

VACUUM CUPS

Product catalog

FIPA

WE CAN MOVE EVERYTHING.

With know-how, expertise, flexibility and professional project management, we enable you to the best solution for your handling task, in the vacuum, gripping and lifting technology.



Box

Efficient handling and transportation of cardboard packaging in storage and shipping areas.



Injection molded parts

Low-impact removal of hot plastic parts, cutting of sprues.



Sacks

Ergonomic, safe handling and picking of sacks.



Bags/Pouches

Handling of unstable flowpacks and bags with different textures.



Sheet metal

Fast cycling times and high process reliability for sheet metal transfer, body car handling and machine loading.



Wood

Handling of wooden elements with different surfaces, machine loading.



Glass/bottles

Impression-free, safe handling and assembly of panes, glass and window elements.



Paper/foils

Precise and reliable handling without soaking in the product.



Drums

Safe handling of heavy drums, buckets and canisters.



Food

Flexible and FDA-compliant handling for direct contact with food.



Pallets

Easy and safe handling of pallets for a smooth material flow.



Electronic parts

Clean and flexible handling of very small components with maximum precision.

AUTOMATION SOLUTIONS ACCORDING TO YOUR NEEDS

We are your global partner for all requirements in the industrial automation industry. Thanks to our many years of experience, reliability and flexibility, we always find the right solution to maximize your process reliability.

Production and logistics mean movement. In most industries, products are picked up, held, deposited, turned, turned over, positioned and lifted.

Vacuum technology can be used to move workpieces safely and quickly, but above all to handle them gently and without causing damage. We have a comprehensive range of innovative and high-quality products for all these applications. With our customer-specific solutions, you can optimize your production processes while supporting your employees in their daily work.

Are you looking for an automation approach and want to improve your processes?

We are more than just a supplier of components. With our expertise, application know-how and professional project management, we provide the optimum solution for your handling task in vacuum, gripping and lifting technology.

Do you want to increase efficiency and productivity at the same time as working ergonomically?

We work closely with our customers and therefore always find an answer- from standard solutions to customized designs the gripper construction.

Our goal: to optimize processes in production and logistics with individual components and customized solutions.

Personal contact, fast response times and expertise are our path to successful projects. We are active for you worldwide through our large partner network.

We keep moving for you so that production and logistics run reliably and smoothly.

THE EXTENSIVE FIPA RANGE

In the pick and place field, all vacuum cups have the same task: lifting parts and moving them without causing damage. Different vacuum cups are used depending on the shape, size and material of the goods to be handled. We have an extensive **range of flat, bellows and oval vacuum cups**, as well as matching **holders and spring levelers**, which we present in this catalog.



Are you looking for the right vacuum component?

The highest level of professionality in generating, regulating, controlling and vacuum – this is guaranteed by the various vacuum components from FIPA. In the catalog for vacuum components you will find everything from suitable vacuum generation, vacuum filters, hoses and connecting elements.



Do you need gripping elements?

In the catalog for End-of-Arm-Tooling you will find everything, such as sprue grippers, gripper fingers, quick-change systems and air nippers, as well as our vacuum gripping systems.



Do you want to make lifting heavy loads easier?

Take the strain from your employees with the ideal tube lifter for your application. Our global is to make your material flow as efficient and ergonomic as possible.

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Overview of materials

Overview of vacuum cup materials

Short designation	Material code	Hardness [Shore A ± 5°]	Commercial designation	Commercial name (example)	Short-term working temperature [°C]	Short-term working temperature [°F]	Abrasion resistance	Flexibility	Oil-resistance	Fuel resistance	Ozone and weathering resistance	Acid resistance	Leaching resistance
CR	9	50 - 60	Chloroprene	Neoprene®	-40 / +110	-40 / +230	+	+	++	o	++	+	+
EPDM	15	50		Vistalon®	-40 / +130	-40 / +266	+	++	o	o	++++	+++	+++
FKM	7	65	Fluor rubber (FPM)	Viton®	-10 / +230	+14 / +446	o	o	++++	++++	++++	+++	+++
Foam rubber	12							++++					
HNBR	14	55	Hydrogenated acrylonitrile-butadiene rubber	Therban®	-30 / +160	-22 / +320	++	+	++++	++	+++	+	+
Monoflex	22	50	Polyurethane		10 / +50	+50 / +122	+++	++++	+++	+++	++	o	+++
NBR	1	50 - 60	Nitrile rubber	Perbunan®	-30 / +90	-22 / +194	+	+	+++	+	o	o	o
NBR-AS	1AS	50 - 70	Nitrile rubber, anti-static		-30 / +90	-22 / +194	+	+	+++	++	o	o	+
NR	4	35 - 45	Natural rubber	SMR	-40 / +80	-40 / +176	++	++++	o	o	o	+	++
NR	3	50 - 65	Natural rubber	SMR	-40 / +80	-40 / +176	++	+++	o	o	o	+	++
PU	5	50 - 65	Polyurethane (EU/AU)	Urepan®	-20 / +80	-4 / +176	++	+	+++	++	+	o	o
SBR	13	50 - 60	Styrene-butadiene-rubber (SBR)	Buna®	-30 / +80	-22/ +176	+++	++	o	o	+	+	+
SI	8; 8-LE*	35 - 45	Silicone rubber	Elastosil®	-40 / +200	-40 / +392	o	++++	o	o	+++	o	o
SI	2; 2-LE*	50 - 70	Silicone rubber	Elastosil®	-40 / +200	-40 / +392	o	+++	o	o	+++	o	o
SI-AS	2AS	50 - 70	Silicone rubber anti-static	Elastosil®	-40 / +200	-40 / +392	o	+++	o	o	+++	o	o
Tepuflex®	17	50	Thermoplastic elastomer		0 / +60	+32 / +140	+++	++	o	o	+++	o	o
Thermalon®	19	60			0 / +160	+32 / +320	++	+	+++	++	o	+	+
TPU	18	60 - 75	Thermoplastic elastomer	Elastollan®	0 / +65	+32 / +149	+++	o	+++	++	+++	o	+
Varioflex®	16	30/60	Polyurethane (2 Shore Hardnesses)		+10 / +50	+50 / +122	+++	++++	+++	+++	++	o	+++
Vinyl	V	50 - 55	PVC (soft)		0 / +60	+32 / +140	+++	++	+	+	++	++	++
Vulkollan®	11	75		Vulkollan®	-40 / +80	-40 / +176	++++	+	+++	++	+++	+	+

++++ = Excellent +++ = Very good ++ = Good + = Fair 0 = Low to satisfactory

Ordering example: Flat vacuum cup made of silicone 50° Shore A

Item No.		
102.030.222._*	> Add material code >	102.030.222.2

NOTE!

> Depending on the application, vacuum cups are subject to mechanical and chemical stresses. The data serve therefore only as guidelines.
> Special vacuum cups fitted with felt linings are extremely low-marking and can be deployed at temperatures up to a max. of 500 °C (932 °F)
> Material colors may change, but the quality remains unaffected.
> Material colors: bg = beige, bl = blue, br = brown, g = green, ge = yellow, gr = gray, or = orange, r = red, sw = black, tr = transparent, w = white
> *Silicone vacuum cups with marking „-LE“: suitable for direct contact with food (compliant to EU regulation 1935/2004 and FDA § 177.2600 e and f)

Structure of order number:

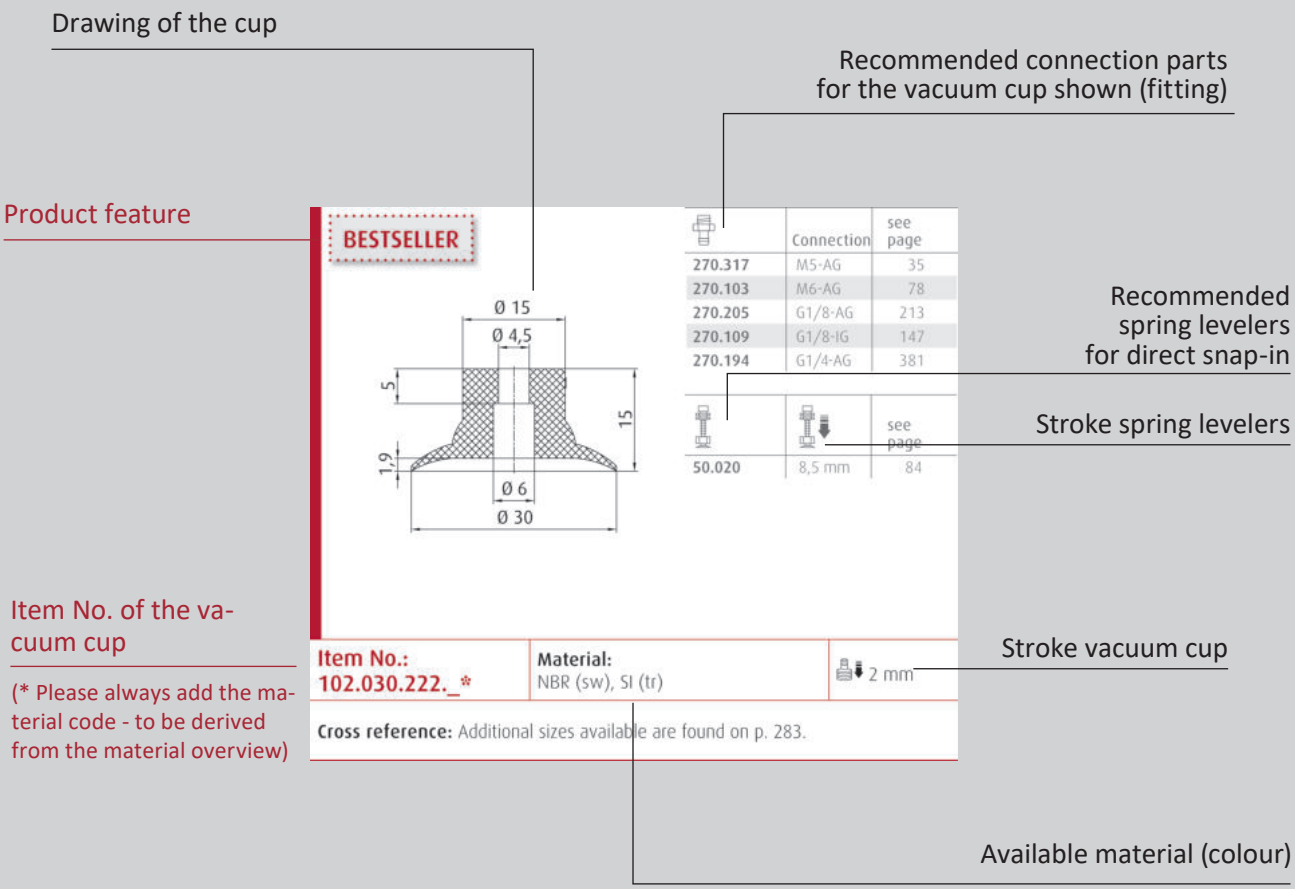
Using the example of a flat vacuum cup with a diameter of 30 mm made of silicone material

Item No.

102. 030. 222. 2

- 102. 030. — Vacuum cup diameter
- 222. — Material code (derived from the material overview on page 6)

Structure of the drawings



All dimensions in this catalogue are given in mm. Changes in any form are reserved.

Proper storage of elastomers

Some elastomer parts are stored for long periods. This can affect product quality. Changes are the result of individual or combined influences of special factors, such as deformation, oxygen, ozone, light, heat, moisture, oils and solvents. For this reason, precautions must be taken to ensure that the service life will not be considerably shortened by incorrect storage. Storage and the recording of time in storage is governed by ISO 2230 and DIN 7716.



HEAT

> Storage temperature of elastomers should preferably be between +5 °C and +25 °C.
> Direct contact with heat sources (such as radiators) or direct sunlight should be avoided.
> Storage at low temperatures can cause elastomers to harden. In this temperature range, therefore, moulded parts must be handled with great care to avoid deformations.

MOISTURE

> Relative humidity in storage areas should be below 70 %. Avoid extremely wet or dry conditions. No condensation should be present.

LIGHT, OZONE

> Elastomer parts should be stored away from light sources and ozone. In particular, direct sunlight or strong artificial light containing an ultraviolet band should be avoided. The use of individual containers, especially plastic bags, is preferred, provided they are UV-protected.

DEFORMATION

> Elastomer components should be stored free of compressions or deformations and in an unbent state. Items delivered in an unbent state should be kept in their original packaging.

CONTACT WITH LIQUIDS OR GREASE

> Moulded elastomer parts should not come into contact during storage with solvents, oils or grease, if not already so packed by the manufacturer.

CONTACT WITH METAL AND NON-FERROUS METALS

> Direct contact with certain metals such as manganese, iron, copper and its alloys, e.g. brass, damages some elastomers and should be avoided during storage.
> Due to the potential for plasticiser migration or migration of other components, elastomers should not be stored in contact with PVCs.

LENGTH OF STORAGE AND INSPECTION (EMPIRICAL VALUES)

The useful life of elastomeric products depends to a considerable degree on the type of elastomer. If the above-mentioned recommendations for storage are observed, the various elastomers can be stored for the times given below:

AU, EU, BR, SBR, NR, thermoplastics	4 years	After the specified time, moulded elastomer parts should be inspected. An extension of shelf life is then possible. Elastomer parts and components less than 1.5 mm thick are more susceptible to attack by oxidation, even when stored under ideal conditions as recommended. The inspection interval should therefore be shorter than indicated above.
NBR, HNBR, CR	6 years	
EPDM	8 years	
FKM, SI, SI-FS	10 years	

IMPORTANT INFORMATION ON THE STORAGE OF POLYURETHANE (AU/EU)

PE bags are used exclusively for safe transport and not for permanent storage.

Polyurethane products must not be stored in sealed PE bags (hydrolysis aging). Polyurethane articles are best stored unpacked.

When storing in cartons or other containers, ensure adequate ventilation (normal air circulation in the storage room is sufficient).

Polyurethane can be stored in PE bags only if the bag is not sealed. When stored in sealed PE bags, the polyurethane is destroyed by hydrolysis.

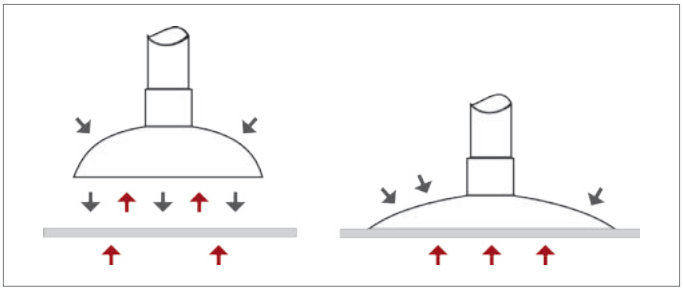
Optimal storage conditions:

Temperature:	room temperature (+5 to +25 °C)
Humidity:	ca. 30 % to 70 %
Air exchange:	air circulation at the storage place is necessary

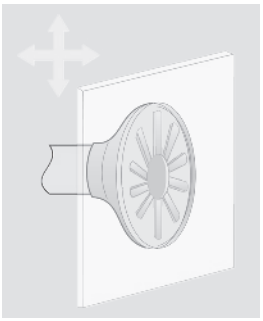
General explanation for vacuum cups

Functional principle

It is not the vacuum unit that sucks up the workpiece to be moved, but the good to be handled that is pressed firmly to the vacuum unit. This happens due to the negative pressure that is created by the built-in vacuum cup or the connected vacuum generator.



The functional principle is straightforward: The vacuum generator draws out the air located between the vacuum cup and workpiece. After contact, the vacuum cup seals off the workpiece surface against the surrounding air pressure. The underpressure or vacuum is created.



Depending on the application, different shapes and sizes of vacuum cups and vacuum cup materials are used.

Example:
For handling movements parallel to the vacuum surface, flat vacuum cups with cleats or knobs are especially suitable because of their high frictional resistance.

Calculation of the holding forces

The force exerted by a vacuum cup holding or lifting a workpiece depends on many factors. These include the acceleration, the safety factor, turning and tilting moments, the elasticity of the material and even the design of the vacuum cup.

Regardless of such factors, the holding power of a vacuum cup can easily be identified by the following formula:

$$\text{Holding power in N} = \frac{\text{active suction surface in cm}^2 \times \text{vacuum available in \%}}{10}$$

In short form:

$$F = \frac{A \times P}{10}$$

The following applies: The holding power of a vacuum cup is proportional to the active suction surface.

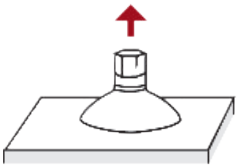
To determine the necessary vacuum cup diameter or the required active suction surface, the following formula helps:

$$\text{Vacuum cup diameter in mm} = 113 \times \sqrt{\frac{\text{Weight in kg} \times \text{Safety factor}}{\text{Underpressure in \%} \times \text{Number of vacuum cups}}}$$

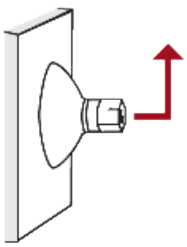
On page 465 you will find a table with average values for vacuum cups in standard applications.

Important: The safety factor (dependent on the lifting direction)

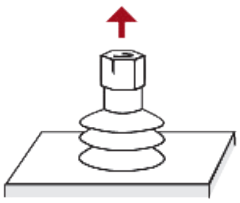
min. 2x safety factor

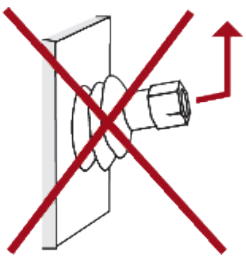


min. 2x safety factor



min. 2x safety factor





Flat vacuum cups series 12

All flat vacuum cups by size

up to Ø 10 mm 51

Ø 11 - 20 mm 60

Ø 21 - 30 mm 74

Ø 31 - 40 mm 93

Ø 41 - 60 mm 101

Ø 61 - 80 mm 111

Ø 81 - 150 mm 120

larger Ø 150 mm 131

Universal flat vacuum cups – SFU-A



Product notes	Advantage
Very shallow cup with single-lip seal for handling various products with smooth or rough surfaces. Connection up to Ø 50 mm by means of plug-in nipple, from Ø 60 mm with vulcanized carrier plate (boltable).	> Great stability allows high acceleration > Fast cycle times are possible, due to the cup's low volume > Cost-effective replacement of worn seals

Ordering notes

Ø 1 mm to Ø 3 mm: PU = 10 pieces

Technical data

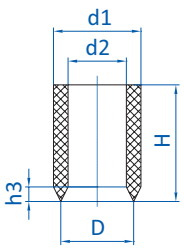
Item no.	Model		Material / Color	Connection thread
102.001.002._*	SFU-A-1,5	0.3	NBR (sw), SI (tr)	--
102.002.004._*	SFU-A-2	0.4	NBR (sw), SI (tr), SI-LE (tr)	--
102.003.005._*	SFU-A -3	0.5	NBR (sw), SI (tr), SI-LE (tr)	--
102.005.009._*	SFU-A -5	0.9	NBR (sw), SI (tr), SI-LE (tr)	--
102.006.013._*	SFU-A -6	1	NBR (sw), SI (tr)	--
102.008.017._*	SFU-A -8	1.4	NBR (sw), SI (tr)	--
102.010.024._*	SFU-A -10	1.2	NBR (sw), SI (tr), SI-LE (tr)	--
102.015.030._*	SFU-A-15	2	NBR (sw), SI (tr), SI-LE (tr)	--
102.015.309._*	SFU-A-15A	1.9	NBR (sw), SI (tr), SI-LE (tr)	--
102.020.041._*	SFU-A -20	2	NBR (sw), SI (tr), SI-LE (tr)	--
102.025.047._*	SFU-A -25	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
102.030.053._*	SFU-A -30	2	NBR (sw), SI (tr), SI-LE (tr)	--
102.035.056._*	SFU-A -35	3	NBR (sw), SI (tr), SI-LE (tr)	--
102.040.061._*	SFU-A -40	3.5	NBR (sw), SI (tr), SI-LE (tr)	--
102.050.065._*	SFU-A -50	4	NBR (sw), SI (tr), SI-LE (tr)	--
102.060.303._*	SFU-A -60	5	NBR (sw), SI (tr), SI-LE (tr)	G1/4-female
102.080.304._*	SFU-A -80	6	NBR (sw), SI (tr), SI-LE (tr)	G1/4-female
102.095.305._*	SFU-A -95	6	NBR (sw), SI (tr), SI-LE (tr)	G1/4-female
154.120.018._*	SFU-A -120	7	NBR (sw), SI (tr), SI-LE (tr)	--
154.150.020._*	SFU-A -150	9	NBR (sw), SI (tr), SI-LE (tr)	--
154.191.025._*	SFU-A -200	13	NBR (sw), SI (tr), SI-LE (tr)	--

*** When ordering please add the appropriate material code to item no.**

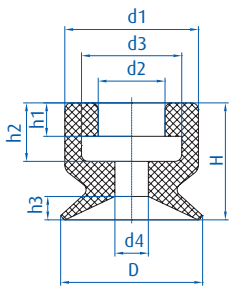
Accessories

Item no.	Suitable fittings										Suitable spring leveler (Snap-in)	
	M3-male	M5-male	M5-female	M6-male	M10-female	G1/8-male	G1/8-female	G1/4-male	G1/4-female	G1/2-female	Spring leveler	
102.001.002._*	270.011	--	--	--	--	--	--	--	--	--	--	--
102.002.004._*	270.014	270.300	--	--	--	--	--	--	--	--	--	--
102.003.005._*	270.014	270.300	--	--	--	--	--	--	--	--	--	--
102.005.009._*	--	270.010	270.005	--	--	270.009	270.007	--	--	--	50.330	9
102.006.013._*	--	270.010	270.005	--	--	270.009	270.007	--	--	--	50.330	9
102.008.017._*	--	270.010	270.005	--	--	270.009	270.007	--	--	--	50.330	9
102.010.024._*	--	270.010	270.005	--	--	270.009	270.007	--	--	--	50.330	9
102.015.030._*	--	270.200	--	--	--	270.064	270.065	--	--	--	--	--
102.015.309._*	--	270.010	270.005	--	--	270.009	270.007	--	--	--	50.330	9
102.020.041._*	--	270.311	--	--	--	270.063	270.061	--	--	--	--	--
102.025.047._*	--	--	--	270.312/19	--	270.030	270.019	270.274	270.275	--	--	--
102.030.053._*	--	--	--	270.312/19	--	270.030	270.019	270.274	270.275	--	--	--
102.035.056._*	--	--	--	270.312/19	--	270.030	270.019	270.274	270.275	--	--	--
102.040.061._*	--	--	--	270.312/19	--	270.030	270.019	270.274	270.275	--	--	--
102.050.065._*	--	--	--	--	--	270.490	270.489	270.491	270.492	--	--	--
102.060.303._*	--	--	--	--	270.090	--	--	270.120	--	--	--	--
102.080.304._*	--	--	--	--	270.090	--	--	270.120	--	--	--	--
102.095.305._*	--	--	--	--	270.090	--	--	270.120	--	--	--	--
154.120.018._*	--	--	--	--	--	--	--	--	--	270.056	--	--
154.150.020._*	--	--	--	--	--	--	--	--	--	270.056	--	--
154.191.025._*	--	--	--	--	--	--	--	--	--	270.056	--	--

Dimensions



Drawing A



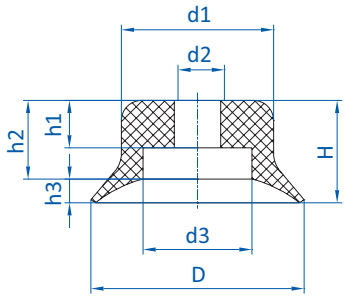
Drawing B

① = Aluminum ② = Steel

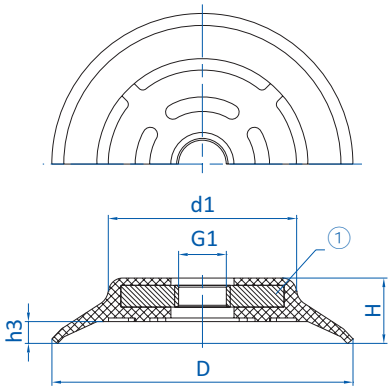
Continued on the next page

*** When ordering please add the appropriate material code to item no.**

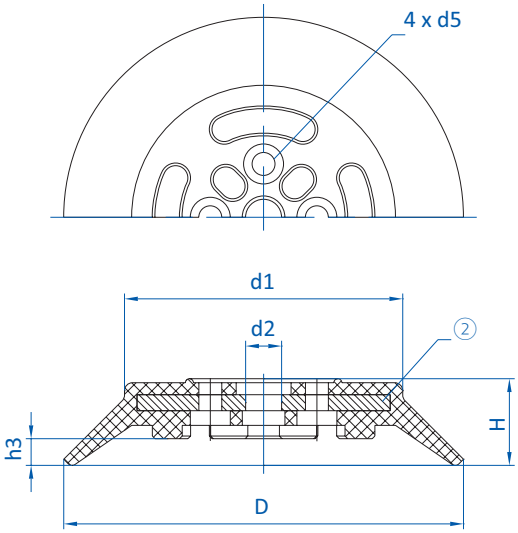
Dimensions



Drawing C



Drawing D



Drawing E

① = Aluminum ② = Steel

*** When ordering please add the appropriate material code to item no.**



Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	**G1**	**H** [mm]	**h1** [mm]	**h2** [mm]	**h3** [mm]
102.001.002._*	A	1.5	1.8	1.2	--	--	2.5	--	--	0.3
102.002.004._*	B	2.5	4	2	3	--	4	1.5	2.5	0.5
102.003.005._*	B	4	4	2	3	--	4	1.5	2.5	0.5
102.005.009._*	B	5	7.5	3.8	6	--	6.5	1.8	3.9	0.8
102.006.013._*	B	6.5	7.5	4	6	--	7	2	4	1
102.008.017._*	B	8.5	8	4	6	--	7	2	3.5	1.4
102.010.024._*	B	11	8.5	4	6	--	7.5	1.8	3.8	1.4
102.015.030._*	C	15	12	4.5	7.5	--	8	2.6	2.1	2.1
102.015.309._*	B	15.5	9	3.8	6	--	8	2.2	4.4	2
102.020.041._*	C	21	15	4.6	11	--	10	4.5	8	2.4
102.025.047._*	C	25	16	6	11	--	14	7	11	3
102.030.053._*	C	30	14	6	11	--	12	7	10	2
102.035.056._*	C	36	21	6	11	--	14	7	11.2	2.8
102.040.061._*	C	42	24	6	11	--	14	7	11.2	2.8
102.050.065._*	C	50	27	8	20	--	15	7.4	11.5	3.5
102.060.303._*	D	62	38	--	--	G1/4	16	--	--	4.8
102.080.304._*	D	83	52	--	--	G1/4	18	--	--	6
102.095.305._*	D	95	66	--	--	G1/4	18	--	--	5.5
154.120.018._*	E	117	90	14	--	--	26	--	--	9
154.150.020._*	E	150	104	13.5	--	--	33	--	--	10
154.191.025._*	E	193	142	13	--	--	40	--	--	15.5

*** When ordering please add the appropriate material code to item no.**

Universal flat vacuum cups – SKT-F



Product notes	Advantage
Universal flat suction cup with single sealing lip for handling flat workpieces with smooth to slightly rough surfaces. Connection up to Ø 50 mm by means of plug-in nipple, from Ø 60 mm with vulcanized carrier plate made of aluminum (screwable).	> High stability enables high acceleration > Fast cycle times possible due to low inherent volume

Technical data

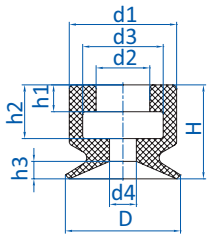
Item no.	Model		Material / Color
102.005.496._*	SKT-F-5	1	NBR (sw), SI (tr)
102.008.497._*	SKT-F-8	1.4	NBR (sw), SI (tr)
102.010.498._*	SKT-F-10	1.5	NBR (sw), SI (tr)
102.015.499._*	SKT-F-15	2	NBR (sw), SI (tr)
102.020.500._*	SKT-F-20	2.5	NBR (sw), SI (tr)
102.025.501._*	SKT-F-25	3	NBR (sw), SI (tr)
102.030.502._*	SKT-F-30	2	NBR (sw), SI (tr)
102.040.503._*	SKT-F-40	4	NBR (sw), SI (tr)
102.050.504._*	SKT-F-50	4	NBR (sw), SI (tr)
102.060.505._*	SKT-F-60	4	NBR (sw), SI (tr)

Accessories

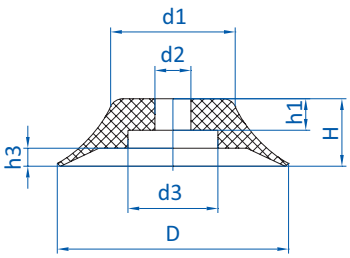
	Suitable fittings							Suitable spring leveler (Snap-in)	
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Spring leveler	
102.005.496._*	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.008.497._*	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.010.498._*	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.015.499._*	270.200	--	--	270.064	270.065	--	--	50.330	9
102.020.500._*	270.311	--	--	270.063	270.061	--	--	--	--
102.025.501._*	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.030.502._*	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.040.503._*	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.050.504._*	--	--	--	270.012	270.020	270.491	270.492	--	--
102.060.505._*	--	--	--	--	--	--	--	--	--

*** When ordering please add the appropriate material code to item no.**

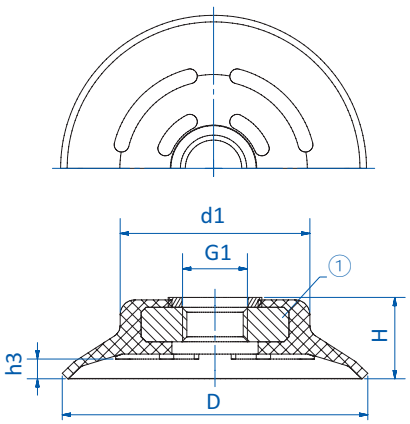
Dimensions



Drawing A



Drawing B



Drawing C

① = Aluminum

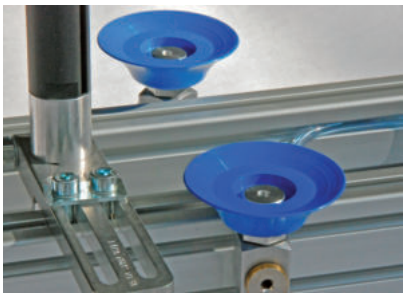
Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
102.005.496._*	A	5.5	7.5	4.2	6.5	1.5	--	6.5	2	4	1
102.008.497._*	A	9.5	9	4.2	6.5	2.4	--	7	2	4	1.4
102.010.498._*	A	10.5	8.5	4.2	6.5	2	--	7.5	2	4	1.5
102.015.499._*	B	16	12	5	8	--	--	8	2.5	--	2
102.020.500._*	B	21	15	5	11	--	--	10	4.5	--	2.5
102.025.501._*	B	25.5	16	6	11	--	--	14	7	--	3
102.030.502._*	B	30	14	6	11	--	--	12	7	--	2
102.040.503._*	B	41	24	6	11	--	--	14	7	--	4
102.050.504._*	B	51	27.5	8	20	--	--	15	7	--	4
102.060.505._*	C	62	38.5	--	--	--	G1/4	16.5	--	--	4

*** When ordering please add the appropriate material code to item no.**

High-temperature Thermalon® cups – SKT-F



UP TO 160 °C (320 °F) & MINIMUM MARKING



Product notes

Flat vacuum cups for smooth surfaces especially suitable for removing hot plastic parts to be painted from an injection molding machine. Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection up to Ø 50 mm by means of plug-in nipple, from Ø 60 mm with vulcanized carrier plate (boltable).

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Great stability allows high acceleration

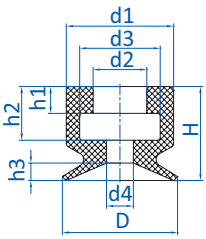
Technical data

Item no.	Model		Material / Color	Short-term working temperature < 30 Sec [°C (°F)]
102.005.496.19	SKT-F-5	1	Thermalon® (bl)	0 - 160 (32 - 320)
102.008.497.19	SKT-F-8	1.4	Thermalon® (bl)	0 - 160 (32 - 320)
102.010.498.19	SKT-F-10	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
102.015.499.19	SKT-F-15	2	Thermalon® (bl)	0 - 160 (32 - 320)
102.020.500.19	SKT-F-20	2.5	Thermalon® (bl)	0 - 160 (32 - 320)
102.025.501.19	SKT-F-25	3	Thermalon® (bl)	0 - 160 (32 - 320)
102.030.502.19	SKT-F-30	2	Thermalon® (bl)	0 - 160 (32 - 320)
102.040.503.19	SKT-F-40	4	Thermalon® (bl)	0 - 160 (32 - 320)
102.050.504.19	SKT-F-50	4	Thermalon® (bl)	0 - 160 (32 - 320)
102.060.505.19	SKT-F-60	4	Thermalon® (bl)	0 - 160 (32 - 320)
102.080.304.19	SKT-F 80	6	Thermalon® (bl)	0 - 160 (32 - 320)
102.095.305.19	SKT-F 95	6	Thermalon® (bl)	0 - 160 (32 - 320)

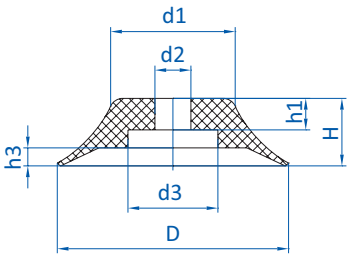
Accessories

	Suitable fittings							Suitable spring leveler (Snap-in)	
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Spring leveler	
102.005.496.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.008.497.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.010.498.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.015.499.19	270.200	--	--	270.064	270.065	--	--	50.330	9
102.020.500.19	270.311	--	--	270.063	270.061	--	--	--	--
102.025.501.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.030.502.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.040.503.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.050.504.19	--	--	--	270.012	270.020	270.491	270.492	--	--
102.060.505.19	--	--	--	--	--	--	--	--	--
102.080.304.19	--	--	--	--	--	--	--	--	--
102.095.305.19	--	--	--	--	--	--	--	--	--

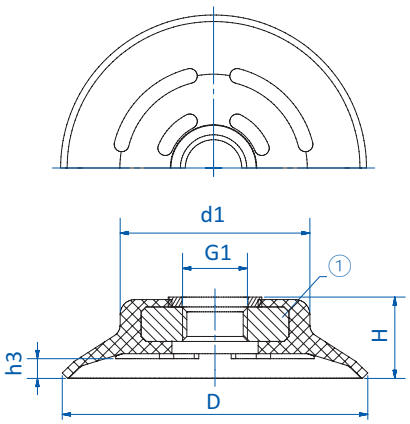
Dimensions



Drawing A



Drawing B



Drawing C

① = Aluminum

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
102.005.496.19	A	5.5	7.5	4.2	6.5	1.5	--	6.5	2	4	1
102.008.497.19	A	9.5	9	4.2	6.5	2.4	--	7	2	4	1.4
102.010.498.19	A	10.5	8.5	4.2	6.5	2	--	7.5	2	4	1.5
102.015.499.19	B	16	12	5	8	--	--	8	2.5	--	2
102.020.500.19	B	21	15	5	11	--	--	10	4.5	--	2.5
102.025.501.19	B	25.5	16	6	11	--	--	14	7	--	3
102.030.502.19	B	30	14	6	11	--	--	12	7	--	2
102.040.503.19	B	41	24	6	11	--	--	14	7	--	4
102.050.504.19	B	51	27.5	8	20	--	--	15	7	--	4
102.060.505.19	C	62	38.5	--	--	--	G1/4	16.5	--	--	4
102.080.304.19	C	82	50.5	--	--	--	G1/4	18	--	--	6
102.095.305.19	C	95	66	--	--	--	G1/4	18	--	--	6

Notes:

Flat vacuum cups, modular – SP-F



Product notes	Advantage
Universal flat vacuum cup in even, supported or deep design. Design: Replacement sealing lip for attachment to fitting.	> High suction force > Fast cycle times possible > Very resistant to wear (Tepuflex®) > Compatible with established products from other vendors

Ordering notes

Explanation of the ending of the accessory fitting:
> S: with screen

Technical data

Item no.	Model		Material / Color	Accessories Retaining ring:
Smooth design				
102.005.090._*	SP-F-5	0.5	SI (tr), CR (sw)	--
102.007.091._*	SP-F-7	1	SI (tr), CR (sw)	--
102.009.092._*	SP-F-9	1.5	SI (tr), CR (sw)	--
102.011.093._*	SP-F-10	1	SI (tr), CR (sw)	--
102.016.098._*	SP-F-15	2	SI (tr), CR (sw)	--
102.020.095._*	SP-F-20	2.5	SI (tr), CR (sw)	78.011
102.030.096._*	SP-F-30	3.5	SI (tr), CR (sw)	78.011
102.040.094._*	SP-F-40	4	SI (tr), CR (sw)	78.012
102.050.097._*	SP-F-50	6.5	SI (tr), CR (sw)	78.013
With cleats				
104.016.003._*	SP-FA-16	0.5	SI (tr), CR (sw)	--
125.020.004._*	SP-FA-20	1	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)	78.011
125.025.007._*	SP-FA-25	1	Tepuflex® (or), SI (tr), CR (sw)	78.011
125.030.010._*	SP-FA-30	2	Tepuflex® (or), SI (tr), CR (sw)	78.011
125.040.013._*	SP-FA-40	2	Tepuflex® (or), SI (tr), CR (sw)	78.012
125.050.017._*	SP-FA-50	2.5	Tepuflex® (or), SI (tr), CR (sw)	78.013
154.078.027._*	SP-FA-75	3	SI (tr), SI-LE (tr), CR (sw)	--
154.113.028._*	SP-FA-110	5	SI (tr), SI-LE (tr), CR (sw)	--
154.155.026._*	SP-FA-150	5	CR (sw)	--
	**Deep design**			
122.016.012._*	SP-FD-16	1.5	SI (tr)	--
122.022.022._*	SP-FD-20	2.5	SI (tr), SI-LE (tr), CR (sw)	78.011

*** When ordering please add the appropriate material code to item no.**

Accessories

Item no.	Suitable fittings									
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G3/8-male	G3/8-female	G1/2-female	G3/4-female
Smooth design										
102.005.090._*	270.153	--	--	--	--	--	--	--	--	--
102.007.091._*	270.153	--	--	--	--	--	--	--	--	--
102.009.092._*	270.153	--	--	--	--	--	--	--	--	--
102.011.093._*	270.134	--	270.104	--	--	--	--	--	--	--
102.016.098._*	270.134	--	270.104	--	--	--	--	--	--	--
102.020.095._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
102.030.096._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
102.040.094._*	--	--	--	--	270.251, 270.501-S	270.506-S	270.505-S	--	--	--
102.050.097._*	--	--	--	--	270.252, 270.502-S	270.504-S	270.507-S	--	--	--
With cleats										
104.016.003._*	270.134	--	270.104	--	--	--	--	--	--	--
125.020.004._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
125.025.007._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
125.030.010._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
125.040.013._*	--	--	--	--	270.251, 270.501-S	270.506-S	270.505-S	--	--	--
125.050.017._*	--	--	--	--	270.252, 270.502-S	270.504-S	270.507-S	--	--	--
154.078.027._*	--	--	--	--	270.527-S	--	--	270.528-S	270.529-S	--
154.113.028._*	--	--	--	--	--	--	--	270.530-S	270.531-S	--
154.155.026._*	--	--	--	--	--	--	--	--	270.532-S	270.533-S
Deep design										
122.016.012._*	270.134	--	270.104	--	--	--	--	--	--	--
122.022.022._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--

Flat vacuum cups, modular

Example:



Assembly example



Assembly example

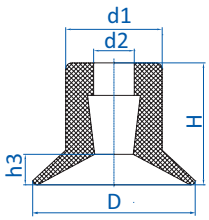
* Fittings are optionally available with and without filter screen
** Fittings come fitted with filter screen as standard

*** When ordering please add the appropriate material code to item no.**

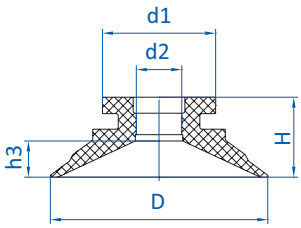
Flat vacuum cups, modular

> The modular series allows you to assemble your own vacuum cups
> Worn sealing lips can be replaced quickly, cost-effective and easily
> High flexibility thanks to a large selection of fitting threads

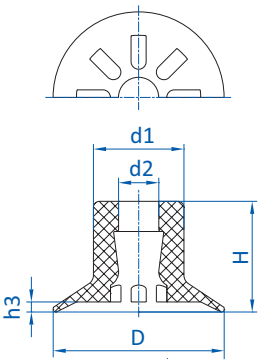
Dimensions



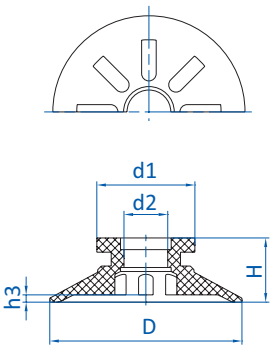
Drawing A



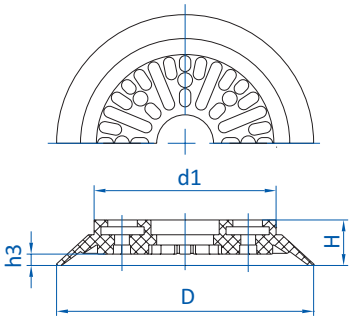
Drawing B



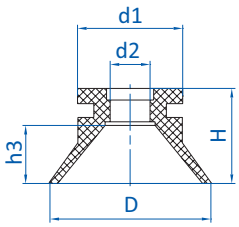
Drawing C



Drawing D



Drawing E



Drawing F

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	H [mm]	h3 [mm]
Smooth design						
102.005.090._*	A	5	4.5	2	6	0.5
102.007.091._*	A	7	5	2	7	0.9
102.009.092._*	A	9.5	5	2	7	1.1
102.011.093._*	A	11	9	3.8	10.5	0.8
102.016.098._*	A	16	9.5	4	12	3
102.020.095._*	B	22	14.5	5.5	8	3
102.030.096._*	B	32	14.5	6.5	10.5	4.7
102.040.094._*	B	42	20	7	13.5	6
102.050.097._*	B	52	27	11	19	8.5

*** When ordering please add the appropriate material code to item no.**



Flat vacuum cups series

Flat vacuum cups, modular – SP-F

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	**H** [mm]	**h3** [mm]
With cleats						
104.016.003._*	C	17	9	4	11	1
125.020.004._*	D	22	14.5	5.5	8	0.9
125.025.007._*	D	28	14	5.5	9	1
125.030.010._*	D	32	14.5	6.5	10.5	1.2
125.040.013._*	D	42	20	7	13.5	2.1
125.050.017._*	D	53	27	12	17.5	2
154.078.027._*	E	78	55	--	13	3
154.113.028._*	E	113	80	--	20	5
154.155.026._*	E	155	109	--	24	5
Deep design						
122.016.012._*	F	17.5	9	4	17	8
122.022.022._*	F	22	14.5	5.5	13	8

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups with fully assembled fitting – SP-F



Product notes

Universal flat vacuum cups in even or supported design. Series with sensing valve prevents dropping of the product if individual vacuum cups in a system are not in contact with the product.
Version: Complete with vacuum cup fitting and filter screen.

Advantage

> High suction force
> Fast cycle times possible
> Very resistant to wear (Tepuflex®)
> Compatible with established products from other vendors

Technical data

Item no.	Model	Connection thread		Material / Color
Smooth design with fitting & filter screen				
120.020.006._*	SP-F-20	G1/8-male, M5-female	2.5	SI (tr), CR (sw)
120.030.013._*	SP-F-30	G1/8-male, M5-female	3.5	SI (tr), CR (sw)
120.040.076._*	SP-F-40	G1/8-female	4	SI (tr), CR (sw)
120.050.078._*	SP-F-50	G1/8-female	6.5	CR (sw)
Smooth design with fitting, filter screen & touch valve				
121.030.006._*	SP-F-30	G1/8-male, M5-female	2.5	CR (sw)
121.040.007._*	SP-F-40	G1/8-female	4	SI (tr), CR (sw)
With cleats, fitting & filter screen				
123.020.003._*	SP-FA-20	G1/8-male, M5-female	1	Tepuflex® (or), SI (tr), CR (sw)
123.025.010._*	SP-FA-25	G1/8-male, M5-female	1	SI (tr), CR (sw)
123.030.019._*	SP-FA-30	G1/8-male, M5-female	2	Tepuflex® (or), SI (tr), CR (sw)
123.040.028._*	SP-FA-40	G1/8-female	2	SI (tr), CR (sw)
123.050.034._*	SP-FA-50	G1/8-female	2.5	Tepuflex® (or), SI (tr), CR (sw)
With cleats, fitting, filter screen & touch valve				
124.030.002._*	SP-FA-30	G1/8-male, M5-female	2	SI (tr)
124.040.006._*	SP-FA-40	G1/8-female	2	SI (tr)
124.050.009._*	SP-FA-50	G1/8-female	2.5	SI (tr), CR (sw)

Accessories

Spare vacuum cup:
102.020.095._*
102.030.096._*
102.040.094._*
102.050.097.9
102.030.096.9
102.040.094._*
125.020.004._*
125.025.007._*
125.030.010._*
125.040.013._*
125.050.017._*
125.030.010.2
125.040.013.2
125.050.017._*

Continued on the next page

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups with fully mounted fitting

Example:



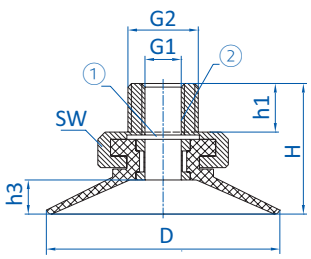
or



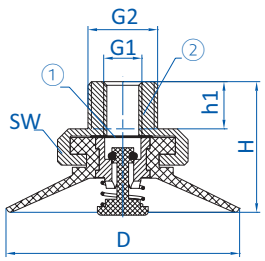
* Version with touch valve available only for flat vacuum cups in smooth design and flat vacuum cups with cleats

> High process reliability thanks to permanently installed fitting
> Worn sealing lips can be replaced if necessary

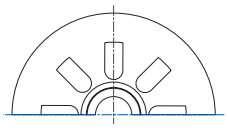
Dimensions

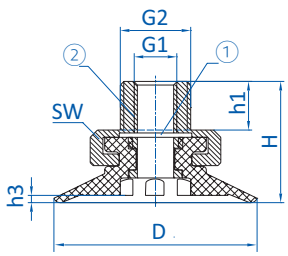


Drawing A

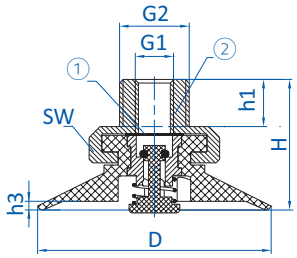


Drawing B





Drawing C



Drawing E

① = Filter screen ② = Aluminum

Item no.	Drawing	Ø D [mm]	Ø d4 [mm]	G1	G2	H [mm]	h1 [mm]	h3 [mm]	SW
Smooth design with fitting & filter screen									
120.020.006._*	A	22	--	M5	G1/8	15.5	6.5	3	17
120.030.013._*	A	32	--	M5	G1/8	18	6.5	4.5	17
120.040.076._*	A	42	--	G1/8	--	22	--	6	12
120.050.078._*	A	52	--	G1/8	--	27	--	8.5	12
Smooth design with fitting, filter screen & touch valve									
121.030.006._*	B	32	--	M5	G1/8	18	6.5	--	17
121.040.007._*	B	42	--	G1/8	--	22	--	--	12
With cleats, fitting & filter screen									
123.020.003._*	C	22	--	M5	G1/8	15.5	6.5	0.9	17

*** When ordering please add the appropriate material code to item no.**



Item no.	Drawing	Ø **D** [mm]	Ø **d4** [mm]	**G1**	**G2**	**H** [mm]	**h1** [mm]	**h3** [mm]	**SW**
123.025.010._*	C	28	--	M5	G1/8	16.5	6.5	1	17
123.030.019._*	C	32	--	M5	G1/8	18	6.5	1.2	17
123.040.028._*	C	42	--	G1/8	--	22	--	2.1	12
123.050.034._*	C	53	--	G1/8	--	26	--	2	12
With cleats, fitting, filter screen & touch valve									
124.030.002._*	E	32	--	M5	G1/8	18	--	1.2	17
124.040.006._*	E	42	--	G1/8	--	22	--	2.1	12
124.050.009._*	E	53	--	G1/8	--	26	--	2	12

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups with a flexible lip – SFU-F



Product notes

Flat vacuum cups with a soft, very flexible single-lip seal for handling highly sensitive products.
Connection via plug-in nipple.
Compatible "snap-in" spring leveller available.

Advantage

> Gentle product handling
> Very good fit to the product surface
> Good seal over a slightly rough surface
> Low volume of the cup enables fast cycle times
> Cost-effective replacement of worn seals

Technical data

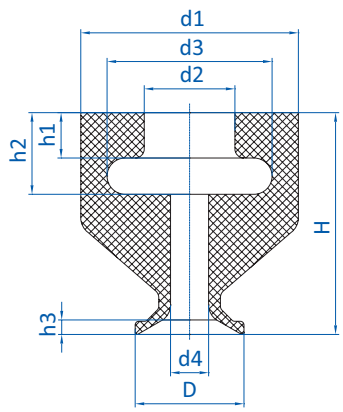
Item no.	Model		Material / Color
102.004.216._*	SFU-F-4	1	NBR (sw), SI (tr)
102.006.217._*	SFU-F-6	1	NBR (sw), SI (tr)
102.008.218._*	SFU-F-8	1	NBR (sw), SI (tr)
102.010.219._*	SFU-F-10	1	NBR (sw), SI (tr)
102.015.220._*	SFU-F-15	2	NBR (sw), SI (tr)
102.020.221._*	SFU-F-20	2	NBR (sw), SI (tr)
102.030.222._*	SFU-F-30	2	NBR (sw), SI (tr)
102.040.223._*	SFU-F-40	2	NBR (sw), SI (tr)

Accessories

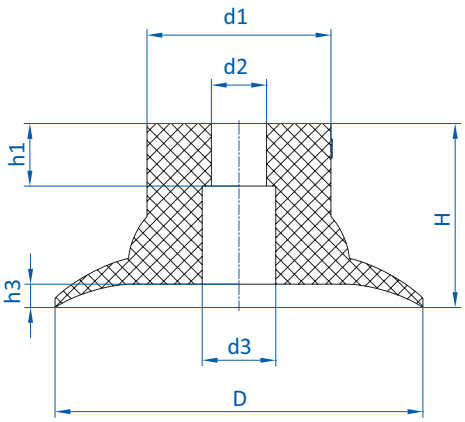
	Suitable fittings					Suitable spring leveler (Snap-in)		
Item no.	M5-male	M6-male	G1/8-male	G1/8-female	G1/4-male	Spring leveler		Hose outside Ø
102.004.216._*	270.200	--	270.064	270.065	--	50.018	8.5	4
102.006.217._*	270.200	--	270.064	270.065	--	50.018	8.5	4
102.008.218._*	270.200	--	270.064	270.065	--	50.018	8.5	4
102.010.219._*	270.200	--	270.064	270.065	--	50.018	8.5	4
102.015.220._*	270.200	--	270.064	270.065	--	50.018	8.5	4
102.020.221._*	270.317	270.103	270.205	270.109	270.194	50.020	8.5	6
102.030.222._*	270.317	270.103	270.205	270.109	270.194	50.020	8.5	6
102.040.223._*	270.317	270.103	270.205	270.109	270.194	50.020	8.5	6

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	**H** [mm]	**h1** [mm]	**h2** [mm]	**h3** [mm]
102.004.216._*	A	3.8	12	5	9	1.1	12	2.5	4.5	0.7
102.006.217._*	A	6	12	5	9	2.1	12.5	2.5	4.5	0.8
102.008.218._*	A	8	12	5	9	2	12.5	2.5	4.5	1.7
102.010.219._*	A	10.5	12	5	9	3	14.5	2.5	4.5	4.2
102.015.220._*	A	16	12	5	9.5	3.3	14	2.4	4.7	2.3
102.020.221._*	B	20	12	4.5	6	--	15	4.7	--	2.1
102.030.222._*	B	30	15	4.5	6	--	15	5	--	1.9
102.040.223._*	B	40	19.5	4.7	6.5	--	15	5	--	2

*** When ordering please add the appropriate material code to item no.**

Notes:

Flat vacuum cups universal – SFU-D



Product notes	Advantage
Universal flat vacuum cups with tapering curved sealing lip. Connection via plug-in nipple.	> Pre-tension of the sealing lip enables gripping of uneven and slightly curved products > Large stroke

Technical data

Item no.	Model		Material / Color
112.004.001._*	SFU-D-4	0.5	NBR (sw), SI (r)
112.005.002._*	SFU-D-5	0.7	NBR (sw), SI (r)
112.006.003._*	SFU-D-6	1	NBR (sw), SI (r)
112.008.007._*	SFU-D-8	1.5	NBR (sw), SI (w), SI-LE (w), NR (sw)
112.010.011._*	SFU-D-10	2	NBR (sw), SI (w), SI-LE (w)
112.012.015._*	SFU-D-12	2	NBR (sw), SI (w), NR (sw)
112.015.022._*	SFU-D-15	2	NBR (sw), SI (w), NR (sw)
112.018.024._*	SFU-D-18	2.3	NBR (sw), SI (w), NR (sw)
112.020.031._*	SFU-D-20	2.3	NBR (sw), SI (w), NR (sw)
112.022.037._*	SFU-D-22	2.5	NBR (sw), SI (w)
112.025.042._*	SFU-D-25	4.5	NBR (sw), SI (w), SI-LE (w), NR (sw)
112.030.052._*	SFU-D-30	4.5	NBR (sw), SI (w)
112.035.060._*	SFU-D-35	5	NBR (sw), SI (w), NR (sw)
112.040.071._*	SFU-D-40	4	NBR (sw), SI (tr)
112.045.077._*	SFU-D-45	7	NBR (sw), SI (w), NR (sw)
112.060.091._*	SFU-D-60	9	NBR (sw), SI (tr)
112.085.102._*	SFU-D-85	12	NBR (sw), SI (tr), NR (sw)

Continued on the next page

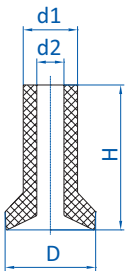
*** When ordering please add the appropriate material code to item no.**

Accessories

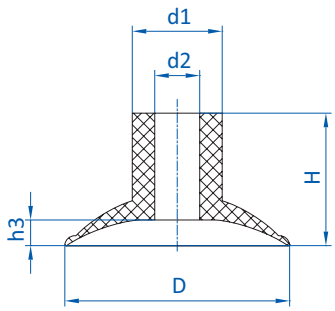
Item no.	Suitable fittings							
	M3-male	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
112.004.001._*	270.025	--	--	--	--	--	--	--
112.005.002._*	270.025	--	--	--	--	--	--	--
112.006.003._*	270.025	--	--	--	--	--	--	--
112.008.007._*	--	270.536	--	--	--	--	--	--
112.010.011._*	--	270.134	270.347	270.104	270.033	270.478	--	--
112.012.015._*	--	270.134	270.347	270.104	270.033	270.478	--	--
112.015.022._*	--	270.134	--	270.104	270.033	270.478	--	--
112.018.024._*	--	270.134	270.347	270.104	270.033	270.478	--	--
112.020.031._*	--	270.134	270.347	270.104	270.033	270.478	--	--
112.022.037._*	--	270.134	270.347	270.104	270.033	270.478	--	--
112.025.042._*	--	270.443	--	--	270.238	270.110	270.534	--
112.030.052._*	--	270.443	--	--	270.238	270.110	270.534	--
112.035.060._*	--	--	--	--	--	--	270.451	270.452
112.040.071._*	--	--	--	--	--	--	270.451	270.452
112.045.077._*	--	--	--	--	--	--	270.451	270.452
112.060.091._*	--	--	--	--	--	--	270.042	--
112.085.102._*	--	--	--	--	--	--	270.216	--

*** When ordering please add the appropriate material code to item no.**

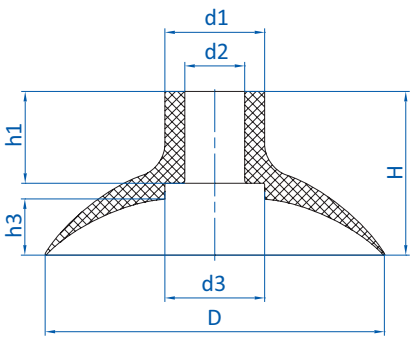
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	H [mm]	h1 [mm]	h3 [mm]
112.004.001._*	A	4	3	1.5	--	7.5	--	--
112.005.002._*	A	5	3	1.5	--	8	--	--
112.006.003._*	A	6	3	1.5	--	8	--	--
112.008.007._*	B	8	5	2.8	--	8	--	1.6
112.010.011._*	B	10	6.7	3.8	--	10.5	--	1.9
112.012.015._*	B	12	8	4	--	11	--	1.7
112.015.022._*	B	15	8	4	--	12	--	2.5
112.018.024._*	B	18	8	3.9	--	11.5	--	2.3
112.020.031._*	B	20	8	4	--	12	--	2.3
112.022.037._*	B	22	8	4	--	13	--	2.5
112.025.042._*	B	25	12	6	--	16	--	4.3
112.030.052._*	B	30	12	6	--	17	--	4.4
112.035.060._*	B	35	15	10	--	16.5	--	5.2
112.040.071._*	B	40	15	10	--	16	--	4
112.045.077._*	B	45	15.5	10	--	17	--	7.5
112.060.091._*	C	60	15	10	25	23	10	9
112.085.102._*	C	85	25	15	25	41	23	14

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups with long shaft – SFU-L



Product notes

Flat vacuum cups for handling sensitive or uneven and slightly curved products. Long, slim design enables pipe mounting and low gimbal leveling for uneven product surfaces.

Advantage

> Gentle handling of particularly sensitive products
> Cost-effective replacement of worn seals

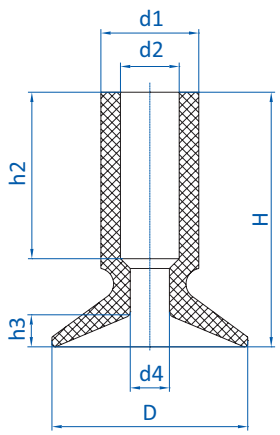
Technical data

Item no.	Model		Material / Color
122.006.002._*	SFU-L-6	1.5	NBR (sw), SI (tr)
122.010.005._*	SFU-L-10	1.5	NBR (sw), SI (tr)
122.016.009._*	SFU-L-16	5	NBR (sw), SI (tr), NR (sw)
122.025.025._*	SFU-L-25	5	NBR (sw), SI (tr), NR (sw)

Accessories

	Suitable fittings				
Item no.	M5-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
122.006.002._*	270.001	--	--	--	--
122.010.005._*	270.022	--	--	--	--
122.016.009._*	270.013	270.003	270.015	270.194	--
122.025.025._*	--	270.132	270.114	270.043	270.178

Dimensions



*** When ordering please add the appropriate material code to item no.**



Item no.	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]	**h3** [mm]
122.006.002._*	6	4	2	1	12	8	1.3
122.010.005._*	10	5	3	2	13	8.5	1.6
122.016.009._*	16	8	4.8	2.5	20	13	3.8
122.025.025._*	25	12	8	4	30	18	5.5

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups for chocolates – SL-PF





Product notes	Advantage
Flat vacuum cups made of FDA-approved silicone for handling delicate products with heavily textured surfaces.	> Gentle handling of the most sensitive surfaces > Also suitable for three-dimensional products, e.g. chocolates

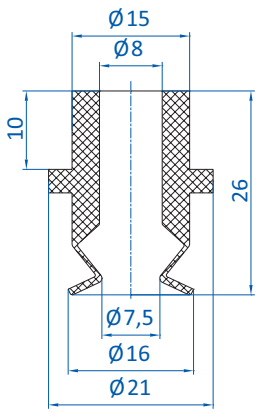
Technical data

Item no.	Model		Material / Color
107.016.008._*	SL-PF-16	2.4	SI (tr), SI-LE (tr)
102.018.345._*	SL-PF-18	--	SI (tr)
107.018.004._*	SL-PF-18A	--	SI (tr), SI-LE (tr)
102.022.043._*	SL-PF-22	5	SI (tr), SI-LE (tr)

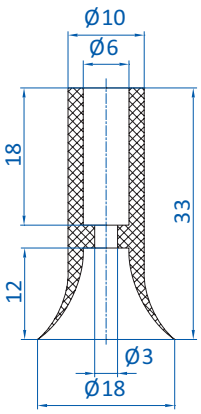
Accessories

	Suitable fittings				
Item no.	M5-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
107.016.008._*	--	270.132	270.114	270.043	270.178
102.018.345._*	270.443	270.238	270.110	270.534	--
107.018.004._*	270.399	270.033	270.478	--	--
102.022.043._*	--	270.112	270.114	270.113	270.178

Dimensions



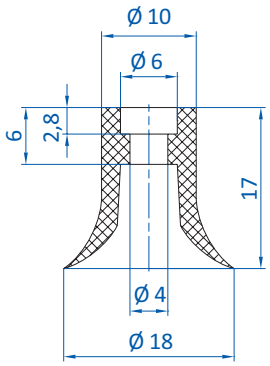
Drawing A



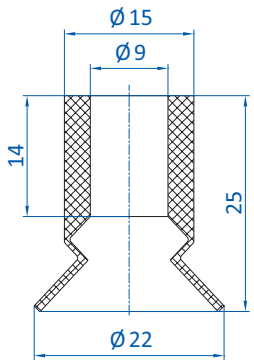
Drawing B

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing C



Drawing D

Item no.	Drawing
107.016.008._*	A
102.018.345._*	B
107.018.004._*	C
102.022.043._*	D

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups for dynamic handling of oily metal sheets – SM-F





Product notes

Robust, round NBR flat vacuum cups, 60° Shore A with vulcanized fitting made of aluminum and large area, multi-part "anti-slip" cleats.
Various connection threads available.
PWIS-conform to guideline VDMA 24364 test category A1.

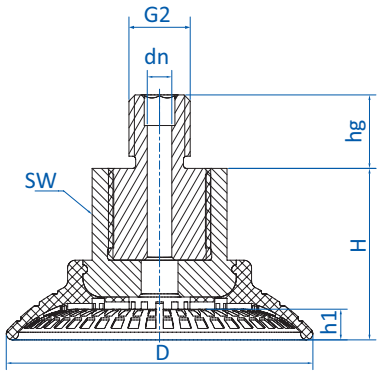
Advantage

> Reliable, non-slip handling of oily sheets due to "anti-slip" cleats. Good absorption of lateral forces
> Supports help to prevent deep-drawing or deformation of thin sheets
> Leak-free suction even with slightly curved surfaces due to flexible sealing lip
> Vulcanized connection thread ensures a secure fit

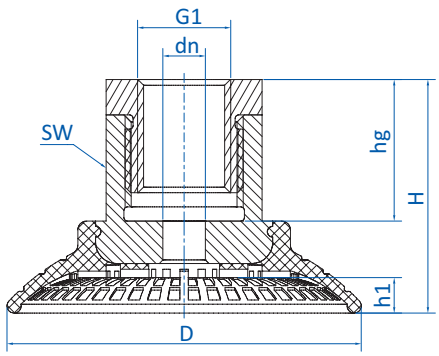
Technical Data

Model / Lip dimensions	Thread (Aluminum)						
	G1/4-male	G1/4-female	G3/8-female	M10-male	M14x1.5-male	Rectangular adapter	
SM-F-30	103.030.030.1	103.030.031.1	103.030.032.1	103.030.033.1	103.030.034.1	103.030.035.1	3
SM-F-40	103.040.036.1	103.040.037.1	103.040.038.1	103.040.039.1	103.040.040.1	103.040.041.1	4
SM-F-50	103.050.042.1	103.050.043.1	103.050.044.1	103.050.045.1	103.050.046.1	103.050.047.1	5
SM-F-60	103.060.048.1	103.060.049.1	103.060.050.1	103.060.051.1	103.060.052.1	103.060.053.1	6
SM-F-80	103.080.054.1	103.080.055.1	103.080.056.1	103.080.057.1	103.080.058.1	103.080.059.1	7.6
SM-F-100	103.100.060.1	103.100.061.1	103.100.062.1	103.100.063.1	103.100.064.1	103.100.065.1	9.5
SM-F-125	103.125.066.1	103.125.067.1	103.125.068.1	103.125.069.1	103.125.070.1	103.125.071.1	12.5

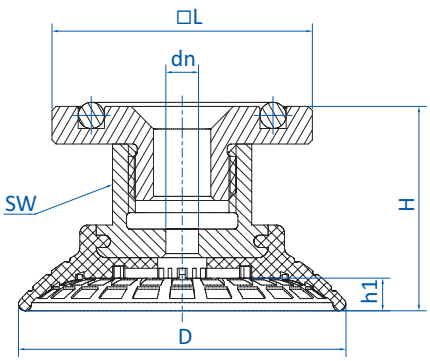
Dimensions



Drawing A



Drawing B



Drawing C



„Anti-slip“ Cleats (SM-F-100)



Item no.	Drawing	Ø D [mm]	Ø D max.* [mm]	Ø dn [mm]	G1 (female)	G2 (male)	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
103.030.030.1	A	30	32.6	4	--	G1/4	--	20	3	10	17
103.030.031.1	B	30	32.6	4	G1/4	--	--	20	3	12	17
103.030.032.1	B	30	32.6	4	G3/8	--	--	36	3	10	17
103.030.033.1	A	30	32.6	4	--	M10	--	20	3	12	17
103.030.034.1	A	30	32.6	4	--	M14x1.5	--	20	3	12	17
103.030.035.1	C	30	32.6	4	--	--	31.8	23.2	3	--	17
103.040.036.1	A	40	43.1	4	--	G1/4	--	22	4	10	17
103.040.037.1	B	40	43.1	4	G1/4	--	--	22	4	12	17
103.040.038.1	B	40	43.1	4	G3/8	--	--	38	4	10	17
103.040.039.1	A	40	43.1	4	--	M10	--	22	4	12	17
103.040.040.1	A	40	43.1	4	--	M14x1.5	--	22	4	12	17
103.040.041.1	C	40	43.1	4	--	--	31.8	25	4	--	17
103.050.042.1	A	50	53.5	6	--	G1/4	--	28	5	10	22
103.050.043.1	B	50	53.5	6	G1/4	--	--	33	5	20	22
103.050.044.1	B	50	53.5	6	G3/8	--	--	28	5	15	22
103.050.045.1	A	50	53.5	4	--	M10	--	28	5	12	22
103.050.046.1	A	50	53.5	6	--	M14x1.5	--	28	5	12	22
103.050.047.1	C	50	53.5	6	--	--	31.8	27.5	5	--	22
103.060.048.1	A	60	63.8	6	--	G1/4	--	31	6	10	22
103.060.049.1	B	60	63.8	8	G1/4	--	--	36	6	20	22
103.060.050.1	B	60	63.8	8	G3/8	--	--	31	6	15	22
103.060.051.1	A	60	63.8	4	--	M10	--	31	6	12	22
103.060.052.1	A	60	63.8	6	--	M14x1.5	--	31	6	12	22
103.060.053.1	C	60	63.8	8	--	--	31.8	30.5	6	--	22
103.080.054.1	A	80	85.1	6	--	G1/4	--	35	7.6	10	22
103.080.055.1	B	80	85.1	8	G1/4	--	--	40	7.6	20	22
103.080.056.1	B	80	85.1	8	G3/8	--	--	35	7.6	15	22
103.080.057.1	A	80	85.1	4	--	M10	--	35	7.6	12	22
103.080.058.1	A	80	85.1	6	--	M14x1.5	--	35	7.6	12	22
103.080.059.1	C	80	85.1	8	--	--	31.8	34.5	7.6	--	22
103.100.060.1	A	100	104	6	--	G1/4	--	36	9.5	10	22
103.100.061.1	B	100	104	8	G1/4	--	--	41	9.5	20	22
103.100.062.1	B	100	104	8	G3/8	--	--	36	9.5	15	22
103.100.063.1	A	100	104	4	--	M10	--	36	9.5	12	22
103.100.064.1	A	100	104	6	--	M14x1.5	--	36	9.5	12	22
103.100.065.1	C	100	104	8	--	--	31.8	35.5	9.5	--	22
103.125.066.1	A	125	133	6	--	G1/4	--	43	12.5	10	22
103.125.067.1	B	125	133	8	G1/4	--	--	48	12.5	20	22
103.125.068.1	B	125	133	8	G3/8	--	--	43	12.5	15	22
103.125.069.1	A	125	133	4	--	M10	--	43	12.5	12	22
103.125.070.1	A	125	133	6	--	M14x1.5	--	43	12.5	12	22
103.125.071.1	C	125	133	8	--	--	31.8	42.5	12.5	--	22

* aspirated condition

Bell shaped vacuum cups for dynamic handling of strongly curved metal sheets – SM-G



ESPECIALLY FOR STRONGLY CURVED SURFACES



Product notes

Flexible, round NBR bell shaped cup, 60° Shore A with vulcanized fitting made of aluminum for best adaptation to strongly curved metal sheets. Large area "anti-slip" cleats, various connection threads available. PWIS-conform to guideline VDMA 24364 test category A1.

Advantage

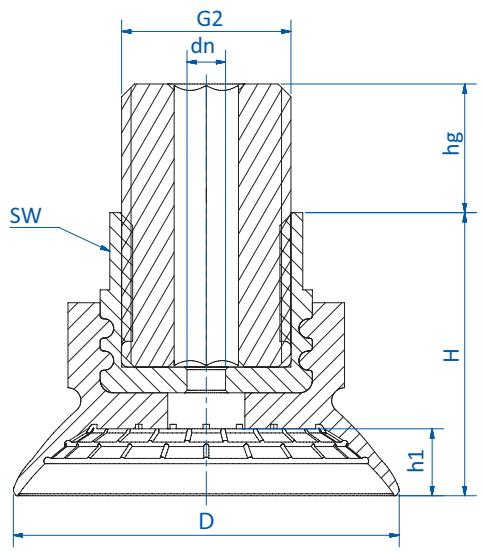
> Reliable, non-slip handling of oily sheets due to “anti-slip” cleats. Good absorption of lateral forces.
> Supports help to prevent deep-drawing or deformation of thin sheets
> Leak-free suction even with strongly curved surfaces due to very flexible sealing lip
> Vulcanized connection thread ensures a secure fit

Technical data

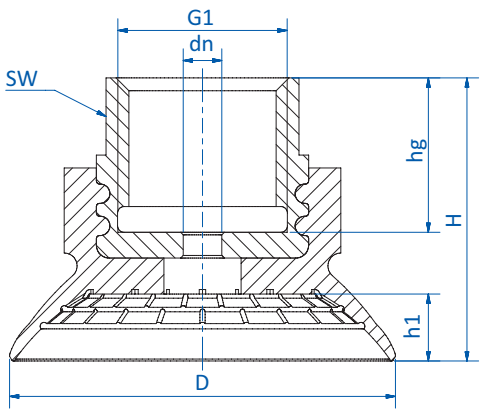
Model / Lip dimensions	Thread (Aluminum)				Volume [cm³]	Gripping force* [N]	
	G1/4-male	G1/4-female	G3/8-female	Rectangular adapter			
SM-G-22	103.022.143.1	103.022.142.1	103.022.148.1	103.022.151.1	1.13	19	4
SM-G-30	103.030.144.1	103.030.141.1	103.030.149.1	103.030.152.1	2.64	33	5.2
SM-G-45	103.045.145.1	103.045.137.1	103.045.150.1	103.045.153.1	9.38	72	7.8
SM-G-60	103.060.146.1	103.060.138.1	103.060.136.1	103.060.154.1	21.77	133	10.6
SM-G-80	103.080.147.1	103.080.139.1	103.080.090.1	103.080.155.1	47.86	218	12.8

* The gripping force specifications are theoretical guide values on dry, smooth and even workpiece surfaces at 60 % vacuum – they do not include a safety factor

Dimensions

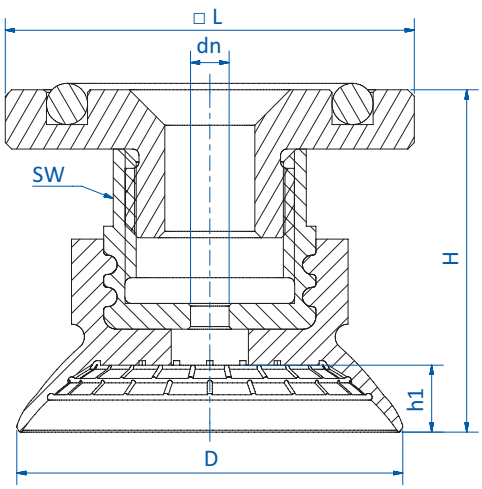


Drawing A



Drawing B

Dimensions



Drawing C

Item no.	Drawing	Ø D [mm]	Ø D max.* [mm]	Ø dn [mm]	G1 (female)	G2 (male)	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
103.022.143.1	A	22	26.3	3	--	G1/4	--	22	4	12	15
103.022.142.1	B	22	26.3	3	G1/4	--	--	15	4	12	15
103.022.148.1	B	22	26.3	3	G3/8	--	--	38	4	10	15
103.022.151.1	C	22	26.3	3	--	--	31.8	26.6	4	--	15
103.030.144.1	A	30	34.1	3	--	G1/4	--	22	5.2	10	15
103.030.141.1	B	30	34.1	3	G1/4	--	--	22	5.2	12	15
103.030.149.1	B	30	34.1	3	G3/8	--	--	38	5.2	10	15
103.030.152.1	C	30	34.1	3	--	--	31.8	26.6	5.2	--	15
103.045.145.1	A	47	53.1	4	--	G1/4	--	24.5	7.8	10	17
103.045.137.1	B	47	53.1	4	G1/4	--	--	24.5	7.8	12	17
103.045.150.1	B	47	53.1	4	G3/8	--	--	40.5	7.8	10	17
103.045.153.1	C	47	53.1	4	--	--	31.8	29.1	7.8	--	17
103.060.146.1	A	63	71	6	--	G1/4	--	31	10.6	10	22
103.060.138.1	B	63	71	6	G1/4	--	--	36	10.6	20	22
103.060.136.1	B	63	71	6	G3/8	--	--	31	10.6	15	22
103.060.154.1	C	63	71	6	--	--	31.8	35.6	10.6	--	22
103.080.147.1	A	83	92.4	7.1	--	G1/4	--	35	12.8	10	22
103.080.139.1	B	83	92.4	7.1	G1/4	--	--	40	12.8	20	22
103.080.090.1	B	83	92.4	7.1	G3/8	--	--	35	12.8	15	22
103.080.155.1	C	83	92.4	7.1	--	--	31.8	39.6	12.8	--	22

* aspirated condition

Flat vacuum cups for textured surfaces – SFU-R





Product notes

Flat vacuum cups with safety sealing lips to handle rough surfaces, as well as smooth but very uneven products.
Connection via an interlocking, snap-in aluminum plate.

Advantage

> Leak-free gripping of many difficult product surfaces thanks to extremely flexible thinly tapered sealing lip
> High stability under lateral forces
> Optimum process reliability due to additional double lip seal
> Cleats help prevent warping of the product
> Cost-effective tool-free changing of worn seals

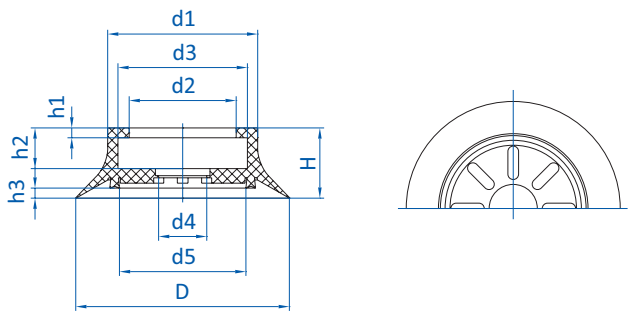
Technical data

Item no.	Model		Material / Color
102.040.357._*	SFU-R-40	3	SI (tr), NR (br)
102.070.234._*	SFU-R-70	6	NBR (gr), SI (tr), NR (bg), NR (br)
102.100.269._*	SFU-R-100	5	NBR (gr), NR (br)
102.200.350._*	SFU-R-200	5	NR (w)

Accessories

	Suitable fittings		
Item no.	G1/8-female	G1/4-female	G1/2-female
102.040.357._*	270.234	--	--
102.070.234._*	--	270.179	--
102.100.269._*	--	270.180	--
102.200.350._*	--	--	270.335

Dimensions



Item no.	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
102.040.357._*	40	26	17.5	21	8	21	12.5	2.9	6	2.5
102.070.234._*	70	50	33	43	14	40	30	3.5	17	5.4
102.100.269._*	100	70	50	61	23	59	33	4.6	19	4.7
102.200.350._*	200	168	148	158	25	158	31	5	18.5	3.2

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups for separating porous products – SFU-RT





Product notes

Flat vacuum cups for stacking of partially air-permeable plate material that air is drawn through.
Separates uppermost plate layer from underlying plate layers.
Soft sealing lip made of abrasion-resistant NR. Secure handling even of rough surfaces thanks to additional internal safety sealing lip.
High stability under lateral forces.
Cost-effective replacement of the wear part, as it comes in two parts.

Ordering notes

Elastomer seal and carrier plate 270.380 must be ordered separately

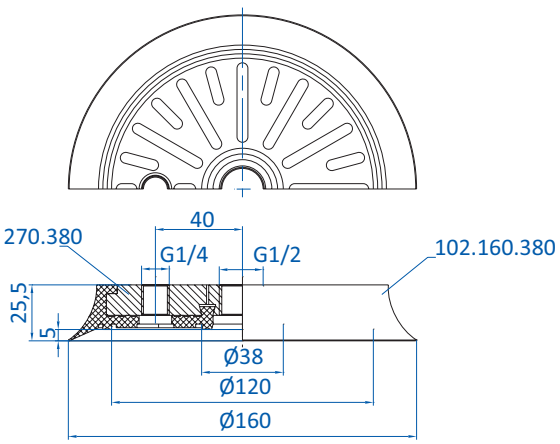
Technical data

Item no.	Model		Material / Color	Suitable fittings
102.160.380.4	SFU-RT-160	6	NR (bg)	270.380

Functional principle

Task: Access the top layer of porous materials without carrying along the lower layers.
Simultaneous intake (outer chamber) and selective blowing in a separate central chamber breaks adhesive forces between the layers.
The unwanted take-up of lower layers is prevented.
The air pressure level should be between 1 and 3 bar (14.5 and 43.5 psi) and is dependent on the nature of the product.

Dimensions



Gripping force [N] at vacuum level [%]

Item no.	20 % Vacuum	30 % Vacuum	40 % Vacuum	50 % Vacuum	60 % Vacuum	70 % Vacuum
102.160.380.4	83	137	186	230	280	324

Notes:

Flat vacuum cups Variopack® – SL-FP

Optimized for FlowPack packaging

EXTREME FLEXIBLE SUCTION LIP





Product notes

Flat vacuum cups with extreme flexible single sealing lip for handling a wide variety of FlowPack packages. Only materials are used that are suitable for the food industry.

Advantage

> Adapts optimally to a wide variety of surfaces
> Very high cross force absorption due to internal support structure
> Quick vacuum cup change by means of plug nipples
> Increases pick rates and reduces machine downtimes

Technical data

Item no.	Model		Material / Color	Connection thread
103.030.135.2	SL-FP-30	5	SI (tr)	G1/4-female
103.030.135.2-LE*	SL-FP-30	5	SI-LE (tr)	G1/4-female
103.030.135.8	SL-FP-30	5	SI (w)	G1/4-female
103.030.135.8-LE*	SL-FP-30	5	SI-LE (w)	G1/4-female
103.060.133.2	SL-FP-60	10	SI (tr)	G3/8-female
103.060.133.2-LE*	SL-FP-60	10	SI-LE (tr)	G3/8-female
103.060.133.8	SL-FP-60	10	SI (w)	G3/8-female
103.060.133.8-LE*	SL-FP-60	10	SI-LE (w)	G3/8-female

Accessories

Spare vacuum cup:
104.030.100.2
104.030.100.2-LE
104.030.100.8
104.030.100.8-LE
104.060.098.2
104.060.098.2-LE
104.060.098.8
104.060.098.8-LE

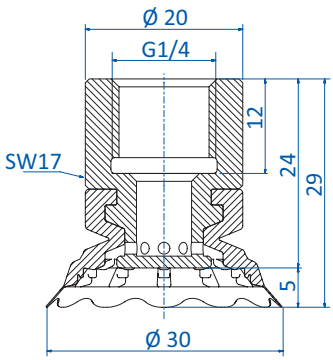
Ordering notes

* For vacuum cups with certificate of conformity for food contact, please select item number ending in "-LE".

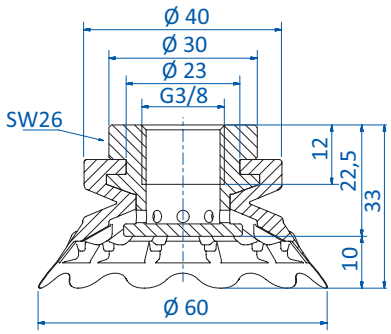
Notes:

Vacuum cups made of material with a hardness of 35° Shore A are particularly suitable for thin packaging. The soft, very flexible silicone seals a more extreme drapery than vacuum cups made of 55°. However, the harder version made of SI 55° Shore A can take larger loads.

Dimensions



SL-FP-30



SL-FP-60

Flat vacuum cups with double safety sealing lips – SFU-S

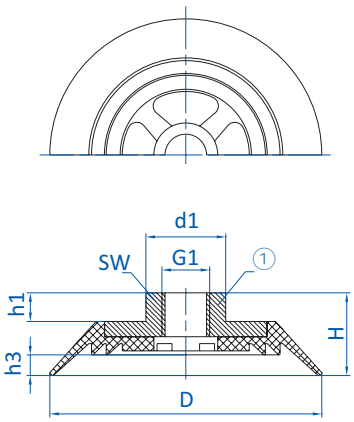


Product notes	Advantage
Flat vacuum cups with dual internal safety sealing lip as well as vulcanized carrier plate made of aluminum.	> High process reliability through multiple sealing lip > Excellent lateral stability due to vulcanized carrier plate, as well as rubberized support surfaces for the product

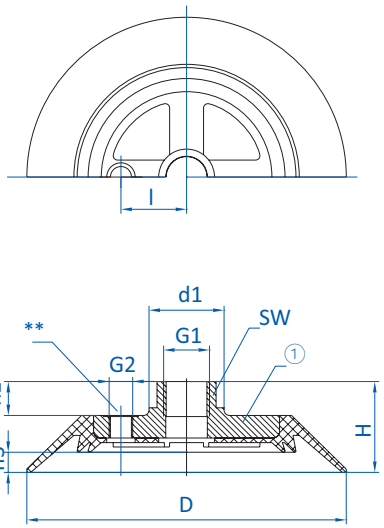
Technical data

Item no.	Model	Connection thread		Material / Color
150.030.031._*	SFU-S-30	M5-female	3	SI (r), CR (sw)
150.050.032._*	SFU-S-50	G1/8-female	5.5	SI (r), CR (sw)
150.075.033._*	SFU-S-75	G1/4-female	6	SI (r), CR (sw)
150.100.034._*	SFU-S-100	G3/8-female	9	NBR (sw), SI (tr), NR (w)
150.150.010._*	SFU-S-150	G1/2-female	9	SI (gr), CR (gr)
150.225.018._*	SFU-S-225	G3/4-female	9.5	SI (gr), CR (gr)

Dimensions



Drawing A



Drawing B

① = Aluminum ** = Vacuum connection at the side possible

*** When ordering please add the appropriate material code to item no.**



Item no.	Drawing	Ø **D** [mm]	**l** [mm]	Ø **d1** [mm]	**G1**	**G2**	**H** [mm]	**h1** [mm]	**h3** [mm]	**SW**
150.030.031._*	A	29	--	10	M5	--	17.5	7	3	8
150.050.032._*	A	50	--	18	G1/8	--	18.5	7	5.5	14
150.075.033._*	A	75	--	22	G1/4	--	23	8	5.5	17
150.100.034._*	A	100	--	30	G3/8	--	30	10	9	24
150.150.010._*	B	146	30	34	G1/2	G1/8	42	15.5	9	27
150.225.018._*	B	223	50	49	G3/4	G1/8	52	20	9.5	40

*** When ordering please add the appropriate material code to item no.**

Vacuum suction plates with foam rubber sealing lip – SP-PLM



Product notes

Flat vacuum suction plate with a soft, foamed sealing lip made of EPDM.
The sealing lip snaps (form-locking) into a support plate.

Advantage

> Good sealing of heavily textured surfaces
> Cost-effective replacement of worn seals

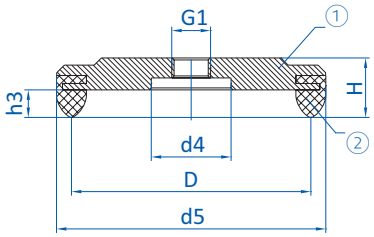
Technical data

Item no.	Model	Connection thread		Weight [g]	Material / Color
160.042.001._*	SP-PLM-35	G1/8-female	1	22	EPDM (sw)
160.067.003._*	SP-PLM-60	G1/8-female	1	63	EPDM (sw)
160.107.006._*	SP-PLM-100	G1/2-female	1	234	EPDM (sw)
160.145.014._*	SP-PLM-140	G1/2-female	1	588	EPDM (sw)
160.215.009._*	SP-PLM-200	G3/4-female	2.5	1,220	EPDM (sw)

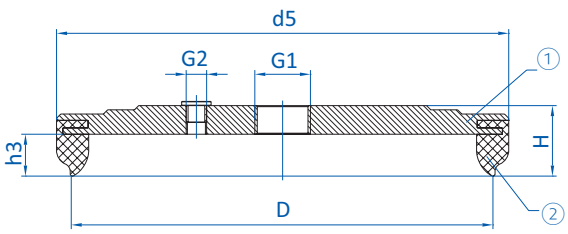
Accessories

Spare vacuum cup:	Touch valve:
102.038.451.15	270.129
102.060.452.15	270.129
102.100.453.15	270.130
102.140.454.15	270.130
102.210.455.15	--

Dimensions



Drawing A



Drawing B

① = Aluminum ② = EPDM foamed

Item no.	Drawing	Ø D [mm]	Ø d4 [mm]	Ø d5 [mm]	G1	G2	H [mm]	h3 [mm]
160.042.001._*	A	35	20	43	G1/8	--	15	7
160.067.003._*	A	60	20	68	G1/8	--	15	7
160.107.006._*	A	100	30	108	G1/2	--	19	7
160.145.014._*	A	138	30	145	G1/2	--	24	7
160.215.009._*	B	201	--	215	G3/4	G1/8	34	20

*** When ordering please add the appropriate material code to item no.**

Heavy-duty flat vacuum suction plates – SFPL-D



Product notes

Heavy-duty vacuum suction plate for both smooth and rough surfaces such as metal sheets, cut marble, granite, precast concrete, metal plates or rough-sawn wood. Central mounting connection – lateral vacuum port.

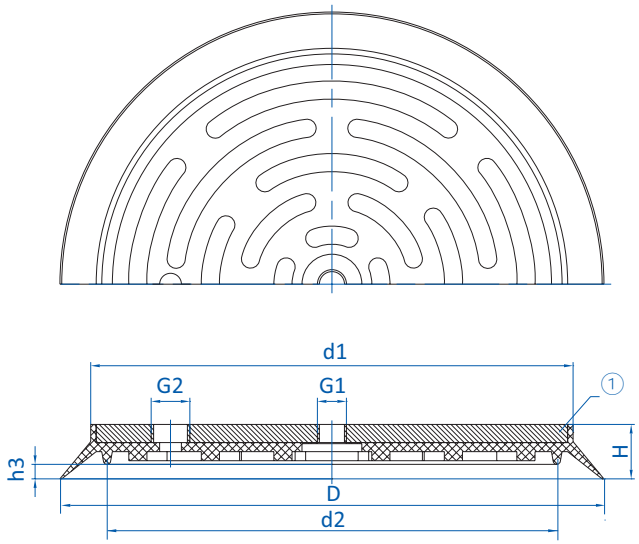
Advantage

> Vulcanized steel carrier plate allows lifting of very heavy loads
> Secure gripping of uneven surfaces thanks to additional inner sealing lip
> Lateral vacuum connection

Technical data

Item no.	Model	Connection thread		Weight [g]	Material / Color
152.160.127.9	SFPL-D-160	M12-female	9	970	CR (sw)
152.200.128.1	SFPL-D-200	M12-female	9	1,741	CR (sw)
152.250.129.1	SFPL-D-250	M12-female	9	2,990	CR (sw)
152.300.130.1	SFPL-D-300	M16-female	12	4,370	NBR (sw)
152.350.131.1	SFPL-D-350	M16-female	13	6,274	NBR (sw)

Dimensions



① = Steel

Item no.	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	**G1**	**G2**	**H** [mm]	**h3** [mm]
152.160.127.9	160	124	109	M12	G3/8	28	9
152.200.128.1	200	166	146	M12	G1/2	27	7.5
152.250.129.1	250	212	194	M12	G3/8	27	7
152.300.130.1	300	266	248	M16	G1/2	30	8
152.350.131.1	350	316	298	M16	G1/2	30	8

Flat XXL-suction rings – SFR



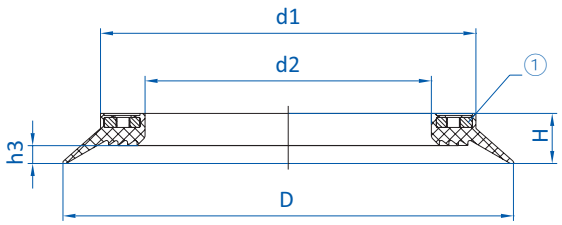
Product notes

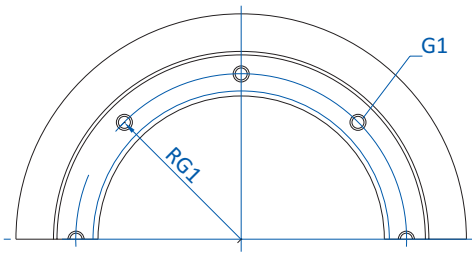
Large flat suction seals vulcanized on steel ring for handling very large loads. Mounting through circular, circumferentially placed thread holes.

Technical data

Item no.	Material / Color	
152.285.099.1	NBR (sw)	11
152.450.105.1	NBR (sw)	18
152.540.106.1	NBR (sw)	18
152.630.107.1	NBR (sw)	18
152.720.108.1	NBR (sw)	18
152.920.109.1	NBR (sw)	18

Dimensions

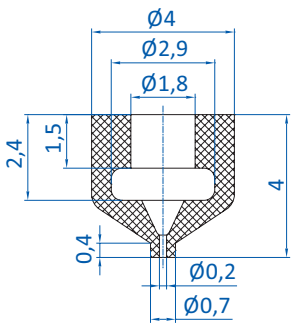




① = Ring made of vulcanized steel

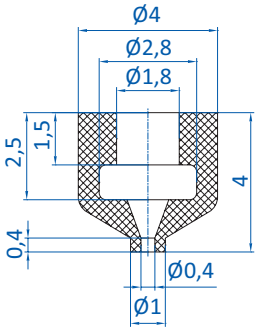
Item no.	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	**G1**	**R G1**	**H** [mm]	**h3** [mm]
152.285.099.1	285	250	160	4xM12	102.5	32	11
152.450.105.1	450	375	286	8xM12	165	50	18
152.540.106.1	540	465	375	8xM12	210	50	18
152.630.107.1	630	556	464	12xM12	255	50	18
152.720.108.1	720	646	554	12xM12	300	50	18
152.920.109.1	920	846	754	12xM12	400	50	18





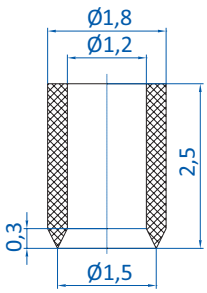
	Connection	
270.524	M3-male	--

Item no.	Material	
102.001.425._	NBR (sw), SI-AS (sw), PU	0 mm



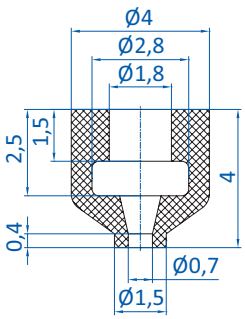
	Connection	
270.524	M3-male	--

Item no.	Material	
102.001.463._*	NBR (sw), SI-AS (sw)	0 mm



	Connection	
270.011	M3-male	--

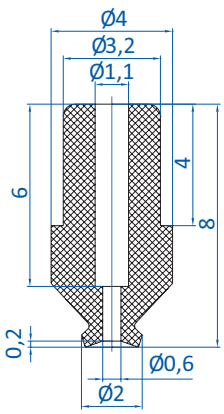
Item no.	Material	
102.001.002._*	NBR (sw), SI (tr)	0.3 mm



	Connection	
270.524	M3-male	--

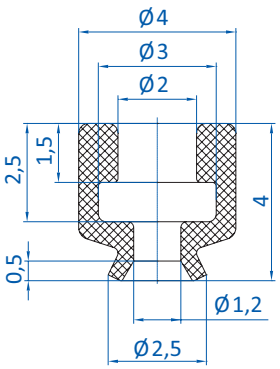
Item no.	Material	
102.002.464._*	NBR (sw), SI-AS (sw)	0 mm

Details and additional sizes available are found on p. 12.
Ordering notes Packing unit = 10 pieces



	Connection	
270.427	M3-male	--

Item no.	Material	
102.002.279._*	NBR (sw), NBR-AS (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)	0.2 mm



	Connection	
270.014	M3-male	--
270.300	M5-male	--

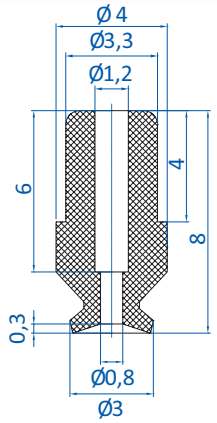
Item no.	Material	
102.002.004._*	NBR (sw), SI (tr), SI-LE (tr), PU (bl)	0.4 mm

Details and additional sizes available are found on p. 12.
Ordering notes Packing unit = 10 pieces

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 3 - 4 mm

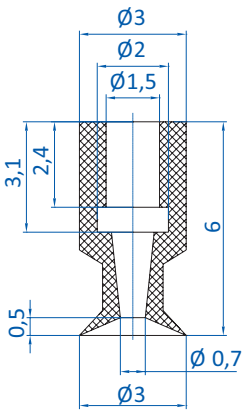


	Connection	
270.427	M3-male	--

Item no. 102.003.280._*

Material NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)

0.3 mm

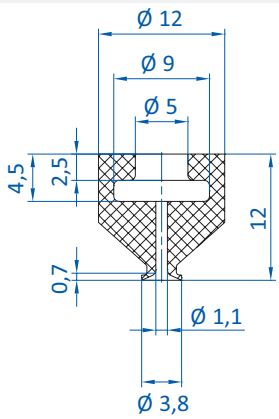


	Connection	
270.025	M3-male	--

Item no. 102.003.480._*

Material NBR (sw)

0.3 mm



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

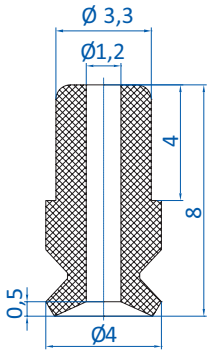
50.018	8.5 mm

Item no. 102.004.216._*

Material NBR (sw), SI (tr)

1 mm

Details and additional sizes available are found on p. 28.

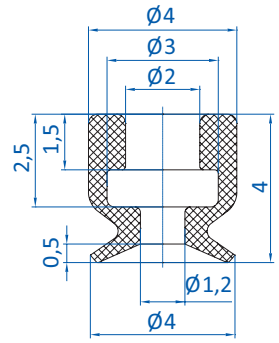


	Connection	
270.427	M3-male	--

Item no. 102.004.281._*

Material NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)

0.3 mm



	Connection	
270.014	M3-male	--
270.300	M5-male	--

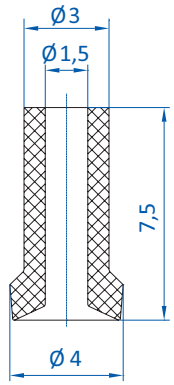
BESTSELLER

Item no. 102.003.005._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl), FKM (sw)

0.5 mm

Details and additional sizes available are found on p. 12.
Ordering notes Packing unit = 10 pieces



	Connection	
270.025	M3-male	--

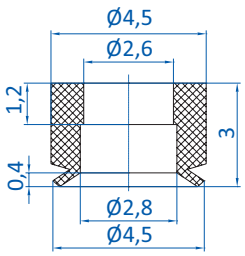
Item no. 112.004.001._*

Material NBR (sw), SI (r)

0.5 mm

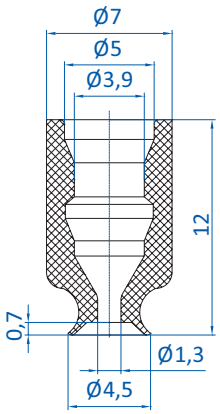
Details and additional sizes available are found on p. 31.

*** When ordering please add the appropriate material code to item no.**



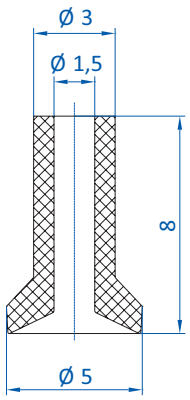
	Connection	
270.014	M3-male	--
270.111	M4-male	--

Item no.	Material	
102.005.115._*	NBR (sw), SI (tr)	0.5 mm



	Connection	
270.399	M5-male	--

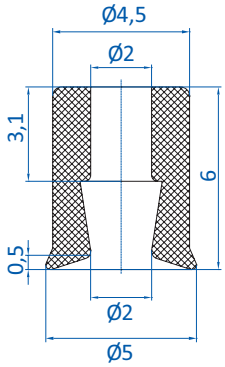
Item no.	Material	
102.005.391._*	SI (tr)	0.5 mm



	Connection	
270.025	M3-male	--

Item no.	Material	
112.005.002._*	NBR (sw), SI (r)	0.7 mm

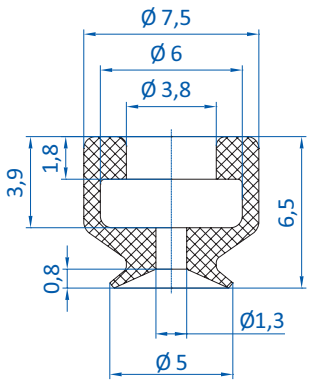
Details and additional sizes available are found on p. 31.



	Connection	
270.153	M5-male	--

Item no.	Material	
102.005.090._*	SI (tr), CR (sw)	0.5 mm

Details and additional sizes available are found on p. 21.

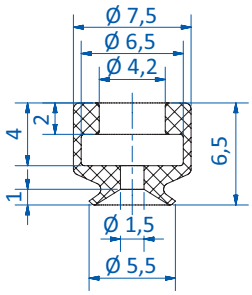


	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm	--

Item no.	Material	
102.005.009._*	NBR (sw), SI (tr), SI-LE (tr), FKM (sw)	0.9 mm

Details and additional sizes available are found on p. 12.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm	--

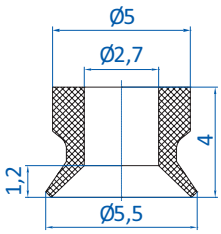
Item no.	Material	
102.005.496._*	NBR (sw), SI (tr), Thermalon® (bl)	1 mm

Details and additional sizes available are found on p. 16.

*** When ordering please add the appropriate material code to item no.**

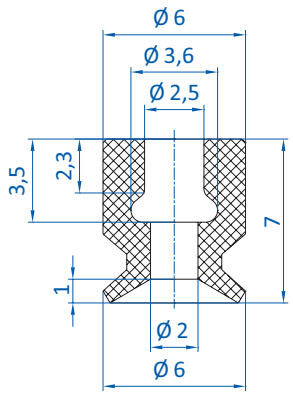
Flat vacuum cups by size

Ø 5 - 6 mm



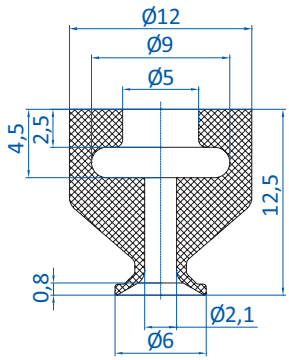
	Connection	
270.014	M3-male	--

Item no.	Material	
102.005.081._*	NBR (sw), SI (tr)	0.9 mm



	Connection	
270.283	M5-male	--

Item no.	Material	
102.006.282._*	NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)	0.5 mm

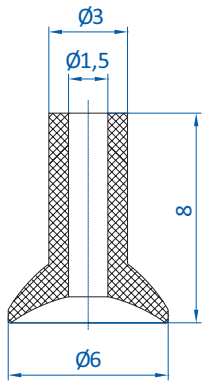


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

Item no.	Material	
102.006.217._*	NBR (sw), SI (tr)	1 mm

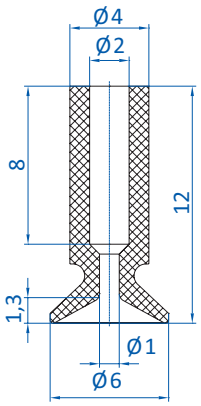
Details and additional sizes available are found on p. 28.



	Connection	
270.025	M3-male	--

Item no.	Material	
112.006.003._*	NBR (sw), SI (r)	1 mm

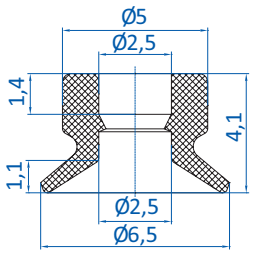
Details and additional sizes available are found on p. 31.



	Connection	
270.001	M5-male	--

Item no.	Material	
122.006.002._*	NBR (sw), SI (tr)	1.5 mm

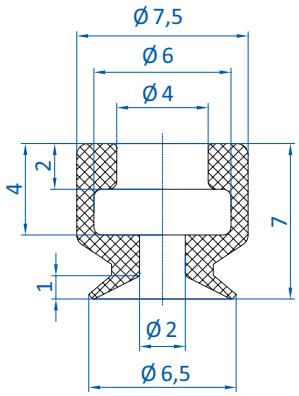
Details and additional sizes available are found on p. 34.



	Connection	
270.111	M4-male	--
270.300	M5-male	--

Item no.	Material	
102.006.297._*	NBR (sw)	0.8 mm

*** When ordering please add the appropriate material code to item no.**



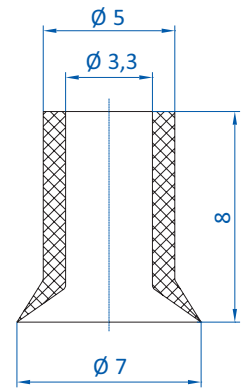
	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm	--

BESTSELLER

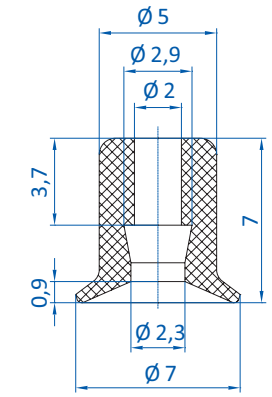
Item no.	Material	
102.006.013._*	NBR (sw), SI (tr), PU (bl)	1 mm

Details and additional sizes available are found on p. 12.



	Connection	
270.536	M5-male	--

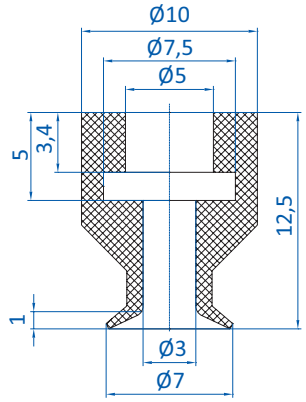
Item no.	Material	
112.006.004._*	NBR (sw), SI (tr)	1 mm



	Connection	
270.153	M5-male	--

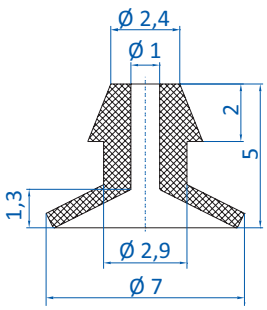
Item no.	Material	
102.007.091._*	SI (tr), CR (sw)	1 mm

Details and additional sizes available are found on p. 21.



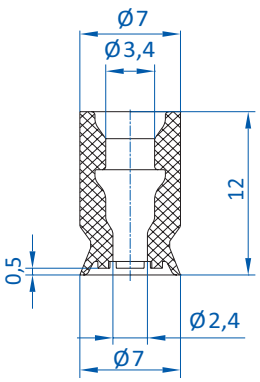
	Connection	
270.037	M5-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no.	Material	
102.007.109._*	SI (r)	1.6 mm



	Connection	
270.025	M3-male	--

Item no.	Material	
102.007.266._*	SI (tr)	1.5 mm



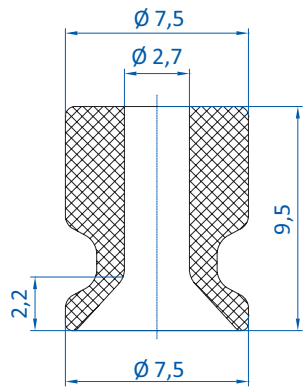
	Connection	
270.399	M5-male	--

Item no.	Material	
102.007.484._*	SI (tr)	0.8 mm

*** When ordering please add the appropriate material code to item no.**

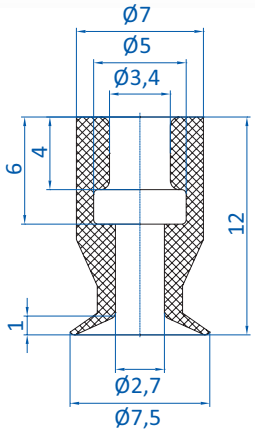
Flat vacuum cups by size

Ø 8 mm



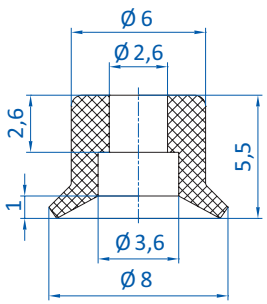
	Connection	
270.536	M5-male	--

Item no. 102.008.187._*
Material NR (sw)
1.5 mm



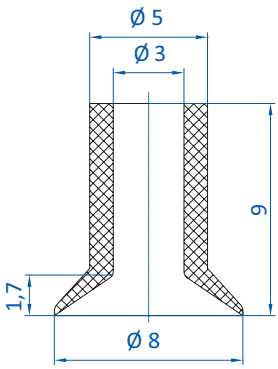
	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

Item no. 102.008.392._*
Material SI (tr)
0.5 mm



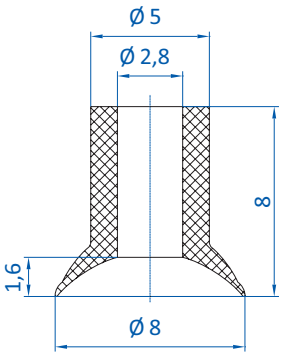
	Connection	
270.283	M5-male	--

Item no. 102.008.283._*
Material NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)
1 mm



	Connection	
270.536	M5-male	--

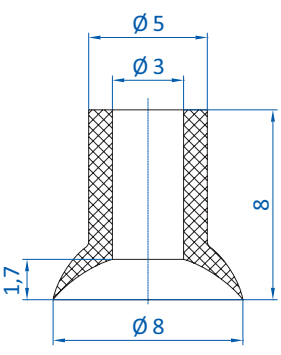
Item no. 102.008.395._*
Material NBR (sw)
0.9 mm



	Connection	
270.536	M5-male	--

Item no. 112.008.007._*
Material NBR (sw), SI (w), SI-LE (w), NR (sw)
1.5 mm

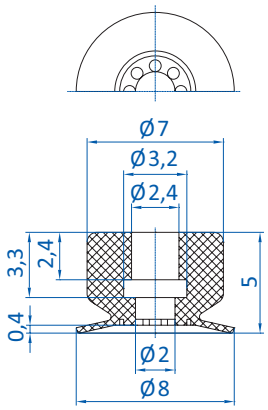
Details and additional sizes available are found on p. 31.



	Connection	
270.536	M5-male	--

Item no. 112.008.009._*
Material SI (tr), NR (sw)
1 mm

*** When ordering please add the appropriate material code to item no.**

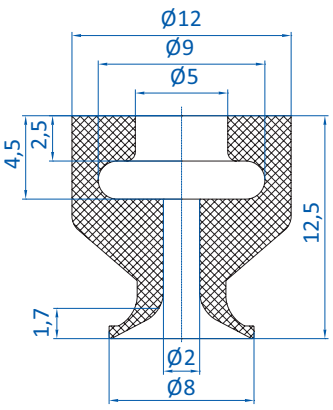


	Connection	
270.283	M5-male	--

VERY FLEXIBLE

Item no.	Material	
104.008.070._*	NBR (sw), SI-FS (r)	0.5 mm

This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 20 mm

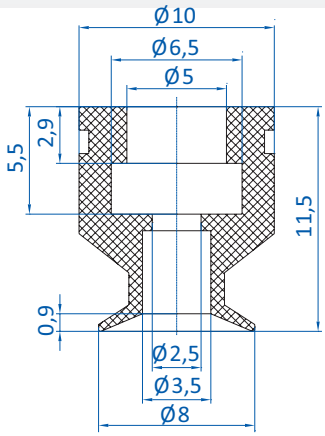


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm

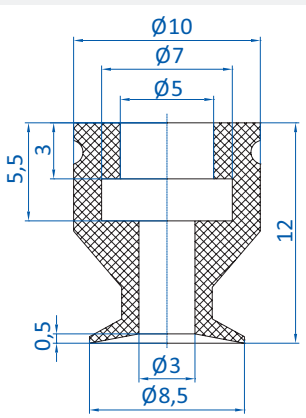
Item no.	Material	
102.008.218._*	NBR (sw), SI (tr)	1 mm

Details and additional sizes available are found on p. 28.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

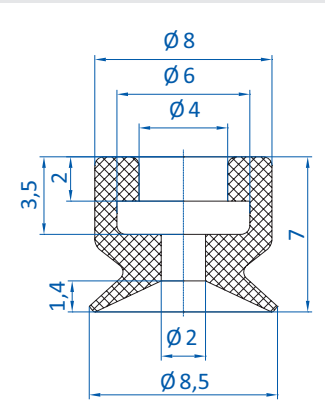
Item no.	Material	
102.008.227._*	SI (tr)	0.5 mm



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm
50.141	9 mm

Item no.	Material	
102.008.362._*	SI (bl)	0.6 mm



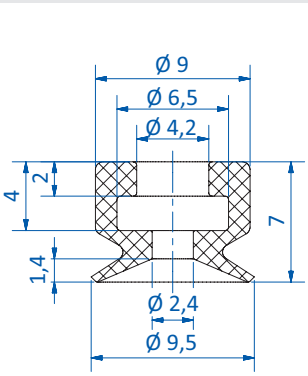
	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm

BESTSELLER

Item no.	Material	
102.008.017._*	NBR (sw), SI (tr), PU (bl), FKM (sw)	1.4 mm

Details and additional sizes available are found on p. 12.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm

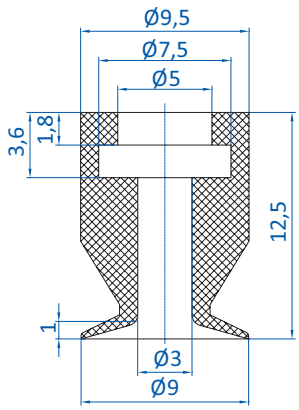
Item no.	Material	
102.008.497._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	1.4 mm

Details and additional sizes available are found on p. 16.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

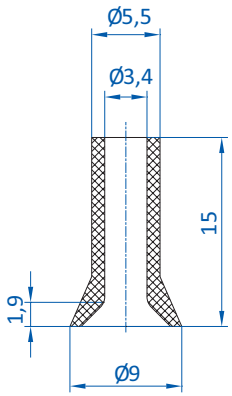
Ø 8 - 10 mm



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

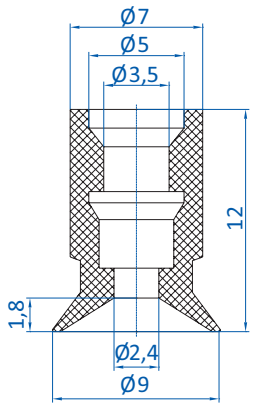
50.018	8.5 mm	--
50.141	9 mm	--

Item no. 102.009.111._*
Material SI (tr)
1 mm



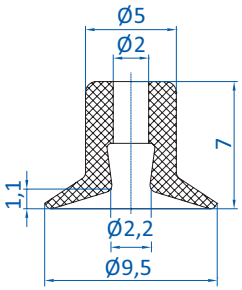
	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 107.009.001._*
Material SI (tr), NR (br)
1.5 mm



	Connection	
270.399	M5-male	--

Item no. 102.008.228._*
Material SI (tr)
0.8 mm

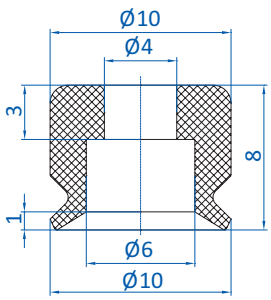


	Connection	
270.153	M5-male	--

BESTSELLER

Item no. 102.009.092._*
Material SI (tr), CR (sw)
1.5 mm

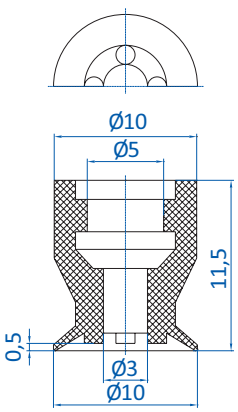
Details and additional sizes available are found on p. 21.



	Connection	
270.010	M5-male	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.103	5.5 mm	--
50.125	9.5 mm	--
50.126	15 mm	--
50.127	19.5 mm	--

Item no. 102.010.284._*
Material NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)
1 mm

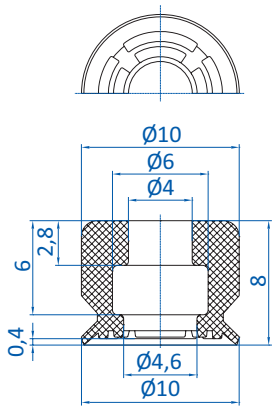


	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 104.010.001._*
Material NBR (sw), SI (bl)
1.5 mm

This vacuum cup is also available in the following dimensions: 15 mm, 18 mm, 24 mm, 30 mm, 40 mm, 50 mm

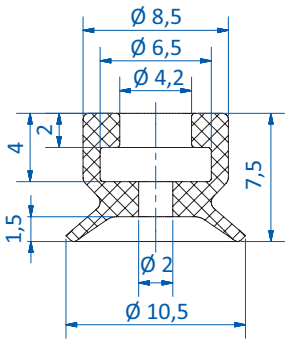
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.010	M5-male	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.103	5.5 mm	--
50.104	6 mm	--
50.125	9.5 mm	--
50.126	15 mm	--
50.127	19.5 mm	--

Item no. 104.010.065._*
Material NBR (sw)
0.5 mm

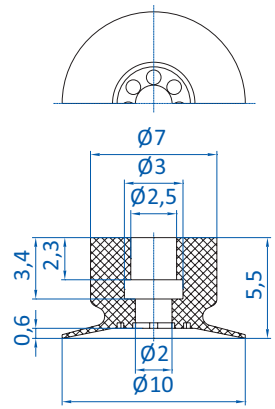


	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm	--

Item no. 102.010.498._*
Material NBR (sw), SI (tr), Thermalon® (bl)
1.5 mm

Details and additional sizes available are found on p. 16.

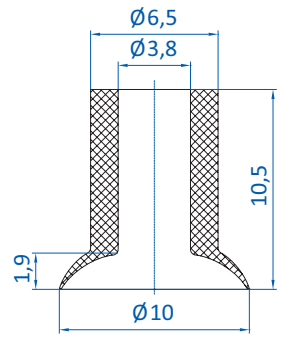


	Connection	
270.283	M5-male	--

VERY FLEXIBLE

Item no. 104.010.071._*
Material NBR (sw), SI-FS (r)
0.7 mm

This vacuum cup is also available in the following dimensions: 8 mm, 15 mm, 20 mm

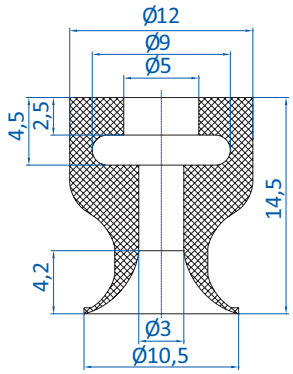


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

50.037	25 mm	--

Item no. 112.010.011._*
Material NBR (sw), SI (w), SI-LE (w)
2 mm

Details and additional sizes available are found on p. 31.

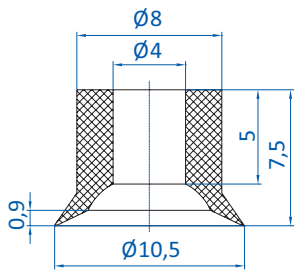


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

Item no. 102.010.219._*
Material NBR (sw), SI (tr)
1 mm

Details and additional sizes available are found on p. 28.



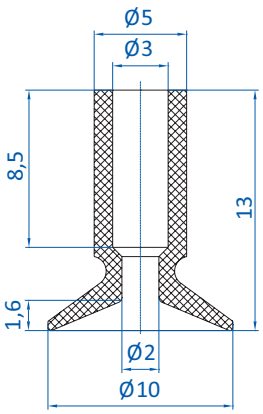
	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

Item no. 112.010.027._*
Material NBR (sw), SI (bl)
1.5 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 10 - 11 mm



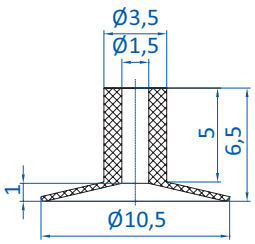
	Connection	
270.022	M5-male	--

Item no. 122.010.005._*

Material NBR (sw), SI (tr)

1.5 mm

Details and additional sizes available are found on p. 34.

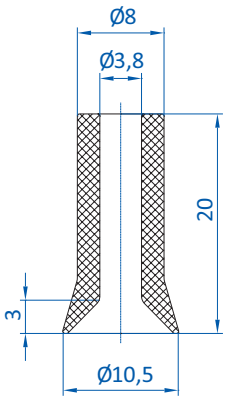


	Connection	
270.025	M3-male	--
270.001	M5-male	--

Item no. 102.011.172._*

Material Vinyl (bl)

0.5 mm

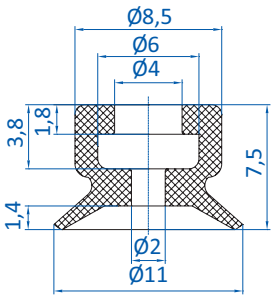


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 102.011.173._*

Material Vinyl (bl)

1.5 mm



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

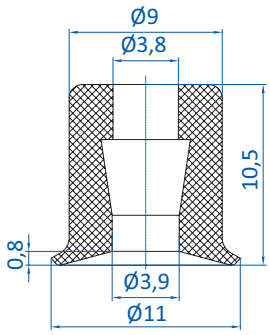
50.330	9 mm	--

Item no. 102.010.024._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)

1.2 mm

Details and additional sizes available are found on p. 12.



	Connection	
270.134	M5-male	--
270.104	M6-male	--

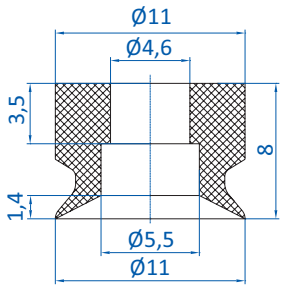
Item no. 102.011.093._*

Material SI (tr), CR (sw)

1 mm

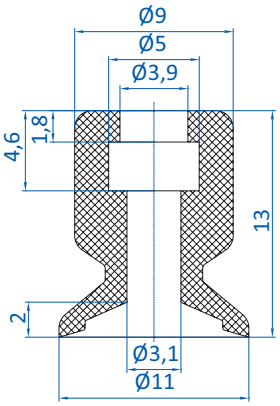
Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**



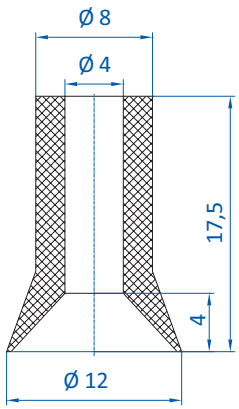
	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

Item no.	Material	
102.011.181._*	NBR (sw), SI (tr)	1 mm



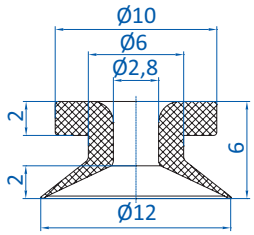
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
102.011.171._*	Vinyl (bl)	0.5 mm



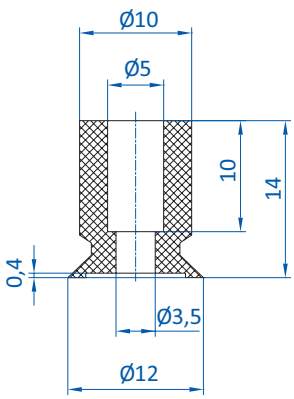
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
102.012.101._*	NR (br)	2.5 mm



	Connection	
270.283	M5-male	--

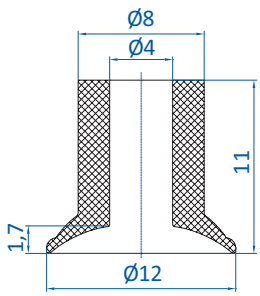
Item no.	Material	
102.012.267._*	NR (br)	2.5 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

50.037	25 mm	--

Item no.	Material	
107.012.002._*	NBR (sw), SI (tr), NR (bg)	0.4 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

50.037	25 mm	--

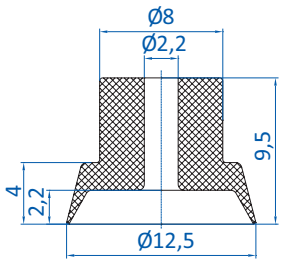
Item no.	Material	
112.012.015._*	NBR (sw), SI (w), NR (sw)	2 mm

Details and additional sizes available are found on p. 31.

*** When ordering please add the appropriate material code to item no.**

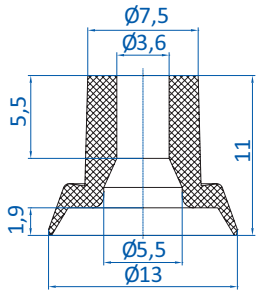
Flat vacuum cups by size

Ø 13 - 14 mm



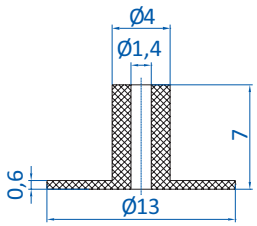
	Connection	
270.153	M5-male	--

Item no. 102.013.070._*
Material NR (bg)
2 mm



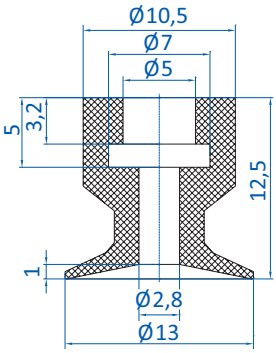
	Connection	
270.010	M5-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 102.013.077._*
Material NR (bl)
2 mm



	Connection	
270.025	M3-male	--

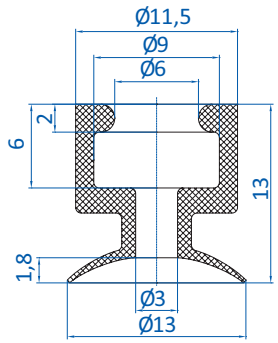
Item no. 102.013.012._*
Material SI (tr)
0 mm



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

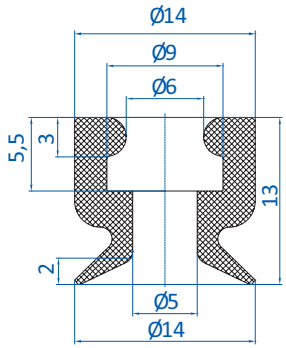
50.018	8.5 mm	--
50.141	9 mm	--

Item no. 102.013.363._*
Material SI (bl)
0.8 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. 102.012.332._*
Material NR (or)
1.5 mm

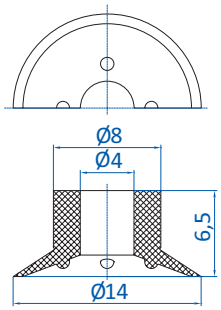


	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. 102.014.333._*
Material NR (or)
2 mm

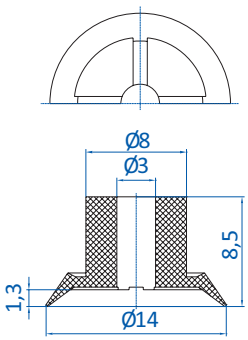
*** When ordering please add the appropriate material code to item no.**





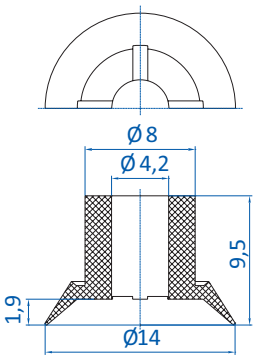
	Connection	
270.010	M5-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
104.014.020._*	NBR (sw)	1.5 mm



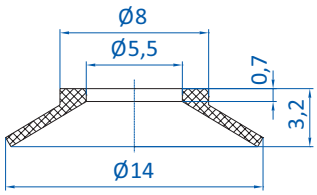
	Connection	
270.536	M5-male	--

Item no.	Material	
102.014.089._*	NBR (sw)	1.5 mm



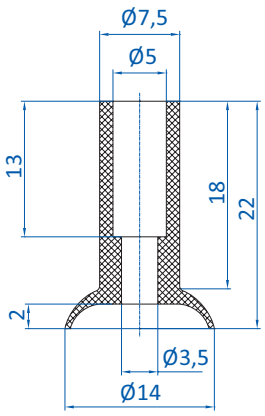
	Connection	
270.010	M5-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
104.014.025._*	SI (tr), NR (sw)	2 mm



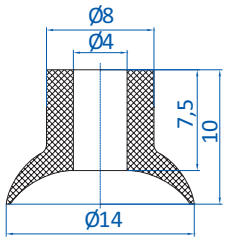
	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no.	Material	
107.014.005._*	PU (bl)	1.5 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no.	Material	
115.015.002._*	NR (bg)	3 mm



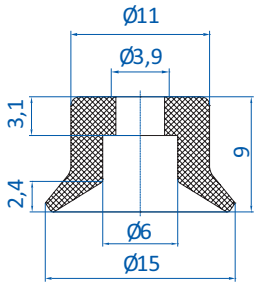
	Connection	
270.010	M5-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
112.015.021._*	NBR (sw), SI (tr)	2 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 15 mm



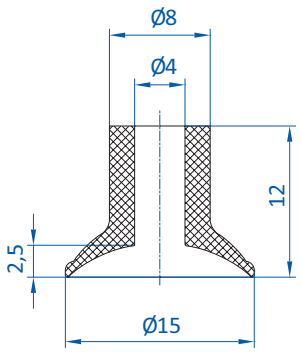
	Connection	
270.010	M5-male	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.103	5.5 mm	--
50.125	9.5 mm	--
50.126	15 mm	--
50.127	19.5 mm	--

Item no. 102.015.285._*

Material NBR (sw), SI (tr), SI-AS (sw), PU (bl), FKM (gr)

1.5 mm



	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

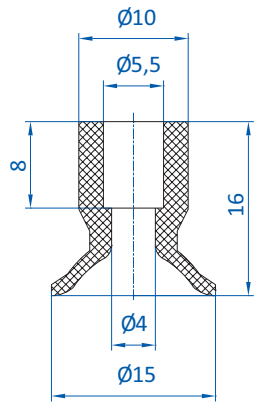
50.037	25 mm	--

Item no. 112.015.022._*

Material NBR (sw), SI (w), NR (sw)

2 mm

Details and additional sizes available are found on p. 31.

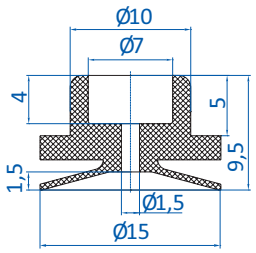


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 122.015.004._*

Material CR (sw)

2 mm



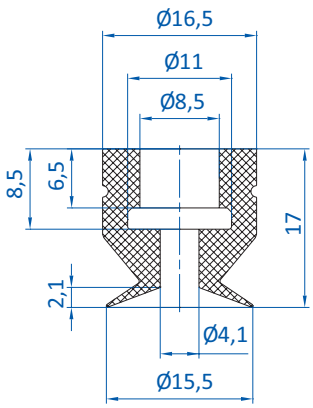
	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

Item no. 102.015.339._*

Material Vinyl (bl)

1.5 mm



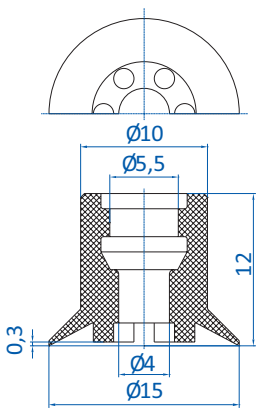
	Connection	
270.012	G1/8-male	--
270.020	G1/8-female	--
270.034	G1/4-male	--
270.038	G1/4-female	--

50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no. 102.015.414._*

Material SI (bl)

2 mm



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

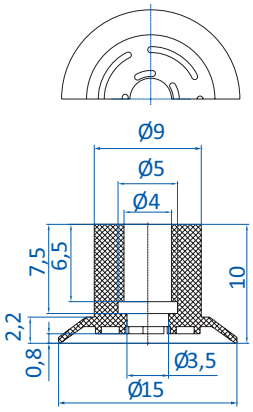
Item no. 104.015.002._*

Material NBR (sw), SI (bl)

1 mm

This vacuum cup is also available in the following dimensions: 10 mm, 18 mm, 24 mm, 30 mm, 40 mm, 50 mm

*** When ordering please add the appropriate material code to item no.**



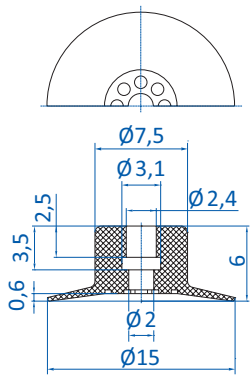
	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 102.015.431._*

Material SI (tr), NR (bg)

0.5 mm

This vacuum cup is also available in the following dimensions: 24 mm, 28 mm, 30 mm, 40 mm



	Connection	
270.283	M5-male	--

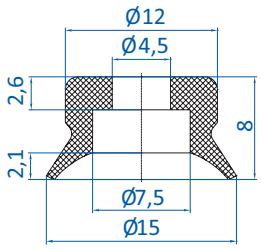
VERY FLEXIBLE

Item no. 104.015.072._*

Material NBR (sw), SI-FS (r)

1.1 mm

This vacuum cup is also available in the following dimensions: 8 mm, 10 mm, 20 mm



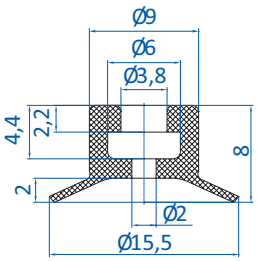
	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no. 102.015.030._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)

2 mm

Details and additional sizes available are found on p. 12.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

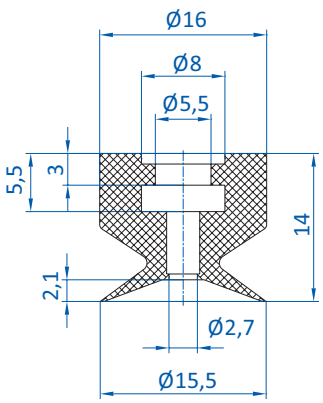
50.330	9 mm	--

Item no. 102.015.309._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)

1.9 mm

Details and additional sizes available are found on p. 12.

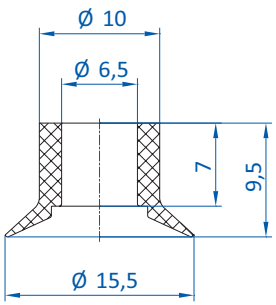


	Connection	
270.037	M5-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. 102.016.319._*

Material PU (bl)

2 mm



	Connection	
270.250	G1/8-male	--

Item no. 102.016.146._*

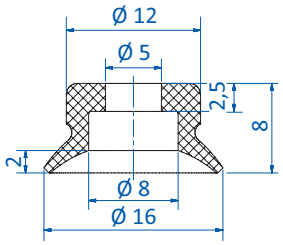
Material NR (gr)

2 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 15 - 16 mm



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

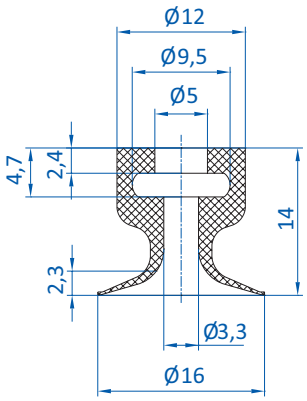
50.330	9 mm	--

Item no. 102.015.499._*

Material NBR (sw), SI (tr), Thermalon® (bl)

2 mm

Details and additional sizes available are found on p. 16.



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

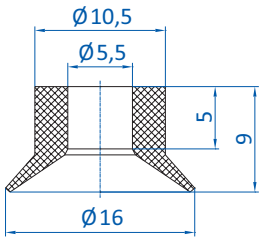
50.018	8.5 mm	--

Item no. 102.015.220._*

Material NBR (sw), SI (tr)

2 mm

Details and additional sizes available are found on p. 28.

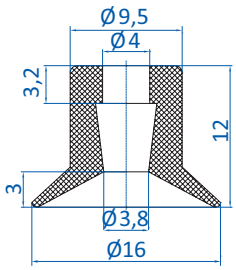


	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 126.016.003._*

Material NR (bg)

3 mm



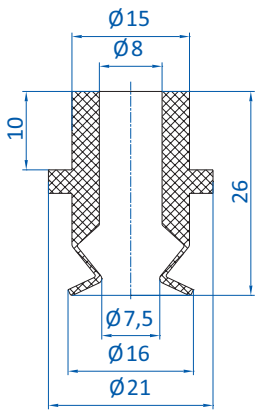
	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 102.016.098._*

Material SI (tr), CR (sw)

2 mm

Details and additional sizes available are found on p. 21.



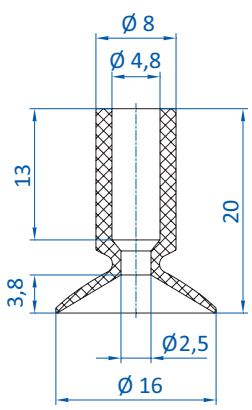
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 107.016.008._*

Material SI (tr), SI-LE (tr)

2.4 mm

Details and additional sizes available are found on p. 36.



	Connection	
270.013	M5-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

50.037	25 mm	--

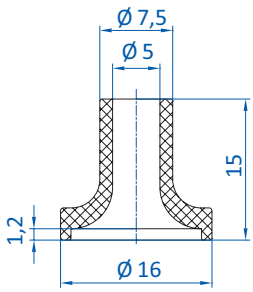
Item no. 122.016.009._*

Material NBR (sw), SI (tr), SI-LE (tr), NR (sw)

5 mm

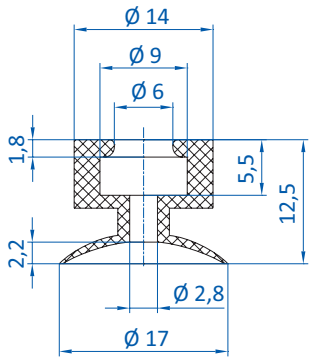
Details and additional sizes available are found on p. 34.

*** When ordering please add the appropriate material code to item no.**



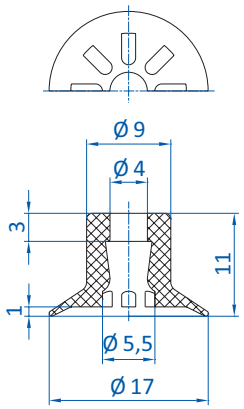
	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 102.016.122._*
Material NR (bg)
3 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. 102.016.255._*
Material SI (r)
3 mm

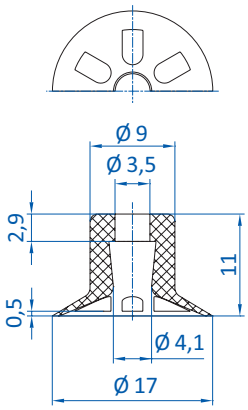


	Connection	
270.134	M5-male	--
270.104	M6-male	--

BESTSELLER

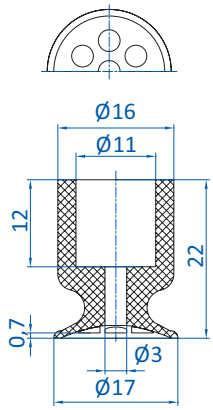
Item no. 104.016.003._*
Material SI (tr), CR (sw)
0.5 mm

Details and additional sizes available are found on p. 21.



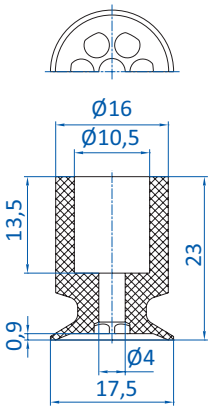
	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 104.017.026._*
Material NR (sw)
1 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 102.017.193._*
Material Vulkollan® (br)
0.7 mm



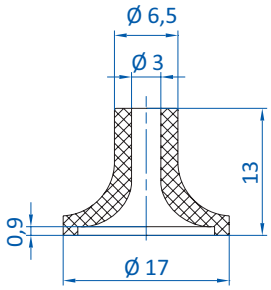
	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 104.018.049._*
Material Vinyl (bl)
2 mm

*** When ordering please add the appropriate material code to item no.**

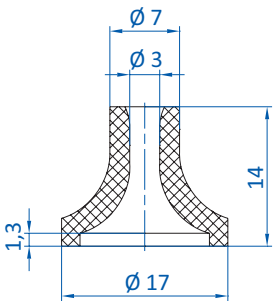
Flat vacuum cups by size

Ø 17 - 18 mm



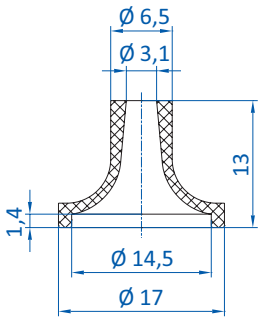
	Connection	
270.536	M5-male	--

Item no.	Material	
102.017.132._*	NR (bl)	3 mm



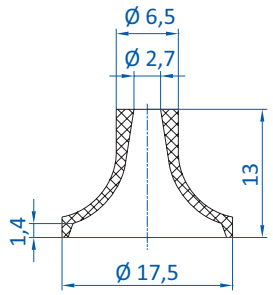
	Connection	
270.536	M5-male	--

Item no.	Material	
102.017.133._*	NR (g)	2.4 mm



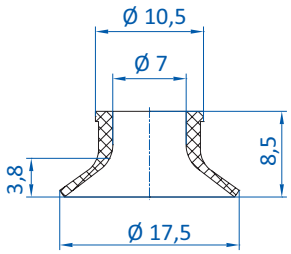
	Connection	
270.536	M5-male	--

Item no.	Material	
102.017.276._*	NR (br)	3 mm



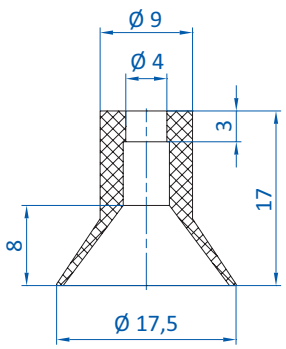
	Connection	
270.024	M5-male	--
270.347	M5-female	--
270.033	G1/8-male	--

Item no.	Material	
102.018.277._*	NR (bl)	0.6 mm



	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
102.019.139._*	NR (bg)	1 mm

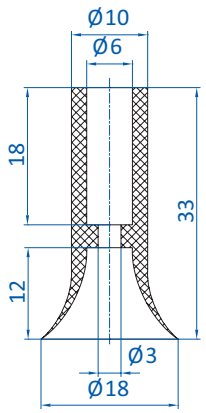


	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no.	Material	
122.016.012._*	SI (tr)	1.5 mm

Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**

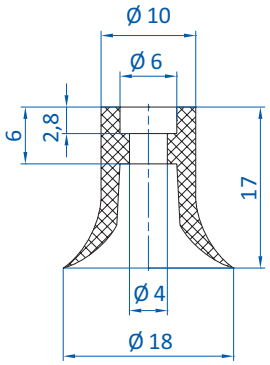


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

FLEXIBLE LIP

Item no.	Material	mm
102.018.345._*	SI (tr)	

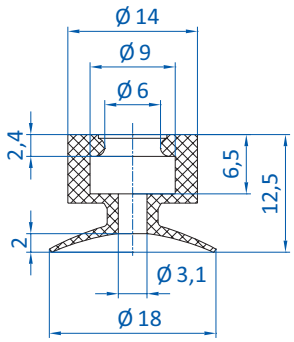
Details and additional sizes available are found on p. 36.



	Connection	
270.399	M5-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

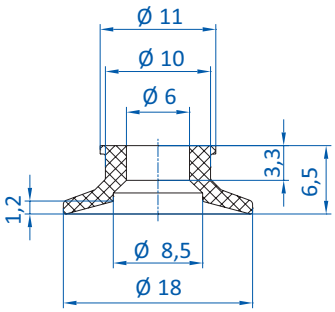
Item no.	Material	mm
107.018.004._*	SI (tr), SI-LE (tr)	

Details and additional sizes available are found on p. 36.



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

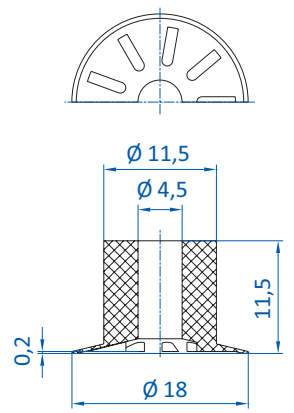
Item no.	Material	2 mm
102.018.442._*	NR (or)	



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

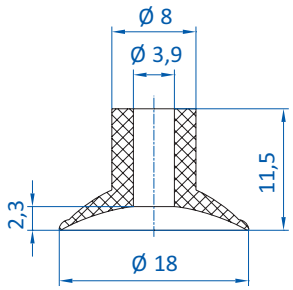
Item no.	Material	0.5 mm
102.018.143._*	NR (bg)	



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

50.037	25 mm	--

Item no.	Material	0.5 mm
104.018.051._*	Vinyl (bl)	



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

50.037	25 mm	--

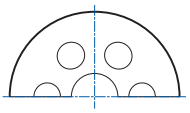
Item no.	Material	2.3 mm
112.018.024._*	NBR (sw), SI (w), NR (sw)	

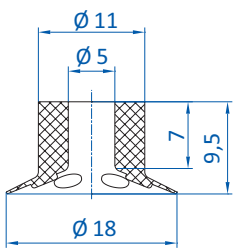
Details and additional sizes available are found on p. 31.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

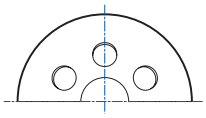
Ø 18 - 19 mm

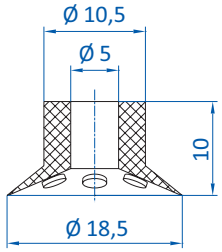




	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

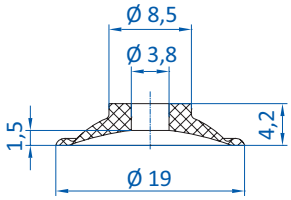
Item no.	Material	
112.018.111._*	SI (tr), SI-LE (tr), NR (sw)	1 mm



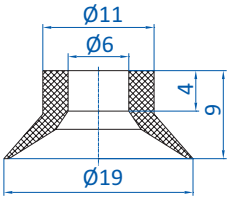


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no.	Material	
127.018.001._*	NBR (sw), SI (tr), NR (bg)	1.5 mm

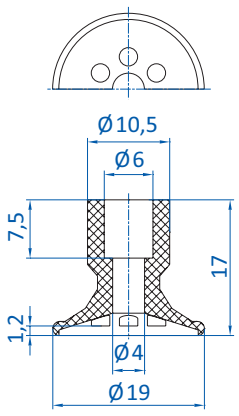


Item no.	Material	
112.019.073._*	NR (sw)	2 mm



	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--
270.534	G1/4-male	--

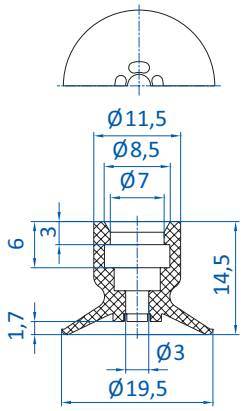
Item no.	Material	
122.019.014._*	SI (tr), NR (bg)	3 mm



	Connection	
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no.	Material	
104.020.042._*	Vinyl (bl)	0.5 mm

*** When ordering please add the appropriate material code to item no.**



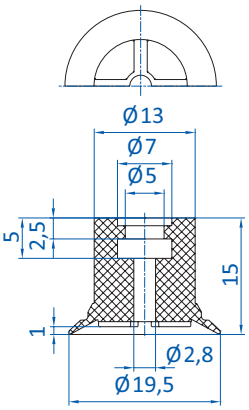
	Connection	
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no. **102.020.355._***

Material NBR (sw)

3 mm

This vacuum cup is also available in the following dimensions: 28 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

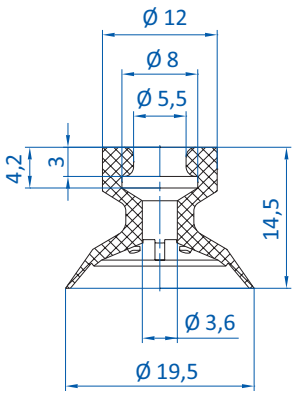
50.018	8.5 mm	--

BESTSELLER

Item no. **102.020.083._***

Material NBR (sw), SI (tr), SI (r)

1 mm

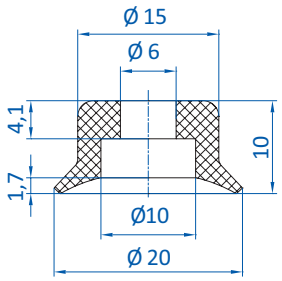


	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. **102.020.272._***

Material NR (sw)

1 mm



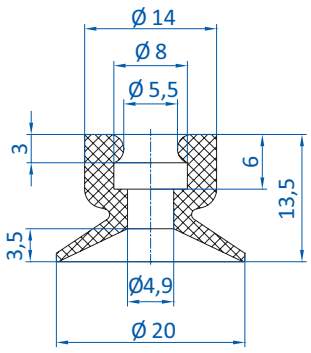
	Connection	
270.311	M5-male	--
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. **102.020.286._***

Material NBR (sw), SI (tr), PU (bl), FKM (gr)

2 mm

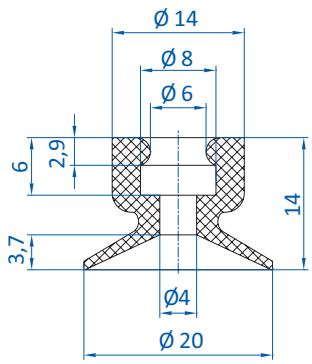


	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. **102.020.140._***

Material NR (sw), NR (or)

3 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

Item no. **126.020.004._***

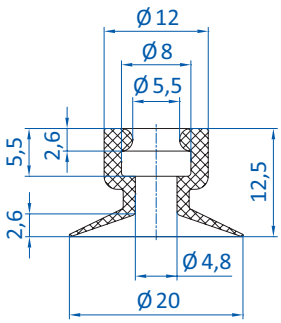
Material SI (tr), SI-LE (tr), NR (or), NR (br)

3.5 mm

*** When ordering please add the appropriate material code to item no.**

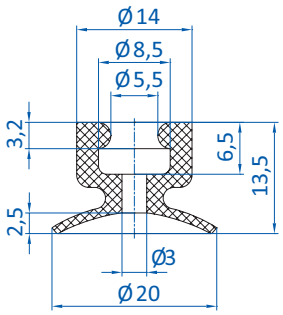
Flat vacuum cups by size

Ø 20 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

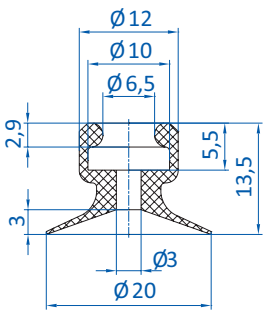
Item no.	Material	
126.020.005._*	NBR (sw), SI (tr), NR (sw)	1 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

WEAR-RESISTANT

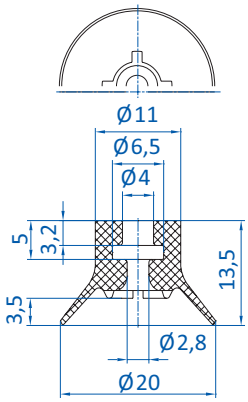
Item no.	Material	
102.020.299._*	Vulkollan® (br)	3.5 mm



	Connection	
270.037	M5-male	--
270.373	M6-male	--
270.085	G1/8-male	--
270.086	G1/8-female	--

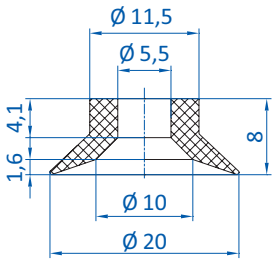
WEAR-RESISTANT

Item no.	Material	
102.020.308._*	Vulkollan® (br)	1 mm



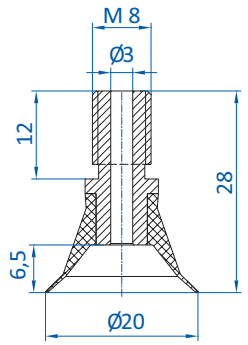
	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no.	Material	
102.020.321._*	Vulkollan® (br)	3.5 mm



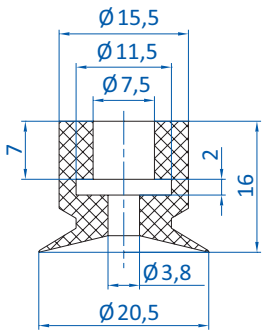
	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no.	Material	
102.019.110._*	NR (bg)	2 mm



Item no.	Material	
120.019.003._*	SI (tr), NR (sw)	2 mm

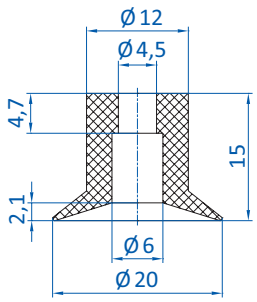
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.012	G1/8-male	--
270.020	G1/8-female	--
270.034	G1/4-male	--
270.038	G1/4-female	--

50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no. 107.020.014._ *
Material SI (tr)
1 mm

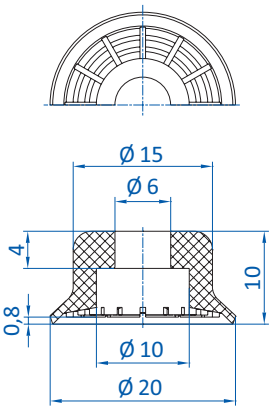


	Connection	
270.317	M5-male	--
270.103	M6-male	--
270.205	G1/8-male	--
270.109	G1/8-female	--
270.194	G1/4-male	--

50.020	8.5 mm	--

Item no. 102.020.221._ *
Material NBR (sw), SI (tr)
2 mm

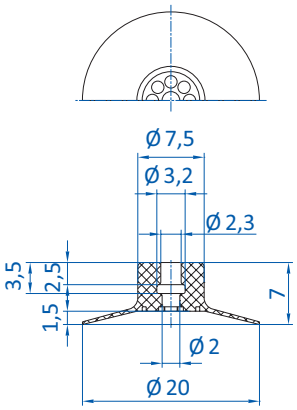
Details and additional sizes available are found on p. 28.



	Connection	
270.311	M5-male	--
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

50.085	6 mm	--
50.128	10 mm	--
50.129	15 mm	--
50.130	19.5 mm	--
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 104.020.066._ *
Material NBR (sw)
1.1 mm

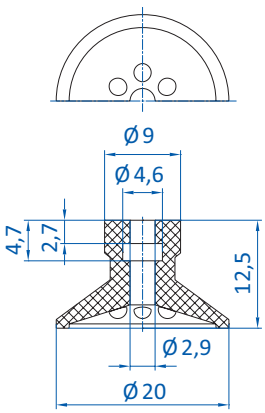


	Connection	
270.283	M5-male	--

VERY FLEXIBLE

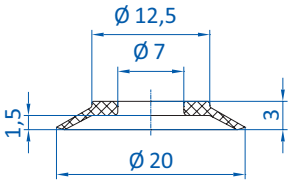
Item no. 104.020.073._ *
Material NBR (sw), SI-FS (r)
1.6 mm

This vacuum cup is also available in the following dimensions: 8 mm, 10 mm, 15 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--

Item no. 104.020.075._ *
Material Vinyl (bl)
2 mm



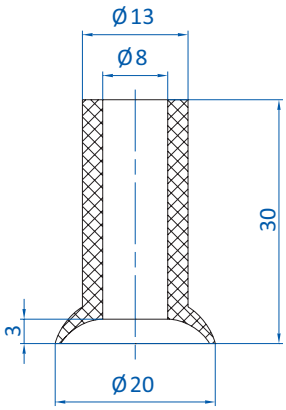
	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no. 102.020.271._ *
Material NR (sw)
1 mm

*** When ordering please add the appropriate material code to item no.**

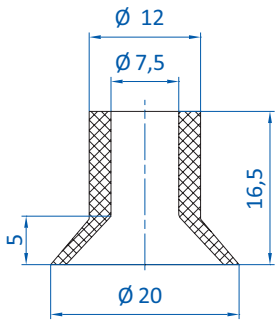
Flat vacuum cups by size

Ø 20 - 21 mm



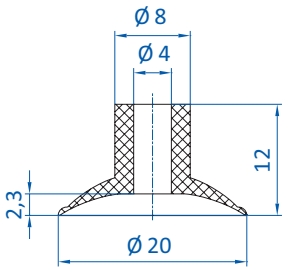
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 107.020.013._*
Material SI (tr), NR (br)
4 mm



	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 107.020.015._*
Material SI (tr), NR (sw), NR (br)
3 mm

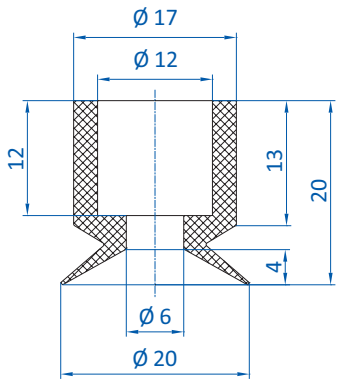


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

50.037	25 mm	--

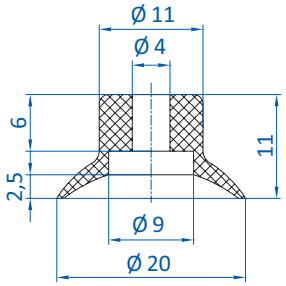
Item no. 112.020.031._*
Material NBR (sw), SI (w), NR (sw)
2.3 mm

Details and additional sizes available are found on p. 31.



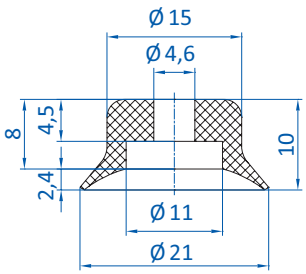
	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no. 122.020.017._*
Material SI (tr), NR (bg)
3 mm



	Connection	
270.013	M5-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 102.020.312._*
Material SI (tr)
2.5 mm

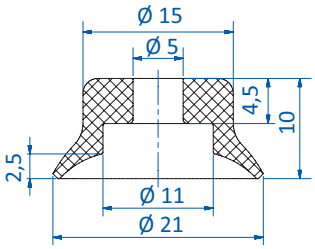


	Connection	
270.311	M5-male	--
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no. 102.020.041._*
Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)
2 mm

Details and additional sizes available are found on p. 12.

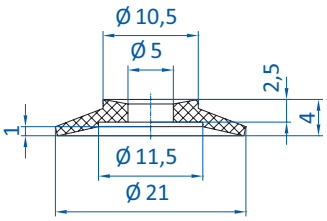
*** When ordering please add the appropriate material code to item no.**



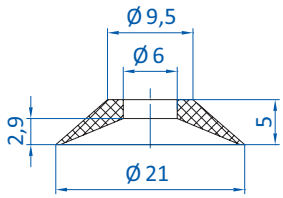
	Connection	
270.311	M5-male	--
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no.	Material	
102.020.500._*	NBR (sw), SI (tr), Thermalon® (bl)	2.5 mm

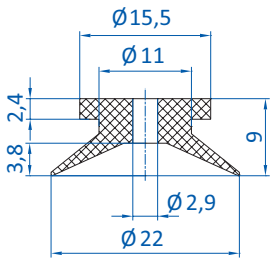
Details and additional sizes available are found on p. 16.



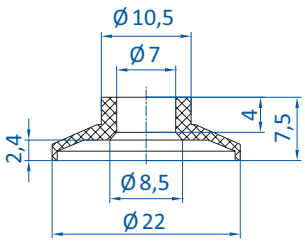
Item no.	Material	
102.021.063._*	NR (sw)	1 mm



Item no.	Material	
107.021.049._*	NR (bg)	1.5 mm

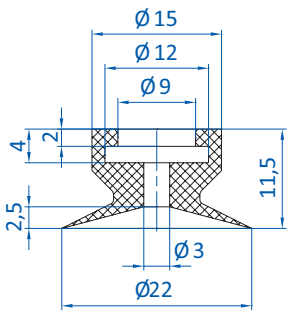


Item no.	Material	
102.022.150._*	Vinl (bl)	2.5 mm



	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
102.022.185._*	NR (gr)	0.5 mm



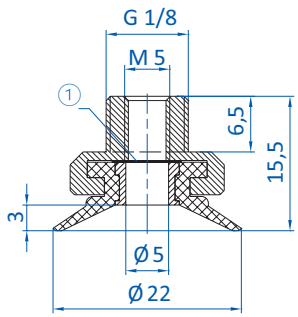
	Connection	
270.541	G1/8-male	--

Item no.	Material	
102.022.406._*	SI (r)	2 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

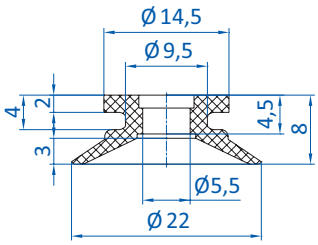
Ø 22 mm



① = Filter screen

Item no.	Material	
120.020.006._*	SI (tr), CR (sw)	2.5 mm

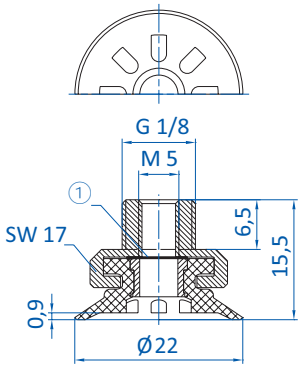
Details and additional sizes available are found on p. 25.



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
102.020.095._*	SI (tr), CR (sw)	2.5 mm

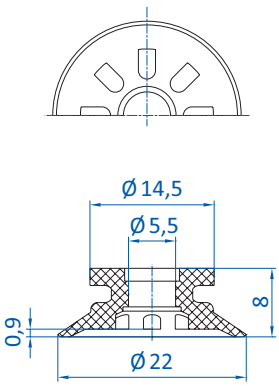
Details and additional sizes available are found on p. 21.



① = Filter screen

Item no.	Material	
123.020.003._*	Tepuflex® (or), SI (tr), CR (sw)	1 mm

Details and additional sizes available are found on p. 25.

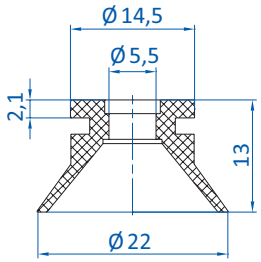


	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

BESTSELLER

Item no.	Material	
125.020.004._*	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)	1 mm

Details and additional sizes available are found on p. 21.

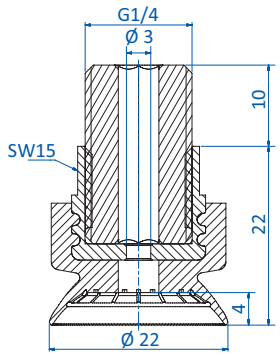


	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
122.022.022._*	SI (tr), SI-LE (tr), CR (sw)	2.5 mm

Details and additional sizes available are found on p. 21.

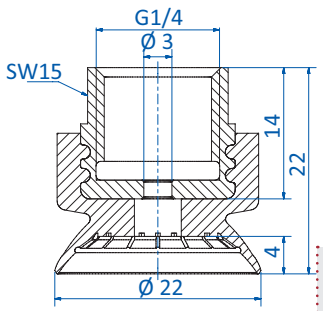
*** When ordering please add the appropriate material code to item no.**



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.022.143._*	NBR (bl)	4 mm

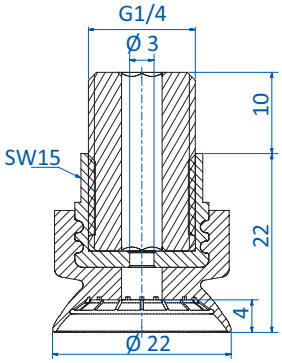
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.022.142._*	NBR (bl)	4 mm

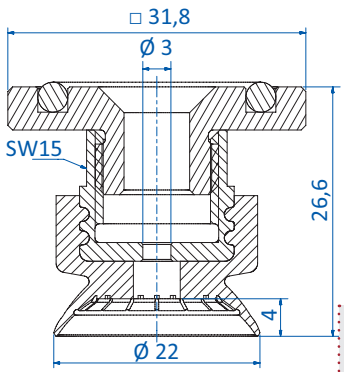
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.022.148._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

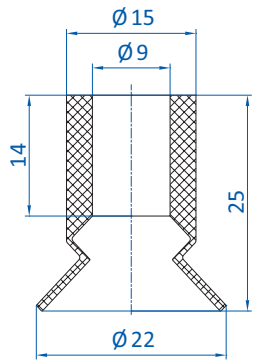
Item no.	Material	
103.022.151._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 40.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 22 - 24 mm



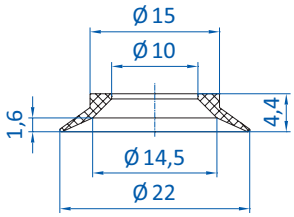
	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. **102.022.043._***

Material NBR (sw), SI (tr), SI-LE (tr), NR (sw)

5 mm

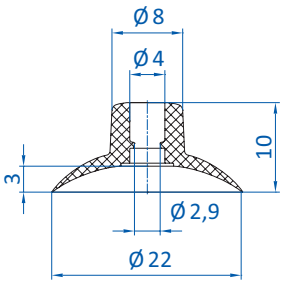
Details and additional sizes available are found on p. 36.



Item no. **107.022.016._***

Material NR (sw)

1 mm



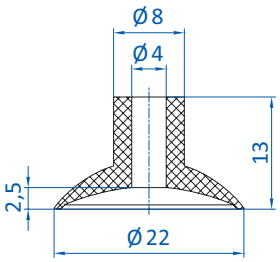
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. **102.022.071._***

Material PU (bl)

3 mm

This vacuum cup is also available in the following dimensions: 25 mm, 30 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

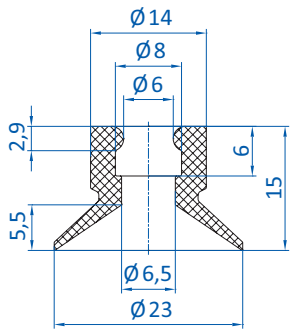
50.037	25 mm	--

Item no. **112.022.037._***

Material NBR (sw), SI (w)

2.5 mm

Details and additional sizes available are found on p. 31.

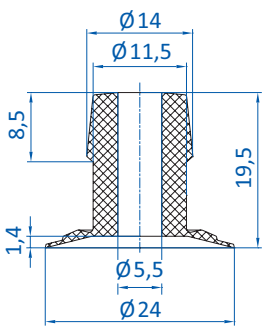


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no. **102.023.356._***

Material Vinyl (bl)

3.8 mm



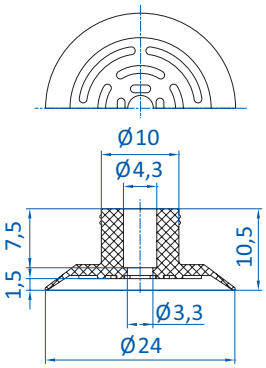
	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. **102.023.149._***

Material Vinyl (tr)

0.5 mm

*** When ordering please add the appropriate material code to item no.**

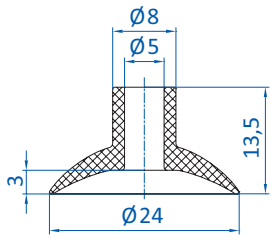


	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

BESTSELLER

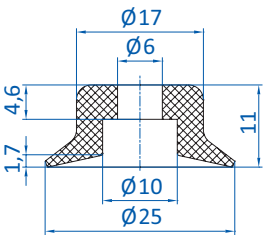
Item no. 102.024.457._*
Material SI (tr), NR (bg)
1.8 mm

This vacuum cup is also available in the following dimensions: 15 mm, 28 mm, 30 mm, 40 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

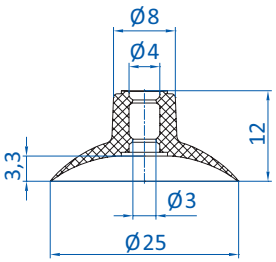
Item no. 102.024.123._*
Material NR (sw)
4 mm



	Connection	
270.311	M5-male	--
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

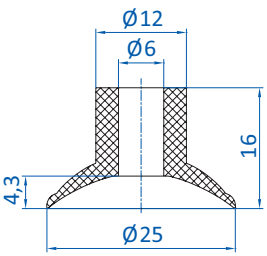
Item no. 102.025.287._*
Material NBR (sw), SI (tr), FKM (gr)
2 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 102.025.085._*
Material PU (r)
4 mm

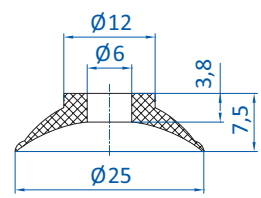
This vacuum cup is also available in the following dimensions: 22 mm, 30 mm



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 112.025.042._*
Material NBR (sw), SI (w), SI-LE (w), NR (sw)
4.5 mm

Details and additional sizes available are found on p. 31.



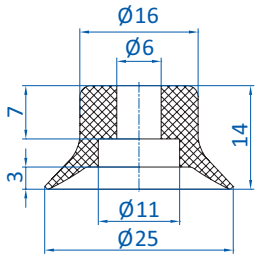
	Connection	
270.039	M6-male	--

Item no. 112.025.043._*
Material NBR (sw), SI (w), SI-LE (w), NR (sw)
2.5 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 25 mm



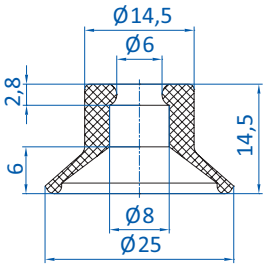
	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 102.025.047._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)

2.5 mm

Details and additional sizes available are found on p. 12.

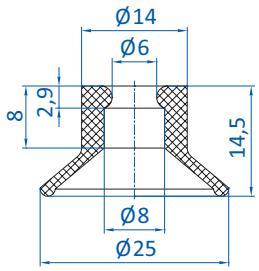


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no. 102.025.102._*

Material NR (g), NR (sw)

4 mm

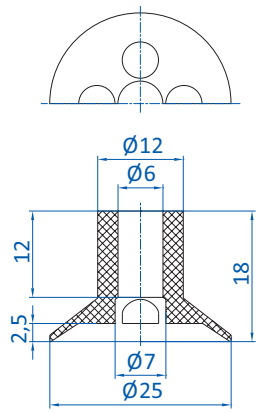


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no. 126.025.010._*

Material FKM (sw)

5 mm

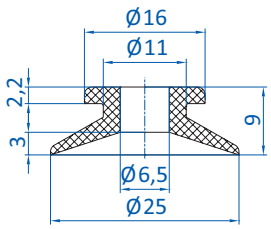


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 102.025.113._*

Material NBR (sw), SI (tr)

3.5 mm

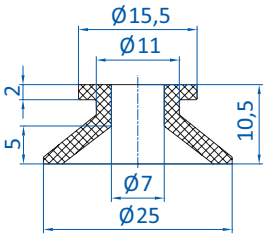


	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no. 102.025.103._*

Material NR (sw)

2.5 mm

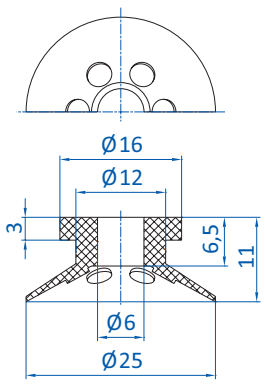


Item no. 102.026.128._*

Material NR (bg)

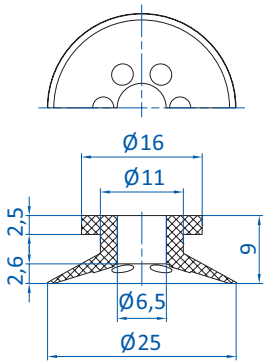
2.5 mm

*** When ordering please add the appropriate material code to item no.**



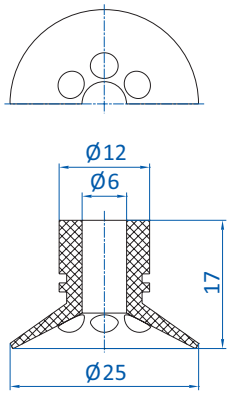
	Connection	
270.200	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.025.027._*
Material NR (bg)
3.5 mm



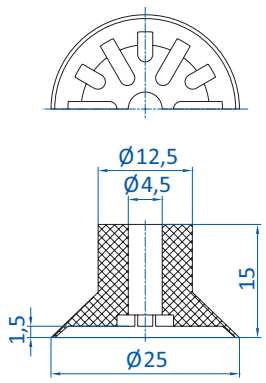
	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no. 104.025.031._*
Material NR (bg), PU (sw)
1 mm



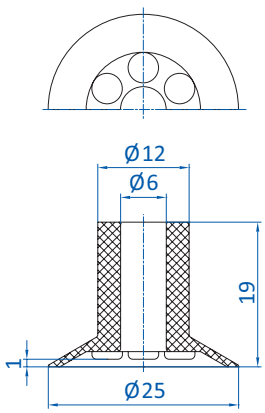
	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.025.040._*
Material Vinyl (bl)
2.5 mm



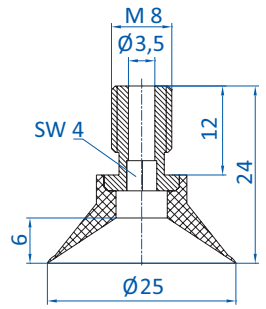
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 104.025.043._*
Material Vinyl (bl)
1.5 mm



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.025.094._*
Material NR (br)
1 mm

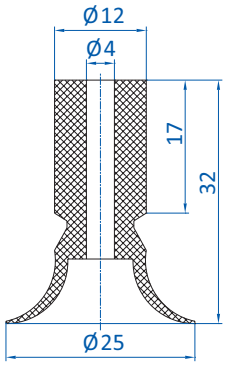


Item no. 120.025.086._*
Material SI (w), NR (sw)
3.5 mm

*** When ordering please add the appropriate material code to item no.**

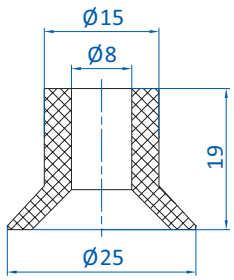
Flat vacuum cups by size

Ø 25 mm



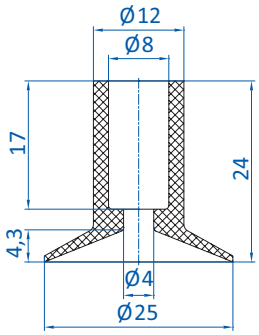
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 126.025.009._*
Material NR (bg)
mm



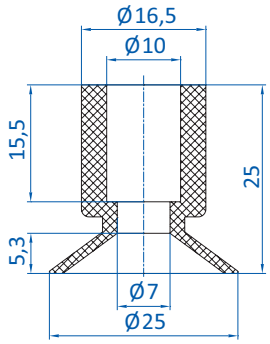
	Connection	
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 107.025.020._*
Material NR (br)
1 mm



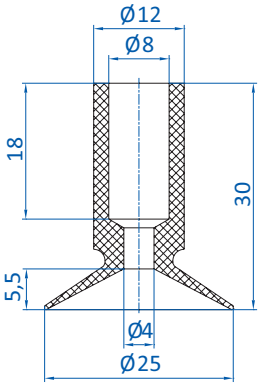
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 102.025.417._*
Material SI (r)
3 mm



	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

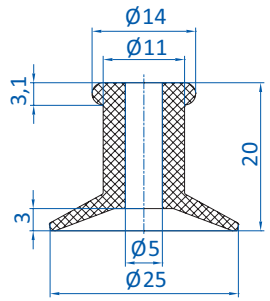
Item no. 102.025.126._*
Material NR (bg)
4 mm



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 122.025.025._*
Material NBR (sw), SI (tr), NR (sw)
5 mm

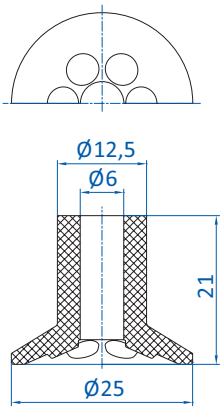
Details and additional sizes available are found on p. 34.



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

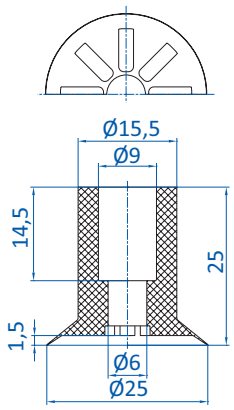
Item no. 102.027.124._*
Material NR (bg)
4 mm

*** When ordering please add the appropriate material code to item no.**



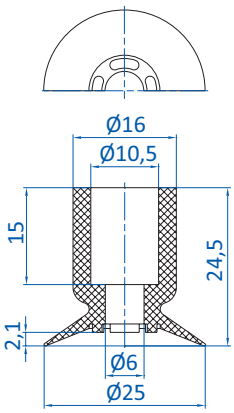
	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.026.033._*
Material NR (bg)
2 mm



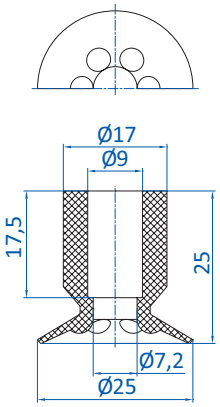
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

Item no. 102.025.373._*
Material Vinyl (bl)
1.5 mm



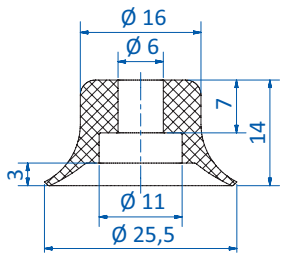
	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 104.025.037._*
Material NR (bg)
2 mm



	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

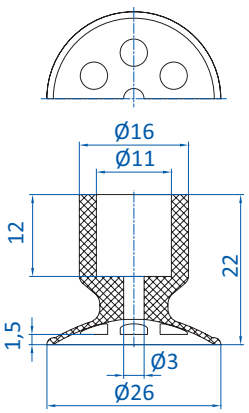
Item no. 104.025.056._*
Material Vinyl (bl)
2.5 mm



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 102.025.501._*
Material NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)
3 mm

Details and additional sizes available are found on p. 16.



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

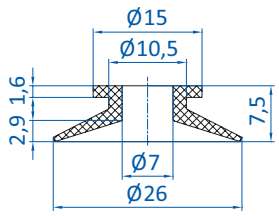
WEAR-RESISTANT

Item no. 102.025.192._*
Material Vulkollan® (br)
3 mm

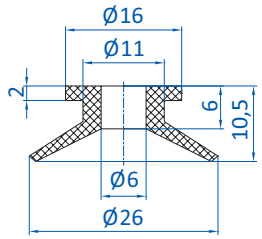
*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 26 - 27 mm

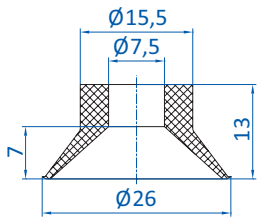


Item no.	Material	
102.026.121._*	NR (bg)	3 mm



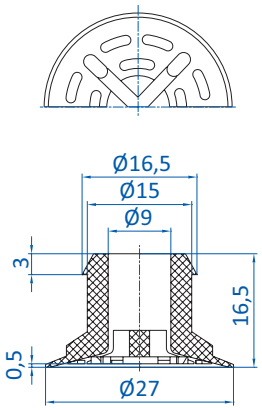
	Connection	
270.200	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no.	Material	
102.026.180._*	Vinyl (bl)	4 mm



	Connection	
270.043	G1/4-male	--
270.038	G1/4-female	--

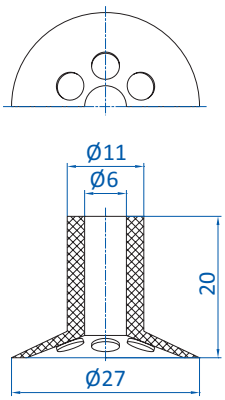
Item no.	Material	
102.027.167._*	Vinyl (bl)	5 mm



	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

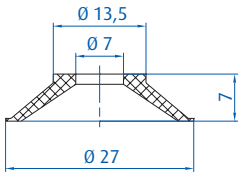
Item no.	Material	
102.027.298._*	SI (tr)	0.5 mm

Notes: Especially well-suited for foils
This vacuum cup is also available in the following dimensions: 36 mm



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

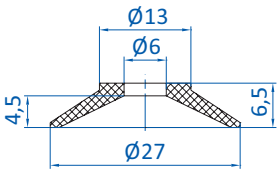
Item no.	Material	
104.027.032._*	NR (bg)	2 mm



	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

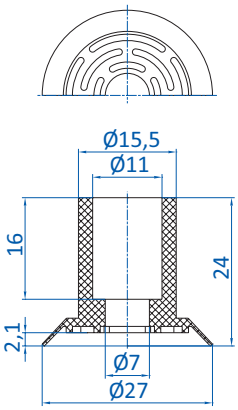
Item no.	Material	
107.027.022._*	NBR (sw), SI (tr)	4 mm

*** When ordering please add the appropriate material code to item no.**



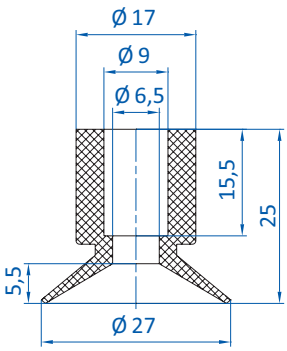
	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no. 107.027.052._*
Material NR (gr)
3 mm



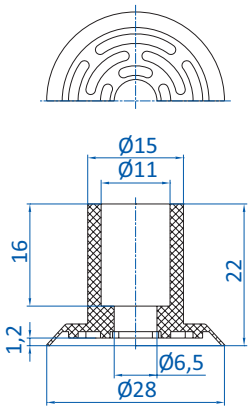
	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 104.027.062._*
Material NR (sw)
2 mm



	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

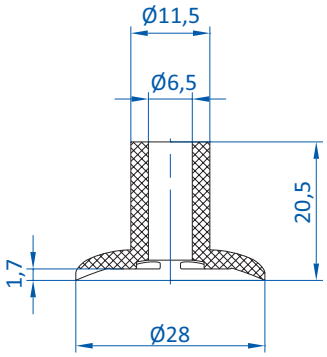
Item no. 102.028.164._*
Material Vinyl (bl)
5 mm



	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

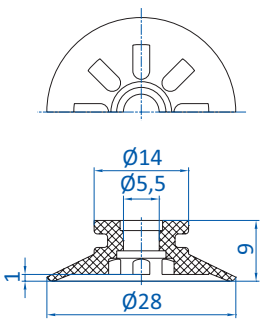
Item no. 104.029.093._*
Material NR (sw)
1 mm

This vacuum cup is also available in the following dimensions: 15 mm, 24 mm, 30 mm, 40 mm



	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 102.027.246._*
Material NR (br)
2 mm



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

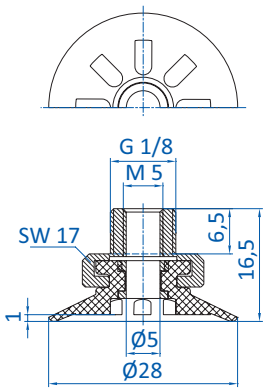
Item no. 125.025.007._*
Material Tepuflex® (or), SI (tr), CR (sw)
1 mm

Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**

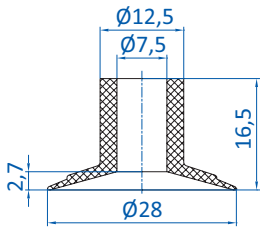
Flat vacuum cups by size

Ø 25 - 28 mm



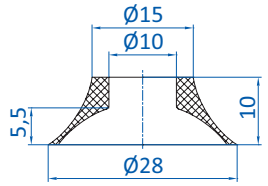
Item no. 123.025.010._*
Material SI (tr), CR (sw)
1 mm

Details and additional sizes available are found on p. 25.

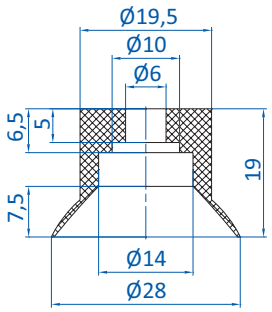


	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 102.028.175._*
Material Vinyl (bl)
2 mm

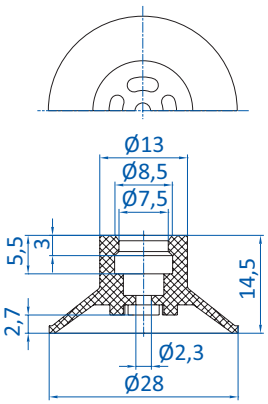


Item no. 102.028.375._*
Material SI (tr)
2 mm



	Connection	
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

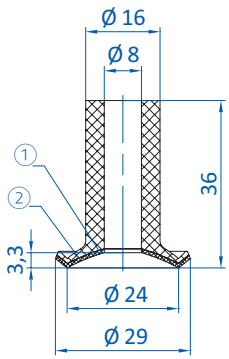
Item no. 102.028.159._*
Material Vinyl (bl)
4 mm



	Connection	
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no. 102.028.194._*
Material NBR (sw)
3 mm

This vacuum cup is also available in the following dimensions: 20 mm



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

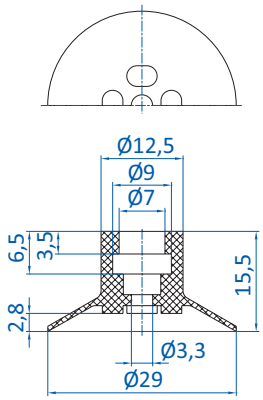
NON-MARKING! TEMP. MAX. 500 °C (932 °F)

① = Felt pads ② = For silicone vacuum cups: Silicone blocker through evaporated aluminum layer

Item no. 26.025.009.2F
Material SI (tr/ge)
2 mm

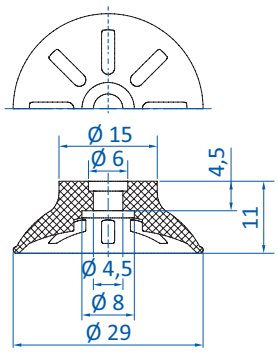
Details and additional sizes available are found on p. 394.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.030	G1/8-male	--
270.019	G1/8-female	--

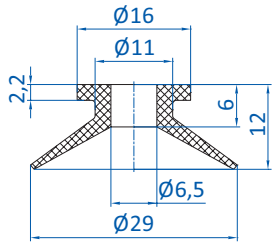
Item no.	Material	
104.029.053._*	Vinyl (bl)	4 mm



	Connection	
270.063	G1/8-male	--

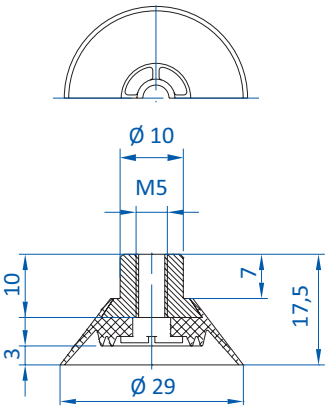
BESTSELLER

Item no.	Material	
102.029.509._*	NR (br)	4 mm



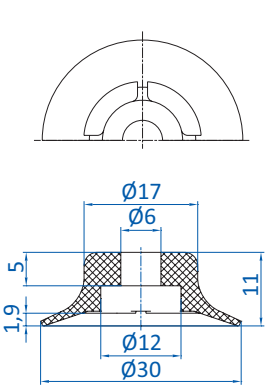
	Connection	
270.200	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no.	Material	
102.029.160._*	Vinyl (bl)	4.5 mm



Item no.	Material	
150.030.031._*	SI (r), CR (sw)	3 mm

Details and additional sizes available are found on p. 46.



	Connection	
270.460	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

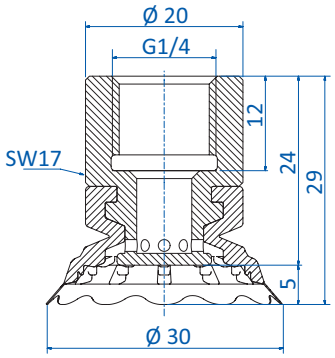
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no.	Material	
102.030.288._*	NBR (sw), SI (tr), PU (bl), FKM (gr)	2 mm

*** When ordering please add the appropriate material code to item no.**

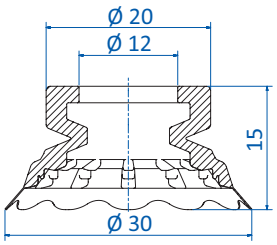
Flat vacuum cups by size

Ø 30 mm

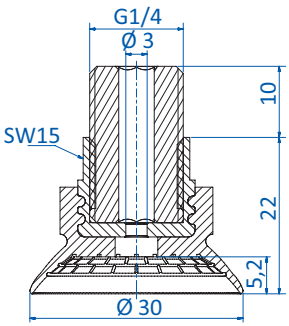


Item no.	Material	
103.030.135._*	SI (tr), SI-LE (tr), SI (w), SI-LE (w)	5 mm

	Connection	
270.729	G1/4-female	--



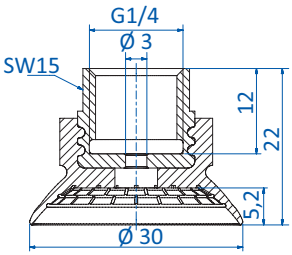
Item no.	Material	
104.030.100._*	SI (tr), SI-LE (tr), SI (w), SI-LE (w)	5 mm



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.030.144._*	NBR (bl)	5.2 mm

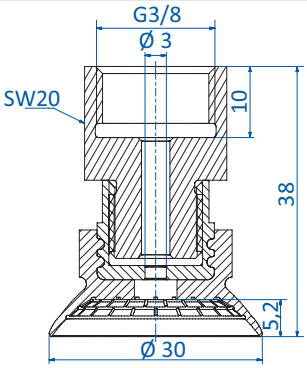
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.030.141._*	NBR (bl)	5.2 mm

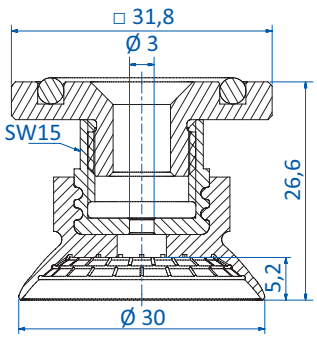
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.030.149._*	NBR (bl)	5.2 mm

Details and additional sizes available are found on p. 40.

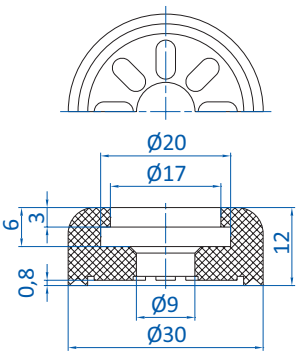


FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.030.152._*	NBR (bl)	5.2 mm

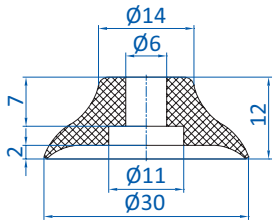
Details and additional sizes available are found on p. 40.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.234	G1/8-female	--

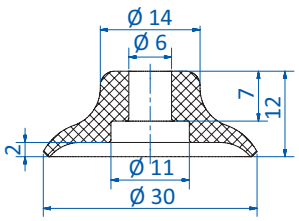
Item no. 102.030.459._*
Material HNBR (ge)
0.8 mm



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 102.030.053._*
Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)
2 mm

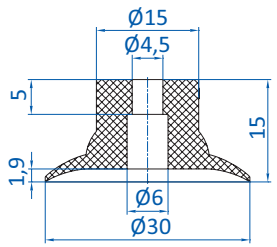
Details and additional sizes available are found on p. 12.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 102.030.502._*
Material NBR (sw), SI (tr), Thermalon® (bl)
2 mm

Details and additional sizes available are found on p. 16.



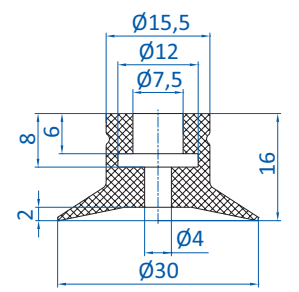
	Connection	
270.317	M5-male	--
270.103	M6-male	--
270.205	G1/8-male	--
270.109	G1/8-female	--
270.194	G1/4-male	--

50.020	8.5 mm	--

BESTSELLER

Item no. 102.030.222._*
Material NBR (sw), SI (tr)
2 mm

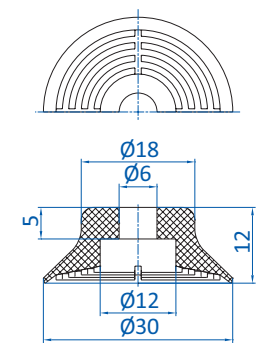
Details and additional sizes available are found on p. 28.



	Connection	
270.012	G1/8-male	--
270.020	G1/8-female	--
270.034	G1/4-male	--
270.038	G1/4-female	--

50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no. 126.030.013._*
Material SI (bl), SI (r)
1.5 mm



	Connection	
270.460	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

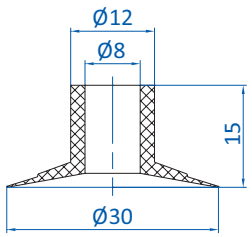
50.085	6 mm	--
50.128	10 mm	--
50.129	15 mm	--
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 104.030.067._*
Material NBR (sw)
1.8 mm

*** When ordering please add the appropriate material code to item no.**

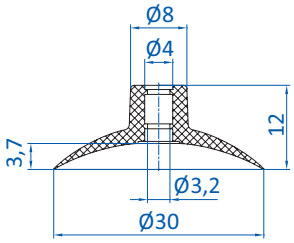
Flat vacuum cups by size

Ø 30 mm



	Connection	
270.112	G1/8-male	--
270.113	G1/4-male	--
270.043	G1/4-male	--
270.178	G1/4-female	--

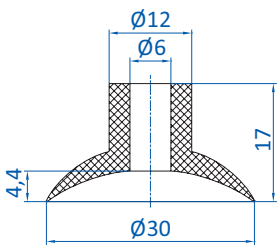
Item no.	Material	
107.030.023._*	NBR (sw), NR (bg)	1 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
102.030.086._*	PU (g)	4.5 mm

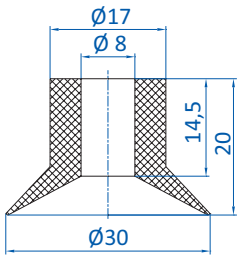
This vacuum cup is also available in the following dimensions: 22 mm, 25 mm



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

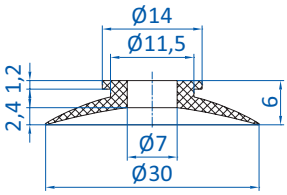
Item no.	Material	
112.030.052._*	NBR (sw), SI (w)	4.5 mm

Details and additional sizes available are found on p. 31.



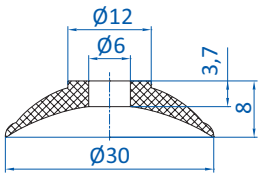
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no.	Material	
115.030.005._*	NBR (sw), SI (tr), SI-LE (tr), NR (sw), NR (bg)	3 mm



Item no.	Material	
102.030.178._*	Vinyl (bl)	3 mm

*** When ordering please add the appropriate material code to item no.**

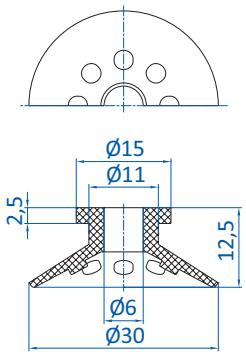


	Connection	
270.255	M8-male	--

Item no. 112.030.051._*

Material NBR (sw), SI (w)

4 mm

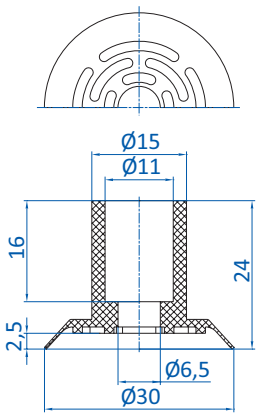


	Connection	
270.039	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 104.030.059._*

Material Vinyl (bl)

3 mm



	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

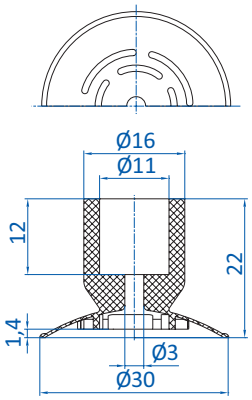
BESTSELLER

Item no. 104.030.009._*

Material NBR (sw), SI (w), SI-LE (w), SI (tr), NR (sw)

3 mm

This vacuum cup is also available in the following dimensions: 15 mm, 24 mm, 28 mm, 40 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 102.030.215._*

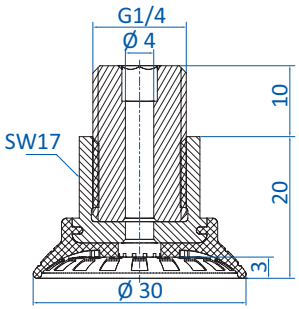
Material Vulkollan® (br)

2 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

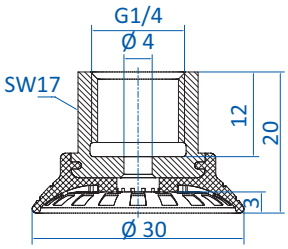
Ø 30 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.030._*	NBR (bl)	3 mm

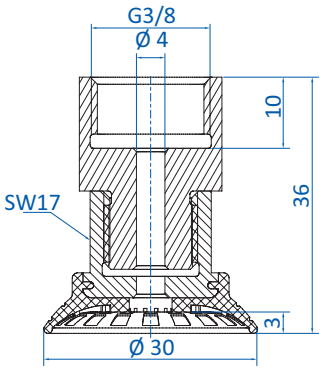
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.031._*	NBR (bl)	3 mm

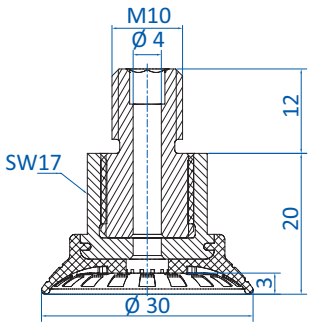
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.032._*	NBR (bl)	3 mm

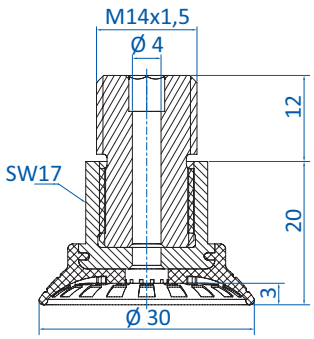
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.033._*	NBR (bl)	3 mm

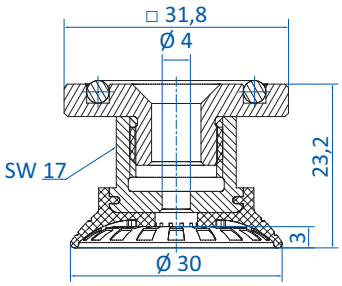
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.034._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 38.

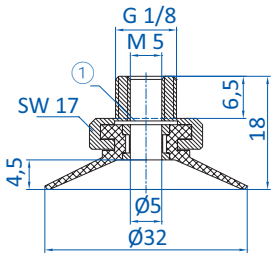


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.030.035._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 38.

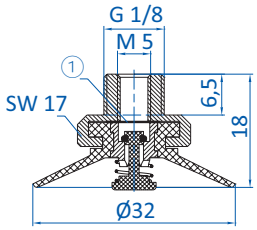
*** When ordering please add the appropriate material code to item no.**



① = Filter screen

Item no.	Material	
120.030.013._*	SI (tr), CR (sw)	3.5 mm

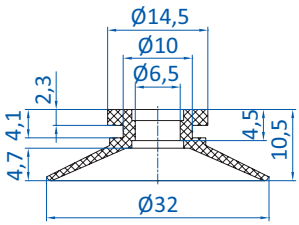
Details and additional sizes available are found on p. 25.



① = Filter screen

Item no.	Material	
121.030.006._*	CR (sw)	2.5 mm

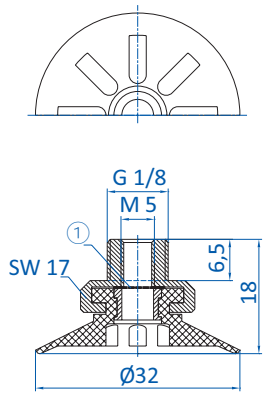
Details and additional sizes available are found on p. 25.



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
102.030.096._*	SI (tr), CR (sw)	3.5 mm

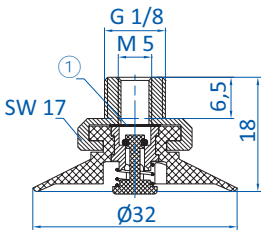
Details and additional sizes available are found on p. 21.



① = Filter screen

Item no.	Material	
123.030.019._*	Tepuflex® (or), SI (tr), CR (sw)	2 mm

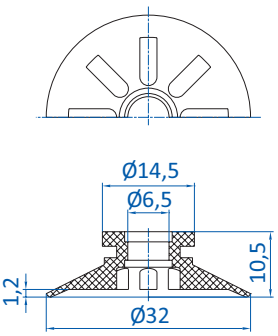
Details and additional sizes available are found on p. 25.



① = Filter screen

Item no.	Material	
124.030.002._*	SI (tr)	2 mm

Details and additional sizes available are found on p. 25.



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

BESTSELLER

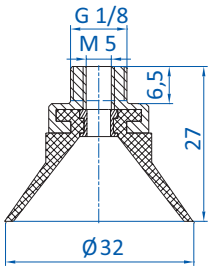
Item no.	Material	
125.030.010._*	Tepuflex® (or), SI (tr), CR (sw)	2 mm

Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

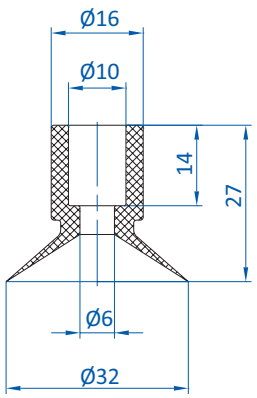
Ø 32 - 33 mm



Item no. 120.032.025._*

Material SI (tr), CR (sw)

5 mm

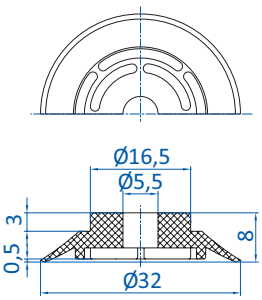


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 122.030.034._*

Material SI (tr), NR (sw)

6.5 mm

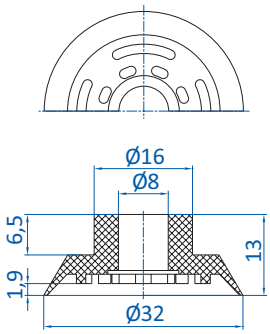


	Connection	
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no. 102.032.104._*

Material NR (bg)

1.8 mm

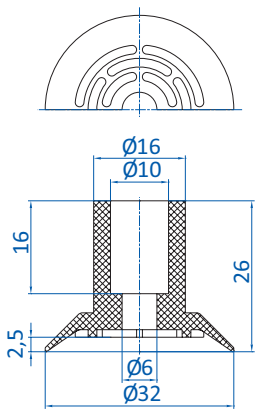


	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 108.032.002._*

Material SI (tr), NR (bg)

2 mm



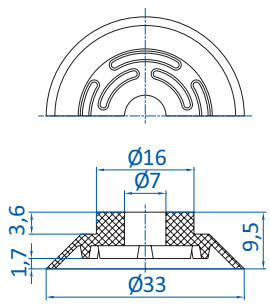
	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 104.033.034._*

Material NR (bg), CR (r)

2.5 mm

Notes: Especially well-suited for flexible products (foils, leather, veneer)



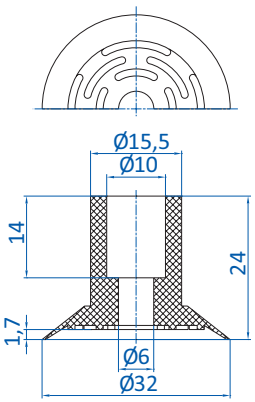
	Connection	
270.039	M6-male	--

Item no. 102.033.398._*

Material Vinyl (bl)

2 mm

*** When ordering please add the appropriate material code to item no.**

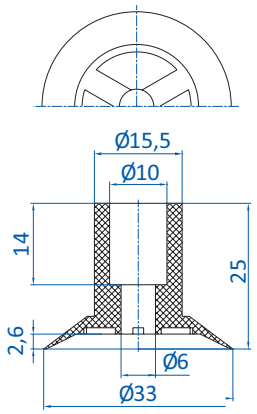


	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 104.032.044._*

Material Vinyl (bl)

2 mm

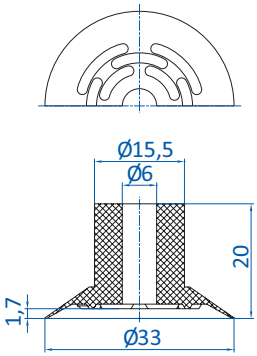


	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 102.033.226._*

Material Vinyl (bl)

3 mm

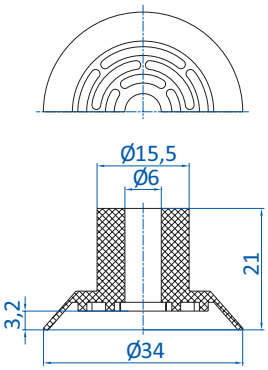


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.033.057._*

Material Vinyl (bl)

1.5 mm

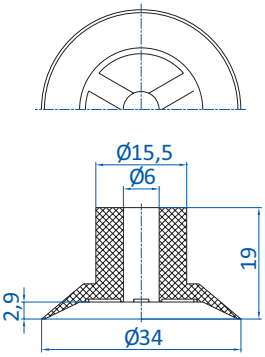


	Connection	
270.030	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. 104.034.036._*

Material NR (bg)

3 mm

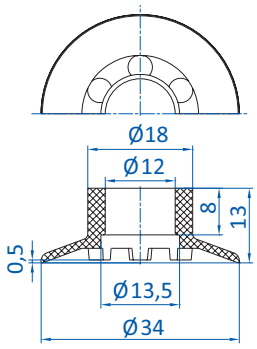


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 104.034.054._*

Material Vinyl (bl)

3 mm



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no. 108.034.003._*

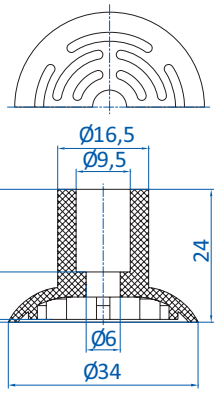
Material NR (bg)

1 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 34 - 35 mm



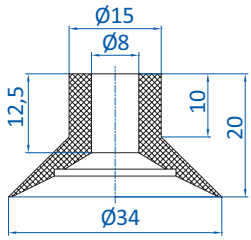
	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. **116.034.001._***

Material NR (sw), NR (bg)

0.5 mm

Notes: Especially well-suited for flexible products (foils, leather, veneer)

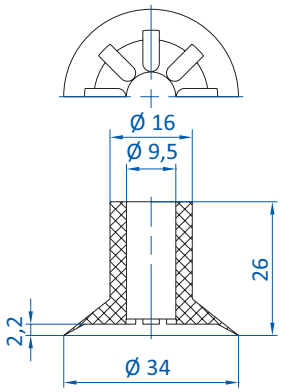


	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. **122.034.038._***

Material NR (sw), NR (br)

3 mm

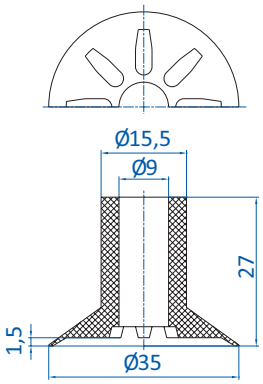


	Connection	
270.177	M10-male	--
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.452	G1/4-female	--

Item no. **104.035.048._***

Material Vinyl (bl)

2 mm

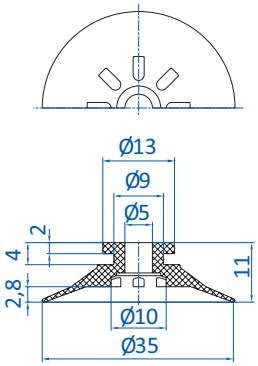


	Connection	
270.177	M10-male	--
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.452	G1/4-female	--

Item no. **104.035.050._***

Material Vinyl (bl)

2 mm

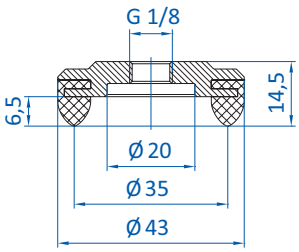


	Connection	
270.310	M5-male	--
270.250	G1/8-male	--

Item no. **102.035.320._***

Material NR (sw)

2.8 mm



Item no. **160.042.001._***

Material EPDM (sw)

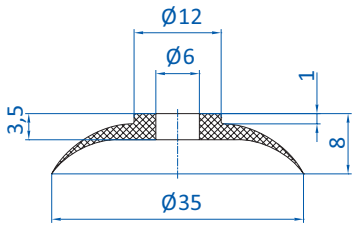
1 mm

Details and additional sizes available are found on p. 48.

Notes: Foam sealing lip equalizes product unevenness

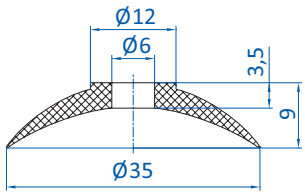
*** When ordering please add the appropriate material code to item no.**

	Connection	
270.250	G1/8-male	--



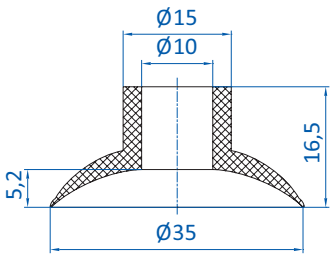
Item no.	Material	
112.035.059._*	Sl (tr), NR (sw)	3 mm

	Connection	
270.039	M6-male	--



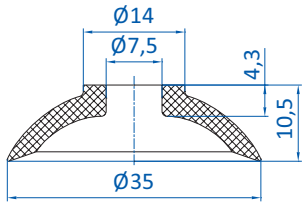
Item no.	Material	
112.035.065._*	Sl (tr)	5.5 mm

	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--



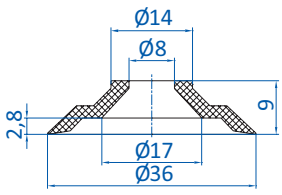
Item no.	Material	
112.035.060._*	NBR (sw), Sl (w), NR (sw)	5 mm

Details and additional sizes available are found on p. 31.



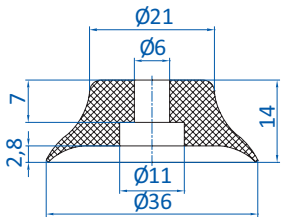
Item no.	Material	
115.035.007._*	NBR (sw), Sl (tr), NR (sw)	5 mm

	Connection	
270.255	M8-male	--



Item no.	Material	
102.036.106._*	Sl (gr)	3 mm

	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--



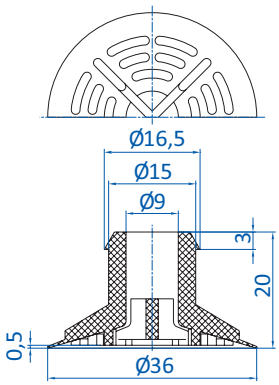
Item no.	Material	
102.035.056._*	NBR (sw), Sl (tr), Sl-LE (tr)	3 mm

Details and additional sizes available are found on p. 12.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

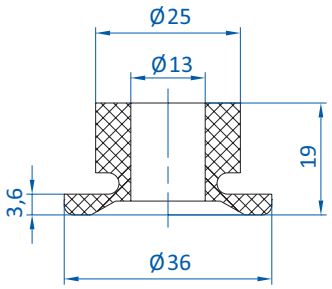
Ø 36 - 40 mm



	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

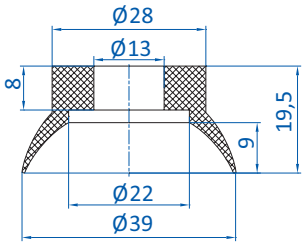
Item no.	Material	
102.036.342._*	Sl (tr)	0.5 mm

Notes: Especially well-suited for foils
This vacuum cup is also available in the following dimensions: 27 mm



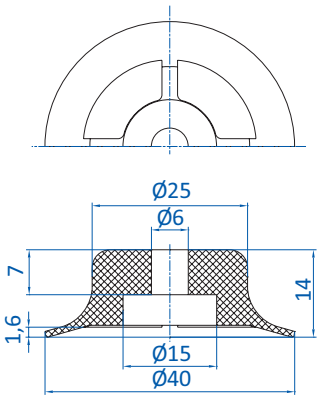
	Connection	
270.207	G1/4-male	--

Item no.	Material	
107.036.037._*	NR (br)	1.5 mm



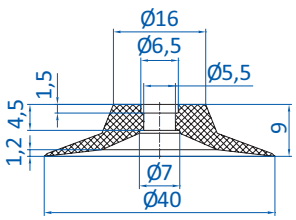
	Connection	
270.210	G1/4-male	--

Item no.	Material	
112.039.069._*	NR (bg)	5 mm



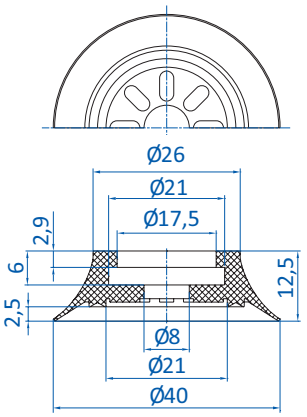
	Connection	
270.498	M6-male	--
270.486	G1/8-male	--
270.487	G1/4-male	--
270.488	G1/4-female	--

Item no.	Material	
102.040.289._*	NBR (sw), Sl (tr), PU (bl), FKM (gr)	2 mm



	Connection	
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no.	Material	
102.040.310._*	CR (sw)	2 mm



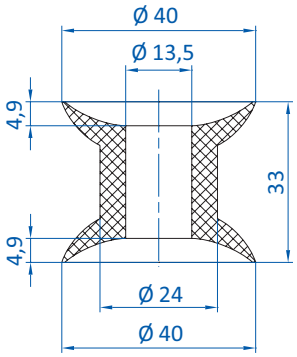
	Connection	
270.234	G1/8-female	--

FLEXIBLE LIP

Item no.	Material	
102.040.357._*	Sl (tr), NR (br)	3 mm

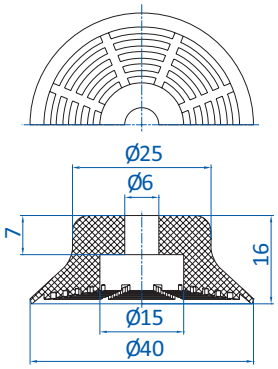
Details and additional sizes available are found on p. 42.

*** When ordering please add the appropriate material code to item no.**



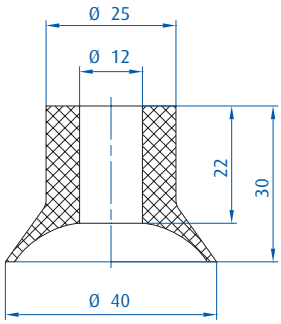
	Connection	
270.116	G1/4-female	--

Item no.	Material	
102.039.235._*	NR (br)	5 mm



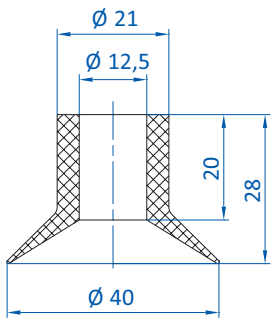
	Connection	
270.498	M6-male	--
270.486	G1/8-male	--
270.485	G1/8-female	--
270.487	G1/4-male	--
270.488	G1/4-female	--

Item no.	Material	
104.040.068._*	NBR (sw)	2.5 mm



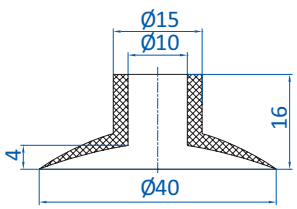
	Connection	
270.049-1	G1/4-male	--

Item no.	Material	
122.040.001._*	NBR (sw), SI (tr), NR (bg)	5 mm



	Connection	
270.049-1	G1/4-male	--

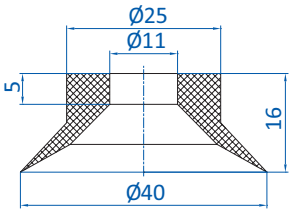
Item no.	Material	
122.040.044._*	SI (tr), NR (bg)	4.5 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no.	Material	
112.040.071._*	NBR (sw), SI (tr)	4 mm

Details and additional sizes available are found on p. 31.



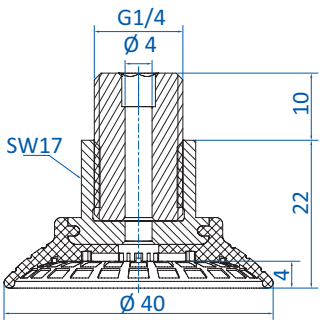
	Connection	
270.256	M8-male	--
270.252	G1/8-female	--

Item no.	Material	
126.040.016._*	SI (tr), NR (bg), PU (bl)	5 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

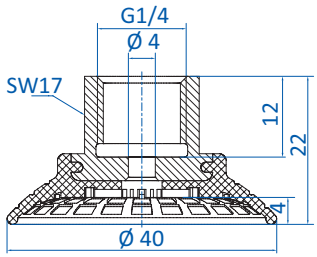
Ø 40 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.036._*	NBR (bl)	4 mm

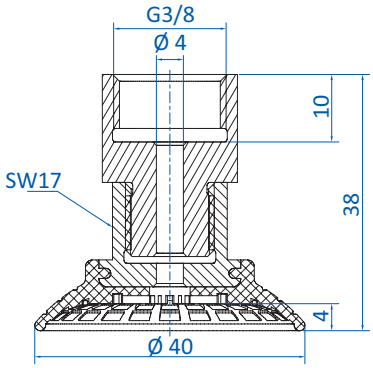
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.037._*	NBR (bl)	4 mm

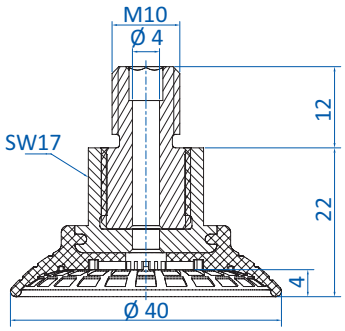
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.038._*	NBR (bl)	4 mm

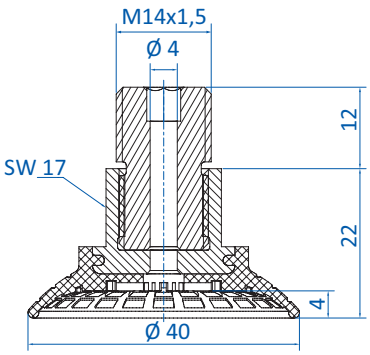
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.039._*	NBR (bl)	4 mm

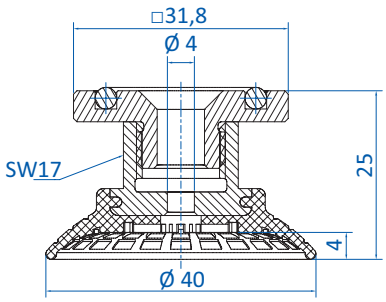
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.040._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 38.

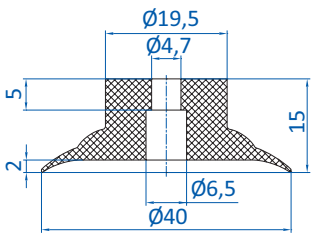


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.040.041._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

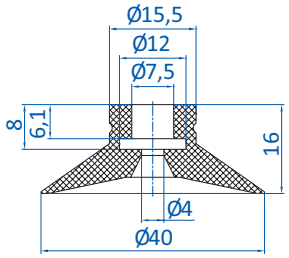


	Connection	
270.317	M5-male	--
270.103	M6-male	--
270.205	G1/8-male	--
270.109	G1/8-female	--
270.194	G1/4-male	--

50.020	8.5 mm	--

Item no. 102.040.223._*
Material NBR (sw), SI (tr)
2 mm

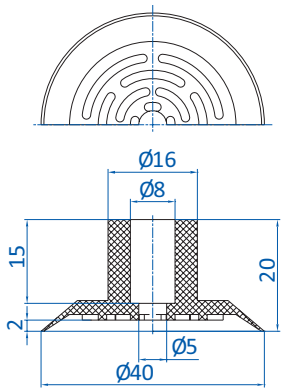
Details and additional sizes available are found on p. 28.



	Connection	
270.012	G1/8-male	--
270.020	G1/8-female	--
270.034	G1/4-male	--
270.038	G1/4-female	--

50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no. 102.040.364._*
Material SI (bl)
3 mm

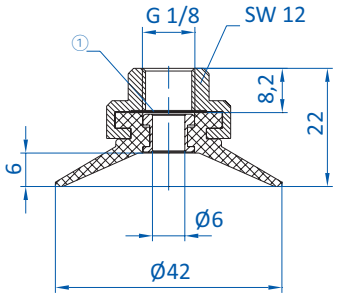


	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

BESTSELLER

Item no. 104.040.018._*
Material SI (tr), SI-LE (tr), NR (sw), NR (br)
2 mm

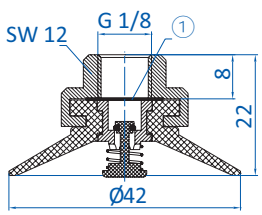
This vacuum cup is also available in the following dimensions: 15 mm, 24 mm, 28 mm, 30 mm



① = Filter screen

Item no. 120.040.076._*
Material SI (tr), CR (sw)
4 mm

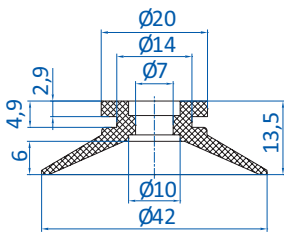
Details and additional sizes available are found on p. 25.



① = Filter screen

Item no. 121.040.007._*
Material SI (tr), CR (sw)
4 mm

Details and additional sizes available are found on p. 25.



	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

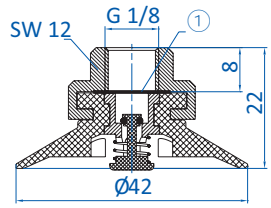
Item no. 102.040.094._*
Material SI (tr), CR (sw)
4 mm

Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

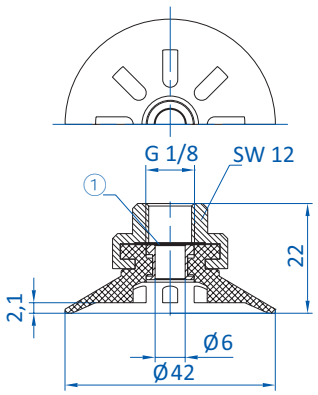
Ø 41 - 42 mm



① = Filter screen

Item no.	Material	
124.040.006._*	Si (tr)	2 mm

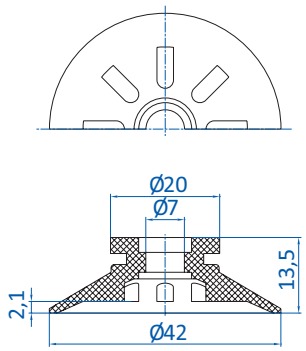
Details and additional sizes available are found on p. 25.



① = Filter screen

Item no.	Material	
123.040.028._*	Si (tr), CR (sw)	2 mm

Details and additional sizes available are found on p. 25.

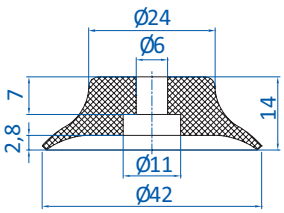


	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

BESTSELLER

Item no.	Material	
125.040.013._*	Tepuflex® (or), Si (tr), CR (sw)	2 mm

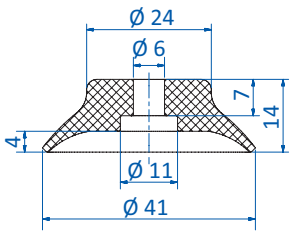
Details and additional sizes available are found on p. 21.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no.	Material	
102.040.061._*	NBR (sw), Si (tr), SI-LE (tr), PU (bl)	3.5 mm

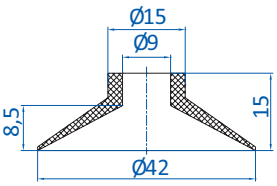
Details and additional sizes available are found on p. 12.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no.	Material	
102.040.503._*	NBR (sw), Si (tr), SI-LE (tr), Thermalon® (bl)	4 mm

Details and additional sizes available are found on p. 16.

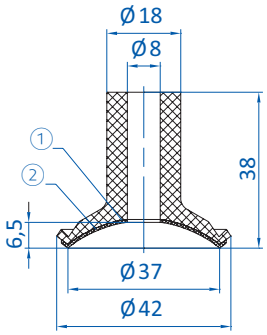


	Connection	
270.034	G1/4-male	--
270.038	G1/4-female	--

Item no.	Material	
102.042.232._*	NR (sw)	7 mm

*** When ordering please add the appropriate material code to item no.**





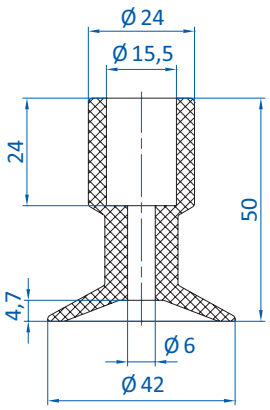
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

NON-MARKING! TEMP. MAX. 500 °C (932 °F)

① = Felt pads ② = For silicone vacuum cups: Silicone blocker through evaporated aluminum layer

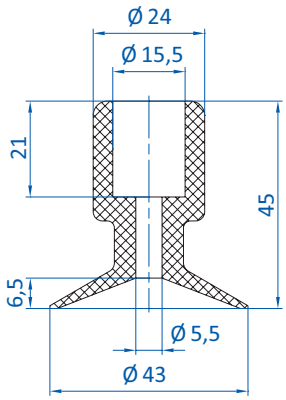
Item no.	Material	
26.037.010.2F	Sl (tr/ge)	3 mm

Details and additional sizes available are found on p. 394.



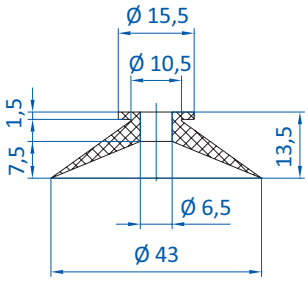
	Connection	
270.116	G1/4-female	--

Item no.	Material	
102.042.184._*	Vinyl (bl)	4 mm



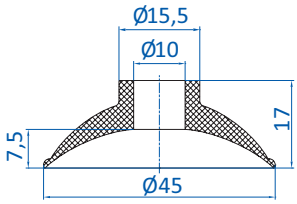
	Connection	
270.116	G1/4-female	--

Item no.	Material	
102.043.252._*	NR (br)	7 mm



	Connection	
270.063	G1/8-male	--
270.061	G1/8-female	--

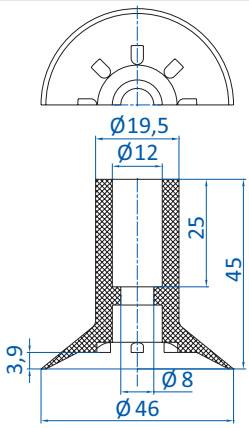
Item no.	Material	
102.043.170._*	Vinyl (bl)	5 mm



	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no.	Material	
112.045.077._*	NBR (sw), Sl (w), NR (sw)	7 mm

Details and additional sizes available are found on p. 31.



	Connection	
270.049-1	G1/4-male	--

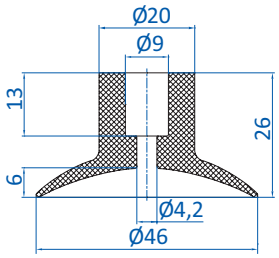
Item no.	Material	
127.045.002._*	NR (sw)	5 mm

This vacuum cup is also available in the following dimensions: 65 mm

*** When ordering please add the appropriate material code to item no.**

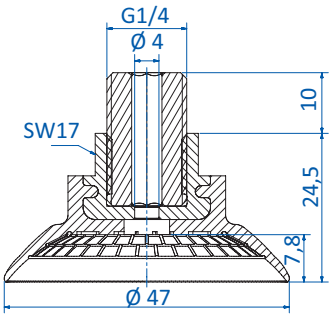
Flat vacuum cups by size

Ø 46 - 49 mm



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--

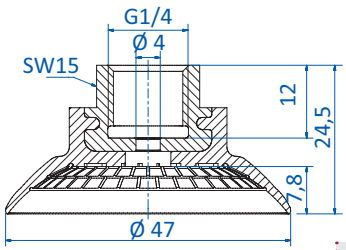
Item no. 102.046.046._*
Material NBR (sw)
6 mm



FOR STRONGLY CURVED METAL SHEETS

Item no. 103.045.145._*
Material NBR (bl)
7.8 mm

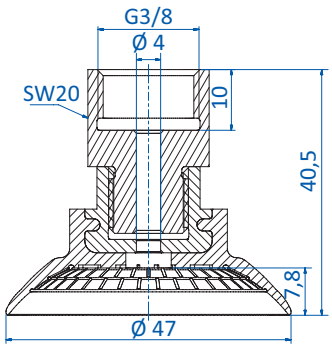
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no. 103.045.137._*
Material NBR (bl)
7.8 mm

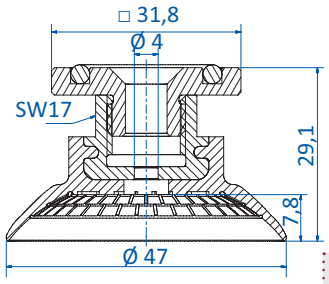
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no. 103.045.150._*
Material NBR (bl)
7.8 mm

Details and additional sizes available are found on p. 40.

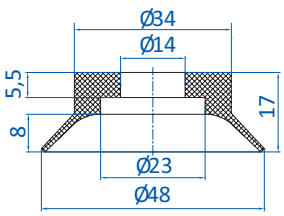


FOR STRONGLY CURVED METAL SHEETS

Item no. 103.045.153._*
Material NBR (bl)
7.8 mm

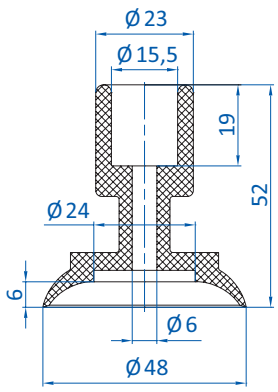
Details and additional sizes available are found on p. 40.

	Connection	
270.210	G1/4-male	--

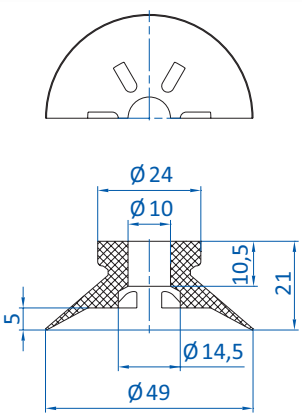


Item no. 107.048.031._*
Material SI (tr), NR (gr)
5 mm

*** When ordering please add the appropriate material code to item no.**

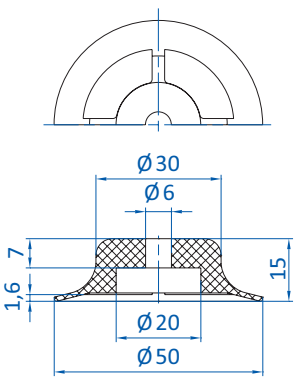


Item no.	Material	
115.048.008._*	NR (sw)	8 mm



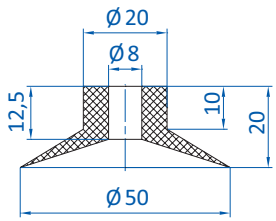
	Connection	
270.249	G1/4-male	--
270.248	G1/4-female	--

Item no.	Material	
127.050.004._*	SI (tr), NR (sw)	4 mm



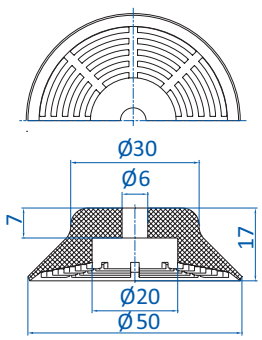
	Connection	
270.499	M6-male	--
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

Item no.	Material	
102.050.290._*	NBR (sw), SI (tr), PU (bl), FKM (gr)	2 mm



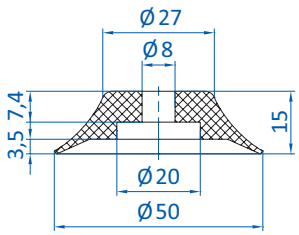
	Connection	
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no.	Material	
126.050.017._*	SI (tr), NR (bg)	4 mm



	Connection	
270.499	M6-male	--
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

Item no.	Material	
104.050.069._*	NBR (sw)	3.1 mm



	Connection	
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

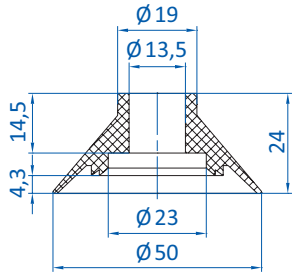
Item no.	Material	
102.050.065._*	NBR (sw), SI (tr), SI-LE (tr), PU (bl)	4 mm

Details and additional sizes available are found on p. 12.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

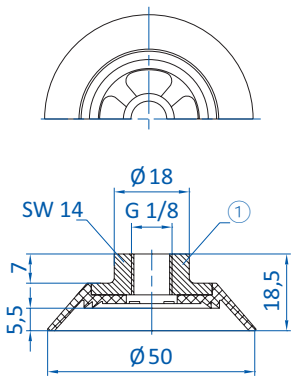
Ø 50 mm



	Connection	
270.184	G1/4-male	--

BESTSELLER

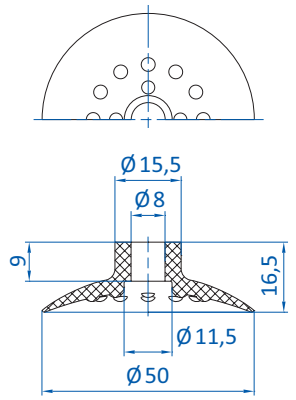
Item no.	Material	
127.050.003._*	SI (r), CR (sw)	5 mm



① = Aluminum

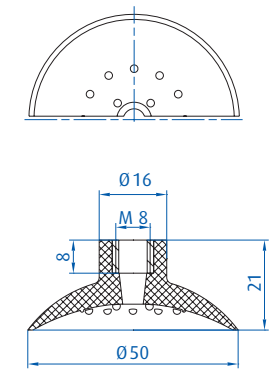
Item no.	Material	
150.050.032._*	SI (r), FKM (sw), CR (sw)	5.5 mm

Details and additional sizes available are found on p. 46.

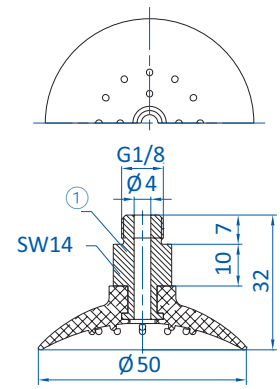


	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no.	Material	
102.050.433._*	Vulkollan® (br)	3 mm

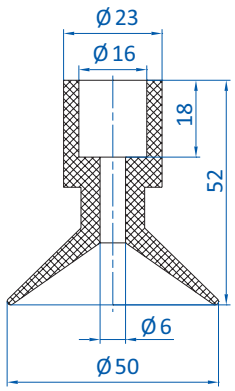


Item no.	Material	
110.050.080._*	NR (sw)	4 mm



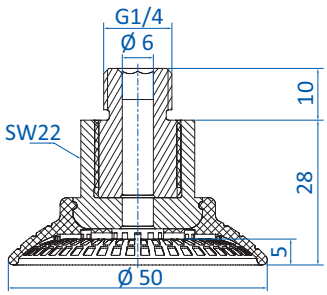
① = Aluminum

Item no.	Material	
113.050.014._*	NBR (sw)	5 mm



Item no.	Material	
126.050.018._*	NR (bg)	10 mm

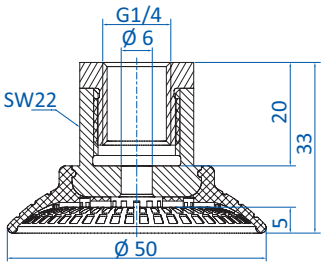
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET META

Item no.	Material	
103.050.042._*	NBR (bl)	5 mm

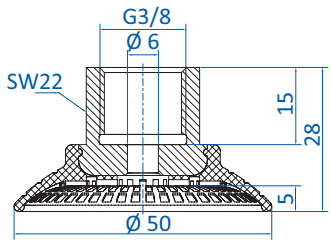
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.050.043._*	NBR (bl)	5 mm

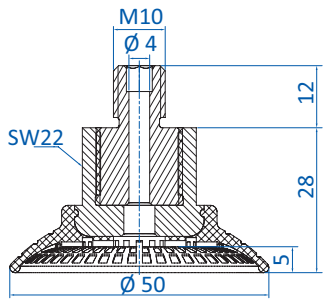
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.050.044._*	NBR (bl)	5 mm

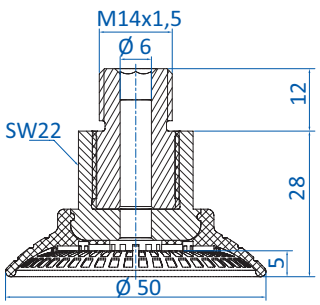
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.050.045._*	NBR (bl)	5 mm

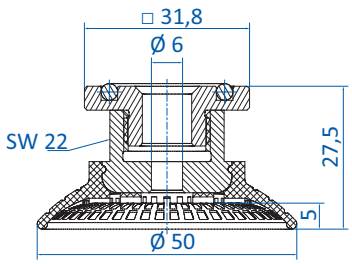
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.050.046._*	NBR (bl)	5 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

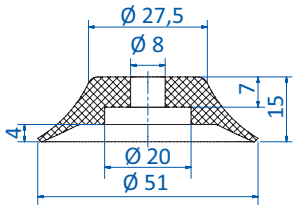
Item no.	Material	
103.050.047._*	NBR (bl)	5 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 50 - 53 mm



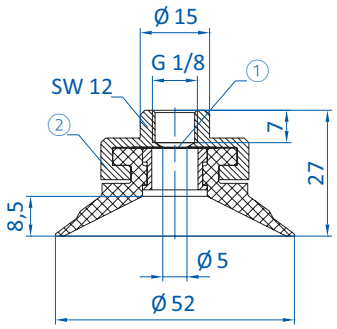
	Connection	
270.012	G1/8-male	--
270.020	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

Item no. 102.050.504._*

Material NBR (sw), SI (tr), Thermalon® (bl)

4 mm

Details and additional sizes available are found on p. 16.



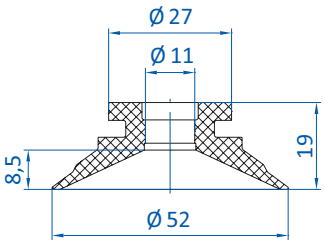
① = Filter screen ② = Aluminum

Item no. 120.050.078._*

Material CR (sw)

6.5 mm

Details and additional sizes available are found on p. 25.



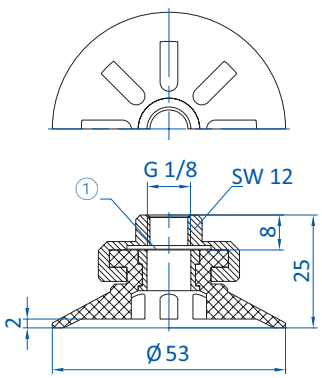
	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.252	G1/8-female	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

Item no. 102.050.097._*

Material SI (tr), CR (sw)

6.5 mm

Details and additional sizes available are found on p. 21.



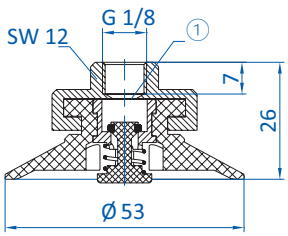
① = Filter screen

Item no. 123.050.034._*

Material Tepuflex® (or), SI (tr), CR (sw)

2.5 mm

Details and additional sizes available are found on p. 25.



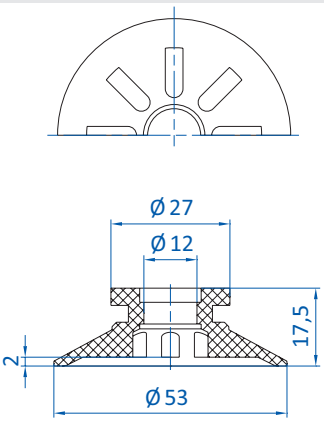
① = Filter screen

Item no. 124.050.009._*

Material SI (tr), CR (sw)

2.5 mm

Details and additional sizes available are found on p. 25.



	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.252	G1/8-female	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

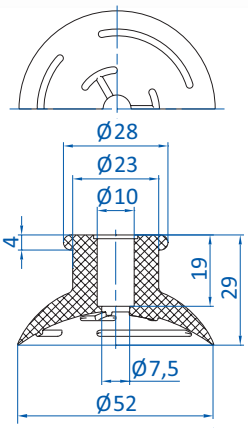
Item no. 125.050.017._*

Material Tepuflex® (or), SI (tr), CR (sw)

2.5 mm

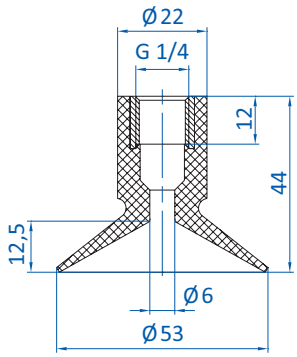
Details and additional sizes available are found on p. 21.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

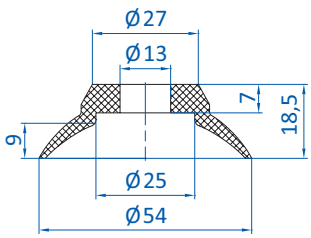
Item no.	Material	
114.052.008._*	NR (bg)	6 mm



Item no.	Material	
120.050.040._*	SI (tr), NR (sw)	11 mm

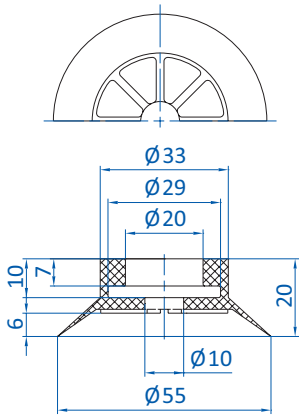
This vacuum cup is also available in the following dimensions: 42 mm, 62 mm, 83 mm

	Connection	
270.184	G1/4-male	--



Item no.	Material	
112.055.086._*	PU (bl)	6 mm

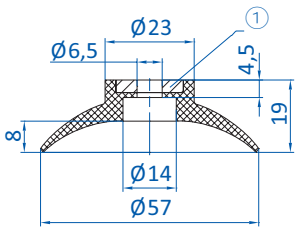
	Connection	
270.289	G1/8-female	--



FLEXIBLE LIP

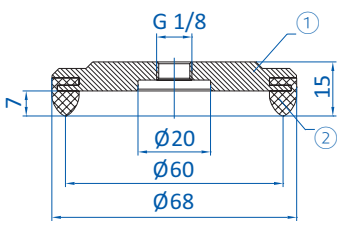
Item no.	Material	
154.055.060._*	NBR (gr)	6 mm

	Connection	
270.312/19	M6-male	--



① = Aluminum

Item no.	Material	
112.057.087._*	NR (sw)	6 mm



① = Aluminum ② = EPDM foamed

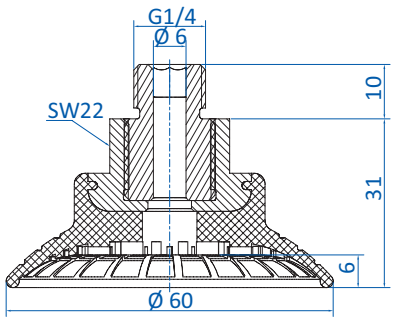
Item no.	Material	
160.067.003._*	EPDM (sw)	1 mm

Details and additional sizes available are found on p. 48.
Notes: Foam sealing lip equalizes product unevenness

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

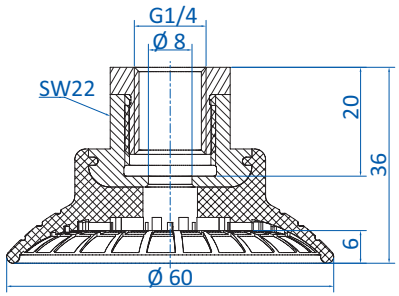
Ø 60 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.060.048._*	NBR (bl)	6 mm

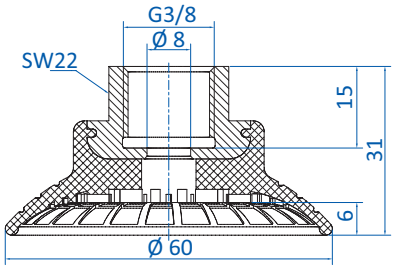
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.060.049._*	NBR (bl)	6 mm

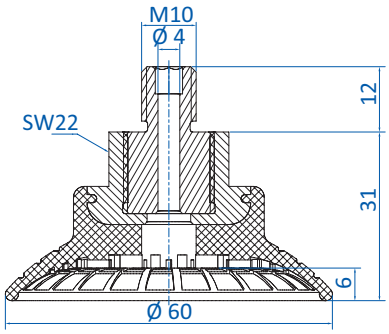
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.060.050._*	NBR (bl)	6 mm

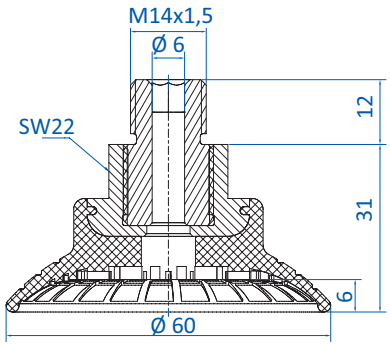
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.060.051._*	NBR (bl)	6 mm

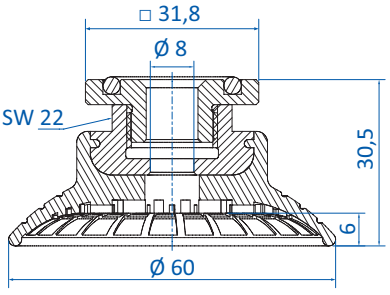
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.060.052._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

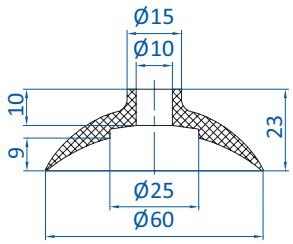
Item no.	Material	
103.060.053._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

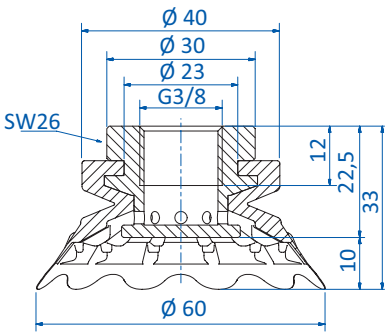


	Connection	
270.042	G1/4-male	--



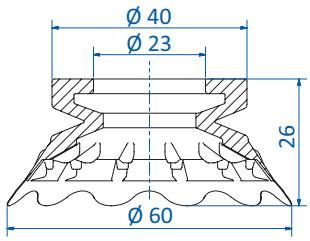
Item no.	Material	
112.060.091._*	NBR (sw), SI (tr)	9 mm

Details and additional sizes available are found on p. 31.

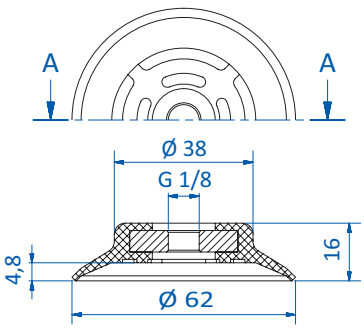


Item no.	Material	
103.060.133._*	SI (tr), SI-LE (tr), SI (w), SI-LE (w)	10 mm

	Connection	
270.725	G3/8-female	--



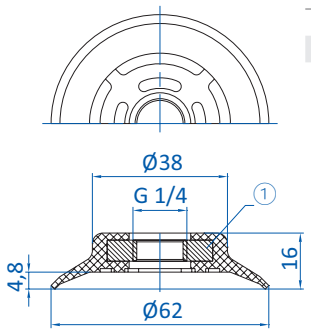
Item no.	Material	
104.060.098._*	SI (tr), SI-LE (tr), SI (w), SI-LE (w)	10 mm



① = Aluminum

Item no.	Material	
102.060.544._*	NBR (sw)	5 mm

	Connection	
270.090	M10-female	--
270.120	G1/4-male	--



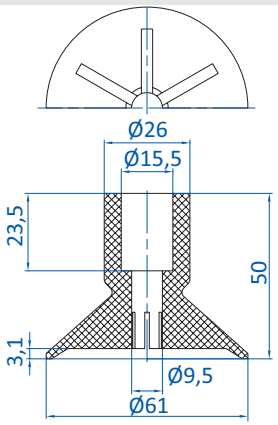
BESTSELLER

① = Aluminum

Item no.	Material	
102.060.303._*	NBR (sw), SI (tr), SI-LE (tr)	5 mm

Details and additional sizes available are found on p. 12.

	Connection	
270.116	G1/4-female	--

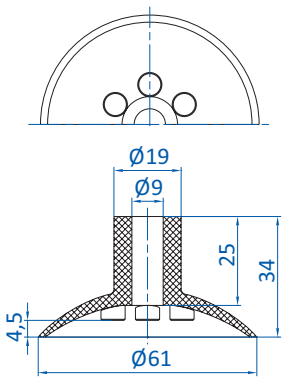


Item no.	Material	
104.061.060._*	Vinyl (bl)	2.5 mm

*** When ordering please add the appropriate material code to item no.**

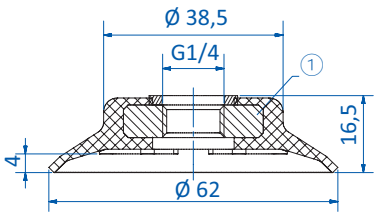
Flat vacuum cups by size

Ø 60 - 62 mm



	Connection	
270.208	G1/4-male	--

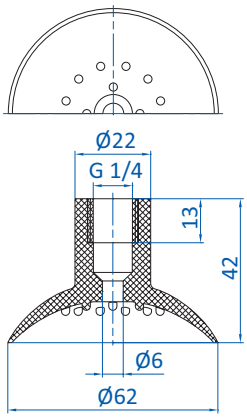
Item no.	Material	
114.061.010._*	Sl (tr), NR (sw)	5 mm



① = Aluminum

Item no.	Material	
102.060.505._*	NBR (sw), Sl (tr), Thermalon® (bl)	4 mm

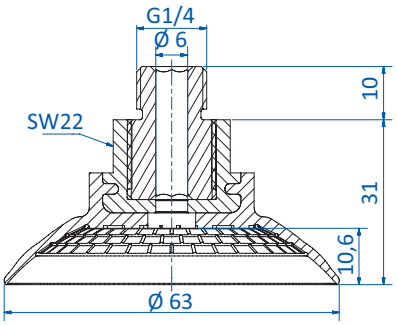
Details and additional sizes available are found on p. 16.



Item no.	Material	
110.060.085._*	Sl (tr), NR (sw)	9.5 mm

This vacuum cup is also available in the following dimensions: 43 mm, 50 mm, 81 mm, 100 mm

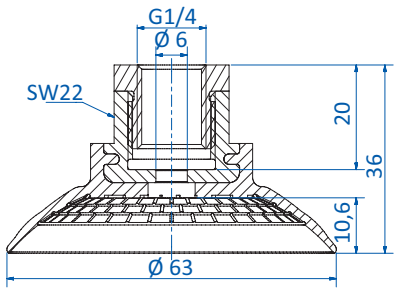
*** When ordering please add the appropriate material code to item no.**



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.060.146._*	NBR (bl)	10.6 mm

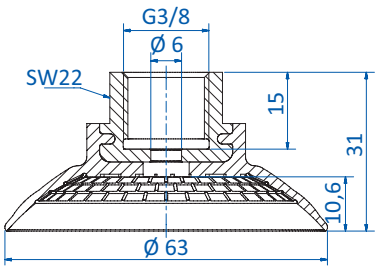
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.060.138._*	NBR (bl)	10.6 mm

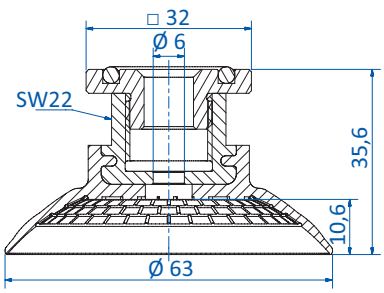
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.060.136._*	NBR (bl)	10.6 mm

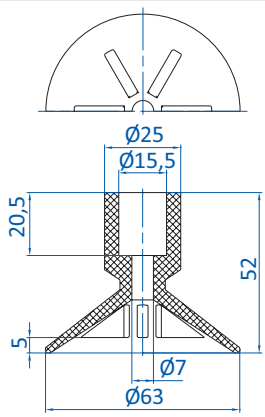
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

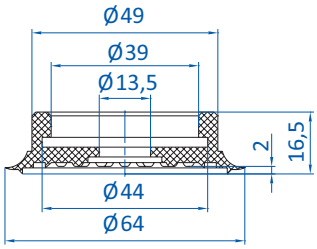
Item no.	Material	
103.060.154._*	NBR (bl)	10.6 mm

Details and additional sizes available are found on p. 40.



	Connection	
270.116	G1/4-female	--

Item no.	Material	
104.063.041._*	NR (bg), CR (r)	6.5 mm



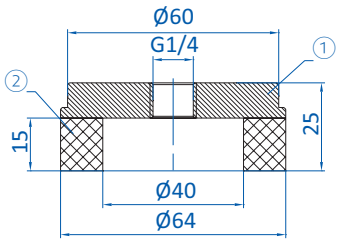
	Connection	
270.262	G1/8-female	--
270.284	G1/4-female	--

Item no.	Material	
154.065.002._*	SI (tr), NR (sw), Vinyl (bl)	1.5 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

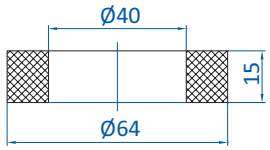
Ø 64 - 65 mm



① = Aluminum ② = Sponge rubber NR

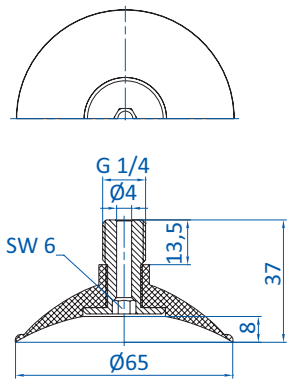
Item no.	Material	
206.064.006._*	Sponge rubber (or)	10 mm

This vacuum cup is also available in the following dimensions: 91 mm



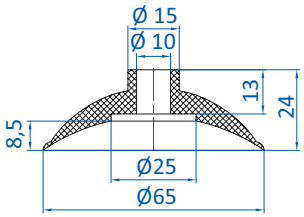
Item no.	Material	
208.064.001._*	Sponge rubber (or)	10 mm

This vacuum cup is also available in the following dimensions: 91 mm



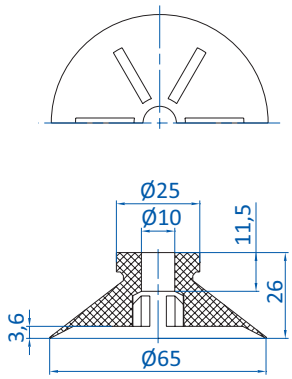
Item no.	Material	
110.065.091._*	NBR (sw), SI (tr), NR (sw), Vinyl (bl)	7 mm

	Connection	
270.176	G1/4-male	--



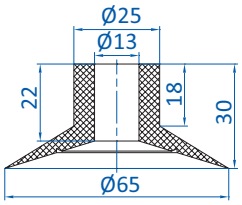
Item no.	Material	
112.065.093._*	NBR (sw), SI (tr), NR (sw), NR (bg), Vinyl (bl)	7 mm

	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--



Item no.	Material	
125.065.026._*	SI (tr), NR (sw), NR (bg)	5 mm

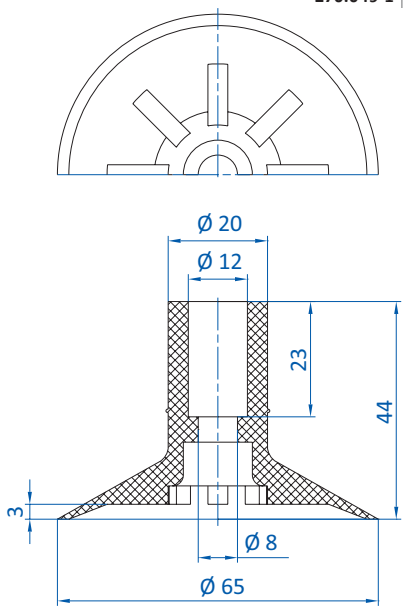
	Connection	
270.207	G1/4-male	--



Item no.	Material	
126.065.019._*	SI (tr), NR (sw)	5 mm

*** When ordering please add the appropriate material code to item no.**

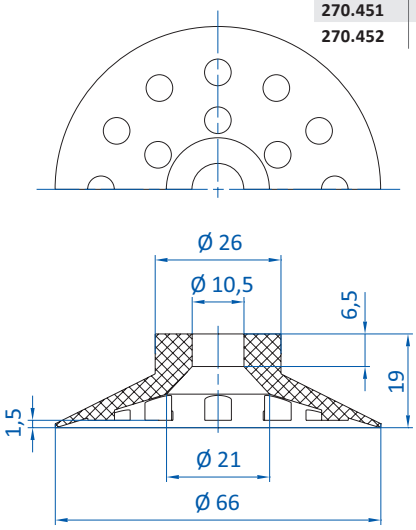
	Connection	
270.049-1	G1/4-male	--



Item no.	Material	
127.065.006._*	Sl (tr), NR (sw)	3 mm

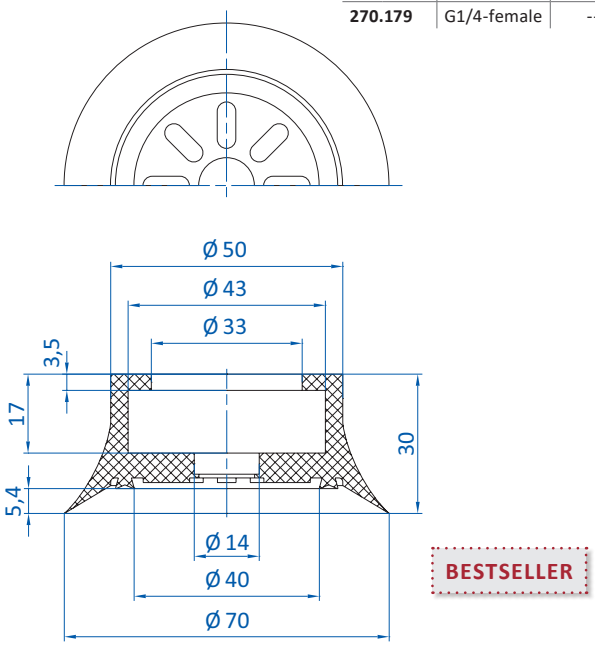
This vacuum cup is also available in the following dimensions: 46 mm

	Connection	
270.256	M8-male	--
270.012	G1/8-male	--
270.020	G1/8-female	--
270.451	G1/4-male	--
270.452	G1/4-female	--



Item no.	Material	
125.066.027._*	NBR (sw), Sl (tr), NR (sw)	0.5 mm

	Connection	
270.179	G1/4-female	--

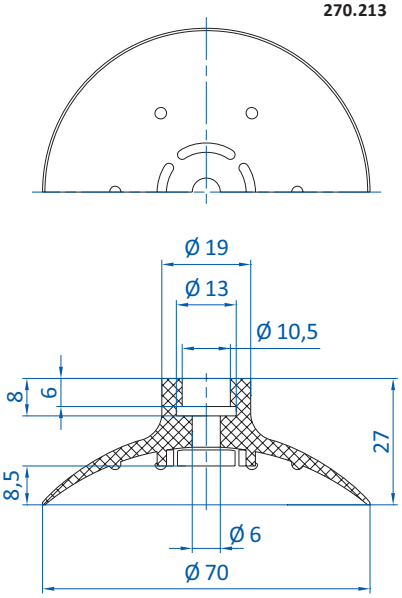


BESTSELLER

Item no.	Material	
102.070.234._*	NBR (gr), SBR (br), Sl (tr), NR (bg), NR (br)	6 mm

Details and additional sizes available are found on p. 42.

	Connection	
270.213	G1/4-male	--

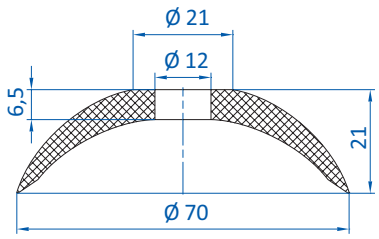


Item no.	Material	
102.070.325._*	Vulkollan® (br)	8.5 mm

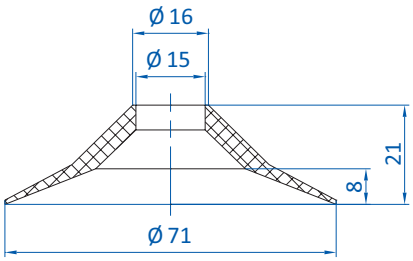
*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 70 - 75 mm

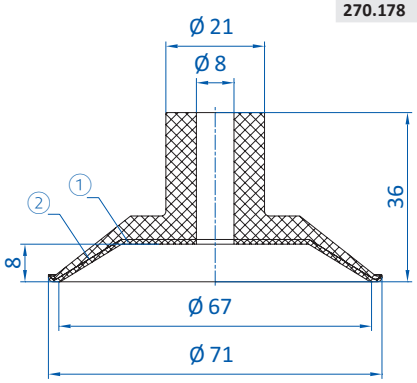


Item no.	Material	
112.070.096._*	NR (bg)	12 mm



Item no.	Material	
107.070.029._*	NR (br)	6 mm

	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--



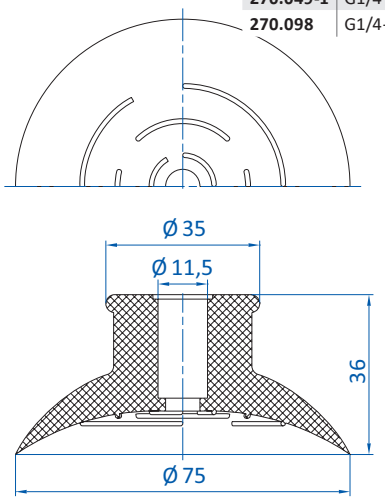
NON-MARKING!
TEMP. MAX. 500 °C
(932 °F)

① = Felt pads ② = For silicone vacuum cups: Silicone blocker through evaporated aluminum layer

Item no.	Material	
26.070.011.2F	SI (tr/ge)	7 mm

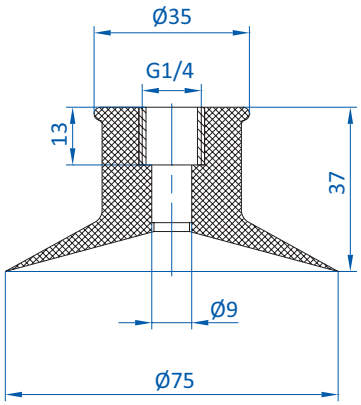
Details and additional sizes available are found on p. 394.

	Connection	
270.177	M10-male	--
270.049-1	G1/4-male	--
270.098	G1/4-female	--

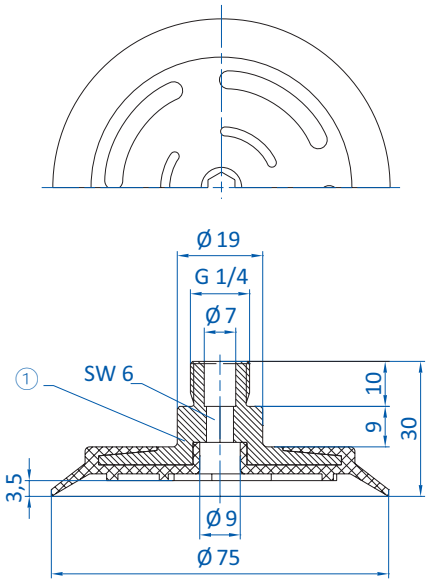


Item no.	Material	
114.075.012._*	NR (br)	3.5 mm

*** When ordering please add the appropriate material code to item no.**

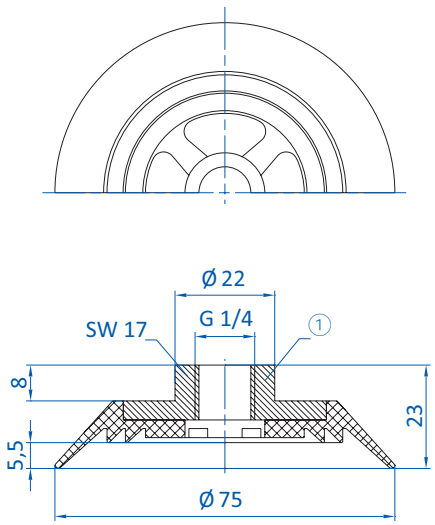


Item no.	Material	
120.075.075._*	NR (bg)	3 mm



① = Aluminum

Item no.	Material	
103.075.025._*	Vulkollan® (br)	3.5 mm

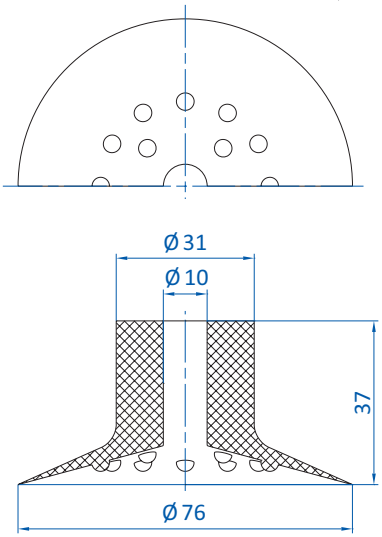


① = Aluminum

Item no.	Material	
150.075.033._*	SI (r), FKM (sw), CR (sw)	6 mm

Details and additional sizes available are found on p. 46.

	Connection	
270.044	G1/4-male	--



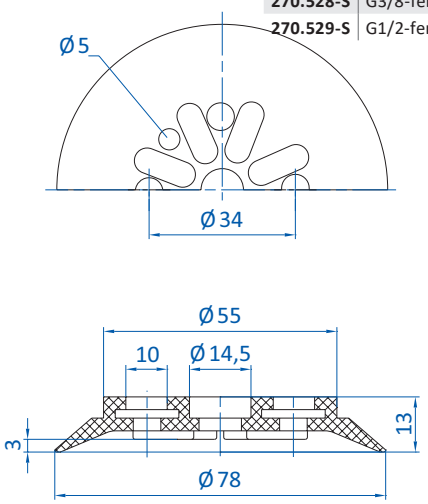
Item no.	Material	
102.075.275._*	NR (br)	3 mm

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

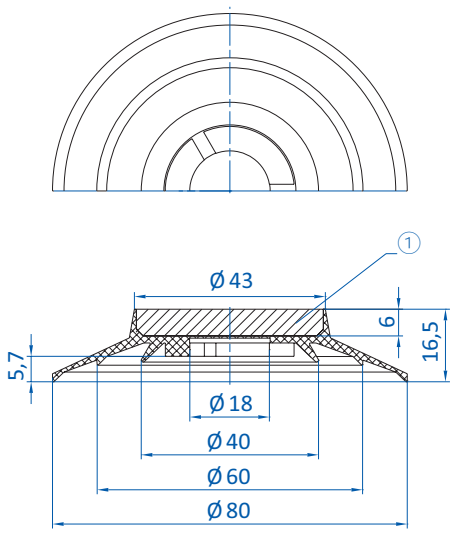
Ø 78 - 80 mm

	Connection	
270.527-S	G1/8-female	--
270.528-S	G3/8-female	--
270.529-S	G1/2-female	--



Item no.	Material	
154.078.027._*	SI (tr), SI-LE (tr), CR (sw)	3 mm

Details and additional sizes available are found on p. 21.

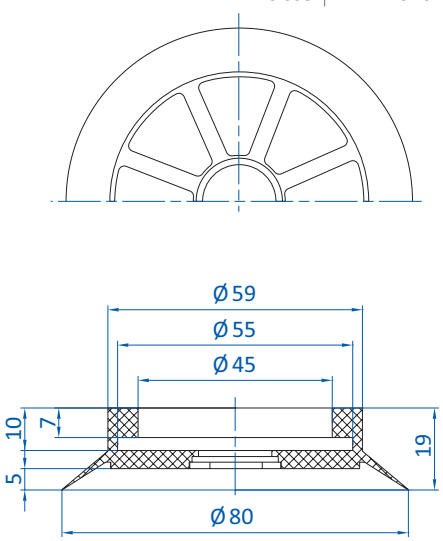


① = Steel

Item no.	Material	
104.080.078._*	SBR (br)	4.5 mm

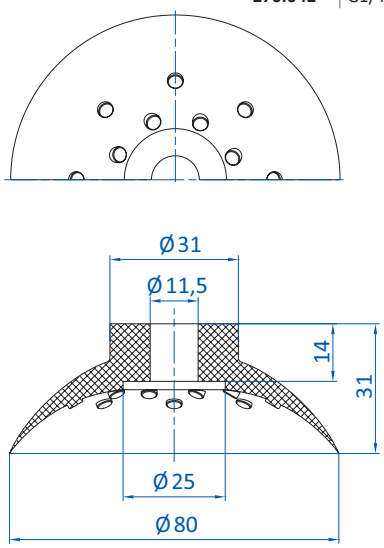
Notes: Use: Picking up products of varying sizes

	Connection	
270.338	M12x1.75-female	--



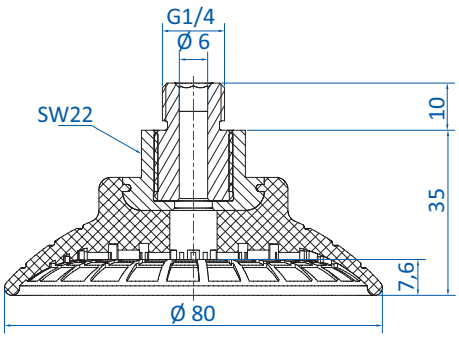
Item no.	Material	
154.080.055._*	NBR (gr), SI (tr), NR (sw)	6 mm

	Connection	
270.042	G1/4-male	--



Item no.	Material	
114.080.021._*	NR (br)	9 mm

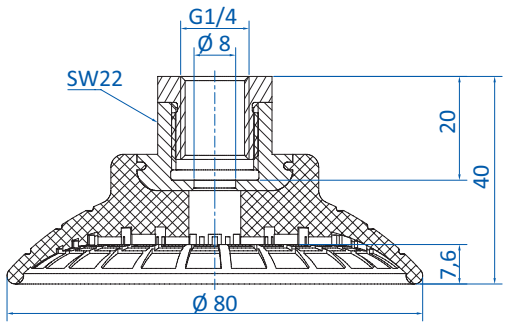
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.080.054._*	NBR (bl)	7.6 mm

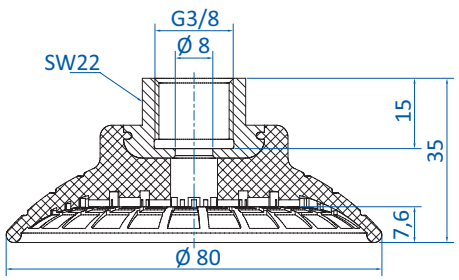
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.080.055._*	NBR (bl)	7.6 mm

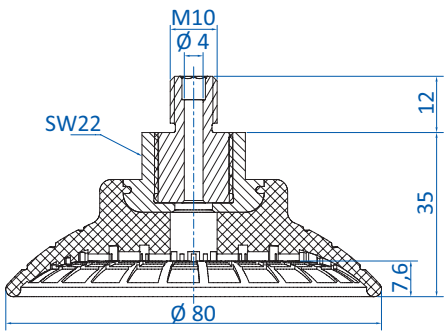
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.080.056._*	NBR (bl)	7.6 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

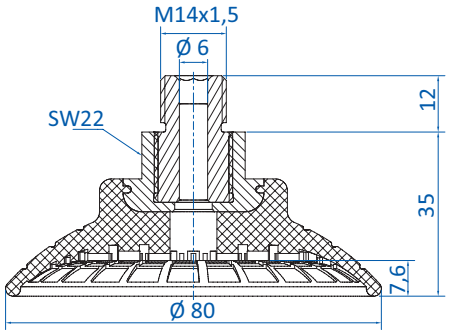
Item no.	Material	
103.080.057._*	NBR (bl)	7.6 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

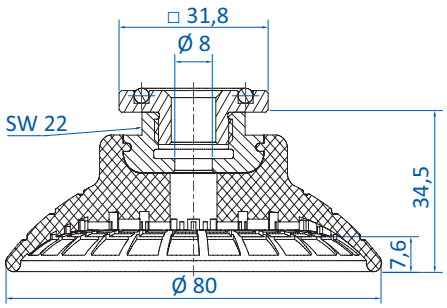
Ø 80 - 83 mm



PARTICULARLY SUITABLE FOR OILY SHEET META

Item no.	Material	
103.080.058._*	NBR (bl)	7.6 mm

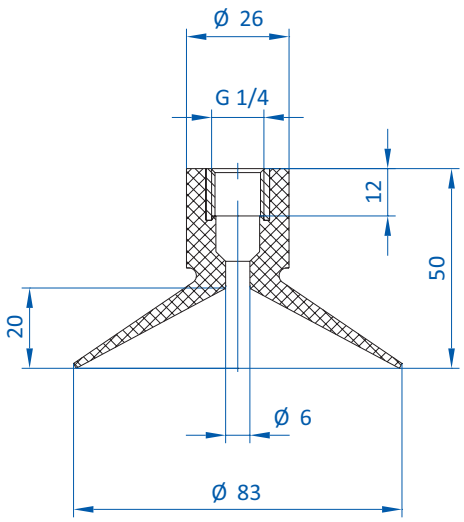
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.080.059._*	NBR (bl)	7.6 mm

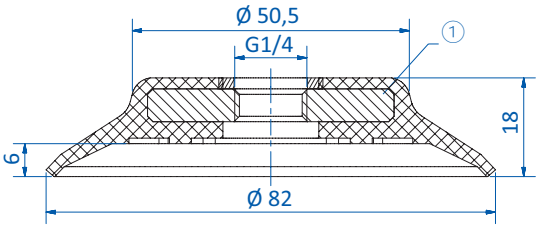
Details and additional sizes available are found on p. 38.



Item no.	Material	
120.080.052._*	SI (tr)	12 mm

This vacuum cup is also available in the following dimensions: 42 mm, 53 mm, 62 mm

	Connection	
270.090	M10-female	--
270.120	G1/4-male	--

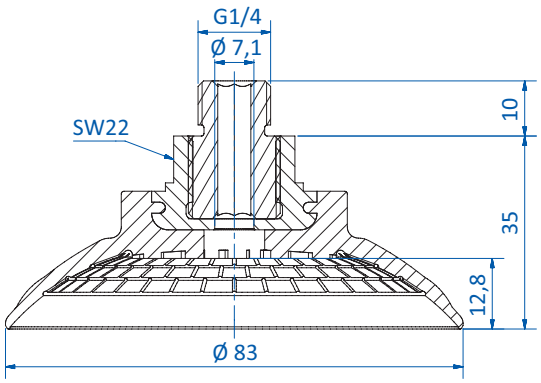


① = Aluminum

Item no.	Material	
102.080.304._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	6 mm

Details and additional sizes available are found on p. 12.

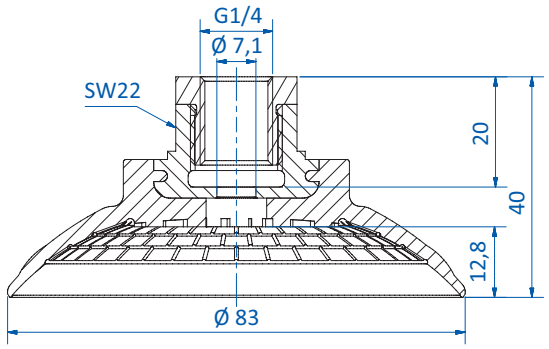
*** When ordering please add the appropriate material code to item no.**



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.080.147._*	NBR (bl)	12.8 mm

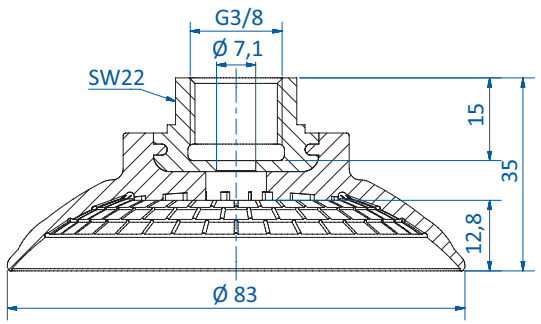
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.080.139._*	NBR (bl)	12.8 mm

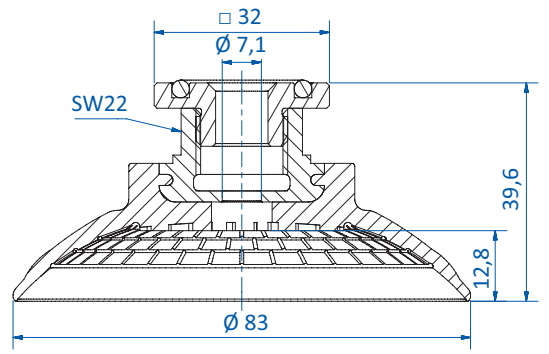
Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
103.080.090._*	NBR (bl)	12.8 mm

Details and additional sizes available are found on p. 40.



FOR STRONGLY CURVED METAL SHEETS

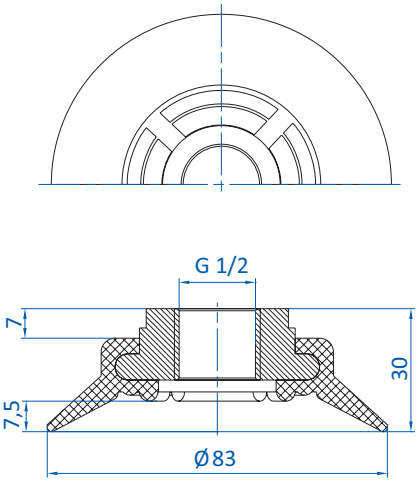
Item no.	Material	
103.080.155._*	NBR (bl)	12.8 mm

Details and additional sizes available are found on p. 40.

*** When ordering please add the appropriate material code to item no.**

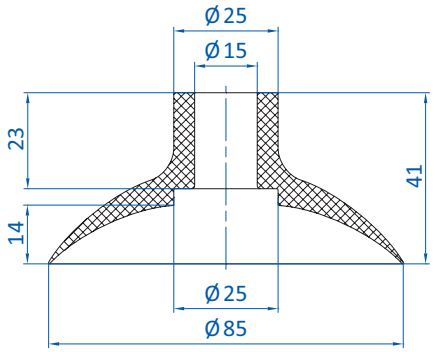
Flat vacuum cups by size

Ø 83 - 90 mm



Item no.	Material	
100.083.060._*	Vinyl (bl)	7.5 mm

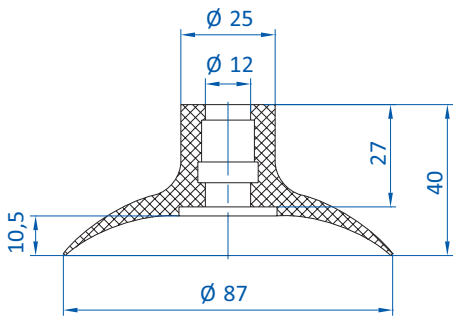
	Connection	
270.216	G1/4-male	--



Item no.	Material	
112.085.102._*	NBR (sw), SI (tr), NR (sw)	12 mm

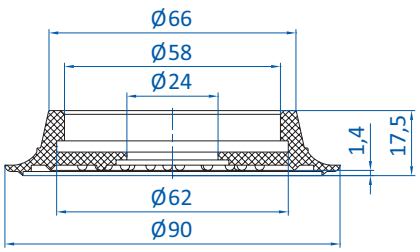
Details and additional sizes available are found on p. 31.

	Connection	
270.338	M12x1.75-female	--
270.207	G1/4-male	--



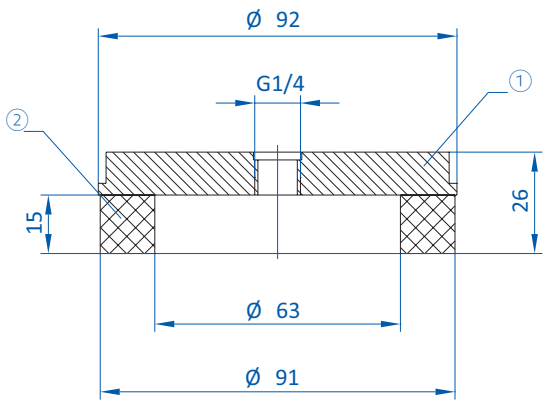
Item no.	Material	
112.087.089._*	NR (sw)	9 mm

	Connection	
270.158	G1/8-female	--
270.264	G1/4-female	--
270.286	G1/2-female	--



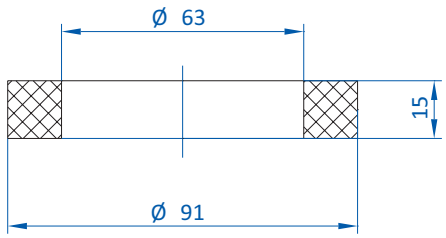
Item no.	Material	
154.090.010._*	NR (sw)	1.5 mm

*** When ordering please add the appropriate material code to item no.**



① = Aluminum ② = Sponge rubber NR

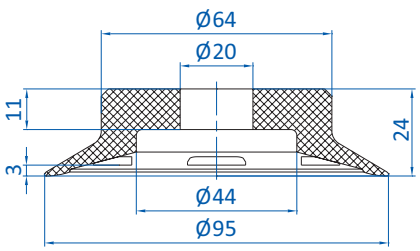
Item no.	Material	
206.092.007._*	Sponge rubber (or)	10 mm



Item no.	Material	
208.092.002._*	Sponge rubber (or)	10 mm

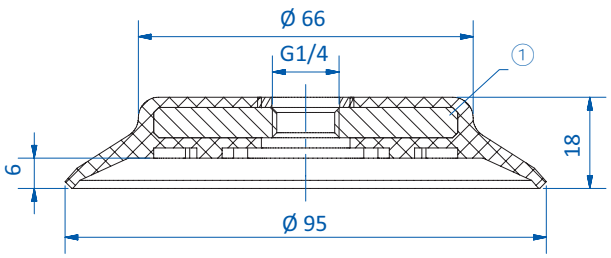
This vacuum cup is also available in the following dimensions: 64 mm

	Connection	
270.100	G1/4-male	--



Item no.	Material	
102.095.182._*	NR (bg)	2.5 mm

	Connection	
270.090	M10-female	--
270.120	G1/4-male	--



① = Aluminum

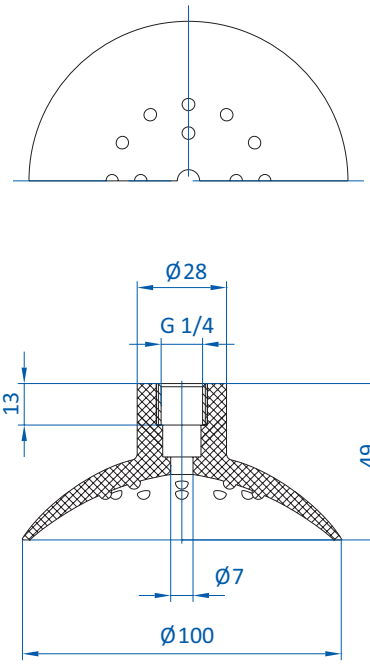
Item no.	Material	
102.095.305._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	6 mm

Details and additional sizes available are found on p. 12.

*** When ordering please add the appropriate material code to item no.**

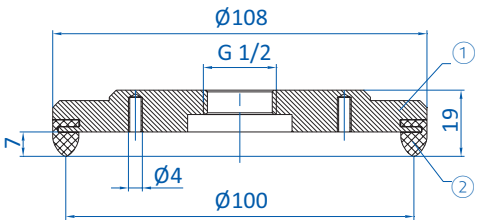
Flat vacuum cups by size

Ø 100 mm



Item no.	Material	
110.100.103._*	NBR (sw)	13 mm

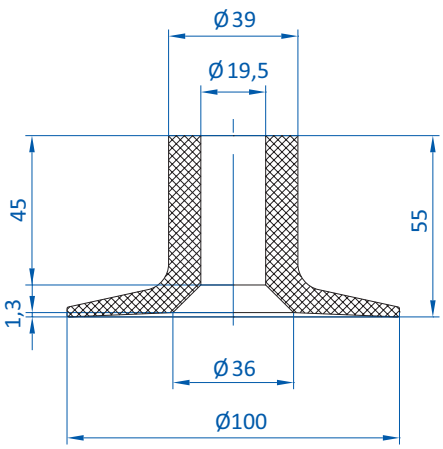
This vacuum cup is also available in the following dimensions: 43 mm, 50 mm, 62 mm, 81 mm



① = Aluminum ② = EPDM foamed

Item no.	Material	
160.107.006._*	EPDM (sw)	1 mm

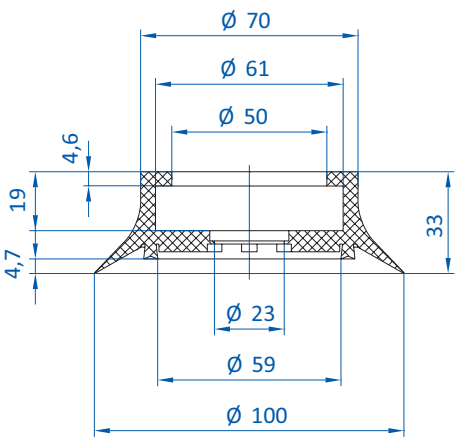
Details and additional sizes available are found on p. 48.
Notes: Foam sealing lip equalizes product unevenness



Item no.	Material	
102.100.100._*	NR (bg)	0.5 mm

FLEXIBLE LIP

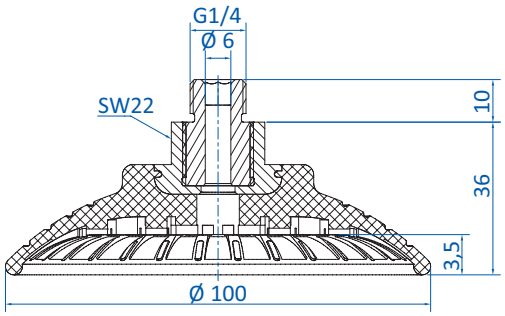
	Connection	
270.180	G1/4-female	--



Item no.	Material	
102.100.269._*	SBR (br), NBR (gr), NR (br)	5 mm

Details and additional sizes available are found on p. 42.

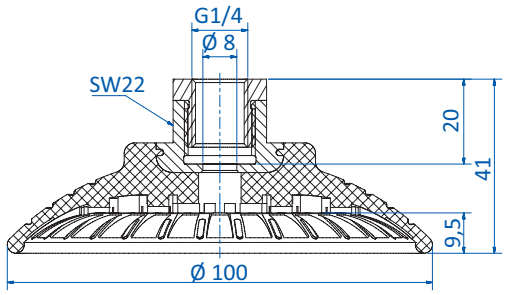
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.100.060._*	NBR (bl)	9.5 mm

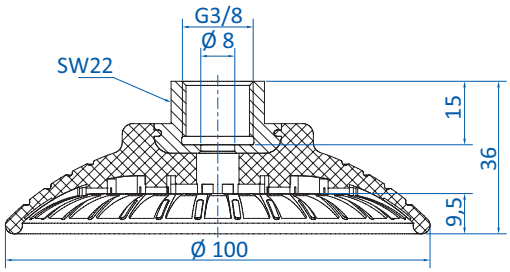
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.100.061._*	NBR (bl)	9.5 mm

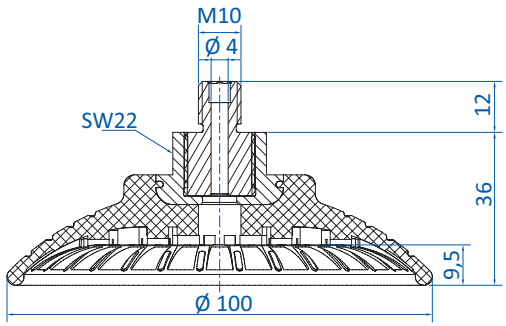
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.100.062._*	NBR (bl)	9.5 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

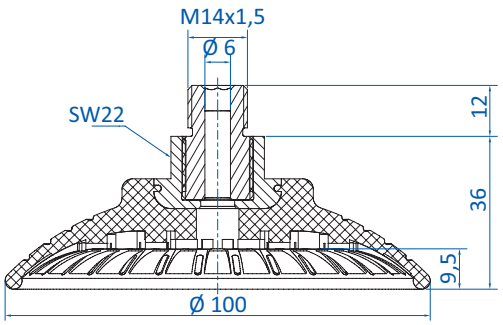
Item no.	Material	
103.100.063._*	NBR (bl)	9.5 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

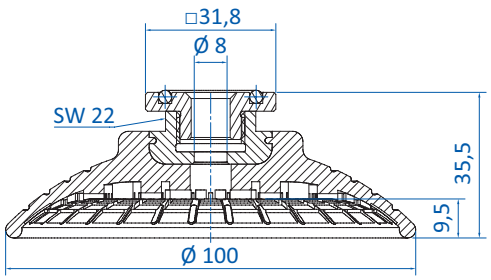
Ø 100 - 105 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.100.064._*	NBR (bl)	9.5 mm

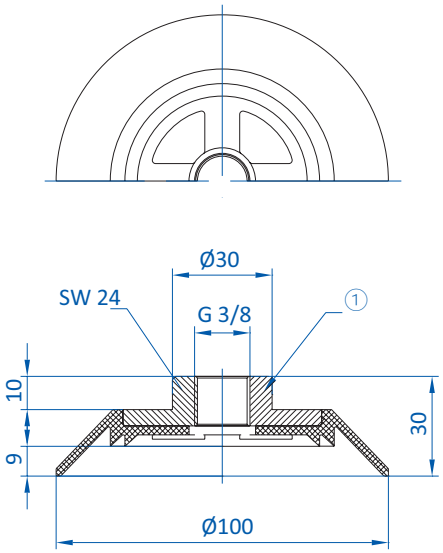
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.100.065._*	NBR (bl)	9.5 mm

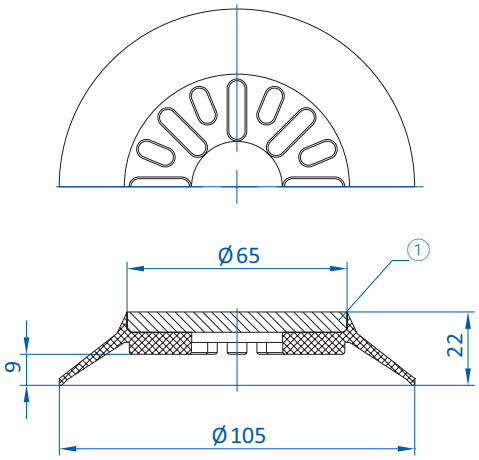
Details and additional sizes available are found on p. 38.



① = Aluminum

Item no.	Material	
150.100.034._*	NBR (sw), SI (tr), NR (w)	9 mm

Details and additional sizes available are found on p. 46.

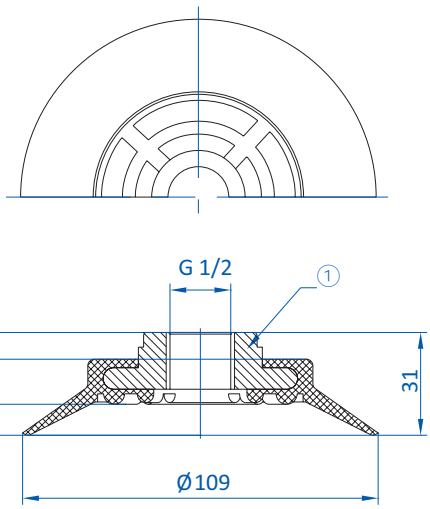


① = Steel

Item no.	Material	
152.105.094._*	NBR (gr)	9 mm

Ordering notes Customized drilling patterns on request

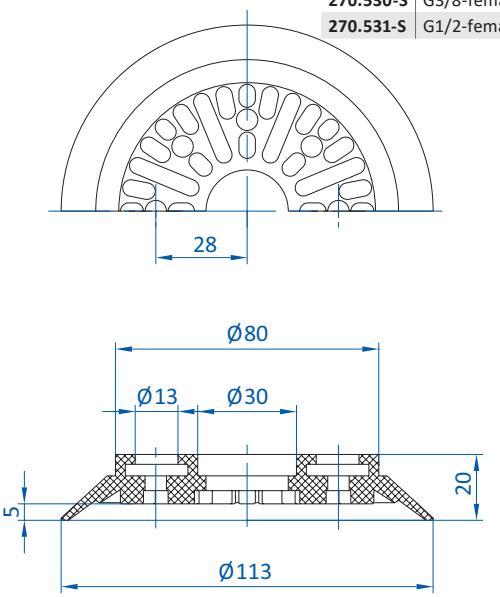
*** When ordering please add the appropriate material code to item no.**



① = Aluminum

Item no.	Material	
100.109.059._*	Vinyl (bl)	9.5 mm

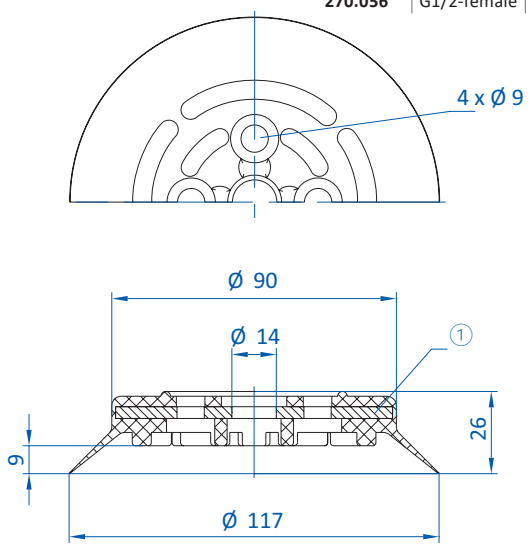
	Connection	
270.530-S	G3/8-female	--
270.531-S	G1/2-female	--



Item no.	Material	
154.113.028._*	SI (tr), SI-LE (tr), CR (sw)	5 mm

Details and additional sizes available are found on p. 21.

	Connection	
270.056	G1/2-female	--



① = Steel

Item no.	Material	
154.120.018._*	NBR (sw), SI (tr), SI-LE (tr)	7 mm

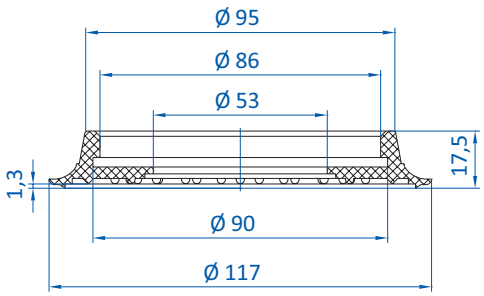
Details and additional sizes available are found on p. 12.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 117 - 125 mm

	Connection	
270.164	G1/8-female	--
270.224	G1/4-female	--
270.167	G3/8-female	--
270.266	G1/2-female	--

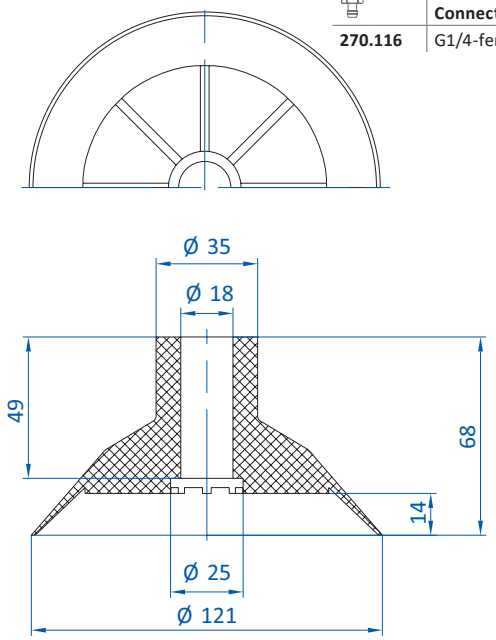


Item no. 154.120.017._*

Material Sl (tr), NR (sw), Vinyl (bl)

1.5 mm

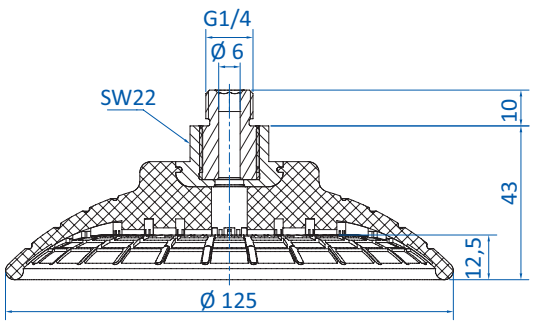
	Connection	
270.116	G1/4-female	--



Item no. 108.120.006._*

Material NR (sw)

14 mm



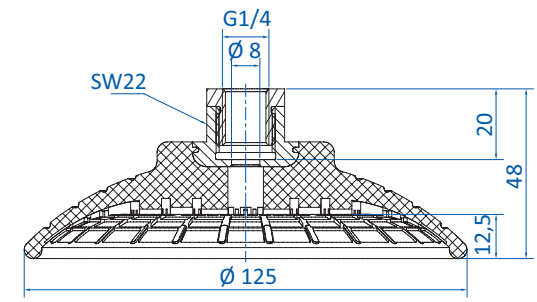
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 103.125.066._*

Material NBR (bl)

12.5 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

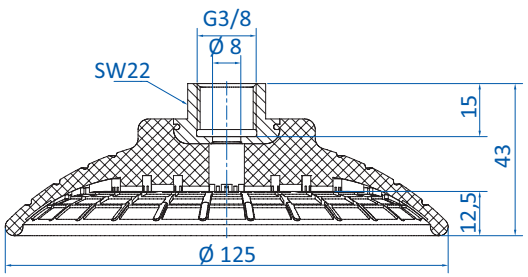
Item no. 103.125.067._*

Material NBR (bl)

12.5 mm

Details and additional sizes available are found on p. 38.

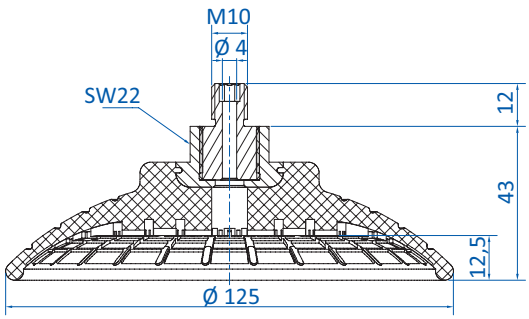
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.125.068._*	NBR (bl)	12.5 mm

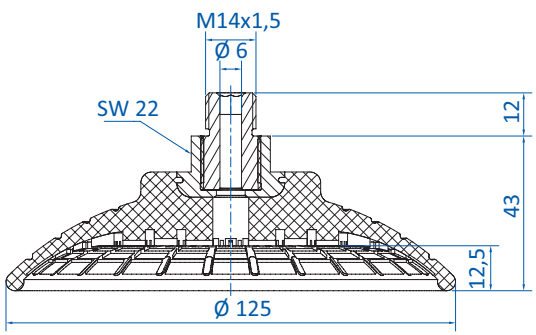
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.125.069._*	NBR (bl)	12.5 mm

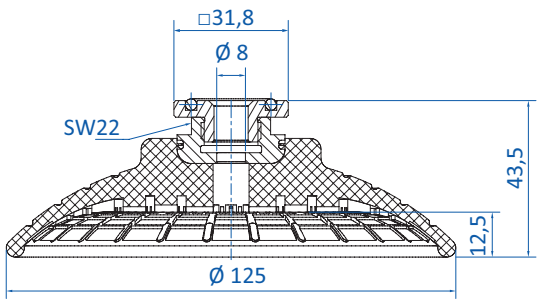
Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
103.125.070._*	NBR (bl)	12.5 mm

Details and additional sizes available are found on p. 38.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

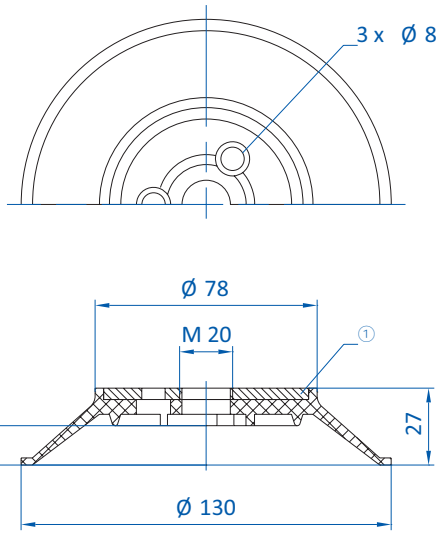
Item no.	Material	
103.125.071._*	NBR (bl)	12.5 mm

Details and additional sizes available are found on p. 38.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

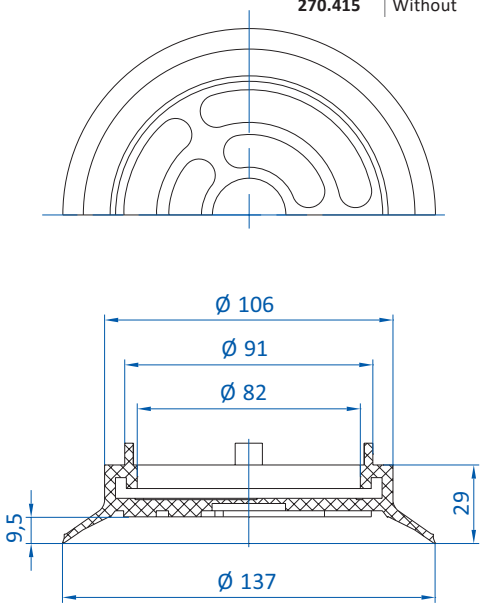
Ø 130 - 137 mm



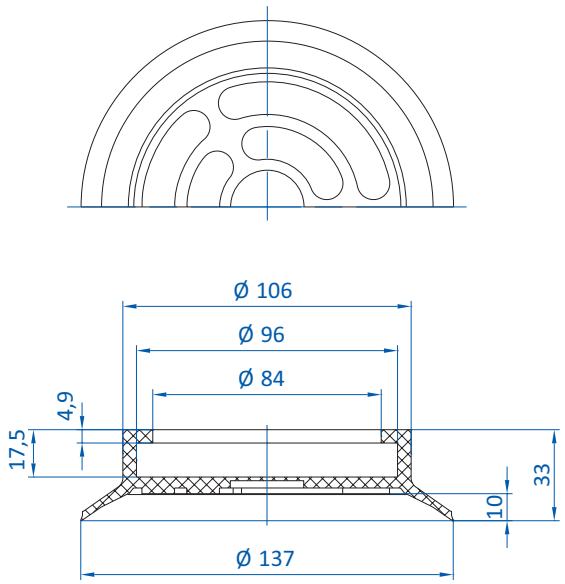
① = Steel

Item no.	Material	
100.130.058._*	NR (sw)	14 mm

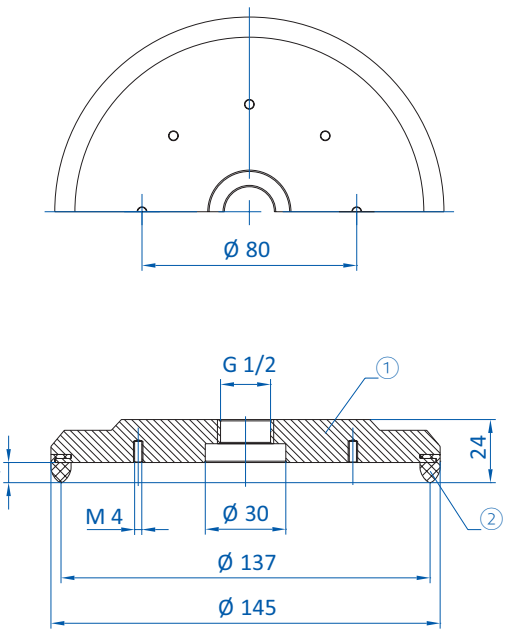
	Connection	
270.415	Without	--



Item no.	Material	
102.130.258._*	SBR (sw)	10 mm



Item no.	Material	
102.135.256._*	NBR (gr), SBR (sw)	11 mm

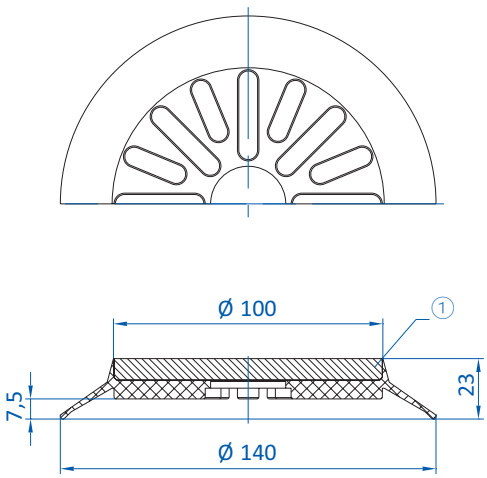


① = Aluminum ② = EPDM foamed

Item no.	Material	
160.145.014._*	EPDM (sw)	1 mm

Details and additional sizes available are found on p. 48.
Notes: Foam sealing lip equalizes product unevenness

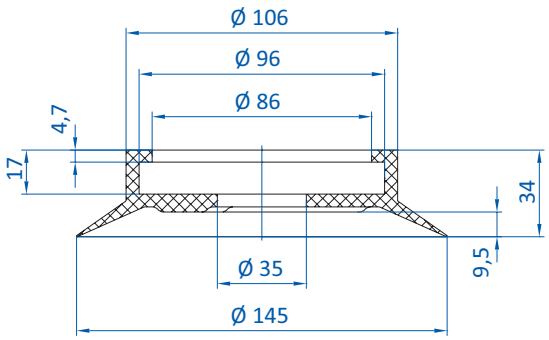
*** When ordering please add the appropriate material code to item no.**



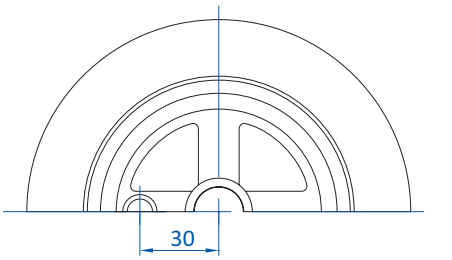
① = Steel

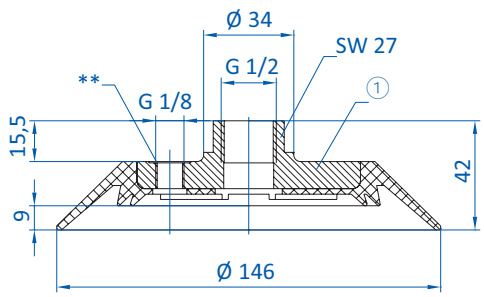
Item no.	Material	
152.140.096._*	NBR (gr)	8 mm

Ordering notes Customized drilling patterns on request



Item no.	Material	
102.145.257._*	NBR (gr), SBR (sw)	9 mm



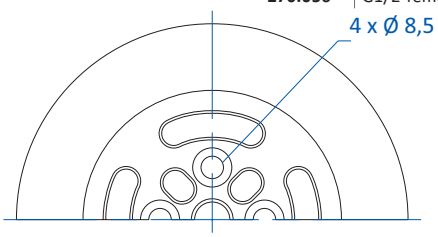


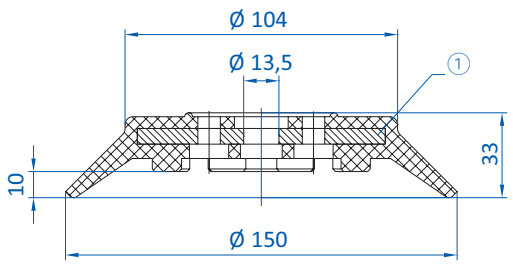
① = Aluminum ** = Vacuum connection at the side possible

Item no.	Material	
150.150.010._*	SI (gr), CR (gr)	9 mm

Details and additional sizes available are found on p. 46.

	Connection	
270.056	G1/2-female	--





① = Steel

Item no.	Material	
154.150.020._*	NBR (sw), SI (tr), SI-LE (tr)	9 mm

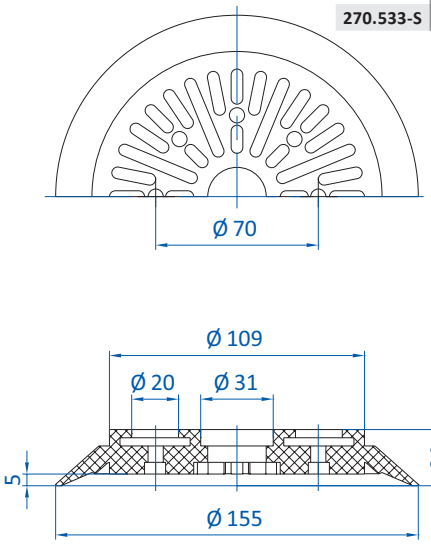
Details and additional sizes available are found on p. 12.

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

Ø 155 - 160 mm

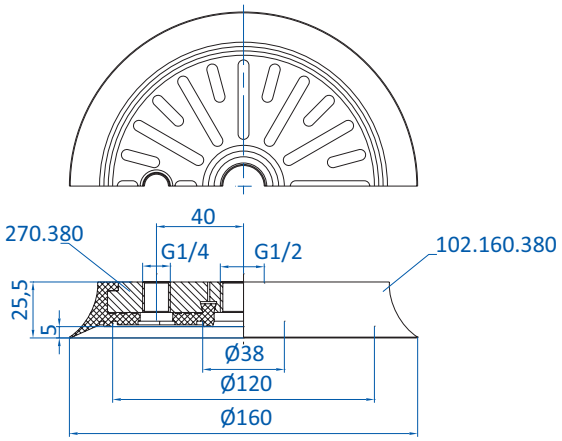
	Connection	
270.532-S	G1/2-female	--
270.533-S	G3/4-female	--



Item no.	Material	
154.155.026._*	CR (sw)	5 mm

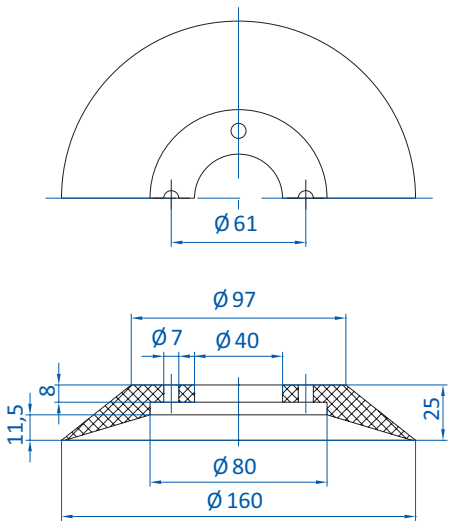
Details and additional sizes available are found on p. 21.

	Connection	
270.380	G1/2-female	--

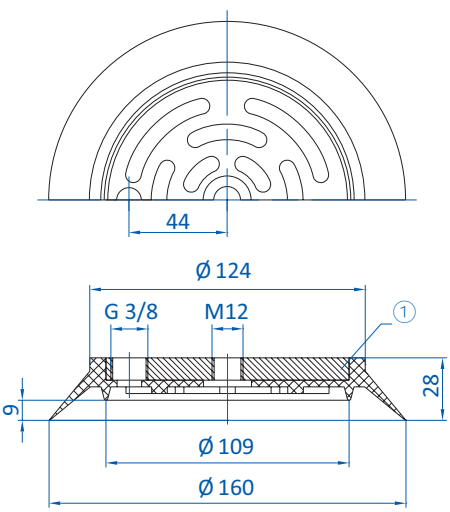


Item no.	Material	
102.160.380._*	NR (bg)	6 mm

Ordering notes Elastomer seal and carrier plate 270.380 must be ordered separately



Item no.	Material	
102.160.031._*	SI (r), NR (gr)	10 mm



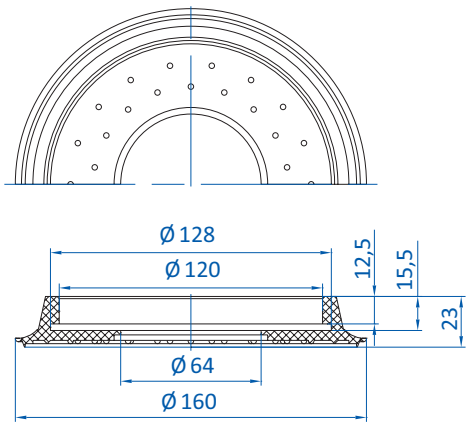
① = Steel

Item no.	Material	
152.160.127.9	CR (sw)	9 mm

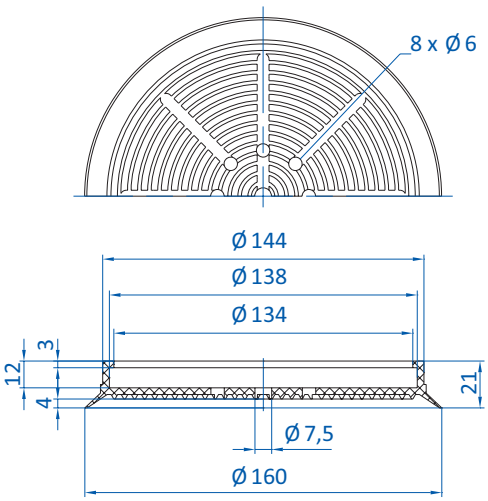
Details and additional sizes available are found on p. 49.

*** When ordering please add the appropriate material code to item no.**

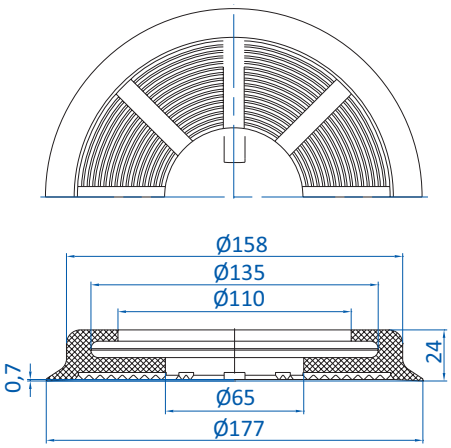
	Connection	
270.171	G1/4-female	--
270.173	G3/8-female	--
270.268	G1/2-female	--



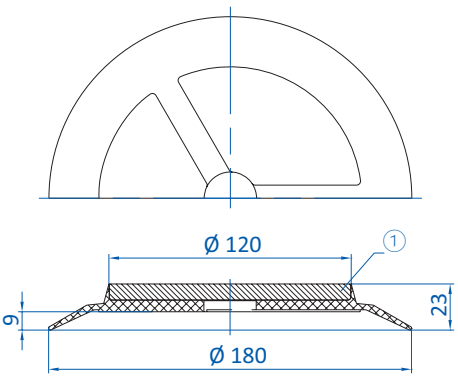
Item no.	Material	
154.160.024._*	SI (tr), NR (sw)	3 mm



Item no.	Material	
154.160.049._*	NBR (gr), SI (tr)	4.7 mm



Item no.	Material	
154.177.053._*	SI (tr), SI-LE (tr)	0.5 mm



① = Steel

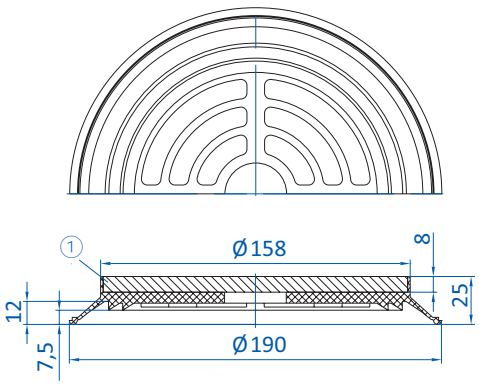
Item no.	Material	
152.180.067._*	NBR (gr)	9 mm

Ordering notes Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**

Flat vacuum cups by size

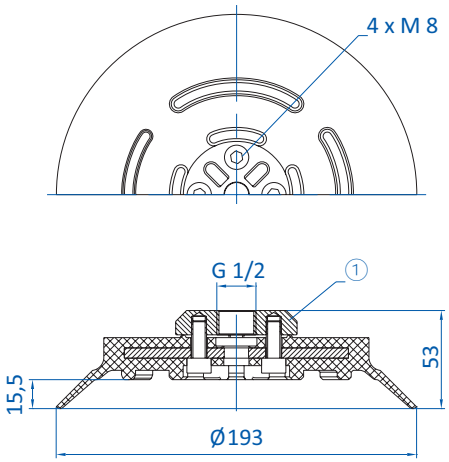
Ø 190 - 200 mm



① = Steel

Item no.	Material	
152.190.080._*	SBR (br), NBR (gr)	10 mm

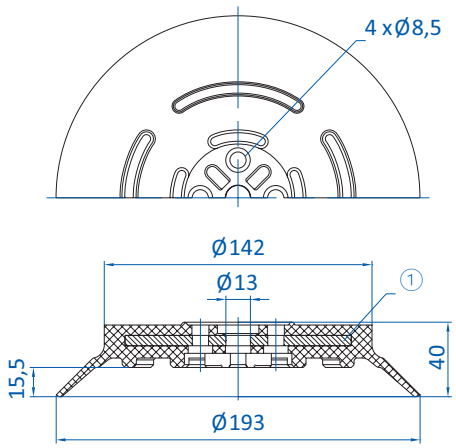
Ordering notes Customized drilling patterns on request



① = Aluminum

Item no.	Material	
152.191.025._*	NBR (sw), SI (tr), PU (bl)	13 mm

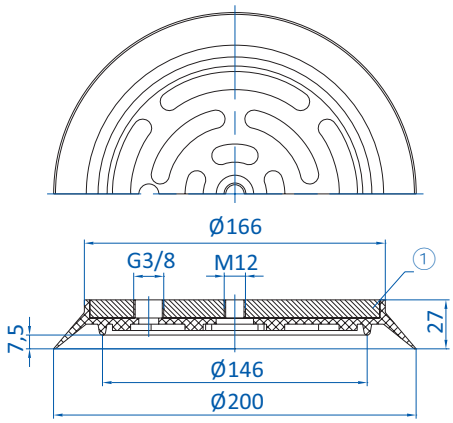
	Connection	
270.056	G1/2-female	--



① = Steel

Item no.	Material	
154.191.025._*	NBR (sw), SI (tr), SI-LE (tr), PU (bl)	13 mm

Details and additional sizes available are found on p. 12.



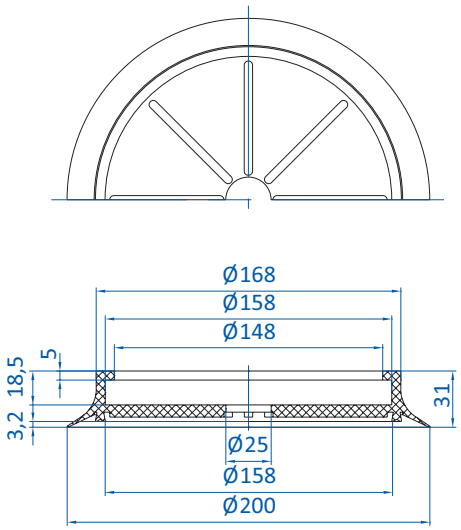
① = Steel

Item no.	Material	
152.200.128.1	CR (sw)	9 mm

Details and additional sizes available are found on p. 49.

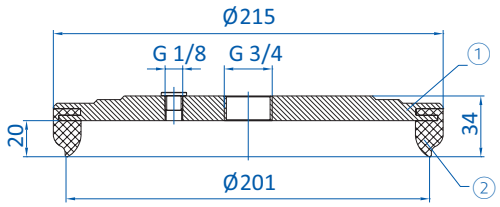
*** When ordering please add the appropriate material code to item no.**

	Connection	
270.335	G1/2-female	--



Item no.	Material	
102.200.350._*	NR (w)	5 mm

Details and additional sizes available are found on p. 42.

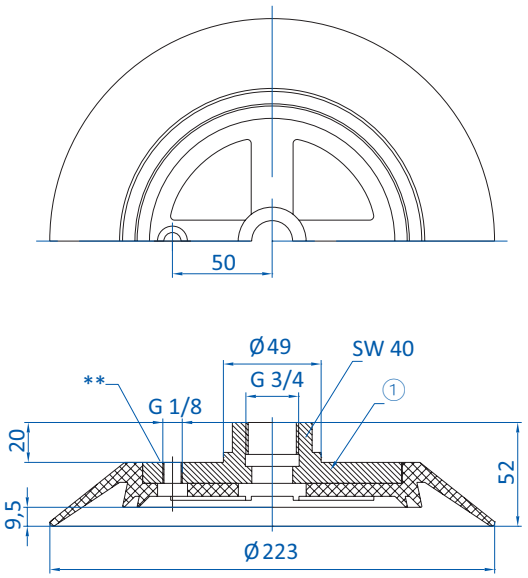


① = Aluminum ② = EPDM foamed

Item no.	Material	
160.215.009._*	EPDM (sw)	2.5 mm

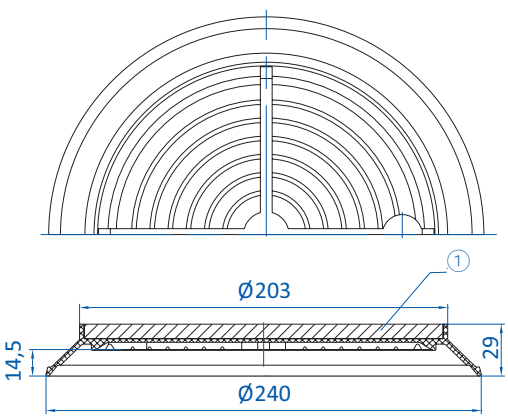
Details and additional sizes available are found on p. 48.
Notes: Foam sealing lip equalizes product unevenness

*** When ordering please add the appropriate material code to item no.**



① = Aluminum ** = Vacuum connection at the side possible

Item no.	Material		
150.225.018._*	SI (gr), CR (gr)	9.5 mm	Details and additional sizes available are found on p. 46.

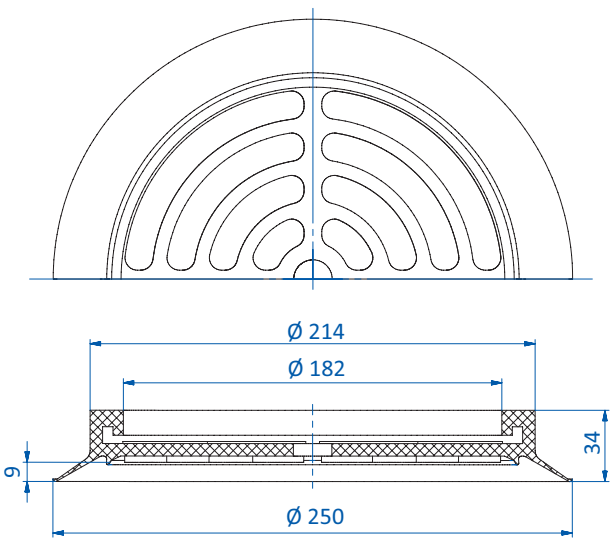


① = Steel

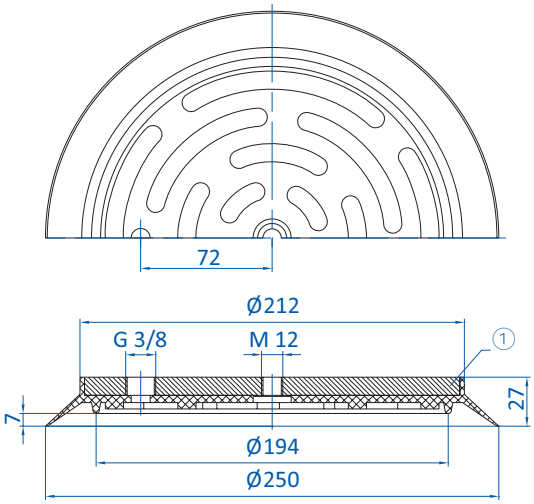
Item no.	Material		
152.240.046._*	NBR (gr), SBR (sw)	14 mm	**Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**

	Connection	
270.236	G1/2-female	--



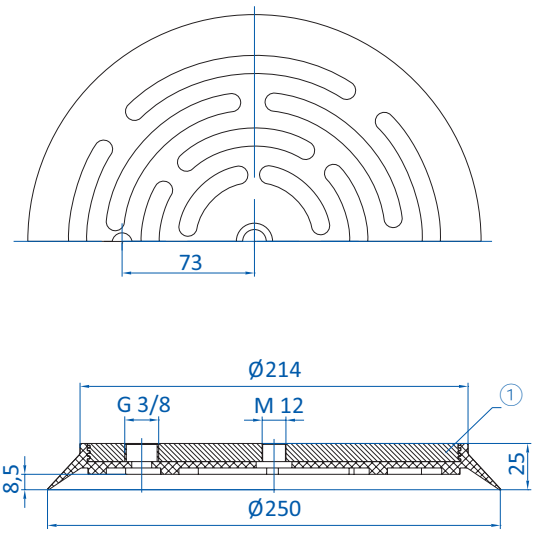
Item no.	Material		
102.250.261._*	SBR (sw)	8.5 mm	



① = Steel

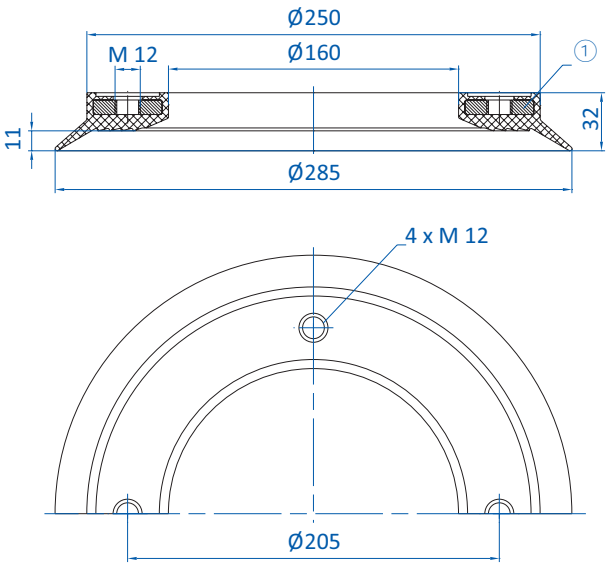
Item no.	Material		
152.250.129.1	CR (sw)	9 mm	Details and additional sizes available are found on p. 49.

*** When ordering please add the appropriate material code to item no.**



① = Steel

Item no.	Material		
152.250.031._*	NBR (sw)	11 mm	

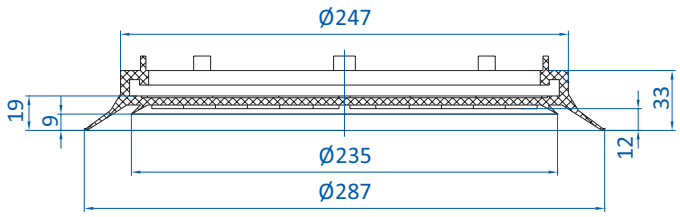


① = Ring made of vulcanized steel

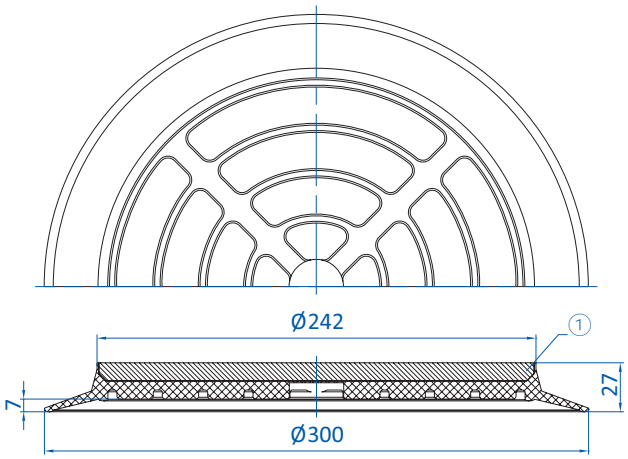
Item no.	Material		
152.285.099.1	NBR (sw)	11 mm	Details and additional sizes available are found on p. 50.

*** When ordering please add the appropriate material code to item no.**

	Connection	
270.535	Without	--



Item no.	Material		
102.290.262._*	SBR (sw)	15 mm	



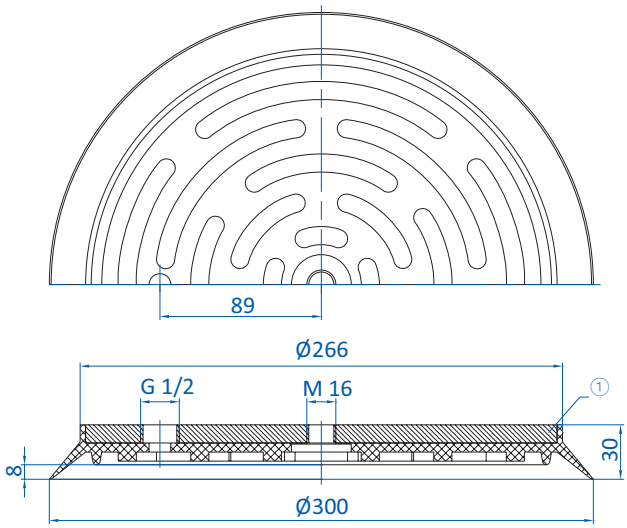
① = Steel

Item no.	Material		
152.300.098._*	NBR (gr)	7 mm	**Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**

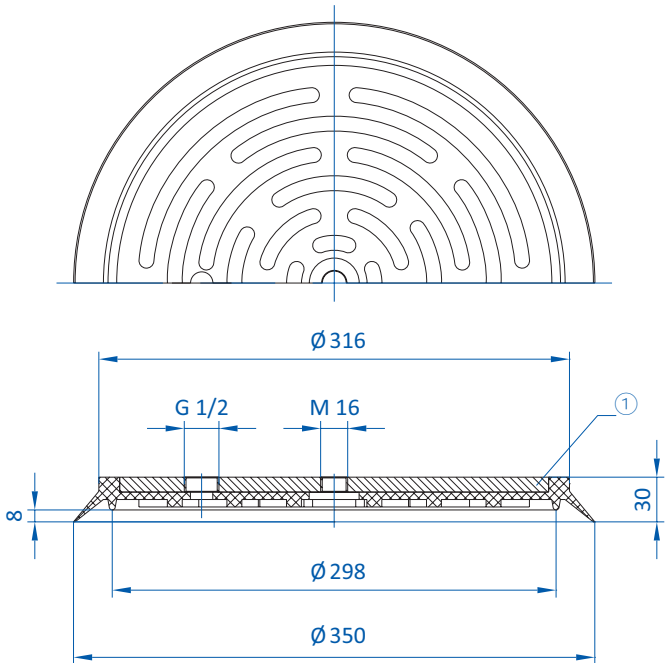
Flat vacuum cups by size

Ø 300 - 350 mm



① = Steel

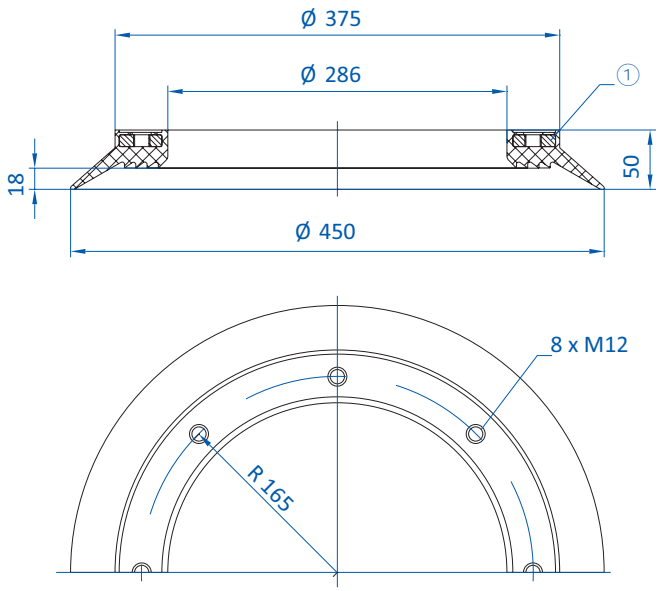
Item no.	Material		
152.300.130.1	NBR (sw)	12 mm	Details and additional sizes available are found on p. 49.



① = Steel

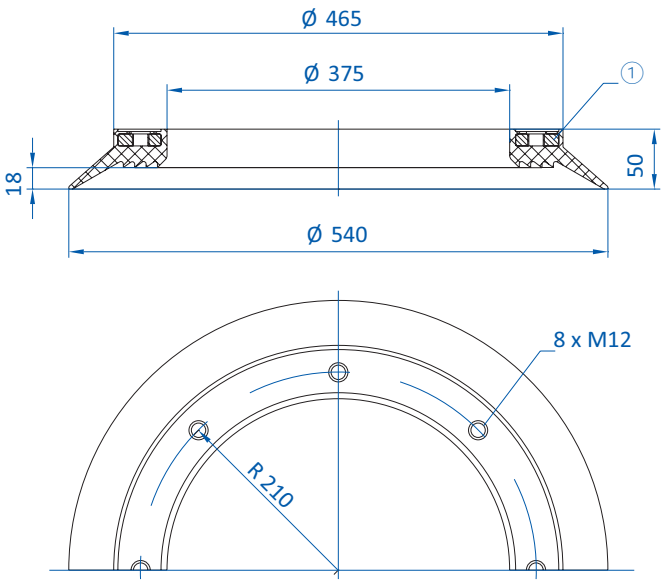
Item no.	Material		
152.350.131.1	NBR (sw)	13 mm	Details and additional sizes available are found on p. 49.

*** When ordering please add the appropriate material code to item no.**



① = Ring made of vulcanized steel

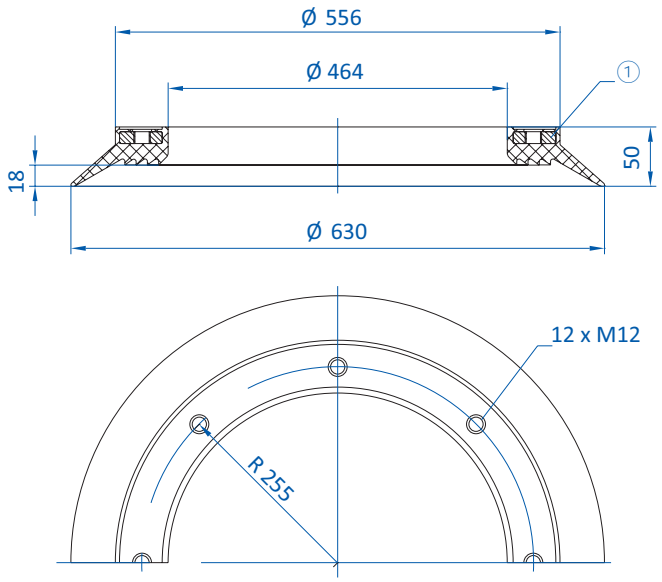
Item no.	Material		
152.450.105.1	NBR (sw)	18 mm	Details and additional sizes available are found on p. 50.



① = Ring made of vulcanized steel

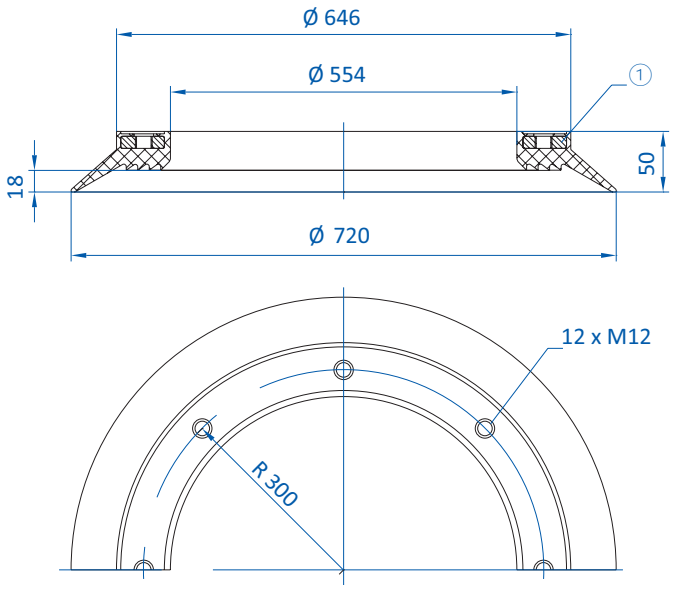
Item no.	Material		
152.540.106.1	NBR (sw)	18 mm	Details and additional sizes available are found on p. 50.

*** When ordering please add the appropriate material code to item no.**



① = Ring made of vulcanized steel

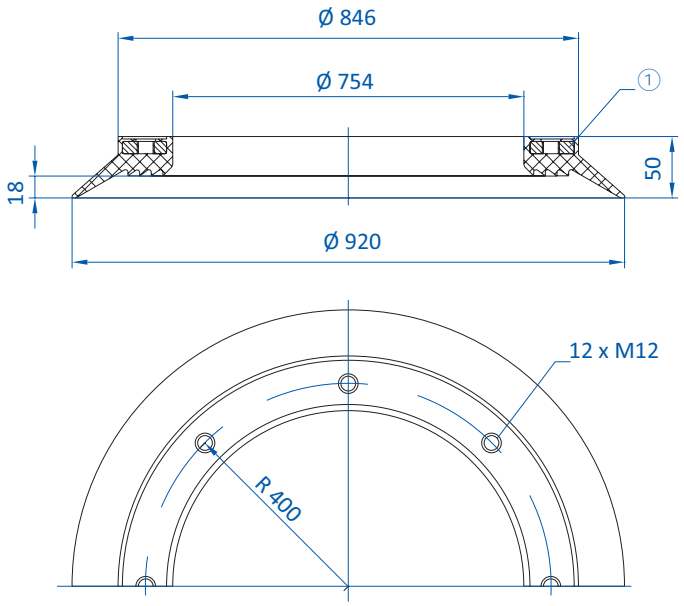
Item no.	Material		
152.630.107.1	NBR (sw)	18 mm	Details and additional sizes available are found on p. 50.



① = Ring made of vulcanized steel

Item no.	Material		
152.720.108.1	NBR (sw)	18 mm	Details and additional sizes available are found on p. 50.

*** When ordering please add the appropriate material code to item no.**



Item no.	Material		
152.920.109.1	NBR (sw)	18 mm	Details and additional sizes available are found on p. 50.

*** When ordering please add the appropriate material code to item no.**

Notes:

Bellows vacuum cups series 147

All bellows vacuum cups by size

up to Ø 10 mm 223

Ø 11 - 20 mm 231

Ø 21 - 30 mm 249

Ø 31 - 40 mm 260

Ø 41 - 60 mm 272

Ø 61 - 80 mm 286

Ø 81 - 150 mm 293

larger Ø 150 mm 302

Notizen:

Bellows vacuum cups, universal, 1.5 folds – SBU 1



Product notes

Universal bellows vacuum cups with 1.5 folds for handling sensitive or uneven products.
Connection up to Ø 75 mm by means of plug-in nipple, from Ø 88 mm with vulcanized bracket.

Advantage

> Bellows compensate for differences in height and enable good adaptation to curved or uneven product surfaces
> Soft attachment for sensitive products
> Cost-effective replacement of worn seals

Technical data

Item no.	Model		Number of folds	Material / Color	Connection thread
23.005.181._*	SBU 1-5	2	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.011.008._*	SBU 1-11	4.5	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.013.120._*	SBU 1-13	4	1.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
23.016.016._*	SBU 1-16	6	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.019.119._*	SBU 1-19	4	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.022.028._*	SBU 1-22	8	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.025.137._*	SBU 1-25	9	1.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
23.033.039._*	SBU 1-33	12	1.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
23.043.096._*	SBU 1-43	12	1.5	NBR (sw), SI (tr), NR (gr)	--
23.053.033._*	SBU 1-53	11	1.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
23.075.151._*	SBU 1-75	20	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
22.088.158._*	SBU 1-88	23	1.5	NBR (sw), SI (tr), SI-LE (tr)	G1/4-male
22.088.159._*	SBU 1-88	23	1.5	NBR (sw), SI (tr), SI-LE (tr)	G1/4-female

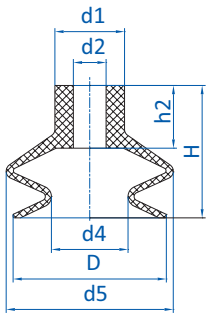
Continued on the next page

*** When ordering please add the appropriate material code to item no.**

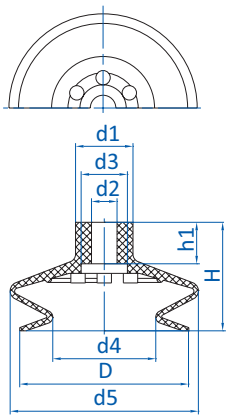
Accessories

Item no.	Suitable fittings								Suitable spring leveler (Snap-in)		
	M5-male	M5-female	M6-male	M10-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Spring leveler		Hose outside Ø
23.005.181._*	270.195	--	--	--	--	--	--	--	--	--	--
23.011.008._*	270.013	270.005	270.103	--	270.003	270.015	--	--	50.037	25	
23.013.120._*	270.013	270.005	270.103	--	270.003	270.015	--	--	50.037	25	
23.016.016._*	270.013	270.005	270.103	--	270.003	270.015	--	--	50.037	25	
23.019.119._*	270.013	270.005	270.103	--	270.003	270.015	270.194	--	50.037	25	
23.022.028._*	270.013	270.005	270.103	--	270.003	270.015	270.194	--	50.037	25	
23.025.137._*	270.013	270.005	270.103	--	270.003	270.015	270.194	--	50.037	25	
23.033.039._*	--	--	270.315	--	270.196	270.114	270.190	270.192	--	--	--
23.043.096._*	--	--	270.315	--	270.196	270.114	270.190	270.192	--	--	--
23.053.033._*	--	--	270.315	--	270.196	270.114	270.190	270.192	--	--	--
23.075.151._*	--	--	--	270.177	--	--	270.451	270.452	--	--	--
22.088.158._*	--	--	--	--	--	--	--	--	--	--	--
22.088.159._*	--	--	--	--	--	--	--	--	--	--	--

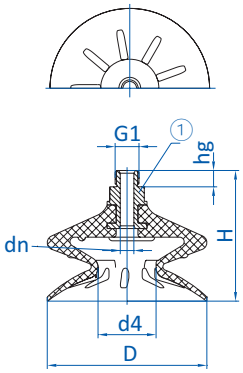
Dimensions



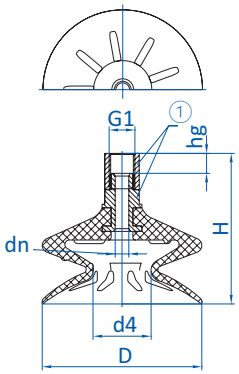
Drawing A



Drawing B



Drawing C



Drawing D

① = Aluminum fitting, vulcanized

*** When ordering please add the appropriate material code to item no.**



Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	hg [mm]
23.005.181._*	A	5	3	1.5	--	2	5	--	--	13	--	9.5	--
23.011.008._*	A	12	10	5	--	4.5	12	--	--	16	--	9	--
23.013.120._*	A	13.5	10	3.8	--	5	13.5	--	--	16	--	9	--
23.016.016._*	A	16	10	5	--	8	17	--	--	19	--	9	--
23.019.119._*	A	18.5	11.5	4.5	--	11.2	19.7	--	--	15	--	8.7	--
23.022.028._*	A	22	10	4.7	--	11	24	--	--	19	--	9	--
23.025.137._*	A	24	10	4	--	10	24	--	--	23	--	9	--
23.033.039._*	B	33.5	18	8	16.5	17	36	--	--	28	13	--	--
23.043.096._*	B	43	18	8	14.5	23	45	--	--	27	12	--	--
23.053.033._*	B	53	18	8	14.5	32	59	--	--	34	13	--	--
23.075.151._*	B	75	27	11	--	43	70.5	--	--	52	--	22	--
22.088.158._*	C	88	--	--	--	32	88	7.5	G1/4	72	--	--	9
22.088.159._*	D	88	--	--	--	32	88	7.5	G1/4	83	--	--	11

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, universal, 1.5 folds – SKT-B1



Product notes

Universal bellows vacuum cup with 1.5 folds for handling delicate or uneven products.
Connection by means of plug nipple.

Advantage

> Bellows compensate for differences in height and enable a gentle touchdown on sensitive product surfaces
> Soft sealing lip adapts to uneven surfaces
> Cost-effective replacement of worn seals

Technical data

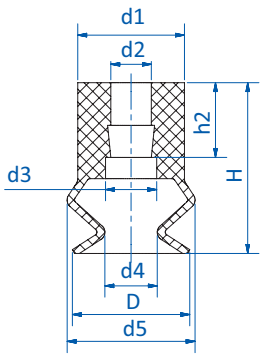
Item no.	Model		Number of folds	Material / Color
23.005.286._*	SKT-B1-5	2	1.5	NBR (sw), SI (tr)
23.011.234._*	SKT-B1-11	5.5	1.5	NBR (sw), SI (tr)
23.014.235._*	SKT-B1-14	5	1.5	NBR (sw), SI (tr)
23.016.236._*	SKT-B1-16	8.5	1.5	NBR (sw), SI (tr)
23.018.237._*	SKT-B1-18	5	1.5	NBR (sw), SI (tr)
23.020.238._*	SKT-B1-20	5	1.5	NBR (sw), SI (tr)
23.022.239._*	SKT-B1-22	8	1.5	NBR (sw), SI (tr)
23.025.240._*	SKT-B1-25	12	1.5	NBR (sw), SI (tr)
23.033.241._*	SKT-B1-33	11	1.5	NBR (sw), SI (tr)
23.043.242._*	SKT-B1-43	12.5	1.5	NBR (sw), SI (tr), SI-LE (tr)
23.053.243._*	SKT-B1-53	15	1.5	NBR (sw), SI (tr), SI-LE (tr)
23.063.244._*	SKT-B1-63	15	1.5	NBR (sw), SI (tr)

Accessories

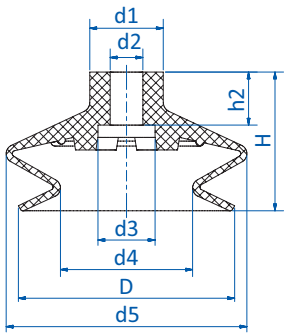
	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.286._*	270.772	--	--	--	--	--	--
23.011.234._*	270.772	270.347	270.104	270.033	270.478	--	--
23.014.235._*	270.772	270.347	270.104	270.033	270.478	--	--
23.016.236._*	270.772	270.347	270.104	270.033	270.478	--	--
23.018.237._*	270.772	270.347	270.104	270.033	270.478	--	--
23.020.238._*	270.772	270.347	270.104	270.033	270.478	--	--
23.022.239._*	270.772	270.347	270.104	270.033	270.478	--	--
23.025.240._*	270.772	270.347	270.104	270.033	270.478	--	--
23.033.241._*	--	--	270.315	270.196	270.114	270.190	270.192
23.043.242._*	--	--	270.315	270.196	270.114	270.190	270.192
23.053.243._*	--	--	270.315	270.196	270.114	270.190	270.192
23.063.244._*	--	--	270.315	270.196	270.114	270.190	270.192

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	H [mm]	h2 [mm]
23.005.286._*	A	5.5	7	3.8	--	2.5	6	11	7
23.011.234._*	A	11	10	3.8	4.8	4.9	12	16	7
23.014.235._*	A	14	10	3.8	4.8	4.8	14	16	7
23.016.236._*	A	16	10	3.8	4.8	8.2	17.5	19	7
23.018.237._*	A	18	10	3.8	4.8	7.8	18	16.5	7
23.020.238._*	A	19	10	3.8	4.8	10.6	20	16	7
23.022.239._*	A	22	10	3.8	4.8	11.4	24	19	7
23.025.240._*	A	24	10	3.8	4.8	9.2	25	23	7
23.033.241._*	B	33	18	8	16	17	36	27.5	13
23.043.242._*	B	43	18	8	14	22.5	46	28	13
23.053.243._*	B	53	18	8	14	32.4	59	34	13
23.063.244._*	B	63	18	8	14	42.5	67	34	13

*** When ordering please add the appropriate material code to item no.**

High-temperature Thermalon® bellows cups, 1.5 folds – SKT-B1



UP TO 160 °C (320 °F) & MINIMUM MARKING

Product notes

Bellows vacuum cups for uneven surfaces especially suited for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces

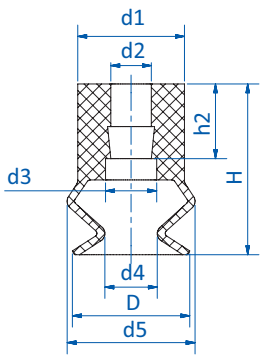
Technical data

Item no.	Model		Number of folds	Material / Color	Short-term working temperature < 30 Sec [°C (°F)]
23.005.286.19	SKT-B1-5	2	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.011.234.19	SKT-B1-11	5.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.014.235.19	SKT-B1-14	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.016.236.19	SKT-B1-16	8.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.018.237.19	SKT-B1-18	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.020.238.19	SKT-B1-20	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.022.239.19	SKT-B1-22	8	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.025.240.19	SKT-B1-25	12	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.033.241.19	SKT-B1-33	11	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.043.242.19	SKT-B1-43	12.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.053.243.19	SKT-B1-53	15	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.063.244.19	SKT-B1-63	15	1.5	Thermalon® (bl)	0 - 160 (32 - 320)

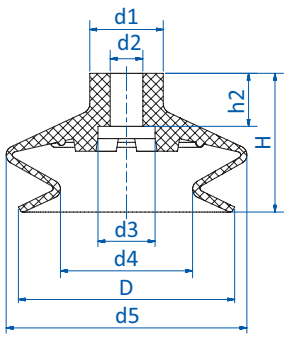
Accessories

Item no.	Suitable fittings						
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.286.19	270.772	--	--	--	--	--	--
23.011.234.19	270.772	270.347	270.104	270.033	270.478	--	--
23.014.235.19	270.772	270.347	270.104	270.033	270.478	--	--
23.016.236.19	270.772	270.347	270.104	270.033	270.478	--	--
23.018.237.19	270.772	270.347	270.104	270.033	270.478	--	--
23.020.238.19	270.772	270.347	270.104	270.033	270.478	--	--
23.022.239.19	270.772	270.347	270.104	270.033	270.478	--	--
23.025.240.19	270.772	270.347	270.104	270.033	270.478	--	--
23.033.241.19	--	--	270.315	270.196	270.114	270.190	270.192
23.043.242.19	--	--	270.315	270.196	270.114	270.190	270.192
23.053.243.19	--	--	270.315	270.196	270.114	270.190	270.192
23.063.244.19	--	--	270.315	270.196	270.114	270.190	270.192

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	H [mm]	h2 [mm]
23.005.286.19	A	5.5	7	3.8	--	2.5	6	11	7
23.011.234.19	A	11	10	3.8	4.8	4.9	12	16	7
23.014.235.19	A	14	10	3.8	4.8	4.8	14	16	7
23.016.236.19	A	16	10	3.8	4.8	8.2	17.5	19	7
23.018.237.19	A	18	10	3.8	4.8	7.8	18	16.5	7
23.020.238.19	A	19	10	3.8	4.8	10.6	20	16	7
23.022.239.19	A	22	10	3.8	4.8	11.4	24	19	7
23.025.240.19	A	24	10	3.8	4.8	9.2	25	23	7
23.033.241.19	B	33	18	8	16	17	36	27.5	13
23.043.242.19	B	43	18	8	14	22.5	46	28	13
23.053.243.19	B	53	18	8	14	32.4	59	34	13
23.063.244.19	B	63	18	8	14	42.5	67	34	13

High-temperature Thermalon®-flocked bellows cups, 1.5 folds – SKT-B1





Product notes

Bellows vacuum cup made of proven Thermalon® with additional flock coating of the contact surfaces for the highest demands on non-marking gripping.

Ideally suited for uneven surfaces with special suitability for the removal of hot plastic parts to be painted from the injection molding machine.
Thermalon® is a material mixture with a hardness of 60° Shore A, specially optimized for the plastics industry.
Flock coating made of thin polyamide layer PA6.6 black.
Connection by means of plug nipple.

Advantage

> Nearly non-marking
> Quick depositing of the product, as there is no static friction due to thin flock coating
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Bellows compensates for height differences and allows good adaptation to curved or uneven product surfaces
> Temperature-resistant up to 160 °C (320 °F)

Notes:

The flock coating could cause leakage, which must be taken into account in the layout of the vacuum source.

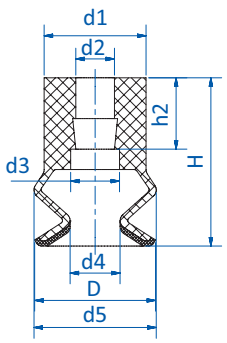
Technical data

Item no.	Model		Number of folds	Material / Color	Required suction power for 60 % vacuum [Nl/min]	Short-term working temperature < 30 Sec [°C (°F)]
23.005.286.19F	SKT-B1-6	2	1.5	Thermalon®-flocked (bl/sw)	7	0 - 160 (32 - 320)
23.011.234.19F	SKT-B1-11	5.5	1.5	Thermalon®-flocked (bl/sw)	11	0 - 160 (32 - 320)
23.014.235.19F	SKT-B1-14	5	1.5	Thermalon®-flocked (bl/sw)	16	0 - 160 (32 - 320)
23.016.236.19F	SKT-B1-16	8.5	1.5	Thermalon®-flocked (bl/sw)	16	0 - 160 (32 - 320)
23.020.238.19F	SKT-B1-20	5	1.5	Thermalon®-flocked (bl/sw)	17	0 - 160 (32 - 320)
23.022.239.19F	SKT-B1-22	8	1.5	Thermalon®-flocked (bl/sw)	17	0 - 160 (32 - 320)
23.025.240.19F	SKT-B1-25	12	1.5	Thermalon®-flocked (bl/sw)	18	0 - 160 (32 - 320)
23.033.241.19F	SKT-B1-33	11	1.5	Thermalon®-flocked (bl/sw)	18	0 - 160 (32 - 320)

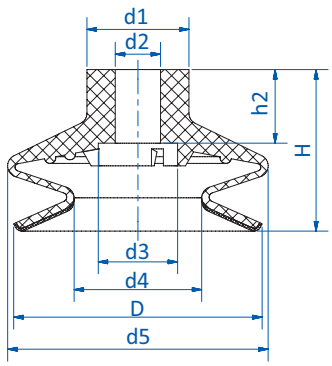
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.286.19F	270.772	--	--	--	--	--	--
23.011.234.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.014.235.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.016.236.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.020.238.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.022.239.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.025.240.19F	270.772	270.347	270.104	270.033	270.478	--	--
23.033.241.19F	--	--	270.315	270.196	270.114	270.190	270.192

Dimensions



Drawing A



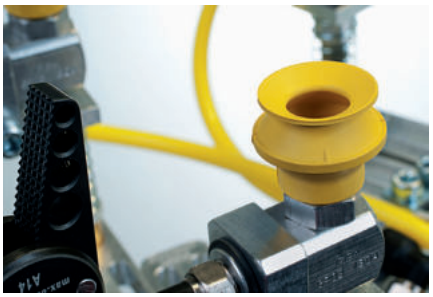
Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h2** [mm]
23.005.286.19F	A	6	7	3.8	--	2.5	6.4	11.5	7
23.011.234.19F	A	11.9	10	3.8	4.8	4.9	12	16.5	7
23.014.235.19F	A	14.9	10	3.8	4.8	4.8	14	16.5	7
23.016.236.19F	A	16.8	10	3.8	4.8	8.2	17.5	19.5	7
23.020.238.19F	A	19.9	10	3.8	4.8	10.6	20	16.5	7
23.022.239.19F	A	22.9	10	3.8	4.8	11.4	24	19.5	7
23.025.240.19F	A	24.9	10	3.8	4.8	9.2	25	23.5	7
23.033.241.19F	B	33.9	18	8	16	17	36	28	13

High-temperature HNBR bellows cups, 1.5 folds – SKH-B1

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces with suitability for removing hot plastic parts to be painted from an injection molding machine.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces

Technical data

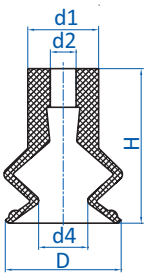
Item no.	Model		Number of folds	Material / Color	Usage temperature [°C (°F)]
23.005.178.14	SKH-B1-5	2	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.008.166.14	SKH-B1-8	3.5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.011.008.14/2	SKH-B1-11	4.5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.015.122.14	SKH-B1-15	5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.016.016.14/2	SKH-B1-16	6	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.020.124.14	SKH-B1-20	8	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.030.125.14	SKH-B1-30	9	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.043.096.14	SKH-B1-43	12	1.5	HNBR (ge)	0 - 160 (32 - 320)

Accessories

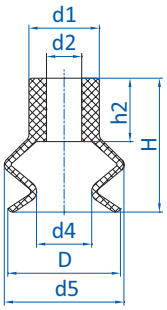
	Suitable fittings							Suitable spring leveler (Snap-in)	
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Spring leveler	
23.005.178.14	270.153	--	--	--	--	--	--	--	--
23.008.166.14	270.153	--	--	--	--	--	--	--	--
23.011.008.14/2	270.013	270.005	270.103	270.003	270.015	--	--	50.037	25
23.015.122.14	270.010	270.005	--	270.009	270.007	--	--	50.330	9
23.016.016.14/2	270.013	270.005	270.103	270.003	270.015	--	--	50.037	25
23.020.124.14	270.311	--	--	270.063	270.061	--	--	--	--
23.030.125.14	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
23.043.096.14	--	--	270.315	270.196	270.114	270.190	270.192	--	--

*** When ordering please add the appropriate material code to item no.**

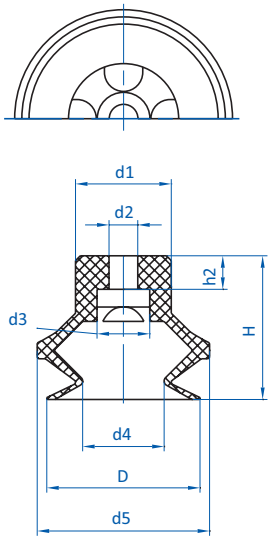
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h2** [mm]
23.005.178.14	A	6	5	2	--	2.2	--	9	--
23.008.166.14	A	9	5.5	2	--	3.8	--	12	--
23.011.008.14/2	B	12	10	5	--	4.5	12	16	9
23.015.122.14	C	16	8.5	3.6	6	8	17	16	1.7
23.016.016.14/2	B	16	10	5	--	8	17	19	9
23.020.124.14	C	21.5	15	4.5	11	10	23.5	20	4.6
23.030.125.14	C	32	20	6	11	17	36	30	7
23.043.096.14	B	43	18	8	--	23	45	27	12

*** When ordering please add the appropriate material code to item no.**

Notizen:

Bellows vacuum cups, universal, 2.5 folds – SBU 2



Product notes

Universal bellows vacuum cups with 2.5 folds for handling sensitive or uneven products over large stroke movements.
Connection up to Ø 75 mm by means of plug-in nipple, from Ø 88 mm with vulcanized bracket.

Advantage

> Bellows compensate for differences in height and enable good adaptation to curved or uneven product surfaces
> Soft attachment for sensitive products
> Cost-effective replacement of worn seals

Technical data

Item no.	Model		Number of folds	Material / Color	Connection thread
21.004.083._*	SBU 2-4	3	2.5	SI (tr), SI-LE (tr)	--
21.005.057._*	SBU 2-5	3	2.5	NBR (g), SI (g), SI (tr), SI-LE (tr)	--
21.006.093._*	SBU 2-6A	3	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.006.087._*	SBU 2-6	3.5	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.008.094._*	SBU 2-8	4	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.009.002._*	SBU 2-9	2	2.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr), PU (bl)	--
21.010.119._*	SBU 2-10	8	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.012.135._*	SBU 2-12	7	2.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr), PU (bl)	--
21.014.133._*	SBU 2-14A	11	2.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
21.014.007._*	SBU 2-14	12	2.5	NBR (sw), SI (tr), SI-LE (tr), PU (bl)	--
21.018.010._*	SBU 2-18	8	2.5	NBR (sw), SI (tr), SI-LE (tr), PU (bl)	--
21.020.016._*	SBU 2-20	9	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.025.060._*	SBU 2-25	19	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
21.032.075._*	SBU 2-32	13	2.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr), PU (bl)	--
21.043.049._*	SBU 2-43	19	2.5	NBR (sw), SI (tr), SI-LE (tr), NR (gr)	--
21.062.055._*	SBU 2-62	25	2.5	NBR (sw), SI (tr), SI-LE (tr)	--
20.088.123._*	SBU 2-88	36	2.5	NBR (sw), SI (tr)	G1/4-male
20.088.124._*	SBU 2-88	36	2.5	NBR (sw), SI (tr)	G1/4-female

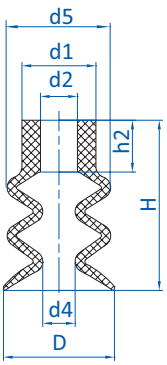
Continued on the next page

* When ordering please add the appropriate material code to item no.

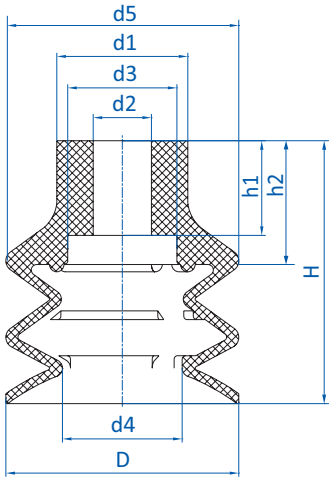
Accessories

Item no.	Suitable fittings						
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.004.083._*	270.134	270.347	270.104	270.033	270.478	--	--
21.005.057._*	270.134	270.347	270.104	270.033	270.478	--	--
21.006.093._*	270.134	270.347	270.104	270.033	270.478	--	--
21.006.087._*	270.013	270.005	270.103	270.003	270.015	--	--
21.008.094._*	270.134	270.347	270.104	270.033	270.478	--	--
21.009.002._*	270.013	270.005	270.103	270.003	270.015	--	--
21.010.119._*	270.013	270.005	270.103	270.003	270.015	--	--
21.012.135._*	270.013	270.005	270.103	270.003	270.015	--	--
21.014.133._*	270.134	270.347	270.104	270.033	270.478	--	--
21.014.007._*	270.013	270.005	270.103	270.003	270.015	--	--
21.018.010._*	270.013	270.005	270.103	270.003	270.015	--	--
21.020.016._*	270.013	270.005	270.103	270.003	270.015	270.194	--
21.025.060._*	270.013	270.005	270.103	270.003	270.015	270.194	--
21.032.075._*	--	--	270.315	270.196	270.114	270.190	270.192
21.043.049._*	--	--	270.315	270.196	270.114	270.190	270.192
21.062.055._*	--	--	270.315	--	--	270.540	270.539
20.088.123._*	--	--	--	--	--	--	--
20.088.124._*	--	--	--	--	--	--	--

Dimensions



Drawing A

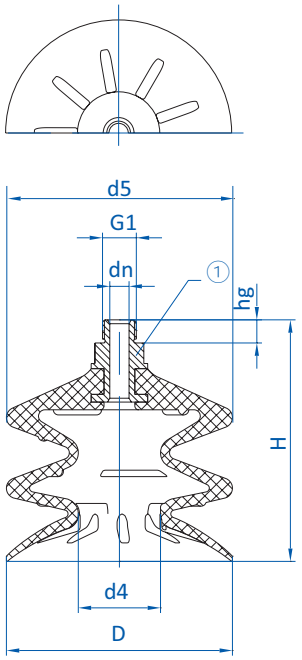


Drawing B

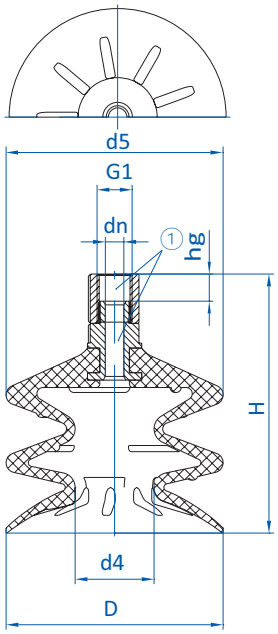
① = Aluminum fitting, vulcanized

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing C



Drawing D

① = Aluminum fitting, vulcanized

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	hg [mm]
21.004.083._*	A	4.5	7	4	--	2	6.5	--	--	14	--	8	--
21.005.057._*	A	5.5	7	4	--	2.5	6.5	--	--	14	--	8.5	--
21.006.093._*	A	6	8	4	--	3	8	--	--	15	--	8	--
21.006.087._*	A	6.5	9	5	--	2.5	6.5	--	--	14.5	--	7.5	--
21.008.094._*	A	7.5	8	4	--	4	7.5	--	--	15	--	8.5	--
21.009.002._*	A	9	9	5	--	4	9	--	--	15	--	7	--
21.010.119._*	A	10	10	5	--	4.5	10	--	--	21	--	7	--
21.012.135._*	A	12	10	5	--	5	12	--	--	21	--	9	--
21.014.133._*	A	14	10	3.8	--	5.5	14	--	--	23	--	7.5	--
21.014.007._*	A	15	10	5	--	4.5	15	--	--	23	--	7	--
21.018.010._*	A	18	10	4.5	--	7	18	--	--	22	--	8.5	--
21.020.016._*	A	20	10	4.5	--	10	20	--	--	23	--	9	--
21.025.060._*	A	25	10	4.8	--	10	25	--	--	33	--	8	--
21.032.075._*	B	32	18	8	15	16.5	32	--	--	36	--	17	--
21.043.049._*	B	42	20	8	15	15.5	42	--	--	46	13	--	--
21.062.055._*	B	62	21	8.5	14.5	27.5	62	--	--	54	13	14.7	--
20.088.123._*	C	88	--	--	--	32	88	7.5	G1/4	94	--	--	9
20.088.124._*	D	88	--	--	--	32	88	7.5	G1/4	105	--	--	11

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, universal, 2.5 folds – SKT-B2



Product notes

Universal bellows vacuum cup with 2.5 folds for handling delicate or uneven products with a large lifting movement.
Connection by means of plug-in nipple.

Advantage

> Bellows compensate for large differences in height and enable a gentle touchdown on highly sensitive product surfaces
> Soft sealing lip adapts very well to uneven and curved surfaces
> Cost-effective replacement of worn seals

Technical data

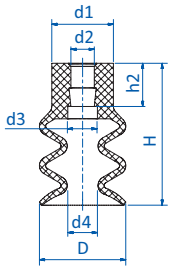
Item no.	Model		Number of folds	Material / Color
21.005.146._*	SKT-B2-5	3	2.5	NBR (sw), SI (tr)
21.007.147._*	SKT-B2-7	3	2.5	NBR (sw), SI (tr)
21.009.148._*	SKT-B2-9	3	2.5	NBR (sw), SI (tr)
21.012.149._*	SKT-B2-12	7	2.5	NBR (sw), SI (tr)
21.014.150._*	SKT-B2-14	10	2.5	NBR (sw), SI (tr)
21.018.151._*	SKT-B2-18	10	2.5	NBR (sw), SI (tr)
21.020.152._*	SKT-B2-20	10	2.5	NBR (sw), SI (tr)
21.025.153._*	SKT-B2-25	20	2.5	NBR (sw), SI (tr)
21.032.154._*	SKT-B2-32	14.5	2.5	NBR (sw), SI (tr)
21.042.155._*	SKT-B2-42	22	2.5	NBR (sw), SI (tr)
21.052.156._*	SKT-B2-52	27	2.5	NBR (sw), SI (tr)
21.062.157._*	SKT-B2-62	31	2.5	NBR (sw), SI (tr), SI-LE (tr)

Accessories

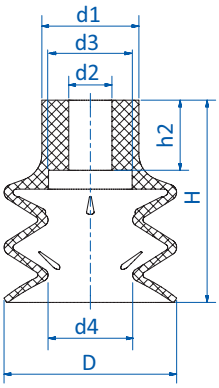
	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.005.146._*	270.772	270.347	270.104	270.033	270.478	--	--
21.007.147._*	270.772	270.347	270.104	270.033	270.478	--	--
21.009.148._*	270.772	270.347	270.104	270.033	270.478	--	--
21.012.149._*	270.772	270.347	270.104	270.033	270.478	--	--
21.014.150._*	270.772	270.347	270.104	270.033	270.478	--	--
21.018.151._*	270.772	270.347	270.104	270.033	270.478	--	--
21.020.152._*	270.772	270.347	270.104	270.033	270.478	--	--
21.025.153._*	270.772	270.347	270.104	270.033	270.478	--	--
21.032.154._*	--	--	270.315	270.196	270.114	270.190	270.192
21.042.155._*	--	--	270.315	270.196	270.114	270.190	270.192
21.052.156._*	--	--	270.315	270.196	270.114	270.190	270.192
21.062.157._*	--	--	270.315	270.196	270.114	270.190	270.192

*** When ordering please add the appropriate material code to item no.**

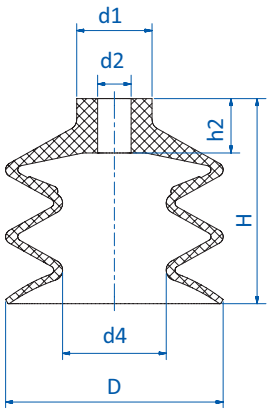
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]
21.005.146._*	A	5.3	7	3.8	2.7	2.7	13.5	7
21.007.147._*	A	6.2	9	3.8	--	2.2	13.5	7
21.009.148._*	A	9.2	9	3.8	--	4.6	15	7
21.012.149._*	A	12	10	3.8	4.8	4.8	21	7
21.014.150._*	A	14	10	3.8	4.8	4.8	23	7
21.018.151._*	A	18	10	3.8	4.8	8.1	23	7
21.020.152._*	A	20	10	3.8	4.8	10	23	7
21.025.153._*	A	25	10	3.8	4.8	10	34	7
21.032.154._*	B	32	18	8	15.7	15.7	37.5	13
21.042.155._*	B	42	18	8	15	18	46	13
21.052.156._*	C	52	18	8	--	24.8	49	13
21.062.157._*	C	62	18	8	--	29.4	55	13

*** When ordering please add the appropriate material code to item no.**

High-temperature Thermalon® bellows cups, 2.5 folds – SKT-B2



UP TO 160 °C (320 °F) & MINIMUM MARKING

Product notes

Bellows vacuum cups for uneven surfaces especially suited for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Long vacuum cup stroke and good adaptation to curved or uneven product surfaces

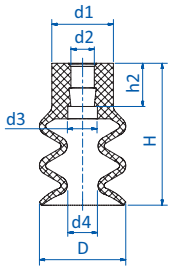
Technical data

Item no.	Model		Material / Color	Number of folds	Short-term working temperature < 30 Sec [°C (°F)]
21.005.146.19	SKT-B2-5	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.007.147.19	SKT-B2-7	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.009.148.19	SKT-B2-9	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.012.149.19	SKT-B2-12	7	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.014.150.19	SKT-B2-14	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.018.151.19	SKT-B2-18	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.020.152.19	SKT-B2-20	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.025.153.19	SKT-B2-25	20	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.032.154.19	SKT-B2-32	14.5	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.042.155.19	SKT-B2-42	22	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.052.156.19	SKT-B2-52	27	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.062.157.19	SKT-B2-62	31	Thermalon® (bl)	2.5	0 - 160 (32 - 320)

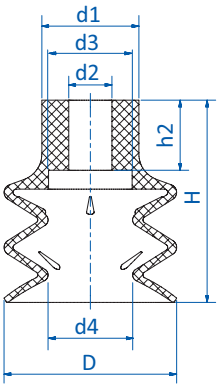
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.005.146.19	270.772	270.347	270.104	270.033	270.478	--	--
21.007.147.19	270.772	270.347	270.104	270.033	270.478	--	--
21.009.148.19	270.772	270.347	270.104	270.033	270.478	--	--
21.012.149.19	270.772	270.347	270.104	270.033	270.478	--	--
21.014.150.19	270.772	270.347	270.104	270.033	270.478	--	--
21.018.151.19	270.772	270.347	270.104	270.033	270.478	--	--
21.020.152.19	270.772	270.347	270.104	270.033	270.478	--	--
21.025.153.19	270.772	270.347	270.104	270.033	270.478	--	--
21.032.154.19	--	--	270.315	270.196	270.114	270.190	270.192
21.042.155.19	--	--	270.315	270.196	270.114	270.190	270.192
21.052.156.19	--	--	270.315	270.196	270.114	270.190	270.192
21.062.157.19	--	--	270.315	270.196	270.114	270.190	270.192

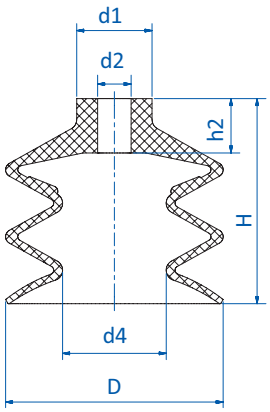
Dimensions



Drawing A



Drawing B

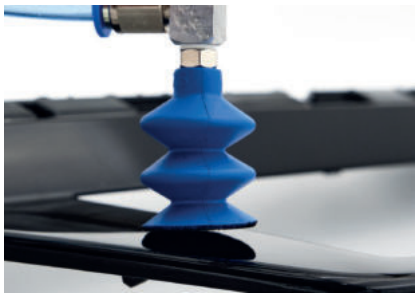


Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]
21.005.146.19	A	5.3	7	3.8	2.7	2.7	13.5	7
21.007.147.19	A	6.2	9	3.8	--	2.2	13.5	7
21.009.148.19	A	9.2	9	3.8	--	4.6	15	7
21.012.149.19	A	12	10	3.8	4.8	4.8	21	7
21.014.150.19	A	14	10	3.8	4.8	4.8	23	7
21.018.151.19	A	18	10	3.8	4.8	8.1	23	7
21.020.152.19	A	20	10	3.8	4.8	10	23	7
21.025.153.19	A	25	10	3.8	4.8	10	34	7
21.032.154.19	B	32	18	8	15.7	15.7	37.5	13
21.042.155.19	B	42	18	8	15	18	46	13
21.052.156.19	C	52	18	8	--	24.8	49	13
21.062.157.19	C	62	18	8	--	29.4	55	13

High-temperature Thermalon®-flocked bellows cups, 2.5 folds – SKT-B2





Product notes

Bellows vacuum cup made of proven Thermalon® with additional flock coating of the contact surfaces for the highest demands on non-marking gripping.

Ideally suited for uneven surfaces with special suitability for the removal of hot plastic parts to be painted from the injection molding machine.
Thermalon® is a material mixture with a hardness of 60° Shore A, specially optimized for the plastics industry.
Flock coating made of thin polyamide layer PA6.6 black.
Connection by means of plug nipple.

Advantage

> Nearly non-marking
> Quick depositing of the product, as there is no static friction due to thin flock coating
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Large suction stroke and good adaptation to curved or uneven product surfaces
> • Temperature-resistant up to 160 °C (320 °F)

Notes:

The flock coating could cause leakage, which must be taken into account in the layout of the vacuum source.

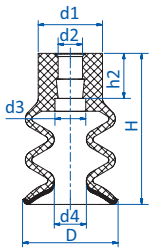
Technical data

Item no.	Model		Number of folds	Material / Color	Required suction power for 60 % vacuum [Nl/min]	Short-term working temperature < 30 Sec [°C (°F)]
21.009.148.19F	SKT-B2-9	3	2.5	Thermalon®-flocked (bl/sw)	10	0 - 160 (32 - 320)
21.012.149.19F	SKT-B2-12	7	2.5	Thermalon®-flocked (bl/sw)	11	0 - 160 (32 - 320)
21.014.150.19F	SKT-B2-14	10	2.5	Thermalon®-flocked (bl/sw)	16	0 - 160 (32 - 320)
21.020.152.19F	SKT-B2-20	10	2.5	Thermalon®-flocked (bl/sw)	17	0 - 160 (32 - 320)
21.025.153.19F	SKT-B2-25	20	2.5	Thermalon®-flocked (bl/sw)	18	0 - 160 (32 - 320)
21.032.154.19F	SKT-B2-32	14.5	2.5	Thermalon®-flocked (bl/sw)	18	0 - 160 (32 - 320)
21.042.155.19F	SKT-B2-42	22	2.5	Thermalon®-flocked (bl/sw)	21	0 - 160 (32 - 320)

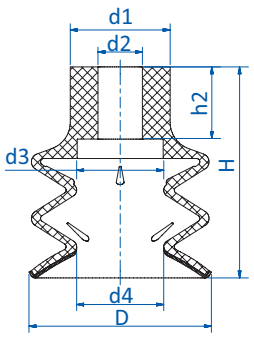
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.009.148.19F	270.772	270.347	270.104	270.033	270.478	--	--
21.012.149.19F	270.772	270.347	270.104	270.033	270.478	--	--
21.014.150.19F	270.772	270.347	270.104	270.033	270.478	--	--
21.020.152.19F	270.772	270.347	270.104	270.033	270.478	--	--
21.025.153.19F	270.772	270.347	270.104	270.033	270.478	--	--
21.032.154.19F	--	--	270.315	270.196	270.114	270.190	270.192
21.042.155.19F	--	--	270.315	270.196	270.114	270.190	270.192

Dimensions



Drawing A



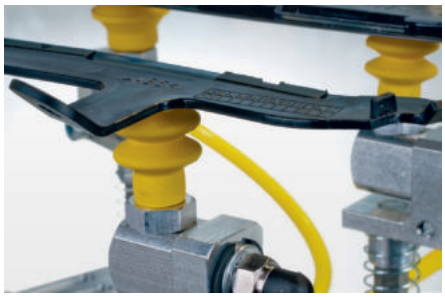
Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]
21.009.148.19F	A	10.1	9	3.8	--	3.9	15.5	7
21.012.149.19F	A	12.9	10	3.8	4.8	5	21.5	7
21.014.150.19F	A	14.9	10	3.8	4.8	5	23.5	7
21.020.152.19F	A	20.9	10	3.8	4.8	10	23.5	7
21.025.153.19F	A	25.9	10	3.8	4.8	10.1	34.5	7
21.032.154.19F	B	32.9	18	8	15.7	15.7	38	13
21.042.155.19F	B	42.9	18	8	15	18	46.5	13

High-temperature HNBR bellows cups, 2.5 folds – SKH-B2

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces with suitability for removing hot plastic parts to be painted from an injection molding machine. Connection via plug-in nipple.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Long vacuum cup stroke and good adaptation to curved or uneven product surfaces

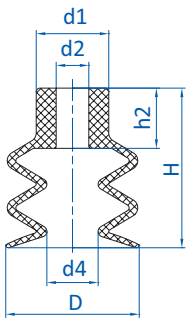
Technical data

Item no.	Model		Number of folds	Material / Color	Usage temperature [°C (°F)]
21.005.057.14	SKH-B2-5	3	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.007.089.14	SKH-B2-7	3	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.009.002.14	SKH-B2-9	2	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.012.135.14	SKH-B2-12	7	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.014.053.14	SKH-B2-14	9	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.018.010.14	SKH-B2-18	8	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.020.016.14/2	SKH-B2-20	9	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.032.075.14/3	SKH-B2-32	13	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.043.049.14	SKH-B2-43	19	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.060.051.14	SKH-B2-60	25	2.5	HNBR (ge)	0 - 160 (32 - 320)

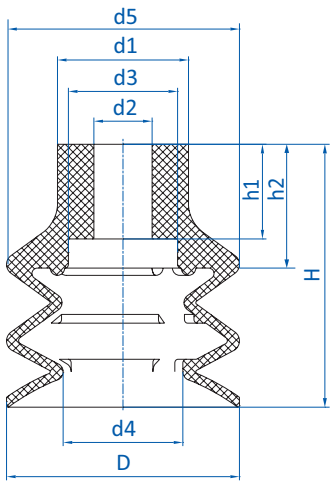
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.005.057.14	270.134	270.347	270.104	270.033	270.478	--	--
21.007.089.14	270.010	270.005	--	270.009	270.007	--	--
21.009.002.14	270.013	270.005	270.103	270.003	270.015	--	--
21.012.135.14	270.013	270.005	270.103	270.003	270.015	--	--
21.014.053.14	270.134	270.347	270.104	270.033	270.478	--	--
21.018.010.14	270.013	270.005	270.103	270.003	270.015	--	--
21.020.016.14/2	270.013	270.005	270.103	270.003	270.015	270.194	--
21.032.075.14/3	--	--	270.315	270.196	270.114	270.190	270.192
21.043.049.14	--	--	270.315	270.196	270.114	270.190	270.192
21.060.051.14	--	--	270.315	--	--	270.540	270.539

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h1** [mm]	**h2** [mm]
21.005.057.14	A	5.5	7	4	--	2.5	--	14	0 - 0	8.5
21.007.089.14	B	7	7.5	4	5.5	3	7	10	2	3.5
21.009.002.14	A	9	9	5	--	4	--	15	--	7
21.012.135.14	A	12	10	5	--	5	--	21	--	9
21.014.053.14	A	14	8	4	--	5.5	--	18	--	5.5
21.018.010.14	A	18	10	4.5	--	7	--	22	--	8.5
21.020.016.14/2	A	20	10	4.5	--	10	--	23	--	9
21.032.075.14/3	B	32	18	8	15	16.5	32	36	13	--
21.043.049.14	B	42	20	8	15	15.5	42	46	13	17
21.060.051.14	B	61	22	8	14	28	61	57	14	18.5

Bellows vacuum cups, universal, 3.5 folds – SBU 3



Product notes	Advantage
Universal bellows vacuum cups with 3.5 folds for handling sensitive or uneven products over very large lift movements. Connection via plug-in nipple.	> Bellows compensate for differences in height and enable good adaptation to curved or uneven product surfaces > Soft attachment for sensitive products > Cost-effective replacement of worn seals

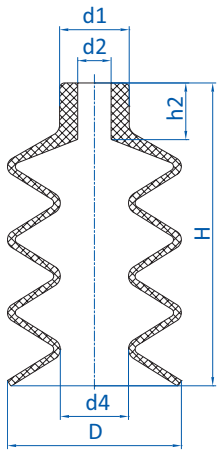
Technical data

Item no.	Model		Number of folds	Material / Color
25.018.031._*	SBU 3-18	12	3.5	NBR (sw), SI (tr)
25.025.005._*	SBU 3-25	24	3.5	NBR (sw), SI (tr), SI-LE (tr)

Accessories

	Suitable fittings					
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male
25.018.031._*	270.013	270.005	270.103	270.003	270.015	270.194
25.025.005._*	270.013	270.005	270.103	270.003	270.015	270.194

Dimensions



Item no.	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	H [mm]	h2 [mm]
25.018.031._*	18	9.5	5	8	29	7
25.025.005._*	25	10	4.8	10	44	8

*** When ordering please add the appropriate material code to item no.**

Vulkollan® bellows cups, universal, 1.5 to 2.5 folds – SBU-VU



SBU1-VU



SBU2-VU

Product notes	Advantage
Extremely robust universal bellows vacuum cups, material made from Vulkollan®	> Minimal abrasion > Very long life cycle > Very good resetting, enabling fast cycle times > Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces > Cost-effective replacement of worn seals

Technical data

Item no.	Model		Number of folds	Material / Color
	**Bellows vacuum cups, 1.5 folds – SBU1-VU**			
23.020.169._*	SBU1-VU-20	7	1.5	Vulkollan® (br)
23.030.170._*	SBU1-VU-30	8	1.5	Vulkollan® (br)
23.050.171._*	SBU1-VU-50	10	1.5	Vulkollan® (br)
	**Bellows vacuum cups, 2.5 folds – SBU2-VU**			
21.009.106._*	SBU2-VU-9	2	2.5	Vulkollan® (br)
21.020.090._*	SBU2-VU-20	8	2.5	Vulkollan® (br)
21.032.091._*	SBU2-VU-30	16	2.5	Vulkollan® (br)
21.030.076._*	SBU2-VU-31	14	2.5	Vulkollan® (br)
21.051.097._*	SBU2-VU-50	18	2.5	Vulkollan® (br)
21.062.092._*	SBU2-VU-60	25	2.5	Vulkollan® (br)

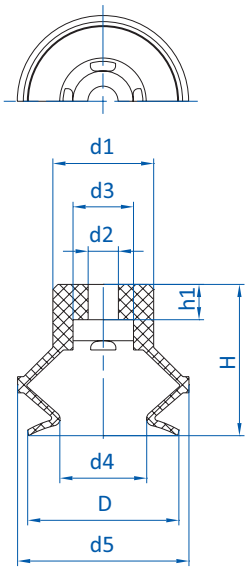
Continued on the next page

*** When ordering please add the appropriate material code to item no.**

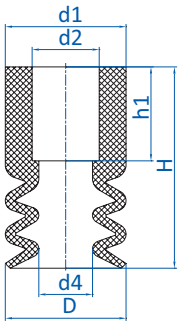
Accessories

Item no.	Suitable fittings							
	M5-male	M5-female	M6-male	M8-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
Bellows vacuum cups, 1.5 folds – SBU1-VU								
23.020.169._*	--	--	270.312/19	--	270.482	270.481	270.483	270.484
23.030.170._*	--	--	270.312/19	--	270.482	270.481	270.483	270.484
23.050.171._*	--	--	270.314	--	270.490	270.489	270.491	270.492
Bellows vacuum cups, 2.5 folds – SBU2-VU								
21.009.106._*	270.013	270.005	270.103	--	270.003	270.015	--	--
21.020.090._*	270.024	--	270.104	--	270.033	270.478	--	--
21.032.091._*	--	--	270.315	--	270.132	270.114	270.190, 270.540	270.192, 270.539
21.030.076._*	--	--	--	270.255	270.486	270.485	270.487	270.488
21.051.097._*	--	--	--	--	270.132	270.114	270.204	270.324
21.062.092._*	--	--	270.315	--	--	--	270.540	270.539

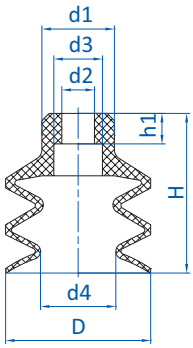
Dimensions



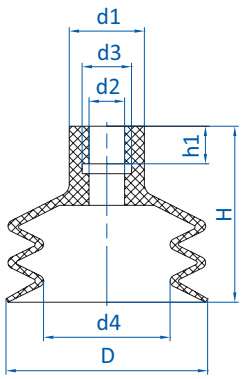
Drawing A



Drawing B



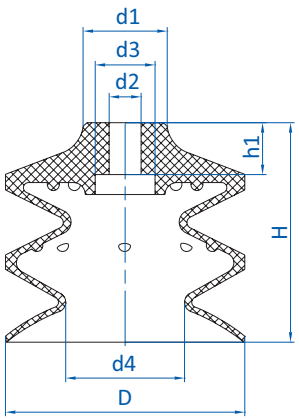
Drawing C



Drawing D

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing E

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h1** [mm]
Bellows vacuum cups, 1.5 folds – SBU1-VU									
23.020.169._*	A	20	15	6	12	12.5	22	22	7
23.030.170._*	A	30	20	6	12	17	34	30	7
23.050.171._*	A	50	29	9	20	31	56	37	7
Bellows vacuum cups, 2.5 folds – SBU2-VU									
21.009.106._*	B	9	9	5.5	--	4	--	15	7
21.020.090._*	C	20	10	4.5	6.5	10.5	--	22	4.2
21.032.091._*	C	30	18	8	15	17	--	38	13
21.030.076._*	C	31	18.5	8	15	19.5	--	29	7
21.051.097._*	D	51	19	9	12.5	32	--	45	9.5
21.062.092._*	E	60	21	8	15	30	--	55	13

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, universal, 1.5 folds, modular – SP-B1



Product notes

Bellows vacuum cups with a short stroke compensates for small irregularities.
Version: Replacement sealing lip for attachment to fitting

Advantage

> High suction force
> Fast cycle times possible
> Very resistant to wear (Tepuflex®)
> Compatible with established products from other vendors

Ordering notes

Explanation of the ending of the accessory fitting:
> S: with screen

Technical data

Item no.	Model		Number of folds	Material / Color
23.005.178._*	SP-B1-5	2	1.5	SI (r), SI-LE (r), SI-AS (sw), CR (sw)
23.008.166._*	SP-B1-8	3.5	1.5	SI (r), SI-LE (r), SI-AS (sw), CR (sw)
23.011.295._*	SP-B1-11	4.5	1.5	SI (r), SI-LE (r), CR (sw)
23.013.296._*	SP-B1-13	5.3	1.5	SI (r), SI-LE (r), CR (sw)
23.016.297._*	SP-B1-16	6.7	1.5	SI (r), SI-LE (r), CR (sw)
23.020.026._*	SP-B1-20	9	1.5	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)
23.030.037._*	SP-B1-30	9	1.5	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)
23.040.045._*	SP-B1-40	9	1.5	Tepuflex® (or), SI (tr), CR (sw)
23.050.054._*	SP-B1-50	12	1.5	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)
23.078.065._*	SP-B1-75	22	1.5	SI (tr), SI-LE (tr), CR (sw)
23.117.069._*	SP-B1-110	29	1.5	SI (tr), SI-LE (tr), CR (sw)
23.160.072._*	SP-B1-150	41	1.5	SI (tr), SI-LE (tr), CR (sw)

Accessories

Item no.	Filter disc:	Retaining ring:
23.005.178._*	--	--
23.008.166._*	--	--
23.011.295._*	--	--
23.013.296._*	--	--
23.016.297._*	--	--
23.020.026._*	78.200	78.011
23.030.037._*	78.201	78.011
23.040.045._*	78.202	78.012
23.050.054._*	78.203	78.013
23.078.065._*	--	--
23.117.069._*	--	--
23.160.072._*	--	--

Accessories

Item no.	Suitable fittings									
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G3/8-male	G3/8-female	G1/2-female	G3/4-female
23.005.178._*	270.153	--	--	--	--	--	--	--	--	--
23.008.166._*	270.153	--	--	--	--	--	--	--	--	--
23.011.295._*	270.134	--	270.104	--	--	--	--	--	--	--
23.013.296._*	270.134	--	270.104	--	--	--	--	--	--	--

*** When ordering please add the appropriate material code to item no.**

Accessories

Item no.	Suitable fittings									
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G3/8-male	G3/8-female	G1/2-female	G3/4-female
23.016.297._*	270.134	--	270.104	--	--	--	--	--	--	--
23.020.026._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
23.030.037._*	--	270.500-S	--	270.250, 270.503-S	--	--	--	--	--	--
23.040.045._*	--	--	--	--	270.251, 270.501-S	270.506-S	270.505-S	--	--	--
23.050.054._*	--	--	--	--	270.252, 270.502-S	270.504-S	270.507-S	--	--	--
23.078.065._*	--	--	--	--	270.527-S	--	--	270.528-S	270.529-S	--
23.117.069._*	--	--	--	--	--	--	--	270.530-S	270.531-S	--
23.160.072._*	--	--	--	--	--	--	--	--	270.532-S	270.533-S

Bellows vacuum cups – modular

Example:



Assembly example



Assembly example

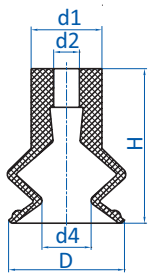
* Fittings are optionally available with and without filter screen
** Fittings come fitted with filter screen as standard

> The modular series allows you to assemble your own vacuum cups
> Worn sealing lips can be replaced quickly, cost-effective and easily
> High flexibility thanks to a large selection of fitting threads

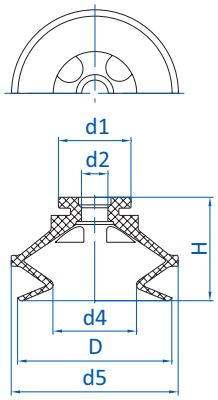
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*** When ordering please add the appropriate material code to item no.**

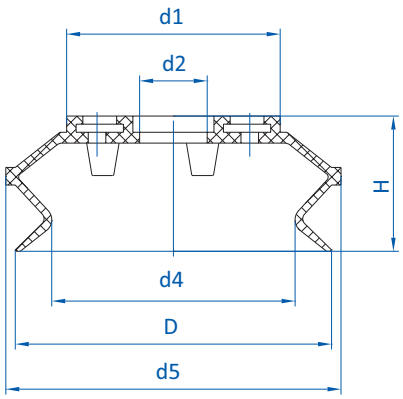
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]
23.005.178._*	A	6	4.5	2	2.2	--	9
23.008.166._*	A	9	5.5	2	3.8	--	12
23.011.295._*	A	11	9	3.8	4	--	16.5
23.013.296._*	A	13	9	3.8	4.6	--	19
23.016.297._*	A	16.5	9	3.8	7.5	--	19.5
23.020.026._*	B	21	14.5	5.5	11	24	19.5
23.030.037._*	B	33	15	5.5	18.5	37	28
23.040.045._*	B	43	20	7.5	23	46	29
23.050.054._*	B	53	26	10.5	32	58	35
23.078.065._*	C	81	55	10	59	84	37
23.117.069._*	C	117	79	25	90	124	50
23.160.072._*	C	160	110	24	112	166	67

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups with 4,5 folds, modular – SP-B4



Product notes	Advantage
Bellows vacuum cups with a long stroke. Version: Replacement sealing lip for attachment to fitting	> High suction force > Very large height compensation > Compatible with established products from other vendors

Ordering notes

Explanation of the ending of the accessory fitting:
> S: with screen

Technical data

Item no.	Model		Number of folds	Material / Color
25.020.025._*	SP-B4-20	16	4.5	SI (tr), SI-LE (tr), CR (sw)
25.030.026._*	SP-B4-30	21	4.5	SI (tr), SI-LE (tr), CR (sw)
25.040.027._*	SP-B4-40	20	4.5	SI (tr), SI-LE (tr), CR (sw)
25.050.028._*	SP-B4-50	25	4.5	SI (tr), SI-LE (tr), CR (sw)

Accessories

Retaining ring:	Stiffening ring:
78.011	78.000
78.012	78.001
78.012	78.002
78.013	78.003

Accessories

	Suitable fittings				
Item no.	M5-female	G1/8-male	G1/8-female	G1/4-male	G3/8-male
25.020.025._*	270.500-S	270.250, 270.503-S	--	--	--
25.030.026._*	--	--	270.251, 270.501-S	270.506-S	270.505-S
25.040.027._*	--	--	270.251, 270.501-S	270.506-S	270.505-S
25.050.028._*	--	--	270.252, 270.502-S	270.504-S	270.507-S

Continued on the next page

* When ordering please add the appropriate material code to item no.

Bellows vacuum cups series

Bellows vacuum cups with 4,5 folds, modular – SP-B4

Bellows vacuum cups – modular

Example:

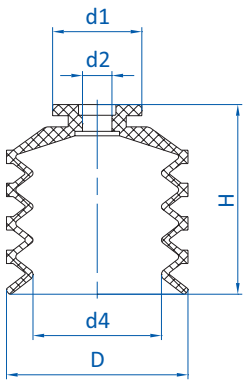


Assembly example

* Fittings are optionally available with and without filter screen

> The modular series allows you to assemble your own vacuum cups
> Worn sealing lips can be replaced quickly, cost-effective and easily
> High flexibility thanks to a large selection of fitting threads

Dimensions



Item no.	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d4** [mm]	**H** [mm]
25.020.025._*	20	14.5	5	14	23
25.030.026._*	31	20	6.5	22	32
25.040.027._*	41	20	6.5	29	43
25.050.028._*	51	27	10.5	37	53

*** When ordering please add the appropriate material code to item no.**

Varioflex® bellows cups, 1.5 folds – SP-BX1





POLYURETHANE COMPOSITE MATERIAL 60°/30°

Product notes

Bellows vacuum cups with 1.5 folds made of an extremely wear-resistant polymer.
Soft, flexible sealing lip in 30° Shore A (red).
Stable body in 60° Shore A (black).
Cleats stabilize the product.

Advantage

> Long life cycle reduces machine downtimes
> Perfect sealing performance on rough or uneven surface
> High stability and fast reset
> Oil and ozone-resistant
> Bellows compensate for height differences
> Cleats allow for fast acceleration

Notes:

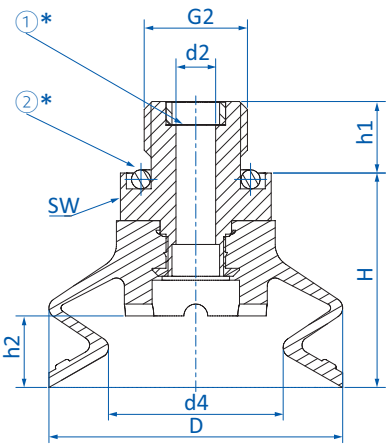
Explanation of the type description:
> SP-BX1 = Series name of the bellows vacuum cup with 1.5 folds
> -xx = nominal diameter
> -PUxx = Material / Hardness
> Example: SP-BX1-15-PU60/30
bellows vacuum cup with 1.5 folds and a nominal diameter of 15 mm, material Varioflex® (Polyurethan 60°/30° Shore A)

Technical data

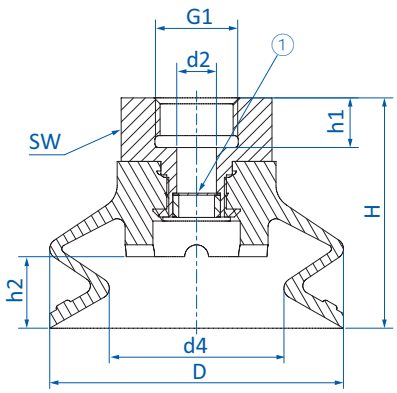
Model / Lip dimensions	Connection thread					
	M5-male	M6-male	G1/8-male	G1/8-female		Spare cup
SP-BX1-10-PU60/30	22.011.332.16	22.011.333.16	--	--	3	23.011.294.16
SP-BX1-15-PU60/30	22.016 .253.16	22.016 .254.16	--	--	4,5	23.016.263.16
SP-BX1-20-PU60/30	--	--	22.021.255.16	--	5	23.021.264.16
SP-BX1-25-PU60/30	--	--	22.026.256.16	--	5	23.026.265.16
SP-BX1-35-PU60/30	--	--	--	22.037.257.16	9	23.037.266.16
SP-BX1-50-PU60/30	--	--	--	22.053.259.16	10	23.053.267.16

Model / Lip dimensions	Connection thread					
	G1/4-male	G3/8-male	G3/8-female	G1/2-female		Spare cup
SP-BX1-35-PU60/30	22.037.258.16	--	--	--	9	23.037.266.16
SP-BX1-50-PU60/30	22.053.260.16	22.053.261.16	--	--	10	23.053.267.16
SP-BX1-75-PU60/30	--	22.075.262.16	22.075.263.16	--	18	--
SP-BX1-115-PU60/30	--	--	22.115.266.16	22.115.267.16	28	23.115.274.16
SP-BX1-160 -PU60/30	--	--	22.160.264.16	22.160.265.16	40	23.160.273.16

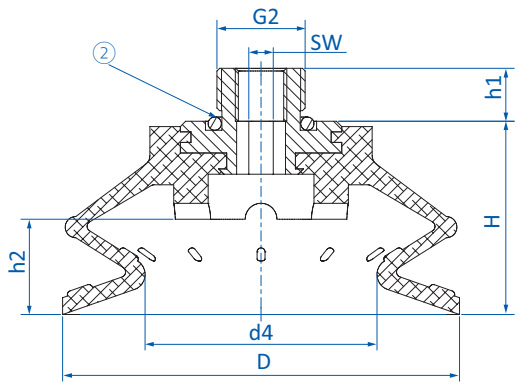
Dimensions



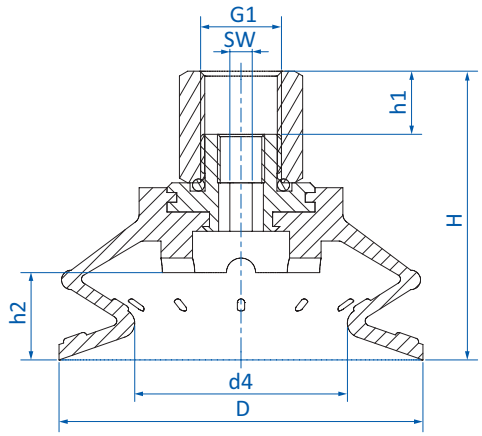
Drawing A



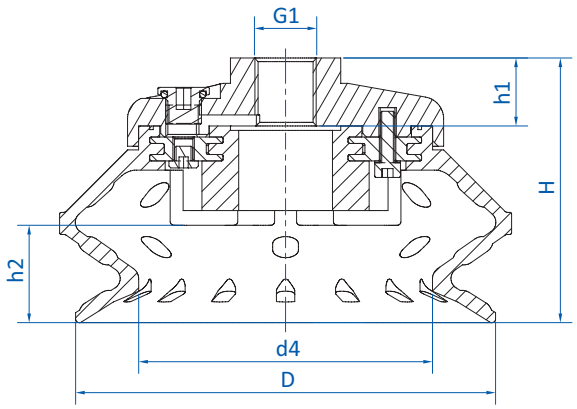
Drawing B



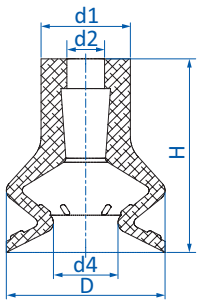
Drawing C



Drawing D



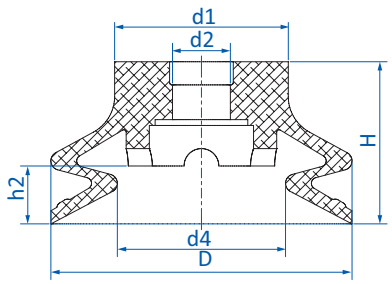
Drawing E



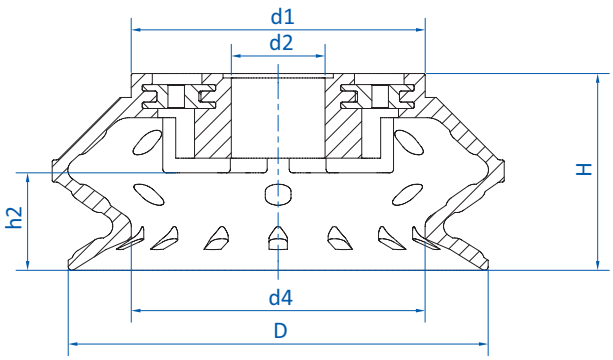
Drawing F

① = Filter screen ② = O-ring * = Size 11 and 16 mm without filter screen and O-ring

Dimensions



Drawing G



Drawing H

① = Filter screen ② = O-ring

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	h2 [mm]	SW
Bellows vacuum cups 1.5 folds – SP-BX1 fully assembled with fitting											
22.011.332.16	A	11	--	2.8	5.6	--	M5	17.5	5	--	8
22.011.333.16	A	11	--	2.5	5.6	--	M6	18	6	--	13
22.016.253.16	A	16	--	2.5	6.5	--	M5	25	3.6	--	8
22.016.254.16	A	16	--	2.5	6.5	--	M6	24	6	--	13
22.021.255.16	A	21	--	4	12	--	G1/8	19	7	5	13
22.026.256.16	A	26	--	4	14.5	--	G1/8	19	7	5	13
22.037.257.16	B	37	--	5	22	G1/8	--	29	6.3	9	19
22.037.258.16	A	37	--	5	22	--	G1/4	27	9	9	19
22.053.259.16	B	53	--	8	32.5	G1/8	--	35	9	10	22
22.053.260.16	A	53	--	6	32.5	--	G1/4	32	9	10	22
22.053.261.16	A	53	--	6	32.5	--	G3/8	32	10	10	22
22.075.262.16	C	75	--	--	44	--	G3/8	36.5	10	18	8
22.075.263.16	D	75	--	--	44	G3/8	--	59.5	13	18	8
22.115.266.16	E	115	--	--	79.9	G3/8	--	72	18.5	26.5	--
22.115.267.16	E	115	--	--	79.9	G1/2	--	72	18.5	26.5	--
22.160.264.16	E	160	--	--	112.7	G3/8	--	89	21	40.5	--
22.160.265.16	E	160	--	--	112.7	G1/2	--	89	21	40.5	--
Spare cups											
23.011.294.16	F	11	9	3.8	5.6	--	--	14	--	--	--
23.016.263.16	F	16	9	4	6.5	--	--	19.5	--	--	--
23.021.264.16	G	21	11	5	12	--	--	14	--	5	--
23.026.265.16	G	26	15	5	14.5	--	--	14	--	5	--
23.037.266.16	G	37	20	7	22	--	--	21	--	9	--
23.053.267.16	G	53	26	10.5	32.5	--	--	26	--	10	--
23.115.274.16	H	115	80	25.5	79.9	--	--	53.5	--	26.5	--
23.160.273.16	H	160	110	25.5	112.7	--	--	68	--	40.5	--

Monoflex bellows cups, 1.5 folds – SP-BX1



Product notes	Advantage
Bellows vacuum cup with 1.5 folds made of very wear-resistant polyurethane. Hardness 50° Shore A Support ribs stabilize the product.	> Long life cycle reduces machine downtimes > Oil and ozone-resistant > Bellows compensate for height and angle differences > Cleats allow for fast acceleration

Notes:

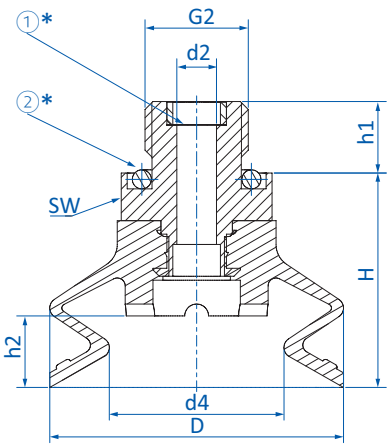
Explanation of the type description:
> SP-BX1 = Series name of the bellows vacuum cup with 1.5 folds
> -xx = nominal diameter
> -PUxx = Material / Hardness
Example: SP-BX1-15-PU50 = bellows vacuum cup with 1.5 folds and a nominal diameter of 15 mm, material Polyurethan 50° Shore A

Technical data

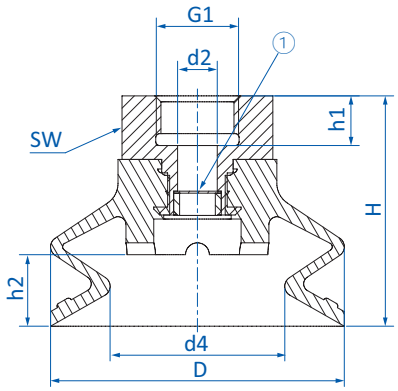
Model / Lip dimensions	Connection thread					Spare cup
	M5-male	M6-male	G1/8-male	G1/8-female		
SP-BX1-10-PU50	22.011.332.22	22.011.333.22	--	--	3	23.011.294.22
SP-BX1-15-PU50	22.016 .253.22	22.016 .254.22	--	--	4,5	23.016.263.22
SP-BX1-20-PU50	--	--	22.021.255.22	--	5	23.021.264.22
SP-BX1-25-PU50	--	--	22.026.256.22	--	5	23.026.265.22
SP-BX1-35-PU50	--	--	--	22.037.257.22	9	23.037.266.22
SP-BX1-50-PU50	--	--	--	22.053.259.22	10	23.053.267.22

Model / Lip dimensions	Connection thread					Spare cup
	G1/4-male	G3/8-male	G3/8-female	G1/2-female		
SP-BX1-35-PU50	22.037.258.22	--	--	--	9	23.037.266.22
SP-BX1-50-PU50	22.053.260.22	22.053.261.22	--	--	10	23.053.267.22
SP-BX1-75-PU50	--	22.075.262.22	22.075.263.22	--	18	--

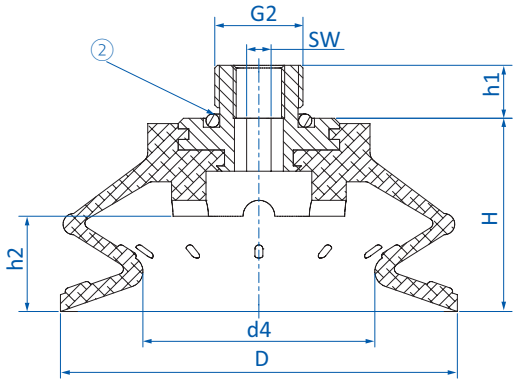
Dimensions



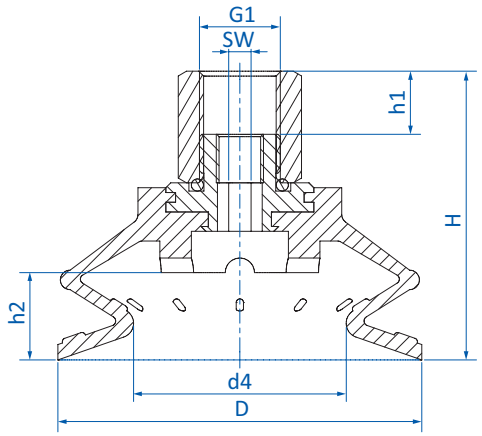
Drawing A



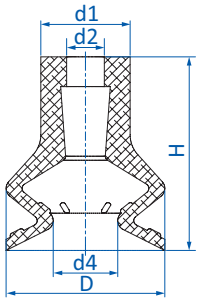
Drawing B



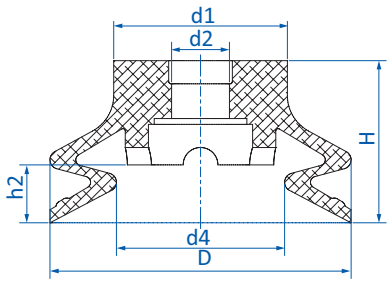
Drawing C



Drawing D



Drawing F



Drawing G

① = Filter screen ② = O-Ring * = Size 11 and 16 mm without strainer and O-ring



Series | Bellows vacuum cups SB

Monoflex bellows cups, 1.5 folds – SP-BX1

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	Ø d3 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	h2 [mm]	SW
22.011.332.22	A	11	--	2.8	5.6	14	--	M5	17.5	5	--	8
22.011.333.22	A	11	--	2.5	5.6	14	--	M6	18	6	--	13
22.016.253.22	A	16	--	2.5	6.5	14	--	M5	25	3.6	--	8
22.016.254.22	A	16	--	2.5	6.5	14	--	M6	24	6	--	13
22.021.255.22	A	21	--	4	12	14	--	G1/8	19	7	5	13
22.026.256.22	A	26	--	4	14.5	14	--	G1/8	19	7	5	13
22.037.257.22	B	37	--	5	22	14	G1/8	--	29	6.3	9	19
22.037.258.22	A	37	--	5	22	14	--	G1/4	27	9	9	19
22.053.259.22	B	53	--	8	32.5	14	G1/8	--	35	9	10	22
22.053.260.22	A	53	--	6	32.5	14	--	G1/4	32	9	10	22
22.053.261.22	A	53	--	6	32.5	14	--	G3/8	32	10	10	22
22.075.262.22	C	75	--	--	44	14	--	G3/8	36.5	10	18	8
22.075.236.22	D	75	--	--	44	14	G3/8	--	59.5	13	18	8
23.011.294.22	F	11	9	3.8	5.6	14	--	--	14	--	--	--
23.016.263.22	F	16	9	4	6.5	14	--	--	19.5	--	--	--
23.021.264.22	G	21	11	5	12	14	--	--	14	--	5	--
23.026.265.22	G	26	15	5	14.5	14	--	--	14	--	5	--
23.037.266.22	G	37	20	7	22	14	--	--	21	--	9	--
23.053.267.22	G	53	26	10.5	32.5	14	--	--	26	--	10	--

Varioflex® bellows cups, 2.5 folds – SP-BX2





POLYURETHANE COMPOSITE MATERIAL 60°/30°

Product notes

Bellows vacuum cups with 2.5 bellows made of an extremely wear-resistant polymer.
Soft, flexible sealing lip in 30° Shore A (red).
Stable body in 60° Shore A (black).

Advantage

> Long life cycle reduces machine downtimes
> Perfect sealing performance on rough or uneven surface
> High stability and fast reset
> Oil and ozone-resistant
> Excellent height and angle compensation
> Optional: filter disc from Ø 26 mm installed between the bellows

Ordering notes

> For versions with a filter disc, please add "-FI" to the material code (e.g. 20.026.148.16-FI)*
> The filter disc is delivered assembled for diameters of 26 - 53 mm
> The filter disc is included for diameters ≥ 77 mm

Notes:

Explanation of the type description:
> SP-BX2 = Series name of the bellows vacuum cup with 2.5 folds
> -xx = nominal diameter
> -PUxx = Material / Hardness
> Example: SP-BX2-15-PU60/30
bellows vacuum cup with 2.5 folds and a nominal diameter of 15 mm, material Varioflex® (Polyurethan 60°/30° Shore A)

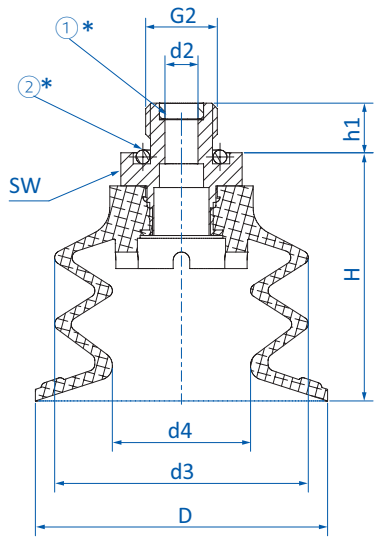
Technical data

Model / Lip dimensions	Connection thread					Spare cup
	M5-male	M6-male	G1/8-male	G1/8-female		
SP-BX2-10-PU60/30	20.011.200.16	20.011.201.16	--	--	4,5	21.011.187.16
SP-BX2-15-PU60/30	20.016 .145.16	20.016 .146.16	--	--	5,5	21.016.175.16
SP-BX2-20-PU60/30	--	--	20.021.147.16	--	6,5	21.021.176.16
SP-BX2-25-PU60/30	--	--	20.026.148.16 (*-FI)	--	8	21.026.177.16 (*-FI)
SP-BX2-35-PU60/30	--	--	--	20.037.149.16 (*-FI)	14	21.037.177.16 (*-FI)
SP-BX2-50-PU60/30	--	--	--	20.053.151.16 (*-FI)	19	21.053.178.16 (*-FI)

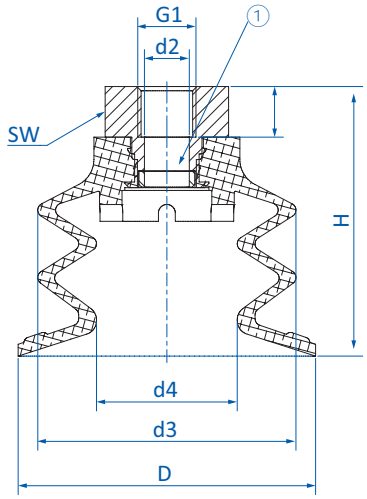
Model / Lip dimensions	Connection thread				Spare cup
	G1/4-male	G3/8-male	G3/8-female		
SP-BX2-35-PU60/30	20.037.150.16 (*-FI)	--	--	14	21.037.177.16 (*-FI)
SP-BX2-50-PU60/30	20.053.152.16 (*-FI)	20.053.153.16 (*-FI)	--	19	21.053.178.16 (*-FI)
SP-BX2-75-PU60/30	--	20.077.154.16 (*-FI)	20.077.155.16 (*-FI)	25	--

Continued on the next page

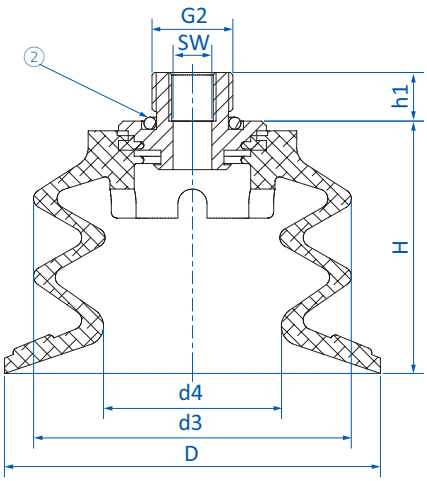
Dimensions



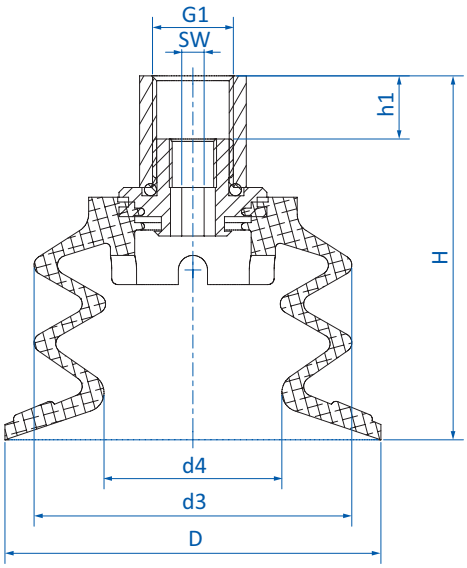
Drawing A



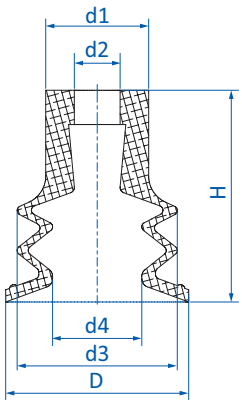
Drawing B



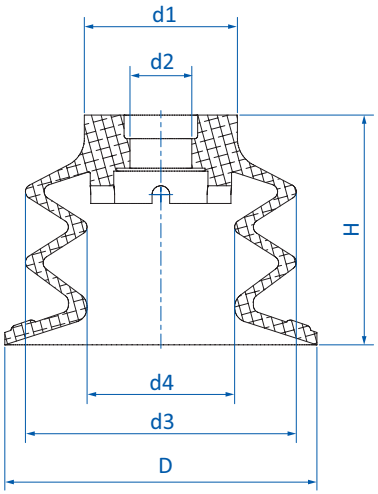
Drawing C



Drawing D



Drawing E



Drawing F

① = Filter screen ② = O-ring * = Size 11 and 16 mm without filter screen and O-ring



Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	SW
Bellows vacuum cups 2.5 folds – SP-BX2 fully assembled with fitting											
20.011.200.16	A	11	--	2.8	11	6.6	--	M5	20.5	5	8
20.011.201.16	A	11	--	2.5	11	6.6	--	M6	21	6	13
20.016.145.16	A	16	--	2.8	14	9	--	M5	24	4	8
20.016.146.16	A	16	--	2.5	14	9	--	M6	23	6	13
20.021.147.16	A	21	--	4	20	12	--	G1/8	20.2	7	13
20.026.148.16	A	26	--	4	23	12	--	G1/8	24	7	13
20.037.149.16	B	37	--	5	31	18	G1/8	--	34.8	6.3	19
20.037.150.16	A	37	--	5	31	18	--	G1/4	32.8	9	19
20.053.151.16	B	53	--	8	46	25	G1/8	--	48	9	22
20.053.152.16	A	53	--	6	46	25	--	G1/4	45	9	22
20.053.153.16	A	53	--	6	46	25	--	G3/8	45	10	22
20.077.154.16	C	77.5	--	--	65.5	37	--	G3/8	52	10	8
20.077.155.16	D	77.5	--	--	65.5	37	G3/8	--	75	13	8
Spare cups											
21.011.187.16	E	11	9.5	3.8	11	6.6	--	--	16.5	--	--
21.016.175.16	E	16	9	4	14	9	--	--	18.5	--	--
21.021.176.16	F	21	11	5	20	12	--	--	15.2	--	--
21.026.177.16	F	26	15	5	23	12	--	--	19	--	--
21.037.177.16	F	37	20	7	31	18	--	--	27	--	--
21.053.178.16	F	53	26	10.5	46	25	--	--	39	--	--

Monoflex Bellows cups, 2.5 folds – SP-BX2





Product notes	Advantage
Bellows vacuum cup with 2.5 folds made of very wear-resistant polyurethane. Hardness 50° Shore A	> Long service life minimizes machine downtime > Good adaptation to product surface > High stability and fast resetting allow short cycle times > Oil and ozone-resistant > Excellent height and angle compensation > Filter disc installed between folds from Ø 26 mm optionally available

Ordering notes

> For versions with a filter disc, please add "-FI" to the material code (e.g. 20.026.148.16-FI)*
> The filter disc is delivered assembled for diameters of 26 - 53 mm
> The filter disc is included for diameters ≥ 77 mm

Notes:

Explanation of the type description:
> SP-BX2 = Series name of the bellows vacuum cup with 2.5 folds
> -xx = nominal diameter
> -PUxx = Material / Hardness
> Example: SP-BX2-15-PU50
bellows vacuum cup with 2.5 folds and a nominal diameter of 15 mm, material Polyurethan 50° Shore A

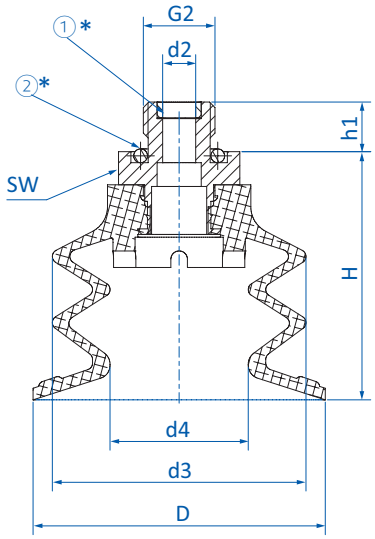
Technical data

Model / Lip dimensions	Connection thread					Spare cup
	M5-male	M6-male	G1/8-male	G1/8-female		
SP-BX2-10-PU50	20.011.200.22	20.011.201.22	--	--	4,5	21.011.187.22
SP-BX2-15-PU50	20.016 .145.22	20.016 .146.22	--	--	5,5	21.016.175.22
SP-BX2-20-PU50	--	--	20.021.147.22	--	6,5	21.021.176.22
SP-BX2-25-PU50	--	--	20.026.148.22 (*-FI)	--	8	21.026.177.22 (*-FI)
SP-BX2-35-PU50	--	--	--	20.037.149.22 (*-FI)	14	21.037.177.22 (*-FI)
SP-BX2-50-PU50	--	--	--	20.053.151.22 (*-FI)	19	21.053.178.22 (*-FI)

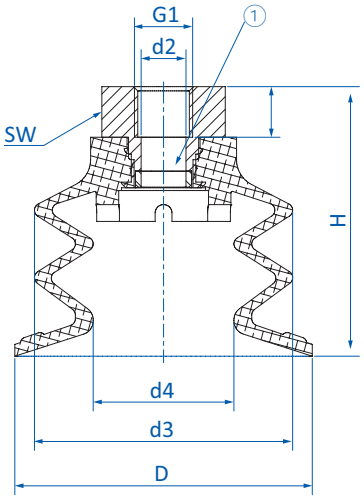
TyModel / Lip dimensions	Connection thread				Spare cup
	G1/4-male	G3/8-male	G3/8-female		
SP-BX2-35-PU50	20.037.150.22 (*-FI)	--	--	14	21.037.177.22 (*-FI)
SP-BX2-50-PU50	20.053.152.22 (*-FI)	20.053.153.22 (*-FI)	--	19	21.053.178.22 (*-FI)
SP-BX2-75-PU50	--	20.077.154.22 (*-FI)	20.077.155.22 (*-FI)	25	--

* -FI: inclusive nylon filter in first fold

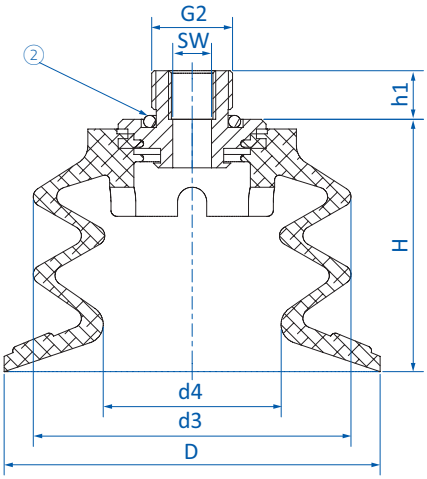
Dimensions



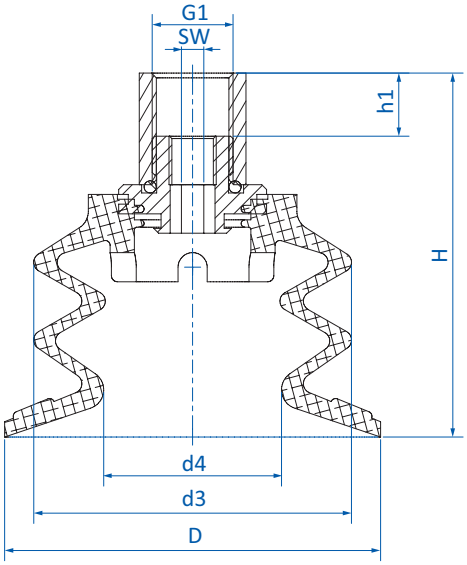
Drawing A



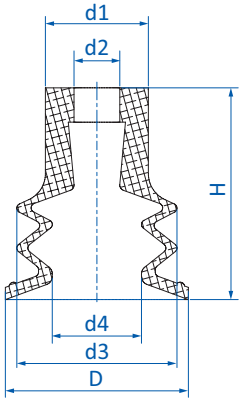
Drawing B



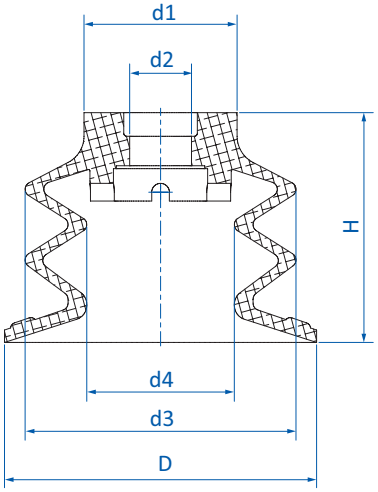
Drawing C



Drawing D



Drawing E



Drawing F

① = Filter screen ② = O-ring * = Size 11 and 16 mm without filter screen and O-ring

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	SW
Bellows vacuum cups 2.5 folds – SP-BX2 fully assembled with fitting											
20.011.200.22	A	11	--	2.8	11	6.6	--	M5	20.5	5	8
20.011.201.22	A	11	--	2.5	11	6.6	--	M6	21	6	13
20.016.145.22	A	16	--	2.8	14	9	--	M5	24	4	8
20.016.146.22	A	16	--	2.5	14	9	--	M6	23	6	13
20.021.147.22	A	21	--	4	20	12	--	G1/8	20.2	7	13
20.026.148.22	A	26	--	4	23	12	--	G1/8	24	7	13
20.037.149.22	B	37	--	5	31	18	G1/8	M5	34.8	6.3	19
20.037.150.22	A	37	--	5	31	18	--	G1/4	32.8	9	19
20.053.151.22	B	53	--	8	46	25	G1/8	M5	48	9	22
20.053.152.22	A	53	--	6	46	25	--	G1/4	45	9	22
20.053.153.22	A	53	--	6	46	25	--	G3/8	45	10	22
20.077.154.22	C	77.5	--	--	65.5	37	--	G3/8	52	10	8
20.077.155.22	D	77.5	--	--	65.5	37	G3/8	M5	75	13	8
Spare cups											
21.011.187.22	E	11	9.5	3.8	11	6.6	--	--	16.5	--	--
21.016.175.22	E	16	9	4	14	9	--	--	18.5	--	--
21.021.176.22	F	21	11	5	20	12	--	--	15.2	--	--
21.026.177.22	F	26	15	5	23	12	--	--	19	--	--
21.037.177.22	F	37	20	7	31	18	--	--	27	--	--
21.053.178.22	F	53	26	10.5	46	25	--	--	39	--	--

Vinyl bellows cups, 1.5 folds – SBV 1



Product notes	Advantage
Durable bellows vacuum cups with 1.5 folds from snug-fitting, wear-resistant material. Very well suited for handling abrasive products such as cardboard. Flexible material enables low-leakage gripping of highly flexible products such as foil-packaged goods. Connection via plug-in nipple.	> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces > Flexible, soft lips > Long life cycle > Cost-effective replacement of worn seals

Technical data

Item no.	Model		Number of folds	Material / Color
23.005.095._*	SBV 1-5	2	1.5	Vinyl (bl)
23.007.112._*	SBV 1-7	2	1.5	Vinyl (bl)
23.013.097._*	SBV 1-13	5	1.5	Vinyl (bl)
23.015.098._*	SBV 1-15	5	1.5	Vinyl (bl)
23.019.109._*	SBV 1-19	8	1.5	Vinyl (bl)
23.020.114._*	SBV 1-20	6	1.5	Vinyl (bl)
23.022.028._*	SBV 1-22	8	1.5	Vinyl (bl)
23.028.113._*	SBV 1-28	9	1.5	Vinyl (bl)
23.030.107._*	SBV 1-30	10.5	1.5	Vinyl (bl)
23.031.192._*	SBV 1-31	6	1.5	Vinyl (bl)
23.035.111._*	SBV 1-35	12	1.5	Vinyl (bl)
23.052.116._*	SBV 1-52	6	1.5	Vinyl (bl)
23.070.060._*	SBV 1-70	20	1.5	Vinyl (bl)

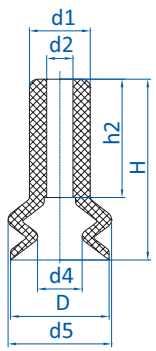
Continued on the next page

* When ordering please add the appropriate material code to item no.

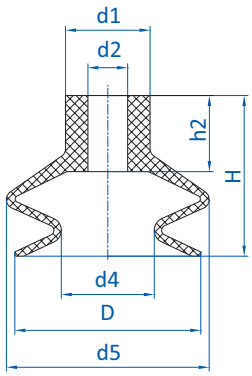
Accessories

Item no.	Suitable fittings					
	M5-male	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.095._*	270.195	--	--	--	--	--
23.007.112._*	270.001	--	--	--	--	--
23.013.097._*	270.013	270.103	270.003	270.015	--	--
23.015.098._*	270.134	270.104	270.033	270.478	--	--
23.019.109._*	--	--	270.030	270.019	270.274	270.275
23.020.114._*	270.134	270.104	270.033	270.478	--	--
23.022.028._*	270.013	270.103	270.003	270.015	270.194	--
23.028.113._*	270.134	270.104	270.033	270.478	--	--
23.030.107._*	--	270.312/19	270.030	270.019	270.274	270.275
23.031.192._*	--	270.312/19	270.030	270.019	270.274	270.275
23.035.111._*	270.443	--	270.238	270.110	270.534	--
23.052.116._*	--	--	270.132	--	270.208	270.452
23.070.060._*	--	--	--	--	270.184	--

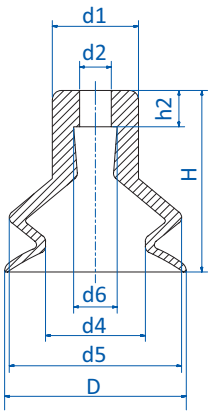
Dimensions



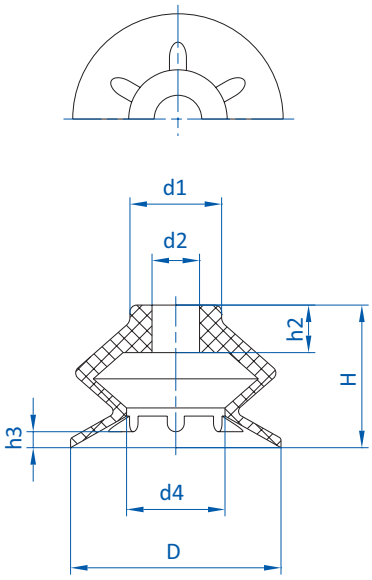
Drawing A



Drawing B



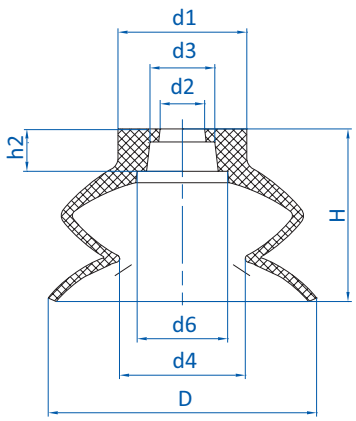
Drawing C



Drawing D

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing E

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	Ø d6 [mm]	H [mm]	h2 [mm]	h3 [mm]
23.005.095._*	A	4.5	3	1.5	--	2.5	4	--	13	10	--
23.007.112._*	A	6	3.7	1.6	--	2.5	6.5	--	11	7.5	--
23.013.097._*	B	13	7.7	3.7	--	7.5	12.5	--	14.7	6.7	--
23.015.098._*	B	15.5	9	3.4	--	8.5	17	--	20.7	11.7	--
23.019.109._*	B	19	12.8	7	--	12	19	--	18	7.4	--
23.020.114._*	C	20	9.5	3.5	--	11	19	4.8	20	4	--
23.022.028._*	A	22	10	4.7	--	11	24	--	19	9	--
23.028.113._*	C	28	12.5	3.5	--	13	26	5	21	4	--
23.030.107._*	B	30	13.2	6.4	--	15	29.3	--	22	7	--
23.031.192._*	D	31	13.5	7	--	14.5	--	--	21	7	2.4
23.035.111._*	B	35	17	6	--	20	33	--	30	16	--
23.052.116._*	B	50.8	18.5	9.7	--	30	50	--	40.8	21.2	--
23.070.060._*	E	70	33.6	11.6	16.9	33	--	24.3	45	11.1	--

*** When ordering please add the appropriate material code to item no.**

Vinyl bellows cups, 2.5 folds – SBV 2



Product notes

Durable bellows vacuum cups with a long stroke, made of snug-fitting, wear-resistant material.
Very well suited for handling abrasive products such as cardboard.
Flexible material enables low-leakage gripping of highly flexible products such as foil-packaged goods. Connection via plug-in nipple.

Advantage

> Long vacuum cup lift and good adaptation to curved or uneven product surfaces
> Flexible, soft lips
> Long life cycle
> Cost-effective replacement of worn seals

Technical data

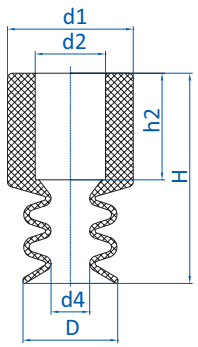
Item no.	Model		Number of folds	Material / Color
21.006.001._*	SBV 2-6	3.5	2.5	Vinyl (bl)
21.010.070._*	SBV 2-10	5	2.5	Vinyl (bl)
21.018.068._*	SBV 2-18	11	2.5	Vinyl (bl)
21.023.066._*	SBV 2-23	9	2.5	Vinyl (bl)
21.029.069._*	SBV 2-29	10	2.5	Vinyl (bl)
21.032.082._*	SBV 2-32	14	2.5	Vinyl (bl)
21.040.027._*	SBV 2-40	16	2.5	Vinyl (bl)
21.050.084._*	SBV 2-50	20	2.5	Vinyl (bl)

Accessories

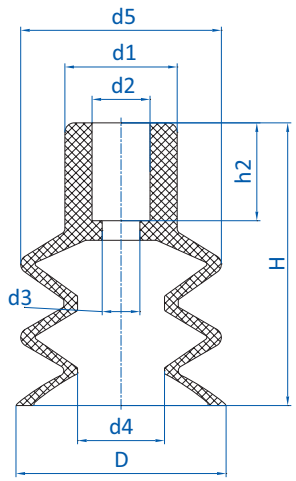
	Suitable fittings						
Item no.	M5-male	M6-male	M10-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.006.001._*	270.013	270.103	--	270.003	270.015	--	--
21.010.070._*	270.013	270.103	--	270.003	270.015	--	--
21.018.068._*	270.013	270.103	--	270.003	270.015	270.194	--
21.023.066._*	--	--	270.177	--	--	270.451	270.452
21.029.069._*	--	--	--	270.132	270.114	270.043	270.178
21.032.082._*	--	--	270.177	--	--	270.451	270.452
21.040.027._*	--	--	270.177	--	--	270.451	270.452
21.050.084._*	--	--	270.177	--	--	270.451	270.452

*** When ordering please add the appropriate material code to item no.**

Dimensions



Drawing B



Drawing A

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]
21.006.001._*	B	6.5	8.5	5	2.5	14	7
21.010.070._*	B	10	10	5	5	15.5	7.5
21.018.068._*	A	19	10	5	9	24	9
21.023.066._*	A	23	17	11	13.5	26	12
21.029.069._*	A	29	15.5	8	12	39	13.5
21.032.082._*	A	32	17	11	19.5	35	14
21.040.027._*	A	40	20	10.5	18.5	53	13.5
21.050.084._*	A	50	19.5	10.5	30	49	13.5

*** When ordering please add the appropriate material code to item no.**

Bag cups 2.5 folds made of Varioflex® – SV-BGX2





Product notes

Robust 2K polyurethane bellows vacuum cup with 2.5 folds for bag handling in the packaging industry, online retail and logistics.
Use for handling filled bags and a wide variety of film packaging.
Soft, conformable sealing lip in 30° shore A.
Non-detachable vulcanized, robust bellows area made of PU in 60° Shore A.

Advantage

> Best possible sealing even on bags with significant wrinkling allows low vacuum level (energy saving)
> Flexibility also allows gripping of little filled bags
> Ideal stability and grip for short cycle times and high acceleration
> Wear-resistant material for a long service life

Ordering notes

> Imperial NPT fittings for the US-market available upon request

Technical data

Item no.	Model		Number of folds	Material / Color
21.035.190.16	SV-BGX2-35	12	2.5	Varioflex® 60°/30° (sw/r)
21.052.191.16	SV-BGX2-52	12	2.5	Varioflex® 60°/30° (sw/r)
21.064.192.16	SV-BGX2-64	15	2.5	Varioflex® 60°/30° (sw/r)

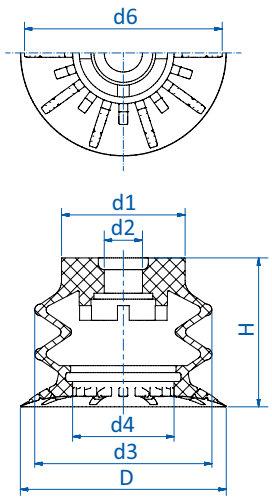
Accessories

	Suitable fittings		
Item no.	G1/8-female	G1/4-male	G3/8-male
21.035.190.16	270.501-S	270.506-S	270.505-S
21.052.191.16	270.502-S	270.504-S	270.507-S
21.064.192.16	270.502-S	270.504-S	270.507-S

Hardness range



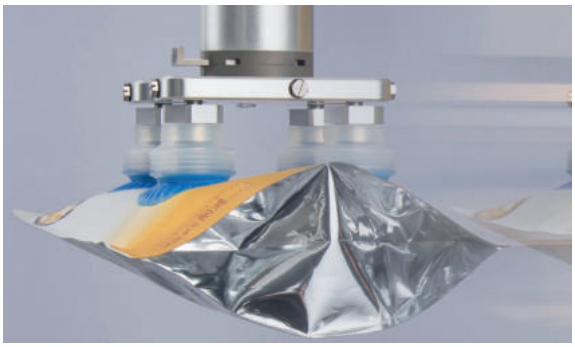
Dimensions



Item no.	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d6** [mm]	**H** [mm]
21.035.190.16	35	21	6.5	30	17	34	25.3
21.052.191.16	52	27.5	10.5	40	23	50	30
21.064.192.16	65	35	10.5	52	30	63	39

Bellows cups 3.5 and 5.5 folds - SV-BG





Product notes

Two-component bellows vacuum cups for bag handling in the packaging industry.
Use for handling liquid or powder filled pouches and a wide variety of film packaging.
Soft, conformable sealing lip in 40° shore A.
non-detachable vulcanized, robust bellows area made of silicone in 70° Shore A.

Advantage

> Best possible sealing even on pouches with strong wrinkle formation
> Ideal stability and hold for short cycle times and high acceleration
> 3.5 bellows compact design allows fast cycles
> 5.5 bellows absorb shocks and vibrations
> Adapts optimally to inclined surfaces

Notes:

> The vacuum cups must always be used in conjunction with a move-in guard to prevent film from being drawn in
> Accessories, such as suitable holders and the move-in guards, are not included in the scope of delivery, please order separately

Technical data

Item no.	Model		Number of folds	Material / Color	Accessories: Move-in guard curved	Accessories: Move-in guard flat
25.030.095.8	SV-BG3-30	6	3,5	SI 70°/40° (tr/bl)	78.525-s	78.525-f
25.040.096.8	SV-BG3-40	7	3,5	SI 70°/40° (tr/bl)	78.526-s	78.526-f
25.050.097.8	SV-BG3-50	9	3,5	SI 70°/40° (tr/bl)	78.527-s	78.527-f
25.030.098.8	SV-BG5-30	10	5,5	SI 70°/40° (tr/bl)	78.525-s	78.525-f
25.040.099.8	SV-BG5-40	12	5,5	SI 70°/40° (tr/bl)	78.526-s	78.526-f
25.050.100.8	SV-BG5-50	15	5,5	SI 70°/40° (tr/bl)	78.527-s	78.527-f

Accessories

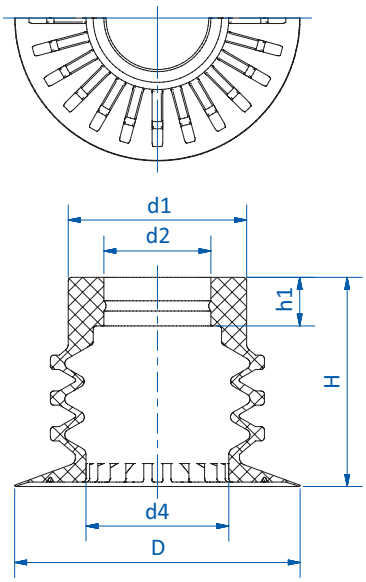
Item no.	Suitable fittings: G1/8-male	G1/4-male	G3/8-male
25.030.095.8	270.776	270.777	270.778
25.040.096.8	270.776	270.777	270.778
25.050.097.8	270.776	270.777	270.778
25.030.098.8	270.776	270.777	270.778
25.040.099.8	270.776	270.777	270.778
25.050.100.8	270.776	270.777	270.778

Hardness range

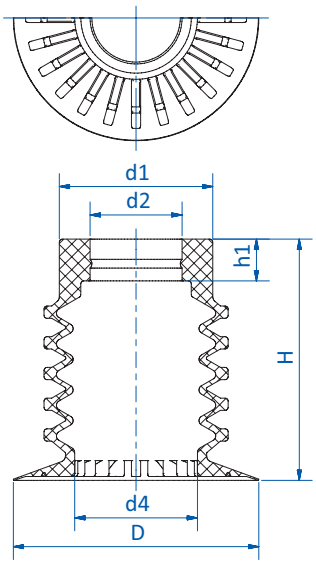


The non-detachable vulcanized, robust bellows area made of silicone 70° Shore A ensures the best possible stability and hold with short cycle times and high acceleration.
The soft, conformable sealing lip ensures the best possible seal even on bags with severe wrinkling.

Dimensions



Drawing A

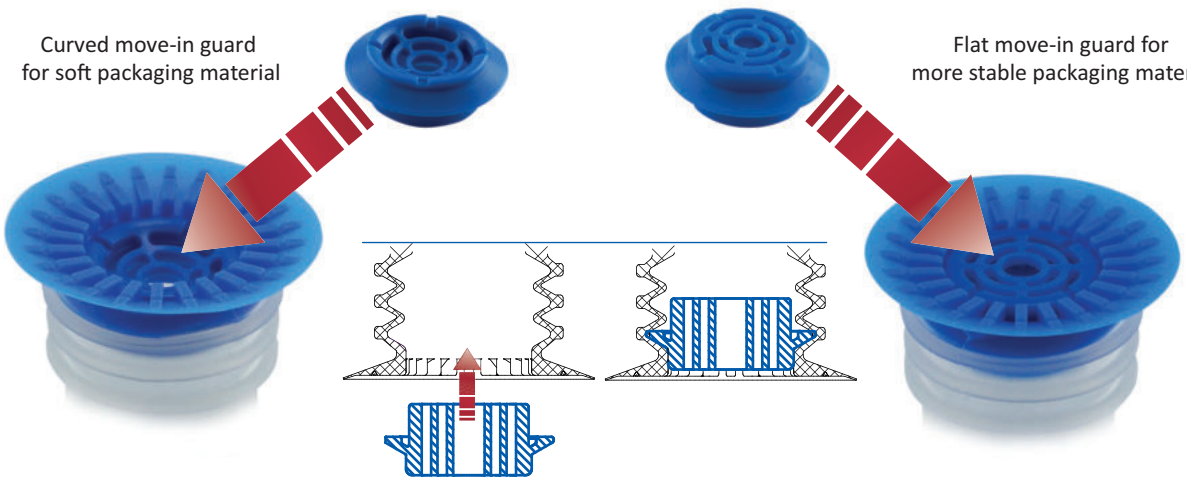


Drawing A

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	h1 [mm]	H [mm]
25.030.095.8	A	30	25	15	15	6.8	25
25.040.096.8	A	40	25	15	20	6.8	29.3
25.050.097.8	A	50	25	15	25	6.8	33.8
25.030.098.8	A	30	25	15	15	6.8	33
25.040.099.8	A	40	25	15	20	6.8	39.3
25.050.100.8	A	50	25	15	25	6.8	45.8

Continued on the next page

Two variants of differently shaped support grids clipped into the lower fold

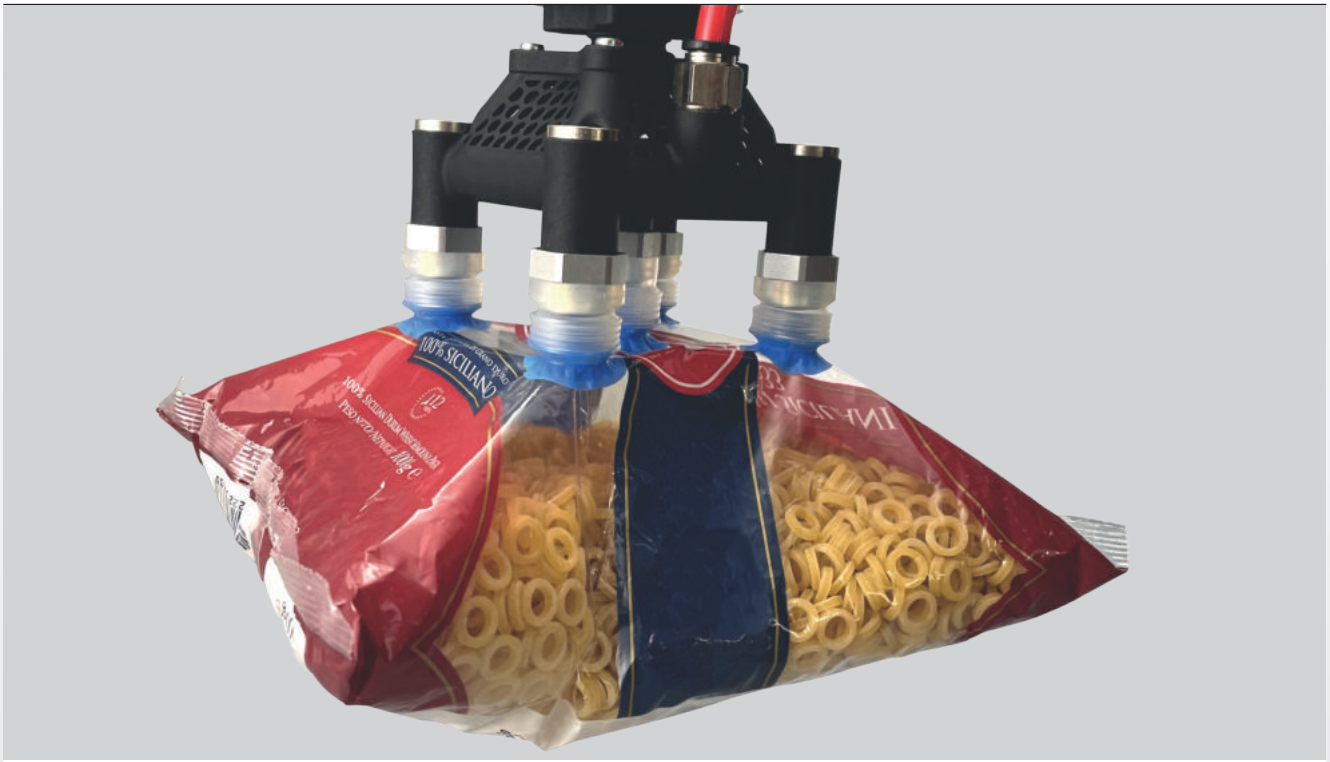


Easy clipping into the lower fold of the vacuum cup

Application example



Application example



Continued on the next page

Move-in guard for vacuum cups SV-BG



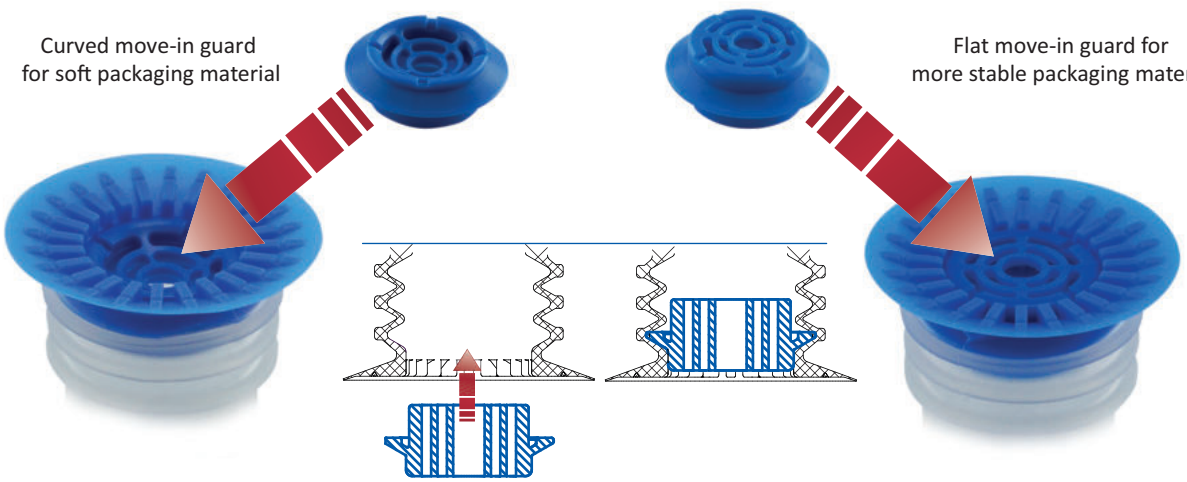
Product notes

> Two variants of differently shaped support grids prevent flexible film packaging from being sucked in
> Curved design suitable for soft packaging material
> Flat version is used for more stable packaging material
> Easy clipping into the lower fold of the SV-BG series vacuum cup
> SV-BG series vacuum cups must always be used in conjunction with a move-in guard

Technical data

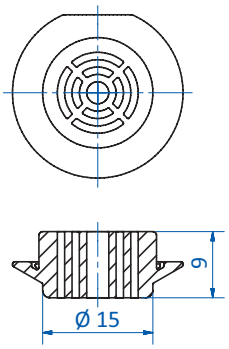
Item no.	Design	Suitable for	Material
78.525-f	flat	SV-BG-30	PP
78.525-s	curved	SV-BG-30	PP
78.526-f	flat	SV-BG-40	PP
78.526-s	curved	SV-BG-40	PP
78.527-f	flat	SV-BG-50	PP
78.527-s	curved	SV-BG-50	PP

Two variants of differently shaped support grids clipped into the lower fold

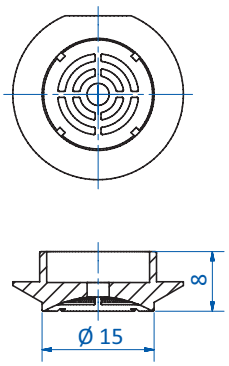


Easy clipping into the lower fold of the vacuum cup

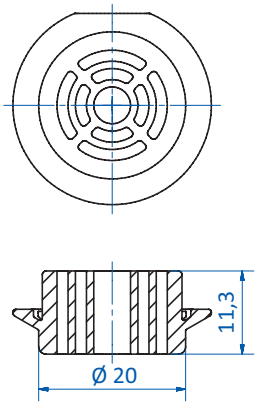
Dimensions



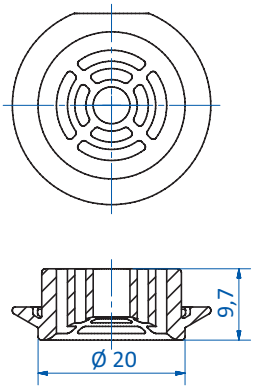
78.525-f



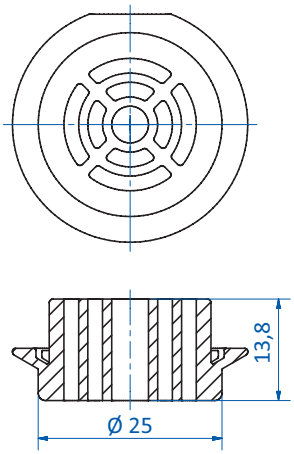
78.525-s



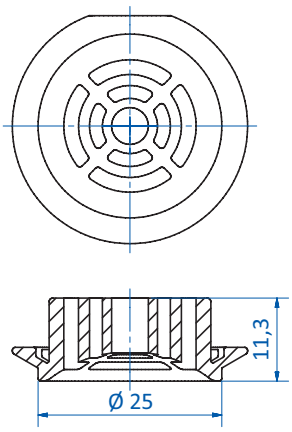
78.526-f



78.526-s



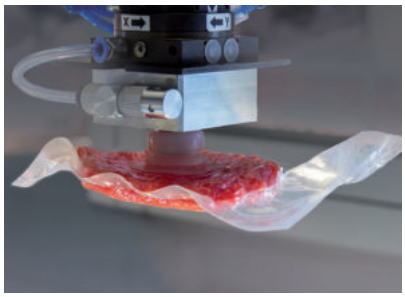
78.527-f



78.527-s

Bellows vacuum cups, 1.5 folds – SBF-A





Product notes

Bellows vacuum cup with soft, very flexible single sealing lip for handling highly sensitive products with high leveling adjustment.
Connection with plugged, or fixed screwed nipple or attachment frame (Ø 80 mm). Compatible "snap-in" spring leveller available.

Advantage

> Large holding force
> Fine, flexible sealing lip fits in perfectly with irregularities of the product
> Cleats for the sealing lip prevent retraction of flexible products (e.g. films)
> Cost-effective replacement of worn seals
> High process reliability due to fixed, non-rotating seat of the screw nipple

Technical data

Item no.	Model		Number of folds	Material / Color	Accessories Spare vacuum cup:
Rubber sealing lip for attachment to fitting					
23.006.290._*	SBF-A -6	2.3	1.5	NBR (sw), SI (tr), SI-AS (sw)	--
23.008.291._*	SBF-A -8	3	1.5	NBR (sw), SI (tr), SI-AS (sw)	--
23.010.139._*	SBF-A -10	4	1.5	NBR (sw), SI (tr), SI-LE (tr), SI-AS (sw)	--
23.015.292._*	SBF-A -15	4	1.5	NBR (sw), SI (tr), SI-AS (sw)	--
23.020.140._*	SBF-A -20	6	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.025.293._*	SBF-A -25	6	1.5	NBR (sw), SI (tr)	--
23.030.141._*	SBF-A -30	8	1.5	NBR (sw), SI (tr), SI-LE (tr)	--
23.040.142._*	SBF-A -40	9.5	1.5	NBR (sw), SI (tr)	--
23.050.143._*	SBF-A -50	11	1.5	NBR (sw), SI (tr)	--
23.080.144._*	SBF-A -80	10	1.5	NBR (sw), SI (tr)	--
Full vacuum cups with receptacle					
22.080.161._*	SBF-A -80	10	1.5	NBR (sw), SI (tr)	23.080.144._*

Accessories

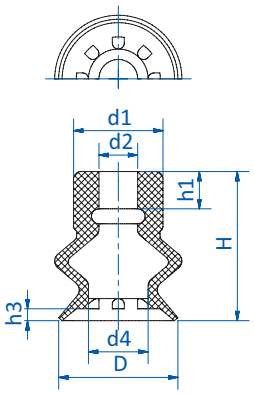
	Suitable fittings							
Item no.	M4-male	M5-male	M6-male	M10-female	G1/8-male	G1/8-female	G1/4-male	G1/4-female
Rubber sealing lip for attachment to fitting								
23.006.290._*	--	270.791	--	--	--	--	--	--
23.008.291._*	--	270.791	--	--	--	--	--	--
23.010.139._*	270.458	270.134	270.104	--	--	--	--	--
23.015.292._*	270.458	270.134	270.104	--	--	--	--	--
23.020.140._*	--	270.311	270.459	--	270.480	270.479	--	--
23.025.293._*	--	270.311	270.459	--	270.480	270.479	--	--
23.030.141._*	--	--	270.460	--	270.482	270.481	270.483	270.484

*** When ordering please add the appropriate material code to item no.**

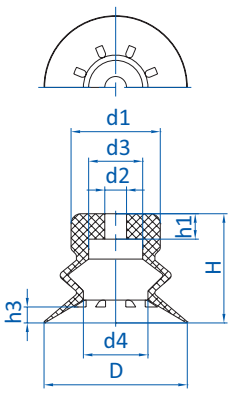
Accessories

Item no.	Suitable fittings							
	M4-male	M5-male	M6-male	M10-female	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.040.142._*	--	--	270.498	--	270.486	270.485	270.487	270.488
23.050.143._*	--	--	270.499	--	270.490	270.489	270.491	270.492
23.080.144._*	--	--	--	--	--	--	--	--
Full vacuum cups with receptacle								
22.080.161._*	--	--	--	270.088	--	--	--	270.089

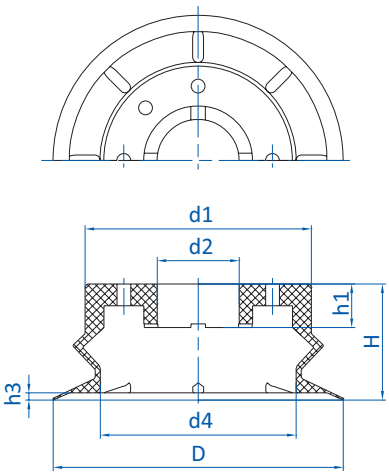
Dimensions



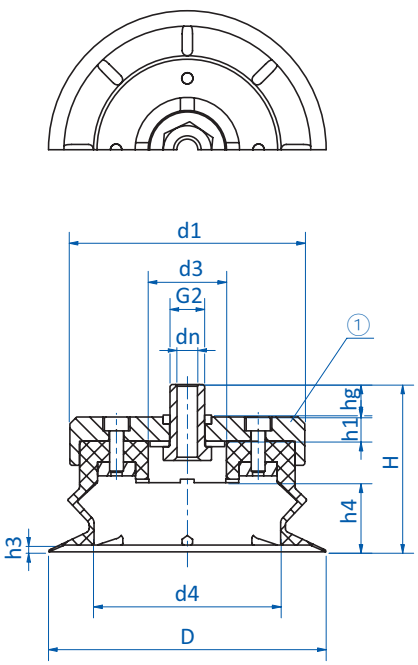
Drawing A



Drawing B



Drawing C



Drawing D

① = Aluminum

Continued on the next page

*** When ordering please add the appropriate material code to item no.**



Bellows vacuum cups series

Bellows vacuum cups, 1.5 folds – SBF-A

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø dn [mm]	G2 (male)	H [mm]	h1 [mm]	h3 [mm]	h4 [mm]	hg [mm]
Rubber sealing lip for attachment to fitting													
23.006.290._*	A	6	6	2.6	--	3	--	--	10	2.5	0.6	--	--
23.008.291._*	A	8	6	2.6	--	4	--	--	10	2.5	0.8	--	--
23.010.139._*	B	10	10	4	6	5	--	--	15.5	3	1	--	--
23.015.292._*	B	15	11	4	6	8	--	--	16	3	1.5	--	--
23.020.140._*	B	20	15	6	10	11	--	--	19	4	2	--	--
23.025.293._*	B	25	17	6	10	11.6	--	--	19	4	2	--	--
23.030.141._*	B	30	17	6	12	14	--	--	23	5	2.8	--	--
23.040.142._*	B	40	25	6	15	18	--	--	30	7	4.4	--	--
23.050.143._*	B	50	30	6	21	21	--	--	32	7	4	--	--
23.080.144._*	C	80	62	23	--	54	--	--	32	12	2	--	--
Full vacuum cups with receptacle													
22.080.161._*	D	80	68	--	23	54	6	M10	48	7	2	20	9

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, 1.5 folds – SBF-B



Product notes

Bellows vacuum cup, 1.5 folds with soft sealing lip and soft bellows for handling curved or uneven product surfaces.
Connection via plug-in nipple.
Compatible "snap-in" spring leveller available.

Advantage

> Bellows compensate height differences
> Good adaptation to curved or uneven product surfaces
> Cost-effective replacement of worn seals

Technical data

Item no.	Model		Number of folds	Material / Color
23.006.145._*	SBF-B-6	5	1.5	NBR (sw), SI (tr)
23.008.146._*	SBF-B-8	5	1.5	NBR (sw), SI (tr)
23.010.147._*	SBF-B-10	5	1.5	NBR (sw), SI (tr), SI-LE (tr)
23.015.148._*	SBF-B-15	7	1.5	NBR (sw), SI (tr)
23.020.149._*	SBF-B-20	6	1.5	NBR (sw), SI (tr)

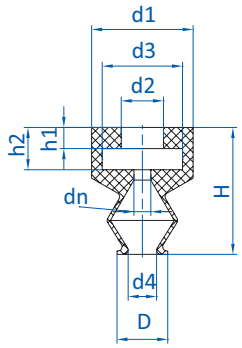
Accessories

	Suitable fittings					Suitable spring leveler (Snap-in)		
Item no.	M5-male	M6-male	G1/8-male	G1/8-female	G1/4-male	Spring leveler		Hose outside Ø
23.006.145._*	270.200	--	270.064	270.065	--	50.018	8.5	4
23.008.146._*	270.200	--	270.064	270.065	--	50.018	8.5	4
23.010.147._*	270.200	--	270.064	270.065	--	50.018	8.5	4
23.015.148._*	270.200	--	270.064	270.065	--	50.018	8.5	4
23.020.149._*	270.317	270.103	270.205	270.109	270.194	50.020	8.5	6

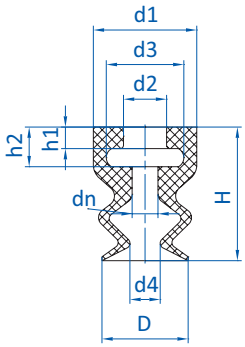
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* When ordering please add the appropriate material code to item no.

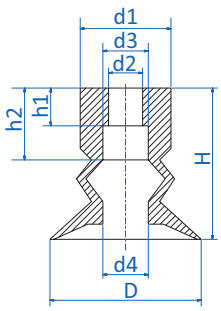
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø dn [mm]	H [mm]	h1 [mm]	h2 [mm]
23.006.145._*	A	6	12	5	9.5	3.4	2	15	2.5	5
23.008.146._*	B	8	12	5	9	4	2	14.7	2.5	4.5
23.010.147._*	B	10	12	5	9	3.5	3	15.5	2.5	4.5
23.015.148._*	B	15	12	5	9	5.5	3	17	2.5	4.5
23.020.149._*	C	20	12	4.5	6	6	--	20	5	9.5

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, 4.5 folds – SBF-C



Product notes

Bellows vacuum cup, 4.5 folds, with a very thin, flexible sealing lip and a large stroke. Fine, flexible sealing lip fits in perfectly with irregularities of the product (e.g. groceries packaged in bags).
Connection via screw nipples (hollow bolt + adapter)

Advantage

> Optimal height and angle compensation
> Very good fit to irregular products
> Gentle handling of sensitive products
> A very safe seat, bolted down with a bracket from the bottom
> Cost-effective replacement of worn seals

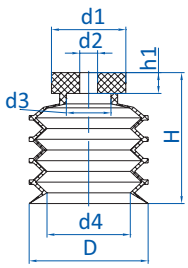
Technical data

Item no.	Model		Number of folds	Material / Color
25.010.044._*	SBF-C-10	4	4.5	NBR (sw), SI (tr)
25.020.045._*	SBF-C-20	10	4.5	NBR (sw), SI (tr)
25.030.046._*	SBF-C-30	14	4.5	NBR (sw), SI (tr)
25.040.047._*	SBF-C-40	19	4.5	NBR (sw), SI (tr)
25.050.048._*	SBF-C-50	26	4.5	NBR (sw), SI (tr)

Accessories

	Suitable fittings					
Item no.	M4-male	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
25.010.044._*	270.458	--	270.009	270.007	--	--
25.020.045._*	--	270.459	270.480	270.479	--	--
25.030.046._*	--	270.460	270.482	270.481	270.483	270.484
25.040.047._*	--	--	270.486	270.485	270.487	270.488
25.050.048._*	--	--	270.490	270.489	270.491	270.492

Dimensions



Item no.	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]	h1 [mm]
25.010.044._*	10	10	4	--	6	14.5	3
25.020.045._*	20	15	6	10	14	25	4
25.030.046._*	30	18	6	12	19	38.5	5
25.040.047._*	40	25	6	15	28	44	7
25.050.048._*	50	30	6	19	32	54	7

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups for chocolates – SL-PB



Product notes	Advantage
Flat vacuum cups made of FDA-approved silicone for handling delicate products with heavily textured surfaces.	> Gentle handling of the most sensitive surfaces > Also suitable for three-dimensional products, e.g. chocolates

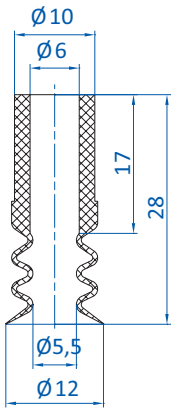
Technical data

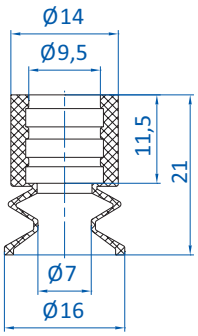
Item no.	Model		Material / Color	Number of folds	Hardness [° Shore A]
21.012.079._*	SL-PB-12	7	SI (w), SI-LE (w), SI (tr), SI-LE (tr)	2.5	50, 35
27.016.001._*	SL-PB-16	6	SI (tr), SI-LE (tr)	1.5	50

Accessories

	Suitable fittings						Suitable spring leveler (Snap-in)	
Item no.	M5-male	M10-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Spring leveler	
21.012.079._*	270.443	--	270.238	270.110	270.534	--	--	--
27.016.001._*	270.244	270.177	--	--	270.451	270.452	50.005	5

Dimensions





Drawing B

*** When ordering please add the appropriate material code to item no.**

Vacuum cups for baked goods – SL-B





Product notes

Bellows vacuum cups especially suitable for baked goods such as waffles, bread, rolls, pizzas and donuts.

Advantage

> Large degree of leveling
> Gentle attachment to the product
> Good holding strength through optimized lip geometry
> FDA-compliant

Ordering notes

Matching assembly aid for special fitting 270.419: Item no. 90.007

Technical data

Item no.	Model		Number of folds	Material / Color	Hardness [° Shore A]
21.034.179._*	SL-B-34	12	2.5	SI-LE (tr)	50
25.038.016._*	SL-B-38	24	4.5	SI (tr), SI-LE (tr)	50
27.039.017._*	SL-B-38A	20	5.5	SI (tr) 50° Shore	50
25.040.043._*	SL-B-40	24	4.5	SI (tr) 50° Shore, SI (tr) 30° Shore	50, 30
25.040.058._*	SL-B-40A	25	4.5	SI (bl), SI-LE (bl)	35
21.060.074._*	SL-B-60	12	2.5	SI (tr)	30

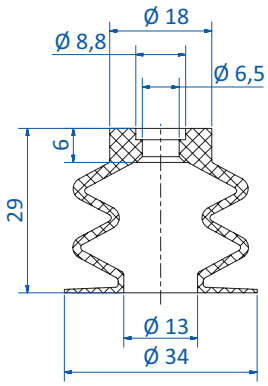
Accessories

	Suitable fittings				
Item no.	Without Thread	M6-male	G1/4-male	G1/4-female	G1/2-male
21.034.179._*	--	270.039	--	--	--
25.038.016._*	270.419	--	270.183	270.182	--
27.039.017._*	270.419	--	270.183	270.182	--
25.040.043._*	270.419	--	270.183	270.182	--
25.040.058._*	270.419	--	270.183	270.182	--
21.060.074._*	--	--	--	--	270.372

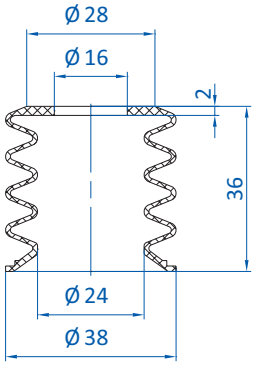
Continued on the next page

* When ordering please add the appropriate material code to item no.

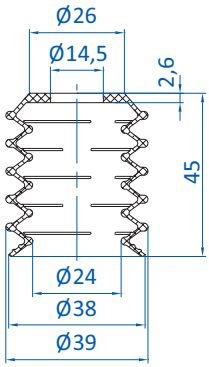
Dimensions



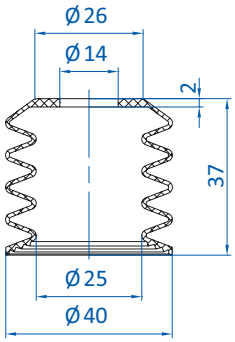
Drawing A



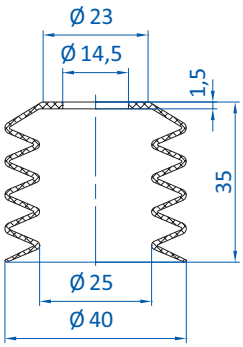
Drawing B



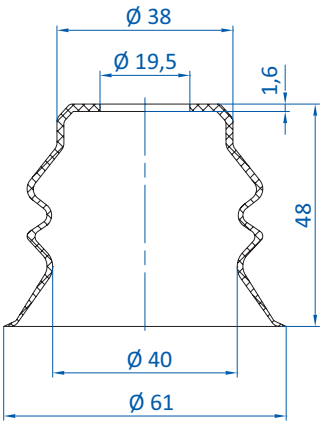
Drawing C



Drawing D



Drawing E



Drawing F

Item no.	Drawing
21.034.179._*	A
25.038.016._*	B
27.039.017._*	C
25.040.043._*	D
25.040.058._*	E
21.060.074._*	F

*** When ordering please add the appropriate material code to item no.**

Plug-In vacuum cups 2.5 folds – SBP2





Product notes

> Bellows vacuum cups for direct installation in bores and housings
> Simple and tool-free exchange
> Dynamic use on cardboard and packaging
> Compatible with common vacuum gripping systems
> Optionally with built-in flow resistance to reduce leakage

Flow resistors available separately
> 270.730: SW08 = 0.8 mm; POM white
> 270.731: SW10 = 1.0 mm; POM blue
> 270.732: SW13 = 1.3 mm; POM black
> 270.733: SW15 = 1.5 mm; POM white

Notes

Material code and Shore hardness:
*.2 = SI (tr) Silicone transparent, Shore hardness 55°
*.8 = SI (w) Silicone white, Shore hardness 35°

Order example:
21.020.185.2 = Plug-In vacuum cup single, Shore hardness 55°
21.020.185.8-SW08-LE = Plug-In vacuum cup, Shore hardness 35°, with mounted flow resistor 0.8 mm, suitable for food contact

Technical data

Item no.	Model		Free passage Ø [mm]	Suction power to achieve 60 % vacuum [Nl/min]	Flow resistor [mm]	Connection	Number of folds
Plug-In vacuum cups without flow resistor							
21.020.185._*	SBP2-20	9	4.3	29	without	Push-In	2.5
21.040.186._*	SBP2-40	20	4.3	29	without	Push-In	2.5
Plug-In vacuum cups with mounted flow resistor 0.8 mm							
21.020.185._*-SW08	SBP2-20	9	0.8	7	0.8	Push-In	2.5
21.040.186._*-SW08	SBP2-40	20	0.8	7	0.8	Push-In	2.5
Plug-In vacuum cups with mounted flow resistor 1 mm							
21.020.185._*-SW10	SBP2-20	9	1	9	1	Push-In	2.5
21.040.186._*-SW10	SBP2-40	20	1	9	1	Push-In	2.5
Plug-In vacuum cups with mounted flow resistor 1.3 mm							
21.020.185._*-SW13	SBP2-20	9	1.3	14	1.3	Push-In	2.5
21.040.186._*-SW13	SBP2-40	20	1.3	14	1.3	Push-In	2.5
Plug-In vacuum cups with mounted flow resistor 1.5 mm							
21.020.185._*-SW15	SBP2-20	9	1.5	17	1.5	Push-In	2.5
21.040.186._*-SW15	SBP2-40	20	1.5	17	1.5	Push-In	2.5

Continued on the next page

*** When ordering please add the appropriate material code to item no.**

When ordering please note

Order example:
21.020.185.2 = Plug-In vacuum cup single
21.020.185.2-SW08-LE = Plug-In vacuum cup with mounted flow resistor 0.8 mm, suitable for food contact

21.020.185.**2-SW08-LE**

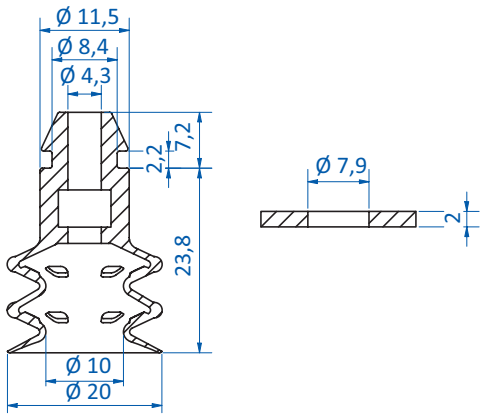
LE = Suitable for short-time contact with food

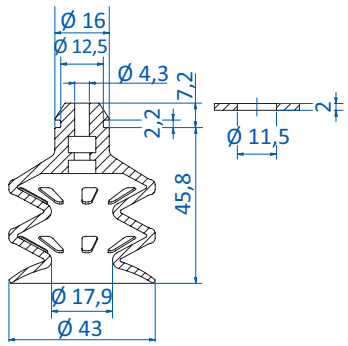
SW08 = 0.8 mm; POM white
SW10 = 1.0 mm; POM blue
SW13 = 1.3 mm; POM black
SW15 = 1.5 mm; POM white



Material code:
***.2** = SI (tr) Silicone transparent, Shore hardness 55°
***.8** = SI (w) Silicone white, shore hardness 35°

Dimensions





*** When ordering please add the appropriate material code to item no.**

Flow resistor for Plug-In vacuum cups SBP2



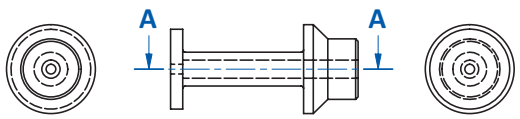
Product notes

> Flow resistance for direct mounting in the vacuum cup
> Four different inner diameters for individual application
> Different colors for easy differentiation
> Reduces the volume flow in the case of vacuum cups that are not or not fully loaded
> Enables the energy-saving design of the system
> Increase of process reliability

Technical data

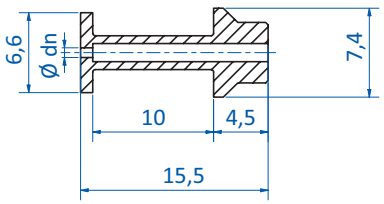
Item no.	Free passage Ø [mm]	Suction power to achieve 60 % vacuum [Nl/min]	Colour	Design	Material	Weight [g]	Suitable for
270.730	0.8	7	white	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.731	1	9	blue	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.732	1.3	14	black	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.733	1.5	17	white	Plug-In	POM	0.2	SBP2-20 & SBP2-40

Dimensions



A - A (4 : 1)

	Ø dn [mm]
270.730	0,8
270.731	1,0
270.732	1,3
270.733	1,5



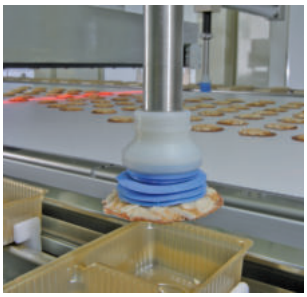
Application example



*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups, 1.5 and 2.5 folds – SV-SB





Product notes	Advantage
Bellows vacuum cups, 1.5 and 2.5 folds, for standard packaging machines. Soft, flexible sealing lip for smooth contact. FDA-compliant materials (SI).	> Gentle handling of sensitive products

Technical data

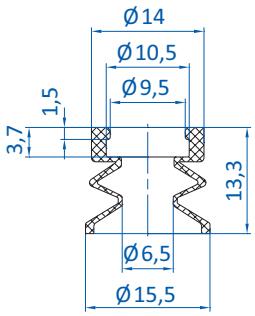
Item no.	Model		Number of folds	Material / Color
Bellows vacuum cups 1.5 bellows – SV-SB1				
23.016.232._*	SV-SB1-16	6	1.5	SI (tr), SI-LE (tr)
23.030.230._*	SV-SB1-30	7	1.5	NR (gr)
Bellows vacuum cups 2.5 bellows – SV-SB2				
21.030.030._*	SV-SB2-30	13	2.5	SI (tr), SI-LE (tr), NR (bl)
21.040.132._*	SV-SB2-40	11	2.5	SI (tr), SI-LE (tr), SI (bl), SI-LE (bl)

Accessories

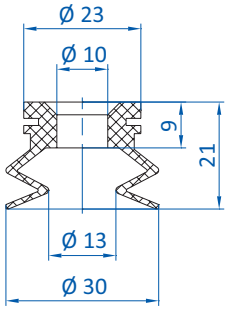
	Suitable fittings					Suitable spring leveler (Snap-in)					
Item no.	M5-male	M6-male	M10-male	G1/4-male	G1/4-female	Spring leveler		Spring leveler		Spring leveler	
Bellows vacuum cups 1.5 bellows – SV-SB1											
23.016.232._*	270.311	270.312/19	--	--	--	50.005	5	50.145	11	50.146	30
23.030.230._*	--	--	270.177	270.451	270.452	--	--	--	--	--	--
Bellows vacuum cups 2.5 bellows – SV-SB2											
21.030.030._*	--	--	270.177	270.451	270.452	--	--	--	--	--	--
21.040.132._*	--	--	--	--	--	--	--	--	--	--	--

*** When ordering please add the appropriate material code to item no.**

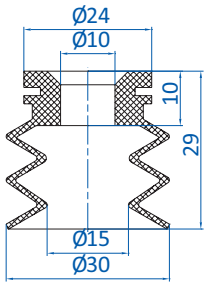
Dimensions



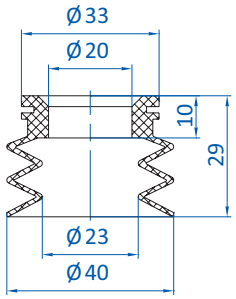
Drawing A



Drawing B



Drawing C



Drawing D

Item no.	Drawing
Bellows vacuum cups 1.5 bellows – SV-SB1	
23.016.232._*	A
23.030.230._*	B
Bellows vacuum cups 2.5 bellows – SV-SB2	
21.030.030._*	C
21.040.132._*	D

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups with 1.5 folds for dynamic sheet handling - SM-B





Product Description

Robust, circular NBR bellows vacuum cups, 60° Shore A with vulcanized fitting made of aluminum and large area, multi-part „anti-slip“ cleats. Various connection threads available.
PWIS-conform to guideline VDMA 24364 test category A1.

Advantage

> Internal supports help to prevent deep-drawing or deformation of thin sheets
> Leak-free suction even with curved surfaces due to flexible sealing lip
> Fold geometry allows handling of three dimensional shaped sheets
> Secure fit due to vulcanised connection thread

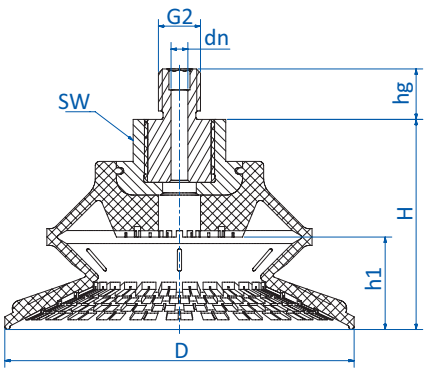
Technical data

Model / Lip dimensions	Thread (Aluminium)						
	G1/4-male	G1/4-female	G3/8-female	M10-male	M14x1.5-male	Rectangular adapter	
SM-B-22	22.022.222.1	22.022.223.1	22.022.224.1	22.022.225.1	22.022.226.1	22.022.227.1	5.8
SM-B-30	22.030.171.1	22.030.172.1	22.030.173.1	22.030.174.1	22.030.175.1	22.030.176.1	8
SM-B-40	22.040.177.1	22.040.178.1	22.040.179.1	22.040.180.1	22.040.181.1	22.040.182.1	11
SM-B-50	22.050.183.1	22.050.184.1	22.050.185.1	22.050.186.1	22.050.187.1	22.050.188.1	12.5
SM-B-60	22.060.189.1	22.060.190.1	22.060.191.1	22.060.192.1	22.060.193.1	22.060.194.1	16.5
SM-B-80	22.080.195.1	22.080.196.1	22.080.197.1	22.080.198.1	22.080.199.1	22.080.200.1	22
SM-B-100	22.100.201.1	22.100.202.1	22.100.203.1	22.100.204.1	22.100.205.1	22.100.206.1	25
SM-B-125	22.125.207.1	22.125.208.1	22.125.209.1	22.125.210.1	22.125.211.1	22.125.212.1	32

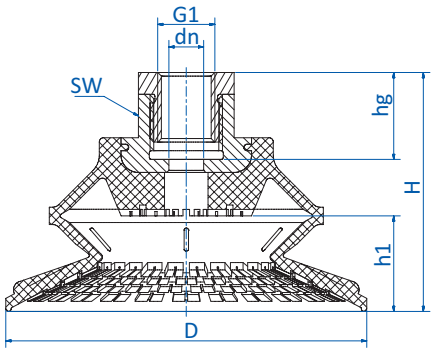
"Anti-Slip" Cleats (SM-B-80)



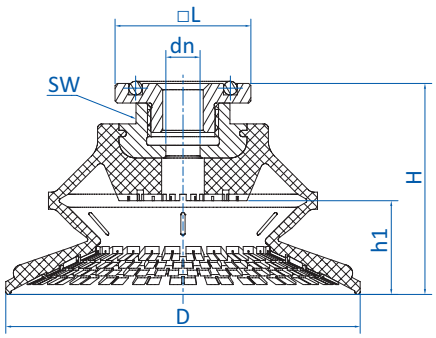
Dimensions



Drawing A



Drawing B



Drawing C



Series | Bellows vacuum cups SB

Bellows vacuum cups with 1.5 folds for dynamic sheet handling - SM-B

Item no.	Drawing	Ø D [mm]	Ø D max.* [mm]	Ø dn [mm]	G1 (female)	G2 (male)	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
22.022.222.1	A	22	23.5	4	--	G1/4	--	25	5.8	10	17
22.022.223.1	B	22	23.5	4	G1/4	--	--	25	5.8	12	17
22.022.224.1	B	22	23.5	4	G3/8	--	--	41	5.8	10	17
22.022.225.1	A	22	23.5	4	--	M10	--	25	5.8	12	17
22.022.226.1	A	22	23.5	4	--	M14x1.5	--	25	5.8	12	17
22.022.227.1	C	22	23.5	4	--	--	31.8	28.2	5.8	--	17
22.030.171.1	A	32	34.2	4	--	G1/4	--	28	8	10	17
22.030.172.1	B	32	34.2	4	G1/4	--	--	28	8	12	17
22.030.173.1	B	32	34.2	4	G3/8	--	--	44	8	10	17
22.030.174.1	A	32	34.2	4	--	M10	--	28	8	12	17
22.030.175.1	A	32	34.2	4	--	M14x1.5	--	28	8	12	17
22.030.176.1	C	32	34.2	4	--	--	31.8	30.2	8	--	17
22.040.177.1	A	42	43	4	--	G1/4	--	29	11	10	17
22.040.178.1	B	42	43	4	G1/4	--	--	29	11	12	17
22.040.179.1	B	42	43	4	G3/8	--	--	45	11	10	17
22.040.180.1	A	42	43	4	--	M10	--	29	11	12	17
22.040.181.1	A	42	43	4	--	M14x1.5	--	29	11	12	17
22.040.182.1	C	42	43	4	--	--	31.8	31.2	11	--	17
22.050.183.1	A	52	54	6	--	G1/4	--	37	12.5	10	22
22.050.184.1	B	52	54	6	G1/4	--	--	42	12.5	20	22
22.050.185.1	B	52	54	6	G3/8	--	--	37	12.5	15	22
22.050.186.1	A	52	54	4	--	M10	--	37	12.5	12	22
22.050.187.1	A	52	54	6	--	M14x1.5	--	37	12.5	12	22
22.050.188.1	C	52	54	6	--	--	31.8	36.5	12.5	--	22
22.060.189.1	A	63	65.3	6	--	G1/4	--	41.5	16.5	10	22
22.060.190.1	B	63	65.3	8	G1/4	--	--	46.5	16.5	20	22
22.060.191.1	B	63	65.3	8	G3/8	--	--	41.5	16.5	15	22
22.060.192.1	A	63	65.3	4	--	M10	--	41.5	16.5	12	22
22.060.193.1	A	63	65.3	6	--	M14x1.5	--	41.5	16.5	12	22
22.060.194.1	C	63	65.3	8	--	--	31.8	41	16.5	--	22
22.080.195.1	A	83	86.8	6	--	G1/4	--	50	22	10	22
22.080.196.1	B	83	86.8	8	G1/4	--	--	55	22	20	22
22.080.197.1	B	83	86.8	8	G3/8	--	--	50	22	15	22
22.080.198.1	A	83	86.8	4	--	M10	--	50	22	12	22
22.080.199.1	A	83	86.8	6	--	M14x1.5	--	50	22	12	22
22.080.200.1	C	83	86.8	8	--	--	31.8	49.5	22	--	22
22.100.201.1	A	103	107.2	6	--	G1/4	--	57	25	10	22
22.100.202.1	B	103	107.2	8	G1/4	--	--	62	25	20	22
22.100.203.1	B	103	107.2	8	G3/8	--	--	57	25	15	22
22.100.204.1	A	103	107.2	4	--	M10	--	57	25	12	22
22.100.205.1	A	103	107.2	6	--	M14x1.5	--	57	25	12	22
22.100.206.1	C	103	107.2	8	--	--	31.8	56.5	25	--	22
22.125.207.1	A	128	132.6	6	--	G1/4	--	68	32	10	22
22.125.208.1	B	128	132.6	8	G1/4	--	--	73	32	20	22
22.125.209.1	B	128	132.6	8	G3/8	--	--	68	32	15	22
22.125.210.1	A	128	132.6	4	--	M10	--	68	32	12	22
22.125.211.1	A	128	132.6	6	--	M14x1.5	--	68	32	12	22
22.125.212.1	C	128	132.6	8	--	--	31.8	67.5	32	--	22

* aspirated condition

Bellows vacuum suction plates Softgrip – SBPL-SG



Product notes

Vacuum suction plate with 1.5 folds for gentle handling of heavy but sensitive products (e.g. glass plates). Divided support surfaces prevent deformation of the product and provide a firm grip. Additional safety sealing lip on the support block positions the product orthogonally to the ground.
Connection via an interlocking, snap-in aluminum plate.

Advantage

> Very careful handling due to soft sealing lip and lightly compressing bellows
> Cleats provide product support
> Cost-effective replacement of worn seals

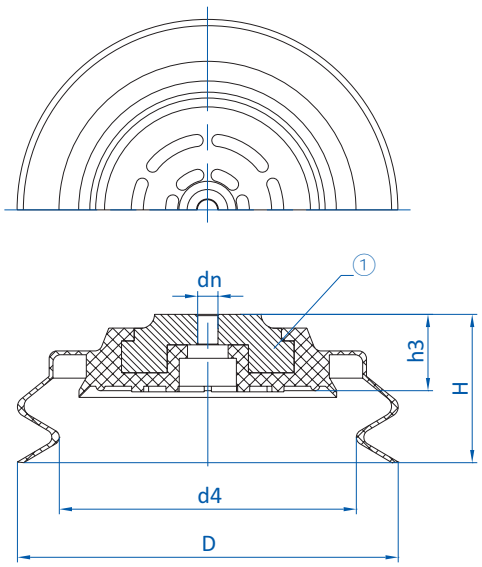
Technical data

Item no.	Model		Weight [g]	Material / Color	Number of folds
22.150.109._*	SBPL-SG-150	28	353	NBR (sw)	1.5

Accessories

Spare vacuum cup:
23.150.090.1

Dimensions



① = Aluminum

Item no.	Ø **D** [mm]	Ø **d4** [mm]	Ø **dn** [mm]	**H** [mm]	**h3** [mm]
22.150.109._*	150	117	8	58	30

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum suction plates – SBPL-E



Product notes

Vacuum suction plate, 1.5 folds, vulcanized carrier plate made of steel. Soft sealing lip from a low-marking NBR blend and lightly compressing bellows for gentle handling of heavy but sensitive products (e.g. glass plates). Divided support surfaces provide a firm grip for all loads.

Advantage

> Gentle handling of heavy, sensitive products
> Good adaptation to both concave and convex surfaces
> Rubberized support surfaces prevent deformation of workpieces
> Low-marking

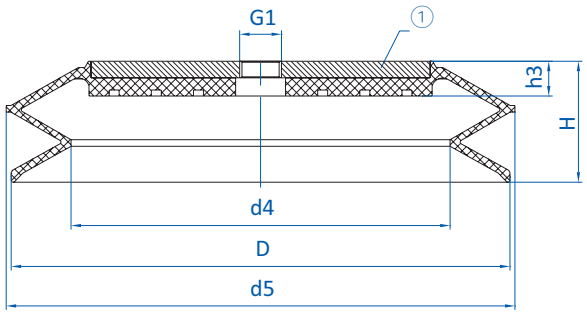
Ordering notes

Customized drilling patterns on request

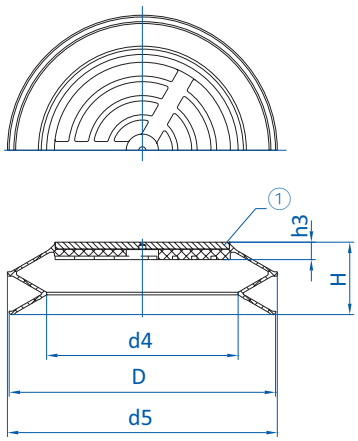
Technical data

Item no.	Model	Connection thread		Weight [g]	Number of folds	Material / Color
22.150.084._*	SBPL-E-150	G1/2-female	32	460	1.5	NBR (gr)
22.200.087._*	SBPL-E-200	G1/2-female	30	860	1.5	NBR (gr)
22.250.088._*	SBPL-E-250	G1/2-female	38	1,900	1.5	NBR (gr)
22.300.091._*	SBPL-E-300	without	60	4,200	1.5	NBR (gr)
22.350.102._*	SBPL-E-350	without	55	4,200	1.5	NBR (gr)

Dimensions



Drawing A

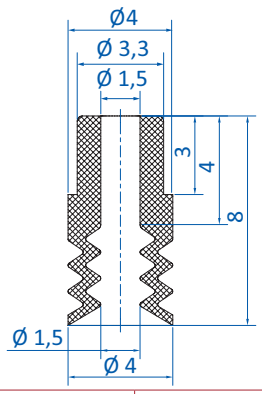


Drawing B

① = Steel

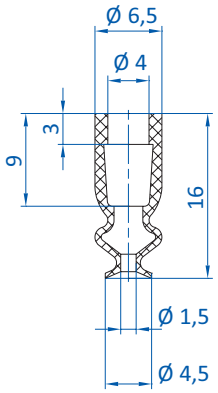
Item no.	Drawing	Ø D [mm]	Ø d4 [mm]	Ø d5 [mm]	G1	H [mm]	h3 [mm]
22.150.084._*	A	150	94	157	G1/2	54	15.5
22.200.087._*	A	200	140	206	G1/2	57	17
22.250.088._*	A	250	190	255	G1/2	61	17.5
22.300.091._*	B	306	220	310	--	83	20
22.350.102._*	B	350	262	350	--	84	21

*** When ordering please add the appropriate material code to item no.**



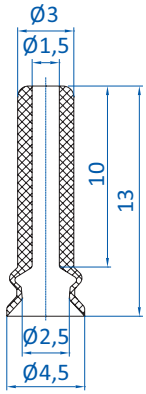
	Connection	
270.427	M3-male	--

Item no. 25.004.087._*
Material NBR (bl)
1 mm



	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

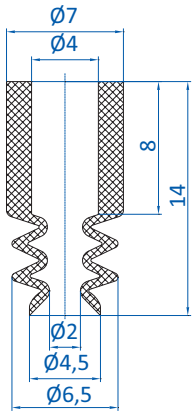
Item no. 23.004.189._*
Material NBR (sw), SI (tr)
4 mm



	Connection	
270.195	M5-male	--

Item no. 23.005.095._*
Material Vinyl (bl)
2 mm

Details and additional sizes available are found on p. 191.

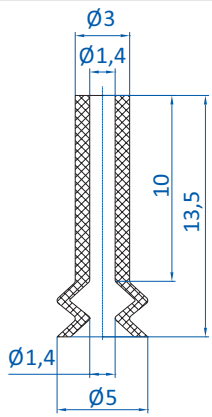


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

BESTSELLER

Item no. 21.004.083._*
Material SI (tr), SI-LE (tr)
3 mm

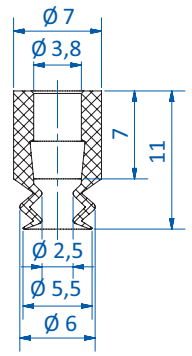
Details and additional sizes available are found on p. 159.



	Connection	
270.195	M5-male	--

Item no. 23.005.181._*
Material NBR (sw), SI (tr), SI-LE (tr)
2 mm

Details and additional sizes available are found on p. 147.



	Connection	
270.772	M5-male	--

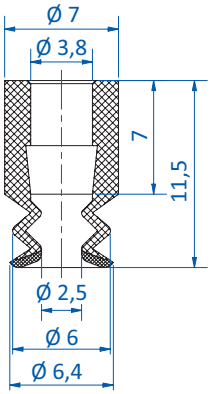
Item no. 23.005.286._*
Material NBR (sw), SI (tr), Thermalon® (bl)
2 mm

Details and additional sizes available are found on p. 150.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

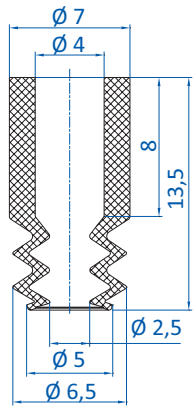
Ø 5 - 6 mm



	Connection	
270.772	M5-male	--

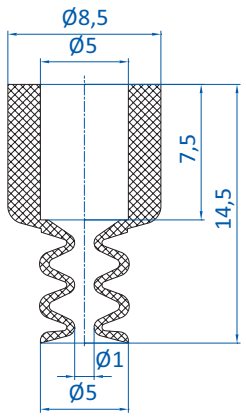
Item no. 23.005.286.19F | **Material** Thermalon®-flocked (bl/sw) | 2 mm

Details and additional sizes available are found on p. 154.



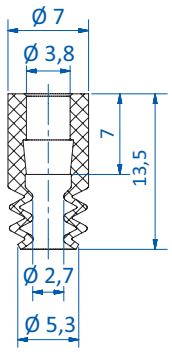
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.005.058._* | **Material** NBR (sw), SI (tr) | 3 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

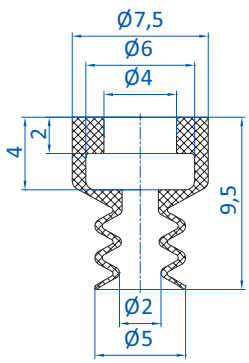
Item no. 21.005.086._* | **Material** SI (tr) | 3.5 mm



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.005.146._* | **Material** NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl) | 3 mm

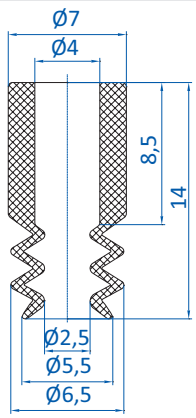
Details and additional sizes available are found on p. 162.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

Item no. 21.005.088._* | **Material** NBR (sw), SI (tr) | 3 mm

This vacuum cup is also available in the following dimensions: 7 mm

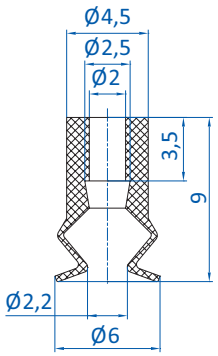


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.005.057._* | **Material** NBR (g), HNBR (ge), SI (g), SI (tr), SI-LE (tr), SI-AS (sw), EPDM (gr) | 3 mm

Details and additional sizes available are found on p. 159.

*** When ordering please add the appropriate material code to item no.**

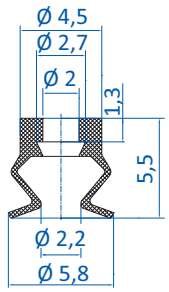


	Connection	
270.153	M5-male	--

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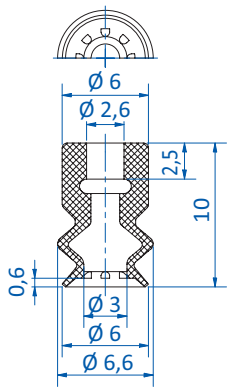
Item no.	Material	
23.005.178._*	SI (r), SI-LE (r), SI-AS (sw), CR (sw), HNBR (ge)	2 mm

Details and additional sizes available are found on p. 174.



	Connection	
270.629	M5-male	--

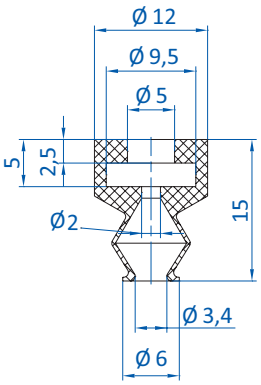
Item no.	Material	
23.005.231._*	SI (r)	2 mm



	Connection	
270.791	M5-male	--

Item no.	Material	
23.006.290._*	NBR (sw), SI (tr), SI-AS (sw)	2.3 mm

Details and additional sizes available are found on p. 204.

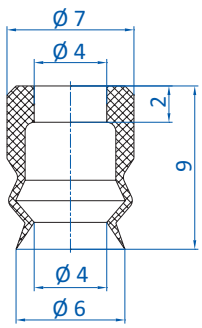


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm

Item no.	Material	
23.006.145._*	NBR (sw), SI (tr)	5 mm

Details and additional sizes available are found on p. 207.

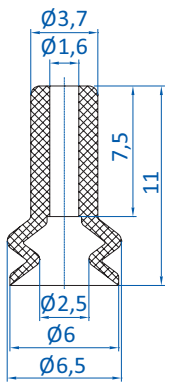


	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm

Item no.	Material	
23.006.161._*	SI (tr)	2 mm

This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 20 mm, 30 mm



	Connection	
270.001	M5-male	--

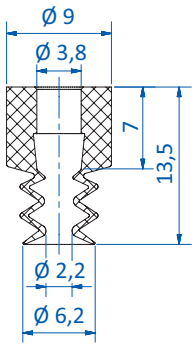
Item no.	Material	
23.007.112._*	Vinyl (bl)	2 mm

Details and additional sizes available are found on p. 191.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 6 - 7 mm



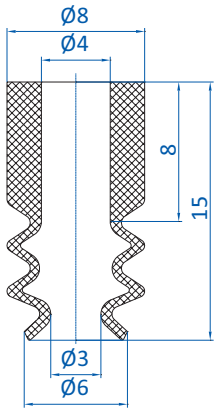
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.007.147._*

Material NBR (sw), SI (tr), Thermalon® (bl)

3 mm

Details and additional sizes available are found on p. 162.



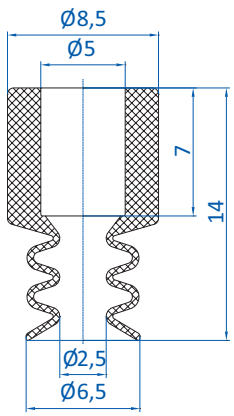
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.006.093._*

Material NBR (sw), SI (tr), SI-LE (tr)

3 mm

Details and additional sizes available are found on p. 159.



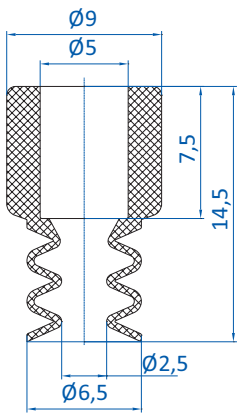
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.006.001._*

Material Vinyl (bl)

3.5 mm

Details and additional sizes available are found on p. 194.



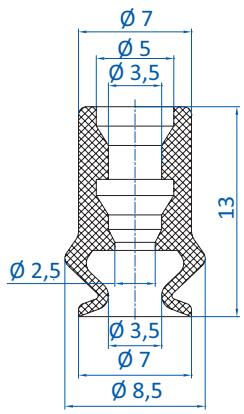
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.006.087._*

Material NBR (sw), SI (tr), SI-LE (tr)

3.5 mm

Details and additional sizes available are found on p. 159.

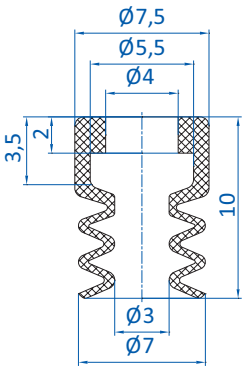


	Connection	
270.399	M5-male	--

Item no. 21.007.096._*

Material NBR (sw), SI (tr)

2 mm



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

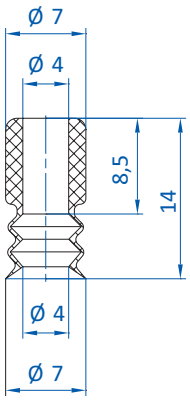
Item no. 21.007.089._*

Material NBR (sw), SI (tr), HNBR (ge)

3 mm

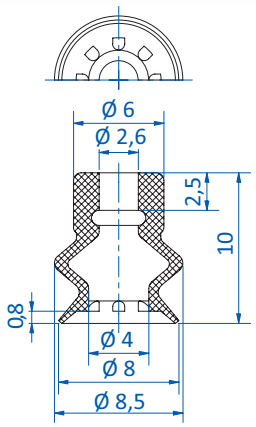
This vacuum cup is also available in the following dimensions: 5 mm

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

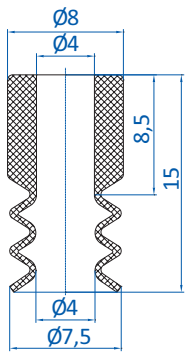
Item no. 21.007.120._*
Material SI (tr)
4 mm



	Connection	
270.791	M5-male	--

Item no. 23.008.291._*
Material NBR (sw), SI (tr), SI-AS (sw)
3 mm

Details and additional sizes available are found on p. 204.

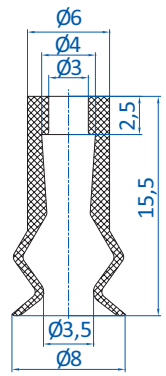


	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

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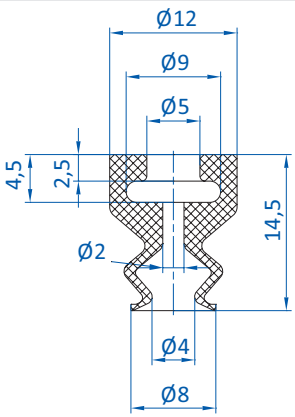
Item no. 21.008.094._*
Material NBR (sw), SI (tr), SI-LE (tr)
4 mm

Details and additional sizes available are found on p. 159.



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--

Item no. 23.008.057._*
Material SI (tr), SI-LE (tr)
3.5 mm

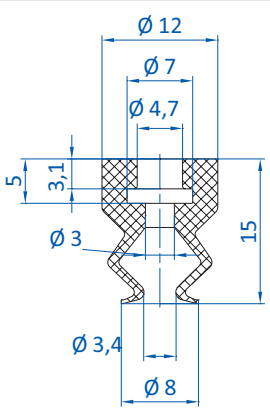


	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

Item no. 23.008.146._*
Material NBR (sw), SI (tr)
5 mm

Details and additional sizes available are found on p. 207.



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

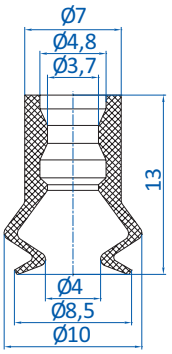
50.141	9 mm	--
50.018	8.5 mm	--

Item no. 21.008.126._*
Material SI (r)
4.5 mm

*** When ordering please add the appropriate material code to item no.**

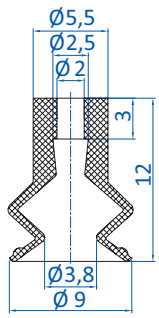
Bellows vacuum cups by size

Ø 8 - 9 mm



	Connection	
270.399	M5-male	--

Item no.	Material	
23.008.225._*	Si (tr)	3 mm

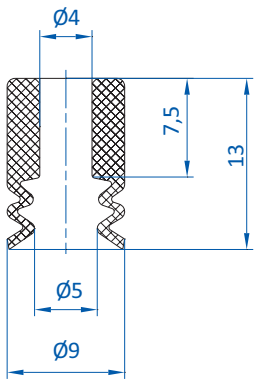


	Connection	
270.153	M5-male	--

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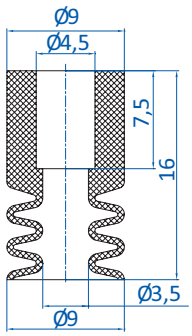
Item no.	Material	
23.008.166._*	Si (r), SI-LE (r), SI-AS (sw), CR (sw), HNBR (ge)	3.5 mm

Details and additional sizes available are found on p. 174.



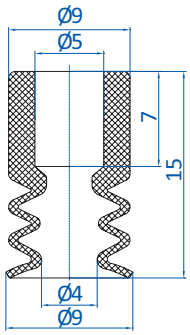
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
21.009.029._*	PU (bl)	1.5 mm



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no.	Material	
21.009.100._*	NBR (sw)	3.5 mm

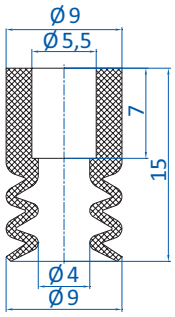


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

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Item no.	Material	
21.009.002._*	NBR (sw), HNBR (ge), SI (tr), SI-LE (tr), NR (gr), PU (bl)	2 mm

Details and additional sizes available are found on p. 159.

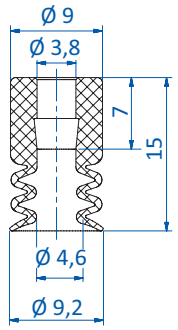


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no.	Material	
21.009.106._*	Vulkollan® (br)	2 mm

Details and additional sizes available are found on p. 171.

*** When ordering please add the appropriate material code to item no.**



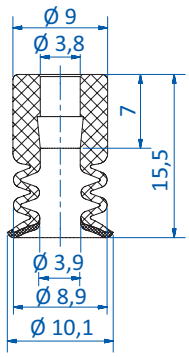
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.009.148._*

Material NBR (sw), SI (tr), Thermalon® (bl)

3 mm

Details and additional sizes available are found on p. 162.



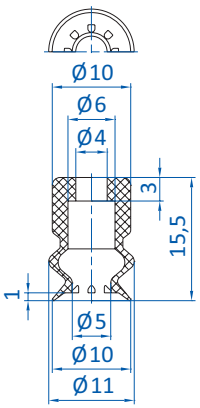
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.009.148.19F

Material Thermalon®-flocked (bl/sw)

3 mm

Details and additional sizes available are found on p. 166.



	Connection	
270.458	M4-male	--
270.134	M5-male	--
270.104	M6-male	--

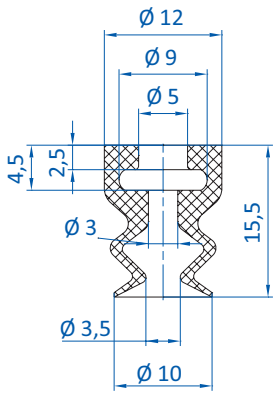
50.103	5.5 mm	--
50.104	6 mm	--
50.125	9.5 mm	--
50.126	15 mm	--
50.127	19.5 mm	--

Item no. 23.010.139._*

Material NBR (sw), SI (tr), SI-LE (tr), SI-AS (sw)

4 mm

Details and additional sizes available are found on p. 204.



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

50.018	8.5 mm	--

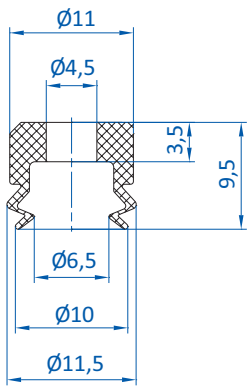
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Item no. 23.010.147._*

Material NBR (sw), SI (tr), SI-LE (tr)

5 mm

Details and additional sizes available are found on p. 207.



	Connection	
270.310	M5-male	--
270.493	G1/8-male	--
270.494	G1/8-female	--

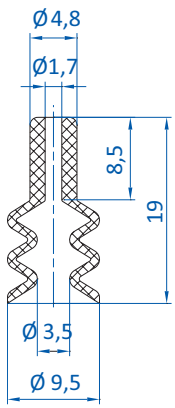
50.330	9 mm	--

Item no. 23.010.163._*

Material SI (tr)

2.5 mm

This vacuum cup is also available in the following dimensions: 6 mm, 15 mm, 20 mm, 30 mm



	Connection	
270.195	M5-male	--

Item no. 21.010.061._*

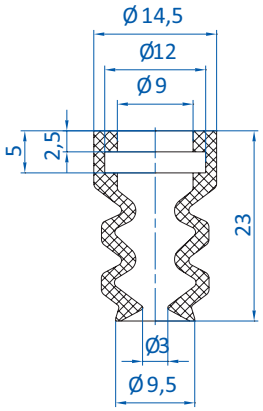
Material Vinyl (bl)

8 mm

*** When ordering please add the appropriate material code to item no.**

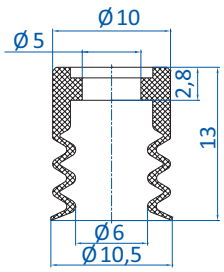
Bellows vacuum cups by size

Ø 10 mm



	Connection	
270.541	G1/8-male	--

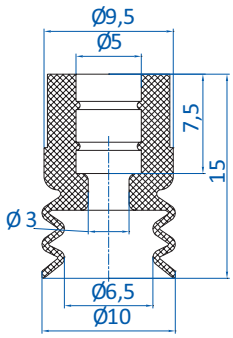
Item no. 21.010.071._*
Material Vinyl (bl)
8 mm



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

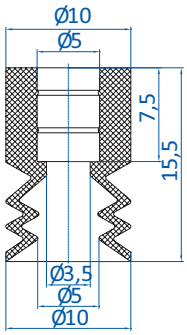
Item no. 21.010.005._*
Material NBR (sw), SI (bl)
4 mm

This vacuum cup is also available in the following dimensions: 15 mm, 18 mm, 24 mm, 30 mm, 40 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

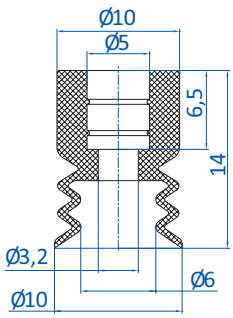
Item no. 21.010.056._*
Material SI (bl), SI (r)
4 mm



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

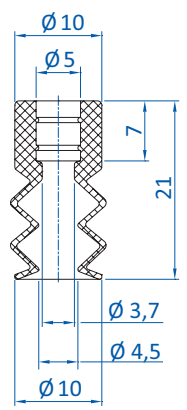
Item no. 21.010.070._*
Material Vinyl (bl)
5 mm

Details and additional sizes available are found on p. 194.



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.010.078._*
Material SI (r), SI (tr), PU (bg)
4 mm

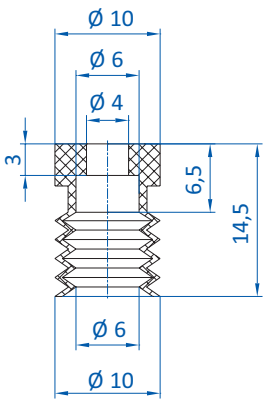


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.010.119._*
Material NBR (sw), SI (tr), SI-LE (tr)
8 mm

Details and additional sizes available are found on p. 159.

*** When ordering please add the appropriate material code to item no.**



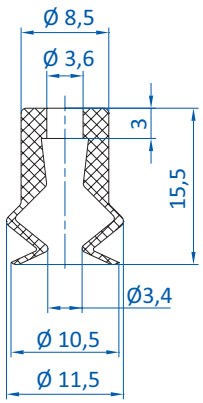
	Connection	
270.458	M4-male	--
270.009	G1/8-male	--
270.007	G1/8-female	--

Item no. 25.010.044._*

Material NBR (sw), SI (tr)

4 mm

Details and additional sizes available are found on p. 209.

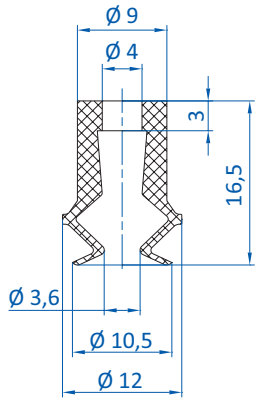


	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.011.138._*

Material SI (r)

4 mm

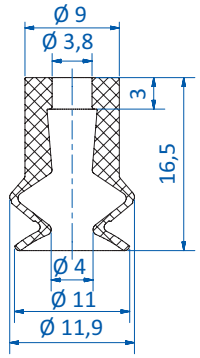


	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.015	G1/8-female	--

Item no. 23.011.173._*

Material SI (tr), SI-LE (tr)

3.5 mm



BESTSELLER

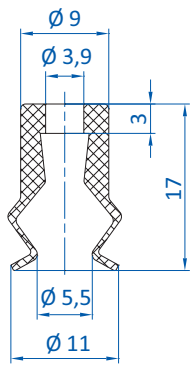
	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 23.011.295._*

Material SI (r), SI-LE (r), CR (sw)

4.5 mm

Details and additional sizes available are found on p. 174.

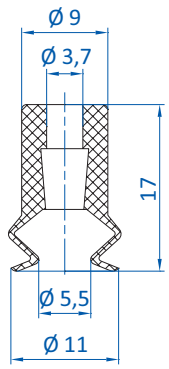


	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 23.011.007._*

Material SI (tr), PU (bl), CR (sw)

5 mm



	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.011.131._*

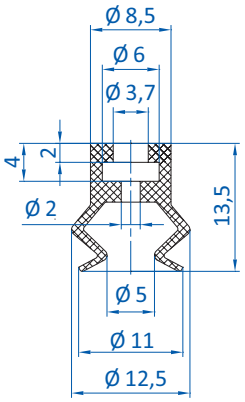
Material NBR (sw), SI (r)

4 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 11 mm

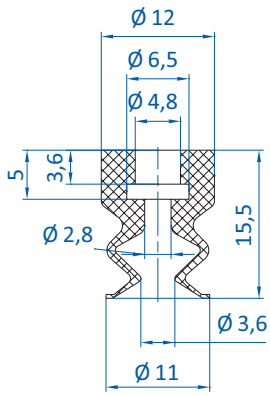


	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

50.330	9 mm	--

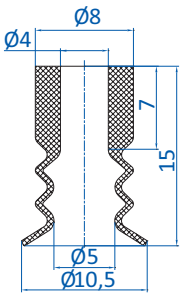
Item no.	Material	
23.010.123._*	NBR (sw), SI (tr), PU (bl)	4 mm

This vacuum cup is also available in the following dimensions: 16 mm, 21 mm, 32 mm, 42 mm, 54 mm



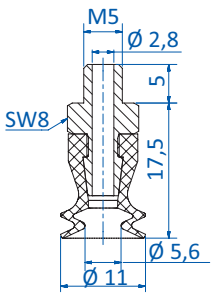
	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no.	Material	
21.010.127._*	SI (r)	6 mm



	Connection	
270.013	M5-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

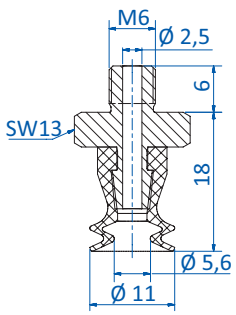
Item no.	Material	
21.011.095._*	NBR (sw), SI (tr), SI-LE (tr)	5 mm



* = Size 11 and 16 mm without filter screen and O-ring

Item no.	Material	
22.011.332._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	3 mm

Details and additional sizes available are found on p. 179.



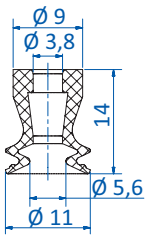
* = Size 11 and 16 mm without filter screen and O-ring

Item no.	Material	
22.011.333._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	3 mm

Details and additional sizes available are found on p. 179.

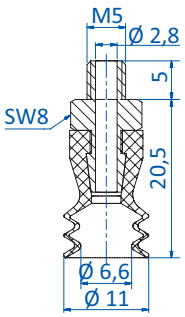
*** When ordering please add the appropriate material code to item no.**

	Connection	
270.134	M5-male	--
270.104	M6-male	--



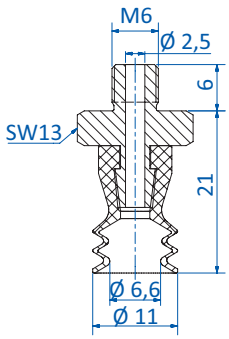
Item no.	Material	
23.011.294._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	3 mm

Details and additional sizes available are found on p. 179.



Item no.	Material	
20.011.200._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	4.5 mm

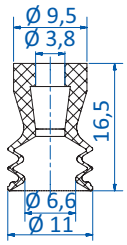
Details and additional sizes available are found on p. 185.



Item no.	Material	
20.011.201._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	4.5 mm

Details and additional sizes available are found on p. 185.

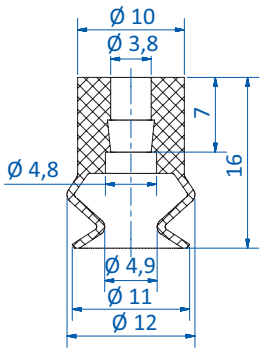
	Connection	
270.134	M5-male	--
270.104	M6-male	--



Item no.	Material	
21.011.187._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	4.5 mm

Details and additional sizes available are found on p. 185.

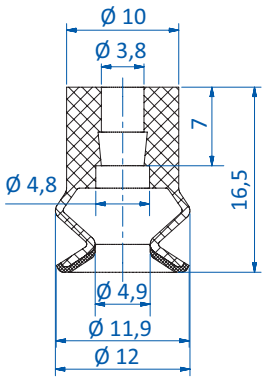
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--



Item no.	Material	
23.011.234._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	5.5 mm

Details and additional sizes available are found on p. 150.

	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--



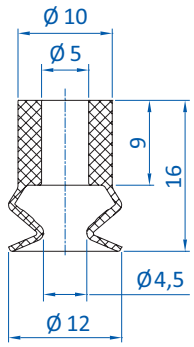
Item no.	Material	
23.011.234.19F	Thermalon®-flocked (bl/sw)	5.5 mm

Details and additional sizes available are found on p. 154.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 12 - 13 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

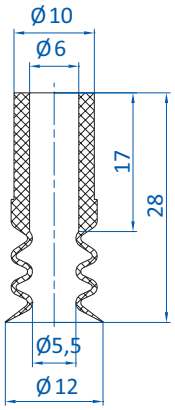
50.037	25 mm	--

Item no. 23.011.008._*

Material NBR (sw), HNBR (ge), SI (tr), SI-LE (tr)

4.5 mm

Details and additional sizes available are found on p. 147.



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

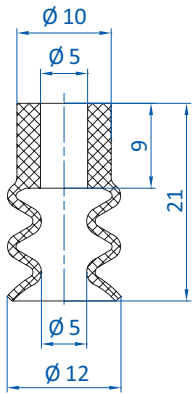
FOR HIGHLY STRUCTURED SURFACES (3D)

Item no. 21.012.079._*

Material NBR (sw), SI (w), SI-LE (w), SI (tr), SI-LE (tr)

7 mm

Details and additional sizes available are found on p. 210.



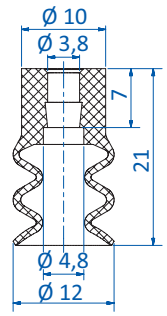
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.012.135._*

Material NBR (sw), HNBR (ge), SI (tr), SI-LE (tr), NR (gr), PU (bl)

7 mm

Details and additional sizes available are found on p. 159.



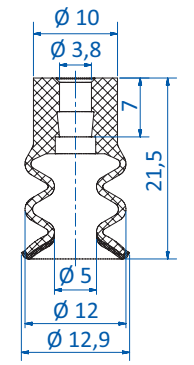
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.012.149._*

Material NBR (sw), SI (tr), Thermalon® (bl)

7 mm

Details and additional sizes available are found on p. 162.



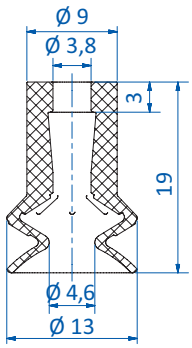
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.012.149.19F

Material Thermalon®-flocked (bl/sw)

7 mm

Details and additional sizes available are found on p. 166.



	Connection	
270.134	M5-male	--
270.104	M6-male	--

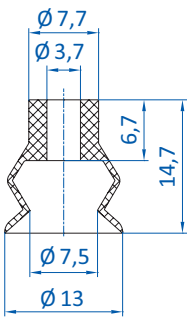
Item no. 23.013.296._*

Material SI (r), SI-LE (r), CR (sw)

5.3 mm

Details and additional sizes available are found on p. 174.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

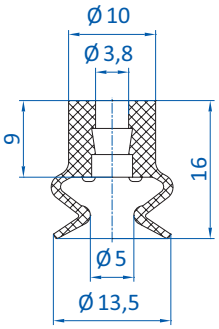
BESTSELLER

Item no. 23.013.097._*

Material Vinyl (bl)

5 mm

Details and additional sizes available are found on p. 191.



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

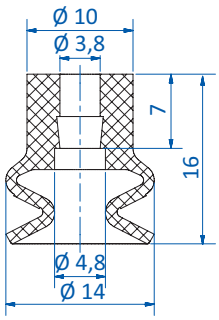
50.037	25 mm	--

Item no. 23.013.120._*

Material NBR (sw), SI (tr), SI-LE (tr), NR (gr)

4 mm

Details and additional sizes available are found on p. 147.



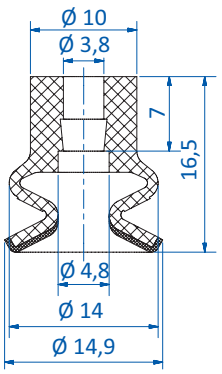
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.014.235._*

Material NBR (sw), SI (tr), Thermalon® (bl)

5 mm

Details and additional sizes available are found on p. 150.



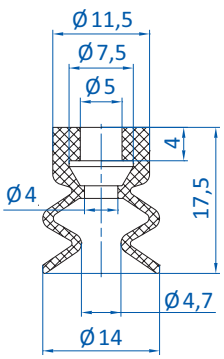
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.014.235.19F

Material Thermalon®-flocked (bl/sw)

5 mm

Details and additional sizes available are found on p. 154.



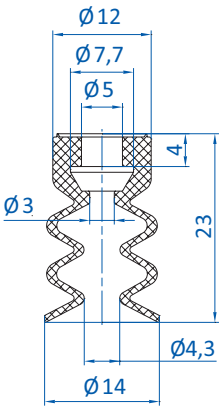
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 23.014.010._*

Material NBR (sw), SI (r), NR (bg), PU (bl)

8 mm

This vacuum cup is also available in the following dimensions: 24 mm, 40 mm, 60 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.014.006._*

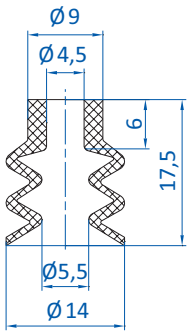
Material NBR (sw), SI (r), SI-LE (r), NR (bg), PU (bl)

10 mm

*** When ordering please add the appropriate material code to item no.**

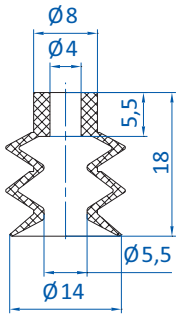
Bellows vacuum cups by size

Ø 14 - 15 mm



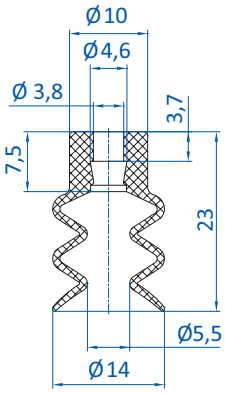
	Connection	
270.024	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.014.046._*
Material PU (r)
7 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

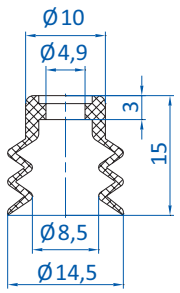
Item no. 21.014.053._*
Material HNBR (ge), SI (tr), SI-LE (tr), CR (sw)
9 mm



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.014.133._*
Material NBR (sw), SI (tr), SI-LE (tr), NR (gr)
11 mm

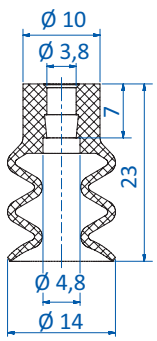
Details and additional sizes available are found on p. 159.



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 21.015.009._*
Material NBR (sw), SI (tr)
5 mm

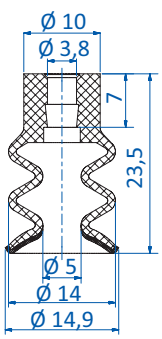
This vacuum cup is also available in the following dimensions: 10 mm, 18 mm, 24 mm, 30 mm, 40 mm



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.014.150._*
Material NBR (sw), SI (tr), Thermalon® (bl)
10 mm

Details and additional sizes available are found on p. 162.

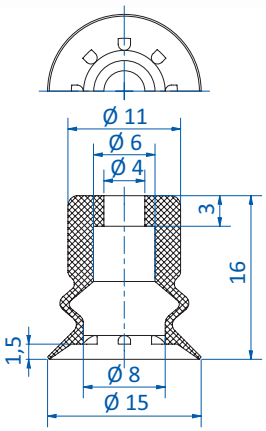


	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.014.150.19F
Material Thermalon®-flocked (bl/sw)
10 mm

Details and additional sizes available are found on p. 166.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.458	M4-male	--
270.134	M5-male	--
270.104	M6-male	--

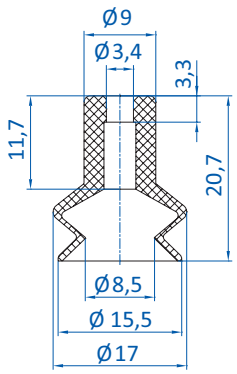
50.127	19.5 mm	--

Item no. 23.015.292._*

Material NBR (sw), SI (tr), SI-AS (sw)

4 mm

Details and additional sizes available are found on p. 204.



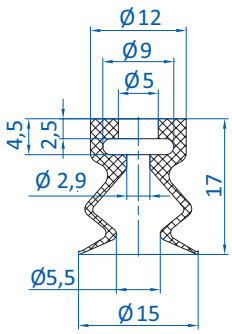
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.015.098._*

Material Vinyl (bl)

5 mm

Details and additional sizes available are found on p. 191.



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

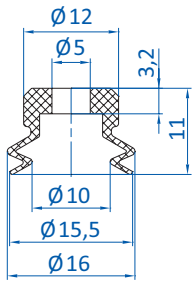
50.018	8.5 mm	--

Item no. 23.015.148._*

Material NBR (sw), SI (tr)

7 mm

Details and additional sizes available are found on p. 207.



	Connection	
270.310	M5-male	--
270.493	G1/8-male	--
270.494	G1/8-female	--

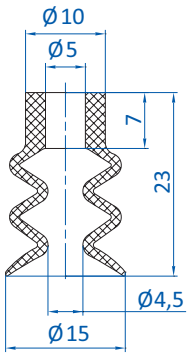
50.330	9 mm	--

Item no. 23.015.164._*

Material NBR (sw), SI (tr)

3.5 mm

This vacuum cup is also available in the following dimensions: 6 mm, 10 mm, 20 mm, 30 mm



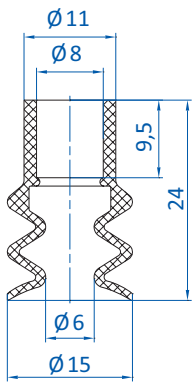
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.014.007._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl)

12 mm

Details and additional sizes available are found on p. 159.



	Connection	
270.112	G1/8-male	--
270.113	G1/4-male	--

Item no. 21.015.008._*

Material NBR (sw), SI (r)

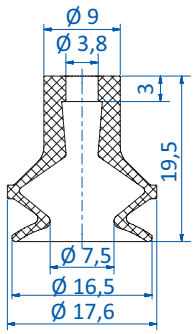
7 mm

This vacuum cup is also available in the following dimensions: 20 mm, 30 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 16 mm



	Connection	
270.134	M5-male	--
270.104	M6-male	--

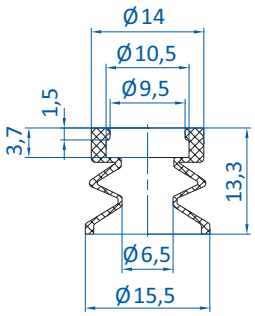
BESTSELLER

Item no. 23.016.297._*

Material SI (r), SI-LE (r), CR (sw)

6.7 mm

Details and additional sizes available are found on p. 174.



	Connection	
270.311	M5-male	--
270.312/19	M6-male	--

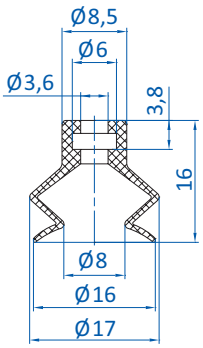
50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no. 23.016.232._*

Material SI (tr), SI-LE (tr)

6 mm

Details and additional sizes available are found on p. 216.



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

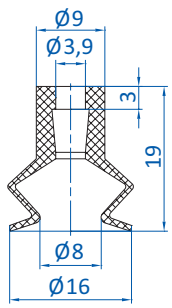
50.330	9 mm	--

Item no. 23.015.122._*

Material NBR (sw), SI (tr), SI-LE (tr), PU (bl), HNBR (ge)

5 mm

This vacuum cup is also available in the following dimensions: 11 mm, 21 mm, 32 mm, 42 mm, 54 mm

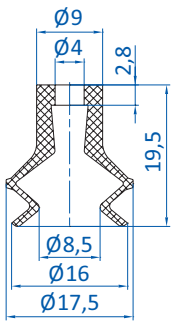


	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 23.016.015._*

Material SI (tr), CR (sw)

7 mm

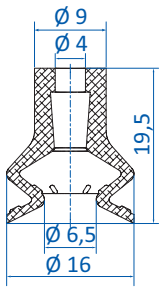


	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.015	G1/8-female	--

Item no. 23.016.174._*

Material SI (tr), SI-LE (tr)

5 mm



	Connection	
270.134	M5-male	--
270.104	M6-male	--

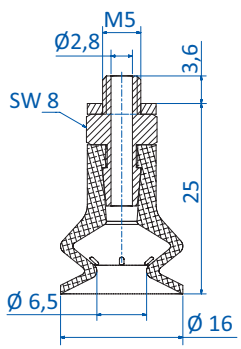
Item no. 23.016.263._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

4.5 mm

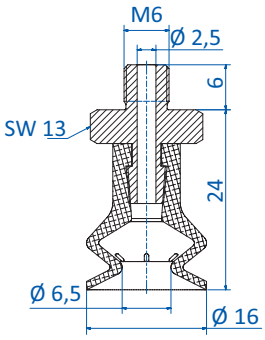
Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**



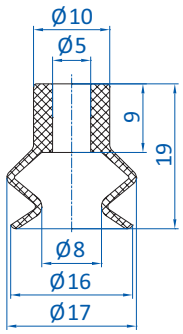
Item no.	Material	
22.016.253._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	4.5 mm

Details and additional sizes available are found on p. 179.



Item no.	Material	
22.016.254._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	4.5 mm

Details and additional sizes available are found on p. 179.

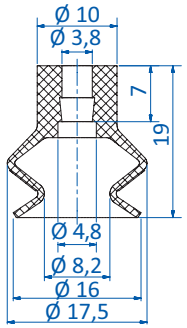


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

50.037	25 mm	--

Item no.	Material	
23.016.016._*	NBR (sw), HNBR (ge), SI (tr), SI-LE (tr)	6 mm

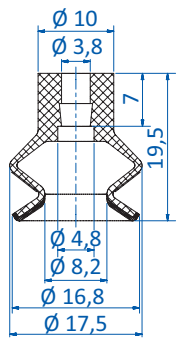
Details and additional sizes available are found on p. 147.



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
23.016.236._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	8.5 mm

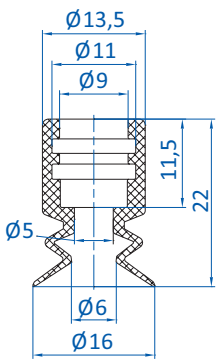
Details and additional sizes available are found on p. 150.



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no.	Material	
23.016.236.19F	Thermalon®-flocked (bl/sw)	8.5 mm

Details and additional sizes available are found on p. 154.



	Connection	
270.244	M5-male	--

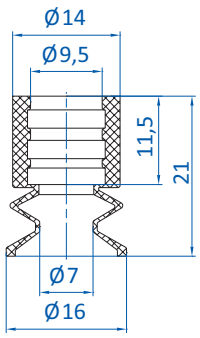
50.005	5 mm	--
50.145	11 mm	--
50.146	30 mm	--

Item no.	Material	
23.016.104._*	Vinyl (bl)	7 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 16 - 17 mm



	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

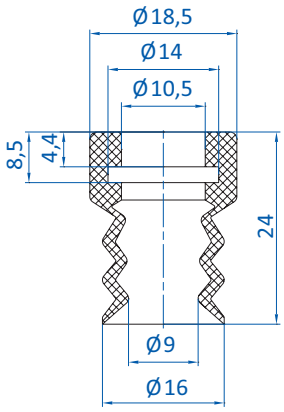
50.005	5 mm	--

Item no. 27.016.001._*

Material Sl (tr), Sl-LE (tr), NR (sw)

6 mm

Details and additional sizes available are found on p. 210.

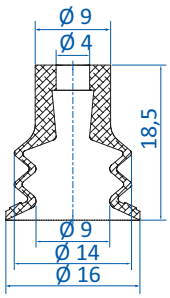


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.016.072._*

Material Vinyl (bl)

9 mm



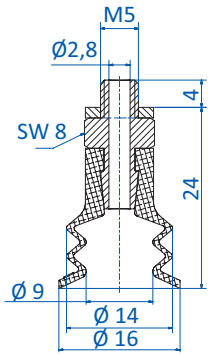
	Connection	
270.134	M5-male	--
270.104	M6-male	--

Item no. 21.016.175._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

5.5 mm

Details and additional sizes available are found on p. 185.

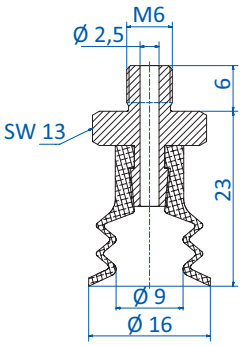


Item no. 20.016.145._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

5.5 mm

Details and additional sizes available are found on p. 185.

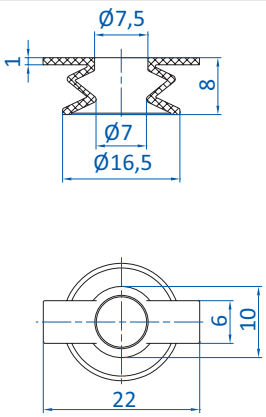


Item no. 20.016.146._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

5.5 mm

Details and additional sizes available are found on p. 185.

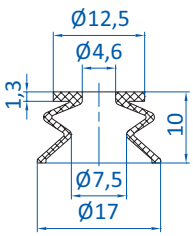


Item no. 23.017.102._*

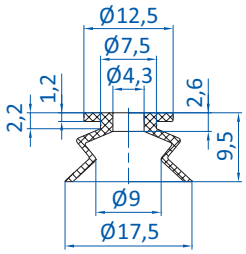
Material NR (sw)

5.5 mm

*** When ordering please add the appropriate material code to item no.**

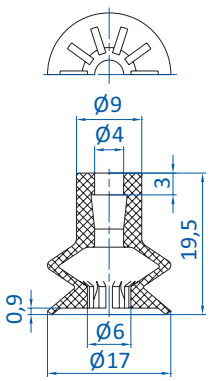


Item no.	Material	
23.017.100._*	NR (br)	6 mm



	Connection	
270.010	M5-male	--
270.005	M5-female	--
270.009	G1/8-male	--
270.007	G1/8-female	--

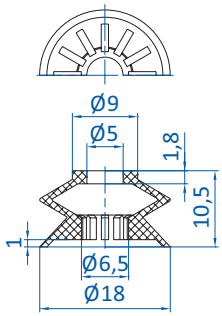
Item no.	Material	
23.016.086._*	SI (tr), PU (bg)	6 mm



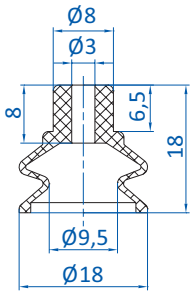
	Connection	
270.134	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

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Item no.	Material	
23.018.175._*	SI (tr), NR (bl)	5.5 mm

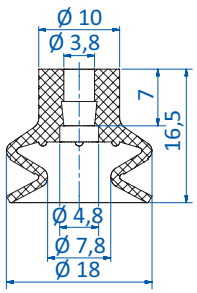


Item no.	Material	
23.018.183._*	NR (or)	5.5 mm



	Connection	
270.022	M5-male	--
270.347	M5-female	--

Item no.	Material	
23.018.101._*	NR (sw)	6 mm



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

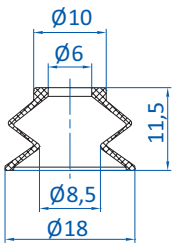
Item no.	Material	
23.018.237._*	NBR (sw), SI (tr), Thermalon® (bl)	5 mm

Details and additional sizes available are found on p. 150.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 18 mm

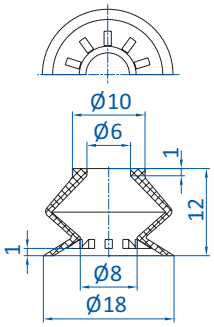


	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no. 23.018.019._*

Material SI (tr), SI-LE (tr), NR (sw), NR (bl)

8 mm

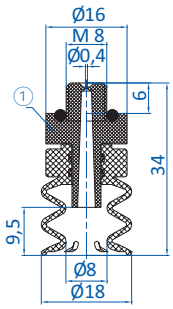


	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no. 23.018.082._*

Material SI (tr), SI-LE (tr), NR (bl), CR (sw)

5.5 mm



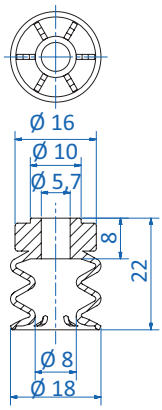
REDUCED LEAKAGE

① = Special fitting with installed orifice ø 0.4 mm. Material: PA6/ O-ring NBR

Item no. 20.018.125._*

Material NBR (gr)

9.5 mm



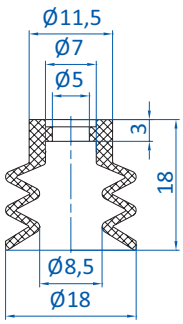
	Connection	
270.443	M5-male	--
270.378	M8-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 21.018.118._*

Material NBR (gr)

10 mm

*** When ordering please add the appropriate material code to item no.**



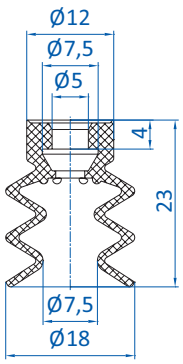
	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.018.012._*

Material NBR (sw), SI (bl)

7 mm

This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 24 mm, 30 mm, 40 mm

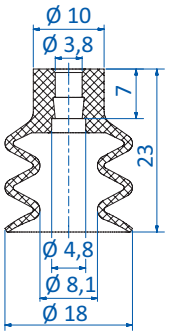


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.018.011._*

Material NBR (sw), SI (r), NR (bg), PU (bl)

8 mm



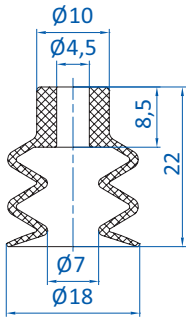
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.018.151._*

Material NBR (sw), SI (tr), Thermalon® (bl)

10 mm

Details and additional sizes available are found on p. 162.



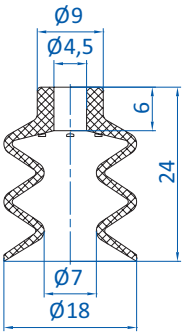
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

Item no. 21.018.010._*

Material NBR (sw), HNBR (ge), SI (tr), SI-LE (tr), PU (bl)

8 mm

Details and additional sizes available are found on p. 159.

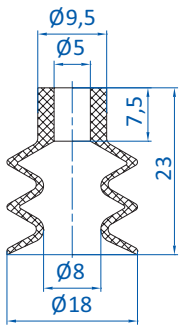


	Connection	
270.024	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 21.018.047._*

Material PU (g)

12 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 21.018.013._*

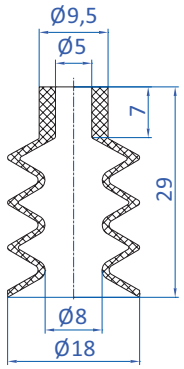
Material NBR (sw), SI (tr), SI-LE (tr), NR (sw)

9 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 18 - 19 mm

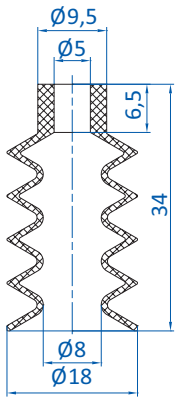


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

BESTSELLER

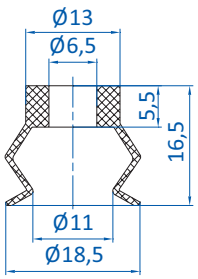
Item no. 25.018.031._*
Material NBR (sw), SI (tr)
12 mm

Details and additional sizes available are found on p. 170.



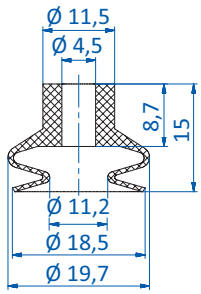
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 25.018.032._*
Material SI (tr), SI-LE (tr)
14 mm



	Connection	
270.039	M6-male	--
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no. 23.019.021._*
Material NBR (sw), SI (tr), SI-LE (tr)
8 mm

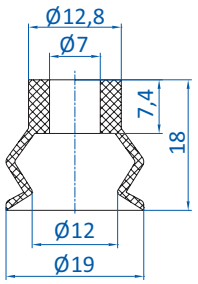


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

50.037	25 mm	--

Item no. 23.019.119._*
Material NBR (sw), SI (tr), SI-LE (tr)
4 mm

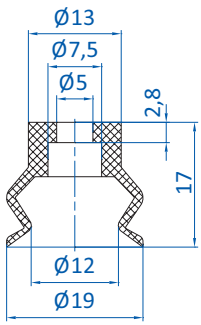
Details and additional sizes available are found on p. 147.



	Connection	
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 23.019.109._*
Material Vinyl (bl)
8 mm

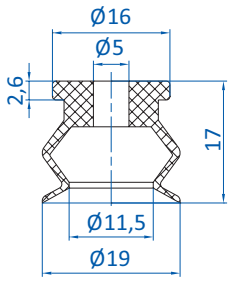
Details and additional sizes available are found on p. 191.



	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

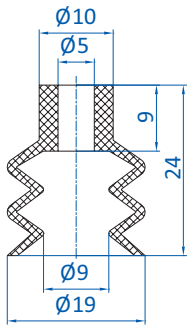
Item no. 23.019.179._*
Material Vinyl (bl)
7 mm

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

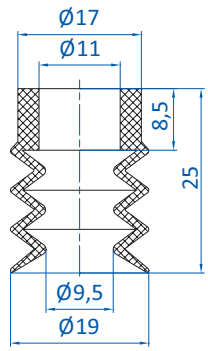
Item no. 23.019.110._*
Material Vinyl (bl)
8 mm



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

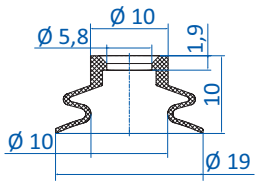
Item no. 21.018.068._*
Material Vinyl (bl)
11 mm

Details and additional sizes available are found on p. 194.



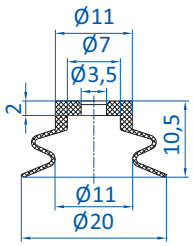
	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 25.019.037._*
Material Vinyl (bl)
10 mm



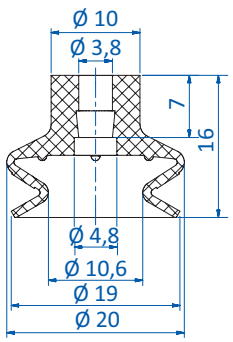
	Connection	
270.200	M5-male	--
270.064	G1/8-male	--
270.065	G1/8-female	--

Item no. 23.019.254._*
Material SI (tr)
3.5 mm



	Connection	
270.310	M5-male	--
270.493	G1/8-male	--
270.494	G1/8-female	--

Item no. 23.020.103._*
Material NR (bg)
2 mm



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

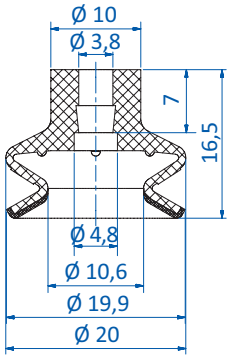
Item no. 23.020.238._*
Material NBR (sw), SI (tr), Thermalon® (bl)
5 mm

Details and additional sizes available are found on p. 150.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

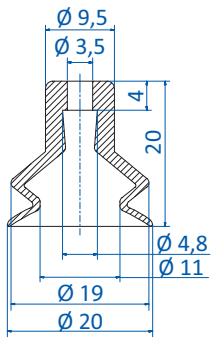
Ø 19 - 20 mm



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.020.238.19F | **Material** Thermalon®-flocked (bl/sw) | 5 mm

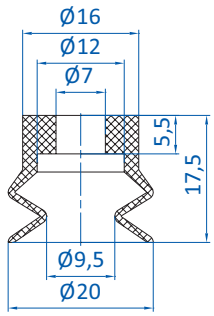
Details and additional sizes available are found on p. 154.



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.020.114._* | **Material** Vinyl (bl) | 6 mm

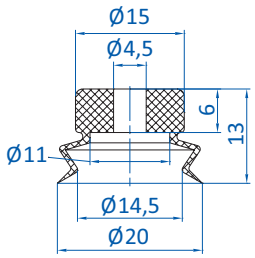
Details and additional sizes available are found on p. 191.



	Connection	
270.311	M5-male	--
270.312/19	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

WEAR-RESISTANT

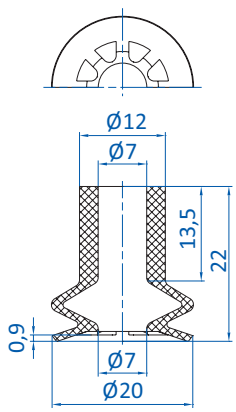
Item no. 23.020.121._* | **Material** Tepuflex® (or), Vulkollan® (br) | 5 mm



	Connection	
270.311	M5-male	--
270.063	G1/8-male	--
270.061	G1/8-female	--

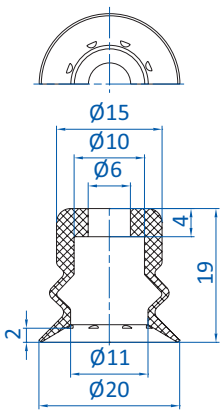
Item no. 23.020.154._* | **Material** SI (tr) | 4 mm

This vacuum cup is also available in the following dimensions: 6 mm, 10 mm, 15 mm, 30 mm



	Connection	
270.030	G1/8-male	--
270.019	G1/8-female	--
270.113	G1/4-male	--
270.275	G1/4-female	--

Item no. 23.020.133._* | **Material** SI (tr) | 4 mm



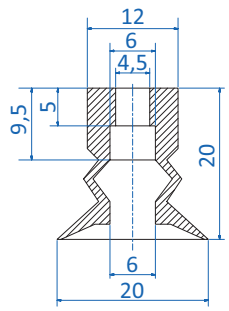
	Connection	
270.311	M5-male	--
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

50.085	6 mm	--
50.128	10 mm	--
50.129	15 mm	--
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--
50.130	19.5 mm	--

Item no. 23.020.140._* | **Material** NBR (sw), SI (tr), SI-LE (tr) | 6 mm

Details and additional sizes available are found on p. 204.

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.317	M5-male	--
270.103	M6-male	--
270.205	G1/8-male	--
270.109	G1/8-female	--
270.194	G1/4-male	--

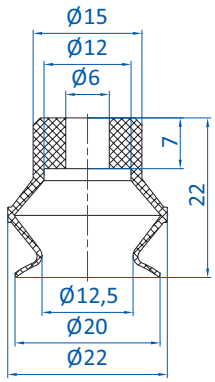
50.020	8.5 mm	--

Item no. 23.020.149._*

Material NBR (sw), SI (tr)

6 mm

Details and additional sizes available are found on p. 207.



	Connection	
270.312/19	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

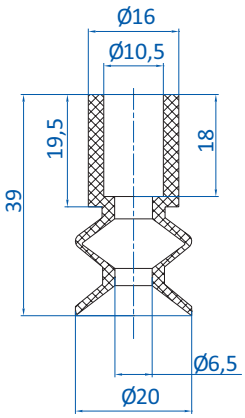
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 23.020.169._*

Material Vulkollan® (br)

7 mm

Details and additional sizes available are found on p. 171.

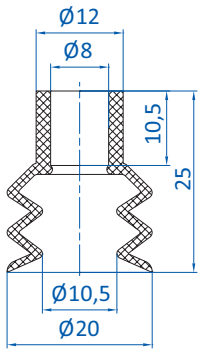


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 23.020.027._*

Material SI (tr), NR (br)

10 mm



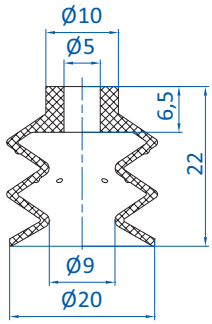
	Connection	
270.112	G1/8-male	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 21.020.014._*

Material NBR (sw), SI (tr)

10 mm

This vacuum cup is also available in the following dimensions: 15 mm, 30 mm



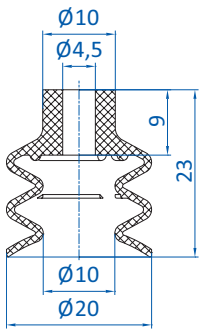
	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

BESTSELLER

Item no. 21.020.015._*

Material NBR (sw), SI (tr), SI-LE (tr), NR (sw)

11 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 21.020.016._*

Material NBR (sw), HNBR (ge), SI (tr), SI-LE (tr)

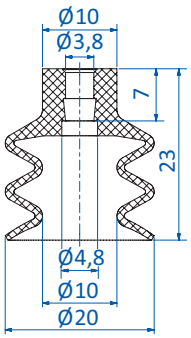
9 mm

Details and additional sizes available are found on p. 159.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 20 mm



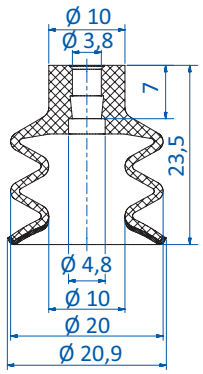
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. **21.020.152._***

Material NBR (sw), Thermalon® (bl)

10 mm

Details and additional sizes available are found on p. 162.



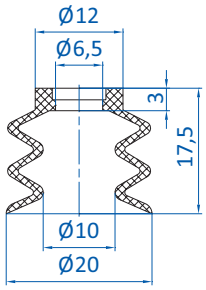
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. **21.020.152.19F**

Material Thermalon®-flocked (bl/sw)

10 mm

Details and additional sizes available are found on p. 166.

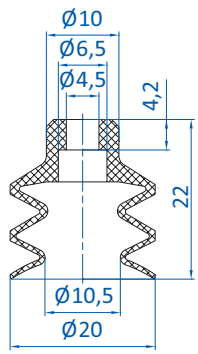


	Connection	
270.039	M6-male	--
270.247	M8-male	--
270.543	G1/8-male	--

Item no. **21.020.073._***

Material SI (tr), SI-LE (tr)

9 mm



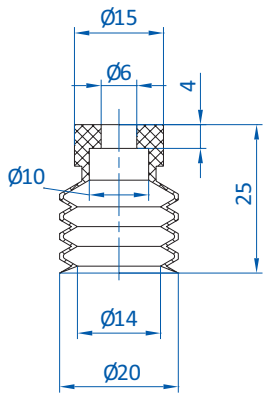
	Connection	
270.024	M5-male	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. **21.020.090._***

Material Vulkollan® (br)

8 mm

Details and additional sizes available are found on p. 171.



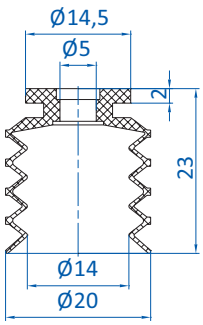
	Connection	
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

Item no. **25.020.045._***

Material NBR (sw), SI (tr)

10 mm

Details and additional sizes available are found on p. 209.



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

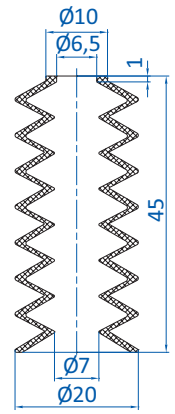
Item no. **25.020.025._***

Material SI (tr), SI-LE (tr), CR (sw)

16 mm

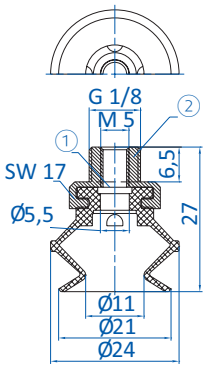
Details and additional sizes available are found on p. 177.

*** When ordering please add the appropriate material code to item no.**



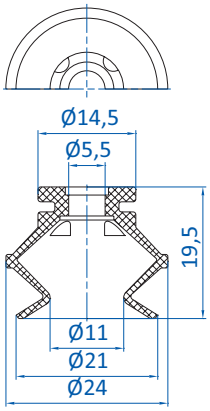
	Connection	
270.105	M6-male	--
270.040	M8-male	--
270.077	G1/8-male	--

Item no.	Material	
25.020.002._*	SI (w)	26 mm



① = Filter screen ② = Aluminum

Item no.	Material	
22.020.020._*	Tepuflex® (or), SI (tr), CR (sw)	9 mm

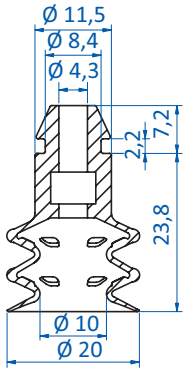


	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

BESTSELLER

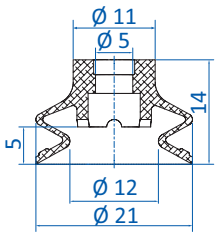
Item no.	Material	
23.020.026._*	Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)	9 mm

Details and additional sizes available are found on p. 174.



Item no.	Material	
21.020.185._*	SI (tr), SI-LE (tr), SI (w), SI-LE (w)	9 mm

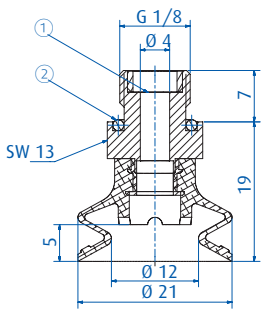
Details and additional sizes available are found on p. 213.



	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.503-S	G1/8-male	--

Item no.	Material	
23.021.264._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	5 mm

Details and additional sizes available are found on p. 179.



① = Filter screen ② = O-ring

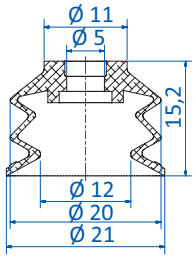
Item no.	Material	
22.021.255._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	5 mm

Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 21 - 22 mm



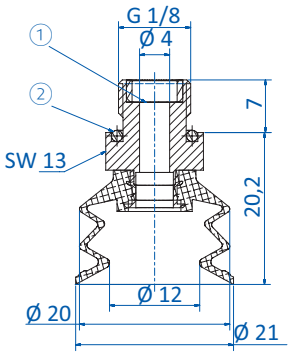
	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.503-S	G1/8-male	--

Item no.
21.021.176._*

Material
Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

6.5 mm

Details and additional sizes available are found on p. 185.



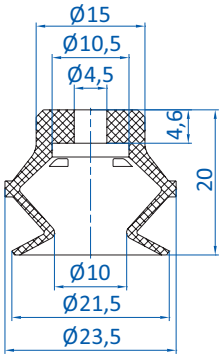
① = Filter screen ② = O-ring

Item no.
20.021.147._*

Material
Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

6.5 mm

Details and additional sizes available are found on p. 185.



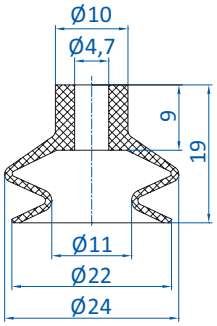
	Connection	
270.311	M5-male	--
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no.
23.020.124._*

Material
NBR (sw), SI (tr), SI-LE (tr), PU (bl), HNBR (ge)

8 mm

This vacuum cup is also available in the following dimensions: 11 mm, 16 mm, 32 mm, 42 mm, 54 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

50.037	25 mm	--

BESTSELLER

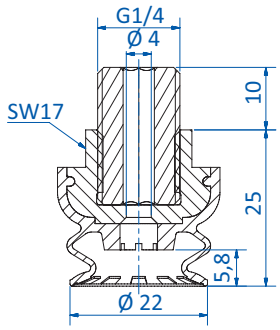
Item no.
23.022.028._*

Material
NBR (sw), SI (tr), SI-LE (tr), Vinyl (bl)

8 mm

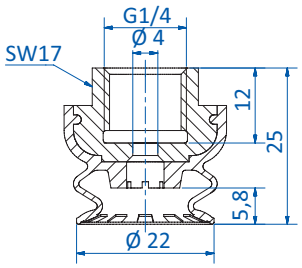
Details and additional sizes available are found on p. 147.

*** When ordering please add the appropriate material code to item no.**



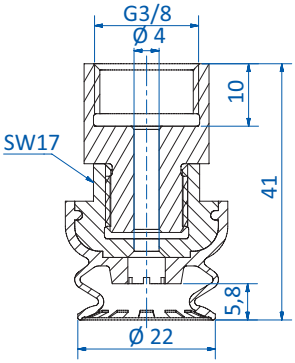
Item no.	Material	
22.022.222._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.



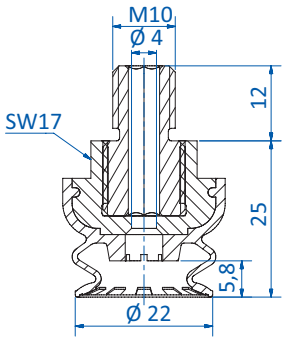
Item no.	Material	
22.022.223._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.



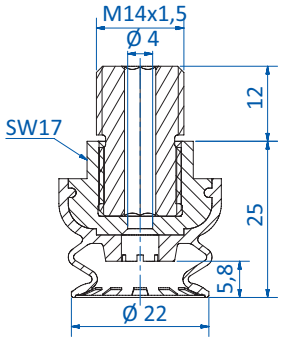
Item no.	Material	
22.022.224._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.



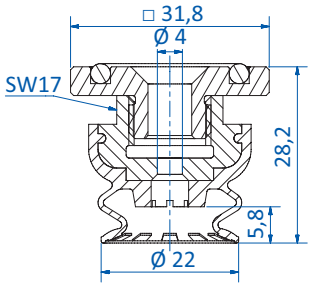
Item no.	Material	
22.022.225._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.



Item no.	Material	
22.022.226._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.



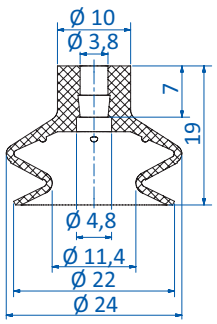
Item no.	Material	
22.022.227._*	NBR (bl)	5.8 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 22 - 24 mm



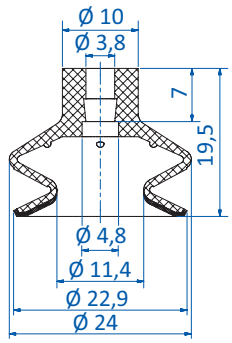
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.022.239._*

Material NBR (sw), SI (tr), Thermalon® (bl)

8 mm

Details and additional sizes available are found on p. 150.



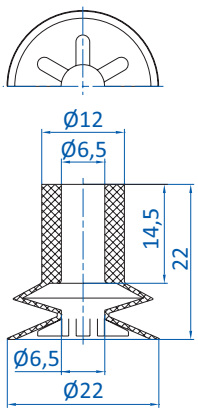
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.022.239.19F

Material Thermalon®-flocked (bl/sw)

8 mm

Details and additional sizes available are found on p. 154.

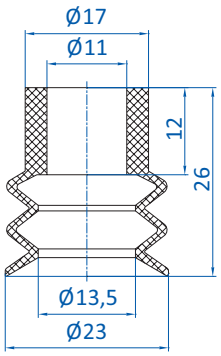


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. 23.023.099._*

Material NR (br)

5 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

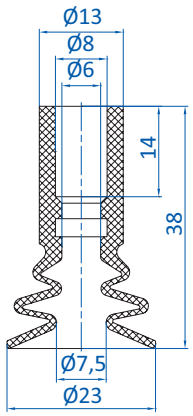
BESTSELLER

Item no. 21.023.066._*

Material Vinyl (bl)

9 mm

Details and additional sizes available are found on p. 194.

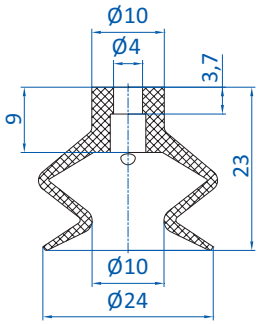


	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 21.023.102._*

Material SI (g)

12 mm



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

50.037	25 mm	--

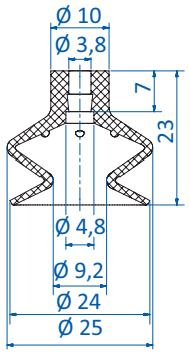
Item no. 23.025.137._*

Material NBR (sw), SI (tr), SI-LE (tr), NR (gr)

9 mm

Details and additional sizes available are found on p. 147.

*** When ordering please add the appropriate material code to item no.**



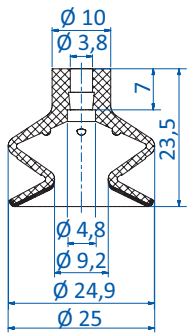
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.025.240._*

Material NBR (sw), SI (tr), Thermalon® (bl)

12 mm

Details and additional sizes available are found on p. 150.



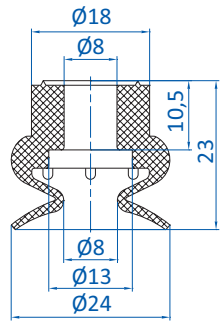
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.025.240.19F

Material Thermalon®-flocked (bl/sw)

12 mm

Details and additional sizes available are found on p. 154.



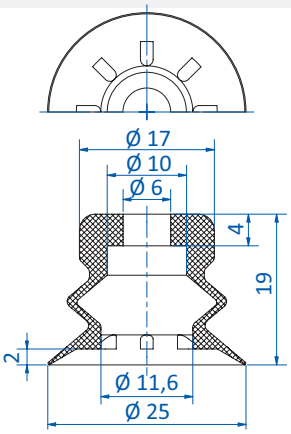
	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

Item no. 23.025.030._*

Material NBR (sw), SI (r), NR (bg)

5 mm

This vacuum cup is also available in the following dimensions: 14 mm, 40 mm, 60 mm



	Connection	
270.311	M5-male	--
270.459	M6-male	--
270.480	G1/8-male	--
270.479	G1/8-female	--

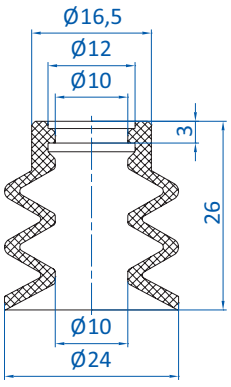
50.085	6 mm	--
50.086	5.5 mm	--
50.128	10 mm	--
50.129	15 mm	--
50.130	19.5 mm	--
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 23.025.293._*

Material NBR (sw), SI (tr)

6 mm

Details and additional sizes available are found on p. 204.



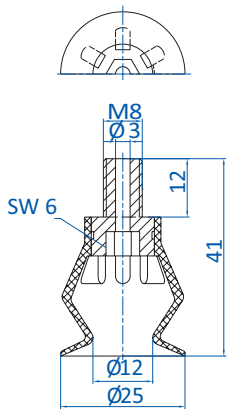
	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no. 21.024.017._*

Material NBR (sw), SI (tr)

10 mm

This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 18 mm, 30 mm, 40 mm



Item no. 22.025.029._*

Material NBR (sw), SI (tr), NR (sw)

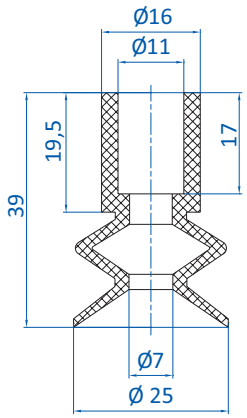
11 mm

This vacuum cup is also available in the following dimensions: 31 mm, 44 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 25 mm

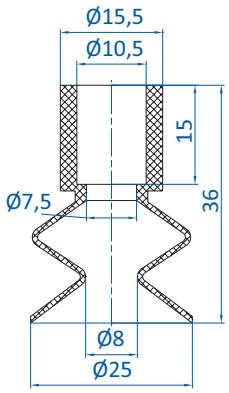


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. **23.025.032._***

Material SI (tr), NR (sw)

12 mm

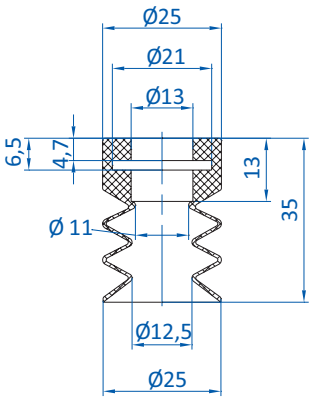


	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. **23.025.200._***

Material Vulkollan® (br)

13 mm

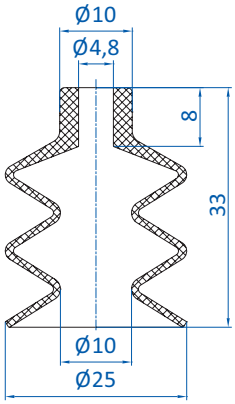


	Connection	
270.049-1	G1/4-male	--

Item no. **21.025.059._***

Material SI (tr), SI-LE (tr)

16 mm



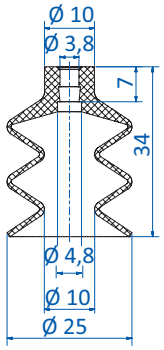
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. **21.025.060._***

Material NBR (sw), SI (tr), SI-LE (tr)

19 mm

Details and additional sizes available are found on p. 159.



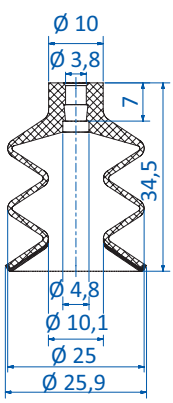
	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. **21.025.153._***

Material NBR (sw), SI (tr), Thermalon® (bl)

20 mm

Details and additional sizes available are found on p. 162.



	Connection	
270.772	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

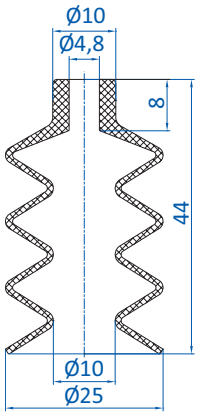
Item no. **21.025.153.19F**

Material Thermalon®-flocked (bl/sw)

20 mm

Details and additional sizes available are found on p. 166.

*** When ordering please add the appropriate material code to item no.**



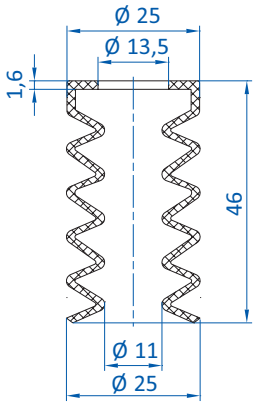
	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 25.025.005._*

Material NBR (sw), SI (tr), SI-LE (tr)

24 mm

Details and additional sizes available are found on p. 170.

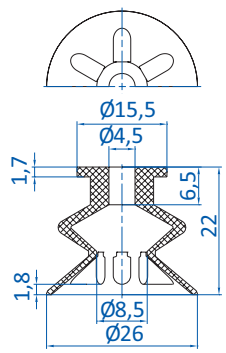


	Connection	
270.182.U	G1/4-male	--
270.182	G1/4-female	--

Item no. 25.025.004._*

Material SI (tr), SI-LE (tr)

29 mm

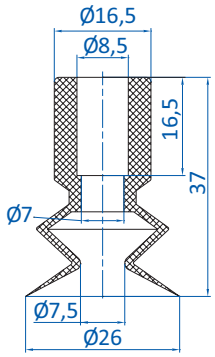


	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 23.026.115._*

Material Vinyl (bl)

8 mm

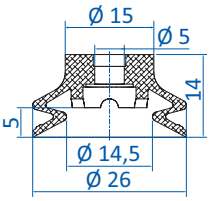


	Connection	
270.244	M5-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 23.026.118._*

Material Vinyl (bl)

12.5 mm



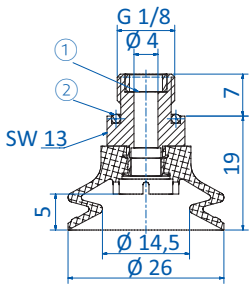
	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.503-S	G1/8-male	--

Item no. 23.026.265._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

5 mm

Details and additional sizes available are found on p. 179.



① = Filter screen ② = O-ring

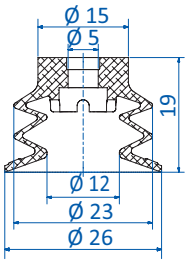
Item no. 22.026.256._*

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

5 mm

Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**



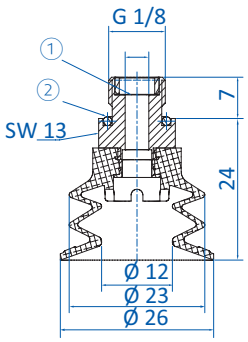
	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.503-S	G1/8-male	--

Item no. 21.026.177._* (*-FI)

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

8 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



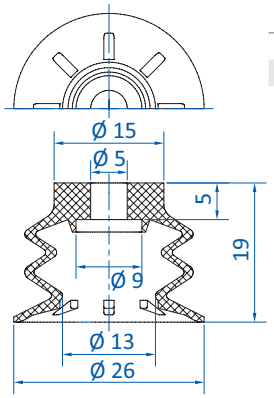
① = Filter screen ② = O-ring

Item no. 20.026.148._* (*-FI)

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

8 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code

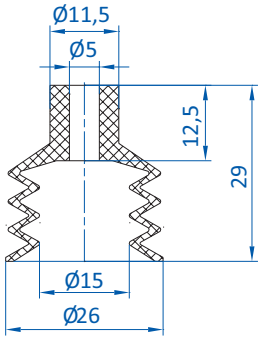


	Connection	
270.063	G1/8-male	--
270.061	G1/8-female	--

Item no. 21.026.162._*

Material NR (br)

9 mm

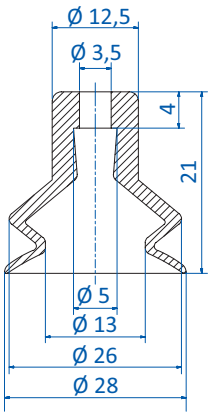


	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 25.025.003._*

Material SI (tr), SI-LE (tr), NR (sw)

9 mm



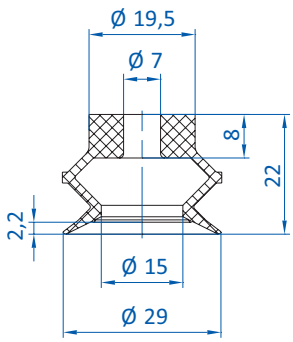
	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

Item no. 23.028.113._*

Material Vinyl (bl)

9 mm

Details and additional sizes available are found on p. 191.



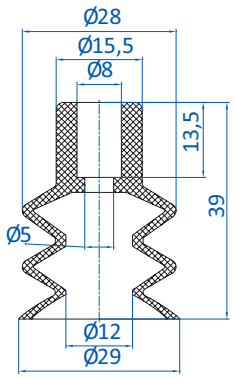
	Connection	
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 23.030.088._*

Material NBR (gr), SI (tr), SI-LE (tr), PU (bl)

10 mm

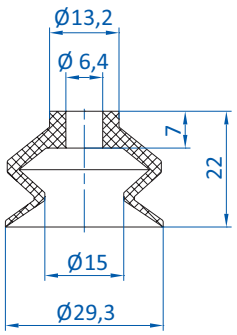
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. **21.029.069._***
Material Vinyl (bl)
10 mm

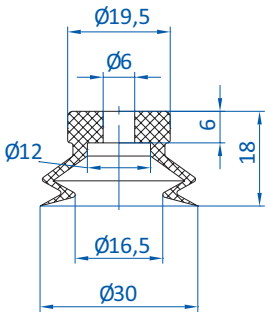
Details and additional sizes available are found on p. 194.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. **23.030.107._***
Material Vinyl (bl)
10.5 mm

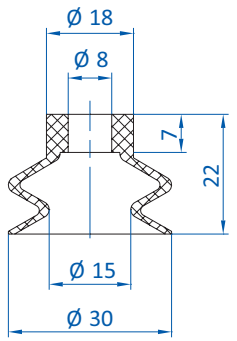
Details and additional sizes available are found on p. 191.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

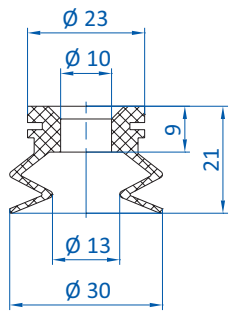
Item no. **23.030.155._***
Material SI (tr)
4.5 mm

This vacuum cup is also available in the following dimensions: 6 mm, 10 mm, 15 mm, 20 mm



	Connection	
270.255	M8-male	--
270.486	G1/8-male	--
270.485	G1/8-female	--
270.487	G1/4-male	--
270.488	G1/4-female	--

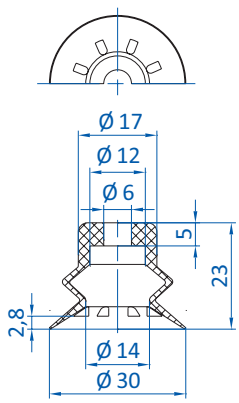
Item no. **23.030.193._***
Material Vulkollan® (br)
8 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. **23.030.230._***
Material NR (gr)
7 mm

Details and additional sizes available are found on p. 216.



	Connection	
270.460	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

50.085	6 mm	--
50.128	10 mm	--
50.129	15 mm	--
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--
50.130	19.5 mm	--

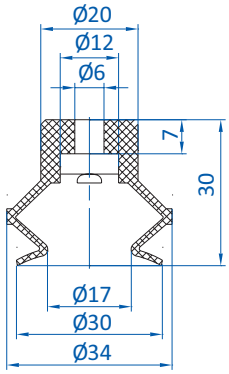
Item no. **23.030.141._***
Material NBR (sw), SI (tr), SI-LE (tr)
8 mm

Details and additional sizes available are found on p. 204.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 30 mm

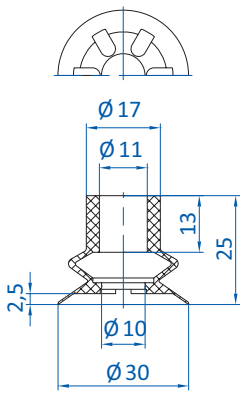


	Connection	
270.312/19	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

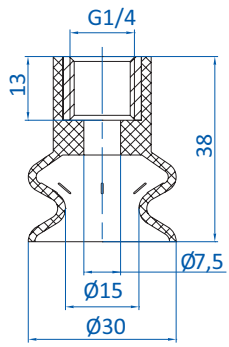
Item no. 23.030.170._*
Material Vulkollan® (br)
8 mm

Details and additional sizes available are found on p. 171.



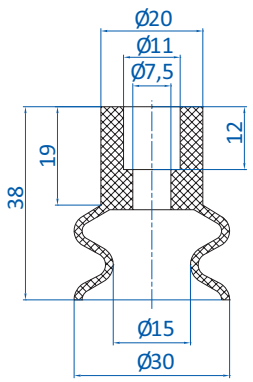
	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 23.033.134._*
Material Vinyl (bl)
10 mm



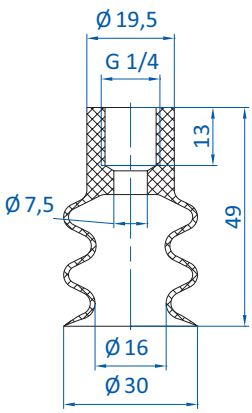
Item no. 22.030.035._*
Material SI (tr)
16 mm

This vacuum cup is also available in the following dimensions: 40 mm, 44 mm, 50 mm



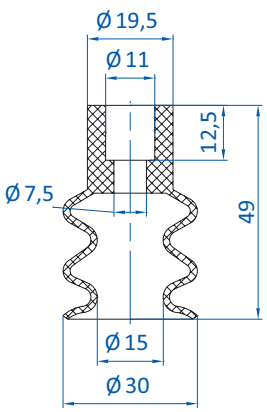
	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 23.030.038._*
Material NBR (sw)
16 mm



Item no. 20.030.044._*
Material SI (tr), NR (sw)
19 mm

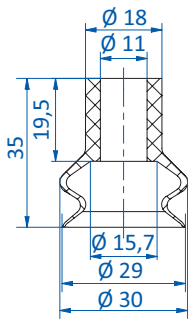
This vacuum cup is also available in the following dimensions: 40 mm, 50 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.030.021._*
Material SI (tr), NR (sw), NR (bg)
18 mm

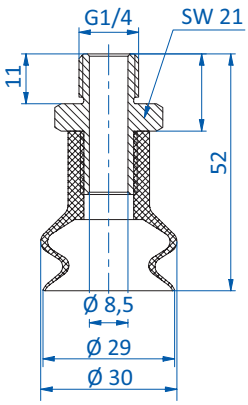
*** When ordering please add the appropriate material code to item no.**



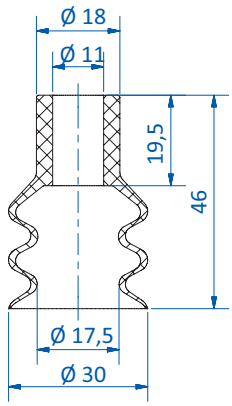
	Connection	
270.630	G1/4-male	--

FLEXIBLE SEALING LIP

Item no.	Material	
23.030.247._*	SI (w), SI-LE (w)	17 mm



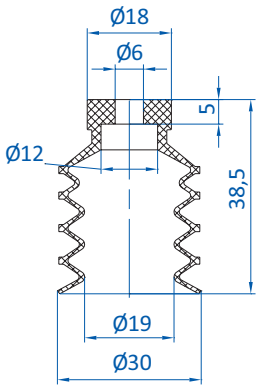
Item no.	Material	
22.030.215._*	SI (w)	17 mm



	Connection	
270.630	G1/4-male	--

FLEXIBLE SEALING LIP

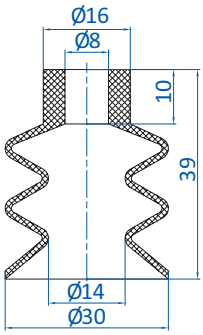
Item no.	Material	
21.030.159._*	SI (w), SI-LE (w)	17.5 mm



	Connection	
270.460	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

Item no.	Material	
25.030.046._*	NBR (sw), SI (tr)	14 mm

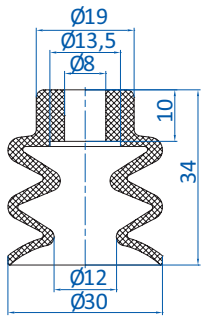
Details and additional sizes available are found on p. 209.



	Connection	
270.315	M6-male	--
270.132	G1/8-male	--
270.114	G1/8-female	--
270.540	G1/4-male	--
270.539	G1/4-female	--

Item no.	Material	
21.030.018._*	NBR (sw), SI (r)	18 mm

This vacuum cup is also available in the following dimensions: 15 mm, 20 mm



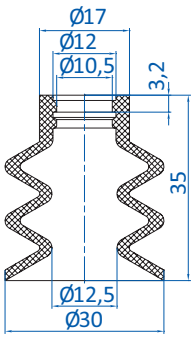
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

Item no.	Material	
21.030.019._*	NBR (sw), SI (r), NR (bg), PU (bl)	13 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

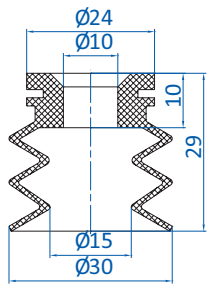
Ø 30 - 31 mm



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no. 21.030.022._*
Material NBR (sw), SI (bl)
14 mm

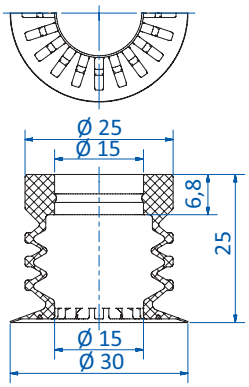
This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 18 mm, 24 mm, 40 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.030.030._*
Material SI (tr), SI-LE (tr), NR (bl)
13 mm

Details and additional sizes available are found on p. 216.

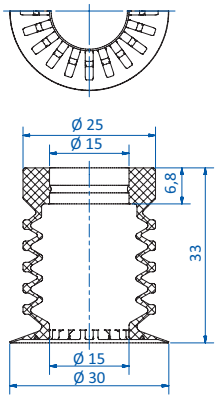


	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

FOR BAG HANDLING

Item no. 25.030.095.8
Material SI 70°/40° (tr/bl)
6 mm

Details and additional sizes available are found on p. 198.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately

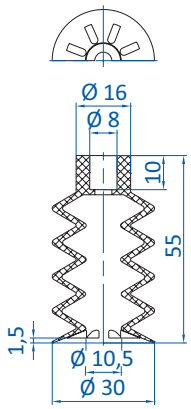


	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

FOR BAG HANDLING

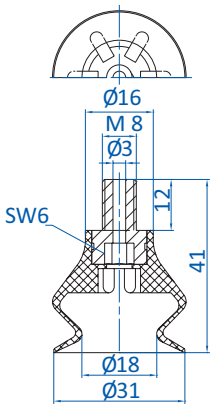
Item no. 25.030.098.8
Material SI 70°/40° (tr/bl)
10 mm

Details and additional sizes available are found on p. 201.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

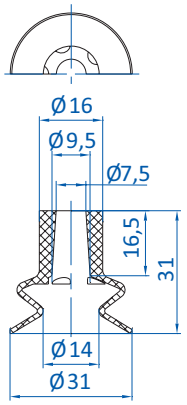
Item no. 25.030.030._*
Material NBR (sw), SI (tr)
27 mm



Item no. 22.030.036._*
Material NBR (sw), SI (tr), NR (sw)
9 mm

This vacuum cup is also available in the following dimensions: 25 mm, 44 mm

*** When ordering please add the appropriate material code to item no.**



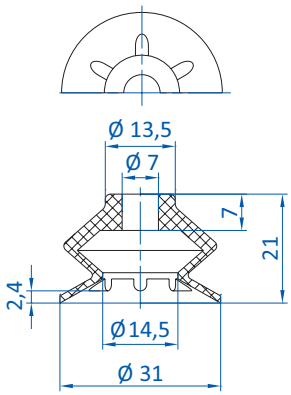
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

Item no. **23.030.035._***

Material NBR (sw), SI (r)

11 mm

This vacuum cup is also available in the following dimensions: 53 mm, 75 mm



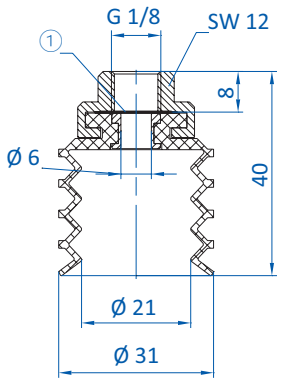
	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. **23.031.192._***

Material Vinyl (bl)

6 mm

Details and additional sizes available are found on p. 191.

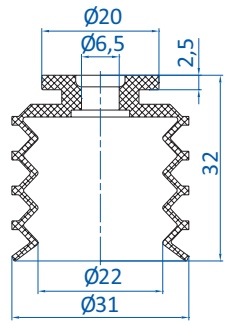


① = Filter screen

Item no. **24.030.039._***

Material CR (sw)

21 mm



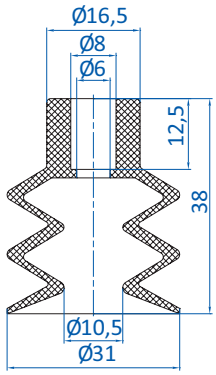
	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no. **25.030.026._***

Material SI (tr), SI-LE (tr), CR (sw)

21 mm

Details and additional sizes available are found on p. 177.

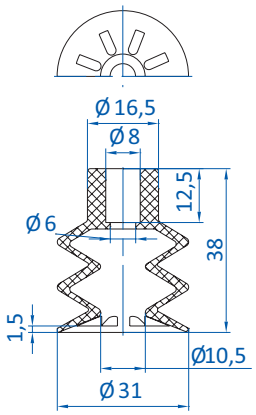


	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. **21.030.023._***

Material SI (tr), SI-LE (tr), NR (sw)

15 mm



	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.043	G1/4-male	--
270.178	G1/4-female	--

Item no. **27.030.006._***

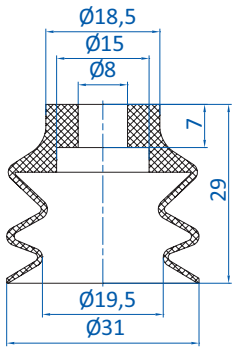
Material NBR (sw), SI (tr), NR (sw)

15 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 30 - 32 mm

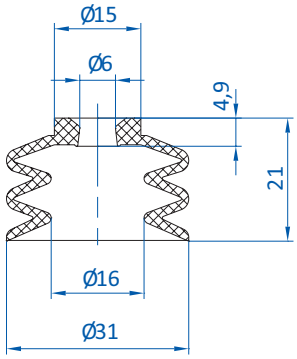


	Connection	
270.255	M8-male	--
270.486	G1/8-male	--
270.485	G1/8-female	--
270.487	G1/4-male	--
270.488	G1/4-female	--

WEAR-RESISTANT

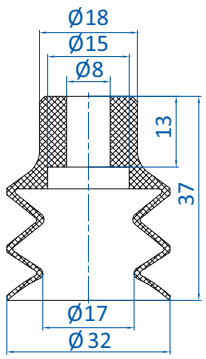
Item no.	Material	
21.030.076._*	Vulkollan® (br)	14 mm

Details and additional sizes available are found on p. 171.



	Connection	
270.460	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

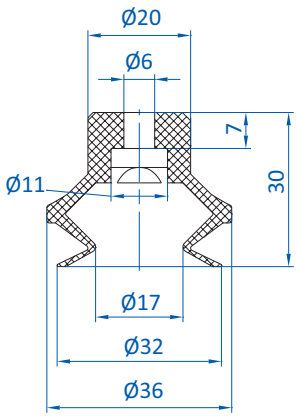
Item no.	Material	
21.031.048._*	SI (tr), NR (sw)	6 mm



	Connection	
270.315	M6-male	--
270.132	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.540	G1/4-male	--
270.192	G1/4-female	--
270.539	G1/4-female	--

Item no.	Material	
21.032.091._*	Vulkollan® (br)	16 mm

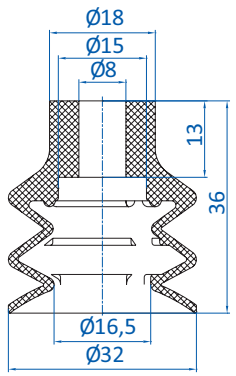
Details and additional sizes available are found on p. 171.



	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no.	Material	
23.030.125._*	NBR (sw), SI (tr), SI-LE (tr), PU (bl), HNBR (ge)	9 mm

This vacuum cup is also available in the following dimensions: 11 mm, 16 mm, 21 mm, 42 mm, 54 mm



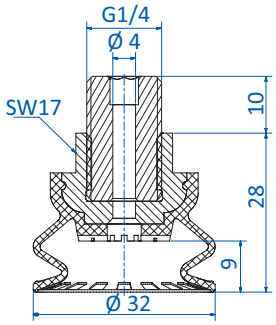
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

BESTSELLER

Item no.	Material	
21.032.075._*	NBR (sw), HNBR (ge), SI (tr), SI-LE (tr), NR (gr), PU (bl)	13 mm

Details and additional sizes available are found on p. 159.

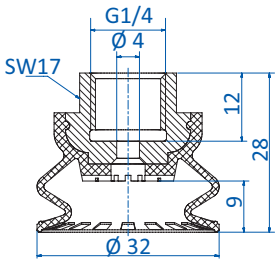
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.030.171._*	NBR (bl)	8 mm

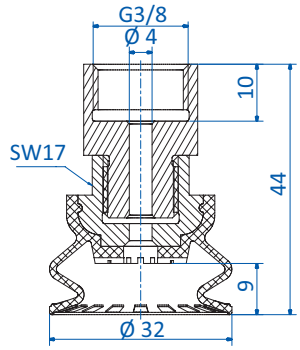
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.030.172._*	NBR (bl)	8 mm

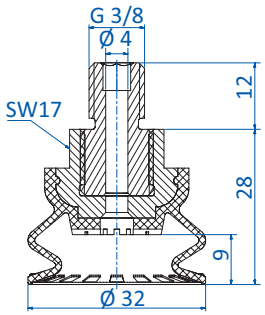
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.030.173._*	NBR (bl)	8 mm

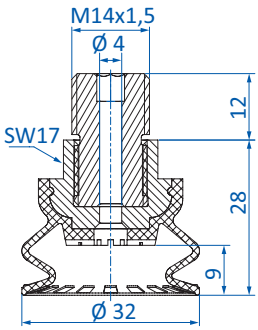
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.030.174._*	NBR (bl)	8 mm

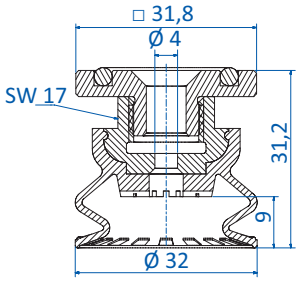
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.030.175._*	NBR (bl)	8 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

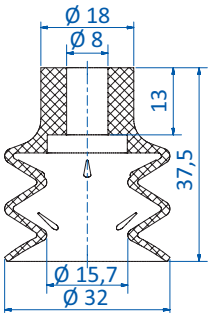
Item no.	Material	
22.030.176._*	NBR (bl)	8 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 32 - 33 mm



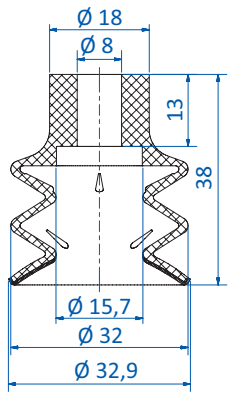
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.032.154._*

Material NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)

14.5 mm

Details and additional sizes available are found on p. 162.



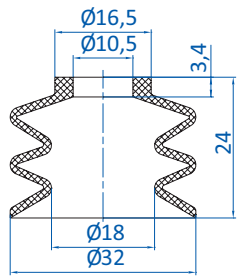
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.032.154.19F

Material Thermalon®-flocked (bl/sw)

14.5 mm

Details and additional sizes available are found on p. 166.

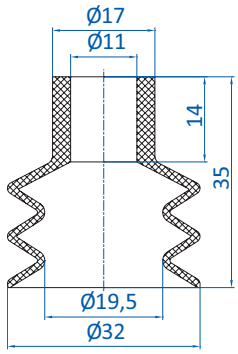


	Connection	
270.521	M5-male	--
270.254	M6-male	--
270.256	M8-male	--

Item no. 21.032.067._*

Material Vinyl (bl)

10 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

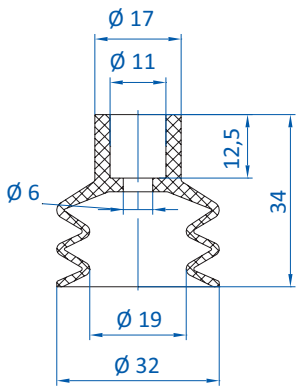
BESTSELLER

Item no. 21.032.082._*

Material Vinyl (bl)

14 mm

Details and additional sizes available are found on p. 194.

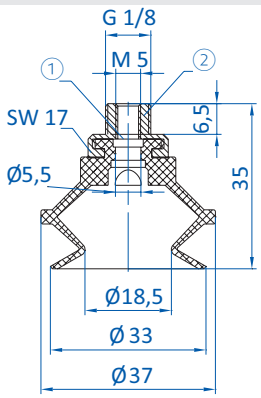


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.032.081._*

Material NR (sw)

13 mm



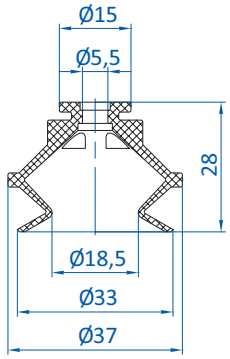
① = Filter screen ② = Aluminum

Item no. 22.030.033._*

Material Tepuflex® (or), SI (tr), CR (sw)

9 mm

*** When ordering please add the appropriate material code to item no.**



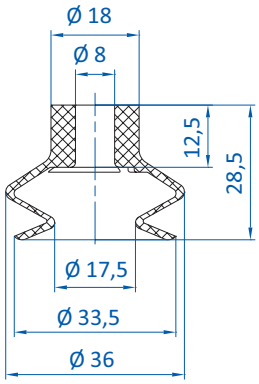
	Connection	
270.783-S	NPT1/8-male	--
270.500-S	M5-female	--
270.250	G1/8-male	--
270.503-S	G1/8-male	--

Item no. **23.030.037._***

Material Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)

9 mm

Details and additional sizes available are found on p. 174.



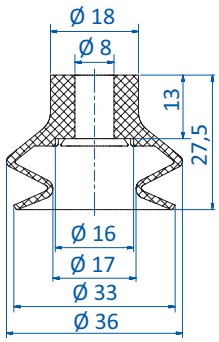
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. **23.033.039._***

Material NBR (sw), SI (tr), SI-LE (tr), NR (gr)

12 mm

Details and additional sizes available are found on p. 147.



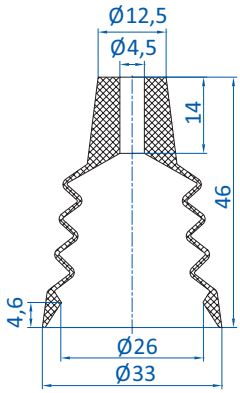
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. **23.033.241._***

Material NBR (sw), SI (tr), Thermalon® (bl), Thermalon®-flocked (bl/sw)

11 mm

Details and additional sizes available are found on p. 150.

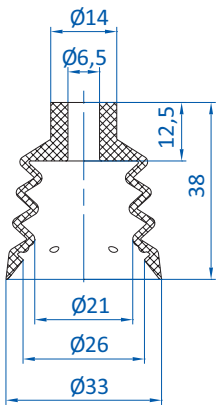


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. **27.033.017._***

Material SI (tr)

25 mm

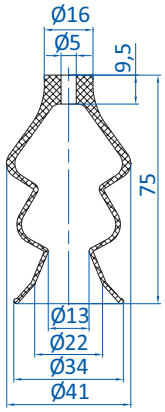


	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--

Item no. **27.033.008._***

Material SI (tr)

16 mm



	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

Item no. **27.034.023._***

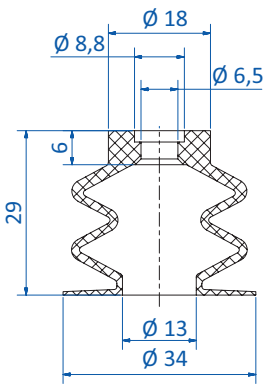
Material SI (r)

39 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 34 - 35 mm

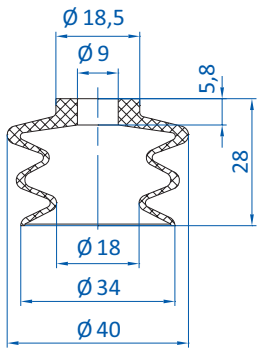


	Connection	
270.039	M6-male	--

IDEAL FOR WAFERS

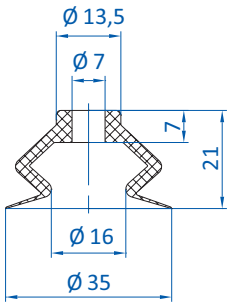
Item no. 21.034.179._*
Material SI-LE (tr)
12 mm

Details and additional sizes available are found on p. 211.



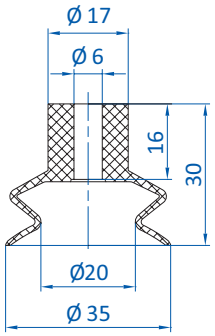
	Connection	
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

Item no. 27.034.003._*
Material Vulkollan® (br)
18 mm



	Connection	
270.312/19	M6-male	--
270.482	G1/8-male	--
270.481	G1/8-female	--
270.483	G1/4-male	--
270.484	G1/4-female	--

Item no. 23.035.106._*
Material Vinyl (bl)
14 mm

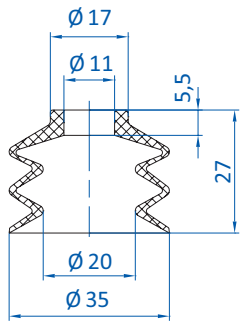


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

BESTSELLER

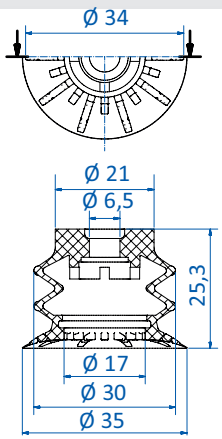
Item no. 23.035.111._*
Material Vinyl (bl)
12 mm

Details and additional sizes available are found on p. 191.



	Connection	
270.313	M8-male	--
270.177	M10-male	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 21.035.080._*
Material Vinyl (bl)
13 mm



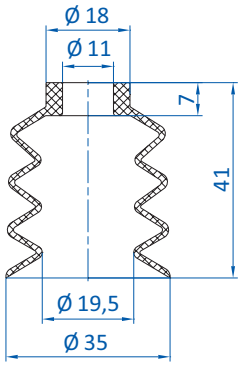
	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

FOR BAG HANDLING

Item no. 21.035.190.16
Material Varioflex® 60°/30° (sw/r)
12 mm

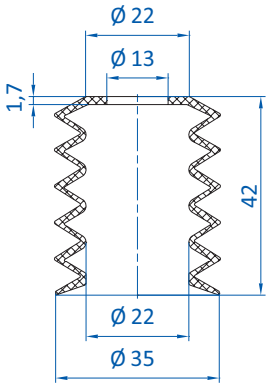
Details and additional sizes available are found on p. 196.

*** When ordering please add the appropriate material code to item no.**



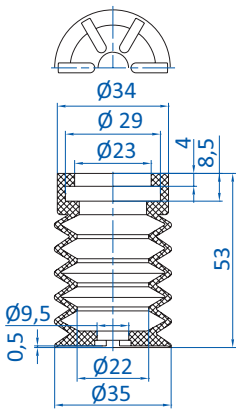
	Connection	
270.313	M8-male	--
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 25.036.040._*
Material Vinyl (bl)
20 mm



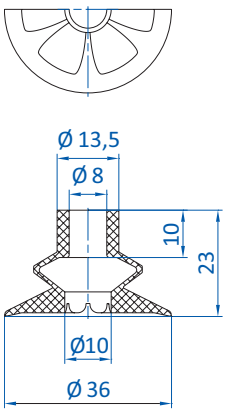
	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 25.035.010._*
Material SI (tr), SI-LE (tr), SI (tr) 30° Shore
26.5 mm



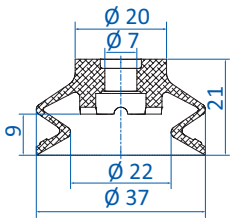
	Connection	
270.235	G1/8-female	--

Item no. 25.036.041._*
Material Vinyl (bl)
22 mm



	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

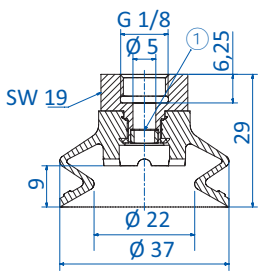
Item no. 27.036.011._*
Material SI (tr), NR (sw)
7 mm



	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no. 23.037.266._*
Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)
9 mm

Details and additional sizes available are found on p. 179.



① = Filter screen

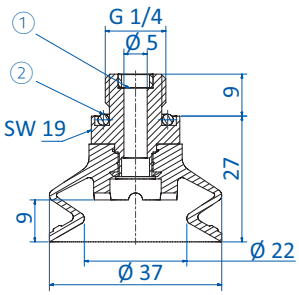
Item no. 22.037.257._*
Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)
9 mm

Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

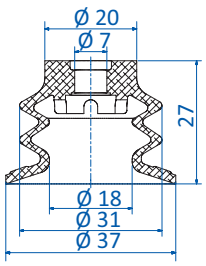
Ø 37 - 0 mm



① = Filter screen ② = O-ring

Item no.	Material	
22.037.258._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	9 mm

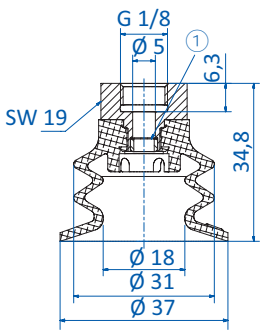
Details and additional sizes available are found on p. 179.



	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no.	Material	
21.037.177._* (*-FI)	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	14 mm

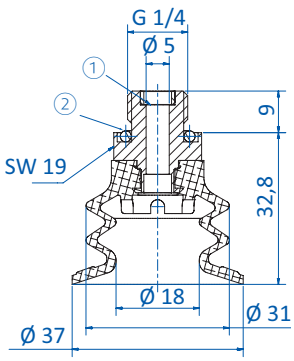
Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



① = Filter screen

Item no.	Material	
20.037.149._* (*-FI)	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	14 mm

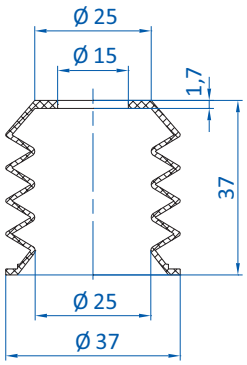
Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



① = Filter screen

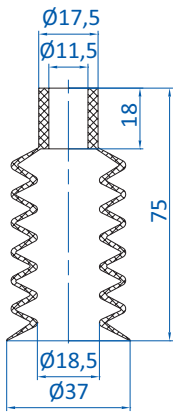
Item no.	Material	
20.037.150._* (*-FI)	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	14 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

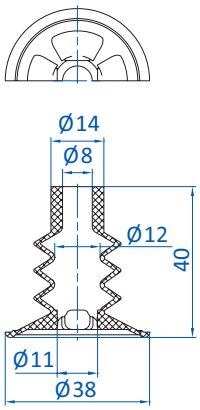
Item no.	Material	
25.037.012._*	Sl (bl)	19 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

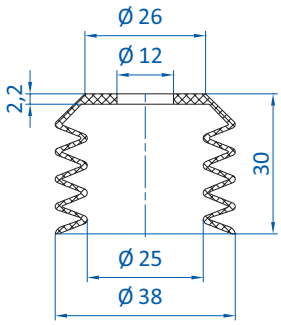
Item no.	Material	
25.038.039._*	Vinyl (bl)	35 mm

*** When ordering please add the appropriate material code to item no.**



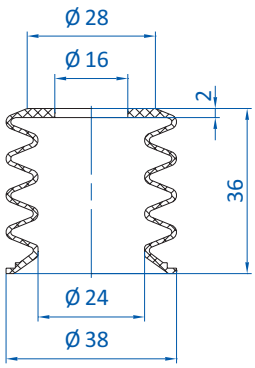
	Connection	
270.112	G1/8-male	--
270.114	G1/8-female	--
270.113	G1/4-male	--
270.178	G1/4-female	--

Item no. 27.038.012._*
Material SI (tr), NR (br)
16 mm



	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

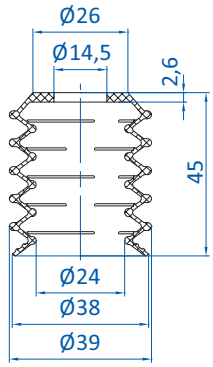
Item no. 25.038.014._*
Material SI (tr)
18 mm



	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 25.038.016._*
Material SI (tr), SI-LE (tr)
24 mm

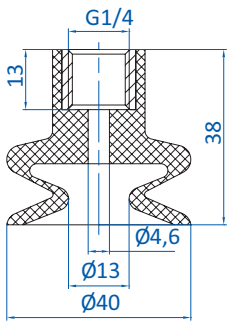
Details and additional sizes available are found on p. 211.



	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 27.039.017._*
Material SI (tr) 50° Shore, SI (tr) 30° Shore
20 mm

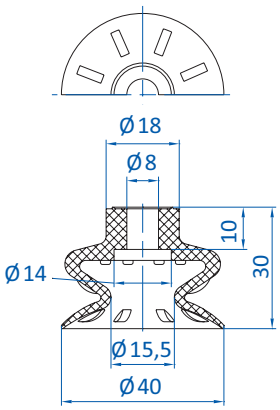
Details and additional sizes available are found on p. 211.



	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

Item no. 22.040.046._*
Material SI (tr), NR (sw)
7 mm

This vacuum cup is also available in the following dimensions: 30 mm, 44 mm, 50 mm



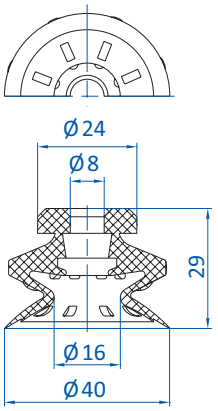
Item no. 23.040.042._*
Material NBR (sw), SI (r), NR (bg)
13 mm

This vacuum cup is also available in the following dimensions: 14 mm, 24 mm, 60 mm

*** When ordering please add the appropriate material code to item no.**

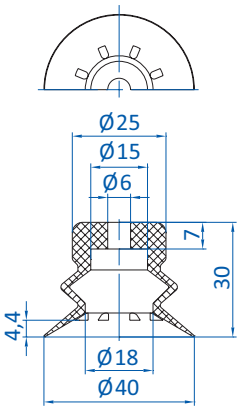
Bellows vacuum cups by size

Ø 40 mm



	Connection	
270.515	G1/4-male	--
270.434	G1/4-female	--

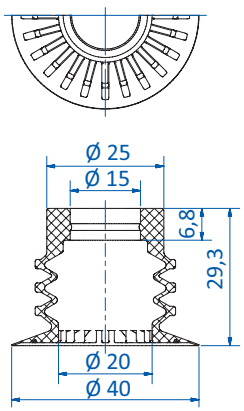
Item no. 23.040.223._*
Material NR (br)
7 mm



	Connection	
270.498	M6-male	--
270.486	G1/8-male	--
270.485	G1/8-female	--
270.487	G1/4-male	--
270.488	G1/4-female	--

Item no. 23.040.142._*
Material NBR (sw), SI (tr)
9.5 mm

Details and additional sizes available are found on p. 204.

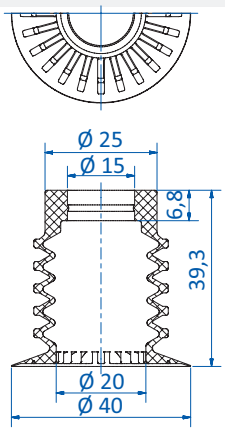


	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

FOR BAG HANDLING

Item no. 25.040.096.8
Material SI 70°/40° (tr/bl)
7 mm

Details and additional sizes available are found on p. 198.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately

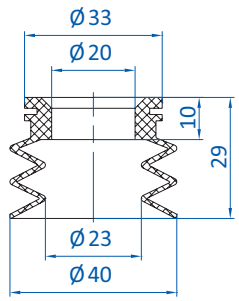


	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

FOR BAG HANDLING

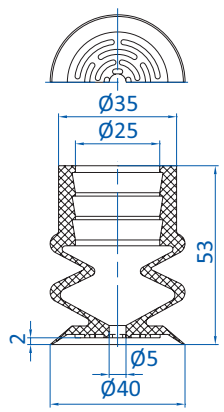
Item no. 25.040.099.8
Material SI 70°/40° (tr/bl)
12 mm

Details and additional sizes available are found on p. 201.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately



Item no. 21.040.132._*
Material SI (tr), SI-LE (tr), SI (bl), SI-LE (bl)
11 mm

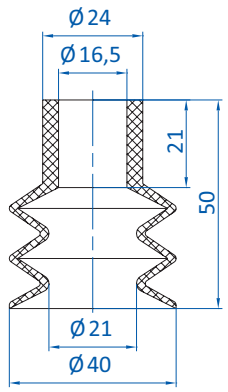
Details and additional sizes available are found on p. 216.



	Connection	
270.438	G1/4-male	--
270.442	G3/8-male	--

Item no. 21.040.141._*
Material NR (bg)
18 mm

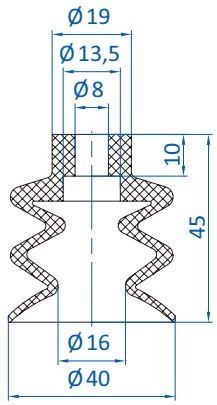
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.116	G1/4-female	--

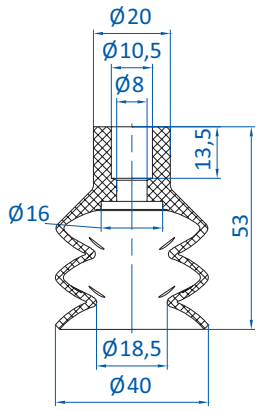
Item no. 21.040.024._*
Material NBR (sw)
18 mm

This vacuum cup is also available in the following dimensions: 60 mm



	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

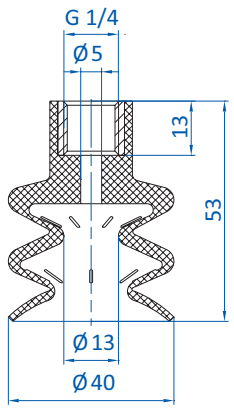
Item no. 21.040.025._*
Material NBR (sw), SI (r), NR (bg), PU (bl)
20 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

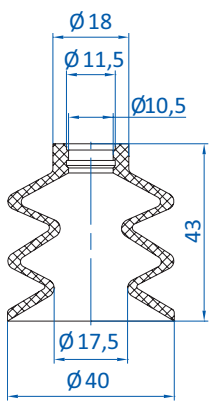
Item no. 21.040.027._*
Material NBR (sw), SI (tr), Vinyl (bl)
16 mm

Details and additional sizes available are found on p. 194.



Item no. 20.040.054._*
Material NBR (sw), SI (tr)
16 mm

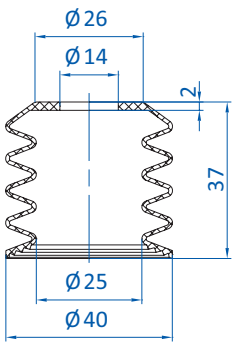
This vacuum cup is also available in the following dimensions: 30 mm, 50 mm



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no. 21.040.028._*
Material NBR (sw), SI (bl)
20 mm

This vacuum cup is also available in the following dimensions: 10 mm, 15 mm, 18 mm, 24 mm, 30 mm



	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

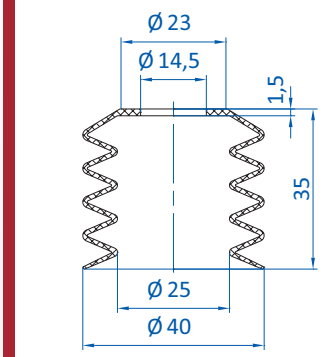
Item no. 25.040.043._*
Material SI (tr) 50° Shore, SI (tr) 30° Shore, SI-LE (tr)
24 mm

Details and additional sizes available are found on p. 211.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 40 - 41 mm



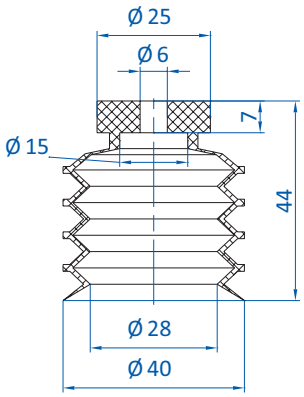
	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 25.040.058._*

Material SI (bl), SI-LE (bl)

25 mm

Details and additional sizes available are found on p. 211.



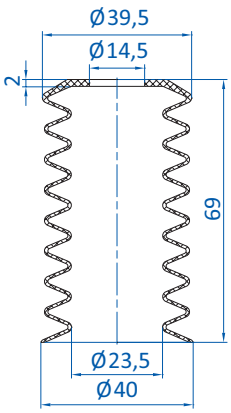
	Connection	
270.486	G1/8-male	--
270.485	G1/8-female	--
270.487	G1/4-male	--
270.488	G1/4-female	--

Item no. 25.040.047._*

Material NBR (sw), SI (tr)

19 mm

Details and additional sizes available are found on p. 209.

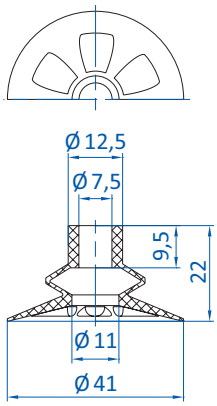


	Connection	
270.419	Without Thread	--
270.183	G1/4-male	--
270.182	G1/4-female	--

Item no. 25.040.019._*

Material SI (tr), SI-LE (tr)

40 mm

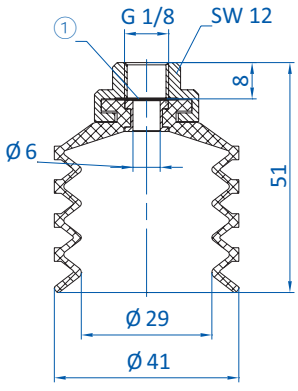


	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

Item no. 23.040.084._*

Material NBR (sw), SI (tr)

9 mm

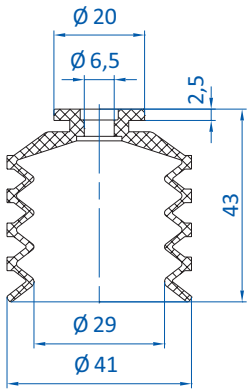


① = Filter screen

Item no. 24.040.074._*

Material SI (tr), CR (sw)

20 mm



	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

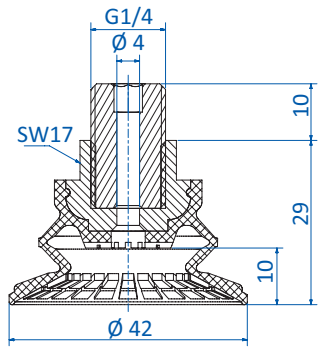
Item no. 25.040.027._*

Material SI (tr), SI-LE (tr), CR (sw)

20 mm

Details and additional sizes available are found on p. 177.

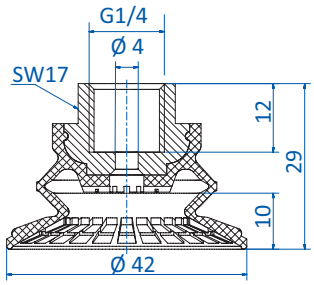
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.040.177._*	NBR (bl)	11 mm

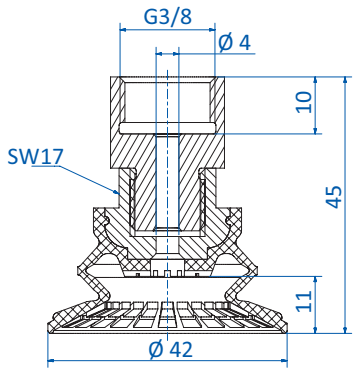
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.040.178._*	NBR (bl)	11 mm

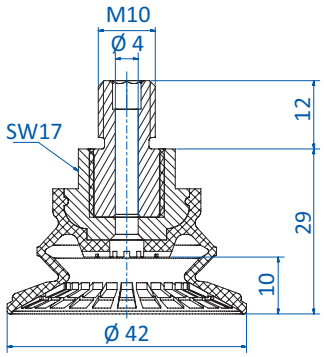
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.040.179._*	NBR (bl)	11 mm

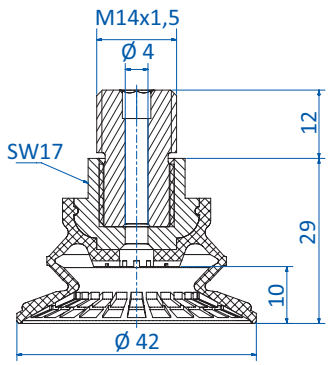
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.040.180._*	NBR (bl)	11 mm

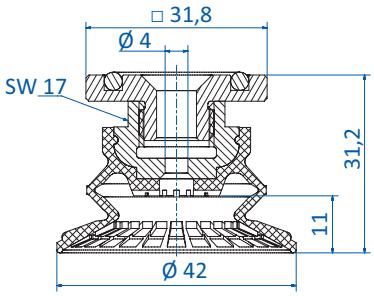
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.040.181._*	NBR (bl)	11 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

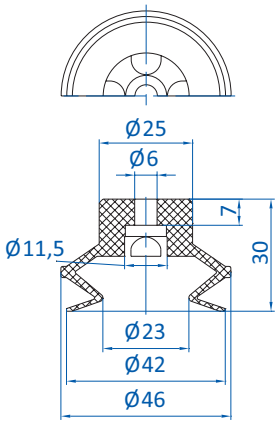
Item no.	Material	
22.040.182._*	NBR (bl)	11 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 40 - 42 mm



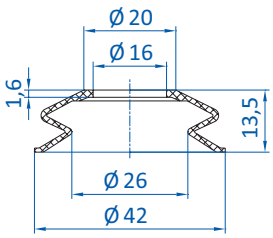
	Connection	
270.312/19	M6-male	--
270.030	G1/8-male	--
270.019	G1/8-female	--
270.274	G1/4-male	--
270.275	G1/4-female	--

Item no. 23.040.126._*

Material NBR (sw), SI (tr), PU (bl)

10 mm

This vacuum cup is also available in the following dimensions: 11 mm, 16 mm, 21 mm, 32 mm, 54 mm



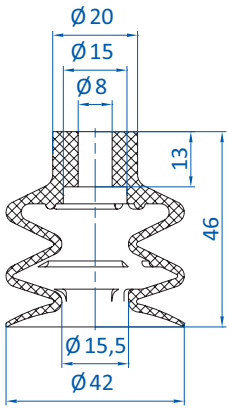
	Connection	
270.419	Without Thread	--
270.182.U	G1/4-male	--
270.182	G1/4-female	--

Item no. 23.042.048._*

Material SI (tr), NR (sw), NR (br)

11 mm

This vacuum cup is also available in the following dimensions: 47 mm



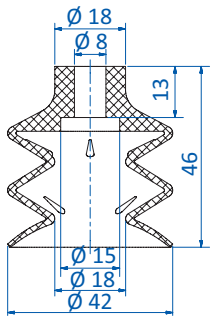
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.043.049._*

Material NBR (sw), HNBR (ge), SI (tr), SI-LE (tr), NR (gr)

19 mm

Details and additional sizes available are found on p. 159.



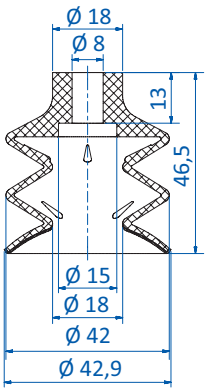
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.042.155._*

Material NBR (sw), SI (tr), Thermalon® (bl)

22 mm

Details and additional sizes available are found on p. 162.



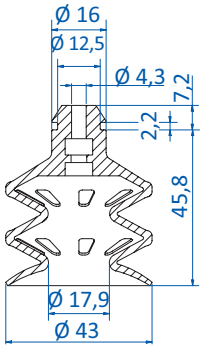
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.042.155.19F

Material Thermalon®-flocked (bl/sw)

22 mm

Details and additional sizes available are found on p. 166.



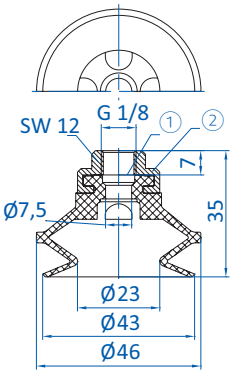
Item no. 21.040.186._*

Material SI (tr), SI-LE (tr), SI (w), SI-LE (w)

20 mm

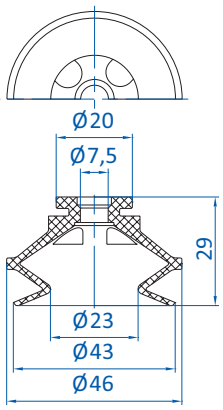
Details and additional sizes available are found on p. 213.

*** When ordering please add the appropriate material code to item no.**



① = Filter screen ② = Aluminum

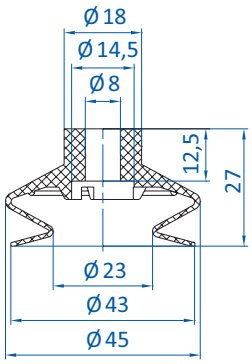
Item no.	Material	
22.040.045._*	Tepuflex® (or), SI (tr), CR (sw)	9 mm



	Connection	
270.781-S	NPSF1/8-female	--
270.786-S	NPT1/4-male	--
270.785-S	NPT3/8-male	--
270.251	G1/8-female	--
270.501-S	G1/8-female	--
270.506-S	G1/4-male	--
270.505-S	G3/8-male	--

Item no.	Material	
23.040.045._*	Tepuflex® (or), SI (tr), CR (sw)	9 mm

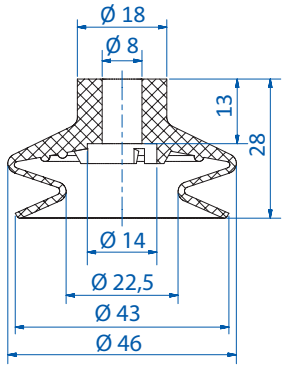
Details and additional sizes available are found on p. 174.



	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no.	Material	
23.043.096._*	NBR (sw), HNBR (ge), SI (tr), NR (gr)	12 mm

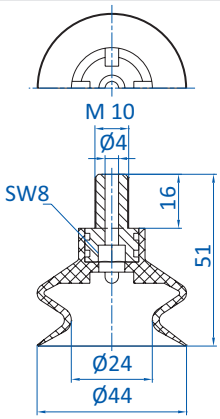
Details and additional sizes available are found on p. 147.



	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

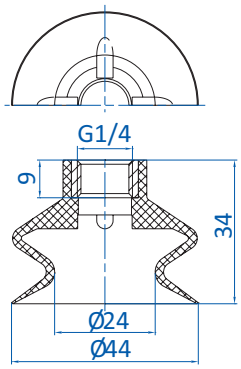
Item no.	Material	
23.043.242._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	12.5 mm

Details and additional sizes available are found on p. 150.



Item no.	Material	
22.044.054._*	SI (tr), NR (sw)	14 mm

This vacuum cup is also available in the following dimensions: 25 mm, 31 mm



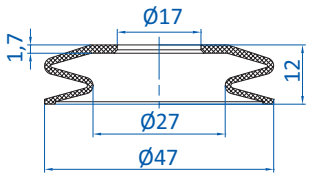
Item no.	Material	
22.044.034._*	SI (tr), NR (sw)	15 mm

This vacuum cup is also available in the following dimensions: 30 mm, 40 mm, 50 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

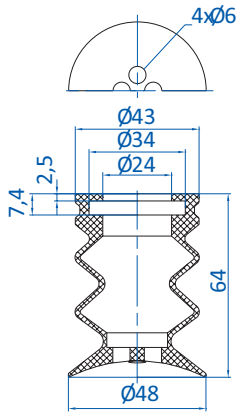
Ø 47 - 50 mm



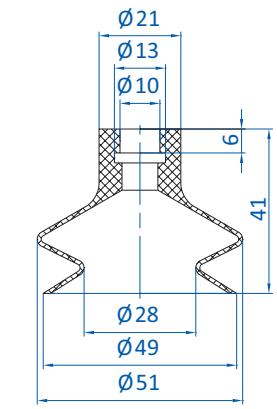
	Connection	
270.182.U	G1/4-male	--
270.182	G1/4-female	--

Item no.	Material	
23.047.246._*	NR (bg)	4 mm

This vacuum cup is also available in the following dimensions: 42 mm

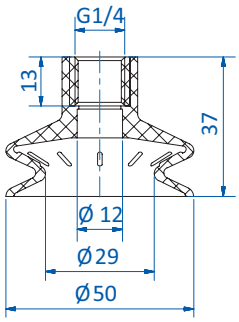


Item no.	Material	
25.048.056._*	SI (tr)	25 mm



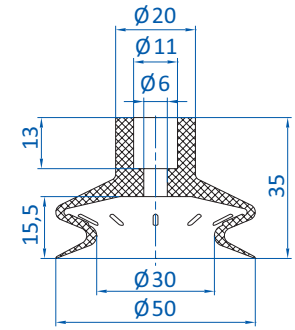
	Connection	
270.213	G1/4-male	--

Item no.	Material	
23.049.199._*	Vulkollan® (br)	20 mm



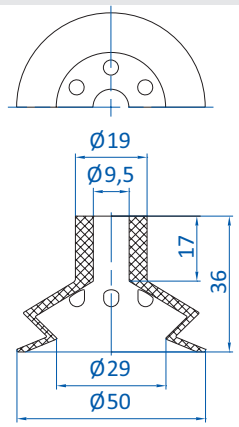
Item no.	Material	
22.050.058._*	SI (tr), NBR (sw)	12 mm

This vacuum cup is also available in the following dimensions: 30 mm, 40 mm, 44 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

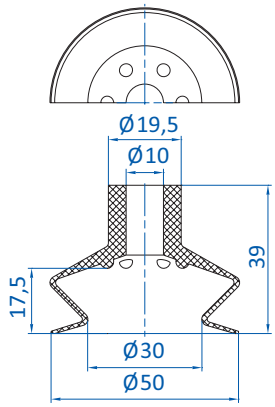
Item no.	Material	
23.050.061._*	SI (tr), NR (sw)	10 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

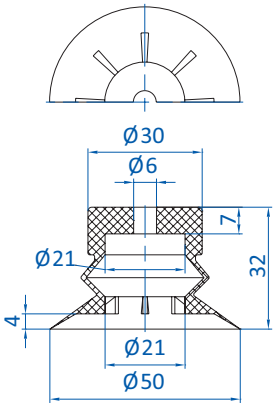
Item no.	Material	
23.050.135._*	NBR (sw)	10 mm

*** When ordering please add the appropriate material code to item no.**



	Connection	
270.177	M10-male	--
270.044	G1/4-male	--
270.452	G1/4-female	--

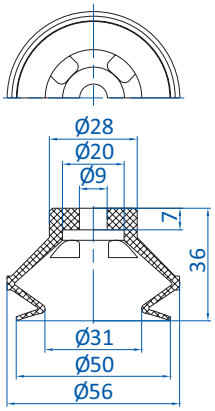
Item no. 23.050.188._*
Material NR (sw)
20 mm



	Connection	
270.499	M6-male	--
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

Item no. 23.050.143._*
Material NBR (sw), SI (tr)
11 mm

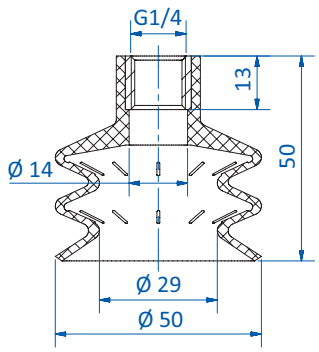
Details and additional sizes available are found on p. 204.



	Connection	
270.314	M6-male	--
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

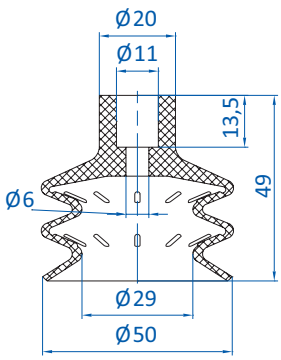
Item no. 23.050.171._*
Material Vulkollan® (br)
10 mm

Details and additional sizes available are found on p. 171.



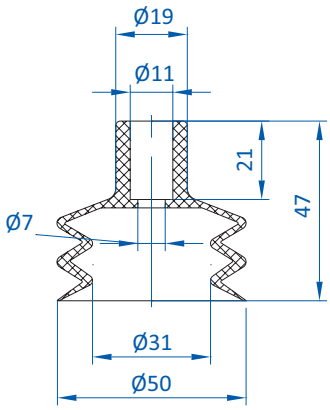
Item no. 20.050.064._*
Material SI (tr), NR (sw)
18 mm

This vacuum cup is also available in the following dimensions: 30 mm, 40 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.050.031._*
Material NBR (sw), SI (tr), SI-LE (tr), NR (sw), NR (br)
18 mm



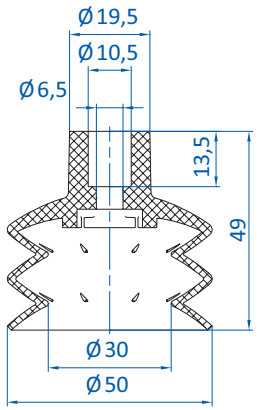
	Connection	
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.050.065._*
Material Vinyl (bl)
25 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

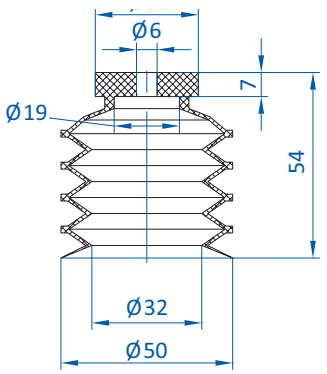
Ø 50 - 51 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.050.084._*
Material Vinyl (bl)
20 mm

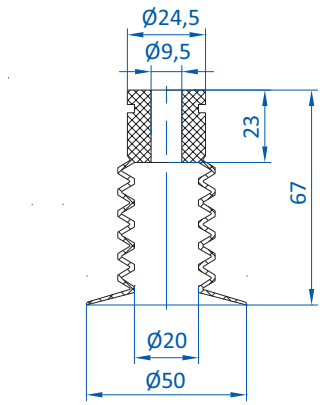
Details and additional sizes available are found on p. 194.



	Connection	
270.490	G1/8-male	--
270.489	G1/8-female	--
270.491	G1/4-male	--
270.492	G1/4-female	--

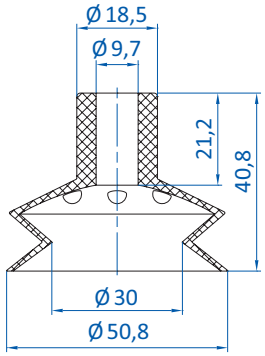
Item no. 25.050.048._*
Material NBR (sw), SI (tr)
26 mm

Details and additional sizes available are found on p. 209.



	Connection	
270.177	M10-male	--
270.132	G1/8-male	--
270.044	G1/4-male	--
270.452	G1/4-female	--

Item no. 25.050.054._*
Material NBR (sw), SI (tr)
29 mm

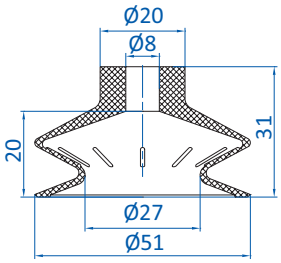


	Connection	
270.132	G1/8-male	--
270.208	G1/4-male	--
270.452	G1/4-female	--

BESTSELLER

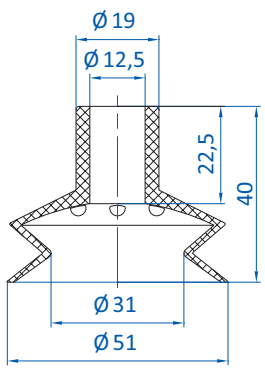
Item no. 23.052.116._*
Material Vinyl (bl)
6 mm

Details and additional sizes available are found on p. 191.



	Connection	
270.315	M6-male	--
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

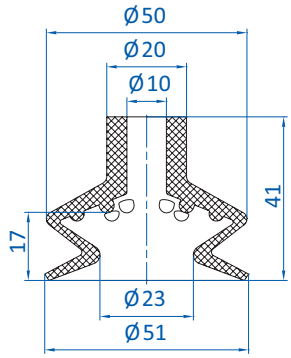
Item no. 23.050.029._*
Material SI (tr), NR (sw)
10 mm



	Connection	
270.207	G1/4-male	--

Item no. 23.052.117._*
Material SI (tr), Vinyl (bl)
6 mm

*** When ordering please add the appropriate material code to item no.**

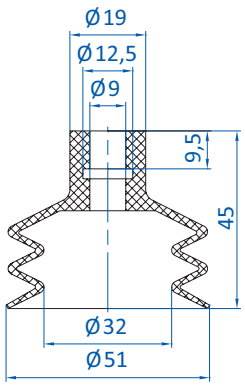


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 23.050.056._*

Material NBR (sw), SI (tr), NR (sw)

11 mm



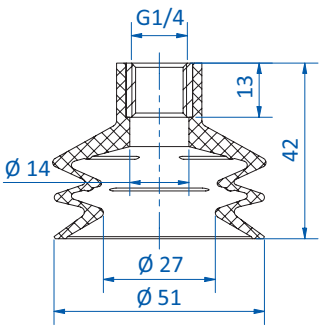
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.204	G1/4-male	--
270.324	G1/4-female	--

Item no. 21.051.097._*

Material Vulkollan® (br)

18 mm

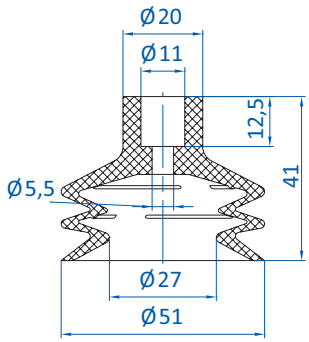
Details and additional sizes available are found on p. 171.



Item no. 20.050.065._*

Material SI (tr), NR (sw)

8 mm

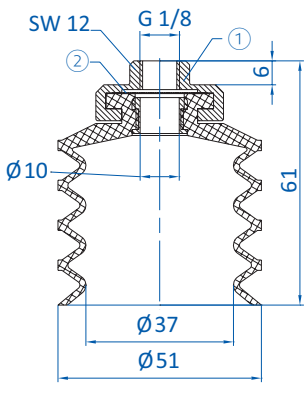


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

Item no. 21.050.032._*

Material NBR (sw), SI (tr), NR (sw), NR (br)

8 mm

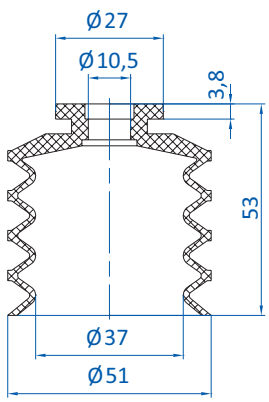


① = Filter screen ② = Aluminum

Item no. 24.050.087._*

Material SI (tr), CR (sw)

30 mm



	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.252	G1/8-female	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

Item no. 25.050.028._*

Material SI (tr), SI-LE (tr), CR (sw)

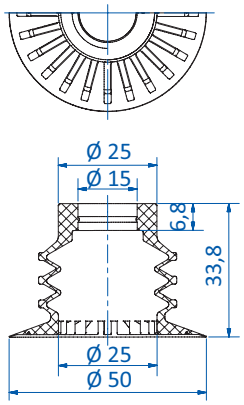
25 mm

Details and additional sizes available are found on p. 177.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 50 - 52 mm



	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

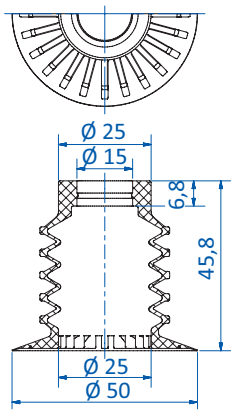
FOR BAG HANDLING

Item no.
25.050.097.8

Material
SI 70°/40° (tr/bl)

9 mm

Details and additional sizes available are found on p. 198.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately



	Connection	
270.776	G1/8-male	--
270.777	G1/4-male	--
270.778	G3/8-male	--

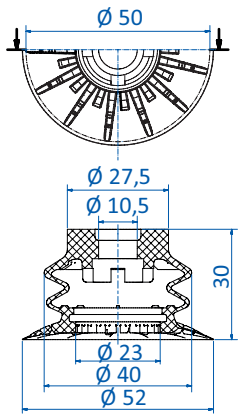
FOR BAG HANDLING

Item no.
25.050.100.8

Material
SI 70°/40° (tr/bl)

15 mm

Details and additional sizes available are found on p. 201.
Ordering notes Suitable holders and the move-in guards (p.202), are not included in the scope of delivery, please order separately



	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

FOR BAG HANDLING

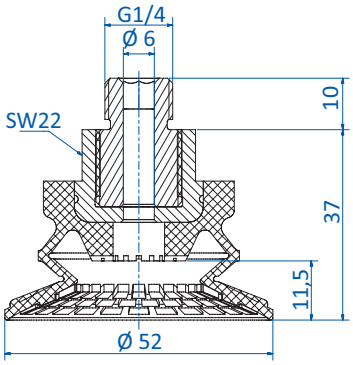
Item no.
21.052.191.16

Material
Varioflex® 60°/30° (sw/r)

12 mm

Details and additional sizes available are found on p. 196.

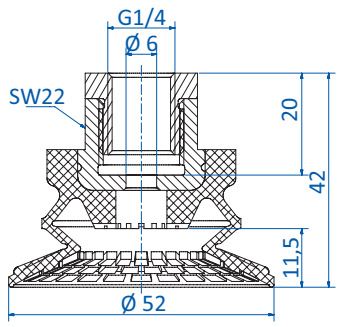
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.050.183._*	NBR (bl)	12.5 mm

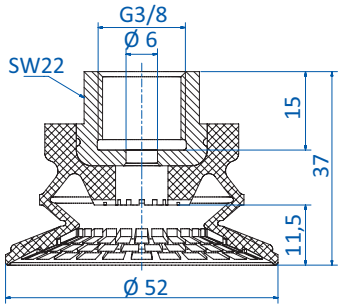
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.050.184._*	NBR (bl)	12.5 mm

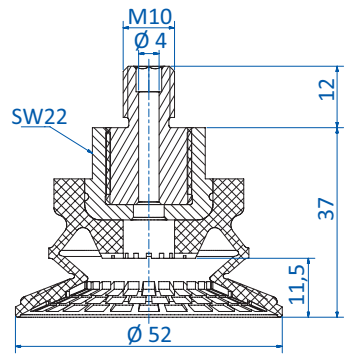
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.050.185._*	NBR (bl)	12.5 mm

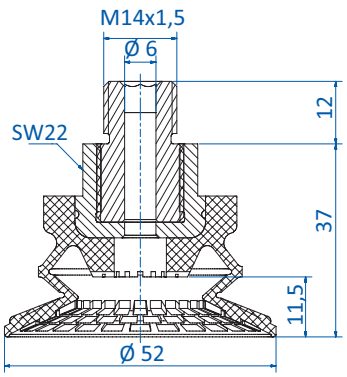
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.050.186._*	NBR (bl)	12.5 mm

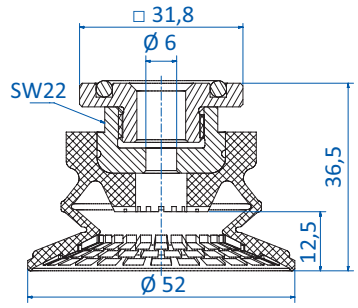
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.050.187._*	NBR (bl)	12.5 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

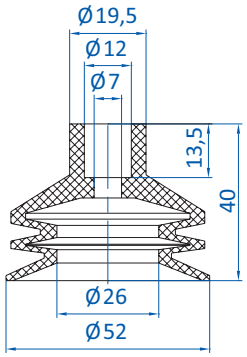
Item no.	Material	
22.050.188._*	NBR (bl)	12.5 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 52 - 53 mm

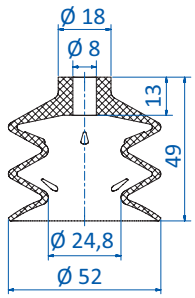


	Connection	
270.101	G1/4-male	--

Item no. 21.052.033._*

Material NBR (sw)

12 mm



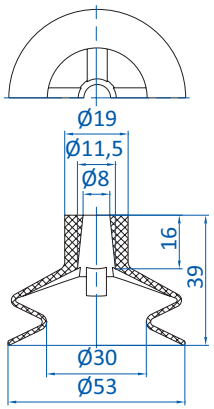
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no. 21.052.156._*

Material NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)

27 mm

Details and additional sizes available are found on p. 162.



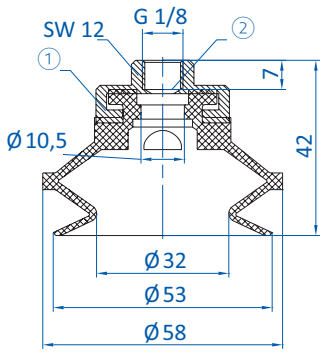
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.192	G1/4-female	--

Item no. 23.055.058._*

Material NBR (sw), SI (r)

11 mm

This vacuum cup is also available in the following dimensions: 31 mm, 75 mm

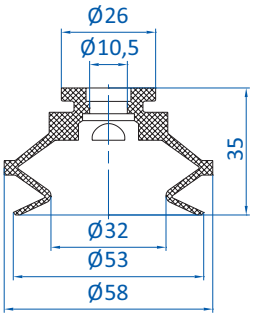


① = Filter screen ② = Aluminum

Item no. 22.050.056._*

Material Tepuflex® (or), SI (tr), CR (sw)

12 mm



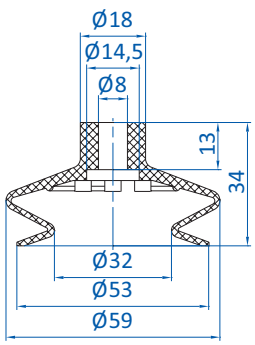
	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.252	G1/8-female	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

Item no. 23.050.054._*

Material Tepuflex® (or), SI (tr), SI-LE (tr), CR (sw)

12 mm

Details and additional sizes available are found on p. 174.



	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

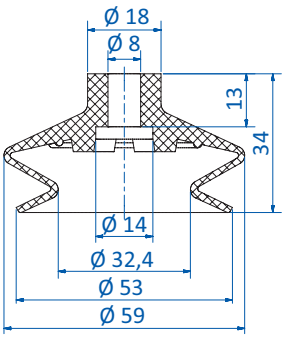
Item no. 23.053.033._*

Material NBR (sw), SI (tr), SI-LE (tr), NR (gr)

11 mm

Details and additional sizes available are found on p. 147.

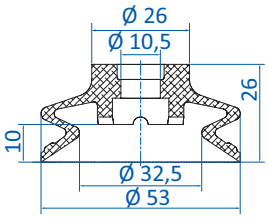
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--

Item no.	Material	
23.053.243._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	15 mm

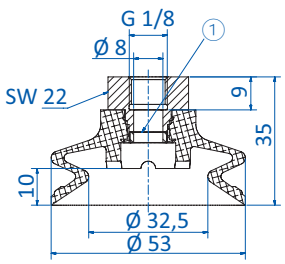
Details and additional sizes available are found on p. 150.



	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

Item no.	Material	
23.053.267._*	Varioflex® 60°/30° (sw/r)	10 mm

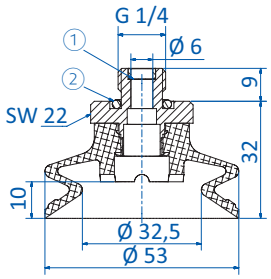
Details and additional sizes available are found on p. 179.



① = Filter screen

Item no.	Material	
22.053.259._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	10 mm

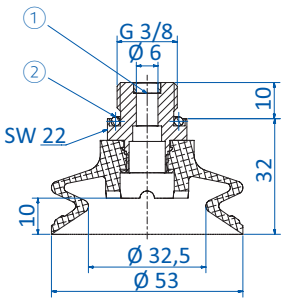
Details and additional sizes available are found on p. 179.



① = Filter screen ② = O-ring

Item no.	Material	
22.053.260._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	10 mm

Details and additional sizes available are found on p. 179.



① = Filter screen ② = O-ring

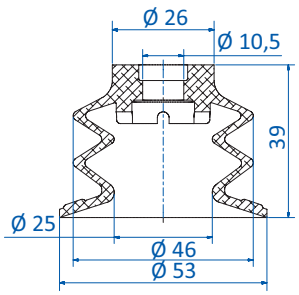
Item no.	Material	
22.053.261._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	10 mm

Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 53 - 56 mm



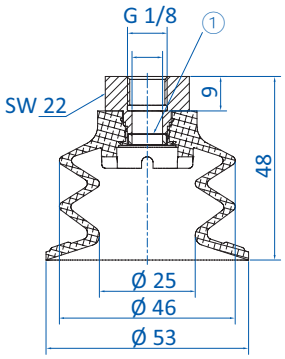
	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

Item no. **21.053.178._* (*-FI)**

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

19 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



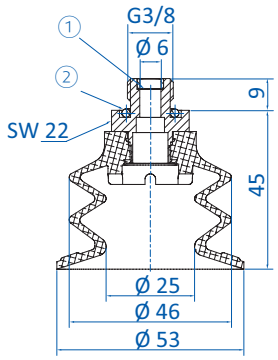
① = Filter screen

Item no. **20.053.151._* (*-FI)**

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

19 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



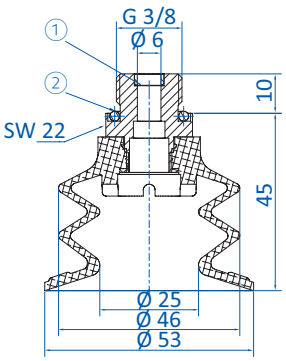
① = Filter screen ② = O-ring

Item no. **20.053.152._* (*-FI)**

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

19 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



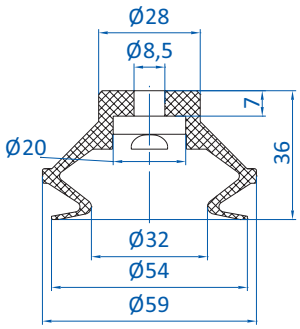
① = Filter screen ② = O-ring

Item no. **20.053.153._* (*-FI)**

Material Varioflex® 60°/30° (sw/r), Monoflex 50° (g)

19 mm

Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code

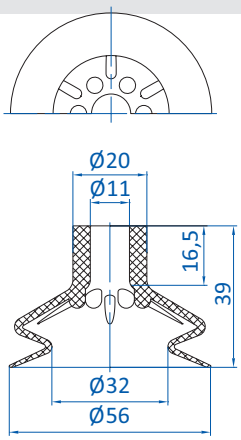


Item no. **23.050.127._***

Material NBR (sw), SI (tr), PU (bl)

10 mm

This vacuum cup is also available in the following dimensions: 11 mm, 16 mm, 21 mm, 32 mm, 42 mm

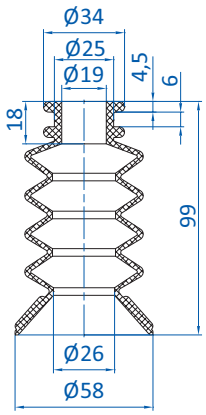


Item no. **23.056.150._***

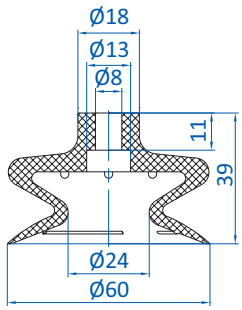
Material SI (tr), SI-LE (tr)

16 mm

*** When ordering please add the appropriate material code to item no.**



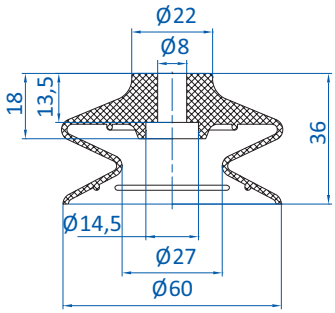
Item no.	Material	
25.058.049._*	Vinyl (bl)	55 mm



	Connection	
270.093	G1/8-male	--
270.092	G1/8-female	--
270.249	G1/4-male	--
270.248	G1/4-female	--

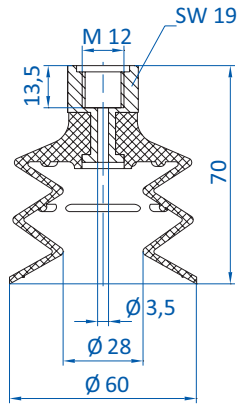
Item no.	Material	
23.060.059._*	NBR (sw), SI (r)	15 mm

This vacuum cup is also available in the following dimensions: 14 mm, 24 mm, 40 mm

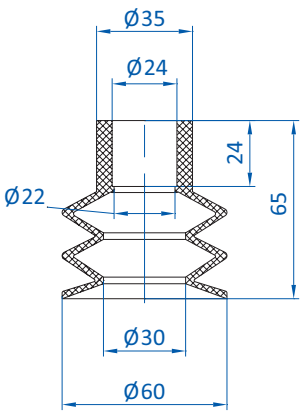


	Connection	
270.281	G1/4-male	--
270.282	G1/4-female	--

Item no.	Material	
23.060.172._*	SI (tr), NR (sw)	12 mm

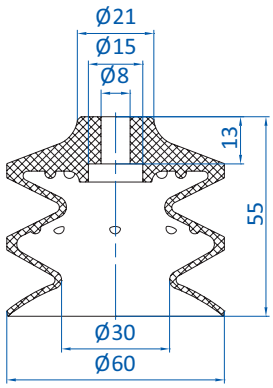


Item no.	Material	
20.060.101._*	NR (sw)	25 mm



Item no.	Material	
21.060.035._*	EPDM (sw), SI (r)	27 mm

This vacuum cup is also available in the following dimensions: 40 mm



	Connection	
270.315	M6-male	--
270.540	G1/4-male	--
270.539	G1/4-female	--

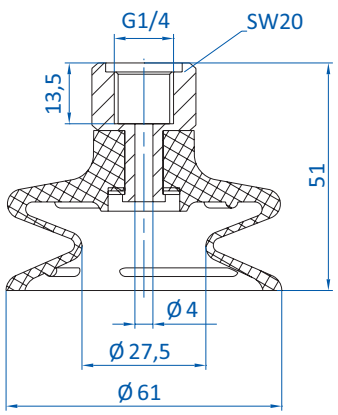
Item no.	Material	
21.062.092._*	Vulkollan® (br)	25 mm

Details and additional sizes available are found on p. 171.

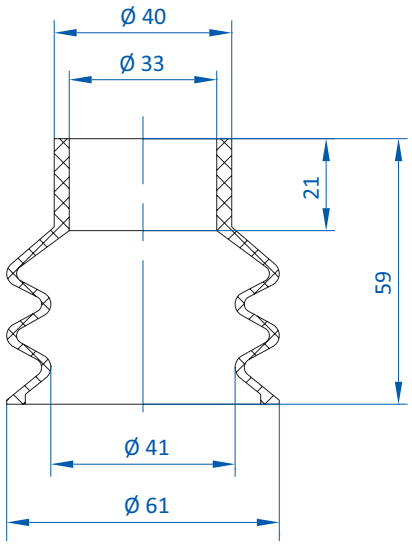
*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 61 mm

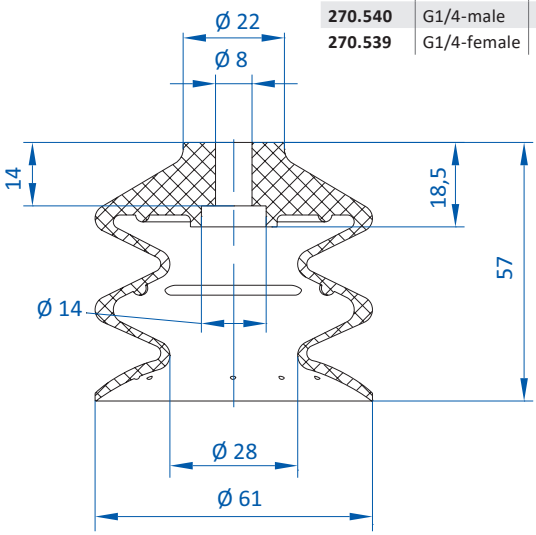


Item no.	Material	
22.060.107._*	NR (sw)	11 mm



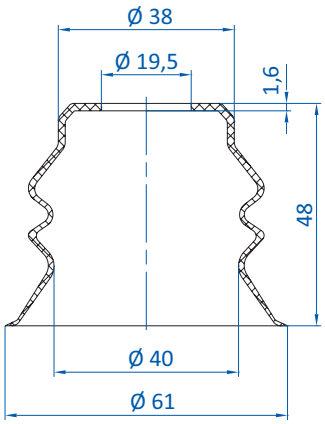
Item no.	Material	
21.060.038._*	NBR (sw), SI (tr)	25 mm

	Connection	
270.315	M6-male	--
270.540	G1/4-male	--
270.539	G1/4-female	--



Item no.	Material	
21.060.051._*	SI (tr), NR (sw), HNBR (ge)	25 mm

	Connection	
270.372	G1/2-male	--

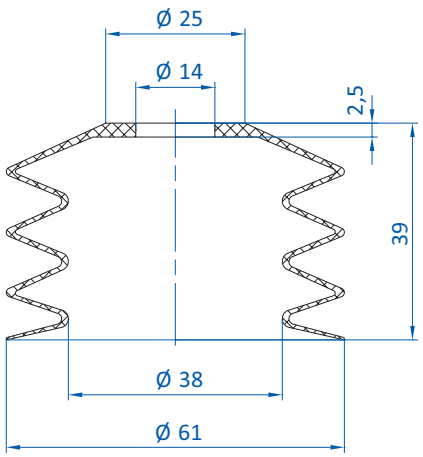


Item no.	Material	
21.060.074._*	SI (tr)	12 mm

Details and additional sizes available are found on p. 211.

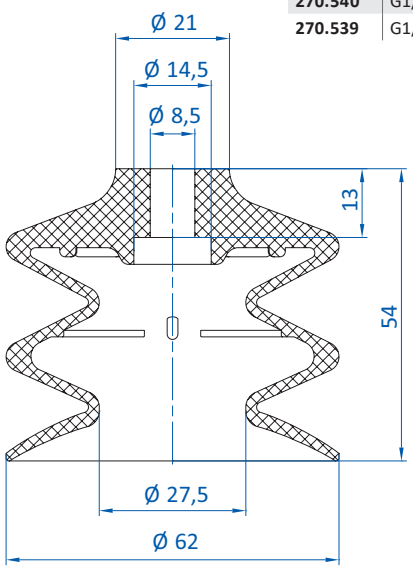
*** When ordering please add the appropriate material code to item no.**

	Connection	
270.183	G1/4-male	--
270.182	G1/4-female	--



Item no.	Material	
25.060.033._*	NBR (sw), SI (br), SI-LE (tr)	16 mm

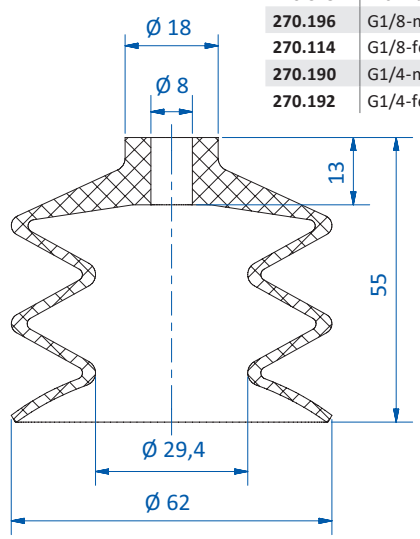
	Connection	
270.315	M6-male	--
270.540	G1/4-male	--
270.539	G1/4-female	--



Item no.	Material	
21.062.055._*	NBR (sw), SI (tr), SI-LE (tr)	25 mm

Details and additional sizes available are found on p. 159.

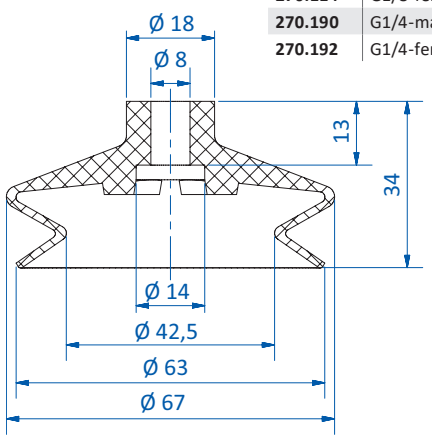
	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--



Item no.	Material	
21.062.157._*	NBR (sw), SI (tr), SI-LE (tr), Thermalon® (bl)	31 mm

Details and additional sizes available are found on p. 162.

	Connection	
270.315	M6-male	--
270.196	G1/8-male	--
270.114	G1/8-female	--
270.190	G1/4-male	--
270.192	G1/4-female	--



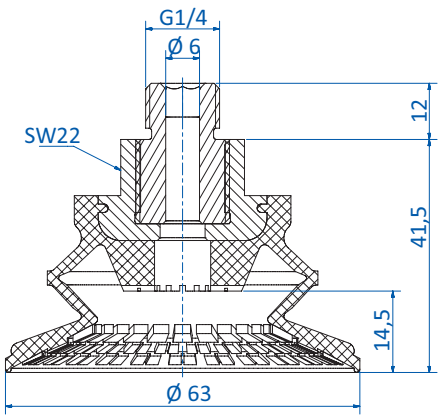
Item no.	Material	
23.063.244._*	NBR (sw), SI (tr), Thermalon® (bl)	15 mm

Details and additional sizes available are found on p. 150.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

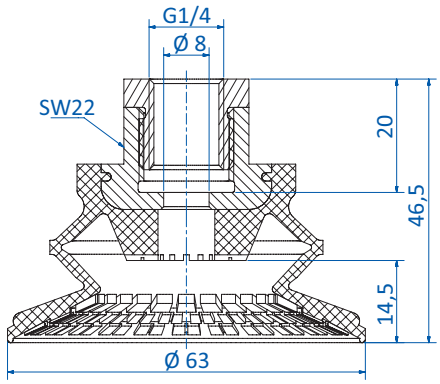
Ø 63 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.060.189._*	Material NBR (bl)	16.5 mm

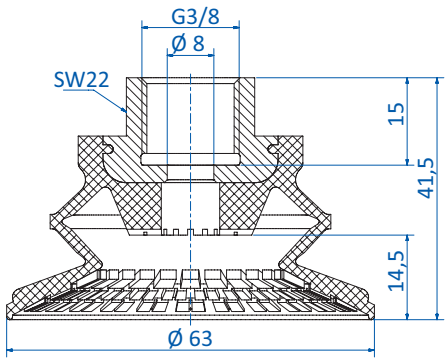
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.060.190._*	Material NBR (bl)	16.5 mm

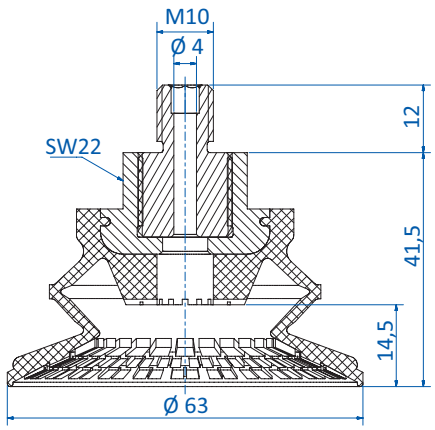
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.060.191._*	Material NBR (bl)	16.5 mm

Details and additional sizes available are found on p. 218.

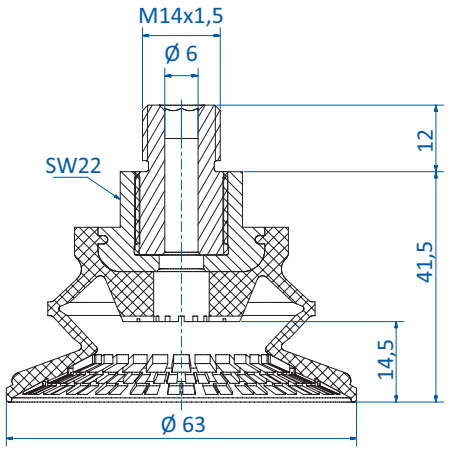


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.060.192._*	Material NBR (bl)	16.5 mm

Details and additional sizes available are found on p. 218.

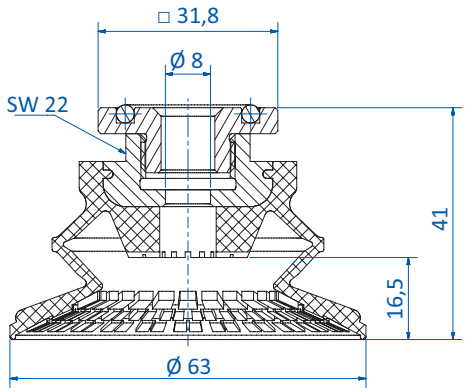
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.060.193._*	NBR (bl)	16.5 mm

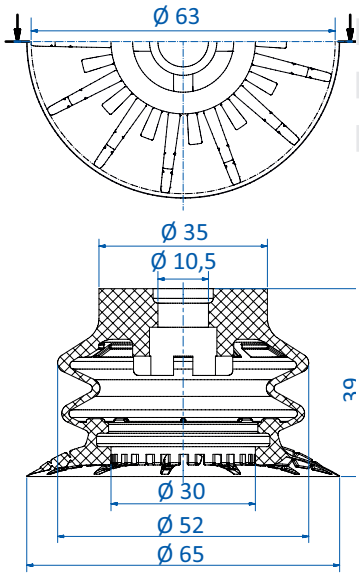
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.060.194._*	NBR (bl)	16.5 mm

Details and additional sizes available are found on p. 218.

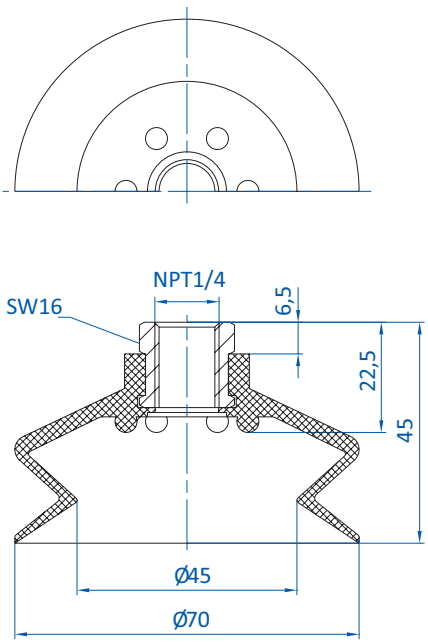


	Connection	
270.782-S	NPSF1/8-female	--
270.784-S	NPT1/4-male	--
270.787-S	NPT3/8-male	--
270.502-S	G1/8-female	--
270.504-S	G1/4-male	--
270.507-S	G3/8-male	--

FOR BAG HANDLING

Item no.	Material	
21.064.192.16	Varioflex® 60°/30° (sw/r)	15 mm

Details and additional sizes available are found on p. 196.



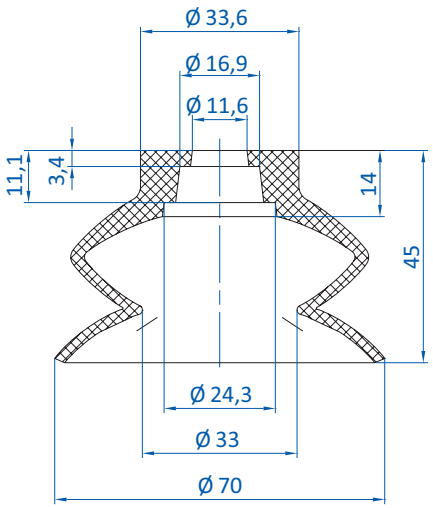
Item no.	Material	
22.070.127._*	Vinyl (bl)	13 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

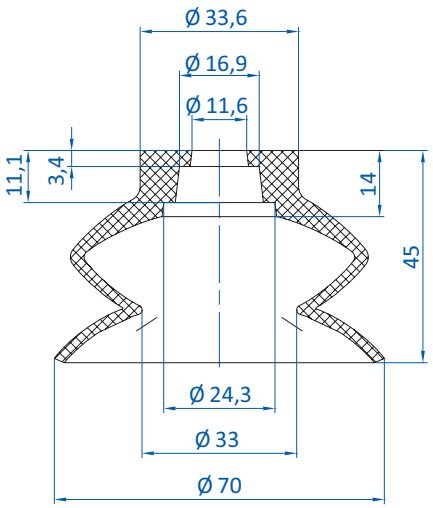
Ø 70 - 75 mm

	Connection	
270.184	G1/4-male	--



Item no.	Material	
23.070.060._*	NBR (sw), SI (tr), NR (sw)	20 mm

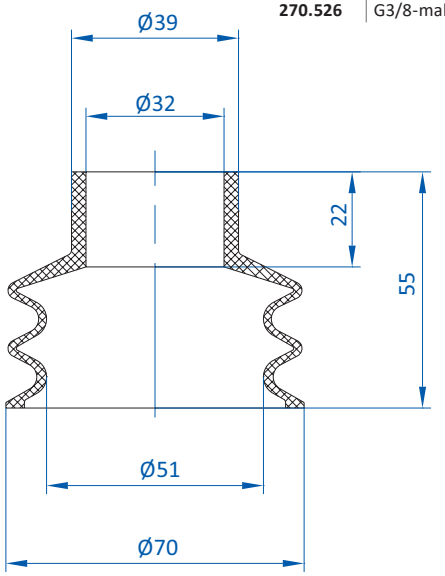
	Connection	
270.184	G1/4-male	--



Item no.	Material	
23.070.060._*	Vinyl (bl)	20 mm

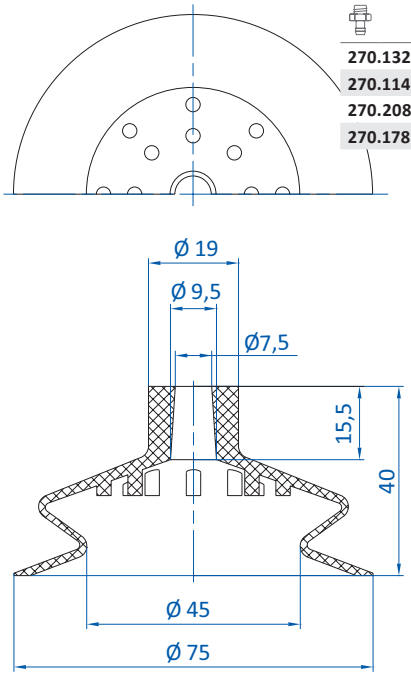
Details and additional sizes available are found on p. 191.

	Connection	
270.526	G3/8-male	--



Item no.	Material	
21.070.041._*	NR (sw), SI (tr), SI-LE (tr)	17 mm

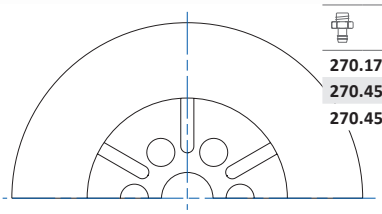
	Connection	
270.132	G1/8-male	--
270.114	G1/8-female	--
270.208	G1/4-male	--
270.178	G1/4-female	--



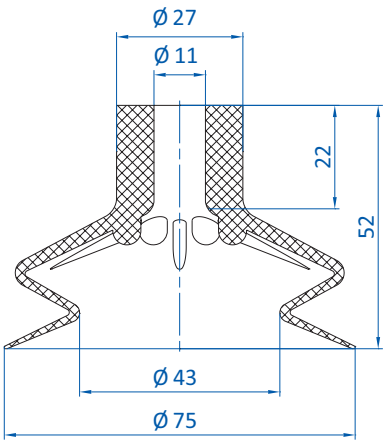
Item no.	Material	
23.075.063._*	NBR (sw), SI (r)	17 mm

This vacuum cup is also available in the following dimensions: 31 mm, 53 mm

*** When ordering please add the appropriate material code to item no.**

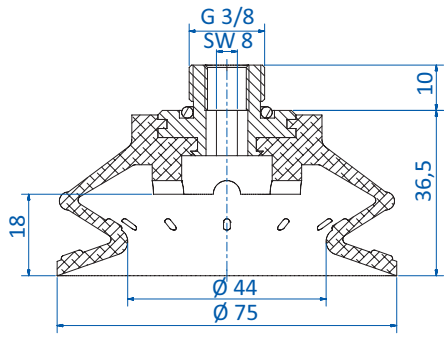


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--



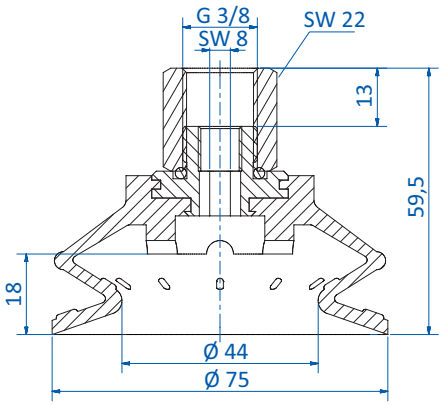
Item no.	Material	
23.075.151._*	NBR (sw), SI (tr), SI-LE (tr)	20 mm

Details and additional sizes available are found on p. 147.



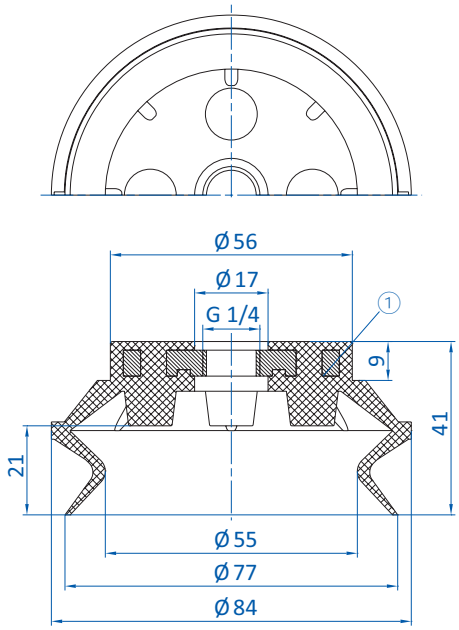
Item no.	Material	
22.075.262._*	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	18 mm

Details and additional sizes available are found on p. 179.



Item no.	Material	
22.075.263._*	Varioflex® 60°/30° (sw/r)	18 mm

Details and additional sizes available are found on p. 179.



① = Aluminum

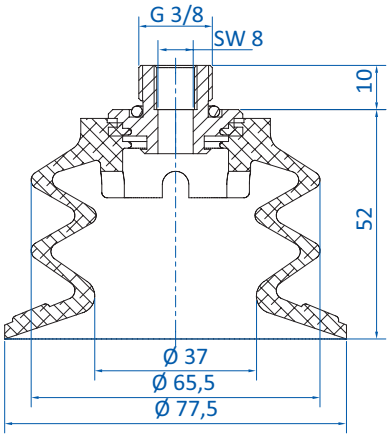
Item no.	Material	
23.075.130._*	NBR (sw), SI (tr), PU (bl)	21 mm

This vacuum cup is also available in the following dimensions: 114 mm, 155 mm

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

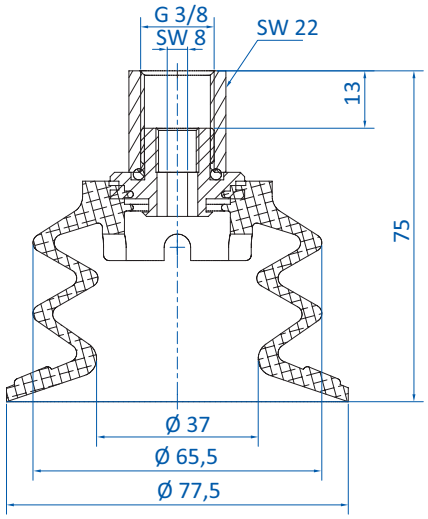
Ø 77 - 80 mm



② = O-ring

Item no.	Material	
20.077.154._* (*-FI)	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	25 mm

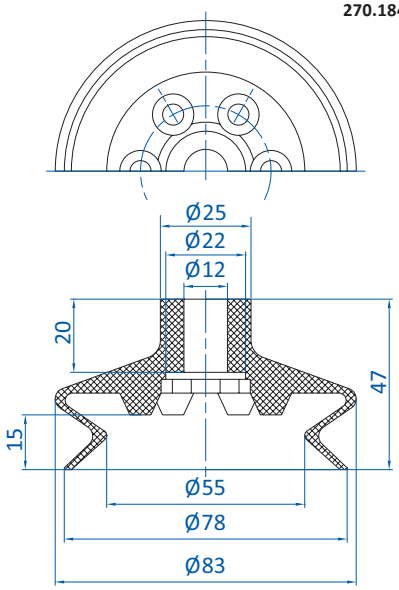
Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code



Item no.	Material	
20.077.155._* (*-FI)	Varioflex® 60°/30° (sw/r), Monoflex 50° (g)	25 mm

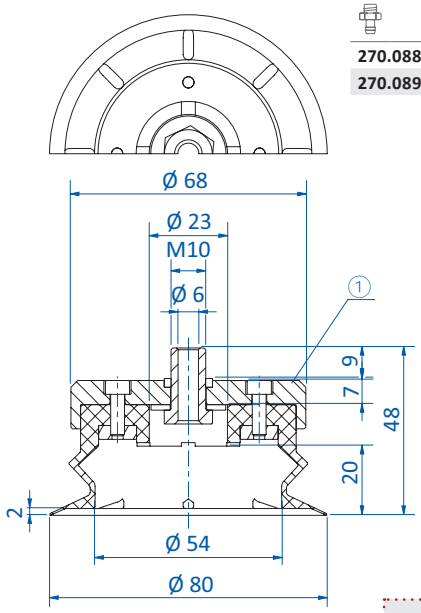
Details and additional sizes available are found on p. 185.
Ordering notes For version with in bellows inserted filter disc please add "-FI" to material code

	Connection	
270.184	G1/4-male	--



Item no.	Material	
23.078.067._*	NBR (sw)	15 mm

	Connection	
270.088	M10-female	--
270.089	G1/4-female	--



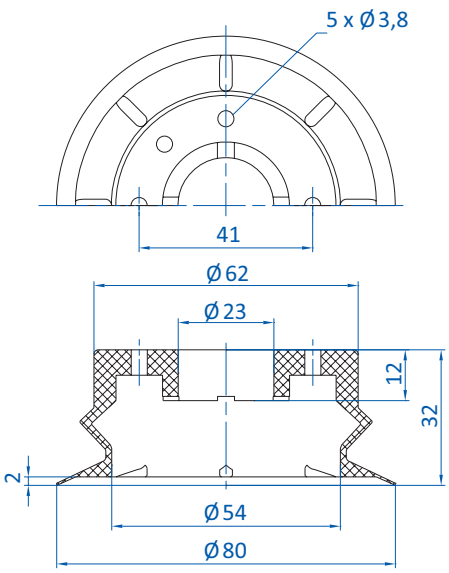
FLEXIBLE & STABLE

① = Aluminum

Item no.	Material	
22.080.161._*	NBR (sw), SI (tr)	10 mm

Details and additional sizes available are found on p. 204.

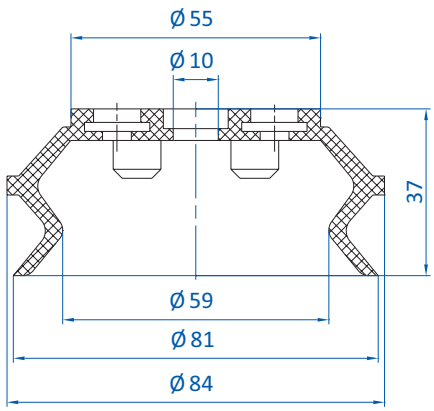
*** When ordering please add the appropriate material code to item no.**



Item no.	Material	
23.080.144._*	NBR (sw), SI (tr)	10 mm

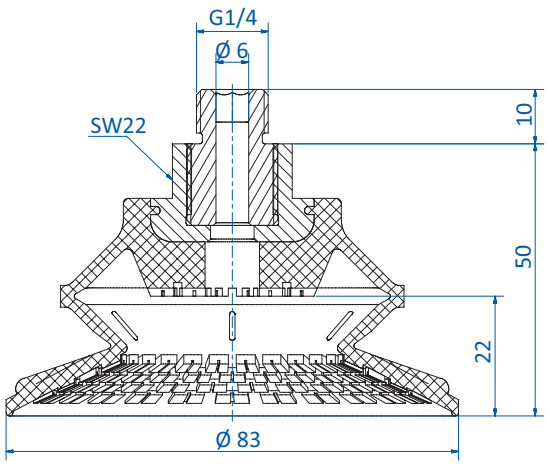
Details and additional sizes available are found on p. 204.

	Connection	
270.527-S	G1/8-female	--
270.528-S	G3/8-female	--
270.529-S	G1/2-female	--



Item no.	Material	
23.078.065._*	SI (tr), SI-LE (tr), CR (sw)	22 mm

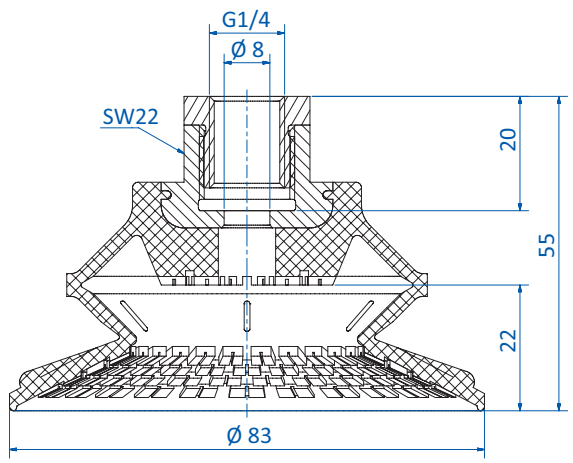
Details and additional sizes available are found on p. 174.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.080.195._*	NBR (bl)	22 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

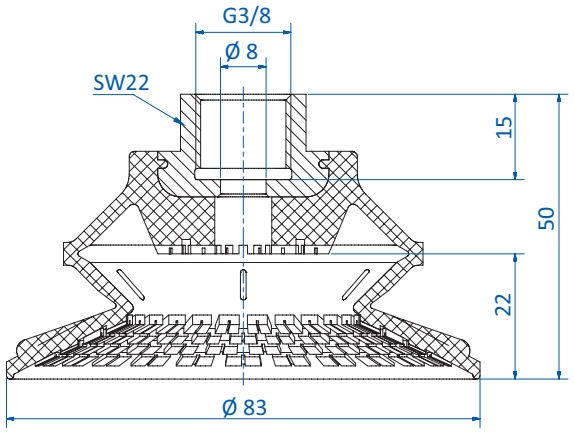
Item no.	Material	
22.080.196._*	NBR (bl)	22 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

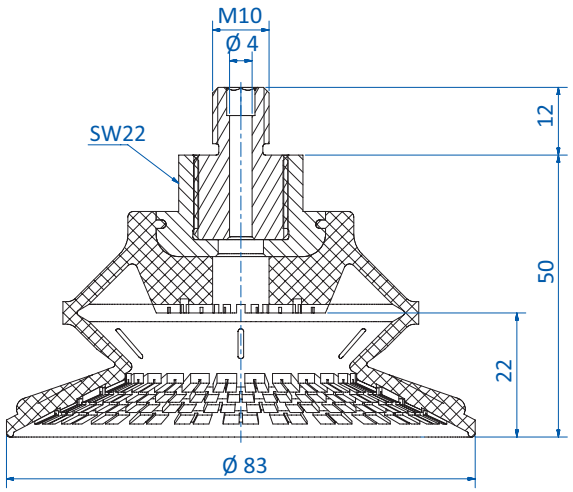
Ø 83 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.080.197._*	Material NBR (bl)	22 mm

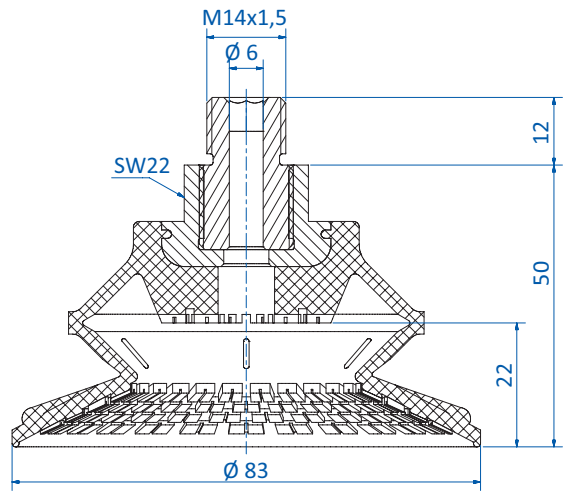
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.080.198._*	Material NBR (bl)	22 mm

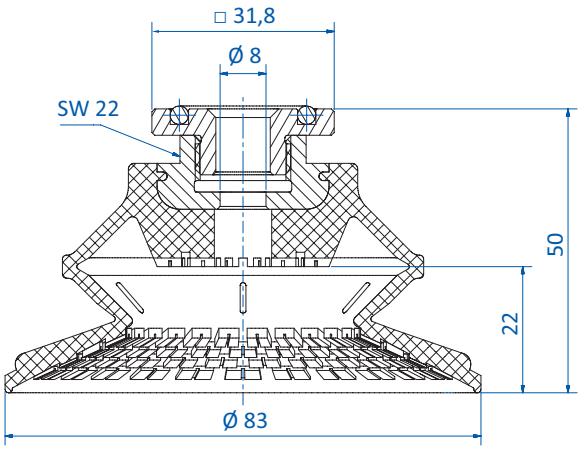
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.080.199._*	Material NBR (bl)	22 mm

Details and additional sizes available are found on p. 218.

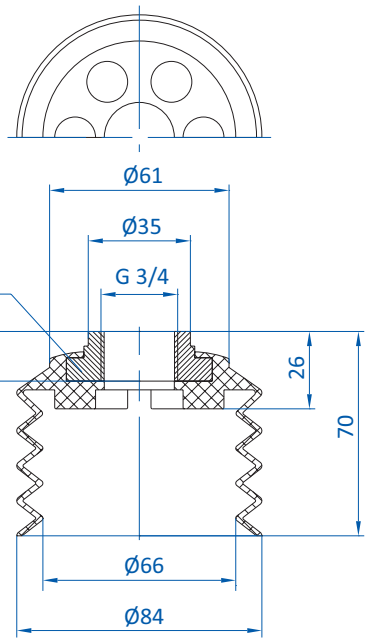


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.080.200._*	Material NBR (bl)	22 mm

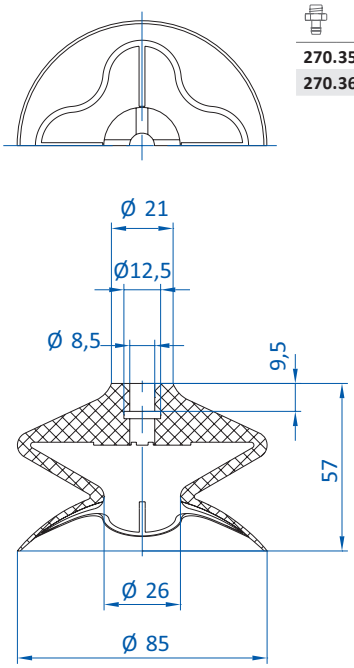
Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**



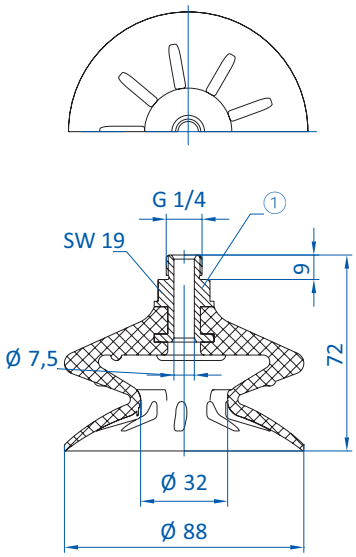
① = Aluminum

Item no.	Material	
25.084.051._*	Vinyl (bl)	31 mm



	Connection	
270.359	G1/4-male	--
270.361	G1/4-female	--

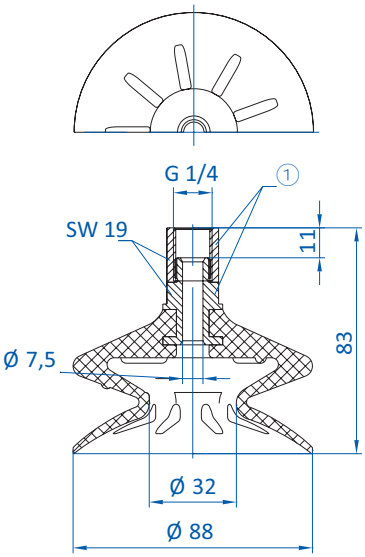
Item no.	Material	
23.085.201._*	Vulkollan® (br)	25 mm



① = Aluminum fitting, vulcanized

Item no.	Material	
22.088.158._*	NBR (sw), SI (tr), SI-LE (tr)	23 mm

Details and additional sizes available are found on p. 147.



① = Aluminum fitting, vulcanized

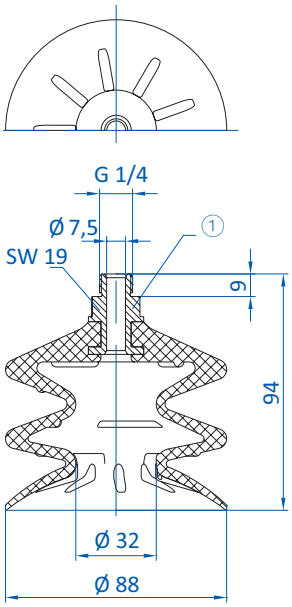
Item no.	Material	
22.088.159._*	NBR (sw), SI (tr), SI-LE (tr)	23 mm

Details and additional sizes available are found on p. 147.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

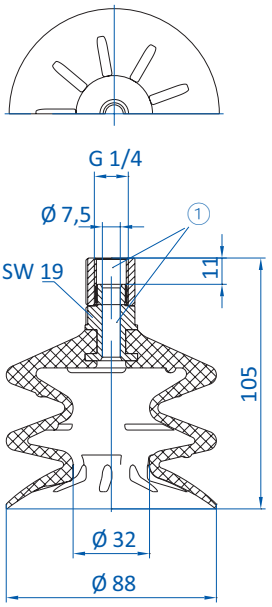
Ø 88 - 92 mm



① = Aluminum fitting, vulcanized

Item no.	Material	
20.088.123._*	NBR (sw), SI (tr)	36 mm

Details and additional sizes available are found on p. 159.

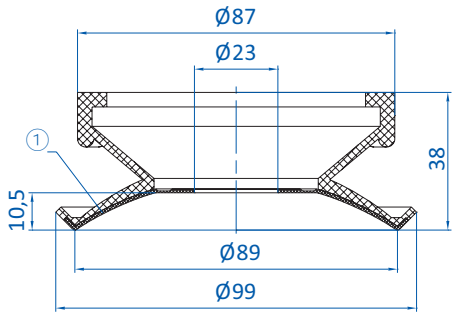


① = Aluminum fitting, vulcanized

Item no.	Material	
20.088.124._*	NBR (sw), SI (tr)	36 mm

Details and additional sizes available are found on p. 159.

	Connection	
270.400	G3/8-female	--

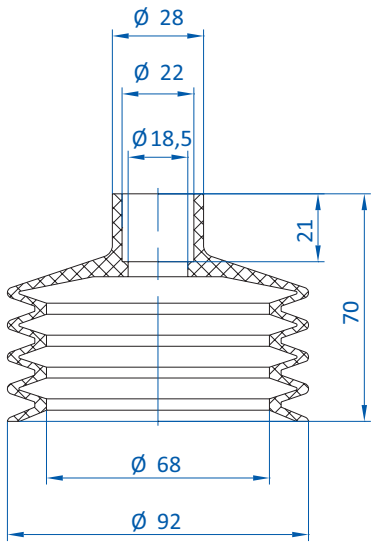


HEAT RESISTANT & LOW MARKING

① = Felt pads

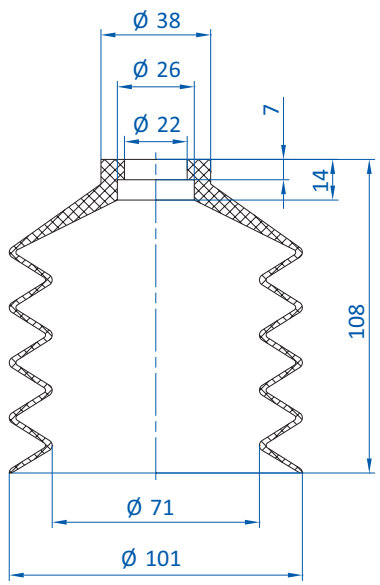
Item no.	Material	
26.090.001.2F	SI (tr/ge)	17 mm

Details and additional sizes available are found on p. 394.

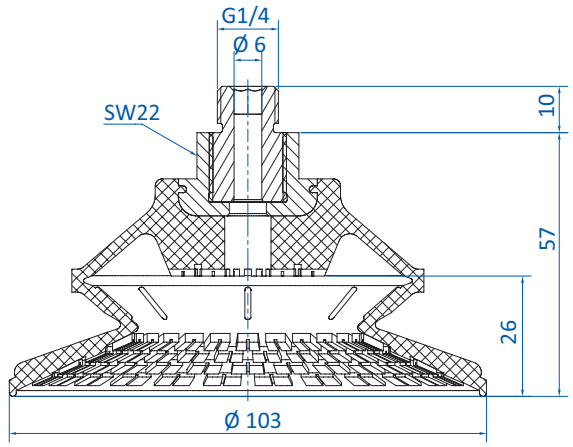


Item no.	Material	
25.091.052._*	Vinyl (bl)	32 mm

*** When ordering please add the appropriate material code to item no.**



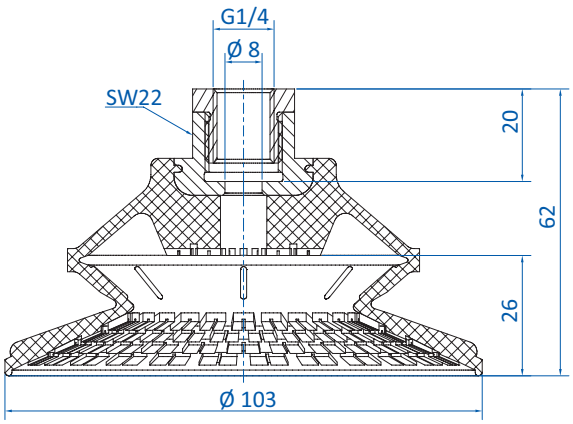
Item no.	Material	
25.102.053._*	Vinyl (bl)	55 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.100.201._*	NBR (bl)	25 mm

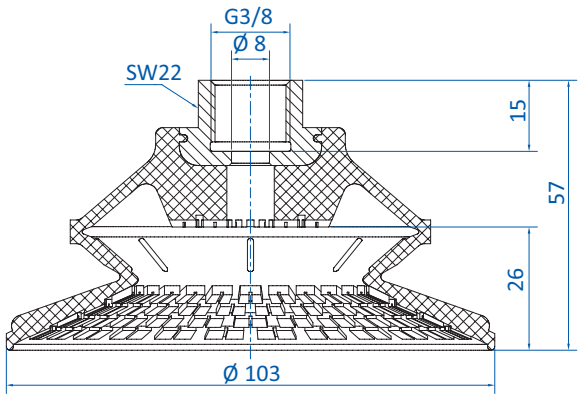
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.100.202._*	NBR (bl)	25 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

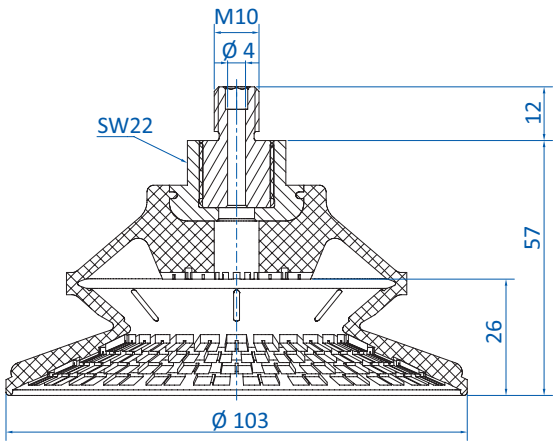
Item no.	Material	
22.100.203._*	NBR (bl)	25 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

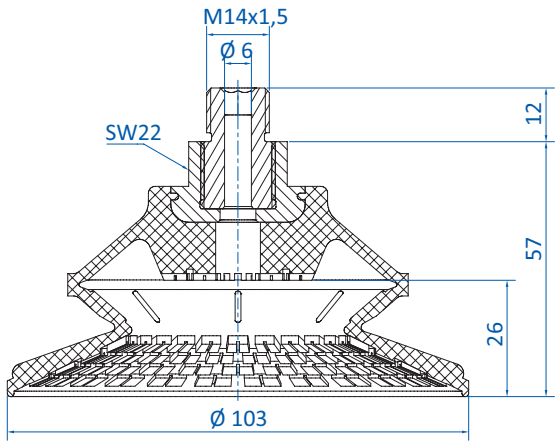
Ø 103 - 115 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.100.204._*	Material NBR (bl)	25 mm

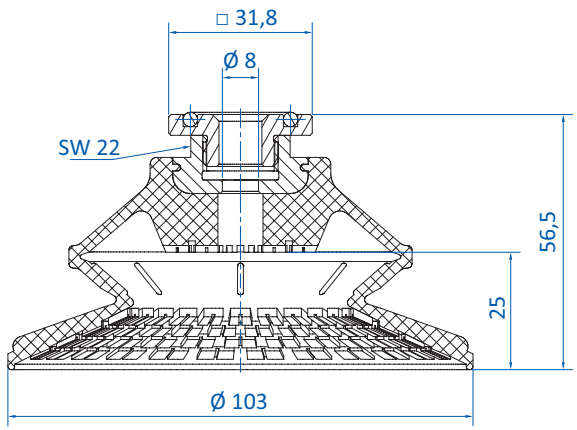
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.100.205._*	Material NBR (bl)	25 mm

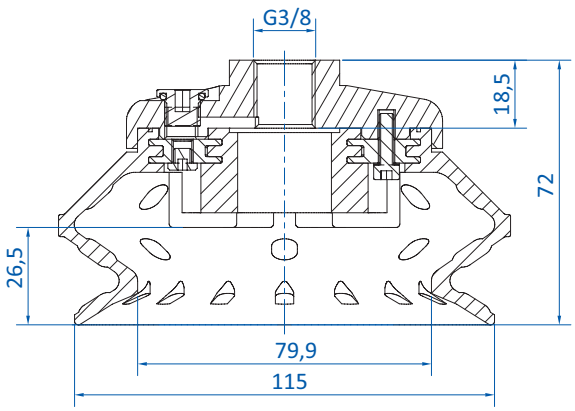
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.100.206._*	Material NBR (bl)	25 mm

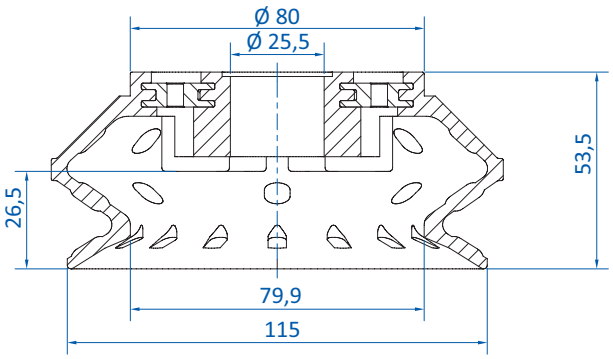
Details and additional sizes available are found on p. 218.



Item no. 22.115.266._*	Material Varioflex® 60°/30° (sw/r)	28 mm

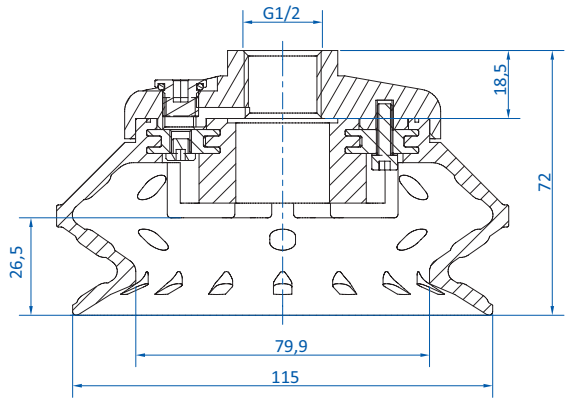
Details and additional sizes available are found on p. 179.

*** When ordering please add the appropriate material code to item no.**



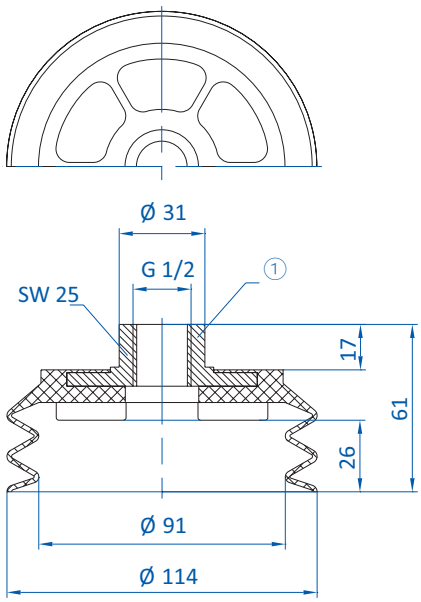
Item no.	Material	
23.115.274._*	Varioflex® 60°/30° (sw/r)	28 mm

Details and additional sizes available are found on p. 179.



Item no.	Material	
22.115.267._*	Varioflex® 60°/30° (sw/r)	28 mm

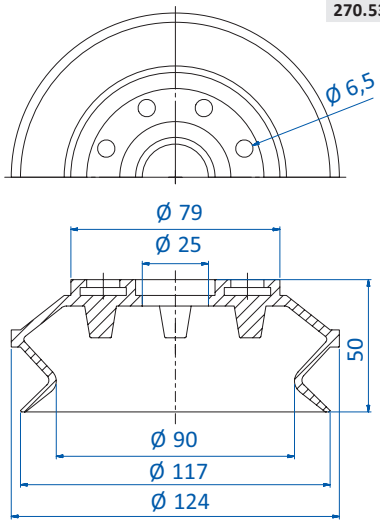
Details and additional sizes available are found on p. 179.



① = Aluminum

Item no.	Material	
20.115.114._*	Vinyl (bl)	27 mm

	Connection	
270.530-S	G3/8-female	--
270.531-S	G1/2-female	--



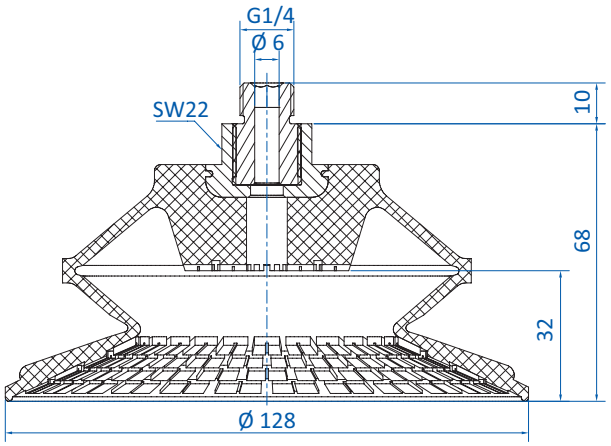
Item no.	Material	
23.117.069._*	SI (tr), SI-LE (tr), CR (sw)	29 mm

Details and additional sizes available are found on p. 174.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

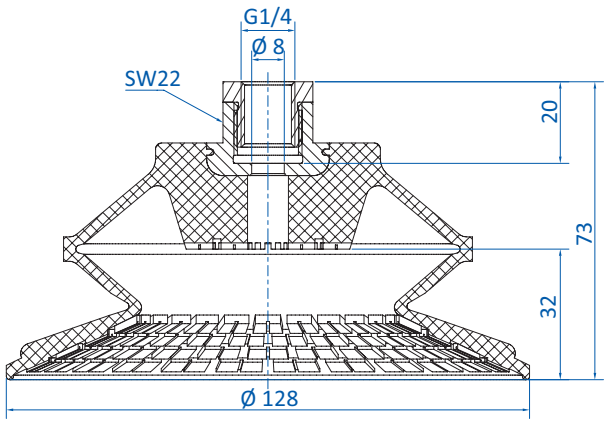
Ø 128 mm



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.125.207._*	Material NBR (bl)	32 mm

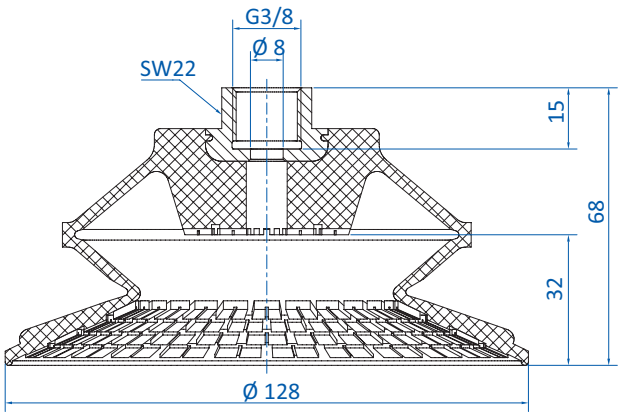
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.125.208._*	Material NBR (bl)	32 mm

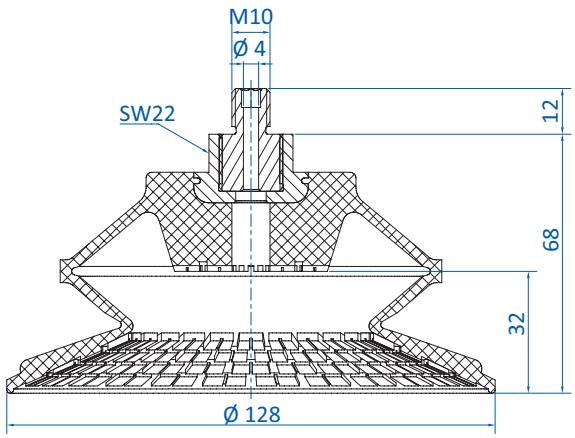
Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.125.209._*	Material NBR (bl)	32 mm

Details and additional sizes available are found on p. 218.

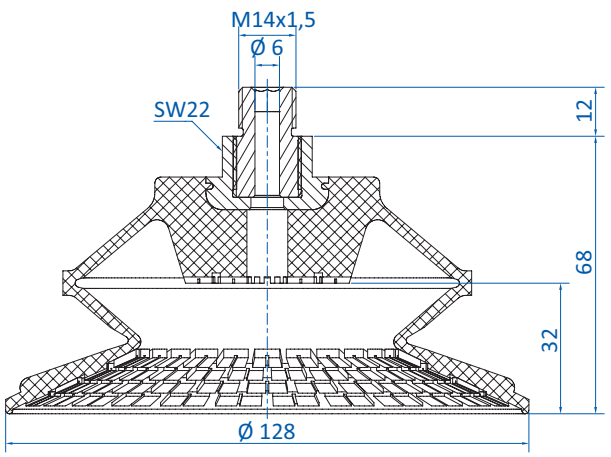


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no. 22.125.210._*	Material NBR (bl)	32 mm

Details and additional sizes available are found on p. 218.

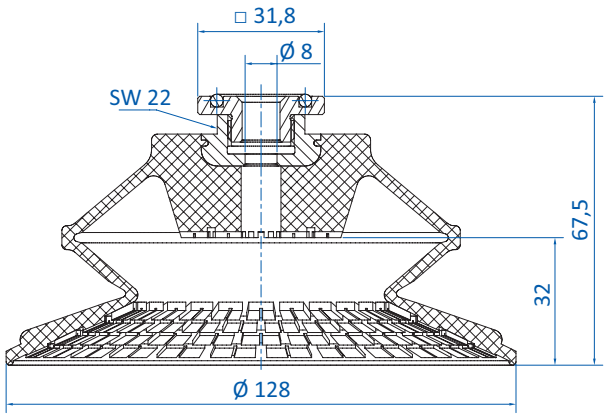
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
22.125.211._*	NBR (bl)	32 mm

Details and additional sizes available are found on p. 218.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

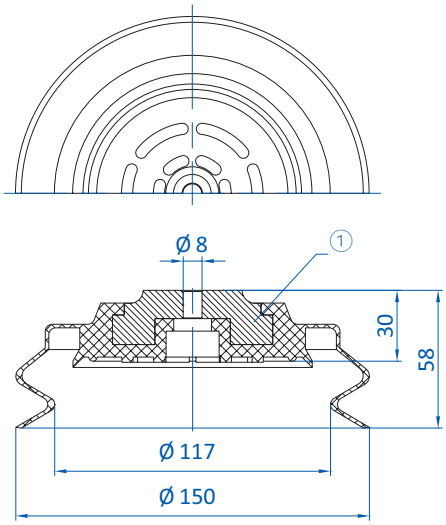
Item no.	Material	
22.125.212._*	NBR (bl)	32 mm

Details and additional sizes available are found on p. 218.

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 150 - 151 mm

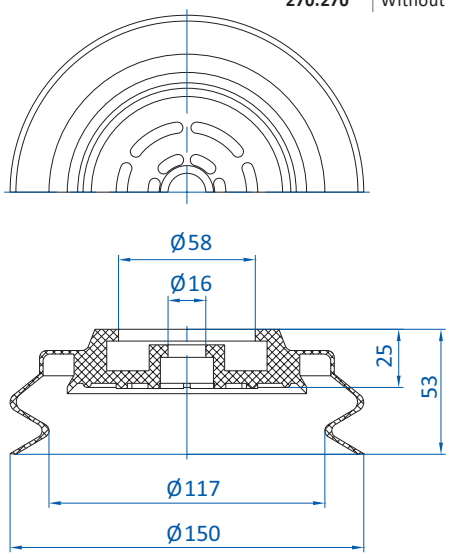


① = Aluminum

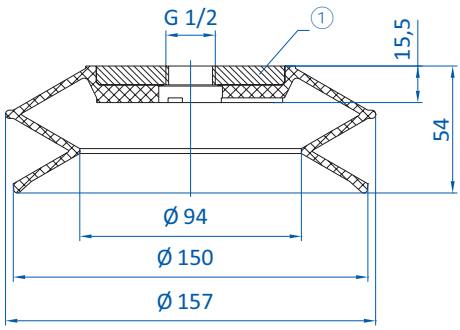
Item no.	Material	
22.150.109._*	NBR (sw)	28 mm

Details and additional sizes available are found on p. 221.

	Connection	
270.270	Without	--



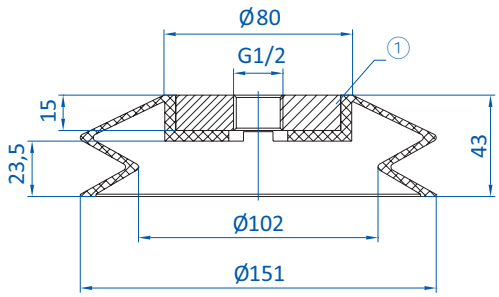
Item no.	Material	
23.150.090._*	NBR (sw)	28 mm



① = Steel

Item no.	Material	
22.150.084._*	NBR (gr), NR (br)	32 mm

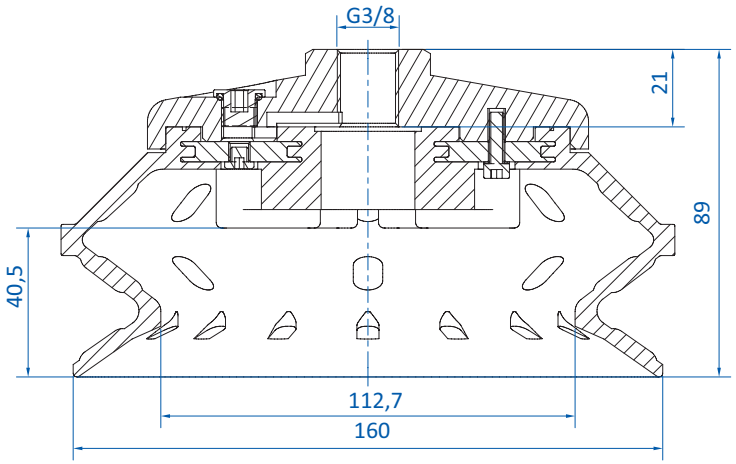
Details and additional sizes available are found on p. 222.



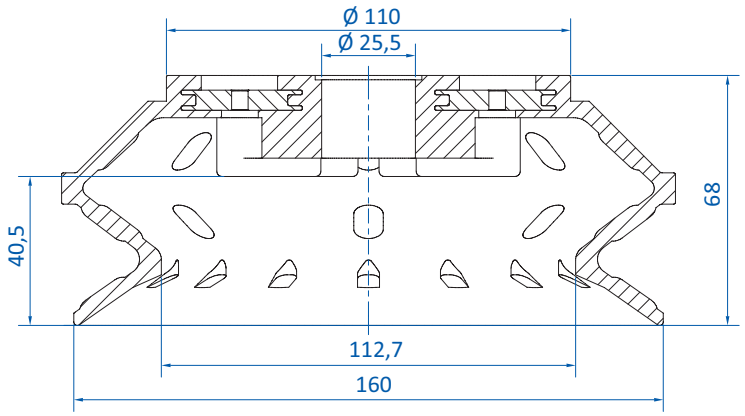
① = Aluminum

Item no.	Material	
22.150.020._*	NBR (sw)	20 mm

*** When ordering please add the appropriate material code to item no.**



Item no.	Material		
22.160.264._*	Varioflex® 60°/30° (sw/r)	40 mm	Details and additional sizes available are found on p. 179.

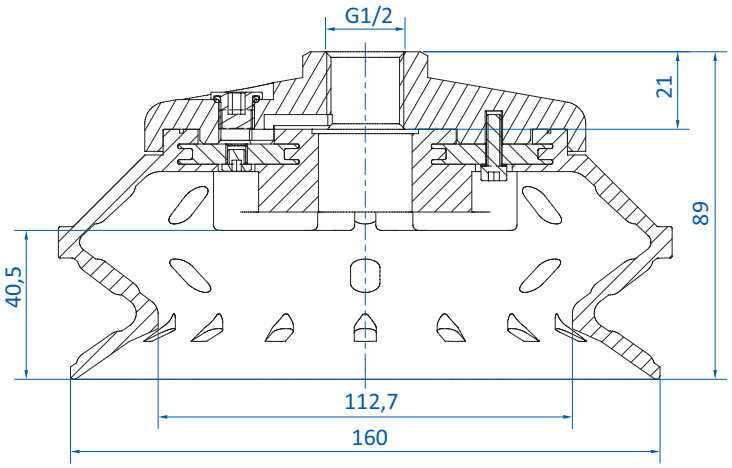


Item no.	Material		
23.160.273._*	Varioflex® 60°/30° (sw/r)	40 mm	Details and additional sizes available are found on p. 179.

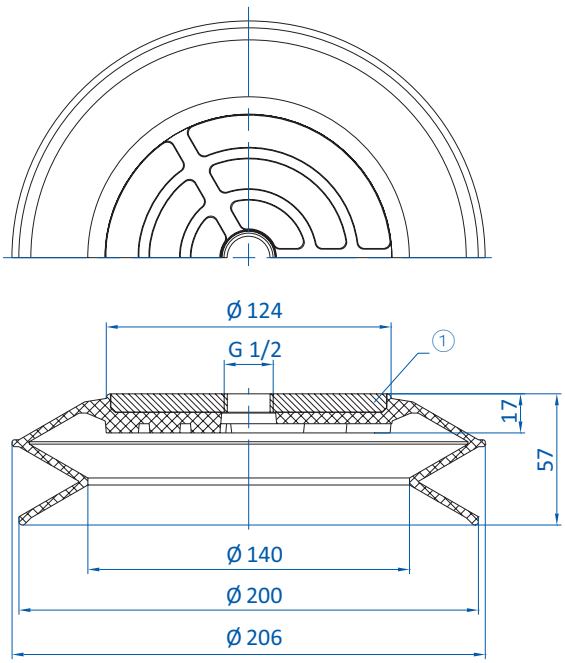
*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 160 - 200 mm



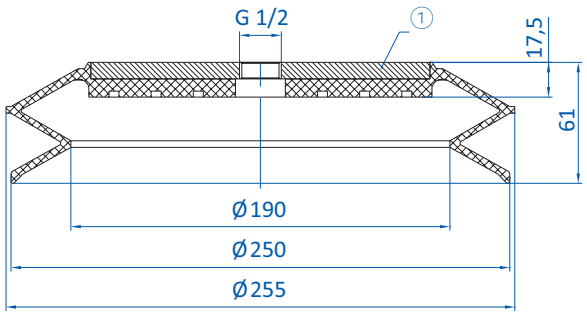
Item no.	Material		
22.160.265._*	Varioflex® 60°/30° (sw/r)	40 mm	Details and additional sizes available are found on p. 179.



① = Steel

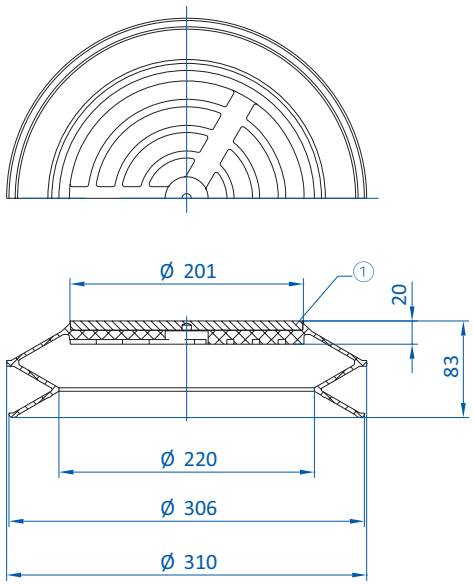
Item no.	Material		
22.200.087._*	NBR (gr), NR (br)	30 mm	Details and additional sizes available are found on p. 222.

*** When ordering please add the appropriate material code to item no.**



① = Steel

Item no.	Material		
22.250.088._*	NBR (gr), SI (tr)	38 mm	Details and additional sizes available are found on p. 222.



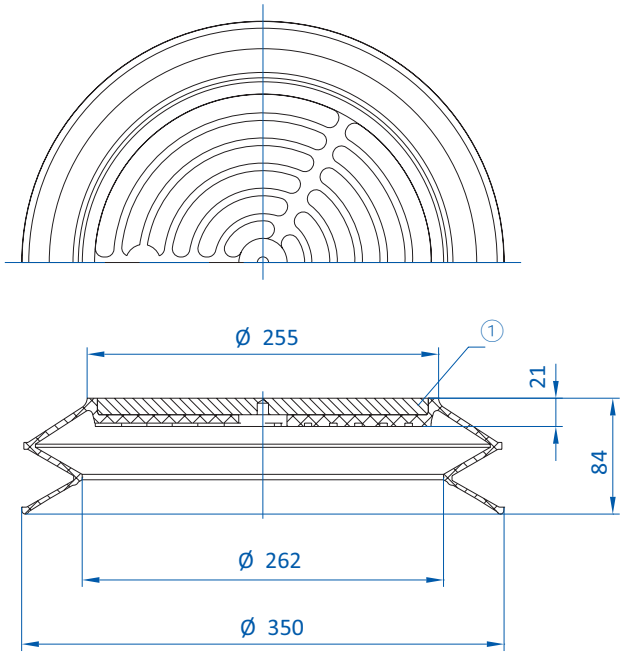
① = Steel

Item no.	Material		
22.300.091._*	NBR (gr)	60 mm	Details and additional sizes available are found on p. 222. **Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**

Bellows vacuum cups by size

Ø 350 mm



① = Steel

Item no.	Material		
22.350.102._*	NBR (gr)	55 mm	Details and additional sizes available are found on p. 222. **Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups series 308

All oval vacuum cups by size

up to length 40 mm 338

Length 40 mm to 79 mm 349

Length 80 mm to 99 mm 358

Length 100 mm to 149 mm 367

Length greater than 150 mm 381

Oval vacuum cups, flat, universal – SO-FU



Product notes

Flat vacuum cups in oval design for elongated workpieces where only minimal space is available (e.g. rails, profiles, tubes, bolts, etc.).
Size 100x35 mm reinforced with metal inserts.
Connection via plug-in nipple.

Advantage

> Significantly increased suction force compared to round vacuum cups of the same width
> Soft sealing lip also allows adhesion to curved products
> Cleats help to prevent warping of the product
> Cost-effective replacement of worn seals

Ordering notes

From size 15x5 mm upward, a gripper clamp (available separately) is recommended to prevent inadvertent rotation.

Technical data

Item no.	Model		Material / Color
132.4x2.001._*	SO-FU-4x2	0.5	NBR (sw), SI (tr), PU (bl)
132.4x2.031._*	SO-FU-4x2A	0.5	NBR (sw), SI (tr), PU (bl)
132.7x4.002._*	SO-FU-7x4	0.8	NBR (sw), SI (tr)
132.7x4.034._*	SO-FU-7x4A	0.8	NBR (sw), SI (tr)
132.12x4.004._*	SO-FU-12x4	0.5	NBR (gr), SI (tr)
132.15x5.008._*	SO-FU-15x5	1	NBR (gr), SI (tr)
132.18x6.012._*	SO-FU-18x6	1	NBR (gr), SI (tr), PU (bl)
132.24x8.016._*	SO-FU-24x8	1	NBR (gr), SI (tr)
132.30x10.018._*	SO-FU-30x10	2	NBR (gr), SI (tr), PU (bl)
132.36x12.019._*	SO-FU-36x12	2	NBR (gr), SI (tr), PU (bl)
132.45x15.020._*	SO-FU-45x15	3	NBR (gr), SI (tr), PU (bl)
132.60x20.022._*	SO-FU-60x20	3	NBR (gr), SI (tr), PU (bl)
132.75x25.023._*	SO-FU-75x25	3	NBR (sw), SI (tr)
132.100x35.26._*	SO-FU-100x35	3	NBR (sw)

Accessories

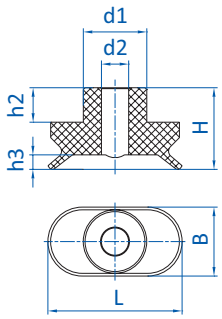
Clamp
--
--
--
--
--
78.030
78.030
78.032
78.032
78.032
78.033
78.033
78.034
78.034

*** When ordering please add the appropriate material code to item no.**

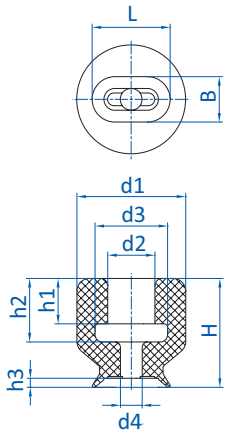
Accessories

Item no.	Suitable fittings								
	M3-male	M4-male	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
132.4x2.001._*	270.011	--	--	--	--	--	--	--	--
132.4x2.031._*	270.014	270.111	270.300	--	--	--	--	--	--
132.7x4.002._*	270.025	--	--	--	--	--	--	--	--
132.7x4.034._*	270.014	270.111	270.300	--	--	--	--	--	--
132.12x4.004._*	--	--	270.134	270.347	270.104	270.033	270.478	--	--
132.15x5.008._*	--	--	270.094	270.005	--	270.095	270.096	--	--
132.18x6.012._*	--	--	270.094	270.005	--	270.095	270.096	--	--
132.24x8.016._*	--	--	270.094	270.005	--	270.095	270.096	--	--
132.30x10.018._*	--	--	270.094	270.005	--	270.095	270.096	--	--
132.36x12.019._*	--	--	270.094	270.005	--	270.095	270.096	--	--
132.45x15.020._*	--	--	--	--	--	--	--	270.097	270.098
132.60x20.022._*	--	--	--	--	--	--	--	270.097	270.098
132.75x25.023._*	--	--	--	--	--	--	--	270.097	270.098
132.100x35.26._*	--	--	--	--	--	--	--	270.097	270.098

Dimensions



Drawing A

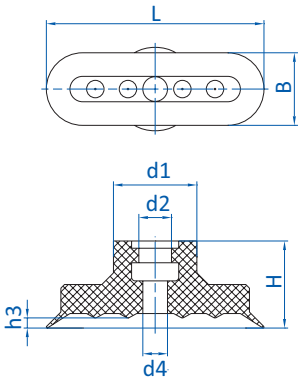


Drawing B

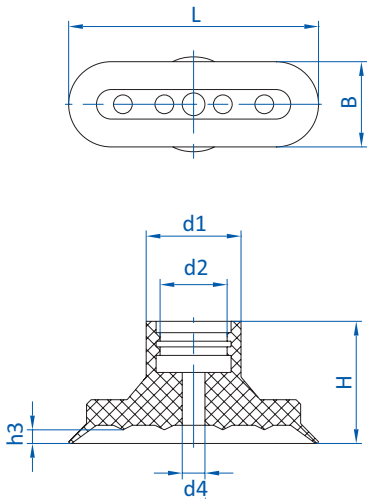
Continued on the next page

* When ordering please add the appropriate material code to item no.

Dimensions



Drawing C



Drawing D

Item no.	Drawing	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
132.4x2.001._*	A	5	2.7	2	1	--	--	3	--	1.3	0.5
132.4x2.031._*	B	4.3	2.5	6	2.6	4	1	6	2.5	3.5	0.5
132.7x4.002._*	A	7.5	3.8	3.5	1.5	--	--	4.5	--	1.9	0.8
132.7x4.034._*	B	7.5	4	6	2.4	3	1.4	6	2.3	3	0.7
132.12x4.004._*	B	12	4	8	4	--	1.5	15	--	9.5	1
132.15x5.008._*	C	15	5	9	5	--	2	12	--	--	0.8
132.18x6.012._*	C	18	6	9	4.5	--	2	12	--	--	1.3
132.24x8.016._*	C	24	8	11.5	4.5	--	3	12	--	--	1.3
132.30x10.018._*	C	30	10	11.5	4.5	--	3.4	12	--	--	1.4
132.36x12.019._*	C	36	12	12	5	--	4	12	--	--	1.2
132.45x15.020._*	D	44	15	16.5	12	--	4	22	--	--	2.4
132.60x20.022._*	D	60	20	16.5	11.5	--	4	22	--	--	2.2
132.75x25.023._*	D	75	25	17.5	11	--	3.5	22	--	--	3
132.100x35.26._*	D	100	35	17.5	11.5	--	8	22	--	--	3.1

*** When ordering please add the appropriate material code to item no.**

Universal oval vacuum cups, 2.5 folds – SO-BU



Product notes

Bellows vacuum cups in oval design for elongated workpieces where only minimal space is available (e.g., rails, profiles, tubes, bolts, etc.). The reinforcement wires fitted into the folds helps prevent collapse at excessive vacuum levels. Connection via plug-in nipple.

Advantage

> Significantly increased suction force compared to round vacuum cups of the same width
> Bellows compensate for height differences
> Soft sealing lip also allows adhesion to curved products

Ordering notes

For fastening, the use of a gripper clamp (available separately) is recommended to prevent inadvertent rotation

Technical data

Item no.	Model		Number of folds	Material / Color
138.25x8.002._*	SO-BU-25x8	6	2.5	NBR (gr), SI (tr)
138.45x15.003._*	SO-BU-45x15	8	2.5	NBR (gr), SI (tr)
138.75x25.004._*	SO-BU-75x25	11	2.5	NBR (gr), SI (tr)

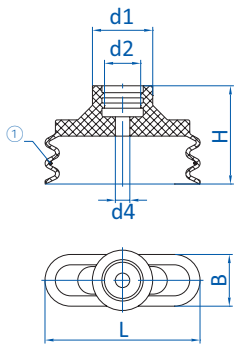
Accessories

Clamp
78.031
78.033
78.034

Accessories

	Suitable fittings					
Item no.	M5-male	M5-female	G1/8-male	G1/8-female	G1/4-male	G1/4-female
138.25x8.002._*	270.094	270.005	270.095	270.096	--	--
138.45x15.003._*	--	--	--	--	270.097	270.098
138.75x25.004._*	--	--	--	--	270.097	270.098

Dimensions



① = Wire strap stiffening

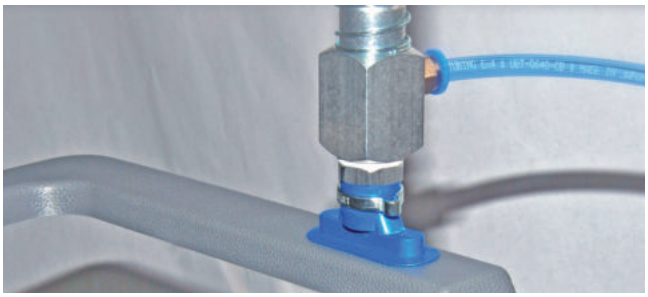
Item no.	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	H [mm]
138.25x8.002._*	25	8	10	4.5	2	18.5
138.45x15.003._*	45	15	17.5	10.5	4	29
138.75x25.004._*	75	25	17.5	10.5	6	35

*** When ordering please add the appropriate material code to item no.**

High-temperature Thermalon® oval cups – SKT-O

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Oval vacuum cups for smooth surfaces suitable for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Significantly increased suction force compared to round vacuum cups of the same width
> Soft sealing lip also allows adhesion to curved products

Ordering notes

From size 24x8 mm upward, a gripper clamp (available separately) is recommended to prevent inadvertent rotation.

Technical data

Item no.	Model		Material / Color	Usage temperature [°C (°F)]
132.4x2.079.19	SKT-O-4x2	0.4	Thermalon® (bl)	0 - 160 (32 - 320)
132.7x4.080.19	SKT-O-7x4	0.5	Thermalon® (bl)	0 - 160 (32 - 320)
132.15x5.081.19	SKT-O-15x5	0.6	Thermalon® (bl)	0 - 160 (32 - 320)
132.18x6.082.19	SKT-O-18x6	1	Thermalon® (bl)	0 - 160 (32 - 320)
132.24x8.083.19	SKT-O-24x8	1	Thermalon® (bl)	0 - 160 (32 - 320)
132.30x10.084.19	SKT-O-30x10	1	Thermalon® (bl)	0 - 160 (32 - 320)
132.45x15.085.19	SKT-O-45x15	2	Thermalon® (bl)	0 - 160 (32 - 320)
132.60x20.086.19	SKT-O-60x20	2.5	Thermalon® (bl)	0 - 160 (32 - 320)

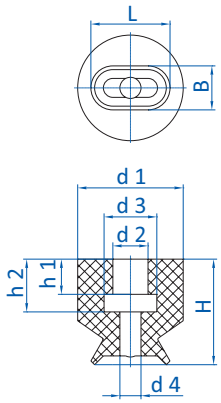
Accessories

Item no.	Clamp
132.4x2.079.19	--
132.7x4.080.19	--
132.15x5.081.19	--
132.18x6.082.19	--
132.24x8.083.19	78.032
132.30x10.084.19	78.032
132.45x15.085.19	78.033
132.60x20.086.19	78.033

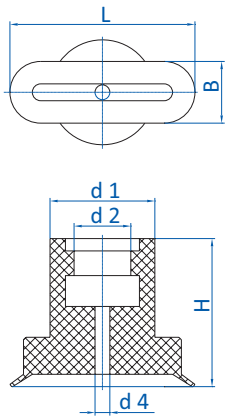
Accessories

	Suitable fittings						
Item no.	M3-male	M4-male	M5-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
132.4x2.079.19	270.014	270.111	270.300	--	--	--	--
132.7x4.080.19	270.014	270.111	270.300	--	--	--	--
132.15x5.081.19	--	--	270.094	270.095	270.096	--	--
132.18x6.082.19	--	--	270.094	270.095	270.096	--	--
132.24x8.083.19	--	--	270.094	270.095	270.096	--	--
132.30x10.084.19	--	--	270.094	270.095	270.096	--	--
132.45x15.085.19	--	--	--	--	--	270.097	270.098
132.60x20.086.19	--	--	--	--	--	270.097	270.098

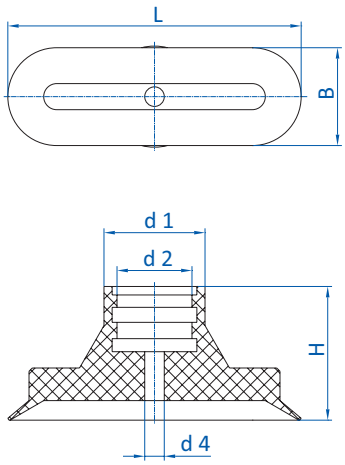
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]
132.4x2.079.19	A	4.5	2.5	6	2	3	1.2	6
132.7x4.080.19	A	7	3.5	6	2	3	1.4	6
132.15x5.081.19	B	15	5	8.5	4.6	--	1.2	12
132.18x6.082.19	B	18	6	8.5	4.6	--	1.5	12
132.24x8.083.19	B	24	8	11.5	5.5	--	1.5	12
132.30x10.084.19	B	30	10	11.5	5.5	--	2.5	12
132.45x15.085.19	C	45	15	15.5	11.5	--	3	21
132.60x20.086.19	C	60	20	15.5	11.5	--	4	21

High-temperature HNBR oval cups – SKH-O

UP TO 160 °C (320 °F) & MINIMUM MARKING



Product notes

Oval vacuum cups for smooth surfaces suitable for removing hot plastic parts to be painted from an injection molding machine.
Connection via plug-in nipple.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Significantly increased suction force compared to round vacuum cups of the same width
> Soft sealing lip also allows adhesion to curved products

Ordering notes

From size 15x5 mm upward, a gripper clamp (available separately) is recommended to prevent inadvertent rotation

Technical data

Item no.	Model		Material / Color	Usage temperature [°C (°F)]
132.4x2.031.14	SKH-O-4x2A	0.5	HNBR (ge)	0 - 160 (32 - 320)
132.7x4.034.14	SKH-O-7x4	0.8	HNBR (ge)	0 - 160 (32 - 320)
132.15x5.067.14	SKH-O-15x5	1	HNBR (ge)	0 - 160 (32 - 320)
132.24x8.066.14	SKH-O-24x8	1	HNBR (ge)	0 - 160 (32 - 320)
132.36x12.068.14	SKH-O-36x12	2	HNBR (ge)	0 - 160 (32 - 320)
132.45x15.064.14	SKH-O-45x15	3	HNBR (ge)	0 - 160 (32 - 320)

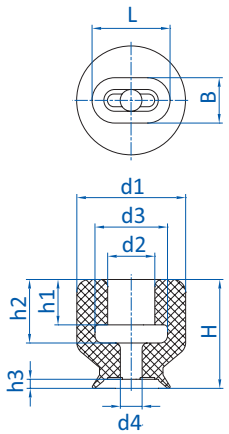
Accessories

Item no.	Clamp
132.4x2.031.14	--
132.7x4.034.14	--
132.15x5.067.14	78.030
132.24x8.066.14	78.032
132.36x12.068.14	78.032
132.45x15.064.14	78.033

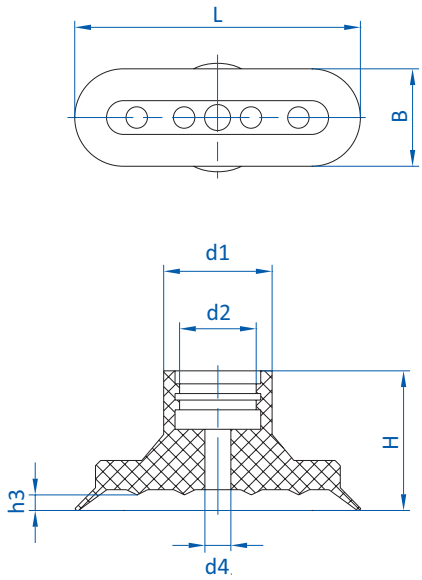
Accessories

	Suitable fittings					
Item no.	M3-male	M4-male	M5-male	G1/8-male	G1/4-male	G1/4-female
132.4x2.031.14	270.014	270.111	270.300	--	--	--
132.7x4.034.14	270.014	270.111	270.300	--	--	--
132.15x5.067.14	--	--	--	270.431	--	--
132.24x8.066.14	--	--	--	270.431	--	--
132.36x12.068.14	--	--	--	270.431	--	--
132.45x15.064.14	--	--	--	--	270.097	270.098

Dimensions



Drawing A



Drawing B

Item no.	Drawing	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
132.4x2.031.14	A	4.3	2.5	6	2.6	4	1	6	2.5	3.5	0.5
132.7x4.034.14	A	7.5	4	6	2.4	3	1.4	6	2.3	3	0.7
132.15x5.067.14	B	15	5	8	5	--	1.3	12	--	--	0.8
132.24x8.066.14	B	24	8.5	12.5	5	--	3	13	--	--	1.5
132.36x12.068.14	B	36	12	12	5	--	4	12	--	--	1.6
132.45x15.064.14	B	44	15	16.5	12	--	4	22	--	--	2.4

Vinyl oval bellows cups – SO-BV



Product notes

Durable oval vacuum cup with height adjustment made of snug-fitting, wear-resistant material. Very well suited for handling abrasive products such as cardboard. Flexible material enables low-leakage gripping of highly flexible products such as foil-packaged goods. Connection via plug-in nipple or vulcanized carrier plate.

Advantage

- Significantly increased suction force compared to round vacuum cups of the same width
- Bellows compensates for differences in height and enables good adaptation to curved or uneven product surfaces
- Flexible, soft lips
- Long life cycle

Technical data

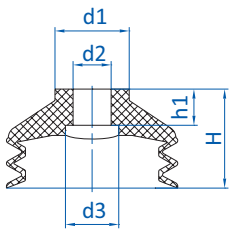
Item no.	Model		Number of folds	Material / Color
138.35x28.001._*	SO-BV-35x28	9	2.5	Vinyl (bl)
138.35x28.048._*	SO-BV-35x28A	9	2.5	Vinyl (bl)
138.45x28.013._*	SO-BV-45x28	9	2.5	Vinyl (bl)
130.97x55.126._*	SO-BV-100x55	11	1.5	Vinyl (bl)

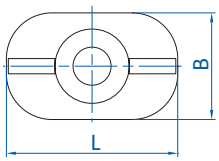
Accessories

	Suitable fittings		
Item no.	M10-male	G1/4-male	G1/4-female
138.35x28.001._*	270.177	270.451	270.452
138.35x28.048._*	270.177	270.451	270.452
138.45x28.013._*	270.177	270.451	270.452
130.97x55.126._*	--	--	--

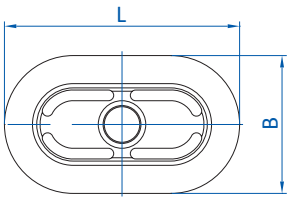
*** When ordering please add the appropriate material code to item no.**

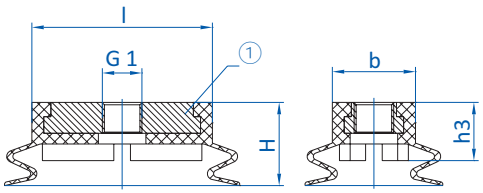
Dimensions





Drawing A





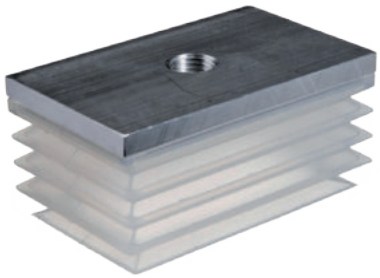
Drawing B

① = Aluminum

Item no.	Drawing	L [mm]	B [mm]	b [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	G1	H [mm]	h1 [mm]	h3 [mm]
138.35x28.001._*	A	35	28	--	19.5	10	14	--	24	8.5	--
138.35x28.048._*	A	35	28	--	19.5	10	14	--	26	8.5	--
138.45x28.013._*	A	45	28	--	19.5	10	14	--	26	9.5	--
130.97x55.126._*	B	99	58	35	--	--	--	G3/8	35	--	25

*** When ordering please add the appropriate material code to item no.**

Rectangular bellows vacuum cups – SV-RB





Product notes

Bellows vacuum cups in rectangular design made of FDA-compliant material (SI). Particularly suitable for film-packaged products and filled pouches. Also available with wire stiffening. Connection via an interlocking snap-in carrier plate.

Advantage

> Large suction surface due to rectangular design
> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces
> Gentle attachment to the product
> Good fit for irregularities and bellows thanks to soft sealing lip

Ordering notes

Optional: Wire strap reinforcement available.
When ordering, please add “-VERS” to item number

Technical data

Item no.	Model		Number of folds	Material / Color
Bellows vacuum cups, 2.5 folds, for cylindrical products				
201.79x29.002._*	SV-RB-79x29	16	2.5	SI (tr), SI (tr) vers
Bellows vacuum cups, 2.5 folds, with flat sealing lip				
209.52x25.006._*	SV-RB-52x25	13	2.5	SI (tr), SI (tr) vers
209.60x29.001._*	SV-RB-60x29	13	2.5	NBR (sw), NBR (sw) vers, SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers
Bellows vacuum cups, 3.5 folds, with thinly tapering, flexible sealing lip				
209.80x30.003._*	SV-RB-80x30	20	3.5	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers
209.80x40.004._*	SV-RB-80x40	20	3.5	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers
209.80x50.005._*	SV-RB-80x50	20	3.5	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers

Accessories

Wire strap reinforcement:
X 0020
X 0022
X 0024
X 0020
X 0023
X 0041

Accessories

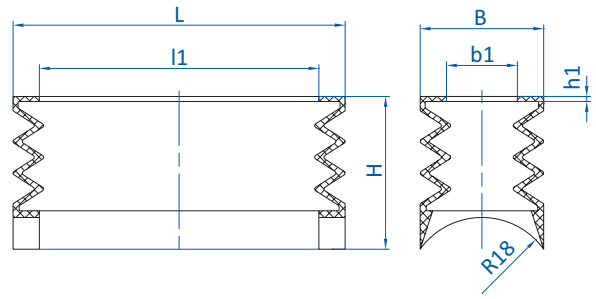
Item no.	Suitable fittings G1/8-female	G1/4-female
Bellows vacuum cups, 2.5 folds, for cylindrical products		
201.79x29.002._*	--	270.392
Bellows vacuum cups, 2.5 folds, with flat sealing lip		
209.52x25.006._*	270.508	--
209.60x29.001._*	--	270.509
Bellows vacuum cups, 3.5 folds, with thinly tapering, flexible sealing lip		
209.80x30.003._*	--	270.392
209.80x40.004._*	--	270.510

*** When ordering please add the appropriate material code to item no.**

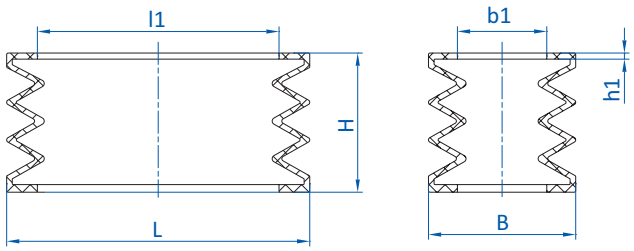
Accessories

Item no.	Suitable fittings	
	G1/8-female	G1/4-female
209.80x50.005._*	--	270.511

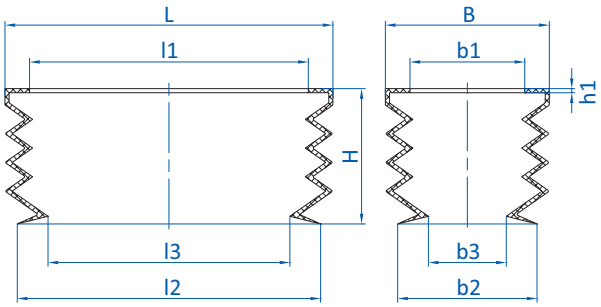
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	L [mm]	B [mm]	l1 [mm]	l2 [mm]	l3 [mm]	b1 [mm]	b2 [mm]	b3 [mm]	H [mm]	h1 [mm]
Bellows vacuum cups, 2.5 folds, for cylindrical products											
201.79x29.002._*	A	80	30	67	--	--	17	--	--	37	1.2
Bellows vacuum cups, 2.5 folds, with flat sealing lip											
209.52x25.006._*	B	53	26	40	--	--	13	--	--	28	1.2
209.60x29.001._*	B	60	29	48	--	--	17.5	--	--	27	1.2
Bellows vacuum cups, 3.5 folds, with thinly tapering, flexible sealing lip											
209.80x30.003._*	C	81	31	69	75	60	18	25	9	34	1.6
209.80x40.004._*	C	80	40	68	74	59	28	34	19	33	1
209.80x50.005._*	C	80	50	67	74	57	37	44	27	33	1.6

*** When ordering please add the appropriate material code to item no.**

Notes:

Oval flat vacuum cups for dynamic handling of oily and dry metal sheets – SM-OF



EXCEPTIONALLY LONG LIFETIME

Product notes

Robust, oval NBR flat vacuum cups, 60° Shore A with vulcanized fittings made of aluminum.
Large area, multi-part anti-slip cleats.
Various connection threads available.
PWIS-conform to guideline VDMA 24364 test category A1.

Advantage

> Exceptionally long lifetime – maximizes number of cycles and thus significantly reduces the costs of operation
> Slip-free handling of oily and dry metal sheets due to anti-slip cleats. Good absorption of shear forces
> Internal supports prevent deep drawing or deformation of thin sheets
> Leak-free suction even with curved surfaces due to flexible sealing lip
> Ideally suited for use in constricted spaces

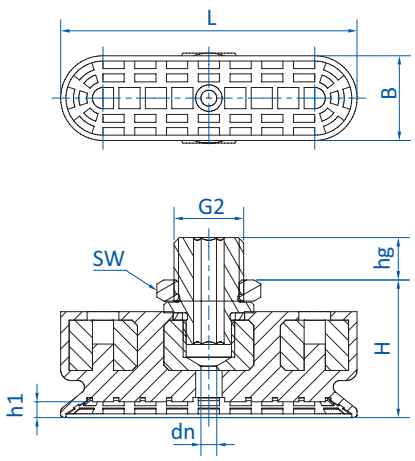
Technical data

Model / Lip dimensions	Thread (Aluminium)						
	G1/4-male	G1/4-female	G3/8-female	M10-male	M14x1.5-male	Rectangular adapter	
SM-OF-55x16	130.55x16.140.1	130.55x16.141.1	130.55x16.142.1	130.55x16.143.1	130.55x16.144.1	130.55x16.145.1	3
SM-OF-65x20	130.65x20.146.1	130.65x20.147.1	130.65x20.148.1	130.65x20.149.1	130.65x20.150.1	130.65x20.151.1	3
SM-OF-95x30	130.95x30.152.1	130.95x30.153.1	130.95x30.154.1	130.95x30.155.1	130.95x30.156.1	130.95x30.157.1	3
SM-OF-85x40	130.85x40.158.1	130.85x40.159.1	130.85x40.160.1	130.85x40.161.1	130.85x40.162.1	130.85x40.163.1	4
SM-OF-105x50	130.105x50.164.1	130.105x50.165.1	130.105x50.166.1	130.105x50.167.1	130.105x50.168.1	130.105x50.169.1	5
SM-OF-125x60	130.125x60.170.1	130.125x60.171.1	130.125x60.172.1	130.125x60.173.1	130.125x60.174.1	130.125x60.175.1	6
SM-OF-145x70	130.145x70.176.1	130.145x70.177.1	130.145x70.178.1	130.145x70.179.1	130.145x70.180.1	130.145x70.181.1	7

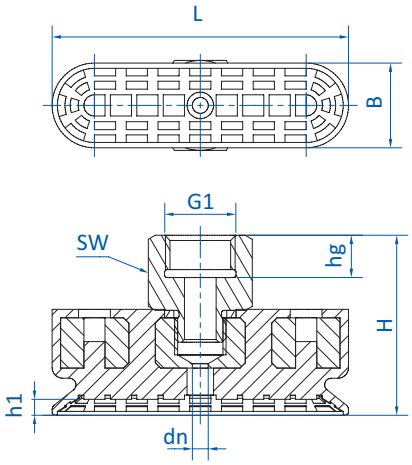
Continued on the next page

* aspirated condition

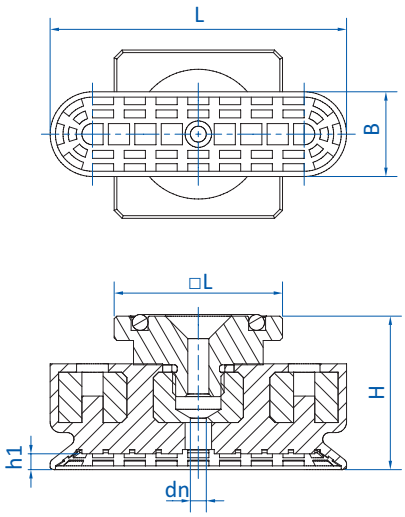
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Dra-wing	G1 (female)	G2 (male)	L [mm]	L max.* [mm]	B [mm]	B max.* [mm]	dn	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
130.55x16.140.1	A	--	G1/4	56	58.7	16	19.2	SW5	--	26	3	8	17
130.55x16.141.1	B	G1/4	--	56	58.7	16	19.2	Ø 6 mm	--	34	3	8	17
130.55x16.142.1	B	G3/8	--	56	58.7	16	19.2	Ø 6 mm	--	34	3	8	22
130.55x16.143.1	A	--	M10	56	58.7	16	19.2	SW5	--	26	3	12	17
130.55x16.144.1	A	--	M14x1.5	56	58.7	16	19.2	SW5	--	28	3	12	22
130.55x16.145.1	C	--	--	56	58.7	16	19.2	Ø 4 mm	31.8	29	3	--	--
130.65x20.146.1	A	--	G1/4	66	68.8	23	25.7	SW5	--	18	3	8	17
130.65x20.147.1	B	G1/4	--	66	68.8	23	25.7	Ø 6 mm	--	26	3	8	17
130.65x20.148.1	B	G3/8	--	66	68.8	23	25.7	Ø 6 mm	--	26	3	8	22
130.65x20.149.1	A	--	M10	66	68.8	23	25.7	SW5	--	18	3	12	17



Item no.	Dra-wing	G1 (female)	G2 (male)	L [mm]	L max.* [mm]	B [mm]	B max.* [mm]	dn	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
130.65x20.150.1	A	--	M14x1.5	66	68.8	23	25.7	SW5	--	20	3	12	22
130.65x20.151.1	C	--	--	66	68.8	23	25.7	Ø 4 mm	31.8	21	3	--	--
130.95x30.152.1	A	--	G1/4	96	100.4	32	35.2	SW5	--	19	3	8	17
130.95x30.153.1	B	G1/4	--	96	100.4	32	35.2	Ø 6 mm	--	27	3	8	17
130.95x30.154.1	B	G3/8	--	96	100.4	32	35.2	Ø 6 mm	--	27	3	8	22
130.95x30.155.1	A	--	M10	96	100.4	32	35.2	SW5	--	19	3	12	17
130.95x30.156.1	A	--	M14x1.5	96	100.4	32	35.2	SW5	--	21	3	12	22
130.95x30.157.1	C	--	--	96	100.4	32	35.2	Ø 4 mm	31.8	22	3	--	--
130.85x40.158.1	A	--	G1/4	86	89.9	40	44	SW5	--	20	4	8	17
130.85x40.159.1	B	G1/4	--	86	89.9	40	44	Ø 6 mm	--	28	4	8	17
130.85x40.160.1	B	G3/8	--	86	89.9	40	44	Ø 6 mm	--	28	4	8	22
130.85x40.161.1	A	--	M10	86	89.9	40	44	SW5	--	20	4	12	17
130.85x40.162.1	A	--	M14x1.5	86	89.9	40	44	SW5	--	22	4	12	22
130.85x40.163.1	C	--	--	86	89.9	40	44	Ø 4 mm	31.8	23	4	--	--
130.105x50.164.1	A	--	G1/4	106	111.2	50	55.2	SW6	--	22	5	8	17
130.105x50.165.1	B	G1/4	--	106	111.2	50	55.2	Ø 8 mm	--	30	5	8	17
130.105x50.166.1	B	G3/8	--	106	111.2	50	55.2	Ø 8 mm	--	30.5	5	9	22
130.105x50.167.1	A	--	M10	106	111.2	50	55.2	SW5	--	22	5	12	17
130.105x50.168.1	A	--	M14x1.5	106	111.2	50	55.2	SW6	--	24	5	12	22
130.105x50.169.1	C	--	--	106	111.2	50	55.2	Ø 6 mm	31.8	25	5	--	--
130.125x60.170.1	A	--	G1/4	126	132	60	66	SW6	--	24	6	8	17
130.125x60.171.1	B	G1/4	--	126	132	60	66	Ø 8 mm	--	32	6	8	17
130.125x60.172.1	B	G3/8	--	126	132	60	66	Ø 8 mm	--	32.5	6	9	22
130.125x60.173.1	A	--	M10	126	132	60	66	SW5	--	24	6	12	17
130.125x60.174.1	A	--	M14x1.5	126	132	60	66	SW6	--	26	6	12	22
130.125x60.175.1	C	--	--	126	132	60	66	Ø 6 mm	31.8	27	6	--	--
130.145x70.176.1	A	--	G1/4	146	154	70	77.7	SW6	--	25	7	8	17
130.145x70.177.1	B	G1/4	--	146	154	70	77.7	Ø 8 mm	--	33	7	8	17
130.145x70.178.1	B	G3/8	--	146	154	70	77.7	Ø 8 mm	--	33.5	7	9	22
130.145x70.179.1	A	--	M10	146	154	70	77.7	SW5	--	25	7	12	17
130.145x70.180.1	A	--	M14x1.5	146	154	70	77.7	SW6	--	27	7	12	22
130.145x70.181.1	C	--	--	146	154	70	77.7	Ø 6 mm	31.8	28	7	--	--

Oval bellow vacuum cups with 1.5 folds for dynamic handling of oily and dry metal sheets – SM-OB



EXCEPTIONALLY LONG LIFETIME

Product notes

Robust, oval NBR bellows vakuum cups, 60° Shore A with vulcanized fittings made of aluminum.
Large area, multi-part anti-slip cleats.
Various connection threads available.
PWIS-conform to guideline VDMA 24364 test category A1.

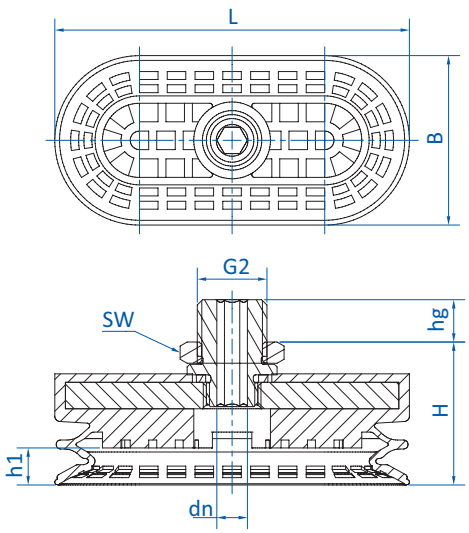
Advantage

- Exceptionally long lifetime – maximizes number of cycles and thus significantly reduces the cost of operation
- Slip-free handling of oily and dry metal sheets due to anti-slip cleats
- Good absorption of shear forces
- Internal supports prevent deep drawing or deformation of thin sheets
- Leak-free suction even with curved surfaces due to flexible sealing lip
- Ideally suited for use in constricted spaces
- Bellow geometry allows handling of three dimensional shaped sheets and ensures good attenuation when placed on a workpiece

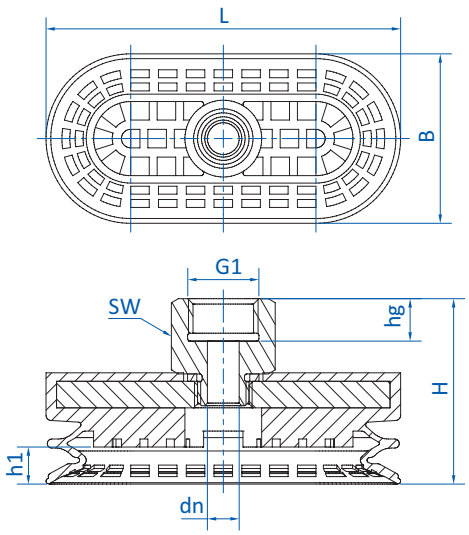
Technical data

Model / Lip dimensions	Thread (Aluminium)						
	G1/4-male	G1/4-female	G3/8-female	M10-male	M14x1.5-male	Rectangular adapter	
SM-OB-65x30	138.65x30.023.1	138.65x30.024.1	138.65x30.025.1	138.65x30.026.1	138.65x30.027.1	138.65x30.028.1	7
SM-OB-85x40	138.85x40.029.1	138.85x40.030.1	138.85x40.031.1	138.85x40.032.1	138.85x40.033.1	138.85x40.034.1	9
SM-OB-115x55	138.115x55.035.1	138.115x55.036.1	138.115x55.037.1	138.115x55.038.1	138.115x55.039.1	138.115x55.040.1	13
SM-OB-145x70	138.145x70.041.1	138.145x70.042.1	138.145x70.043.1	138.145x70.044.1	138.145x70.045.1	138.145x70.046.1	16.5

Dimensions

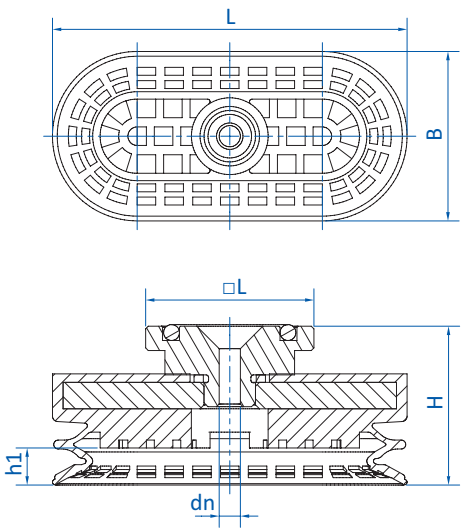


Drawing A



Drawing B

Dimensions



Drawing C

* = Details see "Additional sizes"

Item no.	Dra-wing	G1 (female)	G2 (male)	L [mm]	L max.* [mm]	B [mm]	B max.* [mm]	dn	□L [mm]	H [mm]	h1 [mm]	hg [mm]	SW
138.65x30.023._*	A	--	G1/4	67	69.3	32	35	SW5	--	27	7	8	17
138.65x30.024._*	B	G1/4	--	67	69.3	32	35	Ø 6 mm	--	35	7	8	17
138.65x30.025._*	B	G3/8	--	67	69.3	32	35	Ø 6 mm	--	35	7	8	22
138.65x30.026._*	A	--	M10	67	69.3	32	35	Ø 5 mm	--	27	7	12	17
138.65x30.027._*	A	--	M14x1.5	67	69.3	32	35	SW5	--	29	7	12	22
138.65x30.028._*	C	--	--	67	69.3	32	35	Ø 4 mm	31.8	30	7	--	--
138.85x40.029._*	A	--	G1/4	87	90	42	46.4	SW5	--	30	9	8	17
138.85x40.030._*	B	G1/4	--	87	90	42	46.4	Ø 6 mm	--	38	9	8	17
138.85x40.031._*	B	G3/8	--	87	90	42	46.4	Ø 6 mm	--	38	9	8	22
138.85x40.032._*	A	--	M10	87	90	42	46.4	SW5	--	30	9	12	17
138.85x40.033._*	A	--	M14x1.5	87	90	42	46.4	SW5	--	32	9	12	22
138.85x40.034._*	C	--	--	87	90	42	46.4	Ø 4 mm	31.8	33	9	--	--
138.115x55.035._*	A	--	G1/4	118	121	57	60	SW6	--	35	13	8	17
138.115x55.036._*	B	G1/4	--	118	121	57	60	Ø 8 mm	--	43	13	8	17
138.115x55.037._*	B	G3/8	--	118	121	57	60	Ø 8 mm	--	43.5	13	9	22
138.115x55.038._*	A	--	M10	118	121	57	60	SW5	--	35	13	12	17
138.115x55.039._*	A	--	M14x1.5	118	121	57	60	SW6	--	37	13	12	22
138.115x55.040._*	C	--	--	118	121	57	60	Ø 6 mm	31.8	38	13	--	--
138.145x70.041._*	A	--	G1/4	148	150	72	77.8	SW6	--	39	16.5	8	17
138.145x70.042._*	B	G1/4	--	148	150	72	77.8	Ø 8 mm	--	47	16.5	8	17
138.145x70.043._*	B	G3/8	--	148	150	72	77.8	Ø 8 mm	--	47.5	16.5	9	22
138.145x70.044._*	A	--	M10	148	150	72	77.8	SW5	--	39	16.5	12	17
138.145x70.045._*	A	--	M14x1.5	148	150	72	77.8	SW6	--	41	16.5	12	22
138.145x70.046._*	C	--	--	148	150	72	77.8	Ø 6 mm	31.8	42	16.5	--	--

Oval vacuum cups series

Oval bell shaped vacuum cups for for dynamic handling of strongly curved metal sheets – SM-OG

Oval bell shaped vacuum cups for for dynamic handling of strongly curved metal sheets – SM-OG

PWIS-FREE
LABS-FREI

ESPECIALLY FOR STRONGLY CURVED SURFACES





Product notes

Flexible, oval NBR bell shaped cup, 60° Shore A with vulcanized fitting made of aluminum for best adaptation to strongly curved metal sheets. Large area "anti-slip" cleats, various connection threads available. PWIS-conform to guideline VDMA 24364 test category A1.

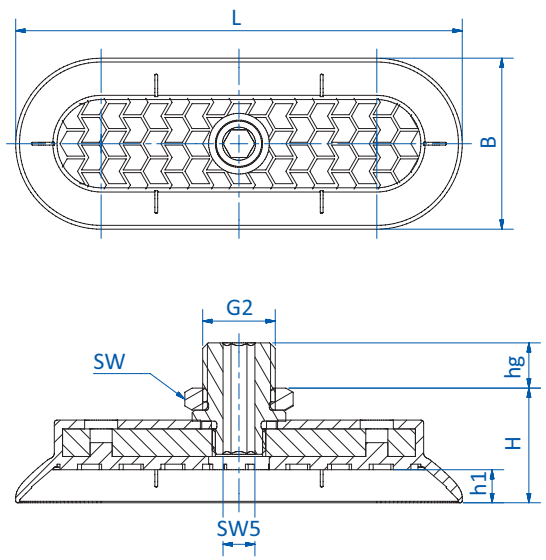
Advantage

- Reliable, non-slip handling of oily sheets due to "anti-slip" cleats. Good absorption of lateral forces.
- Ideally suited for use in constricted spaces
- Supports help to prevent deep-drawing or deformation of thin sheets
- Leak-free suction even with strongly curved surfaces due to very flexible sealing lip
- Vulcanized connection thread ensures a secure fit

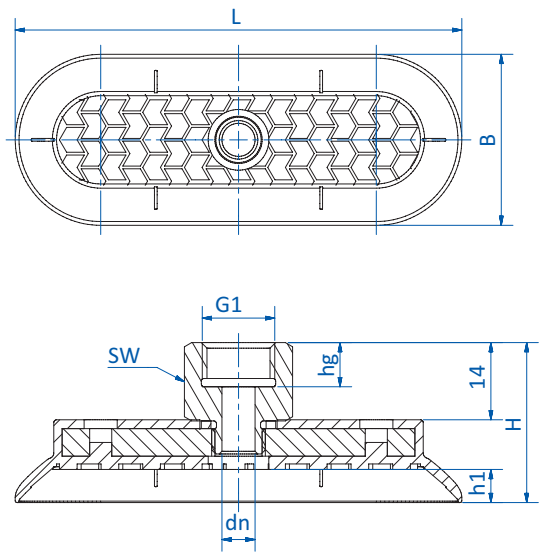
Technical data

Model / Lip dimensions	Thread (Aluminum)				Volume [cm³]	Gripping force* [N]	
	G1/4-male	G1/4-female	G3/8-female	Rectangular adapter			
SM-OG-60x20	130.60x20.197.1	130.60x20.192.1	130.60x20.200.1	130.60x20.203.1	4.97	60	5
SM-OG-80x30	130.80x30.198.1	130.80x30.194.1	130.80x30.201.1	130.80x30.204.1	10.22	118	6
SM-OG-95x40	130.95x40.199.1	130.95x40.196.1	130.95x40.202.1	130.95x40.205.1	15.81	172	6

Dimensions

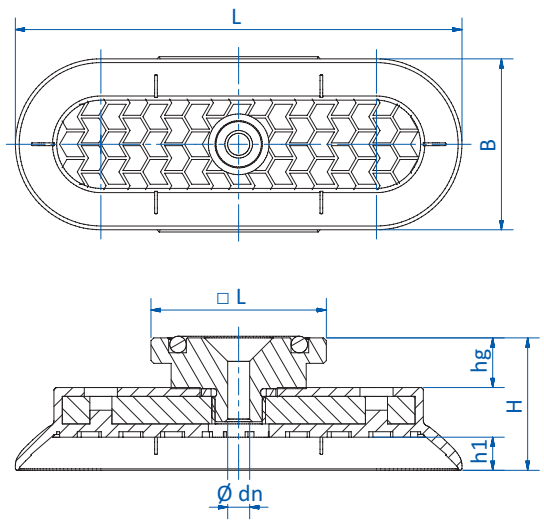


Drawing A



Drawing B

Dimensions

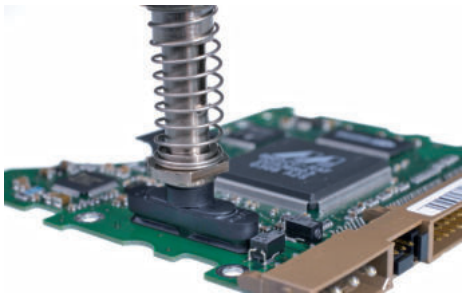


Drawing C

Item no.	Dra-wing	Ø dn [mm]	G1 (female)	G2 (male)	□L [mm]	L [mm]	L max.* [mm]	B [mm]	B max.* [mm]	H [mm]	h1 [mm]	hg [mm]	SW
130.60x20.197._*	A	5	--	G1/4	--	61.5	67	21	27	28	5	8	17
130.60x20.192._*	B	6	G1/4	--	--	61.5	67	21	27	28	5	8	17
130.60x20.200._*	B	6	G3/8	--	--	61.5	67	21	27	28	5	8	22
130.60x20.203._*	C	4	--	--	31.8	61.5	67	21	27	23	5	--	--
130.80x30.198._*	A	5	--	G1/4	--	81	87	31	36.7	29	6	8	17
130.80x30.194._*	B	6	G1/4	--	--	81	87	31	36.7	29	6	8	17
130.80x30.201._*	B	6	G3/8	--	--	81	87	31	36.7	29	6	8	22
130.80x30.204._*	C	4	--	--	31.8	81	87	31	36.7	24	6	--	--
130.95x40.199._*	A	5	--	G1/4	--	95.5	102	40.5	46.5	29	6	8	17
130.95x40.196._*	B	6	G1/4	--	--	95.5	102	40.5	46.5	29	6	8	17
130.95x40.202._*	B	6	G3/8	--	--	95.5	102	40.5	46.5	29	6	8	22
130.95x40.205._*	C	4	--	--	31.8	95.5	102	40.5	46.5	27	6	--	--

Oval vacuum cups, flat – SO-E





Product notes

Small flat vacuum cups in oval design for elongated workpieces where only minimal space is available (e.g. semiconductors, carrier plates, etc.). Connection via an interlocking snap-in plug-in nipple.

Advantage

> Significantly increased suction force compared to round vacuum cups of the same width
> Optimum bending strength due to elongated carrier plate in the plug-in nipple
> Secured against rotation
> Cost-effective replacement of worn seals

Ordering notes

The cups are delivered fully assembled with fitting.

Notes:

Material NBR-AS (anti-static): 65° ShoreA; volume resistance = 200 Ohm•cm

Technical data

Item no.	Model	Connection thread		Material / Color
130.10x4.115._*	SO-E-10x4	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.10x4.068._*	SO-E-10x4	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.10x5.116._*	SO-E-10x5	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.10x5.071._*	SO-E-10x5	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.10x6.117._*	SO-E-10x6	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.10x6.073._*	SO-E-10x6	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x4.118._*	SO-E-20x4	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x4.069._*	SO-E-20x4	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x5.119._*	SO-E-20x5	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x5.081._*	SO-E-20x5	M6-male	0.9	NBR (sw), NBR-AS (sw)
130.20x6.120._*	SO-E-20x6	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x6.074._*	SO-E-20x6	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x8.121._*	SO-E-20x8	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.20x8.076._*	SO-E-20x8	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x5.123._*	SO-E-30x5	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x5.072._*	SO-E-30x5	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x6.124._*	SO-E-30x6	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x6.075._*	SO-E-30x6	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x8.125._*	SO-E-30x8	M5-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)
130.30x8.077._*	SO-E-30x8	M6-male	0.9	NBR (sw), NBR-AS (sw), SI (tr)

Accessories

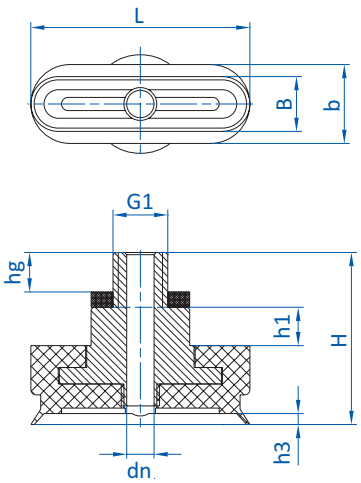
Spare vacuum cup:
132.10x4.003._*
132.10x4.003._*
132.10x5.007._*
132.10x5.007._*
132.10x6.011._*
132.10x6.011._*
132.20x4.005._*
132.20x4.005._*
132.20x5.009._*
132.20x5.009._*
132.20x6.013._*
132.20x6.013._*
132.20x8.015._*
132.20x8.015._*
132.30x5.010._*
132.30x5.010._*
132.30x6.014._*
132.30x6.014._*
132.30x8.017._*
132.30x8.017._*

*** When ordering please add the appropriate material code to item no.**

Accessories

Item no.	Spring leveler		Hose outside Ø	Spring leveler		Hose outside Ø	Spring leveler		Hose outside Ø	Spring leveler		Hose outside Ø
130.10x4.115._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.10x4.068._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.10x5.116._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.10x5.071._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.10x6.117._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.10x6.073._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.20x4.118._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.20x4.069._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.20x5.119._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.20x5.081._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.20x6.120._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.20x6.074._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.20x8.121._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.20x8.076._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.30x5.123._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.30x5.072._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.30x6.124._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.30x6.075._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6
130.30x8.125._*	50.152	10	--	50.153	20	--	--	--	--	--	--	--
130.30x8.077._*	50.095	19.5	6	50.096	30	6	50.097	39	6	50.098	49.5	6

Dimensions



Item no.	L [mm]	B [mm]	b [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h3 [mm]	hg [mm]
130.10x4.115._*	10	4.6	7	2.5	M5	15.5	3.5	1	3.6
130.10x4.068._*	10	4.6	7	2	M6	15.5	3.5	1	4
130.10x5.116._*	10	5	7	2.5	M5	15.5	3.5	1	3.6
130.10x5.071._*	10	5	7	2	M6	15.5	3.5	1	4

Continued on the next page

* When ordering please add the appropriate material code to item no.



Oval vacuum cups series

Oval vacuum cups, flat – SO-E

Item no.	L [mm]	B [mm]	b [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h3 [mm]	hg [mm]
130.10x6.117._*	10	6	7	2.5	M5	15.5	3.5	1	3.6
130.10x6.073._*	10	6	7	2	M6	15.5	3.5	1	4
130.20x4.118._*	20	4.3	7	2.5	M5	15.5	3.5	1	3.6
130.20x4.069._*	20	4.3	7	2	M6	15.5	3.5	1	4
130.20x5.119._*	20	5	7	2.5	M5	15.5	3.5	1	3.6
130.20x5.081._*	20	5	7	2	M6	15.5	3.5	1	4
130.20x6.120._*	20	6	7	2.5	M5	15.5	3.5	1	3.6
130.20x6.074._*	20	6	7	2	M6	15.5	3.5	1	4
130.20x8.121._*	20	8	8	2.5	M5	15.5	3.5	1	3.6
130.20x8.076._*	20	8	8	2	M6	15.5	3.5	1	4
130.30x5.123._*	30	5	7	2.5	M5	15.5	3.5	1	3.6
130.30x5.072._*	30	5	7	2	M6	15.5	3.5	1	4
130.30x6.124._*	30	6	7	2.5	M5	15.5	3.5	1	3.6
130.30x6.075._*	30	6	7	2	M6	15.5	3.5	1	4
130.30x8.125._*	30	8	8	2.5	M5	15.5	3.5	1	3.6
130.30x8.077._*	30	8	8	2	M6	15.5	3.5	1	4

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups for cylindrical products – SO-Z





Product notes	Advantage
Oval vacuum cup for cylindrical products such as pins, needles, tubes, etc. Connection via plug-in nipple, hollow screw (SO-Z-10-18) or direct plug-in to the machine (SO-Z-4-10).	> Significantly greater suction force over normal oval vacuum cups due to three-dimensional oval suction lip contour partially encompassing the workpiece > Cost-effective replacement of worn seals

Technical data

Item no.	Model	Suitable for cylindrical products with Ø [mm]	Material / Color
201.10x3.005._*	SO-Z-2-4	2 - 4	NBR (sw), SI (tr)
201.10x6.006._*	SO-Z-3-7	3 - 7.5	NBR (sw), SI (tr)
132.15x7.073._*	SO-Z-4-10	4 - 10	SI (r)
201.12x9.007._*	SO-Z-6-13	6 - 13	NBR (sw), SI (tr)
9.23x11.036._*	SO-Z-10-18	10 - 18	SI (tr)

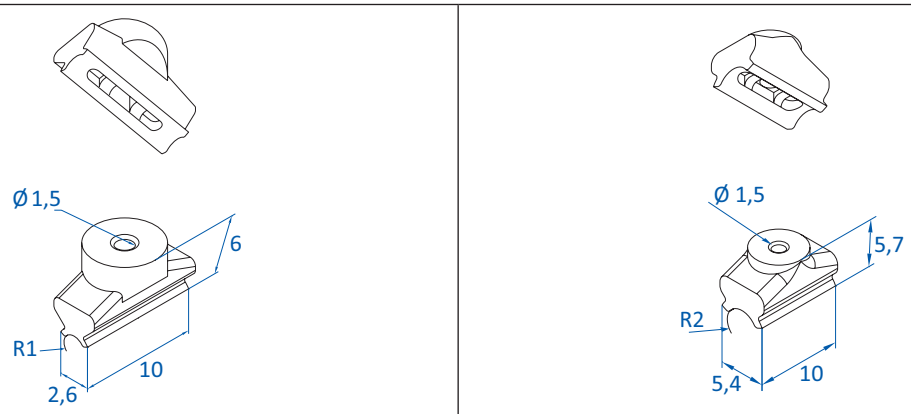
Accessories

	Suitable fittings		
Item no.	M5-male	G1/8-male	G1/8-female
201.10x3.005._*	270.300	--	--
201.10x6.006._*	270.300	--	--
132.15x7.073._*	--	--	--
201.12x9.007._*	270.300	--	--
9.23x11.036._*	270.310	270.493	270.494

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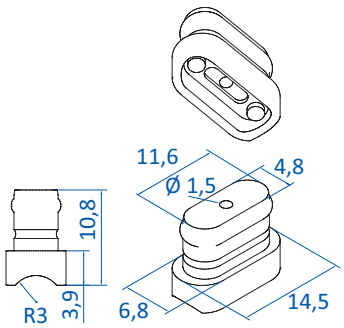
* When ordering please add the appropriate material code to item no.

Dimensions

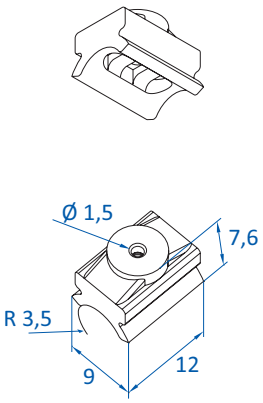


Drawing A

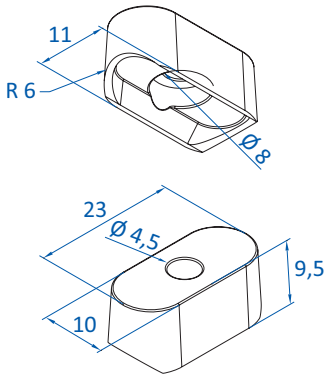
Drawing B



Drawing C



Drawing D

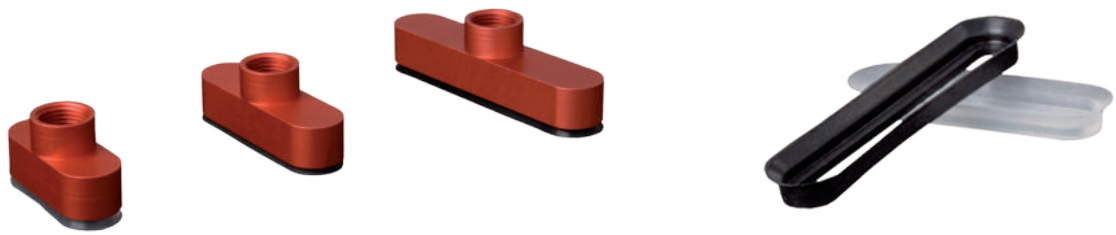


Drawing E

Item no.	Drawing	L [mm]	B [mm]
201.10x3.005._*	A	10	2.6
201.10x6.006._*	B	10	5.4
132.15x7.073._*	C	14.5	6.8
201.12x9.007._*	D	12	9
9.23x11.036._*	E	23	10

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups, flat – SO-C



Product notes

Flat vacuum cups in oval design for elongated workpieces where only minimal space is available (e.g. rails, profiles, tubes, bolts, etc.).
Vacuum chamber housing of anodized aluminum. Rubber sealing lip is fixed by a screwed rubber clamping plate.

Advantage

> Significantly increased suction force compared to round vacuum cups of the same width
> Warp-resistant aluminum housing
> Cost-effective replacement of worn seals

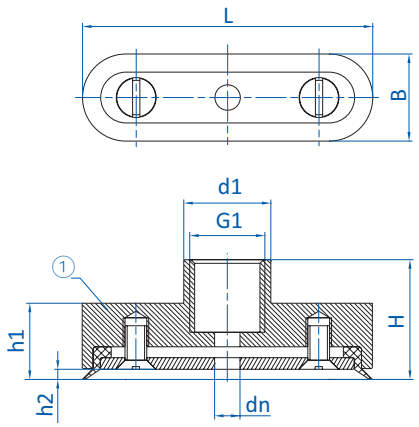
Technical data

Item no.	Model	Connection thread		Material / Color
130.30x12.057._*	SO-C-30x12	G1/8-female	1	SI (tr), NR (sw)
130.40x12.058._*	SO-C-40x12	G1/8-female	1	SI (tr), NR (sw)
130.55x12.082._*	SO-C-55x12	G1/8-female	1	NBR (sw), SI (tr), NR (sw)

Accessories

Spare sealing lip
132.30x12.025._*
132.40x12.027._*
132.55x12.029._*

Dimensions



① = Aluminum

Item no.	L [mm]	B [mm]	Ø d1 [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h2 [mm]
130.30x12.057._*	30	12	12	3.5	G1/8	16.5	10	1.3
130.40x12.058._*	40	12	12	3.5	G1/8	16.5	10	1.4
130.55x12.082._*	55	12	12	3.5	G1/8	16.5	10	1.5

*** When ordering please add the appropriate material code to item no.**

Oval vacuum suction plates for textured surfaces – SOPL-R



Product notes

Oval vacuum cups for handling both rough surfaces and smooth, markedly uneven products.
Connection via vulcanized aluminum plate.

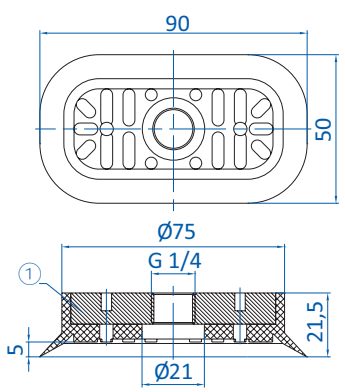
Advantage

> Leak-free gripping of difficult product surfaces thanks to extremely flexible, thinly tapered sealing lip
> Cleats help prevent warping of the product
> Optimum process reliability due to vulcanized backing plate, as well as additional internal safety sealing lip (190x90 mm and 120x65 mm)

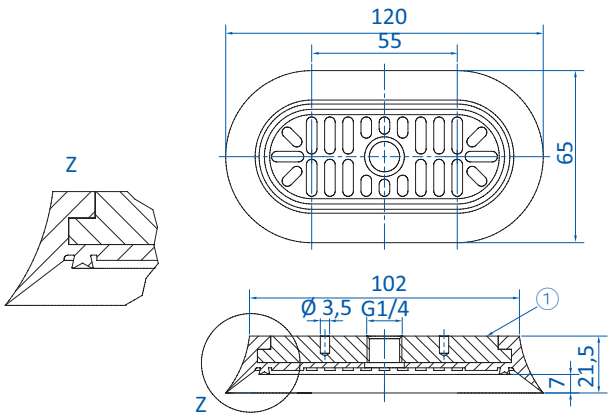
Technical data

Item no.	Model	Connection thread	Material / Color		Weight [g]
130.90x50.113.4	SOPL-R-90x50	G1/4-female	NR (bg)	5	72
9.120x65.088.4	SOPL-R-120x65	G1/4-female	NR (bg)	7	131
9.190x90.061.4-AL	SOPL-R-190x90	G1/4-female	NR (bg)	5.5	295

Dimensions



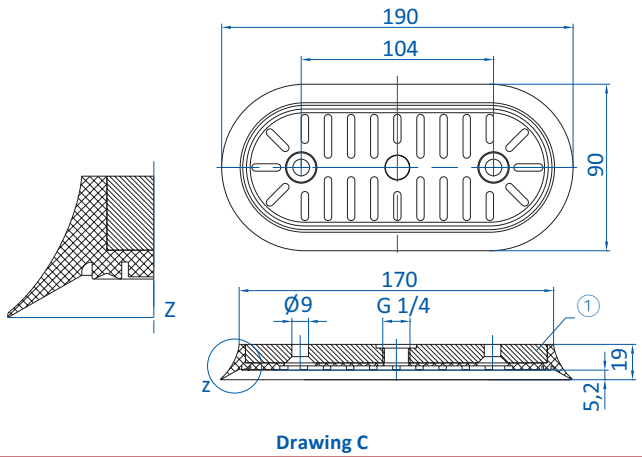
Drawing A



Drawing B

① = Aluminum

Dimensions



Drawing C

① = Aluminum

Item no.	Drawing	L [mm]	B [mm]
130.90x50.113.4	A	90	50
9.120x65.088.4	B	120	65
9.190x90.061.4-AL	C	190	90

Oval vacuum suction plates – SOPL-S



Product notes	Advantage
Oval vacuum cups, vulcanized, on a carrier plate of steel for the handling of long, narrow products such as strips, profiles or frames. Rubberized support surfaces prevent deformation of the product and increase lateral stability.	> High suction force on a small footprint > Low-marking > High process reliability due to vulcanized carrier plate > Individual machine connection possible

Ordering notes

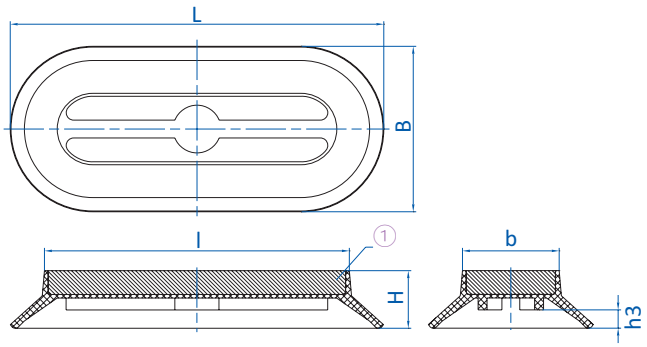
Customized drilling patterns available on request for Series SOPL-S

Technical data

Item no.	Model	Material / Color		Weight [g]	Support surfaces
9.200x40.010.1gr	SOPL-S-200x40	NBR (gr)	9	140	lengthwise
9.110x40.009.1	SOPL-S-110x40	NBR (gr)	9	122	lengthwise
9.125x55.012.1	SOPL-S-125x55	NBR (gr)	9	320	lengthwise
9.150x55.013.1	SOPL-S-150x55	NBR (gr)	7	255	lengthwise
9.200x55.014.1	SOPL-S-200x55	NBR (gr)	7	538	lengthwise
9.300x55.019.1	SOPL-S-300x55	NBR (gr)	8	902	lengthwise
9.370x70.022.1	SOPL-S-370x70	NBR (gr)	10	1,895	lengthwise
9.200x100.015.1	SOPL-S-200x100	NBR (gr)	8	595	lengthwise
9.280x100.017.1	SOPL-S-280x100	NBR (gr)	10	1,880	lengthwise
9.430x180.024.1gr	SOPL-S-430x180	NBR (gr)	6	3,720	selective
9.450x130.025.1	SOPL-S-450x130	NBR (gr)	6	2,660	crosswise
9.580x180.029.1	SOPL-S-580x180	NBR (gr)	10	3,500	lengthwise



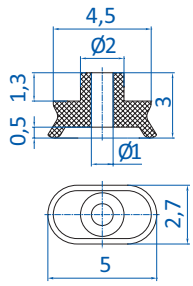
Dimensions



① = Steel

Item no.	L [mm]	B [mm]	l [mm]	b [mm]	H [mm]	h3 [mm]
9.200x40.010.1gr	195	36	176	15	19	6
9.110x40.009.1	113	43	87	17	19	8.5
9.125x55.012.1	126	56	103	33	19	6
9.150x55.013.1	151	56	128	33	19	6
9.200x55.014.1	200	55	178	33	19	6.3
9.300x55.019.1	300	55	227	33	19	6
9.370x70.022.1	378	82	349	53	26	9
9.200x100.015.1	190	90	161	61	22	8.5
9.280x100.017.1	278	100	250	72	25	9
9.430x180.024.1gr	430	180	402	158	20	6
9.450x130.025.1	449	131	420	102	20	6.5
9.580x180.029.1	579	179	570	150	25	9

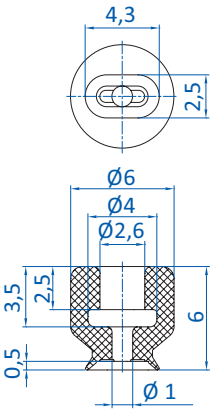
Oval vacuum cups by size



	Connection	
270.011	M3-male	--

Item no. 132.4x2.001._*
Material NBR (sw), SI (tr), PU (bl)
0.5 mm

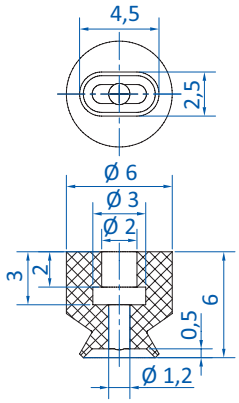
Details and additional sizes available are found on p. 308.



	Connection	
270.014	M3-male	--
270.111	M4-male	--
270.300	M5-male	--

Item no. 132.4x2.031._*
Material NBR (sw), HNBR (ge), SI (tr), PU (bl)
0.5 mm

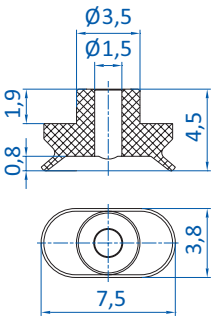
Details and additional sizes available are found on p. 308.



	Connection	
270.014	M3-male	--
270.111	M4-male	--
270.300	M5-male	--

Item no. 132.4x2.079.19
Material Thermalon® (bl)
0.4 mm

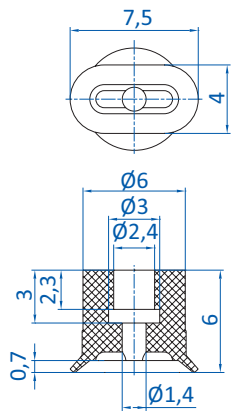
Details and additional sizes available are found on p. 312.



	Connection	
270.025	M3-male	--

Item no. 132.7x4.002._*
Material NBR (sw), SI (tr)
0.8 mm

Details and additional sizes available are found on p. 308.

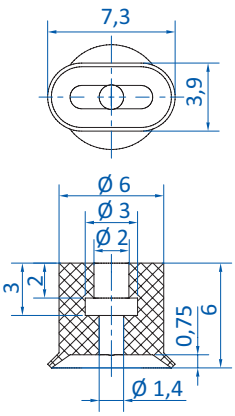


	Connection	
270.014	M3-male	--
270.111	M4-male	--
270.300	M5-male	--

BESTSELLER

Item no. 132.7x4.034._*
Material NBR (sw), HNBR (ge), SI (tr)
0.8 mm

Details and additional sizes available are found on p. 308.



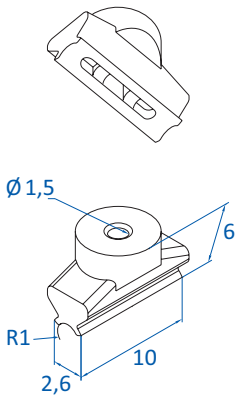
	Connection	
270.014	M3-male	--
270.111	M4-male	--
270.300	M5-male	--

Item no. 132.7x4.080.19
Material Thermalon® (bl)
0.5 mm

Details and additional sizes available are found on p. 312.

*** When ordering please add the appropriate material code to item no.**



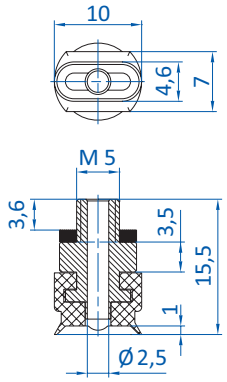


	Connection	
270.300	M5-male	--

FOR CYLINDRICAL PRODUCTS DIAMETER 2 - 4 MM

Item no.	Material	
201.10x3.005._*	NBR (sw), SI (tr)	0 mm

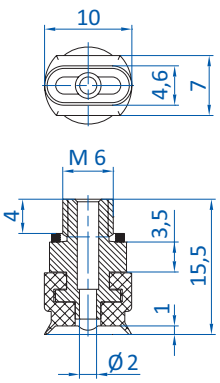
Details and additional sizes available are found on p. 331.



50.152	10 mm	--
50.153	20 mm	--

Item no.	Material	
130.10x4.115._*	NBR (sw), NBR-AS (sw), SI (tr)	0.9 mm

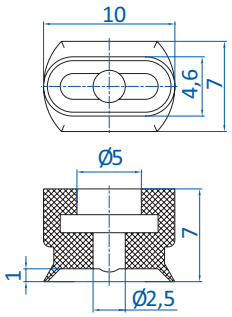
Details and additional sizes available are found on p. 328.



50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

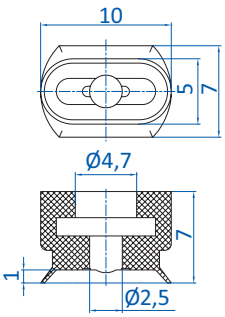
Item no.	Material	
130.10x4.068._*	NBR (sw), NBR-AS (sw), SI (tr)	0.9 mm

Details and additional sizes available are found on p. 328.



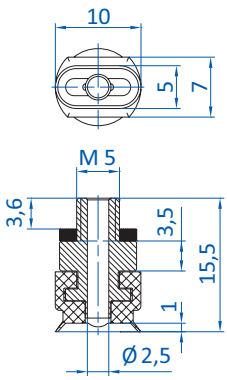
	Connection	
270.463	M5-male	--
270.339	M6-male	--

Item no.	Material	
132.10x4.003._*	NBR (sw), NBR-AS (sw), SI (tr)	0.9 mm



	Connection	
270.463	M5-male	--
270.339	M6-male	--

Item no.	Material	
132.10x5.007._*	NBR (sw), NBR-AS (sw), SI (tr)	0.9 mm



50.152	10 mm	--
50.153	20 mm	--

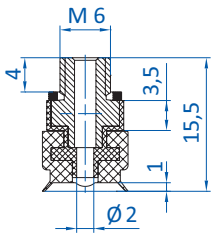
Item no.	Material	
130.10x5.116._*	NBR (sw), NBR-AS (sw), SI (tr)	0.9 mm

Details and additional sizes available are found on p. 328.

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size





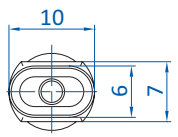
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

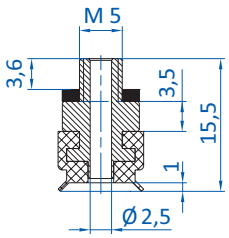
Item no. **130.10x5.071._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.





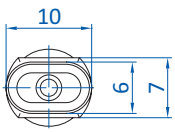
50.152	10 mm	--
50.153	20 mm	--

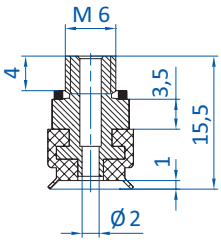
Item no. **130.10x6.117._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.





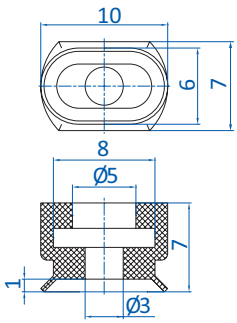
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. **130.10x6.073._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.

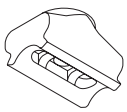


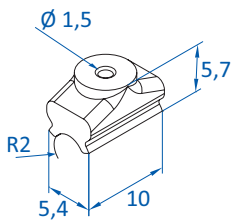
	Connection	
270.463	M5-male	--
270.339	M6-male	--

Item no. **132.10x6.011._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm





	Connection	
270.300	M5-male	--

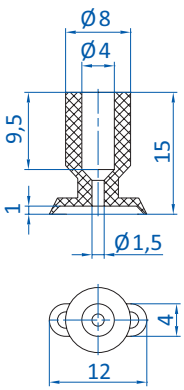
FOR CYLINDRICAL PRODUCTS DIAMETER 3 - 7.5 MM

Item no. **201.10x6.006._***

Material NBR (sw), SI (tr)

0 mm

Details and additional sizes available are found on p. 331.



	Connection	
270.134	M5-male	--
270.347	M5-female	--
270.104	M6-male	--
270.033	G1/8-male	--
270.478	G1/8-female	--

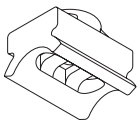
Item no. **132.12x4.004._***

Material NBR (gr), SI (tr)

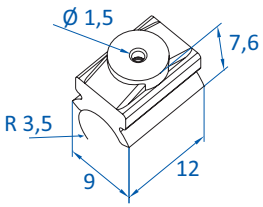
0.5 mm

Details and additional sizes available are found on p. 308.

*** When ordering please add the appropriate material code to item no.**



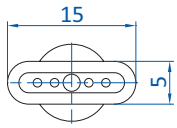
	Connection	
270.300	M5-male	--



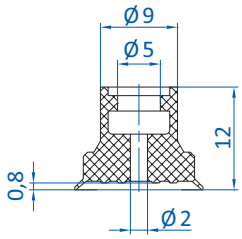
FOR CYLINDRICAL PRODUCTS DIAMETER 6 - 13 MM

Item no. 201.12x9.007._*
Material NBR (sw), SI (tr)
0 mm

Details and additional sizes available are found on p. 331.

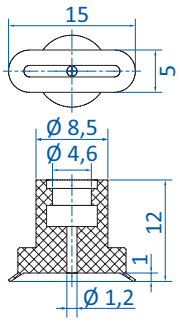


	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--



Item no. 132.15x5.008._*
Material NBR (gr), SI (tr)
1 mm

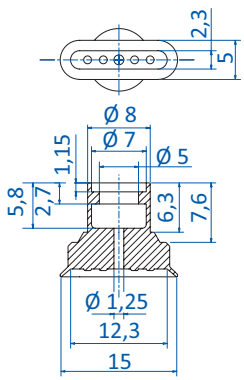
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.15x5.081.19
Material Thermalon® (bl)
0.6 mm

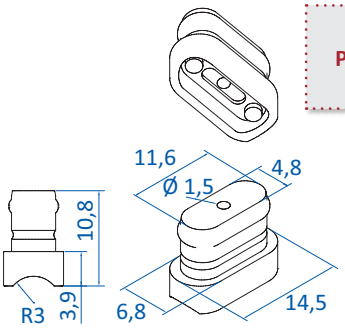
Details and additional sizes available are found on p. 312.



	Connection	
270.431	G1/8-male	--

Item no. 132.15x5.067.14
Material HNBR (ge)
1 mm

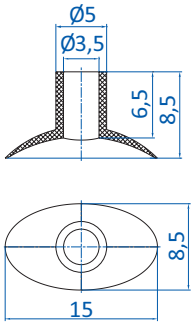
Details and additional sizes available are found on p. 314.
Ordering notes Use of a gripper clamp (available separately) recommended.



FOR CYLINDRICAL PRODUCTS DIAMETER 4 - 10 MM

Item no. 132.15x7.073._*
Material SI (r)
0 mm

Details and additional sizes available are found on p. 331.

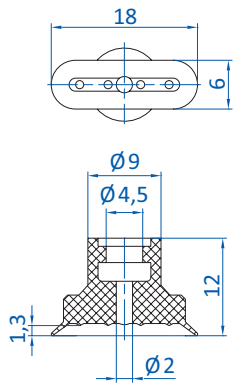


	Connection	
270.536	M5-male	--

Item no. 132.15x8.5.33._*
Material NR (sw)
2 mm

*** When ordering please add the appropriate material code to item no.**

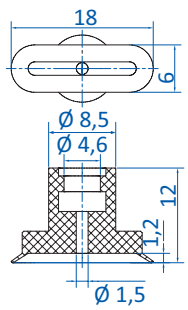
Oval vacuum cups by size



	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.18x6.012._*
Material NBR (gr), SI (tr), PU (bl)
1 mm

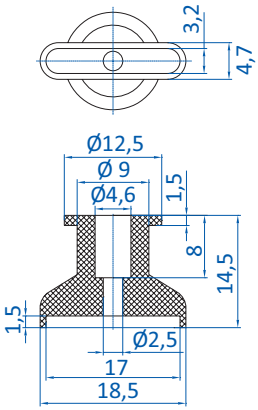
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

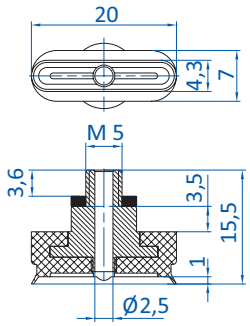
Item no. 132.18x6.082.19
Material Thermalon® (bl)
1 mm

Details and additional sizes available are found on p. 312.



	Connection	
270.013	M5-male	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--

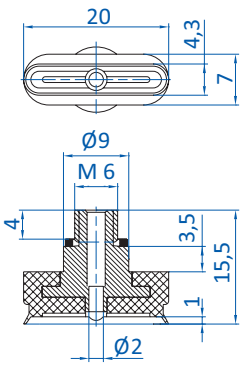
Item no. 132.19x5.044._*
Material Vinyl (bl)
0 mm



50.152	10 mm	--
50.153	20 mm	--

Item no. 130.20x4.118._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

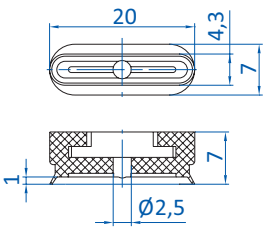
Details and additional sizes available are found on p. 328.



50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 130.20x4.069._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

Details and additional sizes available are found on p. 328.

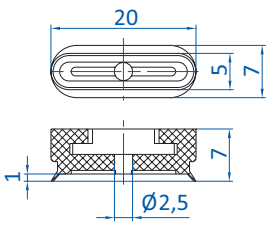


	Connection	
270.464	M5-male	--
270.340	M6-male	--

Item no. 132.20x4.005._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

*** When ordering please add the appropriate material code to item no.**



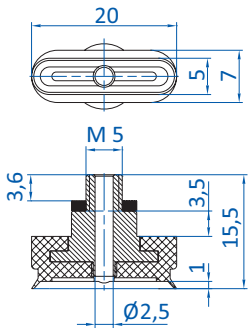


	Connection	
270.464	M5-male	--
270.340	M6-male	--

Item no. **132.20x5.009._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm



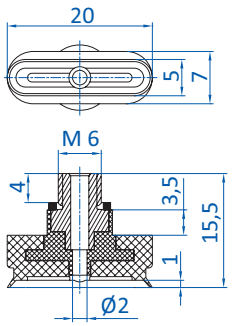
50.152	10 mm	--
50.153	20 mm	--

Item no. **130.20x5.119._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.



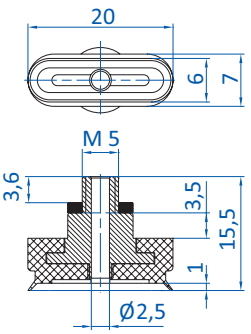
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. **130.20x5.081._***

Material NBR (sw), NBR-AS (sw)

0.9 mm

Details and additional sizes available are found on p. 328.



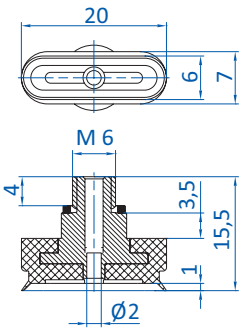
50.152	10 mm	--
50.153	20 mm	--

Item no. **130.20x6.120._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.



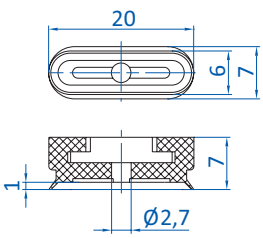
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. **130.20x6.074._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.



	Connection	
270.464	M5-male	--
270.340	M6-male	--

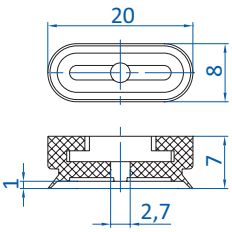
Item no. **132.20x6.013._***

Material NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

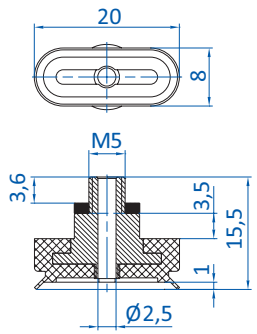
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



	Connection	
270.464	M5-male	--
270.340	M6-male	--

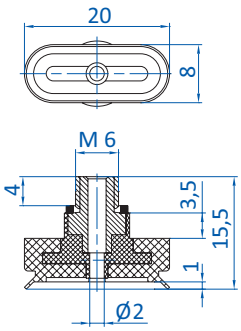
Item no. 132.20x8.015._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm



50.152	10 mm	--
50.153	20 mm	--

Item no. 130.20x8.121._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

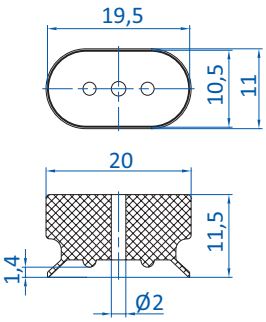
Details and additional sizes available are found on p. 328.



50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

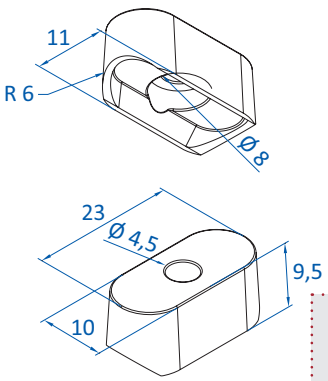
Item no. 130.20x8.076._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

Details and additional sizes available are found on p. 328.



	Connection	
270.022	M5-male	--

Item no. 132.20X11.077._*
Material SI (tr)
1.5 mm

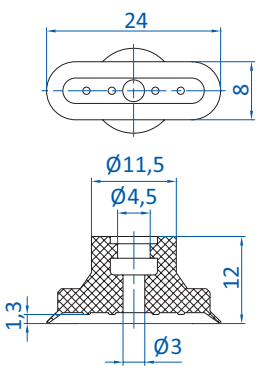


FOR CYLINDRICAL PRODUCTS DIAMETER 10 - 18 MM

	Connection	
270.310	M5-male	--
270.493	G1/8-male	--
270.494	G1/8-female	--

Item no. 9.23x11.036._*
Material SI (tr)
0 mm

Details and additional sizes available are found on p. 331.

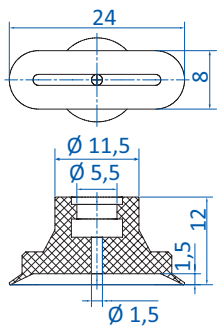


	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.24x8.016._*
Material NBR (gr), SI (tr)
1 mm

Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.

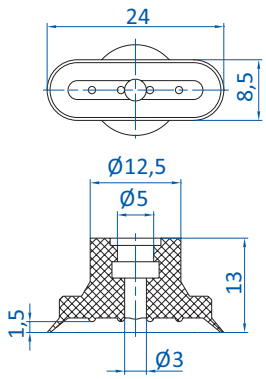
*** When ordering please add the appropriate material code to item no.**



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.24x8.083.19 | **Material** Thermalon® (bl) | 1 mm

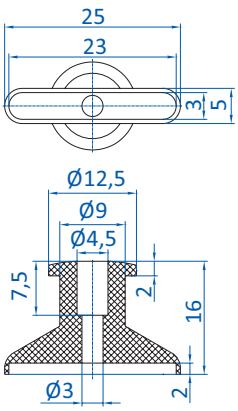
Details and additional sizes available are found on p. 312.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.431	G1/8-male	--

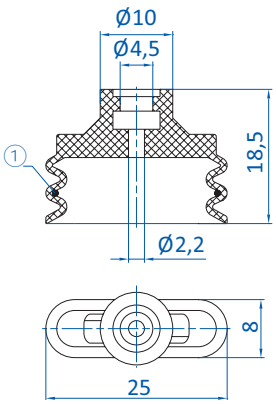
Item no. 132.24x8.066.14 | **Material** HNBR (ge) | 1 mm

Details and additional sizes available are found on p. 314.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.013	M5-male	--
270.005	M5-female	--
270.103	M6-male	--
270.003	G1/8-male	--
270.015	G1/8-female	--
270.194	G1/4-male	--

Item no. 132.25x5.045._* | **Material** Vinyl (bl) | 0 mm



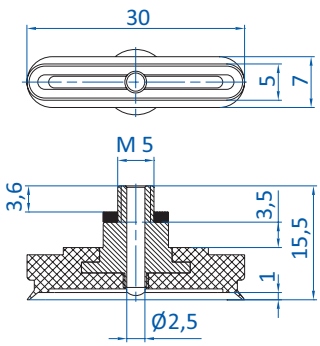
① = Wire strap stiffening

BESTSELLER

	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 138.25x8.002._* | **Material** NBR (gr), SI (tr) | 6 mm

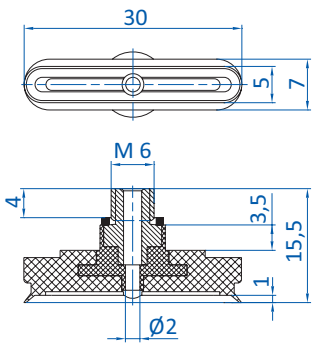
Details and additional sizes available are found on p. 311.
Ordering notes Use of a gripper clamp (available separately) recommended.



50.152	10 mm	--
50.153	20 mm	--

Item no. 130.30x5.123._* | **Material** NBR (sw), NBR-AS (sw), SI (tr) | 0.9 mm

Details and additional sizes available are found on p. 328.



50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

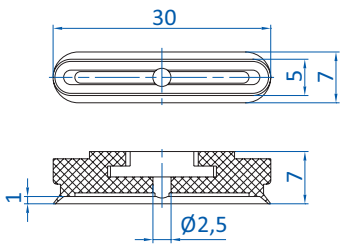
Item no. 130.30x5.072._* | **Material** NBR (sw), NBR-AS (sw), SI (tr) | 0.9 mm

Details and additional sizes available are found on p. 328.

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



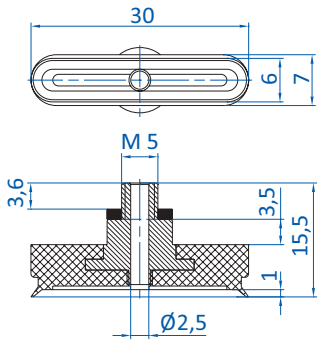


	Connection	
270.464	M5-male	--
270.340	M6-male	--

Item no.
132.30x5.010._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm



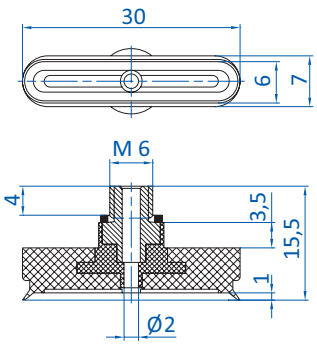
50.152	10 mm	--
50.153	20 mm	--

Item no.
130.30x6.124._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.



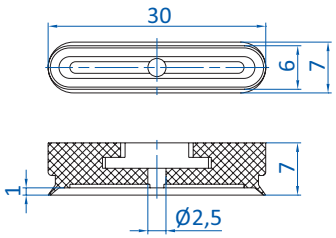
50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no.
130.30x6.075._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.

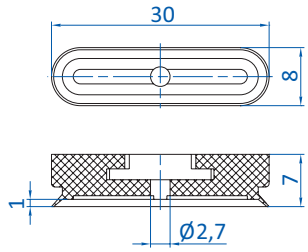


	Connection	
270.464	M5-male	--
270.340	M6-male	--

Item no.
132.30x6.014._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

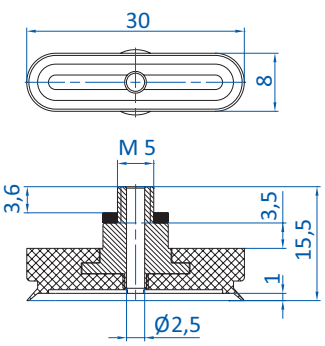


	Connection	
270.464	M5-male	--
270.340	M6-male	--

Item no.
132.30x8.017._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm



50.152	10 mm	--
50.153	20 mm	--

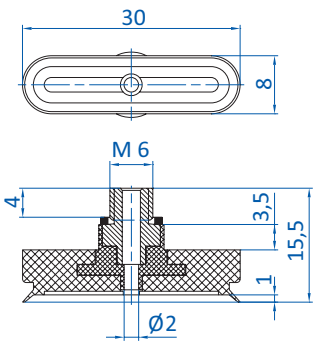
Item no.
130.30x8.125._*

Material
NBR (sw), NBR-AS (sw), SI (tr)

0.9 mm

Details and additional sizes available are found on p. 328.

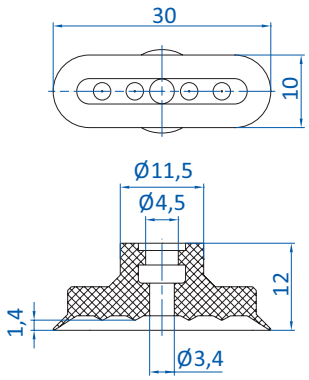
*** When ordering please add the appropriate material code to item no.**



50.095	19.5 mm	--
50.096	30 mm	--
50.097	39 mm	--
50.098	49.5 mm	--

Item no. 130.30x8.077._*
Material NBR (sw), NBR-AS (sw), SI (tr)
0.9 mm

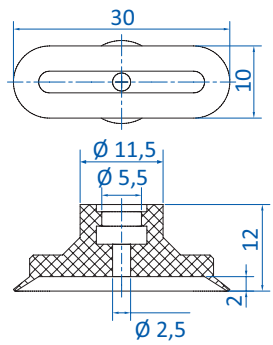
Details and additional sizes available are found on p. 328.



	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.30x10.018._*
Material NBR (gr), SI (tr), PU (bl)
2 mm

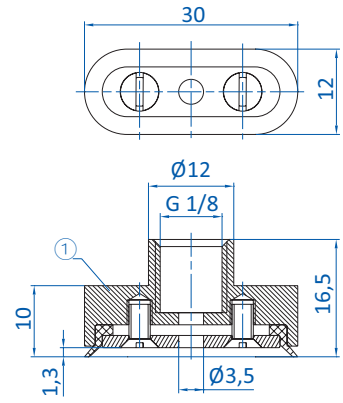
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.094	M5-male	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.30x10.084.19
Material Thermalon® (bl)
1 mm

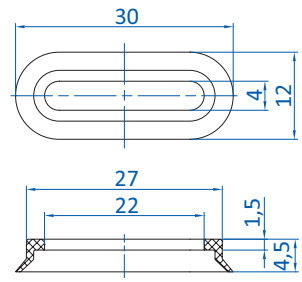
Details and additional sizes available are found on p. 312.
Ordering notes Use of a gripper clamp (available separately) recommended.



① = Aluminum

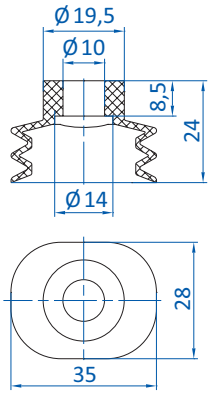
Item no. 130.30x12.057._*
Material SI (tr), NR (sw)
1 mm

Details and additional sizes available are found on p. 333.



	Connection	
270.439	G1/8-female	--

Item no. 132.30x12.025._*
Material SI (tr), NR (sw)
1 mm



	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

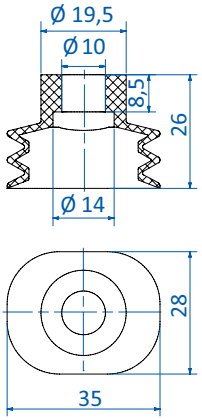
BESTSELLER

Item no. 138.35x28.001._*
Material Vinyl (bl)
9 mm

Details and additional sizes available are found on p. 316.

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size

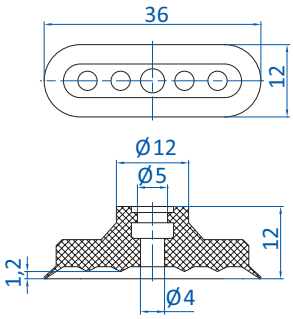


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

BESTSELLER

Item no. 138.35x28.048._*
Material Vinyl (bl)
9 mm

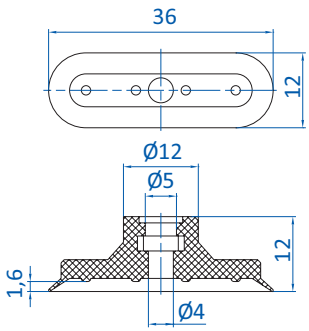
Details and additional sizes available are found on p. 316.



	Connection	
270.094	M5-male	--
270.005	M5-female	--
270.095	G1/8-male	--
270.096	G1/8-female	--

Item no. 132.36x12.019._*
Material NBR (gr), SI (tr), PU (bl)
2 mm

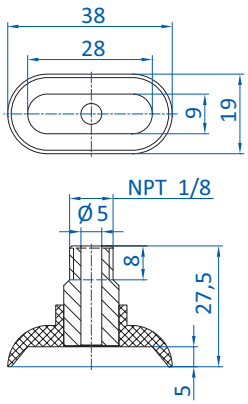
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



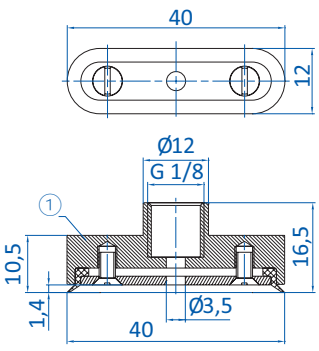
	Connection	
270.431	G1/8-male	--

Item no. 132.36x12.068.14
Material HNBR (ge)
2 mm

Details and additional sizes available are found on p. 314.
Ordering notes Use of a gripper clamp (available separately) recommended.



Item no. 130.38x19.085._*
Material Vinyl (bl)
0 mm

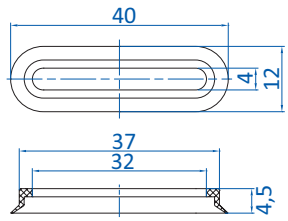


① = Aluminum

Item no. 130.40x12.058._*
Material SI (tr), NR (sw)
1 mm

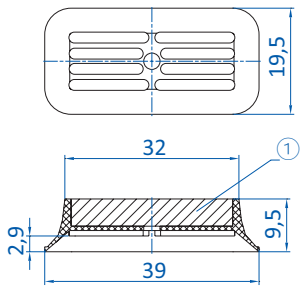
Details and additional sizes available are found on p. 333.

	Connection	
270.440	G1/8-female	--



Item no. 132.40x12.027._*
Material SI (tr), NR (sw)
1 mm

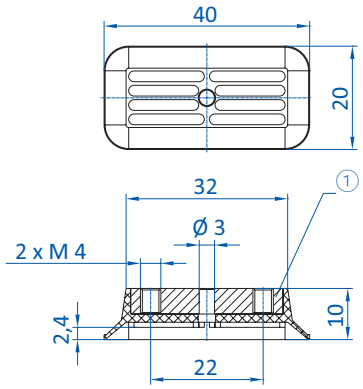
*** When ordering please add the appropriate material code to item no.**



① = Steel

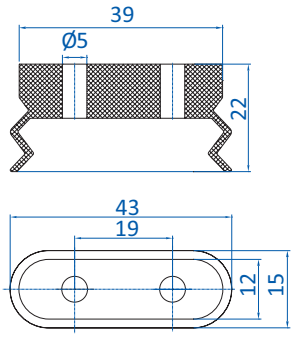
Item no.	Material	
9.40x20.041._*	NBR (gr), SI (tr)	2 mm

Ordering notes Customized drilling patterns on request



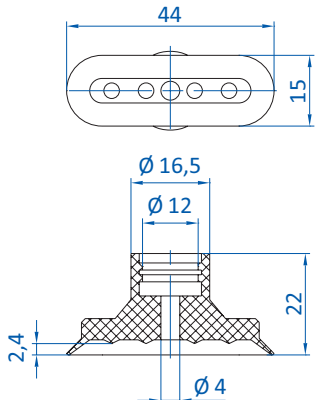
① = Steel

Item no.	Material	
9.40x20.057._*	SI (tr)	2 mm



	Connection	
270.013	M5-male	--

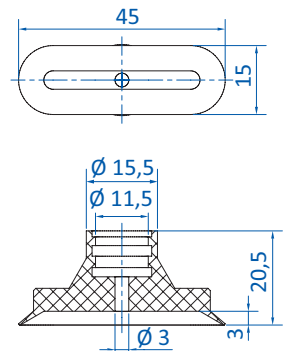
Item no.	Material	
138.43x15.001._*	Vinyl (bl)	8 mm



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.45x15.020._*	NBR (gr), SI (tr), PU (bl)	3 mm

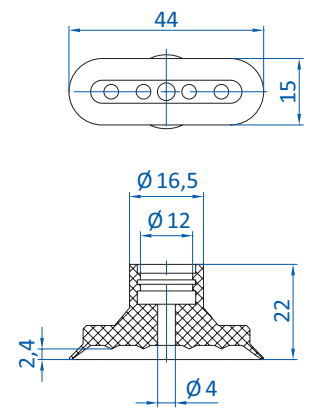
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.45x15.085.19	Thermalon® (bl)	2 mm

Details and additional sizes available are found on p. 312.
Ordering notes Use of a gripper clamp (available separately) recommended.



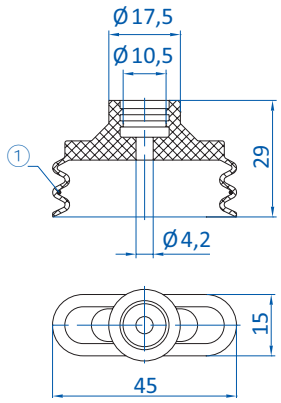
	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.45x15.064.14	HNBR (ge)	3 mm

Details and additional sizes available are found on p. 314.
Ordering notes Use of a gripper clamp (available separately) recommended.

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size

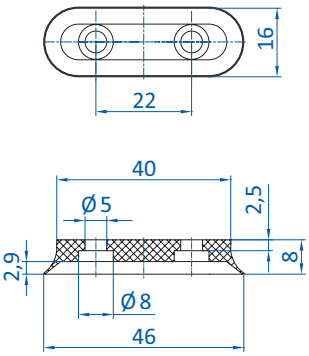


	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

① = Wire strap stiffening

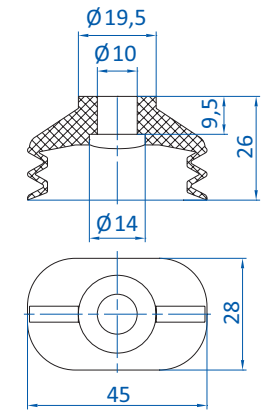
Item no. 138.45x15.003._*
Material NBR (gr), SI (tr)
8 mm

Details and additional sizes available are found on p. 311.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.310	M5-male	--
270.493	G1/8-male	--
270.494	G1/8-female	--

Item no. 9.45x15.038._*
Material NBR (sw), SI (tr), SI-LE (tr)
3 mm

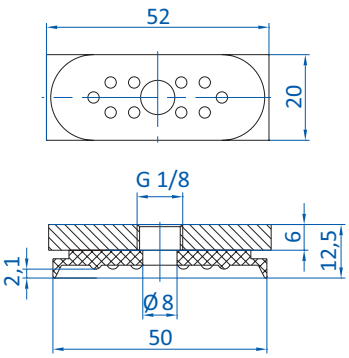


	Connection	
270.177	M10-male	--
270.451	G1/4-male	--
270.452	G1/4-female	--

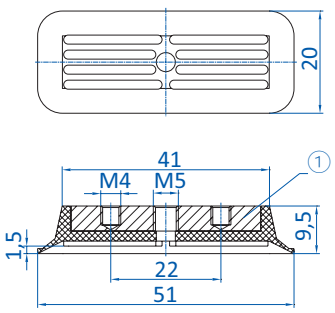
BESTSELLER

Item no. 138.45x28.013._*
Material Vinyl (bl)
9 mm

Details and additional sizes available are found on p. 316.

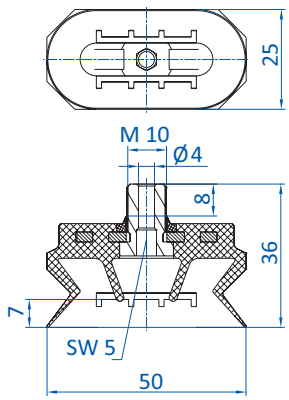


Item no. 130.50x20.102._*
Material NBR (gr)
3 mm



① = Aluminum

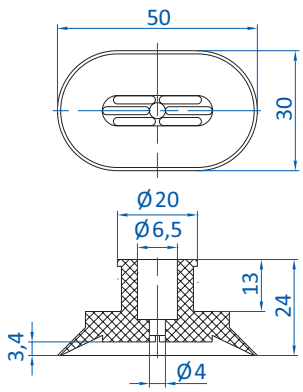
Item no. 9.50x20.034._*
Material NBR (gr), SI (tr)
2 mm



Item no. 130.50x25.094._*
Material NBR (sw), SI (tr)
8 mm

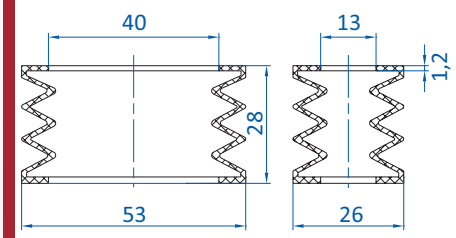
*** When ordering please add the appropriate material code to item no.**





	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

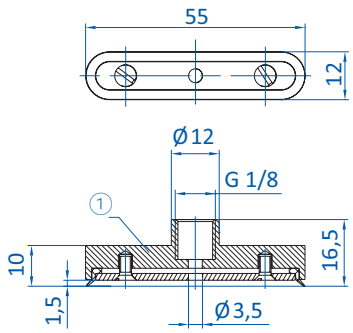
Item no.	Material	
132.50x30.030._*	NBR (gr), SBR (br)	5 mm



	Connection	
270.508	G1/8-female	--

Item no.	Material	
209.52x25.006._*	SI (tr), SI (tr) vers	13 mm

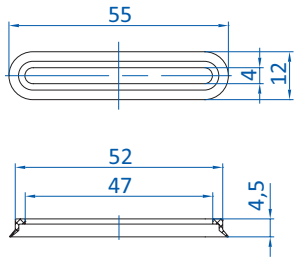
Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement



① = Aluminum

Item no.	Material	
130.55x12.082._*	NBR (sw), SI (tr), NR (sw)	1 mm

Details and additional sizes available are found on p. 333.

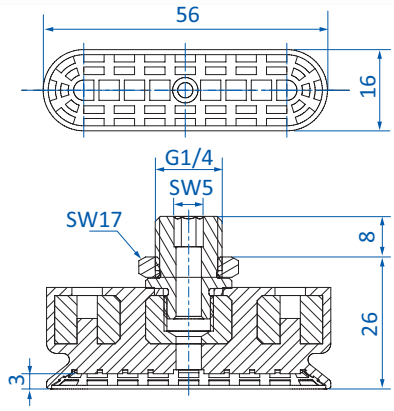


	Connection	
270.441	G1/8-female	--

Item no.	Material	
132.55x12.029._*	NBR (sw), SI (tr), NR (sw)	1 mm

*** When ordering please add the appropriate material code to item no.**

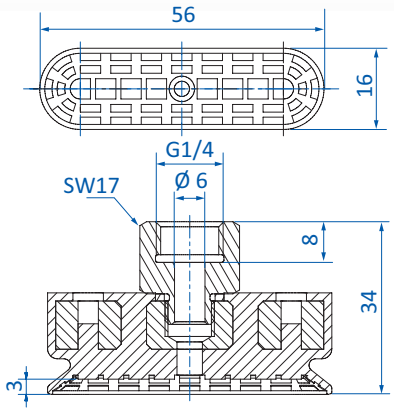
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.140._*	NBR (bl)	3 mm

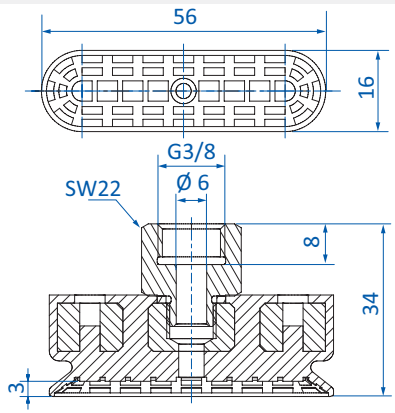
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.141._*	NBR (bl)	3 mm

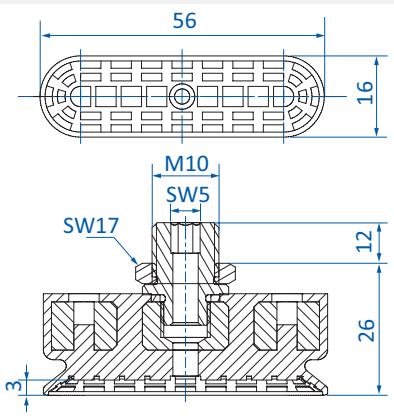
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.142._*	NBR (bl)	3 mm

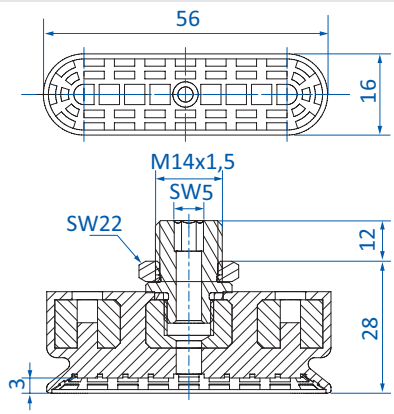
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.143._*	NBR (bl)	3 mm

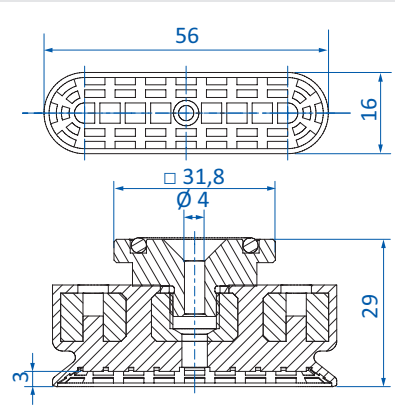
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.144._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.



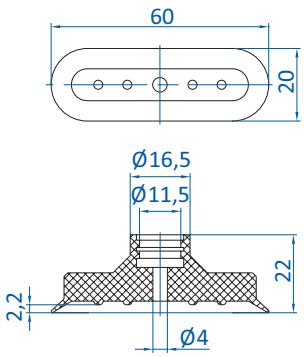
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.55x16.145._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.

*** When ordering please add the appropriate material code to item no.**

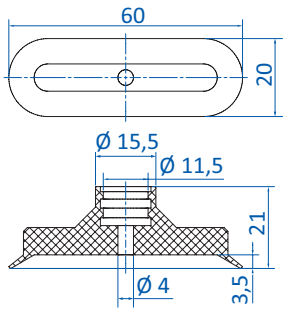




	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.60x20.022._*	NBR (gr), SI (tr), PU (bl)	3 mm

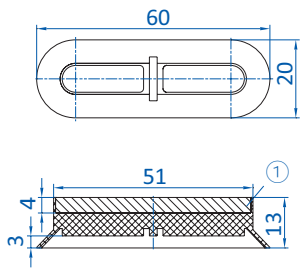
Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.60x20.086.19	Thermalon® (bl)	2.5 mm

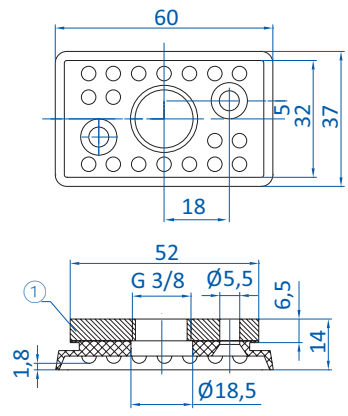
Details and additional sizes available are found on p. 312.
Ordering notes Use of a gripper clamp (available separately) recommended.



① = Steel

Item no.	Material	
9.60x20.003._*	SBR (sw), NR (bg)	4 mm

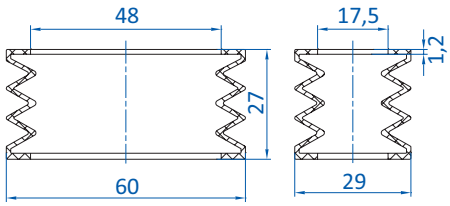
Ordering notes Customized drilling patterns on request



① = Aluminum

Item no.	Material	
130.60x38.091._*	NBR (gr)	2 mm

	Connection	
270.509	G1/4-female	--

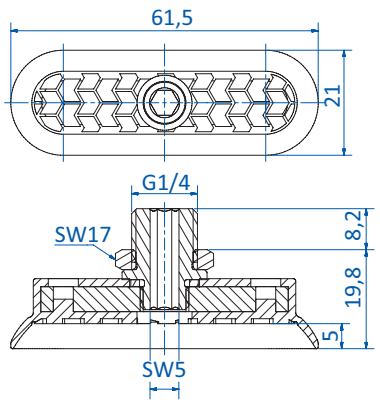


Item no.	Material	
209.60x29.001._*	NBR (sw), NBR (sw) vers, SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers	13 mm

Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement

*** When ordering please add the appropriate material code to item no.**

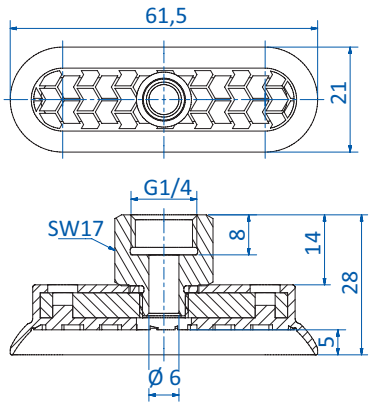
Oval vacuum cups by size



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.60x20.197._*	NBR (bl)	5 mm

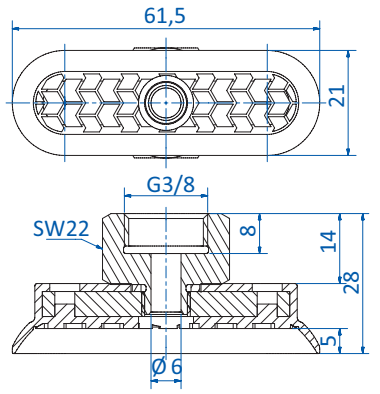
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.60x20.192._*	NBR (bl)	5 mm

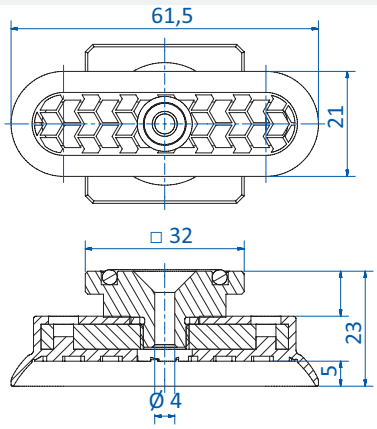
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.60x20.200._*	NBR (bl)	5 mm

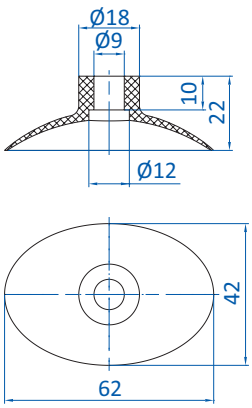
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

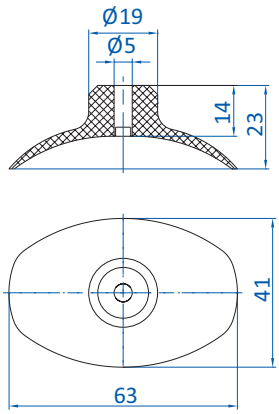
Item no.	Material	
130.60x20.203._*	NBR (bl)	5 mm

Details and additional sizes available are found on p. 326.



PERFECT FOR SOAPS

Item no.	Material	
130.62x42.111._*	Vulkollan® (br)	7 mm

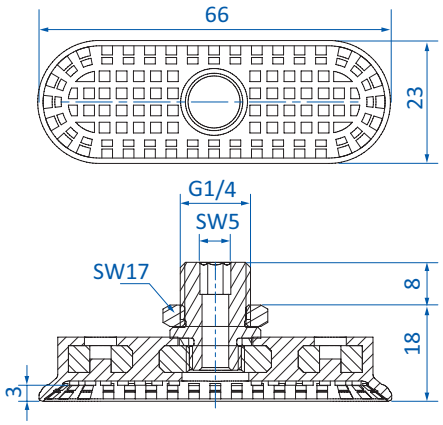


	Connection	
270.443	M5-male	--
270.238	G1/8-male	--
270.110	G1/8-female	--
270.534	G1/4-male	--

PERFECT FOR SOAPS

Item no.	Material	
132.60x42.052._*	SI (g)	8 mm

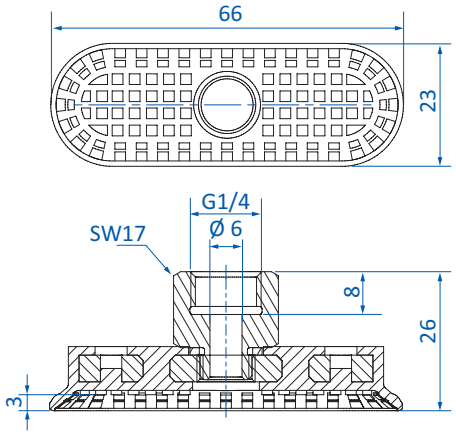
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.146._*	NBR (bl)	3 mm

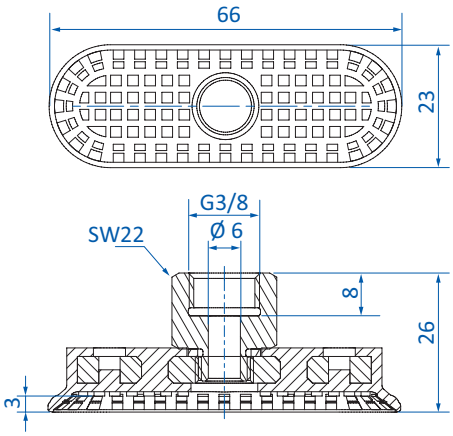
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.147._*	NBR (bl)	3 mm

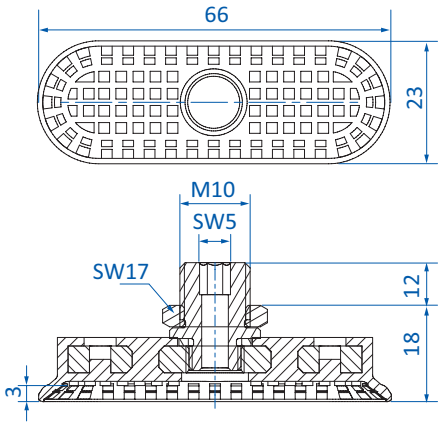
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.148._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.



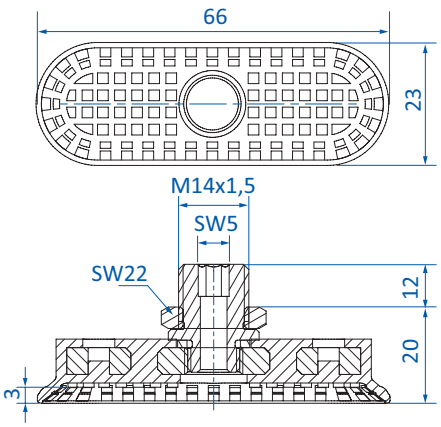
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.149._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.

*** When ordering please add the appropriate material code to item no.**

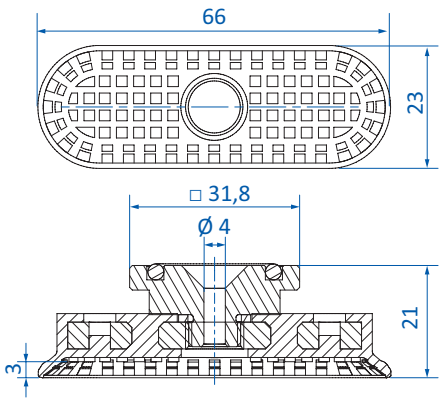
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.150._*	NBR (bl)	3 mm

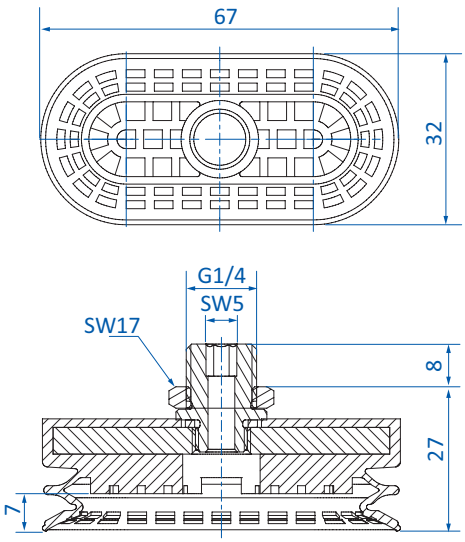
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.65x20.151._*	NBR (bl)	3 mm

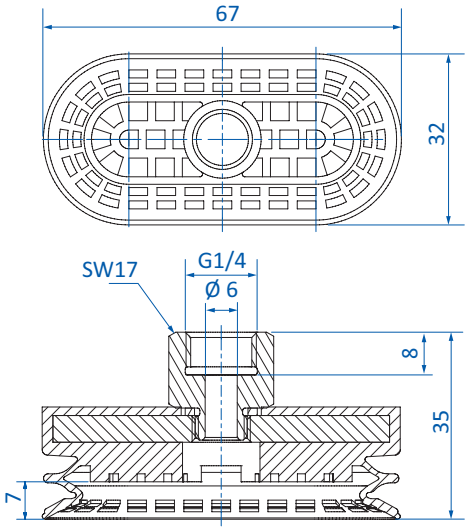
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.023._*	NBR (bl)	7 mm

Details and additional sizes available are found on p. 324.

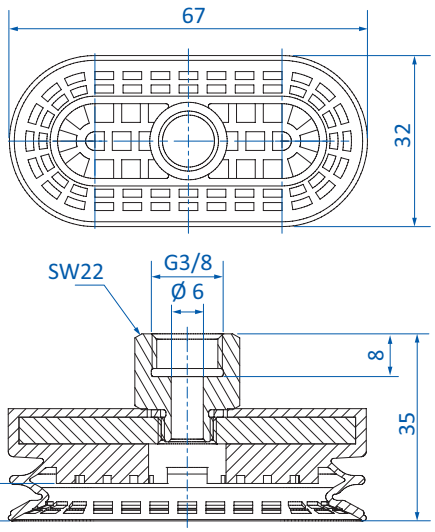


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.024._*	NBR (bl)	7 mm

Details and additional sizes available are found on p. 324.

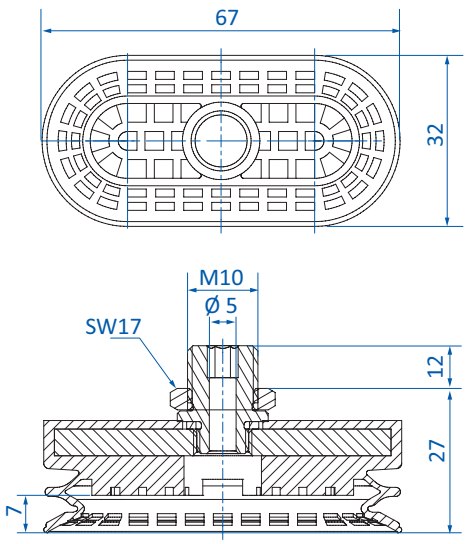
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.025._*	NBR (bl)	7 mm

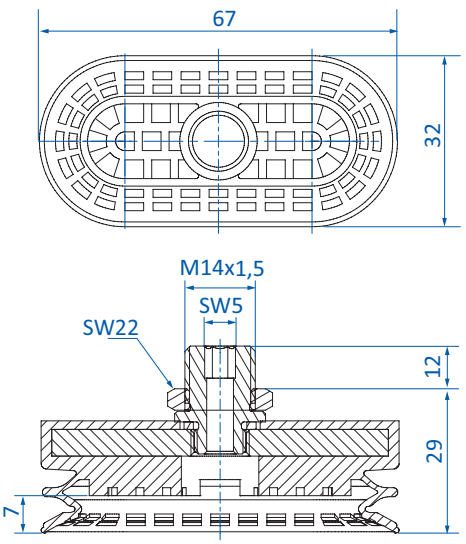
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.026._*	NBR (bl)	7 mm

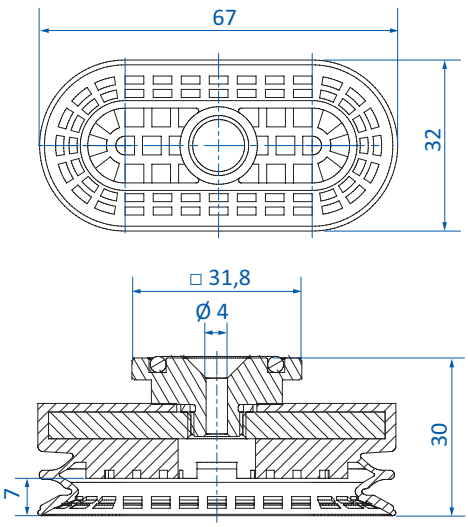
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.027._*	NBR (bl)	7 mm

Details and additional sizes available are found on p. 324.



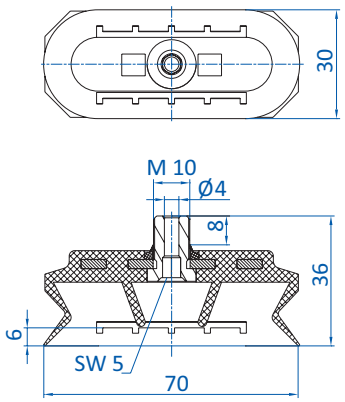
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.65x30.028._*	NBR (bl)	7 mm

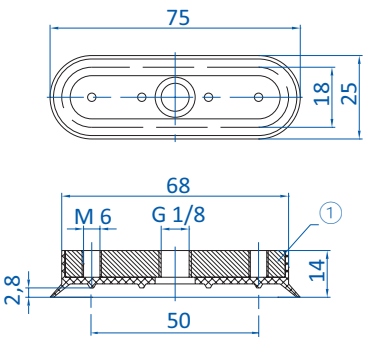
Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size

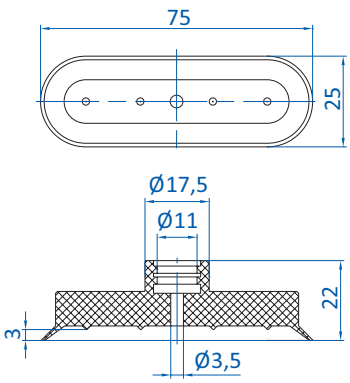


Item no.	Material	
130.70x30.095._*	NBR (sw)	8 mm



① = Aluminum

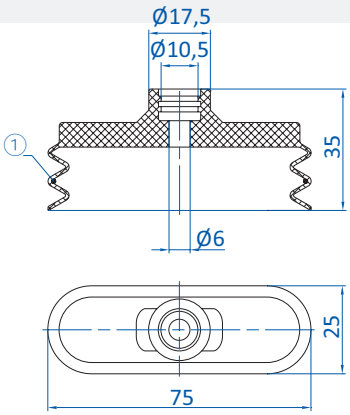
Item no.	Material	
130.75x25.080._*	NBR (sw), SI (r)	3 mm



	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
132.75x25.023._*	NBR (sw), SI (tr)	3 mm

Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.

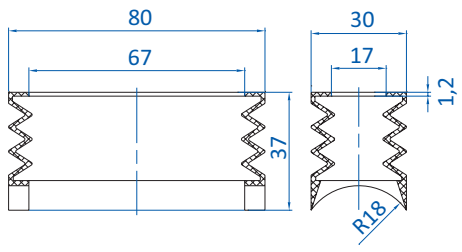


① = Wire strap stiffening

	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

Item no.	Material	
138.75x25.004._*	NBR (gr), SI (tr)	11 mm

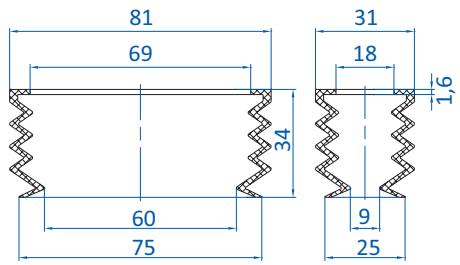
Details and additional sizes available are found on p. 311.
Ordering notes Use of a gripper clamp (available separately) recommended.



	Connection	
270.392	G1/4-female	--

Item no.	Material	
201.79x29.002._*	SI (tr), SI (tr) vers	16 mm

Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement

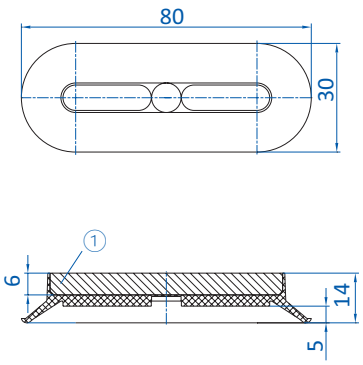


	Connection	
270.392	G1/4-female	--

Item no.	Material	
209.80x30.003._*	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers	20 mm

Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement

*** When ordering please add the appropriate material code to item no.**

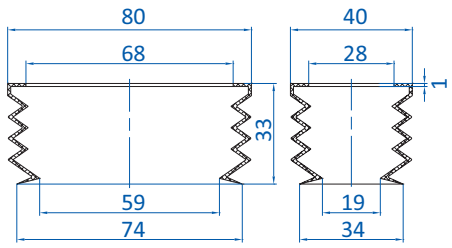


① = Aluminum

Item no.	Material	
9.80x30.004._*	NR (br)	5 mm

Ordering notes Customized drilling patterns on request

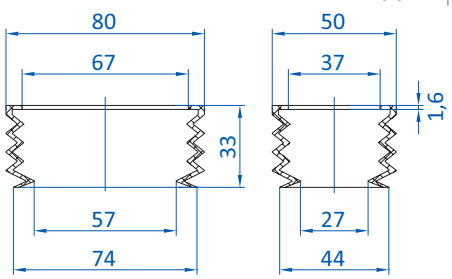
	Connection	
270.510	G1/4-female	--



Item no.	Material	
209.80x40.004._*	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers	20 mm

Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement

	Connection	
270.511	G1/4-female	--

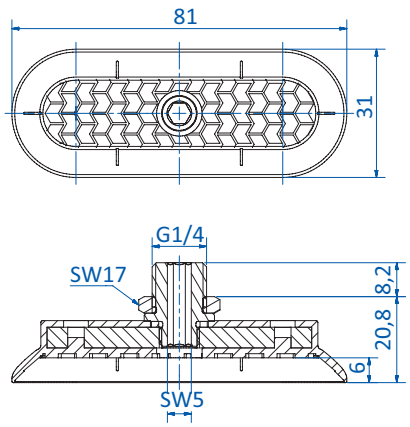


Item no.	Material	
209.80x50.005._*	SI (tr), SI-LE (tr), SI (tr) vers, SI-LE (tr) vers	20 mm

Details and additional sizes available are found on p. 318.
Ordering notes On request, available with wire reinforcement

*** When ordering please add the appropriate material code to item no.**

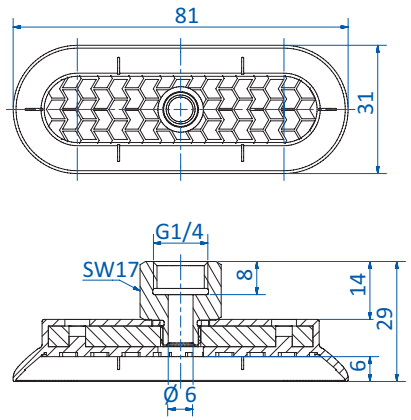
Oval vacuum cups by size



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.80x30.198._*	NBR (bl)	6 mm

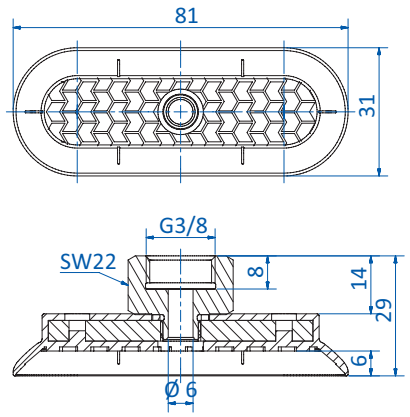
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.80x30.194._*	NBR (bl)	6 mm

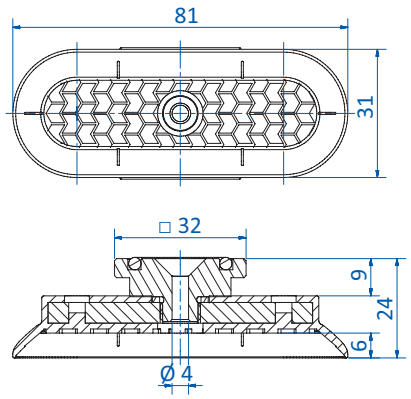
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.80x30.201._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 326.

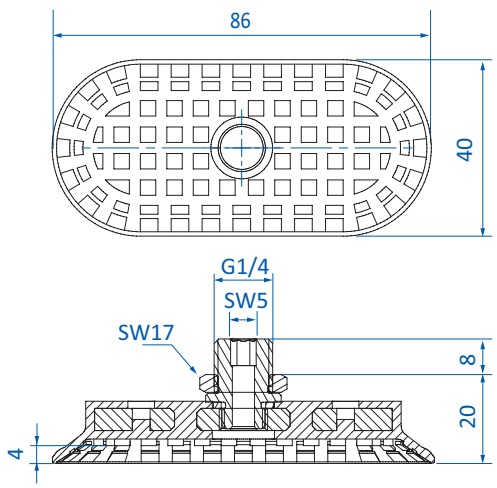


FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.80x30.204._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 326.

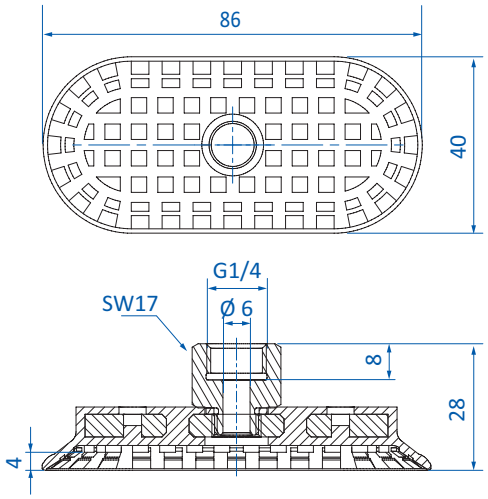
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.158._*	NBR (bl)	4 mm

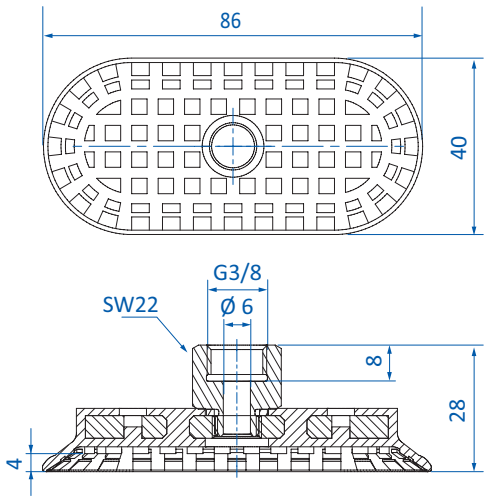
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.159._*	NBR (bl)	4 mm

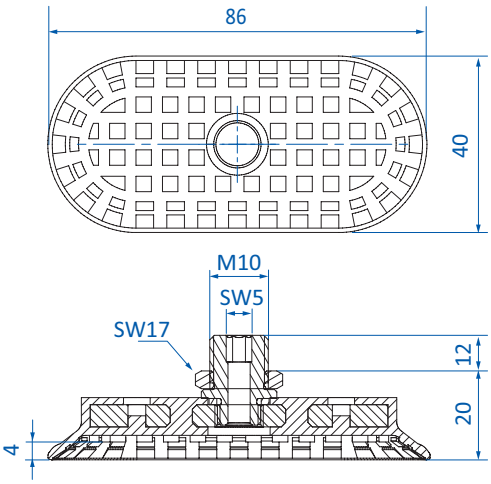
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.160._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 321.



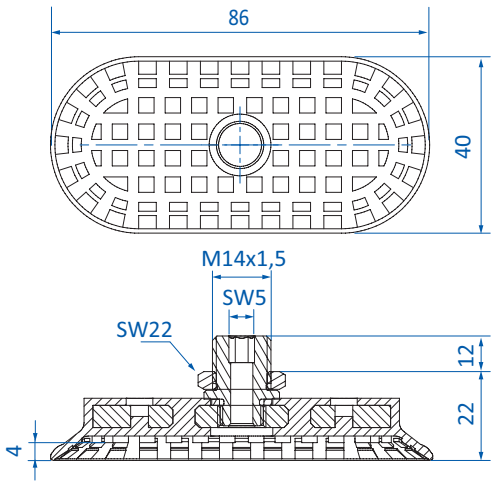
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.161._*	NBR (bl)	4 mm

Details and additional sizes available are found on p. 321.

*** When ordering please add the appropriate material code to item no.**

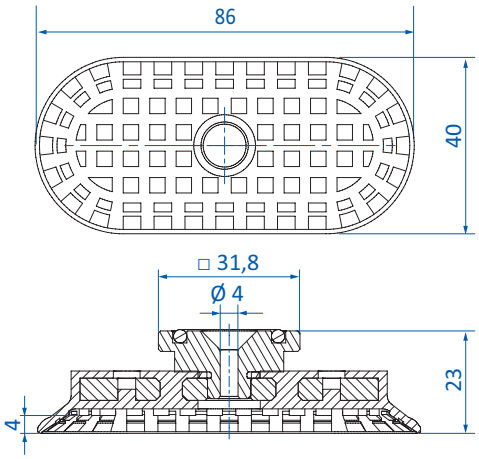
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.162._*	NBR (bl)	4 mm

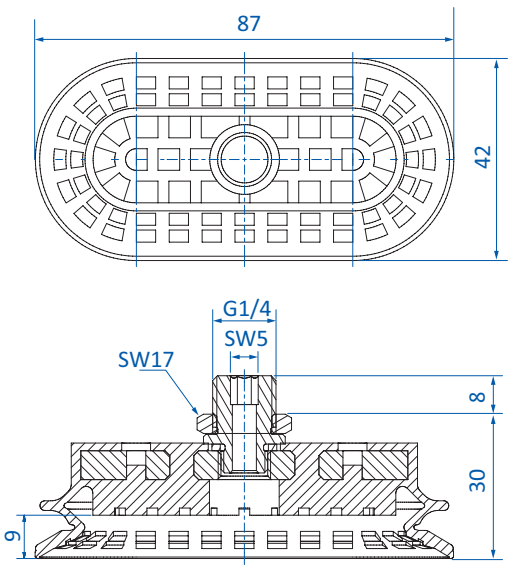
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.85x40.163._*	NBR (bl)	4 mm

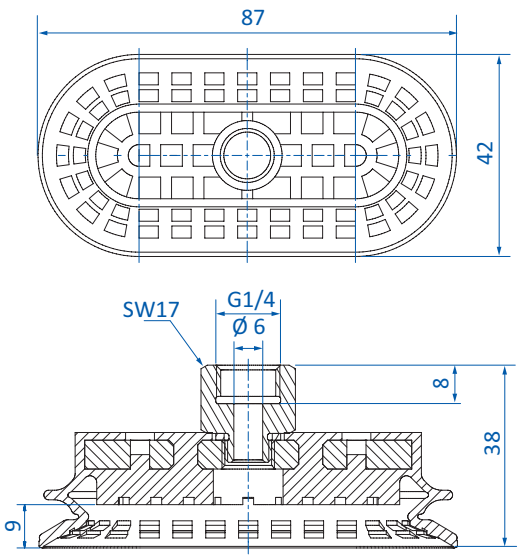
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.029._*	NBR (bl)	9 mm

Details and additional sizes available are found on p. 324.

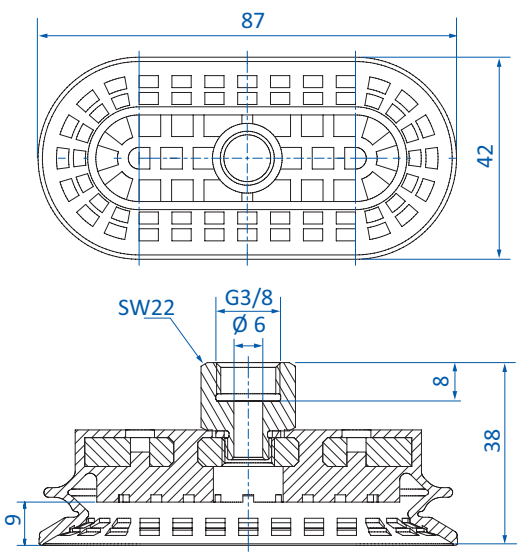


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.030._*	NBR (bl)	9 mm

Details and additional sizes available are found on p. 324.

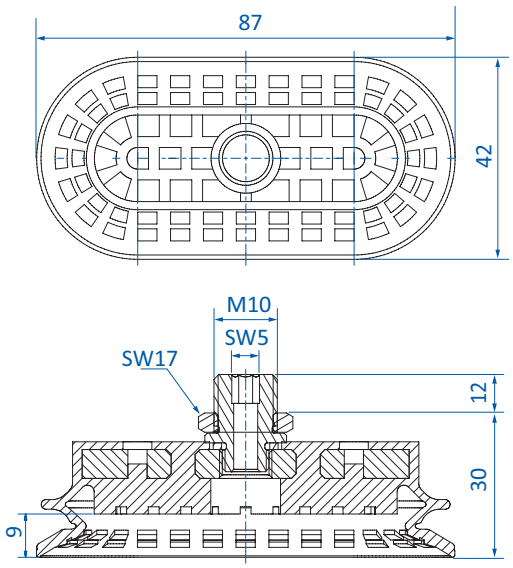
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.031._*	NBR (bl)	9 mm

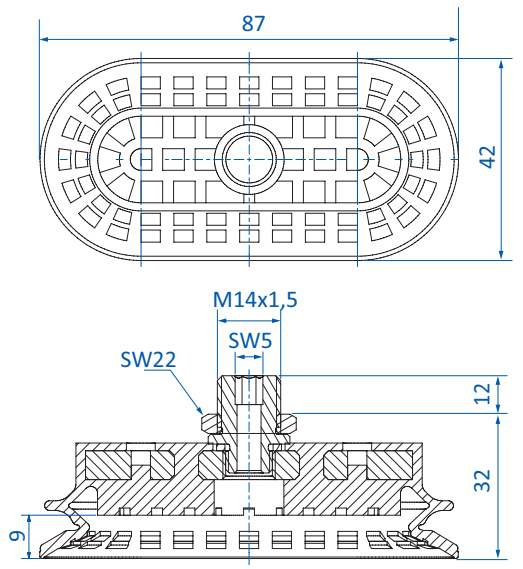
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.032._*	NBR (bl)	9 mm

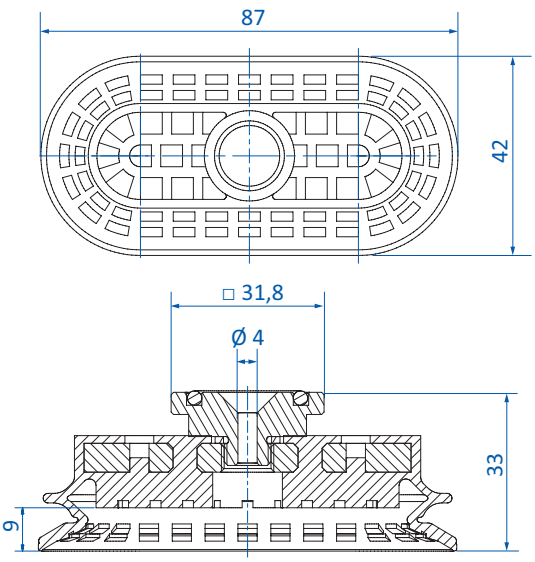
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.033._*	NBR (bl)	9 mm

Details and additional sizes available are found on p. 324.



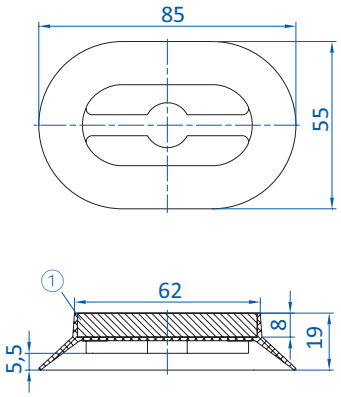
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.85x40.034._*	NBR (bl)	9 mm

Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**

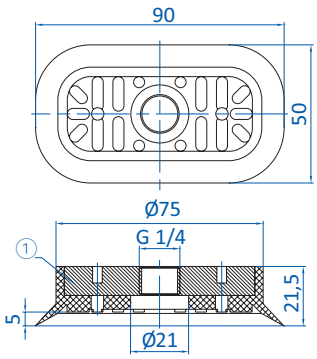
Oval vacuum cups by size



① = Aluminum

Item no.	Material	
9.85x55.006._*	NBR (gr), NR (bg)	7 mm

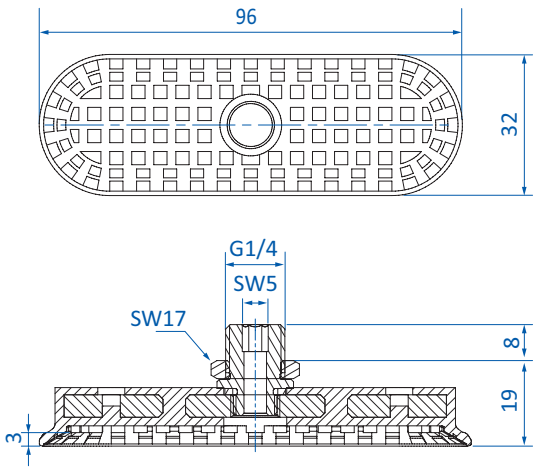
Ordering notes Customized drilling patterns on request



① = Aluminum

Item no.	Material	
130.90x50.113.4	NR (bg)	5 mm

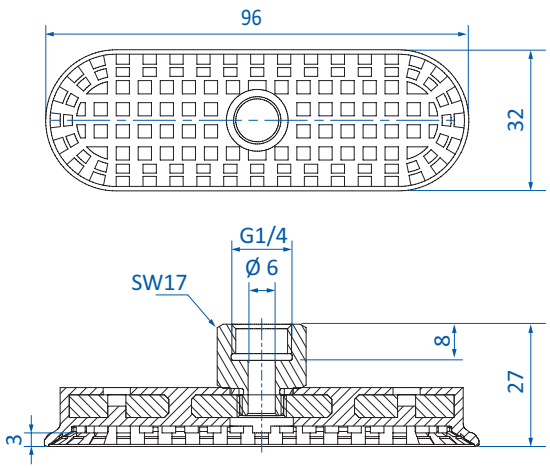
Details and additional sizes available are found on p. 334.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.152._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.

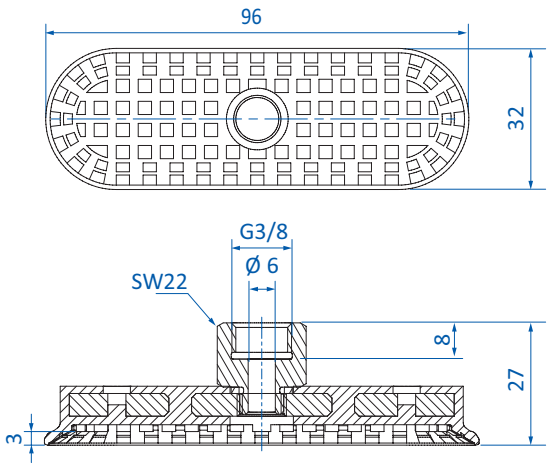


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.153._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.

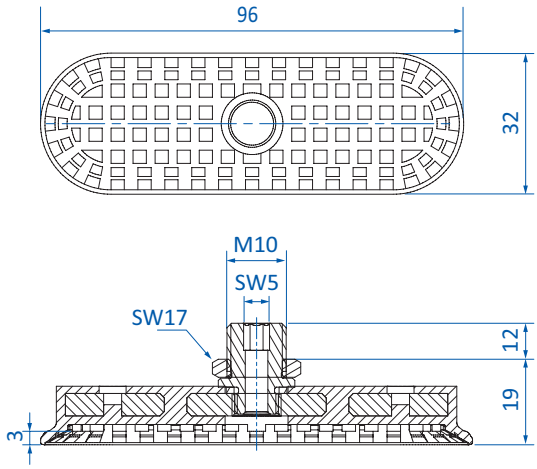
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.154._*	NBR (bl)	3 mm

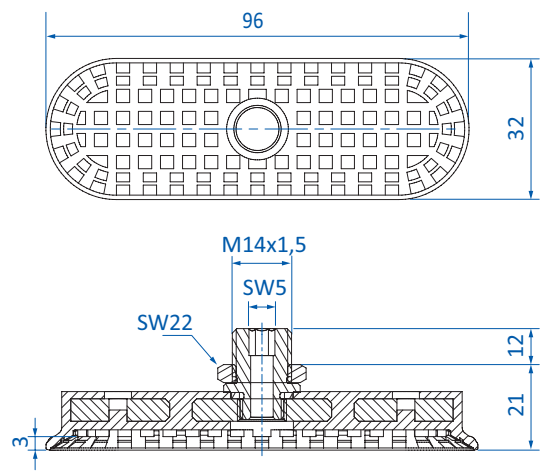
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.155._*	NBR (bl)	3 mm

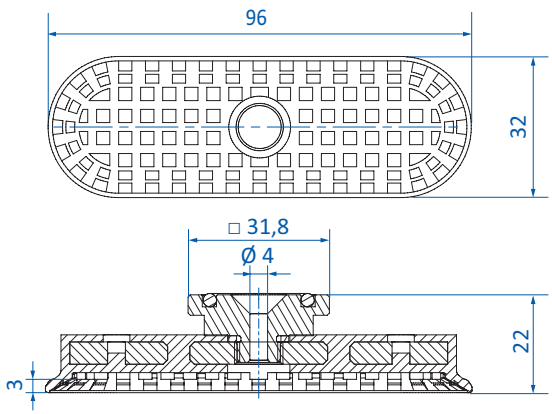
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.156._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.



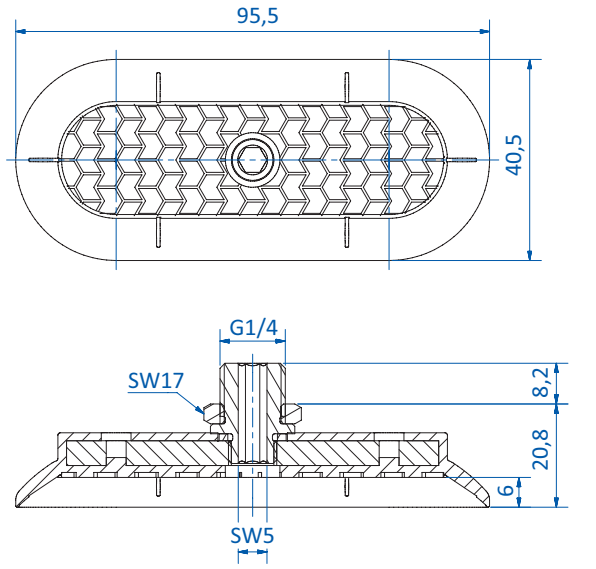
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.95x30.157._*	NBR (bl)	3 mm

Details and additional sizes available are found on p. 321.

*** When ordering please add the appropriate material code to item no.**

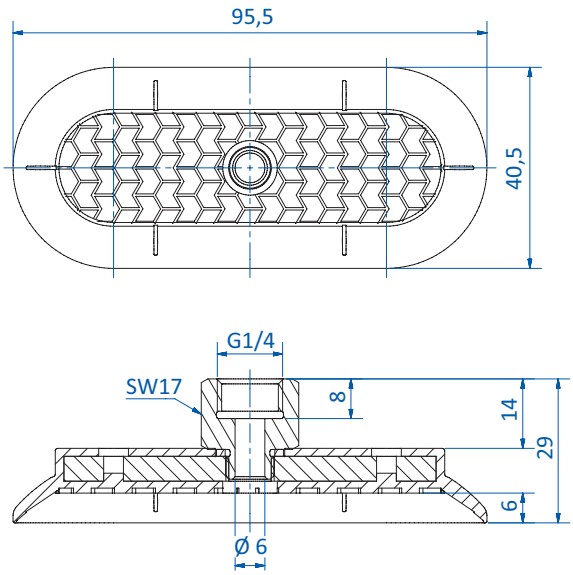
Oval vacuum cups by size



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.95x40.199._*	NBR (bl)	6 mm

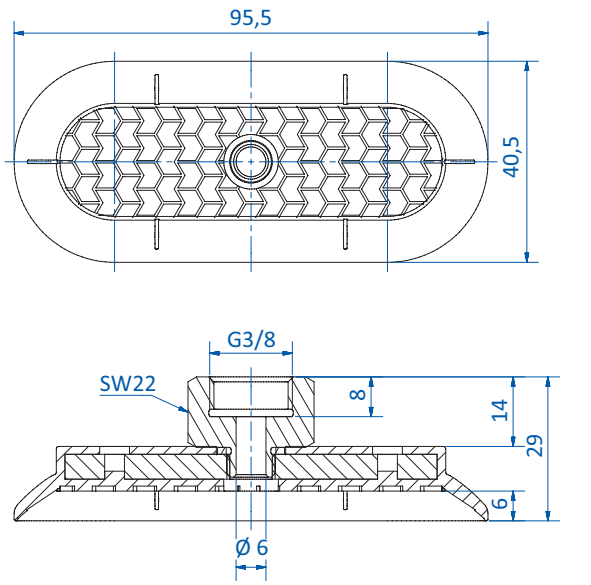
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.95x40.196._*	NBR (bl)	6 mm

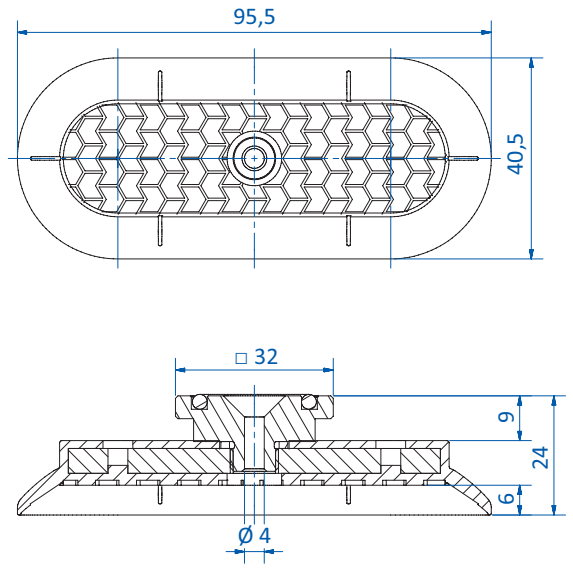
Details and additional sizes available are found on p. 326.



FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.95x40.202._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 326.

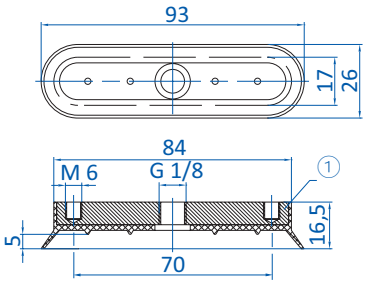


FOR STRONGLY CURVED METAL SHEETS

Item no.	Material	
130.95x40.205._*	NBR (bl)	6 mm

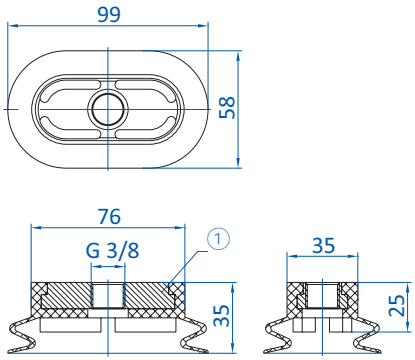
Details and additional sizes available are found on p. 326.

*** When ordering please add the appropriate material code to item no.**



① = Aluminum

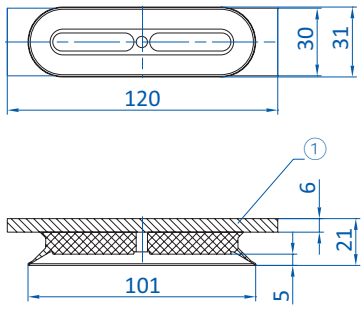
Item no.	Material	
130.96x27.036._*	SI (r)	6 mm



① = Aluminum

Item no.	Material	
130.97x55.126._*	Vinyl (bl)	11 mm

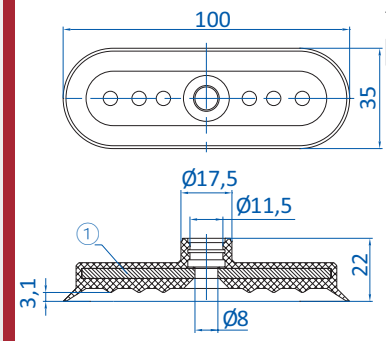
Details and additional sizes available are found on p. 316.



① = Steel

Item no.	Material	
9.100x30.007._*	NBR (gr)	5 mm

Ordering notes Customized drilling patterns on request

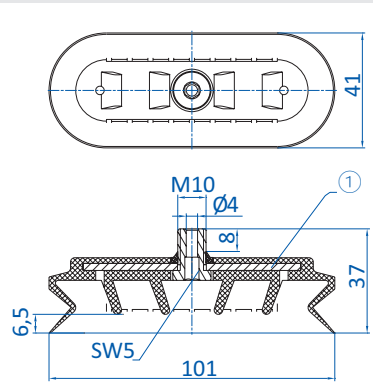


	Connection	
270.097	G1/4-male	--
270.098	G1/4-female	--

① = Aluminum

Item no.	Material	
132.100x35.26._*	NBR (sw)	3 mm

Details and additional sizes available are found on p. 308.
Ordering notes Use of a gripper clamp (available separately) recommended.

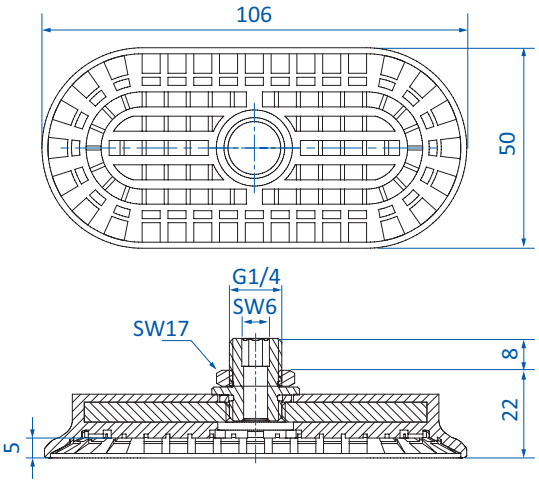


① = Steel

Item no.	Material	
130.100x40.096._*	NBR (sw)	8 mm

*** When ordering please add the appropriate material code to item no.**

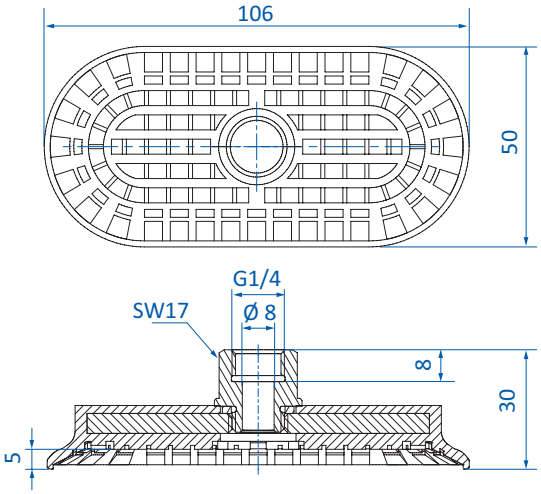
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.164._*	NBR (bl)	5 mm

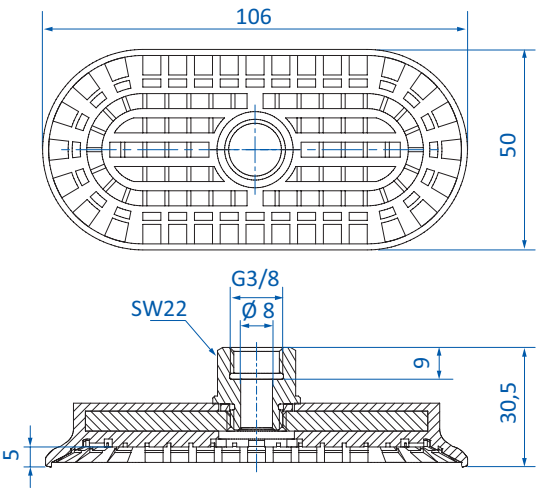
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.165._*	NBR (bl)	5 mm

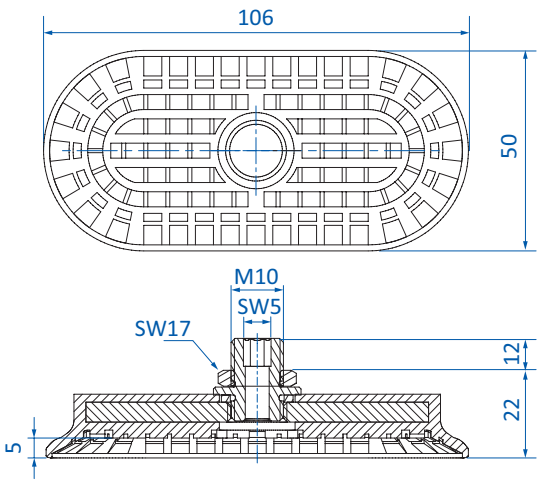
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.166._*	NBR (bl)	5 mm

Details and additional sizes available are found on p. 321.

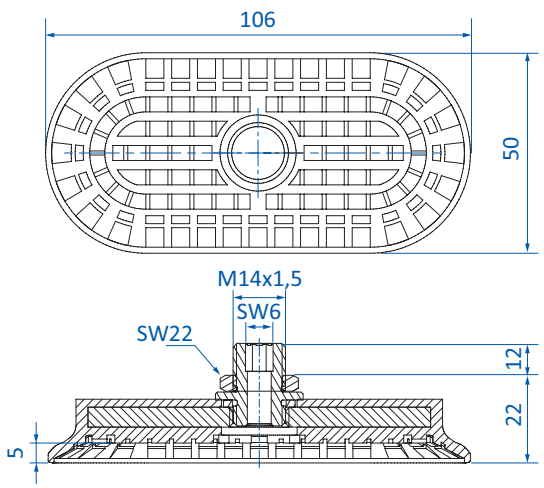


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.167._*	NBR (bl)	5 mm

Details and additional sizes available are found on p. 321.

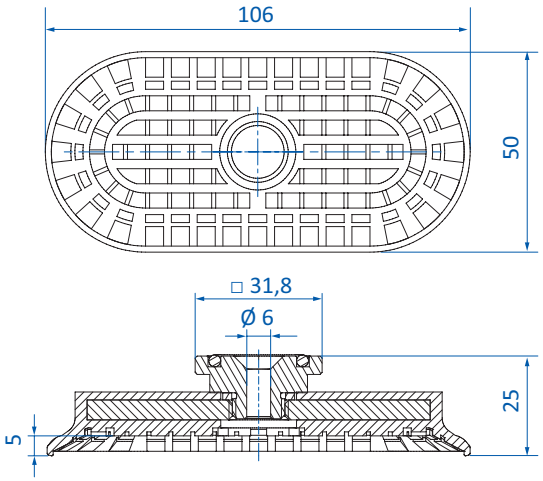
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.168._*	NBR (bl)	5 mm

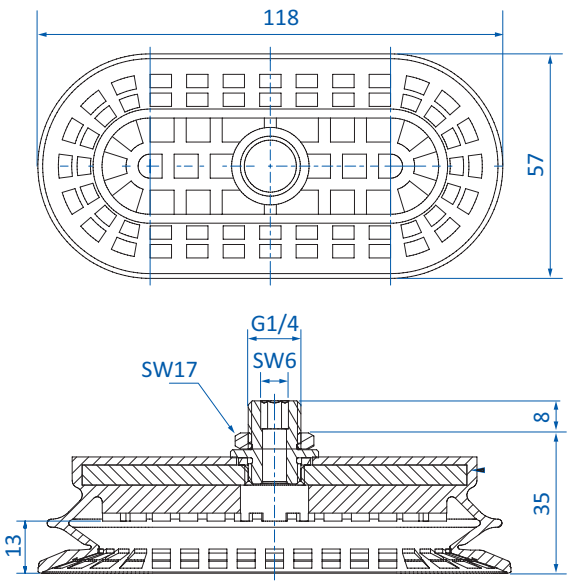
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.105x50.169._*	NBR (bl)	5 mm

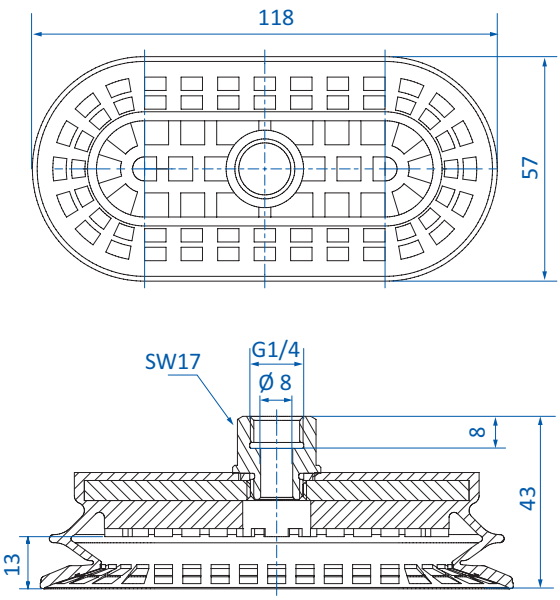
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.035._*	NBR (bl)	13 mm

Details and additional sizes available are found on p. 324.



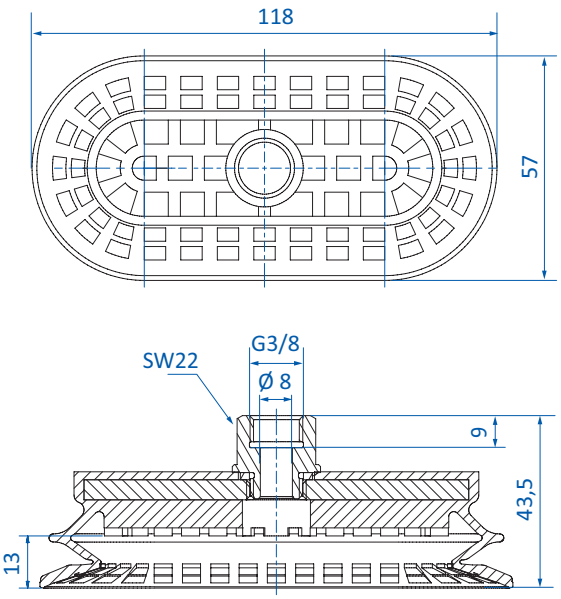
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.036._*	NBR (bl)	13 mm

Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**

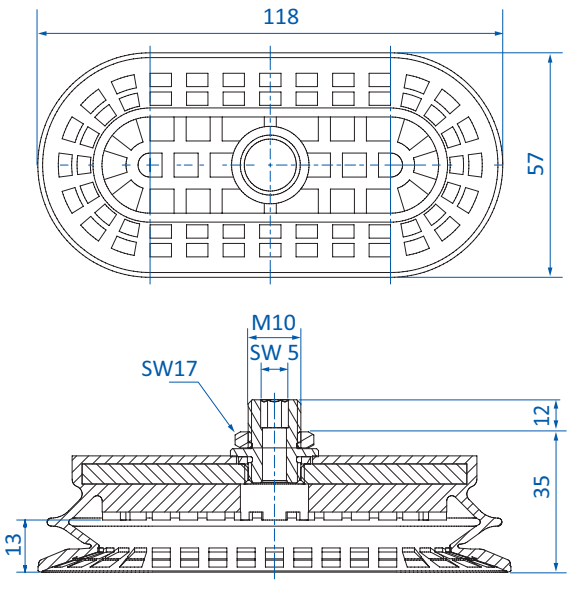
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.037._*	NBR (bl)	13 mm

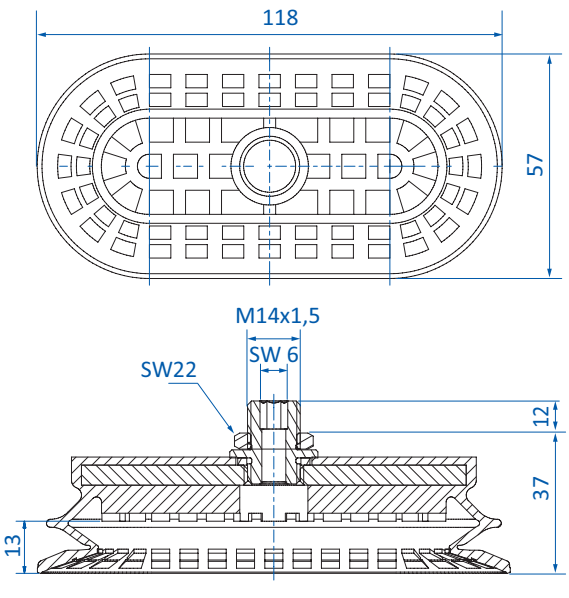
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.038._*	NBR (bl)	13 mm

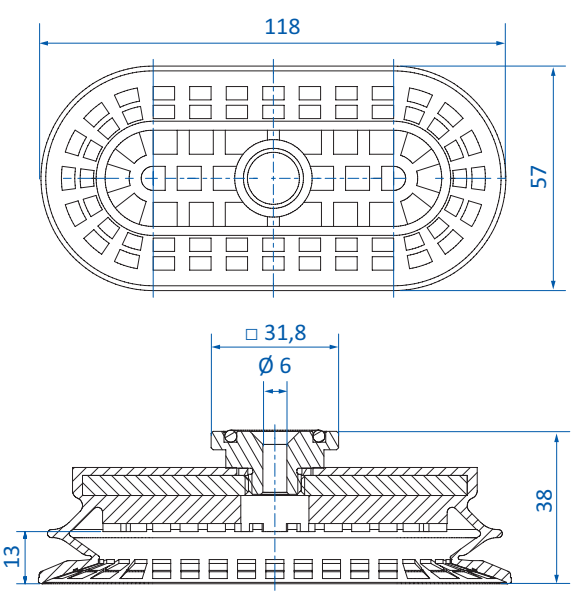
Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.039._*	NBR (bl)	13 mm

Details and additional sizes available are found on p. 324.

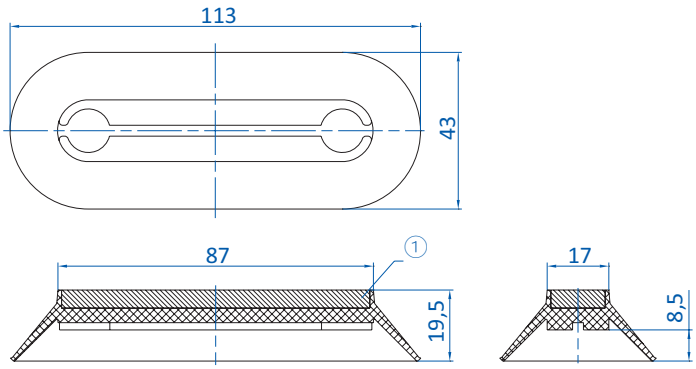


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
138.115x55.040._*	NBR (bl)	13 mm

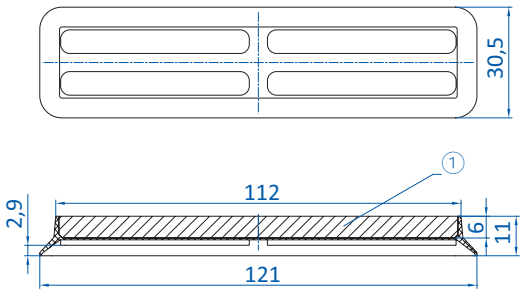
Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**



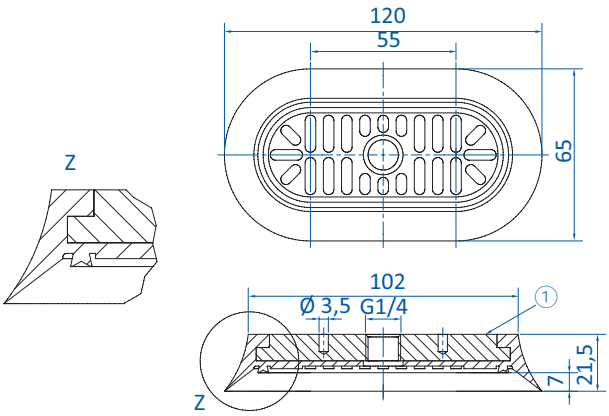
① = Steel

Item no.	Material		
9.110x40.009.1	NBR (gr), NR (br)	9 mm	Details and additional sizes available are found on p. 336.



① = Steel

Item no.	Material		
9.120x30.062._*	NBR (gr)	3 mm	**Ordering notes** Customized drilling patterns on request

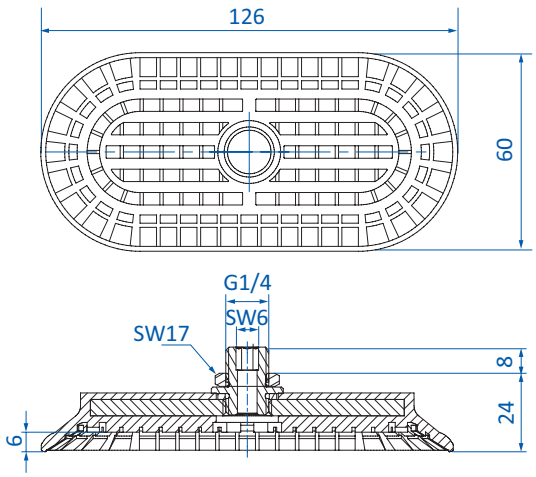


① = Aluminum

Item no.	Material		
9.120x65.088.4	NR (bg)	7 mm	Details and additional sizes available are found on p. 334.

*** When ordering please add the appropriate material code to item no.**

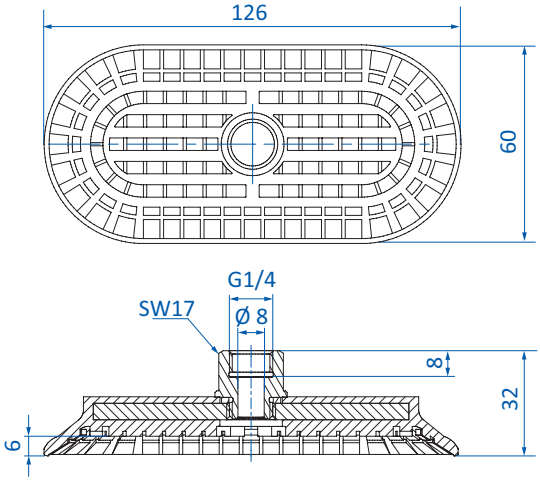
Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.170._*	NBR (bl)	6 mm

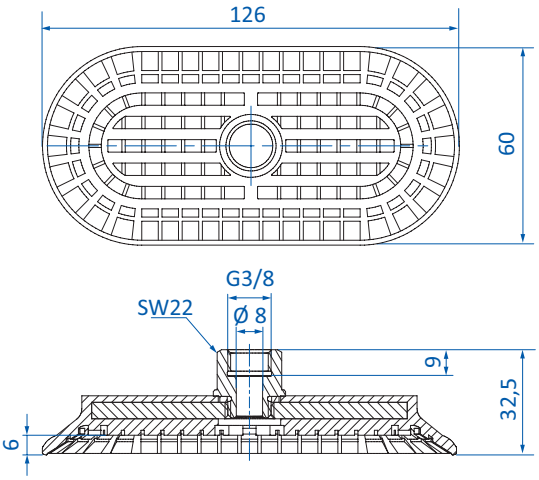
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.171._*	NBR (bl)	6 mm

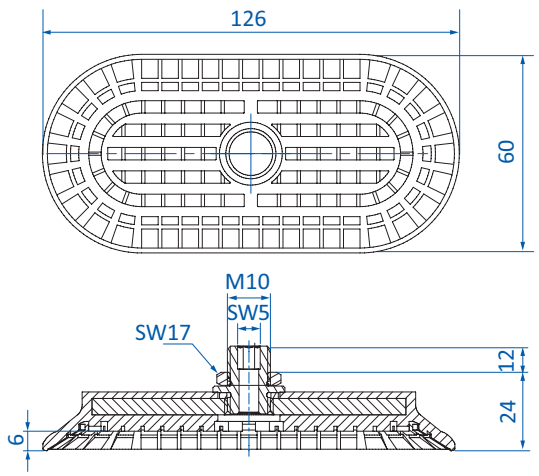
Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.172._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 321.

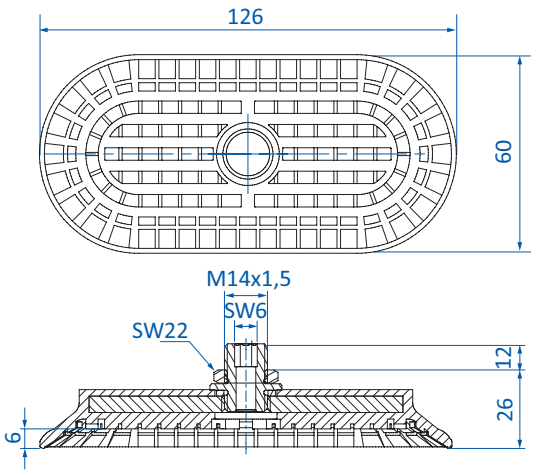


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.173._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 321.

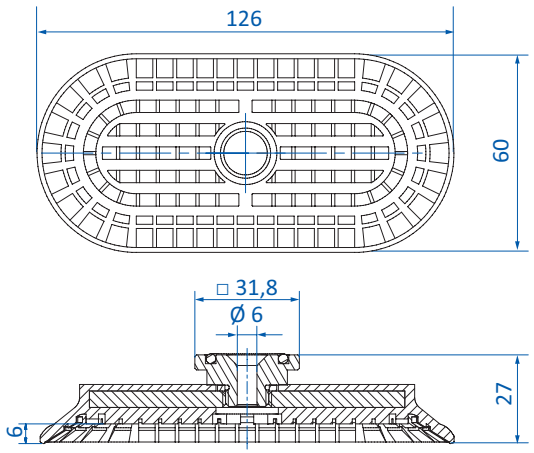
*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.174._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 321.



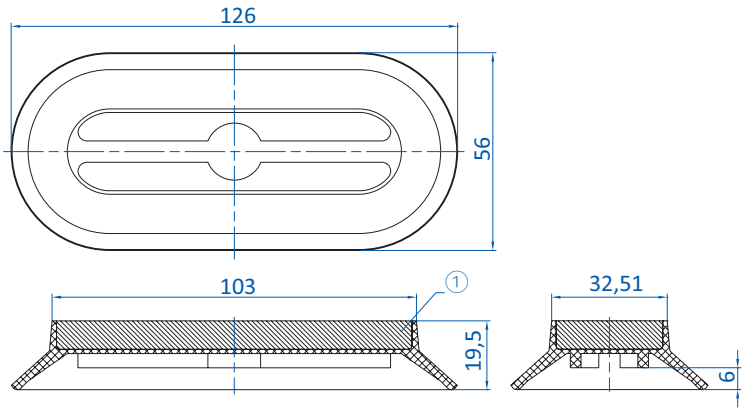
PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material	
130.125x60.175._*	NBR (bl)	6 mm

Details and additional sizes available are found on p. 321.

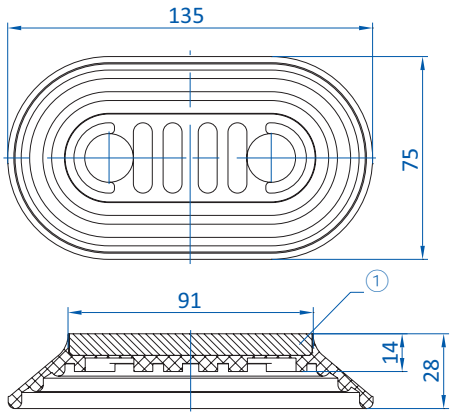
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



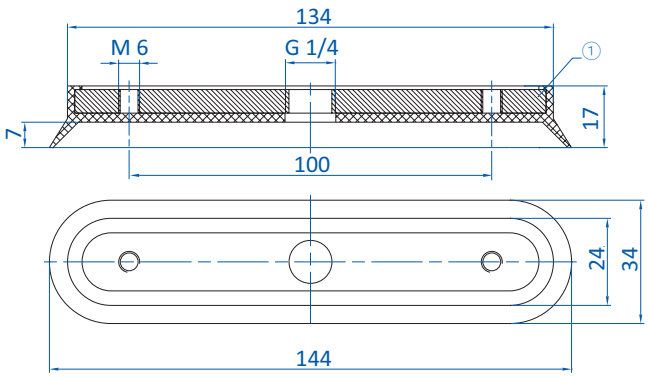
① = Steel

Item no.	Material		
9.125x55.012.1	NBR (gr), NR (br)	9 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request



① = Steel

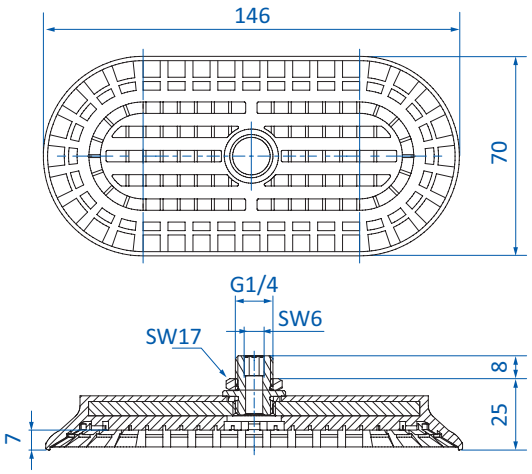
Item no.	Material		
9.135x75.066._*	SBR (sw)	12 mm	**Ordering notes** Customized drilling patterns on request **Notes:** Especially well-suited for rough surfaces



① = Aluminum

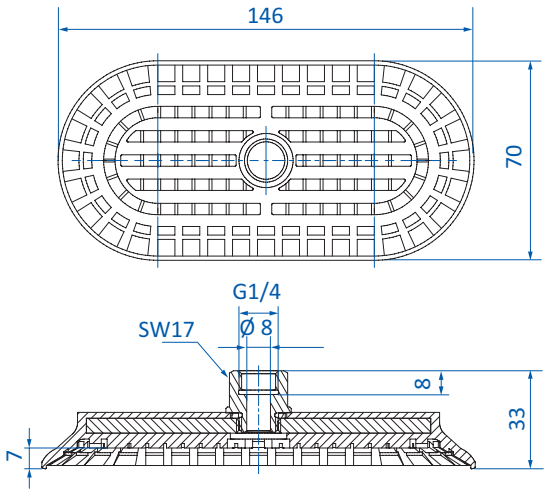
Item no.	Material		
130.145x34.55._*	NBR (sw), SI (r)	7 mm	

*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
130.145x70.176._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.

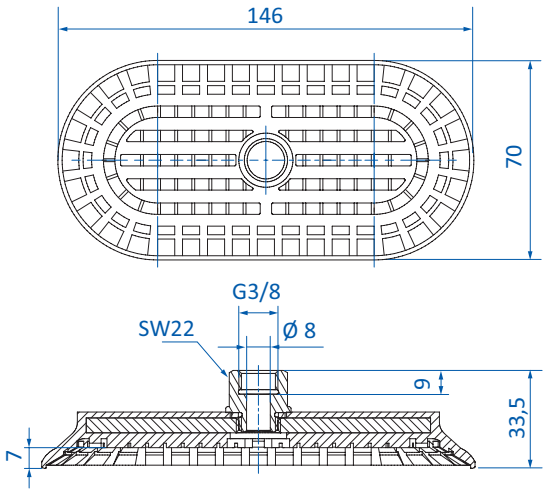


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
130.145x70.177._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.

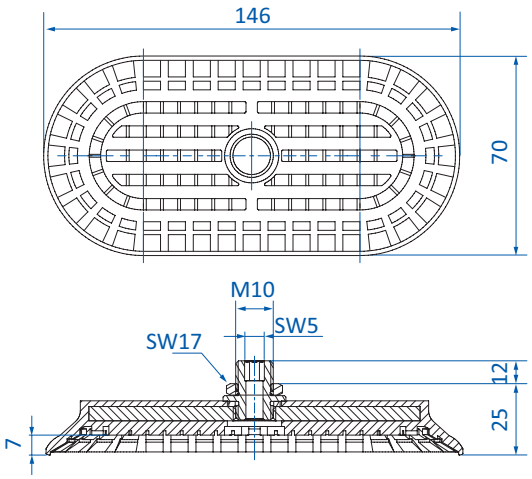
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

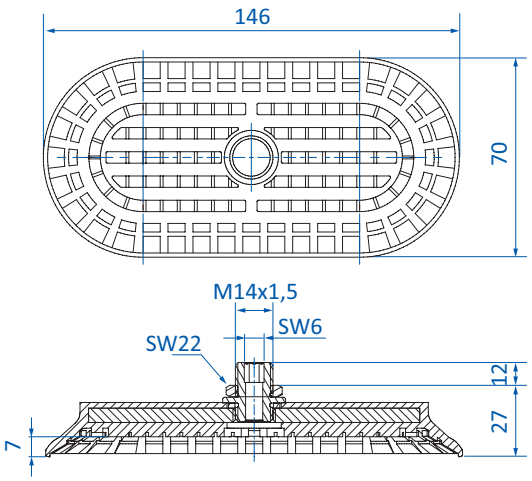
Item no.	Material		
130.145x70.178._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

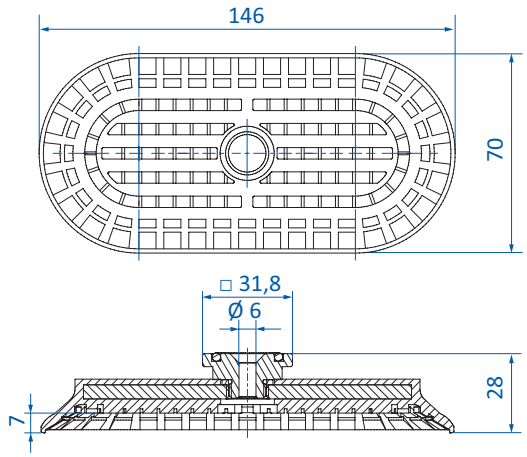
Item no.	Material		
130.145x70.179._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.

*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
130.145x70.180._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.

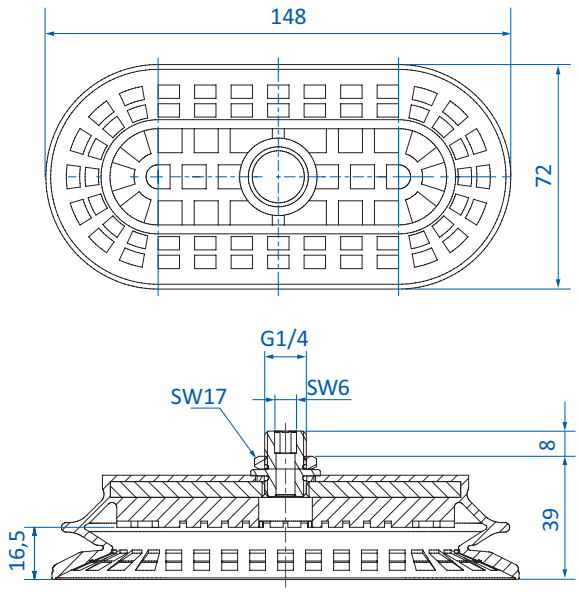


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
130.145x70.181._*	NBR (bl)	7 mm	Details and additional sizes available are found on p. 321.

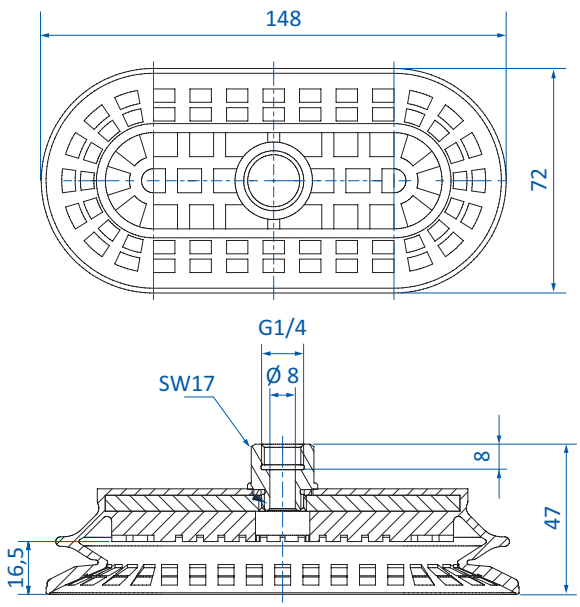
* When ordering please add the appropriate material code to item no.

Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

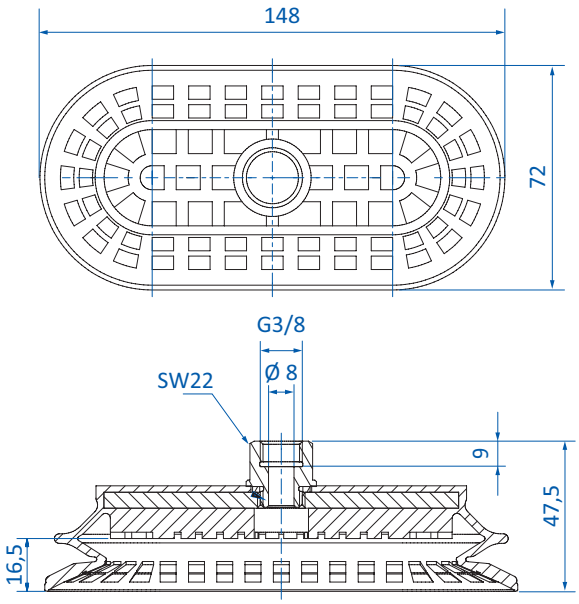
Item no.	Material		
138.145x70.041._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

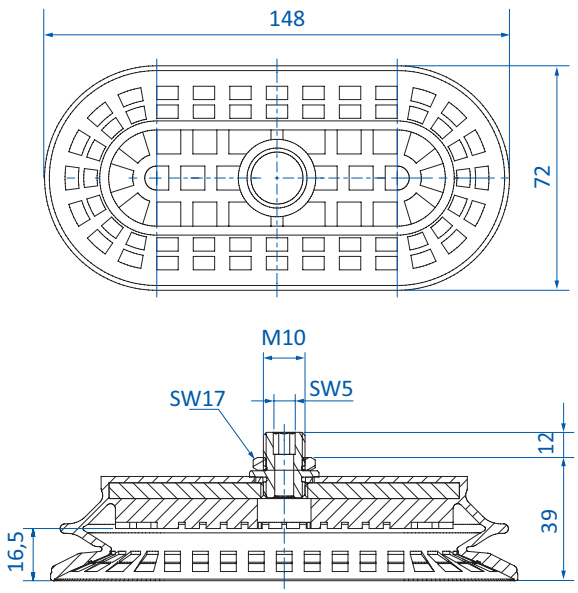
Item no.	Material		
138.145x70.042._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**



PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
138.145x70.043._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.

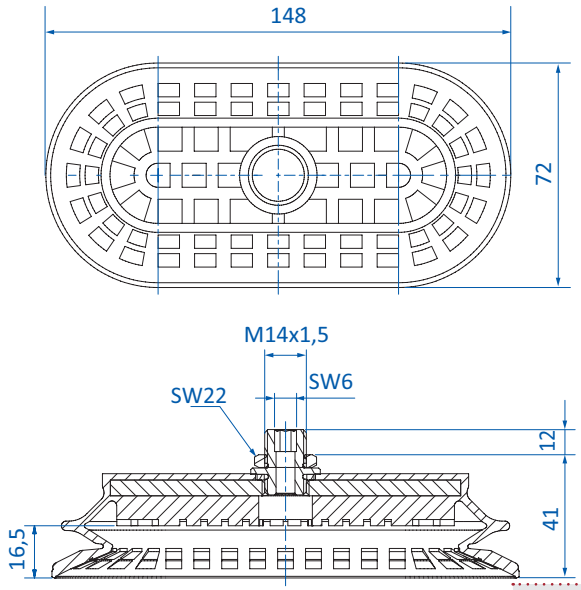


PARTICULARLY SUITABLE FOR OILY SHEET METAL

Item no.	Material		
138.145x70.044._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.

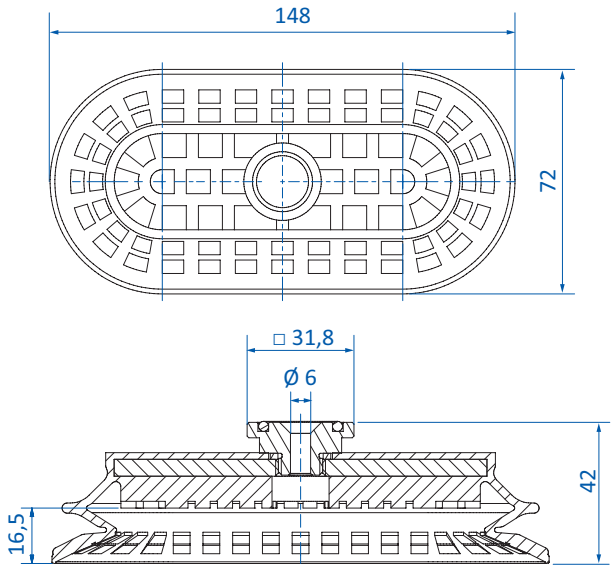
* When ordering please add the appropriate material code to item no.

Oval vacuum cups by size



PARTICULARLY SUITABLE FOR OILY SHEET METAL

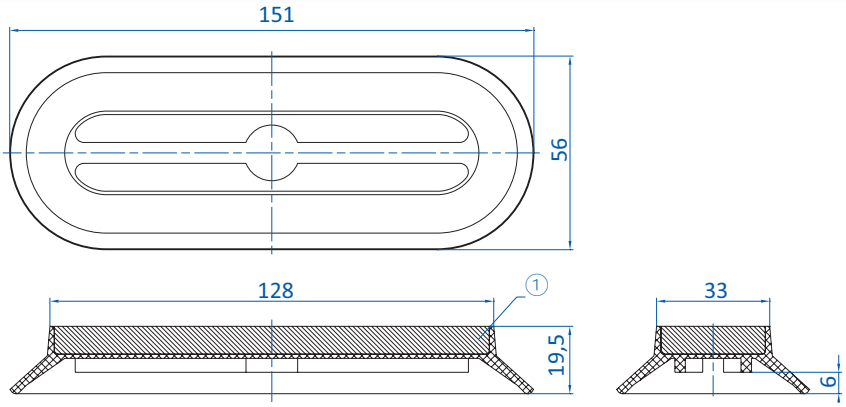
Item no.	Material		
138.145x70.045._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.



PARTICULARLY SUITABLE FOR OILY SHEET METAL

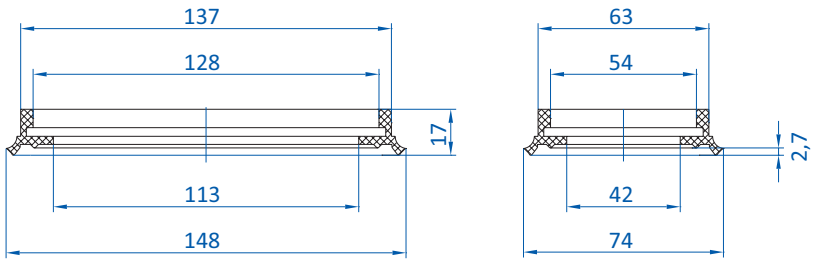
Item no.	Material		
138.145x70.046._*	NBR (bl)	16.5 mm	Details and additional sizes available are found on p. 324.

*** When ordering please add the appropriate material code to item no.**

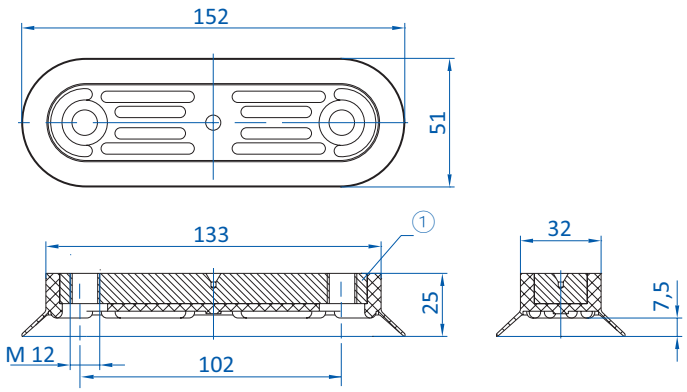


① = Steel

Item no.	Material		
9.150x55.013.1	NBR (gr)	7 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request



Item no.	Material		
216.150x75.3._*	NBR (sw)	1.5 mm	

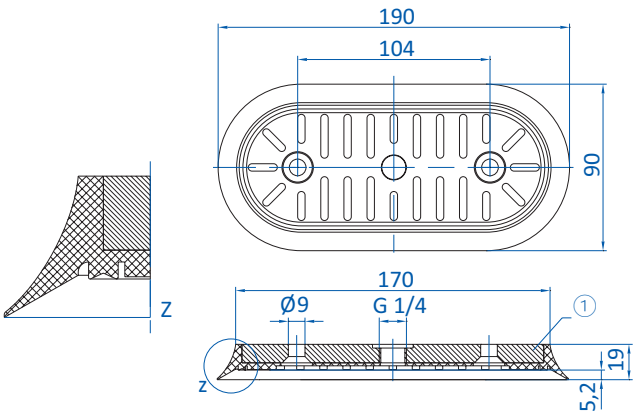


① = Aluminum

Item no.	Material		
130.152x51.092._*	Vinyl (bl)	7 mm	

*** When ordering please add the appropriate material code to item no.**

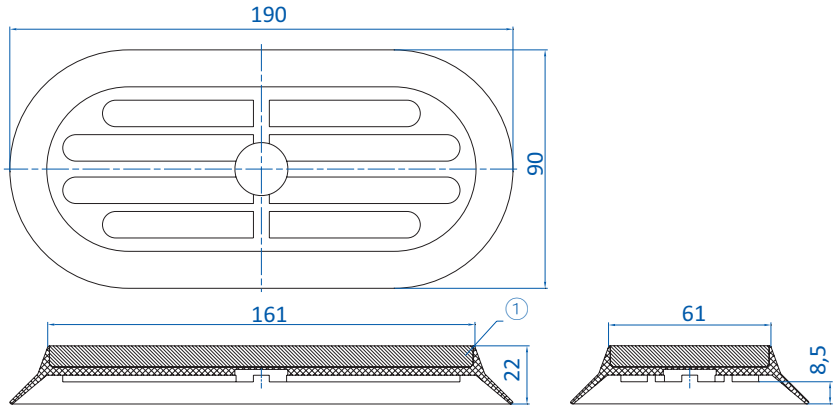
Oval vacuum cups by size



BESTSELLER

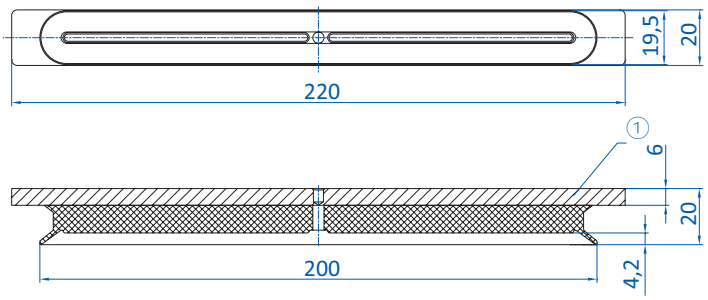
① = Aluminum

Item no.	Material		
9.190x90.061.4-AL	NR (bg)	5.5 mm	Details and additional sizes available are found on p. 334.



① = Steel

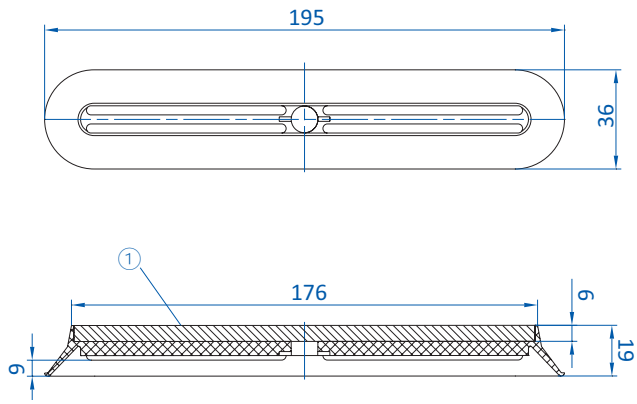
Item no.	Material		
9.200x100.015.1	NBR (gr), SBR (sw)	8 mm	Details and additional sizes available are found on p. 336.



① = Steel

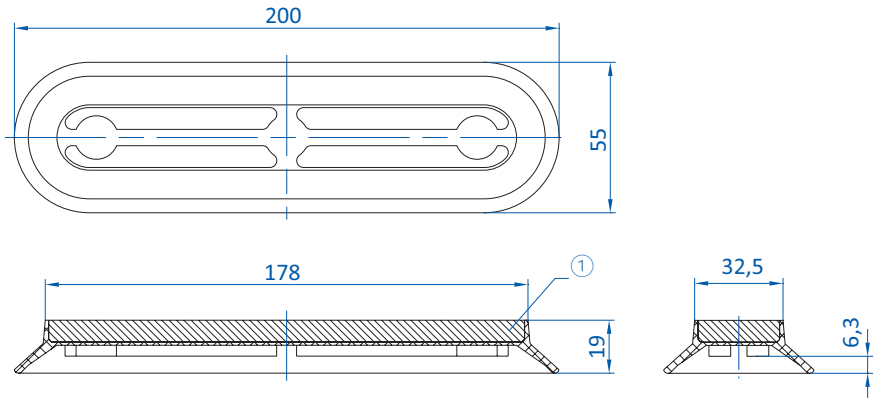
Item no.	Material		
9.200x20.063._*	NBR (gr)	5 mm	**Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**



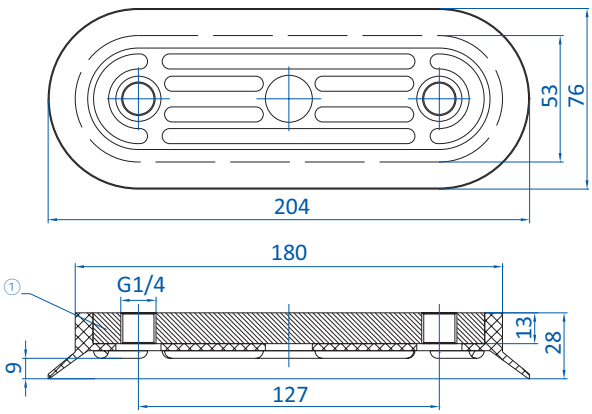
① = Steel

Item no.	Material		
9.200x40.010.1gr	**Material** SBR (br), NBR (gr)	9 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request



① = Steel

Item no.	Material		
9.200x55.014.1	**Material** NBR (gr)	7 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request

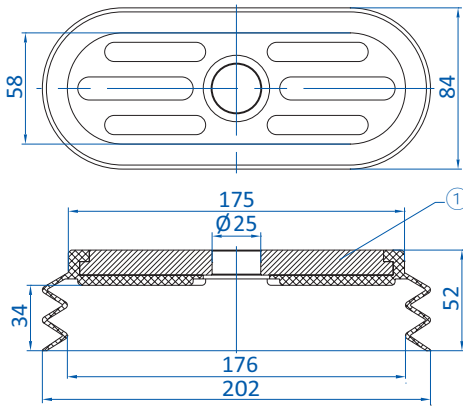


① = Aluminum

Item no.	Material		
130.204x76.86._*	**Material** Vinyl (bl)	8 mm	

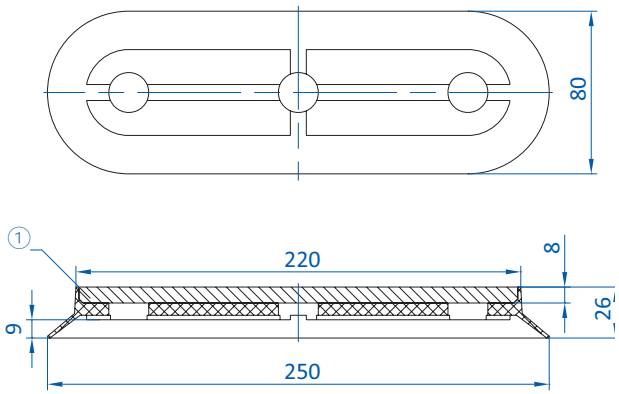
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



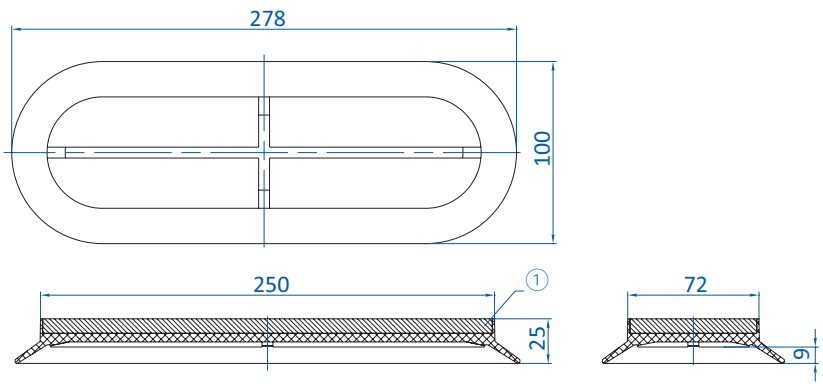
① = Aluminum

Item no.	Material		
137.205x82.1._*	Vinyl (bl)	25 mm	



① = Steel

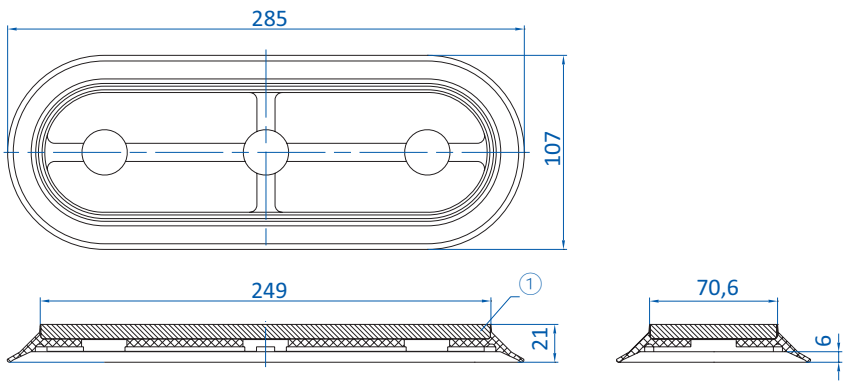
Item no.	Material		
9.250x80.033._*	NBR (gr), SBR (br)	10 mm	**Ordering notes** Customized drilling patterns on request



① = Steel

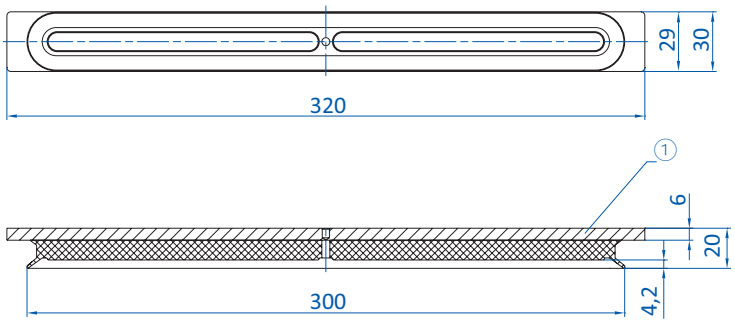
Item no.	Material		
9.280x100.017.1	NBR (gr)	10 mm	Details and additional sizes available are found on p. 336.

*** When ordering please add the appropriate material code to item no.**



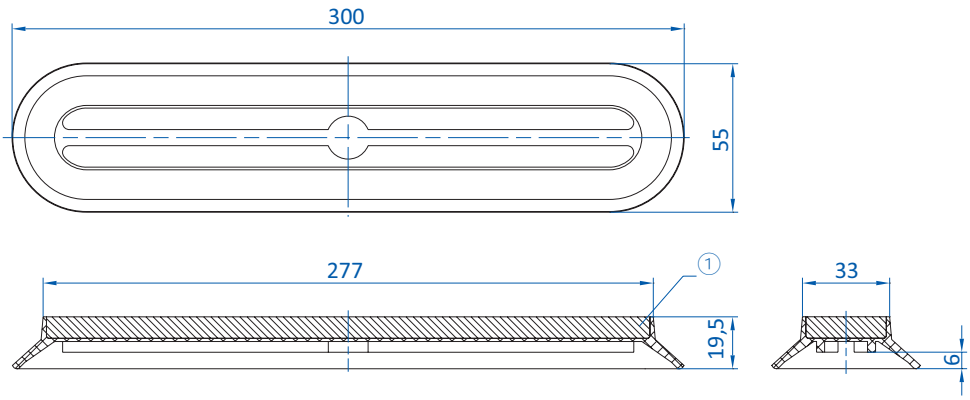
① = Steel

Item no.	Material		Ordering notes
9.280x107.070._*	SBR (br)	6 mm	Customized drilling patterns on request



① = Steel

Item no.	Material		Ordering notes
9.300x30.069._*	NBR (gr)	5 mm	Customized drilling patterns on request

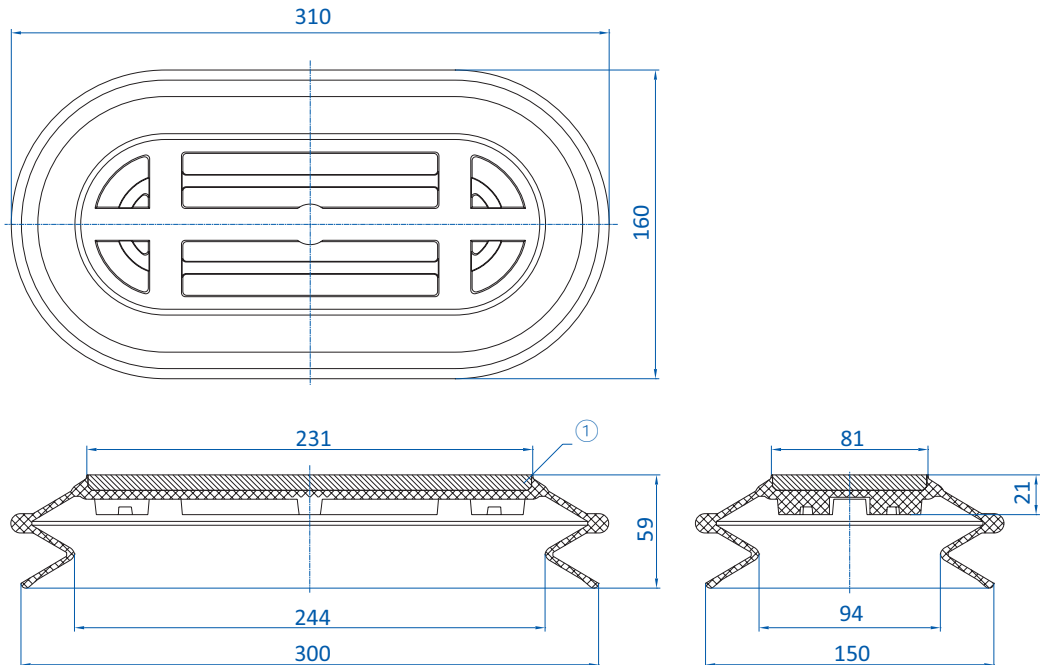


① = Steel

Item no.	Material		Ordering notes
9.300x55.019.1	NBR (gr)	8 mm	Details and additional sizes available are found on p. 336. Customized drilling patterns on request

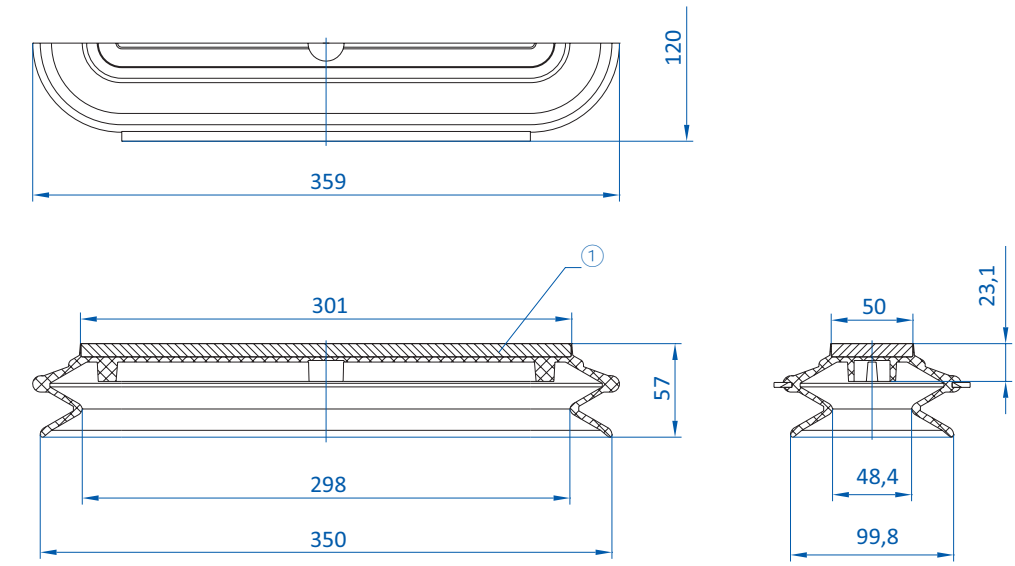
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



① = Steel

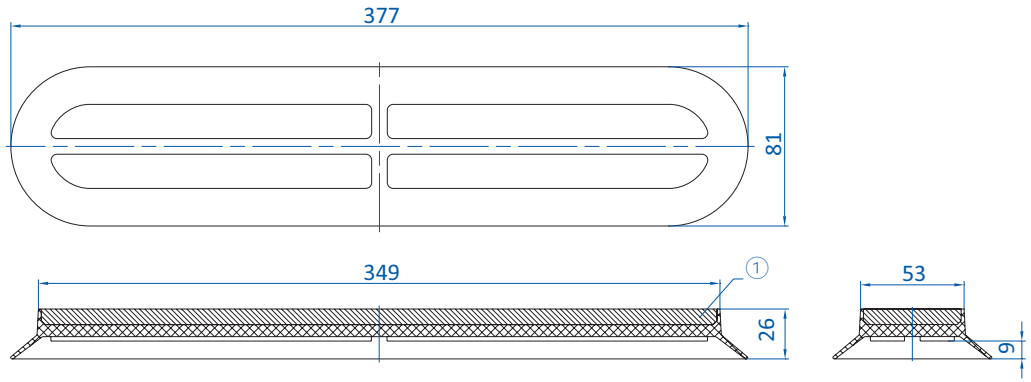
Item no.	Material		Ordering notes
138.300x150.007._*	NBR (gr)	39 mm	Customized drilling patterns on request



① = Steel

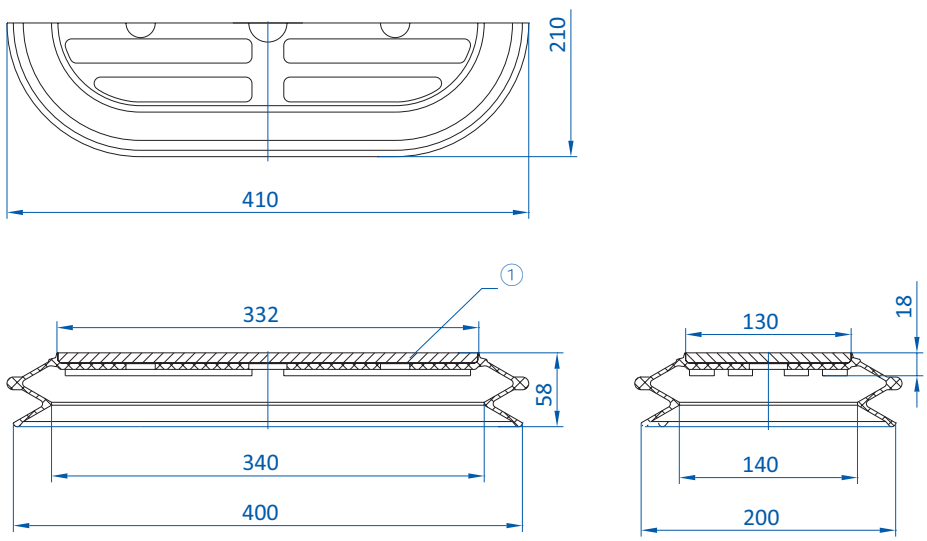
Item no.	Material		Ordering notes
138.350x100.009._*	NBR (gr)	39 mm	Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**



① = Steel

Item no.	Material		
9.370x70.022.1	NBR (gr), SBR (br)	10 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Version with aluminum carrier: 9.370x70.023._*

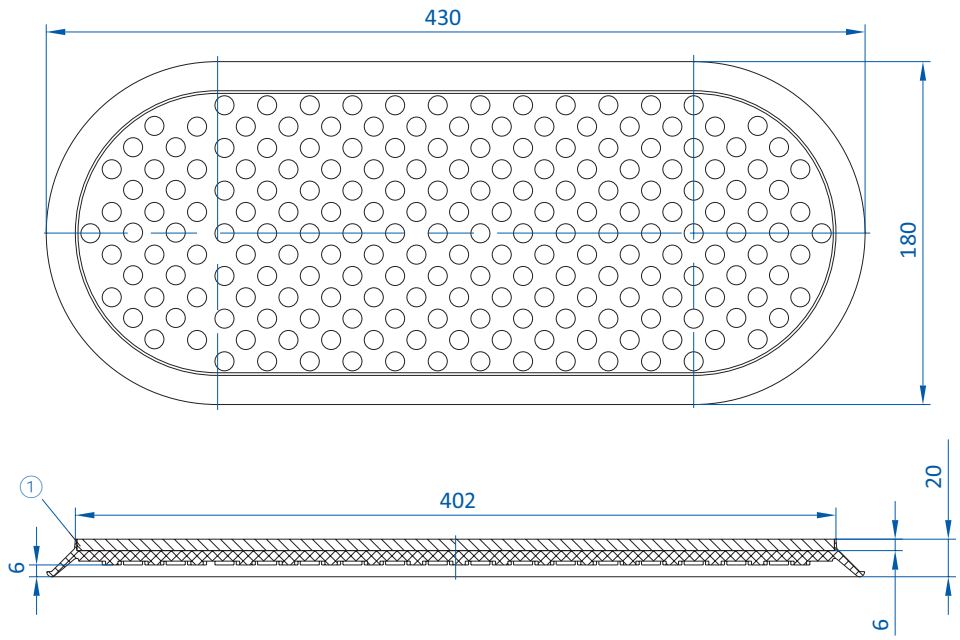


① = Steel

Item no.	Material		
138.400x200.011._*	NBR (gr)	39 mm	**Ordering notes** Customized drilling patterns on request

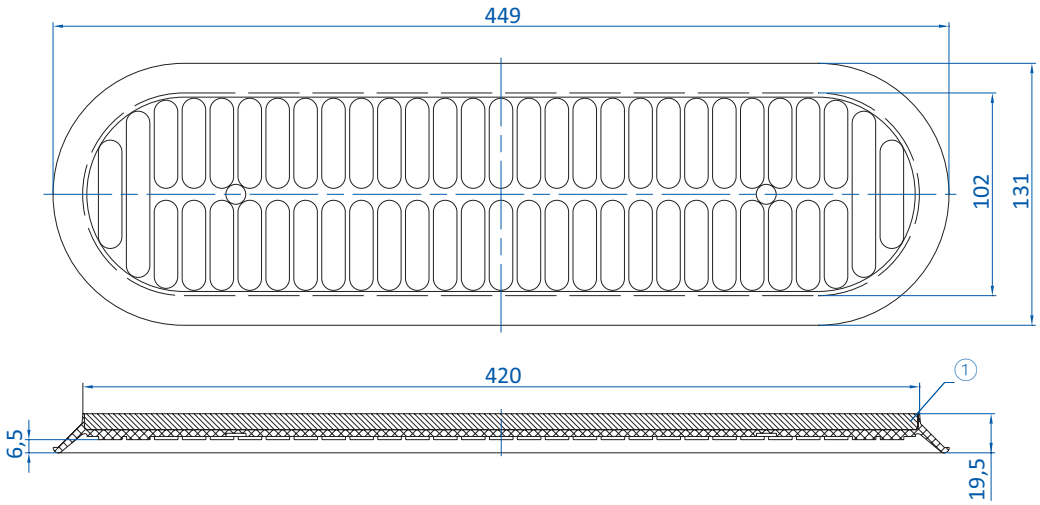
*** When ordering please add the appropriate material code to item no.**

Oval vacuum cups by size



① = Steel

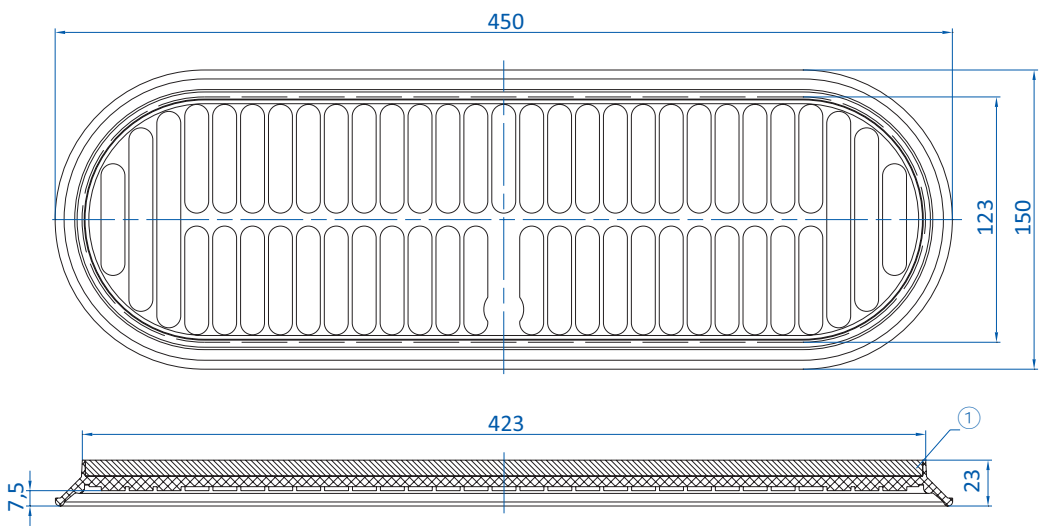
Item no.	Material		
9.430x180.024.1gr	NBR (gr)	6 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request



① = Steel

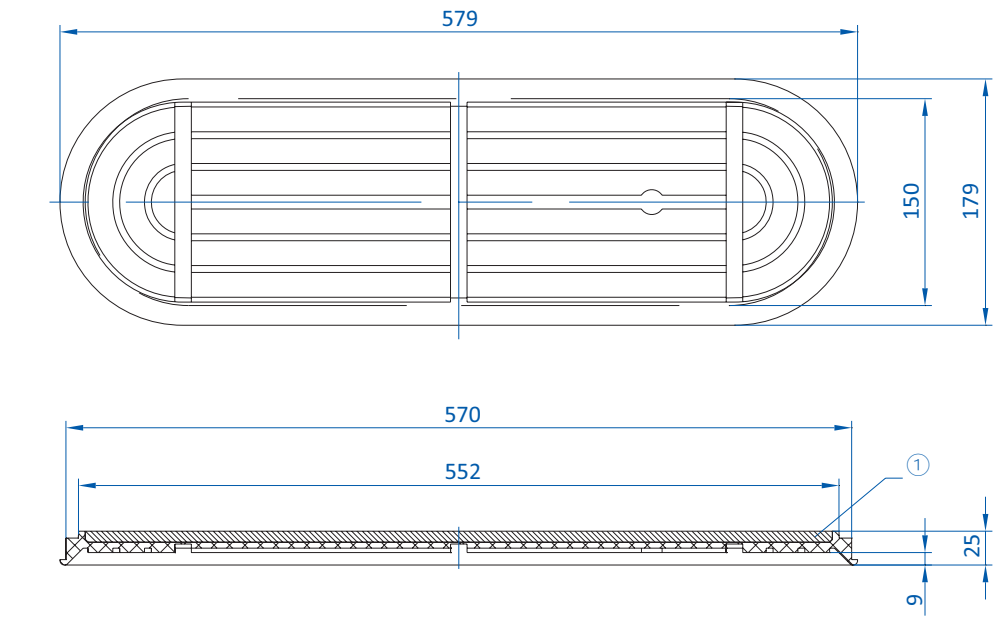
Item no.	Material		
9.450x130.025.1	NBR (gr)	6 mm	Details and additional sizes available are found on p. 336. **Ordering notes** Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**



① = Steel

Item no.	Material		Ordering notes
9.450x150.026._*	NBR (gr)	9 mm	Ordering notes Customized drilling patterns on request



① = Steel

Item no.	Material		Ordering notes
9.580x180.029._*	NBR (gr), SBR (br)	10 mm	Ordering notes Customized drilling patterns on request

*** When ordering please add the appropriate material code to item no.**



Oval vacuum cups by size

Notes:

Vacuum tweezers 392

High temperature vacuum cups with felt pad 394

Hand grippers 396

Vacuum tweezers



Product notes

Compressed air- or vacuum-operated special tool for assembly of small parts

VTA-Set:
Vacuum tweezers with built-in ejector, without valve and with air vent. To pick up the object, close the air vent with the fingertip and release to place the object.

VTB-Set:
Vacuum tweezers with built-in ejector, compressed air valve and built-in silencer – hence, very low-noise. The built-in compressed air valve is used to switch on the vacuum only when needed.

VTA-Set-1:
Vacuum tweezers without ejector and with air vent. To pick up the object, close the air vent with the fingertip and release to place the object.

Ordering notes

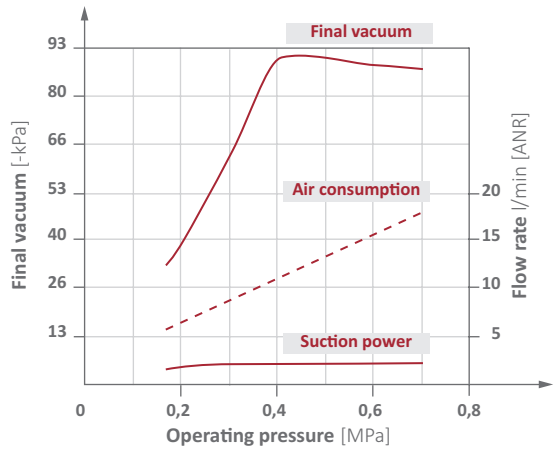
The sets contains:
> Vacuum tweezers, spiral tubing, one of each size vacuum cup (Silicone) Ø 2, 4, 6 and 8 mm
> Curved adapter for vacuum cups Ø 2 and 4 mm
> Curved adapter for vacuum cups Ø 6 and 8 mm

Technical data

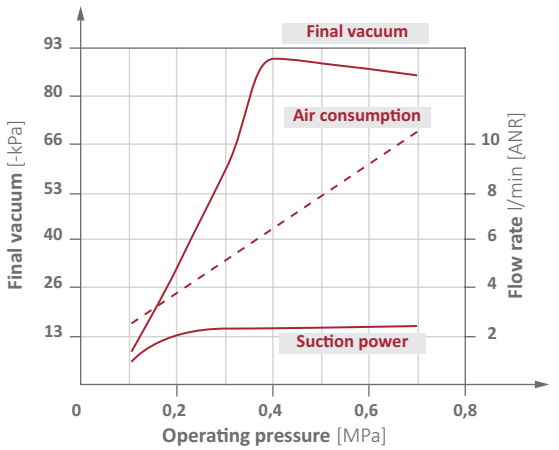
Item no.	Operating principle	Design	Operating pressure [bar (psi)]	Final vacuum [%]	Operating temperature [°C (°F)]	Weight [g]	Accessories
VTA-Set	operated with compressed air	without valve	1.5 - 7 (21.8 - 101.5)	90	0 - 60 (32 - 140)	22	Adapter straight for vacuum cups Ø 2, 4 mm: VPZ-2-S Adapter straight for vacuum cups Ø 6, 8 mm: VPZ-6-S Spare vacuum cup NBR Ø 2, 4, 6, 8 mm: VT-NBR-Set Mounting bracket: EIL.05-HO
VTB-Set	operated with compressed air	with valve	1.5 - 7 (21.8 - 101.5)	90	0 - 60 (32 - 140)	16	Adapter for vacuum cups – bended Ø 2, 4 mm: VPZ-2 Adapter for vacuum cups – bended Ø 6, 8 mm: VPZ-6 Spare vacuum cup NBR Ø 2, 4, 6, 8 mm: VT-NBR-Set Mounting bracket: EIL.05-HO
VTA-Set-1	Vacuum-operated	with air vent	--	--	0 - 60 (32 - 140)	22	Adapter for vacuum cups – bended Ø 2, 4 mm: VPZ-2 Adapter for vacuum cups – bended Ø 6, 8 mm: VPZ-6 Spare vacuum cup NBR Ø 2, 4, 6, 8 mm: VT-NBR-Set Mounting bracket: EIL.05-HO

*= Values depend on vacuum generator

Diagrams



VTA-Set



VTB-Set

Special vacuum cups

High temperature vacuum cups with felt pad – SX-F



HEAT RESISTANT & LOW MARKING

Product notes

Almost mark-free special vacuum cup for high temperature requirements, e.g. in the glass industry.
Special felt pad vulcanized to elastomer carrier. Migration of silicone particles is prevented by vapour-deposited aluminum layer.
Connection up to Ø 70 mm by means of plug-in nipple, from Ø 90 mm with bolted bracket plate.

Advantage

> Temperature-resistant up to 500 °C (932 °F) (SI)
> Almost mark-free
> Cost-effective replacement of worn seals

Notes:

There is a small leak at first use resulting from the texture of the special felt, but after a brief period of use this will be significantly reduced by the thickening of the felt layer.

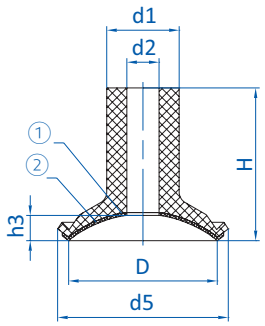
Technical data

Item no.	Model		Weight [g]	Max. operating temperature [°C (°F)]	Material / Color	Number of folds
26.025.009.2F	SX-F-25	2	6	500 (932)	SI (tr/ge)	--
26.037.010.2F	SX-F-40	3	10	500 (932)	SI (tr/ge)	--
26.070.011.2F	SX-F-70	7	24	500 (932)	SI (tr/ge)	--
26.090.001.2F	SX-F-90	17	80	500 (932)	SI (tr/ge)	1.5

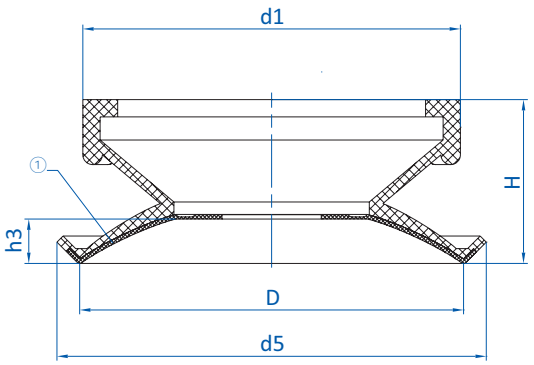
Accessories

	Suitable fittings				
Item no.	G1/8-male	G1/8-female	G1/4-male	G1/4-female	G3/8-female
26.025.009.2F	270.132	270.114	270.208	270.178	--
26.037.010.2F	270.132	270.114	270.208	270.178	--
26.070.011.2F	270.132	270.114	270.208	270.178	--
26.090.001.2F	--	--	--	--	270.400

Dimensions



Drawing A



Drawing B

① = Felt pads ② = For silicone vacuum cups: Silicone blocker through evaporated aluminum layer

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d5** [mm]	**H** [mm]	**h3** [mm]
26.025.009.2F	A	24	16	8	29	36	3.3
26.037.010.2F	A	37	18	8	42	38	6.5
26.070.011.2F	A	67	21	8	71	36	8
26.090.001.2F	B	89	87	--	99	38	10.5

Hand grippers – SX-G



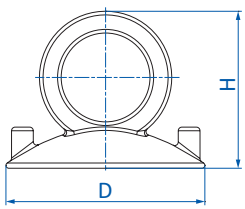
Product notes

Sturdy gripper for the manual handling of flat, smooth products.
No vacuum source required. Simple handling.
Release of the product via a release button.

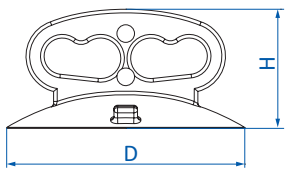
Technical data

Item no.	Model	Tearing force [kg]	Material / Color
64.001.V	SX-G-55	14	Vinyl (sw)
64.002.V	SX-G-65	19	Vinyl (sw)
64.003.V	SX-G-75	22	Vinyl (sw)
64.004.1	SX-G-125	25	NBR (sw)
64.005.V	SX-G-130	28	Vinyl (sw)

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø D [mm]	H [mm]
64.001.V	A	54	42
64.002.V	A	66	48
64.003.V	B	82	42
64.004.1	B	115	63
64.005.V	B	121	65

Standard fittings M3 398

Standard fittings M4 and M5 399

Standard fittings M6 403

Standard fittings M8 406

Standard fittings M10 407

Standard fittings G1/8 408

Standard fittings G1/4 416

Standard fittings G3/8 425

Standard fittings G1/2 427

Standard fittings without thread 428

Standard fittings NPSF and NPT 429

Carrier plates for vacuum cups 431

Spring leveler 433

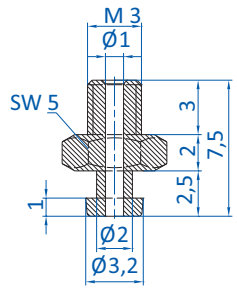
Lifting cylinders 448

Joints 454

Filter discs 457

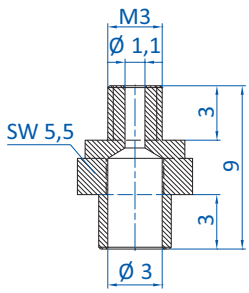
Rings and clamps 458

Connectors 460



Technical data

Item no.	Thread G1
270.014	M3-male

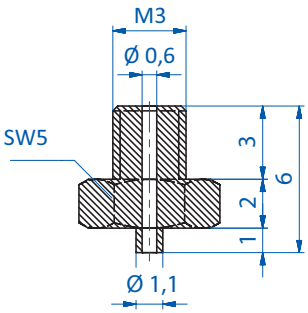


Technical data

Item no.	Thread G1
270.427	M3-male

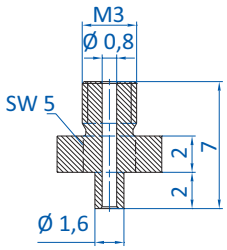
Notes:

Vacuum cup is plugged into the borehole of the fitting



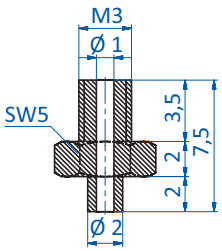
Technical data

Item no.	Thread G1
270.026	M3-male



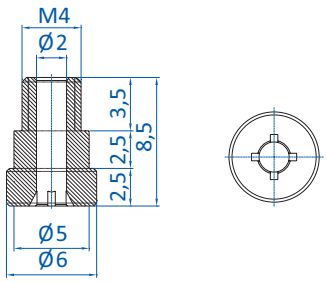
Technical data

Item no.	Thread G1
270.011	M3-male



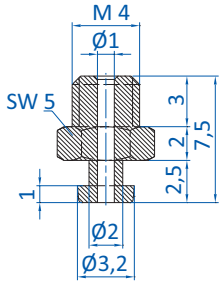
Technical data

Item no.	Thread G1
270.025	M3-male



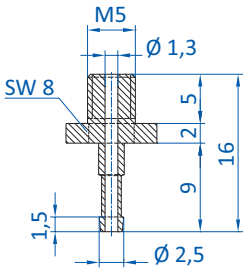
Technical data

Item no.	Thread G1
270.458	M4-male



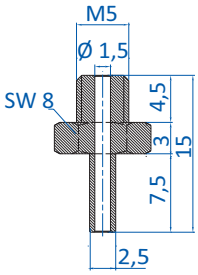
Technical data

Item no.	Thread G1
270.111	M4-male



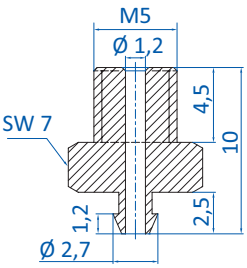
Technical data

Item no.	Thread G1
270.195	M5-male



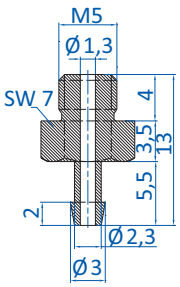
Technical data

Item no.	Thread G1
270.001	M5-male



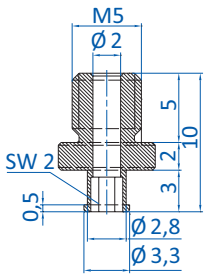
Technical data

Item no.	Thread G1
270.629	M5-male



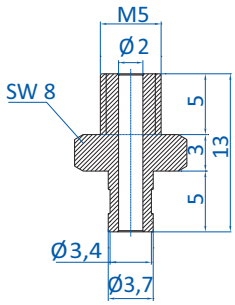
Technical data

Item no.	Thread G1
270.153	M5-male



Technical data

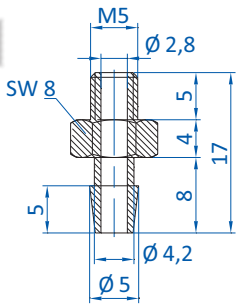
Item no.	Thread G1
270.283	M5-male



Technical data

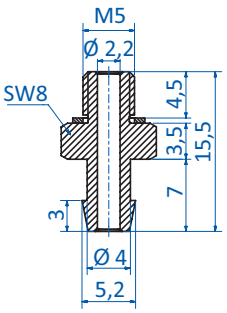
Item no.	Thread G1
270.536	M5-male

BESTSELLER



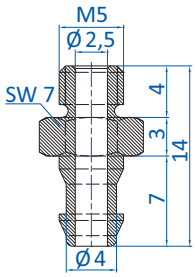
Technical data

Item no.	Thread G1
270.134	M5-male



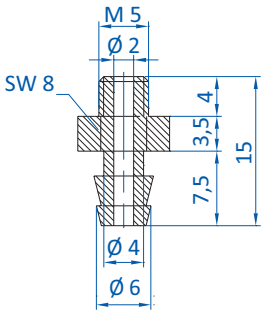
Technical data

Item no.	Thread G1
270.772	M5-male



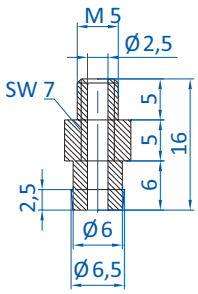
Technical data

Item no.	Thread G1
270.399	M5-male



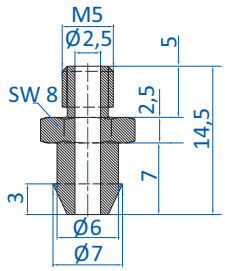
Technical data

Item no.	Thread G1
270.024	M5-male



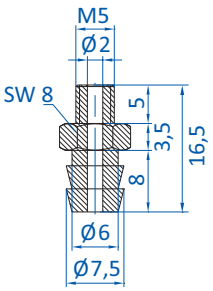
Technical data

Item no.	Thread G1
270.013	M5-male



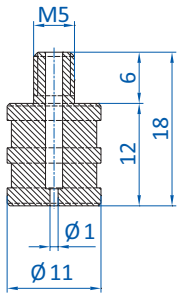
Technical data

Item no.	Thread G1
270.317	M5-male



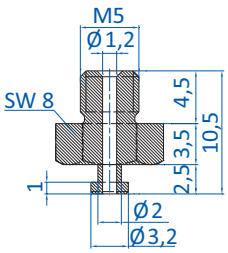
Technical data

Item no.	Thread G1
270.443	M5-male



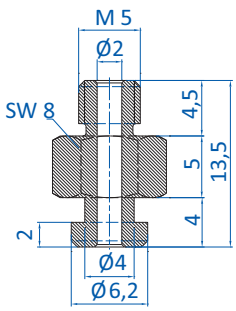
Technical data

Item no.	Thread G1
270.244	M5-male



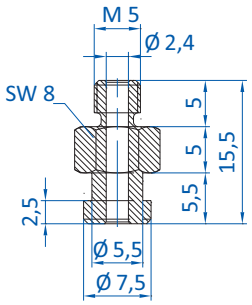
Technical data

Item no.	Thread G1
270.300	M5-male



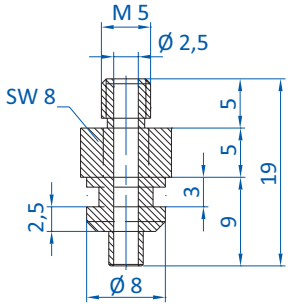
Technical data

Item no.	Thread G1
270.010	M5-male



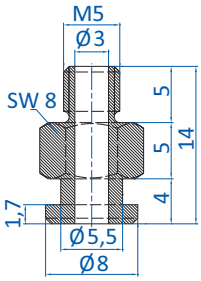
Technical data

Item no.	Thread G1
270.094	M5-male



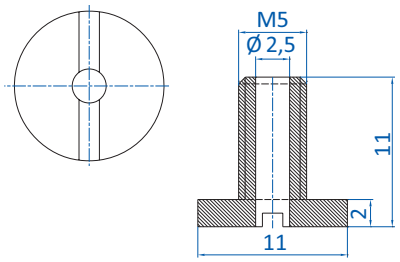
Technical data

Item no.	Thread G1
270.037	M5-male



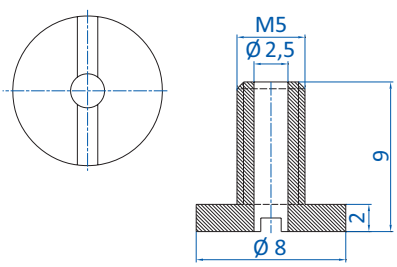
Technical data

Item no.	Thread G1
270.200	M5-male



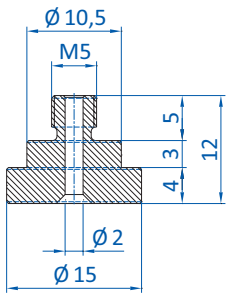
Technical data

Item no.	Thread G1
270.311	M5-male



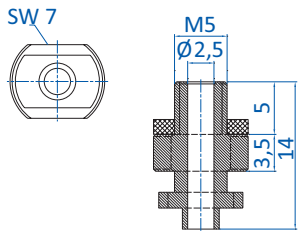
Technical data

Item no.	Thread G1
270.310	M5-male



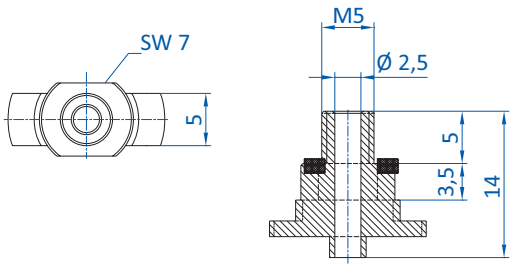
Technical data

Item no.	Thread G1
270.521	M5-male



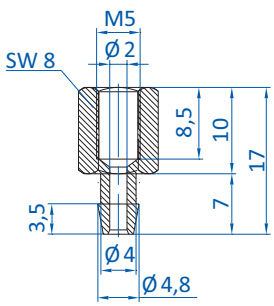
Technical data

Item no.	Thread G1
270.463	M5-male



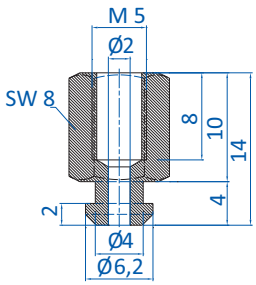
Technical data

Item no.	Thread G1
270.464	M5-male



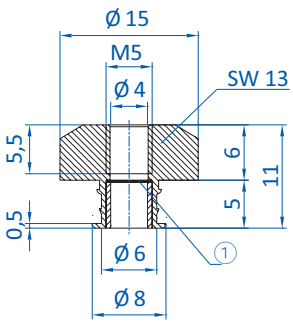
Technical data

Item no.	Thread G1
270.347	M5-female



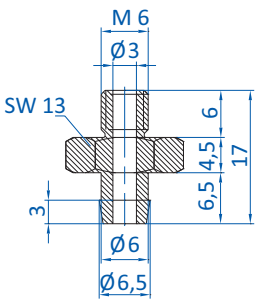
Technical data

Item no.	Thread G1
270.005	M5-female



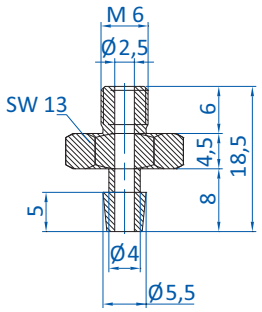
Technical data

Item no.	Thread G1
270.500-S	M5-female



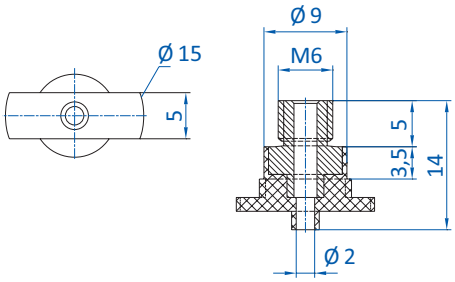
Technical data

Item no.	Thread G1
270.103	M6-male



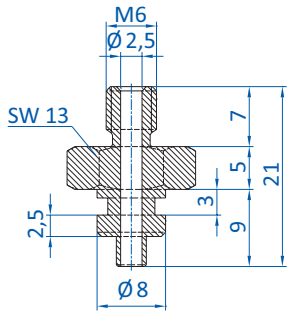
Technical data

Item no.	Thread G1
270.104	M6-male



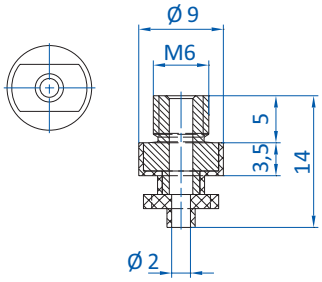
Technical data

Item no.	Thread G1
270.340	M6-male



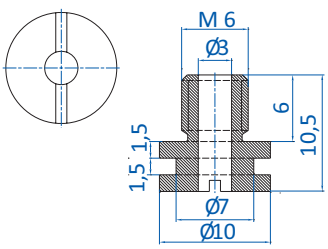
Technical data

Item no.	Thread G1
270.373	M6-male



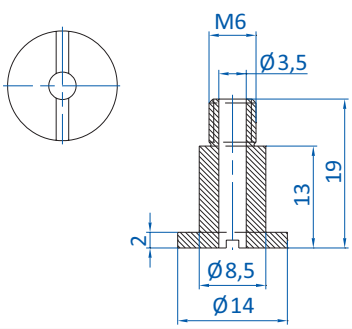
Technical data

Item no.	Thread G1
270.339	M6-male



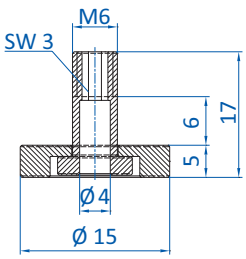
Technical data

Item no.	Thread G1
270.105	M6-male



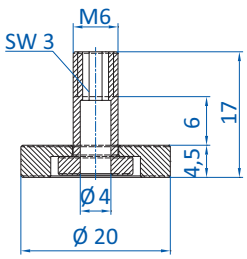
Technical data

Item no.	Thread G1
270.315	M6-male



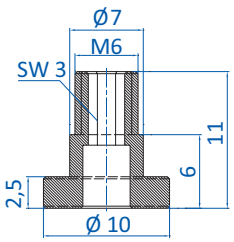
Technical data

Item no.	Thread G1
270.498	M6-male



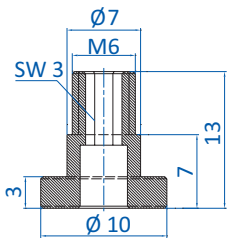
Technical data

Item no.	Thread G1
270.499	M6-male



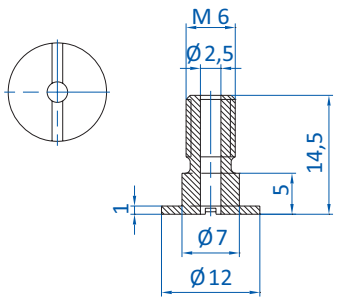
Technical data

Item no.	Thread G1
270.459	M6-male



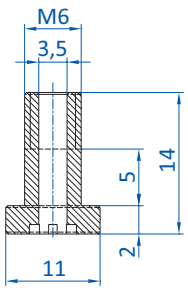
Technical data

Item no.	Thread G1
270.460	M6-male



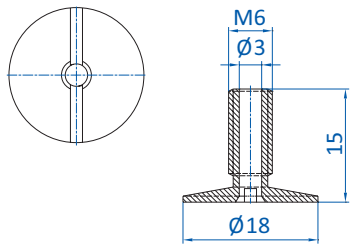
Technical data

Item no.	Thread G1
270.039	M6-male



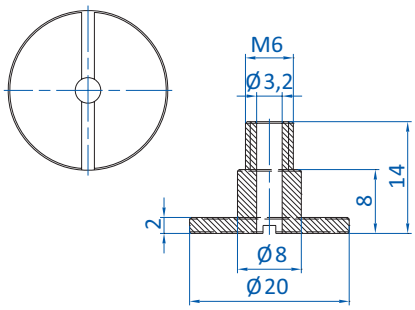
Technical data

Item no.	Thread G1
270.312/19	M6-male



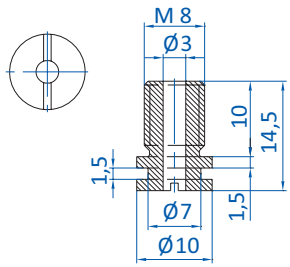
Technical data

Item no.	Thread G1
270.254	M6-male



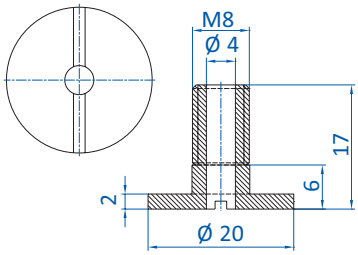
Technical data

Item no.	Thread G1
270.314	M6-male



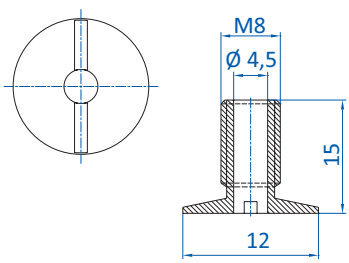
Technical data

Item no.	Thread G1
270.040	M8-male



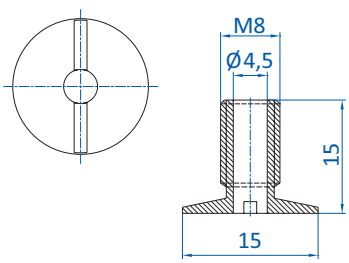
Technical data

Item no.	Thread G1
270.313	M8-male



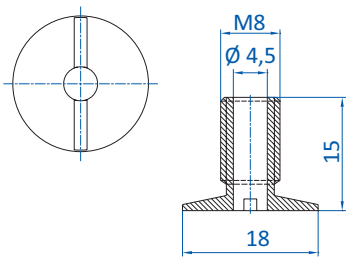
Technical data

Item no.	Thread G1
270.247	M8-male



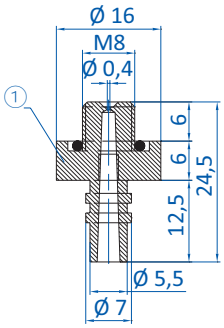
Technical data

Item no.	Thread G1
270.255	M8-male



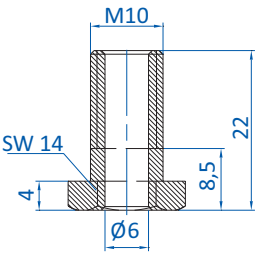
Technical data

Item no.	Thread G1
270.256	M8-male



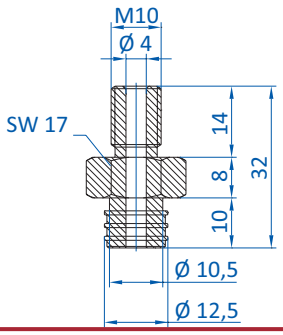
Technical data

Item no.	Thread G1
270.378	M8-male



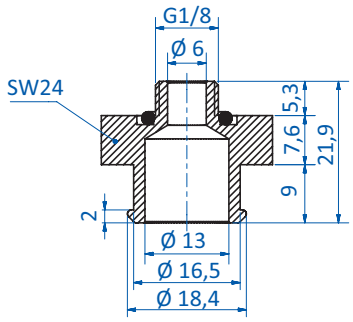
Technical data

Item no.	Thread G1
270.462	M10-male



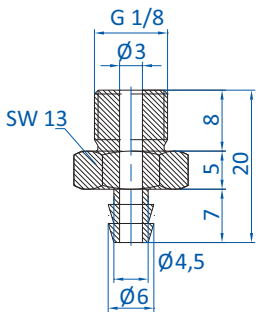
Technical data

Item no.	Thread G1
270.177	M10-male



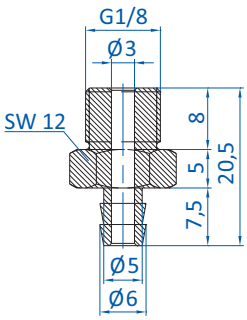
Technical data

Item no.	Thread G1
270.776	G1/8-male



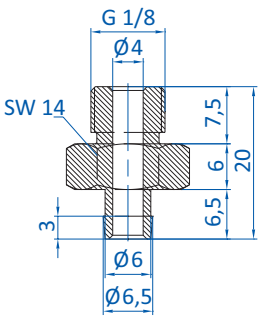
Technical data

Item no.	Thread G1
270.033	G1/8-male



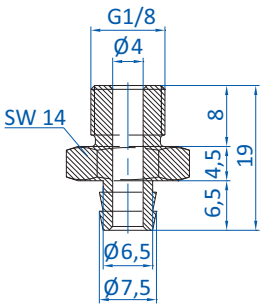
Technical data

Item no.	Thread G1
270.205	G1/8-male



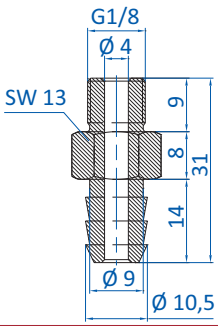
Technical data

Item no.	Thread G1
270.003	G1/8-male



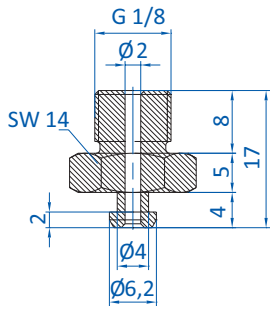
Technical data

Item no.	Thread G1
270.238	G1/8-male



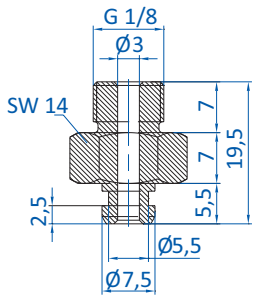
Technical data

Item no.	Thread G1
270.132	G1/8-male



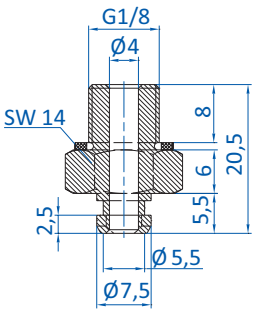
Technical data

Item no.	Thread G1
270.009	G1/8-male



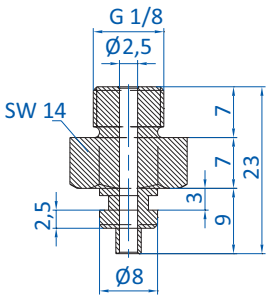
Technical data

Item no.	Thread G1
270.095	G1/8-male



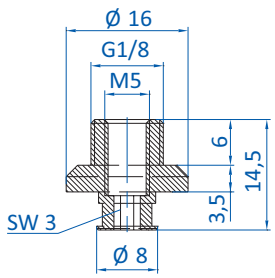
Technical data

Item no.	Thread G1
270.431	G1/8-male



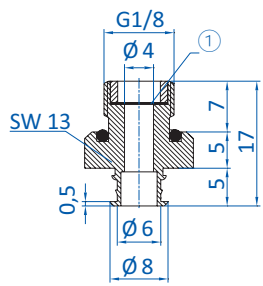
Technical data

Item no.	Thread G1
270.085	G1/8-male



Technical data

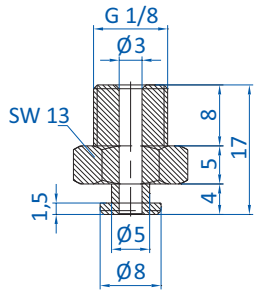
Item no.	Thread G1
270.250	G1/8-male



① = Filter screen

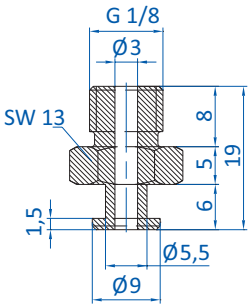
Technical data

Item no.	Thread G1
270.503-S	G1/8-male



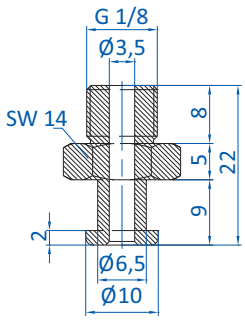
Technical data

Item no.	Thread G1
270.064	G1/8-male



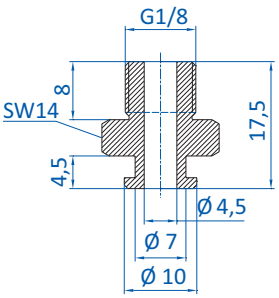
Technical data

Item no.	Thread G1
270.063	G1/8-male



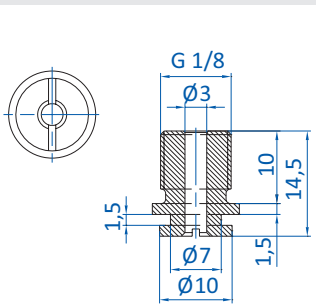
Technical data

Item no.	Thread G1
270.030	G1/8-male



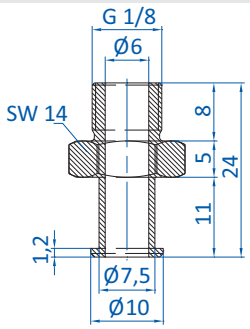
Technical data

Item no.	Thread G1
270.543	G1/8-male



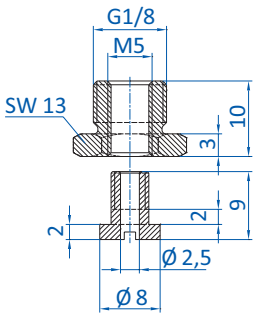
Technical data

Item no.	Thread G1
270.077	G1/8-male



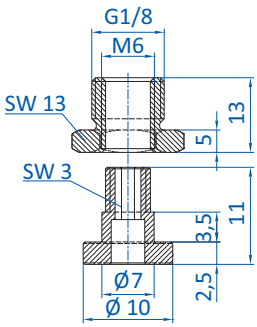
Technical data

Item no.	Thread G1
270.112	G1/8-male



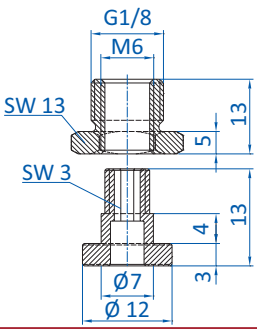
Technical data

Item no.	Thread G1
270.493	G1/8-male



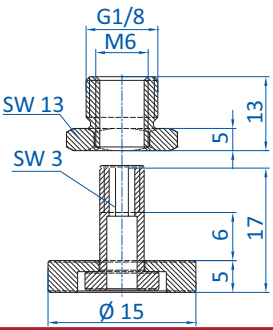
Technical data

Item no.	Thread G1
270.480	G1/8-male



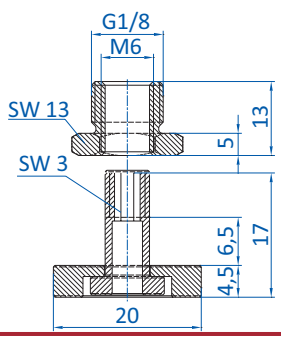
Technical data

Item no.	Thread G1
270.482	G1/8-male



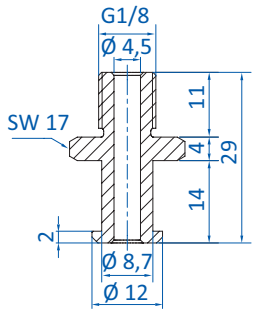
Technical data

Item no.	Thread G1
270.486	G1/8-male



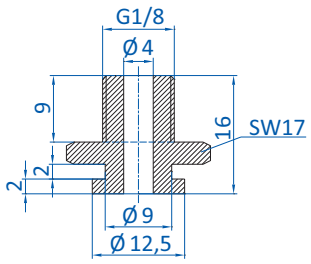
Technical data

Item no.	Thread G1
270.490	G1/8-male



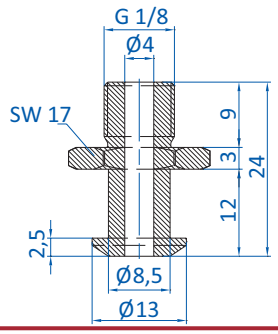
Technical data

Item no.	Thread G1
270.196	G1/8-male



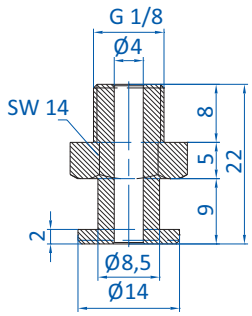
Technical data

Item no.	Thread G1
270.541	G1/8-male



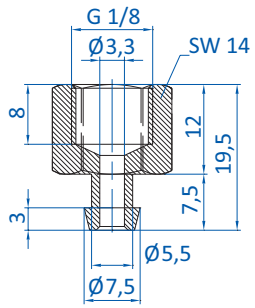
Technical data

Item no.	Thread G1
270.093	G1/8-male



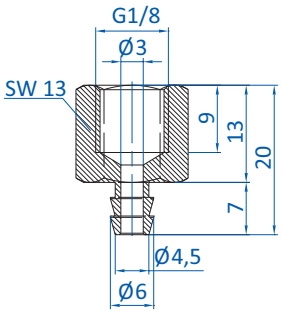
Technical data

Item no.	Thread G1
270.012	G1/8-male



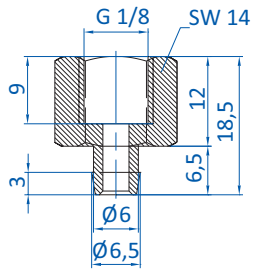
Technical data

Item no.	Thread G1
270.109	G1/8-female



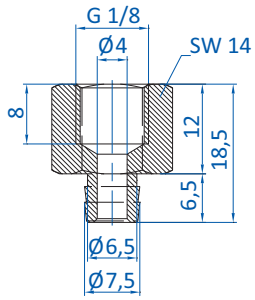
Technical data

Item no.	Thread G1
270.478	G1/8-female



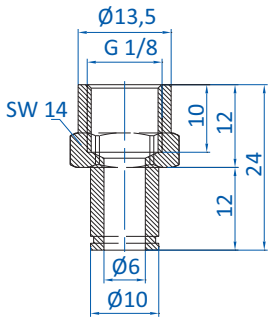
Technical data

Item no.	Thread G1
270.015	G1/8-female



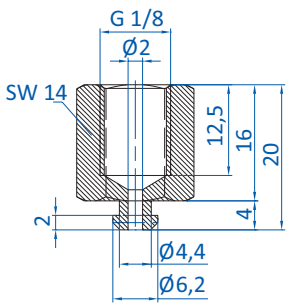
Technical data

Item no.	Thread G1
270.110	G1/8-female



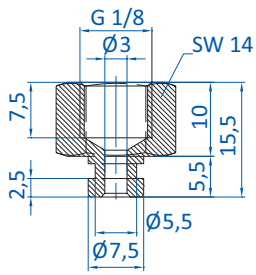
Technical data

Item no.	Thread G1
270.114	G1/8-female



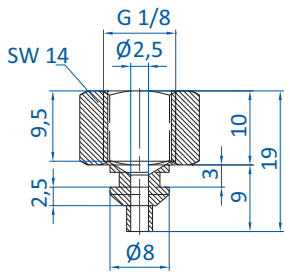
Technical data

Item no.	Thread G1
270.007	G1/8-female



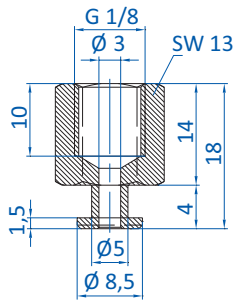
Technical data

Item no.	Thread G1
270.096	G1/8-female



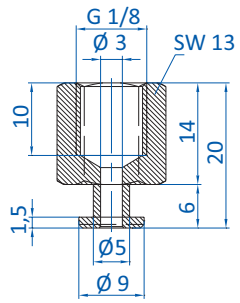
Technical data

Item no.	Thread G1
270.086	G1/8-female



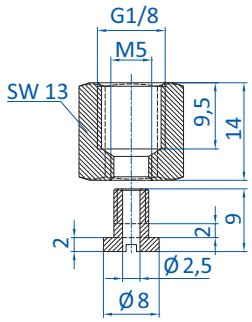
Technical data

Item no.	Thread G1
270.065	G1/8-female



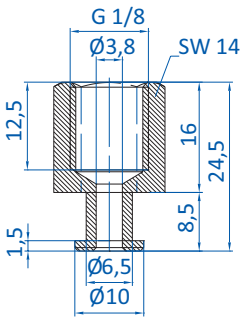
Technical data

Item no.	Thread G1
270.061	G1/8-female



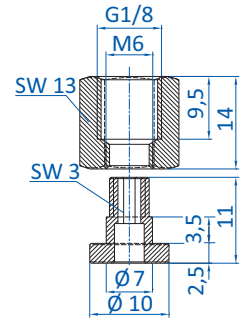
Technical data

Item no.	Thread G1
270.494	G1/8-female



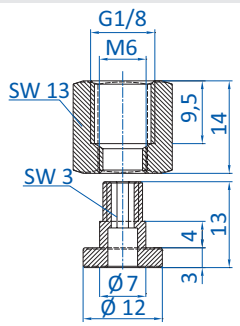
Technical data

Item no.	Thread G1
270.019	G1/8-female



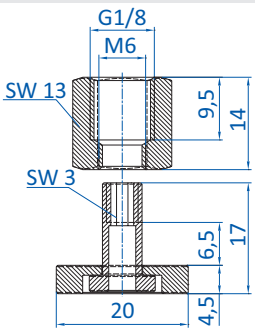
Technical data

Item no.	Thread G1
270.479	G1/8-female



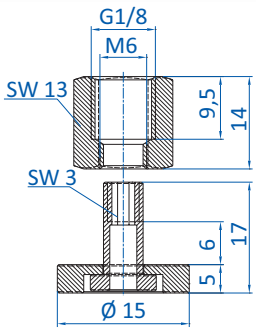
Technical data

Item no.	Thread G1
270.481	G1/8-female



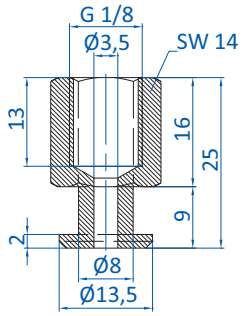
Technical data

Item no.	Thread G1
270.489	G1/8-female



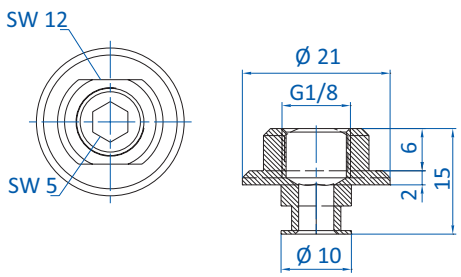
Technical data

Item no.	Thread G1
270.485	G1/8-female



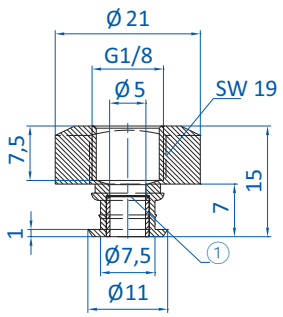
Technical data

Item no.	Thread G1
270.020	G1/8-female



Technical data

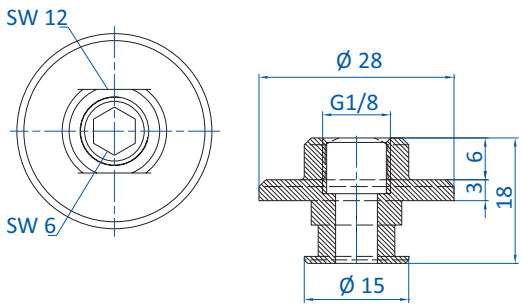
Item no.	Thread G1
270.251	G1/8-female



① = Filter screen

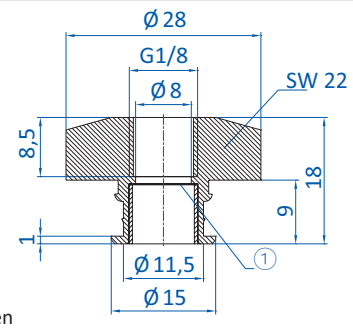
Technical data

Item no.	Thread G1
270.501-S	G1/8-female



Technical data

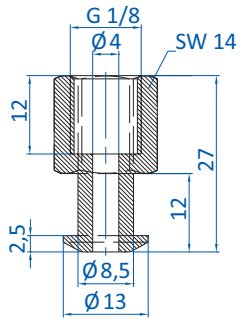
Item no.	Thread G1
270.252	G1/8-female



① = Filter screen

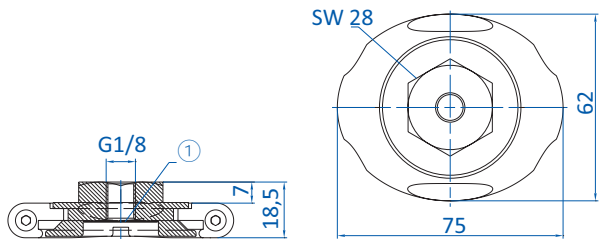
Technical data

Item no.	Thread G1
270.502-S	G1/8-female



Technical data

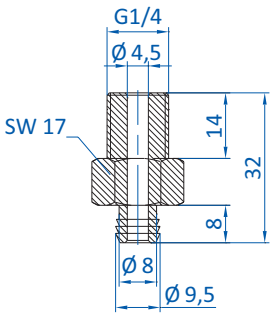
Item no.	Thread G1
270.092	G1/8-female



① = Filter screen

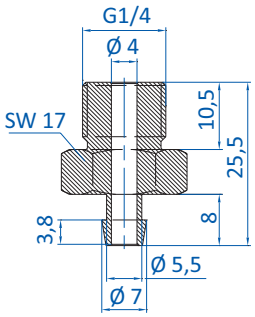
Technical data

Item no.	Thread G1
270.527-S	G1/8-female



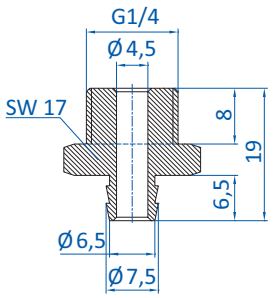
Technical data

Item no.	Thread G1
270.043	G1/4-male



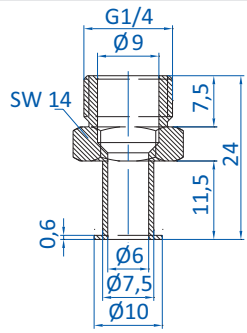
Technical data

Item no.	Thread G1
270.194	G1/4-male



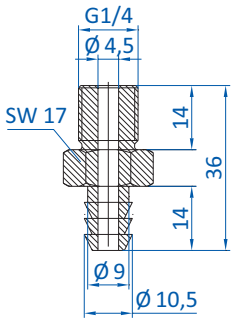
Technical data

Item no.	Thread G1
270.534	G1/4-male



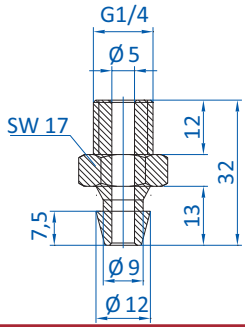
Technical data

Item no.	Thread G1
270.113	G1/4-male



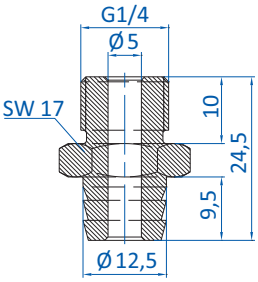
Technical data

Item no.	Thread G1
270.208	G1/4-male



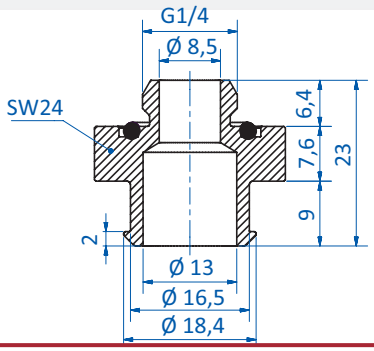
Technical data

Item no.	Thread G1
270.515	G1/4-male



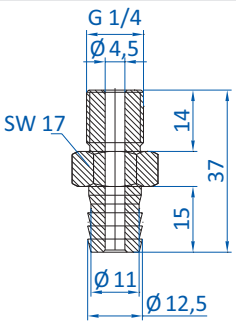
Technical data

Item no.	Thread G1
270.451	G1/4-male



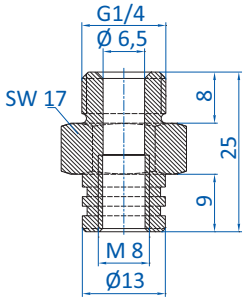
Technical data

Item no.	Thread G1
270.777	G1/4-male



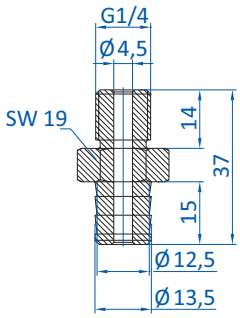
Technical data

Item no.	Thread G1
270.044	G1/4-male



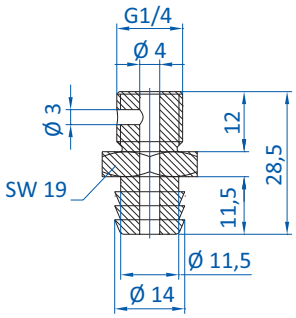
Technical data

Item no.	Thread G1
270.097	G1/4-male



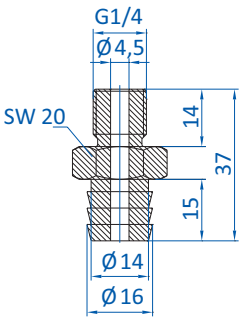
Technical data

Item no.	Thread G1
270.049-1	G1/4-male



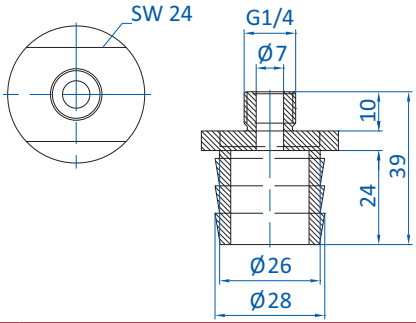
Technical data

Item no.	Thread G1
270.101	G1/4-male



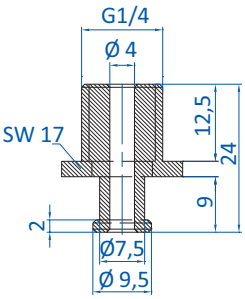
Technical data

Item no.	Thread G1
270.207	G1/4-male



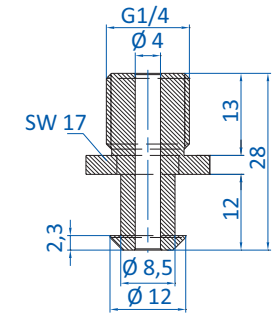
Technical data

Item no.	Thread G1
270.438	G1/4-male



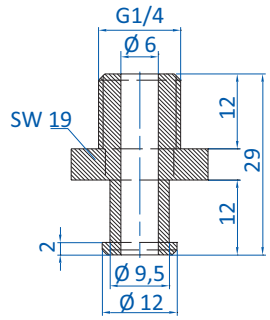
Technical data

Item no.	Thread G1
270.274	G1/4-male



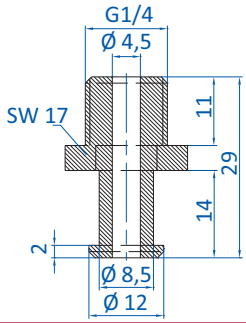
Technical data

Item no.	Thread G1
270.249	G1/4-male



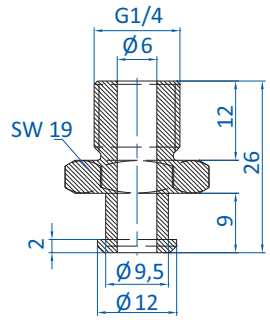
Technical data

Item no.	Thread G1
270.204	G1/4-male



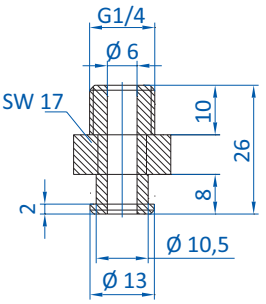
Technical data

Item no.	Thread G1
270.190	G1/4-male



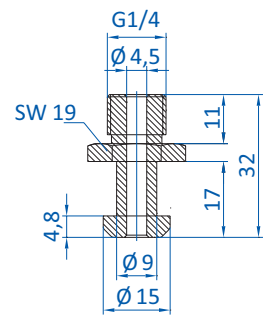
Technical data

Item no.	Thread G1
270.034	G1/4-male



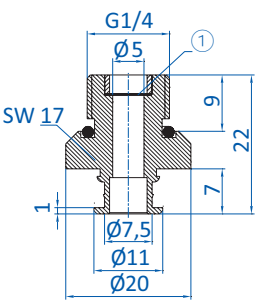
Technical data

Item no.	Thread G1
270.213	G1/4-male



Technical data

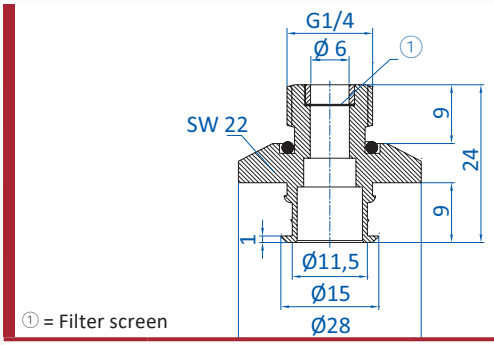
Item no.	Thread G1
270.281	G1/4-male



① = Filter screen

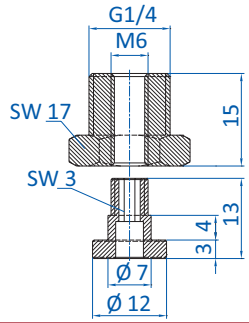
Technical data

Item no.	Thread G1
270.506-S	G1/4-male



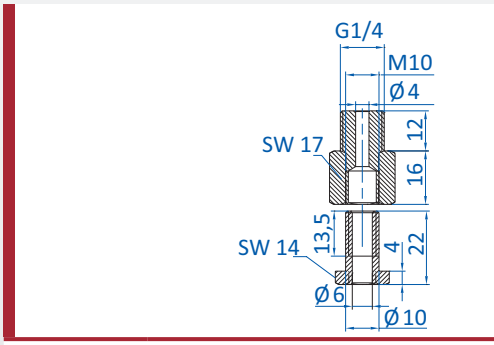
Technical data

Item no.	Thread G1
270.504-S	G1/4-male



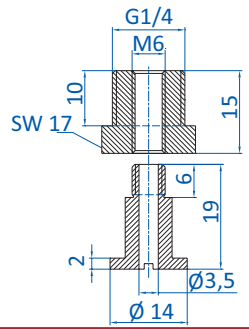
Technical data

Item no.	Thread G1
270.483	G1/4-male



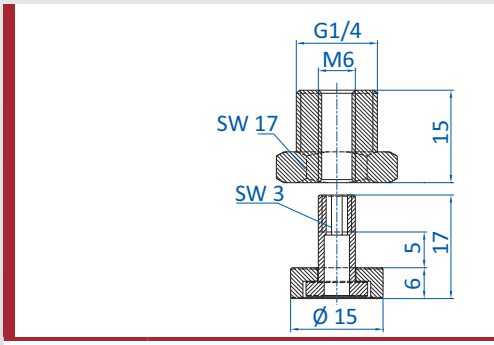
Technical data

Item no.	Thread G1
270.514	G1/4-male



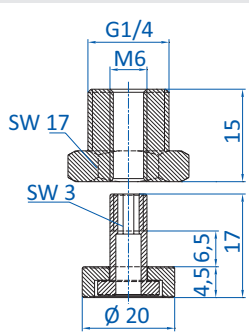
Technical data

Item no.	Thread G1
270.540	G1/4-male



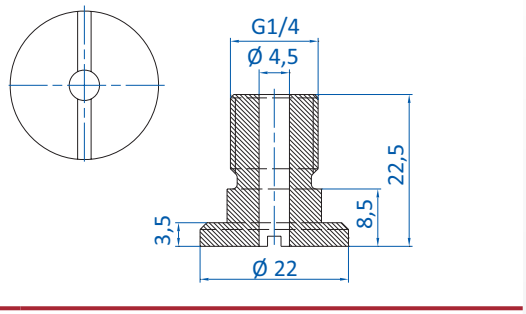
Technical data

Item no.	Thread G1
270.487	G1/4-male



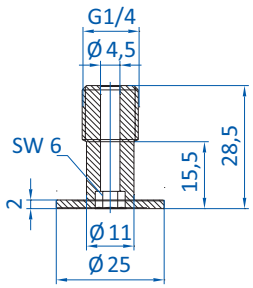
Technical data

Item no.	Thread G1
270.491	G1/4-male



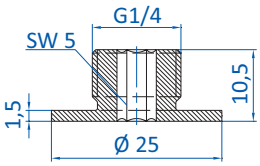
Technical data

Item no.	Thread G1
270.210	G1/4-male



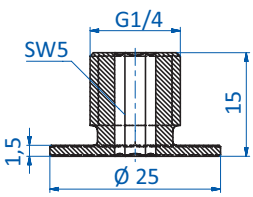
Technical data

Item no.	Thread G1
270.176	G1/4-male



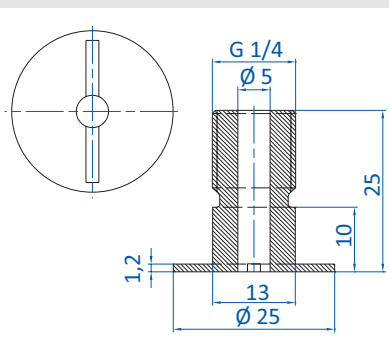
Technical data

Item no.	Thread G1
270.182.U	G1/4-male



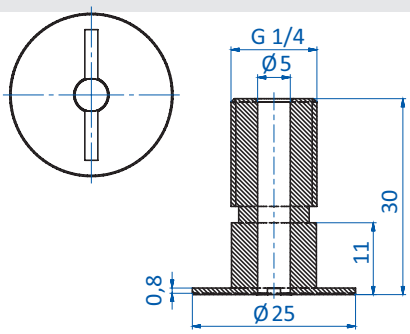
Technical data

Item no.	Thread G1
270.183	G1/4-male



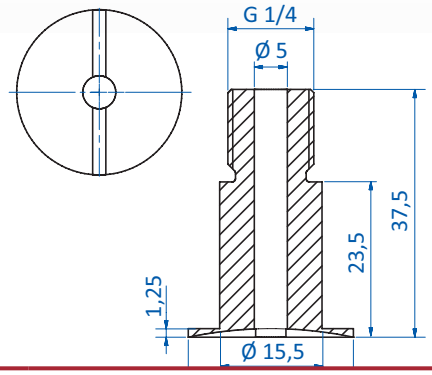
Technical data

Item no.	Thread G1
270.042	G1/4-male



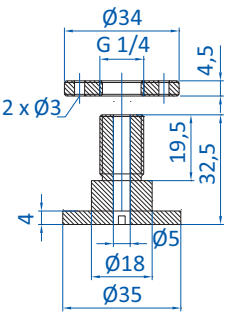
Technical data

Item no.	Thread G1
270.184	G1/4-male



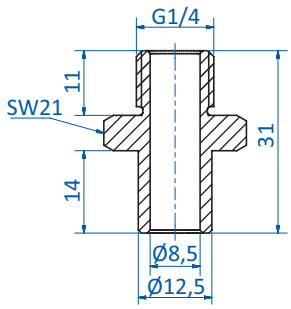
Technical data

Item no.	Thread G1
270.216	G1/4-male



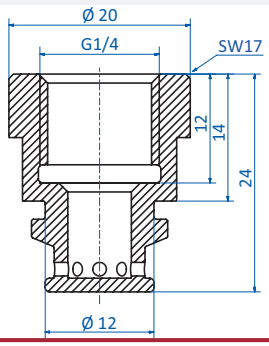
Technical data

Item no.	Thread G1
270.100	G1/4-male



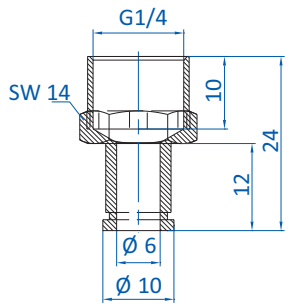
Technical data

Item no.	Thread G1
270.630	G1/4-male



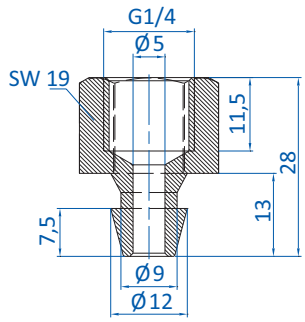
Technical data

Item no.	Thread G1
270.729	G1/4-female



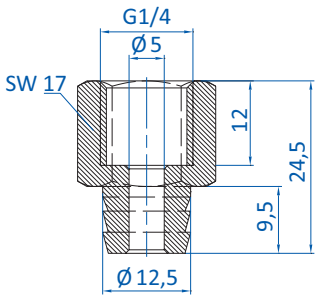
Technical data

Item no.	Thread G1
270.178	G1/4-female



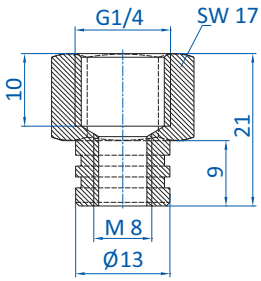
Technical data

Item no.	Thread G1
270.434	G1/4-female



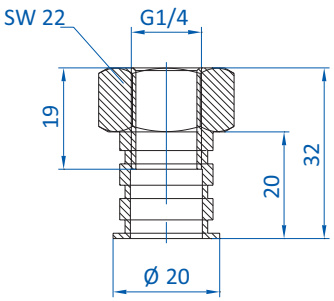
Technical data

Item no.	Thread G1
270.452	G1/4-female



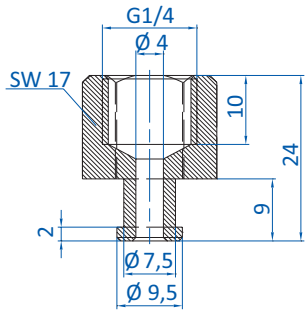
Technical data

Item no.	Thread G1
270.098	G1/4-female



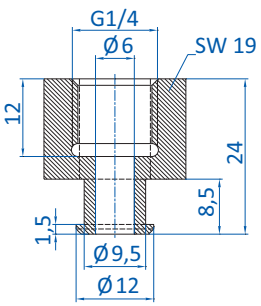
Technical data

Item no.	Thread G1
270.116	G1/4-female



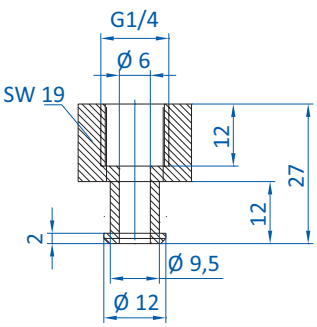
Technical data

Item no.	Thread G1
270.275	G1/4-female



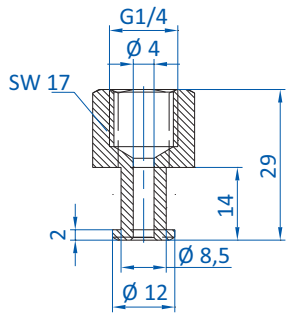
Technical data

Item no.	Thread G1
270.038	G1/4-female



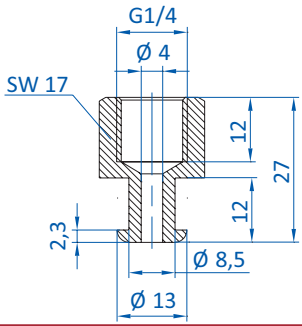
Technical data

Item no.	Thread G1
270.324	G1/4-female



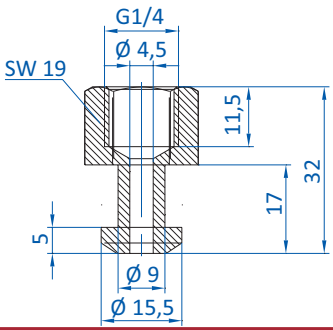
Technical data

Item no.	Thread G1
270.192	G1/4-female



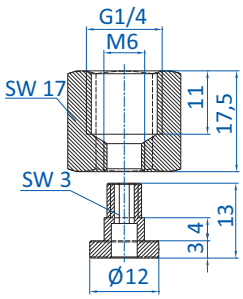
Technical data

Item no.	Thread G1
270.248	G1/4-female



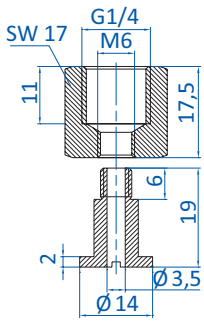
Technical data

Item no.	Thread G1
270.282	G1/4-female



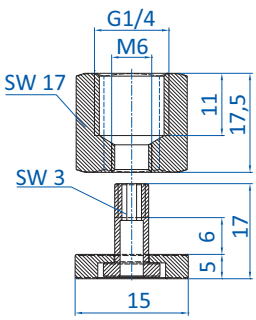
Technical data

Item no.	Thread G1
270.484	G1/4-female



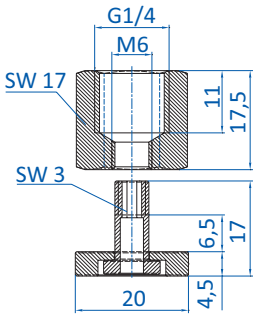
Technical data

Item no.	Thread G1
270.539	G1/4-female



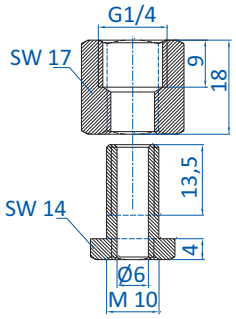
Technical data

Item no.	Thread G1
270.488	G1/4-female



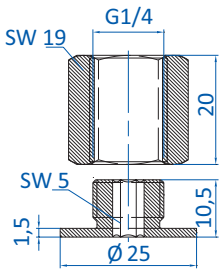
Technical data

Item no.	Thread G1
270.492	G1/4-female



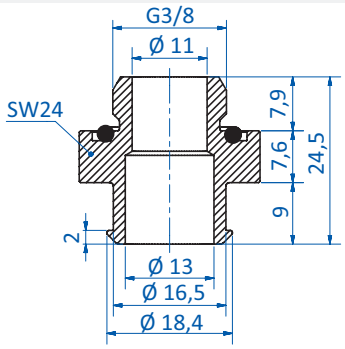
Technical data

Item no.	Thread G1
270.513	G1/4-female



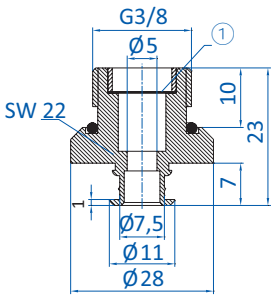
Technical data

Item no.	Thread G1
270.182	G1/4-female



Technical data

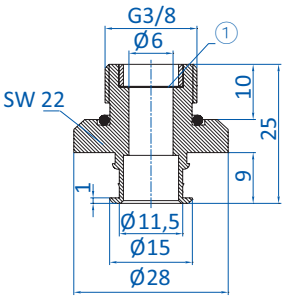
Item no.	Thread G1
270.778	G3/8-male



① = Filter screen

Technical data

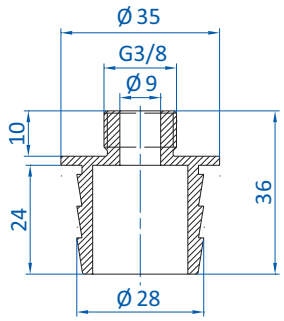
Item no.	Thread G1
270.505-S	G3/8-male



① = Filter screen

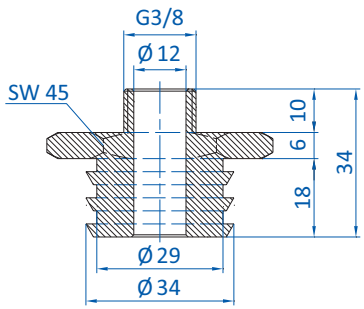
Technical data

Item no.	Thread G1
270.507-S	G3/8-male



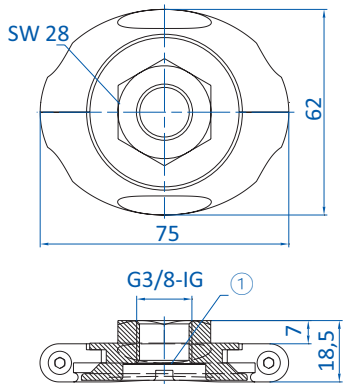
Technical data

Item no.	Thread G1
270.442	G3/8-male



Technical data

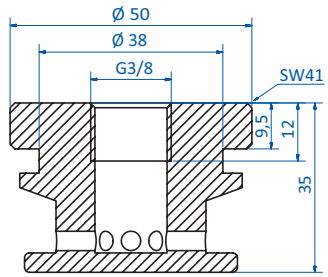
Item no.	Thread G1
270.526	G3/8-male



① = Filter screen

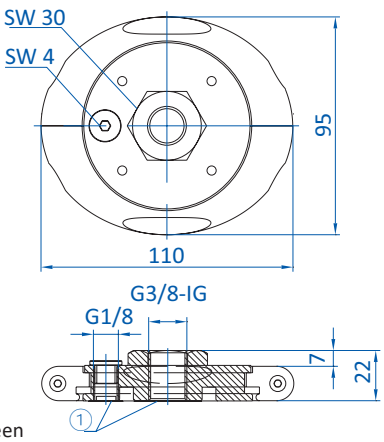
Technical data

Item no.	Thread G1
270.528-S	G3/8-female



Technical data

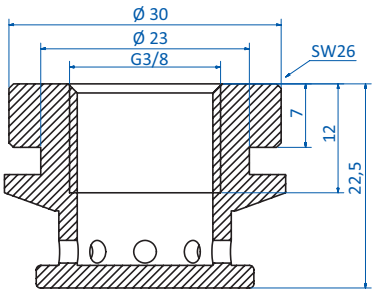
Item no.	Thread G1
270.750	G3/8-female



① = Filter screen

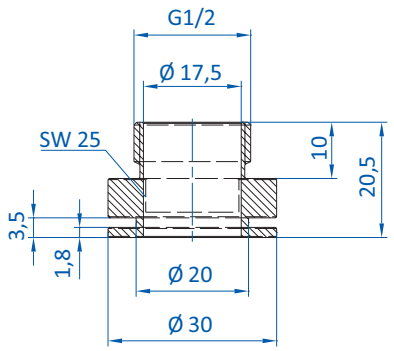
Technical data

Item no.	Thread G1
270.530-S	G3/8-female



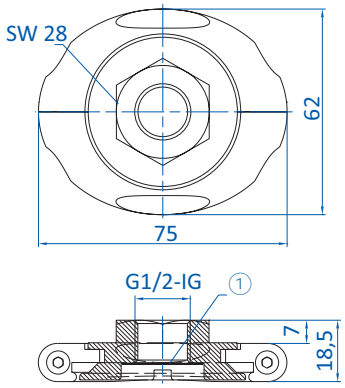
Technical data

Item no.	Thread G1
270.725	G3/8-female



Technical data

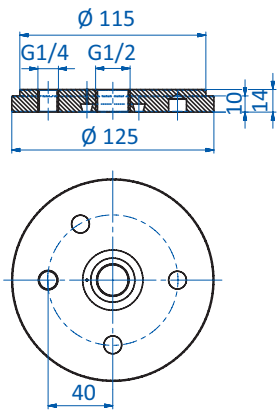
Item no.	Thread G1
270.372	G1/2-male



① = Filter screen

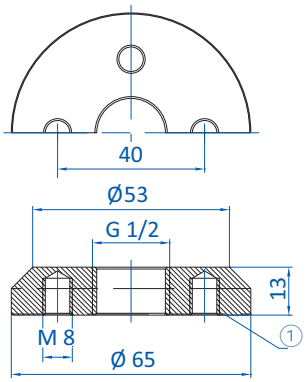
Technical data

Item no.	Thread G1
270.529-S	G1/2-female



Technical data

Item no.	Connection thread
270.380	G1/2-female



① = Aluminum

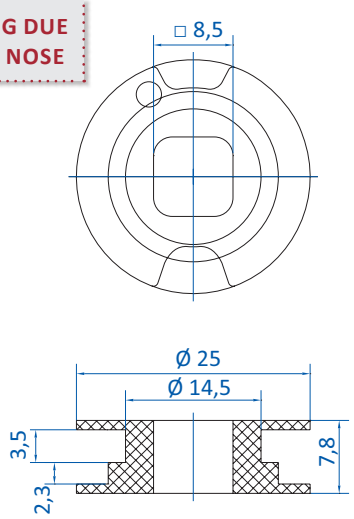
Technical data

Item no.	Thread G1
270.056	G1/2-female

Ordering notes

4x screw M8x16 included in delivery

EASY MOUNTING DUE TO ABRADABLE NOSE

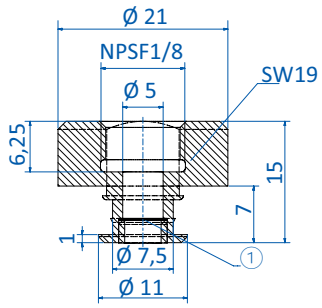


Technical data

Item no.	Thread G1
270.419	Without Thread

Ordering notes

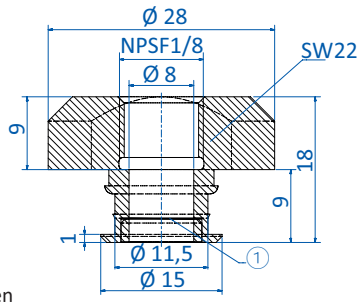
Suitable mounting aid: Item no. 90.007



① = Filter screen

Technical data

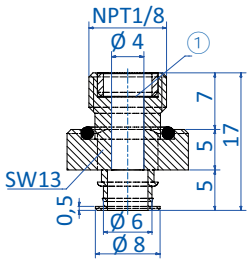
Item no.	Thread G1
270.781-S	NPSF1/8-female



① = Filter screen

Technical data

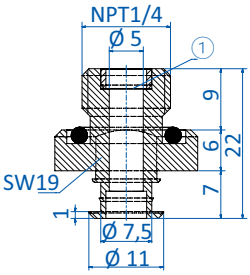
Item no.	Thread G1
270.782-S	NPSF1/8-female



① = Filter screen

Technical data

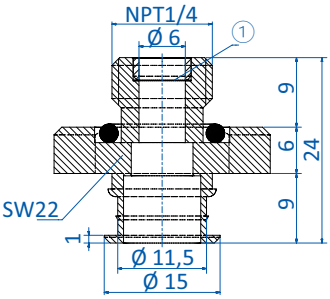
Item no.	Thread G1
270.783-S	NPT1/8-male



① = Filter screen

Technical data

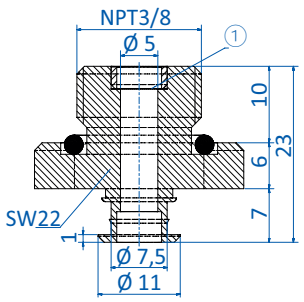
Item no.	Thread G1
270.786-S	NPT1/4-male



① = Filter screen

Technical data

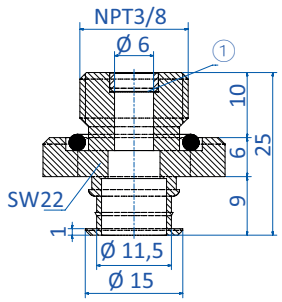
Item no.	Thread G1
270.784-S	NPT1/4-male



① = Filter screen

Technical data

Item no.	Thread G1
270.785-S	NPT3/8-male

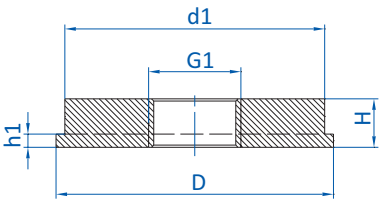


① = Filter screen

Technical data

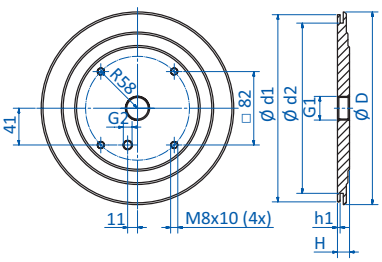
Item no.	Thread G1
270.787-S	NPT3/8-male

Carrier plates SZ-NIP-T



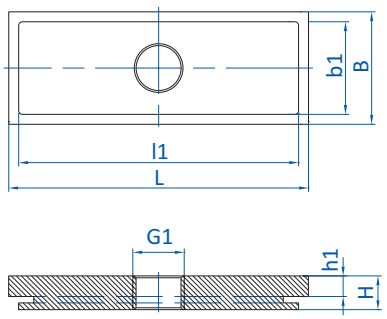
Technical data		Dimensions				
Item no.	Thread G1	G1	H [mm]	h1 [mm]	Ø D [mm]	Ø d1 [mm]
270.233	G1/8-female	G1/8	6	3.1	17.5	14.9
270.234	G1/8-female	G1/8	6	3	21	17.5
270.235	G1/8-female	G1/8	5.5	2.1	28.5	25
270.289	G1/8-female	G1/8	10	3	29	20
270.179	G1/4-female	G1/4	20	14.5	43	32
270.262	G1/8-female	G1/8	10	3	44	40
270.284	G1/4-female	G1/4	10	3	44	40
270.338	M12x1.75-female	M12x1.75	10	3	55	45
270.180	G1/4-female	G1/4	20	14	60	50
270.158	G1/8-female	G1/8	11	3	63	59
270.264	G1/4-female	G1/4	11	3	63	59
270.286	G1/2-female	G1/2	11	3	63	59
270.224	G1/4-female	G1/4	11	3	92	88
270.167	G3/8-female	G3/8	11	3	92	88
270.266	G1/2-female	G1/2	11	3	92	88
270.164	G1/8-female	G1/8	11	3	95	88
270.171	G1/4-female	G1/4	15	4	127	120
270.173	G3/8-female	G3/8	15	4	127	120
270.268	G1/2-female	G1/2	15	4	127	120
270.335	G1/2-female	G1/2	20	14	160	150

Carrier plates SZ-NIP-T



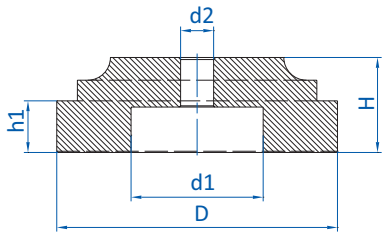
Technical data		Dimensions						
Item no.	Thread G1	G1	G2	H [mm]	h1 [mm]	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]
270.076	G3/4-female	G3/4	G1/8	13.5	3	315	309	285

Carrier plates SZ-NIP-T



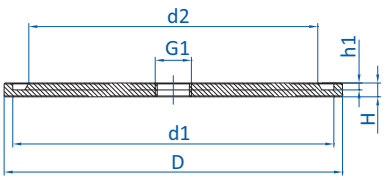
Technical data		Dimensions						
Item no.	Thread G1	G1	L [mm]	l1 [mm]	B [mm]	b1 [mm]	H [mm]	h1 [mm]
270.508	G1/8-female	G1/8	52	48	25	22	9	5.5
270.509	G1/4-female	G1/4	60	56	29	25	9	5.5
270.392	G1/4-female	G1/4	80	75	30	25	9	5.5
270.510	G1/4-female	G1/4	80	75	40	35	9	5.5
270.511	G1/4-female	G1/4	80	75	50	44	9	5.5

Carrier plates SZ-NIP-T



Technical data		Dimensions				
Item no.	Thread G1	H [mm]	h1 [mm]	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]
270.270	Without	23	12.5	68	32	8

Carrier plates SZ-NIP-T



Technical data		Dimensions				
Item no.	Thread G1	H [mm]	h1 [mm]	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]
270.415	Without	8	4.8	95	86	62
270.236	G1/2-female	8	4	196	186	167
270.535	Without	10	5	237	227	198

Non-rotating internal spring levelers – smooth body



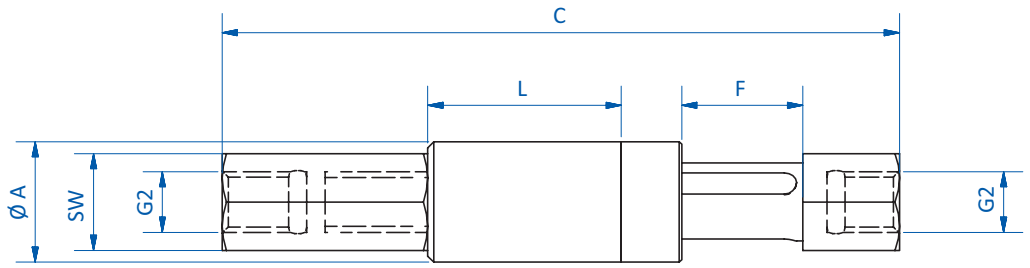
Product notes

> Free moving and high-load capability with ball guide technology
> Clampable smooth body
> Body and rod made of anodized aluminum

Technical data

Item no.	Thread suction side G2	Stroke [mm]	Non-rotating	Weight [g]
GR03.1010	M5-female	10	Yes	7
GR03.1025	M5-female	25	Yes	11
GR03.1420	G1/8-female	20	Yes	23
GR03.1435	G1/8-female	35	Yes	35
GR03.2025	G1/8-female	25	Yes	54
GR03.2050	G1/8-female	50	Yes	80

Dimensions



Item no.	Ø A [mm]	C [mm]	L [mm]	G2	F [mm]	SW
GR03.1010	10	56	16	M5	10	8
GR03.1025	10	90.5	35.5	M5	25	8
GR03.1420	14	98.5	31.5	G1/8	20	12
GR03.1435	14	133.5	51.5	G1/8	35	12
GR03.2025	20	110	41	G1/8	25	16
GR03.2050	20	167.5	73.5	G1/8	50	16

Non-rotating internal spring levelers – threaded body



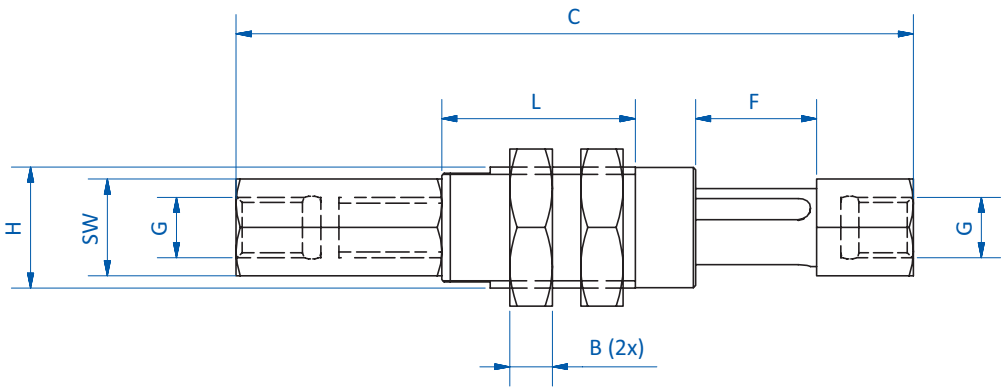
Product notes

> Free moving and high-load capability with ball guide technology
> Flexible mounting via threaded body
> Body and rod made of anodized aluminum

Technical data

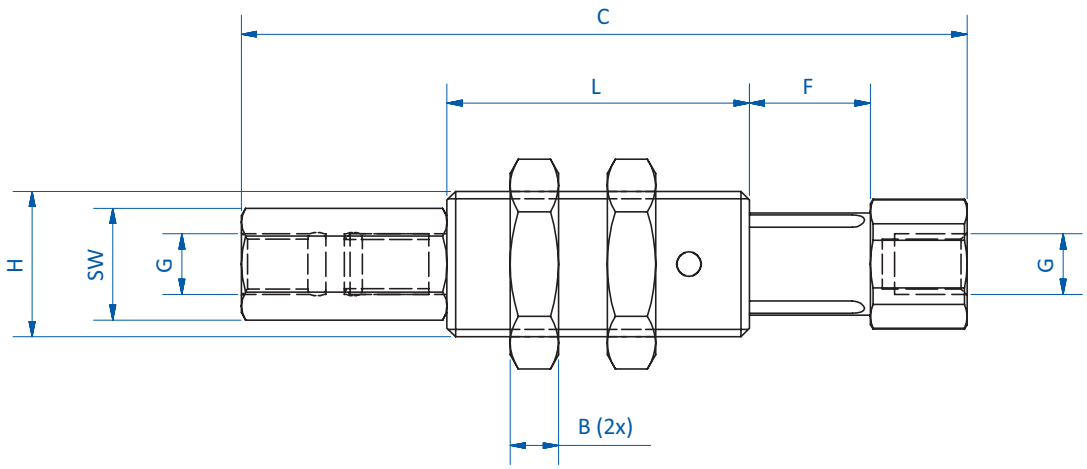
Item no.	Thread suction side G2	Stroke [mm]	Non-rotating	Weight [g]
GR03.1010T	M5-female	10	Yes	11
GR03.1025T	M5-female	25	Yes	13
GR03.1210T	M5-female	10	Yes	15
GR03.1225T	M5-female	25	Yes	20
GR03.1620T	G1/8-female	20	Yes	35
GR03.1635T	G1/8-female	35	Yes	45
GR03.2025T	G1/4-female	25	Yes	63
GR03.2050T	G1/4-female	50	Yes	90
GR03.2540T	G3/8-female	40	Yes	170
GR03.2580T	G3/8-female	80	Yes	235

Dimensions



GR03.1010T | GR03.1025T

Dimensions



GR03.1210T | GR03.1225T | GR03.1620T | GR03.1635T | GR03.2025T | GR03.2050T | GR03.2540T | GR03.2580T

Item no.	H	B [mm]	C [mm]	L [mm]	G	F [mm]	SW
GR03.1010T	M10x1	3.5	56	16	M5	10	8
GR03.1025T	M10x1	3.5	90.5	35.5	M5	25	8
GR03.1210T	M12x1	4	60	25	M5	10	8
GR03.1225T	M12x1	4	94	44	M5	25	8
GR03.1620T	M16x1	5	98.5	38.5	G1/8	20	12
GR03.1635T	M16x1	5	135	58.5	G1/8	36.5	12
GR03.2025T	M20x1.5	6	113	50	G1/4	25	16
GR03.2050T	M20x1.5	6	170.5	82.5	G1/4	50	16
GR03.2540T	M25x1.5	8	159	71	G3/8	40	22
GR03.2580T	M25x1.5	8	249	121	G3/8	80	22

Standard spring levelers with threaded connection – SZ-NIV-S



Product notes

> Compensate for height differences
> Soft attachment for sensitive products
> Leveling as standard version
> Vacuum connection on top, vacuum channel via spring leveler
> Also available non-rotating (M5-female)

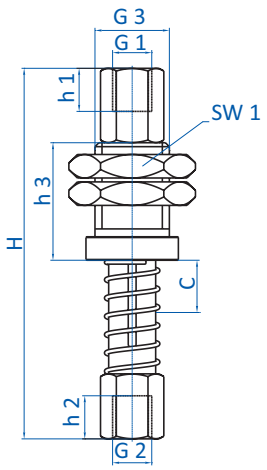
Notes

> Recommendation: for the best possible service life do not exceed max. stroke indicated

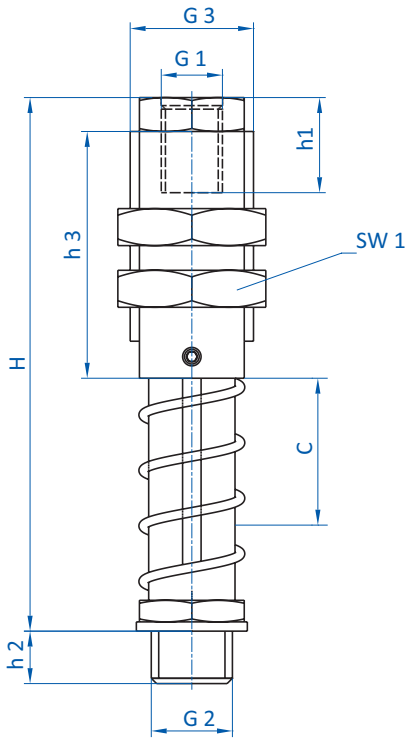
Technical data

Item no.	Model	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Weight [g]	Suitable mounting bracket
50.158	SZ-NIV-S-M5-IG-5	M5-female	G1/8-male	5	0.393	4	2	No	17	GR02.230
50.149	SZ-NIV-S-M5-IG-10	M5-female	G1/8-male	10	0.361	5.8	2.2	No	18	GR02.230
50.152	SZ-NIV-S-M5-IG-10-VS	M5-female	G1/8-male	10	0.361	5.5	1.9	Yes	19	GR02.230
50.150	SZ-NIV-S-M5-IG-20	M5-female	G1/8-male	18	0.227	4.3	0.3	No	20	GR02.230
50.153	SZ-NIV-S-M5-IG-20-VS	M5-female	G1/8-male	20	0.227	4.8	0.3	Yes	21	GR02.230
50.230	SZ-NIV-S-G1/8-AG-15	G1/8-male	M16x1-male	15	0.211	6.5	3.3	No	94	GR02.231
50.160	SZ-NIV-S-G1/8-AG-25	G1/8-male	M16x1-male	25	0.231	8.7	2.9	No	94	GR02.231
50.162	SZ-NIV-S-G1/8-AG-50	G1/8-male	M16x1-male	50	0.156	9.7	1.9	No	110	GR02.231
50.164	SZ-NIV-S-G1/4-AG-25	G1/4-male	M20x1.5-male	25	0.65	18.3	2	No	136	GR02.232
50.166	SZ-NIV-S-G1/4-AG-75	G1/4-male	M20x1.5-male	75	0.245	19.4	1.1	No	195	GR02.232

Dimensions



50.158 | 50.149 | 50.152 | 50.150 | 50.153



50.230 | 50.160 | 50.162 | 50.164 | 50.166

Item no.	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	SW1	G1 (female)	G2 (male)	G2 (female)	G3 (male)	C [mm]
50.158	43	5.5	6.2	15	14	M5	--	M5	G1/8	5
50.149	47	5.5	6.2	15	14	M5	--	M5	G1/8	10
50.152	47	5.5	6.2	15	14	M5	--	M5	G1/8	10
50.150	59	5.5	6.2	15	14	M5	--	M5	G1/8	20
50.153	59	5.5	6.2	15	14	M5	--	M5	G1/8	20
50.230	72	8	6.5	30	22	G1/8	G1/8	--	M16x1	15
50.160	85	8.5	8.5	30	22	G1/8	G1/8	--	M16x1	25
50.162	116	8.5	6.5	30	22	G1/8	G1/8	--	M16x1	50
50.164	95	15	9	40	24	G1/8	G1/4	--	M20x1.5	25
50.166	153	15	10.5	40	24	G1/8	G1/4	--	M20x1.5	75

Spring levelers with internal spring and threaded connection – SZ-NIV-I

BESTSELLER



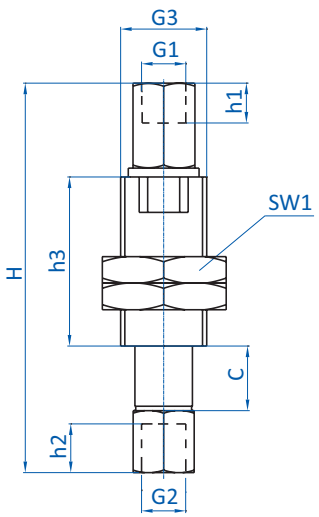
Product notes

> Compensate for height differences
> Soft attachment for sensitive products
> With internal spring protected from dirt and with spring deflection limiter
> Vacuum connection on top, vacuum channel via spring leveler

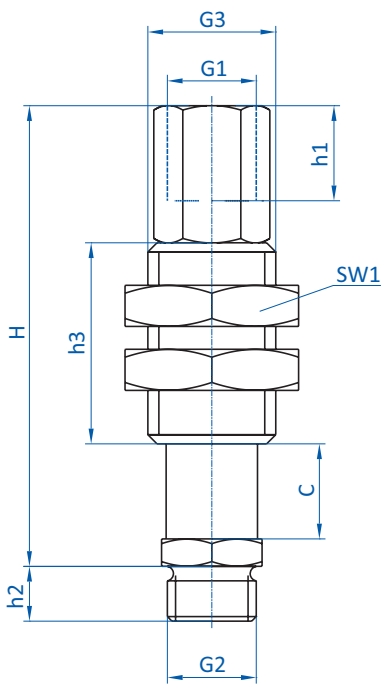
Technical data

Item no.	Model	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Weight [g]	Suitable mounting bracket
50.120	SZ-NIV-I-M5-IG-7	M5-female	G1/8-male	7	0.606	6	1.8	17	GR02.230
50.123	SZ-NIV-I-G1/8-AG-8	G1/8-male	M14x1.5-male	8	0.097	2.6	1.8	42	--
50.124	SZ-NIV-I-G1/8-AG-20	G1/8-male	M16x1-male	19	0.482	12.8	3.7	73	GR02.231

Dimensions



50.120



50.123 | 50.124

Item no.	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	SW1	G1 (female)	G2 (female)	G2 (male)	G3 (male)	C [mm]
50.120	44	4.3	5	19	14	M5	M5	--	G1/8	7
50.123	50	10	6	22	19	G1/8	--	G1/8	M14x1.5	8
50.124	73	12	5.6	35	21	G1/8	--	G1/8	M16x1	20

Heavy-duty spring levelers – SZ-NIV-HD

HEAVY-DUTY DESIGN



Product notes

> Compensate for height differences
> Soft attachment for sensitive products
> Long life even under the toughest conditions
> Leveling with stainless steel shaft and high-quality bearings
> Vacuum connection on top, vacuum channel via spring leveler
> Optionally also available non-rotating

Notes

> Recommendation: for the best possible service life do not exceed max. stroke indicated

Technical data

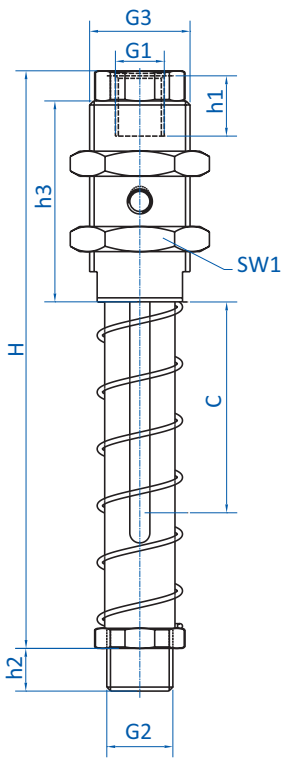
Item no.	Model	Thread suction side G2	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Weight [g]	Suitable mounting bracket
50.315	SZ-NIV-HD-G1/8-AG-15	G1/8-male	15	0.221	5.4	2.1	No	83	GR02.231
50.310	SZ-NIV-HD-G1/8-AG-15-VS	G1/8-male	15	0.221	6.6	3.3	Yes	83	GR02.231
50.316	SZ-NIV-HD-G1/8-AG-25	G1/8-male	25	0.193	6.8	2	No	89	GR02.231
50.311	SZ-NIV-HD-G1/8-AG-25-VS	G1/8-male	25	0.193	5.8	1	Yes	89	GR02.231
50.317	SZ-NIV-HD-G1/8-AG-50	G1/8-male	50	0.097	6.7	1.8	No	104	GR02.231
50.312	SZ-NIV-HD-G1/8-AG-50-VS	G1/8-male	50	0.097	7.6	2.8	Yes	104	GR02.231
50.345	SZ-NIV-HD-G1/4-AG-25	G1/4-male	25	0.711	22.9	5.2	No	134	GR02.232
50.340	SZ-NIV-HD-G1/4-AG-25-VS	G1/4-male	25	0.711	22.1	4.3	Yes	134	GR02.232
50.346	SZ-NIV-HD-G1/4-AG-50	G1/4-male	50	0.452	24.5	1.9	No	160	GR02.232
50.341	SZ-NIV-HD-G1/4-AG-50-VS	G1/4-male	50	0.452	23.9	1.3	Yes	160	GR02.232
50.347	SZ-NIV-HD-G1/4-AG-75	G1/4-male	75	0.262	22.3	2.6	No	186	GR02.232
50.342	SZ-NIV-HD-G1/4-AG-75-VS	G1/4-male	75	0.262	24	4.4	Yes	186	GR02.232
50.350	SZ-NIV-HD-G3/8-AG-25	G3/8-male	25	3.828	95.6	19.1	No	410	--
50.353	SZ-NIV-HD-G3/8-AG-25-VS	G3/8-male	25	3.828	95.4	18.9	Yes	406	--
50.351	SZ-NIV-HD-G3/8-AG-75	G3/8-male	75	1.072	113.4	33	No	531	--
50.354	SZ-NIV-HD-G3/8-AG-75-VS	G3/8-male	75	1.072	124.5	44.1	Yes	525	--
50.360	SZ-NIV-HD-G1/2-AG-25	G1/2-male	25	3.828	95.1	18.5	No	419	--
50.363	SZ-NIV-HD-G1/2-AG-25-VS	G1/2-male	25	3.828	105.9	29.3	Yes	416	--
50.361	SZ-NIV-HD-G1/2-AG-75	G1/2-male	75	1.436	113.8	6.1	No	548	--
50.364	SZ-NIV-HD-G1/2-AG-75-VS	G1/2-male	75	1.436	121.7	14	Yes	540	--
50.366	SZ-NIV-HD-M12-AG-25	M12-male	25	0.711	22.9	5.2	No	150	GR02.232
50.367	SZ-NIV-HD-M12-AG-25-VS	M12-male	25	0.711	22.1	4.3	Yes	150	GR02.232
50.368	SZ-NIV-HD-M12-AG-50	M12-male	50	0.452	24.5	1.9	No	176	GR02.232
50.369	SZ-NIV-HD-M12-AG-50-VS	M12-male	50	0.452	23.9	1.3	Yes	176	GR02.232

Continued on the next page

Technical data

Item no.	Model	Thread suction side G2	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Weight [g]	Suitable mounting bracket
50.370	SZ-NIV-HD-M12-AG-75	M12-male	75	0.262	22.3	2.6	No	202	GR02.232
50.371	SZ-NIV-HD-M12-AG-75-VS	M12-male	75	0.262	24	4.4	Yes	202	GR02.232
50.372	SZ-NIV-HD-M16-AG-25	M16-male	20	3.828	95.6	19.1	No	451	--
50.373	SZ-NIV-HD-M16-AG-25-VS	M16-male	20	3.828	95.4	18.9	Yes	447	--
50.374	SZ-NIV-HD-M16-AG-75	M16-male	75	1.072	113.4	33	No	572	--
50.375	SZ-NIV-HD-M16-AG-75-VS	M16-male	75	1.072	124.5	44.1	Yes	566	--

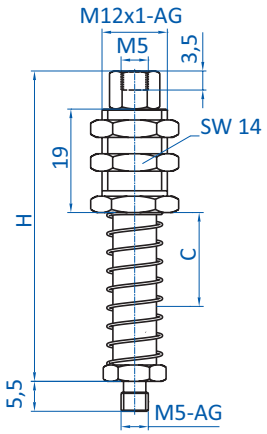
Dimensions



Item no.	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	SW1	G1 (female)	G2 (male)	G3 (male)	C [mm]
50.315	72	8	8	30	22	G1/8	G1/8	M16x1	15
50.310	72	8	8	30	22	G1/8	G1/8	M16x1	15
50.316	85	8	8	30	22	G1/8	G1/8	M16x1	25
50.311	85	8	8	30	22	G1/8	G1/8	M16x1	25
50.317	116	8	8	30	22	G1/8	G1/8	M16x1	50
50.312	116	8	8	30	22	G1/8	G1/8	M16x1	50
50.345	85.5	12	8.5	40	24	G1/8	G1/4	M20x1.5	25
50.340	85.5	12	8.5	40	24	G1/8	G1/4	M20x1.5	25
50.346	115	12	8.5	40	24	G1/8	G1/4	M20x1.5	50
50.341	115	12	8.5	40	24	G1/8	G1/4	M20x1.5	50
50.347	144.5	12	8.5	40	24	G1/8	G1/4	M20x1.5	75
50.342	144.5	12	8.5	40	24	G1/8	G1/4	M20x1.5	75
50.350	104	14	12	53	36	G3/8	G3/8	M30x1.5	25
50.353	104	14	12	53	36	G3/8	G3/8	M30x1.5	25



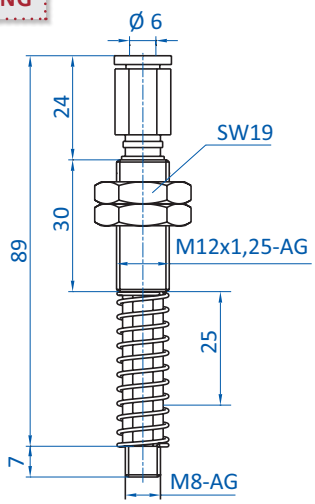
Item no.	**H** [mm]	**h1** [mm]	**h2** [mm]	**h3** [mm]	**SW1**	**G1 (female)**	**G2 (male)**	**G3 (male)**	**C** [mm]
50.351	175	14	12	53	36	G3/8	G3/8	M30x1.5	75
50.354	175	14	12	53	36	G3/8	G3/8	M30x1.5	75
50.360	104	14	12	53	36	G3/8	G1/2	M30x1.5	25
50.363	104	14	12	53	36	G3/8	G1/2	M30x1.5	25
50.361	175	14	12	53	36	G3/8	G1/2	M30x1.5	75
50.364	175	14	12	53	36	G3/8	G1/2	M30x1.5	75
50.366	97.5	12	10	40	24	G1/8	M12	M20x1.5	25
50.367	97.5	12	10	40	24	G1/8	M12	M20x1.5	25
50.368	127	12	10	40	24	G1/8	M12	M20x1.5	50
50.369	127	12	10	40	24	G1/8	M12	M20x1.5	50
50.370	156.5	12	10	40	24	G1/8	M12	M20x1.5	75
50.371	156.5	12	10	40	24	G1/8	M12	M20x1.5	75
50.372	119	14	10	53	36	G3/8	M16	M30x1.5	25
50.373	119	14	10	53	36	G3/8	M16	M30x1.5	25
50.374	190	14	10	53	36	G3/8	M16	M30x1.5	75
50.375	190	14	10	53	36	G3/8	M16	M30x1.5	75



Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]	C [mm]	H [mm]
50.121	M5-male	10	No	M12x1-male	28	10	47
50.122	M5-male	20	No	M12x1-male	31	20	57

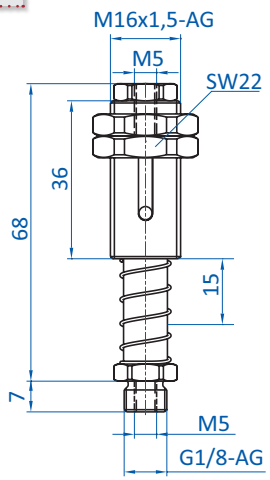
NON-ROTATING



Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.054	M8-male	25	Yes	M12x1.25-male	83

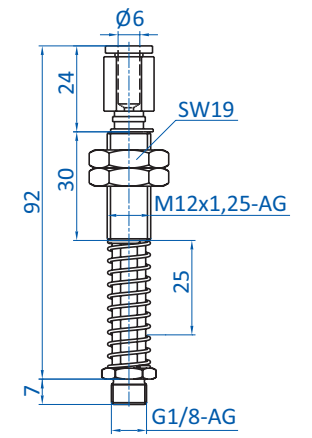
NON-ROTATING



Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.066	G1/8-male	15	Yes	M16x1.5-male	70

NON-ROTATING

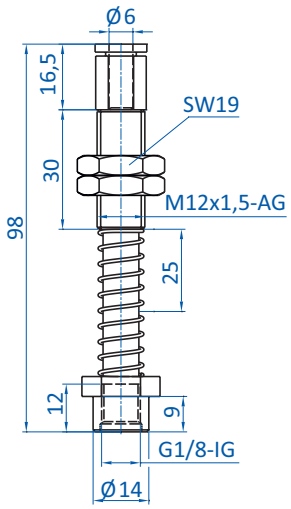


Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.055	G1/8-male	25	Yes	M12x1.25-male	64

Notes:

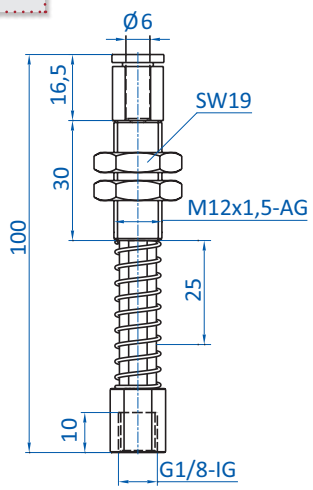
with plastic slide bearings



Technical data

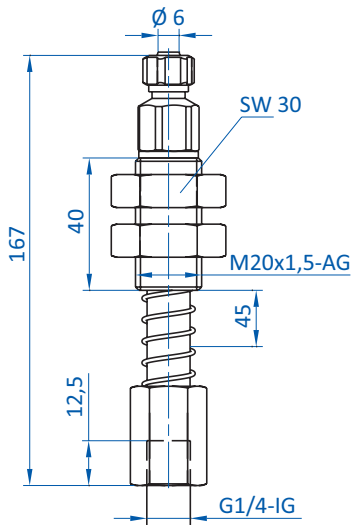
Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.021	G1/8-female	25	No	M12x1.5-male	75

NON-ROTATING



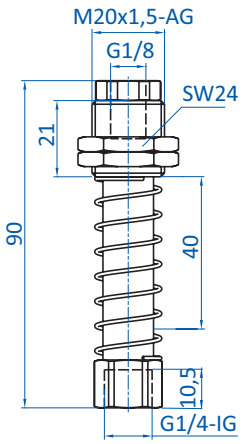
Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.056	G1/8-female	25	Yes	M12x1.5-male	63



Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.106	G1/4-female	45	No	M20x1.5-male	250



Technical data

Item no.	Thread suction side G2	Stroke C [mm]	Non-rotating	Thread fixing bushes G3	Weight [g]
50.050	G1/4-female	40	No	M20x1.5-male	122

Spring levelers for direct vacuum cup mounting – internal spring – SZ-NIV-DI





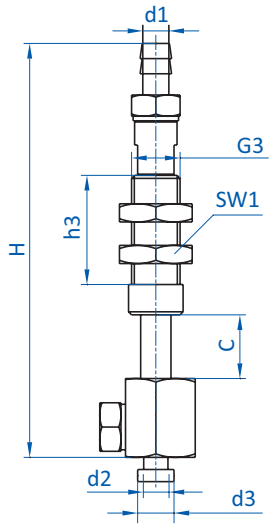
Product notes

> Direct mounting of the spring leveler on the vacuum cup, no additional fitting required
> With internal spring protected from dirt and with spring deflection limiter
> Compensate for height differences
> Soft attachment for sensitive products
> Vacuum connection on top, vacuum channel via spring leveler

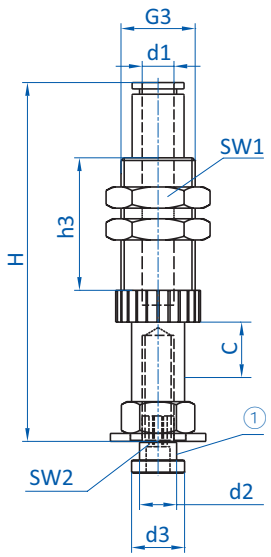
Technical data

Item no.	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Hose inner diameter [mm]	Hose outer diameter [mm]	Design	Weight [g]	Suitable mounting bracket
50.330	Without (Snap-in)	M8x0.75	9	0.037	0.6	0.2	No	4	--	--	19	--
50.103	Without (Snap-in)	M14x1-male	5.5	0.36	6.4	4.4	Yes	--	6	--	34	--
50.104	Without (Snap-in)	M14x1-male	6	0.388	6.5	4.2	Yes	--	4	--	33	--
50.125	Without (Snap-in)	M14x1-male	9.5	0.286	5.3	2.6	Yes	--	6	--	36	--
50.126	Without (Snap-in)	M14x1-male	15	1.933	5.2	1.9	Yes	--	6	--	41	--
50.127	Without (Snap-in)	M14x1-male	19.5	0.147	3.9	1	Yes	--	6	--	48	--
50.085	Without (Snap-in)	M14x1-male	6	0.89	13.7	0.3	Yes	--	6	--	36	--
50.086	Without (Snap-in)	M14x1-male	5.5	0.706	11.5	7.6	Yes	--	4	--	36	--
50.128	Without (Snap-in)	M14x1-male	10	0.534	8.7	3.4	Yes	--	6	--	36	--
50.129	Without (Snap-in)	M14x1-male	15	0.452	6.9	0.1	Yes	--	6	--	41	--
50.130	Without (Snap-in)	M14x1-male	19.5	0.325	8.1	1.8	Yes	--	6	--	48	--
50.018	Without (Snap-in)	M16x1-male	8.5	0.141	2.3	1.1	No	--	4	Plastic corpus	21	GR02.231
50.020	Without (Snap-in)	M16x1-male	8.5	0.157	2.3	0.9	No	--	6	Plastic corpus	23	GR02.231

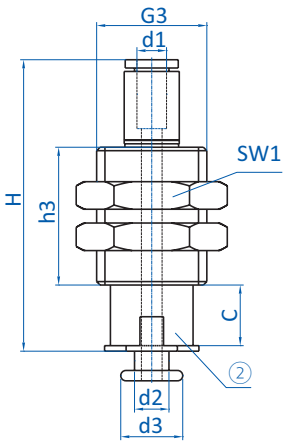
Dimensions



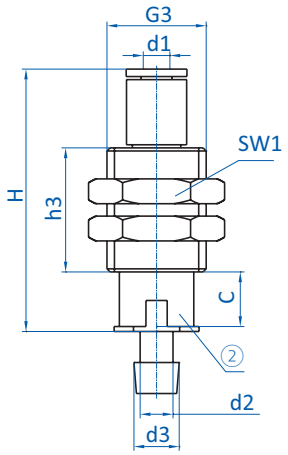
50.330



50.103 | 50.104 | 50.125 | 50.126 | 50.127 | 50.085 | 50.086 | 50.128 | 50.129 | 50.130



50.018



50.020

① = Mounting screw ② = Plastic body

Item no.	Ø **d1** [mm]	Ø **d2** [mm]	**d2**	Ø **d3** [mm]	**G3**	**H** [mm]	**h3** [mm]	**SW1**	**SW2**	**C** [mm]
50.330	4.3	4	--	6	M8x0.75	68	18	12	--	10
50.103	6	--	M4	6.3	M14x1	52	20	17	+	6
50.104	4	--	M4	6.3	M14x1	52	20	17	+	6
50.125	6	5	--	6	M14x1	56	20	17	3	10
50.126	6	5	--	6	M14x1	67	25	17	3	15
50.127	6	5	--	6	M14x1	83	34	17	3	20
50.085	6	7	--	10	M14x1	52	20	17	3	6
50.086	4	7	--	10	M14x1	52	20	17	3	6
50.128	6	7	--	10	M14x1	58	20	17	3	10
50.129	6	7	--	10	M14x1	68	25	17	3	15
50.130	6	7	--	10	M14x1	83	34	17	3	20
50.018	4	5	--	8.7	M16x1	45	20	19	--	8.5
50.020	6	5	--	7.3	M16x1	42.5	20	19	--	8.5

Spring levelers for direct vacuum cup mounting – spring open – SZ-NIV-DA



Series 1



Series 2

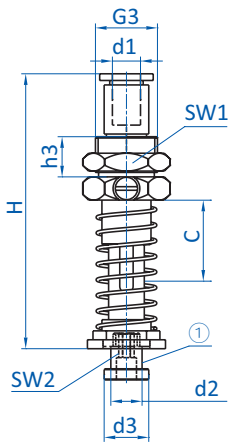
Product notes

> Direct mounting of the spring leveler on the vacuum cup, no additional fitting required
> Compensate for height differences
> Soft attachment for sensitive products
> Leveling with an open spring

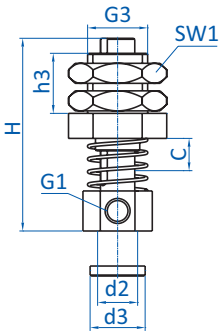
Technical data

Item no.	Series	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Hose outside Ø [mm]	Hose inner diameter [mm]	Weight [g]
50.095	1	Without (Snap-in)	M14x1-male	19.5	0.165	4.5	1.3	Yes	6	--	51
50.096	1	Without (Snap-in)	M14x1-male	30	2.984	2.7 - 0.2	0.2	Yes	6	--	57
50.097	1	Without (Snap-in)	M14x1-male	39	0.078	3.9	0.8	Yes	6	--	62
50.098	1	Without (Snap-in)	M14x1-male	49.5	0.066	3.8	0.5	Yes	6	--	67
50.141	2	Without (Snap-in)	M10x1-male	9	0.475	4.8	0.5	No	--	--	12
50.005	2	Without (Snap-in)	M12-male	5	0.165	2	1.2	No	--	--	23
50.145	2	Without (Snap-in)	M12-male	11	0.083	3.071	0.581	No	--	--	39
50.037	2	Without (Snap-in)	M12x1.5-male	25	0.503	12.8	0.2	No	--	4	69
50.146	2	Without (Snap-in)	M12-male	30	0.075	2.45	0.525	No	--	--	46

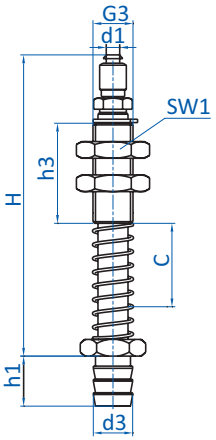
Dimensions



50.095 | 50.096 | 50.097 | 50.098



50.141 | 50.005 | 50.145 | 50.146



50.037

① = Mounting screw M6

Item no.	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	**G1**	**G3**	**H** [mm]	**h1** [mm]	**h3** [mm]	**SW1**	**SW2**	**C** [mm]
50.095	6	7	10	--	M14x1	61	--	9	17	3	20
50.096	6	7	10	--	M14x1	75	--	9	17	3	30
50.097	6	7	10	--	M14x1	87	--	9	17	3	40
50.098	6	7	10	--	M14x1	100	--	9	17	3	50
50.141	--	5	7	M5	M10x1	40	--	12	14	--	8
50.005	--	8	11	M5	M12	43	--	16	19	--	5
50.145	--	8	11	M5	M12	44	--	15	17	--	10
50.037	4	--	5.5	--	M12x1.5	89	7	30	19	--	25
50.146	--	8	11	M5	M12	68	--	15	17	--	30

Vacuum lifting cylinders – operated by compressed air, for flat suction picking

For flat suction picking, e.g. for vacuum cup series SFU-F Ø 4 - 15 mm





Product notes

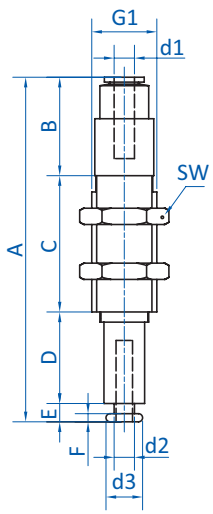
> Stacking and destacking of workpieces
> Vacuum generation by compressed air using an integrated ejector
> Lifting cylinder extended during idle state
> Cycle time independent of stroke and weight
> Vacuum cups can be found in chapter vacuum cups series, flat vacuum cups SFU-F Ø 4 - 15 mm and bellows vacuum cups SBF-B Ø 6 - 15 mm

Note
> Minimize rotating load or load on the ejector and shaft parts from the transverse direction. These can shorten the service life of the lifting cylinder.

Technical data

Item no.	Stroke [mm]	Lifting force [N]	Operating pressure [bar (psi)]	Vacuum level [mbar (inHg)]	Cycles [1/min]	Weight [g]	Suitable mounting bracket
55.100	5	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	33	GR02.231
55.102	10	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	36	GR02.231
55.104	20	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	41	GR02.231
55.106	30	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	45	GR02.231
55.108	5	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	32	GR02.231
55.110	10	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	45	GR02.231
55.112	20	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	52	GR02.231
55.114	30	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	45	GR02.231

Dimensions





Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**d1** [mm]	**d2** [mm]	**d3** [mm]	**E** [mm]	**F** [mm]	**G1**	**SW**
55.100	54.2	23.5	22	5	4	5.2	8.7	4.5	2	M16x1	19
55.102	64.2	23.5	27	10	4	5.2	8.7	4.5	2	M16x1	19
55.104	85	23.5	37	20	4	5.2	8.7	4.5	2	M16x1	19
55.106	105	23.5	47	30	4	5.2	8.7	4.5	2	M16x1	19
55.108	56.5	25	22	5	6	5.2	8.7	4.5	2	M16x1	19
55.110	63.5	25	27	10	6	5.2	8.7	4.5	2	M16x1	19
55.112	85	25	37	20	6	5.2	8.7	4.5	2	M16x1	19
55.114	106.5	25	47	30	6	5.2	8.7	4.5	2	M16x1	19

Vacuum lifting cylinders, for high suction picking – operated by compressed air

For high suction picking, e.g. for vacuum cup series SFU-F Ø 20 - 40 mm





Product notes

> Stacking and destacking of workpieces
> Vacuum generation by compressed air using an integrated ejector
> Lifting cylinder extended during idle state
> Cycle time independent of stroke and weight
> Vacuum cups can be found in chapter vacuum cups series, flat vacuum cups SFU-F Ø 20 - 40 mm and bellow vacuum cups SBF-B Ø 20 mm
>

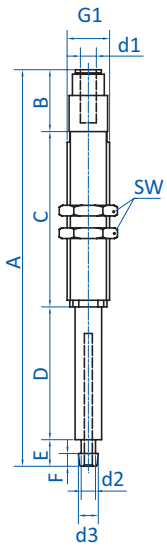
Note

> Minimize rotating load or load on the ejector and shaft parts from the transverse direction. These can shorten the service life of the lifting cylinder.

Technical data

Item no.	Stroke [mm]	Lifting force [N]	Operating pressure [bar (psi)]	Vacuum level [mbar (inHg)]	Cycles [1/min]	Weight [g]	Suitable mounting bracket
55.101	5	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	33	GR02.231
55.103	10	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	36	GR02.231
55.105	20	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	41	GR02.231
55.107	30	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	46	GR02.231
55.109	5	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	33	GR02.231
55.111	10	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	36	GR02.231
55.113	20	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	41	GR02.231
55.115	30	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	46	GR02.231
55.120	50	3.5 - 5	3.5 - 4.5 (50.8 - 65.3)	-700 (-20.7)	50	56	GR02.231

Dimensions





Item no.	G1	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	d2 [mm]	d3 [mm]	E [mm]	F [mm]	SW
55.101	M16x1	60.5	23.5	22	5	4	5	7.5	10	5	19
55.103	M16x1	70.5	23.5	27	10	4	5	7.5	10	5	19
55.105	M16x1	90.5	23.5	37	20	4	5	7.5	10	5	19
55.107	M16x1	110.5	23.5	47	30	4	5	7.5	10	5	19
55.109	M16x1	62	25	22	5	6	5	7.5	10	5	19
55.111	M16x1	72	25	27	10	6	5	7.5	10	5	19
55.113	M16x1	92	25	37	20	6	5	7.5	10	5	19
55.115	M16x1	112	25	47	30	6	5	7.5	10	5	19
55.120	M16x1	151	25	67	50	6	5	7.5	10	5	19

Lifting cylinders – vacuum-operated

Torsionally rigid



55.000 | 55.001 | 55.004



55.002

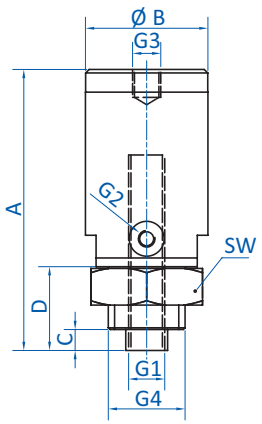
Product notes

> Picking-up and stacking flat and sensitive objects such as e.g. signs, cards, paper, veneers
> Suitable for short cycle times
> Robust aluminum housing, Hartcoat® treated
> Non-rotating piston rod
> Low-noise version
> 55.002: stacking and lifting of metal sheet and heavy parts
> Not suitable for workpieces permeable to air
> Customized sizes on request

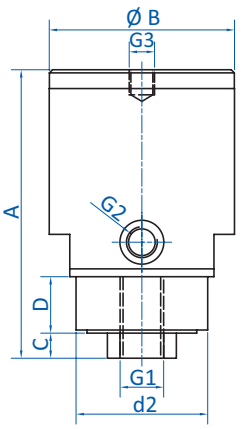
Technical data

Item no.	Stroke [mm]	Volume flow at 80 % vacuum [Nl/min]	Lifting force at 80 % vacuum [N]	Cycle time (extend-suction-lift) [s]	Operating temperature [°C (°F)]	Weight [g]
55.000	17	15	3	0.3	5 - 80 (41 - 176)	39
55.001	25	35	7	0.4	5 - 80 (41 - 176)	111
55.002	30	35	50	1.4	5 - 80 (41 - 176)	331
55.004	40	35	7	0.8	5 - 80 (41 - 176)	138

Dimensions



55.000 | 55.001 | 55.004

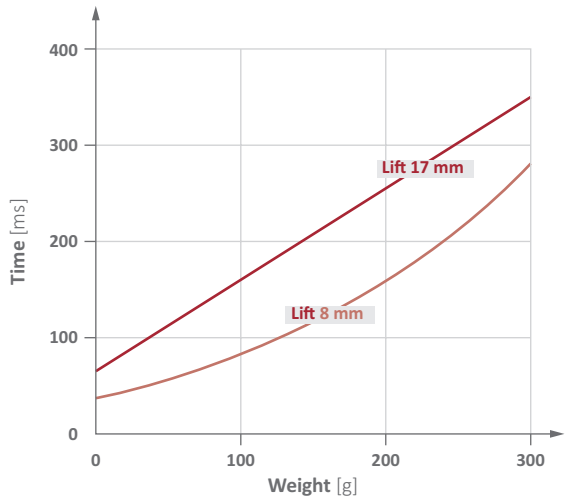


55.002

Item no.	G1	G2	G3	G4	A [mm]	Ø B [mm]	C [mm]	D [mm]	d2 [mm]	SW
55.000	M5	M5	M6	M16x1.5	55.5	24	4	16	--	19
55.001	G1/8	M5	M8	M22x1.5	78	35	6	22	--	27
55.002	G1/4	G1/4	M10	--	92	59	8	18	42	--
55.004	G1/8	G1/8	M8	M22x1.5	99	35	9	24	--	27

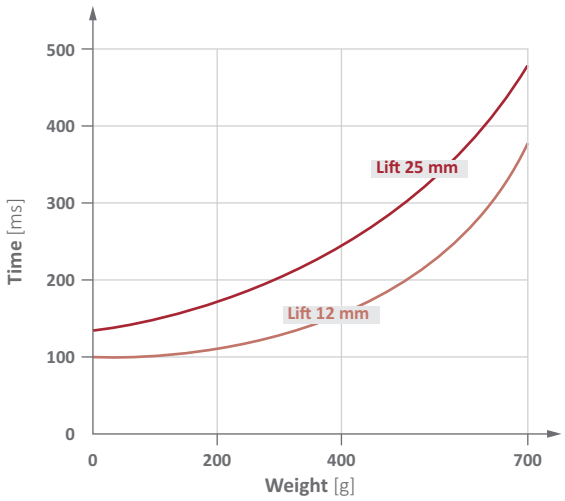
Diagrams

> Double stroke lifting time against weight



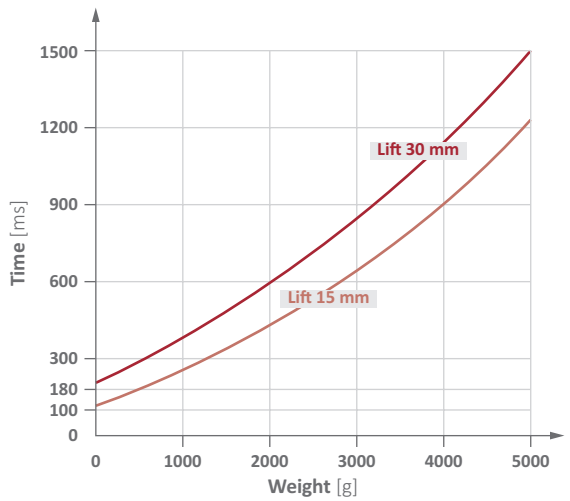
55.000

> Double stroke lifting time against weight



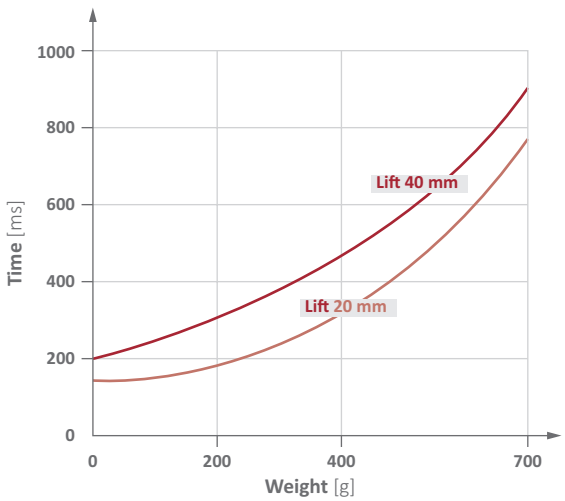
55.001

> Double stroke lifting time against weight



55.002

> Double stroke lifting time against weight



55.004

G threaded ball joints – SZ-GKG



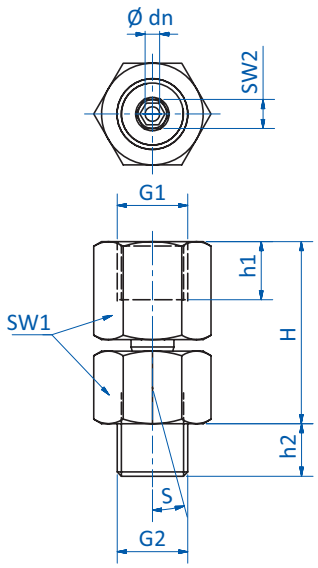
Product notes

> Universal articulating mount for vacuum cups allows compensation for sloping product surfaces
> Angle compensation for sagging products, such as sheet goods
> Version: Ball and socket with O-ring seal

Technical data

Item no.	Thread	Pivoting range S [°]	Lifting force [N]	Weight [g]
270.072	G1/8	2x15	300	26
270.073/1	G1/4	2x15	1,500	49
270.075	G1/2	2x15	2,500	116

Dimensions



Item no.	G1	G2	H [mm]	h1 [mm]	h2 [mm]	Ø dn [mm]	SW1	SW2	S [°]
270.072	G1/8	G1/8	25	8.5	7	2	14	4	2x15
270.073/1	G1/4	G1/4	37	11	10	3.5	19	8	2x15
270.075	G1/2	G1/2	38.5	14	11.5	4	24	6	2x15

Metric threaded ball joints – SZ-GKM



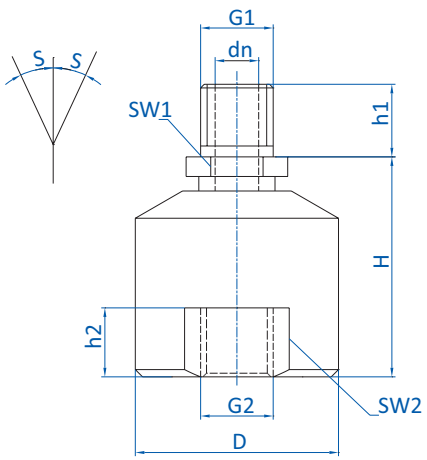
Product notes

> Universal articulating mount for vacuum cups allows compensation for sloping product surfaces
> Angle compensation for sagging products, such as sheet goods
> Version: Ball and socket with O-ring seal

Technical data

Item no.	Thread	Pivoting range S [°]	Weight [g]
270.185	M4	2x15	9
270.186	M6	2x15	20
270.187	M10	2x15	58

Dimensions



Item no.	G1	G2	H [mm]	h1 [mm]	h2 [mm]	Ø D [mm]	Ø dn [mm]	SW1	SW2	S [°]
270.185	M4	M4	19	4	7	15	2	4	--	2x15
270.186	M6	M6	23	6	6.5	20	3	7	--	2x15
270.187	M10	M10	30	10	9.5	28	6	12	24	2x15

Rubber joints – SZ-GG



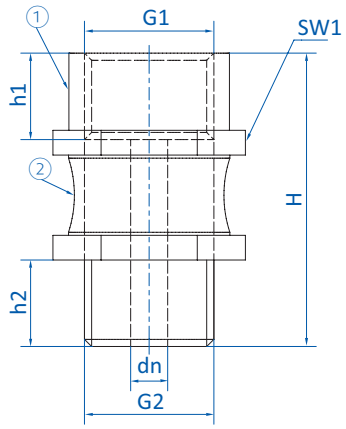
Product notes

> Universal articulating mount for vacuum cups allows compensation for sloping product surfaces
> Angle compensation for sagging products, such as sheet goods
> Automatic reset of the vacuum cup to normal position
> Version: Rubber-metal connection with vacuum channel

Technical data

Item no.	Thread	Pivoting range S [°]	Lifting force [N]	Ambient air temperature [°C (°F)]	Weight [g]
270.771	G1/4	2x12	750	0 - 70 (32 - 158)	30
270.203	G1/2	2x12	3,000	0 - 70 (32 - 158)	100

Dimensions

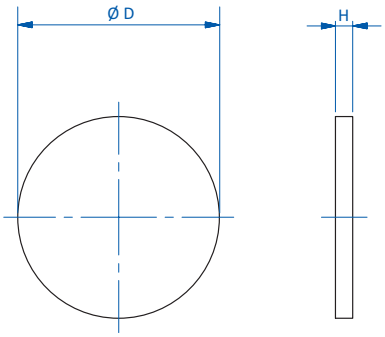


① = Steel ② = Rubber

Item no.	Ø dn [mm]	G1	G2	H [mm]	h1 [mm]	h2 [mm]	SW1
270.771	3	G1/4	G1/4	39	12	12	17
270.203	6	G1/2	G1/2	47.5	14	14	27

Filter discs – SZ-FI

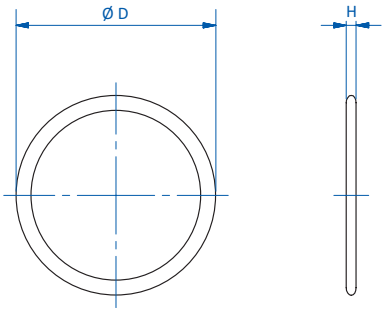
For insertion into vacuum cup fold



Technical data			Dimensions	
Item no.	Material	Usage temperature [°C (°F)]	H [mm]	Ø D [mm]
78.200	HDPE white	-40 - 80 (-40 - 176)	1.5	17.5
78.201	HDPE white	-40 - 80 (-40 - 176)	1.5	28
78.202	HDPE white	-40 - 80 (-40 - 176)	1.5	38.5
78.203	HDPE white	-40 - 80 (-40 - 176)	1.5	48
78.204	HDPE white	-40 - 80 (-40 - 176)	1.5	70.5
78.206	HDPE white	-40 - 80 (-40 - 176)	1.5	147

Filter discs – SZ-FIN

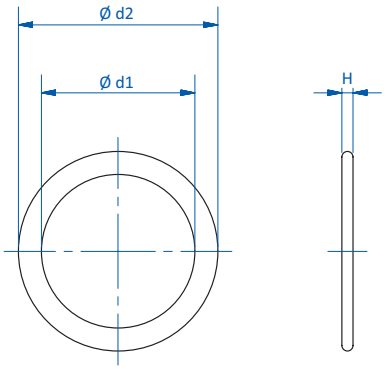
For insertion into vacuum cup fold



Technical data			Dimensions	
Item no.	Material	Usage temperature [°C (°F)]	H [mm]	Ø D [mm]
78.214	Nylon canvas/TPE	-40 - 50 (-40 - 122)	1	20
78.215	Nylon canvas/TPE	-40 - 50 (-40 - 122)	1.6	26
78.216	Nylon canvas/TPE	-40 - 50 (-40 - 122)	3	40
78.217	Nylon canvas/TPE	-40 - 50 (-40 - 122)	3	58

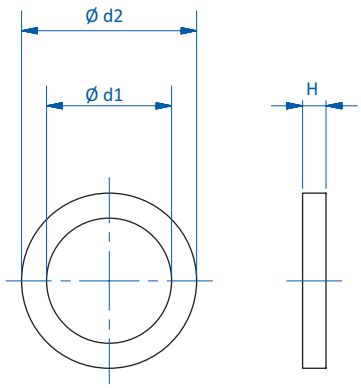
Reinforcement rings – SZ-STAB

For stabilizing bellows vacuum cups



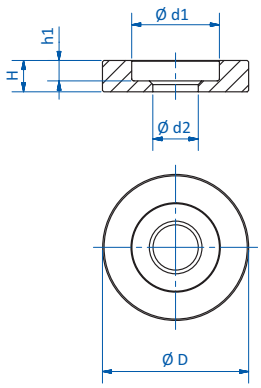
Technical data		Dimensions		
Item no.	Material	H [mm]	Ø d1 [mm]	Ø d2 [mm]
78.000	PA6	1	13.5	17.5
78.001	PA6	1.1	22	26.5
78.002	PA6	1.2	30	35.5
78.003	PA6	1.5	36	45.5

Retaining rings – SZ-HR



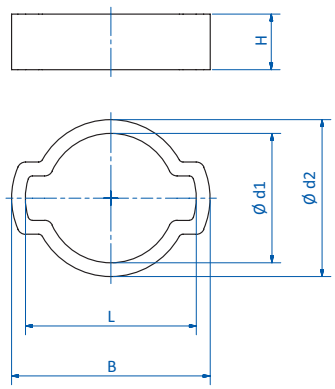
Technical data		Dimensions		
Item no.	Material	H [mm]	Ø d1 [mm]	Ø d2 [mm]
78.011	TPU	1.9	9.7	14
78.012	TPU	2.5	13	20
78.013	TPU	3.2	19	26

Adapter plates – SZ-ASC



Technical data		Dimensions				
Item no.	Material	H [mm]	h1 [mm]	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]
78.080	Aluminum	5	3.5	15	11	6.2
78.081	Aluminum	4.3	2.8	20	12	6.2
78.082	Aluminum	7	4	28	23	10.2

Gripper clamps for vacuum cups – SZ-KS

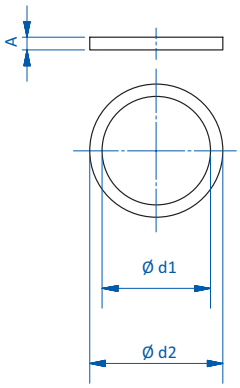


Technical data

Dimensions

Item no.	Ø range [mm]	Material	B [mm]	L [mm]	H [mm]	Ø d1 [mm]	Ø d2 [mm]
78.030	7 - 9	Steel galvanized	14.3	12.3	4	9.3	11.3
78.031	9 - 11	Steel galvanized	16.2	14.2	3	11.3	13.3
78.032	11 - 13	Steel galvanized	19	17	4	13.3	15.3
78.033	15 - 18	Steel galvanized	25.3	22.9	4	18.3	20.7
78.034	17 - 20	Steel galvanized	27.1	24.7	4	20.3	22.7

Sealing rings – SZ-DR



Technical data

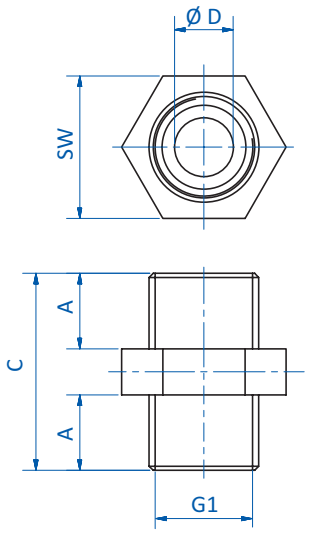
Dimensions

Item no.	For outside thread	Material	A [mm]	Ø d1 [mm]	Ø d2 [mm]
78.052	M5	Rigid PVC white	1	5.4	7.9
78.053	G1/8	Rigid PVC white	2	10.3	13.5
78.054	G1/4	Rigid PVC white	2	13.3	18
78.051	G3/8	Rigid PVC white	2	17.5	21.3
78.055	G1/2	Rigid PVC white	2	21.2	27.9
78.056	G3/4	Rigid PVC white	2	26.8	33

Ordering notes

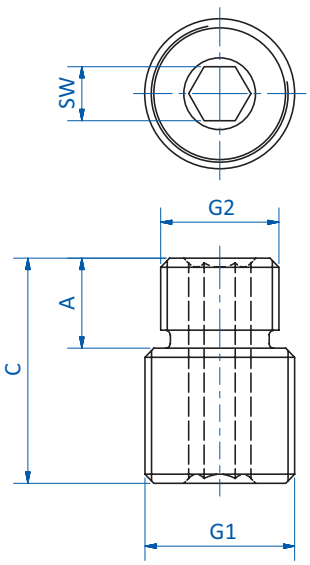
1 packing unit = 100 pieces

Double nipples, equal thread – SZ-GA-MM



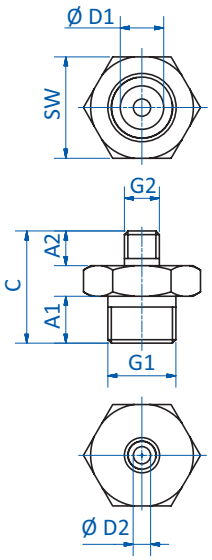
Technical data		Dimensions				
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]	SW
270.420	Brass	M5	5	13	2.5	7
270.059	Brass	G1/8	7	18	5	14
270.120	Brass	G1/4	9	23.5	7	17
270.121	Nickel-plated brass	G3/8	9	23	11	19
270.122	Brass	G1/2	12	30	13	24
270.123	Brass	G3/4	16	40	18	32
270.124	Brass	G1	13.5	32.5	25	34
270.125	Brass	G1 1/4	16	39	34	42
270.126	Brass	G1 1/2	16.5	40	40	50
270.127	Brass	G2	18	44.5	51	60

Reducing bushes with hex socket – SZ GA- MMI



Technical data		Dimensions				
Item no.	Material	G1 (male)	G2 (male)	A [mm]	C [mm]	SW
270.561	Aluminum	G3/8	G1/4	10	25	6
270.562	Aluminum	G3/8	M10	12	27	5
270.563	Aluminum	G3/8	M14	12	27	6
270.564	Aluminum	G1/4	G1/4	--	22	5
270.565	Aluminum	G1/4	M10	12	24	5
270.566	Aluminum	G1/4	M14	11	24	5

Reducing nipples – SZ-GA-RMM

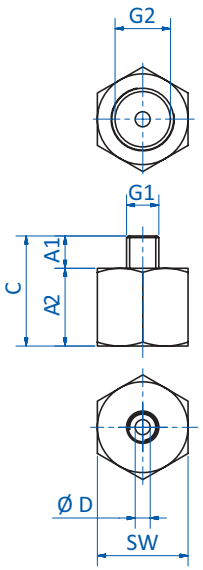


Technical data

Dimensions

Item no.	Material	G1 (male)	G2 (male)	A1 [mm]	A2 [mm]	C [mm]	D1 [mm]	D2 [mm]	SW
270.280	Nickel-plated brass	G1/8	M5	6.5	4.8	15.5	6	2.4	14
270.279	Aluminum	G1/8	M6	9	7	21	3	3	14
270.131	Brass	G1/8	M8	7	6	18	4	4	14
270.107	Aluminum	G1/8	M12	7.5	8.5	21	5.6	5.6	17
270.227	Brass	G1/4	M5	9	5	19	7.5	2.5	17
270.320	Aluminum	G1/4	M10	10	10	25	5.5	5.5	17
270.108	Aluminum	G1/4	M12	8	8	21	5.5	5.5	17
270.181	Nickel-plated brass	G1/4	G1/8	9	8	22	4	4	17
270.297	Nickel-plated brass	G1/2	G1/4	10.5	9	23.3	15	8	24
270.323	Nickel-plated brass	G1/2	G3/8	10	9	24	15	11	24
270.138	Nickel-plated brass	G3/4	G1/2	11.5	10	27	20	15	30
270.148	Nickel-plated brass	G1	G3/4	13	11	30	25.5	20	36

Reducing bushings male/female – SZ-GA-MF

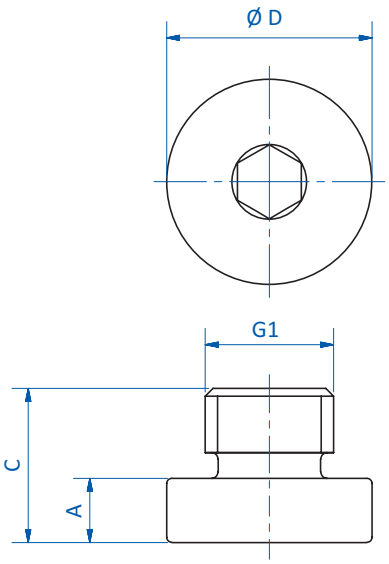


Technical data

Dimensions

Item no.	Material	G1 (male)	G2 (female)	A1 [mm]	A2 [mm]	C [mm]	Ø D [mm]	SW
270.423	Nickel-plated brass	M5	M5	4	7	11	2	8
270.079	Brass	M5	G1/8	5	12	17	2.3	14
270.576	Steel galvanized	M12	G1/4	10	12	22	6.5	17
270.577	Steel galvanized	M16	G3/8	10	15	25	10	24
270.302	Nickel-plated brass	G1/8	M5	6	4	10	--	14
270.303	Nickel-plated brass	G1/8	M6	8	5	13	--	13
270.334	Nickel-plated brass	G1/8	G1/4	6	13.5	19.5	5.4	17
270.304	Aluminum	G1/4	M6	10	5	15	--	17
270.090	Brass	G1/4	M10	5.7	4	11.5	--	19
270.088	Aluminum	G1/4	M10	12	16	28	4	17
270.245	Brass	G1/4	G1/8	9	4	13	--	17
270.078	Brass	G1/4	G1/4	10	18	28	7.5	17
270.567	Aluminum	G1/4	G3/8	11	16	27	4	20
270.560	Aluminum	G3/8	G1/4	11	5	16	--	22
270.229	Brass	G1/2	G1/4	12	6	18	--	24
270.230	Brass	G1/2	G3/8	12	6	18	--	24
270.102	Brass	G3/4	G3/8	12	6	18	--	32
270.600	Brass	G1	G1/2	15	6	21	--	36
270.601	Brass	G1	G3/4	15	6	21	--	36
270.604	Brass	G1 1/2	G1	16	8	24	--	50
270.605	Brass	G1 1/4	G1	16	7	23	--	43

Blanking plugs with O-ring seal – SZ-SCV

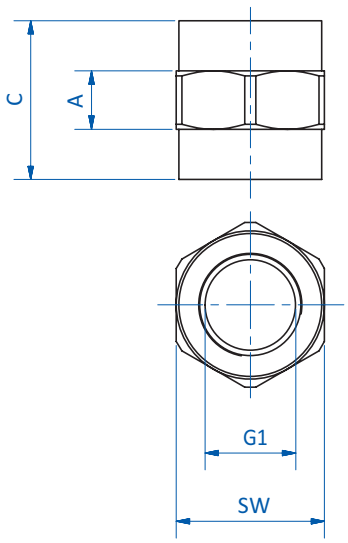


Technical data

Dimensions

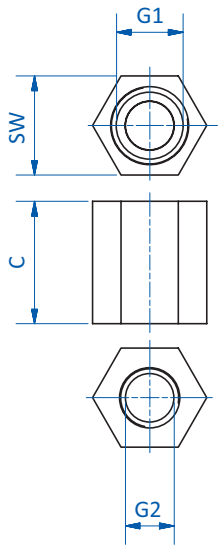
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]
77.000	Nickel-plated brass	M5	2	6	8
77.009	Nickel-plated brass	G1/8	3	11	17
77.008	Nickel-plated brass	G1/4	3	9.5	14
77.010	Nickel-plated brass	G3/8	3.5	12.5	20
77.007	Nickel-plated brass	G1/2	3.5	13.5	25

Threaded bushes – SZ-GA-FF



Technical data		Dimensions			
Item no.	Material	G1 (female)	A [mm]	C [mm]	SW
270.343	Nickel-plated brass	G1/8	5.5	15	14
270.182.O	Aluminum	G1/4	20	20	19
270.130.O	Aluminum	G1/2	32	32	30
270.579	Aluminum	G3/8	23	23	22

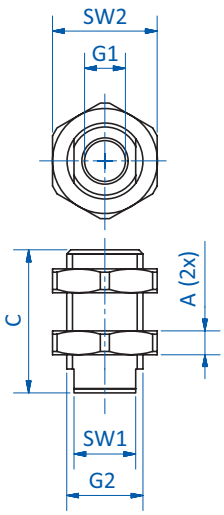
Reducing bushes – SZ-GA-RFF



Technical data		Dimensions			
Item no.	Material	G1 (female)	G2 (female)	C [mm]	SW
270.306	Aluminum	G1/8	M5	14	13
270.307	Aluminum	G1/8	M6	14	13
270.308	Aluminum	G1/4	M6	17.5	17
270.089	Aluminum	G1/4	M10	21	17
270.228	Nickel-plated brass	G3/8	G1/4	21.5	22

Bulkhead connectors – SZ-SVS

Allow for height adjustment during vacuum cup installation



Technical data

Item no.	Material bushing	Material screw nut
270.518	Stainless steel	Steel galvanized
270.519	Stainless steel	Steel galvanized

Dimensions

G1 (female)	G2 (male)	A [mm]	C [mm]	SW1	SW2
G1/8	M16	5	30	13	22
G1/4	M20	5	30	--	24

Average values for vacuum cups in standard applications

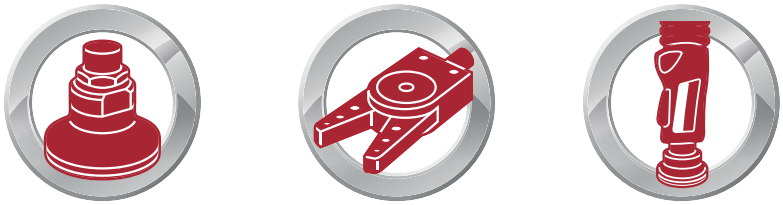
Vacuum cup diameter [mm]	**Effective diameter** approx. [mm]	**Effective suction surface** approx. [cm²]	**Theoretical holding force 20 % vacuum** [N]	**Theoretical holding force 60 % vacuum** [N]	**Theoretical holding force 80 % vacuum** [N]	**Volume flat approx.** [cm³]	**Volume folds approx.** [cm³]	**Recommended internal tubing diameter approx.** [mm]
1	0.80	0.0050	0.01	0.03	0.04	0.001	0.05	2
2	1.60	0.0201	0.04	0.12	0.16	0.001	0.05	2
3	2.40	0.0452	0.09	0.27	0.36	0.002	0.05	2
4	3.20	0.0804	0.16	0.48	0.64	0.003	0.05	2
5	4.00	0.1257	0.25	0.75	1.01	0.005	0.1	2
6	5.17	0.2101	0.42	1.26	1.68	0.008	0.1	2
7	6.03	0.2860	0.57	1.72	2.29	0.015	0.1	2
8	6.90	0.3736	0.75	2.24	2.99	0.03	0.2	2
9	7.76	0.4728	0.95	2.84	3.78	0.05	0.2	2
10	8.62	0.5837	1.17	3.50	4.67	0.07	0.5	4
11	9.48	0.7063	1.41	4.24	5.65	0.1	0.5	4
12	10.34	0.8405	1.68	5.04	6.72	0.1	1	4
13	11.21	0.9864	1.97	5.92	7.89	0.2	1	4
14	12.07	1.1440	2.29	6.86	9.15	0.3	1	4
15	12.93	1.3133	2.63	7.88	10.51	0.4	3	4
16	13.79	1.4942	2.99	8.97	11.95	0.5	3	4
17	14.66	1.6868	3.37	10.12	13.49	0.5	3	4
18	15.52	1.8911	3.78	11.35	15.13	0.6	3	4
19	16.38	2.1071	4.21	12.64	16.86	0.7	5	4
20	17.24	2.3347	4.67	14.01	18.68	0.8	5	4
25	21.55	3.6480	7.30	21.89	29.18	1.3	5	4
30	25.86	5.2531	10.51	31.52	42.02	1.3	5	4
35	30.17	7.1501	14.30	42.90	57.20	2.7	10	4
40	34.48	9.3389	18.68	56.03	74.71	3.8	10	4
45	38.79	11.8195	23.64	70.92	94.56	5	20	4
50	43.10	14.5920	29.18	87.55	116.74	7	20	6
60	51.72	21.0124	42.02	126.07	168.10	10	30	6
70	60.34	28.6003	57.20	171.60	228.80	20	50	6
80	68.97	37.3554	74.71	224.13	298.84	25	60	6
90	77.59	47.2780	94.56	283.67	378.22	30	100	6
100	86.21	58.3679	116.74	350.21	466.94	40	200	9
125	107.76	91.1998	182.40	547.20	729.60	80	300	9
150	129.31	131.3277	262.66	787.97	1,050.62	180	500	9
175	150.86	178.7516	357.50	1,072.51	1,430.01	250	650	12
200	172.41	233.4715	466.94	1,400.83	1,867.77	430	800	12
250	215.52	364.7992	729.60	2,188.80	2,918.39	500	1,600	12
300	258.62	525.3109	1,050.62	3,151.87	4,202.49	600	2,000	12
350	301.72	715.0065	1,430.01	4,290.04	5,720.05	1,500	3,000	12
400	344.83	933.8860	1,867.77	5,603.32	7,471.09	2,000	5,000	12
500	431.03	1,459.1969	2,918.39	8,755.18	11,673.58	4,000	x	16
600	517.24	2,101.2436	4,202.49	12,607.46	16,809.95	6,500	x	16

The information provided above consists of average values for smooth, dry product surfaces without a safety factor.
The application, shape of the vacuum cup and product qualities (e.g. surface texture or air permeability) may result in deviations.

Notes:

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THE EXTENSIVE PRODUCT PORTFOLIO

The highest level of professionality in generating, regulating, controlling and monitoring vacuum – all this is guaranteed by our various vacuum components.
In this catalog you will find everything about vacuum components from **vacuum generation, vacuum filters, tubings and connecting elements**.



Are you looking for the right vacuum cups?

In the pick and place field, all vacuum cups have the same task: lifting parts and moving them without causing damage. Different vacuum cups are used depending on the shape, size and material of the goods to be handled. We have an extensive range of flat, bellows and oval vacuum cups, as well as matching holders and spring levelers, which we present in our vacuum cups catalog.



Do you need gripping elements?

In the catalog for End-of-Arm-Tooling you will find everything, such as sprue grippers, gripper fingers, quick-change systems and air nippers, as well as our vacuum gripping systems.



Do you want to make lifting heavy loads easier?

Take the strain from your employees with the ideal tube lifter for your application. Our global is to make your material flow as efficient and ergonomic as possible.

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MFE – Multi-Function vacuum ejectors





Product notes

> Electrical connector M12
> Automatic air-saving AUTOVAC (save up to 95 % compressed air on air tight surfaces)
> Vacuum switch integrated
> Blow-off with input signal or automatic (on stopping vacuum generation signal) with fixed, or self-optimizing blow-off time
> Adjustment screw to limit blow-off flow
> Integrated non-return valve
> Operation NO or NC
> Predictive maintenance available on 8 pin model (-S)
> Includes silencer
> Bundle up to 5 units on optional manifolds (use blind plates in unused slots to make your setup future proof)
> Extremley robust towards voltage fluctuations

Technical data

Item no.	Operating principle	Electric connection	Optimal operating pressure [bar (psi)]	Operating pressure [bar (psi)]	Suction power at 5 bar (72.5 psi) [Nl/min]	Air consumption at 5 bar (72.5 psi) [Nl/min]	Final vacuum [%]	Nozzle diameter [mm]	Weight [g]
MFE-100H-A-D-S	NC	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	80	110	85	1.5	360
MFE-100H-A-S-S	NC	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	80	110	85	1.5	360
MFE-200H-A-D-S	NC	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	145	200	85	2	360
MFE-200H-A-S-S	NC	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	145	200	85	2	360
MFE-300H-A-D-S	NC	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	195	300	85	2.5	360
MFE-300H-A-S-S	NC	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	195	300	85	2.5	360
MFE-400H-A-D-S	NC	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	245	430	85	3	360
MFE-400H-A-S-S	NC	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	245	430	85	3	360
MFE-100H-B-D-S	NO	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	80	110	85	1.5	360
MFE-100H-B-S-S	NO	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	80	110	85	1.5	360
MFE-200H-B-D-S	NO	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	145	200	85	2	360
MFE-200H-B-S-S	NO	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	145	200	85	2	360
MFE-300H-B-D-S	NO	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	195	300	85	2.5	360
MFE-300H-B-S-S	NO	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	195	300	85	2.5	360
MFE-400H-B-D-S	NO	M12, 5-pin	5 (72.5)	4 - 7 (58 - 101.5)	245	430	85	3	360
MFE-400H-B-S-S	NO	M12, 8-pin	5 (72.5)	4 - 7 (58 - 101.5)	245	430	85	3	360

Electrical connections

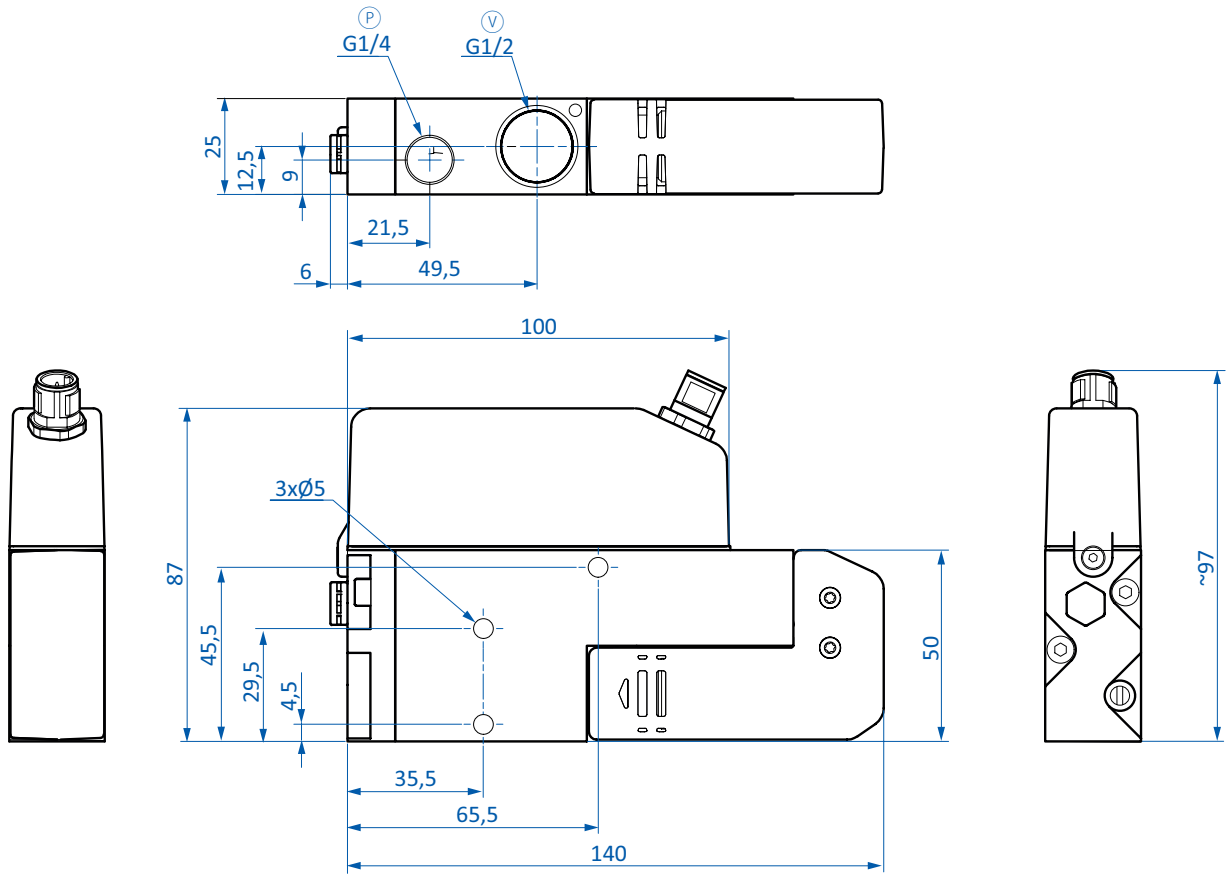
> Supply voltage 24 VDC
> Voltage output signals 24 VDC (PNP) max. 100 mA
> Voltage input signals 24 VDC (PNP)
> Protection class IP65 (with connector)
> Operating temperature 0 - +50 °C (32 - 122 °F)

Model selection

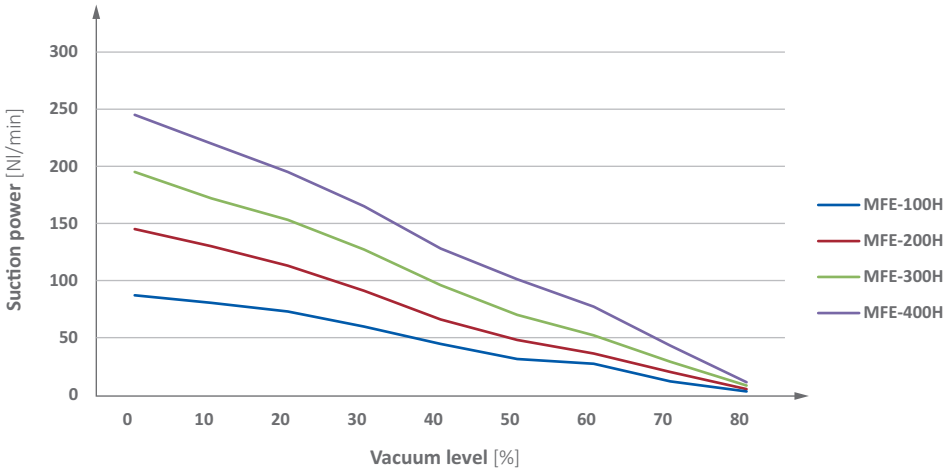
Ordering example:
MFE-100H-A-D-S = 80 Nl/min, operating principle NC, connection M12 5-pin, with silencer
MFE-400H-B-S-S = 245 Nl/min, operating principle NO, connection M12 8-pin, with silencer

Series	Suction power	Operating principle	Electric connection	Silencer
MFE	100H = 80 [Nl/min] 200H = 145 [Nl/min] 300H = 195 [Nl/min] 400H = 245 [Nl/min]	A = NC B = NO	D = 5-pin S = 8-pin	S (with)

Dimensions

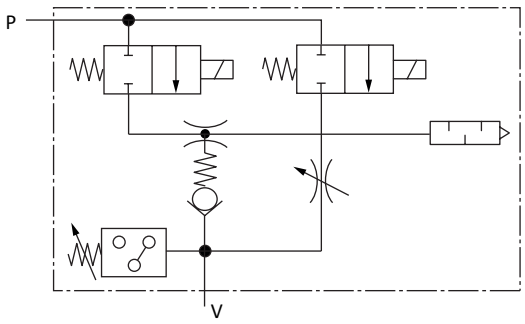


Suction power against vacuum level [Nl/min] at 5 bar (72.5 psi)

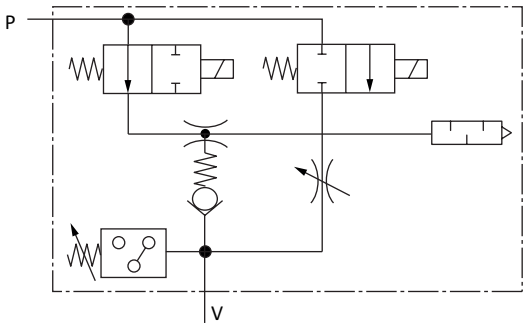


Wiring diagrams

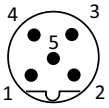
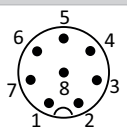
MFE-xxxx-A-x-x NC Ejector



MFE-xxxx-B-x-x NO Ejector



Range of functions depending on electrical connection

	Model -D M12, 5-pin	**Model -S** M12, 8-pin
		
Time controlled blow off		
Adaptive blow off		
Manual / external blow-off		
Feedback, vacuum OK / blow-off OK		
Feedback, preventive maintenance *	--	

* Signal in the event of deviation of the vacuum supply, e.g. if leakage occurs

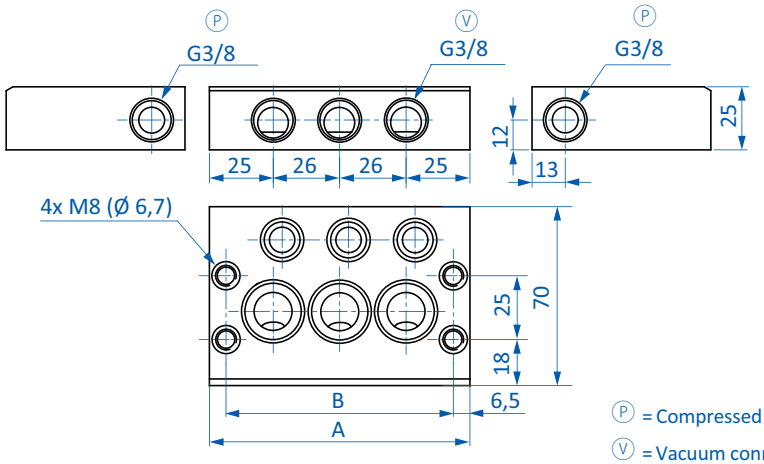
Accessories: cable and adapter

MFE-xxxx-x-D-x
> 20.508 Connecting cable 2 m straight
> 20.509 Connecting cable 2 m 90° elbow
> 20.552 Extension cable 2 m
> 20.554 Adapter to 2x plug M8 3-pin

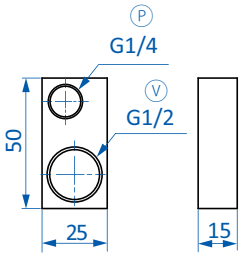
MFE-xxxx-x-S-x
> 20.558 Connecting cable 2 m 90° elbow

Accessories: mainfold and blind plate

Manifolds



Blind plate

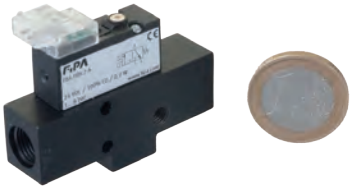


Item no.	Design for MFE-Ejectors	Number of MFE Ejectors	Vacuum connection V	Weight [g]	A [mm]	B [mm]
MFE-MAN2	Manifold *	2	G3/8 (x2)	325	76	63
MFE-MAN3	Manifold *	3	G3/8 (x3)	445	102	89
MFE-MAN4	Manifold *	4	G3/8 (x4)	560	128	115
MFE-MAN5	Manifold *	5	G3/8 (x5)	680	154	141
MFE-MAN0	Blind plate for manifold	--	--	40	--	--

*Screws and seals included in the scope of delivery



EBA – Mini ejector with blow-off boost function





Example: ejector EBA.08H.2-A with digital mini vacuum switch 20.040, closed diffusor silencer 72.000 and flat vacuum cup Ø 40 mm

Product notes

> Very short response time, safe and gentle product release
> Small and very light for installation directly on vacuum cups for fast vacuum build-up and short gripping times
> Blow-off from a fast-reacting micro valve enables very short cycle times
> Graded blow-off boost effect: initially the blow-off is supported by ambient air, for placement that is both quick and gentle
> Robust design and long service life of > 100 million switching cycles
> M5 connection for digital mini vacuum switch to ensure reliable process monitoring
> Ideally suited for robotic applications with very short cycles such as Delta Robots (e.g. FlexPickers)
> Included in delivery: control cable 20.550, length 1.5 m, 2-wire, free end

Technical data

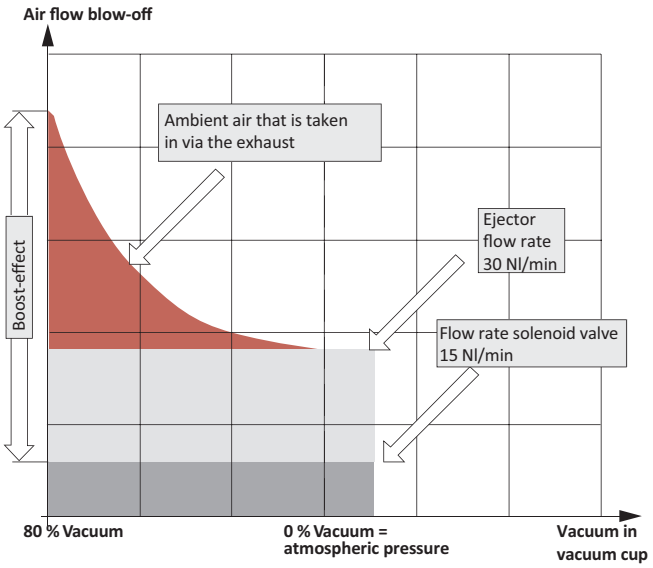
Item no.	**EBA.08H.2-A**
Nozzle diameter [mm]	0.8
Optimal operating pressure [bar (psi)]	5 (72.5)
Max. operating pressure [bar (psi)]	8 (116)
Final vacuum [%]	85
Suction power at 5 bar (72.5 psi) [Nl/min]	25
Air consumption at 5 bar (72.5 psi) [Nl/min]	30
Flow rate solenoid valve [Nl/min]	15
Blow-off volumes of flow [Nl/min]	110 - 45
Power-on time solenoid valve (ED) [%]	100
Power-on/-off time solenoid valve [ms]	5
Power consumption solenoid valve [W]	0.9
Control voltage	24 VDC ± 10 %
Protection class	IP40
Operating temperature [°C (°F)]	-10 - 50 (14 - 122)
Weight [g]	35
Accessories	Silencer: 72.000, Silencer: 72.028

Control cable 20.550



Cable assignment: red (+), black (-)

Integrated blow-off with boost-effect

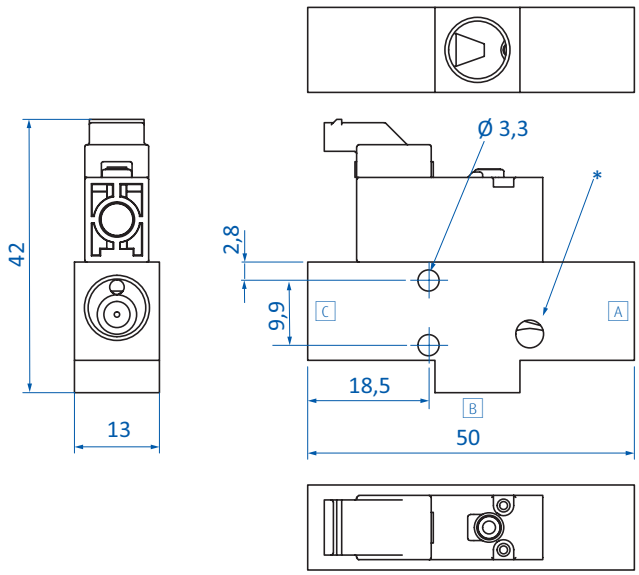


Evacuation / Blow-off time

Evacuation / Blow-off time 1 liter volume up to % vacuum / atmospheric pressure [sec.]		
0 → 50 % / 50 % → 0	0 → 60 % / 60 % → 0	0 → 70 % / 70 % → 0
1.8 / 0.5	2.5 / 0.56	3.9 / 0.61

Evacuation / Blow-off time: example with Ø 30 mm flat suction cups, volume 1.7 cm³ up to % vacuum / atmospheric pressure [ms]		
0 → 50 % / 50 % → 0	0 → 60 % / 60 % → 0	0 → 70 % / 70 % → 0
3 / < 1	4 / < 1	7 / 1

Dimensions



A = Compressed air connection G1/8-female B = Vacuum connection G1/8-female C = Exhaust outlet G1/8-female * = M5 connection for vacuum switches

FGS – Heavy-duty Inline vacuum ejectors



Product notes

> Direct mounting for vacuum cups with G3/8 fitting
> Lightweight and robust aluminum body
> Operated by switching the compressed air supply on/off
> Choose from different options depending on supply pressure, vacuum level, vacuum flow and efficiency required
> Options with and without silencer available
> Includes 6 mm push-in fitting and screws

Technical data

Item no.	Silencer	Optimal operating pressure [bar (psi)]	Optimal suction power [Nl/min]	Optimal air consumption [Nl/min]	Operating pressure [bar (psi)]	Max. suction power [Nl/min]	Max. air consumption [Nl/min]	Final vacuum [%]	Weight [g]
FGS-N-S08-2	not included	5 (72.5)	46	23	4 - 6 (58 - 87)	46	27	75	61
FGS-N-S08-2-S	included	5 (72.5)	46	23	4 - 6 (58 - 87)	46	27	75	70
FGS-N-S08-3	not included	5 (72.5)	66	23	4 - 6 (58 - 87)	68	27	75	65
FGS-N-S08-3-S	included	5 (72.5)	66	23	4 - 6 (58 - 87)	68	27	75	74
FGS-N-P12-2	not included	3.1 (45)	42	29	1.7 - 4 (24.7 - 58)	42	35	90	61
FGS-N-P12-2-S	included	3.1 (45)	42	29	1.7 - 4 (24.7 - 58)	42	35	90	70
FGS-N-P12-3	not included	3.1 (45)	62	29	1.7 - 4 (24.7 - 58)	68	35	90	65
FGS-N-P12-3-S	included	3.1 (45)	62	29	1.7 - 4 (24.7 - 58)	68	35	90	74

Model selection

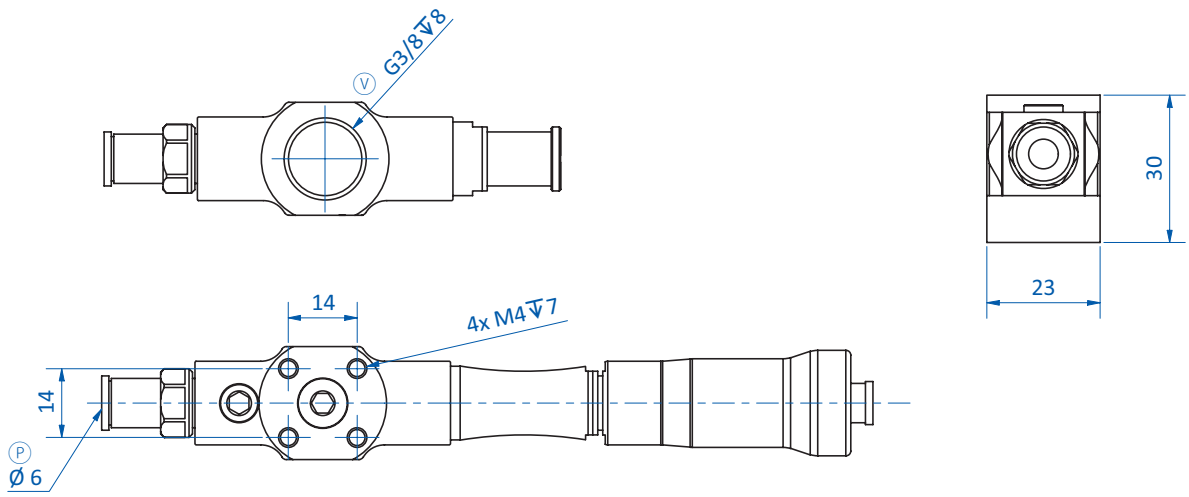
Ordering example:
FGS-N-S08-2 = 46 Nl/min, low air consumption, without silencer
FGS-N-P12-3-S = 68 Nl/min, low operating pressure, with silencer

Series	Design	Silencer
FGS-N	S08-2 = 46 [Nl/min] low air consumption S08-3 = 68 [Nl/min] low air consumption P12-2 = 42 [Nl/min] low operating pressure P12-3 = 68 [Nl/min] low operating pressure	-S (with) *blank* (without)

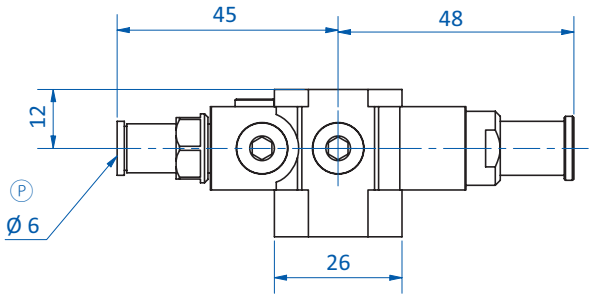
Suitable vacuum switches

> GS02.001: Vacuum switch electronic with two digital outputs and display
> GS02.003: Vacuum switch electronic with analog and digital output
> 20.026: Vacuum / Pressure switches, electronic with digital output

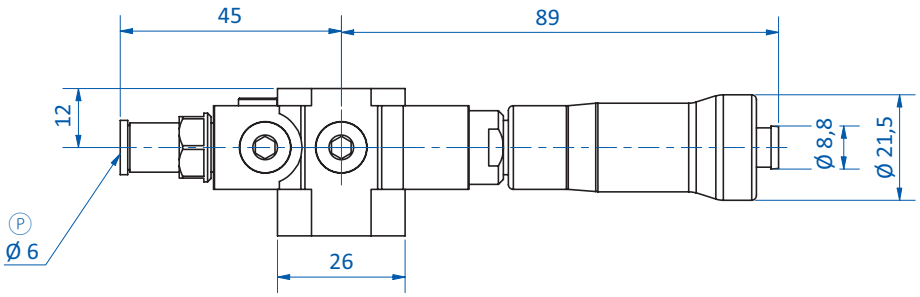
Dimensions



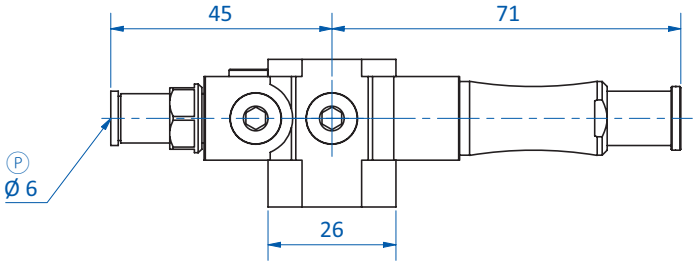
FGS-N-S08-2 | FGS-N-S08-2-S | FGS-N-S08-3 | FGS-N-S08-3-S | FGS-N-P12-2 | FGS-N-P12-2-S | FGS-N-P12-3 | FGS-N-P12-3-S



FGS-N-S08-2 | FGS-N-P12-2



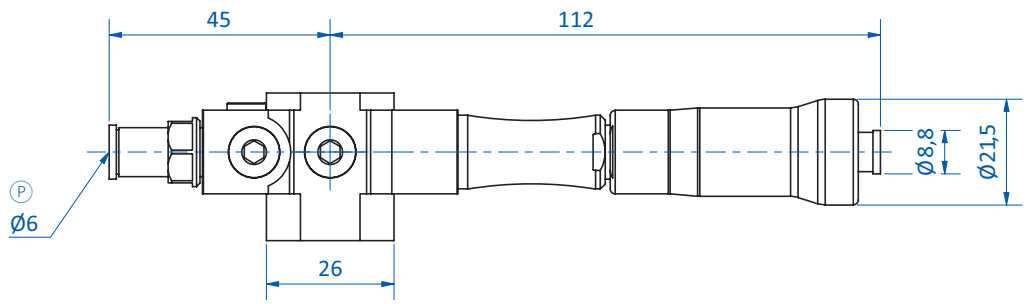
FGS-N-S08-2-S | FGS-N-P12-2-S



FGS-N-S08-3 | FGS-N-P12-3

Ⓟ = Compressed air connection Ⓥ = Vacuum connection

Dimensions

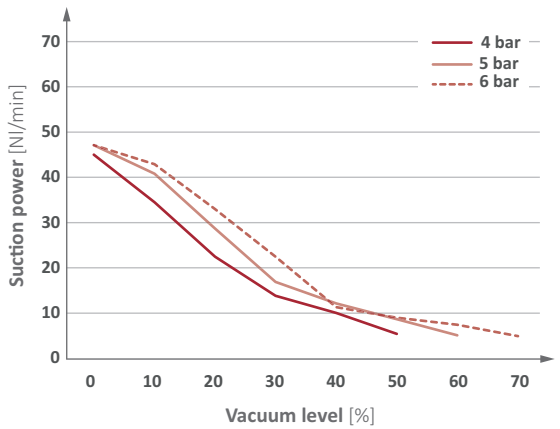


FGS-N-S08-3-S | FGS-N-P12-3-S

Ⓟ = Compressed air connection Ⓥ = Vacuum connection

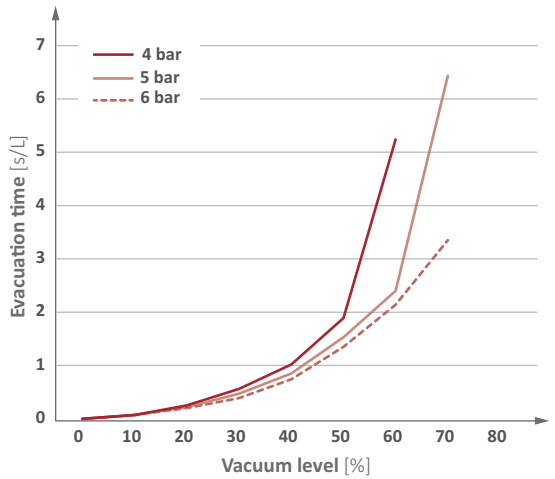
Diagrams

> Suction power against vacuum level [Nl/min]



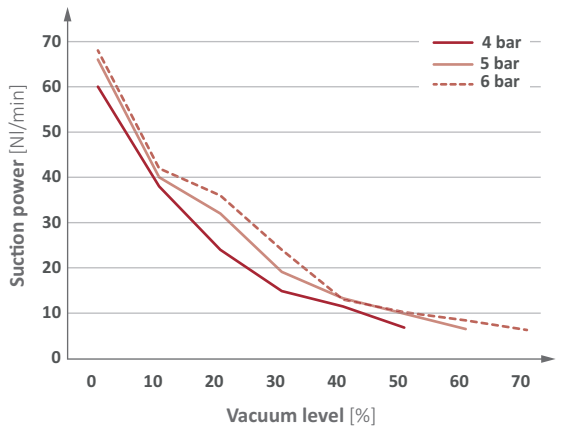
FGS-N-S08-2 | FGS-N-S08-2-S

> Evacuation time against vacuum level [s/L]



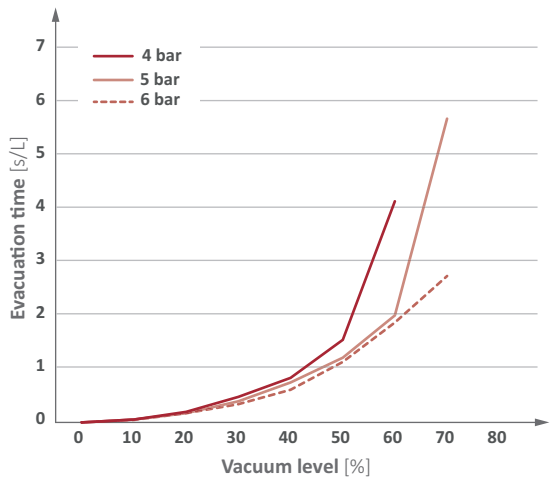
FGS-N-S08-2 | FGS-N-S08-2-S

> Suction power against vacuum level [Nl/min]



FGS-N-S08-3 | FGS-N-S08-3-S

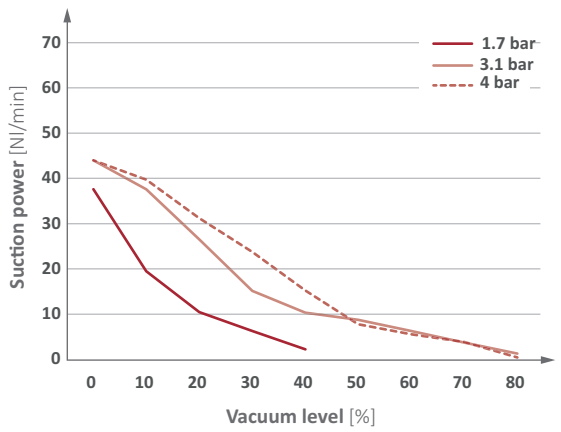
> Evacuation time against vacuum level [s/L]



FGS-N-S08-3 | FGS-N-S08-3-S

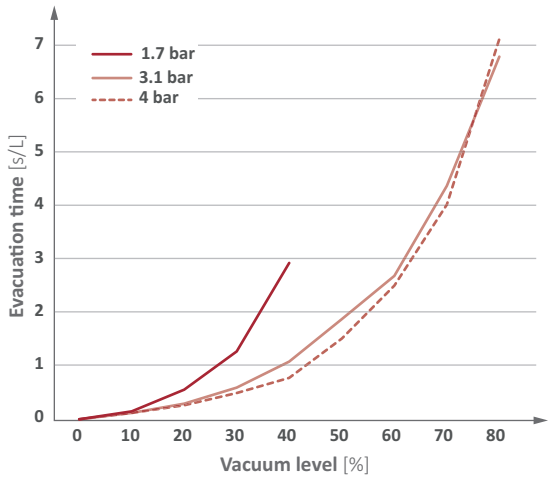
Diagrams

> Suction power against vacuum level [Nl/min]



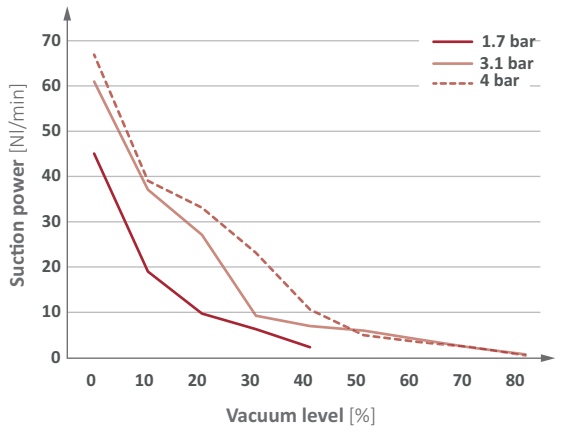
FGS-N-P12-2 | FGS-N-P12-2-S

> Evacuation time against vacuum level [s/L]



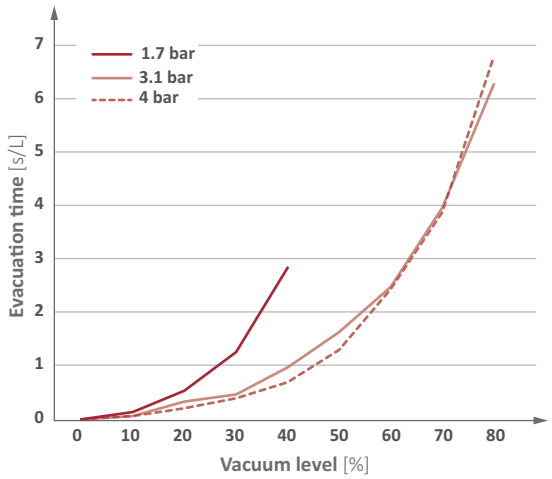
FGS-N-P12-2 | FGS-N-P12-2-S

> Suction power against vacuum level [Nl/min]



FGS-N-P12-3 | FGS-N-P12-3-S

> Evacuation time against vacuum level [s/L]



FGS-N-P12-3 | FGS-N-P12-3-S

EIL – Inline ejectors

Compressed air and vacuum connection via quick fittings, lateral exhaust



V = Vacuum connection P = Compressed air connection EX = Exhaust outlet

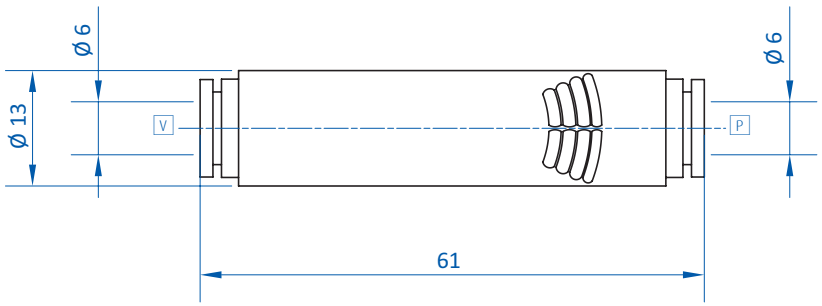
Product notes

> Easy installation directly in the tubing line close to the vacuum cup
> High suction power enables short gripping times
> Index H: ejectors for non-air-permeable products (max. vacuum degree 85 %)
> Index L: ejectors for air-permeable products, resp. in case of higher leakage (increased suction, max. vacuum degree 60 %)

Technical data

Item no.	EIL.05H.1	EIL.05L.1	EIL.07H.1	EIL.07L.1
Nozzle diameter [mm]	0.5	0.5	0.7	0.7
Optimal operating pressure [bar (psi)]	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)
Suction power at 5 bar (72.5 psi) [Nl/min]	8	14	13	28
Air consumption at 5 bar (72.5 psi) [Nl/min]	14	14	28	28
Final vacuum at 5 bar (72.5 psi) [%]	85	60	85	60
Evacuation time 0 to 70 % [s/l]	13	--	7.5	--
Evacuation time 0 to 45 % [s/l]	--	4	--	2
Weight [g]	13	13	13	13
Accessories	Plug-in filter: 71.071 Mounting bracket: EIL.05-HO	Plug-in filter: 71.071 Mounting bracket: EIL.05-HO	Plug-in filter: 71.071 Mounting bracket: EIL.07-HO	Plug-in filter: 71.071 Mounting bracket: EIL.07-HO

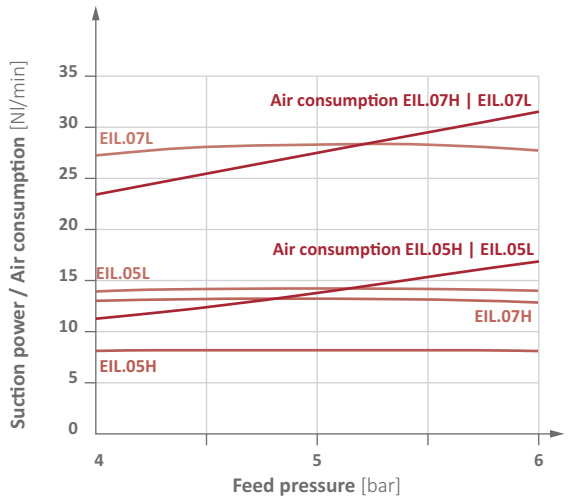
Dimensions



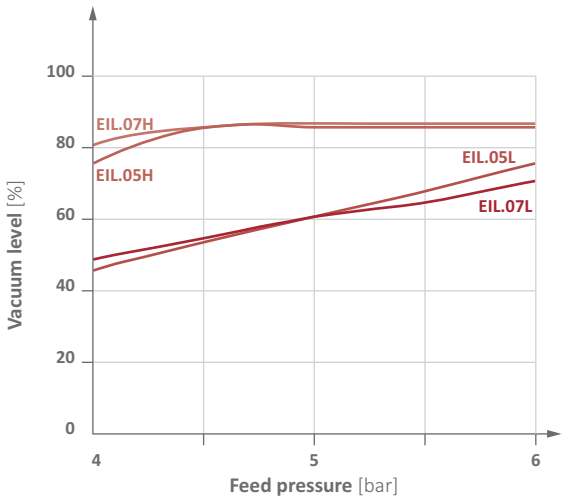
V = Vacuum connection P = Compressed air connection

Diagrams

> Suction power and air consumption against feed pressure



> Vacuum level against feed pressure



Suction power [Nl/min] at vacuum level

Item no.	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %
EIL.05H.1	8	5.3	4.2	3.9	3.3	2.5	1.3	0.4	0.1
EIL.05L.1	14	11.9	9	6.8	4.3	2.2	0.1	--	--
EIL.07H.1	13	10.8	9.2	8.1	7	5.2	4.1	2.7	1.1
EIL.07L.1	28	26	22.1	17.6	10.8	5.4	1.9	--	--

FBM – Mini Multi-stage vacuum ejectors



Product notes

> Compact and lightweight
> Operated by switching the compressed air supply on/off
> Internal silencer

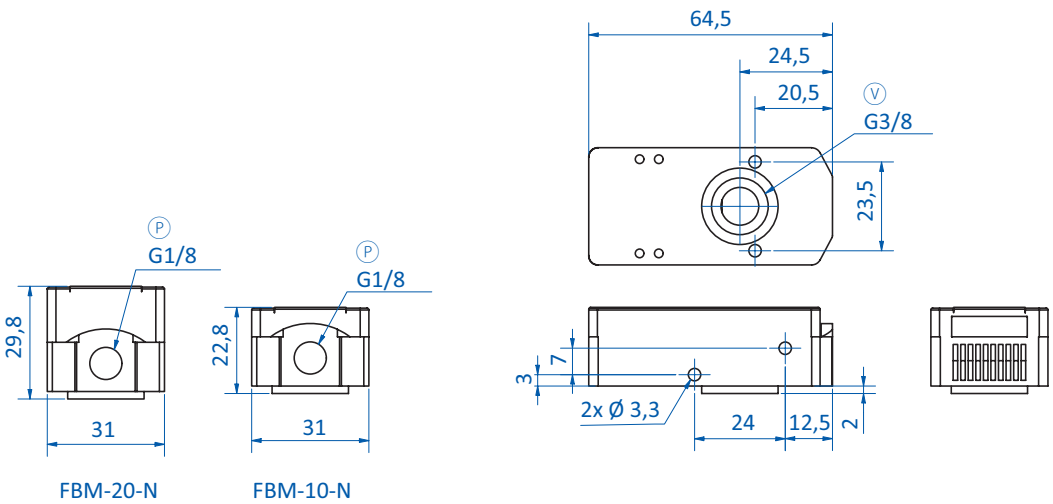
Technical data

Item no.	Optimal operating pressure [bar (psi)]	Optimal suction power [Nl/min]	Optimal air consumption [Nl/min]	Max. operating pressure [bar (psi)]	Max. suction power at 6 bar (87 psi) [Nl/min]	Max. air consumption at 6 bar (87 psi) [Nl/min]	Final vacuum [%]	Weight [g]
FBM-10-N-B	4.5 (65.3)	70	30	6 (87)	74	42	85	39
FBM-20-N-B	4.5 (65.3)	141	60	6 (87)	149	84	85	50

Recommended hose inner diameter

Model	Vacuum port [mm]	Compress air port [mm]
FBM-10	10	6
FBM-20	12	8

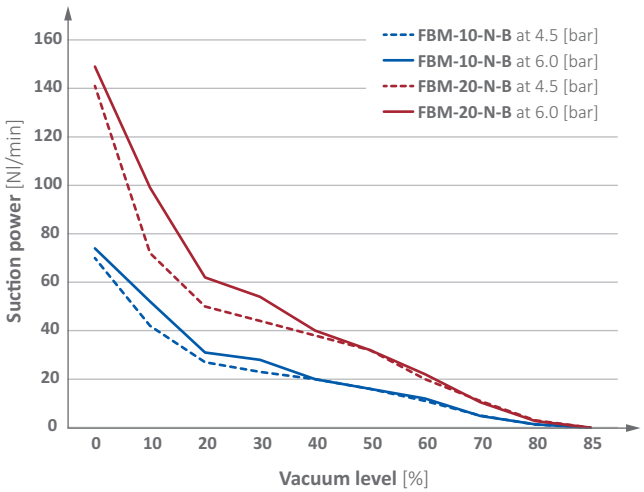
Dimensions



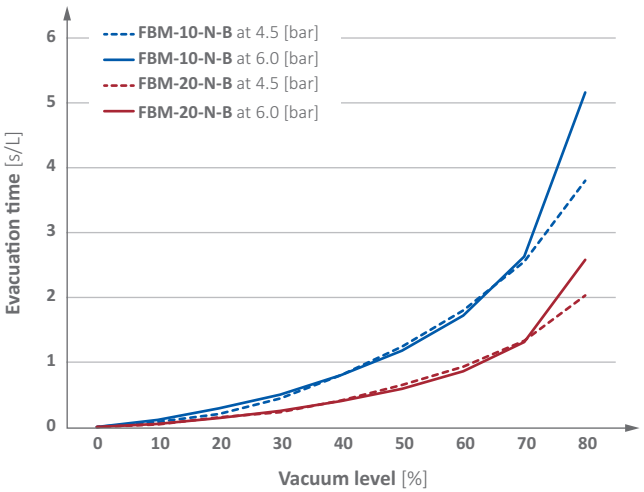
Ⓟ = Compressed air connection Ⓥ = Vacuum connection

Diagrams

> Suction power against vacuum level [Nl/min]



> Evacuation time against vacuum level [s/L]



FMC – Multi-stage vacuum ejectors, vacuum flow 360 - 1650 Nl/min



Product notes

> Operated by switching the compressed air supply on/off
> Includes silencer, push-in fitting, vacuum gauge, mounting brackets and screws

Technical data

Item no.	Non-return valve	Optimal operating pressure [bar (psi)]	Suction power at 6 bar (87 psi) [Nl/min]	Air consumption at 6 bar (87 psi) [Nl/min]	Max. Final vacuum [%]	Weight [g]
FMC-25-L-C1-N-V	included	5 - 6 (72.5 - 87)	360	105	80	650
FMC-25-L-C1-N	not included	5 - 6 (72.5 - 87)	360	105	80	650
FMC-50-L-C1-N-V	included	5 - 6 (72.5 - 87)	635	215	80	650
FMC-50-L-C1-N	not included	5 - 6 (72.5 - 87)	635	215	80	650
FMC-75-L-C2-N-V	included	5 - 6 (72.5 - 87)	850	320	80	850
FMC-75-L-C2-N	not included	5 - 6 (72.5 - 87)	850	320	80	850
FMC-100-L-C2-N-V	included	5 - 6 (72.5 - 87)	970	390	80	850
FMC-100-L-C2-N	not included	5 - 6 (72.5 - 87)	970	390	80	850
FMC-125-L-C3-N-V	included	5 - 6 (72.5 - 87)	1,180	480	80	1,050
FMC-125-L-C3-N	not included	5 - 6 (72.5 - 87)	1,180	480	80	1,050
FMC-150-L-C3-N-V	included	5 - 6 (72.5 - 87)	1,260	620	80	1,050
FMC-150-L-C3-N	not included	5 - 6 (72.5 - 87)	1,260	620	80	1,050
FMC-25-H-C1-N-V	included	5 - 6 (72.5 - 87)	360	185	92	650
FMC-50-H-C1-N-V	included	5 - 6 (72.5 - 87)	700	370	92	650
FMC-75-H-C2-N-V	included	5 - 6 (72.5 - 87)	980	610	92	850
FMC-100-H-C2-N-V	included	5 - 6 (72.5 - 87)	1,380	720	92	850
FMC-125-H-C3-N-V	included	5 - 6 (72.5 - 87)	1,480	780	92	1,050
FMC-150-H-C3-N-V	included	5 - 6 (72.5 - 87)	1,650	830	92	1,050

Recommended hose inner diameter

Art.-Nr.	Vacuum [mm]	Compressed air [mm]
FMC-25	12	8
FMC-50	15	8
FMC-75	19	8
FMC-100	19	8
FMC-125	25	10
FMC-150	25	10

Suitable vacuum switches

> GS02.001: Vacuum switch electronic with two digital outputs and display
> GS02.003: Vacuum switch electronic with analog and digital output
> 20.026: Vacuum / Pressure switches, electronic with digital output

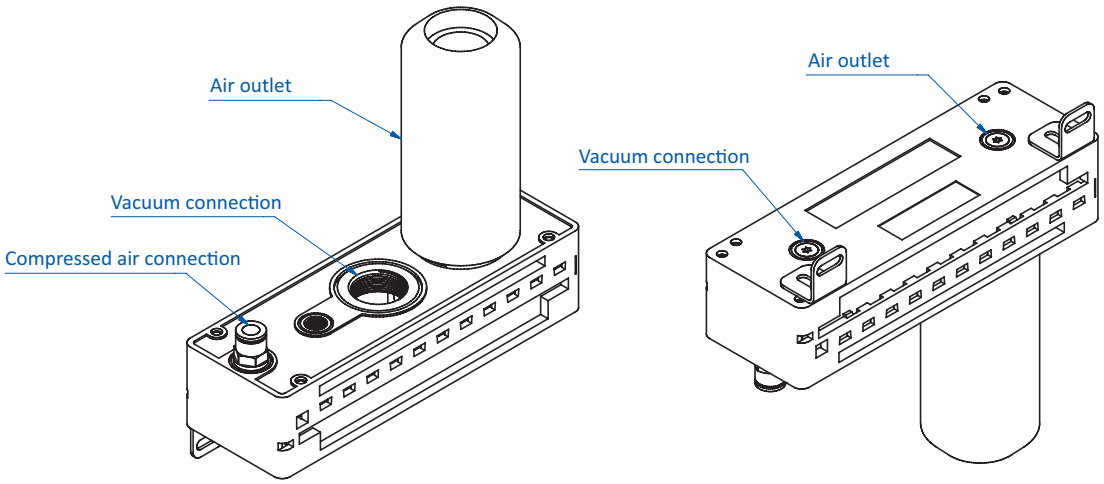
Model selection

Series	Size *	Max. Vacuum level	Modules (depending on size)	Non-return valves
FMC-	25 50 75 100 125 150	-L Vakuumgrad 80 % -H Vakuumgrad 92 %	-C1-N -C2-N -C3-N	-V (with) *blank* (with out)

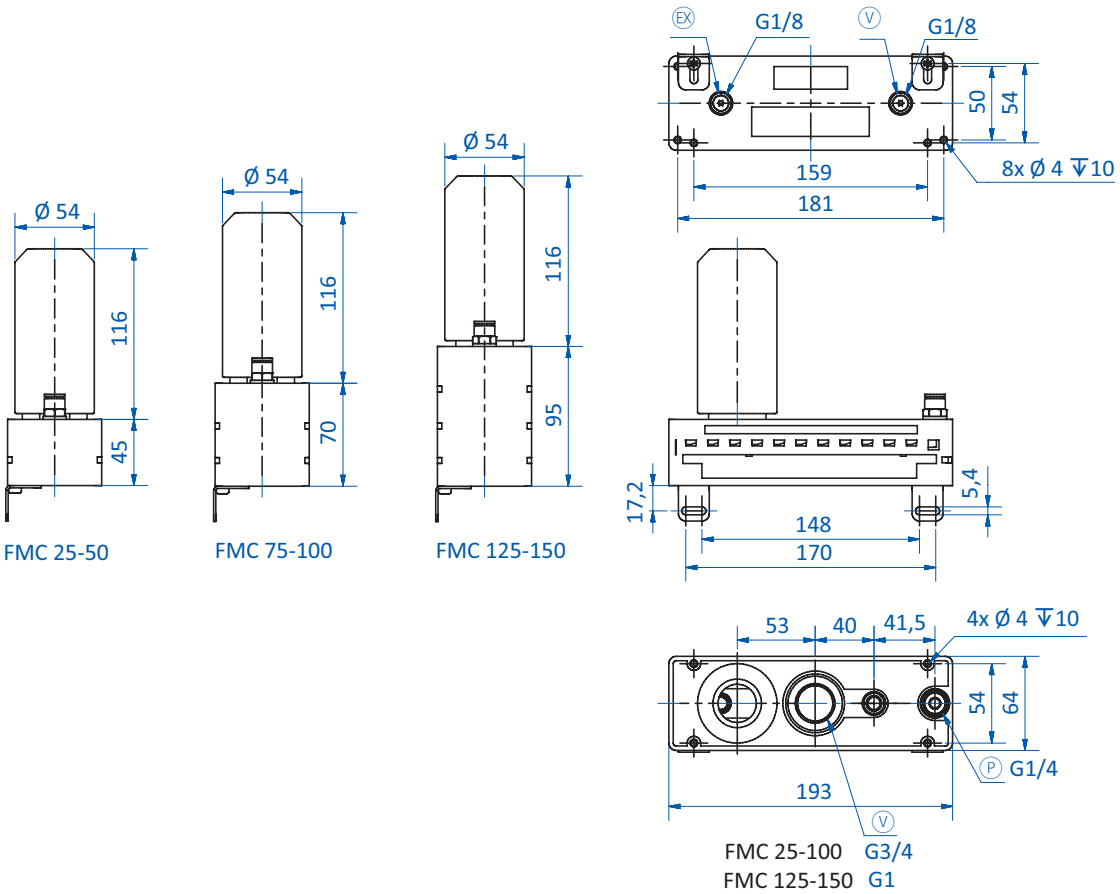
** Suction power see technical data*

Ordering example:
FMC-25-H-C1-N-V = Suction power 360 Nl/min, max. Vacuum level 92 %, with non-return valves
FMC-75-L-C2-N = Suction power 850 Nl/min, max. Vacuum level 80 %, without non-return valves

Description



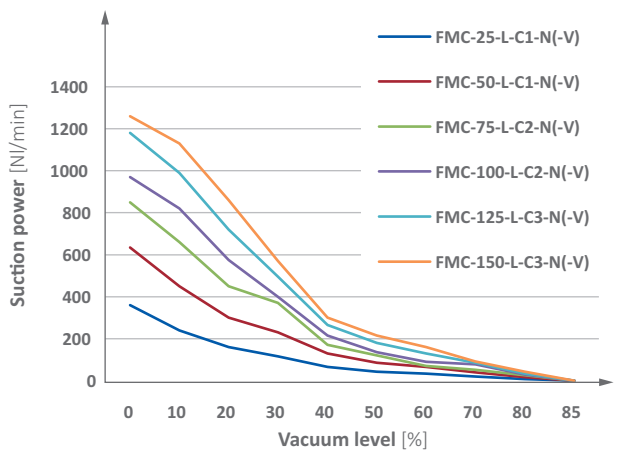
Dimensions



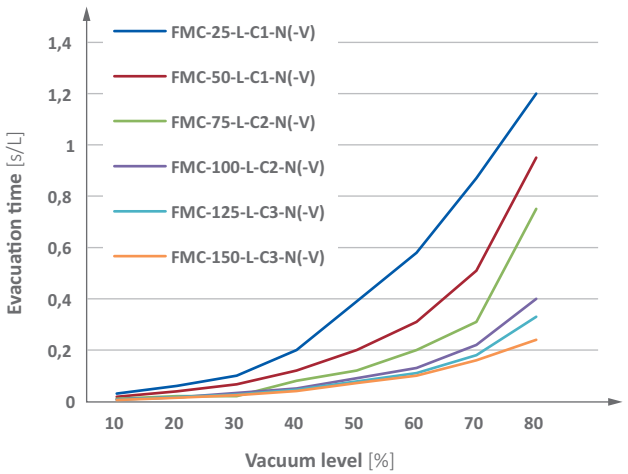
Ⓟ = Compressed air connection Ⓥ = Vacuum connection Ⓔⓧ = Air outlet

Diagrams

> Suction power against vacuum level [Nl/min] at 6 bar (87 psi)

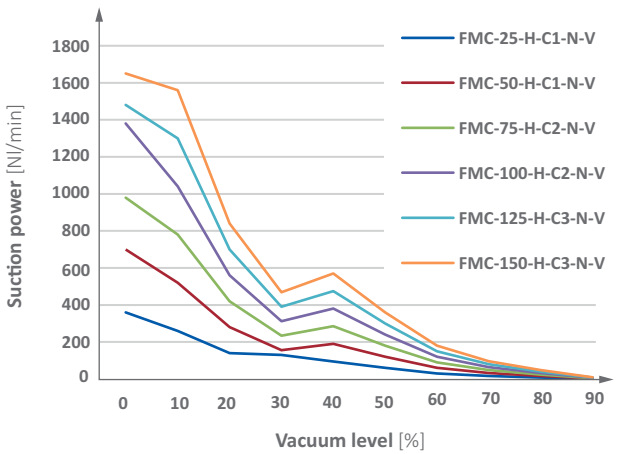


> Evacuation time against vacuum level [s/L] at 6 bar (87 psi)

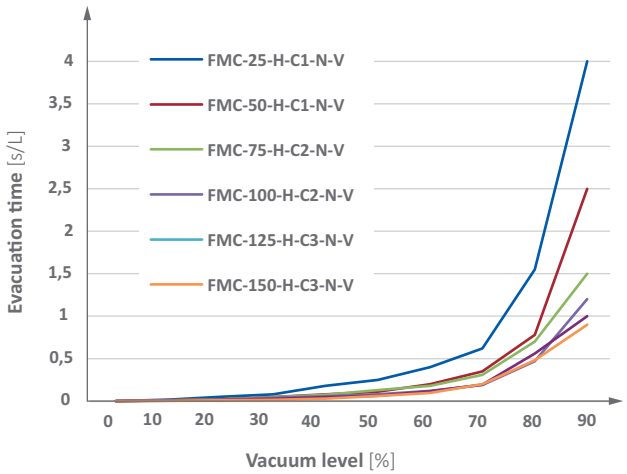


Diagrams

> Suction power against vacuum level [Nl/min] at 6 bar (87 psi)



> Evacuation time against vacuum level [s/L] at 6 bar (87 psi)



Multi-chamber ejectors, vacuum flow 140 - 320 Nl/min





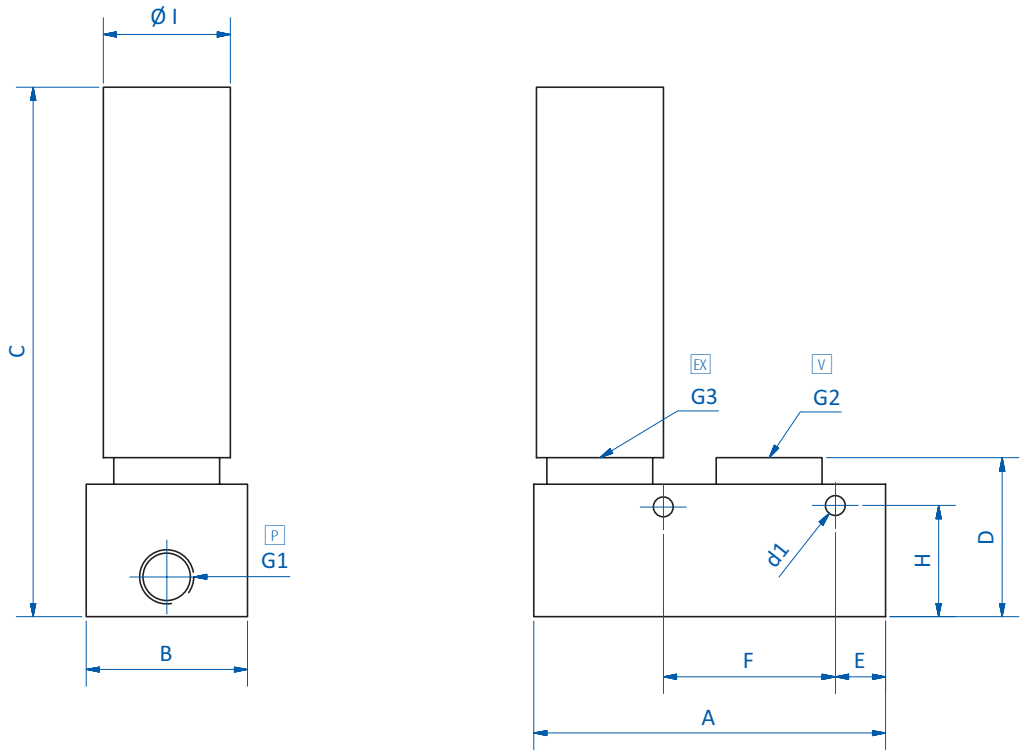
Product notes

> Handling of air-permeable products, or for high leakages
> High suction power for short evacuation times and fast vacuum build-up
> Particularly fast product release due to additional compressed air inlet for blow-off (65.410)
> Noise-optimized operation due to open silencer

Technical data

Item no.	Optimal operating pressure [bar (psi)]	Max. operating pressure [bar (psi)]	Final vacuum [%]	Suction power [Nl/min]	Air consumption at 6 bar (87 psi) [Nl/min]	Evacuation time 0 to 70 % [s/l]	Weight [g]
65.310	6 (87)	7 (101.5)	85	140	54	1.95	90
65.320	6 (87)	7 (101.5)	85	280	108	1.07	90
65.330	6 (87)	7 (101.5)	85	320	144	0.5	170
65.410	6 (87)	7 (101.5)	85	300	95	1.15	620

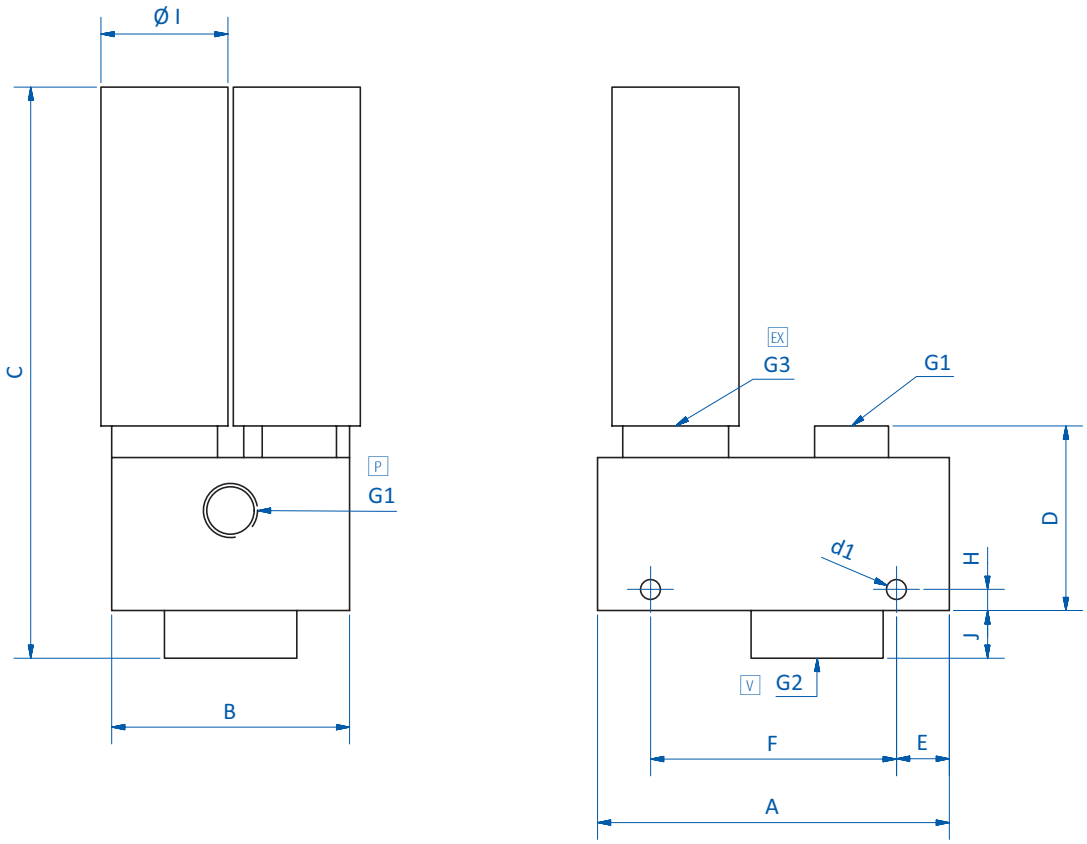
Dimensions



65.310 | 65.320

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

Dimensions

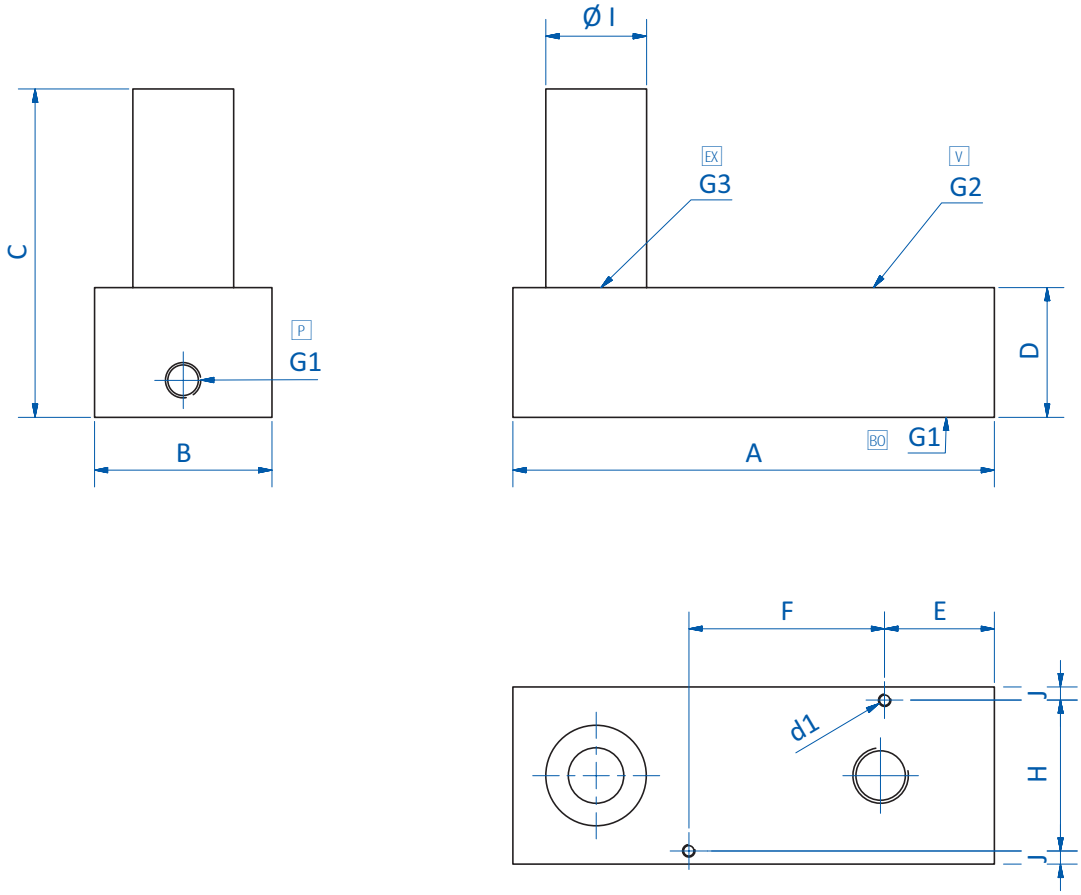


65.330

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

Continued on the next page

Dimensions



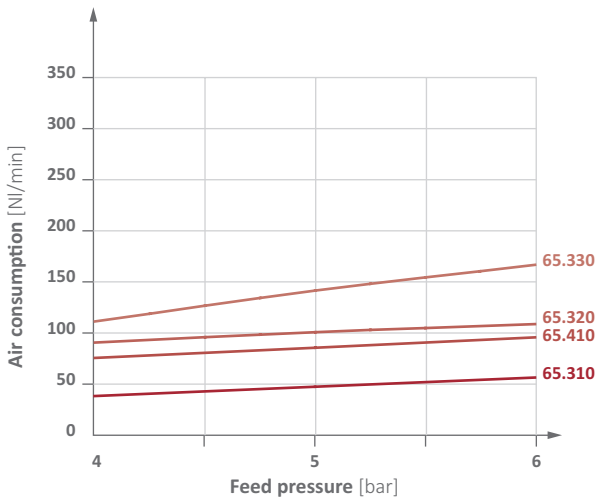
65.410

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

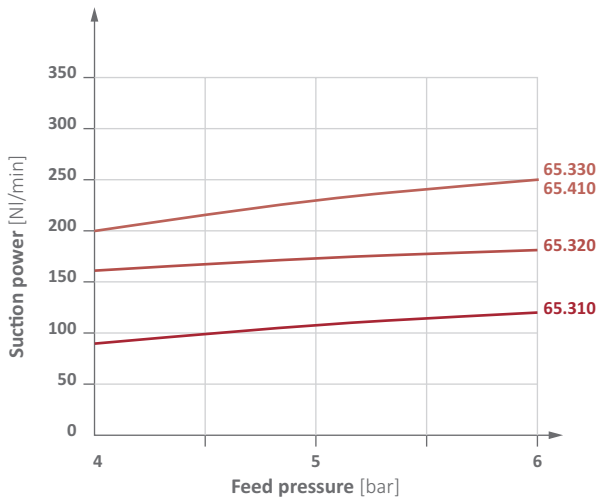
Item no.	G1	G2	G3	A [mm]	B [mm]	C [mm]	D [mm]	d1	E [mm]	F [mm]	H [mm]	Ø I [mm]	J [mm]
65.310	G1/8	G3/8	G3/8	66.5	30.5	100	30	3.7	9.5	32.5	21	24	--
65.320	G1/8	G3/8	G3/8	66.5	30.5	100	30	3.7	9.5	32.5	21	24	--
65.330	G1/8	G1/2	G3/8	66.5	45	107.9	35	3.7	10	46.5	4	24	9
65.410	G1/4	G1/2	G3/4	182	67	124	49	M4	41.5	74	57	38	5

Diagrams

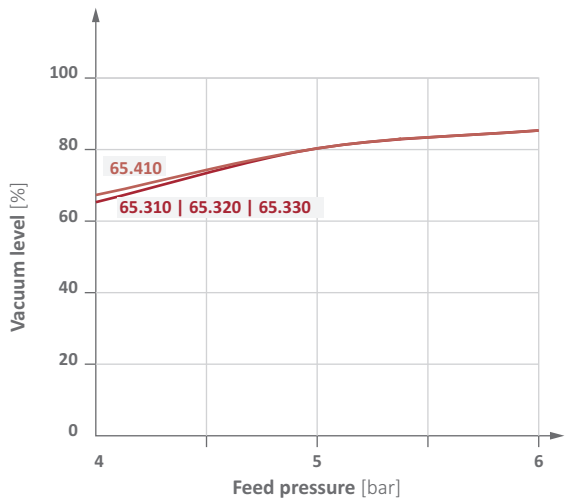
> Air consumption against feed pressure



> Suction power against feed pressure



> Vacuum level against feed pressure



Suction power [Nl/min] at vacuum level

Item no.	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %
65.310	89	62	38	22	18	10	5	--
65.320	130	81	52	30	22	14	8	--
65.330	178	116	91	63	44	15	6	--
65.410	175	118	58	42	33	23	16	10

EBO – Ejector boxes





Series "-S" with mechanical vacuum switch

V = Vacuum connection P = Compressed air connection EX = Exhaust outlet (R)

Product notes

> High suction power for fast evacuation and short gripping time
> Easy installation directly in the vacuum line
> Rectangular design enables space-conserving parallel mounting of several ejector boxes
> Replaceable silencer filter element
> Compressed air and vacuum connection via quick fittings, exhaust via rectangular silencer

Type -S with mechanical / electrical vacuum switch:
> Monitoring of vacuum circuits for high process reliability
> NO/NC switching function
> Factory setting: -534 mbar (-7.7 psi)
> Contact capacity: 3 A at 250 V
> Regulating range: -200 to -667 mbar (-2.9 to -9.7 inHg)
> Repeat accuracy: ± 50 mbar (± 1.5 inHg)
> Hysteresis: -200 mbar (-2.9 inHg)

Ordering notes

> Index H: Ejectors for dense products (max. vacuum degree 90 %)
> Index L: Ejectors for porous products, resp. in case of higher leakage (increased suction, max. vacuum degree 68 %)
> Index P: Ejectors designed for lower feed pressure (max. vacuum degree 90 %)

Technical data

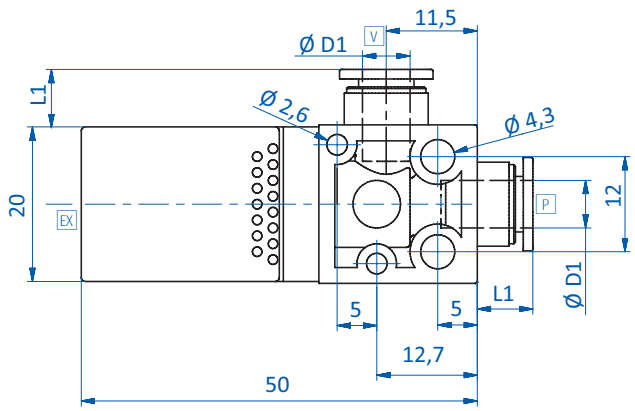
Item no.	Nozzle diameter [mm]	Optimal operating pressure [bar (psi)]	Final vacuum [%]	Suction power [Nl/min]	Air consumption [Nl/min]	Operating temperature [°C (°F)]	Weight [g]	Suitable filter and silencer-set
EBO.05H.4	0.5	5 (72.5)	90	7	11.5	0 - 60 (32 - 140)	18	72.105
EBO.07H.1	0.7	5 (72.5)	93	13	23	0 - 60 (32 - 140)	18.5	72.105
EBO.10H.1	1	5 (72.5)	93	28	46	0 - 60 (32 - 140)	18.5	72.105
EBO.12H.1	1.2	5 (72.5)	93	38	70	0 - 60 (32 - 140)	18	72.105
EBO.05L.4	0.5	5 (72.5)	68	12	11.5	0 - 60 (32 - 140)	18	72.105
EBO.07L.1	0.7	5 (72.5)	68	26	23	0 - 60 (32 - 140)	18.5	72.105
EBO.10L.1	1	5 (72.5)	68	42	46	0 - 60 (32 - 140)	17.5	72.105
EBO.07P.1	0.7	3.5 (50.8)	90	10.5	17	0 - 60 (32 - 140)	18.5	72.105
EBO.10P.1	1	3.5 (50.8)	90	21	34	0 - 60 (32 - 140)	18.5	72.105
EBO.12P.1	1.2	3.5 (50.8)	90	27	47	0 - 60 (32 - 140)	18	72.105
EBO.05H.4-S	0.5	5 (72.5)	90	7	11.5	0 - 60 (32 - 140)	46.5	72.105
EBO.07H.1-S	0.7	5 (72.5)	93	13	23	0 - 60 (32 - 140)	46	72.105
EBO.10H.1-S	1	5 (72.5)	93	28	46	0 - 60 (32 - 140)	47	72.105
EBO.12H.1-S	1.2	5 (72.5)	93	38	70	0 - 60 (32 - 140)	47.5	72.105
EBO.05L.4-S	0.5	5 (72.5)	68	12	11.5	0 - 60 (32 - 140)	46.5	72.105
EBO.07L.1-S	0.7	5 (72.5)	68	26	23	0 - 60 (32 - 140)	48	72.105
EBO.10L.1-S	1	5 (72.5)	68	42	46	0 - 60 (32 - 140)	46.5	72.105
EBO.07P.1-S	0.7	3.5 (50.8)	90	10.5	17	0 - 60 (32 - 140)	48.5	72.105
EBO.10P.1-S	1	3.5 (50.8)	90	21	34	0 - 60 (32 - 140)	48.5	72.105
EBO.12P.1-S	1.2	3.5 (50.8)	90	27	47	0 - 60 (32 - 140)	47.5	72.105

Model selection

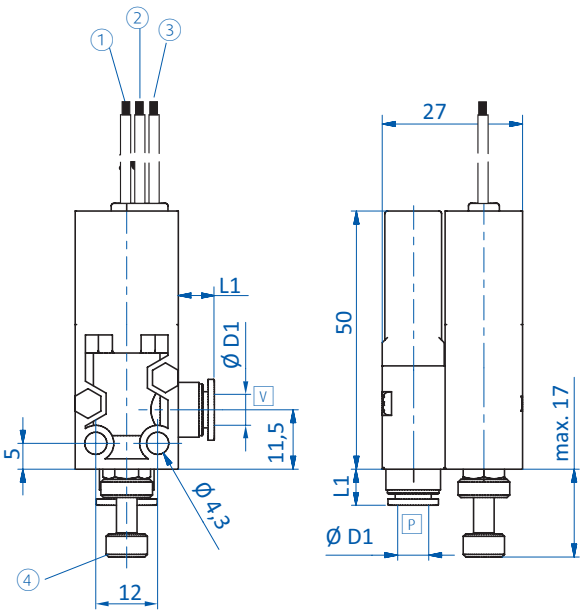
Ordering example:
EBO.05H.4 = Nozzle diam. 0.5 mm for dense products, hose diam. 4 mm, without vacuum switch
EBO.07L.1-S = Nozzle diam. 0.7 mm for porous products, hose diam. 6 mm, with mechanical / electrical vacuum switch

Serie	Nozzle diameter	Type	Hose diameter	Vacuum switch
EBO.	**05** = 0.5 mm **07** = 0.7 mm **10** = 1.0 mm	**H** = for dense products **L** = for porous products **P** = for lower feed pressure	**.1** = 6 mm **.4** = 4 mm	**-S** (with) *blank* (without)

Dimensions



EBO.05H.4 | EBO.07H.1 | EBO.10H.1 | EBO.12H.1 | EBO.05L.4 | EBO.07L.1 | EBO.10L.1 | EBO.07P.1 | EBO.10P.1 | EBO.12P.1



EBO.05H.4-S | EBO.07H.1-S | EBO.10H.1-S | EBO.12H.1-S | EBO.05L.4-S | EBO.07L.1-S | EBO.10L.1-S | EBO.07P.1-S | EBO.10P.1-S | EBO.12P.1-S

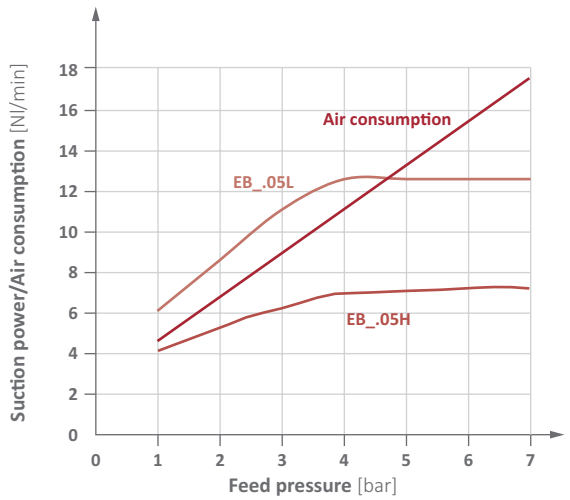
P = Compressed air side with tubing connection V = Vacuum side with tubing connection EX = Exhaust outlet (R) ① = White ② = Red (NC) ③ = Black (NO) ④ = Knurled screw

Continued on the next page

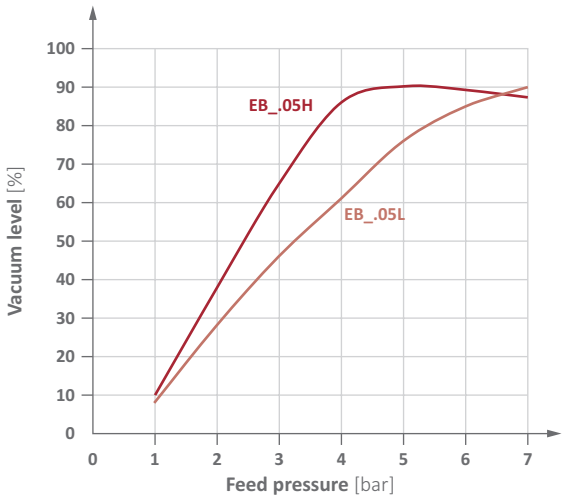
Item no.	Ø **D1** [mm]	**L1** [mm]
EBO.05H.4	4	6.6
EBO.07H.1	6	7
EBO.10H.1	6	7
EBO.12H.1	6	7
EBO.05L.4	4	6.6
EBO.07L.1	6	7
EBO.10L.1	6	7
EBO.07P.1	6	7
EBO.10P.1	6	7
EBO.12P.1	6	7
EBO.05H.4-S	4	6.6
EBO.07H.1-S	6	7
EBO.10H.1-S	6	7
EBO.12H.1-S	6	7
EBO.05L.4-S	4	6.6
EBO.07L.1-S	6	7
EBO.10L.1-S	6	7
EBO.07P.1-S	6	7
EBO.10P.1-S	6	7
EBO.12P.1-S	6	7

Diagrams

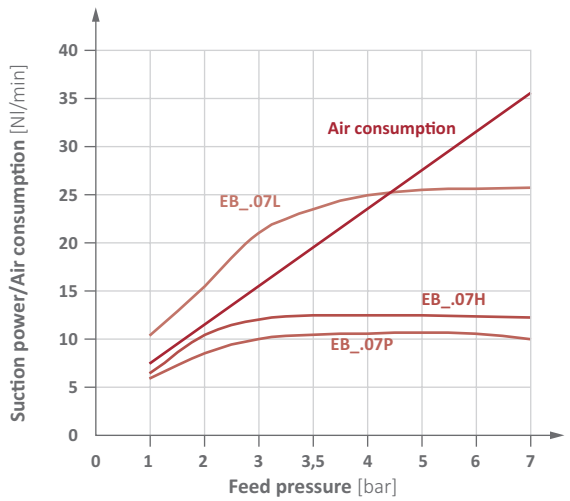
> Suction power and air consumption against feed pressure



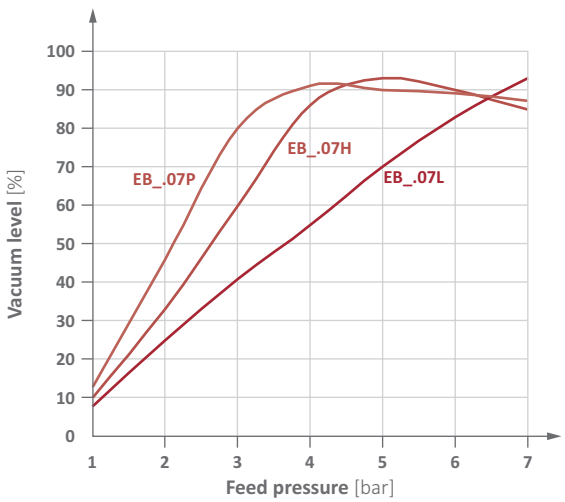
> Vacuum level against feed pressure



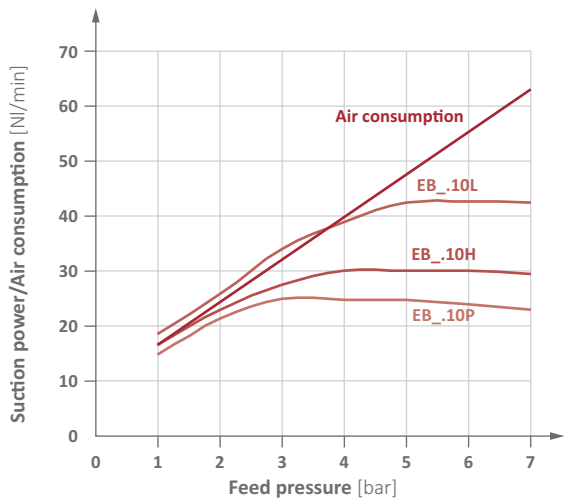
> Suction power and air consumption against feed pressure



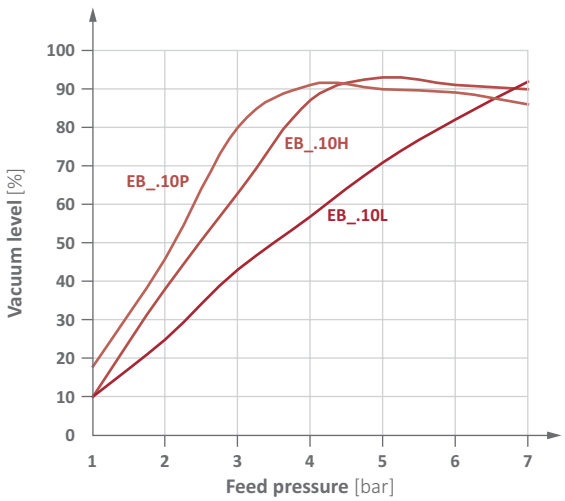
> Vacuum level against feed pressure



> Suction power and air consumption against feed pressure

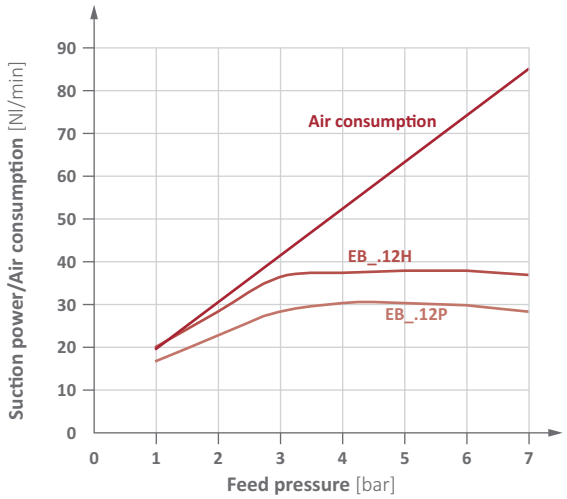


> Vacuum level against feed pressure

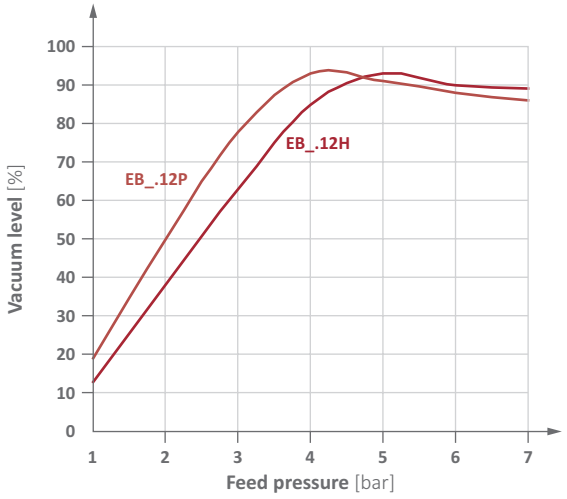


Diagrams

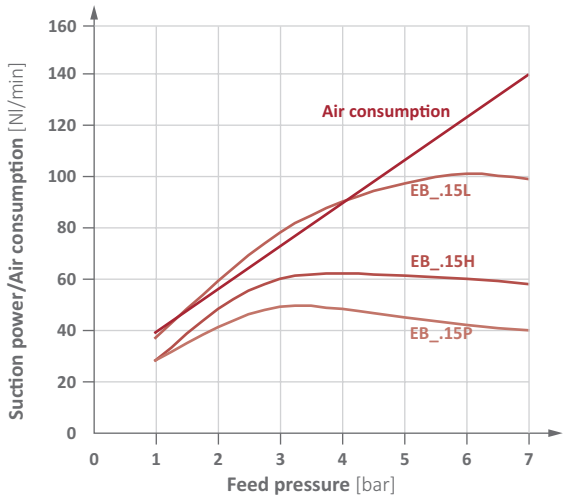
> Suction power and air consumption against feed pressure



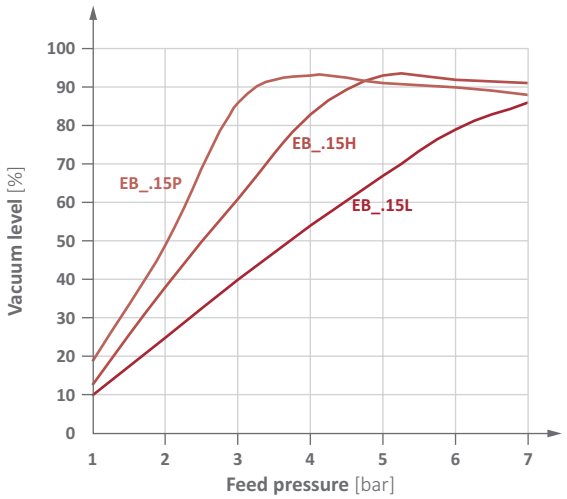
> Vacuum level against feed pressure



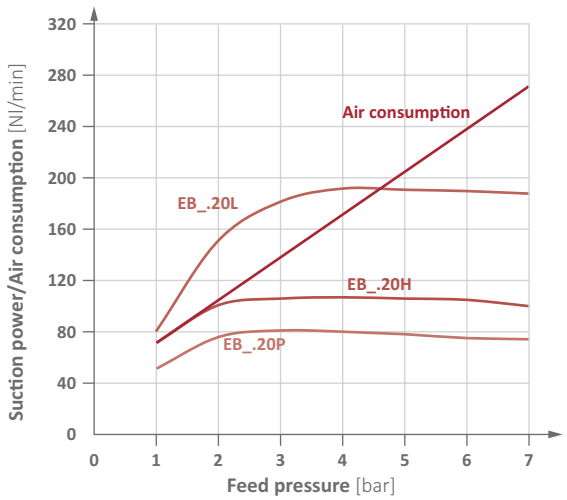
> Suction power and air consumption against feed pressure



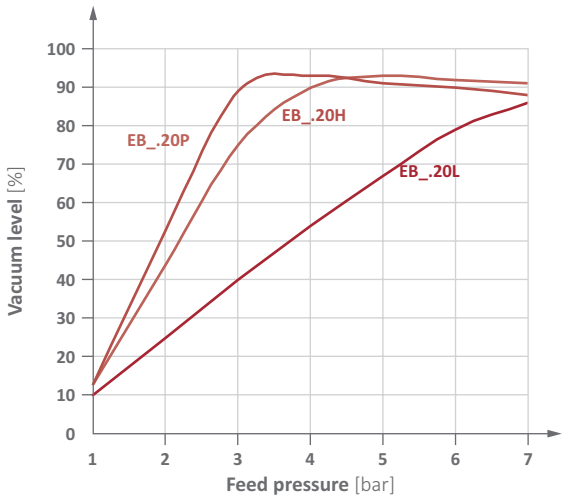
> Vacuum level against feed pressure



> Suction power and air consumption against feed pressure



> Vacuum level against feed pressure



Suction power [Nl/min] at vacuum level

Item no.	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %
EBO.05H.4	7	6.2	5.4	4.6	3.8	3	2.2	1.5	0.7	--
EBO.07H.1	13	11.6	10.1	8.8	7.5	5.9	4.2	3	1.6	0.4
EBO.10H.1	28	25	22	18.9	15.9	12.9	9.9	6.9	3.9	0.9
EBO.12H.1	38	33.9	29.8	25.7	21.6	17.5	13.4	9.3	5.3	1.2
EBO.05L.4	12	10.8	9	7.5	5.5	4	2.5	0.8	--	--
EBO.07L.1	26	22	18.2	14	10	6.3	2.4	--	--	--
EBO.10L.1	42	35.6	29.3	22.9	16.5	10.2	3.8	--	--	--
EBO.07P.1	10.5	9.3	8.1	7	5.8	4.6	3.5	2.2	1.1	--
EBO.10P.1	21	18.7	16.4	14	11.8	9.5	7.1	4.8	2.5	0.2
EBO.12P.1	27	24	21	18.1	15.1	12	9.2	6.2	3.3	0.3
EBO.05H.4-S	7	6.2	5.4	4.6	3.8	3	2.2	1.5	0.7	--
EBO.07H.1-S	13	11.6	10.1	8.8	7.5	5.9	4.2	3	1.6	0.4
EBO.10H.1-S	28	25	22	18.9	15.9	12.9	9.9	6.9	3.9	0.9
EBO.12H.1-S	38	33.9	29.8	25.7	21.6	17.5	13.4	9.3	5.3	1.2
EBO.05L.4-S	12	10.8	9	7.5	5.5	4	2.5	0.8	--	--
EBO.07L.1-S	26	22	18.2	14	10	6.3	2.4	--	--	--
EBO.10L.1-S	42	35.6	29.3	22.9	16.5	10.2	3.8	--	--	--
EBO.07P.1-S	10.5	9.3	8.1	7	5.8	4.6	3.5	2.2	1.1	--
EBO.10P.1-S	21	18.7	16.4	14	11.8	9.5	7.1	4.8	2.5	0.2
EBO.12P.1-S	27	24	21	18.1	15.1	12	9.2	6.2	3.3	0.3

Heavy-duty ejectors

Vacuum generation for use under harsh operating conditions



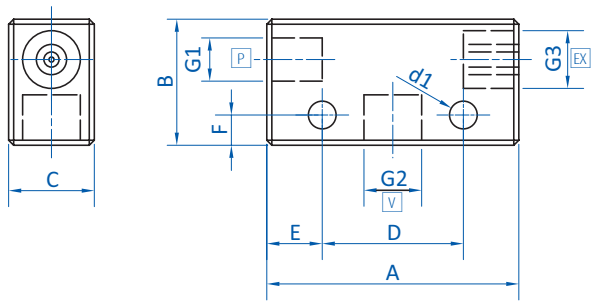
Product notes

> Robust and compact aluminum housing
> Compensation of compressed air fluctuations between 3 and 6 bar (43.5 and 87 psi)
> Additional inlet for blow-off for fast product release or vacuum switch connection for process monitoring (65.111, 65.130)
> Rectangular design enables block assembly in centralized or decentralized vacuum systems

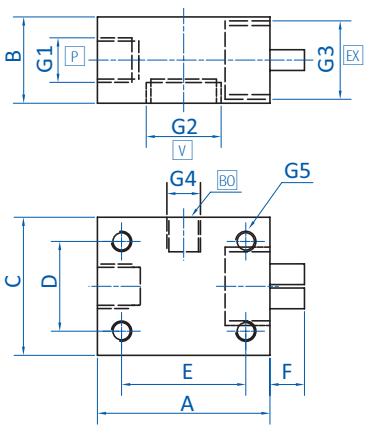
Technical data

Item no.	Optimal operating pressure [bar (psi)]	Max. operating pressure [bar (psi)]	Final vacuum [%]	Suction power [Nl/min]	Air consumption to 4 bar (58 psi) [Nl/min]	Evacuation time 0 to 70 % [s/l]	Weight [g]	Accessories
65.102A	4 (58)	6 (87)	85	30	50	3.5	48	Silencer: 72.001 Silencer: 72.029
65.111	4 (58)	6 (87)	85	33	60	3	120	Silencer: 72.002 Silencer: 72.030
65.120	4 (58)	6 (87)	85	85	130	1.5	125	Silencer: 72.031
65.130	4 (58)	6 (87)	85	130	240	0.7	225	Silencer: 72.033

Dimensions



65.102A



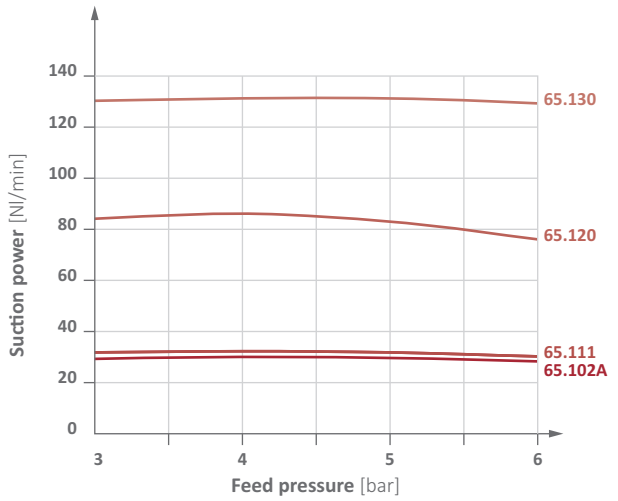
65.111 | 65.120 | 65.130

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Blow-off (65.111 and 65.130)

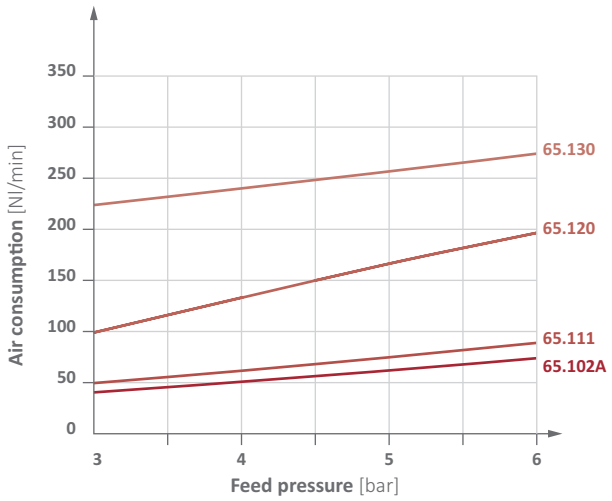
Item no.	G1	G2	G3	G4	G5	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]
65.102A	G1/8	G1/4	G1/4	--	--	50	25	17	28	5.5	11	6
65.111	G1/4	G1/2	G3/8	G1/8	6.5	50	25	40	25	--	34	8
65.120	G1/4	G1/2	G1/2	--	M6	50	25	40	25	--	34	10
65.130	G1/4	G1/2	G1	G1/8	M6	60	40	40	25	--	34	--

Diagrams

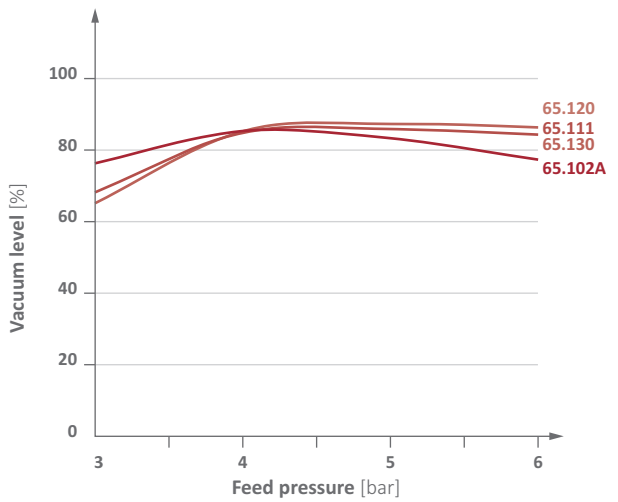
> Suction power against feed pressure



> Air consumption against feed pressure



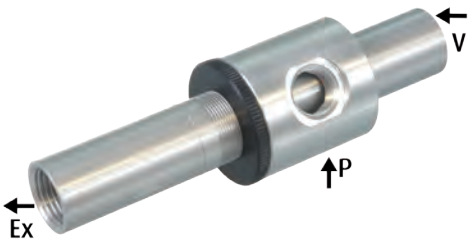
> Vacuum level against feed pressure



Suction power [Nl/min] at vacuum level

Item no.	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %
65.102A	25	23	19	15	13	8	4	1
65.111	25	23	20	17	13	8	4	1
65.120	76	66	55	41	34	22	12	3
65.130	182	160	135	69	52	33	17	6

Feed ejectors – adjustable



Product notes

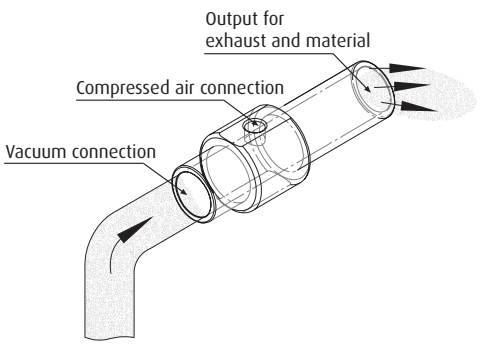
> High suction power for safe handling of air-permeable products or generally in the presence of high leakage
> Gentle transportation of powdery substances or small-size products such as granular material, coffee, flour
> Extraction of non-aggressive vapors and gases
> Volume of suction air and required vacuum level can be adjusted by turning the suction pipe, allowing for an energy efficient increase in performance without increasing air consumption
> Can even be used in rough conditions thanks to the robust, maintenance-free construction without moving parts
> No build-up of heat because of no moving parts and therefore no risk of ignition during transport
> High maximum vacuum level for overcoming larger height differences
> Extremely flexible integration into gripper systems thanks to any mounting position

Notes
> The transport length depends on the feed pressure, the transport volume and the transport goods
> Rule of thumb:
- Tubing length from suction point to ejector ~ 2/3 of the total tubing length
- Tubing length from ejector to point of use ~ 1/3 of the total tubing length
> Prior to installation a test at customer site is recommended
> For longer distances, multiple ejectors can be serially connected

Technical data

Item no.	Nozzle diameter [mm]	Material	Pressure range [bar (psi)]	Optimal operating pressure [bar (psi)]	Final vacuum [mbar (inHg)]	Suction power [Nl/min]	Air consumption [Nl/min]	Operating temperature [°C (°F)]	Weight [g]	Suitable silencers
65.701	6.5	Aluminum anodized	4 - 7 (58 - 101.5)	5.5 (79.8)	840 (24.8)	0 - 284	0 - 342	-20 - 80 (-4 - 176)	105	72.029
65.711	10	Aluminum anodized	4 - 7 (58 - 101.5)	5.5 (79.8)	840 (24.8)	0 - 848	0 - 825	-20 - 80 (-4 - 176)	275	72.031
65.731	19	Aluminum anodized	4 - 7 (58 - 101.5)	5.5 (79.8)	840 (24.8)	0 - 3,402	0 - 2,550	-20 - 80 (-4 - 176)	550	72.033

Functional principle



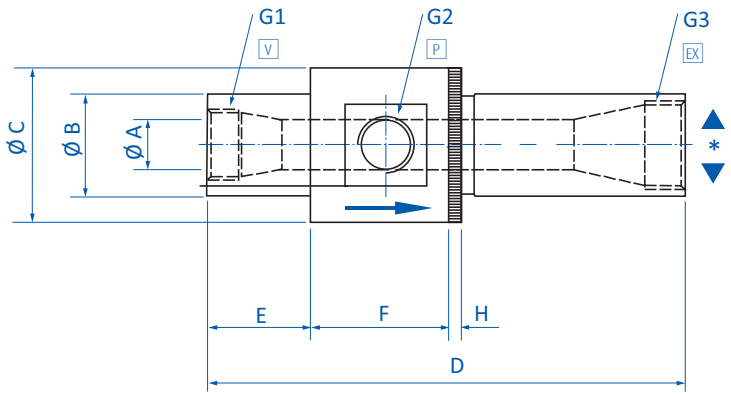
Air consumption [Nl/min] at vacuum level (feed pressure 5.5 bar (79.8 psi))

Item no.	17 %	34 %	50 %	68 %	84 %
65.701	112	169	233	276	342
65.711	176	327	485	595	825
65.731	650	875	1250	1790	2550

Suction power [Nl/min] at vacuum level (feed pressure 5.5 bar (79.8 psi))

Item no.	17 %	34 %	50 %	68 %	84 %
65.701	280	240	200	162	125
65.711	846	735	620	520	395
65.731	3390	2460	1970	1440	1130

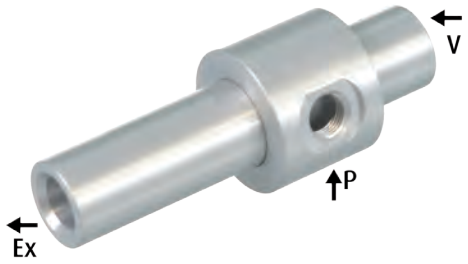
Dimensions



V = Vacuum connection P = Compressed air connection EX = Exhaust outlet (R) * = rotatable

Item no.	G1	G2	G3	Ø A [mm]	Ø B [mm]	Ø C [mm]	D [mm]	E [mm]	F [mm]	H [mm]
65.701	G1/4	G1/8	G1/4	6.5	19	32	94 - 105	22	32	5
65.711	G3/8	G3/8	G1/2	10	25	45	155 - 165	38	45	5
65.731	G3/4	G1/2	G1	19	38	58	175 - 189	38	51	5

Feed ejectors – with a large passage



Product notes

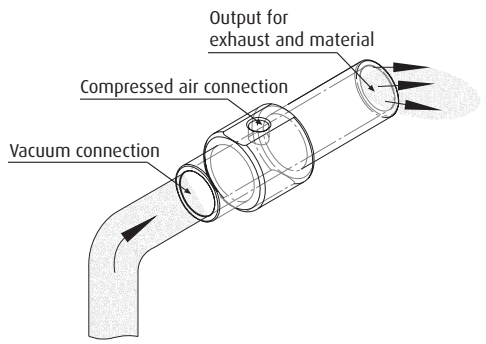
> Very high suction power for high transportation throughput
> Gentle transportation of powdery substances or small-size products such as granular material, pills, chippings
> Extraction of non-aggressive vapors and gases
> Can even be used in rough conditions thanks to the robust, maintenance-free construction
> No build-up of heat because of no moving parts and therefore no risk of ignition during transport
> Extremely flexible integration into gripper systems thanks to any mounting position
> 65.752: Connections for vacuum and outlet on both sides using G3/8 female thread (see drawing)

Notes
> The transport length depends on the feed pressure, the transport volume and the transport goods
> Rule of thumb:
- Tubing length from suction point to ejector ~ 2/3 of the total tubing length
- Tubing length from ejector to point of use ~ 1/3 of the total tubing length
> Prior to installation a test at customer site is recommended
> For longer distances, multiple ejectors can be serially connected

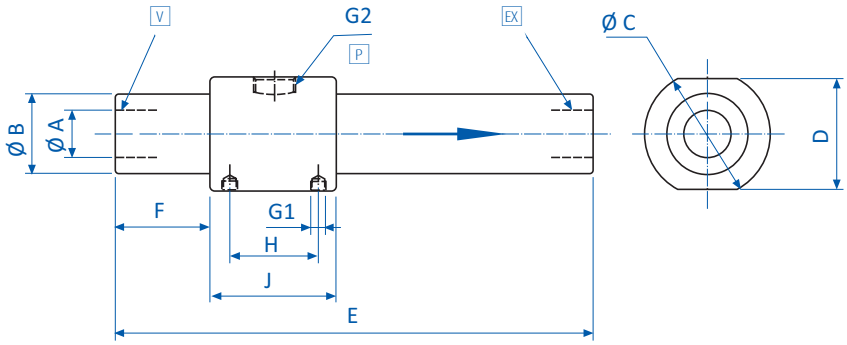
Technical data

Item no.	Nozzle diameter [mm]	Material	Pressure range [bar (psi)]	Max. operating pressure [bar (psi)]	Final vacuum [mbar (inHg)]	Suction power at 5.5 bar (79.8 psi) [Nl/min]	Air consumption at 5.5 bar (79.8 psi) [Nl/min]	Operating temperature [°C (°F)]	Weight [g]	Suitable silencers
65.742	7	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	260 (7.7)	295	160	-10 - 80 (14 - 176)	92	--
65.752	10	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	160 (4.7)	425	170	-10 - 80 (14 - 176)	81	72.030
65.762	13	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	350 (10.3)	870	680	-10 - 80 (14 - 176)	177	--
65.772	19	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	280 (8.3)	1,825	1,365	-10 - 80 (14 - 176)	380	--
65.792	25	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	90 (2.7)	4,400	695	-10 - 80 (14 - 176)	607	--
65.802	38	Aluminum anodized	2.5 - 6 (36.3 - 87)	7 (101.5)	90 (2.7)	5,610	1,356	-10 - 80 (14 - 176)	777	--

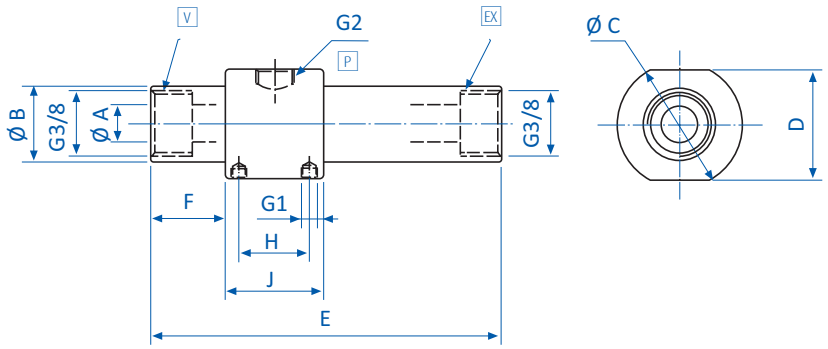
Functional principle



Dimensions



65.742 | 65.762 | 65.772 | 65.792 | 65.802



65.752

V = Vacuum connection P = Compressed air connection EX = Exhaust outlet (R)

Item no.	G1	G2	Ø A [mm]	Ø B [mm]	Ø C [mm]	D [mm]	E [mm]	F [mm]	H [mm]	J [mm]
65.742	M4	G1/8	6.5	18.5	32	30	89	19	18	25
65.752	M4	G1/8	9.5	18.5	32	30	89	19	18	25
65.762	M4	G1/4	12.5	24	38	34	140	25.5	23	32
65.772	M4	G3/8	19	32	50	45	190	38	35	50
65.792	M4	G3/8	25	38	59	55	198	40	40	56
65.802	M4	G3/8	38	49.6	69	65	205	40	42	60

Open silencers for ejectors



Product notes

> Suitable for heavy-duty ejectors
> Open design, specially suitable for dusty, high-particle environments (e.g. wood industry)

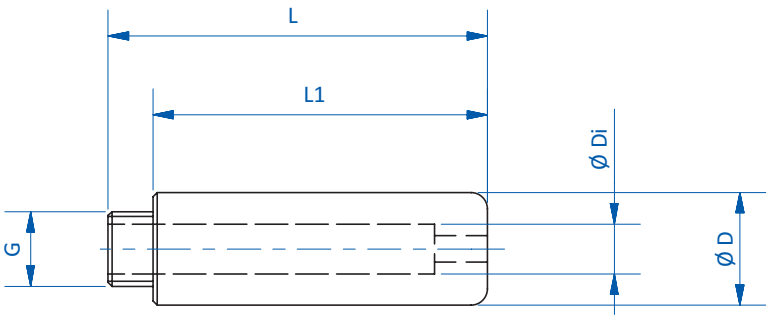
Technical data

Item no.	Weight [g]
72.028	3
72.029	20
72.030	25
72.031	35
72.032	55
72.033	175

Dimensions

G	Ø D [mm]	Ø Di [mm]	L [mm]	L1 [mm]
G1/8	14	7	46	41
G1/4	20	11	73	65
G3/8	24	11	72	64
G1/2	30	17	128	121
G3/4	40	17	126	119
G1	49	26	126	119

Dimensions



Closed silencers for ejectors





Product notes

> Closed diffusor/silencer specially designed for dust-free environments
> Suitable for heavy-duty ejectors

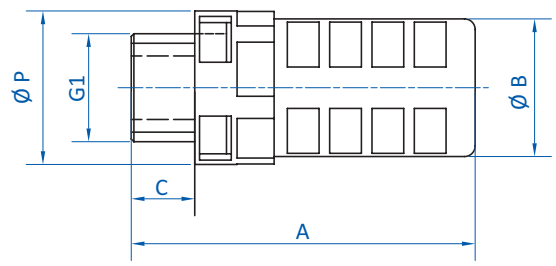
Technical data

Item no.	Connection	Weight [g]
72.000	G1/8	2
72.001	G1/4	3.5
72.002	G3/8	12
72.003	G1/2	15
72.007	Pipe connection Ø 4 [mm]	5.5
72.008	Pipe connection Ø 6 [mm]	3
72.009	Pipe connection Ø 8 [mm]	6.5

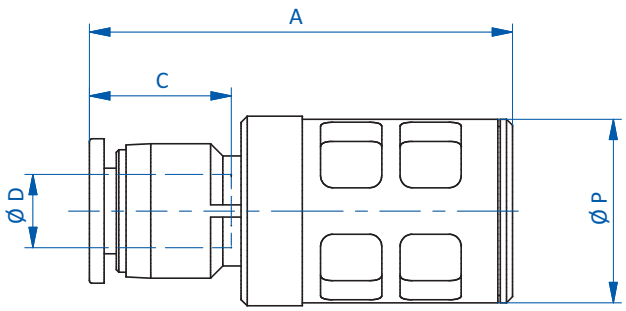
Dimensions

G1	Ø D [mm]	A [mm]	Ø B [mm]	C [mm]	Ø P [mm]
G1/8	--	28	15.5	6	15.5
G1/4	--	38	17.5	8	17.5
G3/8	--	58	26	10	26.5
G1/2	--	66	29	12	29
--	4	30	--	11	10.5
--	6	34.5	--	11.5	15
--	8	48.5	--	17.5	17.5

Dimensions



72.000 | 72.001 | 72.002 | 72.003



72.007 | 72.008 | 72.009

Silencers with filter function



Series 1: brass construction with stainless steel wire fabric



Series 2: brass construction with sintered material

Product notes

> Combination of silencer and air filter
> 72.015 - 72.021: also suitable as protective filter for 3/2-way valves at ventilation/blow-off inlet (under contaminated environmental conditions)
> 72.022 - 72.027: can be mounted directly into the vacuum cup or the fitting, temperature-resistant up to 120 °C (248 °F)

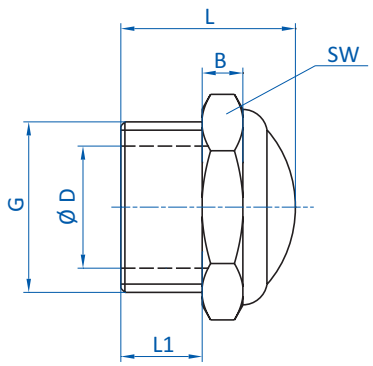
Technical data

Item no.	Type	Weight [g]
72.015	Brass construction with stainless steel wire fabric	2
72.016	Brass construction with stainless steel wire fabric	6
72.017	Brass construction with stainless steel wire fabric	10
72.018	Brass construction with stainless steel wire fabric	15
72.019	Brass construction with stainless steel wire fabric	25
72.020	Brass construction with stainless steel wire fabric	38
72.021	Brass construction with stainless steel wire fabric	56
72.022	Brass construction with sintered material	1
72.023	Brass construction with sintered material	3
72.024	Brass construction with sintered material	6
72.025	Brass construction with sintered material	12

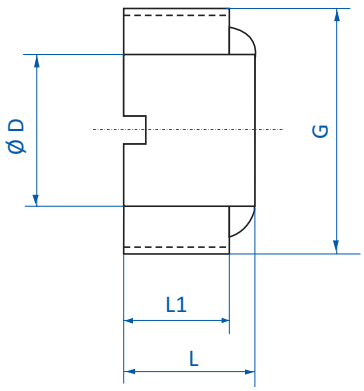
Dimensions

G	B [mm]	Ø D [mm]	L [mm]	L1 [mm]	SW
M5	3.5	2.5	9.5	4	8
G1/8	4	6	14	6	13
G1/4	5	8.5	18.5	8	16
G3/8	6	11	19.5	8	19
G1/2	5	15	22.5	10	24
G3/4	6	20	25.5	10	30
G1	6.5	26	31	11.5	36
G1/8	--	5.5	4.5	3.5	--
G1/4	--	7	6.8	4.5	--
G3/8	--	9.5	6.8	5	--
G1/2	--	12	9	7	--

Dimensions



72.015 | 72.016 | 72.017 | 72.018 | 72.019 | 72.020 | 72.021



72.022 | 72.023 | 72.024 | 72.025

Inline ejectors EIL – accessories

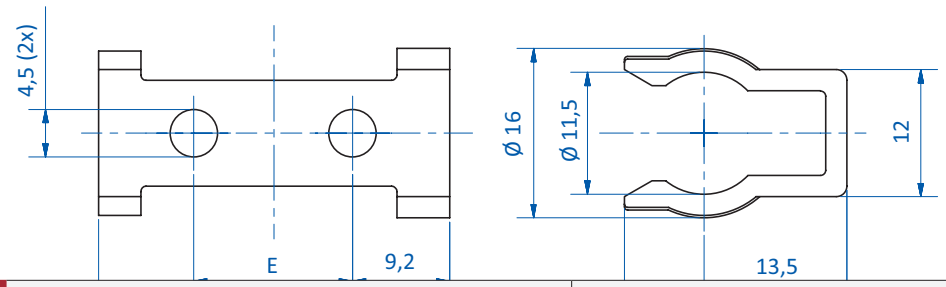
Ejector bracket



Technical data

Item no.	Weight [g]
EIL.05-HO	2
EIL.07-HO	2

Dimensions



Item no.	A [mm]	E [mm]
EIL.05-HO	33.2	15
EIL.07-HO	39.2	20

Notes:

Rotary vane pump dry-running – Becker VT 4.8 – 8 m³/h



Product notes

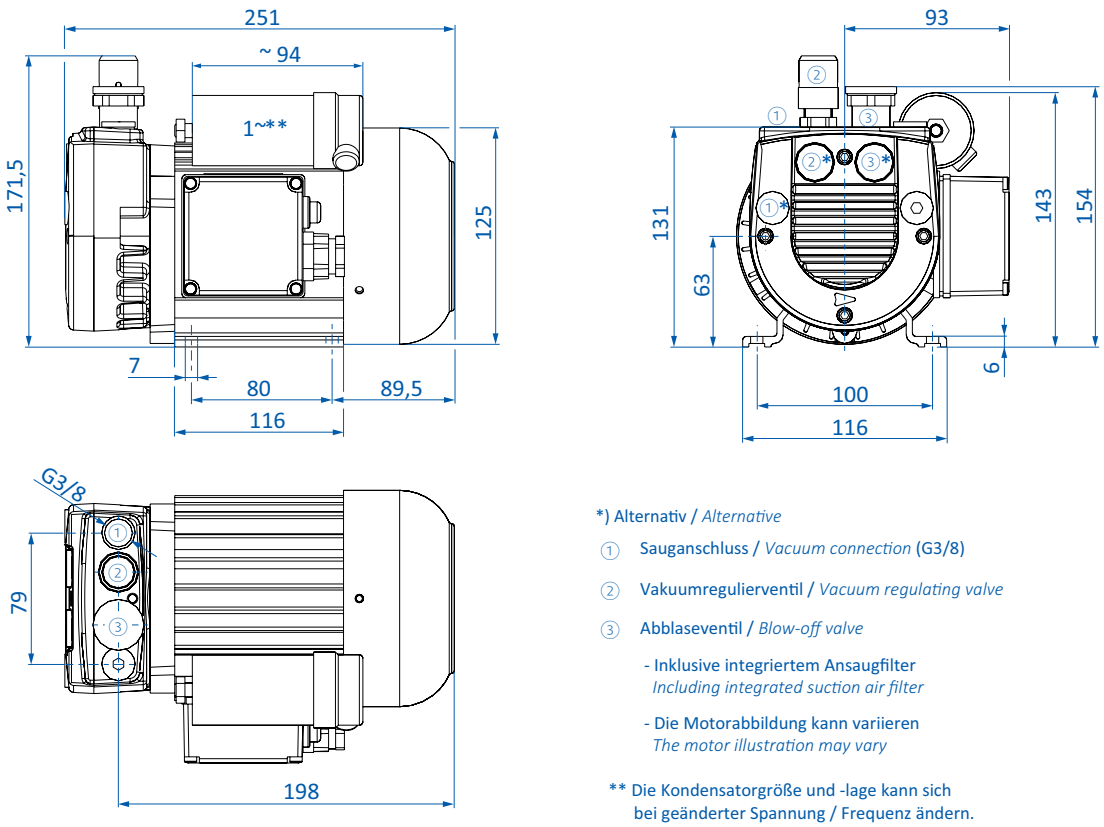
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

Technical data

Item no.	VPT.8A-1	VPT.8A-3-EU	VPT.8A-3-US
Motor type	1-phasig	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	0.35	0.37	0.37
Rated power at 60 Hz [kW]	0.42	0.44	0.44
Power supply at 50 Hz [V]	230 ±10%	175-260 / 300-450	175-260 / 300-450
Power supply at 60 Hz [V]	230 ±10%	202-300 / 350-520	202-300 / 350-520
Current consumption at 50 Hz [A]	3.9	2.35 / 1.35	2.35 / 1.36
Current consumption at 60 Hz [A]	3.4	2.40 / 1.40	2.40 / 1.40
Suction power at 50 Hz [m³/h]	8	8	8
Suction power at 60 Hz [m³/h]	9.1	9.1	9.1
Sound pressure level at 50 Hz [dB(A)]	58	58	58
Sound pressure level at 60 Hz [dB(A)]	61	61	61
Description Becker	VT 4.8	VT 4.8	VT 4.8
Item no. Becker	G009378	G009377	G050868
Note: Becker motor design according to data sheet Pos #	01	02	03

Continued on the next page

Dimensions



*) Alternativ / *Alternative*

① Sauganschluss / *Vacuum connection* (G3/8)

② Vakuumregulierventil / *Vacuum regulating valve*

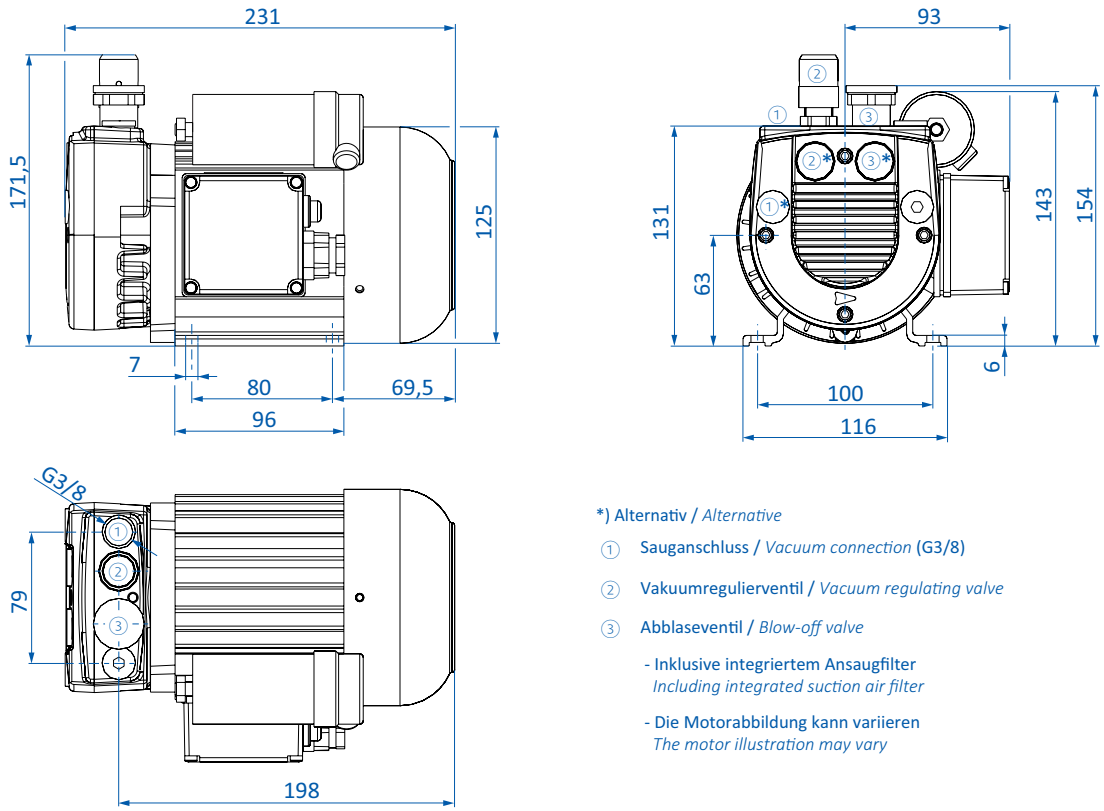
③ Abblaseventil / *Blow-off valve*

- Inklusive integriertem Ansaugfilter
  Including integrated suction air filter
- Die Motorabbildung kann variieren
  The motor illustration may vary

** Die Kondensatorgröße und -lage kann sich bei geänderter Spannung / Frequenz ändern.
The size and position of the capacitor can change with changed voltage / frequency.

VPT.8A-1

Dimensions



*) Alternativ / *Alternative*

① Sauganschluss / *Vacuum connection* (G3/8)

② Vakuumregulierventil / *Vacuum regulating valve*

③ Abblaseventil / *Blow-off valve*

- Inklusive integriertem Ansaugfilter
  Including integrated suction air filter
- Die Motorabbildung kann variieren
  The motor illustration may vary

VPT.8A-3-EU | VPT.8A-3-US

Rotary vane pump dry-running – Becker VT 4.16 – 16 m³/h



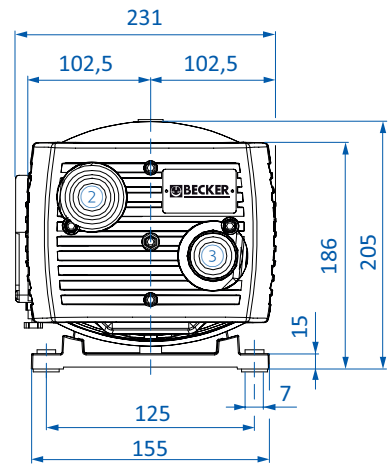
Product notes

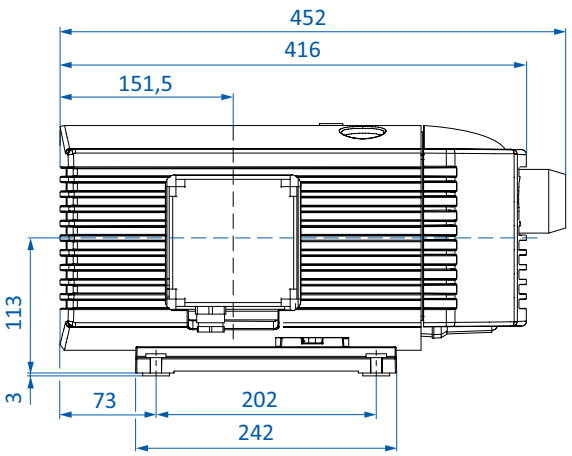
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

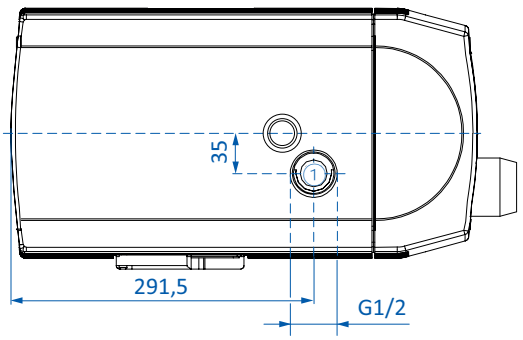
Technical data

Item no.	VPT.16A-1	VPT.16A-3
Motor type	1-phasig	3-phase
Rated power at 50 Hz [kW]	0.55	0.55
Rated power at 60 Hz [kW]	0.66	0.7
Power supply at 50 Hz [V]	230 ±10%	175-260 / 300-450
Power supply at 60 Hz [V]	230 ±10%	202-300 / 350-520
Current consumption at 50 Hz [A]	4.6	3.8 / 2.2
Current consumption at 60 Hz [A]	5.2	3.9 / 2.25
Suction power at 50 Hz [m³/h]	16	16
Suction power at 60 Hz [m³/h]	19	19
Sound pressure level at 50 Hz [dB(A)]	61	61
Sound pressure level at 60 Hz [dB(A)]	64	64
Description Becker	VT 4.16	VT 4.16
Item no. Becker	G008162	G008163

Dimensions







① Sauganschluss / *Vacuum connection* (G1/2)
② Vakuumregulierventil / *Vacuum regulating valve*
③ Abblaseventil / *Blow-off valve*

Rotary vane pump dry-running – Becker VT 4.25 – 25 m³/h



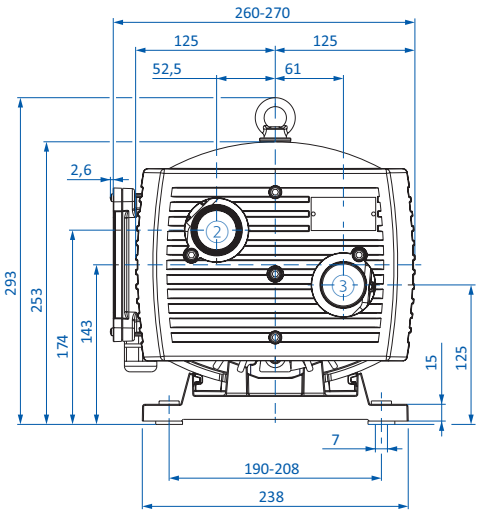
Product notes

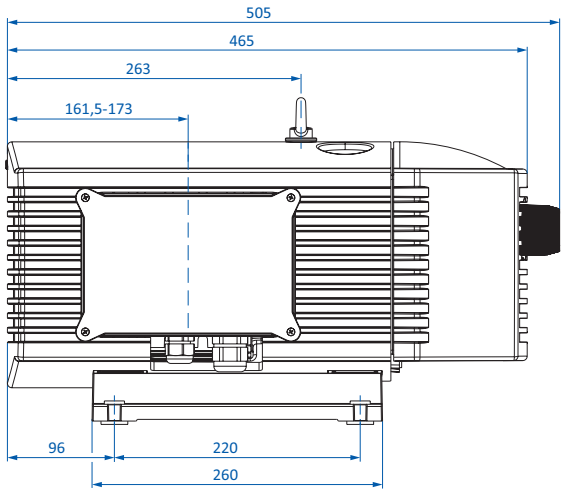
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

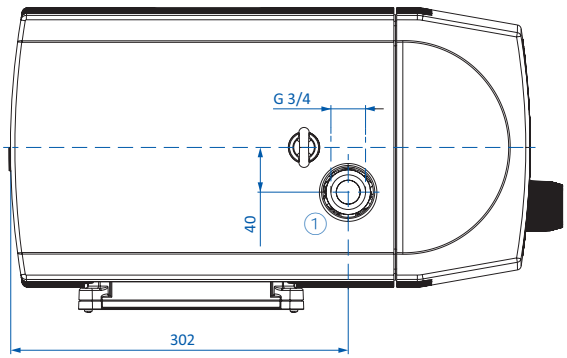
Technical data

Item no.	VPT.25A-3-EU	VPT.25A-3-US
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	0.75	--
Rated power at 60 Hz [kW]	0.9	0.9
Power supply at 50 Hz [V]	190-255 / 330-440	400
Power supply at 60 Hz [V]	190-290 / 330-500	208 / 230 / 460 / 400
Current consumption at 50 Hz [A]	3.9-4.85 / 2.25 - 2.8	1.9
Current consumption at 60 Hz [A]	4.65-4.25 / 2.7-2.45	3.6 / 1.8 / 3.7 / 1.9
Suction power at 50 Hz [m³/h]	25	25
Suction power at 60 Hz [m³/h]	30	30
Sound pressure level at 50 Hz [dB(A)]	62	62
Sound pressure level at 60 Hz [dB(A)]	67	67
Description Becker	VT 4.25	VT 4.25
Item no. Becker	G007775	G026677
Note: Becker motor design according to data sheet Pos #	03	01

Dimensions







① Sauganschluss / *Vacuum connection* (G3/4)

② Vakuumregulierventil / *Vacuum regulating valve*

③ Abblaseventil / *Blow-off valve*
- Inklusive integriertem Ansaugfilter
  Including integrated suction air filter

- Die Abbildung des Klemmkasten kann variieren.
  The illustration of the terminal box may vary.

Rotary vane pump dry-running – Becker VT 4.40 – 40 m³/h



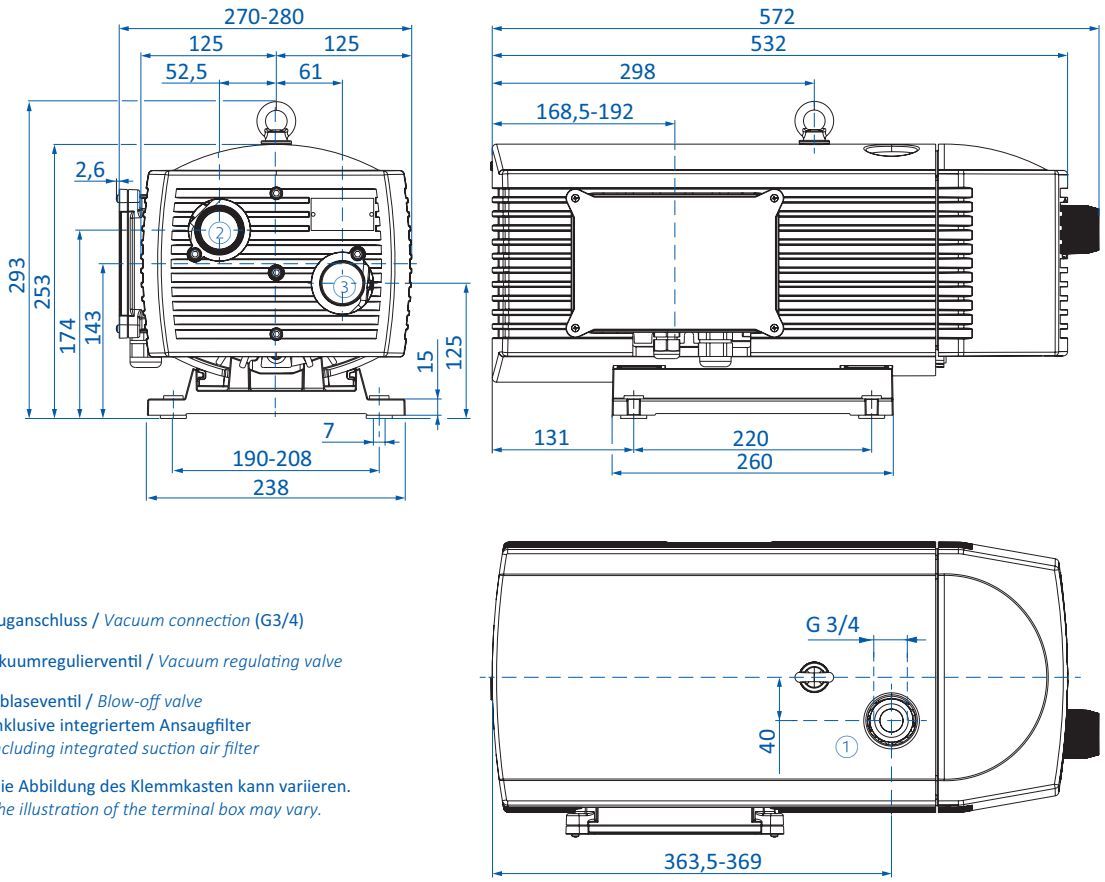
Product notes

The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

Technical data

Item no.	VPT.40A-3-EU	VPT.40A-3-US
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	1.25	1.25
Rated power at 60 Hz [kW]	1.5	1.5
Power supply at 50 Hz [V]	190-255 / 330-440	190-255 / 330-440
Power supply at 60 Hz [V]	190-290 / 330-500	190-290 / 330-500
Current consumption at 50 Hz [A]	5.2-6.2 / 3.0-3.6	5.2-6.2 / 3.0-3.6
Current consumption at 60 Hz [A]	6.9-5.7 / 4.0-3.3	6.9-5.7 / 4.0-3.3
Suction power at 50 Hz [m³/h]	40	40
Suction power at 60 Hz [m³/h]	48	48
Sound pressure level at 50 Hz [dB(A)]	67	67
Sound pressure level at 60 Hz [dB(A)]	72	72
Description Becker	VT 4.40	VT 4.40
Item no. Becker	G007623	G027221
Note: Becker motor design according to data sheet Pos #	03	04
Suitable motor protection switch	SH.ACC.ALL.0210 SH.ACC.ALL.0211 SH.ACC.ALL.0081	SH.ACC.ALL.0081

Dimensions



① Sauganschluss / *Vacuum connection* (G3/4)

② Vakuumregulierventil / *Vacuum regulating valve*

③ Abblaseventil / *Blow-off valve*
- Inklusive integriertem Ansaugfilter
  Including integrated suction air filter

- Die Abbildung des Klemmkasten kann variieren.
  The illustration of the terminal box may vary.

Rotary vane pump dry-running – Becker KVT 3.60 – 55 m³/h



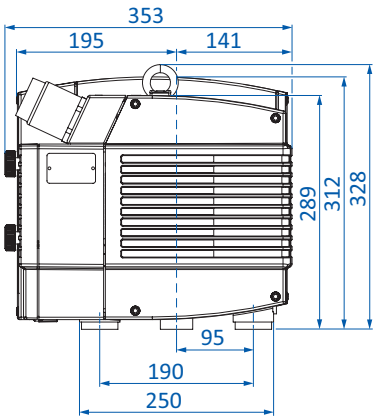
Product notes

The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

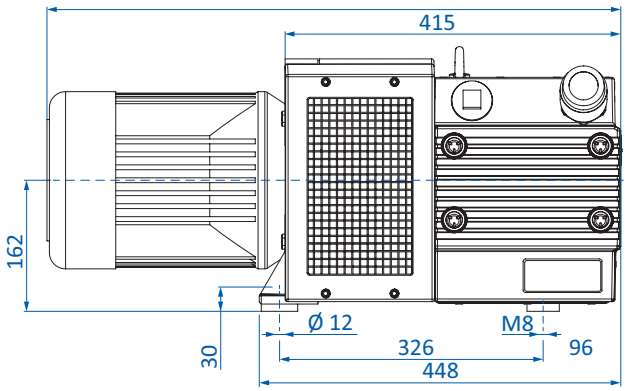
Technical data

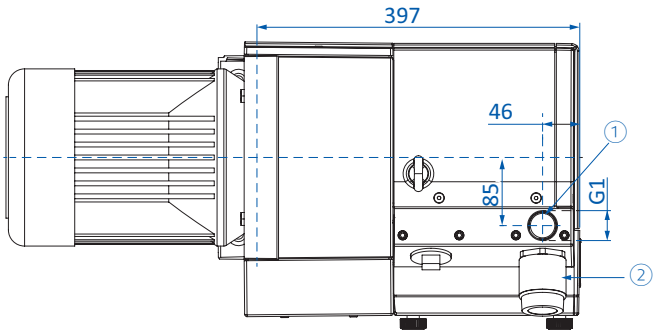
Item no.	VPT.60A-3-EU	VPT.60A-3-US
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	2.2	--
Rated power at 60 Hz [kW]	2.6	2.6
Power supply at 50 Hz [V]	230 / 400	--
Power supply at 60 Hz [V]	230 / 400	208 / 230 / 460
Current consumption at 50 Hz [A]	8.2 / 4.8	--
Current consumption at 60 Hz [A]	9,0 / 5,2	9.7 / 9.3 / 4.6
Suction power at 50 Hz [m³/h]	55	55
Suction power at 60 Hz [m³/h]	66	66
Sound pressure level at 50 Hz [dB(A)]	71	71
Sound pressure level at 60 Hz [dB(A)]	73	73
Description Becker	KVT 3.60	KVT 3.60
Item no. Becker	G024026	G024122
Note: Becker motor design according to data sheet Pos #	01	02
Suitable motor protection switch	SH.ACC.ALL.0211 SH.ACC.ALL.0212 SH.ACC.ALL.0082	SH.ACC.ALL.0082

Dimensions



VPT.60A-3-EU 704
VPT.60A-3-US 747





① Sauganschluss / *Vacuum connection* (G1)

② Vakuumregulierventil / *Vacuum regulating valve*

- Inklusive integriertem Ansaugfilter und Abblaseventil
  Including integra suction air filter and blow-off valve
- Die Motorabbildung kann variieren.
  The motor illustration may vary.

Oil-lubricated rotary vane pumps – Becker O5.10 – 10 m³/h



Product notes

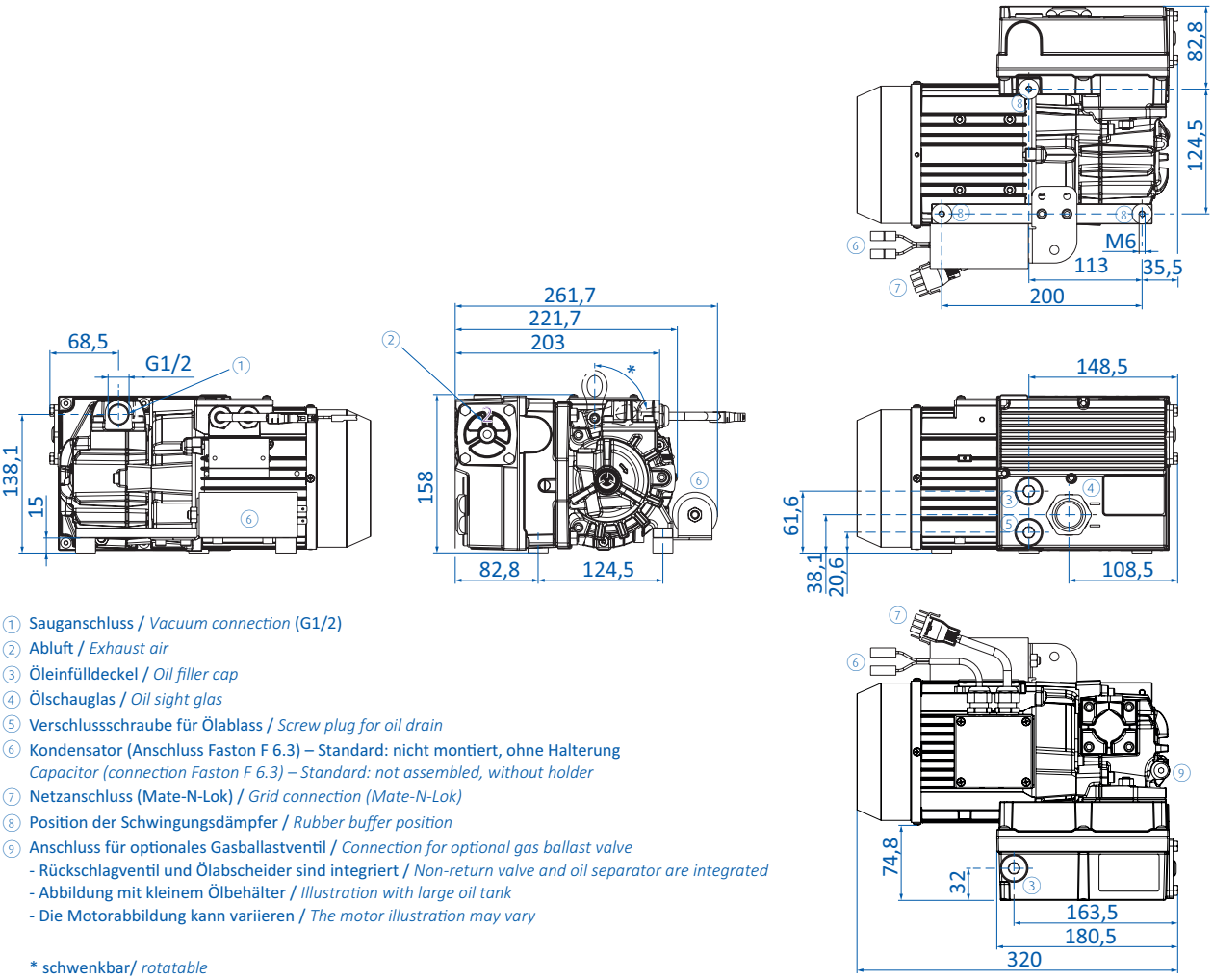
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. Compared to dry-running rotary vane pumps, the working chambers of oil-lubricated pumps are additionally sealed by oil that is also conveyed. This enables the pumps to generate a fine vacuum and makes them suitable for applications that require a high vacuum.

NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

Technical data

Item no.	**VPO.10A-1**
Motor type	1-phasig
Rated power at 50 Hz [kW]	0.37
Rated power at 60 Hz [kW]	0.45
Power supply at 50 Hz [V]	220-240
Power supply at 60 Hz [V]	220-240
Current consumption at 50 Hz [A]	2.5
Current consumption at 60 Hz [A]	3.2
Suction power at 50 Hz [m³/h]	10.5
Suction power at 60 Hz [m³/h]	12.5
Sound pressure level at 50 Hz [dB(A)]	58.5
Sound pressure level at 60 Hz [dB(A)]	64
Description Becker	O5.10/0-00
Item no. Becker	G50758
Note: Becker motor design according to data sheet Pos #	02
Suitable oils	VPO.ACC.0001 VPO.ACC.0006 VPO.ACC.0011

Dimensions



① Sauganschluss / *Vacuum connection* (G1/2)
② Abluft / *Exhaust air*
③ Öleinfülldeckel / *Oil filler cap*
④ Ölschauglas / *Oil sight glas*
⑤ Verschlussschraube für Ölablass / *Screw plug for oil drain*
⑥ Kondensator (Anschluss Faston F 6.3) – Standard: nicht montiert, ohne Halterung
Capacitor (connection Faston F 6.3) – Standard: not assembled, without holder
⑦ Netzanschluss (Mate-N-Lok) / *Grid connection (Mate-N-Lok)*
⑧ Position der Schwingungsdämpfer / *Rubber buffer position*
⑨ Anschluss für optionales Gasballastventil / *Connection for optional gas ballast valve*
- Rückschlagventil und Ölabscheider sind integriert / *Non-return valve and oil separator are integrated*
- Abbildung mit kleinem Ölbehälter / *Illustration with large oil tank*
- Die Motorabbildung kann variieren / *The motor illustration may vary*

* schwenkbar/ *rotatable*

Oil-lubricated rotary vane pumps – Becker O5.16 – 16 m³/h



Product notes

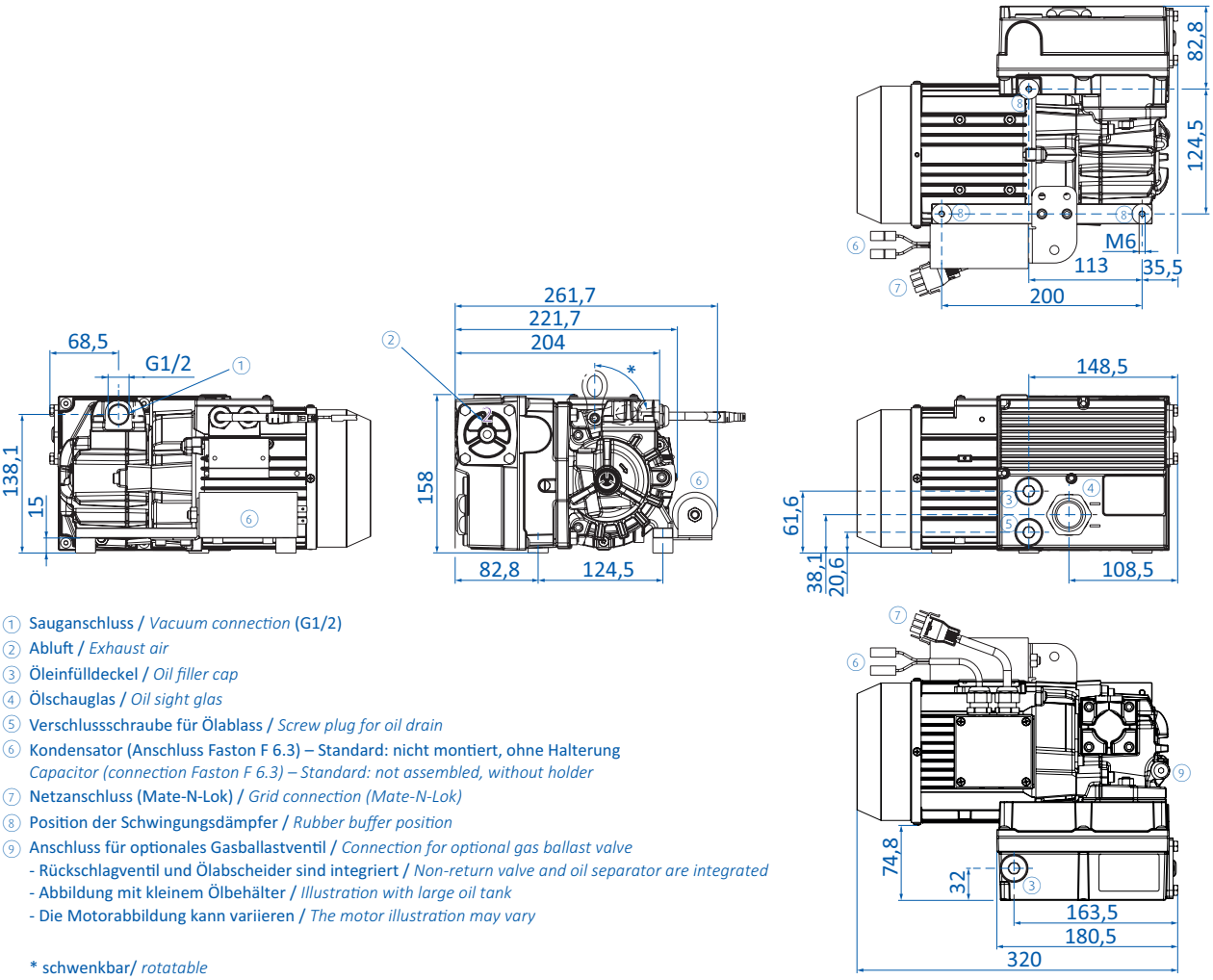
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. Compared to dry-running rotary vane pumps, the working chambers of oil-lubricated pumps are additionally sealed by oil that is also conveyed. This enables the pumps to generate a fine vacuum and makes them suitable for applications that require a high vacuum.

NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

Technical data

Item no.	**VPO.16A-1**
Motor type	1-phasig
Rated power at 50 Hz [kW]	0.55
Rated power at 60 Hz [kW]	0.66
Power supply at 50 Hz [V]	220-240
Power supply at 60 Hz [V]	220-240
Current consumption at 50 Hz [A]	3.7
Current consumption at 60 Hz [A]	4.7
Suction power at 50 Hz [m³/h]	16
Suction power at 60 Hz [m³/h]	19
Sound pressure level at 50 Hz [dB(A)]	60.5
Sound pressure level at 60 Hz [dB(A)]	67
Description Becker	O5.16/0-00
Item no. Becker	G050584
Note: Becker motor design according to data sheet Pos #	02
Suitable oils	VPO.ACC.0001 VPO.ACC.0006 VPO.ACC.0011

Dimensions



① Sauganschluss / *Vacuum connection* (G1/2)
② Abluft / *Exhaust air*
③ Öleinfülldeckel / *Oil filler cap*
④ Ölschauglas / *Oil sight glas*
⑤ Verschlussschraube für Ölablass / *Screw plug for oil drain*
⑥ Kondensator (Anschluss Faston F 6.3) – Standard: nicht montiert, ohne Halterung
Capacitor (connection Faston F 6.3) – Standard: not assembled, without holder
⑦ Netzanschluss (Mate-N-Lok) / *Grid connection (Mate-N-Lok)*
⑧ Position der Schwingungsdämpfer / *Rubber buffer position*
⑨ Anschluss für optionales Gasballastventil / *Connection for optional gas ballast valve*
- Rückschlagventil und Ölabscheider sind integriert / *Non-return valve and oil separator are integrated*
- Abbildung mit kleinem Ölbehälter / *Illustration with large oil tank*
- Die Motorabbildung kann variieren / *The motor illustration may vary*

* schwenkbar/ *rotatable*

Oil-lubricated rotary vane pumps – Becker O5.25 – 25 m³/h



Product notes

The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. Compared to dry-running rotary vane pumps, the working chambers of oil-lubricated pumps are additionally sealed by oil that is also conveyed. This enables the pumps to generate a fine vacuum and makes them suitable for applications that require a high vacuum.

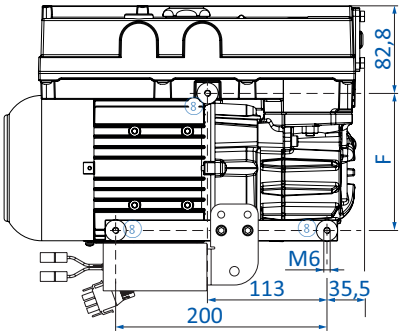
NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

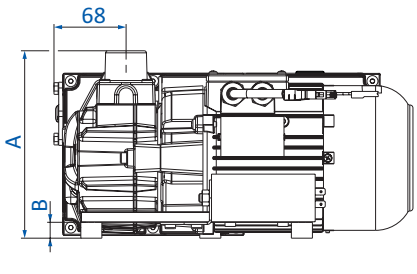
Technical data

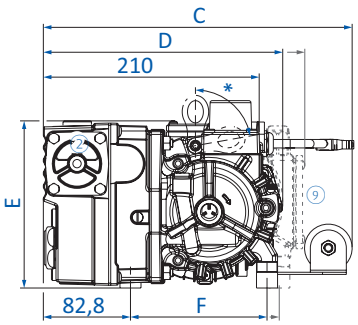
Item no.	**VPO.25A-3**
Motor type	3-phase
Rated power at 50 Hz [kW]	0.75
Rated power at 60 Hz [kW]	0.9
Power supply at 50 Hz [V]	230 / 400
Power supply at 60 Hz [V]	265 / 460 / 230 / 400
Current consumption at 50 Hz [A]	3.1 / 1.8
Current consumption at 60 Hz [A]	3.1 / 1.8 / 3.3 / 1.9
Suction power at 50 Hz [m³/h]	25
Suction power at 60 Hz [m³/h]	30
Sound pressure level at 50 Hz [dB(A)]	63
Sound pressure level at 60 Hz [dB(A)]	66
Description Becker	O5.25/0-50
Item no. Becker	G052357
Note: Becker motor design according to data sheet Pos #	04
Suitable oils	VPO.ACC.0002 VPO.ACC.0003 VPO.ACC.0007 VPO.ACC.0008 VPO.ACC.0012 VPO.ACC.0013

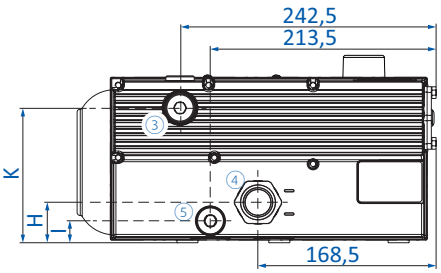
Dimensions

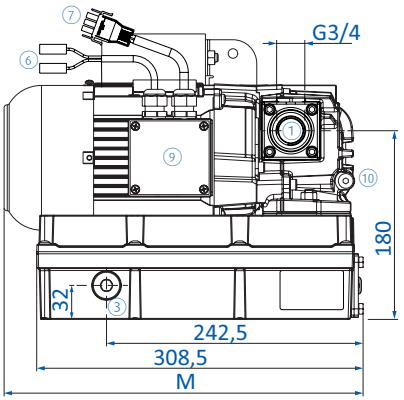
Motor	A	B	C	D	E	F	H	I	K	M
BG 71	171	15	267	225,2	158	129,7	38,1	20,6	127,6	340
BG 80	176	20	295	247,1	162,6	140,2	43,1	25,6	132,6	353,5











① Sauganschluss / *Vacuum connection* (G3/4)
② Abluft / *Exhaust air* (G3/4)
③ Öleinfülldeckel / *Oil filler cap*
④ Ölschauglas / *Oil sight glas*
⑤ Verschlussschraube für Ölablass / *Screw plug for oil drain*
⑥ Kondensator (Anschluss Faston F 6.3) – Standard: nicht montiert, ohne Halterung
Capacitor (connection Faston F 6.3) – Standard: not assembled, without holder
⑦ Netzanschluss (Mate-N-Lok) / *Grid connection (Mate-N-Lok)*
⑧ Position der Schwingungsdämpfer / *Rubber buffer position*
⑨ Klemmenkasten oben (Motor BG 71) / seitlich (BG 80)
Terminal box on top (motor BG 71) / on the side (BG 80)
⑩ Anschluss für optionales Gasballastventil / *Connection for optional gas ballast valve*
- Rückschlagventil und Ölabscheider sind integriert / *Non-return valve and oil separator are integrated*
- Abbildung mit kleinem Ölbehälter / *Illustration with large oil tank*
- Die Motorabbildung kann variieren / *The motor illustration may vary*

* schwenkbar/ *rotatable*



Product notes

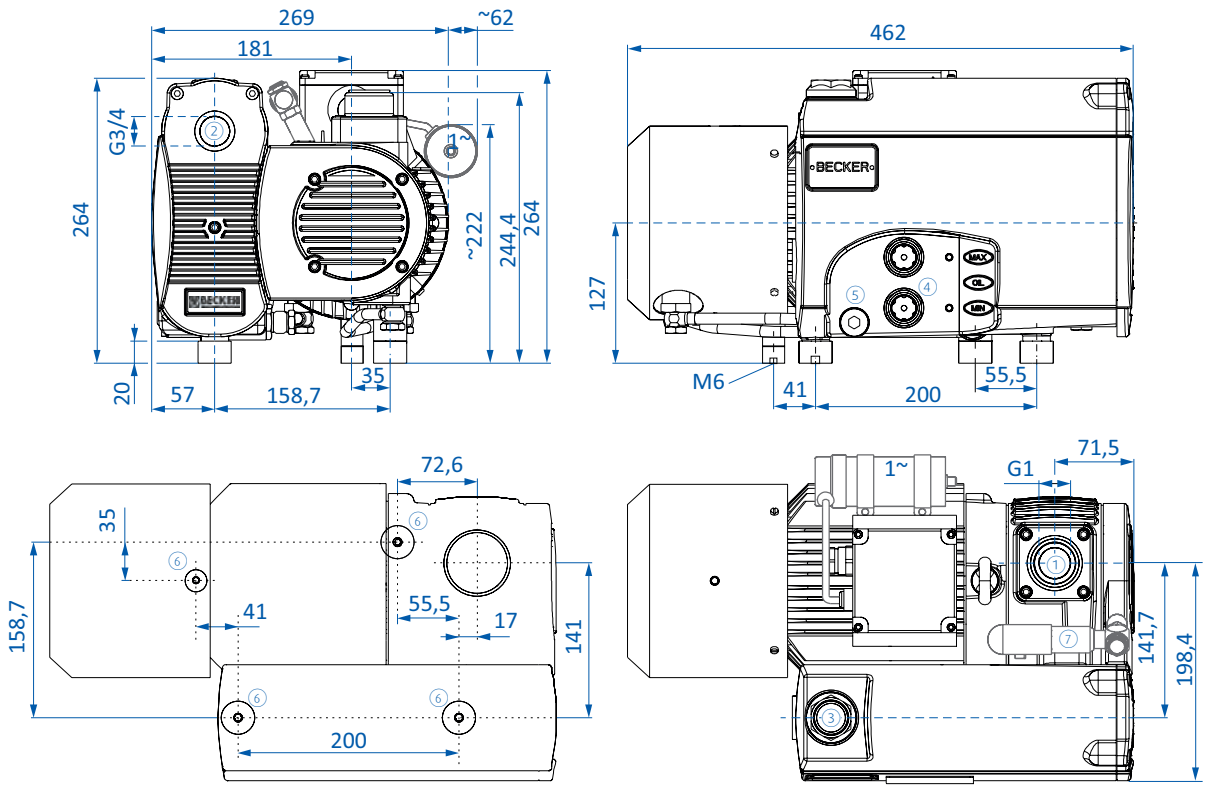
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. Compared to dry-running rotary vane pumps, the working chambers of oil-lubricated pumps are additionally sealed by oil that is also conveyed. This enables the pumps to generate a fine vacuum and makes them suitable for applications that require a high vacuum.

NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

Technical data

Item no.	**VPO.40A-3**
Motor type	3-phase
Rated power at 50 Hz [kW]	1.5
Rated power at 60 Hz [kW]	1.8
Power supply at 50 Hz [V]	230 / 400
Power supply at 60 Hz [V]	265 / 460
Current consumption at 50 Hz [A]	5,33 / 3,08
Current consumption at 60 Hz [A]	5,58 / 3,22
Suction power at 50 Hz [m^3/h]	40
Suction power at 60 Hz [m^3/h]	48
Sound pressure level at 50 Hz [dB(A)]	63
Sound pressure level at 60 Hz [dB(A)]	66
Description Becker	U4.40
Item no. Becker	G024061
Note: Becker motor design according to data sheet Pos #	01
Suitable oils	VPO.ACC.0004 VPO.ACC.0005 VPO.ACC.0009 VPO.ACC.0010 VPO.ACC.0014 VPO.ACC.0015

Dimensions



① Sauganschluss / *Vacuum connection*
② Abluftanschluss / *Exhaust air connection*
③ Öleinfülldeckel / *Oil filler cap*
④ Ölschauglas / *Oil sight glas*
⑤ Verschlussschraube für Ölablass / *Screw plug for oil drain*
⑥ Position der Schwingungsdämpfer / *Rubber buffer position*
⑦ Anschluss für optionales Gasballastventil / *Connection for optional gas ballast valve*

Oil-lubricated rotary vane pumps – Becker U5.71 – 70 m³/h



Product notes

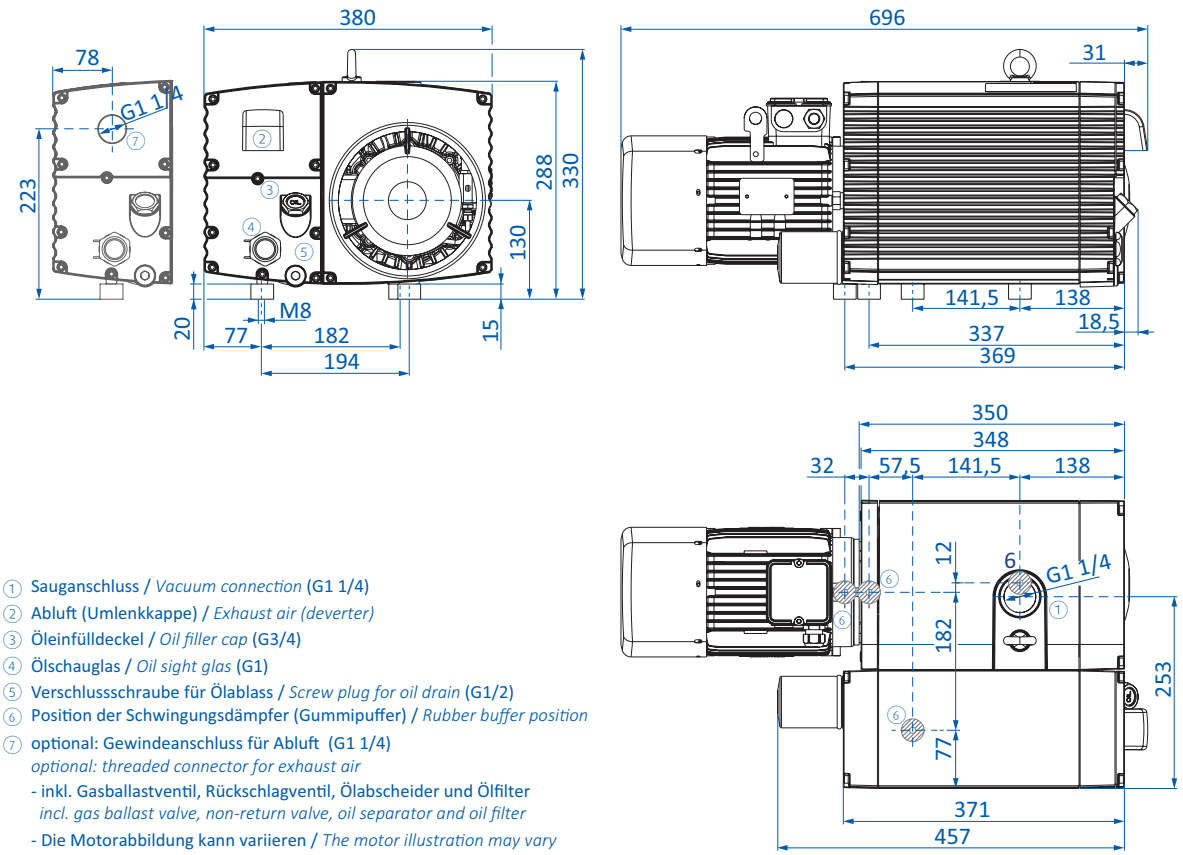
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. Compared to dry-running rotary vane pumps, the working chambers of oil-lubricated pumps are additionally sealed by oil that is also conveyed. This enables the pumps to generate a fine vacuum and makes them suitable for applications that require a high vacuum.

NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

Technical data

Item no.	**VPO.70A-3**
Motor type	3-phase
Rated power at 50 Hz [kW]	1.5
Rated power at 60 Hz [kW]	1.8
Power supply at 50 Hz [V]	230 / 400
Power supply at 60 Hz [V]	265 / 460 / 230 / 400
Current consumption at 50 Hz [A]	6.4 / 3.7
Current consumption at 60 Hz [A]	6.4 / 3.7 / 6.9 / 4.0
Suction power at 50 Hz [m³/h]	70
Suction power at 60 Hz [m³/h]	84
Sound pressure level at 50 Hz [dB(A)]	64
Sound pressure level at 60 Hz [dB(A)]	67
Description Becker	U5.71/0-00
Item no. Becker	G051816
Note: Becker motor design according to data sheet Pos #	01
Suitable oils	VPO.ACC.0004 VPO.ACC.0005 VPO.ACC.0009 VPO.ACC.0010 VPO.ACC.0014 VPO.ACC.0015

Dimensions



① Sauganschluss / *Vacuum connection* (G1 1/4)
② Abluft (Umlenkkappe) / *Exhaust air (deverter)*
③ Öleinfülldeckel / *Oil filler cap* (G3/4)
④ Ölschauglas / *Oil sight glas* (G1)
⑤ Verschlussschraube für Ölablass / *Screw plug for oil drain* (G1/2)
⑥ Position der Schwingungsdämpfer (Gummipuffer) / *Rubber buffer position*
⑦ optional: Gewindeanschluss für Abluft (G1 1/4)
optional: threaded connector for exhaust air
- inkl. Gasballastventil, Rückschlagventil, Ölabscheider und Ölfilter
incl. gas ballast valve, non-return valve, oil separator and oil filter
- Die Motorabbildung kann variieren / *The motor illustration may vary*

Piston pumps



Product notes

> High volume flow and high vacuum level at low installation space
> Can also be used as compressor
> Low-vibration operation
> Robust design
> Long service life and maintenance-free operation due to permanently lubricated piston seals
> Suitable for dry and moist air

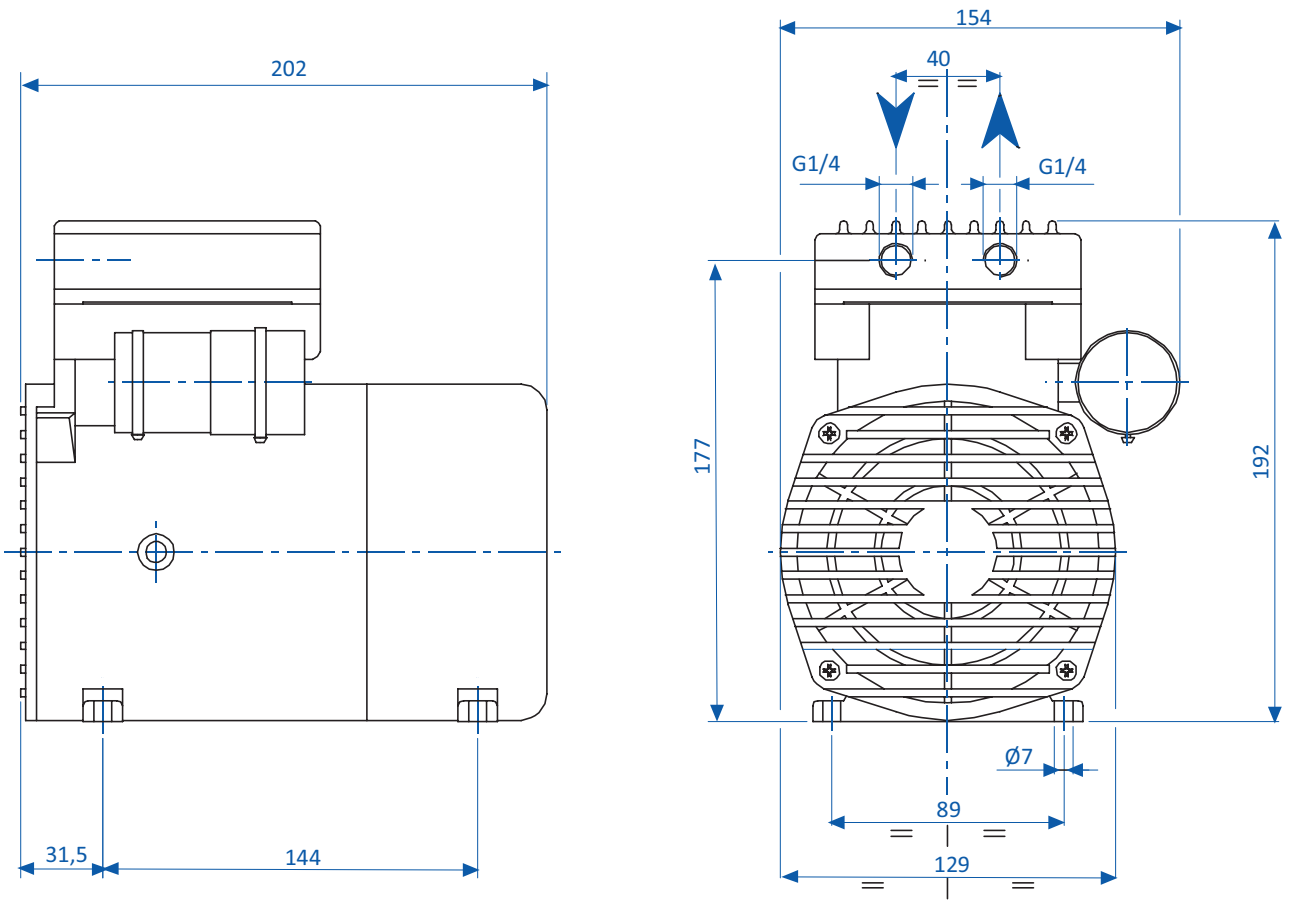
Notes

> A 3/2-way valve must be installed at the inlet in case of pressure-vacuum alternating operation

Technical data

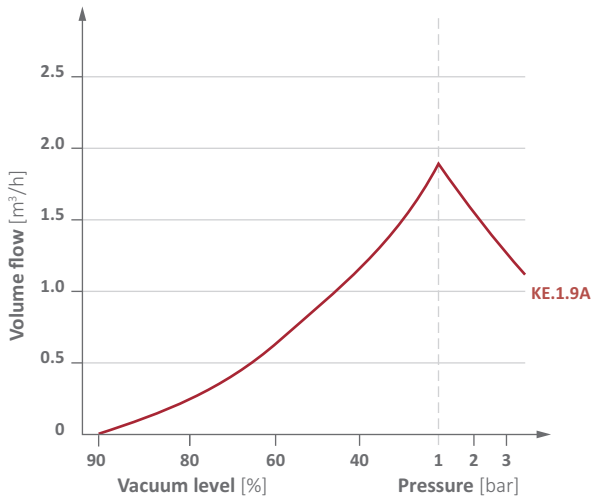
Item no.	**KE.1.9A-1**
Suction power at 50 Hz [m³/h]	1.9
Suction power at 60 Hz [m³/h]	2.2
Final vacuum abs. [mbar (inHg)]	110 (3.2)
Power supply [V]	220 - 240
Rated power at 50 Hz [kW]	0.2
Noise level at 50 Hz [dB(A)]	50
Noise level at 60 Hz [dB(A)]	52
Operating temperature [°C (°F)]	40 - 45 (104 - 113)
Weight [kg]	7.1
Suitable Pre-filters	FB 5

Dimensions



Diagrams

> Volume flow against pressure



Side channel blower – FPZ R30-MD – 91/110 m³/h



Product notes

The side channel blowers are characterised by a high volume flow with a medium vacuum level. This means that air-permeable workpieces in particular, such as cardboard boxes or untreated softwood, can be handled safely. The two-stage design ensures a significantly higher vacuum level with the same high volume flow and thus increases the possible payload to be handled.

> All side channel blowers are suitable for continuous operation.
> They can be installed vertically or horizontally.
> Side channel blowers are practically maintenance-free.
> Suitable silencer 72.039

Technical data

Item no.	SKV.D.91-1.5-C-3	SKV.D.91-1.5-C-3-UR
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	1.5	1.5
Rated power at 60 Hz [kW]	1.7	1.7
Power supply at 50 Hz [V]	200-240 / 345-415	200 / 400
Power supply at 60 Hz [V]	220-280 / 380-480	208-230 / 460
Current consumption at 50 Hz [A]	5.89-5.47 / 3.4-3.16	6.82 / 3.41
Current consumption at 60 Hz [A]	6.1-5.25 / 3.52-3.03	5.91-5.96 / 2.98
Suction power at 50 Hz [m³/h]	91	91
Suction power at 60 Hz [m³/h]	110	110
Max. Vacuum level [mbar (inHg)]	-350 (-10.3)	-350 (-10.3)
Sound pressure level at 50 Hz [dB(A)]	69.7	69.7
Sound pressure level at 60 Hz [dB(A)]	72.8	72.8
Type FPZ	R30-MD	R30-MD
Accessories	Silencer: 72.039 Motor protection switch SH.ACC.ALL.0210 Motor protection switch SH.ACC.ALL.0211 SH.ACC.ALL.0184	SH.ACC.ALL.0184

Side channel blower – FPZ R40-MD – 117/137 m³/h



Product notes

The side channel blowers are characterised by a high volume flow with a medium vacuum level. This means that air-permeable workpieces in particular, such as cardboard boxes or untreated softwood, can be handled safely. The two-stage design ensures a significantly higher vacuum level with the same high volume flow and thus increases the possible payload to be handled.

> All side channel blowers are suitable for continuous operation.
> They can be installed vertically or horizontally.
> Side channel blowers are practically maintenance-free.
> Suitable silencer 72.039

Technical data

Item no.	**SKV.D.117-2.2-C-3**	**SKV.D.117-2.2-C-3-UR**
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	2.2	2.5
Rated power at 60 Hz [kW]	2.6	2.6
Power supply at 50 Hz [V]	200-240 / 345-415	200 / 400
Power supply at 60 Hz [V]	220-280 / 380-480	208-230 / 460
Current consumption at 50 Hz [A]	8.49-7.88 / 4.9-4.55	9.6 / 4.8
Current consumption at 60 Hz [A]	9.06-7.74 / 5.23-4.47	8.27-8.31 / 4.15
Suction power at 50 Hz [m³/h]	117	117
Suction power at 60 Hz [m³/h]	137	137
Max. Vacuum level [mbar (inHg)]	-350 (-10.3)	-350 (-10.3)
Sound pressure level at 50 Hz [dB(A)]	70.8	70.8
Sound pressure level at 60 Hz [dB(A)]	72.8	72.8
Type FPZ	R40-MD	R40-MD
Accessories	Silencer: 72.039 Motor protection switch SH.ACC.ALL.0211 Motor protection switch SH.ACC.ALL.0212 SH.ACC.ALL.0184	SH.ACC.ALL.0184

Side channel blower – FPZ K07R-MD – 181/218 m³/h



Product notes

The side channel blowers are characterised by a high volume flow with a medium vacuum level. This means that air-permeable workpieces in particular, such as cardboard boxes or untreated softwood, can be handled safely. The two-stage design ensures a significantly higher vacuum level with the same high volume flow and thus increases the possible payload to be handled.

> All side channel blowers are suitable for continuous operation.
> They can be installed vertically or horizontally.
> Side channel blowers are practically maintenance-free.
> Suitable silencer 72.041

Technical data

Item no.	**SKV.D.181-4.0-C-3**	**SKV.D.181-4.0-C-3-UR**
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	4	4
Rated power at 60 Hz [kW]	4.8	4.8
Power supply at 50 Hz [V]	200-240 / 345-415	200 / 400
Power supply at 60 Hz [V]	220-280 / 380-480	208-230 / 460
Current consumption at 50 Hz [A]	14.8-14.0 / 8.55-8.06	17.7 / 8.86
Current consumption at 60 Hz [A]	16.1-13.7 / 9.31-7.93	14.6-15.1 / 7.55
Suction power at 50 Hz [m³/h]	181	181
Suction power at 60 Hz [m³/h]	218	218
Max. Vacuum level [mbar (inHg)]	-450 (-13.3)	-450 (-13.3)
Sound pressure level at 50 Hz [dB(A)]	70.5	70.5
Sound pressure level at 60 Hz [dB(A)]	72.5	72.5
Type FPZ	K07R-MD	K07R-MD
Accessories	Silencer: 72.041 Motor protection switch SH.ACC.ALL.0212 Motor protection switch SH.ACC.ALL.0213 SH.ACC.ALL.0183	Silencer: 72.041 SH.ACC.ALL.0183

Side channel blower – FPZ K08R-MD – 236/285 m³/h



Product notes

The side channel blowers are characterised by a high volume flow with a medium vacuum level. This means that air-permeable workpieces in particular, such as cardboard boxes or untreated softwood, can be handled safely. The two-stage design ensures a significantly higher vacuum level with the same high volume flow and thus increases the possible payload to be handled.

> All side channel blowers are suitable for continuous operation.
> They can be installed vertically or horizontally.
> Side channel blowers are practically maintenance-free.
> Suitable silencer 72.041

Technical data

Item no.	**SKV.D.236-5.5-C-3**	**SKV.D.236-5.5-C-3-UR**
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	5.5	5.5
Rated power at 60 Hz [kW]	6.5	6.5
Power supply at 50 Hz [V]	345-415 / 600-720	200 / 400
Power supply at 60 Hz [V]	380-480 / 660-830	208-230 / 460
Current consumption at 50 Hz [A]	11.6-11.5 / 6.7-6.64	22.2 / 11.1
Current consumption at 60 Hz [A]	12.3-11.1 / 7.1-6.41	19.8-19.5 / 9.75
Suction power at 50 Hz [m³/h]	236	236
Suction power at 60 Hz [m³/h]	285	285
Max. Vacuum level [mbar (inHg)]	-450 (-13.3)	-450 (-13.3)
Sound pressure level at 50 Hz [dB(A)]	73.4	73.4
Sound pressure level at 60 Hz [dB(A)]	75.4	75.4
Type FPZ	K08R-MD	K08R-MD
Accessories	Silencer: 72.041 Motor protection switch SH.ACC.ALL.0212 Motor protection switch SH.ACC.ALL.0213 SH.ACC.ALL.0185	Silencer: 72.041 SH.ACC.ALL.0185

Vacuum tanks 5 - 60 liters



Product notes

> Storage for compressed air, vacuum and non-aggressive liquids
> Energy saving assembly of compressed air and vacuum
> For compressed air / vacuum networks with fluctuating demand
> For preventing frequent startup of the compressor system
> To cover high demands short-term
> As supplement to screw / piston compressors, rotary compressors or vacuum pumps

Notes

> 92.001: Two fittings in line with G1/2-female with 90° offset
One fitting per front face with G3/4-female
> 92.002 to 92.004: One fitting in line with G1/2-female
2 x one fitting with G3/4-female and distance 120 mm and 1 x one fitting with G3/4-female on the front faces

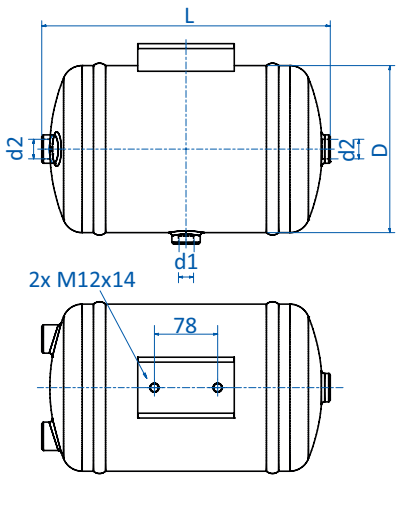
Technical data

Item no.	Safety tank volume [l]	Operating pressure [bar (psi)]	Medium	Design	Weight [kg]
92.001	5	0 - 11 (0 - 159.5)	Compressed air/vacuum	Aluminum	1.7
92.002	10	0 - 11 (0 - 159.5)	Compressed air/vacuum	Aluminum	2.4
92.003	20	0 - 11 (0 - 159.5)	Compressed air/vacuum	Aluminum	3.7
92.004	60	0 - 11 (0 - 159.5)	Compressed air/vacuum	Aluminum	9.3

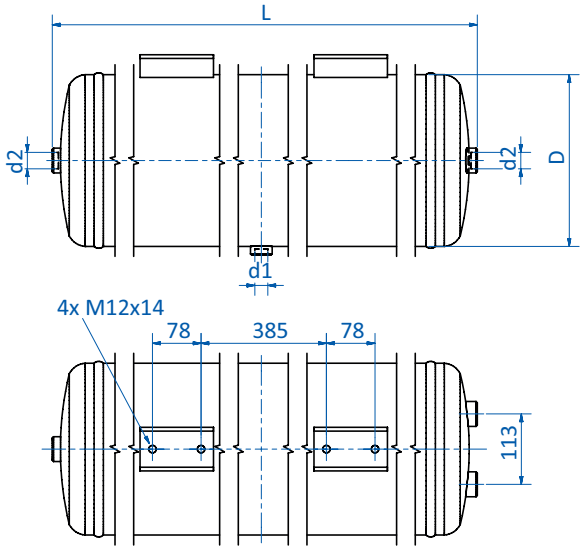
Dimensions

d1	d2	D [mm]	L [mm]
G1/2	G3/4	152	348
G1/2	G3/4	206.6	356
G1/2	G3/4	246	500
G1/2	G3/4	276	1,111

Dimensions



92.001 | 92.002 | 92.003



92.004

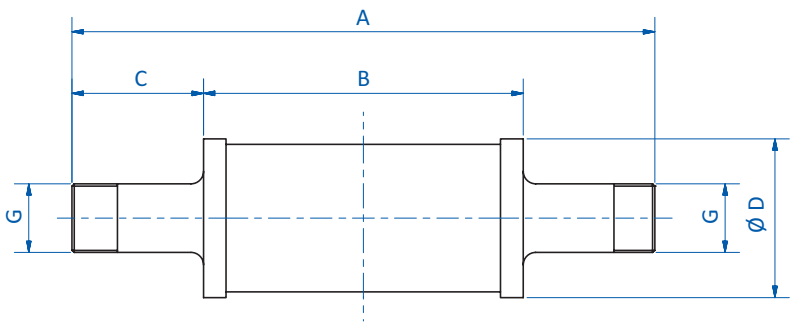
Additional silencer for side channel blowers



Product notes

> Silencer with direct opening
> Suitable for "processing" of the exhaust air: e.g. ventilation or heating of halls or use as silencer and release into the open

Dimensions



Item no.	G	A [mm]	B [mm]	C [mm]	Ø D [mm]
72.038	G1	257	141	58	70
72.039	G1 1/4	241	141	50	70
72.040	G1 1/2	226	172	27	80
72.041	G2	262	198	32	89
72.042	G2 1/2	262	198	32	100

Electro-pneumatic reversing valves for side channel blowers



Product notes

> Operation of a side channel blower as a vacuum generator for suction or compressor for blow-off
> Blow-off volume flow is directed to the vacuum cup/load, without reversing the direction of rotation of the blower
> Three setting positions: suction, blow-off, neutral
> Working principle: rotation of a cylinder, which is operated by an electrical motor-driven actuator

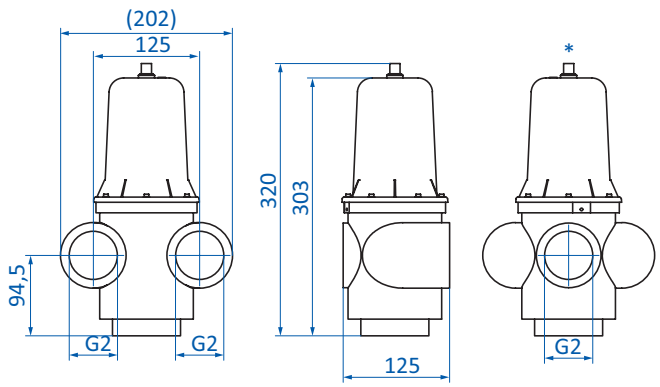
Notes

Please note for the neutral position (0°):
> If operation with closed suction inlets cannot be excluded, a vacuum limiting valve (safety valve) must be installed before the suction inlet

Technical data

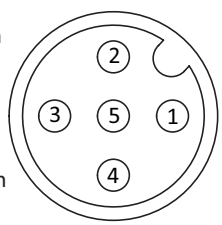
Item no.	**33.097**
Suction power [m³/h]	300
Pressure [mbar (psi)]	800 (11.6)
Power supply [VDC]	24 +/- 10%
Power consumption [W]	10
Duty ratio [%]	100
Direction of rotation [°]	-45 / 0 / +45
Mean control time [s]	0.5
Minimum time interval between successive cycles [s]	0.5
Medium	Unlubricated, filtered air
Ambient air temperature [°C (°F)]	0 - 40 (32 - 104)
Storage temperature [°C (°F)]	-20 - 50 (-4 - 122)
Weight [kg]	3.3

Dimensions



Plug assignment

Pin	Configuration
1	24VDC
2	+45°
3	GND
4	-45°
5	Housing earth connection



* = Plug, 5-pin M12

Motor protection switch



Product notes

> Motor protection switch with 3 m cable and with pole-reversible 16A CEE plug, undervoltage release and lockable operating elements.
> The restart interlock prevents uncontrolled lifting/starting of the uncontrolled lifting / starting of the tube lifter after a power failure.
> The lockable controls allow the hose lifter to be locked out during of the tube lifter during operation or maintenance work against unauthorised or erroneous operation.
> The motor protection switches with cable and plug are ideally suited for connecting vacuum pumps or side channel blowers to the mains.
> Please note how the motor is/was connected when selecting the motor protection switch.

Ordering notes

> The electrical connection of the motor protection switch to the vacuum pump or the side channel blower is not included in the scope of delivery. Please contact your local electrician separately.

Technical data

Item no.	for rated current [A]	Suitable for
SH.ACC.ALL.0210	2.5 - 4	VPT.40A-3-EU; VPT.40A-3-EU-SH; SKV.D.91-1.5-C-3
SH.ACC.ALL.0211	4 - 6.3	VPT.40A-3-EU; VPT.40A-3-EU-SH; VPT.60A-3-EU; SKV.D.91-1.5-C-3; SKV.D.117-2.2-C-3
SH.ACC.ALL.0212	6.3 - 10	VPT.60A-3-EU; SKV.D.117-2.2-C-3; SKV.D.181-4.0-C-3; SKV.D.236-5.5-C-3
SH.ACC.ALL.0213	10 - 16	SKV.D.181-4.0-C-3; SKV.D.236-5.5-C-3

Silencing boxes





Product notes

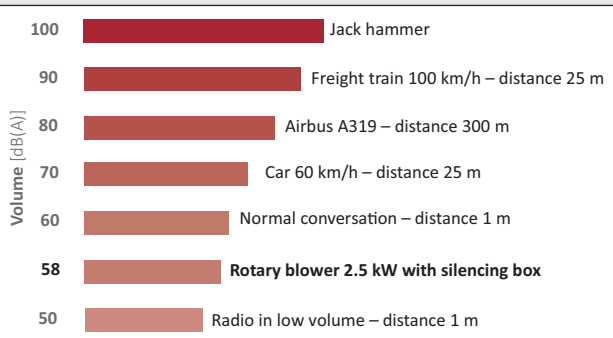
> Reduces the noise level by approx. 10 dB/A.
> Continuous noise pollution can lead to hearing damage. We can help you minimize the noise pollution for your employees, and we would be pleased to provide advice.
> Protects the pump or side channel blower from dirt and damage

Ordering notes

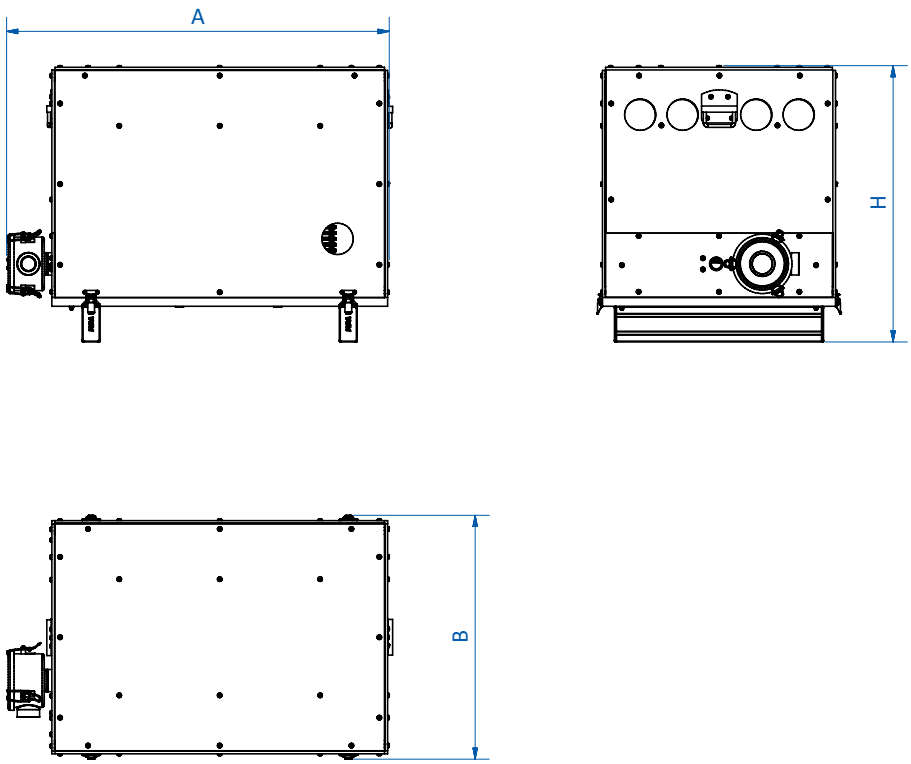
> Pump or side channel compressor and filter as well as the installation are not included in the scope of delivery

Technical data

Item no.	Suitable for	Weight [kg]
SH.ACC.ALL.0081	VPT.40	22.5
SH.ACC.ALL.0082	VPT.60	28.9
SH.ACC.ALL.0183	SKV.D.181	28.4
SH.ACC.ALL.0184	SKV.D.91; SKV.D.117	58.1
SH.ACC.ALL.0185	SKV.D.236	73.5



Dimensions



Item no.	**A** [mm]	**B** [mm]	**H** [mm]
SH.ACC.ALL.0081	865	546	619
SH.ACC.ALL.0082	1,050	626	654
SH.ACC.ALL.0183	939	716	714
SH.ACC.ALL.0184	864	636	644
SH.ACC.ALL.0185	973	746	729

Oils for Vacuum pumps



Product notes

> For use with oil-lubricated rotary vane vacuum pumps
> Various versions available

Technical data

Item no.	Description	Design	Suitable for	Content [l]
VPO.ACC.0001	Becker Lube M 32	mineralic	O 5.10 - O 5.25 (1~)	0.25
VPO.ACC.0002	Becker Lube M 68	mineralic	O 5.10 - O 5.25 (3~)	1
VPO.ACC.0003	Becker Lube M 68	mineralic	O 5.10 - O 5.25 (3~)	5
VPO.ACC.0004	Becker Lube M 100	mineralic	U-Pumps and O 5.6	1
VPO.ACC.0005	Becker Lube M 100	mineralic	U-Pumps and O 5.6	5
VPO.ACC.0006	Becker Lube S 32	synthetic	O 5.10 - O 5.25 (1~)	0.5
VPO.ACC.0007	Becker Lube S 68	synthetic	O 5.10 - O 5.25 (3~)	1
VPO.ACC.0008	Becker Lube S 68	synthetic	O 5.10 - O 5.25 (3~)	5
VPO.ACC.0009	Becker Lube S 100	synthetic	U-Pumps and O 5.6	1
VPO.ACC.0010	Becker Lube S 100	synthetic	U-Pumps and O 5.6	5
VPO.ACC.0011	Becker Lube SL 32	food safe	O 5.10 - O 5.25 (1~)	1
VPO.ACC.0012	Becker Lube SL 68	food safe	O 5.10 - O 5.25 (3~)	1
VPO.ACC.0013	Becker Lube SL 68	food safe	O 5.10 - O 5.25 (3~)	5
VPO.ACC.0014	Becker Lube SL 100	food safe	U-Pumps and O 5.6	1
VPO.ACC.0015	Becker Lube SL 100	food safe	U-Pumps and O 5.6	5

Suitable oils for the vacuum pump

Oil-lubricated rotary vane vacuum pumps	mineralic	synthetic	food safe
VPO.10A-1	VPO.ACC.0001	VPO.ACC.0006	VPO.ACC.0011
VPO.16A-1	VPO.ACC.0001	VPO.ACC.0006	VPO.ACC.0011
VPO.25A-3	VPO.ACC.0002 VPO.ACC.0003	VPO.ACC.0007 VPO.ACC.0008	VPO.ACC.0012 VPO.ACC.0013
VPO.40A-3	VPO.ACC.0004 VPO.ACC.0005	VPO.ACC.0009 VPO.ACC.0010	VPO.ACC.0014 VPO.ACC.0015
VPO.70A-3	VPO.ACC.0004 VPO.ACC.0005	VPO.ACC.0009 VPO.ACC.0010	VPO.ACC.0014 VPO.ACC.0015

Universal filters for large volume flows 82

Filters for wet areas 85

Inline filters 86

Pump filters / pre-filters with paper cartridge, grade of filtration 5 – 7 [µm]

Suitable for dry areas



Product notes

> For use directly on the suction opening of vacuum pumps
> To protect vacuum pumps from damage or excessive wear
> High filtration efficiency due to large filter surface
> Robust metallic housing for long service life
> Quick fastener for prompt checking or replacement of the filter cartridge
> The number of fast-closing is dependent on the filter size (2-4)

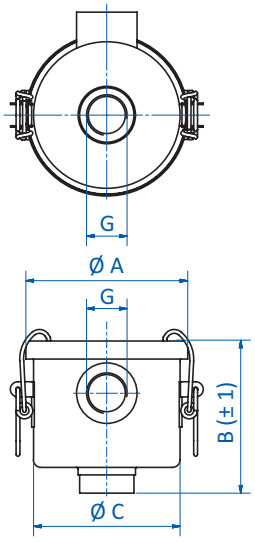
Technical data

Item no.	Max. volume flow [m³/h]	Grade of filtration [µm]	Weight [kg]	Suitable spare cartridges
FC 10F	25	5 - 7	0.36	FC 10F-Kartusche
FC 20F	45	5 - 7	0.78	FC 20/25-Kartusche
FC 25F	50	5 - 7	0.7	FC 20/25-Kartusche
FC 30F	90	5 - 7	1.4	FC 30F/35F-Kartusche
FC 35F	110	5 - 7	1.02	FC 30F/35F-Kartusche
FC 40F	150	5 - 7	1.84	FC 40F-Kartusche
FC 50F	200	5 - 7	2.12	FC 50F-Kartusche
FC 60F	320	5 - 7	5.38	FC 60F-Kartusche
FC 80F	360	5 - 7	5.4	FC 80F-KARTUSCHE

Dimensions

G	Ø A [mm]	B [mm]	Ø C [mm]
G3/8	73	82	72
G1/2	96.5	92	94
G3/4	96.5	93	97
G1	133	104	120
G1 1/4	120	97.5	120
G1 1/4	162	161	162
G1 1/2	162	196	162
G2	185	256	183
G3	185	258.5	183

Dimensions



Pump filters / pre-filters with paper cartridge, grade of filtration 25 – 30 [µm]

Suitable for dry areas



Product notes

> For use directly on the suction opening of dry-running rotary vane pumps
> To protect vacuum pumps from damage or excessive wear
> High filtration efficiency due to large filter surface
> Light-weight plastic housing
> Inspection glass to monitor the filtration effect
> Examples of use: graphics, textile and pharmaceutical industries

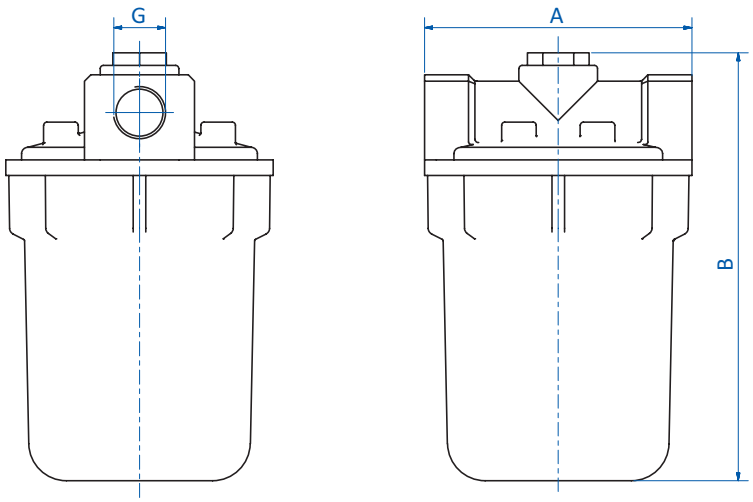
Technical data

Item no.	Max. volume flow [m^3/h]	Grade of filtration [µm]	Weight [g]	Suitable spare cartridges
71.032	12	30	180	71.032-Kartusche
71.033	24	30	370	71.033-Kartusche
71.034	30	30	360	71.033-Kartusche
71.043	100	25	900	71.043-KARTUSCHE

Dimensions

G	A [mm]	B [mm]
G1/4	64	80
G3/8	85	138
G1/2	85	138
G1	145	240

Dimensions



Universal filter with steel cartridge

Suitable for dry and wet areas



FB 25 to FB 60

Product notes

> To protect vacuum pumps from damage or excessive wear
> Separation of coarser particles, dust and dirt
> Resistant filter elements made of stainless steel (INOX)
> Filter incl. condensate trap

Notes

> FB 5 to FB 20: Filter bowl made of transparent plastic
> FB 25 to FB 60: Filter bowl made of die cast aluminum

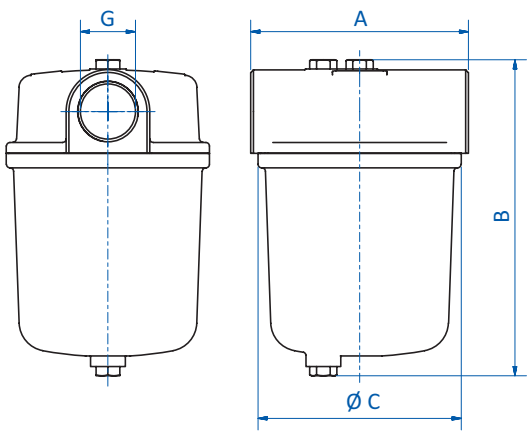
Technical data

Item no.	Max. volume flow [m³/h]	Grade of filtration [µm]	Operating pressure [bar (psi)]	Max. operating temperature [°C (°F)]	Weight [kg]	Suitable spare cartridges
FB 5	5	60	2 (29)	50 (122)	0.14	FB 5-Kartusche
FB 10	10	60	2 (29)	50 (122)	0.26	FB 10-Kartusche
FB 20	20	60	2 (29)	50 (122)	0.34	FB 20-KARTUSCHE
FB 25	40	60	4 (58)	90 (194)	0.87	FB 25/30-KARTUSCHE
FB 30	70	60	4 (58)	90 (194)	0.83	FB 25/30-KARTUSCHE
FB 40	150	60	4 (58)	90 (194)	3	FB 40-Kartusche
FB 50	200	60	4 (58)	90 (194)	3.1	FB 50-Kartusche
FB 60	300	60	4 (58)	90 (194)	3.2	FB 60-Kartusche

Dimensions

G	A [mm]	B [mm]	Ø C [mm]
G1/4	64	78	59
G3/8	81	89	79
G1/2	81	122	79
G3/4	120	170	114
G1	120	175	112
G1 1/4	190	250	182
G1 1/2	190	250	182
G2	182	263	182

Dimensions



Filter / Condensate trap

Precipitation of condensable vapors



71.035



71.036

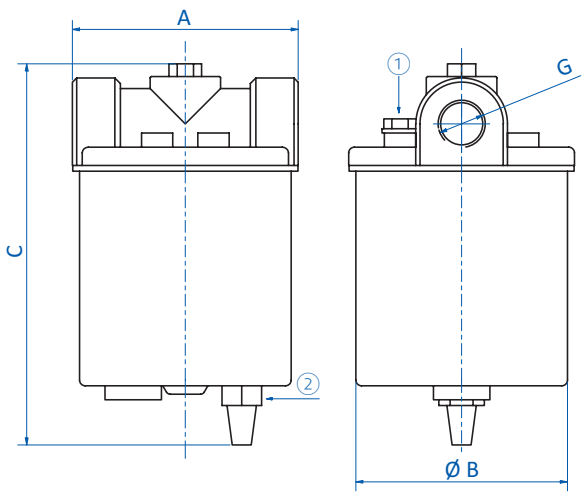
Product notes

> Efficient and reliable separation of water droplets out of vacuum systems
> Easy installation after vacuum pumps or ejectors
> Housing made of transparent plastics for filtration monitoring
> Drainage valve at the bottom to discharge the collected condensate
> Filter needs to be ventilated before opening

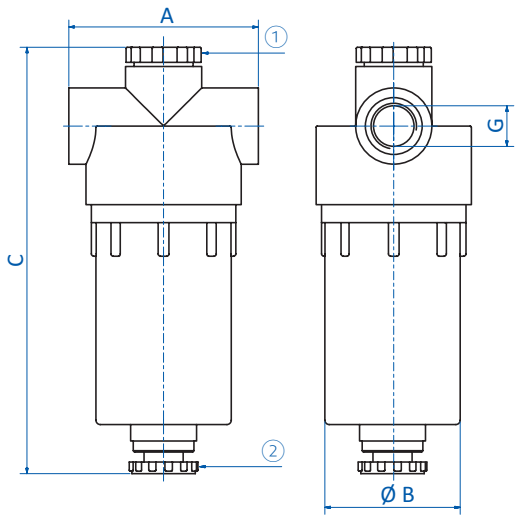
Technical data

Item no.	Max. volume flow [m³/h]	Max. filling capacity [cm³]	Grade of filtration [µm]	Filter material	Max. input pressure [bar (psi)]	Max. operating temperature [°C (°F)]	Weight [kg]	Suitable spare cartridges
71.035	10.6	30	100	Stainless steel mesh	0.5 (7.3)	50 (122)	0.26	71.035-Kartusche
71.036	17.7	25	50	Polyethylene - sintered	0.5 (7.3)	50 (122)	0.35	71.036-Kartusche
71.037	21.2	40	30	Synthetic felt	0.5 (7.3)	50 (122)	0.83	71.037-Kartusche
71.038	35.3	50	30	Synthetic felt	0.5 (7.3)	50 (122)	2.25	71.038-Kartusche
71.039	58.9	100	30	Synthetic felt	0.5 (7.3)	50 (122)	4.24	71.039-Kartusche

Dimensions



71.035



71.036 | 71.037 | 71.038 | 71.039

① = Bleeding screw ② = Blow-off screw

Item no.	G	A [mm]	Ø B [mm]	C [mm]
71.035	R3/8	80	75	135
71.036	R1/2	87	60	196
71.037	R3/4	125	100	255
71.038	R1	175	150	370
71.039	R1 1/2	220	190	450

Plug-in filters





71.070 and 71.071: plug-in pipe (Ø d1) fits in Ø 4 mm / 6 mm tubing connections

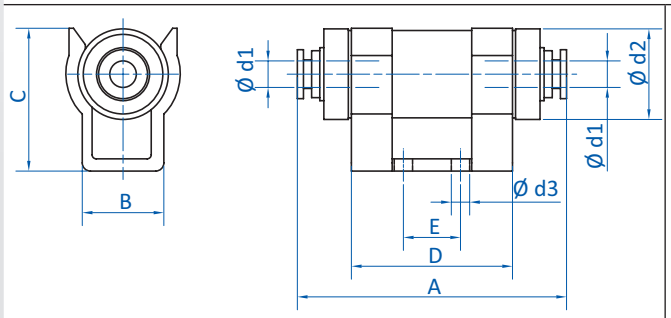
Product notes

> Trapping impurities and liquids which can be suctioned via the vacuum cup or other systems
> To protect vacuum components (e.g. ejectors) from damage or excessive wear
> 71.000 - 71.004: economical use due to replaceable filter cartridges

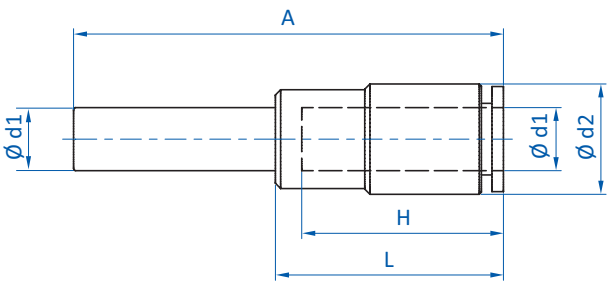
Technical data

Item no.	Filter surface [cm²]	Grade of filtration [µm]	Weight [g]	Accessories
71.000	7.5	10	16	Mounting bracket: VFUH2 Spare cartridge: 71.005-KARTUSCHE
71.001	7.5	10	17	Mounting bracket: VFUH2 Spare cartridge: 71.005-KARTUSCHE
71.002	12.5	10	25	Mounting bracket: VFUH3 Spare cartridge: 71.006-KARTUSCHE
71.003	12.5	10	27	Mounting bracket: VFUH3 Spare cartridge: 71.006-KARTUSCHE
71.004	12.5	10	33	Mounting bracket: VFUH3 Spare cartridge: 71.006-KARTUSCHE
71.070	0.8	10	1.5	--
71.071	1.1	10	2.5	--

Dimensions



71.000 | 71.001 | 71.002 | 71.003 | 71.004



71.070 | 71.071

Item no.	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	H [mm]	L [mm]
71.000	4	18.5	4.5	58	18	29	33	10	--	--
71.001	6	18.5	4.5	60	18	29	33	10	--	--
71.002	6	22.2	4.5	66.5	20	35	39.5	14	--	--
71.003	8	22.2	4.5	70.1	20	35	39.5	14	--	--
71.004	10	22.2	4.5	72.7	20	35	39.5	14	--	--
71.070	4	8	--	38.6	--	--	--	--	11	21.5
71.071	6	10	--	41	--	--	--	--	11.6	21.8

Ring filters

Used in connection with ejectors



Product notes

> Installation between vacuum cup (IN) and ejector (OUT)
> Absorption of dust and dirt that is introduced by the vacuum cup
> Application primarily for inline and base ejectors
> Economical use due to replaceable filter cartridges

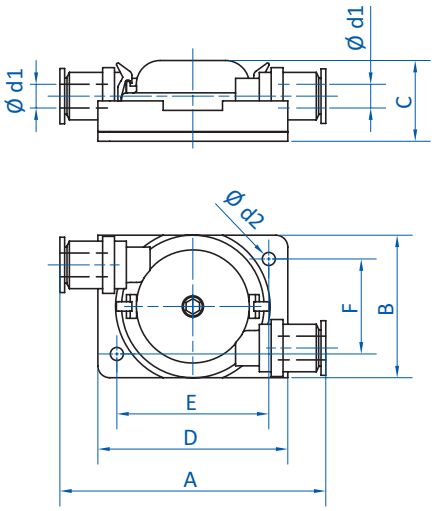
Technical data

Item no.	Filter surface [cm²]	Grade of filtration [µm]	Weight [g]	Suitable spare cartridges
71.007	20	10	206	71.022-KARTUSCHE
71.008	20	10	204.5	71.022-KARTUSCHE
71.009	20	10	198	71.022-KARTUSCHE
71.010	20	10	190.5	71.022-KARTUSCHE
71.011	20	10	231.5	71.022-KARTUSCHE

Dimensions

Ø d1 [mm]	Ø d2 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
6	5.5	113	60	37.5	80	60	40
8	5.5	113	60	37.5	80	60	40
10	5.5	114	60	37.5	80	60	40
12	5.5	113	60	37.5	80	60	40
16	5.5	128	60	37.5	80	60	40

Dimensions



Disposable filters



71.030



71.031

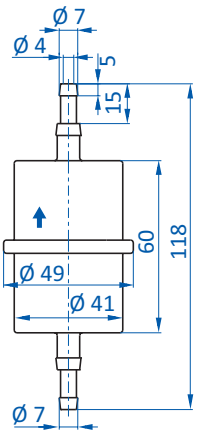
Product notes

> 71.030: Separation of very fine particles with a 7µm filter mesh
> 71.031: Separation of coarse particles, dust and dirt using a 152µm filter unit

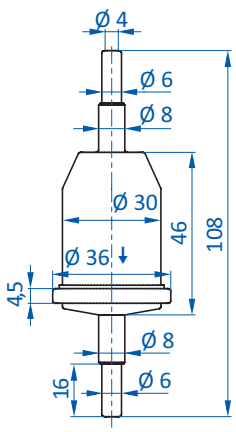
Technical data

Item no.	Max. volume flow [Nl/min]	Grade of filtration [µm]	Filter material	Max. operating temperature [°C (°F)]	Weight [g]
71.030	120	7	Paper	50 (122)	30
71.031	100	152	PP, PE	50 (122)	12

Dimensions



71.030



71.031

Pressure regulators 90

Vacuum regulators 96

Throttle valve 100

Pressure regulators – screw-in type



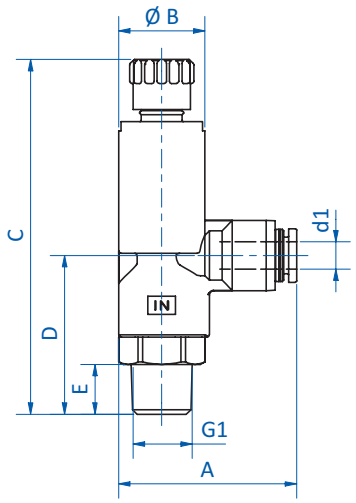
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Pressure adjustment by means of Push-lock adjusting cap
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.822	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	26
32.823	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	26
32.824	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	26
32.825	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	46
32.826	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	26
32.827	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	29
32.828	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	46

Dimensions





Item no.	G1	d1 [mm]	A [mm]	Ø B [mm]	C [mm]	D [mm]	E [mm]
32.822	R1/8	4	28.2	15	71.5	28.7	8
32.823	M5	4	28.2	15	70	27.2	3
32.824	R1/8	6	28.6	15	71.5	28.7	8
32.825	R1/4	6	39.2	19	78.2	35	11
32.826	M5	6	28.6	15	70	27.2	3
32.827	R1/8	8	25.2	15	71.5	28.7	8
32.828	R1/4	8	39.2	19	78.5	35	11

Pressure regulators – screw-in type, with pressure gauge



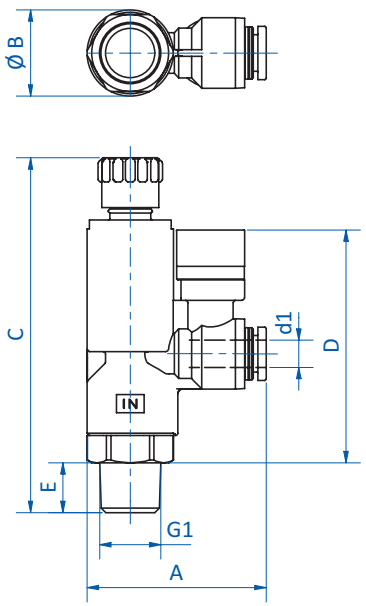
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Pressure adjustment by means of Push-lock adjusting cap, pressure monitoring by means of gauges (readout in MPa)
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.829	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	29
32.830	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	29
32.831	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	29
32.832	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	49
32.833	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	29
32.834	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	21
32.835	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	49

Dimensions





Item no.	G1	d1 [mm]	A [mm]	Ø B [mm]	C [mm]	D [mm]	E [mm]
32.829	R1/8	4	33.8	15	71.5	45.2	8
32.830	M5	4	33.8	15	70	48.7	3
32.831	R1/8	6	34.2	15	71.5	45.2	8
32.832	R1/4	6	39.5	19	78.2	51.3	11
32.833	M5	6	33.8	15	70	48.7	3
32.834	R1/8	8	35.9	15	71.5	48	8
32.835	R1/4	8	39.5	19	78.2	51.3	11

"Inline" pressure regulators



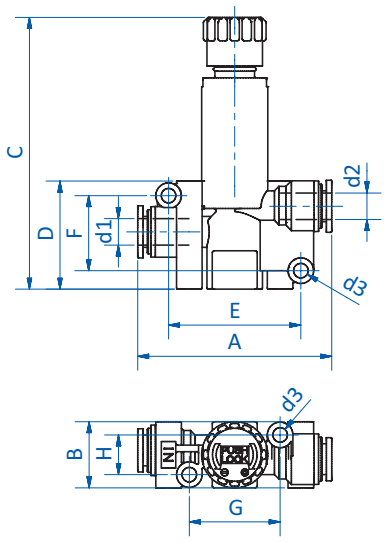
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Pressure adjustment by means of Push-lock adjusting cap
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.836	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	19
32.837	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	20
32.838	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	20
32.839	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	32
32.840	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	33

Dimensions



Item no.	d1 [mm]	d2 [mm]	d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
32.836	4	4	3.3	43.5	15	61.6	37.1	30	17	20.6	9
32.837	6	4	3.3	43.5	15	61.6	24.5	30	17	20.6	9
32.838	6	6	3.3	44	15	61.6	24.5	30	17	20.6	9
32.839	8	6	3.3	57.3	19	65.7	28.4	39.6	21.5	23.4	13
32.840	8	8	3.3	57.3	19	65.7	28.4	39.6	21.5	23.4	13

"Inline" pressure regulators with pressure gauge



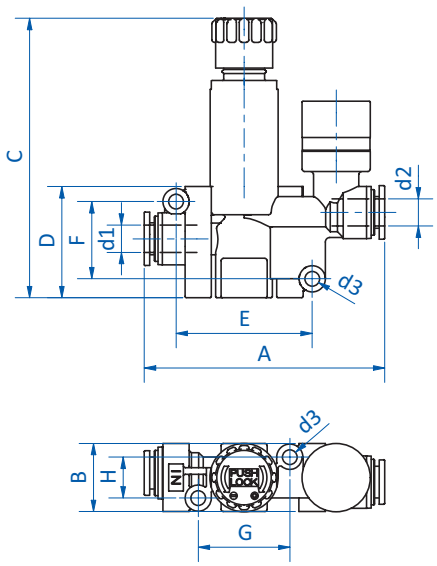
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Easy installation thanks to vertical and horizontal cross holes
> Pressure adjustment by means of Push-lock adjusting cap, pressure monitoring by means of gauges (readout in MPa)
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.841	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	23
32.842	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	23
32.843	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	23
32.844	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	36
32.845	0 - 10 (0 - 145)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	36

Dimensions



Item no.	d1 [mm]	d2 [mm]	d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
32.841	4	4	3.3	52.5	15	61.6	24.5	30	17	22.2	9
32.842	6	4	3.3	52.5	15	61.6	24.5	30	17	20.2	9
32.843	6	6	3.3	53	15	61.6	24.5	30	17	20.2	9
32.844	8	6	3.3	61.5	19	65.7	28.4	39.7	21.3	23.2	13
32.845	8	8	3.3	61.5	19	65.7	28.4	39.7	21.3	23.2	13

Vacuum regulators with external leakage

Safety control valve particularly for oil-free rotary vane pumps



Product notes

> Setting a constant vacuum level when handling workpieces with varying porosities or leakage
> Suitable as safety valve if dry-running rotary vane pumps are to run continuously at maximum vacuum
> Control of vacuum through automatic venting when a preset vacuum level is reached
> Manual adjustment via fine thread, mechanical opening via spring load
> Turn the knob towards the plus (+) to increase the vacuum threshold value at which the regulator will start drawing in outside air. Turn the knob towards the minus (-) to reduce this value.
> On request suitable as safety valve for side channel blowers to limit the max. vacuum level (diameter of regulator and blower inlet should be identical)

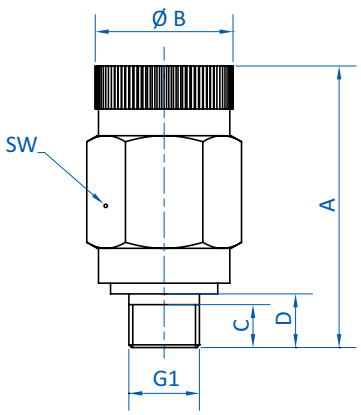
Notes

73.002: the upper limit of the control range depends on the volume flow of the vacuum generator
> 60 mbar bei 2,7 m³/h
> 120 mbar bei 8,4 m³/h
> 170 mbar bei 16 m³/h

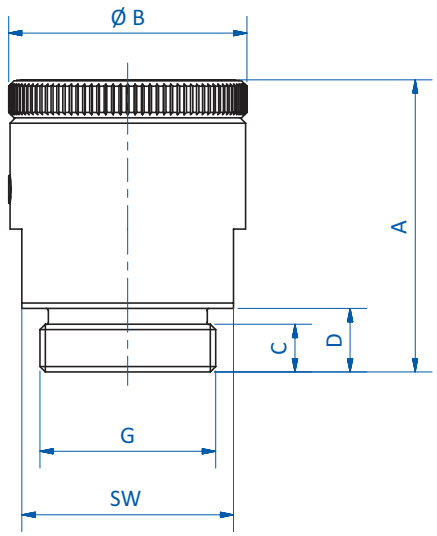
Technical data

Item no.	Maximum control volume [m³/h]	Regulating range [mbar (psi)]	Operating temperature [°C (°F)]	Weight [g]
73.002	16	-999 - 0 (-14.5 - 0)	-20 - 80 (-4 - 176)	270
73.003	40	-999 - 0 (-14.5 - 0)	-20 - 80 (-4 - 176)	658

Dimensions



73.002



73.003

Item no.	G1	A [mm]	Ø B [mm]	C [mm]	D [mm]	SW
73.002	G1/4	53 - 63	25	9	10	25
73.003	G1	55 - 64	45	9	12	40

Precision vacuum regulators



Product notes

> Vacuum adjustment of consumer loads, such as vacuum cups in handling systems
> Automatic compensation of fluctuations in vacuum supply
> Highly precise, continuous vacuum adjustment via a rotary knob with locking mechanism
> Suitable for conducting leakage tests for inspection/measurement purposes
> Turning the rotary knob clockwise increases the vacuum on the consumer side (SET) with the vacuum generator connected (VAC)
> Included in scope of delivery: Vacuum gauge incl. connection adapter

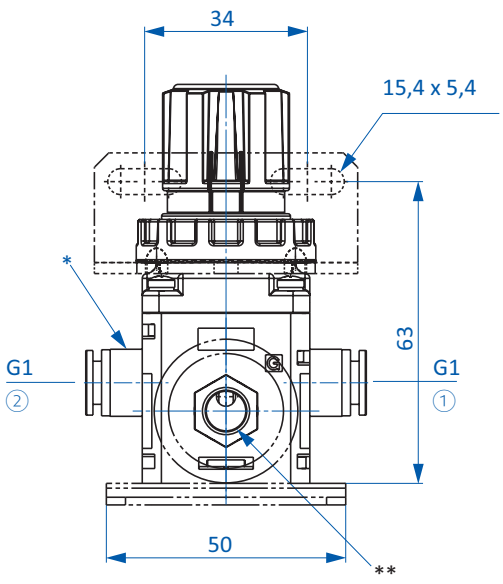
Technical data

Item no.	Maximum control volume [m³/h]	Regulating range [mbar (psi)]	Accuracy [mbar (inHG)]	Connection	Operating temperature [°C (°F)]	Weight [g]	Suitable vacuummeter
33.220	8.4	-999 - 0 (-14.5 - 0)	< 1.3 (0.04)	Pipe connection Ø 8 [mm]	5 - 60 (41 - 140)	135	91.001_R
33.220-G1/4	8.4	-999 - 0 (-14.5 - 0)	< 1.3 (0.04)	G1/4	5 - 60 (41 - 140)	135	91.001_R
33.230	14	-999 - 0 (-14.5 - 0)	< 1.3 (0.04)	Pipe connection Ø 8 [mm]	5 - 60 (41 - 140)	250	91.001_R
33.230-G1/2	14	-999 - 0 (-14.5 - 0)	< 1.3 (0.04)	G1/2	5 - 60 (41 - 140)	250	91.001_R
33.230-G1/4	14	-999 - 0 (-14.5 - 0)	< 1.3 (0.04)	G1/4	5 - 60 (41 - 140)	250	91.001_R

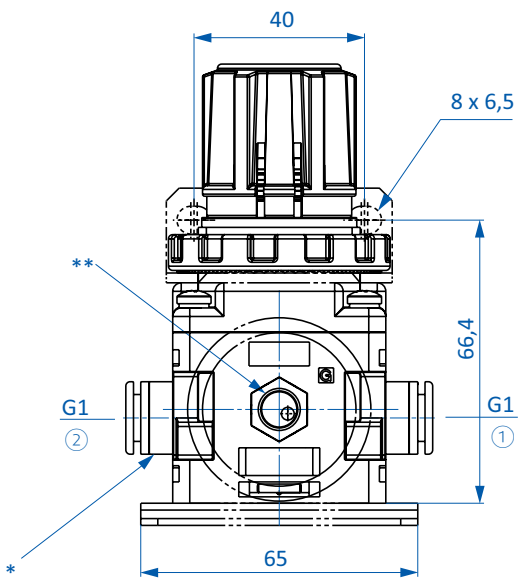
Dimensions

G1	d1 [mm]
--	8
G1/4	--
--	8
G1/2	--
G1/4	--

Dimensions



33.220 | 33.220-G1/4



33.230 | 33.230-G1/2 | 33.230-G1/4

① = Connection to the vacuum cup / product side (description SET) ② = Pump connection (description VAC) * = Plug connection
** = R1/8 Gauge connection

Vacuum regulators



Vacuum regulator 33.105 with vacuum gauge

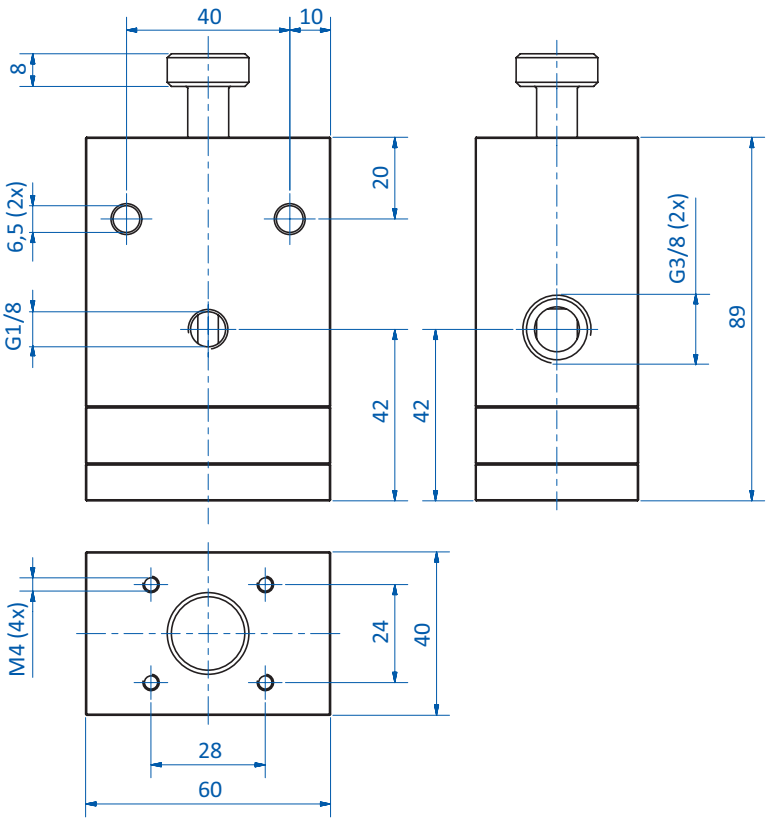
Product notes

> Vacuum adjustment of consumer loads, such as vacuum cups in handling systems
> Integration of a vacuum gauge recommended
> Blow-off is possible if vacuum gauge is not connected
> Any installation position
> Vacuum gauge not included in scope of delivery

Technical data

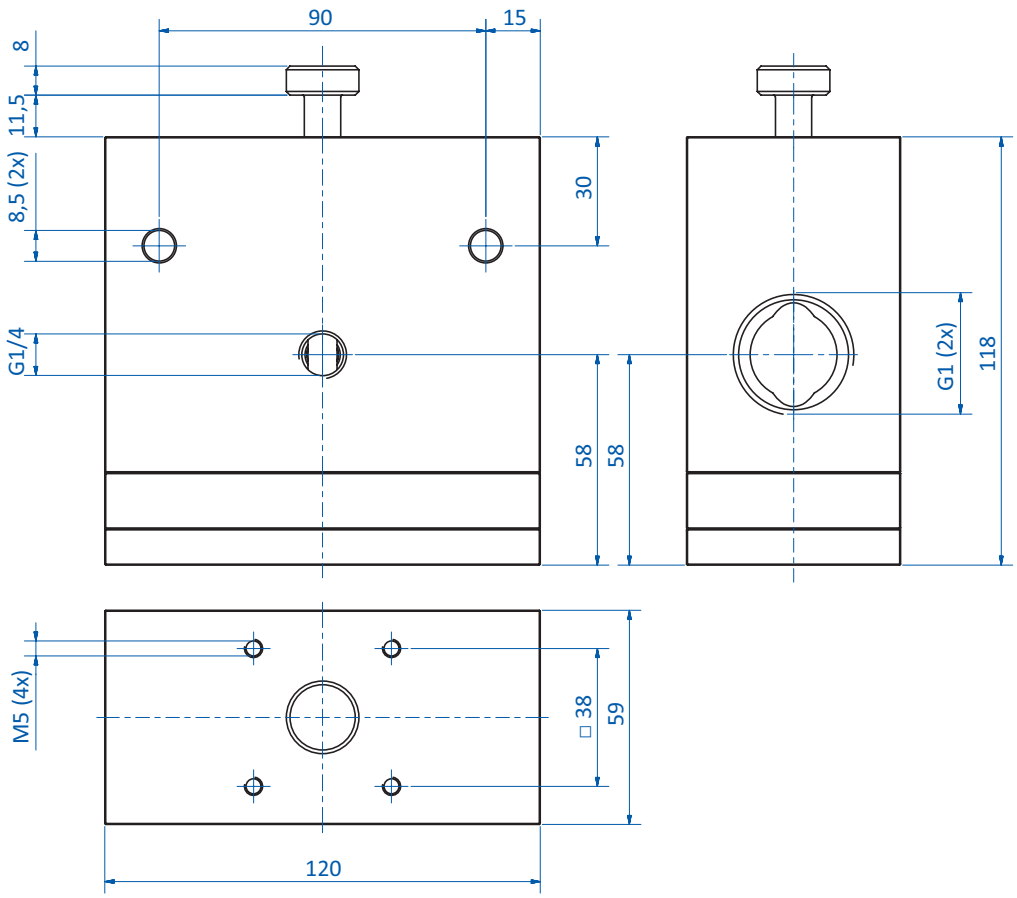
Item no.	Maximum control volume [m³/h]	Regulating range [mbar (psi)]	Operating temperature [°C (°F)]	Weight [kg]	Suitable vacuummeter
33.105	10	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	0.6	91.001
33.120	80	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	2.1	91.003

Dimensions



33.105

Dimensions



33.120

Throttle valves – screw-in type



Product notes

> Limits the volume flow of air at a constant pressure/vacuum level, e.g. reducing leakage / volume flow for unoccupied vacuum cups. Maintains a sufficient vacuum level for vacuum cups with product occupancy and thus prevents dropping of the workpiece.
> Suitable for vacuum and compressed air, operating pressure -1 - 8 bar (-14,5 - 116 psi)
> Manual and stepless adjustment of the volume flow via lockable knurled screw
> Flexible installation using horizontal swivel air connector

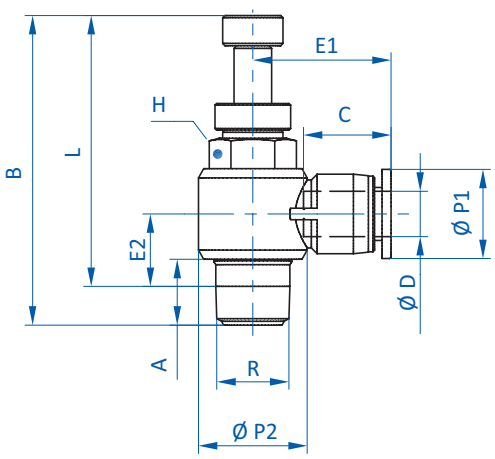
Technical data

Item no.	Operating pressure [bar (psi)]	Operating temperature [°C (°F)]	Weight [g]
32.500	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	9
32.501	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	20
32.502	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	10
32.503	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	20
32.504	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	36
32.505	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	20
32.506	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	36
32.507	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	67
32.508	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	40
32.509	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	69
32.510	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	72
32.511	-1 - 8 (-14.5 - 116)	0 - 60 (32 - 140)	103

Dimensions

R	Ø D [mm]	A [mm]	B [mm]	C [mm]	E1 [mm]	E2 [mm]	H [mm]	L [mm]	Ø P1 [mm]	Ø P2 [mm]
M5	4	3.5	27 - 29.5	15	20	6.5	8	23.5 - 26	10	10
R1/8	4	8	34 - 40.5	15	21.5	10.5	10	30 - 36.5	10	14.5
M5	6	3.5	27 - 29.5	17	24	7.5	8	23.5 - 26	12.5	10
R1/8	6	8	34 - 40.5	17	23.5	10.5	10	30 - 36.5	12.5	14.5
R1/4	6	11	41 - 47.5	17	25.5	12	14	35 - 41.5	12.5	18.5
R1/8	8	8	34 - 40.5	18.5	27	11.5	10	30 - 36.5	14.5	14.5
R1/4	8	11	41 - 47.5	18.5	28.5	13	14	35 - 41.5	14.5	18.5
R3/8	8	12	46.5 - 53.5	18.5	29	15	19	40 - 47	14.5	22
R1/4	10	11	41 - 47.5	20.5	31	14.5	14	35 - 41.5	18	18
R3/8	10	12	46.5 - 53.5	20.5	31.5	16.5	19	40 - 47	18	22
R3/8	12	12	46.5 - 53.5	23.5	37	18	19	40 - 47	21.5	22
R 1/2	12	15	51.5 - 59	23.5	36.5	19.5	24	45.5 - 51	21.5	28

Dimensions



"Inline" throttle valves



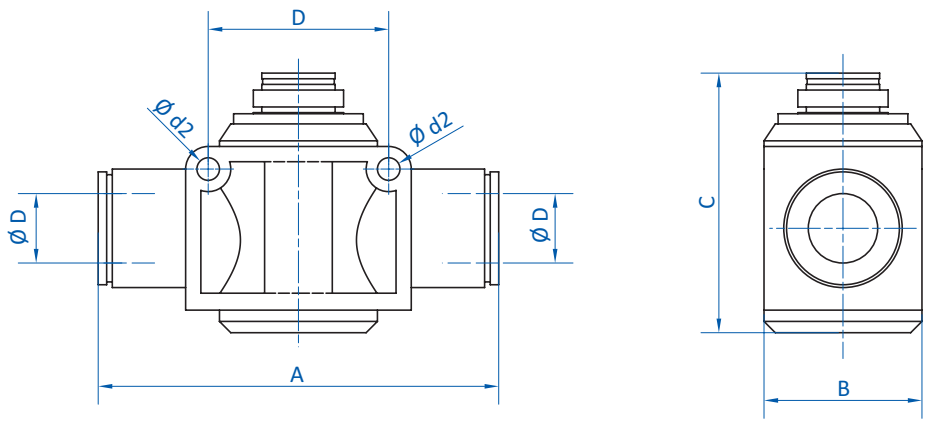
Product notes

> Limitation of suction flow at a constant vacuum level
> Reducing leakage at unoccupied vacuum cups maintains an adequate vacuum level for vacuum cups covered by products and thus prevents products from being dropped
> Manual adjustment using knurled screw
> Simple installation in the line tubing

Technical data

Item no.	Pipe connection [mm]	Operating pressure [bar (psi)]	Operating temperature [°C (°F)]	Weight [g]
32.540	4	-1 - 9 (-14.5 - 130.5)	0 - 60 (32 - 140)	12
32.541	6	-1 - 9 (-14.5 - 130.5)	0 - 60 (32 - 140)	33
32.542	8	-1 - 9 (-14.5 - 130.5)	0 - 60 (32 - 140)	44
32.543	10	-1 - 9 (-14.5 - 130.5)	0 - 60 (32 - 140)	77
32.544	12	-1 - 9 (-14.5 - 130.5)	0 - 60 (32 - 140)	127

Dimensions



Item no.	Ø D [mm]	A [mm]	B [mm]	C [mm]	D [mm]	d2 [mm]
32.540	4	37.5	11	29.5	14	3.2
32.541	6	46	15	44	20	4.3
32.542	8	51.5	18	48	22	4.3
32.543	10	59.5	21	53.5	26	4.3
32.544	12	72	28	58	32	4.3

"Inline" one-way flow control valves



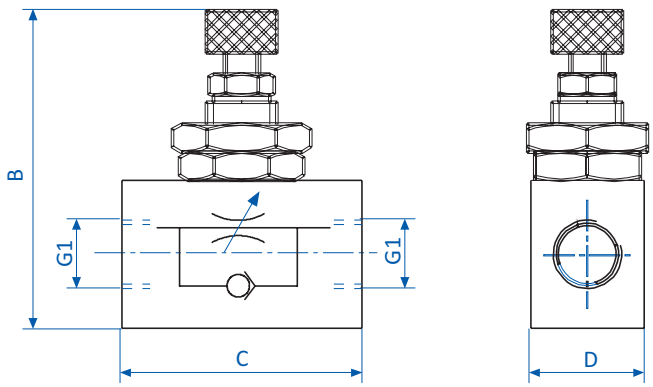
Product notes

> Limitation of suction flow at a constant vacuum level
> Reducing leakage at unoccupied vacuum cups maintains an adequate vacuum level for vacuum cups covered by products and thus prevents products from being dropped
> Manual adjustment using knurled screw

Technical data

Item no.	Max. flow rate [m³/h]	Regulating range [mbar (psi)]	Operating temperature [°C (°F)]	Weight [g]
73.001	2.4	-999 - 0 (-14.5 - 0)	-20 - 80 (-4 - 176)	95
73.004	5.4	-999 - 0 (-14.5 - 0)	-20 - 80 (-4 - 176)	95

Dimensions



Item no.	G1	B [mm]	C [mm]	D [mm]
73.001	G1/4	60	39	22
73.004	G1/2	75	56	30

Solenoid valves for vacuum 104

Pneumatic valves for vacuum 115

Solenoid valves for compressed air 119

Flow control valves 121

Touch valves 128

Non-return valves 130

Manual valves 134

2/2-way solenoid vacuum valves, directly controlled



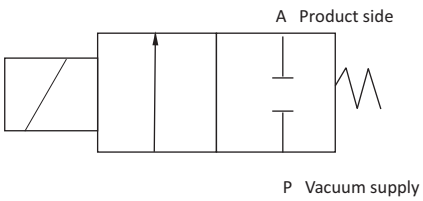
Product notes

> Very high suction power at small size for short evacuation time and fast vacuum build-up
> Short response time
> Robust brass housing and compact design for demanding applications
> Also suitable for positive pressure
> Incl. energy-saving coil for minimized power consumption and less heat development
> Energy-saving coil 24 VDC or 230 VAC and DIN plug IP65 included
> Further available voltages:
- VAC: 115, 48, 24
- VDC: 12

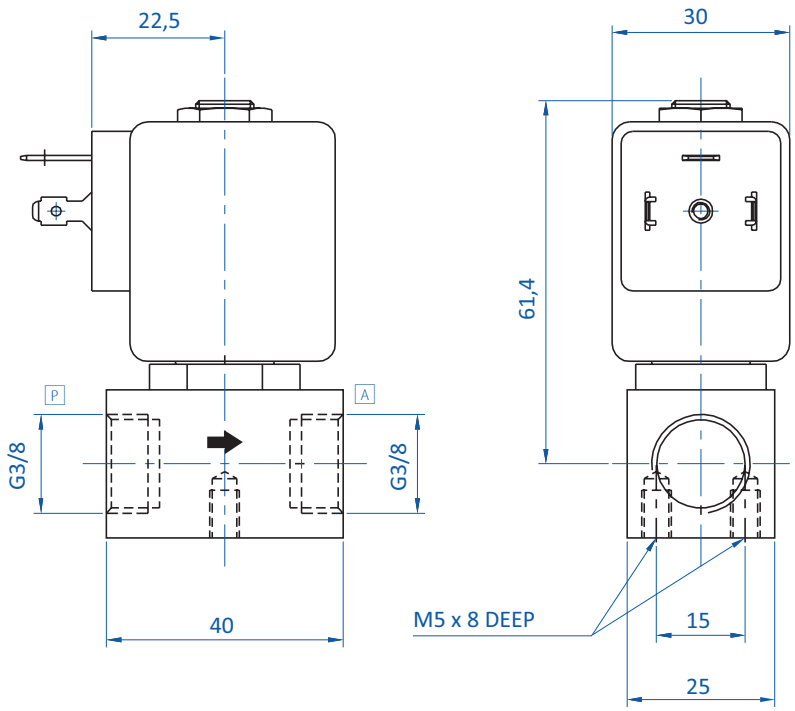
Technical data

Item no.	36.004-24VDC	36.004-230VAC
Nominal width [mm]	7	7
Nominal flow rate [m³/h]	4.8	4.8
Pressure range [bar (psi)]	-0.99 - 5 (-14.4 - 72.5)	-1 - 4 (-14.5 - 58)
Operating principle	NC	NC
Switching time [ms]	20	20
Power-on time [ED]	100 %	100 %
Max. power consumption [W]	18	9
Protection class	IP65	IP65
Plug	24 VDC	230 VAC
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	520	520
Accessories	Plug: 10.007 Coil: 10.0050/24VDC	Plug: 10.007 Coil: 10.0050/230VAC

Wiring diagram



Dimensions



A = Product side P = Vacuum supply

3/2-way solenoid vacuum valve, directly controlled, compact



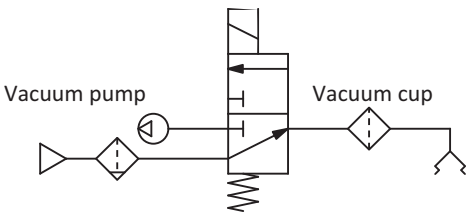
Product notes

> Very high suction power at small size for short evacuation time and fast vacuum build-up
> Small, compact and lightweight
> Suction on/off, blow-off or ventilation of vacuum cups
> HNBR diaphragm allows for flexible installation due to resistance against low ozone concentrations
> Fast switching time
> Factory set NO, can be switched to NC by the customer
> To be mounted in any position
> Included in scope of delivery: coil 24 VDC and DIN plug
> Other voltages on request

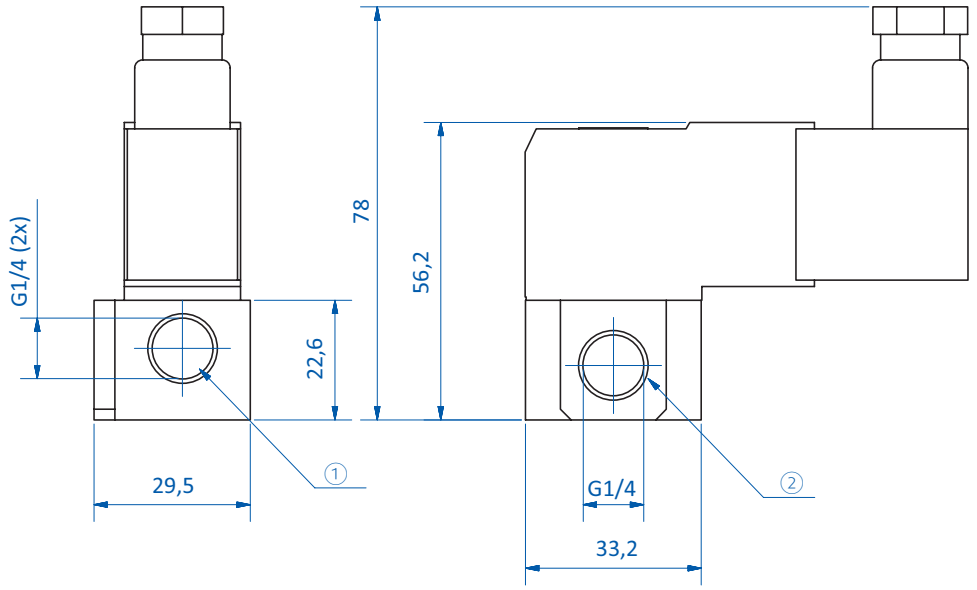
Technical data

Item no.	**36.003**
Connection	G1/4
Nominal width [mm]	4.5
Nominal flow rate [m^3/h]	2.1
Pressure range [bar (psi)]	-0.99 - 0 (-14.4 - 0)
Max. switching frequency [Hz]	10
Response time [ms]	20
Protection class	IP65
Operating principle	NC/NO
Duty ratio [%]	75
Operating voltage [VDC]	24
Power consumption [W]	4
DIN-plug	Yes
Operating temperature [°C (°F)]	-10 - 50 (14 - 122)
Weight [g]	155

Wiring diagram



Dimensions



① = Vacuum supply ② = Compressed air, blow-off

3/2-way solenoid vacuum valve, directly controlled



Product notes

> Very high suction power at small construction size for short evacuation time and fast vacuum build-up
> Fast product release due to integrated vent port
> Suction on/off, blow-off or ventilation of vacuum systems
> Also suitable for positive pressure
> Short response time
> Robust brass housing in compact design for demanding applications
> Incl. energy saving coil for minimized power consumption and less heat development

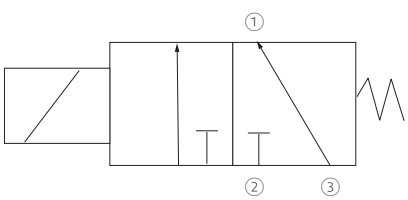
Ordering notes

> Included in scope of delivery: Energy saving coil 24 VDC or 230 VAC for minimized power consumption and less generation of heat and DIN IP65 plug
> Further available voltages:
  - VAC: 115, 48, 24
  - VDC: 12
> Standard seal is NBR, different material, such as EPDM, for higher temperatures on request

Technical data

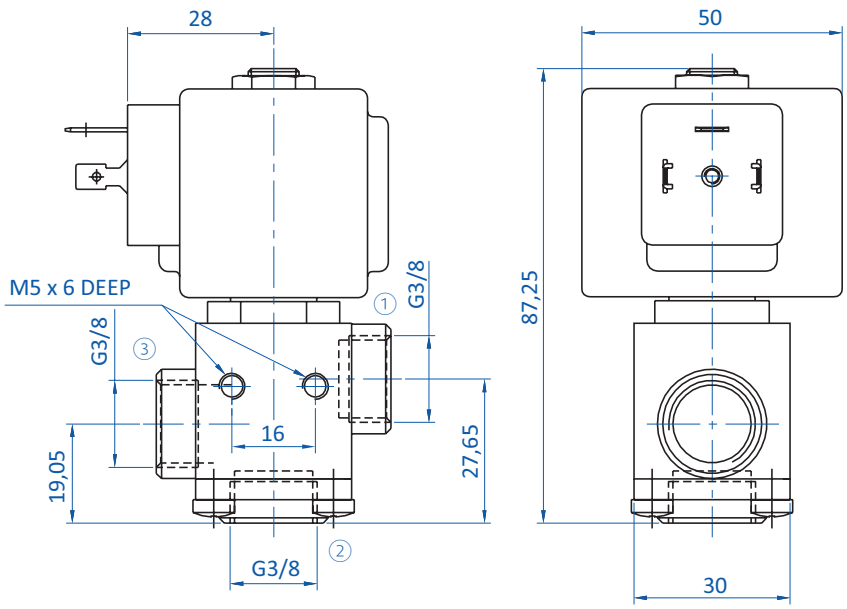
Item no.	36.009/24VDC	36.009/230VAC
Nominal width [mm]	13	13
Nominal flow rate [m³/h]	8.8	8.8
Pressure range [bar (psi)]	-0.99 - 2 (-14.4 - 29)	-0.99 - 4 (-14.4 - 58)
Operating principle	NC	NC
Closing time [ms]	21	21
Duty ratio [%]	100	100
Power consumption [W]	12	12
Protection class	IP65	IP65
Plug	24 VDC	230 VAC
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	540	540
Accessories	Push-in fittings: 30.017 Plug: 10.007 Coil: 10.0050/24VDC	Push-in fittings: 30.017 Plug: 10.007 Coil: 10.0050/230VAC

Wiring diagram



Assignment:
① = A (Product side)
② = P (Vacuum supply)
③ = R (Ventilation (Blow-off))

Dimensions



① = Product side ② = Vacuum supply ③ = Ventilation (Blow-off)

3/2-way solenoid vacuum valves, internally vacuum pilot operated



36.610 | 36.611



36.615 to 36.626

Product notes

> Suction on/off, blow-off, ventilation of vacuum cups
> High suction power at small construction for short evacuation time and fast vacuum build-up
> Valve operation requires no compressed air connection due to internal vacuum control
> Required minimum vacuum level 40 %
> Short switching times
> NO: Safe gripping of workpiece during power failure
> Robust and light-weight housing

Ordering notes

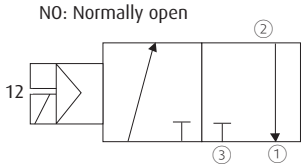
> 36.610 and 36.611: Coil and DIN plug included in scope of delivery
> 36.615 to 36.625: Delivery without coil and plug; please order: Power consumption: 24 VDC: 5 W, 230 VAC: 5 VA

Technical data

Item no.	Nominal width [mm]	Nominal flow rate [m³/h]	Pressure range [bar (psi)]	Operating principle	Switching time at -800 mbar [ms]	Material	Operating temperature [°C (°F)]	Weight [g]	Accessories
36.610	10	10	-0.99 - 0 (-14.4 - 0)	NC	30	Aluminum anodized	-5 - 50 (23 - 122)	420	--
36.611	10	10	-0.99 - 0 (-14.4 - 0)	NO	30	Aluminum anodized	-5 - 50 (23 - 122)	420	--
36.615	15	20	-0.99 - 0 (-14.4 - 0)	NO	85	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	390	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.616	15	20	-0.99 - 0 (-14.4 - 0)	NC	85	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	390	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.620	20	40	-0.99 - 0 (-14.4 - 0)	NO	85	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	370	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.621	20	40	-0.99 - 0 (-14.4 - 0)	NC	85	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	370	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.625	25	90	-0.99 - 0 (-14.4 - 0)	NO	100	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	520	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.626	25	90	-0.99 - 0 (-14.4 - 0)	NC	100	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	520	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006

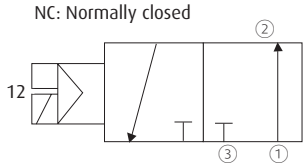
Wiring diagrams

NO: Normally open



Assignment:
① = P (Vacuum supply)
② = A (Product side)
③ = R (Ventilation (Blow-off))

NC: Normally closed



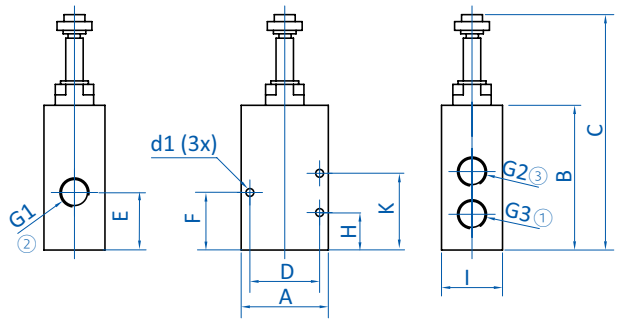
Assignment:
① = P (Ventilation (Blow-off))
② = A (Product side)
③ = R (Vacuum supply)

Pilot valve

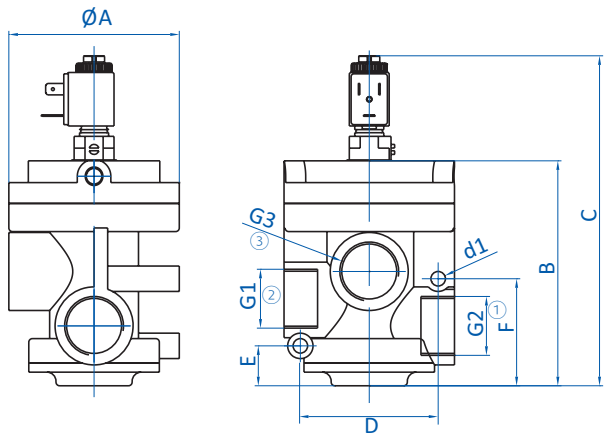


> Manual mode for functional test: Setscrew in zero position
> Automatic mode: Setscrew in position "1"

Dimensions



36.610 | 36.611



36.615 | 36.616 | 36.620 | 36.621 | 36.625 | 36.626

① = Vacuum supply/Ventilation (blow-off) ② = Product side ③ = Ventilation (blow-off) / Vacuum supply

Item no.	G1	G2	G3	Ø A [mm]	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]	H [mm]	I [mm]	K [mm]
36.610	G3/8	G3/8	G3/8	--	50	83	137	40	4.5	33	33	21.5	35	44
36.611	G3/8	G3/8	G3/8	--	50	83	137	40	4.5	33	33	21.5	35	44
36.615	G1/2	G1/2	G1/2	75	--	101	155	63	6.5	22.5	55	--	--	--
36.616	G1/2	G1/2	G1/2	75	--	101	155	63	6.5	22.5	55	--	--	--
36.620	G3/4	G3/4	G3/4	75	--	101	155	63	6.5	22.5	55	--	--	--
36.621	G3/4	G3/4	G3/4	75	--	101	155	63	6.5	22.5	55	--	--	--
36.625	G1	G1	G1	94	--	124	178	63	8.2	22	58	--	--	--
36.626	G1	G1	G1	94	--	124	178	63	8.2	22	58	--	--	--

3/2-way solenoid vacuum valves, pneumatically supported with spring reset



36.210 | 36.211



36.515 - 36.525

Product notes

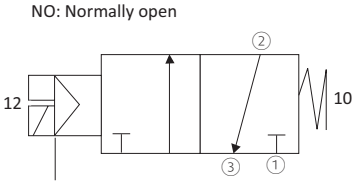
> Suction, blow-off, ventilation of vacuum cups
> High suction power at small construction for short evacuation times and fast vacuum build-up
> Short switching times
> Function: NC/NO as vacuum supply and blow-off/ventilation inlets can be exchanged
> NO: safe gripping of workpiece during power failure
> Robust and lightweight housing
> 36.210 and 36.211: coil and DIN plug included in scope of delivery
> 36.515 - 36.525: delivery without coil and plug; please order: Power consumption: 24 VDC: 5 W, 230 VAC: 5 W

Technical data

Item no.	Nominal width [mm]	Nominal flow rate [m³/h]	Pressure range [bar (psi)]	Operating principle	Control pressure [bar (psi)]	Switching time [ms]	Material	Operating temperature [°C (°F)]	Weight [g]	Accessories
36.210	10	10	-0.99 - 0 (-14.4 - 0)	NC	2.5 (36.3)	22	Aluminum anodized	-5 - 50 (23 - 122)	360	--
36.211	10	10	-0.99 - 0 (-14.4 - 0)	NO	2.5 (36.3)	22	Aluminum anodized	-5 - 50 (23 - 122)	360	--
36.515	15	20	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	390	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.520	20	40	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	370	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.525	25	90	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	500	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006

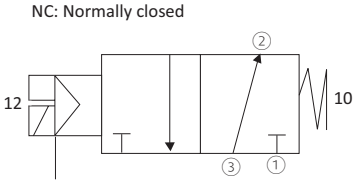
Wiring diagrams

NO: Normally open



Assignment:
① = P (ventilation (blow-off))
② = A (product side)
③ = R (vacuum supply)

NC: Normally closed



Assignment:
① = P (vacuum supply)
② = A (product side)
③ = R (ventilation (blow-off))

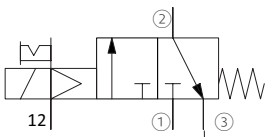
Pilot valve



> Manual mode for functional test: setscrew in position "0"
> Automatic mode: setscrew in position "1"

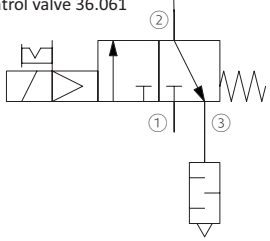
Wiring diagram: how to combine vacuum valve with pneumatic control valve for blow-off

Vacuum valve 36.520



Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

Control valve 36.061

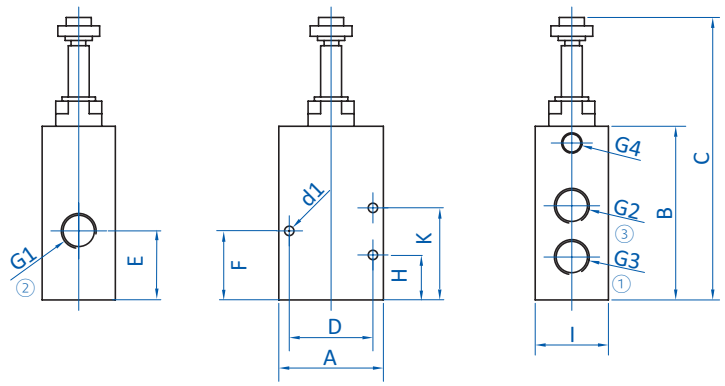


Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

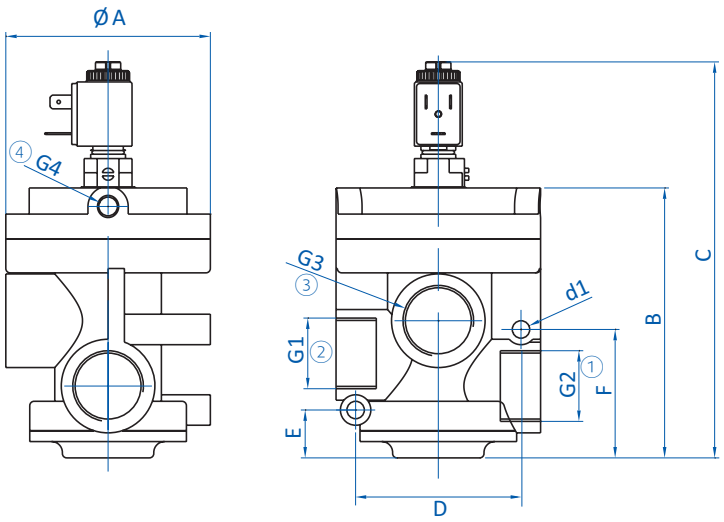
Application example: 3/2-way vacuum valves 36.520 with control valve 36.061

Continued on the next page

Dimensions



36.210 | 36.211



36.515 | 36.520 | 36.525

① = Vacuum supply/Ventilation (blow-off) ② = Product side ③ = Ventilation (blow-off) / Vacuum supply ④ = Control pressure connection

Item no.	G1	G2	G3	G4	Ø A [mm]	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]	H [mm]	I [mm]	K [mm]
36.210	G3/8	G3/8	G3/8	G1/8	--	50	83	137	40	4.5	33	32.8	22.5	35	44
36.211	G3/8	G3/8	G3/8	G1/8	--	50	83	137	40	4.5	33	32.8	22.5	35	44
36.515	G1/2	G1/2	G1/2	G1/8	75	--	101	155	63	6.5	22.5	55	--	--	--
36.520	G3/4	G3/4	G3/4	G1/8	75	--	101	155	63	6.5	22.5	55	--	--	--
36.525	G1	G1	G1	G1/8	92	--	114.5	168.5	63	6.9	22	58	--	--	--

3/2-way vacuum valve, pneumatically controlled with spring reset



Product notes

> Suction blow-off, ventilation of vacuum cups
> High suction power at small construction for short evacuation time and fast vacuum build-up
> Assembly of pneumatically controlled vacuum systems
> Valve operation requires no electric connection
> Shortest switching times compared to vacuum piloted and compressed air supported valves
> 36.815 to 36.825: Function: NC or NO as vacuum supply and blow-off / ventilation inlets can be exchanged

Ordering notes

> 36.335 to 36.341: Electronic valve for switching control independent of compressed air supply available on request; ordering example for version with electronic valve: 36.335_24VDC, 36.341_230VAC etc.

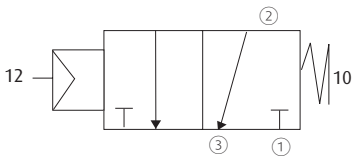
Technical data

Item no.	Nominal width [mm]	Nominal flow rate [m³/h]	Control pressure [bar]	Pressure range [bar (psi)]	Operating principle	Switching time [ms]	Material	Operating temperature [°C (°F)]	Weight [g]
36.810	10	10	≥ 2	-0.99 - 0 (-14.4 - 0)	NO	22	Aluminum anodized	-5 - 50 (23 - 122)	360
36.811	10	10	≥ 2	-0.99 - 0 (-14.4 - 0)	NC	22	Aluminum anodized	-5 - 50 (23 - 122)	360
36.815	15	20	≥ 2	-0.99 - 0 (-14.4 - 0)	NO/NC	60	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	350
36.820	20	40	≥ 2	-0.99 - 0 (-14.4 - 0)	NO/NC	50	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	330
36.825	25	90	≥ 2	-0.99 - 0 (-14.4 - 0)	NO/NC	50	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	500
36.335	32	130	4 - 8	-0.99 - 0 (-14.4 - 0)	NC	200	High resistant, fiberglass reinforced polyamide (GPR)	-5 - 50 (23 - 122)	470
36.336	32	130	4 - 8	-0.99 - 0 (-14.4 - 0)	NO	200	High resistant, fiberglass reinforced polyamide (GPR)	-5 - 50 (23 - 122)	470
36.340	50	310	4 - 8	-0.99 - 0 (-14.4 - 0)	NC	300	High resistant, fiberglass reinforced polyamide (GPR)	-5 - 50 (23 - 122)	990
36.341	50	310	4 - 8	-0.99 - 0 (-14.4 - 0)	NO	300	High resistant, fiberglass reinforced polyamide (GPR)	-5 - 50 (23 - 122)	990

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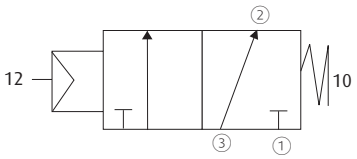
Wiring diagrams

NO: Normally open



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

NC: Normally closed

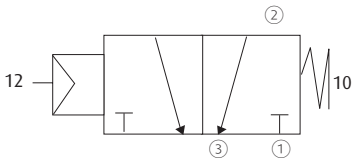


Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

36.810 | 36.811

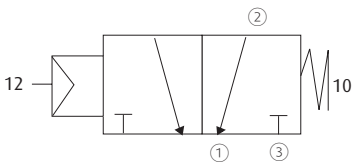
Wiring diagrams

NO: Normally open



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

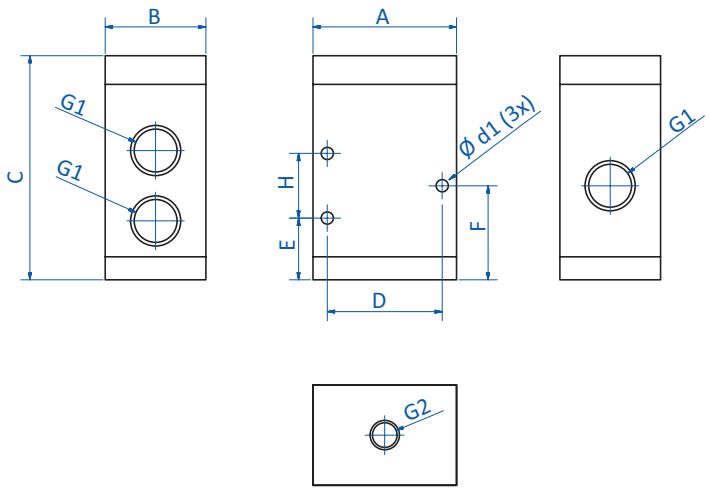
NC: Normally closed



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

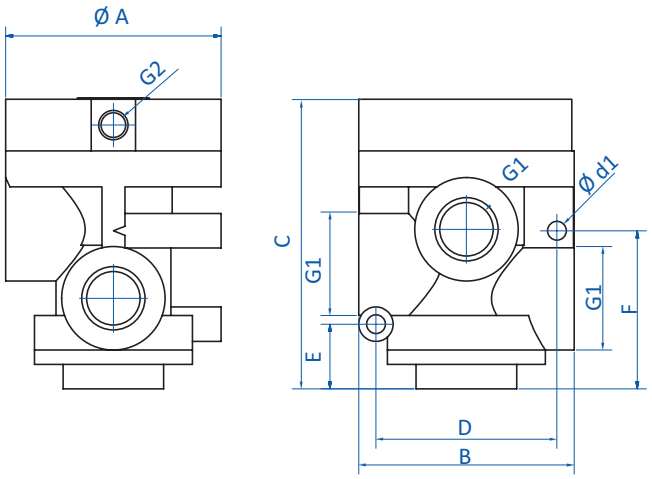
36.815 | 36.820 | 36.825 | 36.335 | 36.336 | 36.340 | 36.341

Dimensions

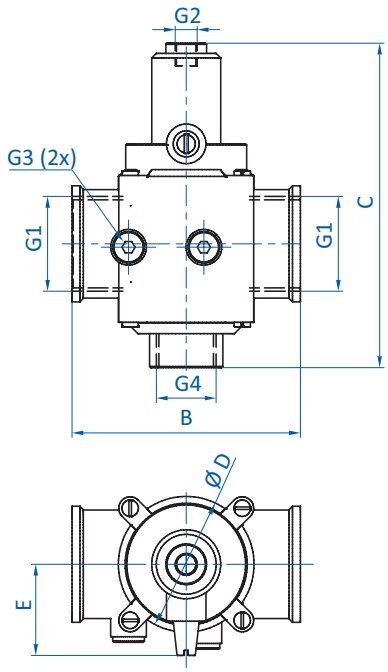


36.810 | 36.811

Dimensions



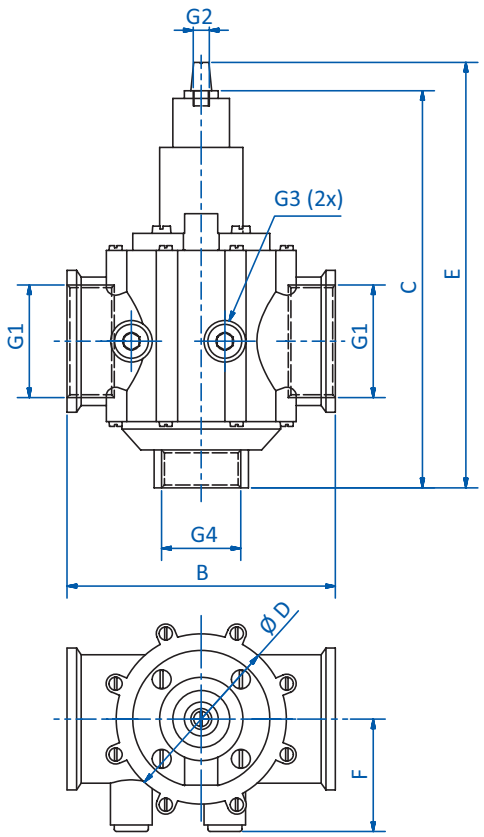
36.815 | 36.820 | 36.825



36.335 | 36.336

Continued on the next page

Dimensions



36.340 | 36.341

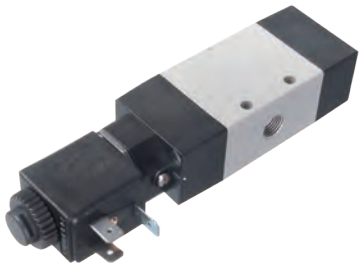
Item no.	G1	G2	G3	G4	Ø A [mm]	A [mm]	B [mm]	C [mm]	D [mm]	Ø D [mm]	Ø d1 [mm]	E [mm]	F [mm]	H [mm]
36.810	G3/8	G1/8	--	--	--	50	35	78	40	--	4.25	21.5	32.75	22.5
36.811	G3/8	G1/8	--	--	--	50	35	78	40	--	4.25	21.5	32.75	22.5
36.815	G1/2	G1/8	--	--	75	--	75	101	63	--	8	22.5	55	--
36.820	G3/4	G1/8	--	--	75	--	75	101	63	--	6.5	22.5	55	--
36.825	G1	G1/8	--	--	92	--	94	114.5	76	--	8.5	21	58	--
36.335	G1 1/4	G1/8	G1/8	G 3/4	--	--	101	144	--	60	--	41	--	--
36.336	G1 1/4	G1/8	G1/8	G 3/4	--	--	101	144	--	60	--	41	--	--
36.340	G2	G1/8	G3/8	G1 1/4	--	--	142	210	--	90	--	225	59.5	--
36.341	G2	G1/8	G3/8	G1 1/4	--	--	142	210	--	90	--	225	59.5	--

Solenoid valves for compressed air

Indirectly controlled, with spring reset



36.060



36.061

Product notes

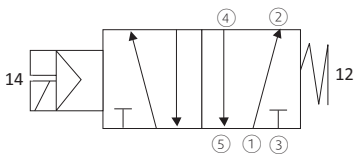
> Suitable for compressed air
> 36.060: for use e.g. to increase cycle times for ejectors without valve technology
Example: vacuum and blow-off control for multi-chamber ejectors e.g. 65.410
- 1x compressed air vacuum generation
- 1x compressed air blow-off
> 36.061: for use e.g. as a blow-off control valve for 3/2-way vacuum valves
> Robust and lightweight housing
> Included in scope of delivery: coil and DIN plug 10.006 for 24 VDC, IP65

Technical data

Item no.	Nominal width [mm]	Nominal flow rate at 6 bar [m³/h]	Control pressure [bar (psi)]	Design	Supply voltage [VDC]	Duty ratio [%]	Max. power consumption [W]	Protection class	Material	Operating temperature [°C (°F)]	Weight [g]
36.060	6	37.2	2.5 - 10 (36.3 - 145)	5/2	24	100	3.8	IP65	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	180
36.061	6	37.2	2.5 - 10 (36.3 - 145)	3/2	24	100	3.8	IP65	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	260

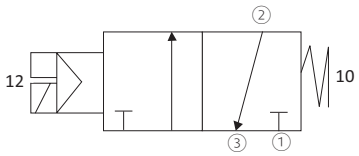
Wiring diagrams

36.060



Assignment
① Compressed air inlet
②, ④ Working connection
③, ⑤ Bleeding

36.061

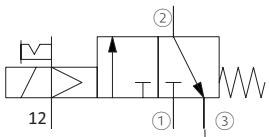


Assignment
① Compressed air inlet
② Working connection
③ Bleeding (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

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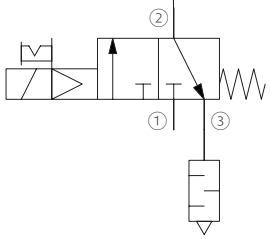
Application example: usage of 36.061 as control valve to activate blow-off of 3/2-way vacuum valves (here: valve 36.520)

36.520



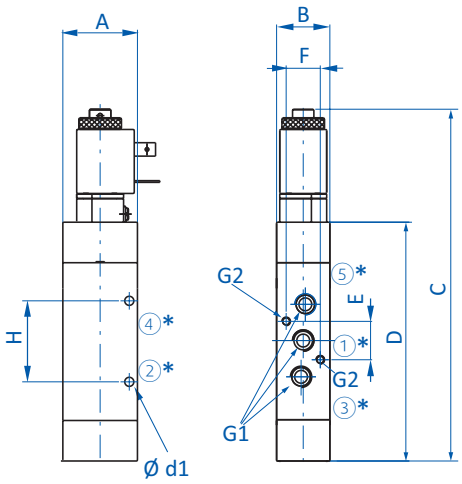
Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

36.061

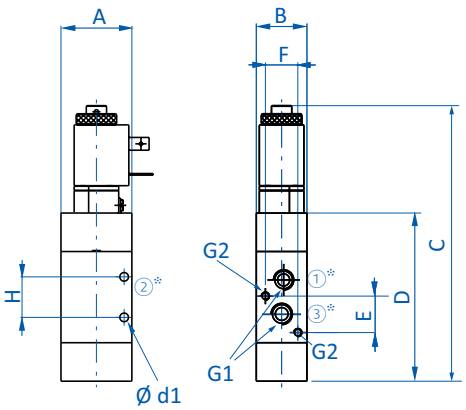


Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

Dimensions



36.060



36.061

* = Assignment see wiring diagrams

Item no.	G1	G2	A [mm]	B [mm]	C [mm]	D [mm]	Ø d1 [mm]	E [mm]	F [mm]	H [mm]
36.060	G1/8	M4	35	25	153	100	4.25	18	16	38
36.061	G1/8	M4	35	25	136	83	4.25	18	16	20

Flow control valves with flow pin

For handling of porous products



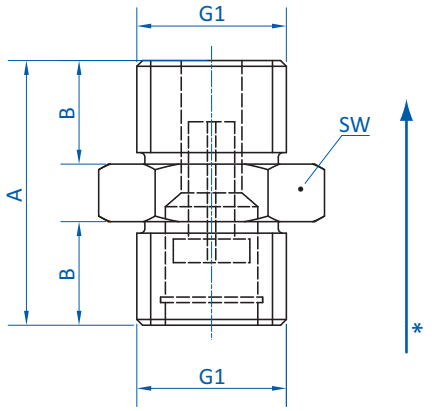
Product notes

> Sealing of unused suction openings to maintain the system vacuum
> Limited leakage prevents premature triggering with porous workpieces
> Compact design
> Optimal installation position is vertical

Technical data

Item no.	Suction power to achieve 30 % vacuum [Nl/min]	Suction power to achieve 60 % vacuum [Nl/min]	Max. flow rate with blow-off at 5 bar (72.5 psi) [Nl/min]	Flow pin bore hole diameter [mm]	Leakage loss [m^3/h]	Weight [g]
63.036	5	5	370	0.8	0.46	8
63.037	11	11	620	1.2	1.04	8
63.038	17	18	480	1.5	1.62	8
63.055	3	3	320	0.6	0.21	8

Dimensions



* = Flow direction

Item no.	G1	A [mm]	B [mm]	SW
63.036	G1/4	23	9	17
63.037	G1/4	23	9	17
63.038	G1/4	23	9	17
63.055	G1/8	16	5	12

Flow control valves with flow pin, self-cleaning

For harsh environmental conditions



Product notes

> Sealing of unused suction openings to maintain the system vacuum
> Limited leakage prevents premature triggering with porous workpieces
> Self-cleaning by blow-off
> Suitable for harsh environmental conditions (Heavy-duty)
> Optimal installation position is vertical

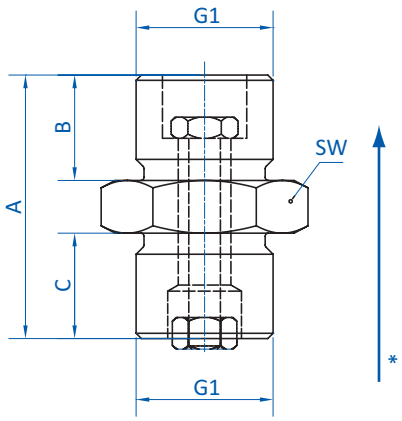
Notes

> 63.015 can be plugged directly into a vacuum cup to conserve space

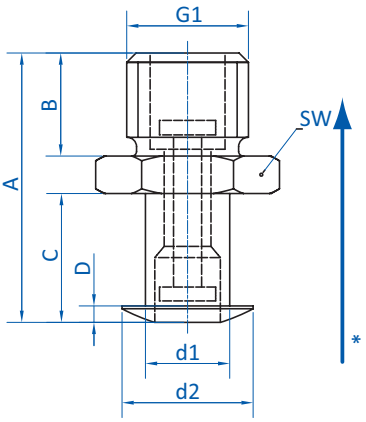
Technical data

Item no.	Suction power to achieve 30 % vacuum [Nl/min]	Suction power to achieve 60 % vacuum [Nl/min]	Max. flow rate with blow-off at 5 bar (72.5 psi) [Nl/min]	Connection	Weight [g]
63.013	38	55	450	G1/4	10
63.015	38	55	450	Pipe connection Ø 9 [mm]	8

Dimensions



63.013



63.015

* = Flow direction

Item no.	G1	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	d2 [mm]	SW
63.013	G1/4	25	10	10	--	--	--	17
63.015	G1/4	29	11	14	2	9	14	17

Flow control valves with flow pin and filter, Inch thread



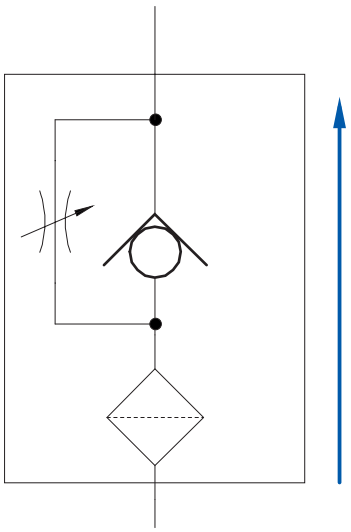
Product notes

> Sealing of unused suction openings to maintain the system vacuum
> Ball seat valve with filter (not suitable for high levels of dust or dirt)
> Suitable for short cycle times
> Limited leakage prevents premature triggering with porous workpieces
> Preset at the factory, 63.003 can be adjusted if necessary
> Vertical mounting, exception of 63.001 to 63.003: Any mounting position

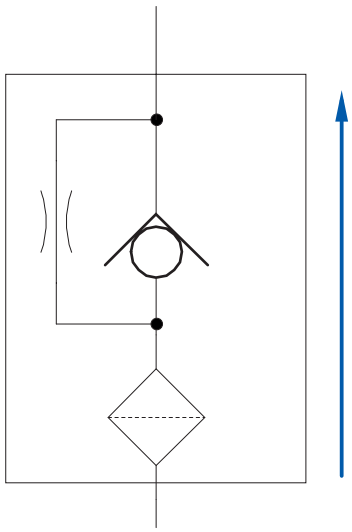
Technical data

Item no.	Suction power to achieve 30 % vacuum [Nl/min]	Suction power to achieve 60 % vacuum [Nl/min]	Max. flow rate with blow-off at 5 bar (72.5 psi) [Nl/min]	Weight [g]
63.001	4	7	260	15
63.002	4	8	360	24
63.003	0 - 22.6	0 - 28.6	550	25
63.008	3	3	340	17
63.011	7	8	590	31
63.012	8	9	790	49
63.060	7	8	590	10

Wiring diagrams



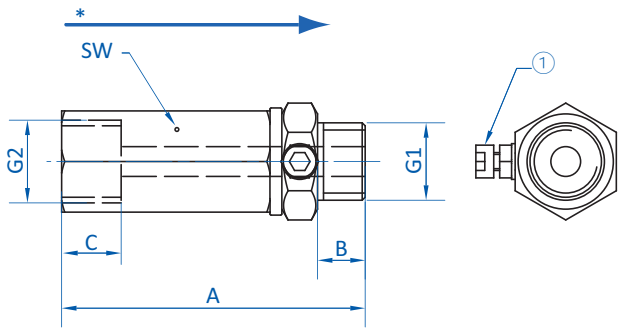
63.003



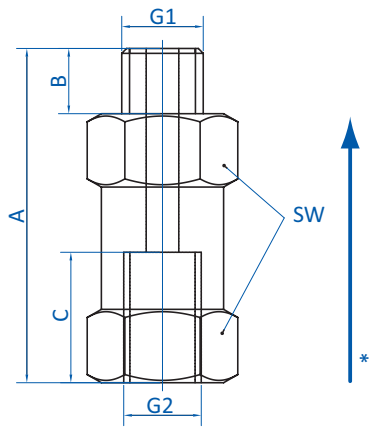
63.001 | 63.002 | 63.008 | 63.011 | 63.012 | 63.060

Continued on the next page

Dimensions



63.001 | 63.002 | 63.003



63.008 | 63.011 | 63.012 | 63.060

① = Adjusting screw for 63.003 * = Flow direction

Item no.	G1	G2	A [mm]	B [mm]	C [mm]	SW
63.001	G1/8-male	G1/8-IG	49	8	10	14
63.002	G1/4-male	G1/4-IG	51	8	8	17
63.003	G1/4-male	G1/4-IG	51	8	9	17
63.008	G1/4-male	G1/4-IG	36	10	11	17
63.011	G3/8-male	G3/8-IG	39	10	12	22
63.012	G1/2-male	G1/2-IG	41	12	12	27
63.060	R1/8-male	R1/8-IG	33.5	8	8	14

Flow control valves with flow pin and filter, metric thread



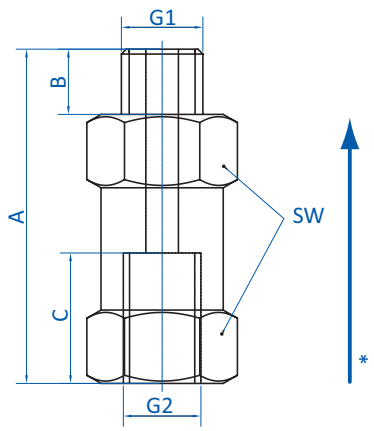
Product notes

> Sealing of unused suction openings to maintain the system vacuum
> Ball seat valve with filter (not suitable for high levels of dust or dirt)
> Suitable for short cycle times
> Low leakage prevents premature triggering with porous workpieces

Technical data

Item no.	Suction power to achieve 30 % vacuum [Nl/min]	Suction power to achieve 60 % vacuum [Nl/min]	Max. flow rate with blow-off at 5 bar (72.5 psi) [Nl/min]	Leakage loss [m^3/h]	Weight [g]
63.058	1	1	80	0.105	6
63.059	1.5	1.5	100	0.105	12

Dimensions



* = Flow direction

Item no.	G1	A [mm]	B [mm]	C [mm]	SW
63.058	M5	19.9	3	4.5	10
63.059	M6	28.1	4	4.9	12

Flow control valves without leakage loss



Product notes

> Sealing of unused suction openings to maintain the system vacuum
> No leakage loss, which means it is particularly well suited for dense workpieces
> Closed valves are reset by switching off the vacuum
> Vertical mounting

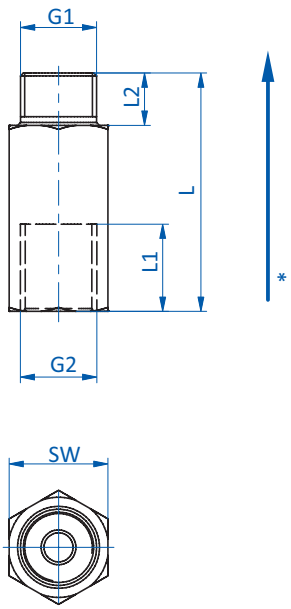
Notes

> These valves work only if the vacuum is switched on after the vacuum cup has been set in position

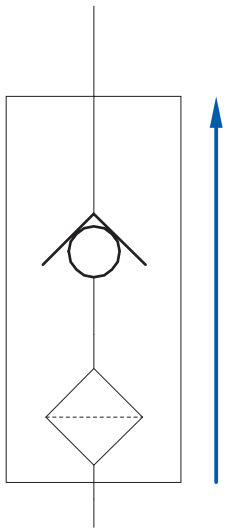
Technical data

Item no.	Suction power [Nl/min]	Min. vacuum level required [mbar (inHg)]	Weight [g]
63.017	28.3	-250 (-7.4)	13
63.018	28.3	-250 (-7.4)	16

Dimensions



Wiring diagram



* = Flow direction

Item no.	G1	G2	L [mm]	L1 [mm]	L2 [mm]	SW
63.017	G1/8	G1/4	41	10	9	17
63.018	G1/4	G1/4	41	10	9	17

Flow resistor for Plug-In vacuum cups SBP2



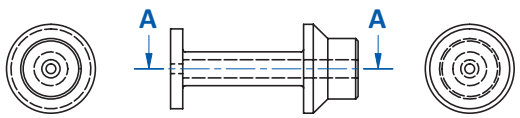
Product notes

> Flow resistance for direct mounting in the vacuum cup
> Four different inner diameters for individual application
> Different colors for easy differentiation
> Reduces the volume flow in the case of vacuum cups that are not or not fully loaded
> Enables the energy-saving design of the system
> Increase of process reliability

Technical data

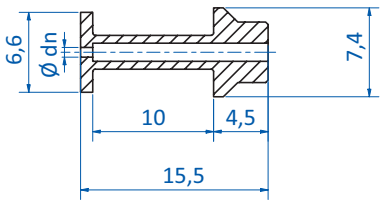
Item no.	Free passage Ø [mm]	Suction power to achieve 60 % vacuum [Nl/min]	Colour	Design	Material	Weight [g]	Suitable for
270.730	0.8	7	white	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.731	1	9	blue	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.732	1.3	14	black	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.733	1.5	17	white	Plug-In	POM	0.2	SBP2-20 & SBP2-40

Dimensions



A - A (4 : 1)

	Ø dn [mm]
270.730	0,8
270.731	1,0
270.732	1,3
270.733	1,5



Application example



Touch valves





Product notes

> Maintains the vacuum level in vacuum systems
> Mechanical scanning leaves unused suction openings closed
> Spring-loaded suspension allows for any mounting position
> Low susceptibility to dirt and very safe operation

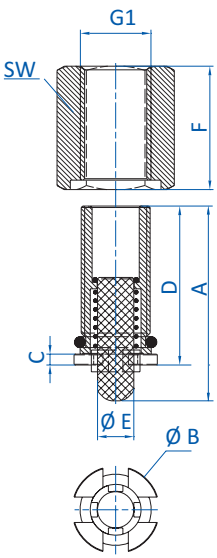
Notes

> Touch valves are directly screwed into vacuum cup, no further fittings needed

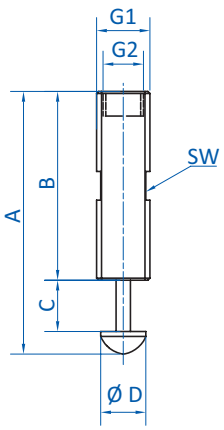
Technical data

Item no.	Type	Touch stroke [mm]	Weight [g]	Suitable fittings
270.129	female	5	7	--
270.130	female	7	62	270.268, 270.266, 270.286
63.026	male	13	29	270.179, 270.180
63.027	male	5	21	270.179, 270.180
63.032	male	8	8	270.090

Dimensions

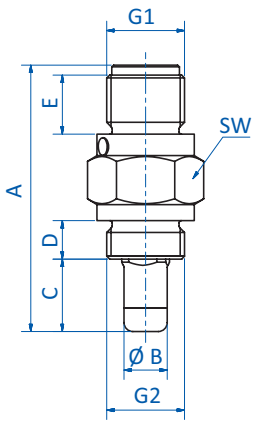


270.129 | 270.130



63.026 | 63.027

Dimensions



63.032

Item no.	G1	G2	A [mm]	B [mm]	Ø B [mm]	C [mm]	D [mm]	Ø D [mm]	E [mm]	Ø E [mm]	F [mm]	SW
270.129	G1/8	--	27	--	12	1.5	22	--	--	5	17	14
270.130	G1/2	--	43	--	25	1.5	35	--	--	8	32	30
63.026	G1/4	G1/8	65	45	--	13	--	11	--	--	--	11
63.027	G1/4	G1/8	56	46	--	5	--	11	--	--	--	11
63.032	G1/4	G1/4	45	--	7.3	12	6.5	--	10	--	--	17

"Inline" non-return valves



Product notes

> Preservation of the vacuum level in suction systems in case of failure of the vacuum generator
> Can also be used as part of an energy-saving system for dense workpieces
> Choice of hose plug-in or screw connections for quick retrofitting in existing vacuum systems
> Robust metal body
> Very small design
> Any installation position

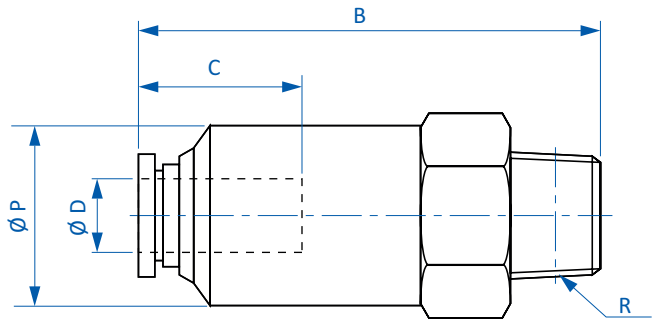
Technical data

Item no.	Effective surface area [mm²]	Material	Weight [g]
32.600	2.5	Nickel-plated brass	7.2
32.601	2.7	Nickel-plated brass	7.4
32.602	2.7	Nickel-plated brass	11
32.603	6.8	Nickel-plated brass	11
32.604	6.8	Nickel-plated brass	23
32.605	6.8	Nickel-plated brass	22
32.606	15.5	Nickel-plated brass	24
32.607	35	Aluminum	47
32.608	39	Aluminum	65
32.609	50	Aluminum	50
32.610	53	Aluminum	69
32.612	2.7	Nickel-plated brass	7.4
32.613	2.7	Nickel-plated brass	11
32.614	6.8	Nickel-plated brass	11
32.615	6.8	Nickel-plated brass	23
32.616	6.8	Nickel-plated brass	22
32.617	15.5	Nickel-plated brass	24
32.618	35	Aluminum	47
32.619	39	Aluminum	65
32.620	50	Aluminum	50
32.621	53	Aluminum	69
32.623	6	Nickel-plated brass	22
32.624	14.5	Nickel-plated brass	37
32.625	52	Aluminum	38
32.626	78	Aluminum	57
32.627	6	Nickel-plated brass	22
32.628	14.5	Nickel-plated brass	37
32.629	52	Aluminum	38

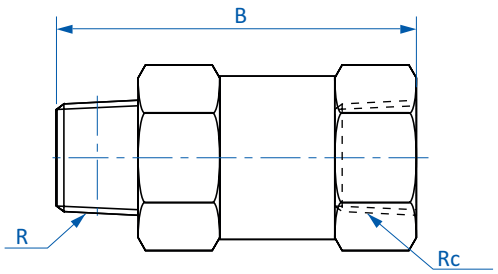
Technical data

Item no.	Effective surface area [mm²]	Material	Weight [g]
32.630	78	Aluminum	57
32.631	2.7	Aluminum anodized	5
32.632	6.8	Aluminum anodized	9.5
32.633	15.5	Aluminum anodized	20
32.634	32	Aluminum anodized	61.5
32.635	46	Aluminum anodized	68

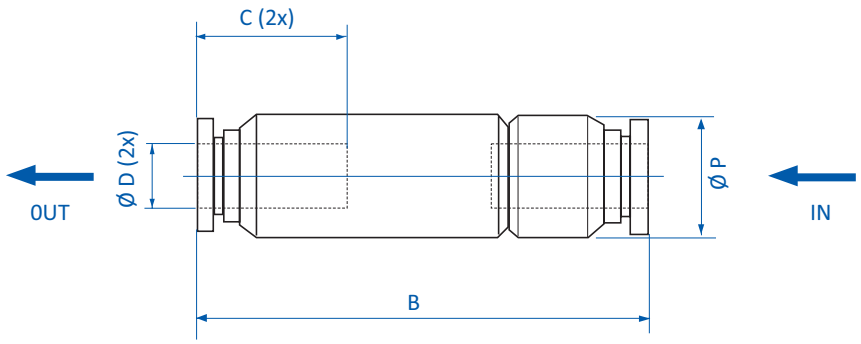
Dimensions



32.600 | 32.601 | 32.602 | 32.603 | 32.604 | 32.605 | 32.606 | 32.607 | 32.608 | 32.609 | 32.610 | 32.612 | 32.613 | 32.614 | 32.615 | 32.616 | 32.617 | 32.618 | 32.619 | 32.620 | 32.621



32.623 | 32.624 | 32.625 | 32.626 | 32.627 | 32.628 | 32.629 | 32.630



32.631 | 32.632 | 32.633 | 32.634 | 32.635

Item no.	Ø **D** [mm]	**B** [mm]	**C** [mm]	Ø **P** [mm]	**R**	**Rc**
32.600	4	27.8	10.9	8	M5	--
32.601	4	28.8	10.9	8	M6	--
32.602	4	23.9	10.9	9	R1/8	--
32.603	6	29	11.7	10	R1/8	--
32.604	6	29	11.7	12	R1/4	--

Item no.	Ø **D** [mm]	**B** [mm]	**C** [mm]	Ø **P** [mm]	**R**	**Rc**
32.605	8	35.5	18.2	13.5	R1/8	--
32.606	8	39.2	18.2	13.5	R1/4	--
32.607	10	61.7	20.7	25	R3/8	--
32.608	10	68.2	20.7	28	R1/2	--
32.609	12	65.3	23.3	25	R3/8	--
32.610	12	70.8	23.3	28	R1/2	--
32.612	4	28.8	10.9	8	M6	--
32.613	4	23.9	10.9	9	R1/8	--
32.614	6	29	11.7	10	R1/8	--
32.615	6	29	11.7	12	R1/4	--
32.616	8	35.5	18.2	13.5	R1/8	--
32.617	8	39.2	18.2	13.5	R1/4	--
32.618	10	61.7	20.7	25	R3/8	--
32.619	10	68.2	20.7	28	R1/2	--
32.620	12	65.3	23.3	25	R3/8	--
32.621	12	70.8	23.3	28	R1/2	--
32.623	--	26.3	--	--	R1/8	Rc1/8
32.624	--	33	--	--	R1/4	Rc1/4
32.625	--	52	--	--	R3/8	Rc3/8
32.626	--	62	--	--	R1/2	Rc1/2
32.627	--	26.3	--	--	R1/8	Rc1/8
32.628	--	33	--	--	R1/4	Rc1/4
32.629	--	52	--	--	R3/8	Rc3/8
32.630	--	62	--	--	R1/2	Rc1/2
32.631	4	34	11	9	--	--
32.632	6	38.5	12	12	--	--
32.633	8	55.5	18.5	15	--	--
32.634	10	82.5	21	25	--	--
32.635	12	87.5	23.5	25	--	--

Non-return valves for very high volume flows



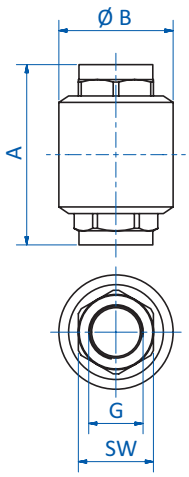
Product notes

> Maintenance of the vacuum level in suction systems in cases of vacuum generator failure
> Suitable for installation between the vacuum pump and vacuum tank
> Prevents return flow of the oil into the vacuum system with vacuum pumps without an integrated non-return valve
> Can be mounted in any installation position

Technical data

Item no.	Nominal flow rate [m^3/h]	Material	Weight [g]
32.647	20	Brass with oil-resistant seals	151
32.648	26	Brass with oil-resistant seals	196
32.649	45	Brass with oil-resistant seals	280
32.650	75	Brass with oil-resistant seals	421
32.651	125	Brass with oil-resistant seals	658
32.652	200	Brass with oil-resistant seals	897
32.653	350	Brass with oil-resistant seals	1,346

Dimensions



Item no.	G	A [mm]	Ø B [mm]	SW
32.647	G3/8	55	35	23
32.648	G1/2	58	58.5	27
32.649	G3/4	65	41	33
32.650	G1	74.5	48	40
32.651	G1 1/4	83	60.5	50
32.652	G1 1/2	93	71	55
32.653	G2	101	87	70

2/2-way manual shut-off valves



Product notes

> Use when electro valves are not possible or uneconomical

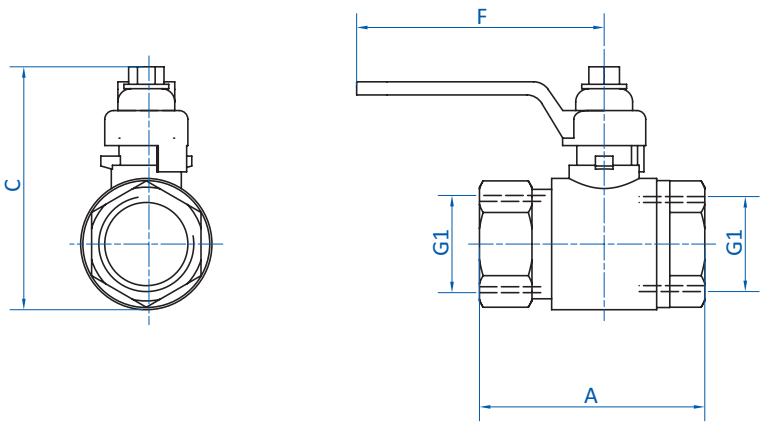
Technical data

Item no.	Free passage [mm]	Pressure range [bar (psi)]	Weight [g]
33.075	10	0 - 30 (0 - 435.1)	121
33.076	10	0 - 30 (0 - 435.1)	121
33.077	15	0 - 30 (0 - 435.1)	177
33.078	20	0 - 30 (0 - 435.1)	298
33.079	25	0 - 30 (0 - 435.1)	560
33.080	32	0 - 30 (0 - 435.1)	830
33.081	40	0 - 30 (0 - 435.1)	1,000

Dimensions

G1	A [mm]	C [mm]	F [mm]
G1/4	44	49	80
G3/8	44	51	80
G1/2	50	57	80
G3/4	57	74	113
G1	70	83	113
G1 1/4	80	90	138
G1 1/2	94	110	138

Dimensions



3/2-way manual shut-off valves



Product notes

> Switching on/off individual vacuum cups in vacuum systems
> Blow-off and ventilation of vacuum cups
> Valve type with L-bore

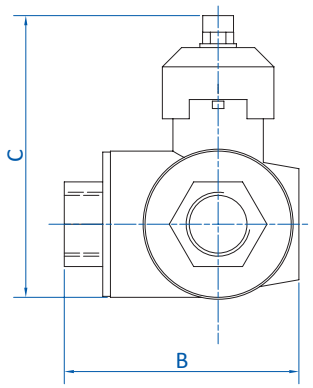
Technical data

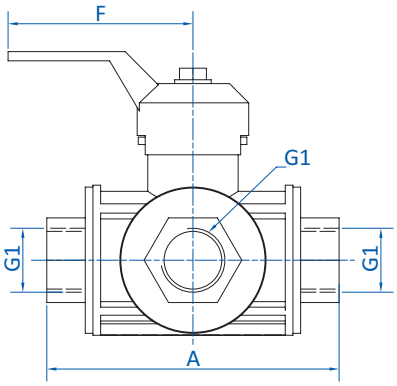
Item no.	Free passage [mm]	Pressure range [bar (psi)]	Weight [g]
33.084	10	0 - 30 (0 - 435.1)	160
33.085	12	0 - 30 (0 - 435.1)	190
33.086	14	0 - 30 (0 - 435.1)	300
33.087	18	0 - 30 (0 - 435.1)	490
33.088	23	0 - 30 (0 - 435.1)	850

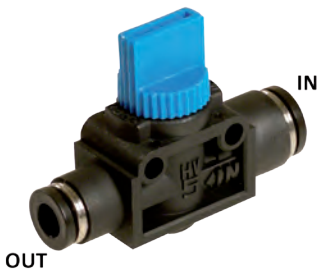
Dimensions

G1	A [mm]	B [mm]	C [mm]	F [mm]
G1/4	77	58	85	125
G3/8	77	58	85	125
G1/2	77	58	85	125
G3/4	92	70	107	145
G1	104	80	124	170

Dimensions







Product notes

> Switching on/off individual vacuum cups in vacuum systems
> Blow-off and ventilation of vacuum cups
> Easy in-line installation in the tubing line

Ordering notes

> Other connections available on request

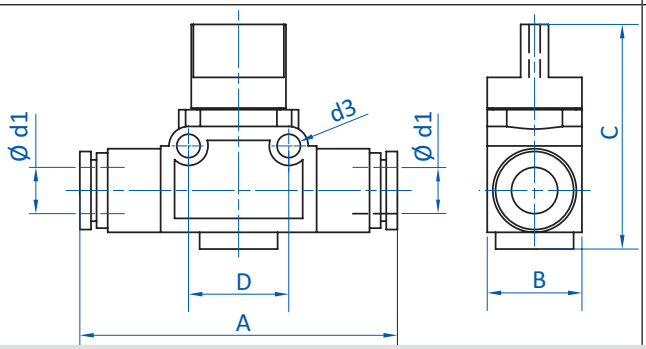
Technical data

Item no.	Pressure range [bar (psi)]	Weight [g]
33.000	-1 - 9 (-14.5 - 130.5)	24
33.001	-1 - 9 (-14.5 - 130.5)	24.5
33.003	-1 - 9 (-14.5 - 130.5)	27
33.004	-1 - 9 (-14.5 - 130.5)	44
33.006	-1 - 9 (-14.5 - 130.5)	50

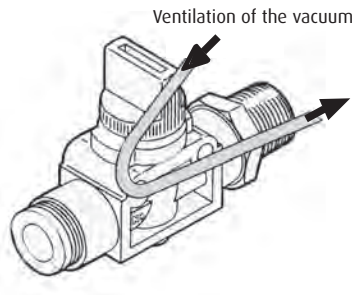
Dimensions

d1 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	d3 [mm]
4	52	17	40.5	18	4.2
6	52	17	40.5	18	4.2
8	56	17	40.5	18	4.2
10	65	21	41	24	4.2
12	71	21	41	24	4.2

Dimensions



Operating principle



Vacuum switches 138

Vacuum/Pressure switches 145

Vacuummeter and Pressure gauges 146

Accessories 148

Vacuum switch – electromechanical

With NO/NC function for DC- and AC-connection



Product notes

> An electrical signal is triggered when set vacuum value is reached
> Switching point set via setscrew
> Hysteresis is fixed
> Standard vacuum connnection via galvanized steel G1/4 screw-in port
> Long service life due to high quality, robust design
> Can be mounted in any position

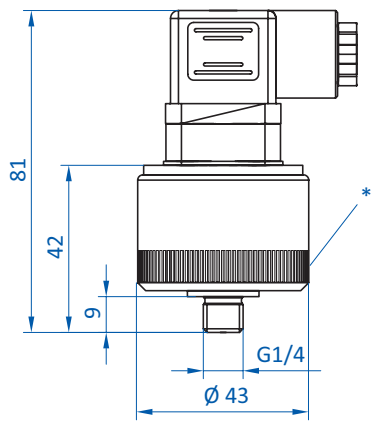
Ordering notes

> If desired the switching point can be preset

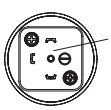
Technical data

Item no.	20.011
Adjustable range [mbar (psi)]	20 - 800 (0.3 - 11.6)
Hysteresis	6 % switch point
Switching capacity DC up to 28 V [A]	max. 2
Switching capacity AC up to 250 V [A]	max. 2
Max. switching frequency [Hz]	200
Protection class	IP65
Suitable media	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	-25 - 85 (-13 - 185)
Weight [g]	120

Dimensions



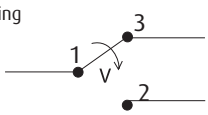
Electrical connection / changeover contact



Setting screw
M3 DIN 914

1. Completely screw in with hex-wrench
2. Apply switching vacuum
3. Ease screw until contact toggles

Wiring



* = Knurled screw

Vacuum switch – pneumatic



Product notes

> Switch outputs a pneumatic signal when the set vacuum level is reached
> No electrical connection required
> Usable as switch element for pneumatic valves

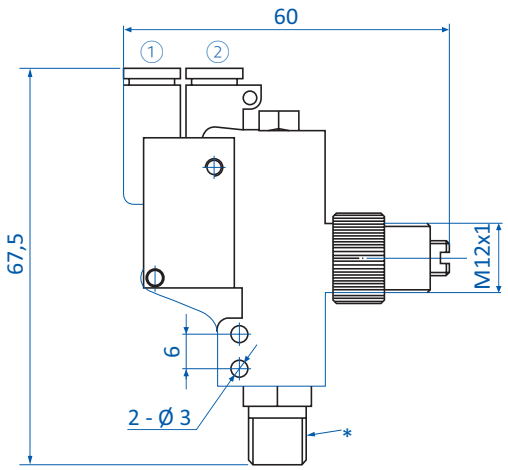
Notes

> Vacuum switch 20.002 is part of the air-saving function for multi-chamber ejectors 65.340-LSE to 65.390-LSE

Technical data

Item no.	**20.002**
Adjustable range [mbar (psi)]	-950 - -150 (-13.8 - -2.2)
Hysteresis [mbar (inHG)]	120 (3.5)
Operating pressure [bar (psi)]	1.5 - 8 (21.8 - 116)
Operating principle	NC
Repeat accuracy [%]	± 5
Suitable media	Dry, unoiled air and non-abrasive gases
Operating temperature [°C (°F)]	10 - 60 (50 - 140)
Weight [g]	44

Dimensions



① = Compressed air inlet, quick fitting Ø 4 mm ② = Compressed air output, quick fitting Ø 4 mm * = G1/8-male

Mini vacuum switch – electronic with digital output





Example: mini vacuum switch 20.040 on ejector EBA.08H.2-A and flat vacuum cup Ø 40 mm

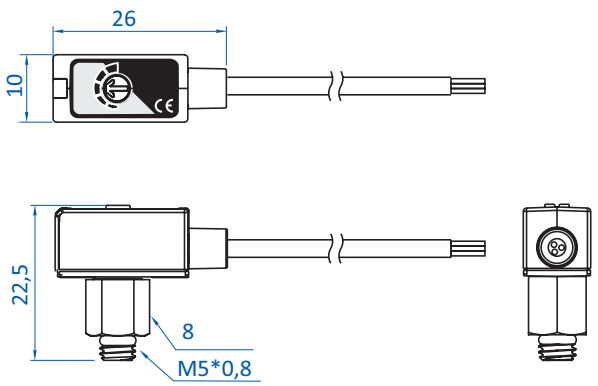
Product notes

> Switch outputs a digital signal when a specific vacuum level is reached
> Vacuum level is manually set with a potentiometer screw
> Hysteresis is fixed
> Red LED indicates set level reached
> Space-saving installation on ejectors thanks to very small design
> Included in scope of delivery: cable 1.5 m, 3-pole, open wire

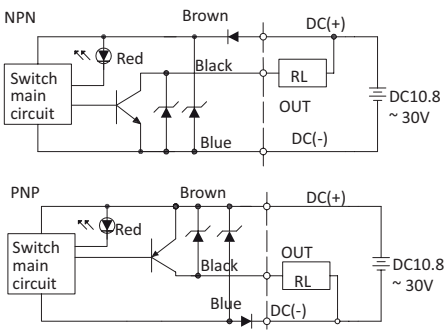
Technical data

Item no.	20.040	20.041
Adjustable range [mbar (psi)]	-990 - 0 (-14.4 - 0)	-990 - 0 (-14.4 - 0)
Hysteresis	3 % from default setting	3 % from default setting
Digital switching outputs	PNP	NPN
Response time [ms]	~ 1	~ 1
Repeat accuracy [%]	≤ ± 1 % from measuring range	≤ ± 1 % from measuring range
Overpressure safety [bar (psi)]	2 (29)	2 (29)
Supply voltage [VDC]	10.8 - 30	10.8 - 30
Max. current consumption [mA]	10	10
Vacuum connection	M5	M5
Protection class	IP40	IP40
Suitable media	Filtered, oiled or unoiled air or neutral gases	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	0 - 60 (32 - 140)	0 - 60 (32 - 140)
Weight [g]	20	20

Dimensions



Wiring diagrams



Vacuum switch electronic with analog and digital output



Product notes

> Monitoring of vacuum levels, e.g. in handling systems
> Intelligent sensor with "teaching" feature
> Suitable for all vacuum levels due to flexible setting of switching point and hysteresis
> Small and robust
> Easy operation
> Protection class IP65 (no ventilation tube required)
> Flexible mounting: Control panel can be rotated 360° after installation

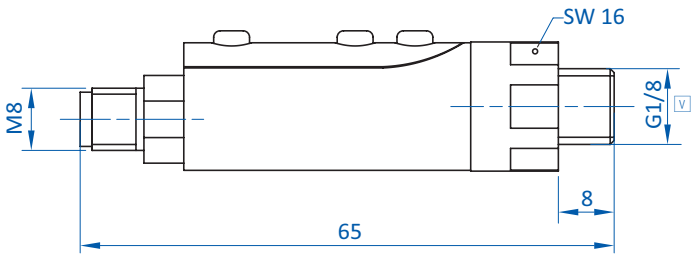
Notes

> Transient emissions: EN 61000-6-4:2007; EN 61326-2-3:2006
> Interference resistance: EN 61000-6-2:2005; EN 61326-2-3:2006

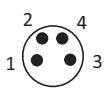
Technical data

Item no.	GS02.003
Measuring range [bar (inHg)]	-1 - 0 (-29.5 - 0)
Digital switching outputs	1x PNP (NO or NC)
Analogue output [V]	1 - 5
Repeat accuracy [%]	± 0.2 % from measuring range
Overpressure safety [bar (psi)]	2 (29)
Supply voltage [VDC]	11 - 30
Current consumption [mA]	< 30
Max. switching current [mA]	250
Electric connection	Plug M8x1; 4-pin
Protection class	IP65
Suitable media	Dry, unoiled air and non-abrasive gases
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)
Weight [g]	20
Accessories	Connecting cable: 20.501, Connecting cable: 20.502, Adapter: 20.511, Adapter: 20.523, Adapter: 20.522, Wall clip: 20.520

Dimensions



Pin assignment



Pin 1 = Supply voltage
Pin 2 = OV (GND)
Pin 3 = Output PNP
Pin 4 = Analog output (1-5V)

V = Vacuum connection

Vacuum switch electronic with two digital outputs and display



GS02.001



GS02.002

Product notes

> Monitoring of vacuum levels, e.g. in handling systems
> Optimization of cycle times to improve the economy of vacuum systems
> Two freely adjustable digital outputs to set lower and upper threshold values
> Additional analog output
> 7-segment LED-display
> Protection class IP65 (no ventilation tube required)
> Integrated reverse voltage protection
> Compact, lightweight and robust design
> Flexible mounting: GS.001 can be rotated 360° after installation

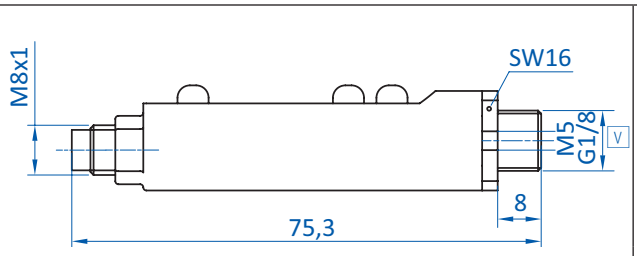
Notes

> Transient emissions: EN 61000-6-4:2007; EN 61326-2-3:2006
> Interference resistance: EN 61000-6-2:2005; EN 61326-2-3:2006
> Vacuum values can be displayed and adjusted by the customer in following units: MPa, bar, inHg, mmHg

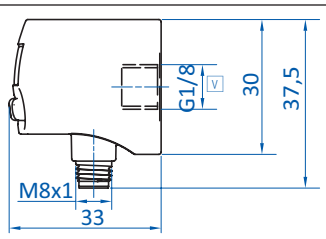
Technical data

Item no.	GS02.001	GS02.002
Measuring range [bar (inHg)]	-1 - 0 (-29.5 - 0)	-1 - 0 (-29.5 - 0)
Digital switching outputs	2x PNP (NO or NC)	2x PNP (NO or NC)
Repeat accuracy [%]	± 0.2 % from measuring range	± 0.2 % from measuring range
Overpressure safety [bar (psi)]	6 (87)	6 (87)
Supply voltage [VDC]	11 - 30	11 - 30
Current consumption [mA]	< 55	< 15
Max. switching current [mA]	125	250
Electric connection	Plug M8x1; 4-pin	Plug M8x1; 4-pin
Protection class	IP65	IP65
Suitable media	Filtered, oiled or unoiled air or neutral gases	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	0 - 50 (32 - 122)	10 - 60 (50 - 140)
Weight [g]	25	45
Accessories	Adapter: 20.522, Adapter: 20.523, Adapter: 20.511, Connecting cable: 20.501, Connecting cable: 20.502, Wall clip: 20.520	Connecting cable: 20.501, Connecting cable: 20.502

Dimensions



GS02.001



GS02.002

V = Vacuum connection

Vacuum switch – electronic with two digital outputs and analog output



Product notes

> Monitoring of vacuum levels, e.g. in handling systems
> Optimization of cycle times to improve the economy of vacuum systems
> Two freely adjustable digital outputs to set lower and upper threshold values
> Analog output for continuous monitoring of vacuum level
> Stable measurement even with short fluctuations of the supply pressure due to anti-chattering function
> 7-segment 3-digit LED-display
> Integrated reverse voltage protection
> Compact and lightweight design

Notes

> Vacuum values can be displayed and adjusted by the customer in following units: kPa, kgf/cm², bar, psi, inHg, mmHg

Ordering notes

> Connector cable 0.3 meter with plug (M12 5-pin, straight) included in delivery
> Connector cable optional
20.508: M12, 5-pin, straight, open wires, 2 m
20.509: M12, 5-pin, 90°, open wires, 2 m

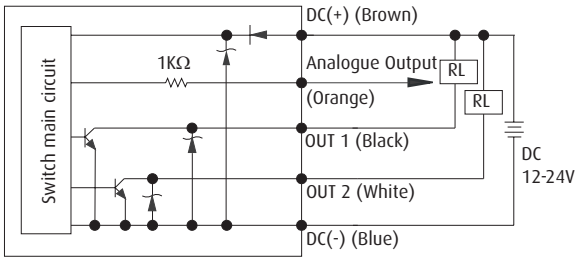
Technical data

Item no.	20.035	20.036
Measuring range [bar (inHg)]	-1 - 0 (-29.5 - 0)	-1 - 0 (-29.5 - 0)
Digital switching outputs	2 x PNP	2 x NPN
Analogue output [V]	1 - 5	1 - 5
Repeat accuracy [%]	≤ ± 0.2 % from measuring range	≤ ± 0.2 % from measuring range
Overpressure safety [bar (psi)]	3 (43.5)	3 (43.5)
Supply voltage [VDC]	10.8 - 30	10.8 - 30
Current consumption [mA]	≤ 55	≤ 55
Max. switching current [mA]	80	80
Electric connection	Plug M12x1; 5-pin	Plug M12x1; 5-pin
Vacuum connection	G1/8-male and M5-female	G1/8-male and M5-female
Protection class	IP40	IP40
Suitable media	Dry, unoiled air and non-abrasive gases	Dry, unoiled air and non-abrasive gases
Operating temperature [°C (°F)]	0 - 50 (32 - 122)	0 - 50 (32 - 122)
Weight [g]	35	35
Suitable connecting cable	20.508 20.509	20.508 20.509

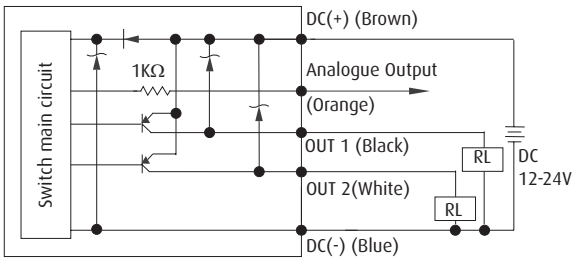
Continued on the next page

Wiring diagrams

20.035 (NPN)

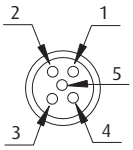


20.036 (PNP)



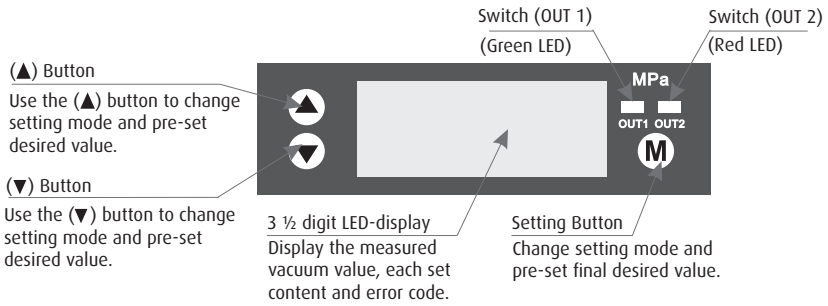
Plug assignment

20.035 and 20.036

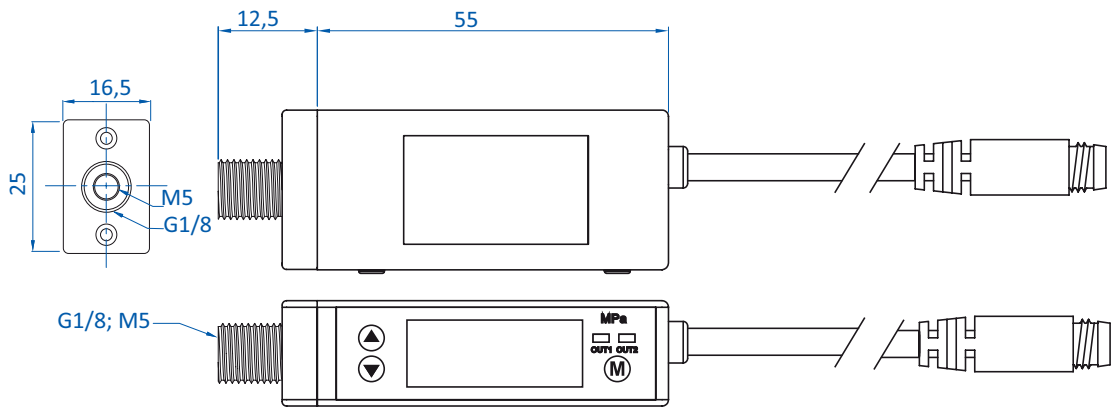


(1) Brown (+)
(2) White (OUT 2)
(3) Blue (-)
(4) Black (OUT 1)
(5) Orange (analogue OUT 1-5)

Panel instructions



Dimensions



Vacuum / Pressure switches – electronic with digital output

Compact design



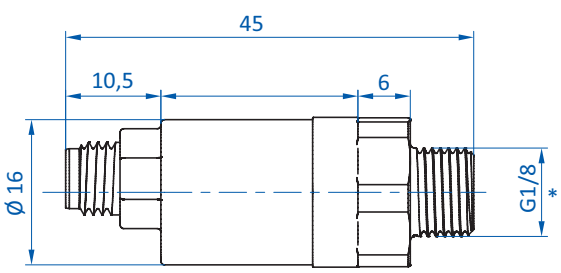
Product notes

> Digital monitoring of vacuum and pressure in handling and automation systems
> Small, lightweight and compact
> Transistor output
> Simple programming of the switching point, hysteresis and switching logic NC/NO
> Monitoring of a pressure window is possible
> Locking feature
> LED operation and status indication
> Item 20.027: With fitting pipe Ø 6 mm to be inserted into tubing or ejectors (e.g. inline or base ejectors)

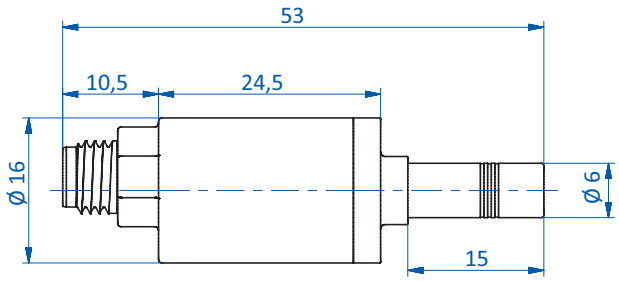
Technical data

Item no.	**20.026**	**20.027**
Adjustable range [mbar (psi)]	-999 - 999 (-14.5 - 14.5)	-999 - 999 (-14.5 - 14.5)
Hysteresis	0 - 100 %	0 - 100 %
Digital switching outputs	PNP Transistor	PNP Transistor
Switching logic	NO/NC	NO/NC
Repeat accuracy [%]	± 0.2 % from measuring range	± 0.2 % from measuring range
Supply voltage [VDC]	9 - 30 (reverse polarity, short circuit protected)	9 - 30 (reverse polarity, short circuit protected)
Current consumption [mA]	< 20	< 20
Max. switching current [mA]	250	250
Electric connection	Plug M8x1, 4-pin	Plug M8x1, 4-pin
Voltage at the output	ca. Ub -1,5 V	ca. Ub -1,5 V
EMI / EMC	According to EU-directive 2004 / 108 / EG	According to EU-directive 2004 / 108 / EG
Protection class	IP65	IP65
Suitable media	Dry, unoiled air and non-abrasive gases	Dry, unoiled air and non-abrasive gases
Connection	G1/8-male	Pipe connection Ø 6 [mm]
Operating temperature [°C (°F)]	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)
Accessories	Connecting cable: 20.501, Connecting cable: 20.502, Adapter: 20.511, Adapter: 20.522, Adapter: 20.523	Connecting cable: 20.501, Connecting cable: 20.502, Adapter: 20.511, Adapter: 20.522, Adapter: 20.523

Dimensions



20.026



20.027

* = M5-female

Vacuummeter, with red-green indication



Product notes

> Visual monitoring of the vacuum and/or pressure level in gripper systems
> Standardized design for flexible use in vacuum systems

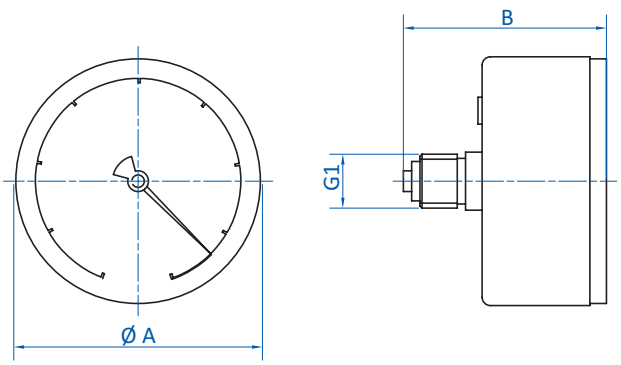
Technical data

Item no.	Measuring range [mbar (inHg)]	Connection	Weight [g]
91.001	0 - -1,000 (0 - -29.5)	At the rear	45
91.001_R	0 - -1,000 (0 - -29.5)	At the rear	40
91.003	0 - -1,000 (0 - -29.5)	At the rear	90
91.000	0 - -1,000 (0 - -29.5)	At the bottom	47
91.002	0 - -1,000 (0 - -29.5)	At the bottom	92
91.004	0 - -1,000 (0 - -29.5)	At the bottom	975

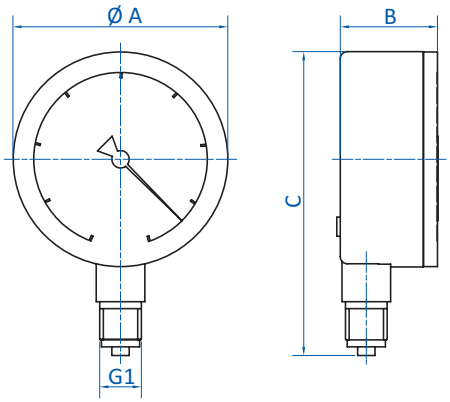
Dimensions

G1	Ø A [mm]	B [mm]	C [mm]
G1/8	39	41.5	--
R1/8	39	41.5	--
G1/4	62	49	--
G1/8	39	26.5	55.5
G1/4	62	27.5	86
G1/2	160	65.5	200

Dimensions



91.001 | 91.001_R | 91.003



91.000 | 91.002 | 91.004

Digital pressure gauge – connection at the bottom





Diagram with installation kit 20.515 for front panel mounting

Product notes

> Visual monitoring of the vacuum and/or pressure level in gripper systems
> Calibration feature
> Very compact
> LCD-display with selectable pressure units
> Robust aluminum housing

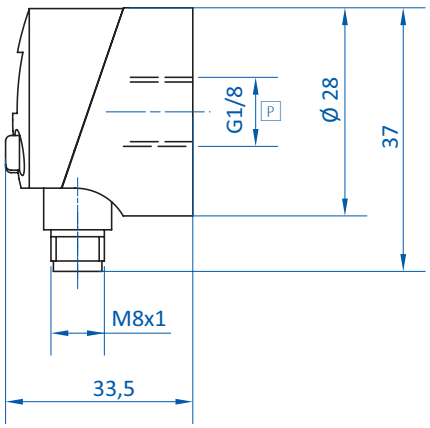
Notes

> Vacuum values can be displayed and adjusted by the customer in following units: MPa, bar, psi

Technical data

Item no.	91.012
Measuring range [bar (inHg)]	-1 - 1 (-29.5 - 29.5)
Supply voltage [VDC]	10.8 - 30 (with reverse current protection)
Overpressure safety [bar (psi)]	5 (72.5)
Current consumption [mA]	< 30
Response time [ms]	< 2.5
Insulation resistance [mOhm]	> 100 (500 VDC)
Electric connection	Plug M8x1, 4-pin
Mounting position	any
EMI / EMC	According to EN 50081-1 / 50082-2
Operating temperature [°C (°F)]	-10 - 0 (14 - 32)
Weight [g]	45

Dimensions

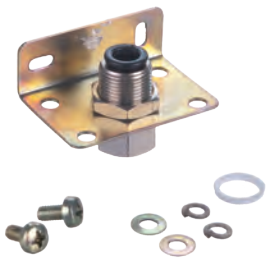


P = Pressure / Vacuum connection

Adapter and mounting brackets for vacuum switches and pressure switches



20.522 | 20.523



20.511

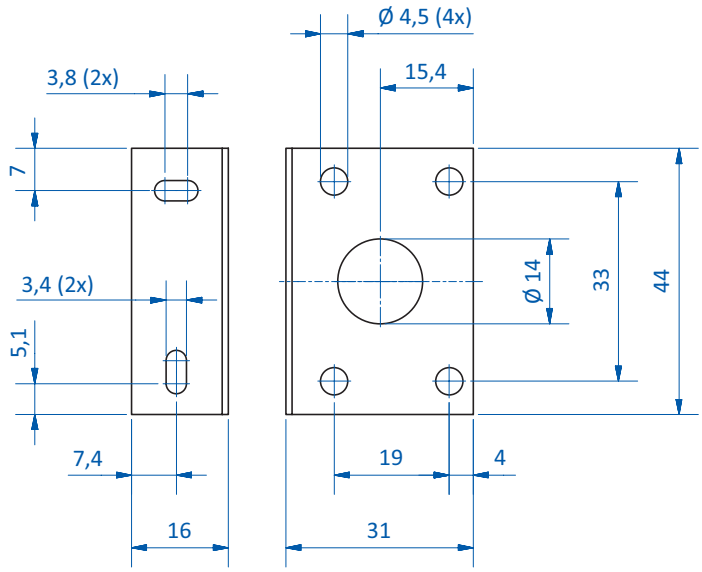
Ordering notes

> Mounting material included in scope of delivery

Technical data

Item no.	Description	Suitable for vacuum/pressure switches	Weight [g]
20.511	Push-in fitting G1/8, hose-Ø 6 mm with mounting angle	GS02.003, GS02.001, 20.026, 20.027	13
20.522	Adapter with angle bracket for flange assembly	GS02.003, GS02.001, 20.026, 20.027	10
20.523	Adapter for flange assembly	GS02.003, GS02.001, 20.026, 20.027	8

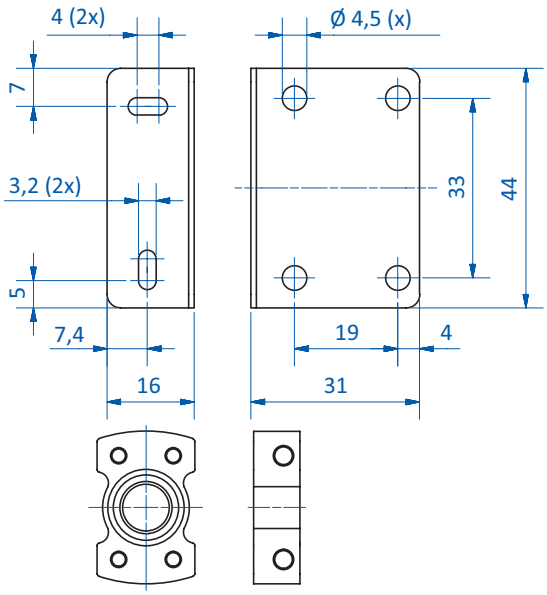
Dimensions



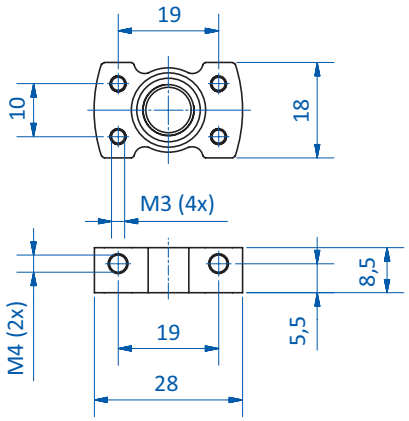
20.511

* = Push-in fitting G1/8, tubing Ø 6 mm not displayed

Dimensions



20.522



20.523

* = Push-in fitting G1/8, tubing Ø 6 mm not displayed

Clip 16 mm for wall mounting



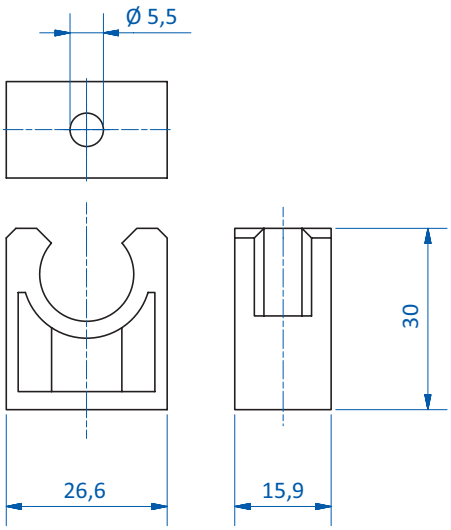
Product notes

> Mounting via through hole Ø 5 mm located centric at bottom side

Technical data

Item no.	Suitable for vacuum/pressure switches	Weight [g]
20.520	GS02.001, GS02.003	7

Dimensions



Tubing 152

Vacuum manifolds 162

Rotary feedthroughs 165

Push-in fittings and plug-in connectors – standard 166

Screw and plug-in connectors – Self-extinguishing 183

Screw connectors and plug-in connectors – mini 186

Quick couplings with vacuum / pressure lock 190

Accessories 192

Standard tube for compressed air and vacuum made of PU



Product notes

> The ether-based polyurethane tubing, which features excellent flexibility, helps with connections that require small bending radii.
> A variety of colours are available so that piping can be colour coded or complemented in the same colours as the units.
> The useful cut markings at 500 mm intervals help when cutting to the correct size.
> Packaging unit with 20 m as standard, with 100 m on request.

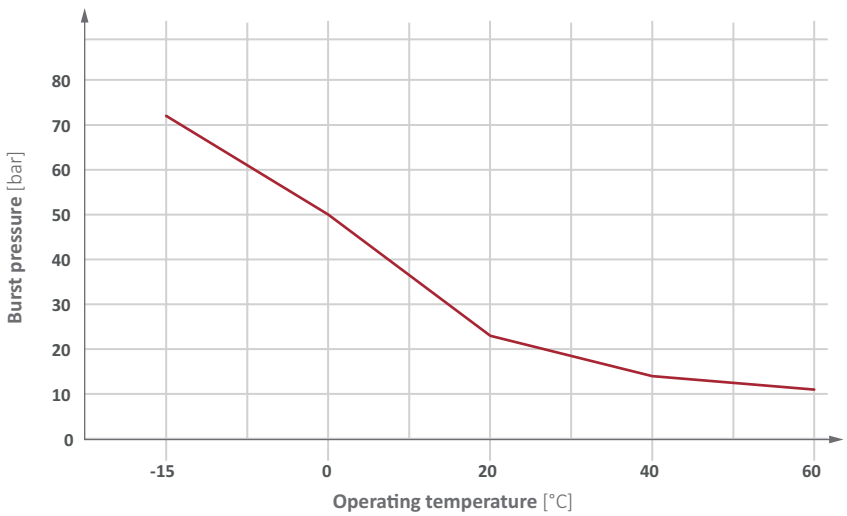
Technical data

Item no.	Colour	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
PUN0425.BK.20	black	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.BK.20	black	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.BK.20	black	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.BK.20	black	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN0425.RD.20	red	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.RD.20	red	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.RD.20	red	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.RD.20	red	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN1280.RD.20	red	12	8	30	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	74	20
PUN1611.RD.20	red	16	11	60	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	128	20
PUN0425.OG.20	orange	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.OG.20	orange	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.OG.20	orange	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.OG.20	orange	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN0425.BN.20	light brown/ochre	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.BN.20	light brown/ochre	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.BN.20	light brown/ochre	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.BN.20	light brown/ochre	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN0425.YE.20	yellow	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.YE.20	yellow	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.YE.20	yellow	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.YE.20	yellow	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN1280.YE.20	yellow	12	8	30	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	74	20
PUN1611.YE.20	yellow	16	11	60	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	128	20

Technical data

Item no.	Colour	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
PUN0425.GN.20	green	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.GN.20	green	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.GN.20	green	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.GN.20	green	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN0425.BU.20	blue	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.BU.20	blue	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.BU.20	blue	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.BU.20	blue	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN1280.BU.20	blue	12	8	30	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	74	20
PUN0425.CB.20	blue transparent	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.CB.20	blue transparent	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.CB.20	blue transparent	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.CB.20	blue transparent	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN1280.CB.20	blue transparent	12	8	30	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	74	20
PUN1611.CB.20	blue transparent	16	11	60	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	128	20
PUN0425.TR.20	translucent	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.TR.20	translucent	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.TR.20	translucent	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.TR.20	translucent	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20
PUN0425.WH.20	white	4	2.5	10	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	9	20
PUN0640.WH.20	white	6	4	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	19	20
PUN0850.WH.20	white	8	5	15	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	36	20
PUN1065.WH.20	white	10	6.5	20	-1 - 8 (-14.5 - 116)	23 (333.6)	-15 - 60 (5 - 140)	54	20

Diagram burst pressure



Vacuum tubing made of highly flexible transparent PVC, reinforced with wire spiral



Product notes

> Vacuum applications up to 95 %
> Very smooth inner surface for residue-free transport of materials such as granulate
> Suitable for continuous movement
> Hight abrasion-proof

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.160	13	8	32	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	140	1
61.161	16	10	20	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	155	1
61.162	18	12	25	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	180	1
61.163	20	14	30	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	200	1
61.164	22	16	35	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	225	1
61.165	24	18	40	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	280	1
61.166	27	20	50	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	340	1
61.167	33	25	60	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	510	1
61.168	42	32	75	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	730	1
61.169	53	40	100	-0.95 - 0 (-13.8 - 0)	-5 - 65 (23 - 149)	1,220	1

Highly flexible vacuum and pressure tubing made of PUR, reinforced with PVC spiral



Product notes

> Vacuum applications up to 40 % vacuum
> Very smooth inner surface for residue-free transport of materials such as granulate
> Resistant to the elements and many chemicals
> Outer surface slightly corrugated
> Color transparent
> Suitable for installation in drag chains
> Rule of thumb for installation in drag chain: bending radius = 10 x outer diameter of tubing
> Other sizes on request

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.020	25	20	20	-0.4 - 1 (-5.8 - 14.5)	-10 - 70 (14 - 158)	100	20
61.021	30	25	25	-0.4 - 1 (-5.8 - 14.5)	-10 - 70 (14 - 158)	150	20
61.023	38	32	32	-0.3 - 0.5 (-4.4 - 7.3)	-10 - 70 (14 - 158)	200	20
61.025	44	38	38	-0.3 - 0.5 (-4.4 - 7.3)	-10 - 70 (14 - 158)	230	20
61.026	46	40	40	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	250	20
61.027	51	45	45	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	280	20
61.028	57	50	50	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	310	20
61.029	62	55	55	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	350	20
61.030	67	60	60	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	390	20
61.031	70	63	63	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	410	20
61.033	78	70	70	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	500	20
61.034	84	76	76	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	555	20
61.035	89	80	80	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	610	20
61.036	99	90	90	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	715	20
61.037	112	102	102	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	835	20
61.038	120	110	110	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	890	20
61.039	131	120	120	-0.3 - 0 (-4.4 - 0)	-10 - 70 (14 - 158)	950	20
61.040	138	127	127	-0.2 - 0 (-2.9 - 0)	-10 - 70 (14 - 158)	1,015	20

PUR highly flexible vacuum pressure tubing, reinforced, self-extinguishing



Product notes

> Highly flexible polyurethane for pressure and vacuum applications tubing
> Self-extinguishing, flame resistant according to DIN 4102 B 1
> Alternative product in case of flying sparks, weld spatter or special fire safety obstructions
> Reinforced with PVC-coated spring coil
> Highly abrasion-proof
> Smooth inner walls, corrugated external surface
> Color transparent
> Tubing built acc. to TRBS 2153 (zone 1 and 21) suitable for non-combustible dusts / bulk goods and gases / liquids of low conductivity spiral ends shall be earthed at both sides to ensure good dissipation
> Suitable for installation in drag chains
> Rule of thumb for installation in drag chain: Bending radius = 10 x outer diameter of tubing

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.005S	18	13	13	-0.5 - 2 (-7.3 - 29)	-40 - 90 (-40 - 194)	82	10
61.006S	25	20	20	-0.45 - 1.8 (-6.5 - 26.1)	-40 - 90 (-40 - 194)	147	10
61.007S	30	25	25	-0.4 - 1.6 (-5.8 - 23.2)	-40 - 90 (-40 - 194)	183	10
61.008S	35	30	30	-0.35 - 1.5 (-5.1 - 21.8)	-40 - 90 (-40 - 194)	220	10
61.009S	45	40	40	-0.3 - 1.4 (-4.4 - 20.3)	-40 - 90 (-40 - 194)	380	10
61.010S	50	45	45	-0.28 - 1.5 (-4.1 - 21.8)	-40 - 90 (-40 - 194)	410	10
61.011S	56	50	50	-0.28 - 1.5 (-4.1 - 21.8)	-40 - 90 (-40 - 194)	460	10

Spiral tubing made of black PUR for vacuum and pressure applications



Product notes

> Space-saving tubing for mobile vacuum or pressure systems without straining the connections
> Suitable for pneumatic tools

Technical data

Item no.	Spiral tubing length [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]
61.100	70	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.101	150	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.102	230	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.103	390	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.104	120	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.105	180	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.106	350	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.107	480	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.108	700	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.109	1,040	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.110	1,450	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.135	90	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.111	160	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.112	230	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.113	430	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.114	620	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.115	910	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.116	1,300	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.117	1,850	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.118	250	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.119	390	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.120	540	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.121	770	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.122	1,045	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.123	1,550	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)

Dimensions

A [mm]	Ø d [mm]	Ø D [mm]	L [mm]
70	3	16	210
150	3	16	450
230	3	16	700
390	3	16	1,200
120	4	24	360
180	4	24	540
350	4	24	1,100
480	4	24	1,500
700	4	24	2,100
1,040	4	24	3,200
1,450	4	24	4,400
90	6	30	270
160	6	30	500
230	6	30	700
430	6	30	1,300
620	6	30	1,900
910	6	30	2,800
1,300	6	30	3,900
1,850	6	30	5,600
250	8	42	750
390	8	42	1,200
540	8	42	1,700
770	8	42	2,400
1,045	8	42	3,200
1,550	8	42	4,700

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Spiral tubing made of black PUR for vacuum and pressure applications

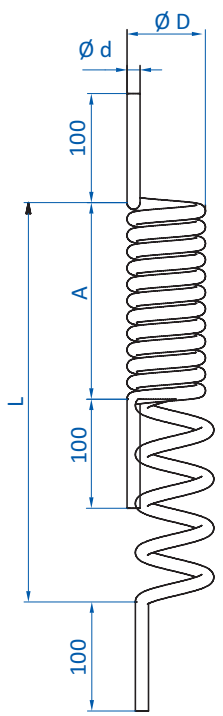
Technical data

Item no.	Spiral tubing length [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]
61.124	330	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.125	470	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.126	680	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.127	970	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.128	1,380	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.129	310	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.130	450	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.131	660	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.132	920	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)
61.133	1,320	-1 - 7 (-14.5 - 101.5)	29 (420.6)	-15 - 60 (5 - 140)

Dimensions

A [mm]	Ø d [mm]	Ø D [mm]	L [mm]
330	10	58	1,000
470	10	58	1,400
680	10	58	2,100
970	10	58	3,000
1,380	10	58	4,200
310	12	72	1,000
450	12	72	1,400
660	12	72	2,000
920	12	72	2,800
1,320	12	72	4,000

Dimensions



Tubing nipples with external thread



Product notes

> Select the tubing inner diameter about 1 - 2 mm smaller than the tubing nipple

Technical data

Item no.	For hose inner diameter [mm]	Material
62.020	6	Nickel-plated brass
62.021	8	Nickel-plated brass
62.022	10	Nickel-plated brass
62.023	6	Nickel-plated brass
62.024	8	Nickel-plated brass
62.025	10	Nickel-plated brass
62.026	12	Nickel-plated brass
62.027	16	Nickel-plated brass
62.028	19	Nickel-plated brass
62.029	25	Nickel-plated brass
62.030	10	Nickel-plated brass
62.031	12	Nickel-plated brass
62.033	16	Nickel-plated brass
62.034	18	Nickel-plated brass
62.035	26	Brass
62.036	32	Nickel-plated brass
62.037	38	Nickel-plated brass
62.065	32	Brass
62.040	50	Brass
62.041	50	Brass
62.042	63	Brass
62.045	6	Brass
62.046	9	Brass
62.047	12	Brass
62.048	16	Nickel-plated brass
62.060	14	Nickel-plated brass
62.061	32	Brass
62.062	4	Brass
62.063	6	Brass

Dimensions

G1	SW
G1/8-male	12
G1/8-male	12
G1/8-male	12
G1/4-male	12
G1/4-male	14
G1/4-male	14
G1/4-male	14
G3/4-male	27
G3/4-male	32
G3/4-male	32
G1/2-male	22
G1/2-male	22
G1/2-male	22
G1/2-male	22
G1-male	37
G1 1/4-male	50
G2 1/2-male	55
G1 1/2-male	48
G1 1/2-male	52
G2-male	70
G2 1/2-male	80
G3/8-male	19
G3/8-male	19
G3/8-male	19
R3/8-male	17
G1/2-male	24
G1-male	36
M5-male	7
M5-male	7

Tubing clamps

Material: Steel, galvanized



Product notes

> Corrosion-proof thanks to the use of galvanized steel

Technical data

Item no.	Adjustment range of diameter [mm]	Weight [g]
66.010	8 - 12	6
66.011	12 - 22	6
66.015	16 - 25	10
66.017	25 - 40	15
66.019	30 - 43	18
66.020	40 - 60	22

Reinforcing sleeves

Material: stainless steel





Product notes

> We recommend the use of reinforcing for all soft tubing
> Reinforced sleeves also recommended for water transportation

Technical data

Item no.	Hose outer diameter [mm]	Hose inner diameter [mm]
WR 0425	4	2.5
WR 0640	6	4
WR 0850	8	5
WR 0860	8	6
WR 1280	12	8
WR 1290	12	9
WR 1613	16	13

Tubing cutter with measuring tape



Technical data

Item no.	Compatible hose Ø [mm]
61.083	3 - 16

Manifolds for simple assembly of vacuum loads

Outputs on one side, at the front



Product notes

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Material: aluminum

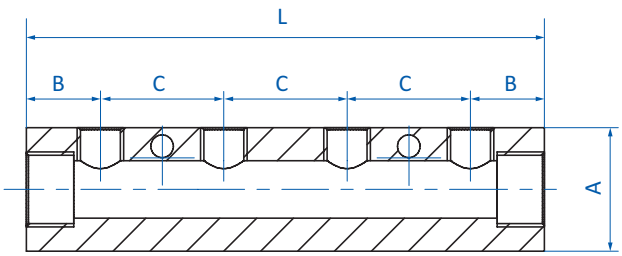
Technical data

Item no.	Input connection	Output connection	Suitable sealing plugs
79.000	2x G1/8	2x M5	77.000, 77.009
79.001	2x G1/8	4x M5	77.000, 77.009
79.002	2x G1/8	6x M5	77.000, 77.009
79.003	2x G1/4	2x G1/8	77.008, 77.009
79.004	2x G1/4	4x G1/8	77.008, 77.009
79.005	2x G1/4	6x G1/8	77.008, 77.009
79.006	2x G3/8	2x G1/4	77.008, 77.010
79.007	2x G3/8	4x G1/4	77.008, 77.010
79.008	2x G3/8	6x G1/4	77.008, 77.010
79.009	2x G3/8	2x G1/8	77.009, 77.010
79.010	2x G3/8	4x G1/8	77.009, 77.010
79.011	2x G3/8	6x G1/8	77.009, 77.010
79.012	2x G1/2	2x G1/4	77.007, 77.008
79.013	2x G1/2	4x G1/4	77.007, 77.008
79.014	2x G1/2	6x G1/4	77.007, 77.008

Dimensions

A [mm]	B [mm]	C [mm]	L [mm]
20	15	15	45
20	15	15	75
20	15	15	105
30	15	30	60
30	15	30	120
30	15	30	180
40	18	36	72
30	18	36	144
30	18	36	216
40	18	30	72
30	18	30	126
30	18	30	186
40	22	36	80
40	22	36	152
40	22	36	224

Dimensions



Manifolds for simple assembly of vacuum loads

Outputs on both sides, at the front and rear



Product notes

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Material: aluminum

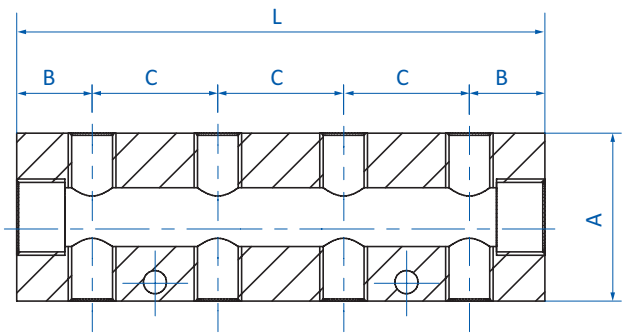
Technical data

Item no.	Input connection	Output connection	Suitable sealing plugs
79.015	2x G1/8	2+2 x M5	77.000 77.009
79.016	2x G1/8	4+4 x M5	77.000 77.009
79.017	2x G1/4	2+2 x G1/8	77.008 77.009
79.018	2x G1/4	4+4 x G1/8	77.008 77.009
79.019	2x G3/8	2+2 x G1/4	77.008 77.010
79.020	2x G3/8	4+4 x G1/4	77.008 77.010
79.023	2x G1/2	2+2 x G1/4	77.007 77.008
79.024	2x G1/2	4+4 x G1/4	77.007 77.008

Dimensions

A [mm]	B [mm]	C [mm]	L [mm]
20	15	15	45
20	15	15	75
30	15	30	60
30	15	30	120
40	18	36	72
40	18	36	144
40	22	36	80
40	22	36	152

Dimensions



Distributors

With two or three outputs



Product notes

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Suitable for vacuum and compressed air

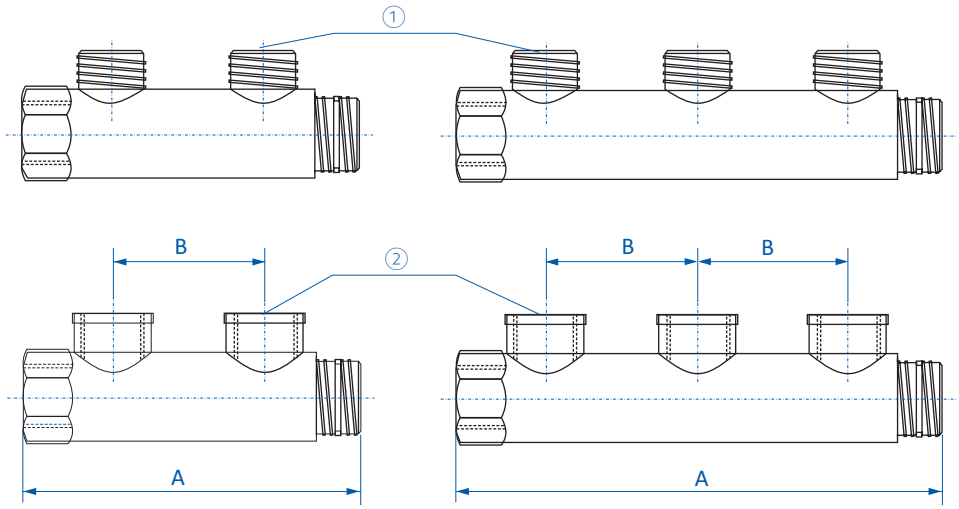
Technical data

Item no.	Input connection	Output connection	Material	Suitable sealing caps
79.025	2x G3/4	2x 1/2 male	Brass blank	79.040, 79.041
79.026	2x G3/4	2x 1/2 female	Brass blank	79.040, 79.041
79.028	2x G1	2x 1/2 female	Brass blank	79.040, 79.042
79.032	2x G3/4	3x 1/2 female	Brass blank	79.040, 79.041
79.034	2x G1	3x 1/2 female	Brass blank	79.040, 79.042
79.036	2x G1 1/4	3x 1/2 female	Brass blank	79.040

Dimensions

A [mm]	B [mm]
114	50
114	50
114	50
164	50
164	50
197	60

Dimensions



① = Connection output (male thread) ② = Connection output (female thread)

Rotary feedthroughs for vacuum

Rotary feedthroughs for revolving machine parts



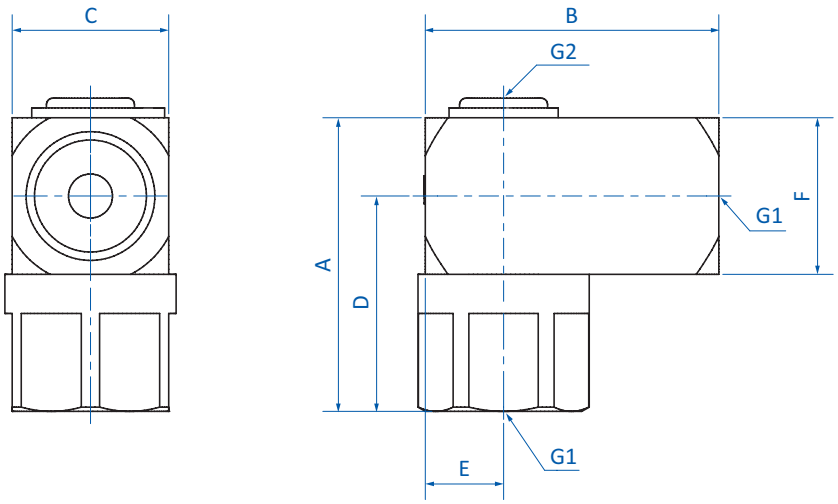
Product notes

> Vacuum inlet for revolving machine parts
> Suitable for fast moving machinery or gripping systems
> Only suitable for vacuum, not for compressed air
> Construction: Housing of brass, nickel-plated, NBR seals, guide pins, flange screws and retaining ring: Steel galvanized

Technical data

Item no.	Nominal width [mm]	Nominal flow rate [Nl/min]	U max. [1/min]	Operating temperature [°C (°F)]	Weight [g]
30.816	5	425	500	-10 - 85 (14 - 185)	69
30.817	5	465	550	-10 - 85 (14 - 185)	58
30.818	8	1,350	300	-10 - 85 (14 - 185)	150

Dimensions



Item no.	G1	G2	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
30.816	G1/8	--	32	30	16	22	8	16
30.817	G1/4	--	32	30	16	22	8	16
30.818	G3/8	G1/8	39	40	25	26	12.5	20

Straight male stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.000	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.001	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.002	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.003	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.004	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.005	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.006	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.007	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.008	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.009	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.010	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.011	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.012	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
30.013	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.014	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.015	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.016	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.017	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.018	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2
30.019	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R3/8
30.020	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R1/2
30.002-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.003-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.006-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.007-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.008-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.011-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8
30.012-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/8
30.014-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G3/8
30.015-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/2
30.016-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G1/4
30.017-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G3/8
30.018-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G1/2
30.019-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	16	G3/8
30.020-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	16	G1/2

Cartridge male stud connectors, round, hex key



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.201	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.202	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.203	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.204	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.205	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.206	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.207	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.208	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.209	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.210	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.211	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.212	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.213	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.214	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Straight male stud connectors with cut-off valve

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data				Dimensions	
Item no.	Effective passage area [mm²]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.761	1.6	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.762	2	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.763	2.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.764	7.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.765	7.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4

Female stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.050	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.051	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.052	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.053	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.054	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.055	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.056	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.057	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.058	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.059	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.060	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.062	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	G1/2
30.063	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	G1/2
30.056-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8
30.057-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/4
30.058-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G3/8
30.059-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G1/4
30.060-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G3/8

Straight tube connectors – equal



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.223	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.224	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.225	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
30.226	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
30.227	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12

Straight tube reducers



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.075	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.076	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6
30.077	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	8
30.078	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	10
30.080	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	12

Male stud connectors with ball bearing

Ball bearing enables applications with fast rotation or pivoting



Technical data				Dimensions	
Item no.	Max. revolutions [1/min.]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.800	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.801	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.802	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.803	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.804	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.805	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.806	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.807	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.808	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.809	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
30.810	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.811	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.812	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.813	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.814	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.815	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Push-in stud connectors for high speed rotation

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data				Dimensions	
Item no.	Max. revolutions [1/min.]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.846	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.847	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.848	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.849	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.850	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.851	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.852	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.853	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.854	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.855	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.856	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

90° elbow male connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.100	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.101	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.102	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.103	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.104	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.105	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.106	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.107	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.108	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.109	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.110	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.111	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.112	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
30.113	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.114	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.115	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.116	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.117	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.119	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R3/8
30.120	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R1/2
30.102-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.103-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.106-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.107-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.108-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.109-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/8
30.110-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/4
30.111-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8
30.112-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/8
30.113-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/4
30.114-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G3/8
30.115-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/2
30.116-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G1/4
30.117-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G3/8
30.118-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	12	G1/2
30.119-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	16	G3/8
30.120-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	16	G1/2

90° extended elbow male connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.279	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.280	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.281	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.282	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.283	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.284	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.285	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.286	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.287	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.288	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.289	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.290	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.291	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.292	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

90° elbow female connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.170	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.171	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.172	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.173	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.174	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.175	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.176	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.177	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.178	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.179	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.180	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.181	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.182	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.183	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.184	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.172-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.173-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.176-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.177-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.178-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.179-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/8
30.180-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/4
30.181-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8
30.182-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G1/4
30.183-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	10	G3/8

90° male elbows with cut-off valve

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.774	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.775	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	G1/8
30.776	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.777	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	G1/8
30.778	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	G1/4

90° elbow connectors – equal



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.270	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.271	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.272	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
30.273	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
30.274	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12
30.275	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16

90° male elbows with ball bearing

Ball bearing enables applications with fast rotation or pivoting



Technical data				Dimensions	
Item no.	Max. revolutions [1/min.]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.823	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.824	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.825	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.826	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.827	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.828	500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.829	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.830	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.831	400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.832	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
30.833	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.834	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.835	300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.836	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.837	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.838	250	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

90° male elbows for high speed rotation



Technical data				Dimensions	
Item no.	Max. revolutions [1/min.]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.863	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.864	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.865	1,500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.866	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.867	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.868	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.869	1,200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.870	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.871	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.872	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.873	900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Male banjo connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.301	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.302	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.303	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.304	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.305	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.306	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.307	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.308	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.309	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.310	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.311	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.312	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2
30.313	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R3/8

Male branch tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.332	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.333	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.334	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.335	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.336	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.337	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.338	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.339	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.340	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.341	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.342	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.343	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.344	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.347	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.349	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Equal tube tee connectors



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.390	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.391	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.392	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
30.393	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
30.394	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12
30.395	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16

Unequal tube tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.399	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6
30.401	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	8
30.402	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	10

Equal Y-connectors



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.431	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.432	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.433	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
30.434	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
30.435	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12
30.436	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16

Unequal Y-connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.440	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.441	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6
30.442	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	8
30.443	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	10

Male Y-connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.403	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.404	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.405	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.406	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.407	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.408	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.409	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.410	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.411	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.412	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.413	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.414	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.415	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.416	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.417	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.418	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.419	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2
30.420	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R3/8
30.421	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	16	R1/2

Elbow Y male connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.518	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.519	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.520	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.521	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.522	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.523	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.524	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.525	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.527	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.528	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.529	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.530	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.531	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.532	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.533	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.534	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.535	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Push-in connectors QC

Available as an option: connecting strap for parallel circuit = QB-H, for series circuit = QB-T



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
QC3-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	3
QC3-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	4
QC3-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	6
QC4-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	3
QC4-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	4
QC4-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	6
QC6-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	3
QC6-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
QC6-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	6
QC6-8	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	8
QC8-6	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6
QC8-8	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	8

Two stack banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.599	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.600	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.601	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.602	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.603	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.604	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.605	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.606	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.607	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.608	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2
30.609	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.610	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.611	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.612	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.613	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.614	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Two stack, twin banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.649	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.650	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.651	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.652	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.653	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.654	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.655	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.656	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.657	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.658	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2
30.659	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.660	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.661	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.662	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.663	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.664	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Three stack, twin banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.674	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.675	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.676	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.677	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.678	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.679	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.680	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.681	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.682	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.683	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2
30.684	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.685	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.686	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.687	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.688	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.689	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

3-way male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.490	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.491	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.492	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.493	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.494	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.495	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.496	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.497	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.498	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.499	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.501	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.502	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
30.503	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
30.504	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
30.505	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
30.506	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
30.507	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Self-extinguishing male stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
32.000	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
32.001	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
32.002	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
32.003	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
32.004	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
32.005	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
32.006	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
32.007	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
32.008	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
32.009	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
32.010	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
32.011	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
32.012	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
32.013	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
32.014	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
32.015	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
32.016	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Self-extinguishing equal tube connectors



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
32.055	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
32.056	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
32.057	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
32.058	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
32.059	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12

90° male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
32.033	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
32.034	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
32.035	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
32.036	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
32.037	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
32.038	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
32.039	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
32.040	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
32.041	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
32.042	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
32.043	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/8
32.044	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
32.045	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
32.046	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
32.047	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
32.048	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
32.049	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

90° male elbow connectors, equal



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
32.050	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
32.051	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
32.052	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
32.053	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
32.054	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12

Male branch tee connectors, self-extinguishing



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
32.017	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
32.018	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
32.019	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
32.020	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
32.021	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
32.022	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
32.023	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
32.024	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
32.025	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
32.026	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
32.027	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/4
32.028	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R3/8
32.029	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10	R1/2
32.030	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/4
32.031	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R3/8
32.032	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12	R1/2

Equal tube tee connectors, self-extinguishing



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
32.060	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
32.061	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
32.062	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8
32.063	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	10
32.064	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	12

Mini male stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.901	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.902	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.903	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.904	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.905	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.906	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.907	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.908	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.906-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.910-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8

Mini male stud connectors, round, hex key



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.921	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.922	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.923	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.924	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.925	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.926	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.927	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.928	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini tube fittings, cartridge



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.932	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.933	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.934	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M8
30.935	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M8

Mini female stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.914	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.915	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.916	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.917	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5

Mini 45° male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.976	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.977	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.978	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.979	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.980	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.981	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.982	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini unequal tube tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
31.025	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	3
31.026	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4

Mini extended male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.963	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.964	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.965	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.966	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.967	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.968	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.969	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.970	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.949	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.950	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.951	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.952	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.953	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.954	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.955	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.956	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.957	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.958	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini male branch equal tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.993	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.994	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.995	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.996	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.997	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.998	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.999	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
31.000	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
31.001	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
31.002	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Sockets with threaded connection

Locking of compressed air or vacuum during disassembly, release after reconnection
Coupling: Socket (lock) and plug (open)



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	G	Ø P [mm]
CPS20-02W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	R1/4	12
CPS20-03W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	R3/8	12
CPS20-04W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	R1/2	12

Sockets with plug-in connection

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	Ø P [mm]
CPS20-6W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	6	12
CPS20-8W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	8	12
CPS20-10W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	10	12
CPS20-12W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	12	12

Plug

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	Ø P [mm]
CPP20-6W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	6	11
CPP20-8W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	8	11
CPP20-10W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	10	11
CPP20-12W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	12	11

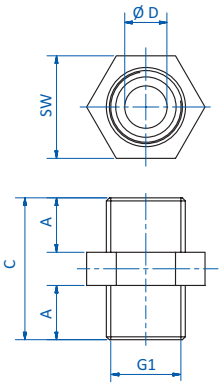
Angle plugs

Locking of compressed air or vacuum during disassembly, release after reconnection



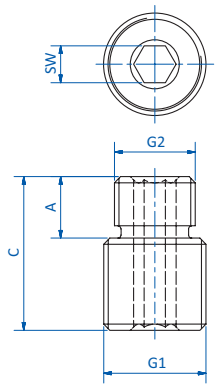
Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	Ø P [mm]
CPP20L-8W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	8	11
CPP20L-10W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	10	11
CPP20L-12W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	12	11

Double nipples, equal thread – SZ-GA-MM



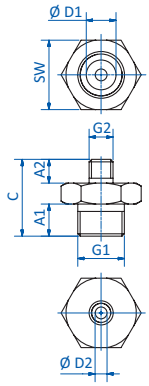
Technical data		Dimensions				
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]	SW
270.420	Brass	M5	5	13	2.5	7
270.059	Brass	G1/8	7	18	5	14
270.120	Brass	G1/4	9	23.5	7	17
270.121	Nickel-plated brass	G3/8	9	23	11	19
270.122	Brass	G1/2	12	30	13	24
270.123	Brass	G3/4	16	40	18	32
270.124	Brass	G1	13.5	32.5	25	34
270.125	Brass	G1 1/4	16	39	34	42
270.126	Brass	G1 1/2	16.5	40	40	50
270.127	Brass	G2	18	44.5	51	60

Reducing bushes with hex socket – SZ GA- MMI



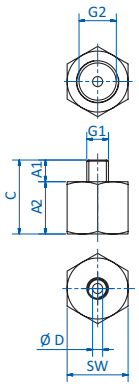
Technical data		Dimensions				
Item no.	Material	G1 (male)	G2 (male)	A [mm]	C [mm]	SW
270.561	Aluminum	G3/8	G1/4	10	25	6
270.562	Aluminum	G3/8	M10	12	27	5
270.563	Aluminum	G3/8	M14	12	27	6
270.564	Aluminum	G1/4	G1/4	--	22	5
270.565	Aluminum	G1/4	M10	12	24	5
270.566	Aluminum	G1/4	M14	11	24	5

Reducing nipples – SZ-GA-RMM



Technical data		Dimensions						
Item no.	Material	G1 (male)	G2 (male)	A1 [mm]	A2 [mm]	C [mm]	D1 [mm]	D2 [mm]	SW
270.280	Nickel-plated brass	G1/8	M5	6.5	4.8	15.5	6	2.4	14
270.279	Aluminum	G1/8	M6	9	7	21	3	3	14
270.131	Brass	G1/8	M8	7	6	18	4	4	14
270.107	Aluminum	G1/8	M12	7.5	8.5	21	5.6	5.6	17
270.227	Brass	G1/4	M5	9	5	19	7.5	2.5	17
270.320	Aluminum	G1/4	M10	10	10	25	5.5	5.5	17
270.108	Aluminum	G1/4	M12	8	8	21	5.5	5.5	17
270.181	Nickel-plated brass	G1/4	G1/8	9	8	22	4	4	17
270.297	Nickel-plated brass	G1/2	G1/4	10.5	9	23.3	15	8	24
270.323	Nickel-plated brass	G1/2	G3/8	10	9	24	15	11	24
270.138	Nickel-plated brass	G3/4	G1/2	11.5	10	27	20	15	30
270.148	Nickel-plated brass	G1	G3/4	13	11	30	25.5	20	36

Reducing bushings male/female – SZ-GA-MF

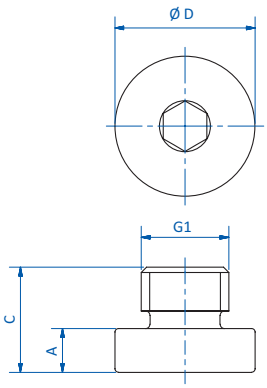


Technical data

Dimensions

Item no.	Material	G1 (male)	G2 (female)	A1 [mm]	A2 [mm]	C [mm]	Ø D [mm]	SW
270.423	Nickel-plated brass	M5	M5	4	7	11	2	8
270.079	Brass	M5	G1/8	5	12	17	2.3	14
270.576	Steel galvanized	M12	G1/4	10	12	22	6.5	17
270.577	Steel galvanized	M16	G3/8	10	15	25	10	24
270.302	Nickel-plated brass	G1/8	M5	6	4	10	--	14
270.303	Nickel-plated brass	G1/8	M6	8	5	13	--	13
270.334	Nickel-plated brass	G1/8	G1/4	6	13.5	19.5	5.4	17
270.304	Aluminum	G1/4	M6	10	5	15	--	17
270.090	Brass	G1/4	M10	5.7	4	11.5	--	19
270.088	Aluminum	G1/4	M10	12	16	28	4	17
270.245	Brass	G1/4	G1/8	9	4	13	--	17
270.078	Brass	G1/4	G1/4	10	18	28	7.5	17
270.567	Aluminum	G1/4	G3/8	11	16	27	4	20
270.560	Aluminum	G3/8	G1/4	11	5	16	--	22
270.229	Brass	G1/2	G1/4	12	6	18	--	24
270.230	Brass	G1/2	G3/8	12	6	18	--	24
270.102	Brass	G3/4	G3/8	12	6	18	--	32
270.600	Brass	G1	G1/2	15	6	21	--	36
270.601	Brass	G1	G3/4	15	6	21	--	36
270.604	Brass	G1 1/2	G1	16	8	24	--	50
270.605	Brass	G1 1/4	G1	16	7	23	--	43

Blanking plugs with O-ring seal – SZ-SCV

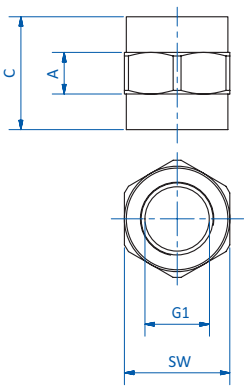


Technical data

Dimensions

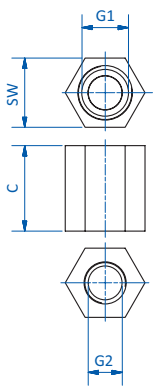
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]
77.000	Nickel-plated brass	M5	2	6	8
77.009	Nickel-plated brass	G1/8	3	11	17
77.008	Nickel-plated brass	G1/4	3	9.5	14
77.010	Nickel-plated brass	G3/8	3.5	12.5	20
77.007	Nickel-plated brass	G1/2	3.5	13.5	25

Threaded bushes – SZ-GA-FF



Technical data		Dimensions			
Item no.	Material	G1 (female)	A [mm]	C [mm]	SW
270.343	Nickel-plated brass	G1/8	5.5	15	14
270.182.O	Aluminum	G1/4	20	20	19
270.130.O	Aluminum	G1/2	32	32	30
270.579	Aluminum	G3/8	23	23	22

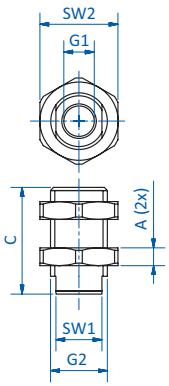
Reducing bushes – SZ-GA-RFF



Technical data		Dimensions			
Item no.	Material	G1 (female)	G2 (female)	C [mm]	SW
270.306	Aluminum	G1/8	M5	14	13
270.307	Aluminum	G1/8	M6	14	13
270.308	Aluminum	G1/4	M6	17.5	17
270.089	Aluminum	G1/4	M10	21	17
270.228	Nickel-plated brass	G3/8	G1/4	21.5	22

Bulkhead connectors – SZ-SVS

Allow for height adjustment during vacuum cup installation



Technical data			Dimensions				
Item no.	Material bushing	Material screw nut	G1 (female)	G2 (male)	A [mm]	C [mm]	SW1	SW2
270.518	Stainless steel	Steel galvanized	G1/8	M16	5	30	13	22
270.519	Stainless steel	Steel galvanized	G1/4	M20	5	30	--	24

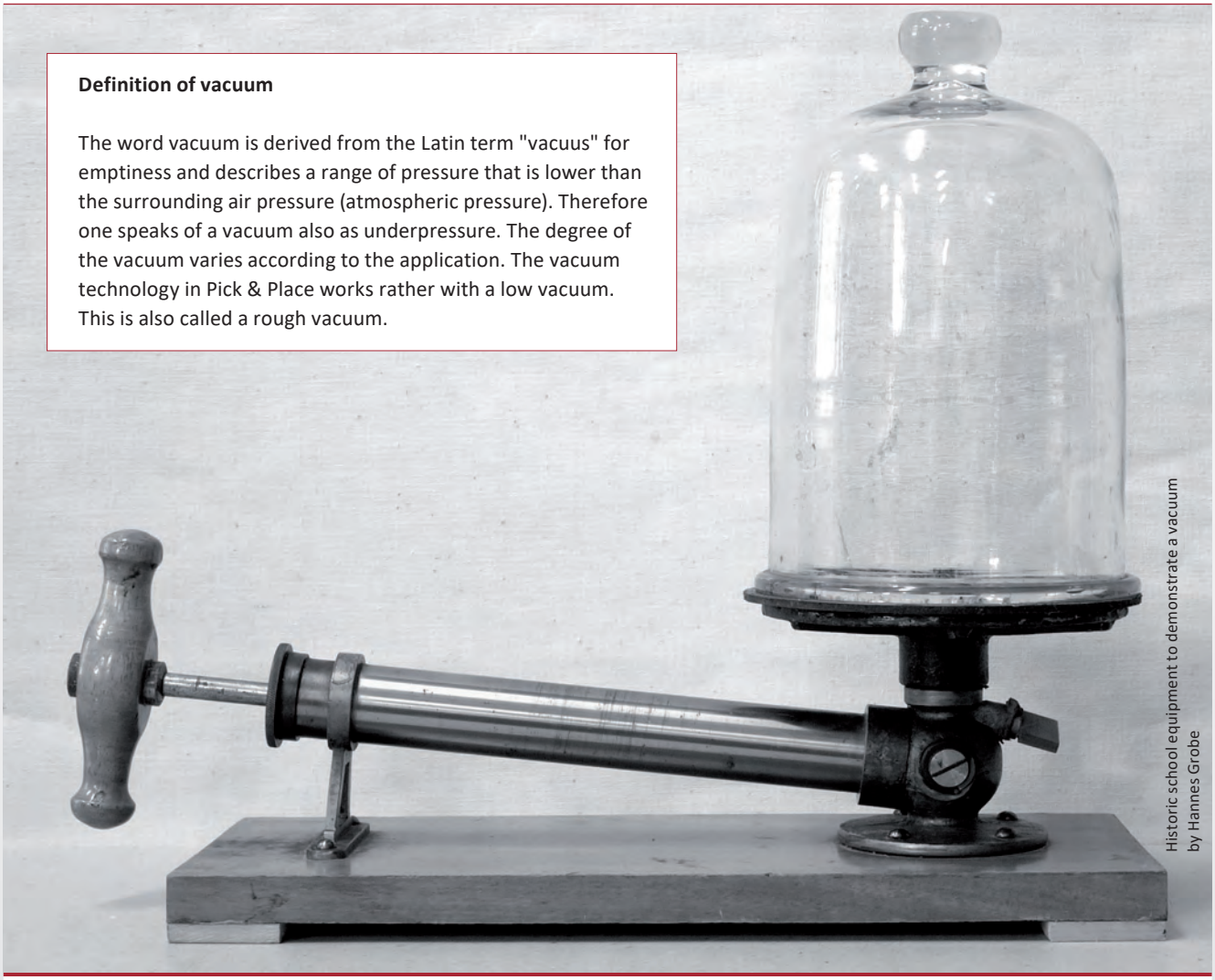
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Vacuum: Basics

Definition of vacuum

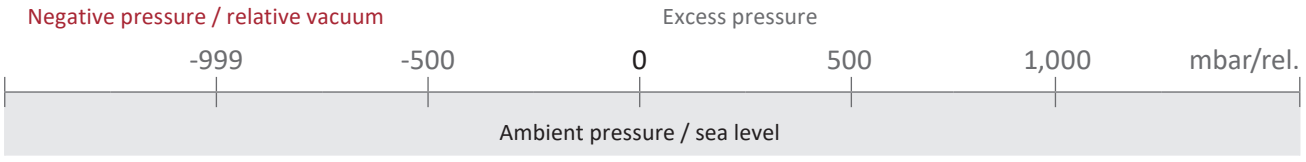
The word vacuum is derived from the Latin term "vacuus" for emptiness and describes a range of pressure that is lower than the surrounding air pressure (atmospheric pressure). Therefore one speaks of a vacuum also as underpressure. The degree of the vacuum varies according to the application. The vacuum technology in Pick & Place works rather with a low vacuum. This is also called a rough vacuum.



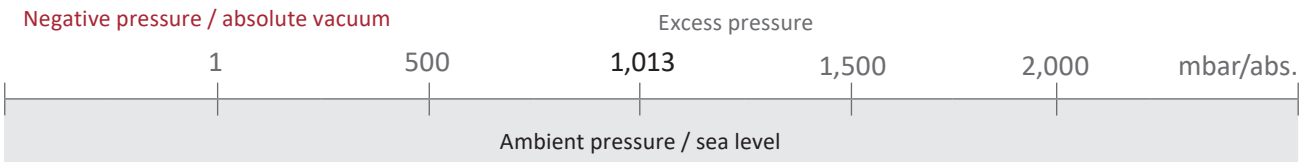
Historic school equipment to demonstrate a vacuum by Hannes Grobe

Vacuum values

The vacuum is specified as a relative or absolute value. In vacuum technology, as a rule, the vacuum is specified as a relative value with a negative prefix. The reference point for measuring the relative pressure is the air pressure at 0 mbar.



The absolute vacuum, in contrast, always has a positive prefix. Background: The conventional value used in science relates the negative pressure (vacuum) to the absolute zero point or vacuum.



Units of vacuum

Pascal (Pa), kilopascals (kPa), bar (bar) and millibars (mbar) are used as pressure units in vacuum technology.
The conversion of these units is as follows:

0.001 bar = 0.1 kPa = 1 mbar = 100 Pa

or as indicated in the conversion table:

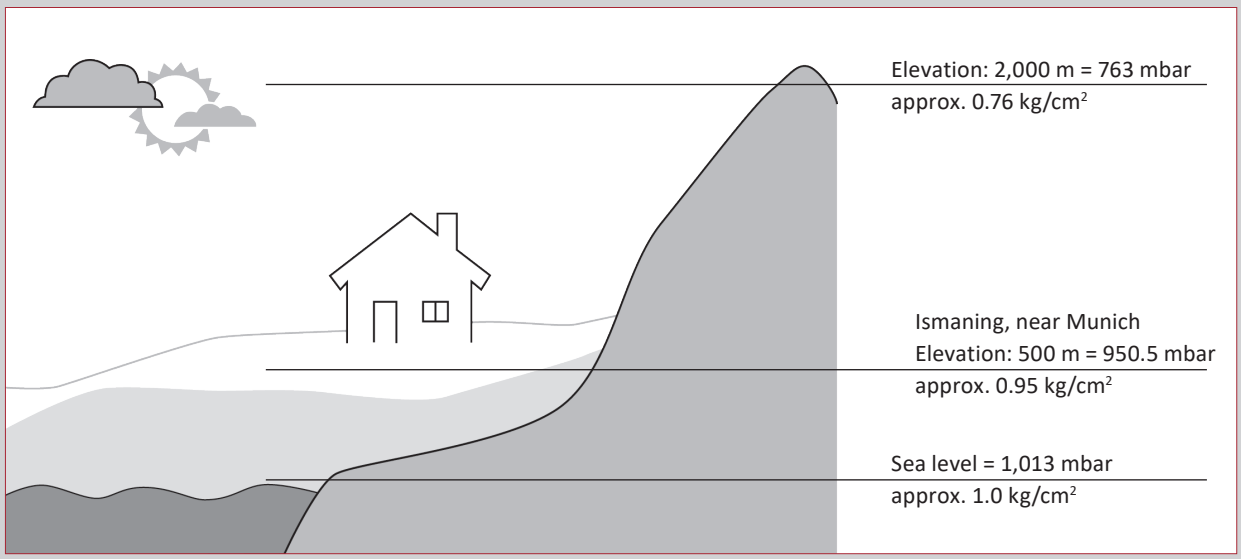
Vacuum / pressure conversion table

Residual pressure absolute [mbar]	Relative vacuum	bar relative	N/cm²	kPa	atm.kp/cm²	mm H_2O	Torr; mmHg	inHg
900	10 %	-0.101	-1.01	-10.1	-0.103	-1,030	-76	-3
800	20 %	-0.203	-2.03	-20.3	-0.207	-2,070	-152	-6
700	30 %	-0.304	-3.04	-30.4	-0.31	-3,100	-228	-9
600	40 %	-0.405	-4.05	-40.5	-0.413	-4,130	-304	-12
500	50 %	-0.507	-5.07	-50.7	-0.517	-5,170	-380	-15
400	60 %	-0.608	-6.08	-60.8	-0.62	-6,200	-456	-18
300	70 %	-0.709	-7.09	-70.9	-0.723	-7,230	-532	-21
200	80 %	-0.811	-8.11	-81.1	-0.827	-8,270	-608	-24
100	90 %	-0.912	-9.12	-91.2	-0.93	-9,300	-684	-27

Relationship between air pressure and vacuum

The ambient pressure or atmospheric pressure at 0 mbar is the reference quantity for the manufacture of a vacuum.
The air pressure in turn depends on the height at which it is measured.

In general: Air pressure decreases with increasing altitude. Thus, the ambient pressure on the Zugspitze (2,963 metres height; 695 mbar) is much lower than at sea level (1,013 mbar) which at 0 metres marks the ideal state for vacuum generation.
For vacuum technology that means: As air pressure is reduced, the difference in pressure between ambient pressure and the vacuum cup pressure narrows. The maximum holding force of the vacuum is thus reduced. The benchmark: For every 100 metre increase in altitude, the ambient pressure falls by about 12.5 mbar. That must correspondingly be considered when using components in producing a vacuum.



Required internal diameter for compressed air tubing lines

Air flow rate [liters/min.]	Tubing length [m]																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
100	3	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6
200	4	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7
300	5	5	6	6	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9
400	5	6	7	7	7	8	8	8	8	8	9	9	9	9	9	9	9	9	10	10
500	6	7	7	8	8	8	9	9	9	9	9	9	10	10	10	10	10	10	10	11
600	6	7	8	8	9	9	9	9	10	10	10	10	10	10	11	11	11	11	11	11
700	7	8	8	9	9	9	10	10	10	10	11	11	11	11	11	11	12	12	12	12
800	7	8	9	9	9	10	10	10	11	11	11	11	11	12	12	12	12	12	12	13
900	7	8	9	9	10	10	11	11	11	11	12	12	12	12	12	12	13	13	13	13
1,000	7	9	9	10	10	11	11	11	12	12	12	12	12	13	13	13	13	13	13	14
1,100	8	9	10	10	11	11	11	12	12	12	12	13	13	13	13	13	14	14	14	14
1,200	8	9	10	11	11	11	12	12	12	13	13	13	13	14	14	14	14	14	14	15
1,300	8	9	10	11	11	12	12	12	13	13	13	14	14	14	14	14	14	15	15	15
1,400	8	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	15	15	15	15
1,500	9	10	11	11	12	12	13	13	13	14	14	14	14	15	15	15	15	15	16	16
1,600	9	10	11	12	12	13	13	13	14	14	14	15	15	15	15	15	16	16	16	16
1,700	9	10	11	12	13	13	13	14	14	14	15	15	15	15	16	16	16	16	16	17
1,800	9	11	12	12	13	13	14	14	14	15	15	15	15	16	16	16	16	17	17	17
1,900	9	11	12	12	13	14	14	14	15	15	15	16	16	16	16	16	17	17	17	17
2,000	10	11	12	13	13	14	14	15	15	15	16	16	16	16	17	17	17	17	17	18
2,100	10	11	12	13	14	14	14	15	15	16	16	16	16	17	17	17	17	17	18	18
2,200	10	11	12	13	14	14	15	15	15	16	16	16	17	17	17	17	18	18	18	18
2,300	10	12	13	13	14	15	15	15	16	16	16	17	17	17	17	18	18	18	18	18
2,400	10	12	13	14	14	15	15	16	16	16	17	17	17	17	18	18	18	18	19	19
2,500	10	12	13	14	14	15	15	16	16	17	17	17	17	18	18	18	18	19	19	19
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2,900	11	13	14	15	15	16	16	17	17	18	18	18	18	19	19	19	19	20	20	20
3,000	11	13	14	15	15	16	17	17	17	18	18	18	19	19	19	20	20	20	20	20
3,100	11	13	14	15	16	16	17	17	18	18	18	19	19	19	19	20	20	20	20	21
3,200	11	13	14	15	16	16	17	17	18	18	19	19	19	19	20	20	20	20	21	21
3,300	12	13	14	15	16	17	17	18	18	18	19	19	19	20	20	20	20	21	21	21
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3,700	12	14	15	16	17	17	18	18	19	19	20	20	20	21	21	21	21	22	22	22
3,800	12	14	15	16	17	17	18	19	19	19	20	20	20	21	21	21	22	22	22	22
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4,700	13	15	16	17	18	19	20	20	21	21	21	22	22	22	23	23	23	24	24	24
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4,900	13	15	17	18	19	19	20	20	21	21	22	22	22	23	23	23	24	24	24	24
5,000	14	16	17	18	19	19	20	21	21	21	22	22	23	23	23	24	24	24	24	25
5,500	14	16	17	18	19	20	21	21	22	22	23	23	23	24	24	24	25	25	25	26
6,000	14	17	18	19	20	21	21	22	22	23	23	24	24	25	25	25	26	26	26	26
6,500	15	17	19	20	21	21	22	23	23	24	24	25	25	25	26	26	26	27	27	27
7,000	15	18	19	20	21	22	23	23	24	24	25	25	26	26	26	27	27	27	28	28
7,500	16	18	20	21	22	22	23	24	24	25	25	26	26	27	27	27	28	28	28	29
8,000	16	18	20	21	22	23	24	24	25	26	26	26	27	27	28	28	28	29	29	29
8,500	16	19	21	22	23	24	24	25	26	26	27	27	28	28	28	29	29	29	30	30
9,000	17	19	21	22	23	24	25	25	26	27	27	28	28	29	29	29	30	30	30	31
9,500	17	20	21	23	24	25	25	26	27	27	28	28	29	29	29	30	30	31	31	31
10,000	17	20	22	23	24	25	26	27	27	28	28	29	29	30	30	30	31	31	32	32

Values at an operating pressure of 6 bar and a pressure drop of 0.5 bar
Design example: At a required air flow rate of 2,000 liters per minute and a tubing length of 10 meters, the required internal diameter is 15 mm.

Air volume to be evacuated per meter of tubing, dependent on the internal tubing diameter

Internal tubing diameter [mm]	**Cross section** [mm^2]	**Air volume per meter** [cm^3]	**Air volume per meter** [l]
2	3.14	3.1	0.003
3	7.07	7.1	0.007
4	12.56	12.6	0.013
6	28.26	28.3	0.028
7	38.47	38.5	0.038
8	50.24	50.2	0.050
9	63.59	63.6	0.064
10	78.50	78.5	0.079
11	94.99	95.0	0.095
12	113.04	113.0	0.113
14	153.86	153.9	0.154
16	200.96	201.0	0.201
18	253.34	254.3	0.254
20	314.00	314.0	0.314
25	490.63	490.6	0.491
32	803.84	803.8	0.804
35	961.63	961.6	0.962
38	1,133.54	1,133.5	1.134
40	1,256.00	1,256.0	1.256

Required inner diameter D in the case of the branching of tubing

Number of tubing	**Calculation** [diameter D x factor]
1	D x 1
2	D x 0.71
4	D x 0.50
8	D x 0.36
16	D x 0.25
32	D x 0.18

Example calculation

If a tubing with an inner diameter of 40 mm branches out to become 4 tubing, each of these tubing requires an internal diameter of 20 mm.
If a tubing with an inner diameter of 40 mm branches out to become 16 tubing, each of these tubing requires an internal diameter of 10 mm.

Notes:

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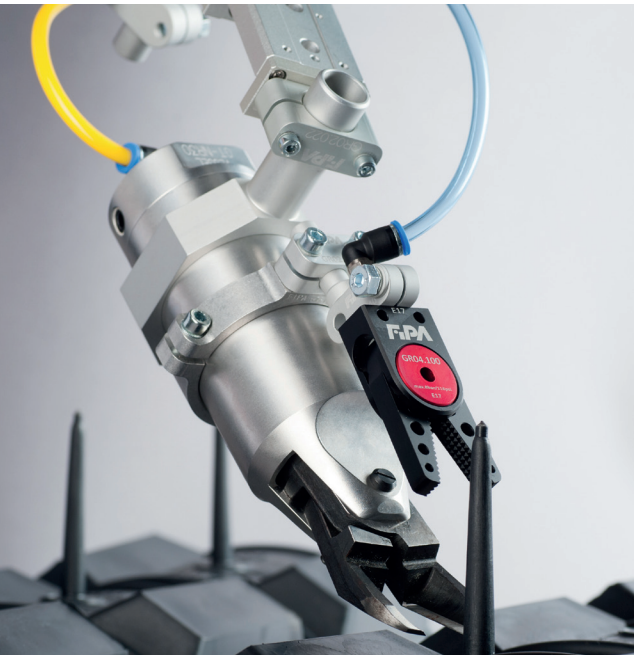
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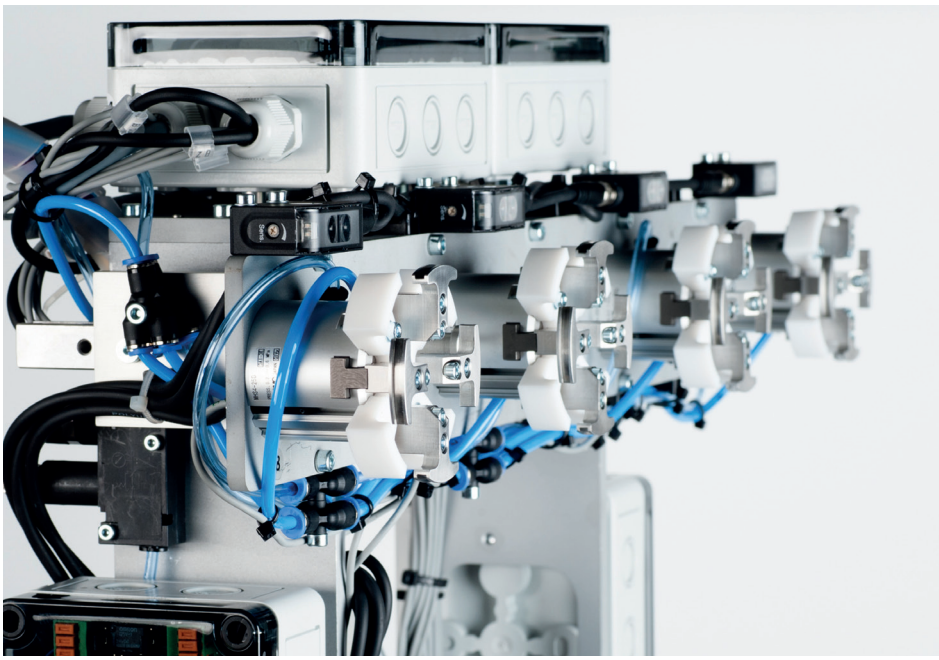


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FIPA has long been an internationally oriented company with more than just a first-class line of products. Thanks to a large sales network, FIPA can be where its customers are. FIPA will provide you with the service and technical support that you expect from a long-term partnership.

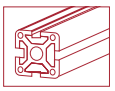
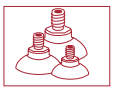
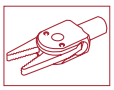
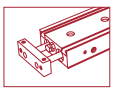
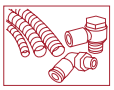
In this catalog you will find a wide selection of End-of-Arm-Tooling (EOAT) components for handling any type of workpiece, even those with complex shapes.

We invite you to look through this catalog and get to know FIPA’s EOAT products. You will find what you are looking for. We promise.
Because even if "your" product is not in the catalog, all you need to do is call us. And FIPA will develop it for you.



Best regards, Rainer Mehrer,
President of FIPA

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FIPA: YOUR SERVICE POINT

FIPA places the highest value on an excellent service culture that includes personal contact and professional project management. Just call us! We'll happily provide the appropriate information, service, or product you require.

Training and seminars
So that no questions go unanswered

Tests and loan equipment
Doing is better than studying

Personal advice
You have the choice: an initial consultation or an expert-level meeting

Installation and commissioning
"Doesn't work" isn't an option

Weekend installation
Nobody wants a machine that's doing nothing

E-academy
Your flexible FIPA continual training scheme

Service package with extended guarantee
For long-term satisfaction

Goods management
Order stock goods by 4 p.m. (CET) for same-day dispatch

Hotline
Manned continuously from 7 a.m. to 6 p.m. (CET), Monday to Friday

FIPA Service
For all information about our services, visit **www.fipa.com**



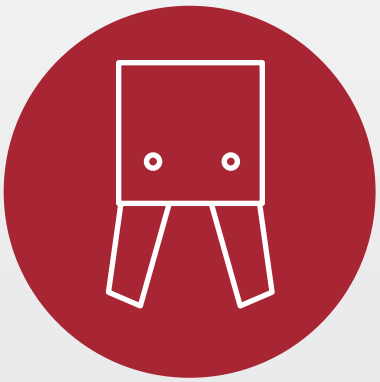
A highly-developed service culture includes personal contact and professional project management. Both of these are very important at FIPA. This is the only way to create the best possible solutions for all problems relating to vacuum-, gripper- and lifting technology.

Giovana Sarmiento Diaz-Schäfer | Project Engineer Business Unit Packaging

KEY ELEMENTS

The potential of modular systems is that a limited number of elements can give rise to endless possibilities for new developments. These can be achieved in the shortest possible time frame with reliable results.

END-OF-ARM-TOOLING



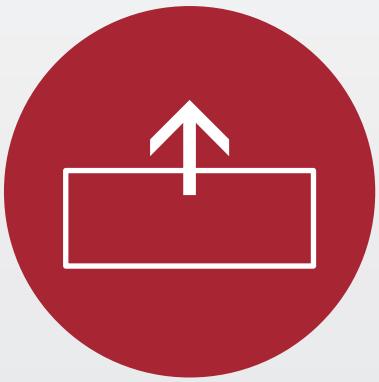
Gripping | Cutting

VACUUM TECHNOLOGY



Suction | Control and regulation
Vacuum generation

LIFTING TECHNOLOGY



Lifting | Moving
Transporting

You can find all the information you need about FIPA components at **www.fipa.com** or in the corresponding product catalog



The elements of our modular construction kit system can be joined up quickly, and they function reliably. Whether in robotics, crane- and lifting technology or in general handling tasks, almost any required situation can be covered with standard components.

Michael Kaltenecker | Business Development Manager

OUR MARKETS

Plastics

"Increasing cost pressure, complex component geometries, additional material functions, and ever-decreasing time-to-market: These are the challenges the plastics industry faces every day.

Our response: Highly flexible gripper systems, heat-resistant components, low-marking and silicone-free HNBR pads for handling sensitive parts, and customized grippers for highest customer requirements."



INJECTION MOLDED PART REMOVAL
GATE CUTTING
LIFTING BAGS OF GRANULAR MATERIAL



MARTIN TURNER
Director Business Unit Plastics

Sheet Metal

"Products for the metal and sheet metal processing industry should be high-quality, durable, extremely lightweight, and cost-effective. Another requirement is to align production to accommodate a wide variety of products in small lot sizes.

Our response: Extremely wear-resistant materials, silicone-free and PWIS-free vacuum cups, gripper spiders for robot-assisted handling of large sheet metal parts, and innovative gripper systems."



SHEET METAL TRANSFER
AUTO BODY PANEL HANDLING
MACHINERY LOADING



THOMAS TREFZER
Director Business Unit Sheet Metal

Packaging

"Nowadays packaging is not only expected to protect products, it should also extend the shelf-life, be impermeable to oxygen, light, and moisture while being sustainable and individual. Manufacturers of packaging equipment rely on construction kit systems to master these tasks.

Our response: The worldwide largest range of vacuum cups can be combined with countless vacuum components to ensure that all types of packaging can be gripped safely."



TORSTEN EIFLER

Director Business Unit Packaging



PICK & PLACE
CARDBOARD BOX HANDLING
PALLET HANDLING
BAG HANDLING
FOOD & BEVERAGE

General Industries

"FIPA's modular, flexible product portfolio is not restricted to our three core markets. We rise to the challenge of any application – whether in the wood or glass industry or the electronic industry.

Our claim: to offer advice when planning systems and selecting components, to develop solutions with utmost precision, and to provide support during assembly and commissioning."



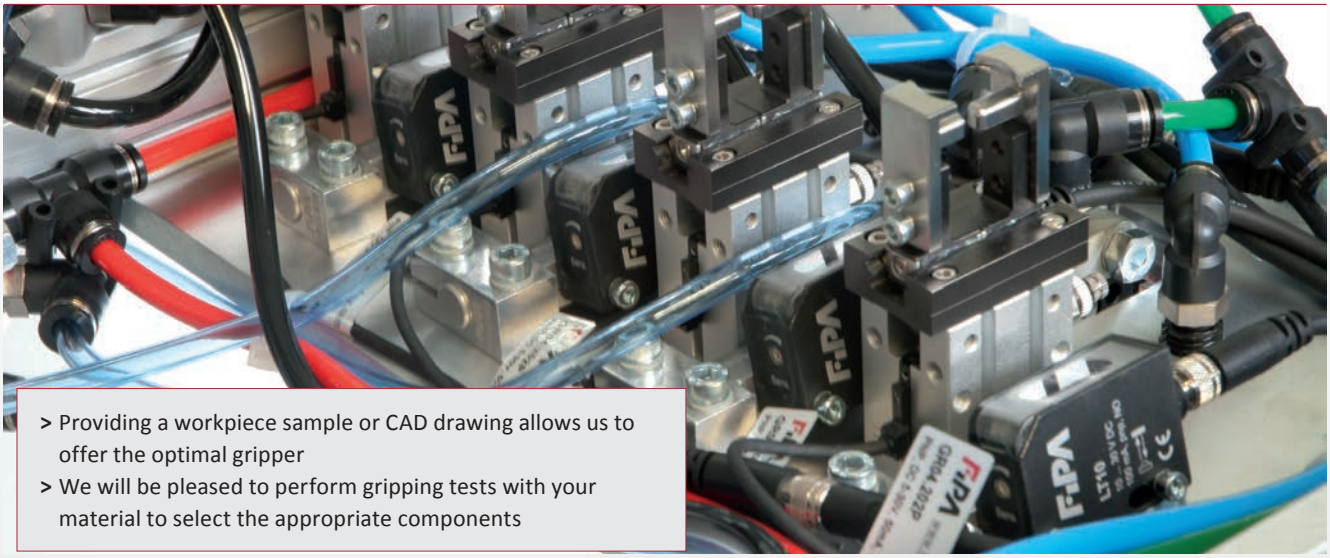
THOMAS WOJTCZYK

Head of General Industries



PCB HANDLING
WOOD PROCESSING CENTER
AND
GLASS PROCESSING MACHINES

FIPA Gripper assembly – your options for the highest benefit of technology and know-how

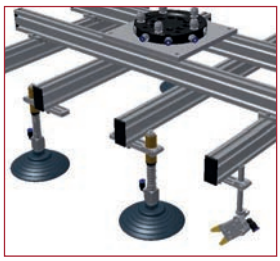


> Providing a workpiece sample or CAD drawing allows us to offer the optimal gripper
> We will be pleased to perform gripping tests with your material to select the appropriate components



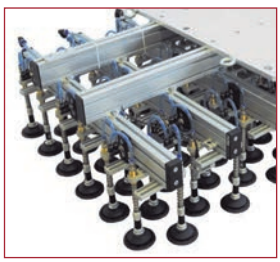
Option 1

> FIPA provides full technical support and supplies all required components
> You conduct the final assembly



Option 2

> FIPA designs the gripper according to your specification in 3D CAD and all components and an installation guide are provided
> You conduct the final assembly



Option 3

> FIPA plans and assembles the gripper according to your specification
> The gripper is delivered already preset and needs only on-site fine-tuning



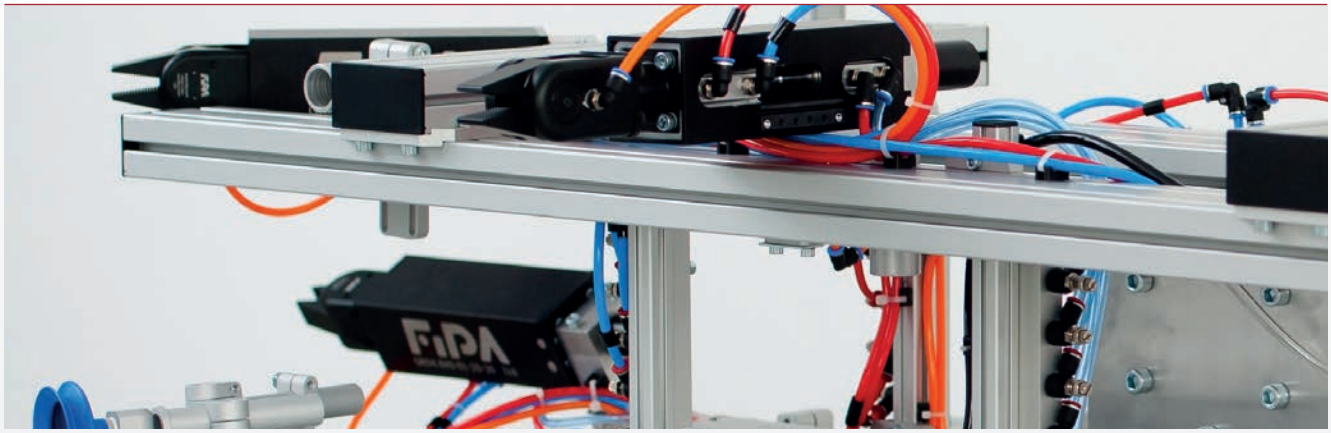
Cutting stations

> FIPA plans and realizes cutting stations for cutting off sprues
> For our extensive range of air nippers and suitable blades please refer to this catalog

Please complete the questionnaire on pageles 462 - 465, so that we can select the optimal product for you.

You can also find and download the questionnaire on www.fipa.com.

FIPA Components for gripper assembly



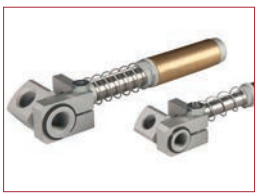
Suction fingers or vacuum cup fittings



Suction fingers, rigid



Suction fingers, rotatable



Suction fingers, spring-loaded, rotatable, with anit-twist protection



Adjustable vacuum cup fitting

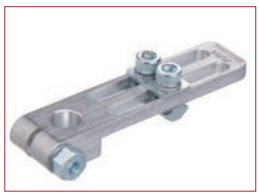


Application example

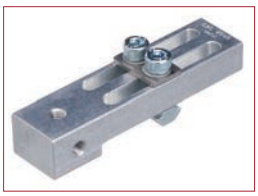
Extrusions and connectors



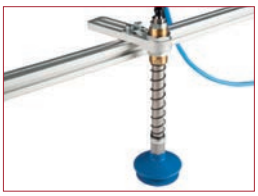
Extrusion systems / S, M and XLine



Angle clamps



Angle connectors



Application example



Application example

Active gripping elements



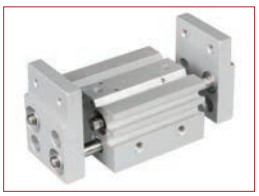
Grippers



ID grippers



Finger grippers

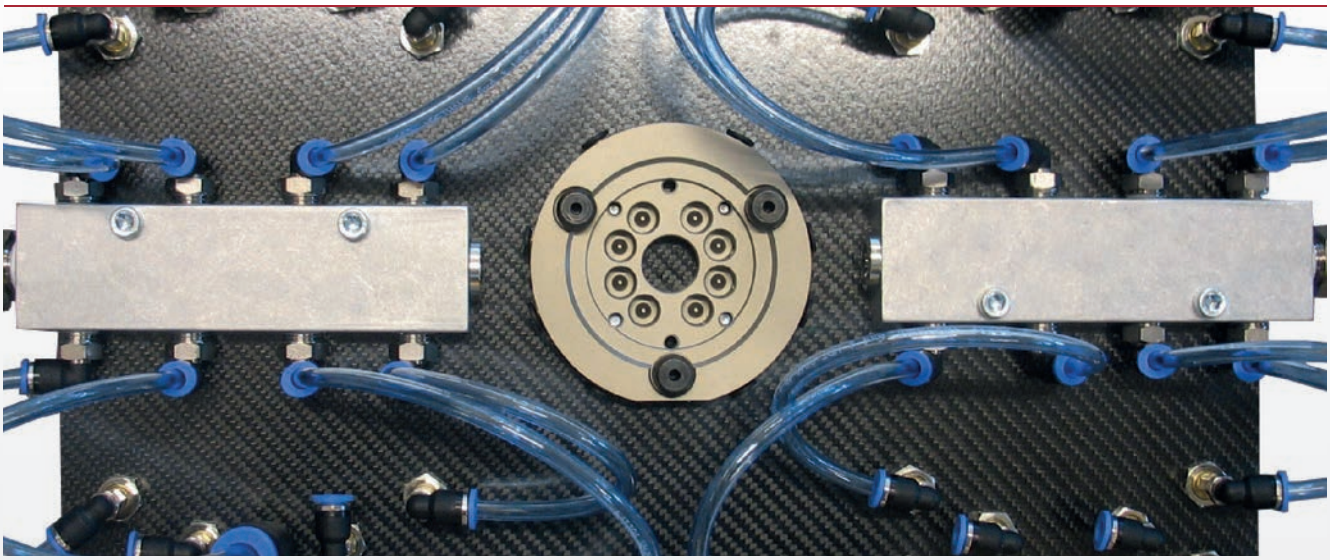


Parallel grippers



Needle grippers

FIPA Plate-based gripper systems



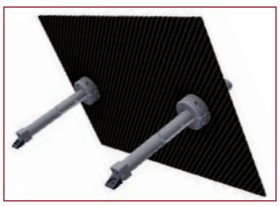


Plate-based gripper systems made of aluminum or carbon fiber (CFK)

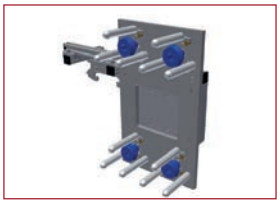
Properties

> Simplified gripper construction reduces costs and weight compared to extrusion-based systems
> Connecting elements such as angle clamps or profile connectors can be omitted
> Lower total weight enhances gripping dynamics and reduces current consumption



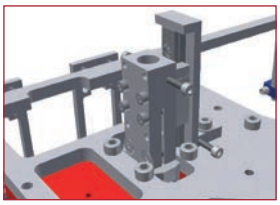
Example 1 – Tool for gripping a two-component part

> Four parallel grippers
> Linear guiding block
> Four customized centering plates
> Quick-change system
> Holder for harting plug



Example 2 – Tool for gripping a cylindrical part

> Four vacuum cups made of vinyl
> Twelve POM centering pins
> Quick-change system
> Holder for harting plug



Example 3 – Tool for gripping an electronic part

> Four grippers on guide blocks
> Six parallel grippers
> Quick-change system

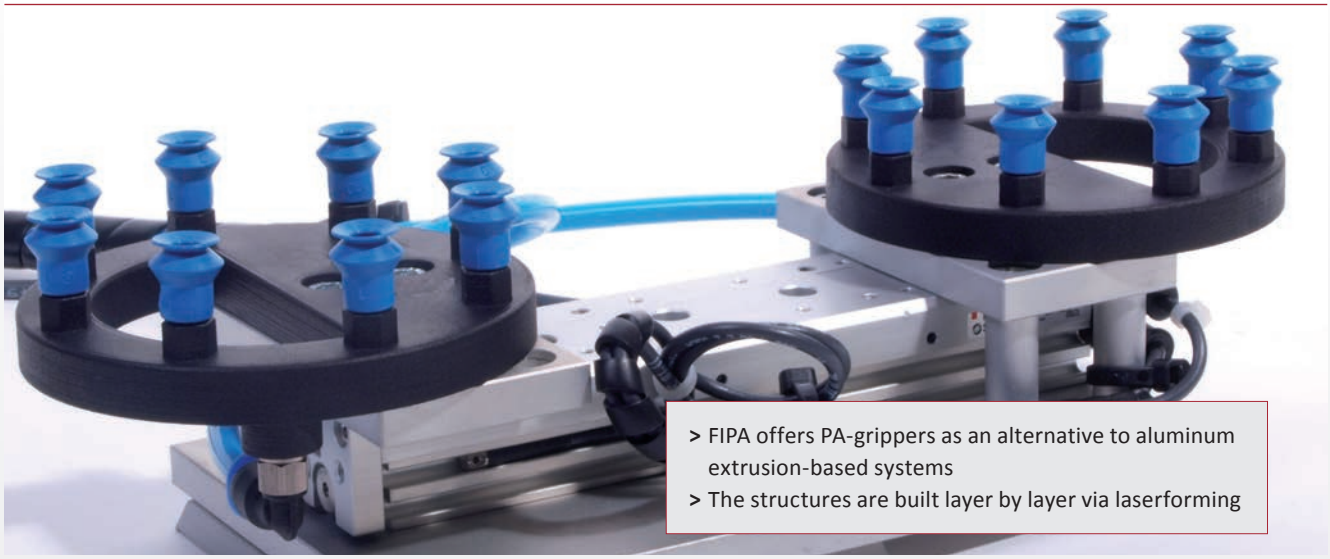


Clamping rings

> Mounting gripper components with a shaft to plate-based EOAT

Larger grippers can be realized by combining extrusions and plates:
> Extrusions for supporting structure
> Plates for integration of gripper components

FIPA Grippers based on polyamide (PA) laserforming



> FIPA offers PA-grippers as an alternative to aluminum extrusion-based systems
> The structures are built layer by layer via laserforming



Properties of PA-grippers

> Realization of special gripping tools in quantities of one or more
> Use of PA-components reduces weight and increases gripping dynamics
> Adjustment to workpiece contour enables high accelerations and gentle handling of sensitive products
> Vacuum or air channels integrated into the material minimize piping and complexity and enable space-saving installation
> High-performance PA-material approved for direct food contact
> Combining aluminum (support structure) and PA (custom gripper geometry) extends range of applications



Example 1

> Modular grippers for chocolate bars for use with Delta Robots
> Flexible gripper fingers for gentle product handling



Example 2

> Modular gripper for short duty cycles
> Integrated ejector EMM and Varioflex® bellows vacuum cup for height compensation



Example 3

> Modular gripper for cans
> Gripper design follows the contours of the can and thus enables high accelerations

> Using PA-grippers reduces weight by up to 70 % compared to conventional systems!
> We will be happy to develop your customized gripper solution!

Notes:

Quick-change systems at a glance 12

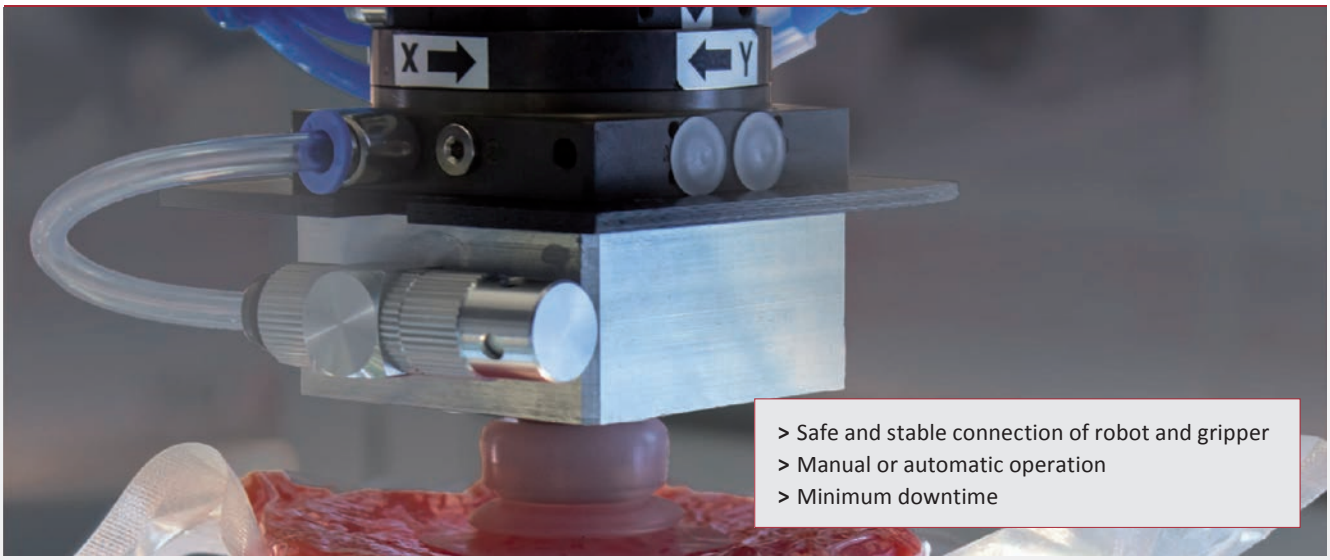
S Series 13

SR Series 20

R Series 39

ASR Series 42

FIPA Quick-change systems



> Safe and stable connection of robot and gripper
> Manual or automatic operation
> Minimum downtime



S Series – manual quick-change system

> Four sizes with load capacity from 5 to 40 kg
> Easy change-over of base plates and pneumatic couplings
> Spring loaded base plates for compensating ejector stroke of injection molding machines (GR05.023, GR05.024)

> See page 13



SR Series – manual quick-change system

> Three sizes with load capacity of 20, 40 and 100 kg
> Secure snap-on coupling SAFE-LOCK
> Locking position optically indicated (red/green)
> Model MV comes with micro valves for automatic air lock off during decoupling

> See page 20



Accessories

> Plates to adapt SLine and MLine extrusions directly to round quick-changers
> Fits to round quick-changers from FIPA and other brands
> Wall brackets for safe storing of gripper systems



ASR Series – automatic quick-change system

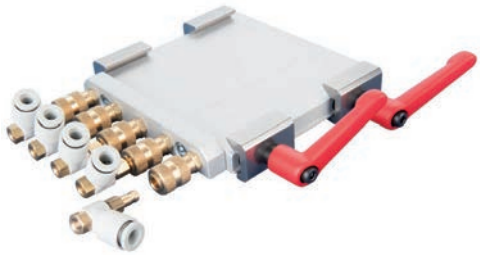
> Two sizes with load capacity of 5 and 20 kg
> Secure locking system with guide pins, compensates positional deviations during coupling
> Optional electric plug connectors for transmitting up to eight sensor signals

> See page 42

Quick-change systems – square, robot side, without fittings



GR05.041



GR05.041 incl. quick-connection couplers

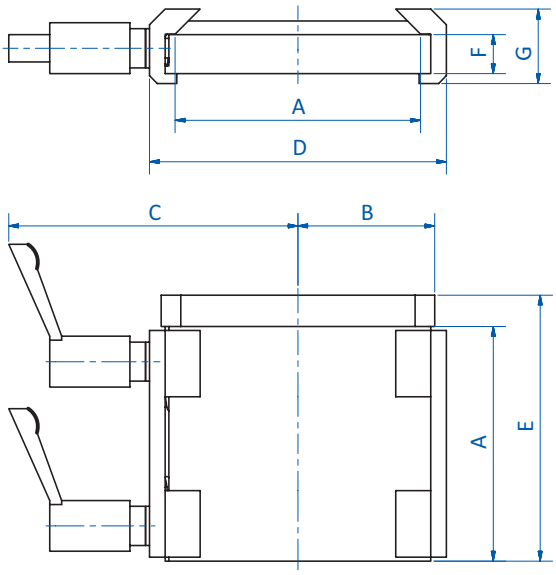
Product notes

> Manual interface between robot and gripper system
> Minimized down time due to fast gripper change
> Available in four sizes
> Clamping levers included in scope of delivery
> Base plates and pneumatic connections not included in scope of delivery

Technical data

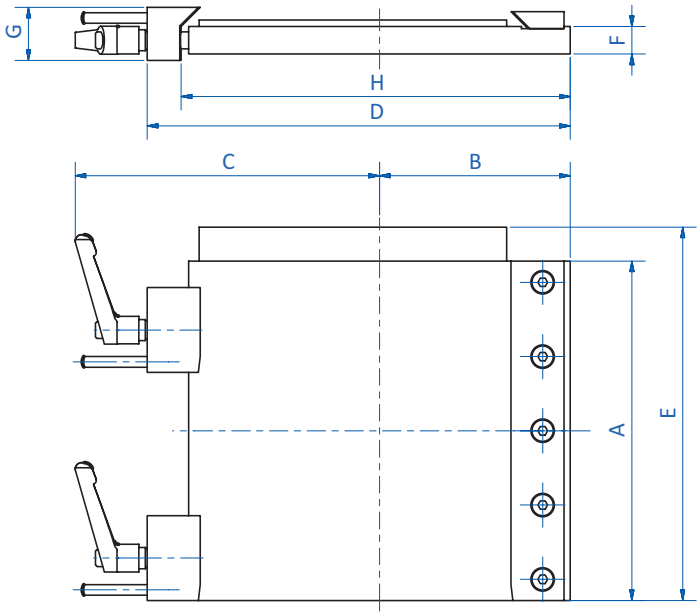
Item no.	Industry standard code	Number of pneumatic connections	Compatible hose Ø [mm]	Lifting force [N]	Weight [g]	Accessories
GR05.041	GR-0	5	6	50	315	Gripper mounting plate: GR05.042 (p.15) Quick-connection coupler: KIT1-GR05.041
GR05.021	GR-1	5	6	100	570	Gripper mounting plate: GR05.022 (p.15) Quick-connection coupler: KIT1-GR05.021
GR05.031	GR-2	5	6 / 8	200	1,970	Gripper mounting plate: GR05.032 (p.15) Gripper mounting plate: GR-XL05.032 (p.15) Quick-connection coupler: KIT1-GR05.031
GR05.051	GR-3	5	6 / 8	400	4,520	Gripper mounting plate: GR05.052 (p.15) Gripper mounting plate: GR-XL05.052 (p.15) Quick-connection coupler: KIT1-GR05.031

Dimensions

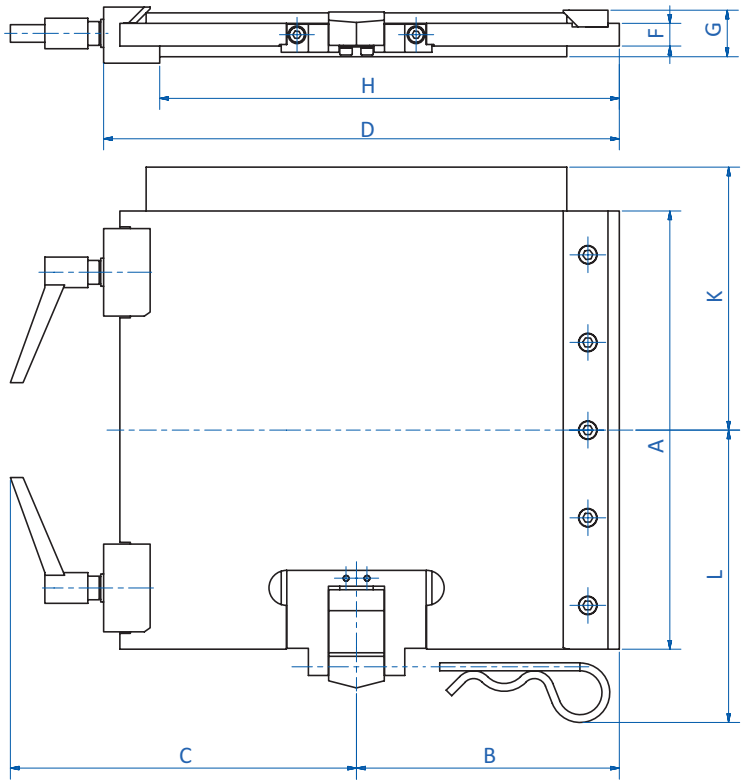


GR05.041 | GR05.021

Dimensions



GR05.031



GR05.051

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]	L [mm]
GR05.041	60	38	74	76	68	10	19	62	--	--
GR05.021	100	57.5	91.5	115	110	10	20	101	--	--
GR05.031	160	90	143.5	198	176	13	25	183	--	--
GR05.051	250	150	197.5	290	--	13	32	259	150	167

Gripper mounting plates



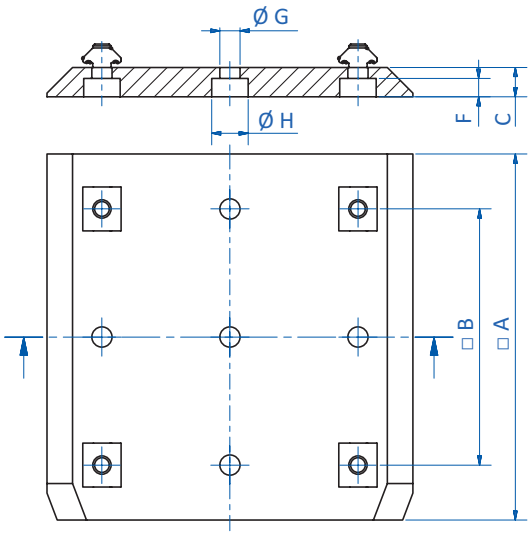
Product notes

> Suitable for square quick-change systems GR05.021 to GR05.051
> Base plates with pre-located, center-punched holes enable custom drilling patterns (index -X)
> Slot nuts and mounting screws included in scope of delivery, except for base plates index -X

Technical data

Item no.	Industry standard code	Suitable for extrusion system	Weight [g]	Suitable robot adapter plates
GR05.042	GR-0	SLine / MLine	84	GR05.041 (p.13)
GR05.022	GR-1	SLine / MLine	230	GR05.021 (p.13)
GR05.032	GR-2	SLine / MLine	635	GR05.031 (p.13)
GR05.052	GR-3	SLine / MLine	1,650	GR05.051 (p.13)
GR-XL05.032	GR-2	XLine	752	GR05.031 (p.13)
GR-XL05.052	GR-3	XLine	1,784	GR05.051 (p.13)
GR05.042-X	GR-0	SLine / MLine	84	GR05.041 (p.13)
GR05.022-X	GR-1	SLine / MLine	208	GR05.021 (p.13)
GR05.032-X	GR-2	SLine / MLine	635	GR05.031 (p.13)
GR05.052-X	GR-3	SLine / MLine	1,650	GR05.051 (p.13)

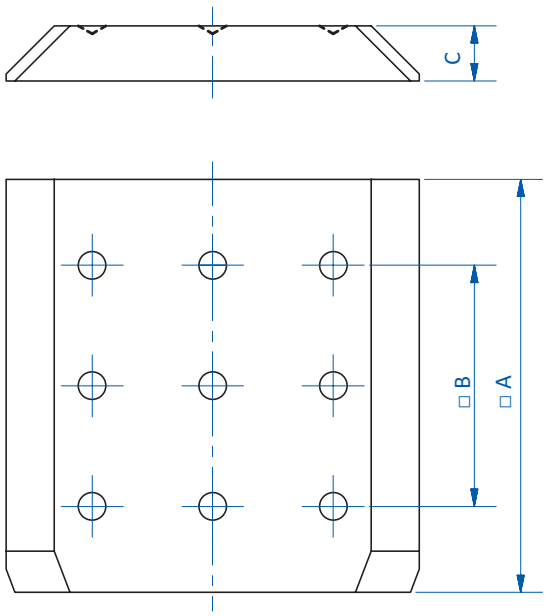
Dimensions



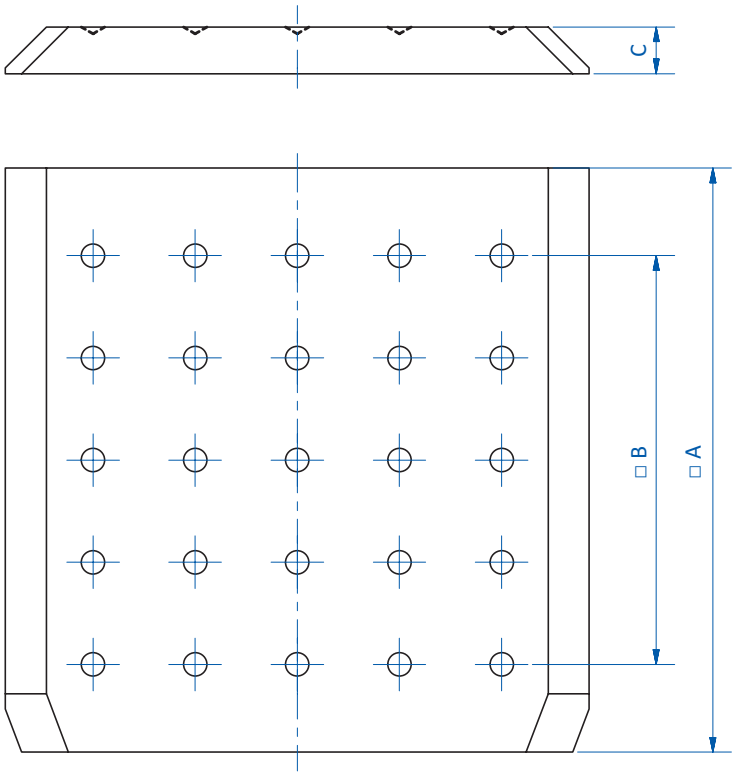
GR05.042 | GR05.022 | GR05.032 | GR05.052 | GR-XL05.032 | GR-XL05.052

Continued on the next page

Dimensions

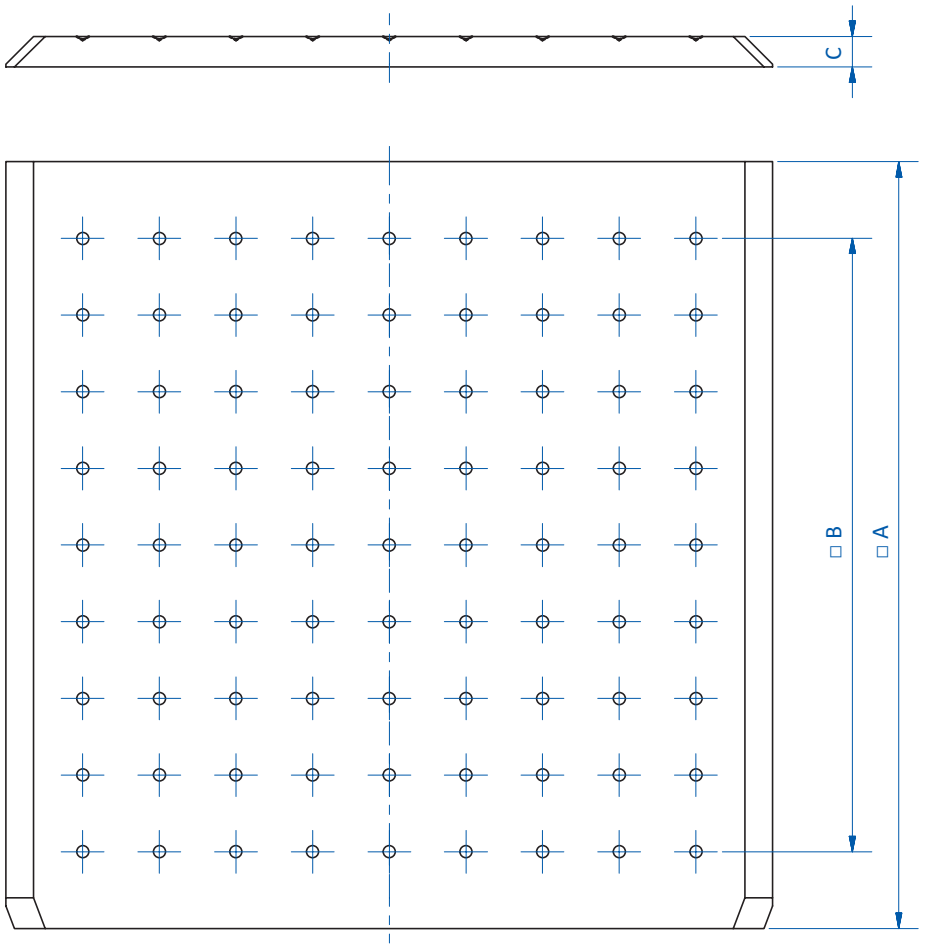


GR05.042-X



GR05.022-X | GR05.032-X

Dimensions

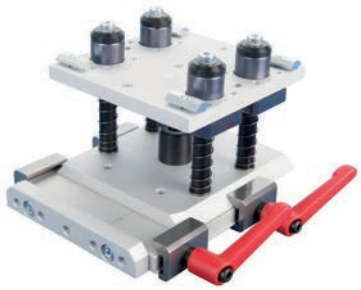


GR05.052-X

Item no.	□ **A** [mm]	□ **B** [mm]	**C** [mm]	**F** [mm]	**Ø G** [mm]	**Ø H** [mm]
GR05.042	60	35	8	5	5.5	10
GR05.022	100	70	8	5	5.5	10
GR05.032	160	120	10	4.5	5.5	10
GR05.052	250	200	10	7	5.5	10
GR-XL05.032	160	120	10	6.5	8.5	14
GR-XL05.052	250	200	10	6.5	8.5	14
GR05.042-X	60	35	8	--	--	--
GR05.022-X	100	70	8	--	--	--
GR05.032-X	160	120	10	--	--	--
GR05.052-X	250	200	10	--	--	--

Gripper mounting plates – spring loaded





Gripper mounting plate with quick-change system GR05.021

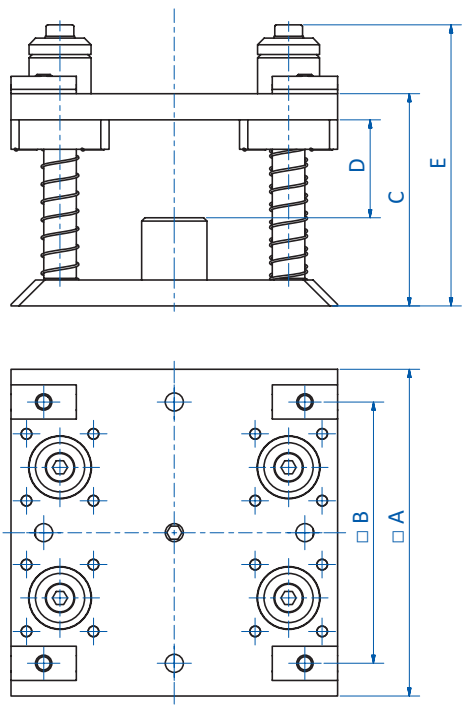
Product notes

> Base plate for compensating ejection stroke of molding machine
> High-quality slide bearings ensure accurate guidance
> A second set of springs with higher spring rate included in scope of delivery
> Slot nuts and mounting screws included in scope of delivery

Technical data

Item no.	Suitable for extrusion system	Industry standard code	Stroke [mm]	Spring stiffness (already built in) [N/mm]	Spring stiffness (alternatively) [N/mm]	Weight [g]	Suitable robot adapter plates
GR05.023	SLine	GR-1	30	0.143	0.349	690	GR05.021 (p.13)
GR05.024	SLine / MLine	GR-1	30	0.143	0.349	690	GR05.021 (p.13)

Dimensions



Item no.	□ A [mm]	□ B [mm]	C [mm]	D [mm]	E [mm]
GR05.023	100	80	65	30	86
GR05.024	110	85	65	30	86

Wall brackets for square quick-change plates





Wall bracket with quick-change plate

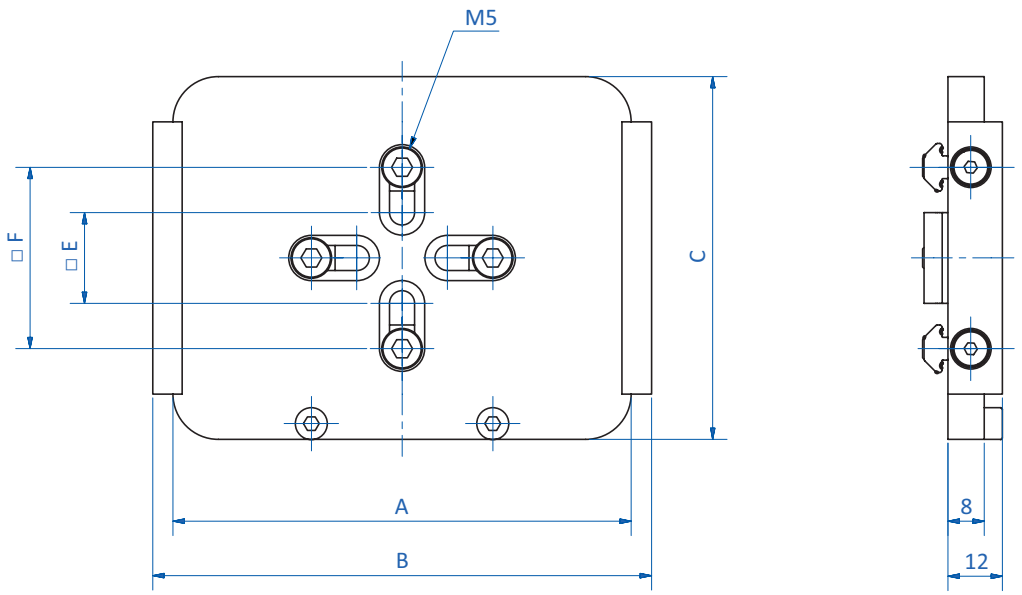
Product notes

> Efficient storage of gripping systems
> Fixing kit included in delivery

Technical data

Item no.	Weight [g]	Compatible gripper mounting plate
GR05.042-W	145	GR05.042 (p.15)
GR05.022-W	212	GR05.022 (p.15)
GR05.032-W	385	GR05.032 (p.15)
GR05.052-W	1,218	GR05.052 (p.15)

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	□ E [mm]	□ F [mm]
GR05.042-W	60	70	80	20	40
GR05.022-W	101	110	80	20	40
GR05.032-W	161	170	100	20	40
GR05.052-W	251	260	200	60	120

Round quick-changers Ø 50 mm, 6 air inlets – robot side



SR50-A-SL-MV with optical locking indication SAFE-LOCK

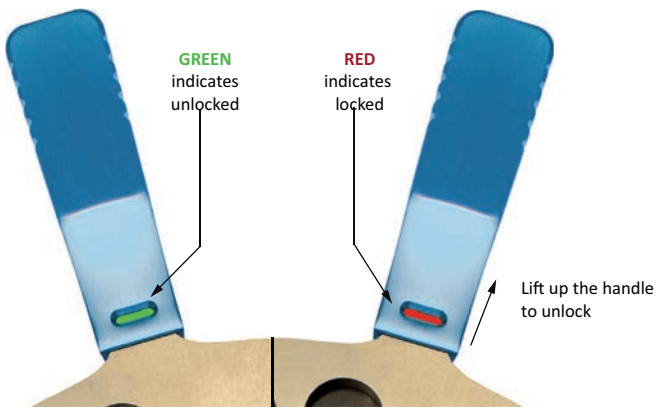
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Model MV comes with micro valves for automatic air or vacuum lock off during decoupling
> Model SL with secure SAFE-LOCK ensures maximum functional reliability and optical locking indication (red/green)
> Stainless steel design on request

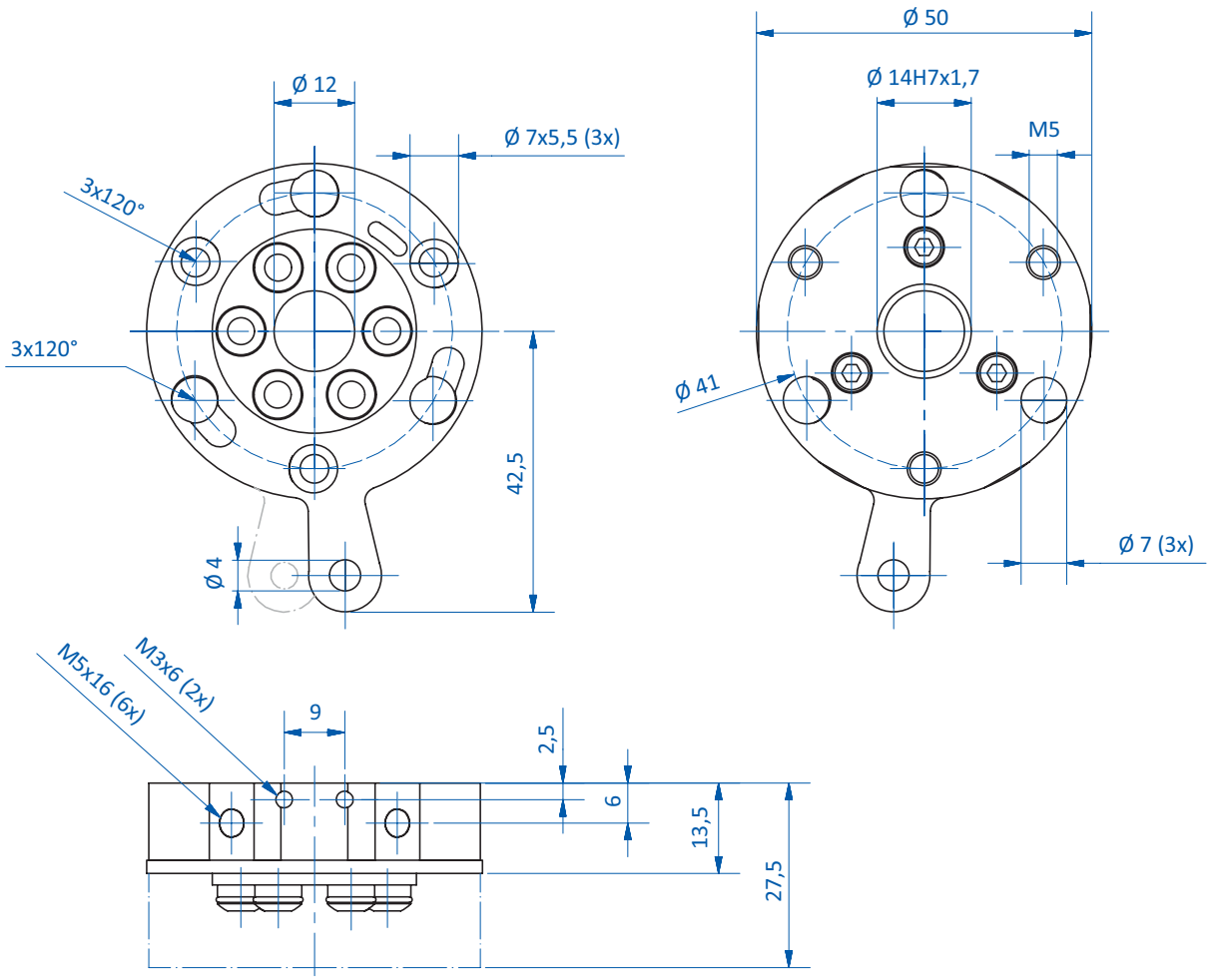
Technical data

Item no.	SR50-A	SR50-A-MV	SR50-A-SL	SR50-A-SL-MV
Lifting force [N]	200	200	200	200
Number of pneumatic connections	6xM5	6xM5	6xM5	6xM5
Working pressure [bar (psi)]	0 - 6 (0 - 87)	0 - 6 (0 - 87)	0 - 6 (0 - 87)	0 - 6 (0 - 87)
Max. torque [Nm]	50	50	50	50
Max. bending moment [Nm]	30	30	30	30
Repeat accuracy [mm]	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025
Micro valves	--	integrated	--	integrated
Snap-on	--	--	SAFE-LOCK for secure locking	SAFE-LOCK for secure locking
Weight [g]	65	65	65	65
Accessories	Electrical connectors: 20.537 (p.38) Spare part kit: KIT-SR50	Electrical connectors: 20.537 (p.38) Spare part kit: KIT-SR50	Electrical connectors: 20.537 (p.38) Spare part kit: KIT-SR50	Electrical connectors: 20.537 (p.38) Spare part kit: KIT-SR50

Display of optical locking indication SAFE-LOCK



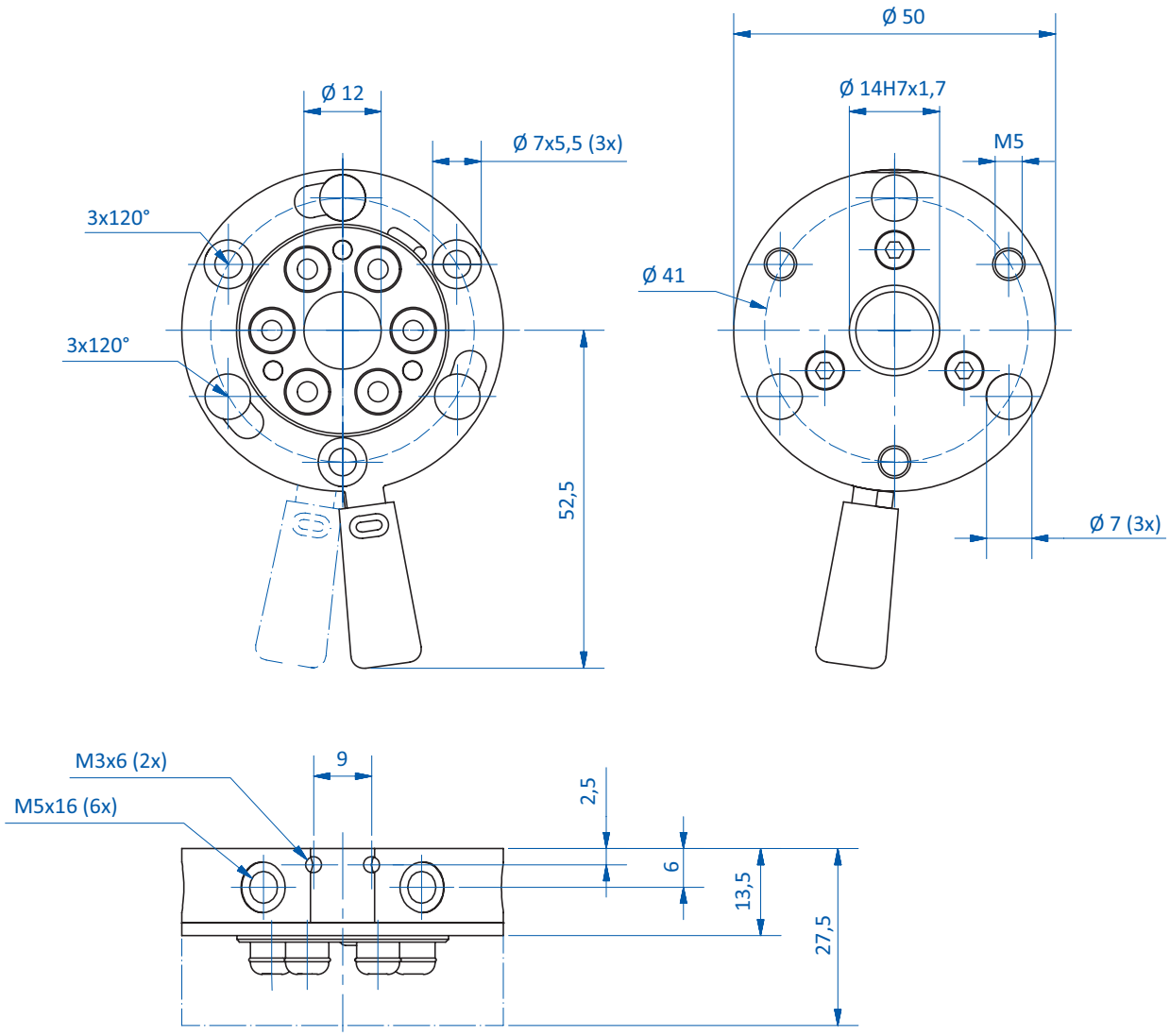
Dimensions



SR50-A | SR50-A-MV

Continued on the next page

Dimensions



SR50-A-SL | SR50-A-SL-MV

Round quick-changers Ø 50 mm, 6 air inlets – gripper side



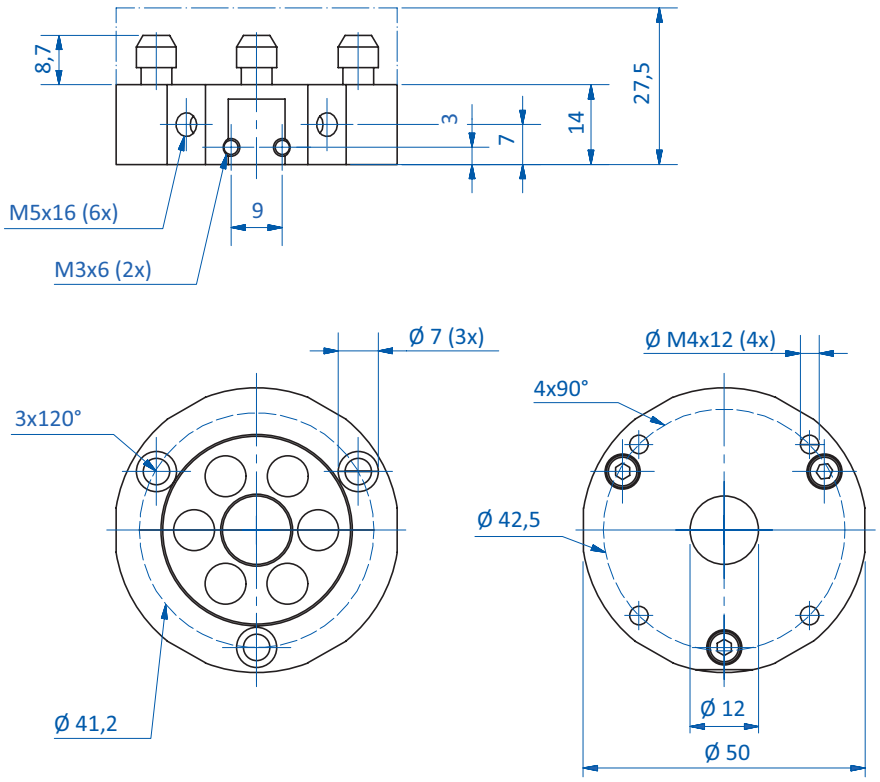
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Stainless steel design on request

Technical data

Item no.	SR50-B
Lifting force [N]	200
Number of pneumatic connections	6xM5
Working pressure [bar (psi)]	0 - 6 (0 - 87)
Max. torque [Nm]	50
Max. bending moment [Nm]	30
Repeat accuracy [mm]	+/- 0.025
Weight [g]	69
Suitable electrical connectors	20.538 (p.38)

Dimensions



Round quick-changers Ø 90 mm, 8 air inlets – robot side



SR90-A-SL with optical locking indication SAFE-LOCK

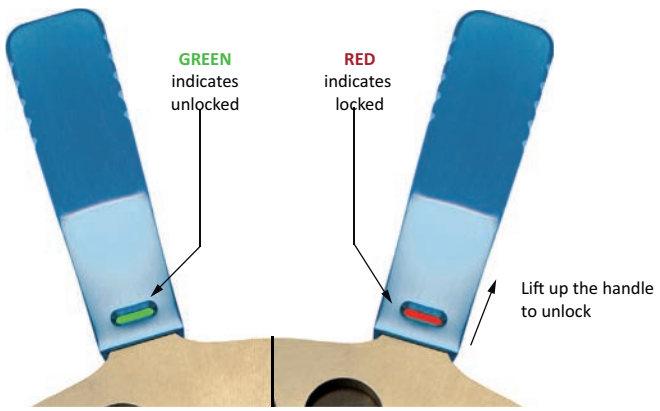
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Model MV comes with micro valves for automatic air or vacuum lock off during decoupling
> Model SL with secure SAFE-LOCK ensures maximum functional reliability and optical locking indication (red/green)
> Stainless steel design on request

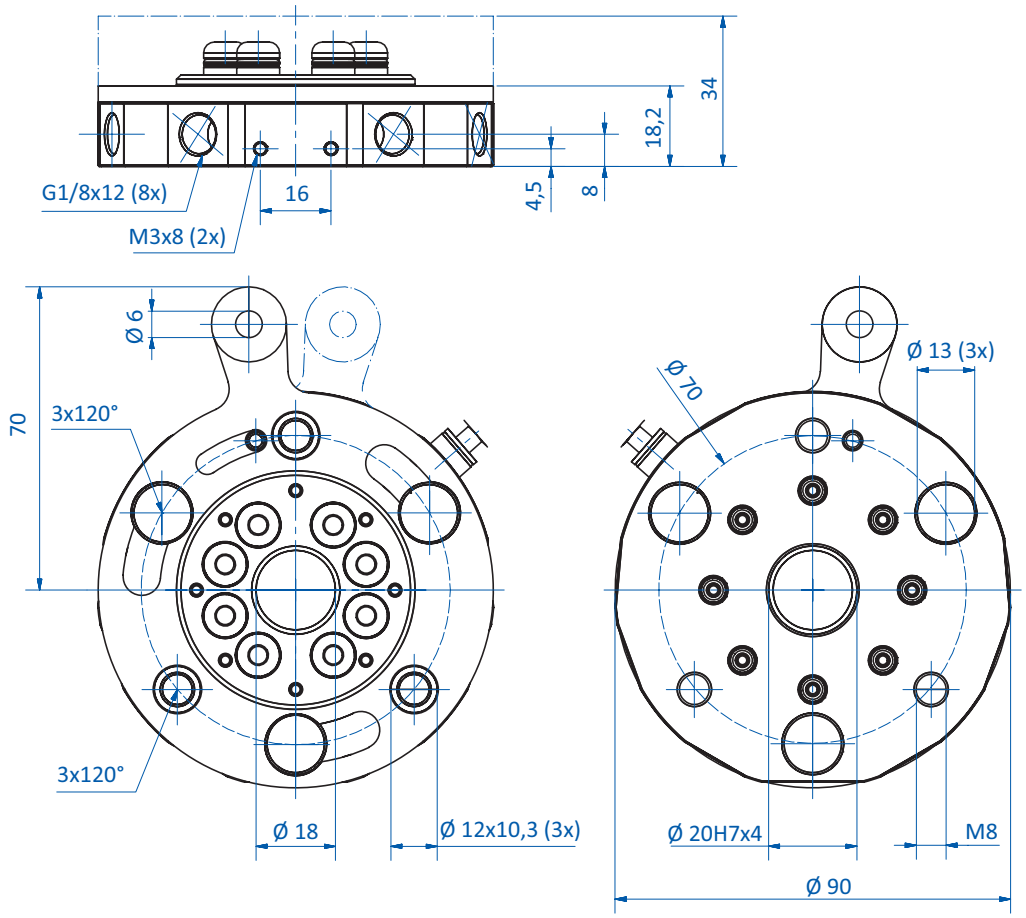
Technical data

Item no.	SR90-A	SR90-A-MV	SR90-A-SL	SR90-A-SL-MV
Lifting force [N]	400	400	400	400
Number of pneumatic connections	8xG1/8	8xG1/8	8xG1/8	8xG1/8
Working pressure [bar (psi)]	0 - 6 (0 - 87)	0 - 6 (0 - 87)	0 - 6 (0 - 87)	0 - 6 (0 - 87)
Max. torque [Nm]	100	100	100	100
Max. bending moment [Nm]	60	60	60	60
Repeat accuracy [mm]	+/- 0.025	+/- 0.025	+/- 0.025	+/- 0.025
Micro valves	--	integrated	--	integrated
Snap-on	--	--	SAFE-LOCK for secure locking	SAFE-LOCK for secure locking
Weight [g]	320	320	320	320
Accessories	Electrical connectors: 20.536 (p.38) Spare part kit: KIT-SR90	Electrical connectors: 20.536 (p.38) Spare part kit: KIT-SR90	Electrical connectors: 20.535 (p.38) Spare part kit: KIT-SR90	Electrical connectors: 20.535 (p.38) Spare part kit: KIT-SR90

Display of optical locking indication SAFE-LOCK



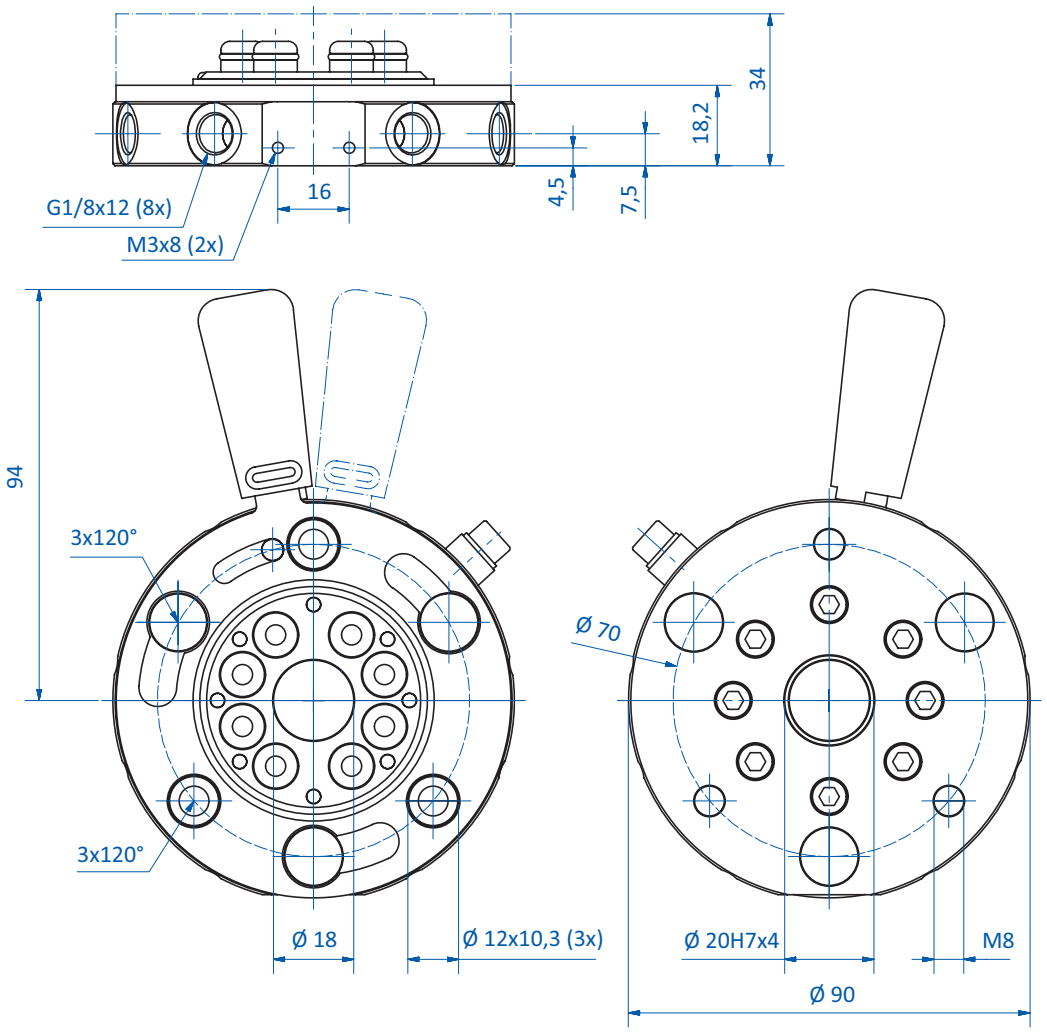
Dimensions



SR90-A | SR90-A-MV

Continued on the next page

Dimensions



SR90-A-SL | SR90-A-SL-MV

Round quick-changers Ø 90 mm, 8 air inlets – gripper side



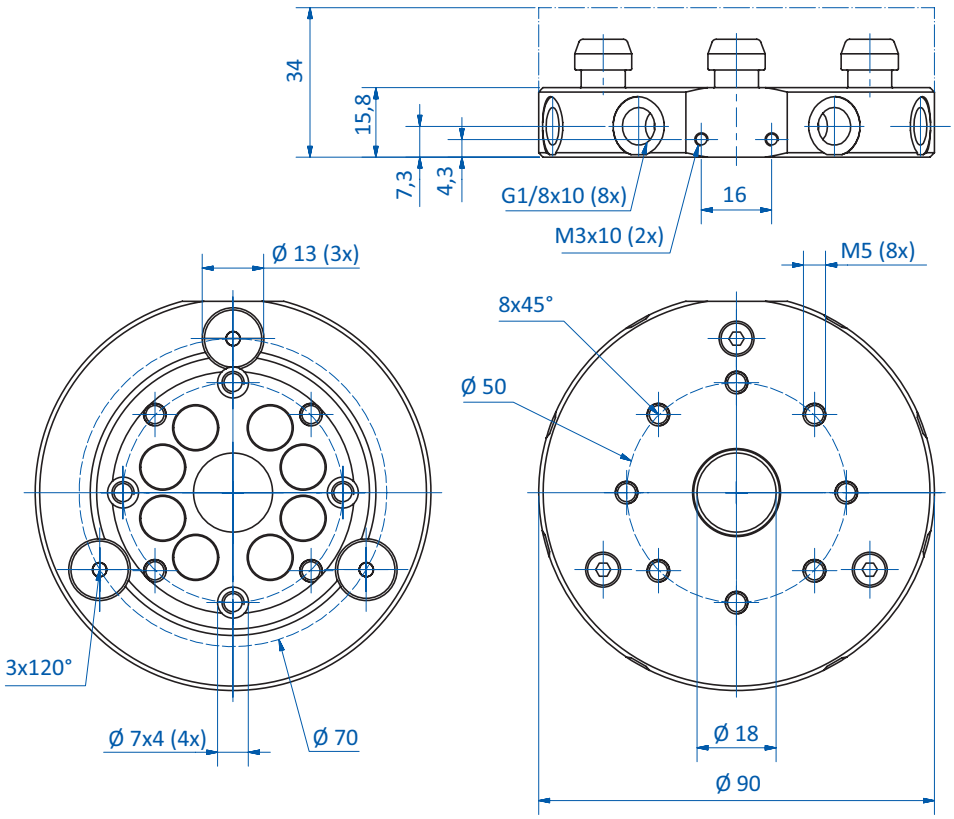
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Stainless steel design on request

Technical data

Item no.	SR90-B
Lifting force [N]	400
Number of pneumatic connections	8xG1/8
Working pressure [bar (psi)]	0 - 6 (0 - 87)
Max. torque [Nm]	100
Max. bending moment [Nm]	60
Repeat accuracy [mm]	+/- 0.025
Weight [g]	220
Suitable electrical connectors	20.536 (p.38)

Dimensions



Round quick-changers Ø 150 mm, 10 air inlets – robot side



SR150-A

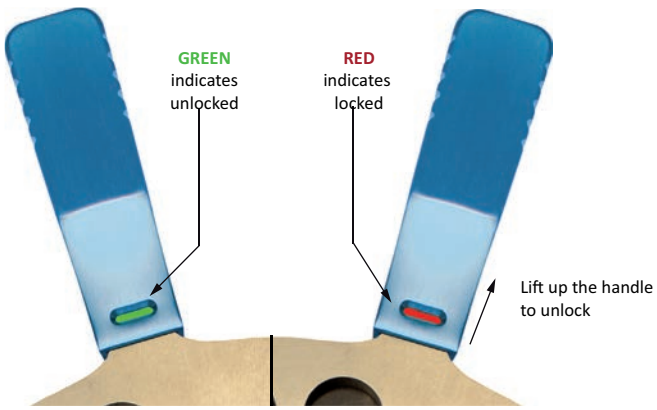
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Model SL with secure SAFE-LOCK ensures maximum functional reliability and optical locking indication (red/green)
> Stainless steel design on request

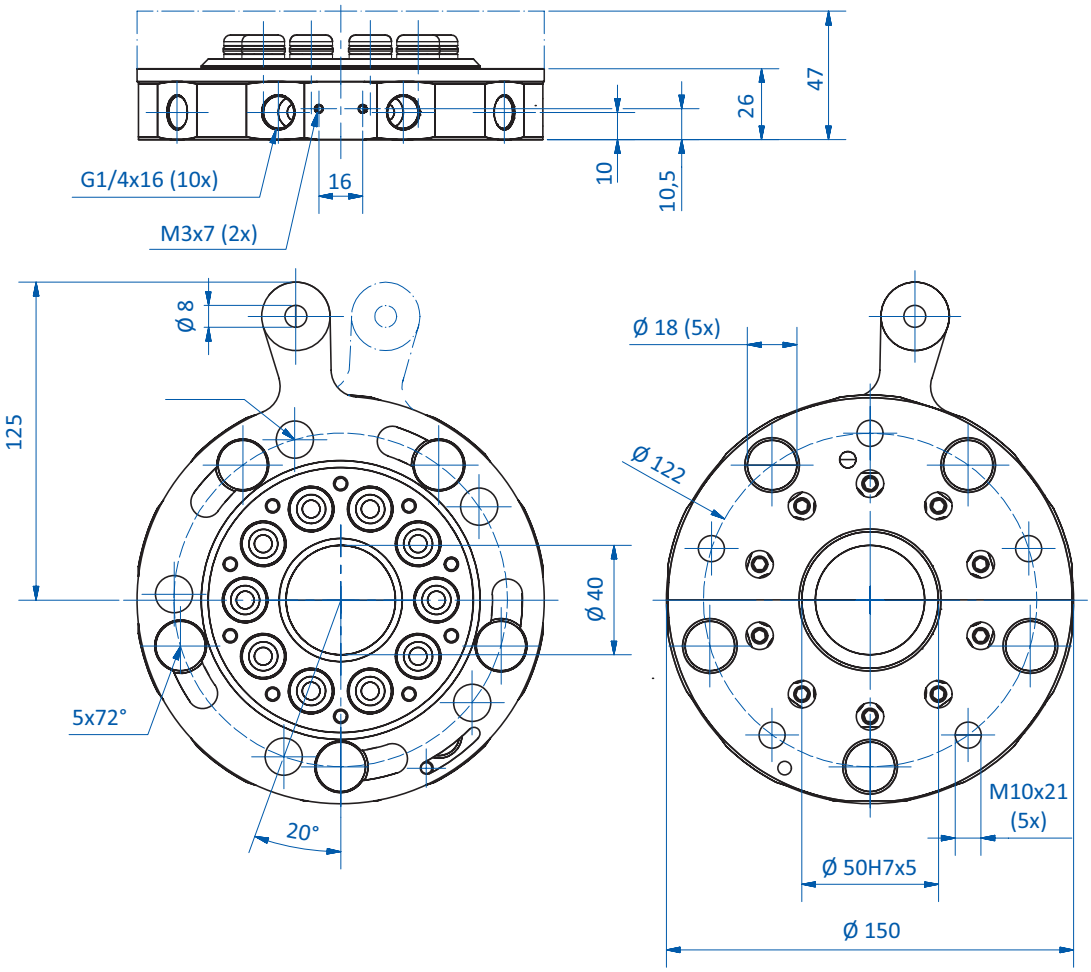
Technical data

Item no.	SR150-A	SR150-A-SL
Lifting force [N]	1,000	1,000
Number of pneumatic connections	10xG1/4	10xG1/4
Working pressure [bar (psi)]	0 - 6 (0 - 87)	0 - 6 (0 - 87)
Max. torque [Nm]	250	250
Max. bending moment [Nm]	100	100
Repeat accuracy [mm]	+/- 0.025	+/- 0.025
Micro valves	--	--
Snap-on	--	SAFE-LOCK for secure locking
Weight [g]	1,190	1,190
Accessories	Electrical connectors: 20.535 (p.38) Spare part kit: KIT-SR150	Electrical connectors: 20.535 (p.38) Spare part kit: KIT-SR150

Display of optical locking indication SAFE-LOCK



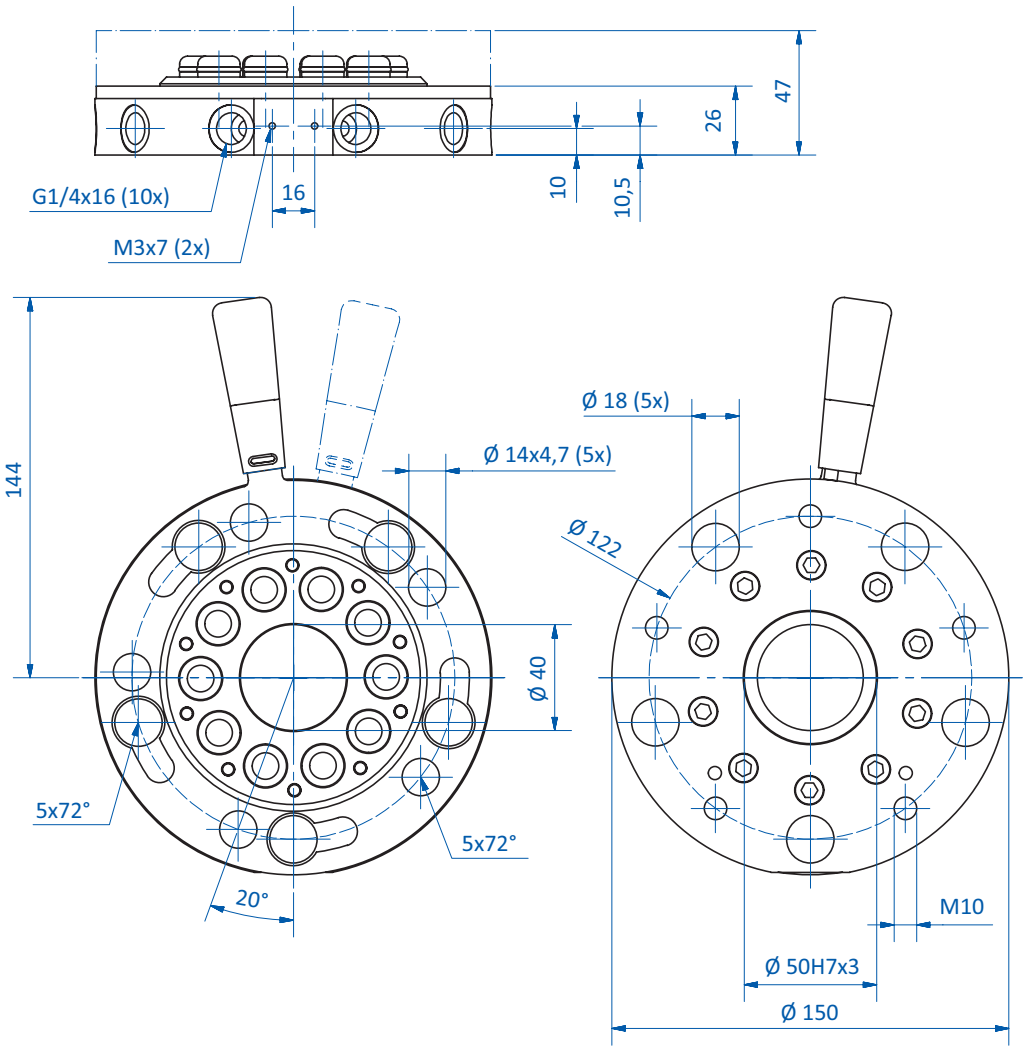
Dimensions



SR150-A

Continued on the next page

Dimensions



SR150-A-SL

Round quick-changers Ø 150 mm, 10 air inlets – gripper side



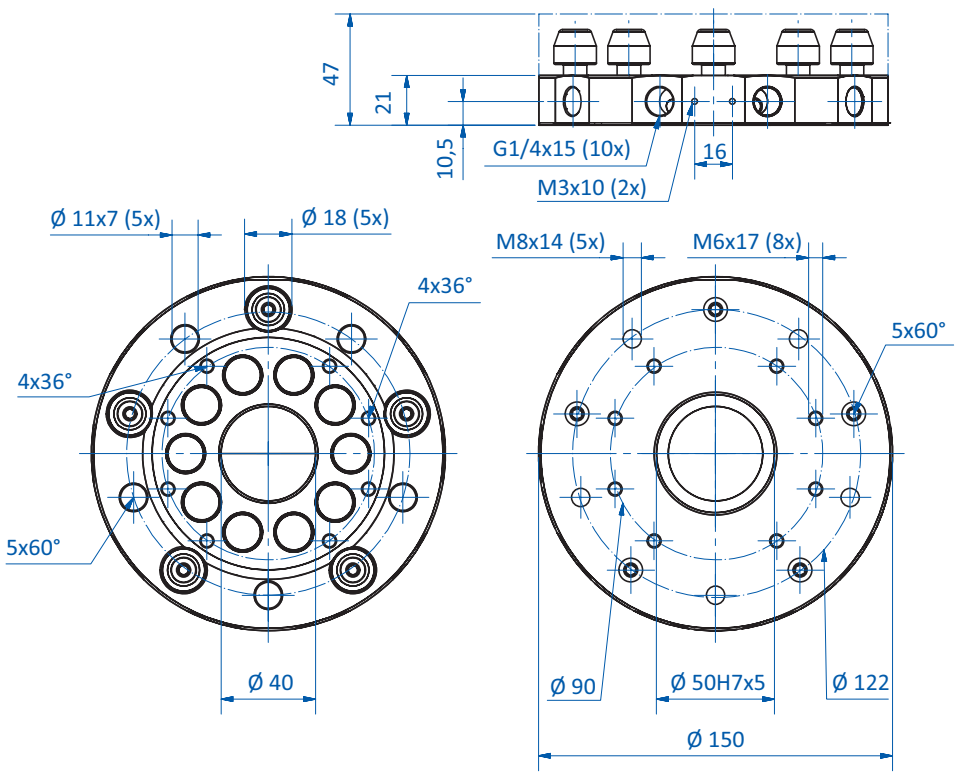
Product notes

> Manual interface between robot and gripper system
> Air connections always correctly aligned
> Body made of anodized aluminum alloy
> Stainless steel design on request

Technical data

Item no.	SR150-B
Lifting force [N]	1,000
Number of pneumatic connections	10xG1/8
Working pressure [bar (psi)]	0 - 6 (0 - 87)
Max. torque [Nm]	250
Max. bending moment [Nm]	100
Repeat accuracy [mm]	+/- 0.025
Weight [g]	850
Suitable electrical connectors	20.536 (p.38)

Dimensions



Adapter plates for round quick-changers – gripper side



SR150-C



GR05.102

Product notes

> Adapter plates for mounting SLine or MLine extrusions to SR Series round quick-changers
> GR05.100, GR05.101, GR05.102: for SEPRO quick-changers
> Slot nuts and mounting screws included in scope of delivery
> Suitable for third-party systems

Technical data

Item no.	Weight [g]	Suitable quick-change systems
SR50-C	107	SR50-A (p.20), SR50-B (p.23)
SR90-C	117	SR90-A (p.24), SR90-B (p.27)
SR150-C	227	SR150-A (p.28), SR150-B (p.31)
GR05.100	236	SEPRO AM02S0716605
GR05.101	272	SEPRO BP 90
GR05.102	400	SEPRO BP 120

Robot adapter plates SR Series



SR50-C



SR90-C



SR150-C

Robot adapter plates SEPRO



GR05.100

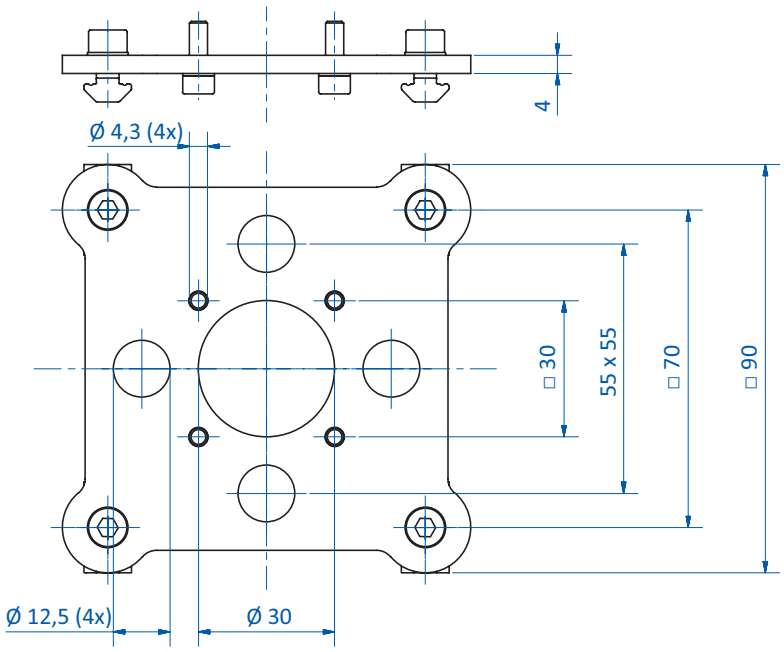


GR05.101

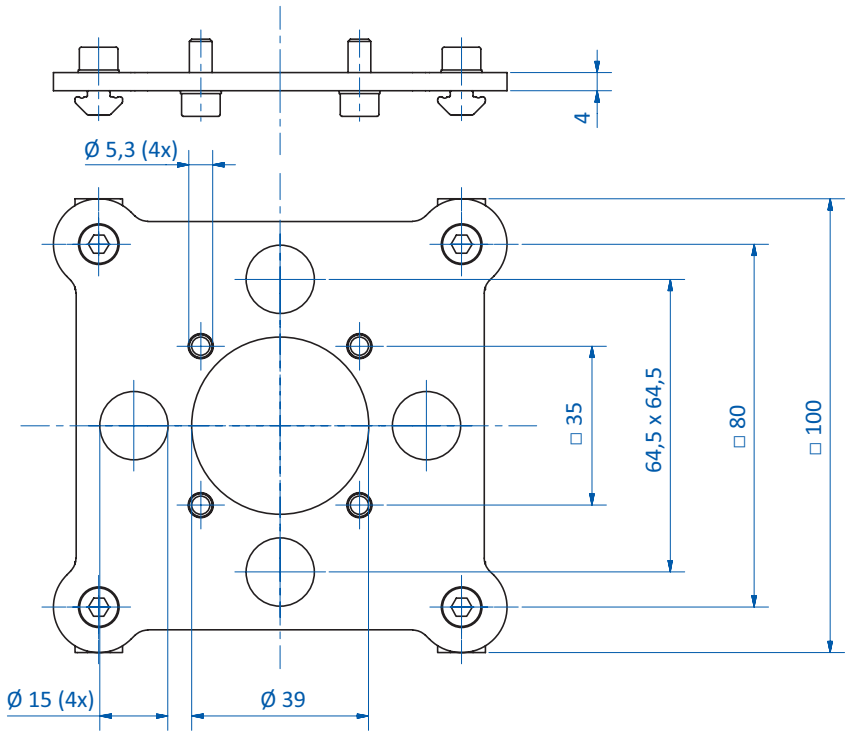


GR05.102

Dimensions



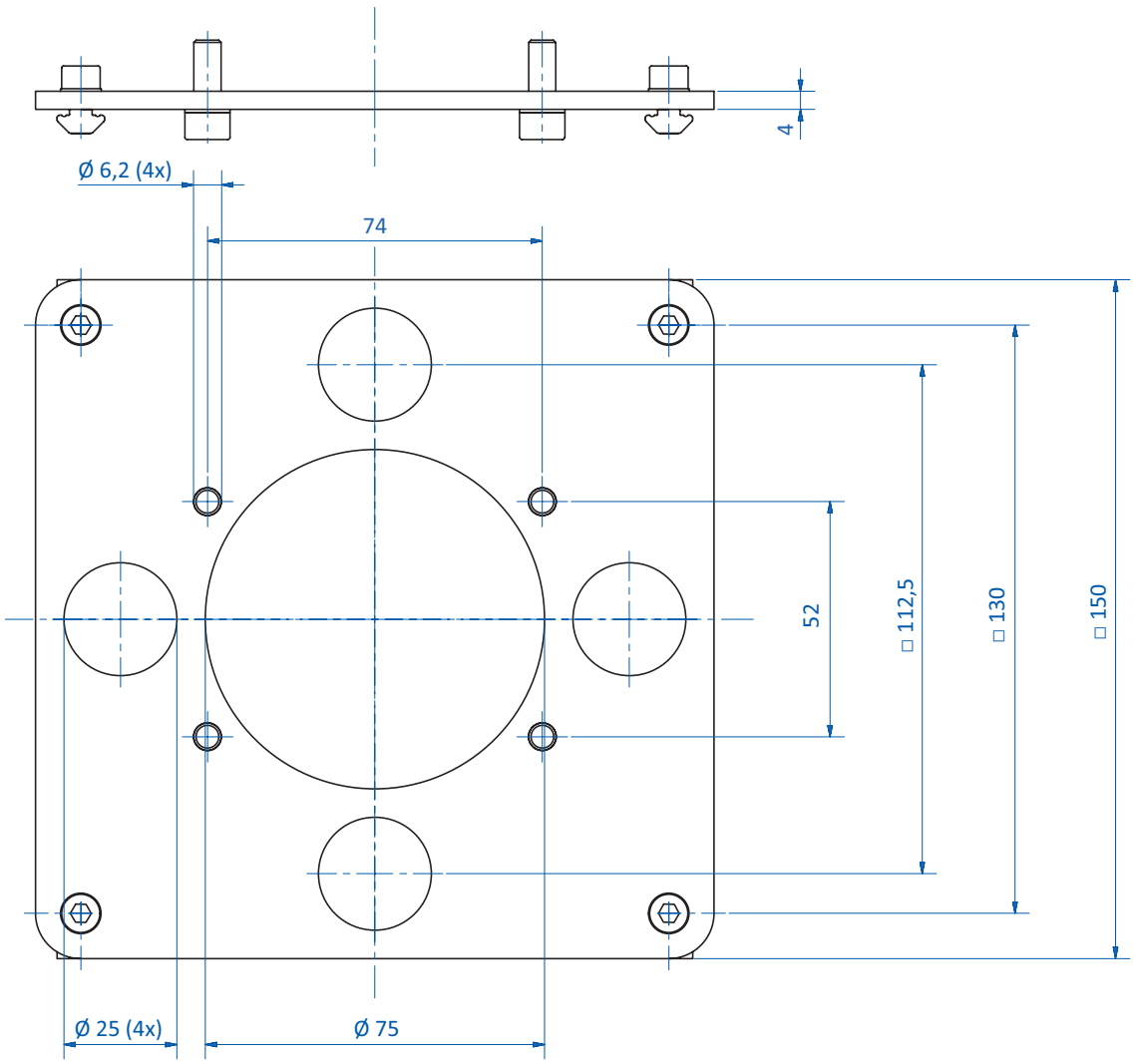
SR50-C



SR90-C

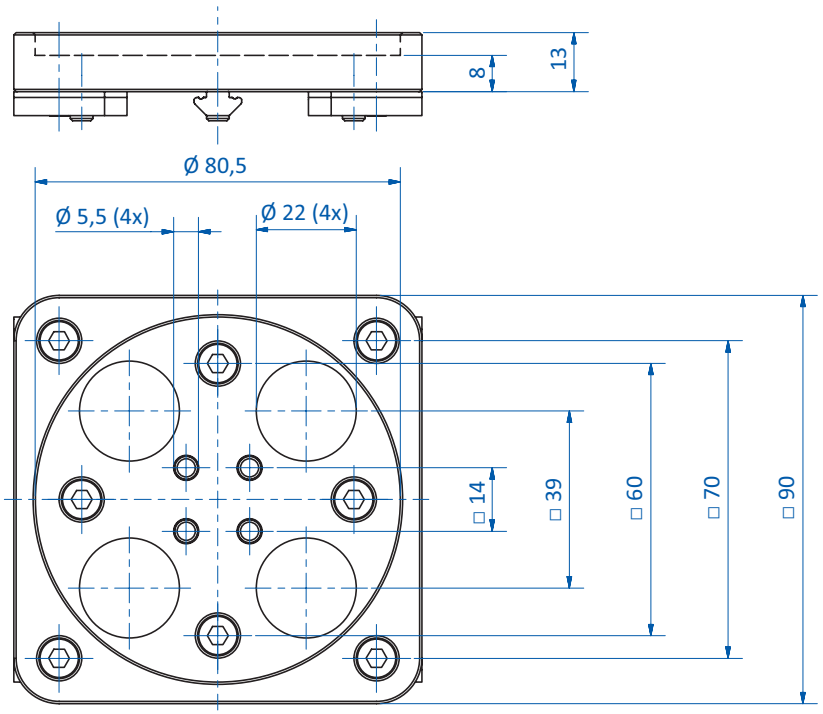
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Dimensions

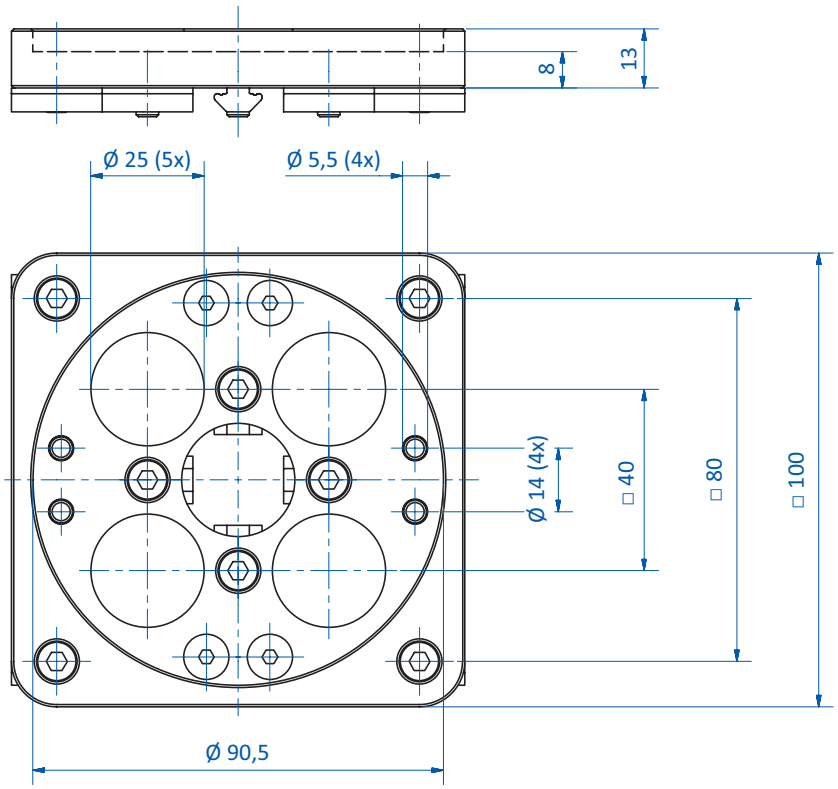


SR150-C

Dimensions



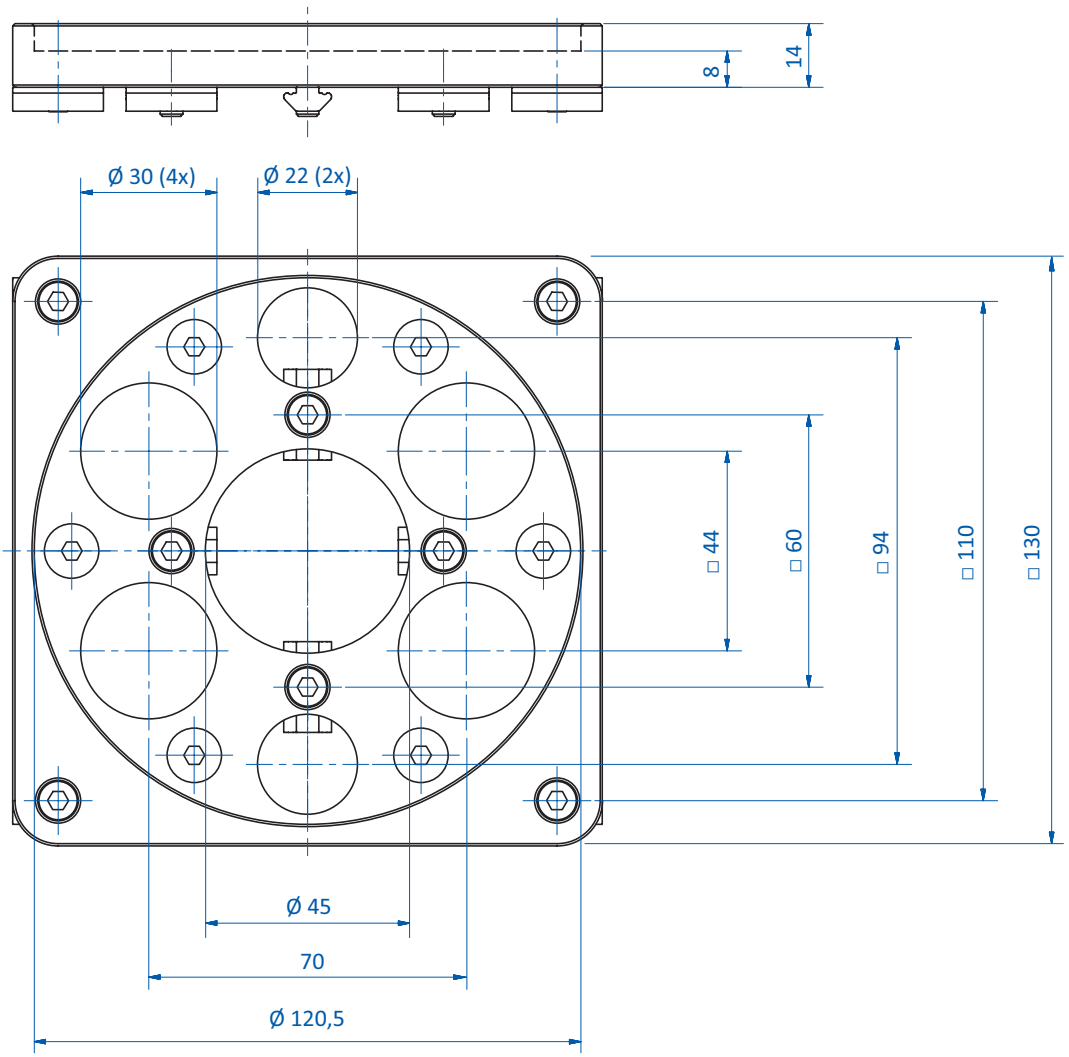
GR05.100



GR05.101

Continued on the next page

Dimensions



GR05.102

Wall bracket for gripper systems with round base plate





Application example with quick-changer

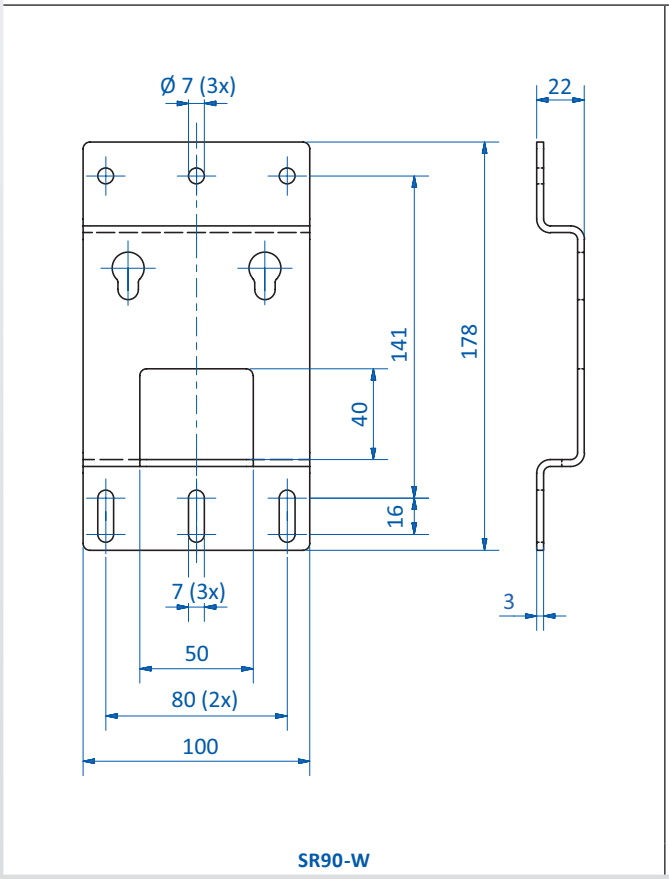
Product notes

> Efficient and safe storage of EOAT with SR Series round quick-changers
> Suitable for third-party round gripper systems

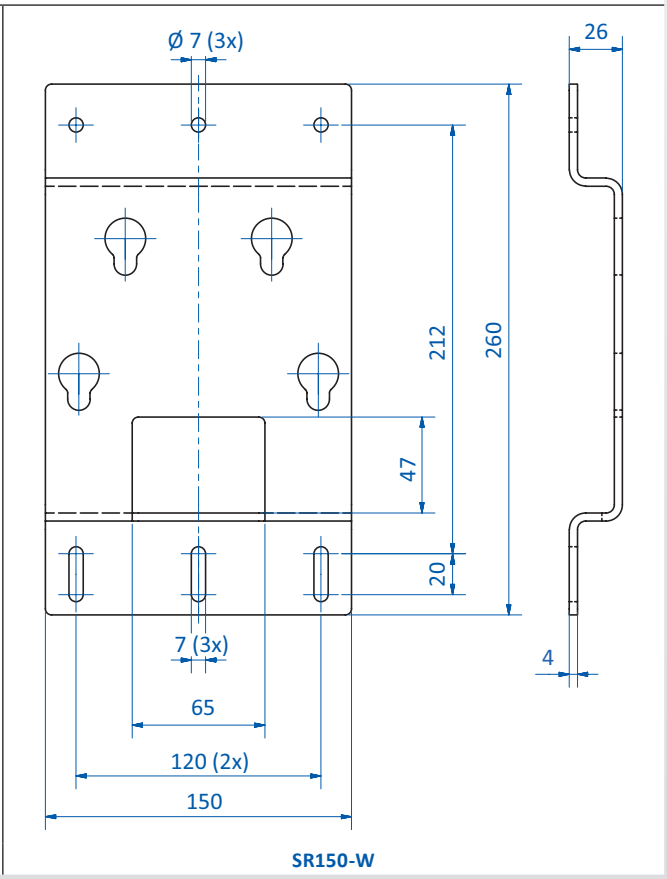
Technical data

Item no.	Weight [g]	Suitable quick-change systems
SR90-W	600	SR90-B (p.27)
SR150-W	1,200	SR150-B (p.31)

Dimensions



SR90-W



SR150-W

Electric plug connectors for SR50, SR90 and SR150



Robot side 20.537 | Gripper side 20.538



Robot side 20.535 | Gripper side 20.536

Product notes

> Electrical interface between robot and gripper
> 15 pin SUB-D plug
> Max. cable cross section 0.14 mm² based on 16 - 18-wire cable

Technical data

Item no.	Suitable quick-change systems	Plug Design	Number of Pins	Operating voltage [VDC]	Power consumption [W]	Weight [g]	Suitable plug
20.535	SR90-A, SR150-A, SR90-A-SL, SR150-A-SL	male	15	24	0.5	42	20.505
20.536	SR90-B, SR150-B	female	15	24	0.5	41	20.505
20.537	SR50-A, SR50-A-SL, SR50-A-MV, SR50-A-SL-MV	male	9	24	0.5	42	20.505
20.538	SR50-B	female	9	24	0.5	41	20.505

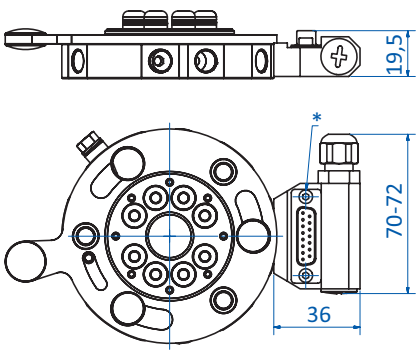
SR Series with electric connectors



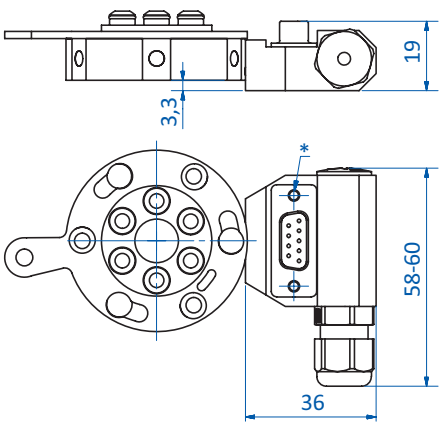




Dimensions



20.535 | 20.536



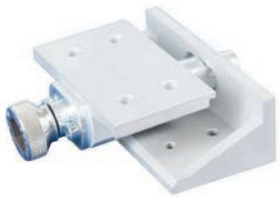
20.537 | 20.538

* = Remove plug connection for cable installation

Quick-change systems rectangle, robot side

COMPATIBLE WITH STAR SYSTEMS





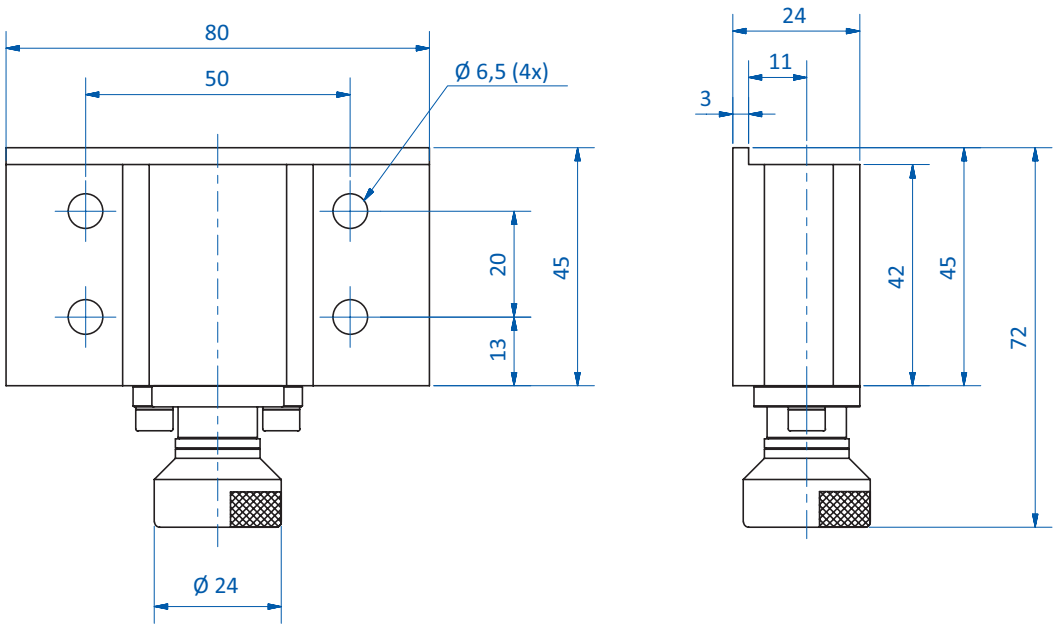
Product notes

> Manual interface between robot and gripper system
> Minimized downtime due to fast gripper change
> Gripper side not included in scope of delivery

Technical data

Item no.	Lifting force [N]	Weight [g]	Suitable gripper side
GR05.121	150	168	GR05.122 (p.40)

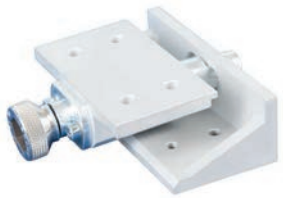
Dimensions



Quick-change systems rectangle, gripper side

COMPATIBLE WITH STAR SYSTEMS





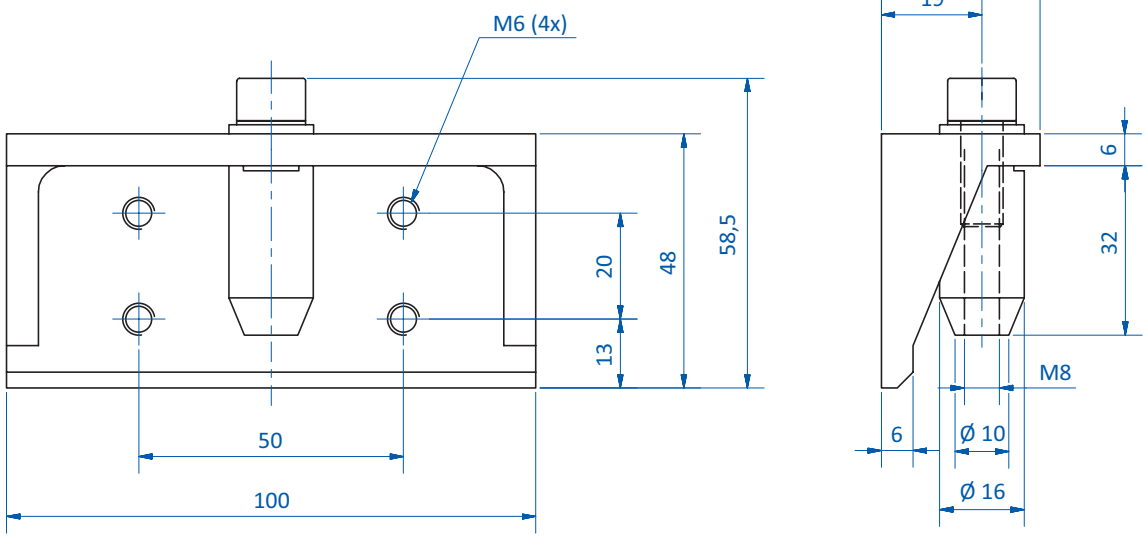
Product notes

> Manual interface between robot and gripper system
> Minimized downtime due to fast gripper change
> Robot side not included in scope of delivery

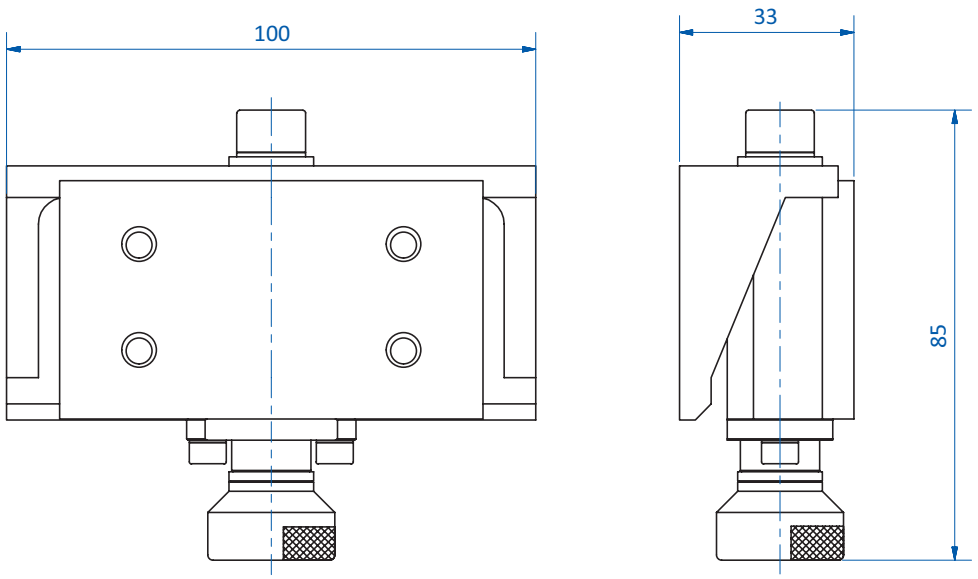
Technical data

Item no.	Lifting force [N]	Weight [g]	Suitable robot side
GR05.122	150	171	GR05.121 (p.39)

Dimensions



Dimensions for quick-change system robot side incl. gripper side



Automatic quick-change systems



Robot side: ASR60-A



Gripper side: ASR48-B

Product notes

> Fast exchange of EOAT on robots via automatic compressed air disconnection, minimizes set-up time
> Secure locking system with guide pins compensates positional deviations during coupling
> Electronic connector for signal transmitting see accessories

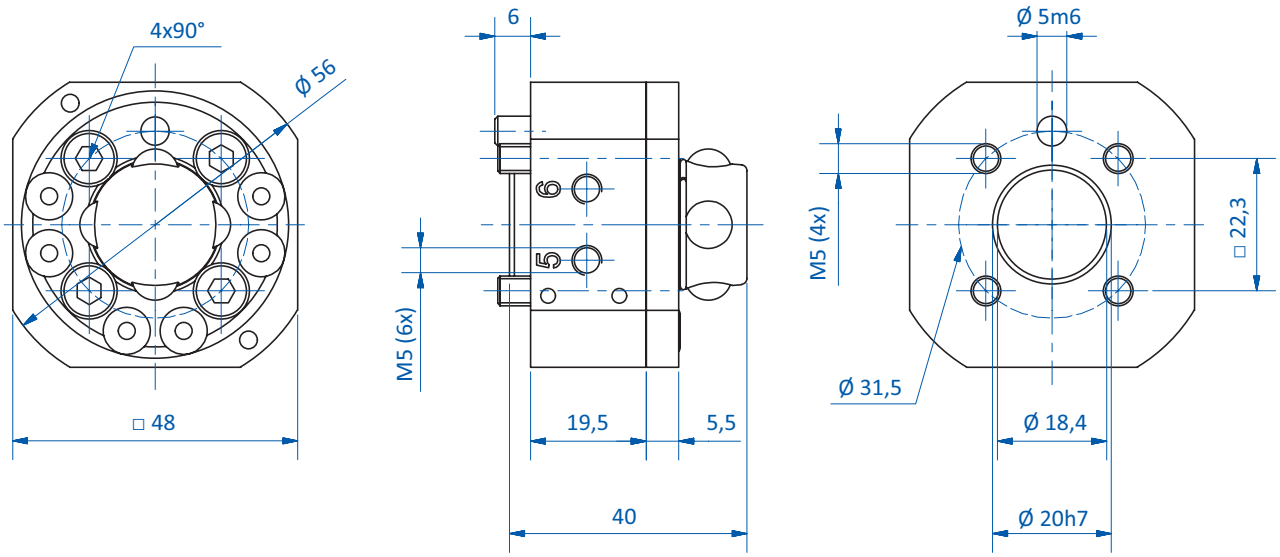
Technical data

Item no.	ASR48-A	ASR48-B	ASR60-A	ASR60-B
Lifting force [N]	50	50	200	200
Number of pneumatic connections	8xM5	6xM5	4xM5	4xM5
Working pressure [bar (psi)]	0 - 10 (0 - 145)	0 - 10 (0 - 145)	0 - 10 (0 - 145)	0 - 10 (0 - 145)
Max. torque [Nm]	40	40	150	150
Max. bending moment [Nm]	40	40	158	158
Repeat accuracy [mm]	< 0.01	< 0.01	< 0.01	< 0.01
Operating pressure [bar (psi)]	6 - 10 (87 - 145)	6 - 10 (87 - 145)	6 - 10 (87 - 145)	6 - 10 (87 - 145)
Operating temperature [°C (°F)]	10 - 60 (50 - 140)	10 - 60 (50 - 140)	10 - 60 (50 - 140)	10 - 60 (50 - 140)
Weight [g]	200	50	400	110
Suitable plug connectors	ASR48-A-ME (p.45)	ASR48-B-ME (p.45)	ASR60-A-ME (p.45)	ASR60-B-ME (p.45)

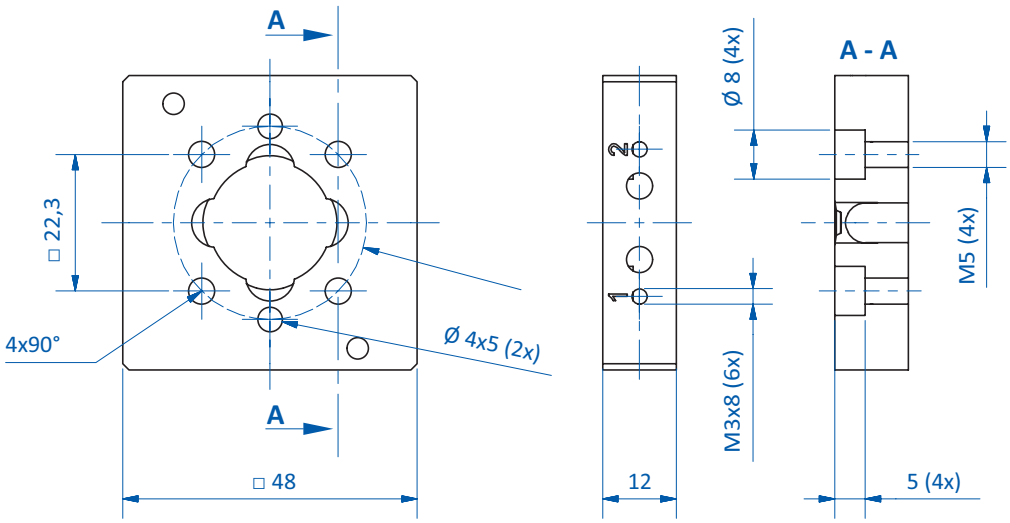
Application example



Dimensions



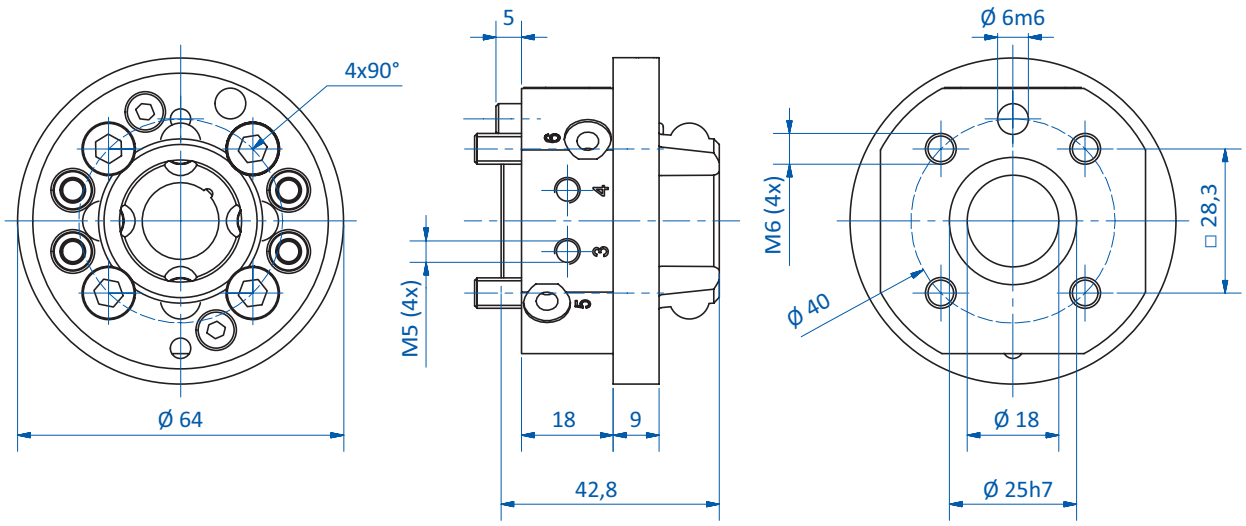
ASR48-A



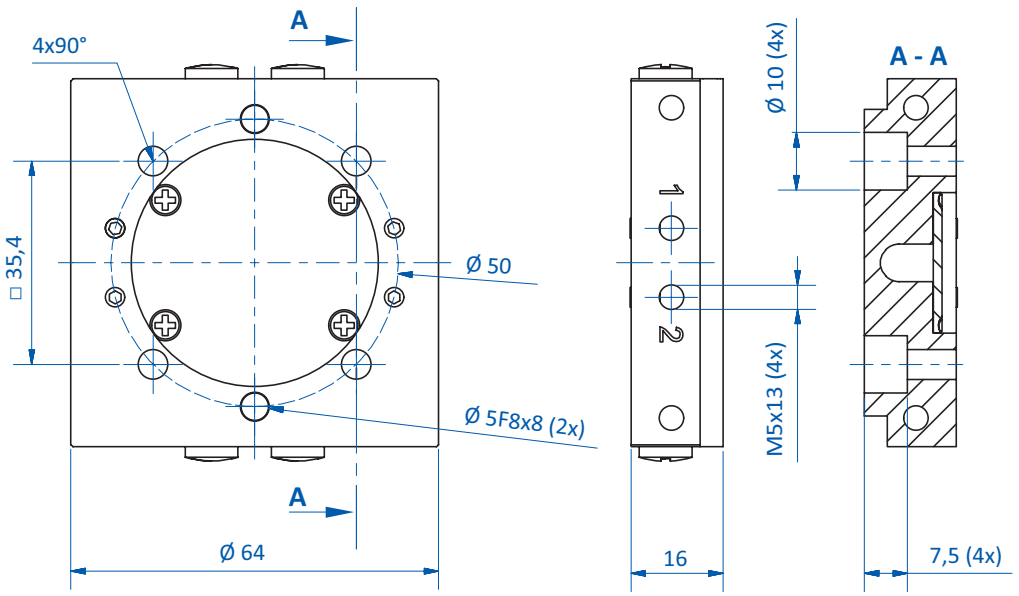
ASR48-B

Continued on the next page

Dimensions



ASR60-A



ASR60-B

Electronic connectors for automatic quick-changers



Display with quick-change system – robot side



Display with quick-change system – gripper side

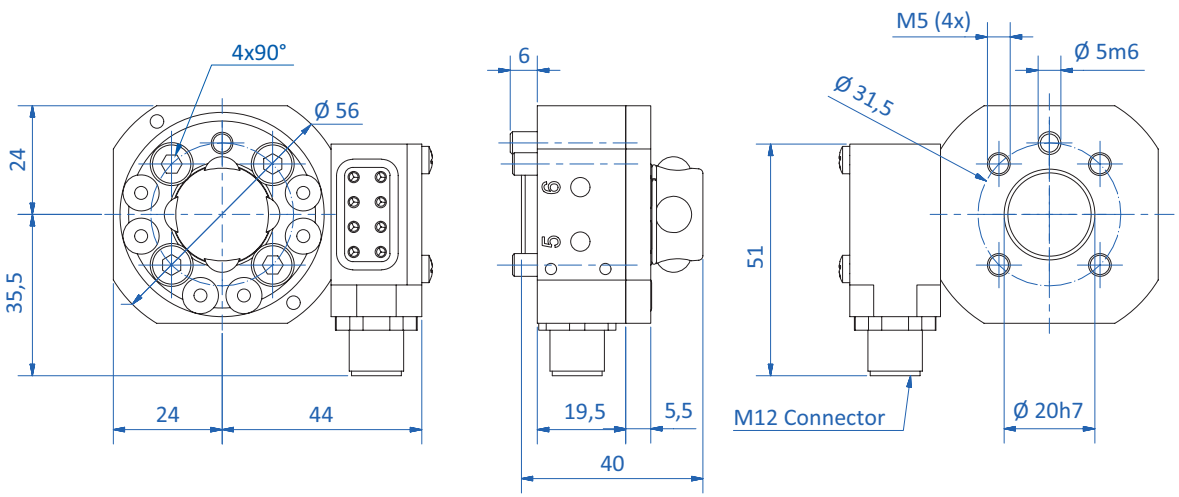
Product notes

> Electronic modules for transmitting up to eight signals
> Automatic electrical connection via spring loaded pins

Technical data

Item no.	Max. operating voltage [V]	Number of electrical channels	Max. current consumption [A]	Connection	Operating temperature [°C (°F)]	Weight [g]
ASR48-A-ME	60	8	2	M12	10 - 60 (50 - 140)	50
ASR48-B-ME	60	8	2	M12	10 - 60 (50 - 140)	20
ASR60-A-ME	60	8	2	M12	10 - 60 (50 - 140)	50
ASR60-B-ME	60	8	2	M12	10 - 60 (50 - 140)	20

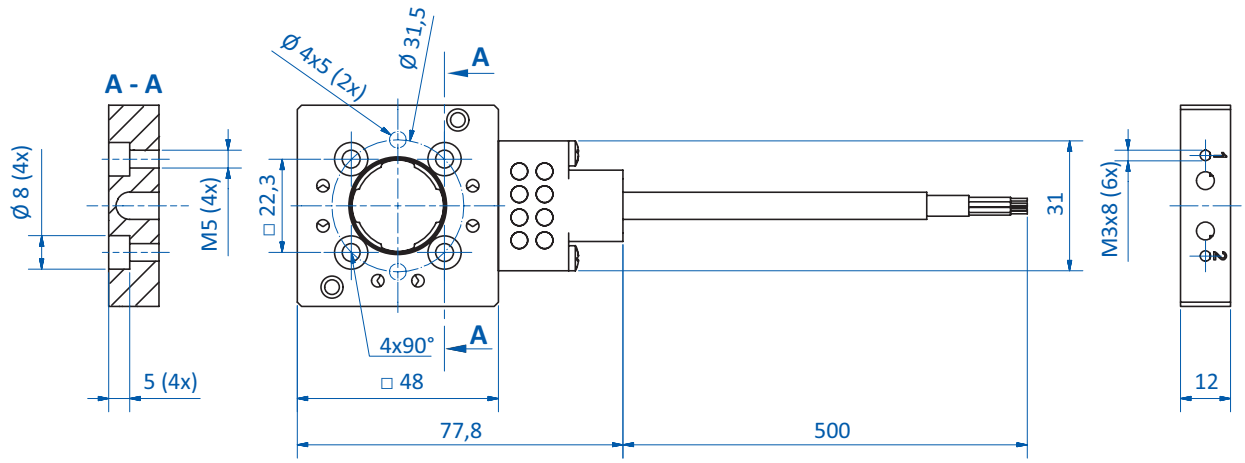
Dimensions



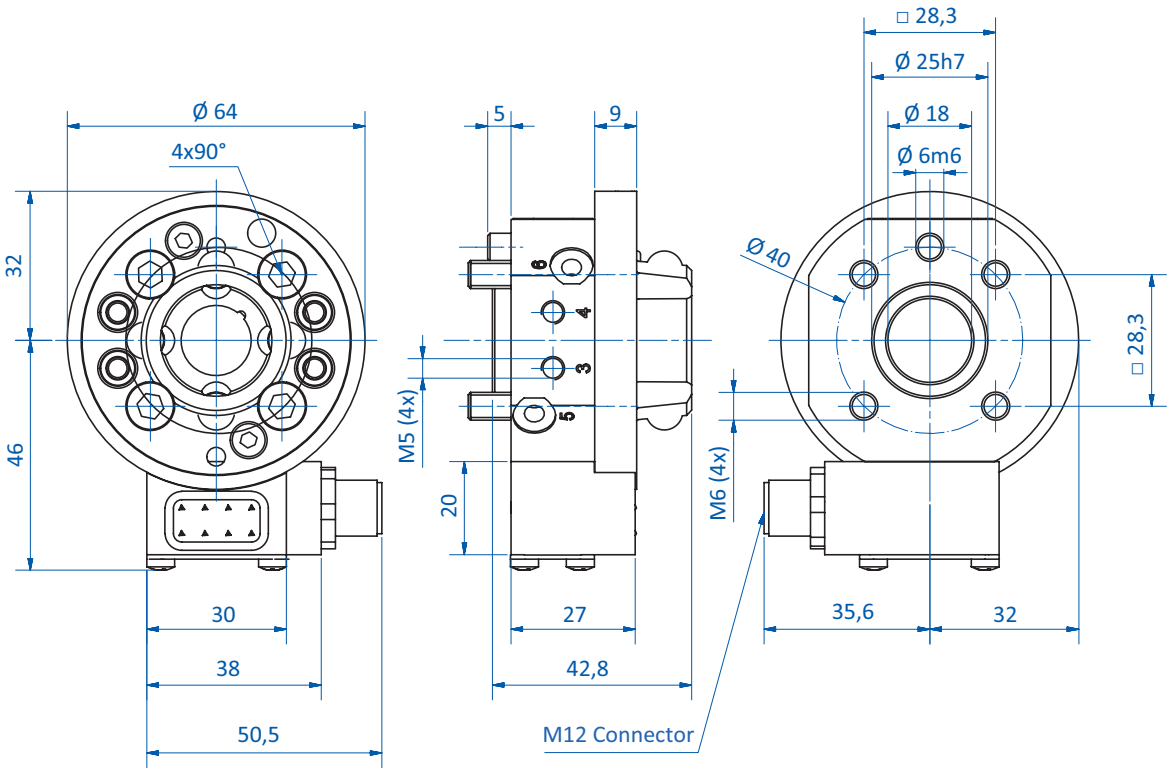
ASR48-A-ME

Continued on the next page

Dimensions

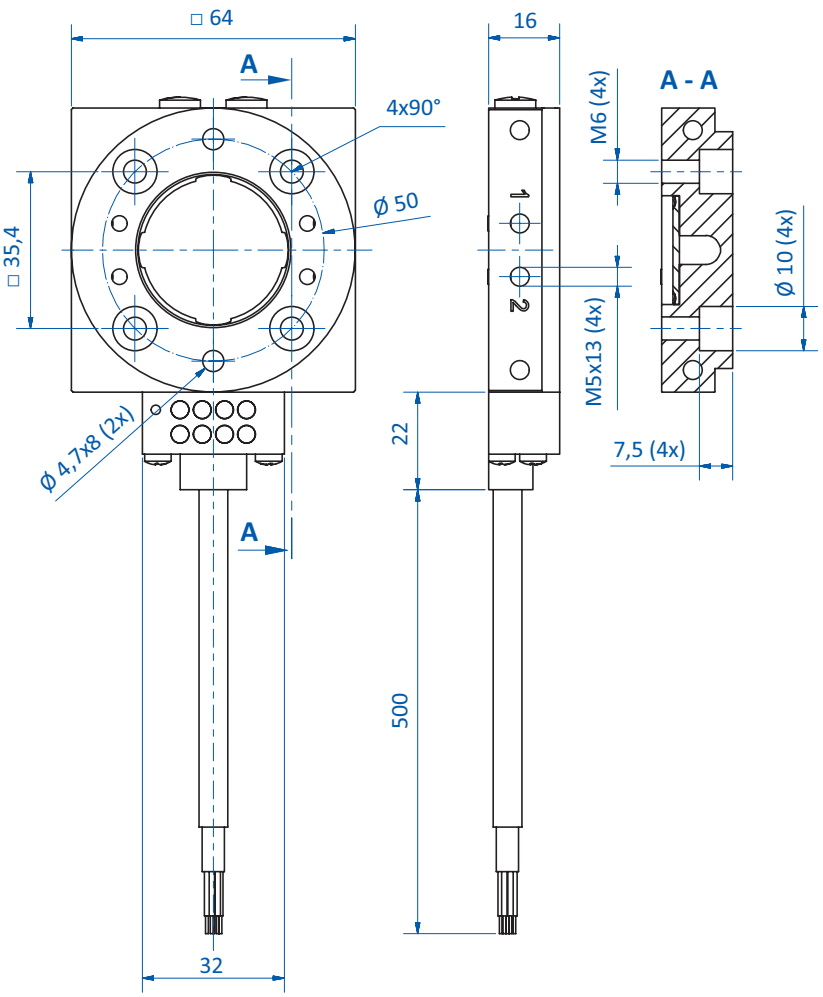


ASR48-B-ME



ASR60-A-ME

Dimensions



ASR60-B-ME

Notes:

Extrusion systems at a glance 50
Extrusions 52
Slot nuts 58
Connectors 64
Clamps for shafts 78
Mounting of vacuum cups 91
Air manifolds 96
Special elements 99
Accessories 102

FIPA Extrusions



> FIPA extrusions SLine, MLine and XLine form the base of gripper systems and offer maximum stability and application flexibility



SLine and MLine

> Base for grippers with spans up to 1 m and loads up to approx. 5 kg
> Stable and lightweight

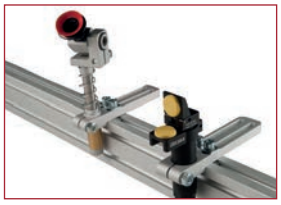
> See page 52



XLine

> Base for grippers with spans exceeding 1 m and loading capacity exceeding 5 kg
> Torsionally rigid for maximum stability even with high loads

> See page 55



Angle clamps

> Integration of gripper elements or vacuum cups
> Clamping diameters 10, 14, 20 and 30 mm
> Fits to extrusions from FIPA as well as third-party products



Profile connectors

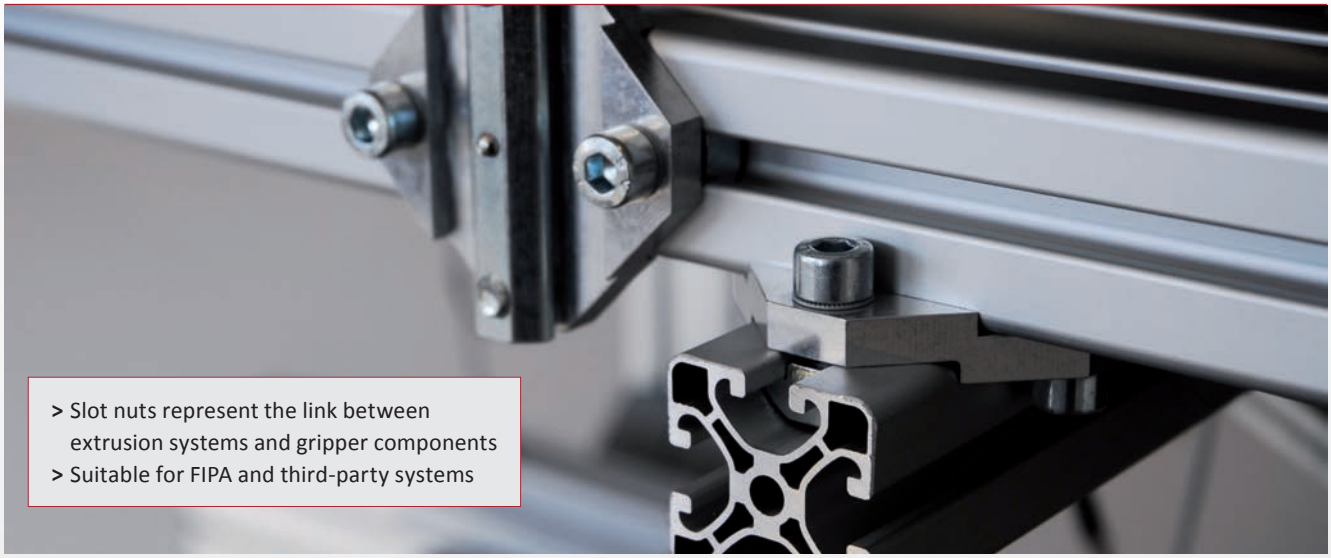
> Angle variable, rigid connection of two extrusions



Clamping screws

> Internal and external hex bits for easy assembly even in restricted spaces

FIPA Slot nuts



> Slot nuts represent the link between extrusion systems and gripper components
> Suitable for FIPA and third-party systems



Threaded slot nuts – universal

> For inserting into the extrusion groove
> Suitable for extrusion systems SLine, MLine and XLine as well as third-party products
> Existing components from other suppliers can still be used

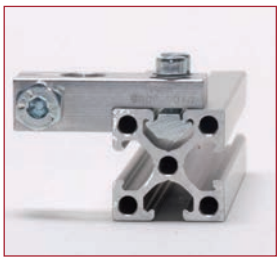
> See page 58



Threaded slot nuts – swivel-in

> Slot nuts can be rotated in or out even after the assembly of the gripper system
> Quick and flexible extension and adaption of gripper systems without disassembly

> See page 62



Installation examples

> Using the same universal slot nut in FIPA and third-party extrusions
> Example with third-party extrusions 25 x 25 mm



> Example with FIPA SLine 20 x 20 mm

SLine extrusions



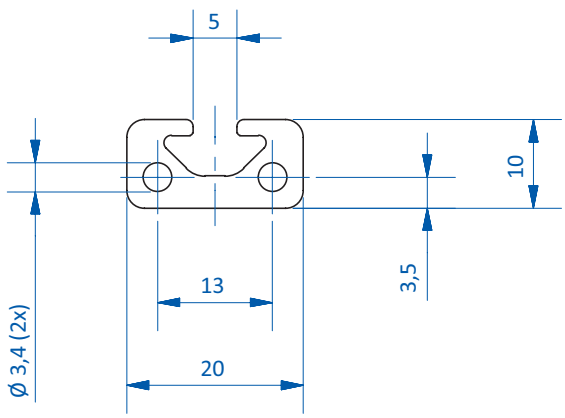
Product notes

> Lightweight and rigid
> Material: AlMgSi 0.5 F25
> Special lengths over 2,000 mm on request

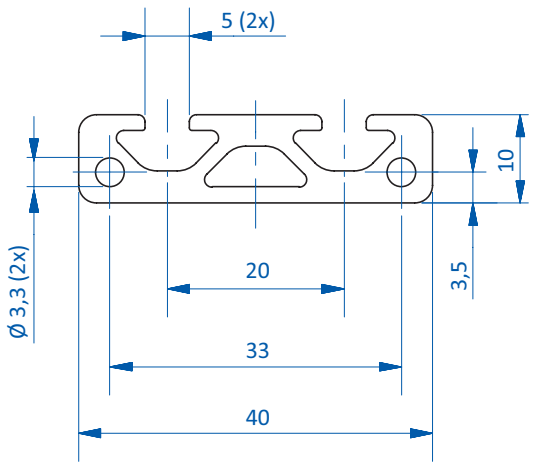
Technical data

Item no.	Length [mm]	Weight [kg/m]	Cross-section area [cm²]	Moment of plane area axial Ix [cm⁴]	Moment of plane area axial Iy [cm⁴]	Moment of resistance axial Wx [cm³]	Moment of resistance axial Wy [cm³]	Suitable end caps
GR01.001.2000	1,960	0.35	1.28	0.12	0.53	0.22	0.53	GR01.010 (p.57)
GR01.002.2000	1,960	0.63	2.34	0.24	3.59	0.45	1.8	GR01.011 (p.57)
GR01.003.2000	1,960	0.48	1.8	0.74	0.74	0.74	0.74	GR01.012 (p.57)
GR01.004.2000	1,960	0.87	3.22	1.39	5.16	1.39	2.53	GR01.013 (p.57)
GR01.006.2000	1,960	1.67	6.06	2.68	35.8	2.68	8.95	GR01.015 (p.57)
GR01.007.2000	1,960	1.33	4.94	9.16	9.16	4.53	4.53	GR01.016 (p.57)

Dimensions

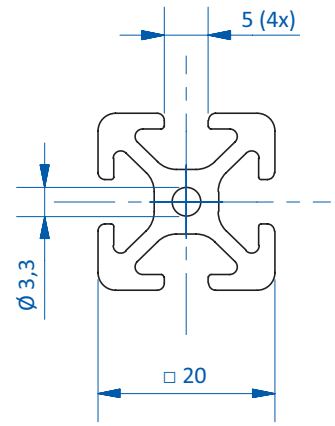


GR01.001.2000

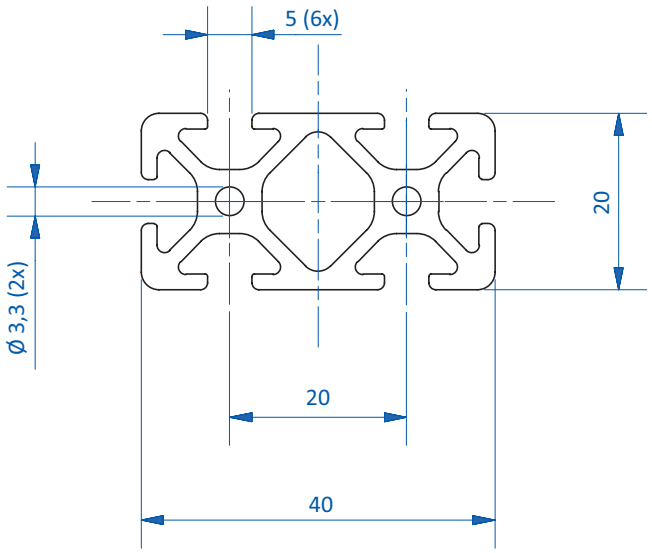


GR01.002.2000

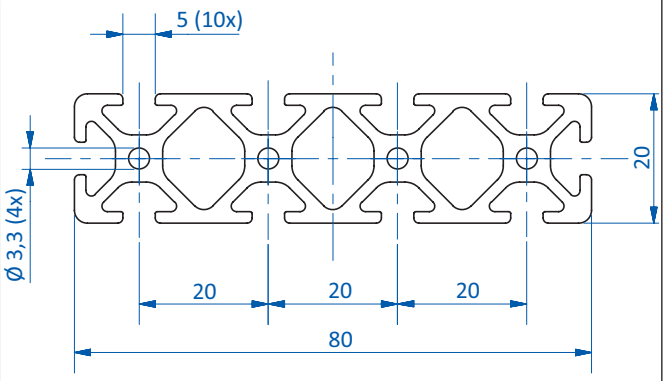
Dimensions



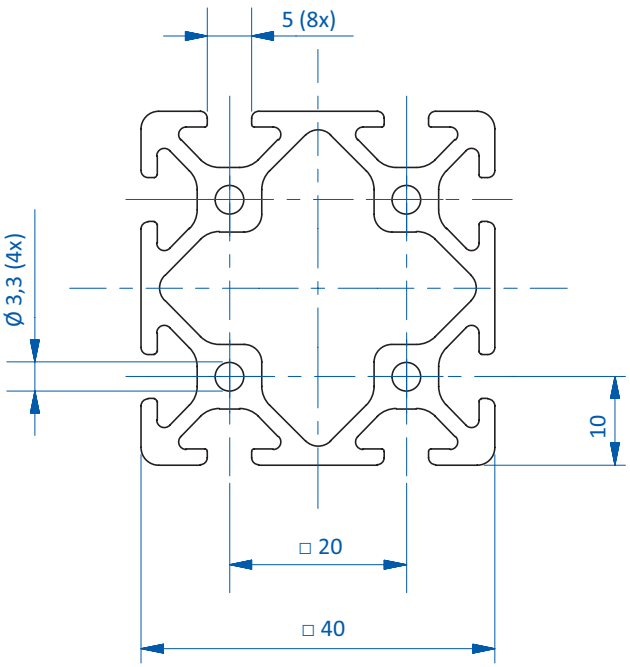
GR01.003.2000



GR01.004.2000



GR01.006.2000



GR01.007.2000

MLine extrusions



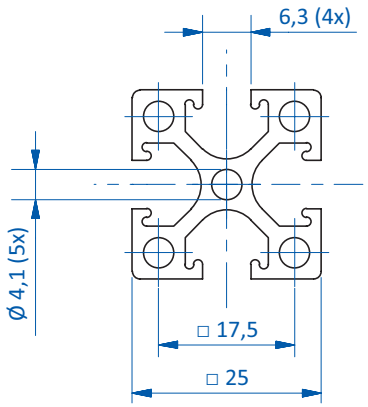
Product notes

> Lightweight and rigid
> Material: AlMgSi 0.5 F25
> Special lengths over 2,000 mm on request

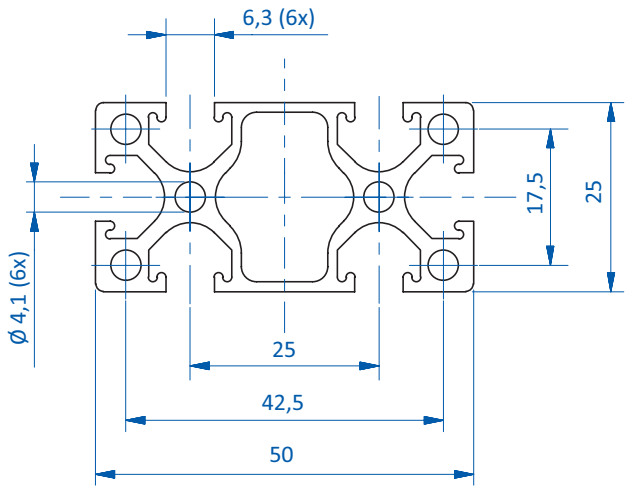
Technical data

Item no.	Length [mm]	Weight [kg/m]	Cross-section area [cm²]	Moment of plane area axial Ix [cm⁴]	Moment of plane area axial Iy [cm⁴]	Moment of resistance axial Wx [cm³]	Moment of resistance axial Wy [cm³]	Suitable end caps
GR01.008.2000	1,960	0.61	2.48	1.58	1.58	1.26	1.26	GR01.017 (p.57)
GR01.009.2000	1,960	1.04	4.27	10.89	2.85	4.36	2.28	GR01.018 (p.57)

Dimensions



GR01.008.2000



GR01.009.2000



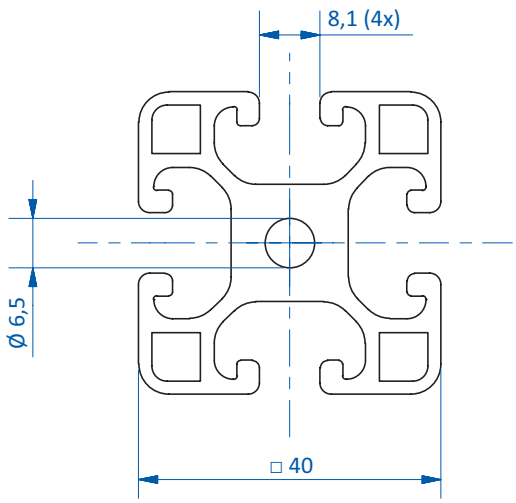
Product notes

> High rigidity
> Material: AlMgSi 0.5 F25
> Special lengths over 2,000 mm on request

Technical data

Item no.	Length [mm]	Weight [kg/m]	Cross-section area [cm²]	Moment of plane area axial Ix [cm⁴]	Moment of plane area axial Iy [cm⁴]	Moment of resistance axial Wx [cm³]	Moment of resistance axial Wy [cm³]	Suitable end caps
GR-XL01.003.2000	1,960	1.36	5.04	7.34	7.34	3.67	3.67	GR-XL01.012 (p.57)
GR-XL01.004.2000	1,960	2.37	8.73	14.7	57.7	7.37	14.4	GR-XL01.013 (p.57)
GR-XL01.005.2000	1,960	5.19	19.2	131	131	32.8	32.8	--

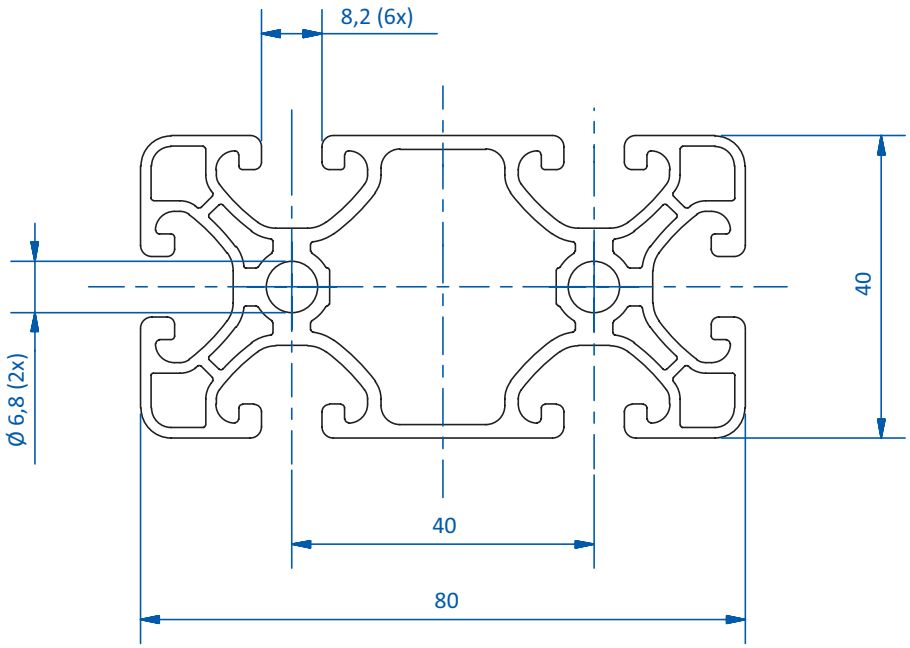
Dimensions



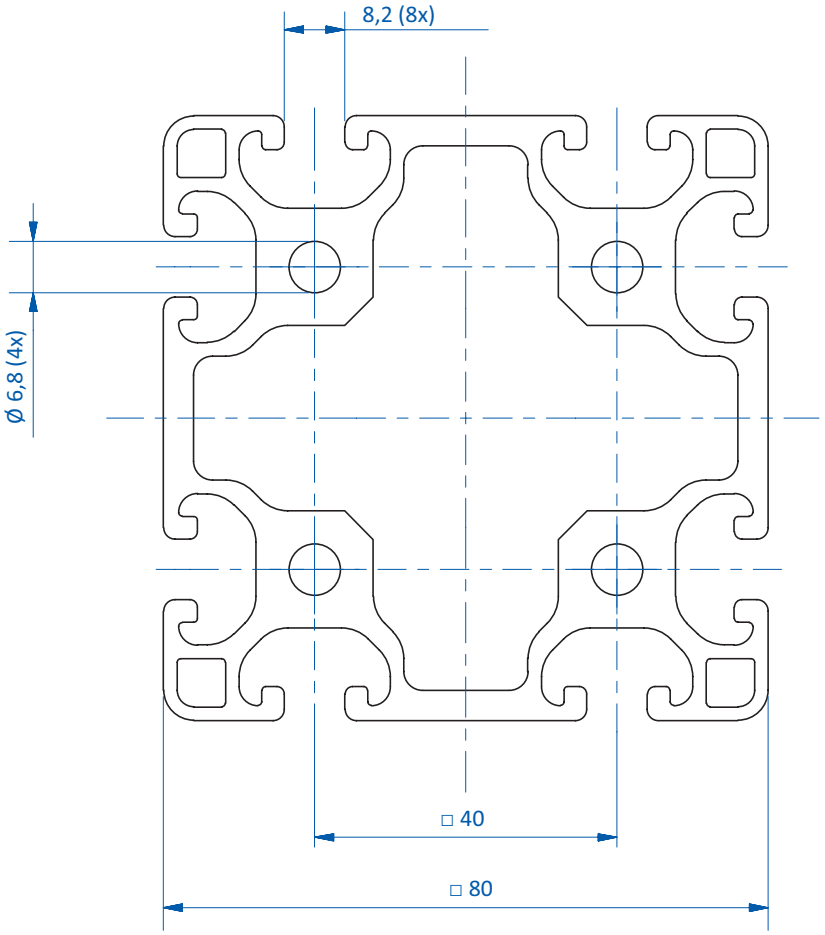
GR-XL01.003.2000

Continued on the next page

Dimensions



GR-XL01.004.2000



GR-XL01.005.2000

End caps



Product notes

> For installation at the end of extrusion, reducing the risk of injury
> Material: PA6 black

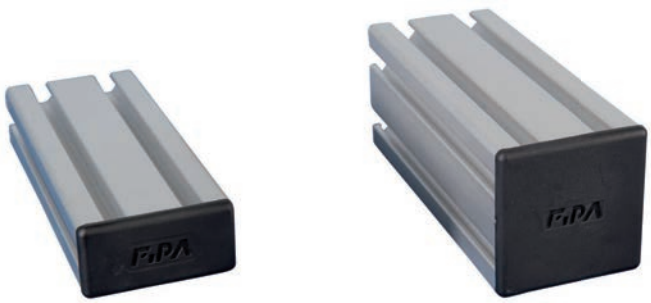
Technical data

Item no.	Suitable for extrusion system
GR01.010	SLine
GR01.011	SLine
GR01.012	SLine
GR01.013	SLine
GR01.015	SLine
GR01.016	SLine
GR01.017	MLine
GR01.018	MLine
GR-XL01.012	XLine
GR-XL01.013	XLine

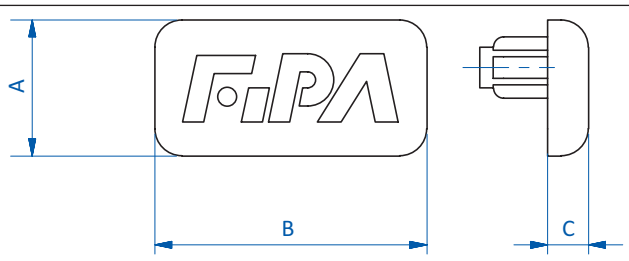
Dimensions

A [mm]	B [mm]	C [mm]
10	20	3
10	40	3
20	20	3
20	40	3
20	80	3
40	40	3
25	25	3
25	50	3
40	40	4
40	80	4

Application examples



Dimensions



Threaded slot nuts – universal





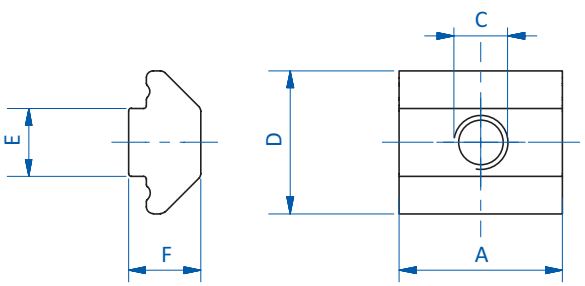
Product notes

> Galvanized steel slot nuts
> Ball catch prevents slipping of slot nut during installation
> Compatible with many third-party extrusions

Technical data

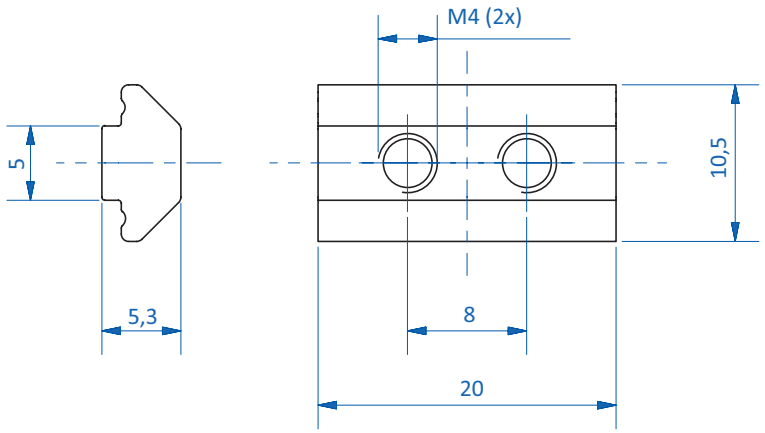
Item no.	Suitable for extrusion system	With ball catch	Weight [g]
GR01.088A	SLine / MLine	--	2
GR01.089A	SLine / MLine	--	3
GR01.090A	SLine / MLine	--	6
GR01.091A	SLine / MLine	Yes	6
GR01.092A	SLine / MLine	Yes	8
GR01.093A	SLine / MLine	Yes	9
GR01.094A	SLine / MLine	Yes	12
GR01.095A	SLine / MLine	Yes	13
GR01.096A	SLine / MLine	Yes	20
GR01.097A	SLine / MLine	--	2
GR01.098A	SLine / MLine	--	5
GR01.101A	SLine / MLine	Yes	12
GR01.102A	SLine / MLine	Yes	20
GR-XL01.100	XLine	Yes	17
GR-XL01.101	XLine	Yes	21
GR-XL01.102	XLine	Yes	35
GR-XL01.103	XLine	Yes	57
GR-XL01.104	XLine	Yes	94
GR-XL01.106	XLine	Yes	18

Dimensions

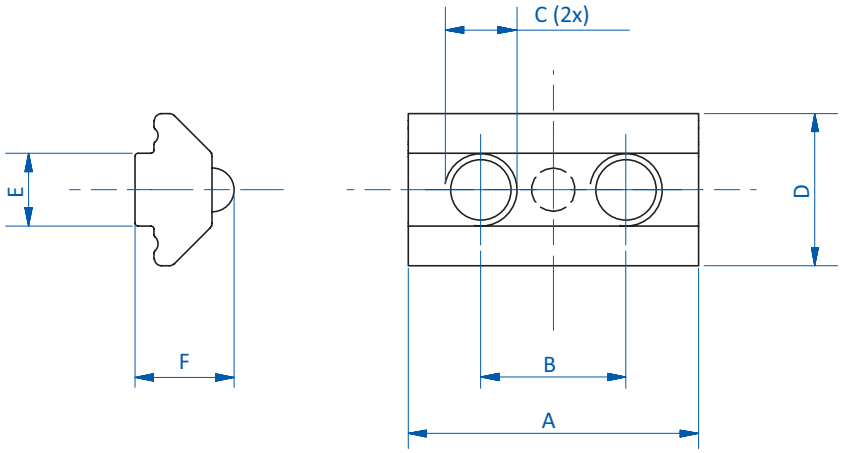


GR01.088A | GR01.089A | GR01.097A | GR01.098A | GR-XL01.100 | GR-XL01.106

Dimensions



GR01.090A



GR01.091A | GR01.092A | GR01.093A | GR01.094A | GR01.095A | GR01.096A | GR01.101A | GR01.102A | GR-XL01.101 | GR-XL01.102 | GR-XL01.103 | GR-XL01.104

Item no.	C	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]
GR01.088A	M3	12	--	10.5	4.5	5.3
GR01.089A	M4	12	--	10.5	4.5	5.3
GR01.090A	M4	20	8	10.5	5	6.8
GR01.091A	M5	20	10	10.5	5	6.8
GR01.092A	M5	25	12	10.5	5	6.8
GR01.093A	M5	30	20	10.5	5	6.8
GR01.094A	M5	35	25	10.5	5	6.8
GR01.095A	M5	40	30	10.5	5	6.8
GR01.096A	M5	60	50	10.5	5	6.8
GR01.097A	M5	12	--	10.5	5	6.8
GR01.098A	M5	20	--	10.5	5	6.8
GR01.101A	M5	45	35	10.5	5	6.8
GR01.102A	M5	70	60	10.5	5	6.8
GR-XL01.100	M8	22	--	17	8	12.1
GR-XL01.101	M8	30	15	17	8	12.1
GR-XL01.102	M8	45	30	17	8	12.1
GR-XL01.103	M8	70	55	17	8	12.1
GR-XL01.104	M8	110	95	17	8	12.1
GR-XL01.106	M6	22	--	17	8	12.1

Threaded slot nuts – universal



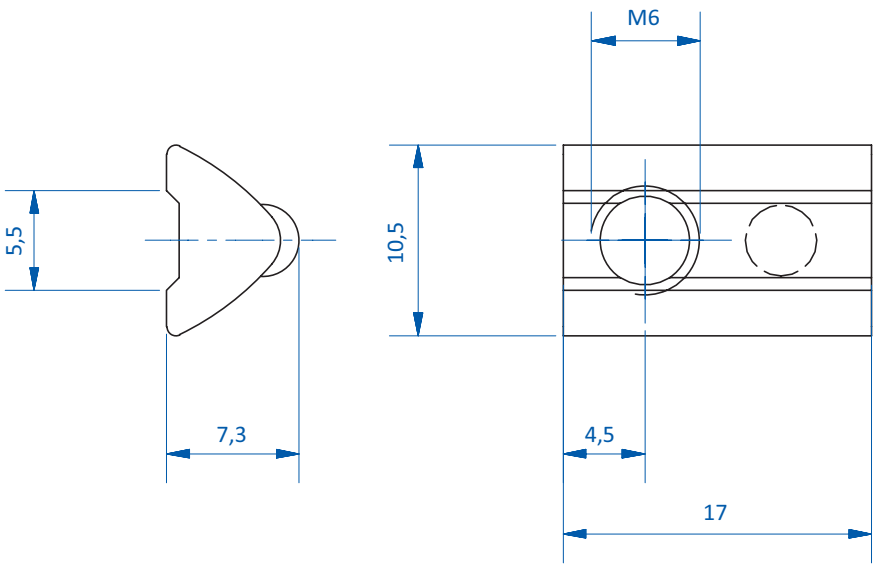
Product notes

> Galvanized steel slot nuts
> Ball catch prevents slipping of slot nut during installation
> Compatible with many third-party extrusions

Technical data

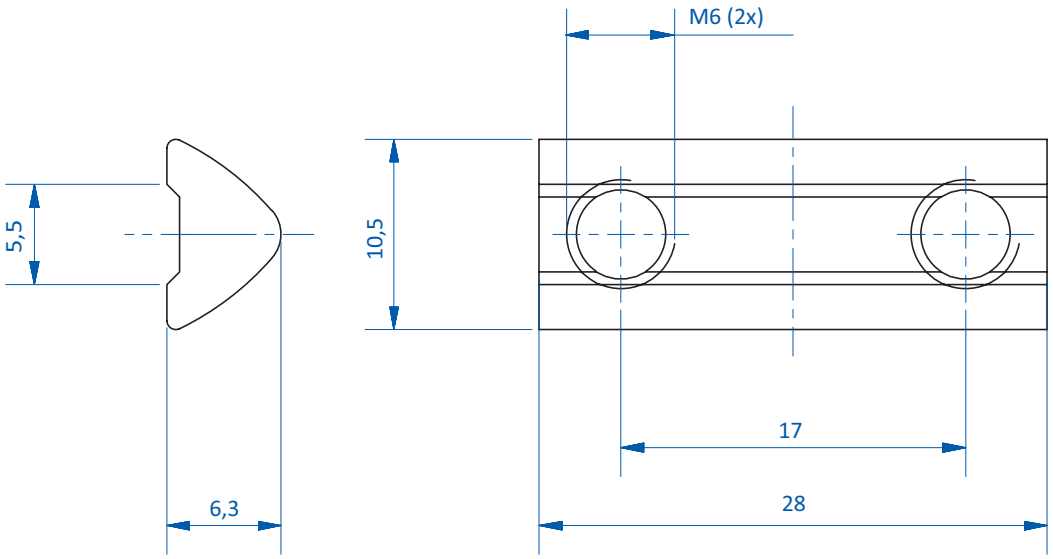
Item no.	Suitable for extrusion system	With ball catch	Weight [g]
GR01.103	MLine	Yes	4
GR01.104	MLine	--	7
GR01.105	MLine	--	16

Dimensions

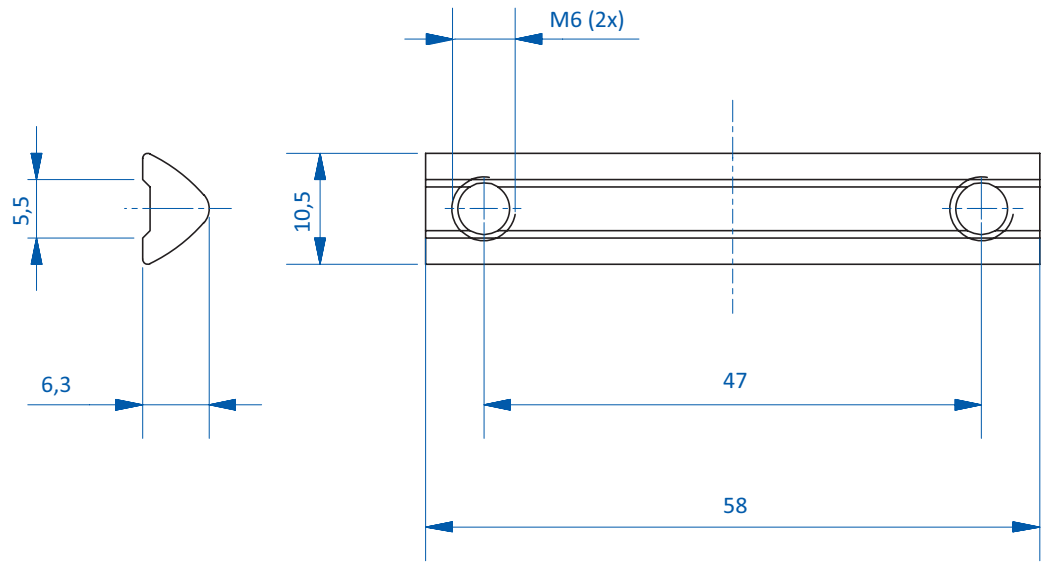


GR01.103

Dimensions



GR01.104



GR01.105

Threaded slot nuts – swivel-in



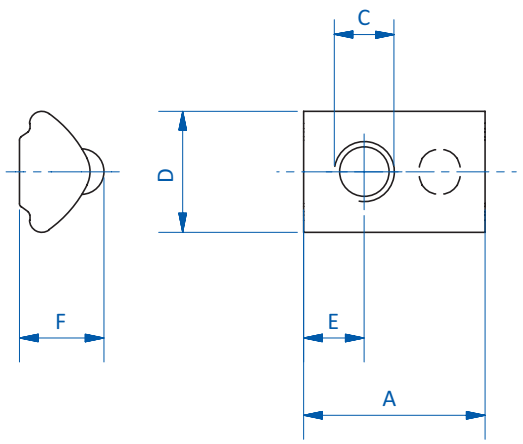
Product notes

> Galvanized steel slot nuts
> Enables subsequent extension of gripper systems without disassembly
> Ball catch prevents slipping of slot nut during installation

Technical data

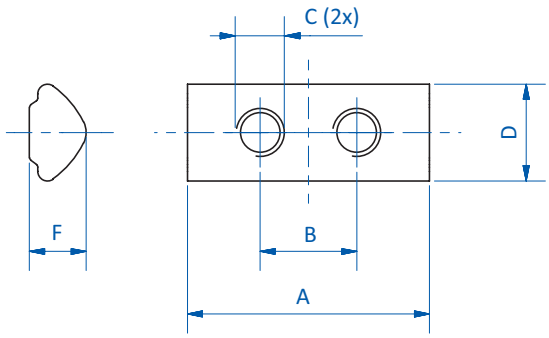
Item no.	Suitable for extrusion system	With ball catch	Weight [g]
GR01.069	SLine	Yes	2
GR01.070	SLine	Yes	2
GR01.071	SLine	Yes	2
GR01.080	SLine	--	2
GR01.081	SLine	Yes	3
GR01.082	SLine	Yes	4
GR01.083	SLine	Yes	5
GR01.084	SLine	Yes	6
GR01.085	SLine	Yes	7
GR01.086	SLine	Yes	11
GR-XL01.105	XLine	Yes	8

Dimensions

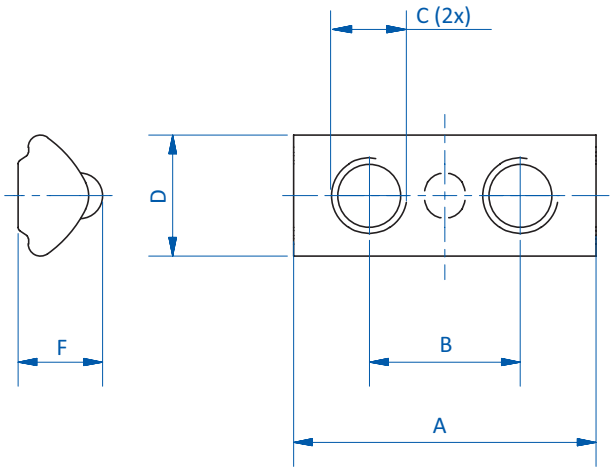


GR01.069 | GR01.070 | GR01.071 | GR-XL01.105

Dimensions



GR01.080



GR01.081 | GR01.082 | GR01.083 | GR01.084 | GR01.085 | GR01.086

Item no.	C	A [mm]	B [mm]	D [mm]	F [mm]	E [mm]
GR01.069	M3	12	--	8	5.6	3
GR01.070	M4	12	--	8	5.6	4
GR01.071	M5	12	--	8	5.6	4
GR01.080	M4	20	8	8	4.7	--
GR01.081	M5	20	10	8	5.6	--
GR01.082	M5	25	12	8	5.6	--
GR01.083	M5	30	20	8	5.6	--
GR01.084	M5	35	25	8	5.6	--
GR01.085	M5	40	30	8	5.6	--
GR01.086	M5	60	50	8	5.6	--
GR-XL01.105	M5	22	--	12.9	9.1	6.3

Cross joint connectors



Product notes

> Elements for 90° connection of two extrusions
> Extrusions can be moved in four directions after screws are loosened

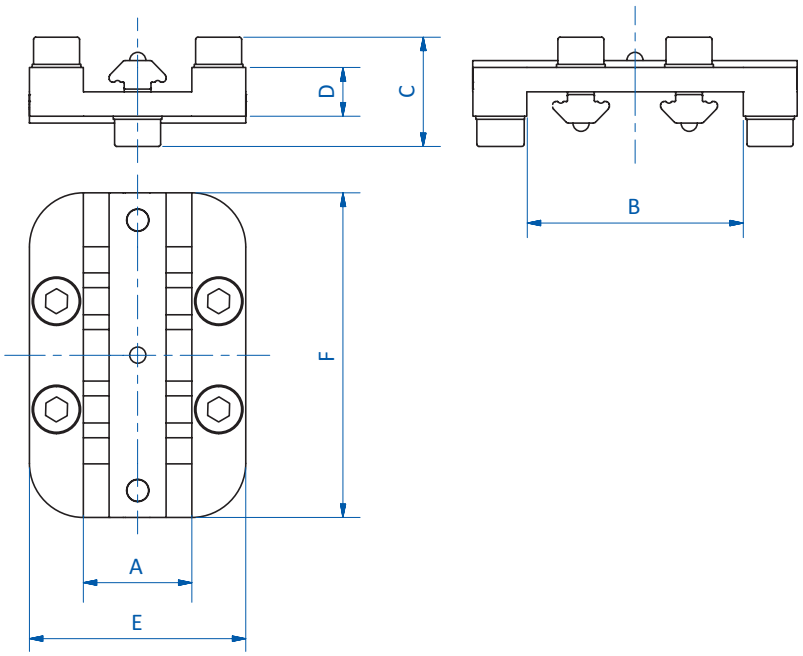
Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.020A	SLine	48
GR01.021	SLine	73
GR01.022	SLine	107
GR01.026	MLine	55
GR01.027	MLine	90
GR01.150	MLine	101
GR-XL01.020	XLine	218
GR-XL01.021	XLine	380
GR-XL01.022	XLine	630

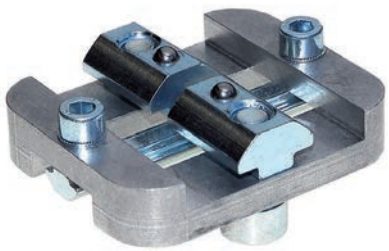
Dimensions

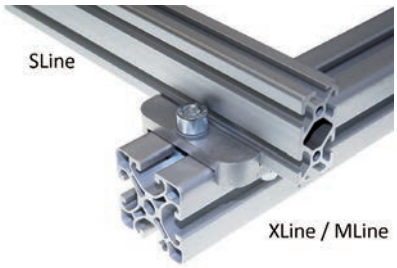
A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
20	20	20	9	40	40	--
20	40	20	9	40	60	--
40	40	20	9	60	60	--
25	25	23	12	45	45	--
25	50	23	12	45	70	--
50	50	23	12	70	70	--
40	40	30	12	70	70	4
40	80	30	12	70	110	4
80	80	30	12	110	110	4

Dimensions



Cross joint connectors





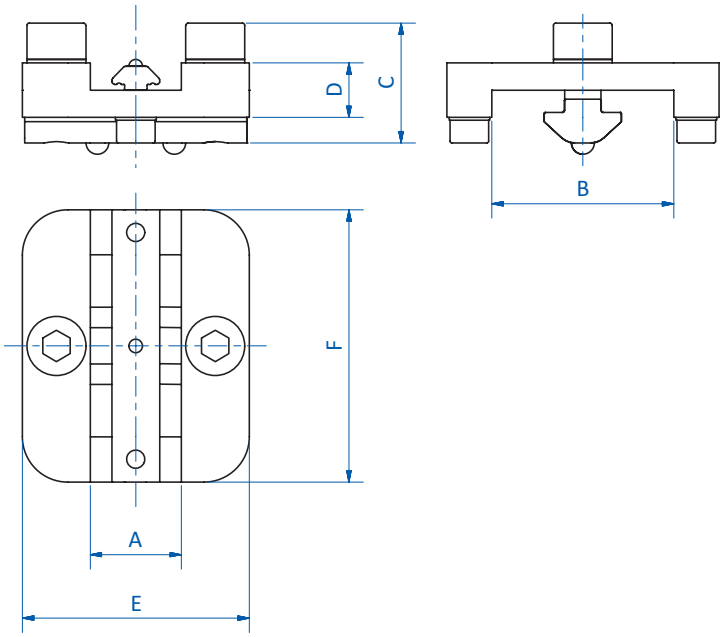
Product notes

> Elements for 90° connection of SLine with MLine or XLine extrusions

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.023	SLine / MLine	61
GR01.024	SLine / XLine	119
GR01.025	SLine / XLine	173

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]	**F** [mm]
GR01.023	20	25	23	12	40	45
GR01.024	20	40	27	12	50	60
GR01.025	40	40	27	12	70	60

Profile connectors



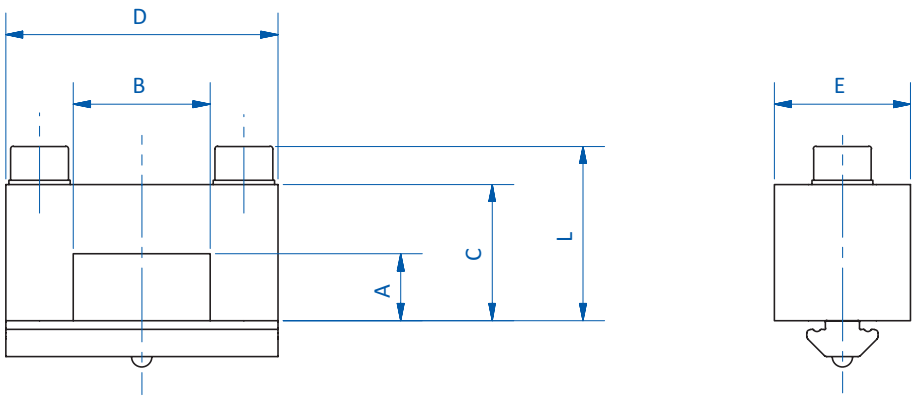
Product notes

> Elements for 90° connection of two SLine extrusions
> Extrusions can be moved in four directions after screws are loosened

Technical data

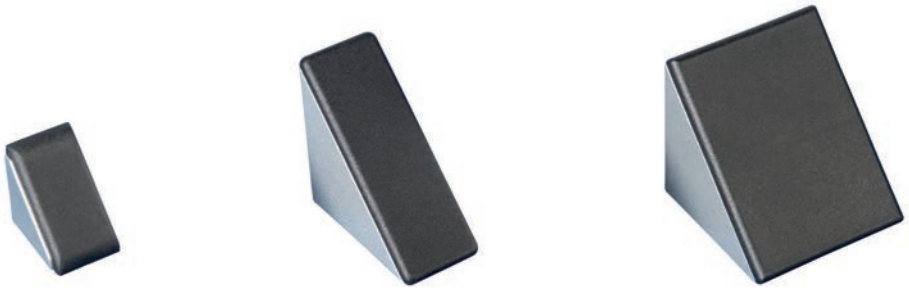
Item no.	Suitable for extrusion system	Weight [g]
GR01.030	SLine	43
GR01.031	SLine	58
GR01.032	SLine	72
GR01.040	SLine	50
GR01.041	SLine	55
GR01.042	SLine	83

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	L [mm]
GR01.030	10	20	20	40	20	25.5
GR01.031	10	40	19.5	60	20	25
GR01.032	20	40	29.5	60	20	35
GR01.040	20	10	29.5	30	20	35
GR01.041	20	20	29.5	40	20	35
GR01.042	40	20	49.5	40	20	55

Angle connectors 90° with cover



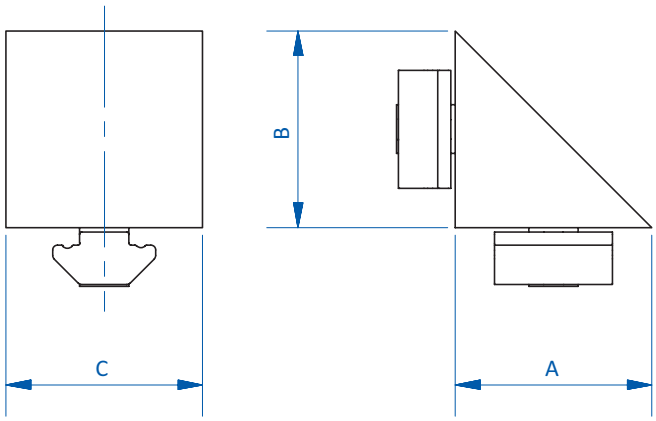
Product notes

> Elements for connection of two extrusions

Technical data

Item no.	Weight [g]	Suitable for extrusion system
GR01.050	20	SLine / MLine
GR01.051	60	SLine / MLine
GR01.052	150	XLine
GR01.053	270	XLine

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]
GR01.050	20	20	20
GR01.051	41.5	41.5	20
GR01.052	40	40	40
GR01.053	77.5	77.5	38.5

Joining plates 90°





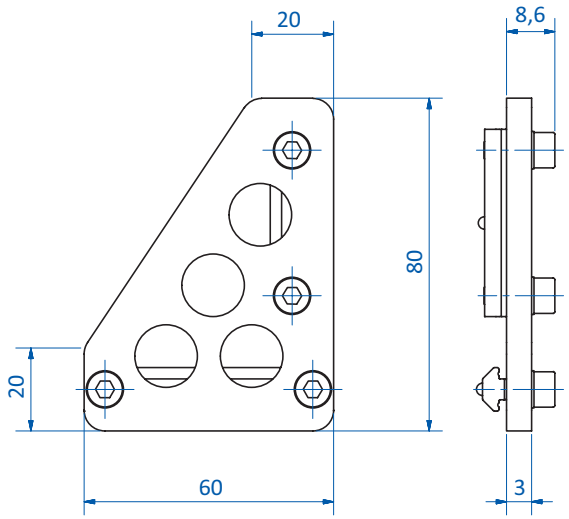
Product notes

> Joining plate for 90° connection of two profiles

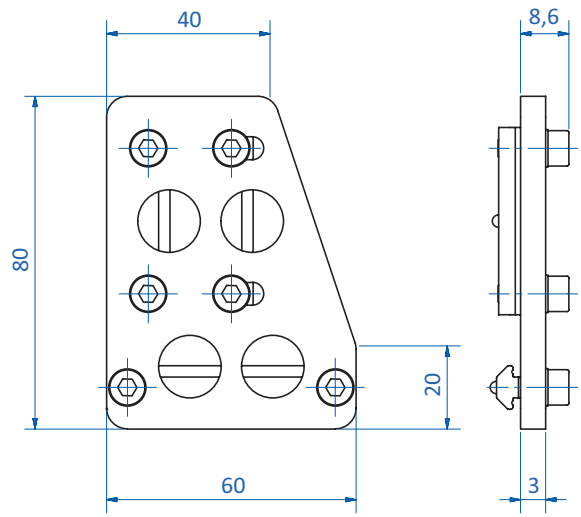
Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.060	SLine / MLine	93
GR01.061	SLine / MLine	108

Dimensions



GR01.060



GR01.061

Corner joint plates 90° to 130°



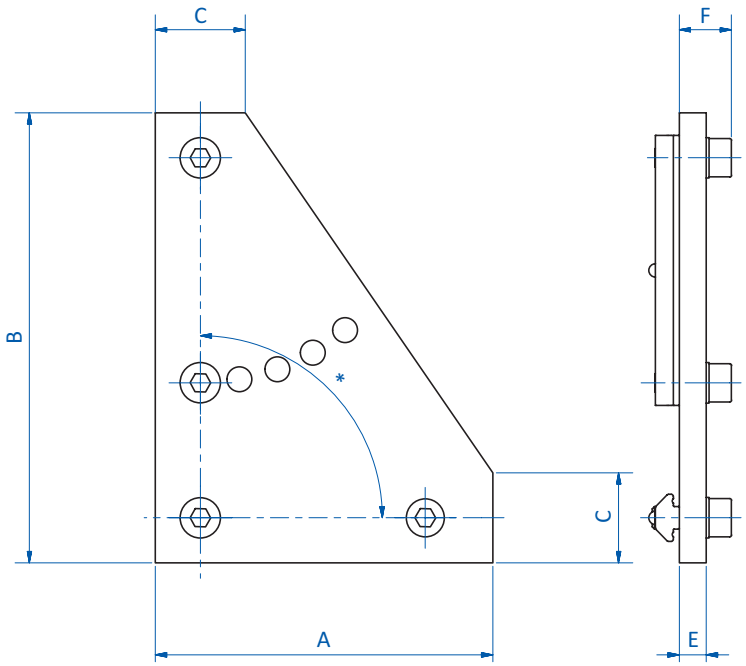
Product notes

> Joining plates for connection of two profiles with a defined angle

Technical data

Item no.	Suitable for extrusion system	Angle [°]	Weight [g]
GR01.063	SLine	90°, 100°, 110°, 120°, 130°	127
GR01.064	MLine	90°, 100°, 110°, 120°, 130°	131
GR-XL01.063	XLine	90°, 110°, 130°	284

Dimensions



* = Angle

Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**E** [mm]	**F** [mm]
GR01.063	75	100	20	3	8.6
GR01.064	75	100	25	3	8.6
GR-XL01.063	80	120	40	3	11.8

Adjustable profile connectors 0° to 90°



GR01.062

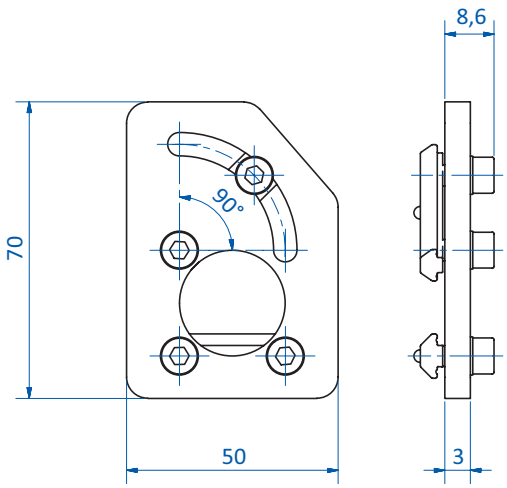
Product notes

> Joining plates for connection of two profiles with adjustable angle

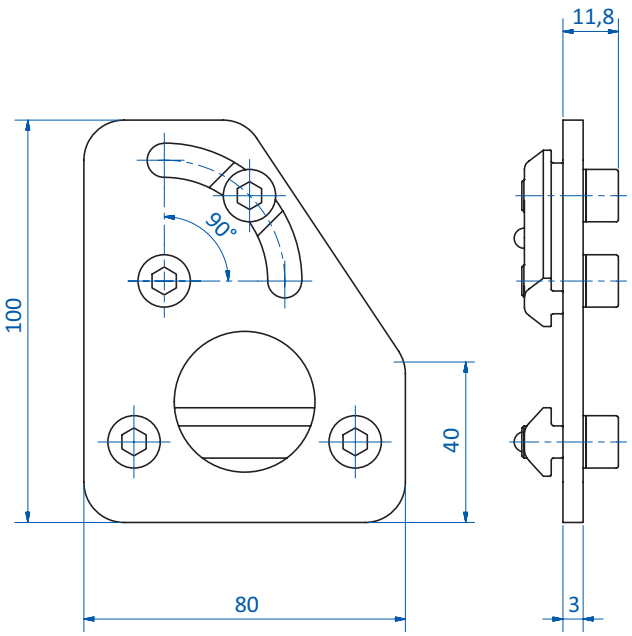
Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.062	SLine / MLine	77
GR-XL01.062	XLine	225

Dimensions



GR01.062



GR-XL01.062

Profile connectors – rotatable





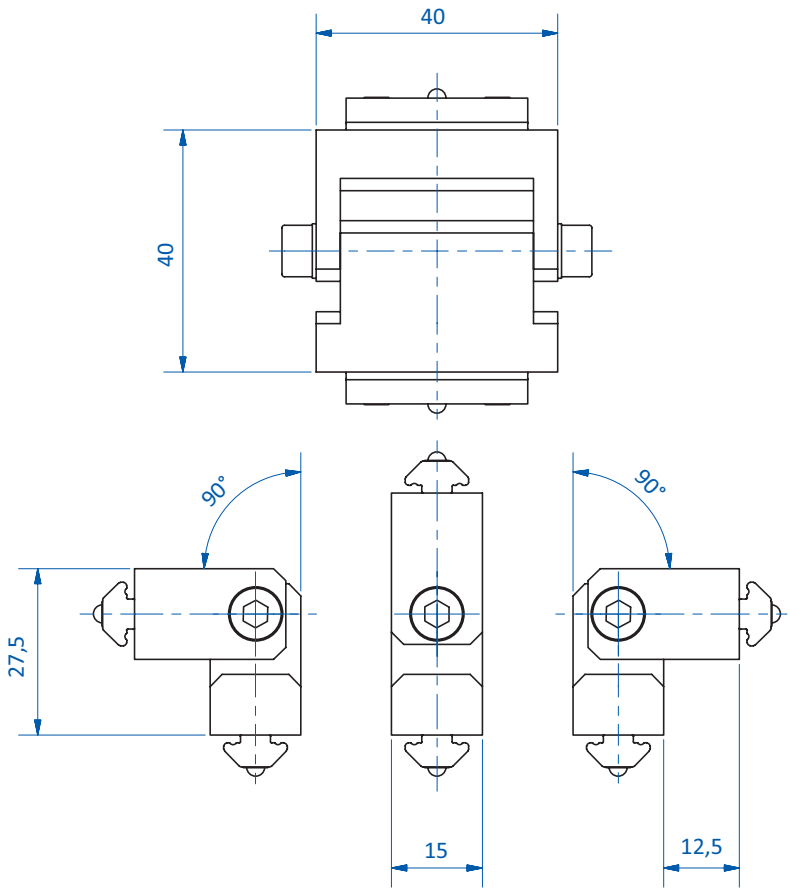
Product notes

> Variable angle mounting of two parallel profiles
> Rigid clamping through two opposing screws
> 2x slot nut GR01.093A, with 2x M5 thread for length-ways mounting
> 4x slot nut GR01.097A, with 2x M5 thread for horizontal mounting

Technical data

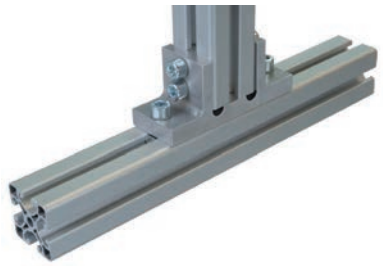
Item no.	Suitable for extrusion system	Weight [g]
GR01.100	SLine / MLine	78

Dimensions



Profile end connectors 90°





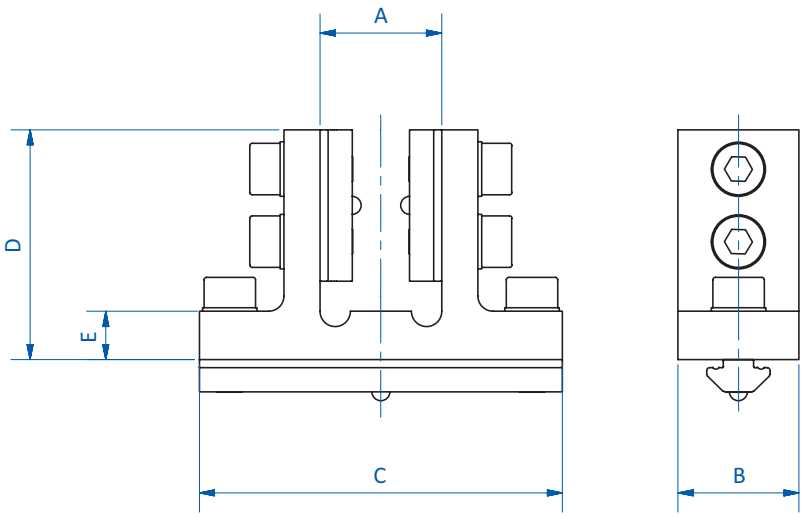
Product notes

> Rigid 90° connection between two extrusions
> No thread cutting required

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.120	SLine / MLine	92
GR01.121	SLine / MLine	90
GR01.122	SLine / MLine	96
GR01.123	SLine / MLine	100
GR-XL01.025	XLine	406
GR-XL01.026	XLine	396

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
GR01.120	20	20	60	38	8
GR01.121	40	20	80	38	8
GR01.122	25	25	60	37	7
GR01.123	50	25	90	37	7
GR-XL01.025	40	40	110	47	12
GR-XL01.026	80	40	150	47	12

Flat connectors – straight



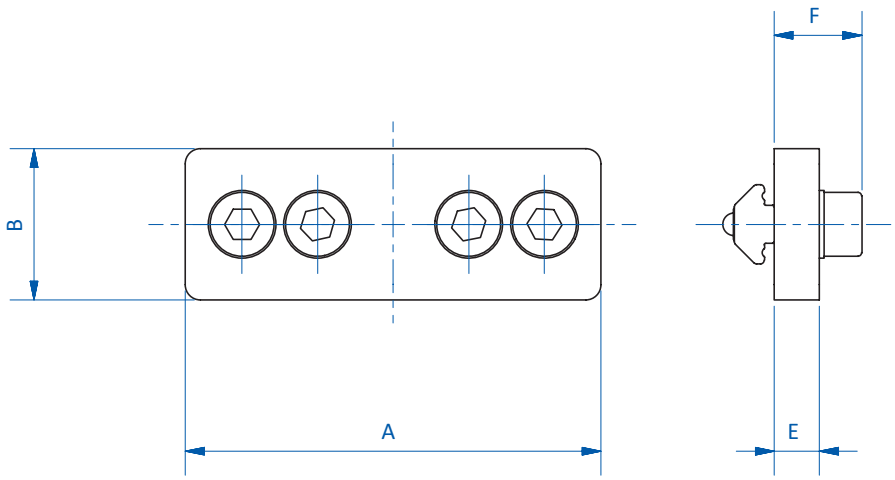
Product notes

> For rigid end-to-end connection of two profiles

Technical data

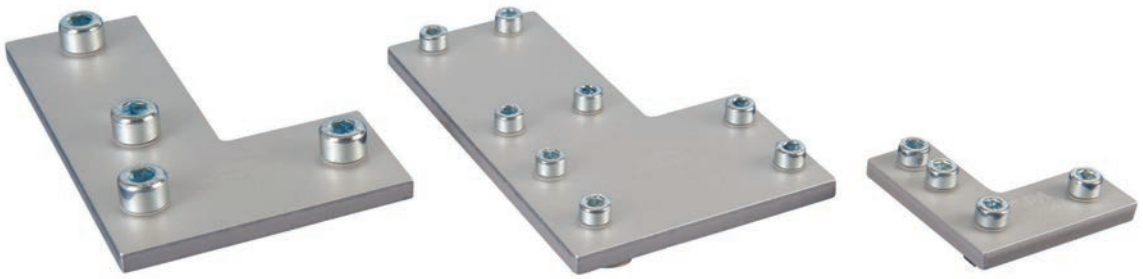
Item no.	Suitable for extrusion system	Weight [g]
GR01.054	SLine / MLine	16
GR01.055	SLine / MLine	50
GR01.056	SLine / MLine	64
GR-XL01.028	XLine	260

Dimensions



Item no.	**A** [mm]	**B** [mm]	**E** [mm]	**F** [mm]
GR01.054	55	20	3	9
GR01.055	75	20	3	9
GR01.056	100	20	3	9
GR-XL01.028	160	40	3	12

Flat connectors – L-form



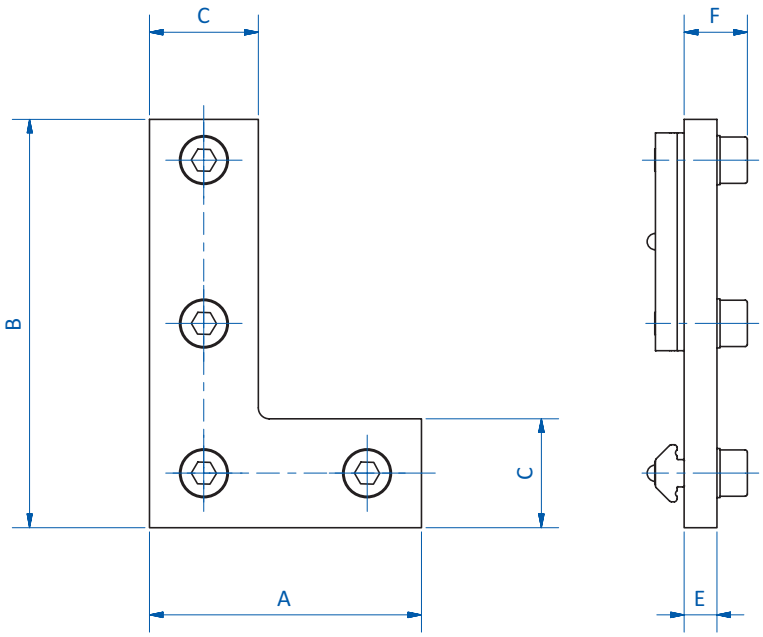
Product notes

> For rigid connection of two profiles at 90°

Technical data

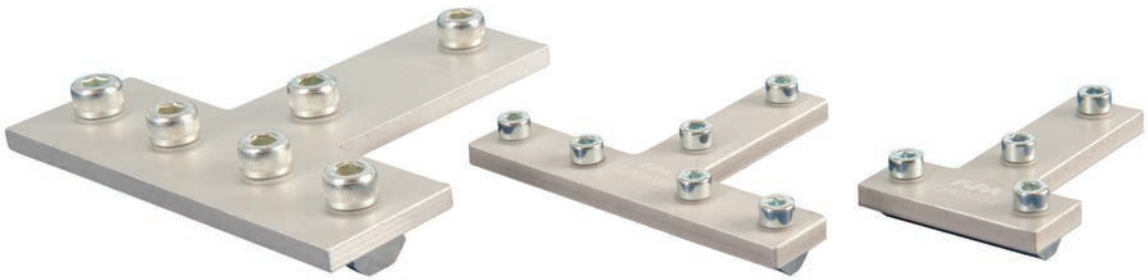
Item no.	Suitable for extrusion system	Weight [g]
GR01.046	SLine / MLine	66
GR01.047	SLine / MLine	53
GR01.048	MLine	213
GR-XL01.029	XLine	260

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]
GR01.046	50	75	20	3	9
GR01.047	50	50	20	3	9
GR01.048	80	120	50	3	9
GR-XL01.029	80	120	40	3	12

Flat connectors – T-form



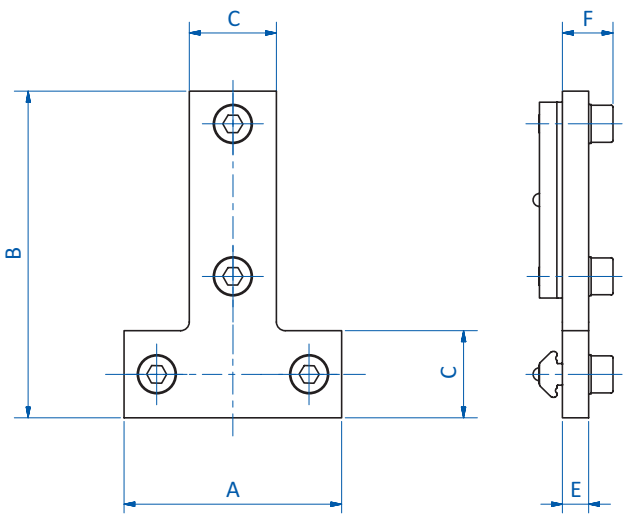
Product notes

> For rigid perpendicular connection of two profiles

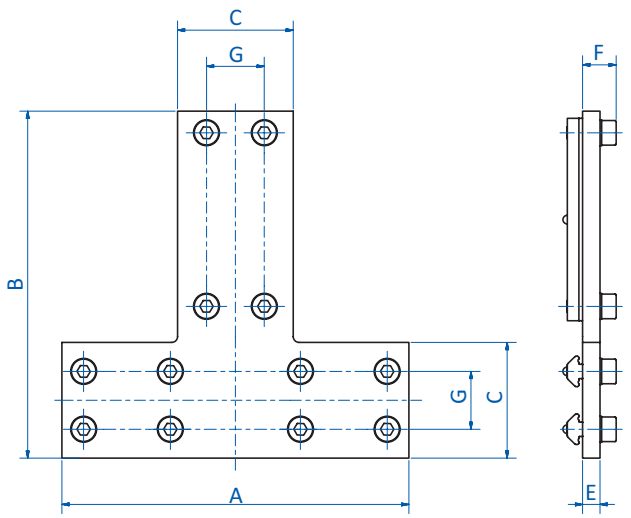
Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.035	SLine / MLine	95
GR01.036	SLine	123
GR01.037	MLine	268
GR-XL01.035	XLine	318

Dimensions



GR01.035 | GR-XL01.035



GR01.036 | GR01.037

Item no.	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]
GR01.035	100	75	20	3	9	--
GR01.036	120	120	40	3	9	20
GR01.037	120	130	50	3	9	25
GR-XL01.035	120	120	40	3	12	--

Flat connectors 45°



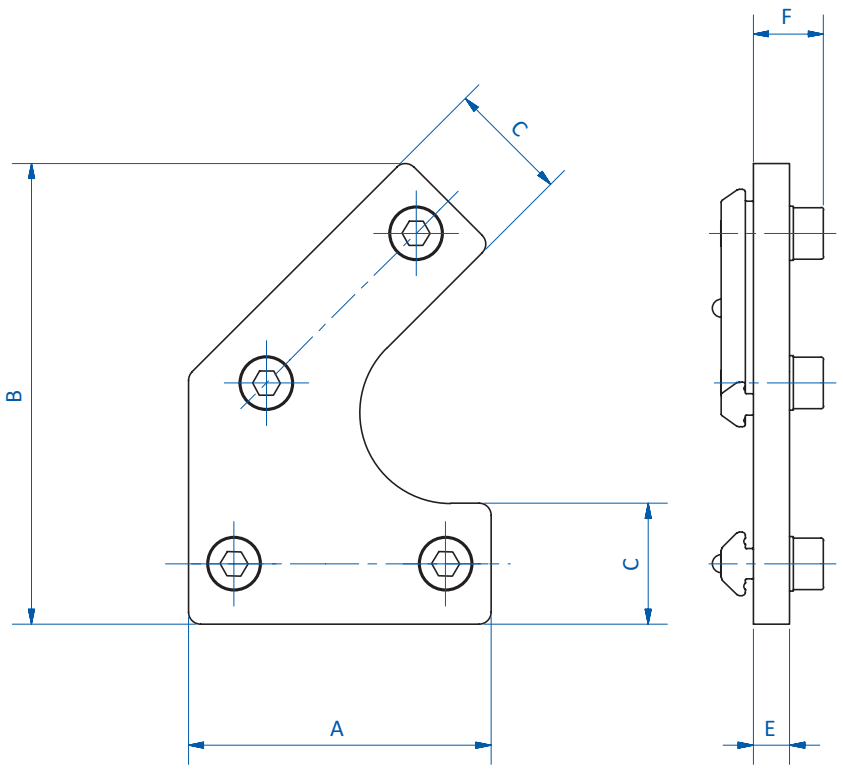
Product notes

> For rigid 45° connection of two profiles

Technical data

Item no.	Angle [°]	Suitable for extrusion system	Weight [g]
GR01.065	45	SLine	74
GR01.066	45	MLine	79

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**E** [mm]	**F** [mm]
GR01.065	50	76	20	3	9
GR01.066	50	76	25	3	9

Profile – Tube – Adapter



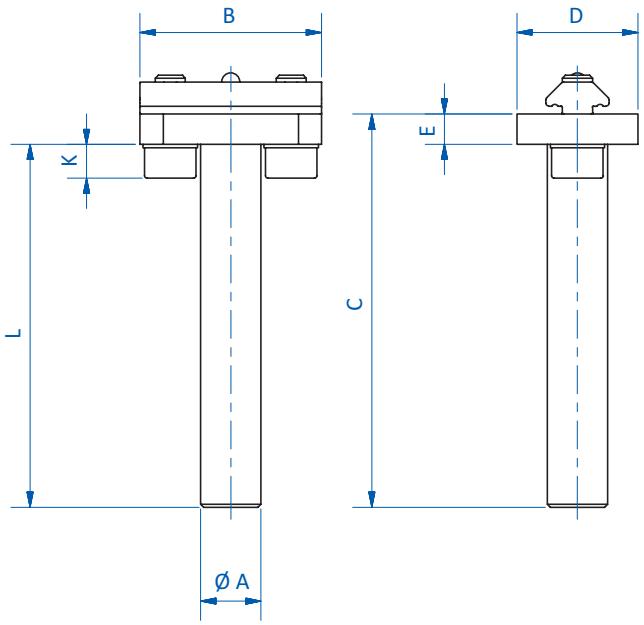
Product notes

> For the transition from profile systems to a tubular system

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR01.110	SLine / MLine	28
GR01.111	SLine / MLine	41
GR01.112	SLine / MLine	48

Dimensions



Item no.	**Ø A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]	**K** [mm]	**L** [mm]
GR01.110	10	30	65	20	5	5.6	60
GR01.111	14	35	85	20	5	5.6	80
GR01.112	20	42	105	20	5	5.6	100

Short angle clamps



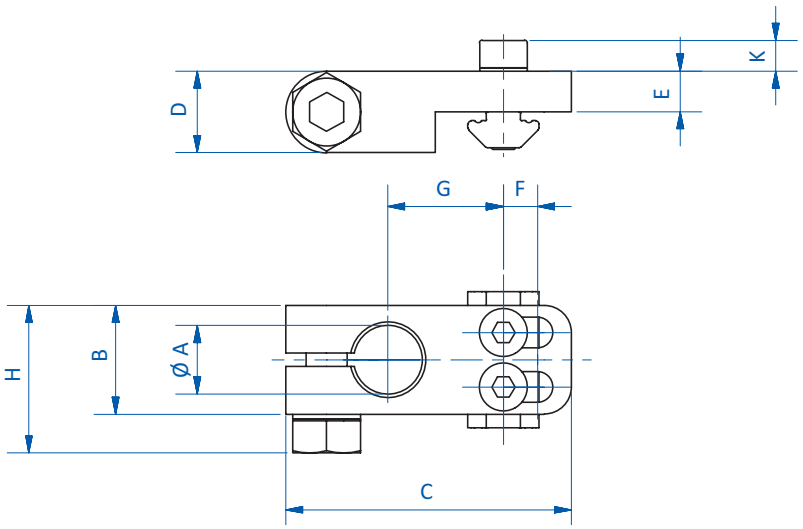
Product notes

> For 90° mounting of gripper components
> Slotted holes allow for use with profiles from 20 mm to 30 mm in size

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.001A	SLine / MLine	26
GR02.003A	SLine / MLine	52
GR02.004	SLine / MLine	41
GR02.005	SLine / MLine	73
GR-XL02.003	XLine	114
GR-XL02.005	XLine	122

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]
GR02.001A	10	16	42	12	6	5	17	21.7	4.5
GR02.003A	20	25	52	12	6.5	5	22	30.7	5.6
GR02.004	14	20	46	12	6.5	5	19	25.7	5.6
GR02.005	30	35	62	20	10	5	27	40.7	5.6
GR-XL02.003	10	30	73	15	6	10	32	35.7	8.8
GR-XL02.005	30	35	82	20	10	10	37	40.7	8.8

Long angle clamps



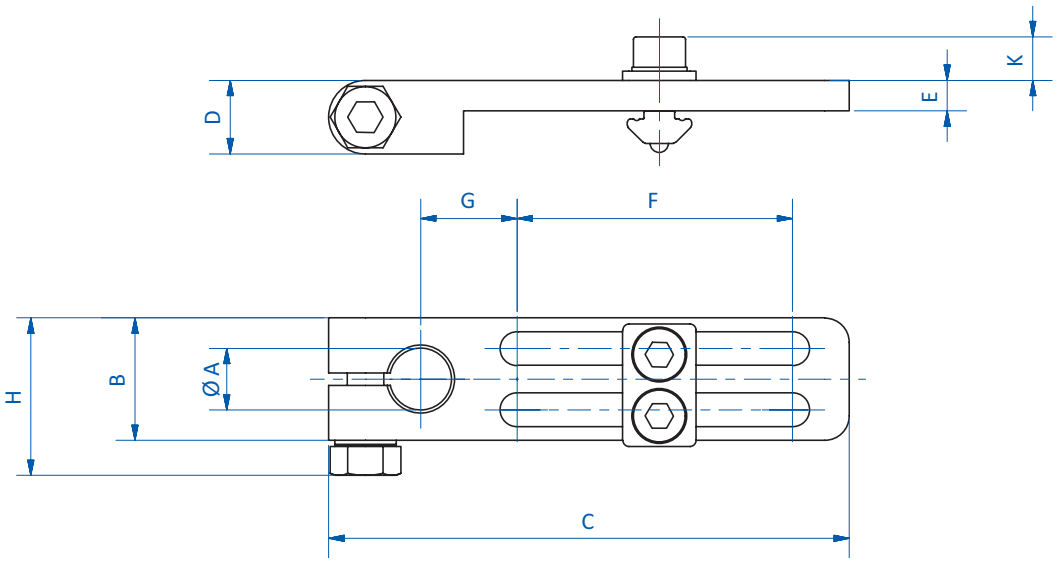
Product notes

> For 90° mounting of gripper components
> Allows for adjustment parallel and perpendicular to the profile frame

Technical data

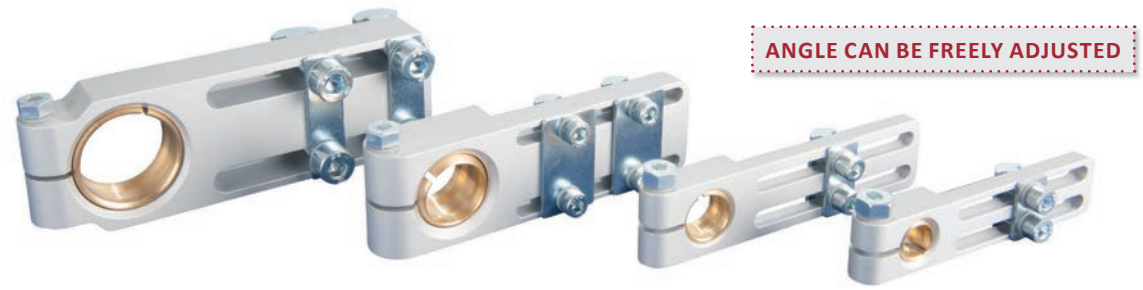
Item no.	Suitable for extrusion system	Weight [g]
GR02.010A	SLine / MLine	52
GR02.011A	SLine / MLine	58
GR02.013A	SLine / MLine	85
GR02.016	SLine / MLine	150
GR-XL02.013	XLine	140
GR-XL02.016	XLine	213

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]
GR02.010A	10	20	85	12	8	45	15.8	25.7	7.1
GR02.011A	14	20	98.5	12	8.5	55	17.3	25.7	7.1
GR02.013A	20	25	114	12	8.5	64.5	20.3	30.7	7.1
GR02.016	30	35	122	20	10	65	27	40.7	7.1
GR-XL02.013	20	30	150	15	7.5	100	21	35.7	10.3
GR-XL02.016	30	36	162	20	20	100	25.5	40.7	10.3

Long angle clamps – with ball joint



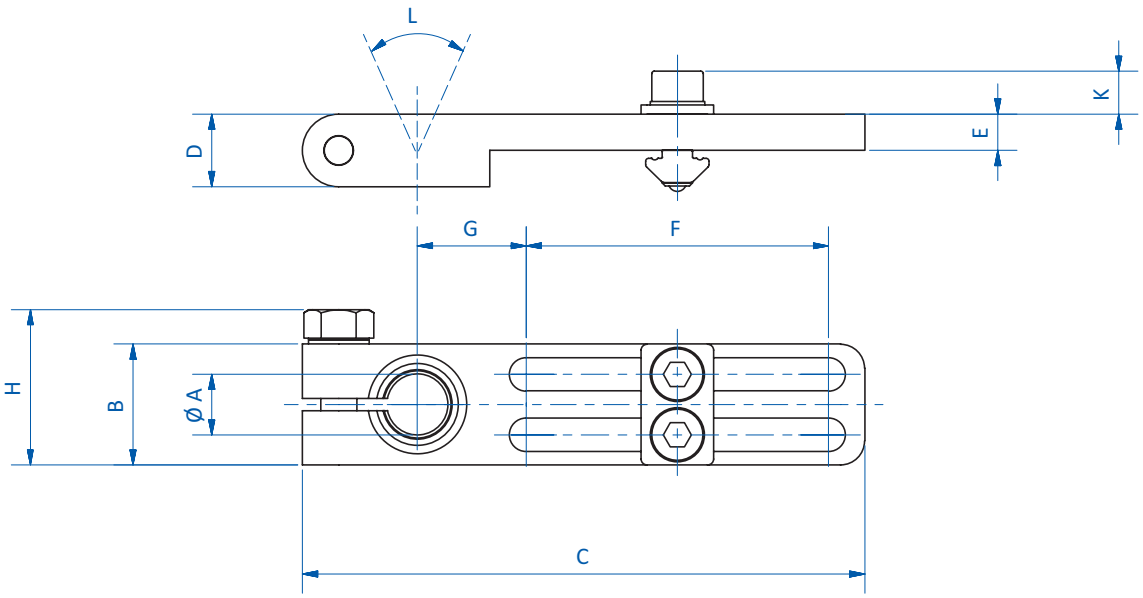
Product notes

> Ball joint enables variable angular adjustment of gripper components
> Allows for adjustment parallel and perpendicular to the profile frame

Technical data

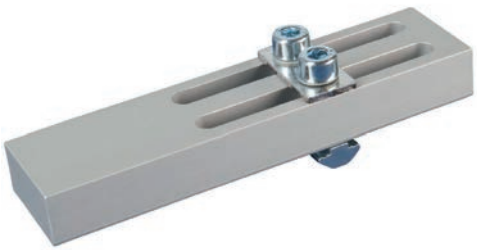
Item no.	Suitable for extrusion system	Angular adjustment [°]	Weight [g]
GR02.035	SLine / MLine	38	48
GR02.036	SLine / MLine	33	60
GR02.037	SLine / MLine	31	145
GR02.038	SLine / MLine	28	238
GR-XL02.038	XLine	28	260

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]	L [°]
GR02.035	10	20	93	12	6	50	18	25.7	7.1	38
GR02.036	14	25	107	12	6	60	20	30.7	7.1	33
GR02.037	20	35	115	20	10	60	24	40.7	7.1	31
GR02.038	30	45	136	20	17	70	30	45.7	7.1	28
GR-XL02.038	30	45	136	20	20	70	30	45.7	10.3	28

Angle clamps – customizable



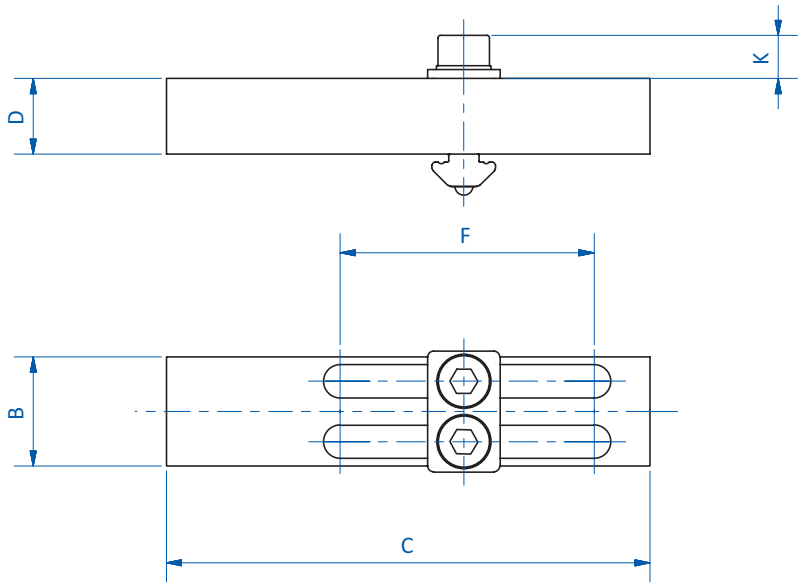
Product notes

> Mounting blank for custom solutions
> Allows for adjustment parallel and perpendicular to the profile frame

Technical data

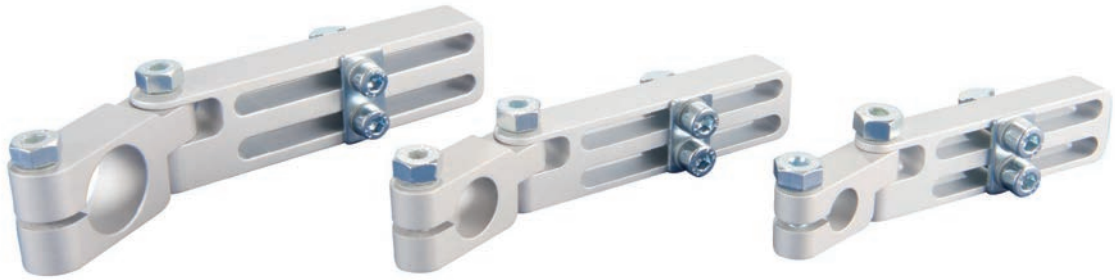
Item no.	Suitable for extrusion system	Weight [g]
GR02.014	SLine / MLine	47
GR02.015	SLine / MLine	84

Dimensions



Item no.	B [mm]	C [mm]	D [mm]	F [mm]	K [mm]
GR02.014	18	80	12.5	42	7.1
GR02.015	25	100	12.5	52	7.1

Long angle clamps – with swivel head



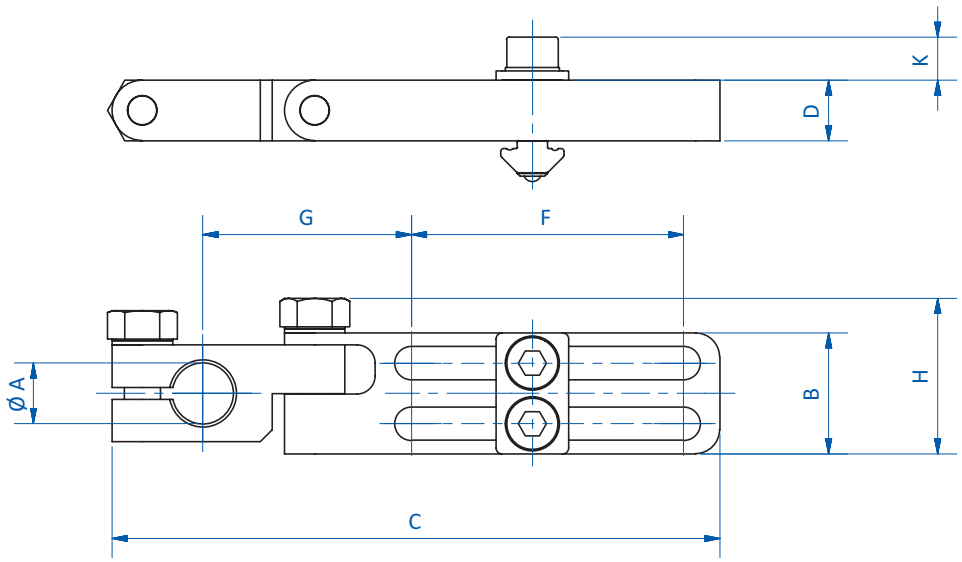
Product notes

> Swivel head allows for angle variable installation of gripper components
> Allows for adjustment parallel and perpendicular to the profile frame

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.026	SLine / MLine	56
GR02.027	SLine / MLine	62
GR02.028	SLine / MLine	90
GR02.029	SLine / MLine	152
GR-XL02.029	XLine	223

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	H [mm]	K [mm]
GR02.026	10	20	100.5	10	45	34.5	25.7	7.1
GR02.027	14	20	116.5	12	55	37.5	25.7	7.1
GR02.028	20	25	136	15	65	44	30.7	7.1
GR02.029	30	35	183.8	22.5	85	58.8	40.7	7.1
GR-XL02.029	30	45	185	20	85	60	45.7	10.3

Cross clamps





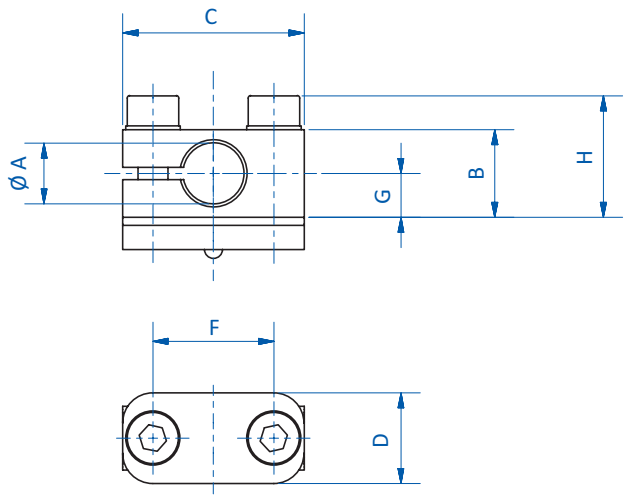
Product notes

> Elements for 90° clamping of gripper components
> Clamp allows transition from profile systems to a tubular system

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.020	SLine / MLine	27
GR02.022	SLine / MLine	43
GR02.023	SLine / MLine	35
GR02.024	SLine / MLine	97
GR-XL02.022	XLine	103
GR-XL02.024	XLine	172

Dimensions



Item no.	Ø **A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**F** [mm]	**G** [mm]	**H** [mm]
GR02.020	10	14.5	30	15	20	7.3	20.1
GR02.022	20	24.5	40	15	30	12.3	30.1
GR02.023	14	19.5	35	15	25	9.8	25.1
GR02.024	30	34	60	20	50	17	39.6
GR-XL02.022	20	24.5	45	20	30	12.3	33.3
GR-XL02.024	30	34	68	20	55	17	42.8

Heavy-duty cross clamps





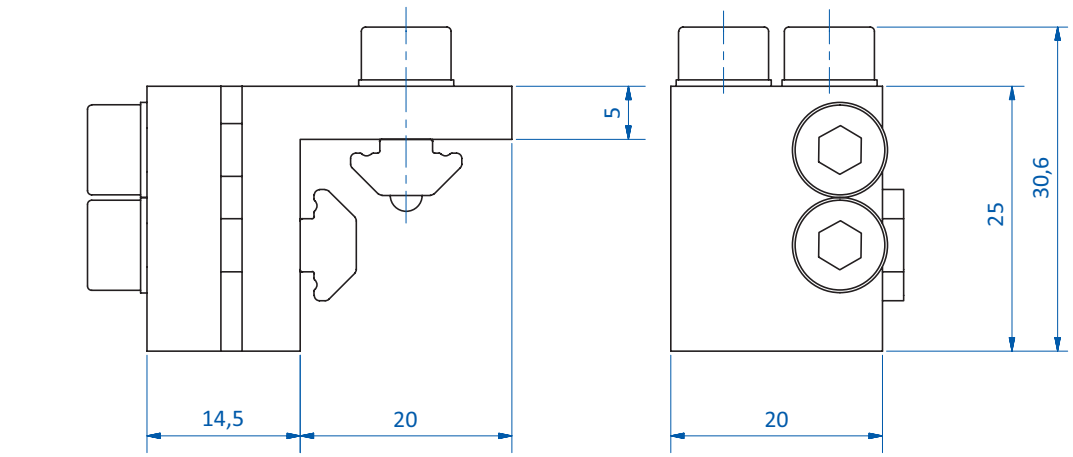
Product notes

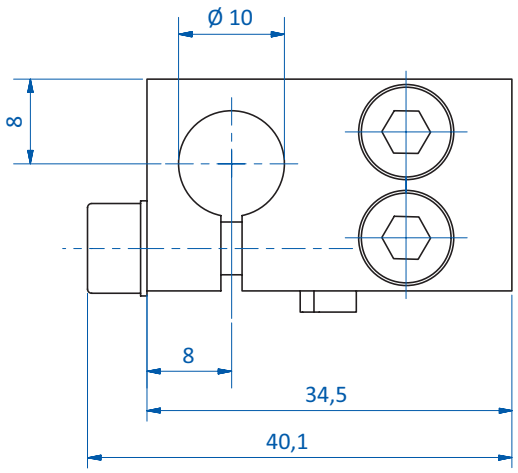
> Heavy-duty clamps for mounting gripper components
> Channel nuts locate on perpendicular faces of the profile to minimize deflection of critical components

Technical data

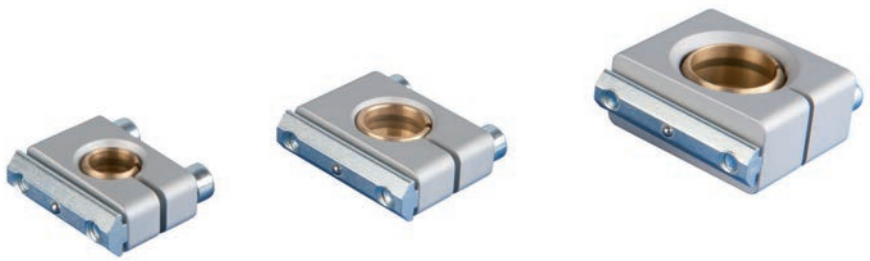
Item no.	Suitable for extrusion system	Weight [g]
GR02.006	SLine	37

Dimensions





Cross clamps – with ball joint



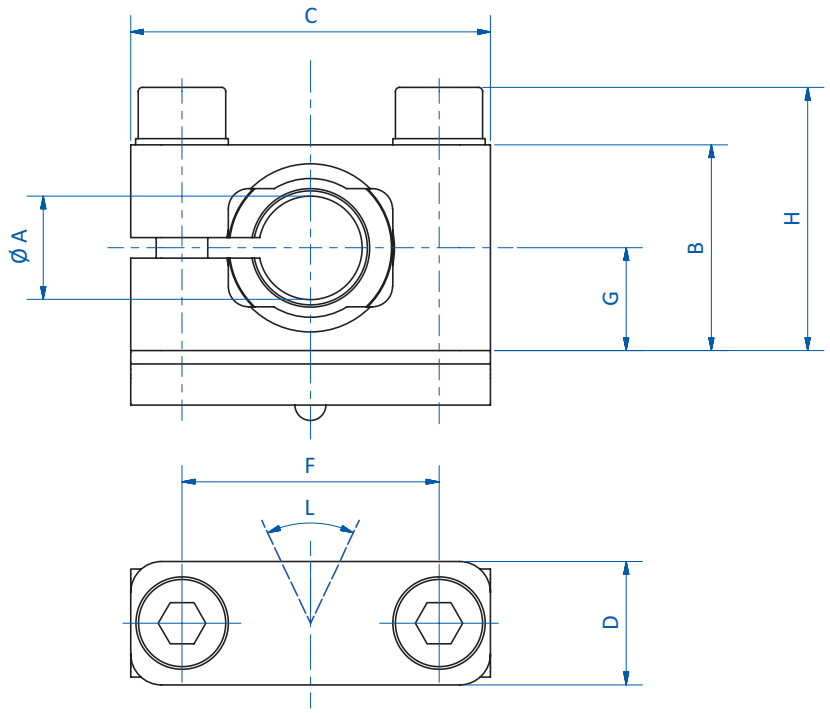
Product notes

> Elements for clamping of gripper components
> Ball joint enables variable angular adjustment of gripper components up to max. 19°

Technical data

Item no.	Suitable for extrusion system	Angular adjustment [°]	Weight [g]
GR02.020-KG	SLine / MLine	19	38
GR02.022-KG	SLine / MLine	16	98
GR02.023-KG	SLine / MLine	17	49

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	H [mm]	L [°]
GR02.020-KG	10	20	35	12	25	10	25.6	19
GR02.022-KG	20	35	45	20	35	17.5	40.6	16
GR02.023-KG	14	25	40	12	30	12.5	30.6	17

Threaded mounting brackets



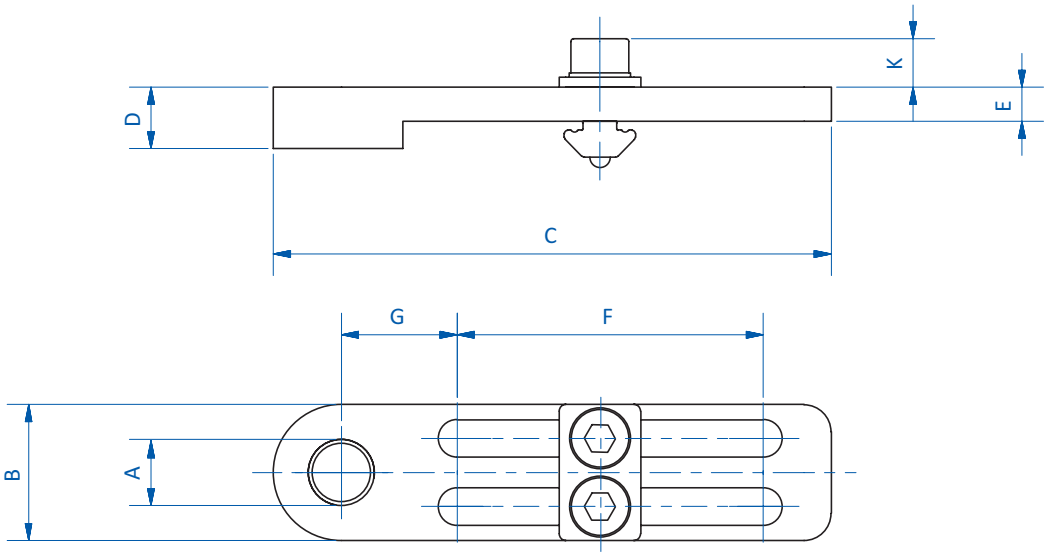
Product notes

> Mounting of G1/8, M16 x 1 and M20 x 1.5 suspensions and spring loaded gripper arms to profiles

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.230	SLine / MLine	29
GR02.231	SLine / MLine	55
GR02.232	SLine / MLine	63

Dimensions



Item no.	A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	K [mm]
GR02.230	G1/8	20	82	9	5	45	17	7.1
GR02.231	M16x1	26	99	12	8.5	55	21	7.1
GR02.232	M20x1.5	28	110	12	8.5	65	21	7.1

Parallel clamps



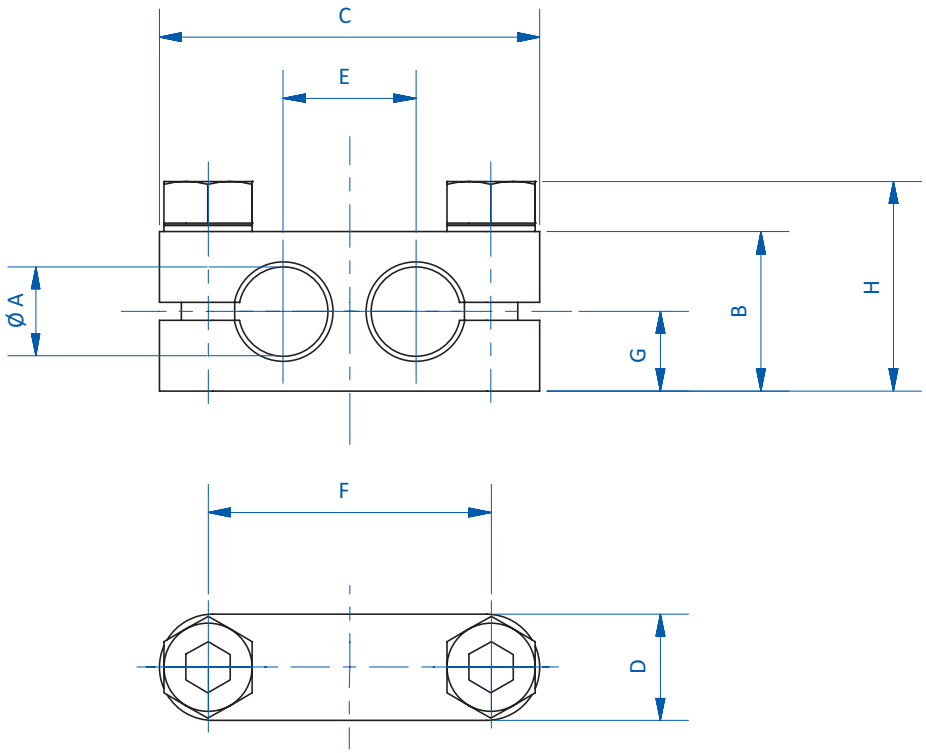
Product notes

> Parallel connection of two clamping shafts

Technical data

Item no.	Weight [g]
GR02.220	30
GR02.221	35
GR02.222	60

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
GR02.220	10	18	43	12	15	32	9	23.7
GR02.221	14	20	52	12	20	41	10	25.7
GR02.222	20	25	64	14	26	53	12.5	30.7

Cross clamps 90°



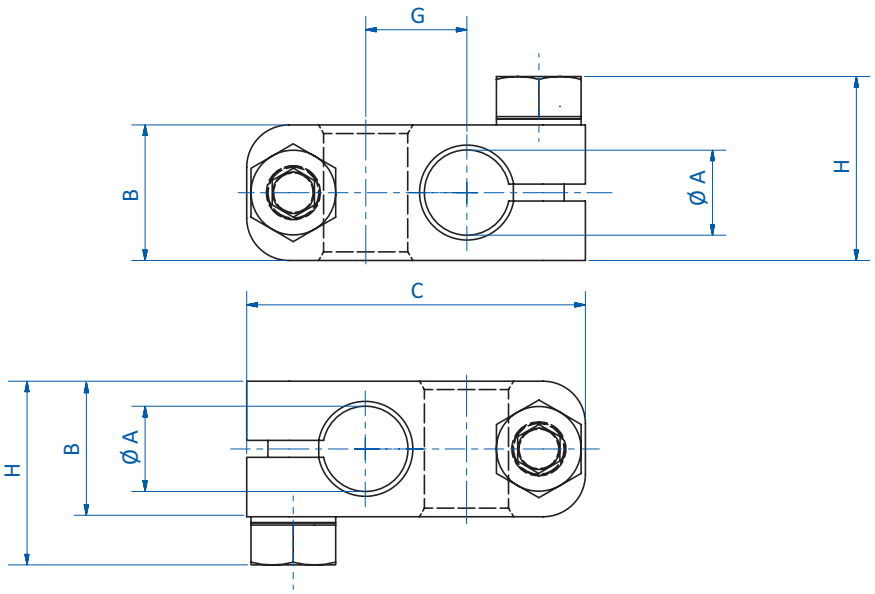
Product notes

> Perpendicular clamping of tubular components
> Versatile 90° connection of two clamping shafts of the same size

Technical data

Item no.	Weight [g]
GR02.210	28
GR02.211	33
GR02.212	58

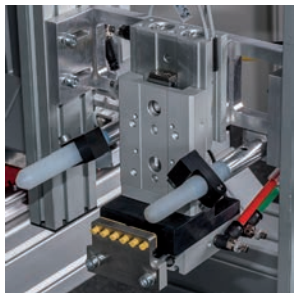
Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	G [mm]	H [mm]
GR02.210	10	16	40	12	21.7
GR02.211	14	18	48	16	23.7
GR02.212	20	24 - 0	60	22	29.7

Locator pins





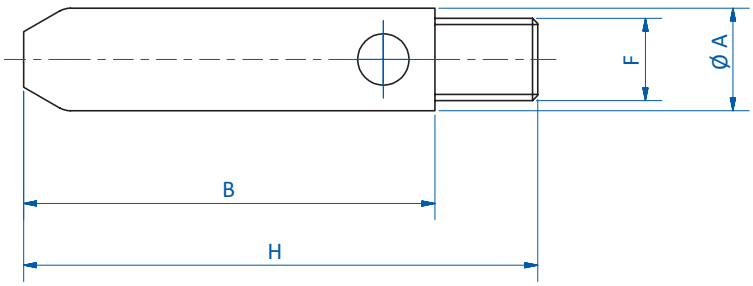
Product notes

> Alignment of EOAT and locating of parts
> Locator pins made of POM
> Compatible with extension tubes

Technical data

Item no.	Weight [g]	Suitable extension tube
GR06.001	4	GR06.020 (p.90)
GR06.002A	22	GR06.021A (p.90)
GR06.003	63	GR06.022 (p.90)

Dimensions



Item no.	F	Ø A [mm]	B [mm]	H [mm]
GR06.001	M8x1	10	40	50
GR06.002A	M12x1	14	85	100
GR06.003	M17x1	20	135	150

Extension tubes



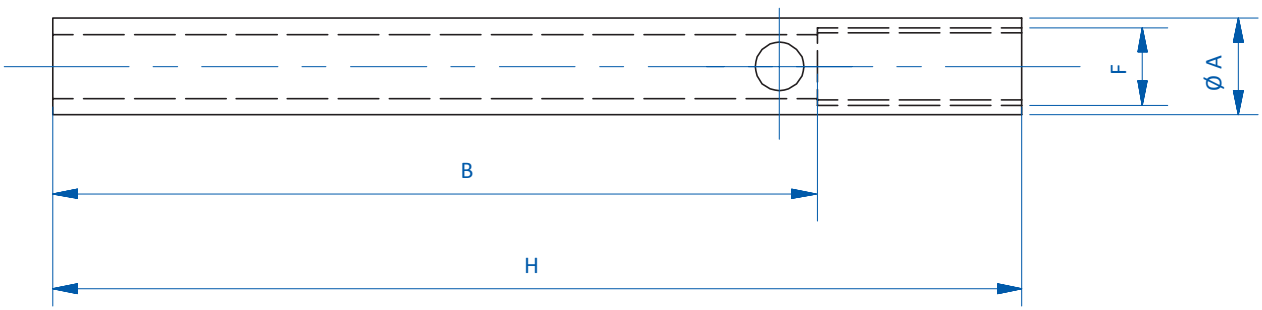
Product notes

> Compatible with locator pins, finger grippers and sprue grippers

Technical data

Item no.	Clamping Ø [mm]	Weight [g]	Suitable locator pins
GR06.020	10	10	GR06.001 (p.89)
GR06.021A	14	22	GR06.002A (p.89)
GR06.022	20	28	GR06.003 (p.89)

Dimensions



Item no.	F	Ø A [mm]	B [mm]	H [mm]
GR06.020	M8x1	10	87	100
GR06.021A	M12x1	14	82	100
GR06.022	M17x1	20	82	100

Angle connectors for vacuum cups





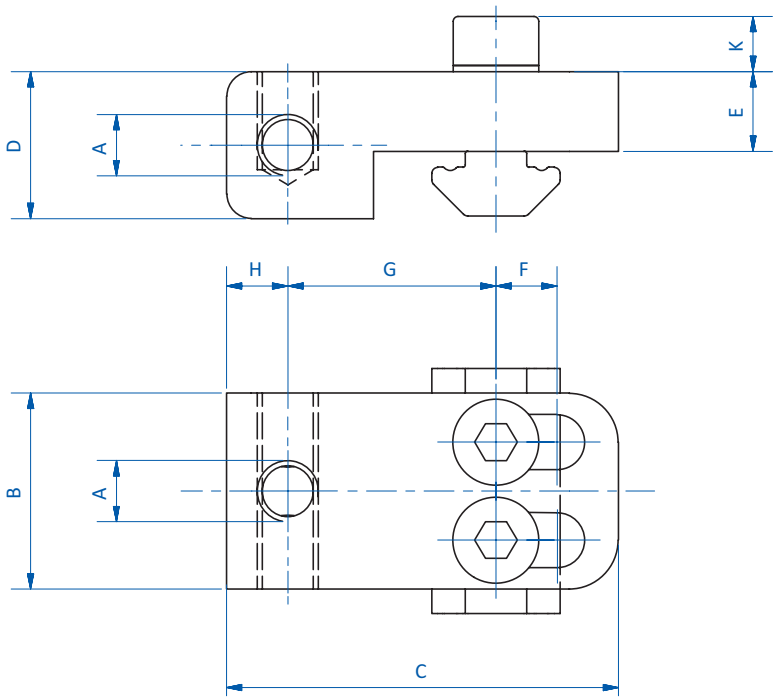
Product notes

> Two vacuum ports
> Slotted holes allow for use with profiles from 20 mm to 30 mm and 40 mm to 60 mm in size

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.030A	SLine / MLine	18
GR02.031A	SLine / MLine	37
GR-XL02.033	XLine	94

Dimensions



Item no.	A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]
GR02.030A	M5	16	32	12	6.5	5	17	5	4.5
GR02.031A	G1/8	25	38	15	6.5	5	20	8	5.6
GR-XL02.033	G1/4	30	60	20	10	10	29	11	8.8

Long angle connectors for vacuum cups



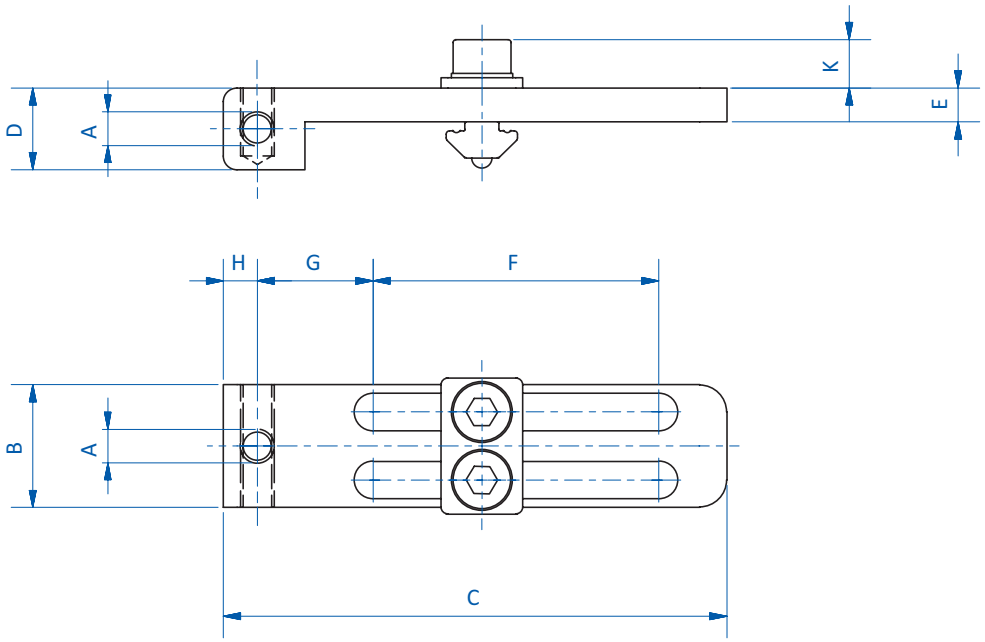
Product notes

> Two vacuum ports
> Slotted holes allow for adjustment perpendicular to the profile frame

Technical data

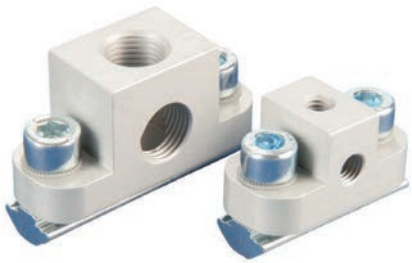
Item no.	Suitable for extrusion system	Weight [g]
GR02.040	SLine / MLine	44
GR02.041	SLine / MLine	58
GR02.043	SLine / MLine	86

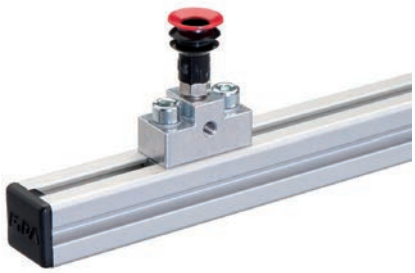
Dimensions



Item no.	A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]
GR02.040	M5	18	74	12	5	42	17	5	7.1
GR02.041	G1/8	25	90	15	8.5	52	20.8	8	7.1
GR02.043	G1/4	30	94	18	8.5	52	22	10	7.1

Vacuum cup connectors – perpendicular





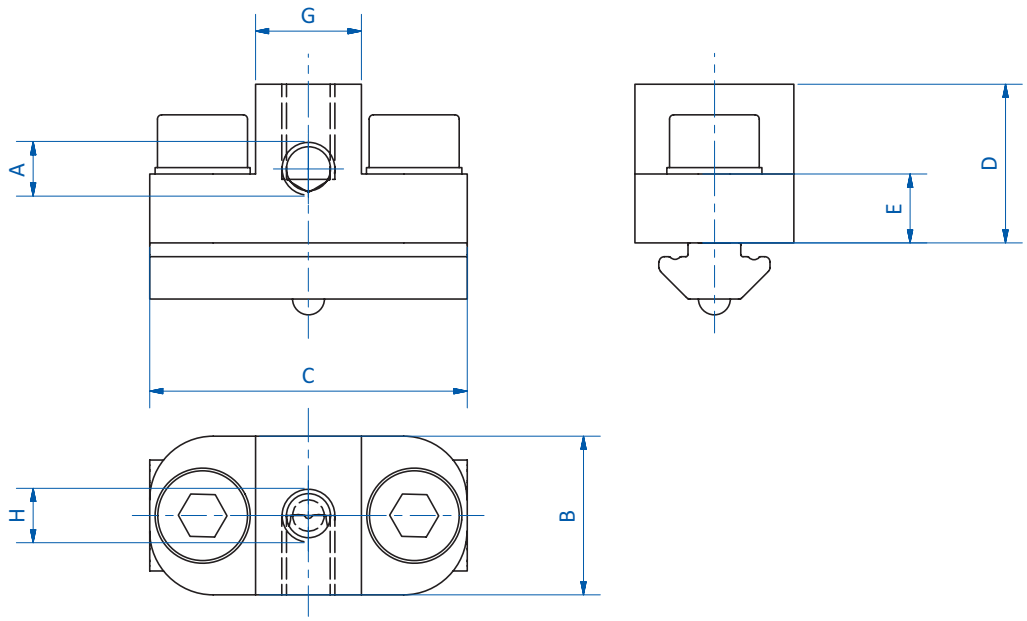
Product notes

> Compact mounting of vacuum cups to profiles

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.050	SLine / MLine	24
GR02.051	SLine / MLine	36
GR02.053	SLine / MLine	49

Dimensions



Item no.	A	H	B [mm]	C [mm]	D [mm]	E [mm]	G [mm]
GR02.050	M5	M5	15	30	15	6.5	10
GR02.051	G1/8	G1/8	15	40	20	6.5	20
GR02.053	G1/4	G1/4	20	40	25	6.5	20

Vacuum cup connectors – rotatable 360°



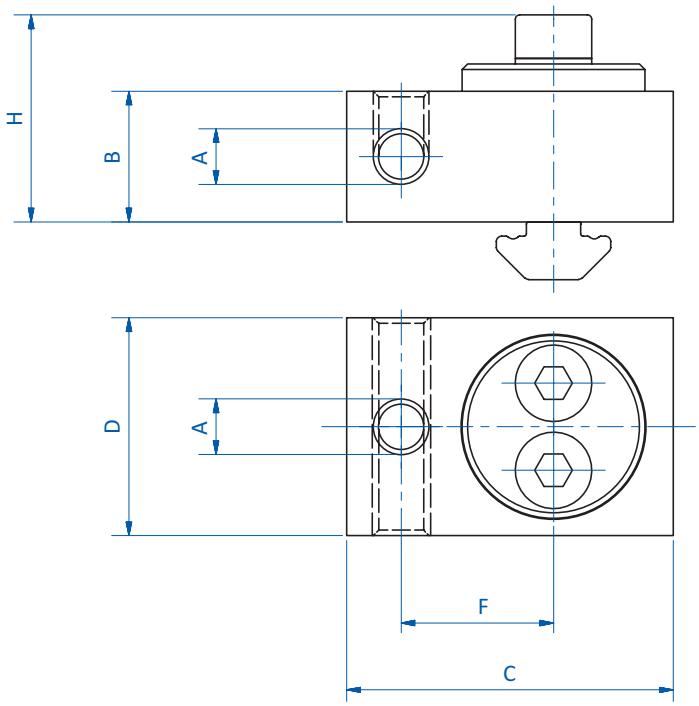
Product notes

> 360° adjustability
> Two vacuum ports

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR02.060	SLine / MLine	24
GR02.061	SLine / MLine	48
GR02.063	SLine / MLine	69

Dimensions



Item no.	A	B [mm]	C [mm]	D [mm]	F [mm]	H [mm]
GR02.060	M5	12	30	20	14	19
GR02.061	G1/8	15	43	25	20	22.1
GR02.063	G1/4	20	45	30	21	25.6

Vacuum cup connectors – rotatable





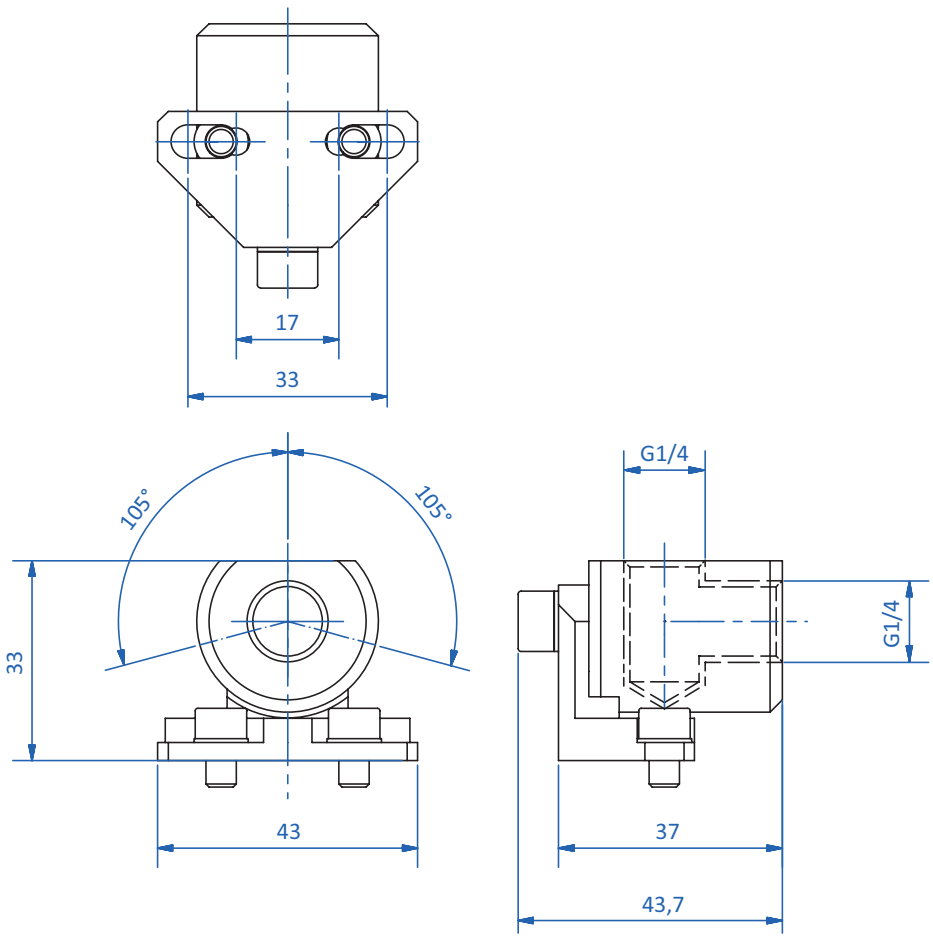
Product notes

> For mounting vacuum cups to profiles or compact cylinders
> Suitable for all standard compact cylinders (anti-twist) in accordance with ISO 21287 standard

Technical data

Item no.	Suitable for extrusion system	Weight [g]
GR07.020	SLine / MLine	79

Dimensions



Air and vacuum manifolds – stackable





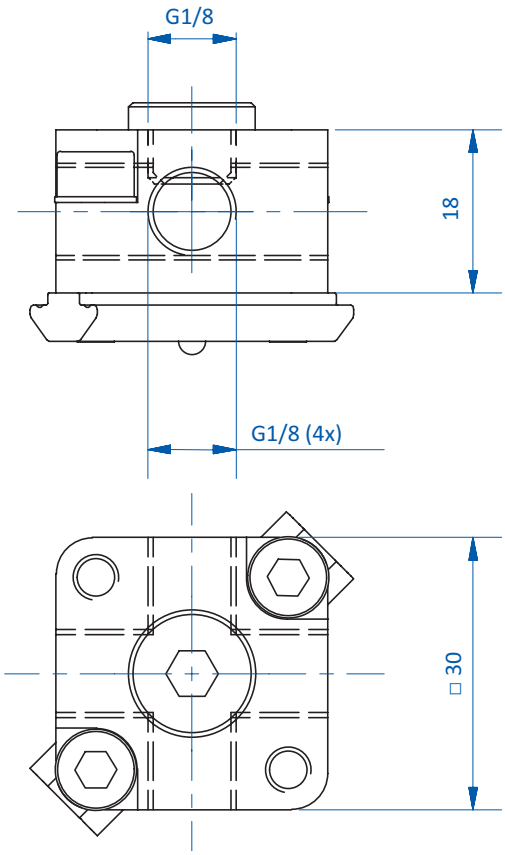
Product notes

> Space-saving distribution of air or vacuum
> One inlet, four outlets per manifold
> Can be expanded by stacking additional manifolds
> When stacking the air manifold, a bore hole with max. Ø 7 mm is to be provided in the center of the underside
> Slot nut, O-ring for sealing and sealing plug included in scope of delivery

Technical data

Item no.	Suitable for extrusion system	Weight [g]	Suitable sealing plugs
GR05.001A	SLine / MLine	50	77.009 (p.455)

Dimensions



Air and vacuum manifolds





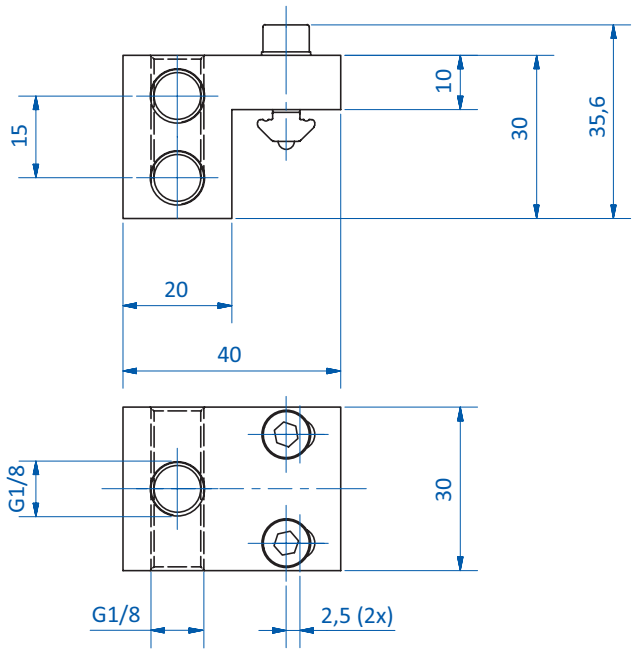
Product notes

> Distribution of air or vacuum in gripper systems

Technical data

Item no.	Suitable for extrusion system	Circuit	Number of inlets / outlets	Weight [g]	Suitable sealing plugs
GR05.001	SLine / MLine	1	1 inlet, 4 outlets	69	77.009 (p.455)
GR05.002	SLine / MLine	2	Each circuits with 1 inlet, 4 outlets	106	77.009 (p.455)
GR05.003	SLine / MLine	2	Each circuits with 1 inlet, 6 outlets	155	77.009 (p.455) 77.008 (p.455)

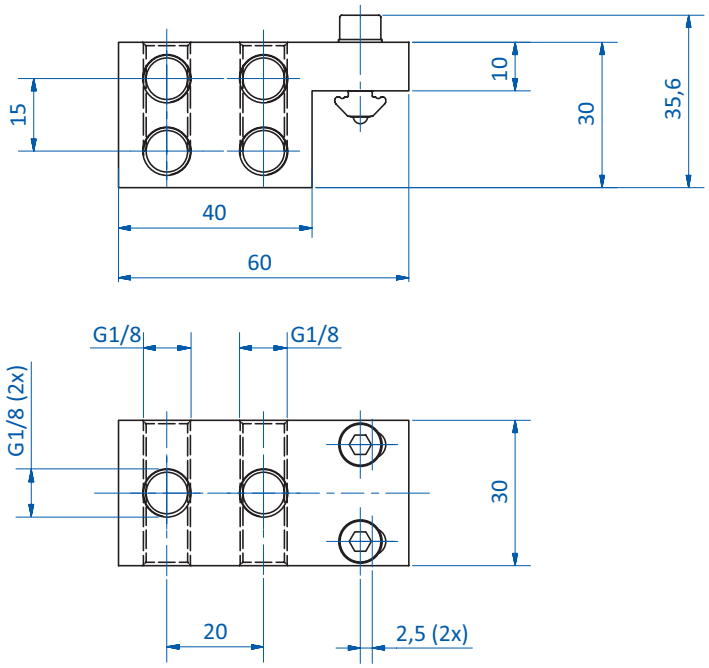
Dimensions



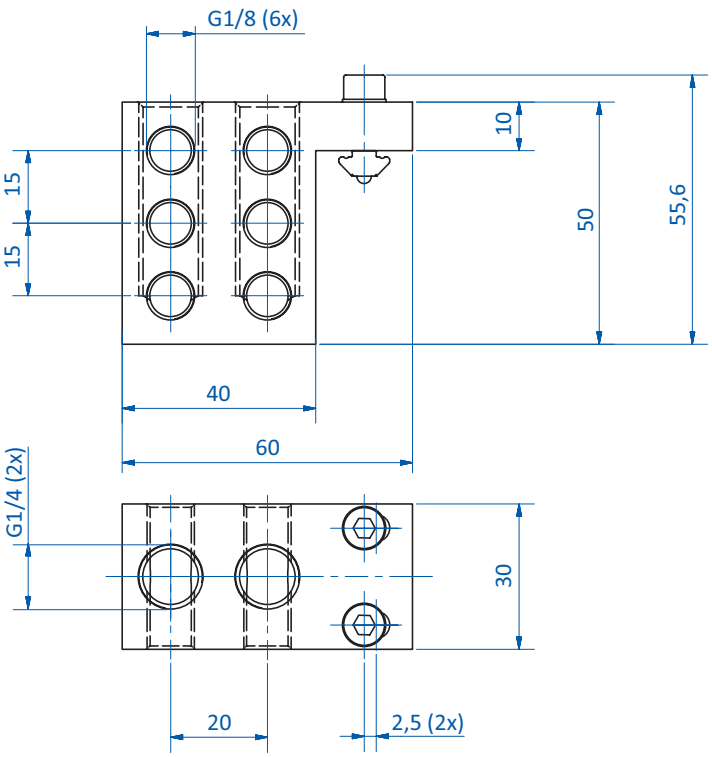
GR05.001

Continued on the next page

Dimensions



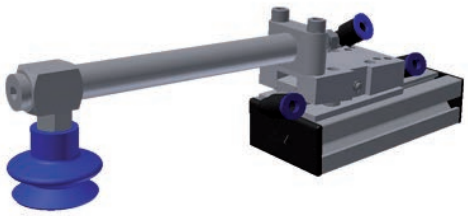
GR05.002



GR05.003

Swivelling unit – universal, double-acting





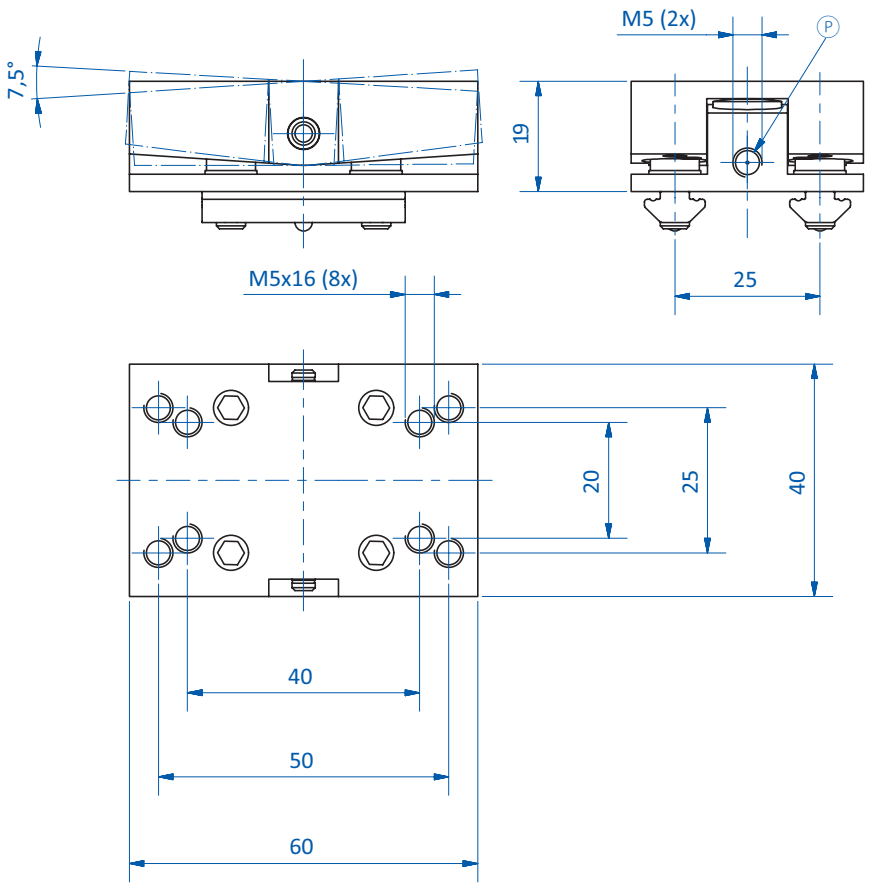
Product notes

> Space-saving lateral application of vacuum cups to the workpiece
> Double-acting, controlled swivel movement and short duty cycles

Technical data

Item no.	Principle of operation	Pressure range [bar (psi)]	Angle stroke [°]	Weight [g]
GR02.300	Double-acting	2 - 8 (29 - 116)	7.5	120

Dimensions



Ⓟ = Compressed air connection

Pneumatic centering units



STRONG HOLDING FORCE

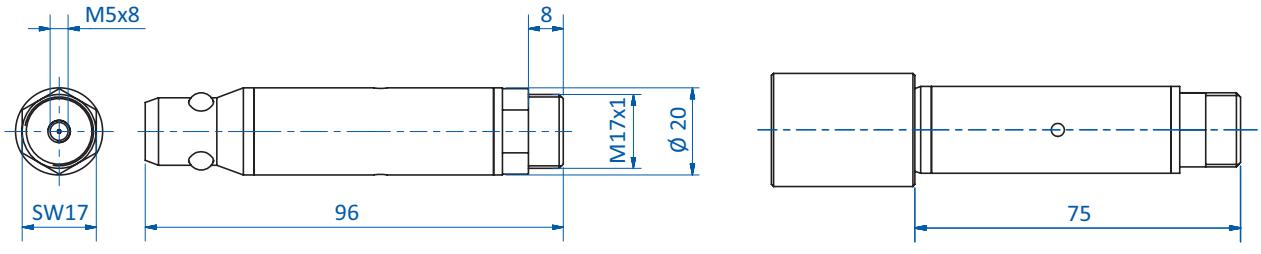
Product notes

> Single-acting centering element for high-precision demolding
> Strong holding force in the coupled system
> Guiding sleeve embedded in the mold
> Optional position monitoring (locked/unlocked) via PNP/NPN sensors
> Sensor is fixed to centering unit via mounting bracket GR07.520S clamping diameter 20 mm
> PNP and NPN sensors: C-Nut, straight: GR04.198, GR04.198/NPN

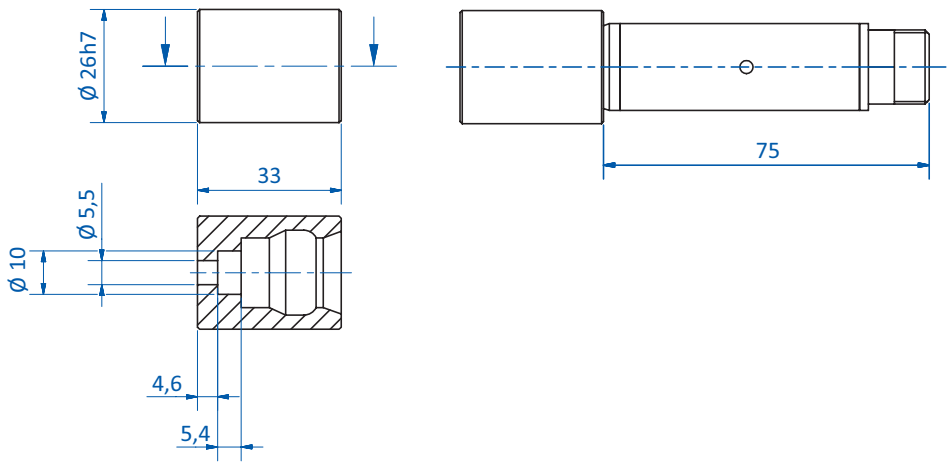
Technical data

Item no.	Description	Holding force at 6 bar (87 psi) [N]	Accessories
GR07.520	Centering unit	750	Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) Sensor mounting bracket: GR07.520S (p.101)
GR07.521	Guiding sleeve	--	--

Dimensions



GR07.520



GR07.521

Sensor mounting bracket for centering unit





Display with centering unit

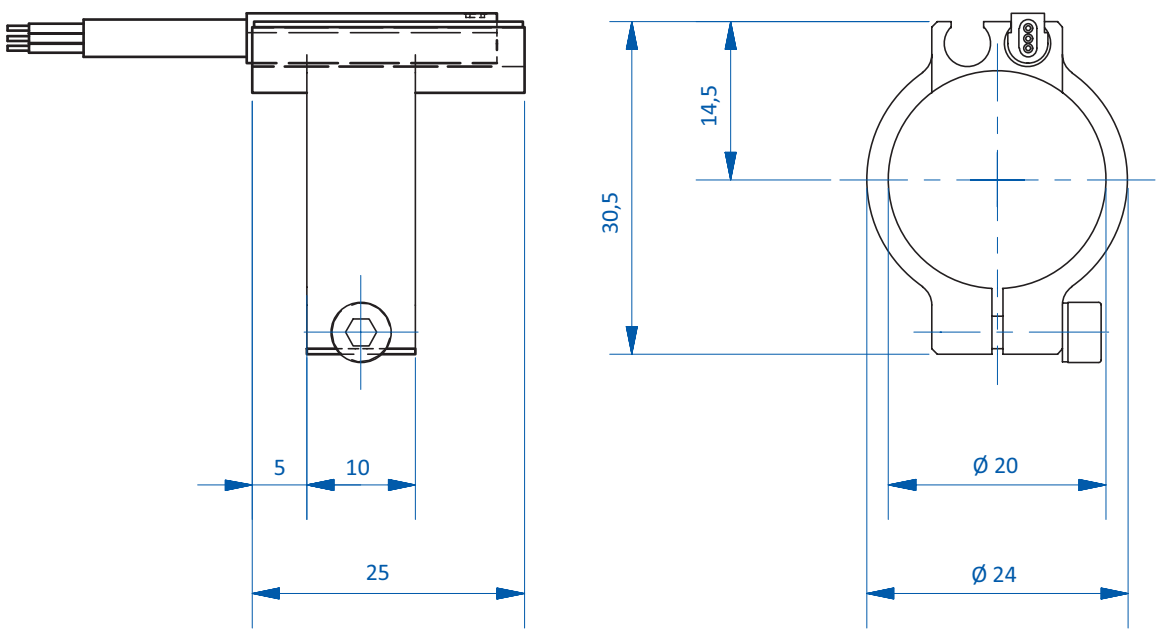
Product notes

> Mounting bracket for monitoring locking stage (locked/unlocked)

Technical data

Item no.	Suitable for sensor	Suitable for centering unit	Weight [g]
GR07.520S	GR04.198, GR04.198/NPN	GR07.520	7

Dimensions



Clamps for Plate-based EOAT



SUITABLE FOR PLATE-BASED EOAT

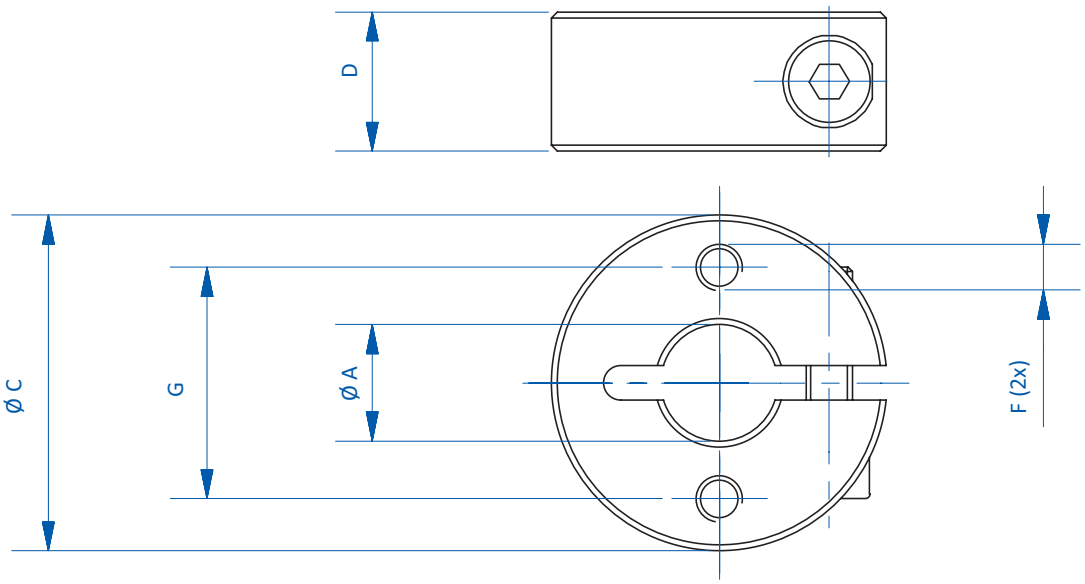
Product notes

> Clamps for mounting gripper components to plate-based EOAT

Technical data

Item no.	Weight [g]
GR06.060	16
GR06.061	24
GR06.062	82
GR06.063	138

Dimensions



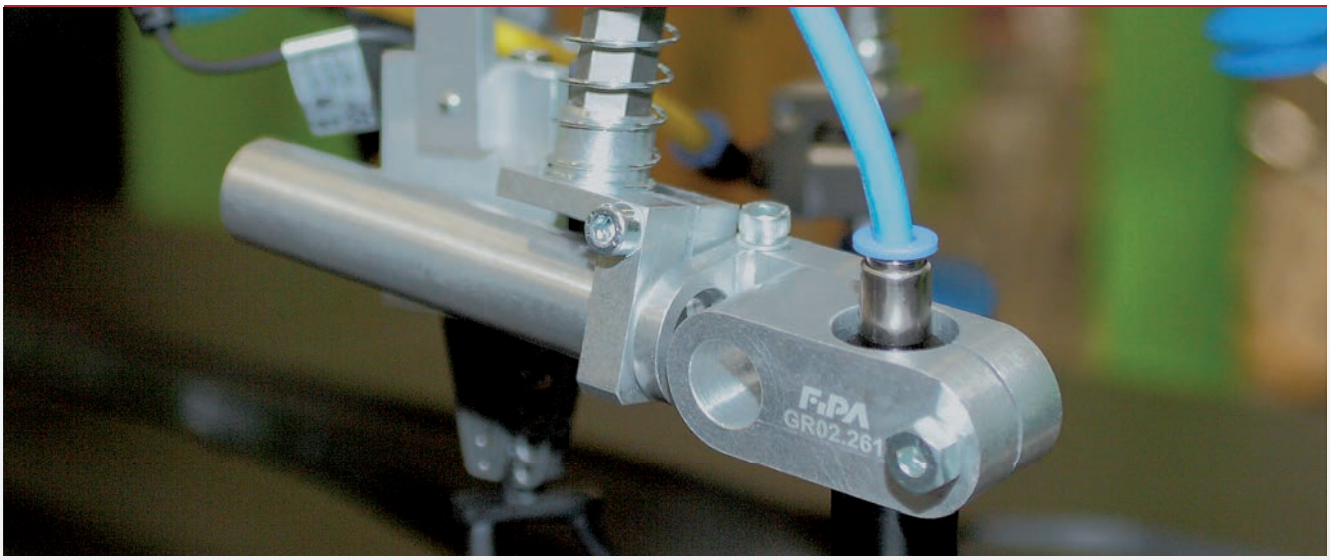
Item no.	Ø A [mm]	F	G [mm]	Ø C [mm]	D [mm]
GR06.060	10	M4	20	29	12
GR06.061	14	M5	25	34	15
GR06.062	20	M6	32	49	22.5
GR06.063	30	M8	45	59	30

Gripper arms at a glance 104

Angle arms 105

Suction fingers 112

FIPA Gripper arms





Angle arms, elbow or rigid

> Elements for integration of gripper components
> Secure clamping even under high load

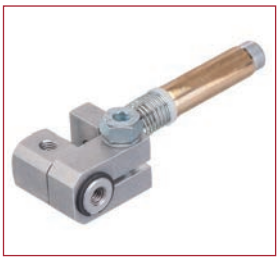
GR03.160 - GR03.165
> Spring loaded elbow, rotatable, torsionally rigid
> Compensates stroke when product is ejected from sprue mold
> Precise function even with angular loads



GR02.070A - GR02.100
> Rigid arms

GR02.240 - GR02.262
> Modular elbow, heavy duty
> Clamping heads can be exchanged with suction heads of GR03.240–GR03.262

> See page 105



Arms for vacuum cups, elbow or rigid

> Elements for integration of vacuum cups in gripper systems

GR03.120B - GR03.153B
> Spring loaded elbow, torsionally rigid
> Compensates stroke when product is ejected from sprue mold
> Precise function even with angular loads



GR03.080A - GR03.115
> Spring-loaded, rigid arms, torsionally rigid

GR03.240 - GR03.262
> Modular, heavy duty
> Suction heads can be exchanged with clamping heads of GR02.240 - GR02.262

> See page 112

Angle arms – rigid



Product notes

> Components for mounting grippers, gripper fingers or gripper arms

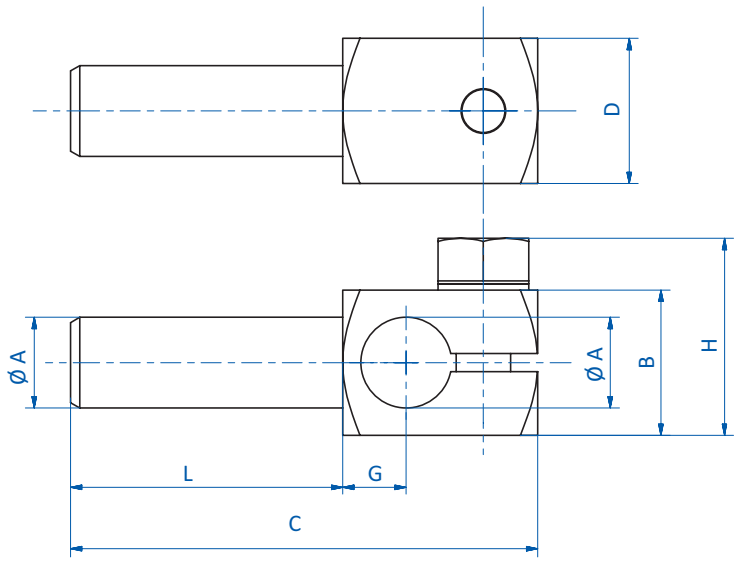
Technical data

Item no.	Weight [g]
GR02.070A	20
GR02.071A	24
GR02.072A	28
GR02.083	36
GR02.084	45
GR02.085	52
GR02.100	61
GR02.101A	80
GR02.102A	95
GR02.104	137
GR02.105	171
GR02.106	205
GR02.107	239

Dimensions

Ø A [mm]	B [mm]	C [mm]	D [mm]	G [mm]	H [mm]	L [mm]
10	16	51	16	7	21.7	30
10	16	81	10	7	21.7	60
10	16	111	16	7	21.7	90
14	18	70.5	20	9.5	23.7	45
14	18	115.5	20	9.5	23.7	90
14	18	155.5	20	9.5	23.7	130
20	24	84	25	13	29.7	50
20	24	134	25	13	29.7	100
20	24	184	25	13	29.7	150
30	36	98	30	21	42.3	50
30	36	148	30	21	42.3	100
30	36	198	30	21	42.3	150
30	36	248	30	21	42.3	200

Dimensions



Elbow arms – adjustable



Product notes

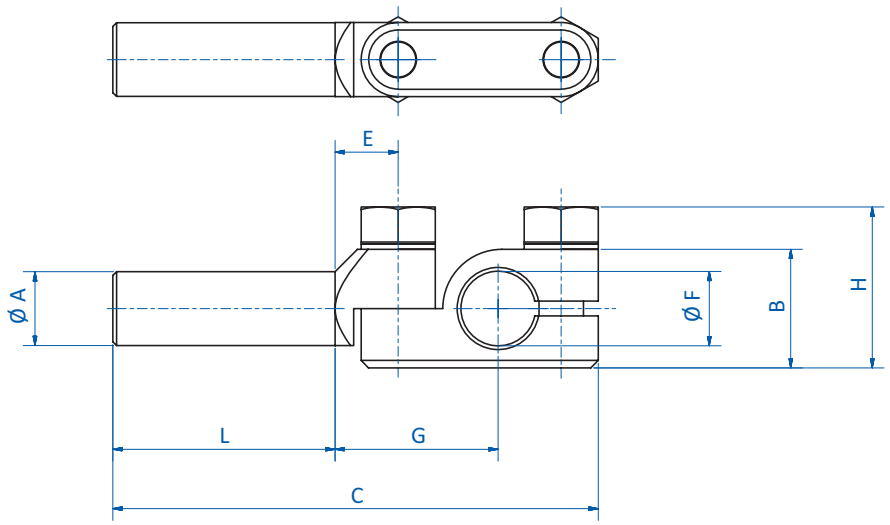
> Components for mounting grippers, gripper fingers or gripper arms
> Angle adjustment +/- 95°

Technical data

Dimensions

Item no.	Weight [g]	Ø A [mm]	Ø F [mm]	B [mm]	C [mm]	E [mm]	G [mm]	H [mm]	L [mm]
GR02.140	36	10	10	16	65.5	8.5	22	21.7	30
GR02.141	40	10	10	16	95.5	8.5	22	21.7	60
GR02.142	45	10	10	16	125.5	8.5	22	21.7	90
GR02.180	42	14	10	16	90	10	27	21.7	45
GR02.181	51	14	10	16	135	10	27	21.7	90
GR02.182	59	14	10	16	175	10	27	21.7	130
GR02.153	60	14	14	18	90	10	27	23.7	45
GR02.154	68	14	14	18	135	10	27	23.7	90
GR02.155	78	14	14	18	175	10	27	23.7	130
GR02.170	87	20	20	24	111	17	40	29.7	50
GR02.171	103	20	20	24	161	17	40	29.7	100
GR02.172	120	20	20	24	211	17	40	29.7	150

Dimensions



Elbow arms – adjustable, heavy duty



Product notes

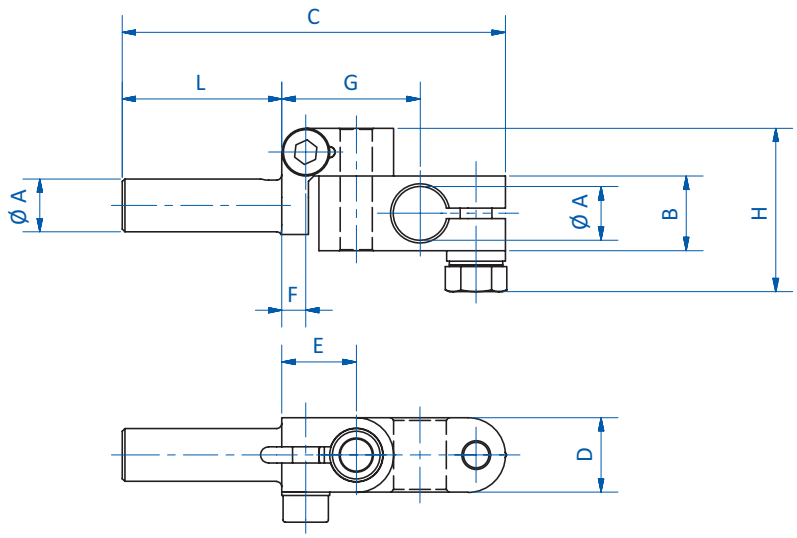
> Components for mounting grippers, gripper fingers or gripper arms
> Secure clamping under heavy load
> Angle adjustment +/- 100°
> Heads are interchangeable with the heads of suction fingers GR03.240 - GR03.242, GR03.250 - GR03.252 und GR03.260 - GR03.262

Technical data

Dimensions

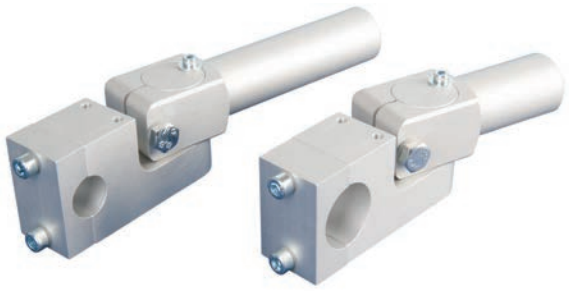
Item no.	Weight [g]	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	L [mm]
GR02.240	29	10	14	72	14	14	4.5	26	30.7	30
GR02.241	32	10	14	102	14	14	4.5	26	30.7	60
GR02.242	35	10	14	132	14	14	4.5	26	30.7	90
GR02.250	50	14	18	97	18	16	4.5	34	32.7	45
GR02.251	58	14	18	142	18	16	4.5	34	32.7	90
GR02.252	66	14	18	182	18	16	4.5	34	32.7	130
GR02.260	89	20	24	116	24	19	4.5	43	38.7	50
GR02.261	104	20	24	166	24	19	4.5	43	38.7	100
GR02.262	119	20	24	216	24	19	4.5	43	38.7	150

Dimensions



Rotary heads for angle arms Ø 30 mm – heavy duty





Rotary head GR02.270 with angle arm GR02.104

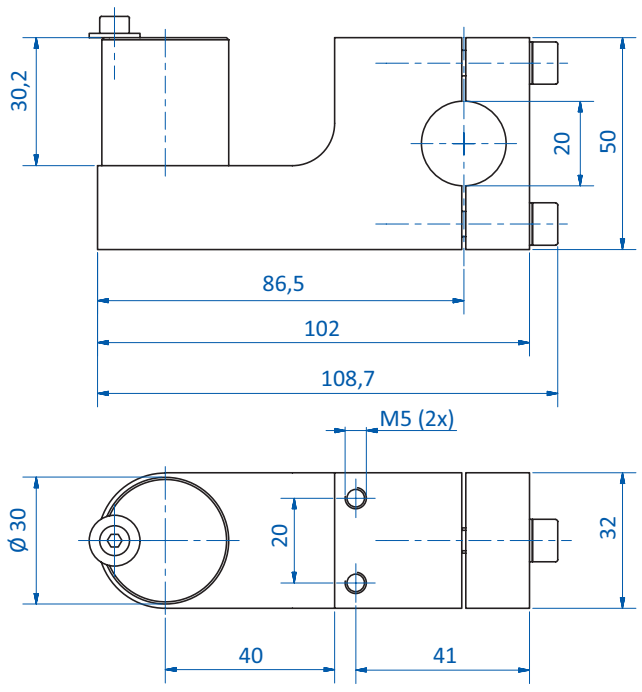
Product notes

> Rotary heads for angle arms with shaft diameter 30 mm
> Integration of gripper elements with clamping diameter 20 mm or 30 mm
> Secure clamping even under heavy load
> Pivoting range 0° to ~130°, can be freely adjusted in two directions
> Please order your combination of gripper arm and rotary head

Technical data

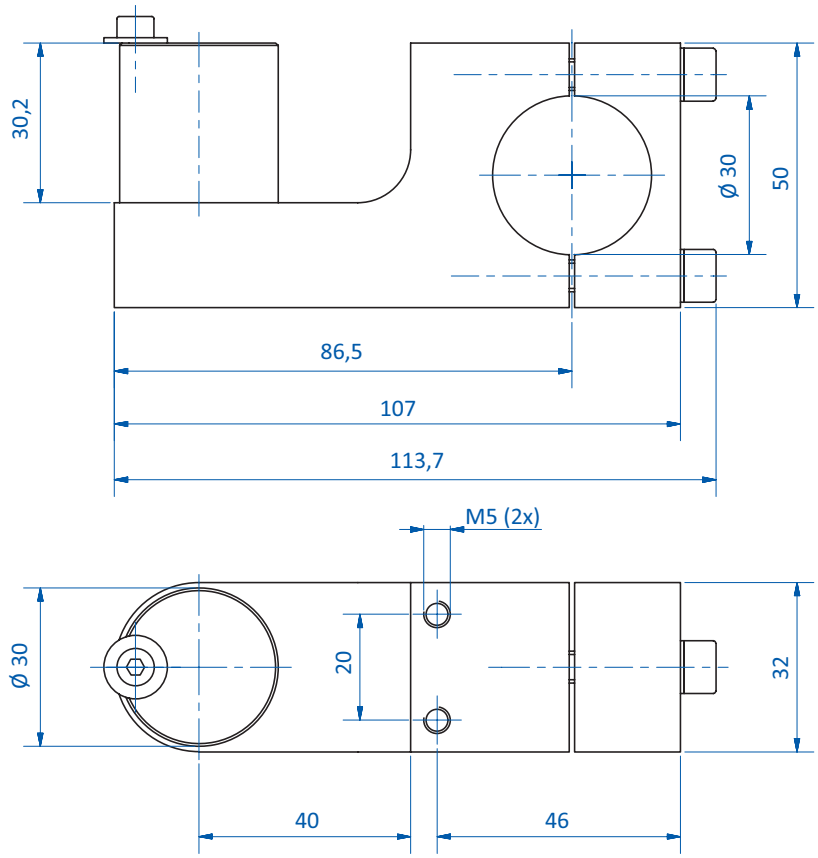
Item no.	Clamping Ø [mm]	Weight [g]	Suitable for angle arms
GR02.270	20	332	GR02.104, GR02.105, GR02.106, GR02.107
GR02.273	30	319	GR02.104, GR02.105, GR02.106, GR02.107

Dimensions



GR02.270

Dimensions



GR02.273

Elbow arms – spring compensated and non-rotating



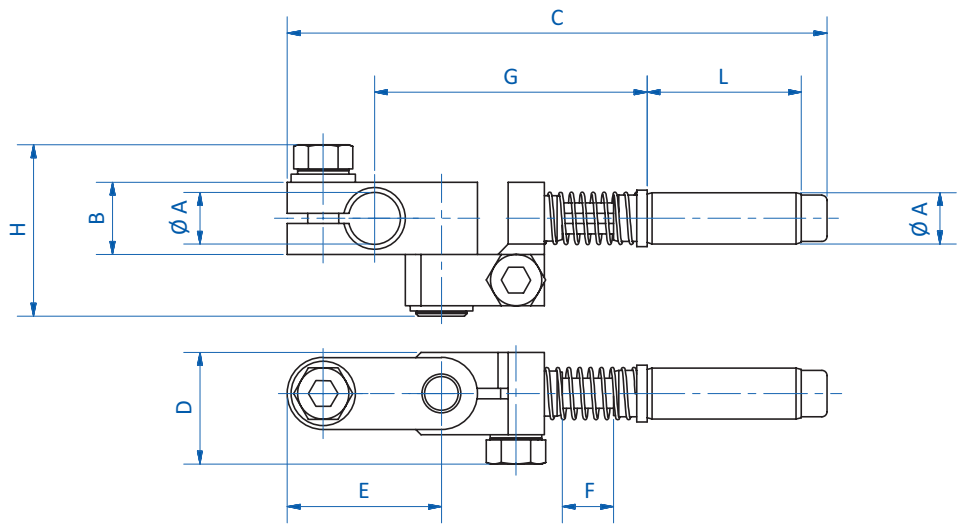
Product notes

> Components for mounting grippers, gripper fingers or gripper arms
> Spring compensates for variation in ejection stroke
> Angle adjustment +/- 130°
> Smooth motion due to lubrication-free polymer bearing

Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.160	10	60
GR03.161	20	65
GR03.162	15	125
GR03.163	35	134
GR03.164	20	288
GR03.165	40	310

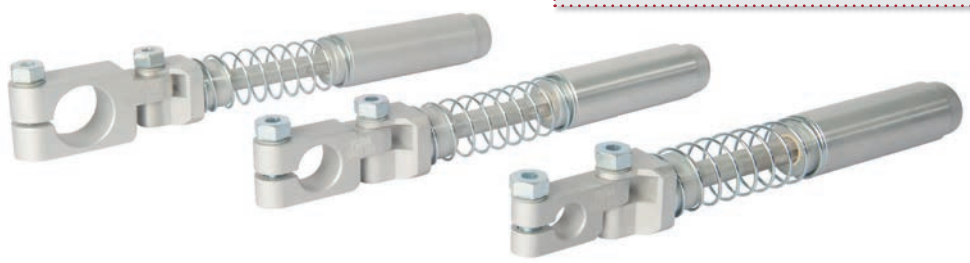
Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	L [mm]
GR03.160	10	14	105	21.7	30	10	53	33.3	30
GR03.161	10	14	115	21.7	30	20	63	33.3	30
GR03.162	14	20	133	24.7	37.5	15	69.5	37.7	35
GR03.163	14	20	153	24.7	37.5	35	89.5	37.7	35
GR03.164	20	25	179.5	30.7	52	20	87.5	42.7	55
GR03.165	20	25	199.5	30.7	52	40	107.5	42.7	55

Elbow arms with sliding bush – spring compensated, adjustable and non-rotating

PRECISE FUNCTIONING EVEN UNDER HIGH LOAD



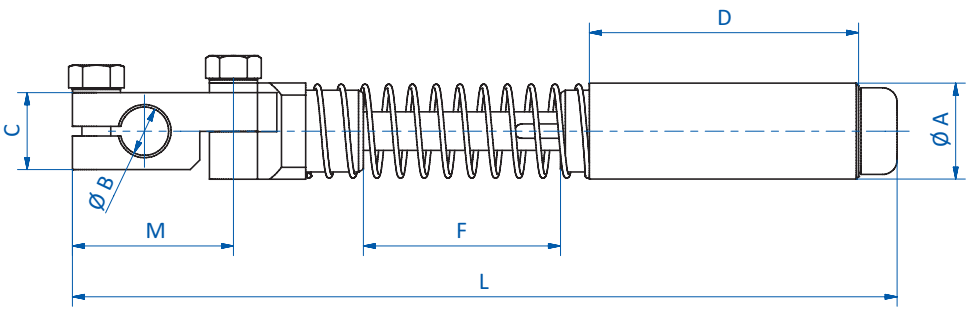
Product notes

> Elements for connecting grippers
> Guiding through sliding bushes for high precision by absorbing lateral forces and moments
> Spring compensates for variation in ejection stroke

Technical data

Item no.	Suitable for grippers with clamping Ø [mm]	Stroke [mm]	Weight [g]
GR03.202	10	40	104
GR03.203	14	40	111
GR03.204	20	40	122

Dimensions



Item no.	Ø A [mm]	Ø B [mm]	C [mm]	D [mm]	F [mm]	L [mm]	M [mm]
GR03.202	20	10	16	55.5	40	171.5	33.5
GR03.203	20	14	20	55.5	40	177.5	39.5
GR03.204	20	20	25	55.5	40	185.5	47.5

Suction fingers for vacuum cups – rigid





Product notes

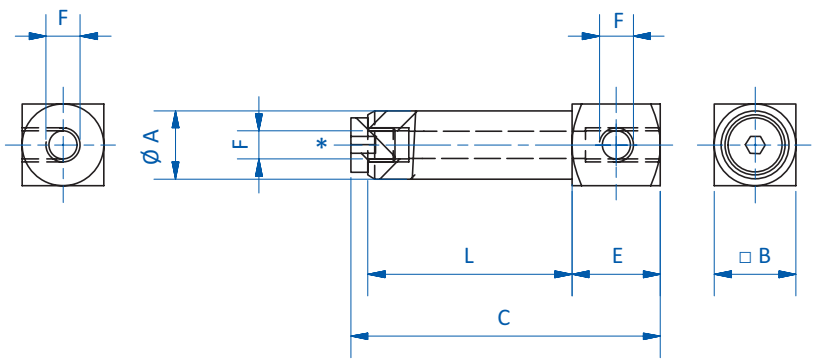
> Components for mounting vacuum cups
> Two vacuum ports

Technical data

Dimensions

Item no.	Weight [g]	Ø A [mm]	F	G	H	□ B [mm]	E [mm]	C [mm]	L [mm]
GR03.001A	11	10	M5	--	--	12	13	45.5	30
GR03.002A	16	10	M5	--	--	12	13	75	60
GR03.003A	22	10	M5	--	--	12	13	105	90
GR03.010A	27	14	G1/8	--	--	16	20	67.5	45
GR03.011A	39	14	G1/8	--	--	16	20	112.5	90
GR03.012A	49	14	G1/8	--	--	16	20	152.5	130
GR03.036	64	20	G1/4	G1/8	G1/8	22	23	75.5	50
GR03.037	100	20	G1/4	G1/8	G1/8	22	23	125	100
GR03.038	137	20	G1/4	G1/8	G1/8	22	23	175.5	150
GR03.039	203	30	G1/4	--	G1/4	30	30	230	200

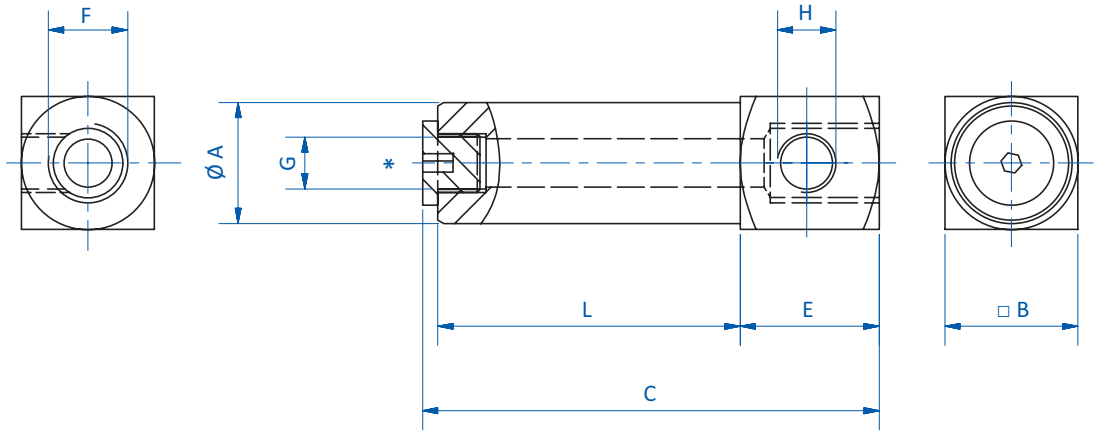
Dimensions



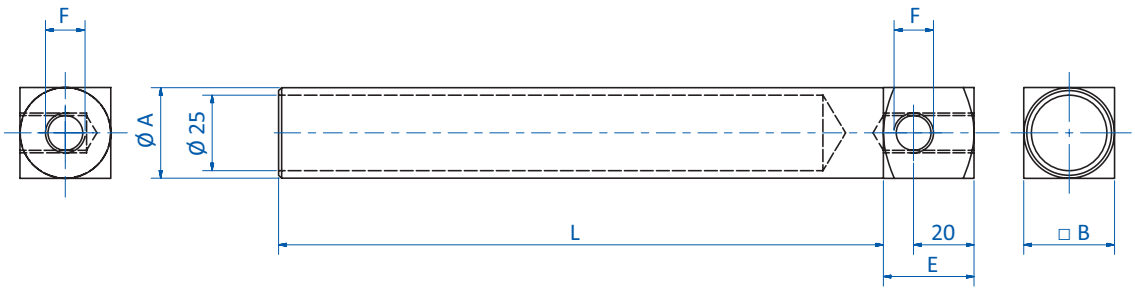
GR03.001A | GR03.002A | GR03.003A | GR03.010A | GR03.011A | GR03.012A

* = Alternative vacuum connection

Dimensions



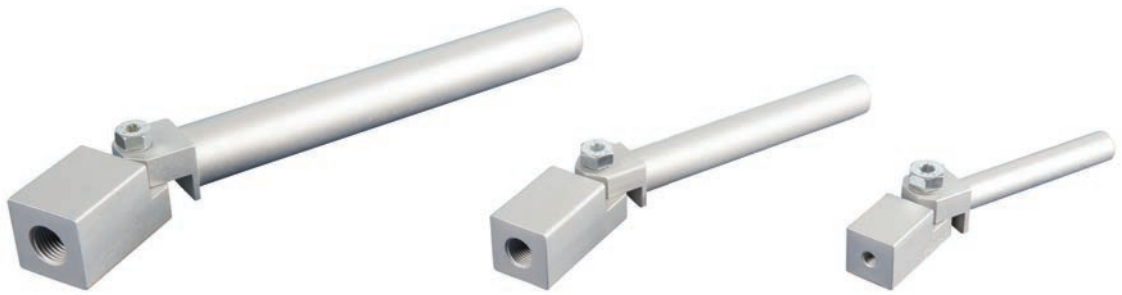
GR03.036 | GR03.037 | GR03.038



GR03.039

* = Alternative vacuum connection

Suction fingers for vacuum cups – adjustable



Product notes

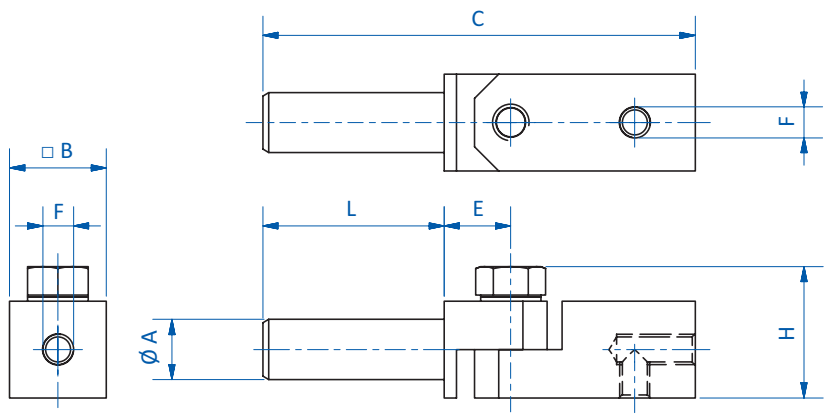
> Components for mounting vacuum cups
> Angle adjustment +/- 90°

Technical data

Dimensions

Item no.	Weight [g]	Ø A [mm]	F	□ B [mm]	C [mm]	E [mm]	H [mm]	L [mm]
GR03.040A	35	10	M5	16	66.5	11	21.7	30
GR03.041A	38	10	M5	16	101.5	11	21.7	60
GR03.042A	43	10	M5	16	131.5	11	21.7	90
GR03.050A	58	14	G1/8	20	99	13	23.7	45
GR03.051A	69	14	G1/8	20	144	13	23.7	90
GR03.052A	78	14	G1/8	20	184	13	23.7	130
GR03.070A	72	20	G1/8	20	106	15	25.7	50
GR03.071A	87	20	G1/8	20	156	15	25.7	100
GR03.072A	103	20	G1/8	20	206	15	25.7	150
GR03.073A	93	20	G1/4	25	108	15	28.2	50
GR03.074A	106	20	G1/4	25	158	15	28.2	100
GR03.075A	123	20	G1/4	25	208	15	28.2	150

Dimensions



Suction fingers – adjustable



Product notes

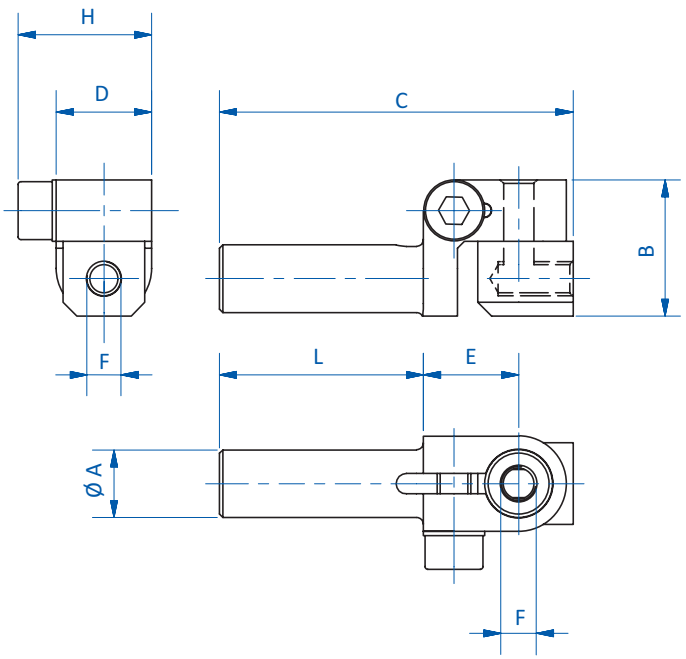
> Adjustable head for mounting and aligning vacuum cups with part contours
> Angle adjustment +/- 100°
> Up to 50 % less weight compared to standard version
> Heads are interchangeable with the heads of elbow arms GR02.240 - GR02.242, GR02.250 - GR02.252, GR02.260 - GR02.262

Technical data

Item no.	Weight [g]
GR03.240	15
GR03.241	18
GR03.242	21
GR03.250	29
GR03.251	37
GR03.252	46
GR03.260	57
GR03.261	71
GR03.262	86

Continued on the next page

Dimensions



Item no.	Ø **A** [mm]	**F**	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]	**H** [mm]	**L** [mm]
GR03.240	10	M5	20	52	14	14	19.6	30
GR03.241	10	M5	20	82	14	14	19.6	60
GR03.242	10	M5	20	112	14	14	19.6	90
GR03.250	14	G1/8	28	71	18	16	23.6	45
GR03.251	14	G1/8	28	116	18	16	23.6	90
GR03.252	14	G1/8	28	156	18	16	23.6	130
GR03.260	20	G1/4	33	82	24	19	29.6	50
GR03.261	20	G1/4	33	132	24	19	29.6	100
GR03.262	20	G1/4	33	182	24	19	29.6	150

Spring compensated gripper arm for vacuum cups



Product notes

> Spring compensates for variation in ejection stroke
> Smooth motion due to lubrication-free polymer bearing
> Only for round vacuum cups

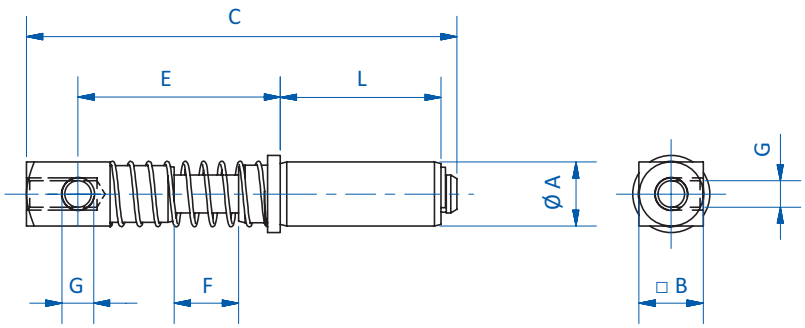
Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.080A	10	18
GR03.081A	20	18
GR03.090A	15	45
GR03.091A	35	48
GR03.114	20	127
GR03.115	40	136

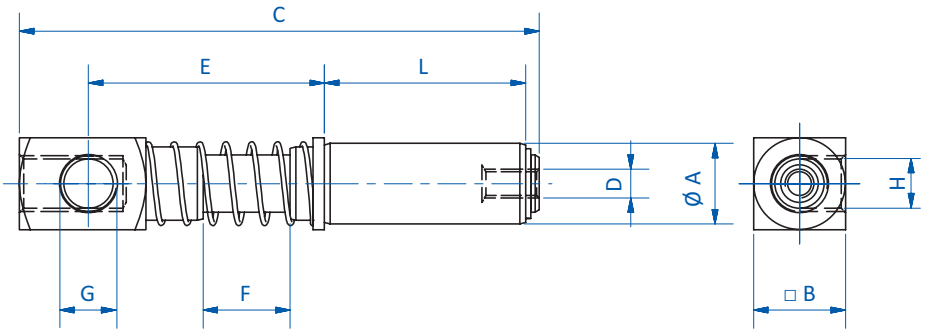
Dimensions

Ø A [mm]	G	H	D	□ B [mm]	C [mm]	E [mm]	F [mm]	L [mm]
10	M5	M5	--	10	67	31.5	10	25
10	M5	M5	--	10	77	41.5	20	25
14	G1/8	G1/8	M5	16	92.5	41.1	15.1	35
14	G1/8	G1/8	M5	16	112.5	61.1	35.1	35
20	G1/8	G1/4	G1/8	20	127.5	50	20	55
20	G1/8	G1/4	G1/8	20	147.5	70	40	55

Dimensions



GR03.080A | GR03.081A



GR03.090A | GR03.091A | GR03.114 | GR03.115

Spring compensated gripper arm for vacuum cups – non-rotating



Product notes

> Spring compensates for variation in ejection stroke
> Smooth motion due to lubrication-free polymer bearing
> Suitable for round, oval and rectangular vacuum cups
> Lateral vacuum port or at the end

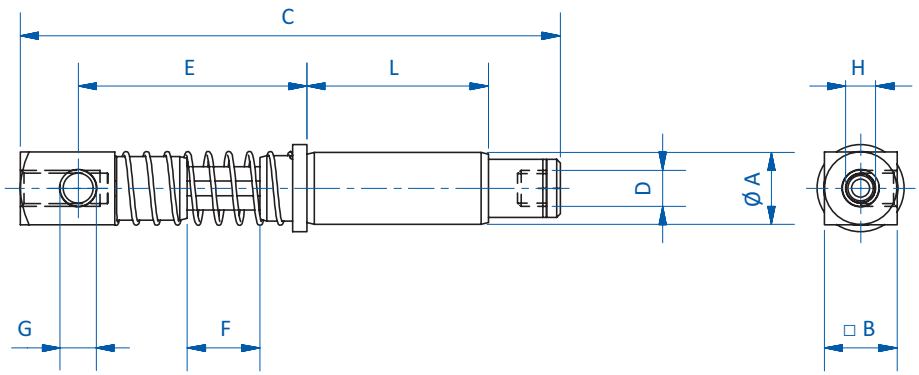
Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.080T	10	17
GR03.081T	20	18
GR03.090T	15	44
GR03.091T	35	48
GR03.114T	20	129
GR03.115T	40	137

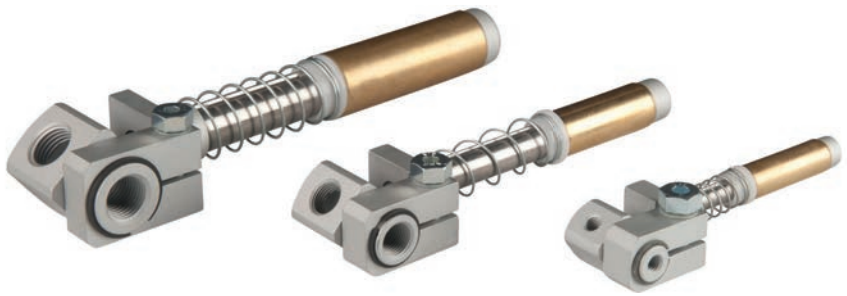
Dimensions

Ø A [mm]	G	H	D	□ B [mm]	C [mm]	E [mm]	F [mm]	L [mm]
10	M5	M5	M5	10	75	31.5	10	25
10	M5	M5	M5	10	85	41.5	20	25
14	G1/8	G1/8	M5	16	98.5	41.1	15	35
14	G1/8	G1/8	M5	16	118.5	61	35	35
20	G1/8	G1/4	G1/8	20	137.5	50	20	55
20	G1/8	G1/4	G1/8	20	157	70	40	55

Dimensions



Spring compensated suction fingers for vacuum cups – non-rotating



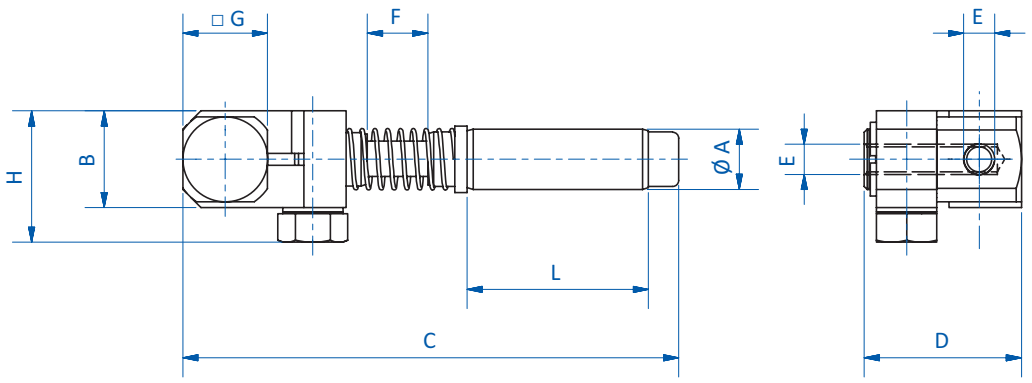
Product notes

> Adjustable head for mounting and aligning vacuum cups with part contours
> Spring compensates for variation in ejection stroke
> Smooth motion due to lubrication-free polymer bearing
> Angle adjustment +/- 120°

Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.120B	10	35
GR03.121B	20	37
GR03.130B	15	75
GR03.131B	35	84
GR03.152B	20	207
GR03.153B	40	229

Dimensions



Item no.	Ø A [mm]	E	B [mm]	C [mm]	D [mm]	F [mm]	□ G [mm]	H [mm]	L [mm]
GR03.120B	10	M5	16	82	26	10	14	21.7	30
GR03.121B	10	M5	16	92	26	20	14	21.7	30
GR03.130B	14	G1/8	19	104.5	32.5	15	18	24.7	35
GR03.131B	14	G1/8	19	124.5	32.5	35	18	24.7	35
GR03.152B	20	G1/4	25	139.5	37.5	20	24	30.7	55
GR03.153B	20	G1/4	25	159.5	37.5	40	24	30.7	55

Notes:

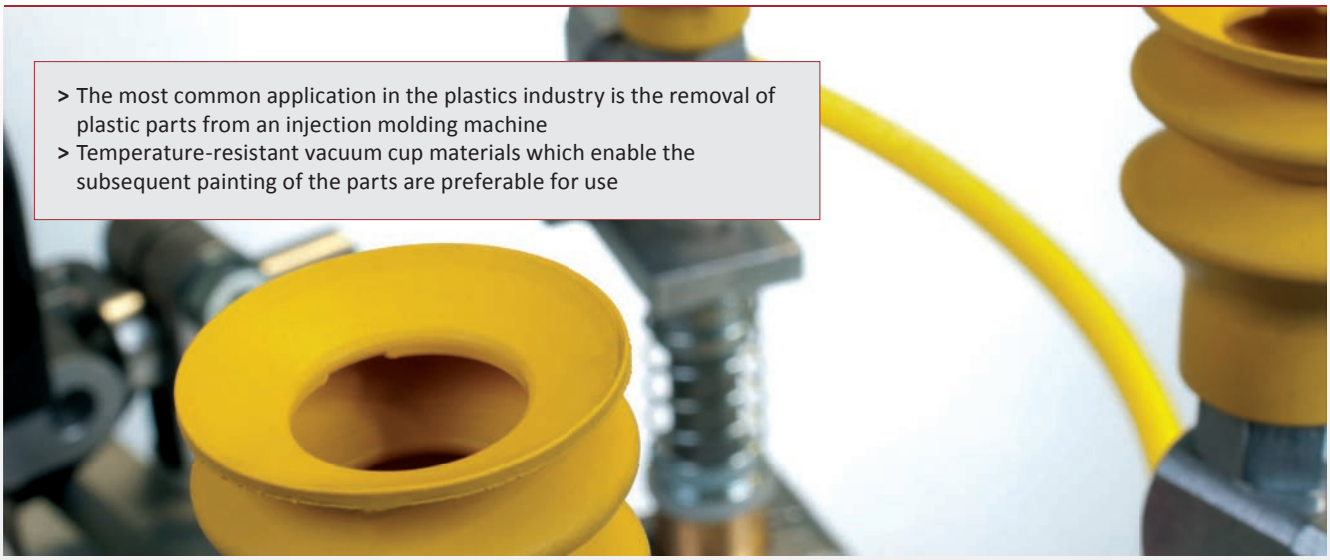
Vacuum cups at a glance **122**

Vacuum cups for demolding **124**

Further industry solutions **153**

Suspensions **154**

FIPA Vacuum cups for demolding



> The most common application in the plastics industry is the removal of plastic parts from an injection molding machine
> Temperature-resistant vacuum cup materials which enable the subsequent painting of the parts are preferable for use



Thermalon® vacuum cups

> Optimized material for low marking
> Heat-resistant up to 160 °C
> No silicones or other adhesive-repelling substances, enabling later painting of the products

Bellows vacuum cups, 1.5 folds – SKT-B1
> Good adaptation to uneven product surfaces
> Diameter: 11 - 63 mm

Bellows vacuum cups, 2.5 folds – SKT-B2
> Very good adaptation to uneven product surfaces
> Large range of height and angle adjustment
> Particularly gentle placement on product surfaces
> Diameter: 5 - 62 mm



Flat vacuum cups – SKT-F
> Flat vacuum cups with a flexible single sealing lip
> Low internal volume saves energy
> Diameter: 5 - 60 mm

Oval vacuum cups – SKH-O
> Oval-shaped flat vacuum cups for the handling of narrow products
> Narrow width enables the gripping of ribbed surfaces
> Significantly greater suction power than round vacuum cups of equal width
> Dimensions: 4x2 - 45x15 mm

> See page 124

FIPA Vacuum cups for demolding



HNBR vacuum cups – SKH-B1, SKH-B2 and SKH-O

Bellows cups 1.5 and 2.5 folds, flat vacuum cups and oval vacuum cups

> Standard material for removing hot plastic parts from an injection molding machine
> Heat-resistant up to 160 °C
> No silicones or other adhesive-repelling substances, enabling later painting of the products
> Low-marking
> Wear-resistant material
> Good adaptation to uneven product surfaces
> Diameter: 5 - 60 mm

> See page 132



Varioflex® bellows cups, 1.5 and 2.5 folds – SP-BX

> Excellent service life and superior retention force
> Special polyurethane in two degrees of hardness (60° Shore A black, 30° Shore A red)
> Soft lip for optimal sealing
> Short cycle times and high process reliability
> Operating temperature: 10 - 50 °C
> Low-marking

1.5 folds – SP-BX1

> Good adaptation to uneven product surfaces
> Supports (Ø 20–75 mm) stabilise the product
> Diameter: 15 - 75 mm

2.5 folds – SP-BX2

> Excellent adaptation to uneven product surfaces
> Large range of height and angle adjustment
> Diameter: 15 - 75 mm

> See page 138



Flat silicone vacuum cups with curved lip – SFU-D

> Universal flat vacuum cups with tapering curved sealing lip
> Pre-tension of the sealing lip enables gripping of uneven, slightly curved products
> Diameter: 4 - 85 mm

> See page 144



Bellows silicone vacuum cups, universal – SBU 1 and SBU 2

1.5 and 2.5 folds

> Universal bellows vacuum cups for handling sensitive or uneven products
> Bellows compensates for differences in height and enables good adaptation to curved or uneven product surfaces
> Diameter: 4 - 88 mm

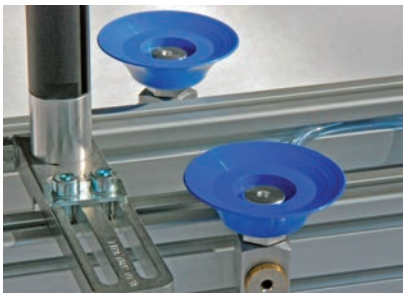
> See page 147

For the full range of vacuum cups please refer to the FIPA Vacuum Technology Catalog or our website www.fipa.com.

High-temperature Thermalon® cups – SKT-F

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Flat vacuum cups for smooth surfaces especially suitable for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection up to Ø 50 mm by means of plug-in nipple, from Ø 60 mm with vulcanized carrier plate (boltable).

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Great stability allows high acceleration

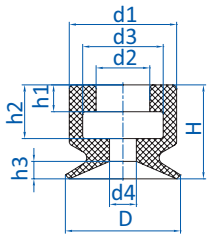
Technical data

Item no.	Model / Lip dimensions		Material / Color	Usage temperature [°C (°F)]
102.005.496.19	SKT-F-5	0.9	Thermalon® (bl)	0 - 160 (32 - 320)
102.008.497.19	SKT-F-8	1.3	Thermalon® (bl)	0 - 160 (32 - 320)
102.010.498.19	SKT-F-10	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
102.015.499.19	SKT-F-15	1.9	Thermalon® (bl)	0 - 160 (32 - 320)
102.020.500.19	SKT-F-20	2.3	Thermalon® (bl)	0 - 160 (32 - 320)
102.025.501.19	SKT-F-25	3	Thermalon® (bl)	0 - 160 (32 - 320)
102.030.502.19	SKT-F-30	2	Thermalon® (bl)	0 - 160 (32 - 320)
102.040.503.19	SKT-F-40	3.9	Thermalon® (bl)	0 - 160 (32 - 320)
102.050.504.19	SKT-F-50	4	Thermalon® (bl)	0 - 160 (32 - 320)
102.060.505.19	SKT-F-60	4.9	Thermalon® (bl)	0 - 160 (32 - 320)

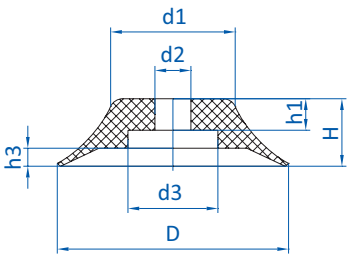
Accessories

	Suitable fittings							Suitable suspensions (Snap-in)	
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female	Suspen-sions	
102.005.496.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.008.497.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.010.498.19	270.010	270.005	--	270.009	270.007	--	--	50.330	9
102.015.499.19	270.200	--	--	270.064	270.065	--	--	50.330	9
102.020.500.19	270.311	--	--	270.063	270.061	--	--	--	--
102.025.501.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.030.502.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.040.503.19	--	--	270.312/19	270.030	270.019	270.274	270.275	--	--
102.050.504.19	--	--	--	270.012	270.020	270.491	270.492	--	--
102.060.505.19	--	--	--	--	--	--	--	--	--

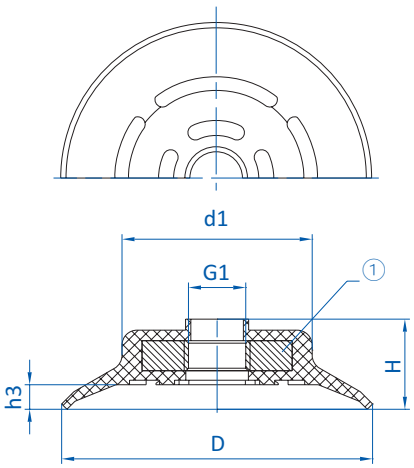
Dimensions



Drawing A



Drawing B



Drawing C

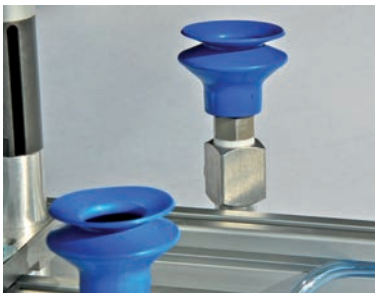
① = Aluminum

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
102.005.496.19	A	5.5	7.5	4	6	1.5	--	6.5	2	4	0.9
102.008.497.19	A	8.5	8	4	6	2	--	7	2	4	1.3
102.010.498.19	A	11	8.5	4	6	2	--	7.5	2	4	1.4
102.015.499.19	B	15.5	12	4.5	8	--	--	8	2.7	--	1.8
102.020.500.19	B	21	15	4.5	11	--	--	10	4.5	--	2.2
102.025.501.19	B	26	16	6	11	--	--	14	7	--	2.8
102.030.502.19	B	31	14.5	6	11	--	--	12	7	--	2
102.040.503.19	B	41	24	6	11	--	--	14	7	--	3.9
102.050.504.19	B	51	27.5	8	20	--	--	15	7	--	4
102.060.505.19	C	62	38	--	30	--	G1/4	18	--	--	5

High-temperature Thermalon® bellows cups, 1.5 folds – SKT-B1

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces especially suited for removing hot plastic parts to be painted from an injection molding machine. Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces

Technical data

Item no.	Model / Lip dimensions		Number of folds	Material / Color	Short-term working temperature < 30 Sec [°C (°F)]
23.011.234.19	SKT-B1-11	5.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.014.235.19	SKT-B1-14	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.016.236.19	SKT-B1-16	8.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.018.237.19	SKT-B1-18	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.020.238.19	SKT-B1-20	5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.022.239.19	SKT-B1-22	8	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.025.240.19	SKT-B1-25	12	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.033.241.19	SKT-B1-33	11	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.043.242.19	SKT-B1-43	12.5	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.053.243.19	SKT-B1-53	15	1.5	Thermalon® (bl)	0 - 160 (32 - 320)
23.063.244.19	SKT-B1-63	15	1.5	Thermalon® (bl)	0 - 160 (32 - 320)

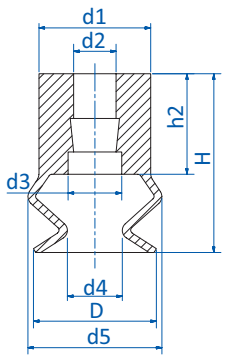
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.011.234.19	270.134	270.347	270.104	270.033	270.478	--	--
23.014.235.19	270.134	270.347	270.104	270.033	270.478	--	--
23.016.236.19	270.134	270.347	270.104	270.033	270.478	--	--
23.018.237.19	270.134	270.347	270.104	270.033	270.478	--	--
23.020.238.19	270.134	270.347	270.104	270.033	270.478	--	--
23.022.239.19	270.134	270.347	270.104	270.033	270.478	--	--
23.025.240.19	270.134	270.347	270.104	270.033	270.478	--	--
23.033.241.19	--	--	270.315	270.196	270.114	270.190	270.192
23.043.242.19	--	--	270.315	270.196	270.114	270.190	270.192
23.053.243.19	--	--	270.315	270.196	270.114	270.190	270.192

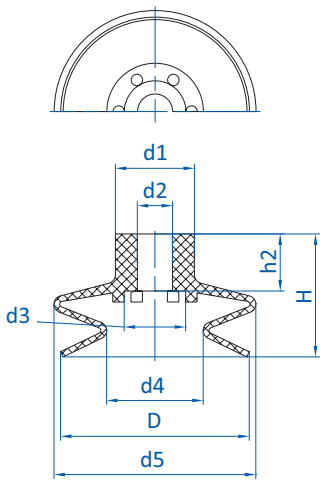
Accessories

Item no.	Suitable fittings						
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.063.244.19	--	--	270.315	270.196	270.114	270.190	270.192

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h2** [mm]
23.011.234.19	A	11	10	3.8	4.8	5	12	16	9
23.014.235.19	A	13	10	3.8	4.8	5	14	16	9
23.016.236.19	A	16	10	3.8	4.8	8	17.5	19	9
23.018.237.19	A	18	10	3.8	4.8	8	18	16.5	9
23.020.238.19	A	19	10	3.8	4.8	10.5	20	16	9
23.022.239.19	A	22	10	3.8	4.8	11	24	19	9
23.025.240.19	A	24	10	3.8	4.8	9.5	25	23	9
23.033.241.19	B	33	18	8	14	17	36	28	13
23.043.242.19	B	43	18	8	14	22	46	28	13
23.053.243.19	B	53	18	8	14	33	59	34	13
23.063.244.19	B	63	18	8	14	44	67	34	13

High-temperature Thermalon® bellows cups, 2.5 folds – SKT-B2

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces especially suited for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Long vacuum cup stroke and good adaptation to curved or uneven product surfaces

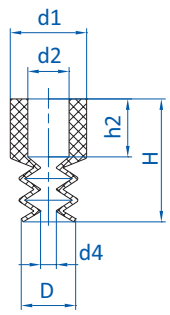
Technical data

Item no.	Model / Lip dimensions		Material / Color	Number of folds	Short-term working temperature < 30 Sec [°C (°F)]
21.005.146.19	SKT-B2-5	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.007.147.19	SKT-B2-7	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.009.148.19	SKT-B2-9	3	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.012.149.19	SKT-B2-12	7	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.014.150.19	SKT-B2-14	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.018.151.19	SKT-B2-18	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.020.152.19	SKT-B2-20	10	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.025.153.19	SKT-B2-25	20	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.032.154.19	SKT-B2-32	14.5	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.042.155.19	SKT-B2-42	22	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.052.156.19	SKT-B2-52	27	Thermalon® (bl)	2.5	0 - 160 (32 - 320)
21.062.157.19	SKT-B2-62	31	Thermalon® (bl)	2.5	0 - 160 (32 - 320)

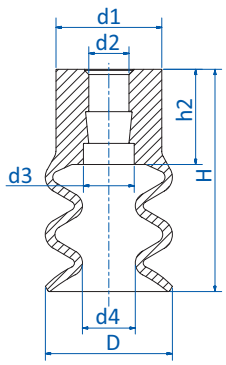
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.005.146.19	270.134	270.347	270.104	270.033	270.478	--	--
21.007.147.19	270.134	270.347	270.104	270.033	270.478	--	--
21.009.148.19	270.134	270.347	270.104	270.033	270.478	--	--
21.012.149.19	270.134	270.347	270.104	270.033	270.478	--	--
21.014.150.19	270.134	270.347	270.104	270.033	270.478	--	--
21.018.151.19	270.134	270.347	270.104	270.033	270.478	--	--
21.020.152.19	270.134	270.347	270.104	270.033	270.478	--	--
21.025.153.19	270.134	270.347	270.104	270.033	270.478	--	--
21.032.154.19	--	--	270.315	270.196	270.114	270.190	270.192
21.042.155.19	--	--	270.315	270.196	270.114	270.190	270.192
21.052.156.19	--	--	270.315	270.196	270.114	270.190	270.192
21.062.157.19	--	--	270.315	270.196	270.114	270.190	270.192

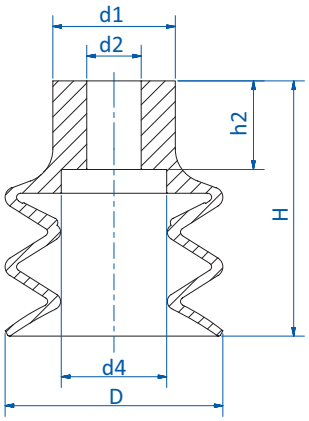
Dimensions



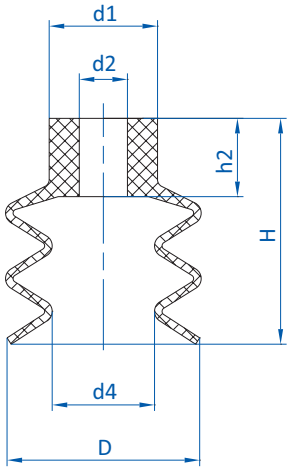
Drawing A



Drawing B



Drawing C



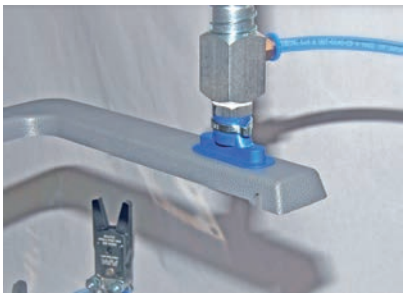
Drawing D

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d4** [mm]	**H** [mm]	**h2** [mm]
21.005.146.19	A	5.5	7	4	2.2	13.5	8
21.007.147.19	A	6	9	4.5	1.8	14	6.5
21.009.148.19	A	9.5	9	4.4	4	15	7.5
21.012.149.19	B	12	10	3.8	5	21	9
21.014.150.19	B	14	10	3.8	5	23	9
21.018.151.19	B	17.5	10	3.8	7.5	23	9
21.020.152.19	B	20	10	3.8	10	23	9
21.025.153.19	B	25	10	3.8	10	34	9
21.032.154.19	C	32	18	8	17	38	13
21.042.155.19	C	42	18	8	18.5	46	13
21.052.156.19	D	52	18	8	25	49	13
21.062.157.19	D	62	18	8	30	55	13

High-temperature Thermalon® oval cups – SKT-O

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Oval vacuum cups for smooth surfaces suitable for removing hot plastic parts to be painted from an injection molding machine.
Thermalon® is a material mixture specially optimized for the plastics industry with a hardness of 60° Shore A.
Connection via plug-in nipple.

Advantage

> Extremely low-marking
> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Significantly increased suction force compared to round vacuum cups of the same width
> Soft sealing lip also allows adhesion to curved products

Ordering notes

From size 24x8 mm upward, a gripper clamp (available separately) is recommended to prevent inadvertent rotation.

Technical data

Item no.	Model / Lip dimensions		Material / Color	Lip dimensions	Usage temperature [°C (°F)]
132.4x2.079.19	SKT-O-4x2	0.4	Thermalon® (bl)	4x2	0 - 160 (32 - 320)
132.7x4.080.19	SKT-O-7x4	0.5	Thermalon® (bl)	7x4	0 - 160 (32 - 320)
132.15x5.081.19	SKT-O-15x5	0.6	Thermalon® (bl)	15x5	0 - 160 (32 - 320)
132.18x6.082.19	SKT-O-18x6	1	Thermalon® (bl)	18x6	0 - 160 (32 - 320)
132.24x8.083.19	SKT-O-24x8	1	Thermalon® (bl)	24x8	0 - 160 (32 - 320)
132.30x10.084.19	SKT-O-30x10	1	Thermalon® (bl)	30x10	0 - 160 (32 - 320)
132.45x15.085.19	SKT-O-45x15	2	Thermalon® (bl)	45x15	0 - 160 (32 - 320)
132.60x20.086.19	SKT-O-60x20	2.5	Thermalon® (bl)	60x20	0 - 160 (32 - 320)
132.75x25.087.19	SKT-O-75x25	2.5	Thermalon® (bl)	75x25	0 - 160 (32 - 320)

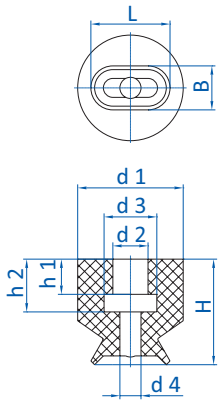
Accessories

Clamp
--
--
--
--
78.032
78.032
78.033
78.033
78.034

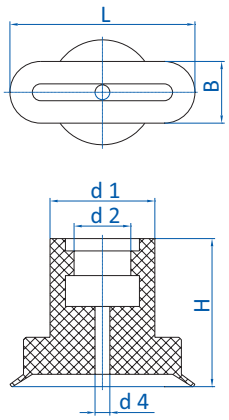
Accessories

	Suitable fittings						
Item no.	M3-male	M4-male	M5-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
132.4x2.079.19	270.014	270.111	270.300	--	--	--	--
132.7x4.080.19	270.014	270.111	270.300	--	--	--	--
132.15x5.081.19	--	--	270.094	270.095	270.096	--	--
132.18x6.082.19	--	--	270.094	270.095	270.096	--	--
132.24x8.083.19	--	--	270.094	270.095	270.096	--	--
132.30x10.084.19	--	--	270.094	270.095	270.096	--	--
132.45x15.085.19	--	--	--	--	--	270.097	270.098
132.60x20.086.19	--	--	--	--	--	270.097	270.098
132.75x25.087.19	--	--	--	--	--	270.097	270.098

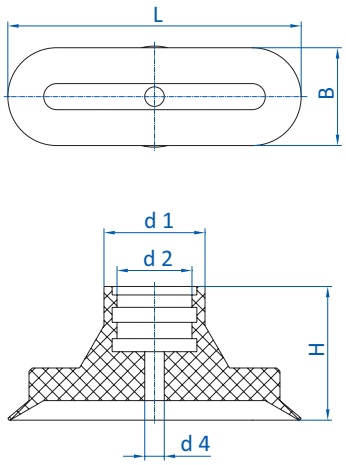
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]
132.4x2.079.19	A	4.5	2.5	6	2	3	1.2	6
132.7x4.080.19	A	7	3.5	6	2	3	1.4	6
132.15x5.081.19	B	15	5	8.5	4.6	--	1.2	12
132.18x6.082.19	B	18	6	8.5	4.6	--	1.5	12
132.24x8.083.19	B	24	8	11.5	5.5	--	1.5	12
132.30x10.084.19	B	30	10	11.5	5.5	--	2.5	12
132.45x15.085.19	C	45	15	15.5	11.5	--	3	21
132.60x20.086.19	C	60	20	15.5	11.5	--	4	21
132.75x25.087.19	C	75	25	17.5	11.5	--	4	21

High-temperature HNBR bellows cups, 1.5 folds – SKH-B1

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces with suitability for removing hot plastic parts to be painted from an injection molding machine.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Bellows compensate differences in height and enable good adaptation to curved or uneven product surfaces

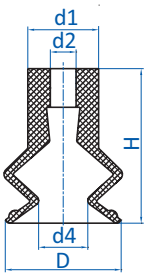
Technical data

Item no.	Model / Lip dimensions		Number of folds	Material / Color	Usage temperature [°C (°F)]
23.005.178.14	SKH-B1-5	2	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.008.166.14	SKH-B1-8	3.5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.011.008.14/2	SKH-B1-11	4.5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.015.122.14	SKH-B1-15	5	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.016.016.14/2	SKH-B1-16	6	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.020.124.14/2	SKH-B1-20	8	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.030.125.14	SKH-B1-30	9	1.5	HNBR (ge)	0 - 160 (32 - 320)
23.043.096.14	SKH-B1-43	12	1.5	HNBR (ge)	0 - 160 (32 - 320)

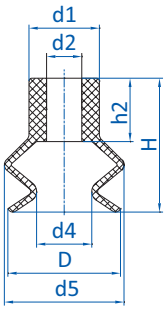
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.178.14	270.153	--	--	--	--	--	--
23.008.166.14	270.153	--	--	--	--	--	--
23.011.008.14/2	270.013	270.005	270.103	270.003	270.015	--	--
23.015.122.14	270.010	270.005	--	270.009	270.007	--	--
23.016.016.14/2	270.013	270.005	270.103	270.003	270.015	--	--
23.020.124.14/2	270.311	--	--	270.063	270.061	--	--
23.030.125.14	--	--	270.312/19	270.030	270.019	270.274	270.275
23.043.096.14	--	--	270.315	270.196	270.114	270.190	270.192

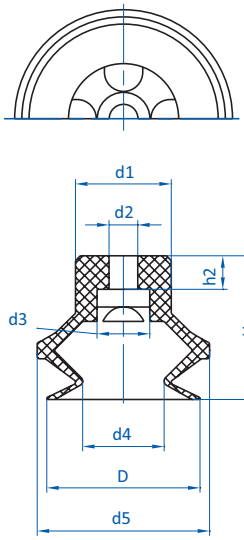
Dimensions



Drawing A



Drawing B



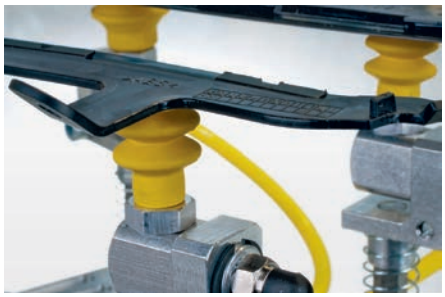
Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h2** [mm]
23.005.178.14	A	6	5	2	--	2.2	--	9	--
23.008.166.14	A	9	5.5	2	--	3.8	--	12	--
23.011.008.14/2	B	12	10	5	--	4.5	12	16	9
23.015.122.14	C	15	8.5	3.6	6	8	17	16	1.7
23.016.016.14/2	B	16	10	5	--	8	17	19	9
23.020.124.14/2	C	21.5	15	4.5	11	10	23.5	20	4.6
23.030.125.14	C	32	20	6	11	17	36	30	7
23.043.096.14	B	43	18	8	--	23	45	27	12

High-temperature HNBR bellows cups, 2.5 folds – SKH-B2

UP TO 160 °C (320 °F) & MINIMUM MARKING





Product notes

Bellows vacuum cups for uneven surfaces with suitability for removing hot plastic parts to be painted from an injection molding machine. Connection via plug-in nipple.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Long vacuum cup stroke and good adaptation to curved or uneven product surfaces

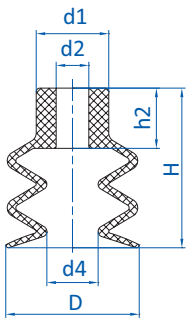
Technical data

Item no.	Model / Lip dimensions		Number of folds	Material / Color	Usage temperature [°C (°F)]
21.005.057.14	SKH-B2-5	3	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.007.089.14	SKH-B2-7	3	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.009.002.14	SKH-B2-9	2	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.012.135.14	SKH-B2-12	7	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.014.053.14	SKH-B2-14	9	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.018.010.14	SKH-B2-18	8	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.020.016.14/2	SKH-B2-20	9	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.032.075.14/3	SKH-B2-32	13	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.043.049.14	SKH-B2-43	19	2.5	HNBR (ge)	0 - 160 (32 - 320)
21.060.051.14	SKH-B2-60	25	2.5	HNBR (ge)	0 - 160 (32 - 320)

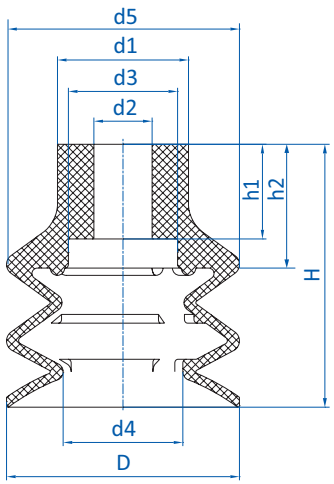
Accessories

	Suitable fittings						
Item no.	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.005.057.14	270.134	270.347	270.104	270.033	270.478	--	--
21.007.089.14	270.010	270.005	--	270.009	270.007	--	--
21.009.002.14	270.013	270.005	270.103	270.003	270.015	--	--
21.012.135.14	270.013	270.005	270.103	270.003	270.015	--	--
21.014.053.14	270.134	270.347	270.104	270.033	270.478	--	--
21.018.010.14	270.013	270.005	270.103	270.003	270.015	--	--
21.020.016.14/2	270.013	270.005	270.103	270.003	270.015	270.194	--
21.032.075.14/3	--	--	270.315	270.196	270.114	270.190	270.192
21.043.049.14	--	--	270.315	270.196	270.114	270.190	270.192
21.060.051.14	--	--	270.315	--	--	270.540	270.539

Dimensions



Drawing A



Drawing B

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	Ø **d4** [mm]	Ø **d5** [mm]	**H** [mm]	**h1** [mm]	**h2** [mm]
21.005.057.14	A	5.5	7	4	--	2.5	--	14	--	8.5
21.007.089.14	B	7	7.5	4	5.5	3	7	10	2	3.5
21.009.002.14	A	9	9	5	--	4	--	15	--	7
21.012.135.14	A	12	10	5	--	5	--	21	--	9
21.014.053.14	A	14	8	4	--	5.5	--	18	--	5.5
21.018.010.14	A	18	10	4.5	--	7	--	22	--	8.5
21.020.016.14/2	A	20	10	4.5	--	10	--	23	--	9
21.032.075.14/3	B	32	18	8	15	16.5	32	36	13	--
21.043.049.14	B	42	20	8	15	15.5	42	46	13	17
21.060.051.14	B	61	22	8	14	28	61	57	14	18.5

High-temperature HNBR oval cups – SKH-O

UP TO 160 °C (320 °F) & MINIMUM MARKING



Product notes

Oval vacuum cups for smooth surfaces suitable for removing hot plastic parts to be painted from an injection molding machine.
Connection via plug-in nipple.

Advantage

> Free of silicone and other paint-wetting-impairment substances (PWIS)
> Minimum marking
> Significantly increased suction force compared to round vacuum cups of the same width
> Soft sealing lip also allows adhesion to curved products

Ordering notes

From size 15x5 mm upward, a gripper clamp (available separately) is recommended to prevent inadvertent rotation

Technical data

Item no.	Model / Lip dimensions		Material / Color	Usage temperature [°C (°F)]
132.4x2.031.14	SKH-O-4x2A	0.5	HNBR (ge)	0 - 160 (32 - 320)
132.7x4.034.14	SKH-O-7x4	0.8	HNBR (ge)	0 - 160 (32 - 320)
132.15x5.067.14	SKH-O-15x5	1	HNBR (ge)	0 - 160 (32 - 320)
132.24x8.066.14	SKH-O-24x8	1	HNBR (ge)	0 - 160 (32 - 320)
132.36x12.068.14	SKH-O-36x12	2	HNBR (ge)	0 - 160 (32 - 320)
132.45x15.064.14	SKH-O-45x15	3	HNBR (ge)	0 - 160 (32 - 320)

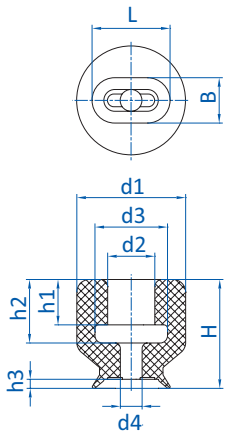
Accessories

Item no.	Clamp
132.4x2.031.14	--
132.7x4.034.14	--
132.15x5.067.14	78.030
132.24x8.066.14	78.032
132.36x12.068.14	78.032
132.45x15.064.14	78.033

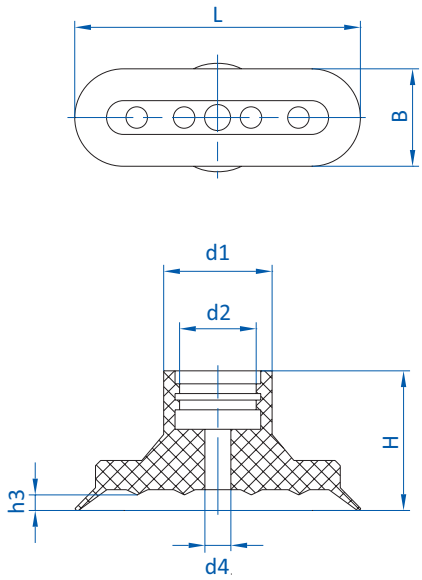
Accessories

	Suitable fittings					
Item no.	M3-male	M4-male	M5-male	G1/8-male	G1/4-male	G1/4-female
132.4x2.031.14	270.014	270.111	270.300	--	--	--
132.7x4.034.14	270.014	270.111	270.300	--	--	--
132.15x5.067.14	--	--	--	270.431	--	--
132.24x8.066.14	--	--	--	270.431	--	--
132.36x12.068.14	--	--	--	270.431	--	--
132.45x15.064.14	--	--	--	--	270.097	270.098

Dimensions



Drawing A



Drawing B

Item no.	Drawing	L [mm]	B [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]
132.4x2.031.14	A	4.3	2.5	6	2.6	4	1.2	6	2.5	3.5	0.5
132.7x4.034.14	A	7.5	4	6	2.4	3	1.4	6	2.3	3	0.7
132.15x5.067.14	B	15	5	9	5	--	2	12	--	--	0.8
132.24x8.066.14	B	24	8.5	12.5	5	--	3	13	--	--	1.5
132.36x12.068.14	B	36	12	12	5	--	4	12	--	--	1.6
132.45x15.064.14	B	44	15	16.5	12	--	4	22	--	--	2.4

Varioflex® bellows cups, 1.5 folds – SP-BX1



POLYURETHANE COMPOSITE MATERIAL 60°/30°



Product notes

Bellows vacuum cups with 1.5 folds made of an extremely wear-resistant polymer.
Soft, flexible sealing lip in 30° Shore A (red).
Stable body in 60° Shore A (black).
Cleats stabilize the product.

Advantage

> Long life cycle reduces machine downtimes
> Perfect sealing performance on rough or uneven surface
> High stability and fast reset
> Oil and ozone-resistant
> Bellows compensate for height differences
> Cleats allow for fast acceleration

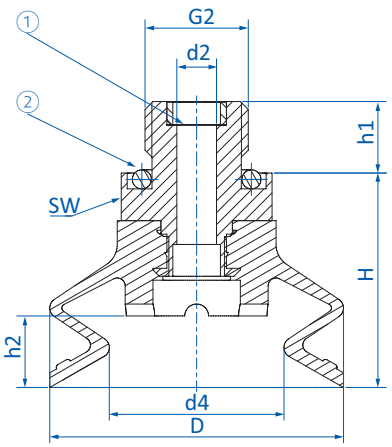
Notes

Explanation of the type description:
> SP-BX1 = Series name of the bellows vacuum cup with 1.5 folds
> -xx = nominal diameter
> Example: SP-BX1-15 = bellows vacuum cup with 1.5 folds and a nominal diameter of 15 mm

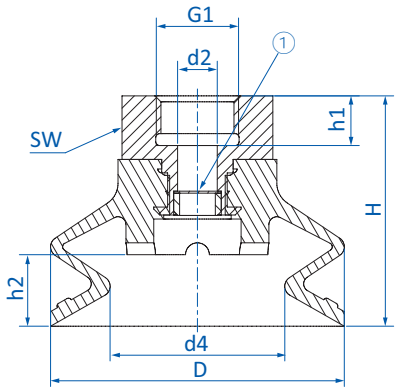
Technical data

Model / Lip dimensions	Ø [mm]	Connection thread 1	Item no.	Connection thread 2	Item no.	Connection thread 3	Item no.		Usage temperature [°C (°F)]	Accessories: Spare cup
		Bellows vacuum cups 1.5 folds – SP-BX1 fully assembled with fitting								
SP-BX1-15	16	M5-male	22.016.253.16	M6-male	22.016.254.16	--	--	4.5	10 - 50 (50 - 122)	23.016.263.16
SP-BX1-20	21	G1/8-male	22.021.255.16	--	--	--	--	5	10 - 50 (50 - 122)	23.021.264.16
SP-BX1-25	26	G1/8-male	22.026.256.16	--	--	--	--	5	10 - 50 (50 - 122)	23.026.265.16
SP-BX1-35	37	G1/8-female	22.037.257.16	G1/4-male	22.037.258.16	--	--	9	10 - 50 (50 - 122)	23.037.266.16
SP-BX1-50 -	53	G1/8-female	22.053.259.16	G1/4-male	22.053.260.16	G3/8-male	22.053.261.16	10	10 - 50 (50 - 122)	23.053.267.16
SP-BX1-75	75	G3/8-male	22.075.262.16	G3/8-female	22.075.263.16	--	--	18	10 - 50 (50 - 122)	--
SP-BX1-115	115	G3/8-IG	22.115.266.16	G1/2-IG	22.115.267.16	--	--	28	10 - 50 (50 - 122)	23.115.274.16
SP-BX1-160	160	G3/8-IG	22.160.264.16	G1/2-IG	22.160.265.16	--	--	40	10 - 50 (50 - 122)	23.160.273.16

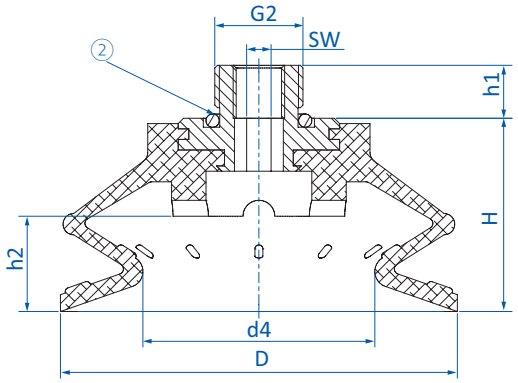
Dimensions



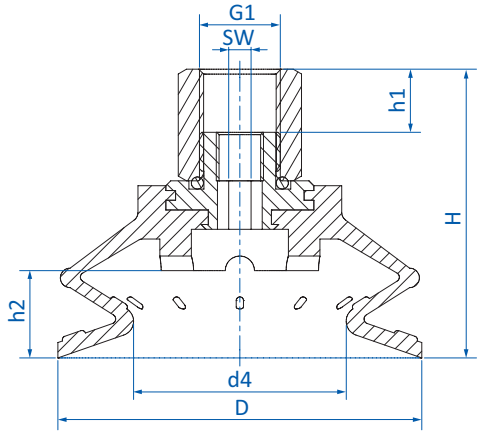
Drawing A



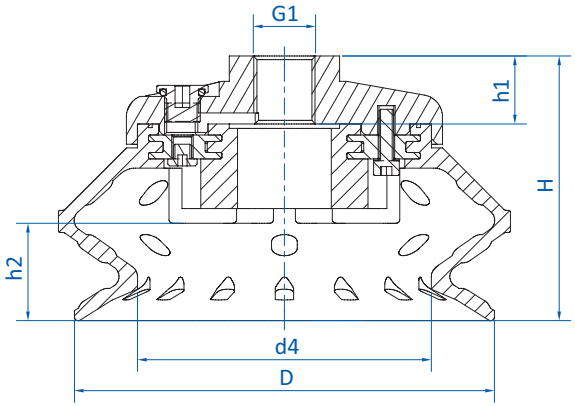
Drawing B



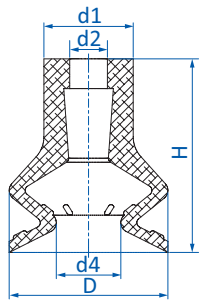
Drawing C



Drawing D



Drawing E

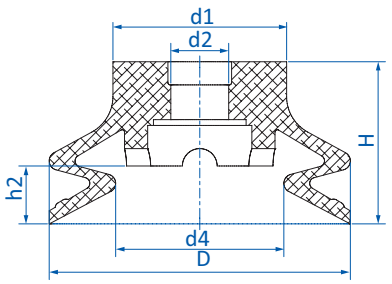


Drawing F

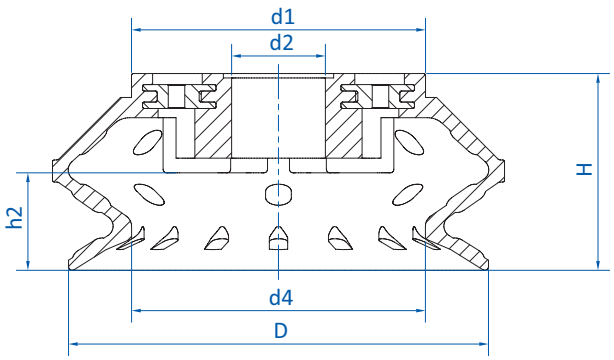
① = Filter screen ② = O-ring

Continued on the next page

Dimensions



Drawing G



Drawing H

① = Filter screen ② = O-ring

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d4 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	h2 [mm]	SW
Bellows vacuum cups 1.5 folds – SP-BX1 fully assembled with fitting											
22.016.253.16	A	16	--	2.5	6.5	--	M5	25	3.6	--	8
22.016.254.16	A	16	--	2.5	6.5	--	M6	24	6	--	13
22.021.255.16	A	21	--	4	12	--	G1/8	19	7	5	13
22.026.256.16	A	26	--	4	14.5	--	G1/8	19	7	5	13
22.037.257.16	B	37	--	5	22	G1/8	--	29	6.3	9	19
22.037.258.16	A	37	--	5	22	--	G1/4	27	9	9	19
22.053.259.16	B	53	--	8	32.5	G1/8	--	35	9	10	22
22.053.260.16	A	53	--	6	32.5	--	G1/4	32	9	10	22
22.053.261.16	A	53	--	6	32.5	--	G3/8	32	10	10	22
22.075.262.16	C	75	--	--	44	--	G3/8	36.5	10	18	8
22.075.263.16	D	75	--	--	44	G3/8	--	59.5	13	18	8
22.115.266.16	E	115	--	--	79.9	G3/8	--	72	18.5	26.5	--
22.115.267.16	E	115	--	--	79.9	G1/2	--	72	18.5	26.5	--
22.160.264.16	E	160	--	--	112.7	G3/8	--	89	21	40.5	--
22.160.265.16	E	160	--	--	112.7	G1/2	--	89	21	40.5	--
Spare cups											
23.016.263.16	F	16	9	4	6.5	--	--	19.5	--	--	--
23.021.264.16	G	21	11	5	12	--	--	14	--	5	--
23.026.265.16	G	26	15	5	14.5	--	--	14	--	5	--
23.037.266.16	G	37	20	7	22	--	--	21	--	9	--
23.053.267.16	G	53	26	10.5	32.5	--	--	26	--	10	--
23.115.274.16	H	115	80	25.5	79.9	--	--	53.5	--	26.5	--
23.160.273.16	H	160	110	25.5	112.7	--	--	68	--	40.5	--

Varioflex® bellows cups, 2.5 folds – SP-BX2

POLYURETHANE COMPOSITE MATERIAL 60°/30°





Product notes

Bellows vacuum cups with 2.5 bellows made of an extremely wear-resistant polymer.
Soft, flexible sealing lip in 30° Shore A (red).
Stable body in 60° Shore A (black).

Advantage

> Long life cycle reduces machine downtimes
> Perfect sealing performance on rough or uneven surface
> High stability and fast reset
> Oil and ozone-resistant
> Excellent height and angle compensation
> Optional: filter disc from Ø 26 mm installed between the bellows

Notes

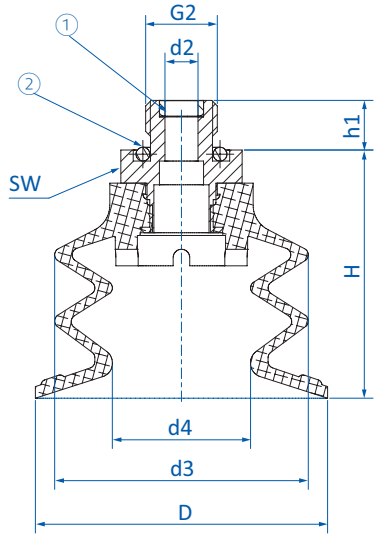
Explanation of the type description:
> SP-BX2 = Series name of the bellows vacuum cup with 2.5 folds
> -xx = nominal diameter
> Example: SP-BX2-15 = bellows vacuum cup with 2.5 folds and a nominal diameter of 15 mm

Technical data

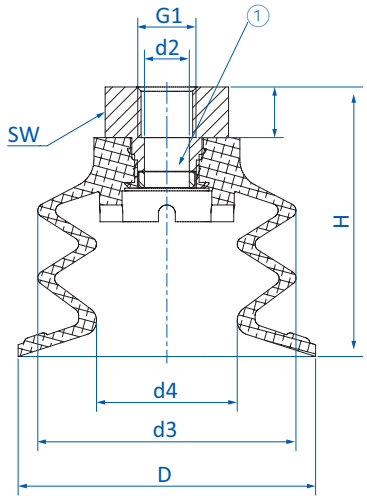
Model / Lip dimensions	Ø [mm]	Connection thread 1	Item no.	Connection thread 2	Item no.	Connection thread 3	Item no.		Usage temp. [°C (°F)]	Accessories: Spare cup
Bellows vacuum cups 2.5 folds – SP-BX2 fully assembled with fitting										
SP-BX2-15	16	M5-male	20.016.145.16	M6-male	20.016.146.16	--	--	5.5	10 - 50 (50 - 122)	21.016.175.16
SP-BX2-20	21	G1/8-male	20.021.147.16	--	--	--	--	6.5	10 - 50 (50 - 122)	21.021.176.16
SP-BX2-25	26	G1/8-male	20.026.148.16	--	--	--	--	8	10 - 50 (50 - 122)	21.026.177.16
SP-BX2-35	37	G1/8-female	20.037.149.16	G1/4-male	20.037.150.16	--	--	14	10 - 50 (50 - 122)	21.037.177.16
SP-BX2-50	53	G1/8-female	20.053.151.16	G1/4-male	20.053.152.16	G3/8-male	20.053.153.16	19	10 - 50 (50 - 122)	21.053.178.16
SP-BX2-75	77	G3/8-male	20.077.154.16	G3/8-female	20.077.155.16	--	--	25	10 - 50 (50 - 122)	--
Bellows vacuum cups 2.5 folds – SP-BX2 fully assembled with fitting and filter										
SP-BX2-25	26	G1/8-male	20.026.148.16-FI	--	--	--	--	8	10 - 50 (50 - 122)	21.026.177.16-FI
SP-BX2-35	37	G1/8-female	20.037.149.16-FI	G1/4-male	20.037.150.16-FI	--	--	14	10 - 50 (50 - 122)	21.037.177.16-FI
SP-BX2-50	53	G1/8-female	20.053.151.16-FI	G1/4-male	20.053.152.16-FI	G3/8-male	20.053.153.16-FI	19	10 - 50 (50 - 122)	21.053.178.16-FI
SP-BX2-75	77	G3/8-male	20.077.154.16-FI	G3/8-female	20.077.155.16-FI	--	--	25	10 - 50 (50 - 122)	--

Continued on the next page

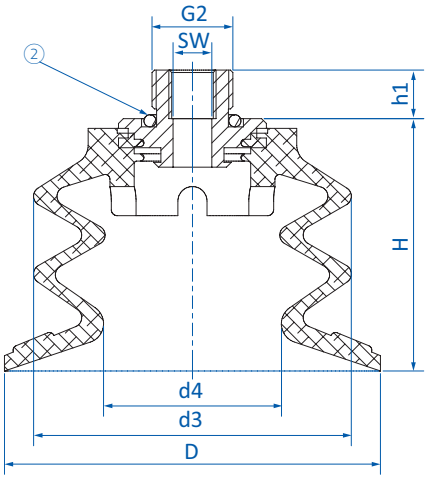
Dimensions



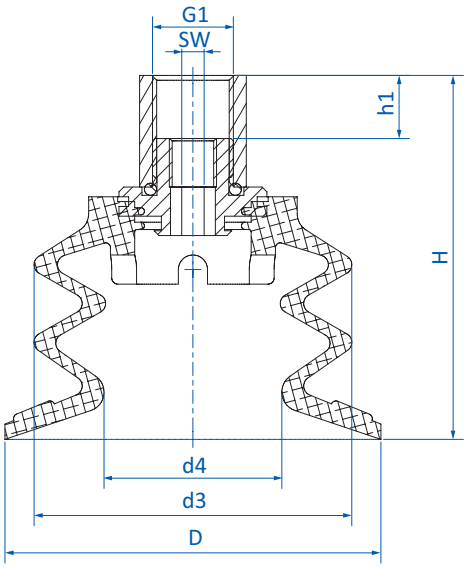
Drawing A



Drawing B



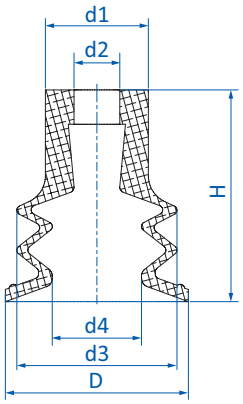
Drawing C



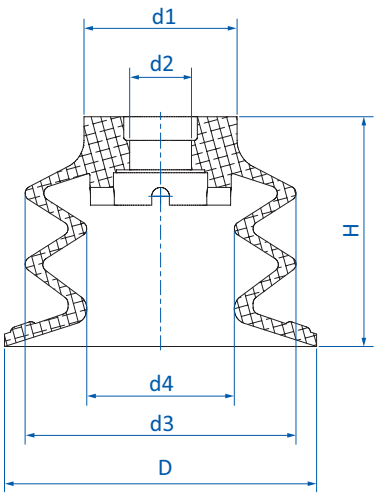
Drawing D

① = Filter screen ② = O-ring

Dimensions



Drawing E



Drawing F

① = Filter screen ② = O-ring

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	G1 (female)	G2 (male)	H	h1 [mm]	SW
Bellows vacuum cups 2.5 folds – SP-BX2 fully assembled with fitting											
20.016.145.16	A	16	--	2.8	14	9	--	M5	24	4	8
20.016.146.16	A	16	--	2.5	14	9	--	M6	23	6	13
20.021.147.16	A	21	--	4	20	12	--	G1/8	20.2	7	13
20.026.148.16	A	26	--	4	23	12	--	G1/8	24	7	13
20.037.149.16	B	37	--	5	31	18	G1/8	--	34.8	6.3	19
20.037.150.16	A	37	--	5	31	18	--	G1/4	32.8	9	19
20.053.151.16	B	53	--	8	46	25	G1/8	--	48	9	22
20.053.152.16	A	53	--	6	46	25	--	G1/4	45	9	22
20.053.153.16	A	53	--	6	46	25	--	G3/8	45	10	22
20.077.154.16	C	77.5	--	--	65.5	37	--	G3/8	52	10	8
20.077.155.16	D	77.5	--	--	65.5	37	G3/8	--	75	13	8
Spare cups											
21.016.175.16	E	16	9	4	14	9	--	--	18.5	--	--
21.021.176.16	F	21	11	5	20	12	--	--	15.2	--	--
21.026.177.16	F	26	15	5	23	12	--	--	19	--	--
21.037.177.16	F	37	20	7	31	18	--	--	27	--	--
21.053.178.16	F	53	26	10.5	46	25	--	--	39	--	--

Flat vacuum cups with curved lip – SFU-D



Product notes	Advantage
Universal flat vacuum cups with tapering curved sealing lip. Connection via plug-in nipple.	> Pre-tension of the sealing lip enables gripping of uneven and slightly curved products > Large stroke

Technical data

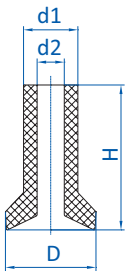
Item no.	Model / Lip dimensions		Material / Color
112.004.001.2	SFU-D-4	0.5	SI (r)
112.005.002.2	SFU-D-5	0.7	SI (r)
112.006.003.2	SFU-D-6	1	SI (r)
112.008.007.2	SFU-D-8	1.5	SI (w)
112.010.011.2	SFU-D-10	2	SI (w)
112.012.015.2	SFU-D-12	2	SI (w)
112.015.022.2	SFU-D-15	2	SI (w)
112.018.024.2	SFU-D-18	2.3	SI (w)
112.020.031.2	SFU-D-20	2.3	SI (w)
112.022.037.2	SFU-D-22	2.5	SI (w)
112.025.042.2	SFU-D-25	4.5	SI (w)
112.030.052.2	SFU-D-30	4.5	SI (w)
112.035.060.2	SFU-D-35	5	SI (w)
112.040.071.2	SFU-D-40	4	SI (tr)
112.045.077.2	SFU-D-45	7	SI (w)
112.060.091.2	SFU-D-60	9	SI (tr)
112.085.102.2	SFU-D-85	12	SI (tr)

Accessories

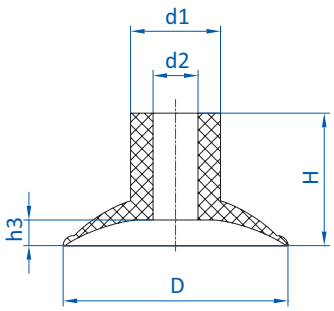
Item no.	Suitable fittings							
	M3-male	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
112.004.001.2	270.025	--	--	--	--	--	--	--
112.005.002.2	270.025	--	--	--	--	--	--	--
112.006.003.2	270.025	--	--	--	--	--	--	--
112.008.007.2	--	270.536	--	--	--	--	--	--
112.010.011.2	--	270.134	270.347	270.104	270.033	270.478	--	--
112.012.015.2	--	270.134	270.347	270.104	270.033	270.478	--	--
112.015.022.2	--	270.134	--	270.104	270.033	270.478	--	--
112.018.024.2	--	270.134	270.347	270.104	270.033	270.478	--	--
112.020.031.2	--	270.134	270.347	270.104	270.033	270.478	--	--
112.022.037.2	--	270.134	270.347	270.104	270.033	270.478	--	--
112.025.042.2	--	270.443	--	--	270.238	270.110	270.534	--
112.030.052.2	--	270.443	--	--	270.238	270.110	270.534	--
112.035.060.2	--	--	--	--	--	--	270.451	270.452
112.040.071.2	--	--	--	--	--	--	270.451	270.452
112.045.077.2	--	--	--	--	--	--	270.451	270.452
112.060.091.2	--	--	--	--	--	--	270.042	--
112.085.102.2	--	--	--	--	--	--	270.216	--

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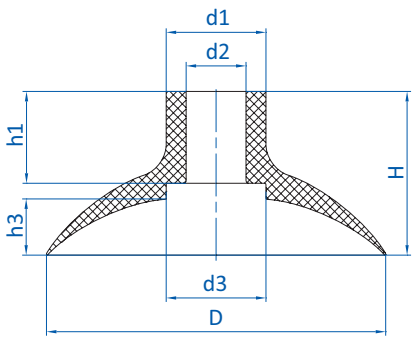
Dimensions



Drawing A



Drawing B



Drawing C

Item no.	Drawing	Ø **D** [mm]	Ø **d1** [mm]	Ø **d2** [mm]	Ø **d3** [mm]	**H** [mm]	**h1** [mm]	**h3** [mm]
112.004.001.2	A	4	3	1.5	--	7.5	--	--
112.005.002.2	A	5	3	1.5	--	8	--	--
112.006.003.2	A	6	3	1.5	--	8	--	--
112.008.007.2	B	8	5	2.8	--	8	--	1.6
112.010.011.2	B	10	6.7	3.8	--	10.5	--	1.9
112.012.015.2	B	12	8	4	--	11	--	1.7
112.015.022.2	B	15	8	4	--	12	--	2.5
112.018.024.2	B	18	8	3.9	--	11.5	--	2.3
112.020.031.2	B	20	8	4	--	12	--	2.3
112.022.037.2	B	22	8	4	--	13	--	2.5
112.025.042.2	B	25	12	6	--	16	--	4.3
112.030.052.2	B	30	12	6	--	17	--	4.4
112.035.060.2	B	35	15	10	--	16.5	--	5.2
112.040.071.2	B	40	15	10	--	16	--	4
112.045.077.2	B	45	15.5	10	--	17	--	7.5
112.060.091.2	C	60	15	10	25	23	10	9
112.085.102.2	C	85	25	15	25	41	23	14

Bellows vacuum cups, universal, 1.5 folds – SBU 1



Product notes	Advantage
Universal bellows vacuum cups with 1.5 folds for handling sensitive or uneven products. Connection up to Ø 75 mm by means of plug-in nipple, from Ø 88 mm with vulcanized bracket.	> Bellows compensate for differences in height and enable good adaptation to curved or uneven product surfaces > Soft attachment for sensitive products > Cost-effective replacement of worn seals

Technical data

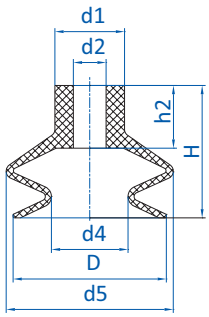
Item no.	Model / Lip dimensions		Number of folds	Material / Color	Connection thread
23.005.181.2	SBU 1-5	2	1.5	SI (tr)	--
23.011.008.2	SBU 1-11	4.5	1.5	SI (tr)	--
23.013.120.2	SBU 1-13	4	1.5	SI (tr)	--
23.016.016.2	SBU 1-16	6	1.5	SI (tr)	--
23.019.119.2	SBU 1-19	4	1.5	SI (tr)	--
23.022.028.2	SBU 1-22	8	1.5	SI (tr)	--
23.025.137.2/25	SBU 1-25	9	1.5	SI (tr)	--
23.033.039.2	SBU 1-33	12	1.5	SI (tr)	--
23.043.096.2	SBU 1-43	12	1.5	SI (tr)	--
23.053.033.2	SBU 1-53	11	1.5	SI (tr)	--
23.075.151.2	SBU 1-75	20	1.5	SI (tr)	--
22.088.158.2	SBU 1-88	23	1.5	SI (tr)	G1/4-male
22.088.159.2	SBU 1-88	23	1.5	SI (tr)	G1/4-female

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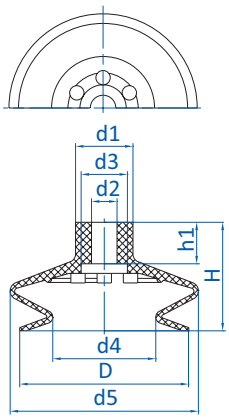
Accessories

	Suitable fittings							
Item no.	M5-male	M5-female	M6-male	M10-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
23.005.181.2	270.195	--	--	--	--	--	--	--
23.011.008.2	270.013	270.005	270.103	--	270.003	270.015	--	--
23.013.120.2	270.013	270.005	270.103	--	270.003	270.015	--	--
23.016.016.2	270.013	270.005	270.103	--	270.003	270.015	--	--
23.019.119.2	270.013	270.005	270.103	--	270.003	270.015	270.194	--
23.022.028.2	270.013	270.005	270.103	--	270.003	270.015	270.194	--
23.025.137.2/25	270.013	270.005	270.103	--	270.003	270.015	270.194	--
23.033.039.2	--	--	270.315	--	270.196	270.114	270.190	270.192
23.043.096.2	--	--	270.315	--	270.196	270.114	270.190	270.192
23.053.033.2	--	--	270.315	--	270.196	270.114	270.190	270.192
23.075.151.2	--	--	--	270.177	--	--	270.451	270.452
22.088.158.2	--	--	--	--	--	--	--	--
22.088.159.2	--	--	--	--	--	--	--	--

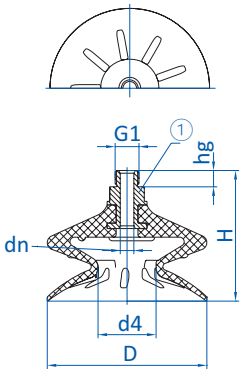
Dimensions



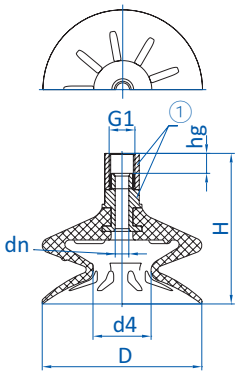
Drawing A



Drawing B



Drawing C



Drawing D

① = Aluminum fitting, vulcanized



Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	hg [mm]
23.005.181.2	A	5	3	1.5	--	2	5	--	--	13	--	9.5	--
23.011.008.2	A	12	10	5	--	4.5	12	--	--	16	--	9	--
23.013.120.2	A	13.5	10	3.8	--	5	13.5	--	--	16	--	9	--
23.016.016.2	A	16	10	5	--	8	17	--	--	19	--	9	--
23.019.119.2	A	18.5	10	4.5	--	11	19.5	--	--	15	--	8.5	--
23.022.028.2	A	22	10	4.7	--	11	24	--	--	19	--	9	--
23.025.137.2/25	A	24	10	4	--	10	24	--	--	23	--	9	--
23.033.039.2	B	33.5	18	8	16.5	17	36	--	--	28	13	--	--
23.043.096.2	B	43	18	8	14.5	23	45	--	--	27	12	--	--
23.053.033.2	B	53	18	8	14.5	32	59	--	--	34	13	--	--
23.075.151.2	B	75	27	11	--	43	70.5	--	--	52	--	22	--
22.088.158.2	C	88	--	--	--	32	88	7.5	G1/4	72	--	--	9
22.088.159.2	D	88	--	--	--	32	88	7.5	G1/4	83	--	--	11

Bellows vacuum cups, universal, 2.5 folds – SBU 2



Product notes	Advantage
Universal bellows vacuum cups with 2.5 folds for handling sensitive or uneven products over large stroke movements. Connection up to Ø 75 mm by means of plug-in nipple, from Ø 88 mm with vulcanized bracket.	> Bellows compensate for differences in height and enable good adaptation to curved or uneven product surfaces > Soft attachment for sensitive products > Cost-effective replacement of worn seals

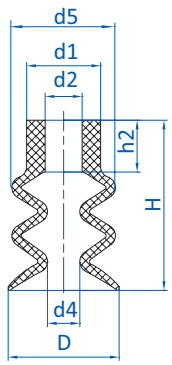
Technical data

Item no.	Model / Lip dimensions		Number of folds	Material / Color	Connection thread
21.004.083.2tr	SBU 2-4	3	2.5	SI (tr)	--
21.005.057.2/3 21.005.057.2/4	SBU 2-5	3	2.5	SI (tr)	--
21.006.093.2	SBU 2-6A	3	2.5	SI (tr)	--
21.006.087.2	SBU 2-6	3.5	2.5	SI (tr)	--
21.008.094.2	SBU 2-8	4	2.5	SI (tr)	--
21.009.002.2	SBU 2-9	2	2.5	SI (tr)	--
21.010.119.2	SBU 2-10	8	2.5	SI (tr)	--
21.012.135.2	SBU 2-12	7	2.5	SI (tr)	--
21.014.133.2	SBU 2-14A	11	2.5	SI (tr)	--
21.014.007.2	SBU 2-14	12	2.5	SI (tr)	--
21.018.010.2	SBU 2-18	8	2.5	SI (tr)	--
21.020.016.2	SBU 2-20	9	2.5	SI (tr)	--
21.025.060.2	SBU 2-25	19	2.5	SI (tr)	--
21.032.075.2	SBU 2-32	13	2.5	SI (tr)	--
21.043.049.2	SBU 2-43	19	2.5	SI (tr)	--
21.062.055.2	SBU 2-62	25	2.5	SI (tr)	--
20.088.123.2	SBU 2-88	36	2.5	SI (tr)	G1/4-male
20.088.124.2	SBU 2-88	36	2.5	SI (tr)	G1/4-female

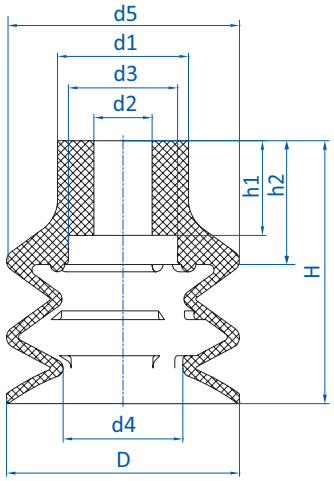
Accessories

Item no.	Suitable fittings						
	M5-male	M5-female	M6-male	G1/8-male	G1/8-female	G1/4-male	G1/4-female
21.004.083.2tr	270.134	270.347	270.104	270.033	270.478	--	--
21.005.057.2/3 21.005.057.2/4	270.134	270.347	270.104	270.033	270.478	--	--
21.006.093.2	270.134	270.347	270.104	270.033	270.478	--	--
21.006.087.2	270.013	270.005	270.103	270.003	270.015	--	--
21.008.094.2	270.134	270.347	270.104	270.033	270.478	--	--
21.009.002.2	270.013	270.005	270.103	270.003	270.015	--	--
21.010.119.2	270.013	270.005	270.103	270.003	270.015	--	--
21.012.135.2	270.013	270.005	270.103	270.003	270.015	--	--
21.014.133.2	270.134	270.347	270.104	270.033	270.478	--	--
21.014.007.2	270.013	270.005	270.103	270.003	270.015	--	--
21.018.010.2	270.013	270.005	270.103	270.003	270.015	--	--
21.020.016.2	270.013	270.005	270.103	270.003	270.015	270.194	--
21.025.060.2	270.013	270.005	270.103	270.003	270.015	270.194	--
21.032.075.2	--	--	270.315	270.196	270.114	270.190	270.192
21.043.049.2	--	--	270.315	270.196	270.114	270.190	270.192
21.062.055.2	--	--	270.315	--	--	270.540	270.539
20.088.123.2	--	--	--	--	--	--	--
20.088.124.2	--	--	--	--	--	--	--

Dimensions



Drawing A

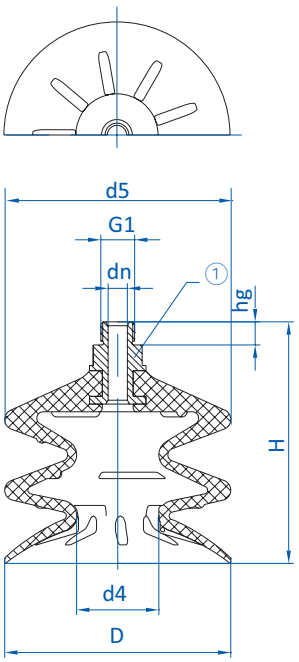


Drawing B

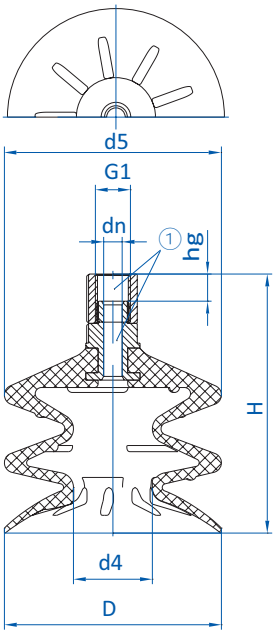
① = Aluminum fitting, vulcanized

Continued on the next page

Dimensions



Drawing C



Drawing D

① = Aluminum fitting, vulcanized

Item no.	Drawing	Ø D [mm]	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	Ø d4 [mm]	Ø d5 [mm]	Ø dn [mm]	G1	H [mm]	h1 [mm]	h2 [mm]	hg [mm]
21.004.083.2tr	A	4.5	7	4	--	2	6.5	--	--	14	--	8	--
21.005.057.2/3 21.005.057.2/4	A	5.5	7	4	--	2.5	6.5	--	--	14	--	8.5	--
21.006.093.2	A	6	8	4	--	3	8	--	--	15	--	8	--
21.006.087.2	A	6.5	9	5	--	2.5	6.5	--	--	14.5	--	7.5	--
21.008.094.2	A	7.5	8	4	--	4	7.5	--	--	15	--	8.5	--
21.009.002.2	A	9	9	5	--	4	9	--	--	15	--	7	--
21.010.119.2	A	10	10	5	--	4.5	10	--	--	21	--	7	--
21.012.135.2	A	12	10	5	--	5	12	--	--	21	--	9	--
21.014.133.2	A	14	10	3.8	--	5.5	14	--	--	23	--	7.5	--
21.014.007.2	A	15	10	5	--	4.5	15	--	--	23	--	7	--
21.018.010.2	A	18	10	4.5	--	7	18	--	--	22	--	8.5	--
21.020.016.2	A	20	10	4.5	--	10	20	--	--	23	--	9	--
21.025.060.2	A	25	10	4.8	--	10	25	--	--	33	--	8	--
21.032.075.2	B	32	18	8	15	16.5	32	--	--	36	--	17	--
21.043.049.2	B	42	20	8	15	15.5	42	--	--	46	13	--	--
21.062.055.2	B	62	21	8.5	14.5	27.5	62	--	--	54	13	14.7	--
20.088.123.2	C	88	--	--	--	32	88	7.5	G1/4	94	--	--	9
20.088.124.2	D	88	--	--	--	32	88	7.5	G1/4	105	--	--	11

FIPA Vacuum cups – Further industry solutions



> Besides the plastics industry FIPA vacuum cups are also successfully used in other markets for many years.



Vacuum cups for sheet metal handling

> Flat and bellows vacuum cups for dynamic handling of dry or oiled sheet metal
> Non-slip handling thanks to "anti-slip" supporting ribs
> Free of silicone and other paint-wetting-impairment substances (PWIS)



Vacuum cups for the packaging industry

> Round, oval and square bellows vacuum cups for gentle product contact
> Good adaptation to curved or flexible product surfaces
> Varioflex® bellows cups for good adaptation to uneven product surfaces



Vacuum cups for the food industry

> Bellows vacuum cups with flexible lip seal for optimum sealing
> FDA compliant vacuum cups for bakery products, with multiple bellows for large height compensation and gentle product handling
> FDA compliant special vacuum cups, e.g. for gentle handling of eggs or chocolates

For the full range of vacuum cups please refer to the FIPA Vacuum Technology Catalog or our website www.fipa.com.

Non-rotating internal spring suspensions – smooth body

NEW



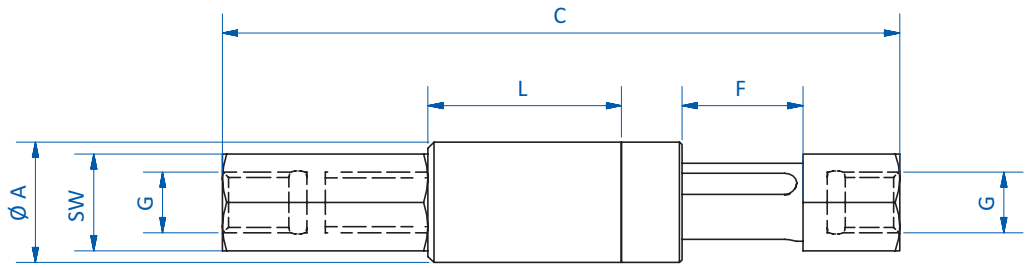
Product notes

> Free moving and high-load capability with ball guide technology
> Clampable smooth body
> Body and rod made of anodized aluminum

Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.1010	10	7
GR03.1025	25	11
GR03.1420	20	23
GR03.1435	35	35
GR03.2025	25	54
GR03.2050	50	80

Dimensions



Item no.	Ø A [mm]	C [mm]	L [mm]	G	F [mm]	SW
GR03.1010	10	56	16	M5	10	8
GR03.1025	10	90.5	35.5	M5	25	8
GR03.1420	14	98.5	31.5	G1/8	20	12
GR03.1435	14	133.5	51.5	G1/8	35	12
GR03.2025	20	110	41	G1/8	25	16
GR03.2050	20	167.5	73.5	G1/8	50	16

Non-rotating internal spring suspensions – threaded body

NEW



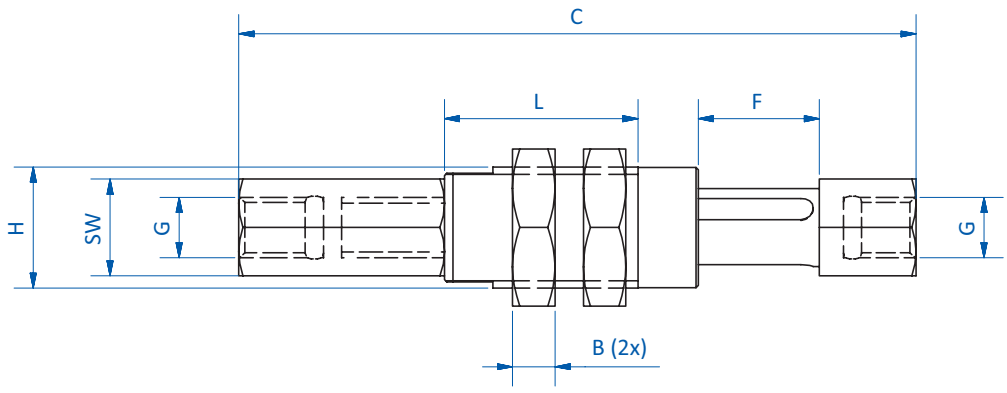
Product notes

> Free moving and high-load capability with ball guide technology
> Flexible mounting via threaded body
> Body and rod made of anodized aluminum

Technical data

Item no.	Stroke [mm]	Weight [g]
GR03.1010T	10	11
GR03.1025T	25	13
GR03.1210T	10	15
GR03.1225T	25	20
GR03.1620T	20	35
GR03.1635T	35	45
GR03.2025T	25	63
GR03.2050T	50	90
GR03.2540T	40	170
GR03.2580T	80	235

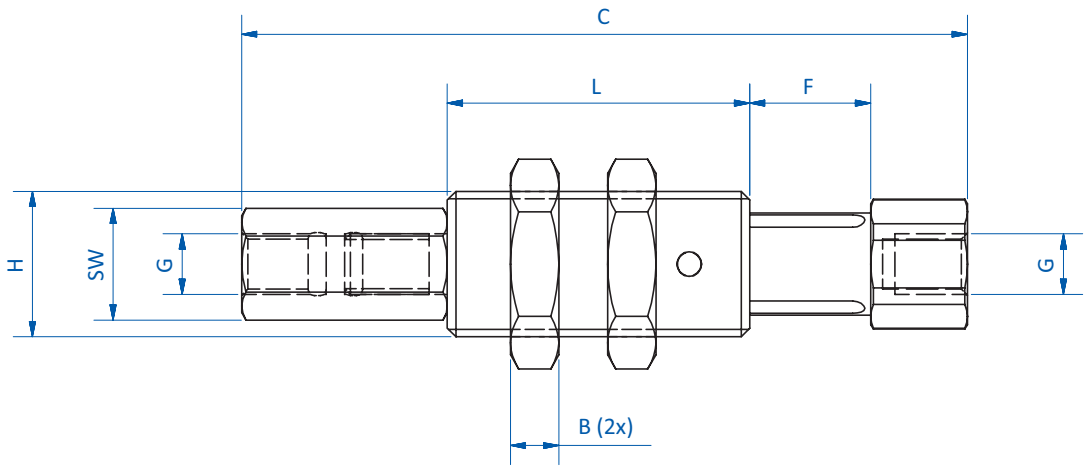
Dimensions



GR03.1010T | GR03.1025T

Continued on the next page

Dimensions



GR03.1210T | GR03.1225T | GR03.1620T | GR03.1635T | GR03.2025T | GR03.2050T | GR03.2540T | GR03.2580T

Item no.	H	B [mm]	C [mm]	L [mm]	G	F [mm]	SW
GR03.1010T	M10x1	3.5	56	16	M5	10	8
GR03.1025T	M10x1	3.5	90.5	35.5	M5	25	8
GR03.1210T	M12x1	4	60	25	M5	10	8
GR03.1225T	M12x1	4	94	44	M5	25	8
GR03.1620T	M16x1	5	98.5	38.5	G1/8	20	12
GR03.1635T	M16x1	5	135	58.5	G1/8	36.5	12
GR03.2025T	M20x1.5	6	113	50	G1/4	25	16
GR03.2050T	M20x1.5	6	170.5	82.5	G1/4	50	16
GR03.2540T	M25x1.5	8	159	71	G3/8	40	22
GR03.2580T	M25x1.5	8	249	121	G3/8	80	22

Suspensions with internal spring and threaded connection – SZ-NIV-I

BESTSELLER



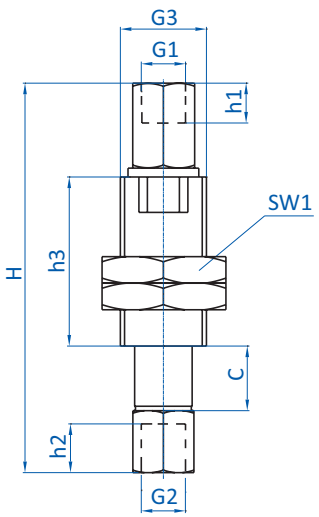
Product notes

> Compensate for height differences
> Soft attachment for sensitive products
> With internal spring protected from dirt and with spring deflection limiter
> Vacuum connection on top, vacuum channel via suspension

Technical data

Item no.	Model	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Weight [g]	Suitable mounting bracket
50.120	SZ-NIV-I-M5-IG-7	M5-female	G1/8-male	7	0.606	6	1.8	17	GR02.230 (p.86)
50.123	SZ-NIV-I-G1/8-AG-8	G1/8-male	M14x1.5-male	8	0.097	2.6	1.8	41	--
50.124	SZ-NIV-I-G1/8-AG-20	G1/8-male	M16x1-male	19	0.482	12.8	3.7	73	GR02.231 (p.86)

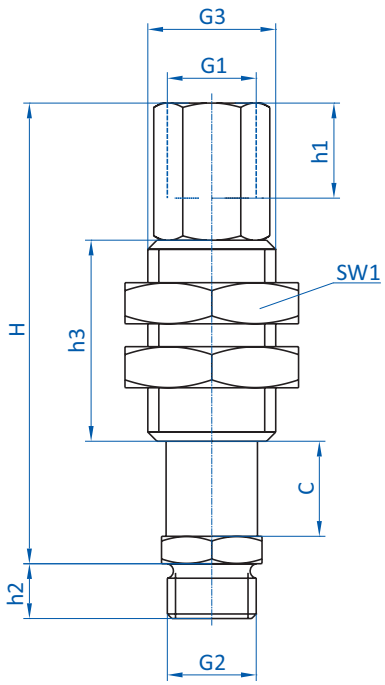
Dimensions



50.120

Continued on the next page

Dimensions



50.123 | 50.124

Item no.	**H** [mm]	**h1** [mm]	**h2** [mm]	**h3** [mm]	**SW1**	**G1** (female)	**G2** (female)	**G2** (male)	**G3** (male)	**C** [mm]
50.120	44	4.3	5	19	14	M5	M5	--	G1/8	7
50.123	50	10	6	22	19	G1/8	--	G1/8	M14x1.5	8
50.124	73	12	5.6	35	21	G1/8	--	G1/8	M16x1	20

Standard suspensions with threaded connection – SZ-NIV-S



Product notes

> Compensate for height differences
> Soft attachment for sensitive products
> Leveling as standard version
> Vacuum connection on top, vacuum channel via suspension
> Also available non-rotating (M5-female)

Notes

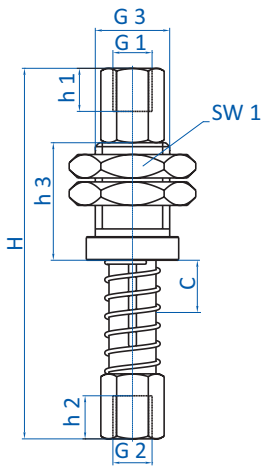
> Recommendation: For the best possible service life do not exceed max. stroke indicated

Technical data

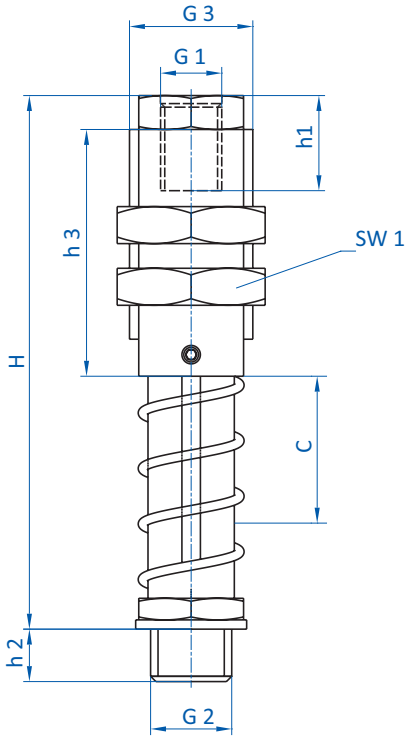
Item no.	Model	Thread suction side G2	Thread fixing bushes G3	Stroke C [mm]	Spring rate [N/mm]	Max. spring force [N]	Spring pre-load [N]	Non-rotating	Weight [g]	Suitable mounting bracket
50.158	SZ-NIV-S-M5-IG-5	M5-female	G1/8-male	5	0.393	4	2	--	17	GR02.230 (p.86)
50.149	SZ-NIV-S-M5-IG-10	M5-female	G1/8-male	10	0.361	5.8	2.2	--	18	GR02.230 (p.86)
50.152	SZ-NIV-S-M5-IG-10-VS	M5-female	G1/8-male	10	0.361	5.5	1.9	Yes	19	GR02.230 (p.86)
50.150	SZ-NIV-S-M5-IG-20	M5-female	G1/8-male	18	0.227	4.3	0.3	--	20	GR02.230 (p.86)
50.153	SZ-NIV-S-M5-IG-20-VS	M5-female	G1/8-male	20	0.227	4.8	0.3	Yes	21	GR02.230 (p.86)
50.230	SZ-NIV-S-G1/8-AG-15	G1/8-male	M16x1-male	15	0.211	6.5	3.3	--	94	GR02.231 (p.86)
50.160	SZ-NIV-S-G1/8-AG-25	G1/8-male	M16x1-male	25	0.231	8.7	2.9	--	94	GR02.231 (p.86)
50.162	SZ-NIV-S-G1/8-AG-50	G1/8-male	M16x1-male	50	0.156	9.7	1.9	--	110	GR02.231 (p.86)
50.164	SZ-NIV-S-G1/4-AG-25	G1/4-male	M20x1.5-male	25	0.65	18.3	2	--	136	GR02.232 (p.86)
50.166	SZ-NIV-S-G1/4-AG-75	G1/4-male	M20x1.5-male	75	0.245	19.4	1.1	--	195	GR02.232 (p.86)

Continued on the next page

Dimensions



50.158 | 50.149 | 50.152 | 50.150 | 50.153



50.230 | 50.160 | 50.162 | 50.164 | 50.166

Item no.	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	SW1	G1 (female)	G2 (male)	G2 (female)	G3 (male)	C [mm]
50.158	43	5.5	6.2	15	14	M5	--	M5	G1/8	5
50.149	47	5.5	6.2	15	14	M5	--	M5	G1/8	10
50.152	47	5.5	6.2	15	14	M5	--	M5	G1/8	10
50.150	59	5.5	6.2	15	14	M5	--	M5	G1/8	20
50.153	59	5.5	6.2	15	14	M5	--	M5	G1/8	20
50.230	72	8	6.5	30	22	G1/8	G1/8	--	M16x1	15
50.160	85	8.5	8.5	30	22	G1/8	G1/8	--	M16x1	25
50.162	116	8.5	6.5	30	22	G1/8	G1/8	--	M16x1	50
50.164	95	15	9	40	24	G1/8	G1/4	--	M20x1.5	25
50.166	153	15	10.5	40	24	G1/8	G1/4	--	M20x1.5	75

Grippers at a glance 162

Sprue grippers 164

Gripper fingers 200

Gripper finger accessories 204

Parallel grippers 209

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Expansion grippers 242

Special grippers at a glance 254

Needle grippers 256

Magnetic grippers 269

Bernoulli vacuum cups 270

Customized grippers 278

FIPA Grippers

> Active gripper elements for secure and precise demolding of plastic parts or general handling of workpieces





Sprue grippers

> Wide jaw opening for large sprues
> Narrow closing-gap for small sprues
> Single-acting or double-acting
> Series 130 and 140 come with self-centering factory setting, easy to deactivate if required
> Detects sprues larger 1 mm

> See page 164



Grippers with stroke

> For flat sprues or flaps
> Feed lift for demolding of plastic parts
> Return lift for depositing
> Double-acting and self-centering
> Detects parts larger 1 mm

> See page 190



Grippers for direct mounting

> Compact design for direct integration to extrusions
> Single-acting (GR04.110A and B) and double-acting (GR04.110)
> Detects sprues larger 1 mm

> See page 193



Gripper fingers

> Gripping behind and clamping workpieces
> 35° and 95° lift
> HNBR elastomer pads for gentle product contact
> Centering and stop elements available

> See page 200



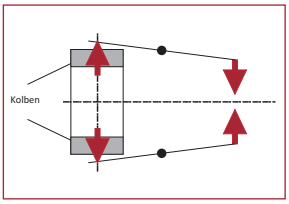
Parallel and angular grippers

> Parallel grippers with large stroke
> 2-finger parallel gripper for pick & place applications, handling of inserts
> 3-finger gripper for precise handling of e.g. inserts
> Angle grippers for gripping on undercuts or for clamping parts
> For short cycle times, double-acting grippers available

> See page 209

FIPA Sprue grippers – technical properties





Very high gripping force

> Force directly transferred to gripper jaws by two pneumatic pistons
> Wear is minimized, gripping force is maximized



Long life due to robust design

> Gripper body and jaws made of high-strength, anodized aluminum alloy
> Maximizes wear resistance and lifetime



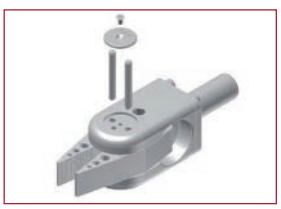
Direct part detection

> Large area sensor activation, independent of sprue position in the gripper
> PNP and NPN sensors
> Detects sprues larger 1 mm
> Integrated control LED



Indirect part detection

> Sensor activated if no part has been gripped and jaws are fully closed
> PNP and NPN sensors
> Sensors without mechanical or moving components, suitable for high loads
> Integrated control LED



Series 130 and 140 can be easy disassembled without snap rings

> Jaws quickly exchanged
> Grippers easily changed over to non-self-centering

Series 60 – miniature grippers, clamping diameter 10 mm

NEW





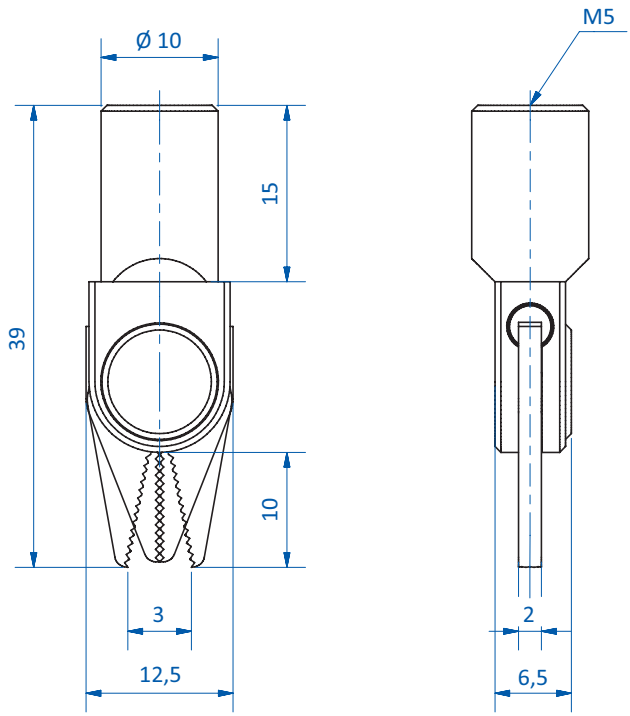
Product notes

> Gripper for small sprues and restricted space
> Gap-free closing
> Body and jaws made of high-strength anodized aluminum alloy
> Single-acting
> Medium: filtered and oiled/unoiled air

Technical data

Item no.	Operating pressure [bar (psi)]	Closing force at 6 bar (87 psi) [N]	Weight [g/m]
GR04.060	6 (87)	3.5	5.3

Dimensions



Series 80 – miniature sprue gripper



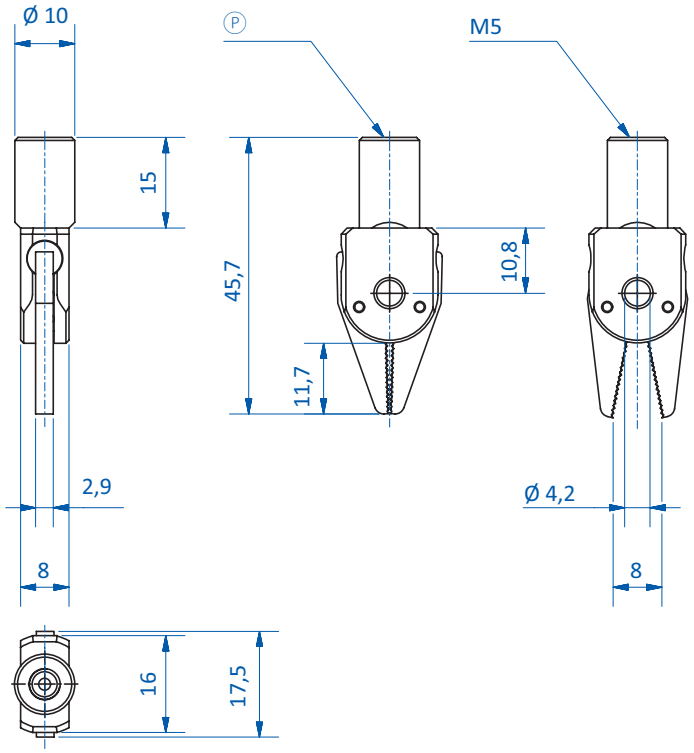
Product notes

> Clamping diameter 10 mm
> Body and jaws made of anodized aluminum alloy
> Principle of operation: single-acting
> Medium: filtered and oiled/unoiled air

Technical data

Item no.	Max. operating pressure [bar (psi)]	Closing force at 6 bar (87 psi) [N]	Weight [g]
GR04.080	6 (87)	12	8

Dimensions



Series 90 – miniature sprue grippers, clamping diameter 10 mm – single-acting





Product notes

> Grippers for small gates and limited space requirement
> High gripping force and wide jaw opening
> Housings and gripper jaws consist of an anodized, high-strength aluminum alloy
> Model H with replaceable HNBR pads for gentle handling
> Index 1N and 1P for direct sensor monitoring
> Index 2N and 2P for teachable sensors
> Index 3P for indirect sensor monitoring
> Single-acting
> Medium: filtered and oiled/non-oiled air

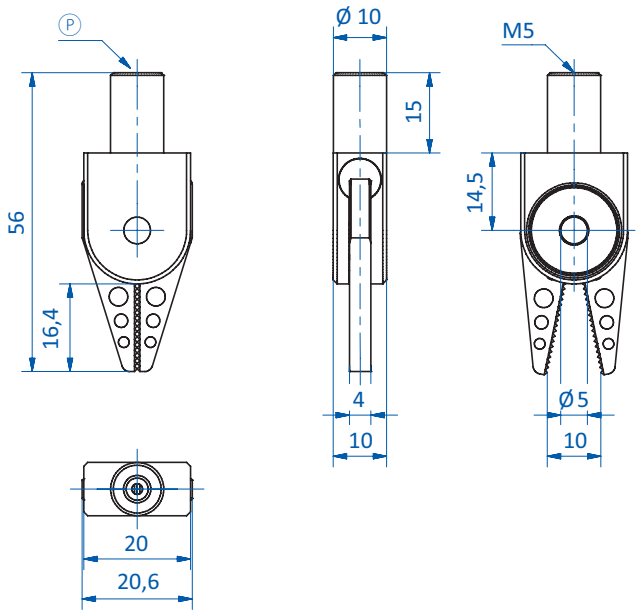
Notes

> PNP Inverter 20.530 enables direct control of parts on gripper GR04.090-3N: Sensor triggers as soon as part is gripped
> The converter 20.531 enables the use of grippers in NPN circuits

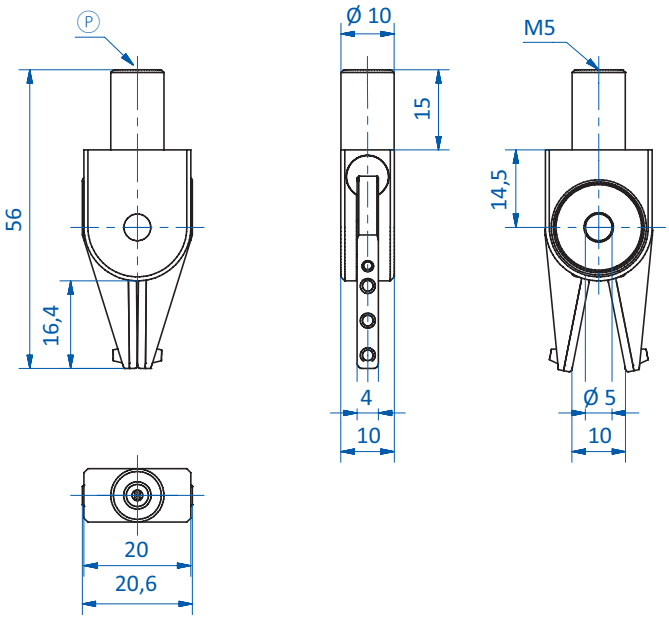
Technical data

Item no.	Jaw design	Operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.090	Standard	2.5 - 6 (36.3 - 87)	--	15	14	--
GR04.090H	HNBR pad	2.5 - 6 (36.3 - 87)	--	15	15	HNBR pad: GR04.090-4
GR04.090-1N	Standard	2.5 - 6 (36.3 - 87)	NPN	15	16	Plug connector: 20.527 (p.411) Plug connector: 20.528 (p.411) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GR04.090-1P	Standard	2.5 - 6 (36.3 - 87)	PNP	15	16	Plug connector: 20.527 (p.411) Plug connector: 20.528 (p.411) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GR04.090-3P	Standard	2.5 - 6 (36.3 - 87)	PNP	15	14	Connector cable: 20.503 (p.410) Signal converter: 20.530 (p.422) Signal converter: 20.531 (p.422)
GR04.090H-2N	HNBR pad	2.5 - 6 (36.3 - 87)	NPN	15	17	Connector cable: 20.501 (p.410) Connector cable: 20.502 (p.410) HNBR pad: GR04.090-4
GR04.090H-2P	HNBR pad	2.5 - 6 (36.3 - 87)	PNP	15	17	Connector cable: 20.501 (p.410) Connector cable: 20.502 (p.410) HNBR pad: GR04.090-4

Dimensions



GR04.090

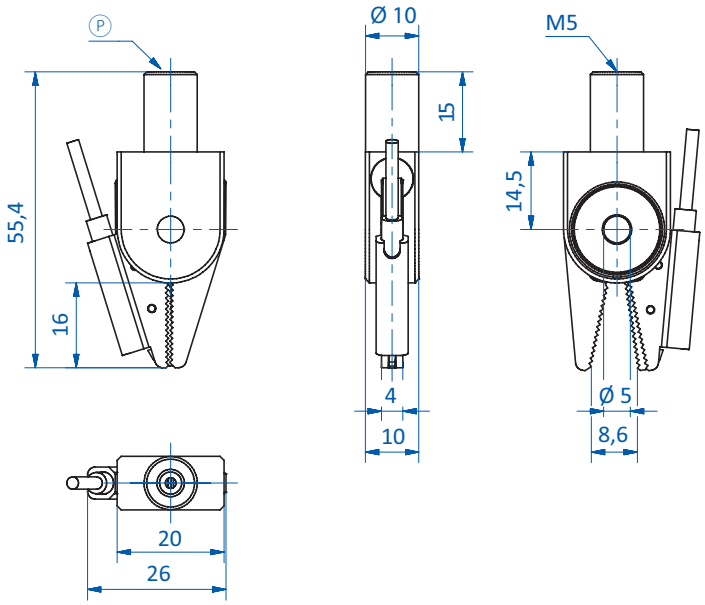


GR04.090H

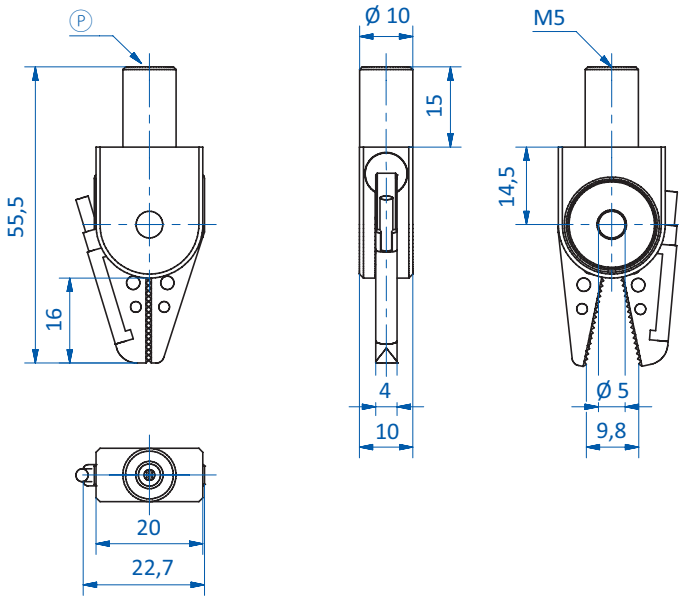
Ⓟ = Compressed air connection

Continued on the next page

Dimensions



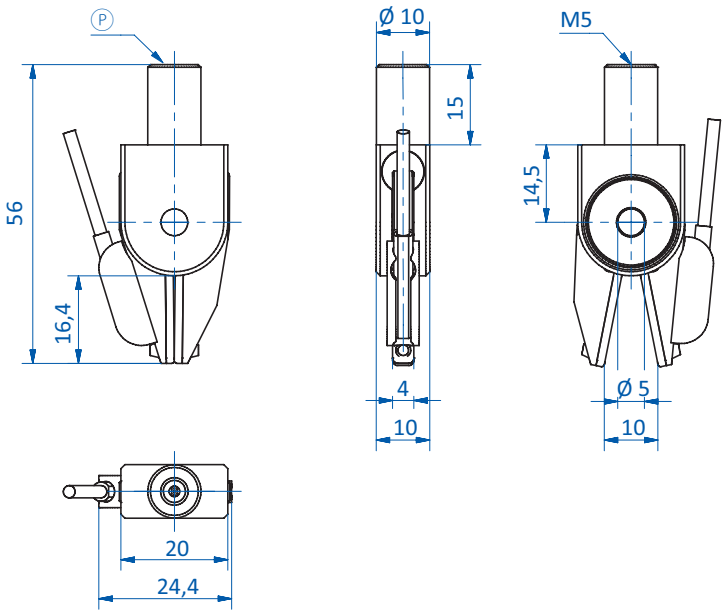
GR04.090-1N | GR04.090-1P



GR04.090-3P

Ⓟ = Compressed air connection

Dimensions



GR04.090H-2N | GR04.090H-2P

Ⓟ = Compressed air connection

Series 100 – sprue grippers, clamping diameter 10 mm – single-acting



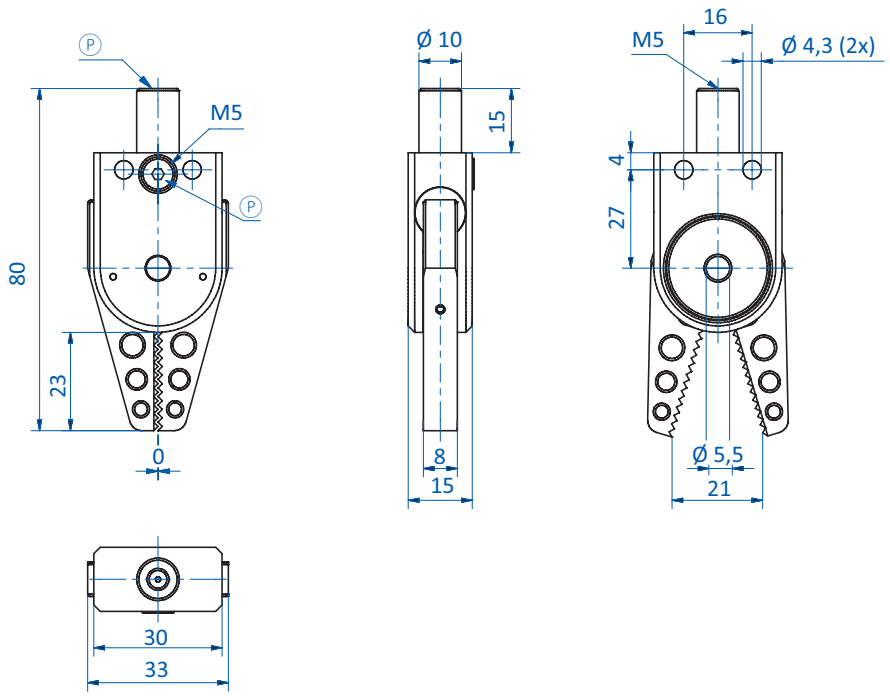
Product notes

> Grippers with wide jaw opening for large gates
> Gap-free closing for flat gates
> Housings and gripper jaws consist of an anodized, high-strength aluminum alloy
> Model B with rounded gripper jaws for large/inclined gates
> Model U for special gripper jaws; the closing force depends on the shape of the gripper jaws
> Model S with sawtooth profile for inclined gates
> Model H with replaceable HNBR pads for gentle handling
> Model XW with extra wide gripper jaws
> Index 1N and 1P for direct monitoring; large-area sensor operation, regardless of the position of the gate in the gripper
> Index 2N and 2P for direct monitoring; sensor with two freely adjustable switching points
> Index 3N and 3P for indirect monitoring; signal triggering if no component has been gripped; no moving parts and thus increased mechanical stability
> Single-acting
> Medium: filtered and oiled/non-oiled air

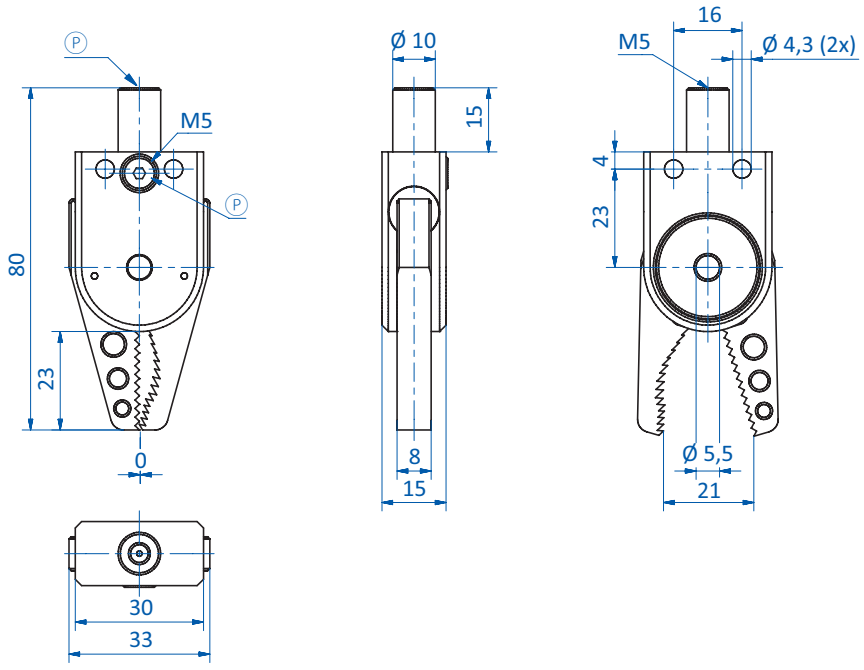
Technical data

Item no.	Jaw design	Operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.100	Standard	2.5 - 8 (36.3 - 116)	--	22	49	--
GR04.100B	Sawtooth jaws round	2.5 - 8 (36.3 - 116)	--	22	49	--
GR04.100U	Universal	2.5 - 8 (36.3 - 116)	--	--	44	--
GR04.100S	Sawtooth jaws straight	2.5 - 8 (36.3 - 116)	--	22	49	--
GR04.100H	HNBR pad	2.5 - 8 (36.3 - 116)	--	22	46	HNBR pad: GR04.103-4HNBR
GR04.100HNBR	Fully HNBR-coated	2.5 - 8 (36.3 - 116)	--	22	48	--
GR04.100XW	Xwide	2.5 - 8 (36.3 - 116)	--	22	85	--
GR04.100-1N	Standard	2.5 - 8 (36.3 - 116)	NPN	22	52	Sensor: GS04.002 (p.408) Connector cable: 20.503 (p.410)
GR04.100-1P	Standard	2.5 - 8 (36.3 - 116)	PNP	22	52	Sensor: GS04.001 (p.408) Connector cable: 20.503 (p.410)
GR04.100-2N	Standard	2.5 - 8 (36.3 - 116)	NPN	22	53	Sensor: GS04.006 Connector cable: 20.501 (p.410) Connector cable: 20.502 (p.410)
GR04.100-2P	Standard	2.5 - 8 (36.3 - 116)	PNP	22	53	Sensor: GS04.005 Connector cable: 20.501 (p.410) Connector cable: 20.502 (p.410)
GR04.100-3N	Standard	2.5 - 8 (36.3 - 116)	NPN	22	50	Sensor: GR04.203N (p.404) Connector cable: 20.503 (p.410)
GR04.100-3P	Standard	2.5 - 8 (36.3 - 116)	PNP	22	50	Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410)
GR04.100H-2N	HNBR pad	2.5 - 8 (36.3 - 116)	NPN	22	50	Sensor: GS04.006 Connector cable: 20.503 (p.410) HNBR pad: GR04.103-4HNBR
GR04.100H-2P	HNBR pad	2.5 - 8 (36.3 - 116)	PNP	22	50	Sensor: GS04.005 Connector cable: 20.503 (p.410) HNBR pad: GR04.103-4HNBR

Dimensions



GR04.100

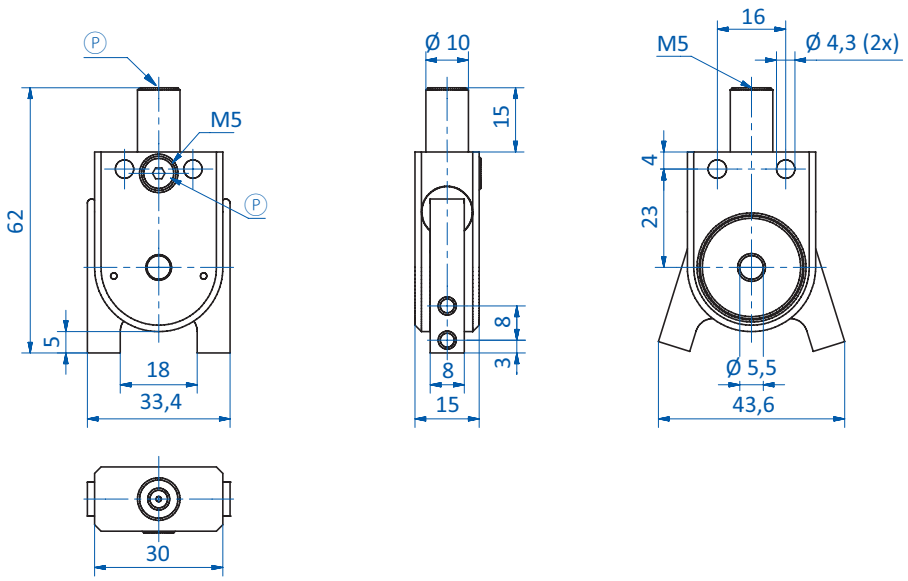


GR04.100B

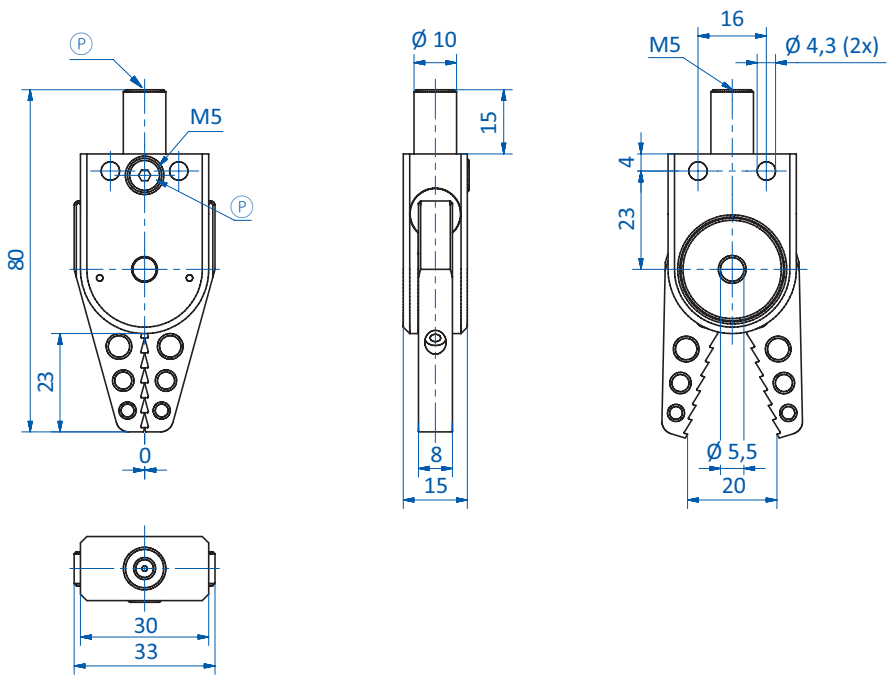
Ⓟ = Compressed air connection

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Dimensions



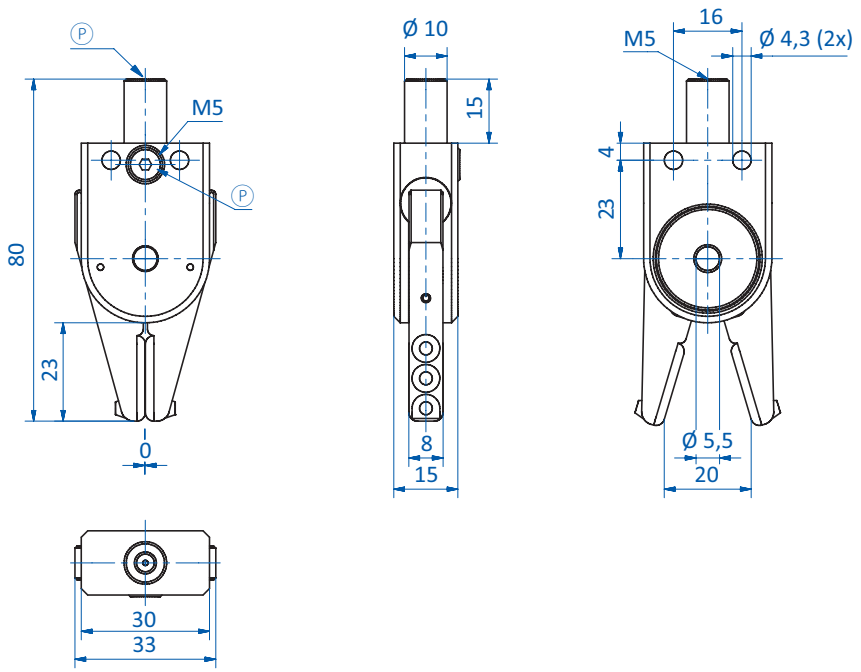
GR04.100U



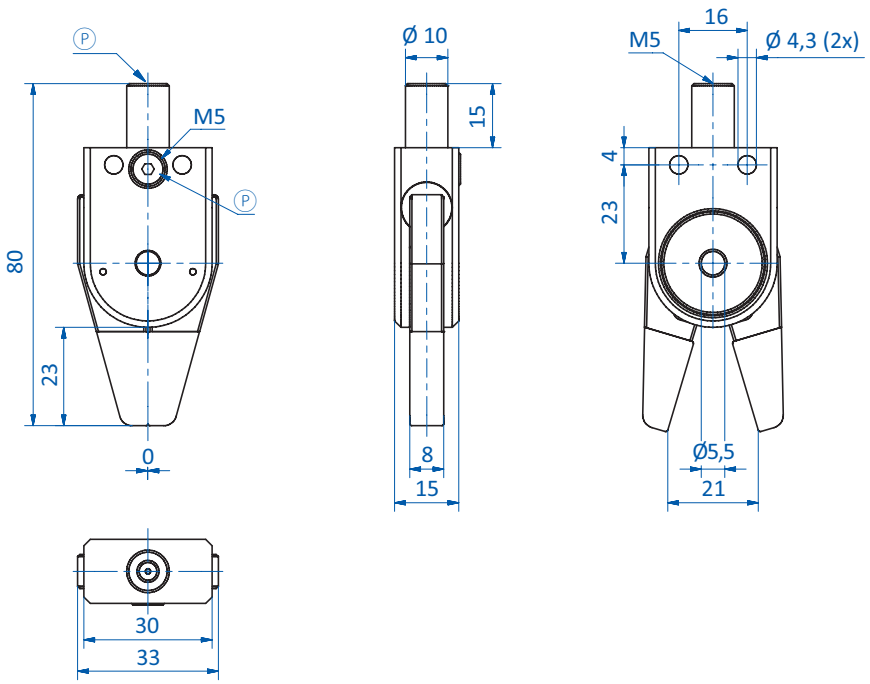
GR04.100S

Ⓟ = Compressed air connection

Dimensions



GR04.100H

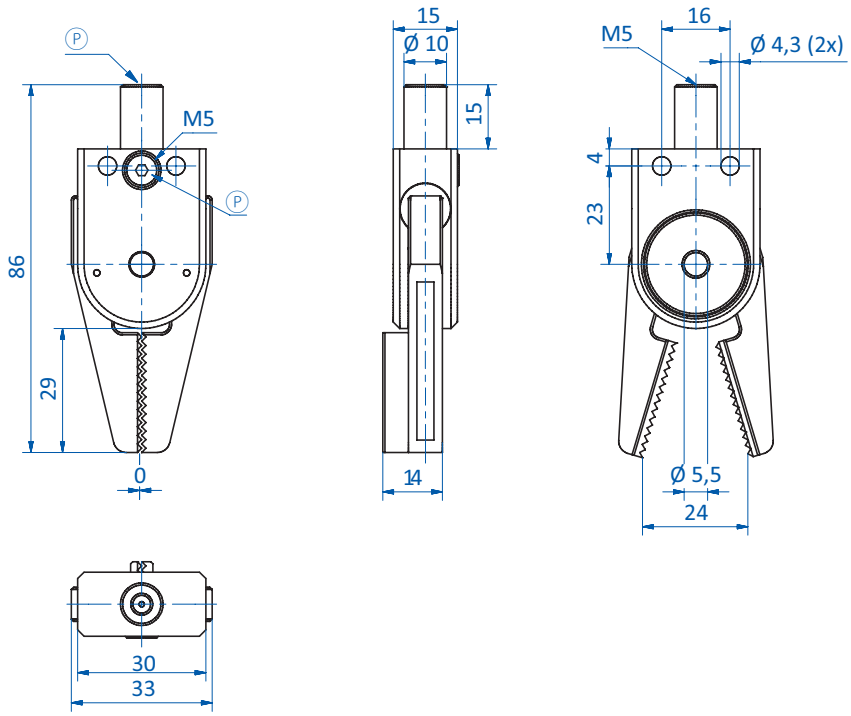


GR04.100HNBR

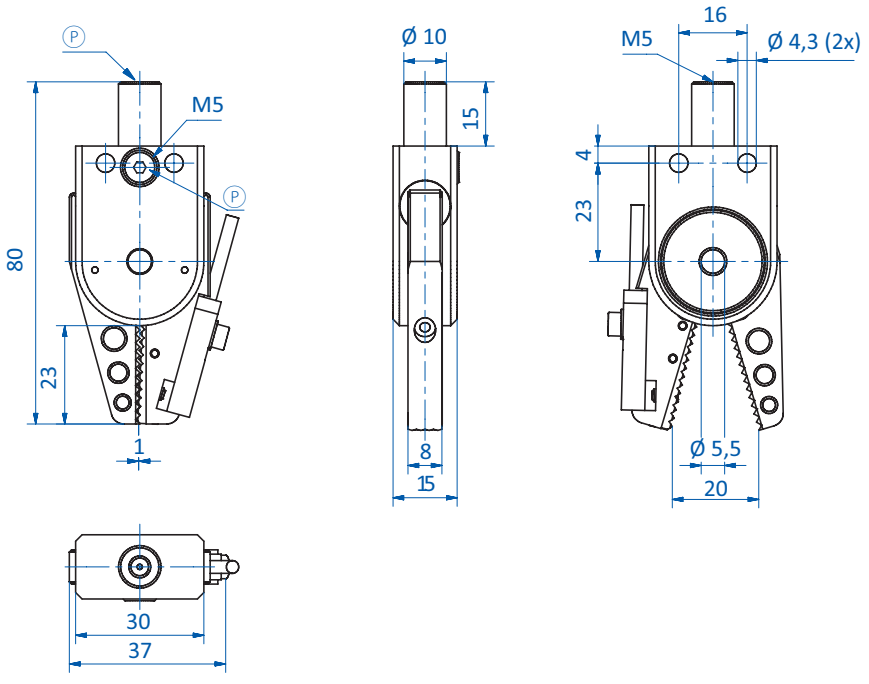
Ⓟ = Compressed air connection

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Dimensions



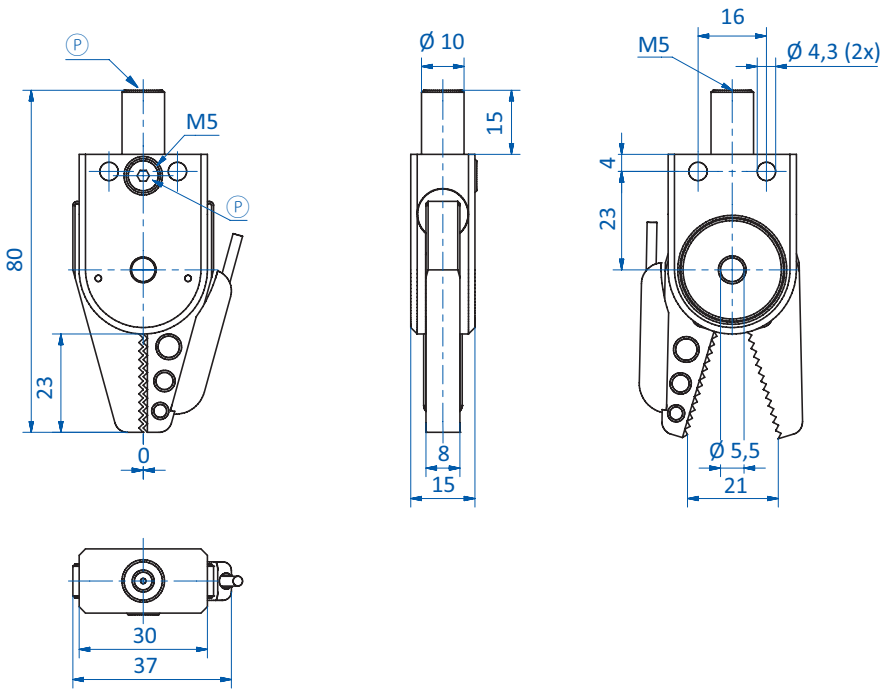
GR04.100XW



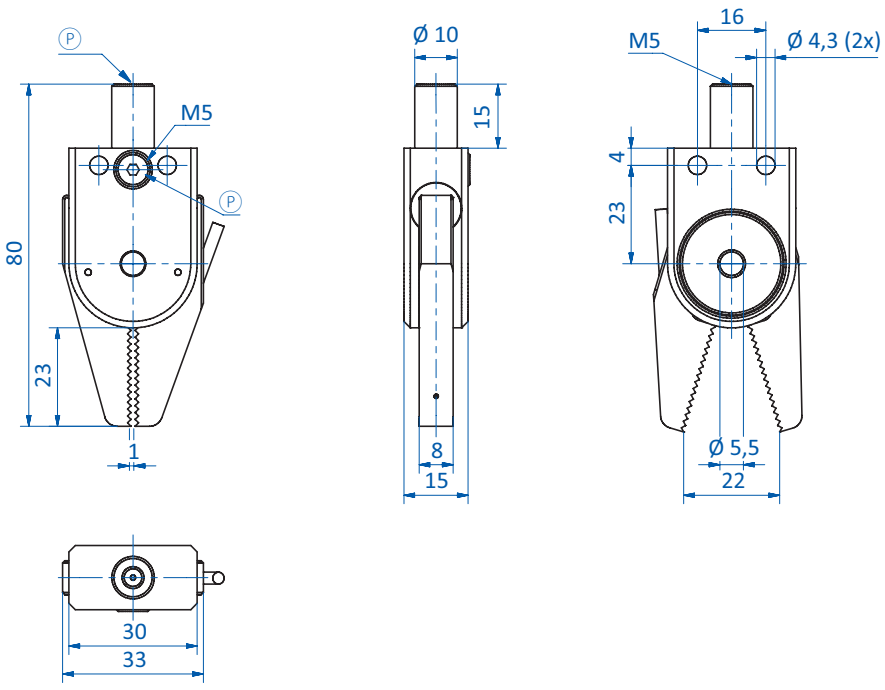
GR04.100-1N | GR04.100-1P

Ⓟ = Compressed air connection

Dimensions



GR04.100-2N | GR04.100-2P

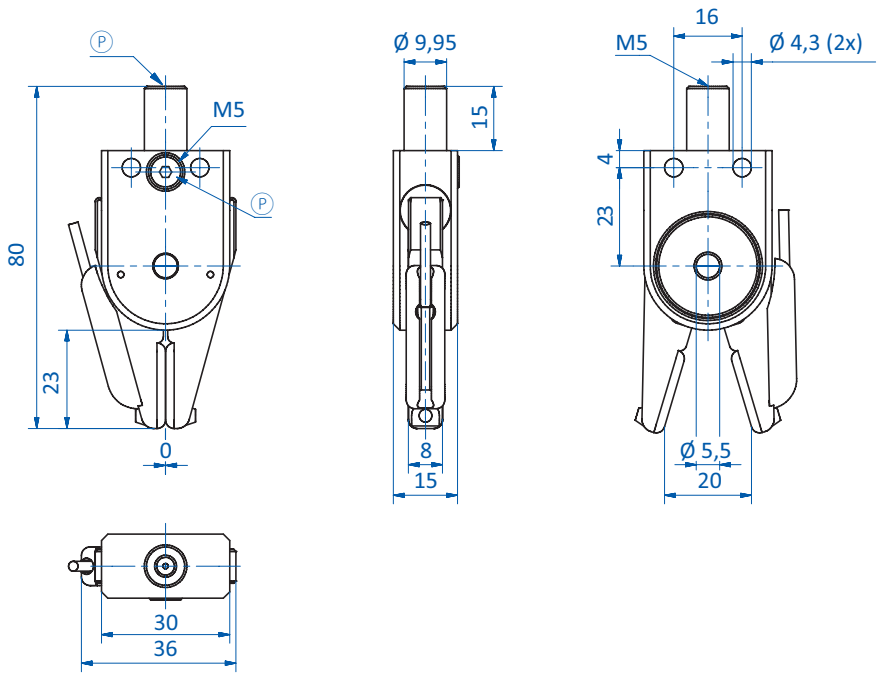


GR04.100-3N | GR04.100-3P

Ⓟ = Compressed air connection

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Dimensions



GR04.100H-2N | GR04.100H-2P

Ⓟ = Compressed air connection

Series 100 – sprue grippers, clamping diameter 10 mm – double-acting



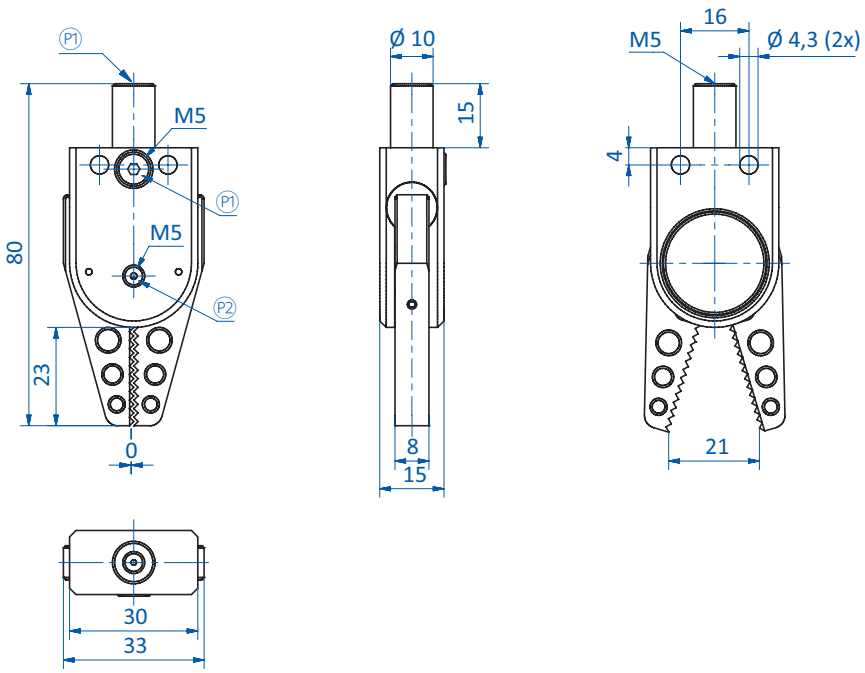
Product notes

> Grippers with wide jaw opening for large gates
> Gap-free closing for flat gates
> Dual-action for short cycle times; opening and closing separately controllable
> Housings and gripper jaws consist of an anodized, high-strength aluminum alloy
> Double-acting
> Medium: filtered and oiled/non-oiled air

Technical data

Item no.	Jaw design	Operating pressure [bar (psi)]	Closing force at 6 bar (87 psi) [N]	Weight [g]
GR04.102	Standard	2.5 - 8 (36.3 - 115)	20	51

Dimensions



P1 = Compressed air supply (close) P2 = Compressed air supply (open)

Series 130 – sprue grippers, clamping diameter 20 mm – single-acting



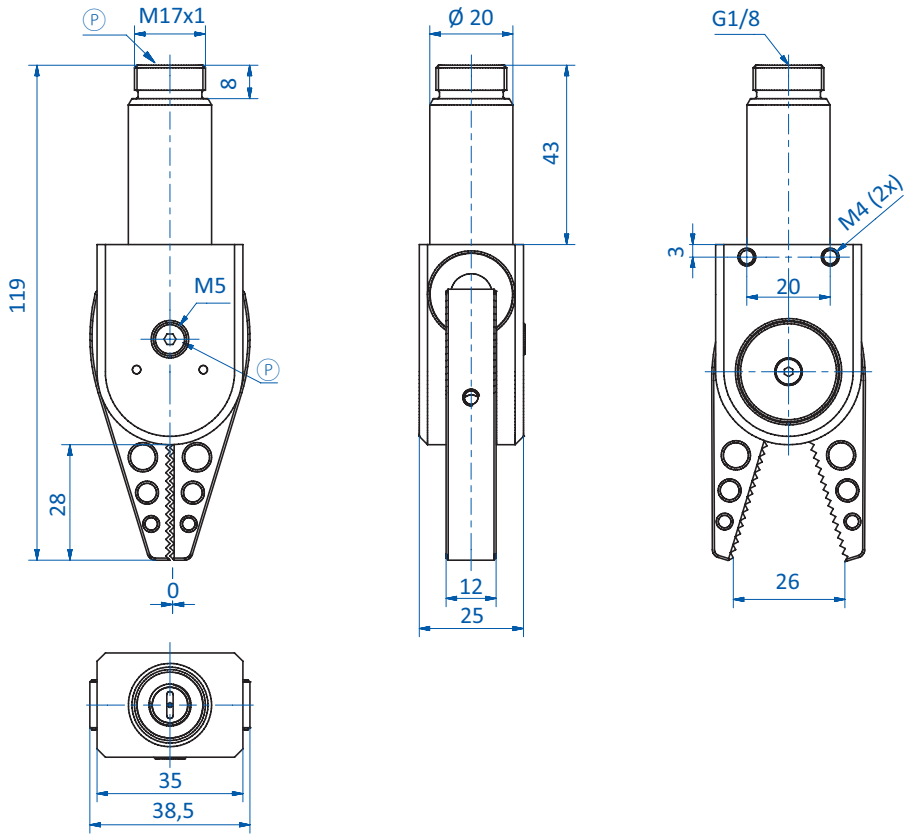
Product notes

> Grippers with strong gripping force and wide jaw opening for large gates
> Tight closing for flat gates
> GR04.130 with straight gripper jaws
> Housings and gripper jaws consist of an anodized, high-strength aluminum alloy
> Model B with rounded gripper jaws for large/inclined gates
> Model U for special gripper jaws; the closing force depends on the shape of the gripper jaws
> Model S with sawtooth profile for inclined gates
> Model H with replaceable HNBR pads for gentle handling
> Model XW with extra wide gripper jaws
> Index 1N and 1P for direct monitoring; large-area sensor operation, regardless of the position of the gate in the gripper
> Index 3N and 3P for indirect monitoring; signal triggering if no component has been gripped; no moving parts and thus increased mechanical stability
> Single-acting
> Medium: filtered and oiled/non-oiled air

Technical data

Item no.	Jaw design	Operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.130	Standard	2.5 - 8 (36.3 - 116)	--	95	133	--
GR04.130B	Sawtooth jaws round	2.5 - 8 (36.3 - 116)	--	95	131	--
GR04.130U	Universal	2.5 - 8 (36.3 - 116)	--	--	128	--
GR04.130H	HNBR pad	2.5 - 8 (36.3 - 116)	--	95	137	Extension tube: GR06.022 (p.90) HNBR pad: GR04.130C-4HNBR
GR04.130-1N	Standard	2.5 - 8 (36.3 - 116)	NPN	95	141	Extension tube: GR06.022 (p.90) Connector cable: 20.503 (p.410) Sensor: GS04.002 (p.408)
GR04.130-1P	Standard	2.5 - 8 (36.3 - 116)	PNP	95	141	Extension tube: GR06.022 (p.90) Connector cable: 20.503 (p.410) Sensor: GS04.001 (p.408)
GR04.130B-1N	Sawtooth jaws round	2.5 - 8 (36.3 - 116)	NPN	95	140	Extension tube: GR06.022 (p.90) Connector cable: 20.503 (p.410) Sensor: GS04.002 (p.408)
GR04.130B-1P	Sawtooth jaws round	2.5 - 8 (36.3 - 116)	PNP	95	140	Extension tube: GR06.022 (p.90) Connector cable: 20.503 (p.410) Sensor: GS04.001 (p.408)
GR04.130XW-3P	Xwide	2.5 - 8 (36.3 - 116)	PNP	95	139	Extension tube: GR06.022 (p.90) Connector cable: 20.503 (p.410) Sensor: GR04.203P (p.404)

Dimensions

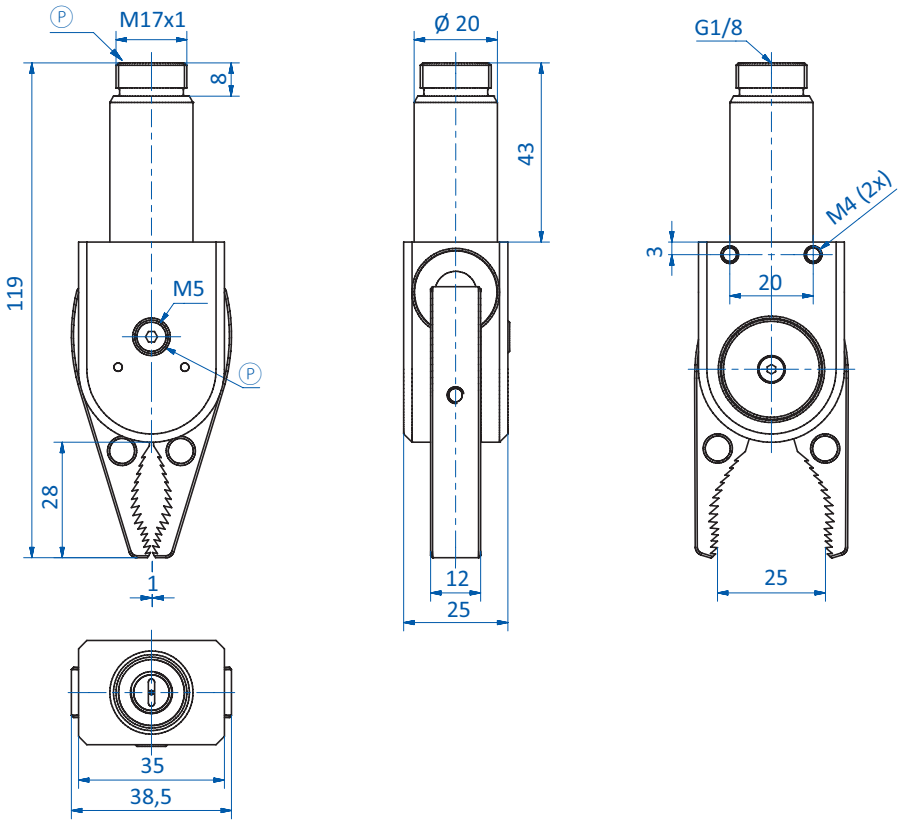


GR04.130

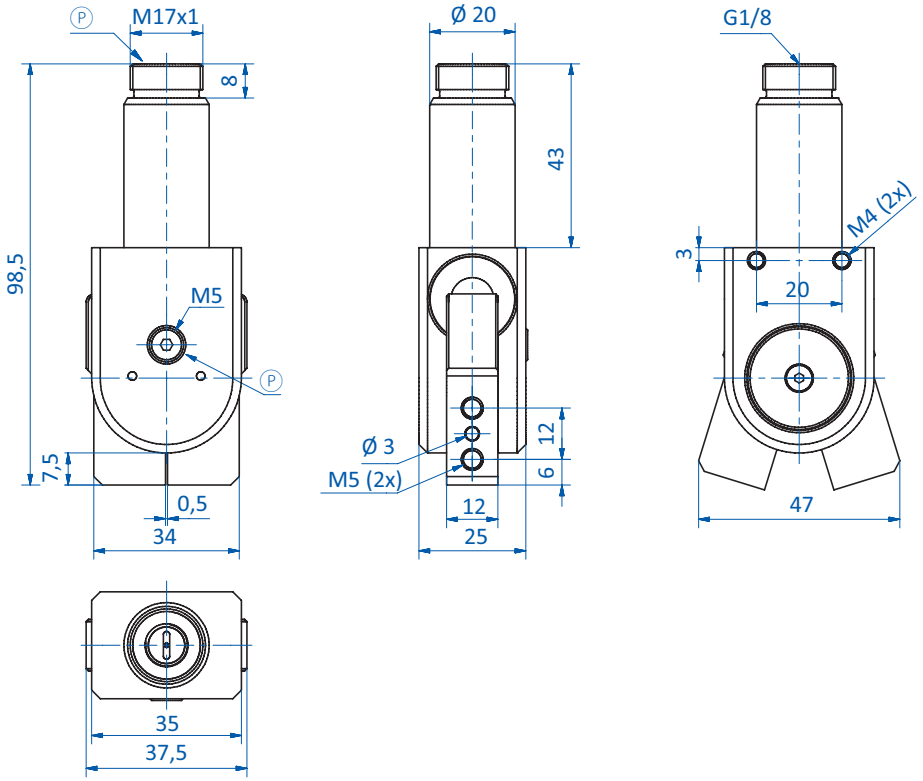
Ⓟ = Compressed air connection

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Dimensions



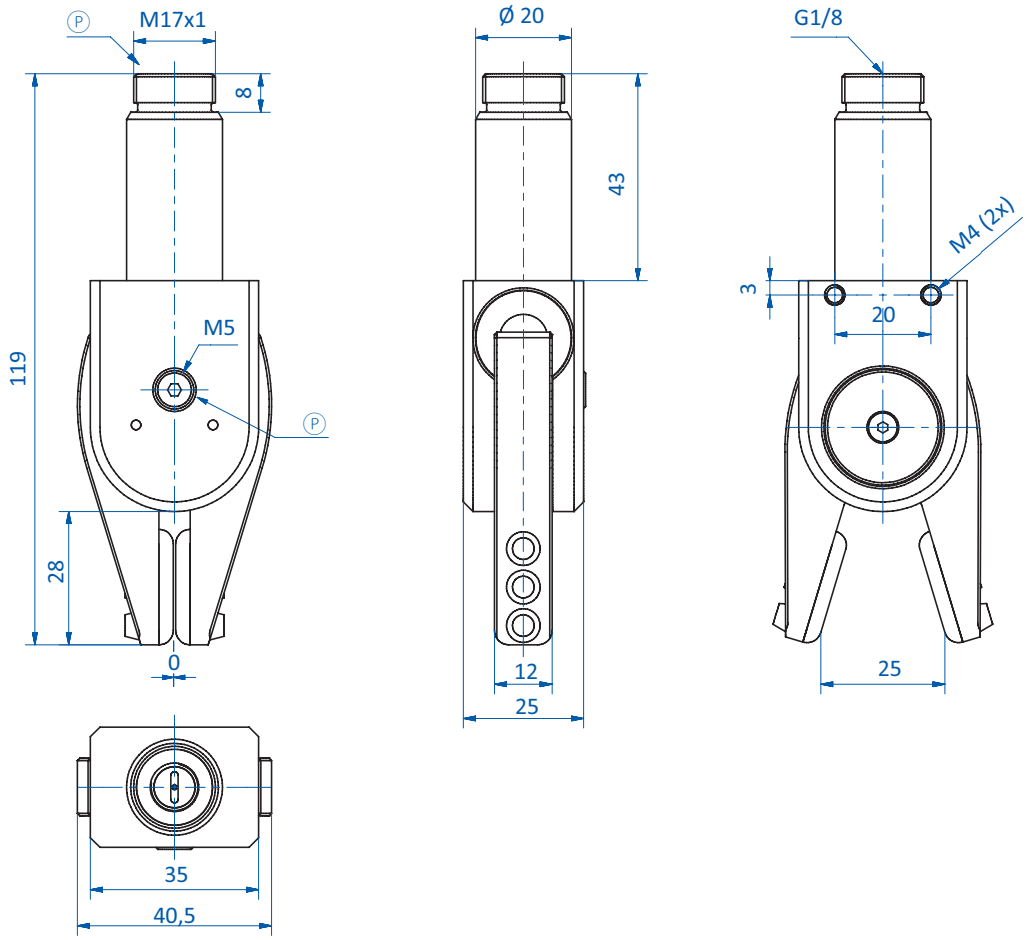
GR04.130B



GR04.130U

P = Compressed air connection

Dimensions

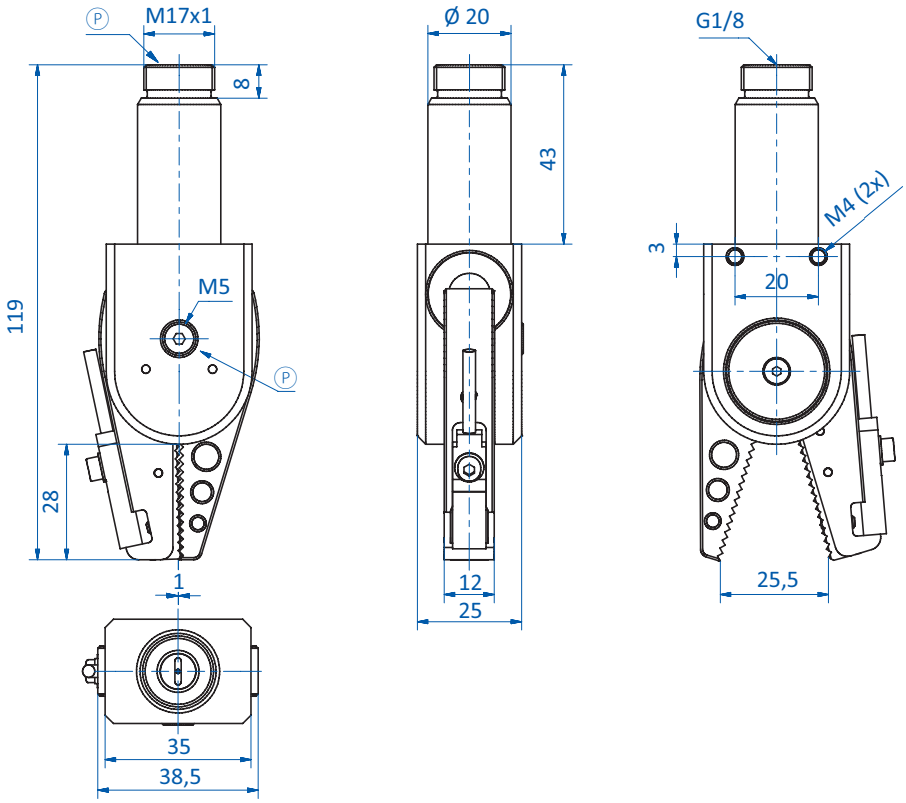


GR04.130H

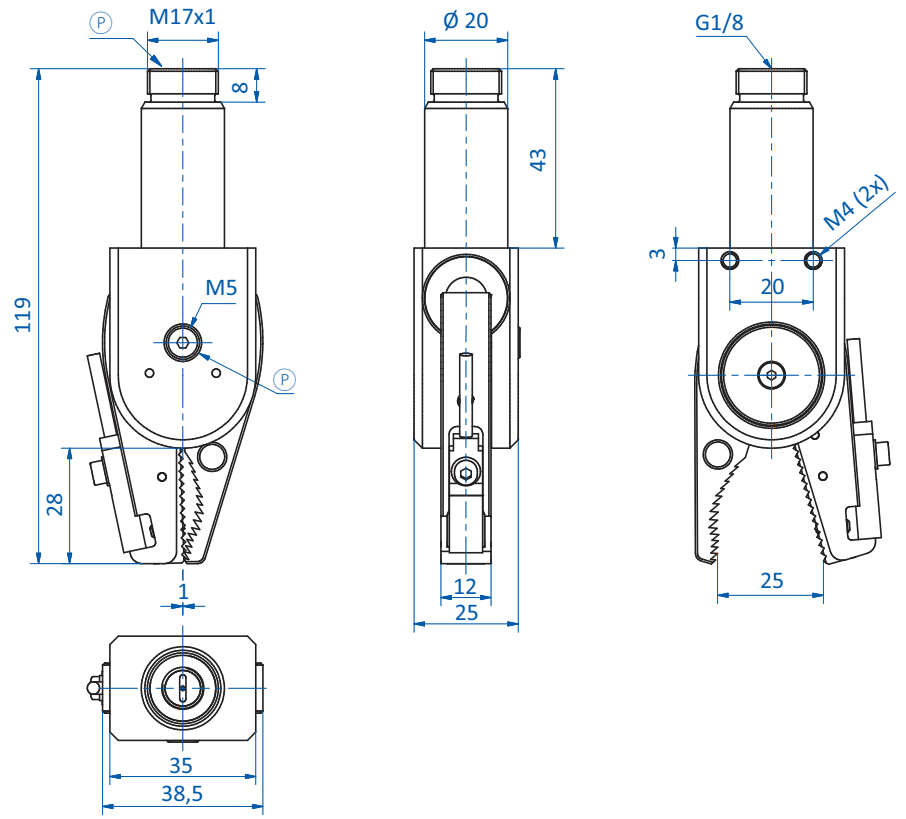
Ⓟ = Compressed air connection

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Dimensions



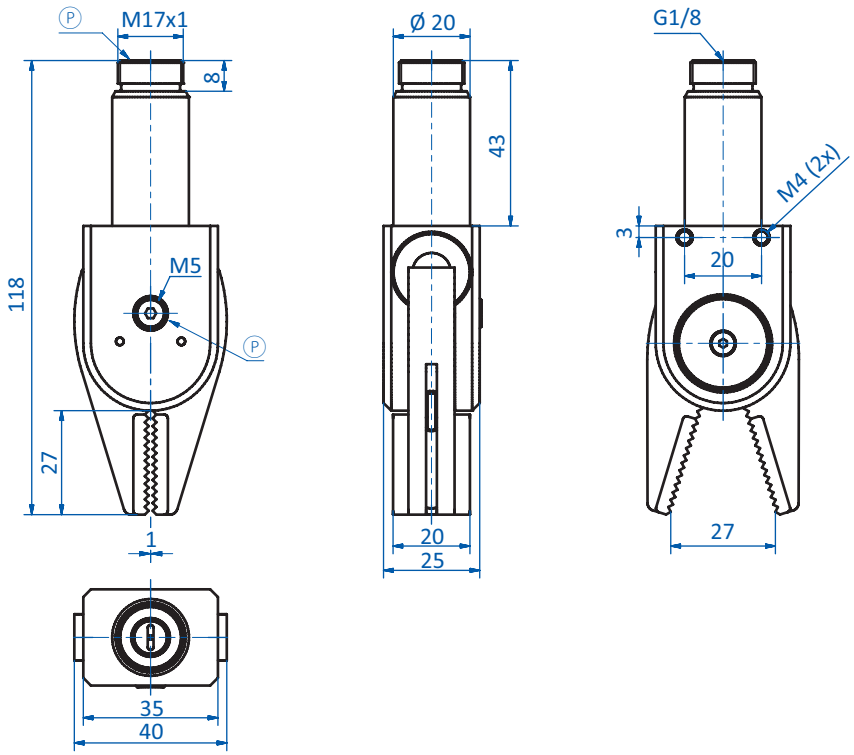
GR04.130-1N | GR04.130-1P



GR04.130B-1N | GR04.130B-1P

Ⓟ = Compressed air connection

Dimensions



GR04.130XW-3P

Ⓟ = Compressed air connection

Series 2016 – sprue grippers, without sensor

SELF-CENTERING



GR04.2016R with straight jaws



Sprue gripper GR04.2016H with HNBR pads

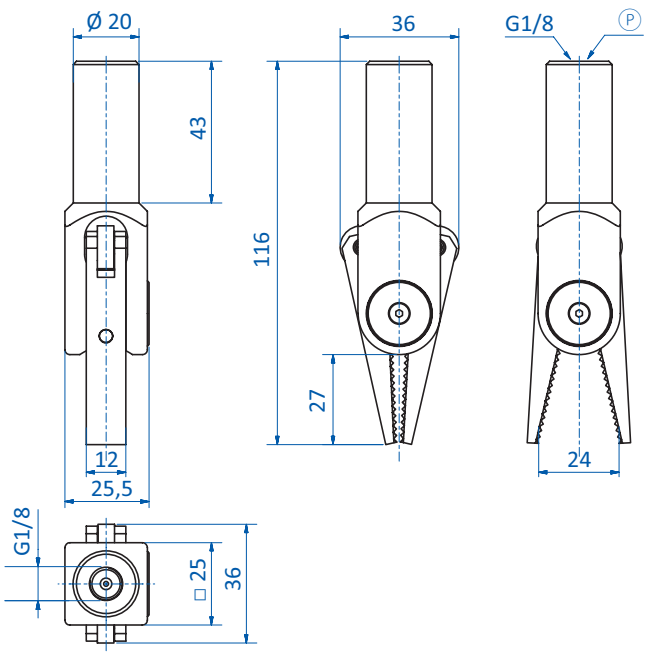
Product notes

> Clamping diameter 20 mm
> Grippers with wide opening jaws and high gripping force
> GR04.2016S with sawtooth jaws for a higher gripping force
> GR04.2016H with interchangeable HNBR pads for gentle gripping
> Easy assembly/disassembly of the gripper jaws
> Jaws made of zinc-plated steel
> If a sprue detection is needed please use the grippers GR04.2016RC or GR04.2016SC with direct part detection
> Body and jaws made of anodized aluminum
> Principle of operation: single-acting
> Medium: Filtered and oiled/unoiled air

Technical data

Item no.	Max. operating pressure [bar (psi)]	Closing force at 6 bar (87 psi) [N]	Weight [g]
GR04.2016R	6 (87)	52	148
GR04.2016S	6 (87)	52	148
GR04.2016H	6 (87)	52	148

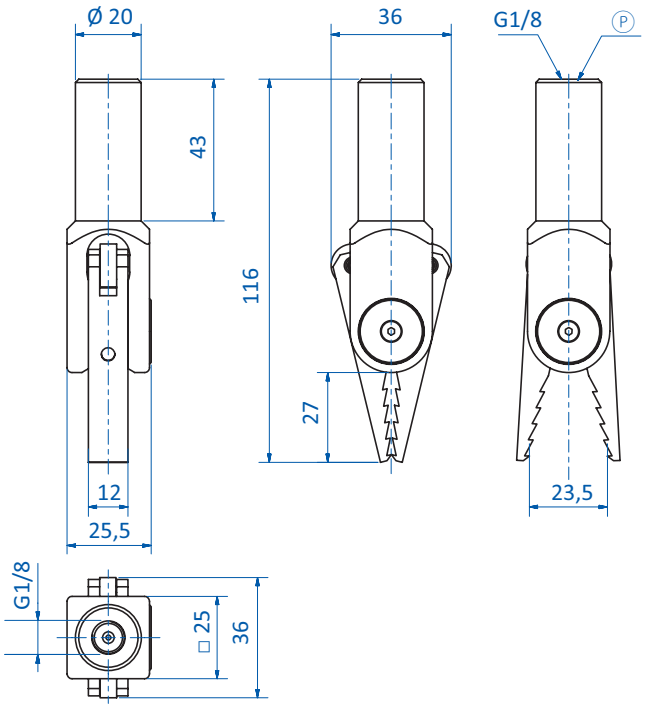
Dimensions



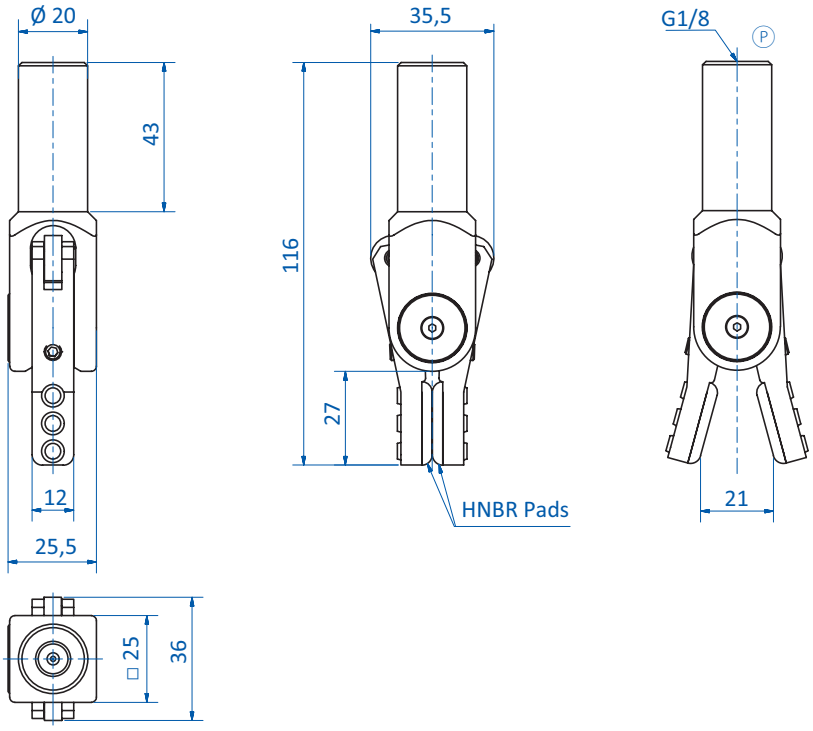
GR04.2016R

Ⓟ = Compressed air connection

Dimensions



GR04.2016S



GR04.2016H

Ⓟ = Compressed air connection

Series 2016 – sprue grippers, with direct sensing

SELF-CENTERING



GR04.2016RC with straight jaws



GR04.2016SC with sawtooth for a higher gripping force

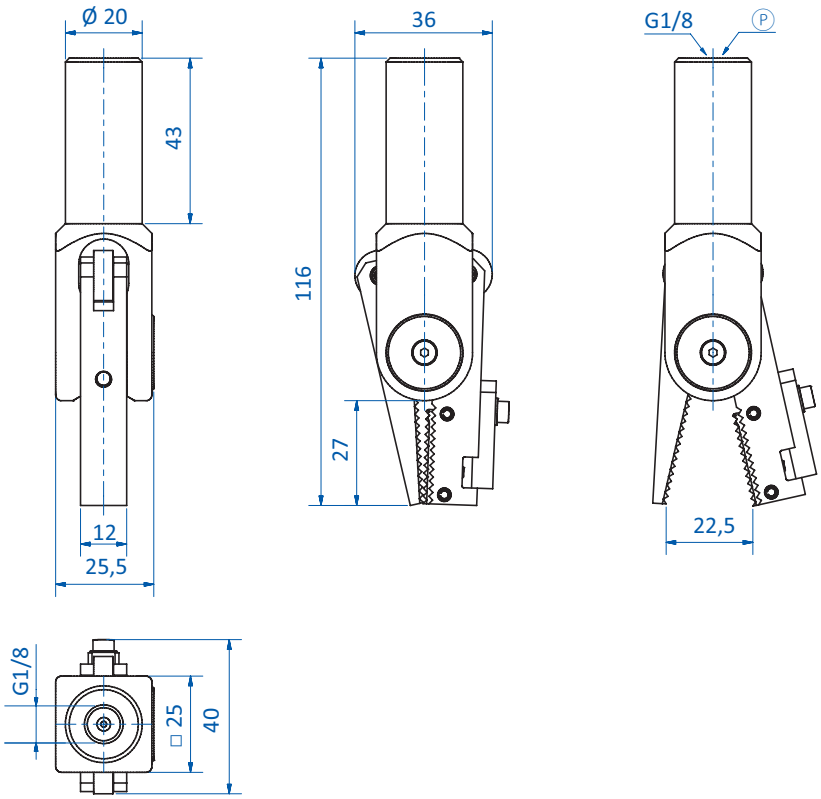
Product notes

> Clamping diameter 20 mm
> Grippers with wide opening jaws and high gripping force
> Self-centering
> Large area sensor activation, regardless of sprue position
> Easy assembly/disassembly of the gripper jaws
> Jaws made of zinc-plated steel
> Body and jaws made of anodized aluminum
> Principle of operation: single-acting
> Medium: filtered and oiled/unoiled air

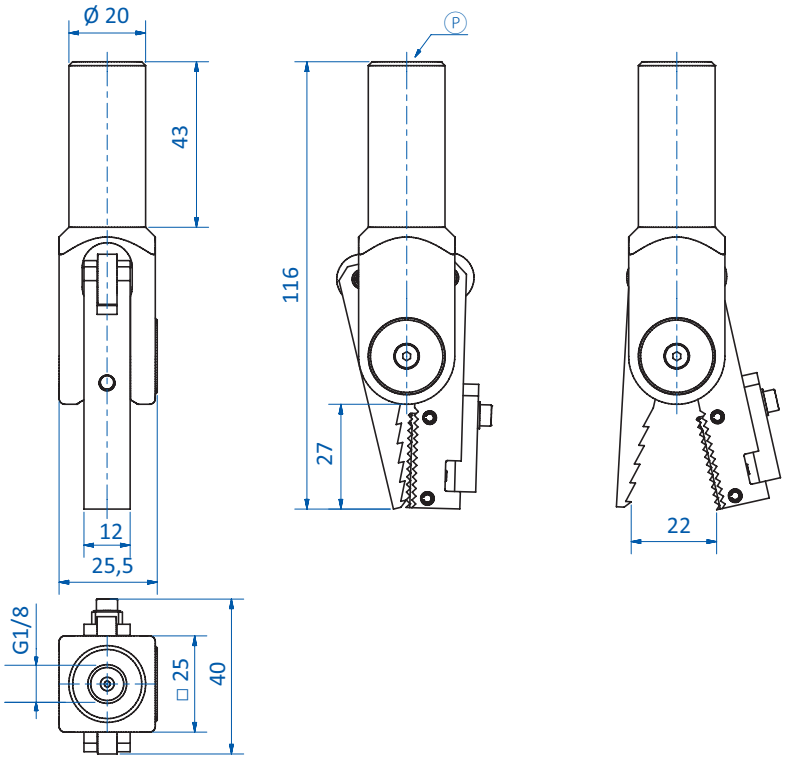
Technical data

Item no.	Max. operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.2016RC	6 (87)	PNP	52	165	Connector cable: 20.503 (p.410) Sensor: GS04.001 (p.408)
GR04.2016RC/NPN	6 (87)	NPN	52	165	Connector cable: 20.503 (p.410) Sensor: GS04.002 (p.408)
GR04.2016SC	6 (87)	PNP	52	168	Connector cable: 20.503 (p.410) Sensor: GS04.001 (p.408)
GR04.2016SC/NPN	6 (87)	NPN	52	168	Connector cable: 20.503 (p.410) Sensor: GS04.002 (p.408)

Dimensions



GR04.2016RC | GR04.2016RC/NPN



GR04.2016SC | GR04.2016SC/NPN

Ⓟ = Compressed air connection

Series 140 – power grippers





Application example: gripping of plastic flaps

Product notes

> Clamping diameter 20 mm
> PNP or NPN sensors with 0.3 m cable, 3-pin M8 plug and extension cable 2 m with 3-pin M8 socket & free end, included
> Very high grip force
> Body and jaws made of anodized aluminum
> Principle of operation: single-acting
> Medium: filtered and oiled/unoiled air

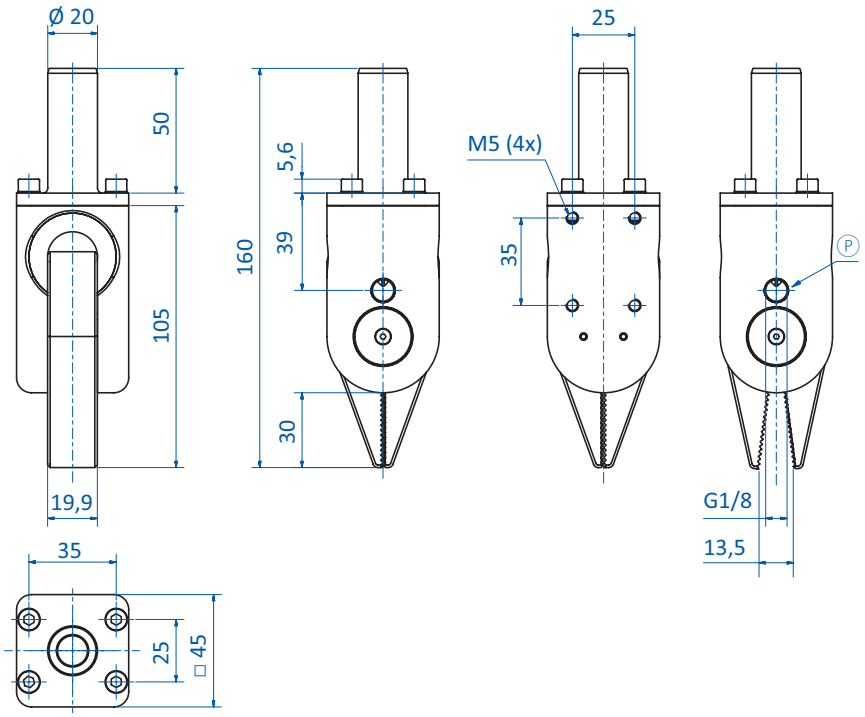
Technical data

Item no.	Max. operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.140A	8 (116)	--	380	395	--
GR04.140B	8 (116)	PNP	380	405	Connector cable: 20.503 (p.410) Sensor: GS04.001 (p.408)
GR04.140B/NPN	8 (116)	NPN	380	405	Connector cable: 20.503 (p.410) Sensor: GS04.002 (p.408)

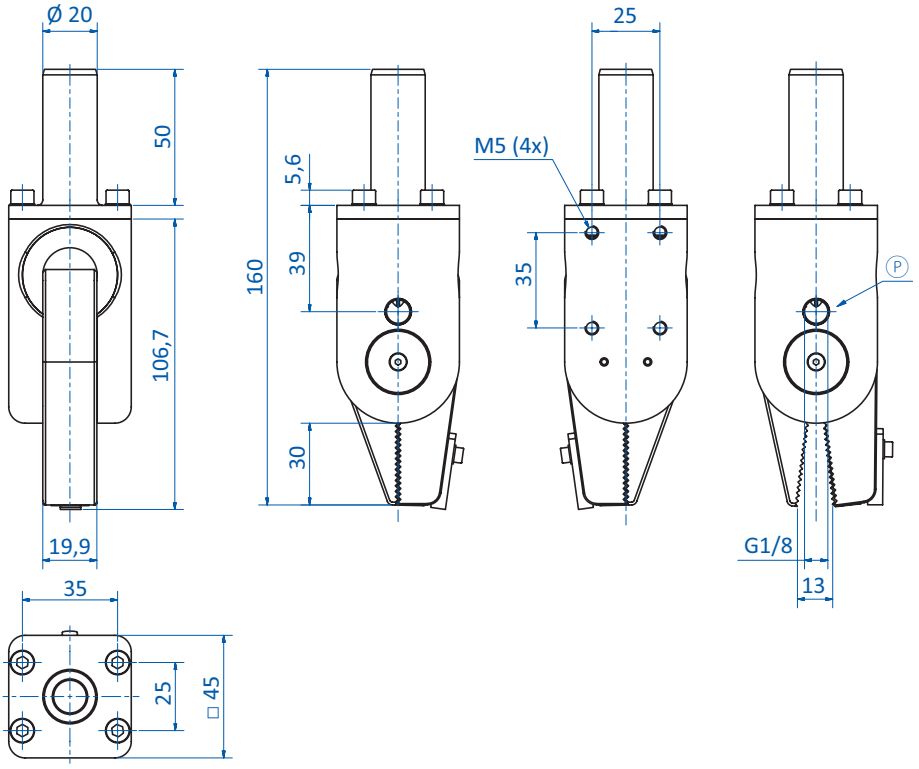
Installation example with side-mounted fitting



Dimensions



GR04.140A



GR04.140B | GR04.140B/NPN

Ⓟ = Compressed air connection

Series 840 – power grippers with stroke, clamping diameter 30 mm

DETECTS SPRUES LARGER 1 MM





Product notes

> Grippers with high gripping force and narrow closing gap for flat sprues
> Feed stroke (cylinder 1) moves gripper towards the mold for part removal
> Back stroke (cylinder 2) fully retracts gripper to enable undisturbed part release, e.g. on a conveyor belt
> Grippers are self-centering
> Medium: filtered and oiled/unoiled air
> Suitable for heavy-duty applications due to closed, coaxial cylinder guiding
> Part control via large area sensor activation, regardless of sprue position (GR04.140B, GR04.140B/NPN)
> Detection of stroke via optional cylinder sensors
> Easy exchange of jaws without snap-rings
> If required, the grippers can quickly be changed over to non-self-centering
> Included in scope of delivery of GR04.840B: sensor GR04.131-S1, resp. GR04.131-S2, cable 0.2 m, 3-pin M8 male connector, free end; extension cable 2 m, 3-pin M8 male connector, free end
> Please refer to "suitable sensors" for cylinder sensors

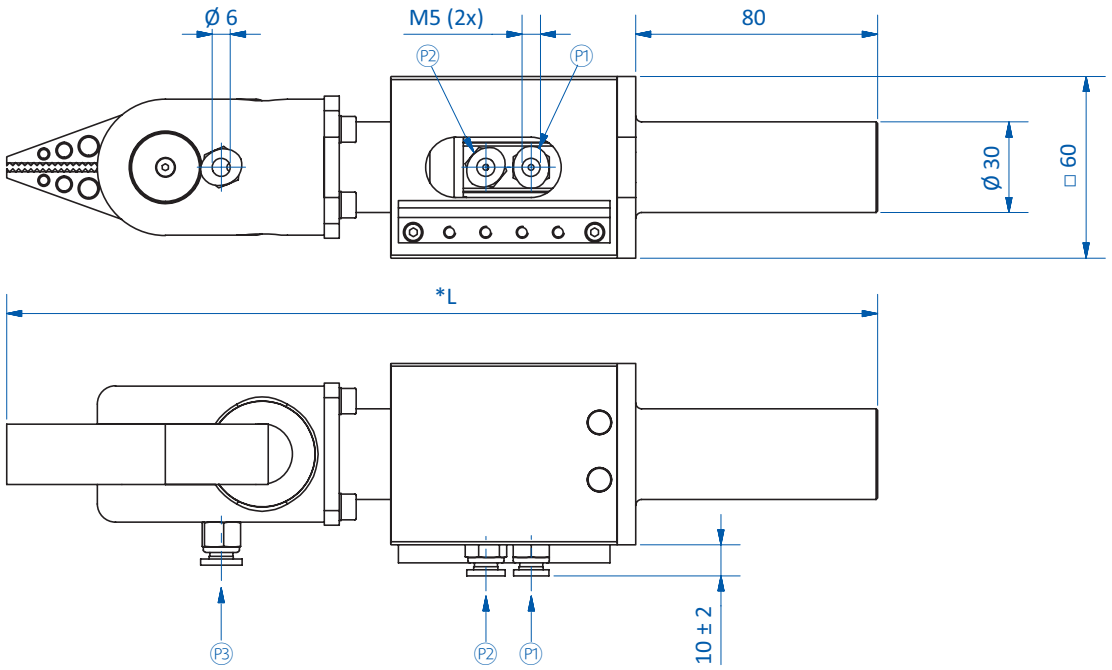
Technical data

Item no.	Operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Stroke 1 [mm]	Stroke 2 [mm]	Weight [g]	Suitable sensors
GR04.840A-20	6 (87)	--	380	20	--	1,110	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)
GR04.840A-30	6 (87)	--	380	30	--	1,185	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)
GR04.840A-20-20	6 (87)	--	380	20	20	1,480	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)
GR04.840A-20-30	6 (87)	--	380	30	20	1,540	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)
GR04.840B-20	6 (87)	PNP	380	20	--	1,130	GS04.001 (p.408) GR04.202P (p.404) GR04.280P (p.404)
GR04.840B-30	6 (87)	PNP	380	30	--	1,200	GS04.001 (p.408) GR04.202P (p.404) GR04.280P (p.404)
GR04.840B-20-20	6 (87)	PNP	380	20	20	1,500	GS04.001 (p.408) GR04.202P (p.404) GR04.280P (p.404)
GR04.840B-20-30	6 (87)	PNP	380	30	20	1,560	GS04.001 (p.408) GR04.202P (p.404) GR04.280P (p.404)
GR04.840B-20/NPN	6 (87)	NPN	380	20	--	1,130	GS04.002 (p.408) GR04.202N (p.404) GR04.280N (p.404)
GR04.840B-30/NPN	6 (87)	NPN	380	30	--	1,200	GS04.002 (p.408) GR04.202N (p.404) GR04.280N (p.404)

Technical data

Item no.	Operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Stroke 1 [mm]	Stroke 2 [mm]	Weight [g]	Suitable sensors
GR04.840B-20-20/NPN	6 (87)	NPN	380	20	20	1,500	GS04.002 (p.408) GR04.202N (p.404) GR04.280N (p.404)
GR04.840B-20-30/NPN	6 (87)	NPN	380	30	20	1,560	GS04.002 (p.408) GR04.202N (p.404) GR04.280N (p.404)

Dimensions

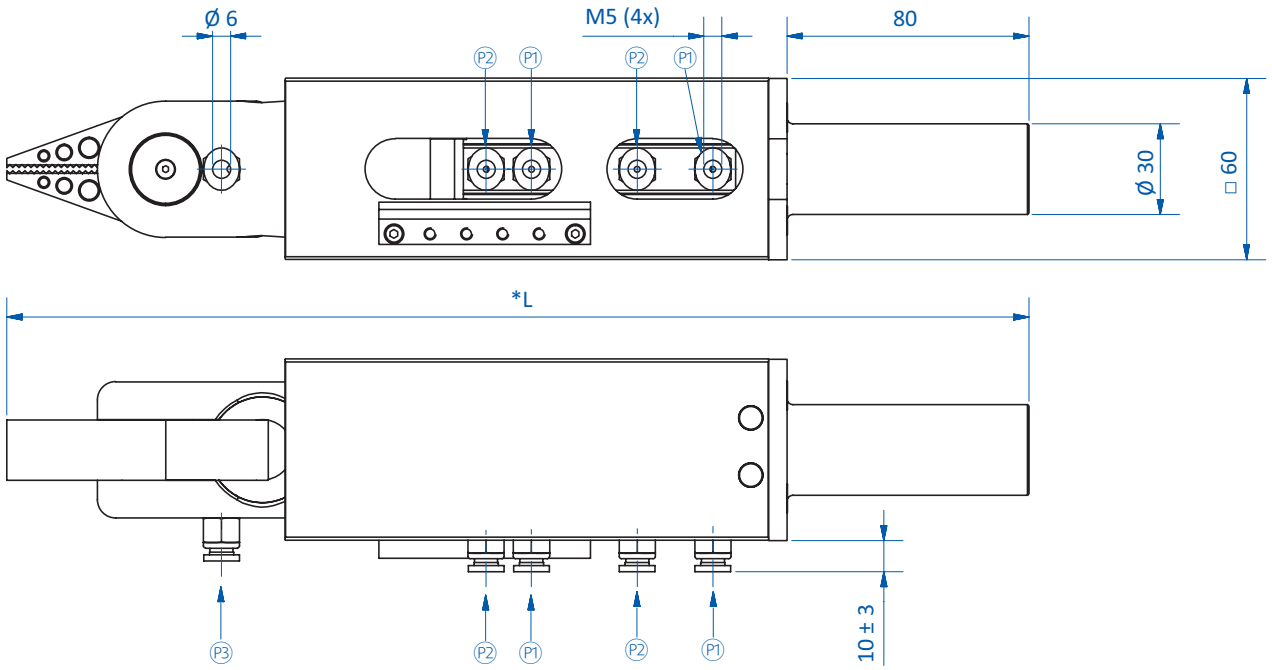


GR04.840A-20 | GR04.840A-30 | GR04.840B-20 | GR04.840B-30 | GR04.840B-20/NPN | GR04.840B-30/NPN

* = The length L refers to the gripper with retracted cylinders. Total length = L + stroke 1 (resp. stroke 1 + stroke 2). Ⓟ1 = Compressed air connection cylinder extended Ⓟ2 = Compressed air connection cylinder retracted Ⓟ3 = Compressed air connection gripper

Continued on the next page

Dimensions



GR04.840A-20-20 | GR04.840A-20-30 | GR04.840B-20-20 | GR04.840B-20-30 | GR04.840B-20-20/NPN | GR04.840B-20-30/NPN

* = The length L refers to the gripper with retracted cylinders. Total length = L + stroke 1 (resp. stroke 1 + stroke 2). Ⓟ1 = Compressed air connection cylinder extended Ⓟ2 = Compressed air connection cylinder retracted Ⓟ3 = Compressed air connection gripper

Item no.	**L** [mm]
GR04.840A-20	298
GR04.840A-30	308
GR04.840A-20-20	348
GR04.840A-20-30	358
GR04.840B-20	298
GR04.840B-30	308
GR04.840B-20-20	348
GR04.840B-20-30	358
GR04.840B-20/NPN	298
GR04.840B-30/NPN	308
GR04.840B-20-20/NPN	348
GR04.840B-20-30/NPN	358

Series 110 – sprue gripper with indirect sensing





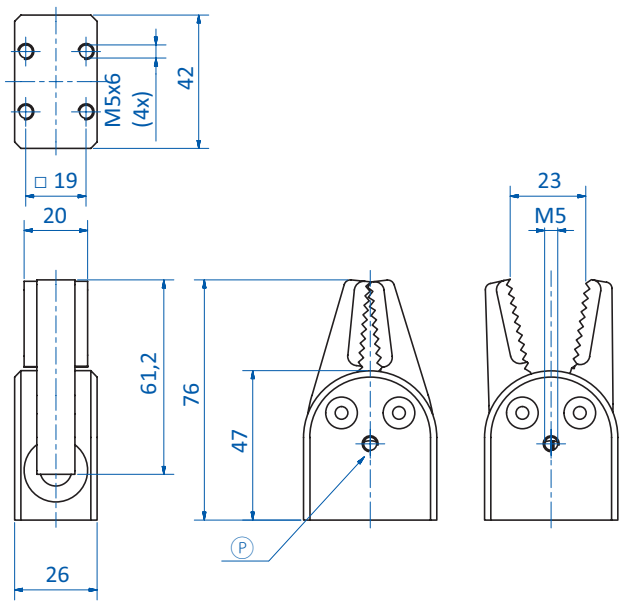
Product notes

> Grippers with high gripping force and wide jaw opening
> Jaws with rough tooth pattern for parts that are difficult to demold
> Sprue detection via indirect sensing, signals when jaws are closed, because no part has been gripped
> Principle of operation: single-acting
> Sensor with 3-pole M8 plug and 0.6 m cable included in scope of delivery

Technical data

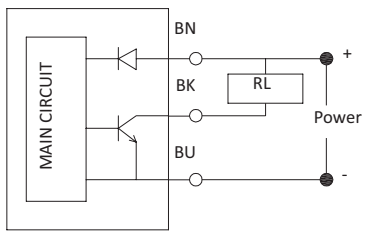
Item no.	Max. operating pressure [bar (psi)]	Sensor	Closing force at 6 bar (87 psi) [N]	Weight [g]	Accessories
GR04.111A	8 (116)	PNP*	95	135	Mounting bracket: GR04.196A (p.198) Sensor: GR04.111A-Sensor
GR04.111A/NPN	8 (116)	NPN*	95	135	Mounting bracket: GR04.196A (p.198) Sensor: GR04.111A-Sensor-NPN

Dimensions

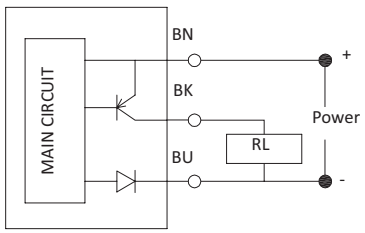


Wiring diagrams sensors

NPN



PNP



BN = Brown, BK = Black, BU = Blue

Ⓟ = Compressed air connection * = Sensing of parts larger 2 mm

Series 110 – grippers



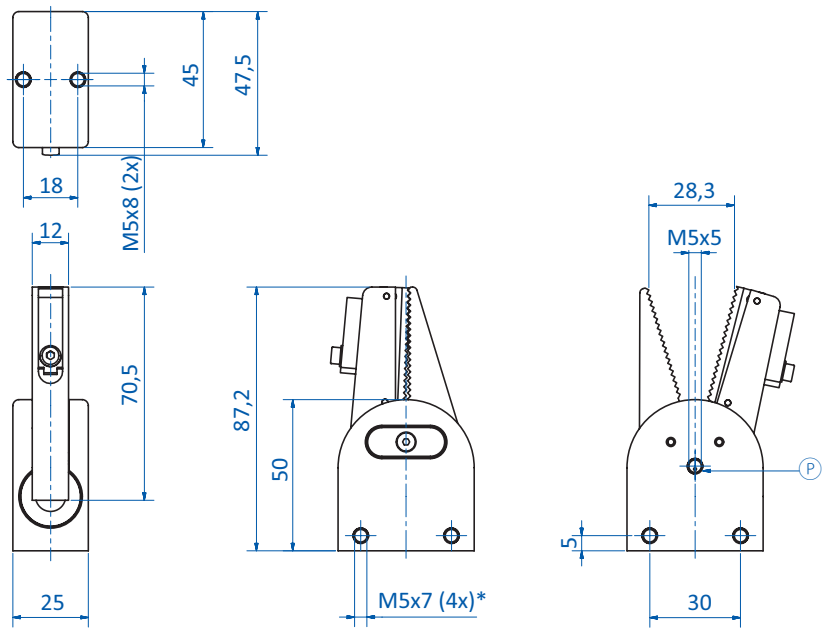
Product notes

> High grip force, extra wide jaw opening and gap-free closing allow for a wide range of sprue diameters to be gripped
> PNP or NPN sensors with 0.3 m cable, 3-pin M8 plug and extension cable 2 m with 3-pin M8 socket & free end, included
> Principle of operation: single-acting

Technical data

Item no.	Max. operating pressure [bar (psi)]	Sensor	Closing force on the jaw tip [N]	Minimum sprue thickness [mm]	Weight [g]	Suitable sensors
GR04.110A	8 (116)	PNP	95	1	130	GS04.001 (p.408)
GR04.110A/NPN	8 (116)	NPN	95	1	130	GS04.002 (p.408)
GR04.110B	8 (116)	--	95	1	130	--

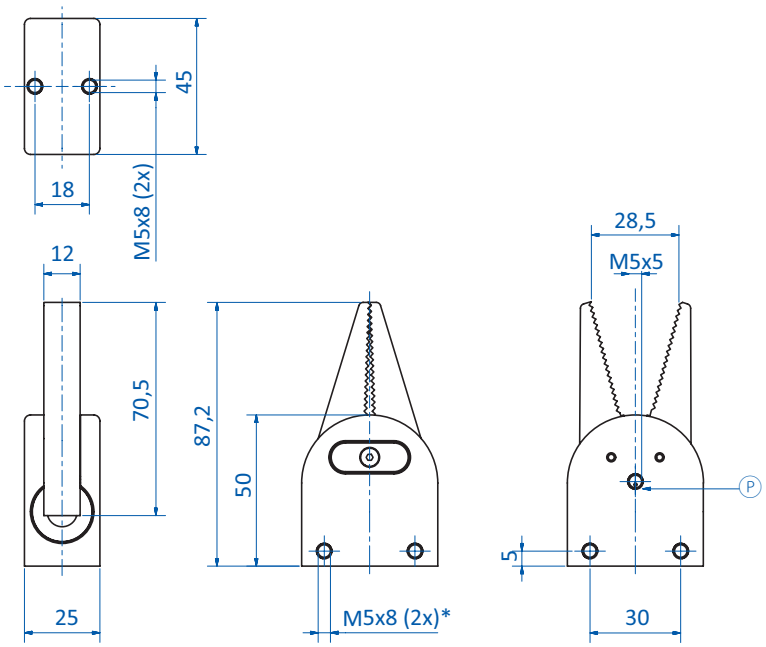
Dimensions



GR04.110A | GR04.110A/NPN

Ⓟ = Compressed air connection * = Fixing hole

Dimensions



GR04.110B

Ⓟ = Compressed air connection * = Fixing hole

Series 110 – grippers



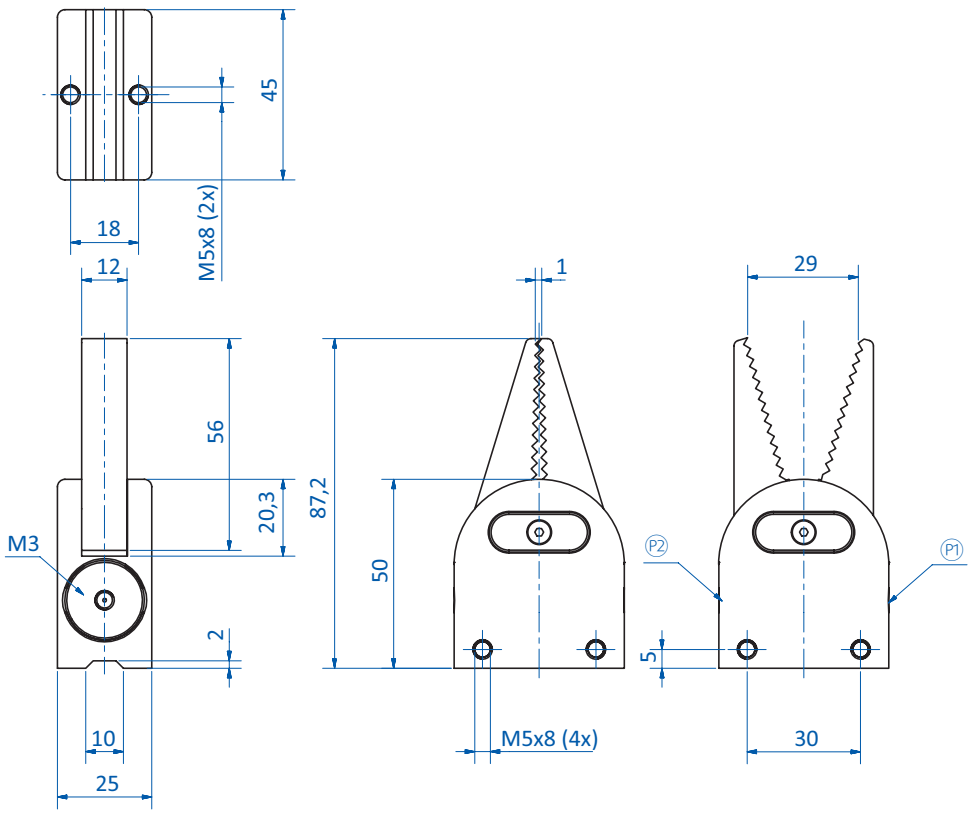
Product notes

> High grip force, extra wide jaw opening and gap-free closing allow for a wide range of sprue diameters to be gripped
> Principle of operation: double-acting

Technical data

Item no.	Max. operating pressure [bar (psi)]	Closing force at 6 bar (87 psi) [N]	Weight [g]	Suitable fittings
GR04.110	8 (116)	66	135	GR04.197A (p.197)

Dimensions



P1 = Compressed air supply (open) P2 = Compressed air supply (close)

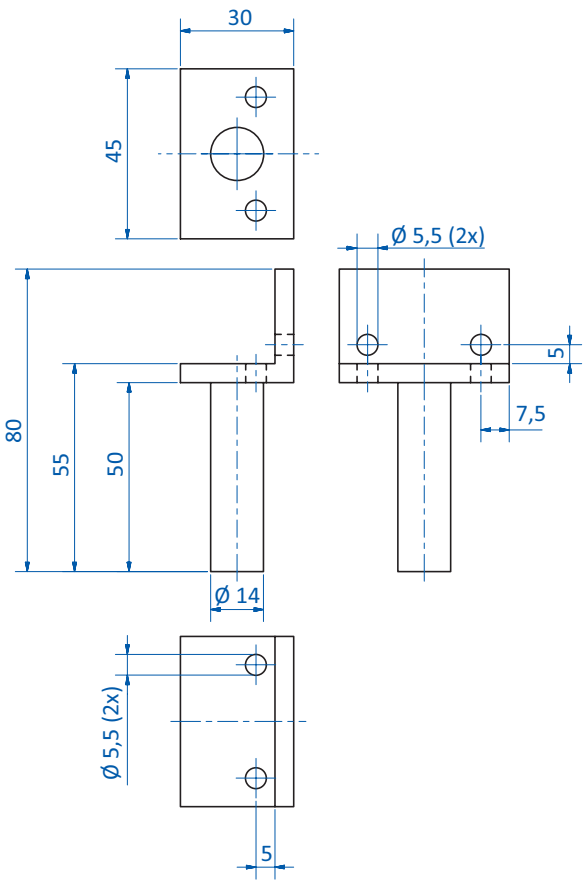
Mounting brackets for Series 110 – grippers



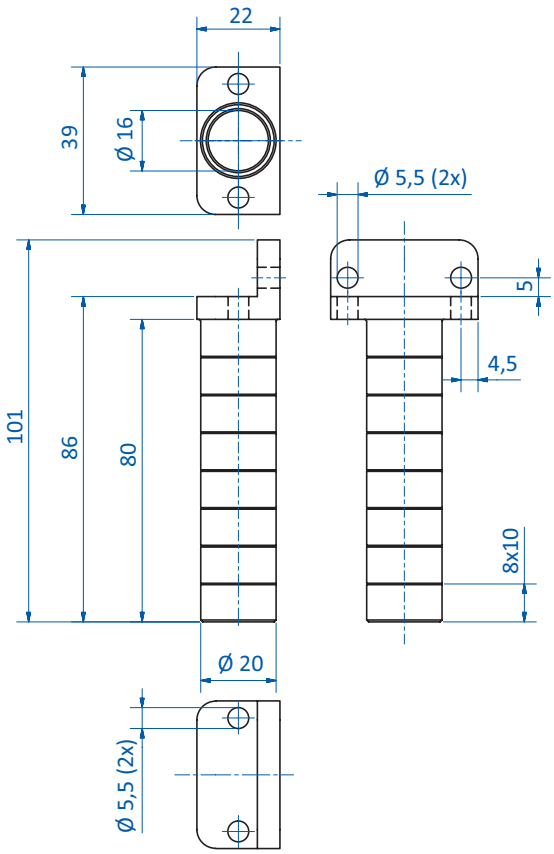
Technical data

Item no.	Weight [g]
GR04.197A	47
GR04.197B	47

Dimensions



GR04.197A



GR04.197B

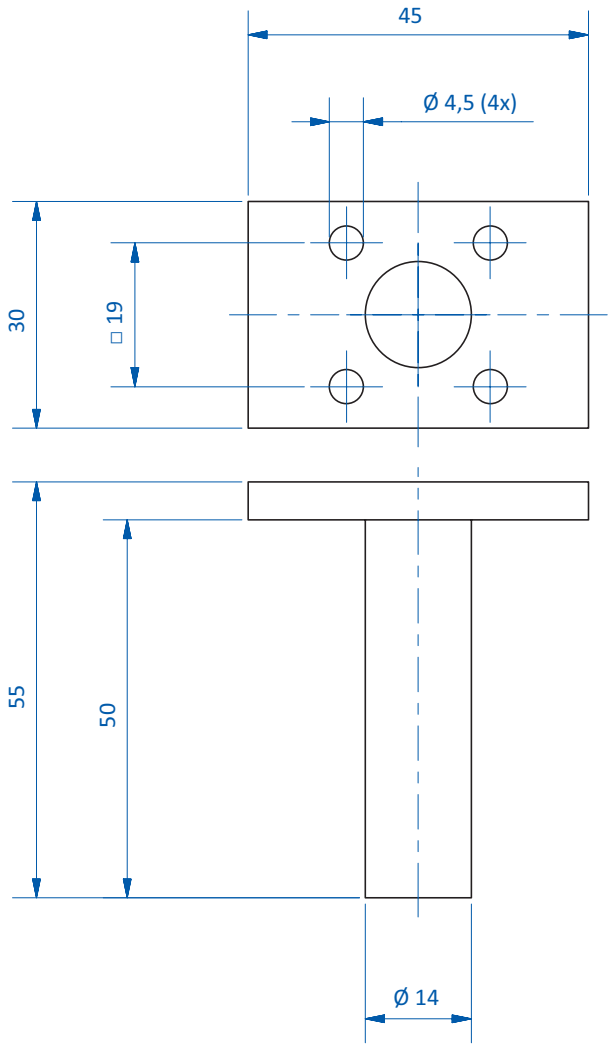
Mounting brackets for Series 110 – grippers



Technical data

Item no.	Weight [g]
GR04.196A	27

Dimensions



Notes:

95° Gripper fingers





Gripper finger with HNBR pad and HNBR stop element for soft gripping

Product notes

> Single-acting, spring return
> Body and jaws made of anodized aluminum alloy
> GR04.034 & GR04.040: optional sensors for monitoring piston position
> Gripper finger with central hole for mounting optional HNBR pad

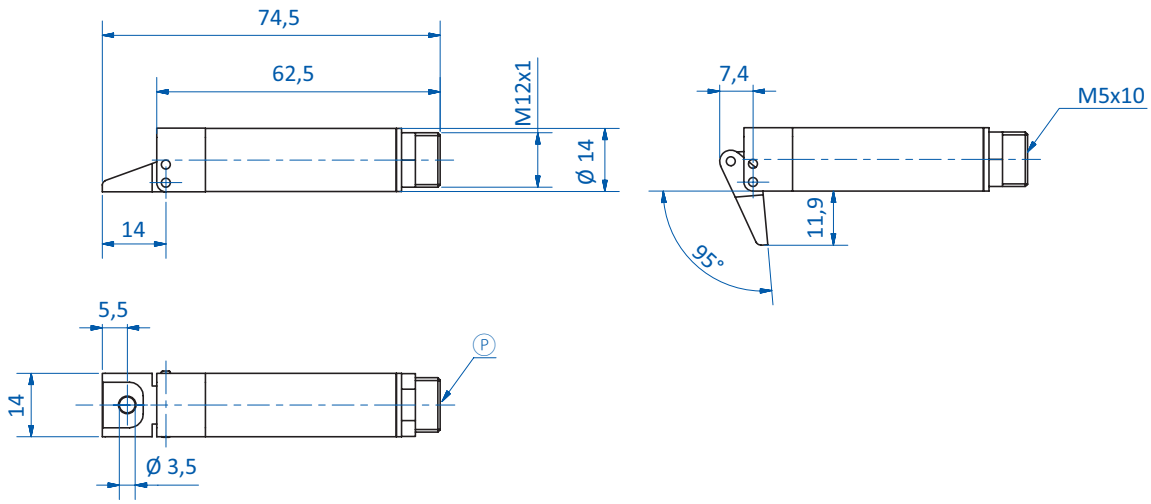
Technical data

Item no.	GR04.034	GR04.040	GR04.044
Operating pressure [bar (psi)]	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)
Clamping Ø [mm]	14	20	20
Angle stroke [°]	95	95	95
Sensor nut	--	Yes	--
Closing force at 6 bar (87 psi) [N]	24	70	70
Weight [g]	25	82	60
Accessories	HNBR pad: GR04.034-HNBR Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) Sensor mounting bracket: GR04.038S (p.204)	HNBR pad: GR04.044-HNBR Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404)	HNBR pad: GR04.044-HNBR

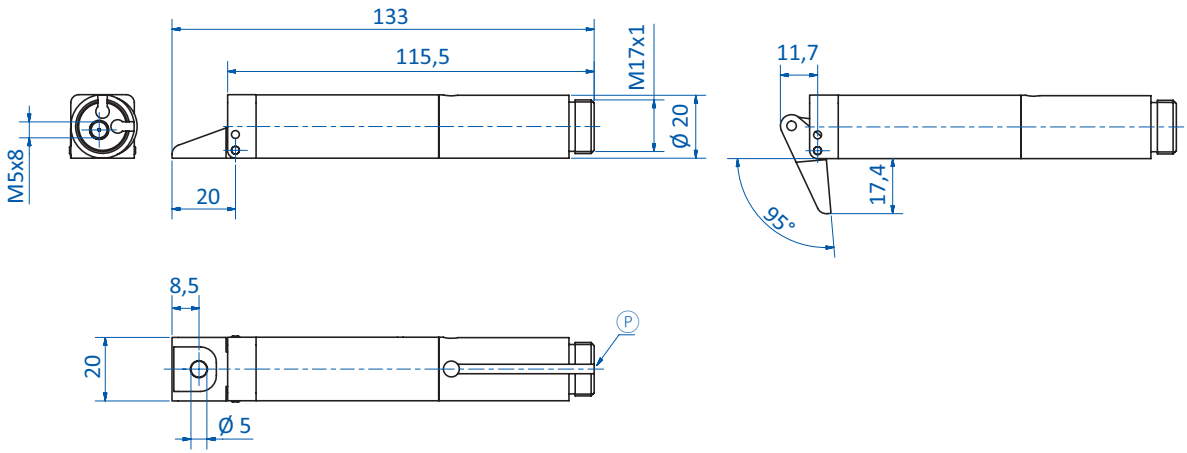
Application example with sensor



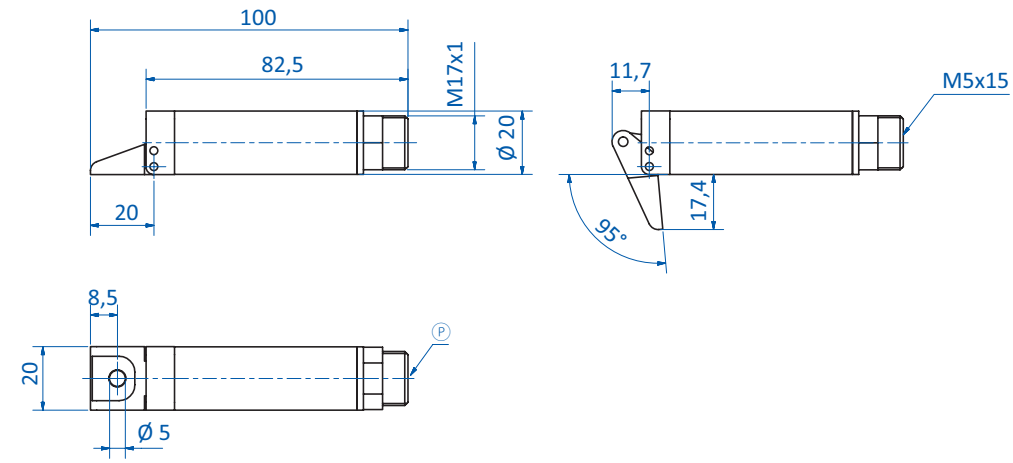
Dimensions



GR04.034



GR04.040



GR04.044

Ⓟ = Compressed air connection

35° Gripper Fingers



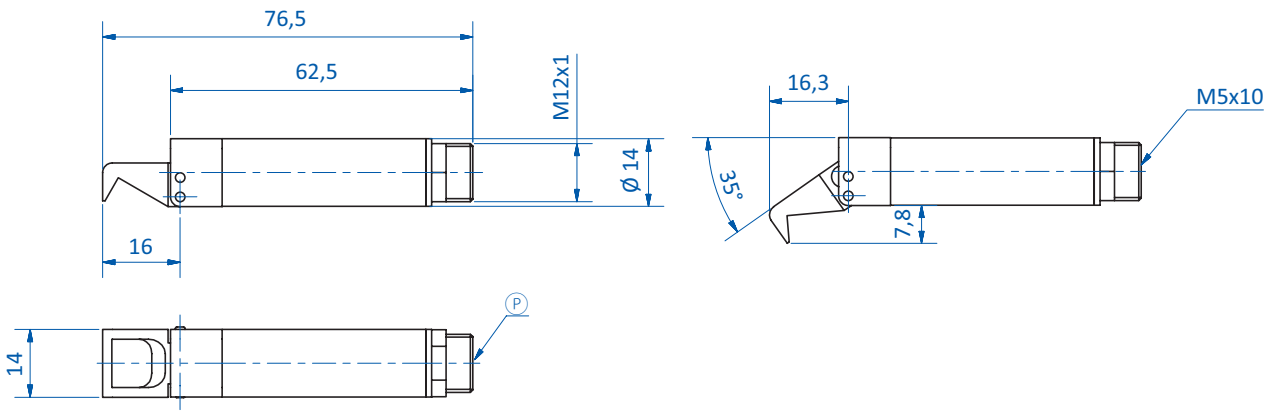
Product notes

> Single-acting, spring return
> Body and jaws made of anodized aluminum alloy
> GR04.035 & GR04.041: optional sensors for monitoring piston position

Technical data

Item no.	GR04.035	GR04.041	GR04.045
Operating pressure [bar (psi)]	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)
Clamping Ø [mm]	14	20	20
Angle stroke [°]	35	35	35
Sensor nut	--	Yes	--
Closing force at 6 bar (87 psi) [N]	23	65	65
Weight [g]	25	86	65
Accessories	Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) Sensor mounting bracket: GR04.038S (p.204)	Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404)	--

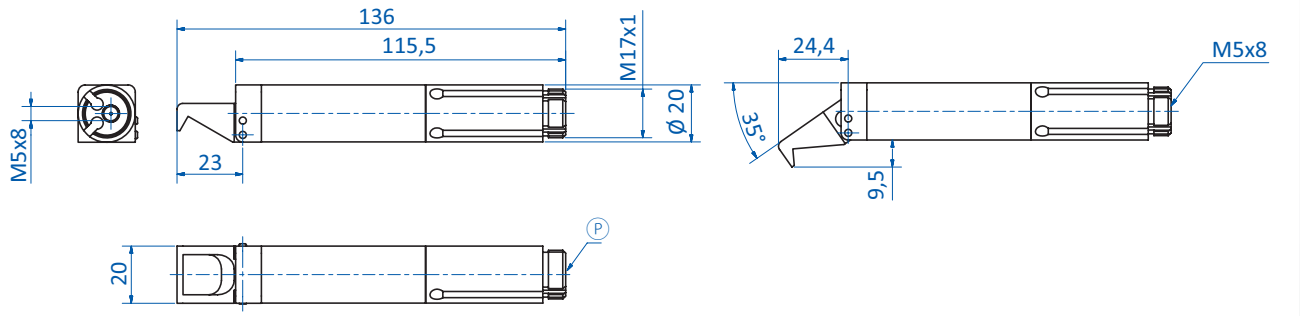
Dimensions



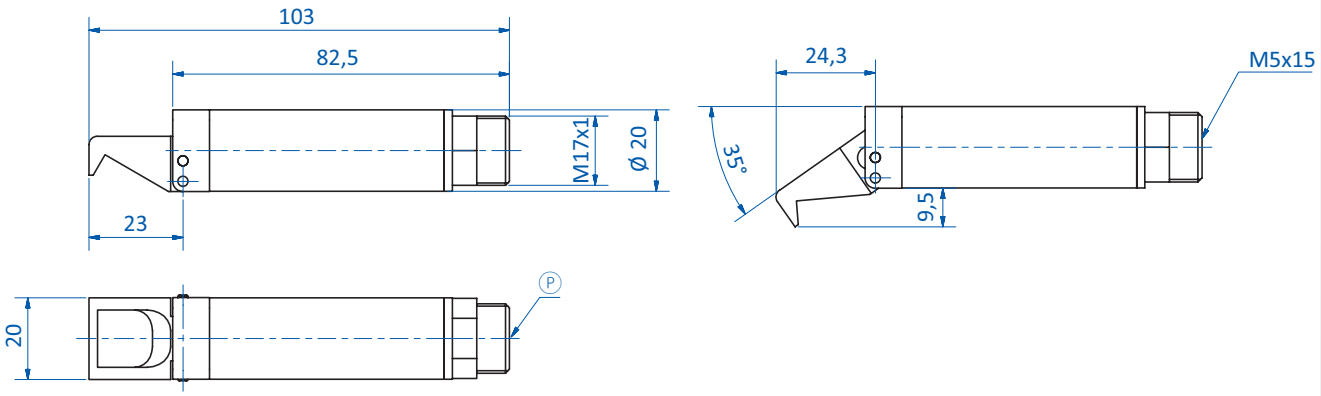
GR04.035

Ⓟ = Compressed air connection

Dimensions



GR04.041



GR04.045

Ⓟ = Compressed air connection

Sensor mounting bracket for gripper fingers, diameter 14 mm





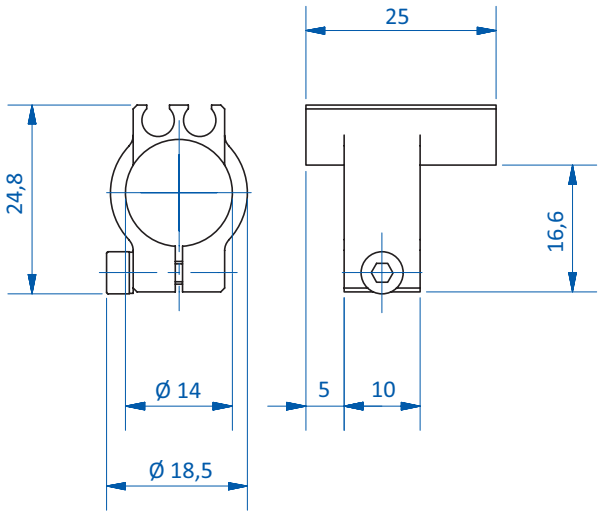
Product notes

> Made of anodized aluminum

Technical data

Item no.	Suitable for gripper fingers	Clamping Ø [mm]	Weight [g]	Suitable sensors
GR04.038S	GR04.034, GR04.035	14	6	GR04.198 (p.404) GR04.198/NPN (p.404)

Dimensions



Gripper finger guide





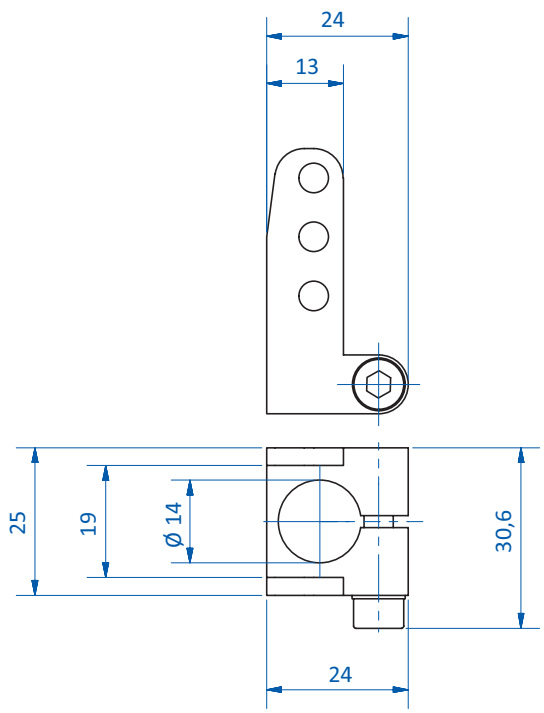
Product notes

> Part protection during demolding

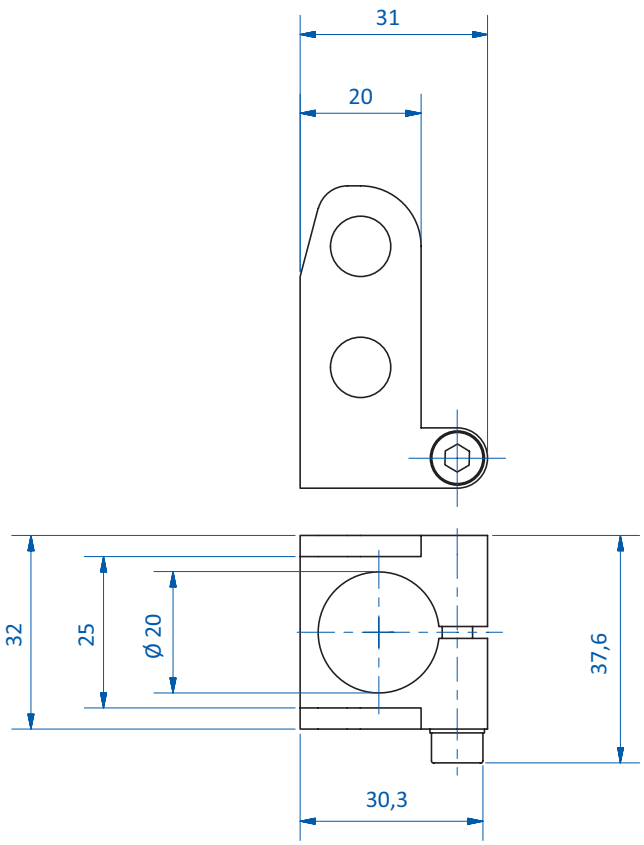
Technical data

Item no.	Suitable for gripper fingers	Clamping Ø [mm]	Weight [g]	Suitable finger grippers
GR04.037	GR04.034, GR04.035	14	12	GR04.034 (p.200) GR04.035 (p.202)
GR04.047	GR04.040, GR04.041, GR04.044, GR04.045	20	19	GR04.040 (p.200) GR04.041 (p.202) GR04.044 (p.200) GR04.045 (p.202)

Dimensions



GR04.037



GR04.047

Stop elements for gripper fingers



GR04.036 and GR04.046



GR04.034-H and GR04.044-H with HNBR pad

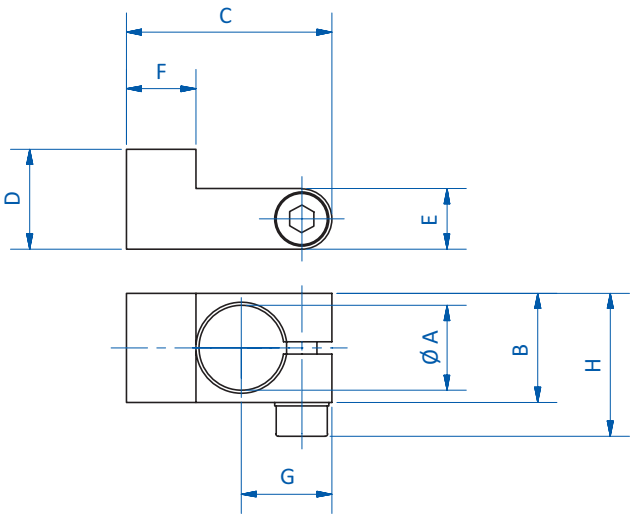
Product notes

> Made of POM
> Can be used in conjunction with guide elements
> GR04.034-H & GR04.044-H: with HNBR pads for gentle gripping of sensitive components, temperature range 0 - 160 °C (32 - 320 °F) for short term contact – up to 30 seconds

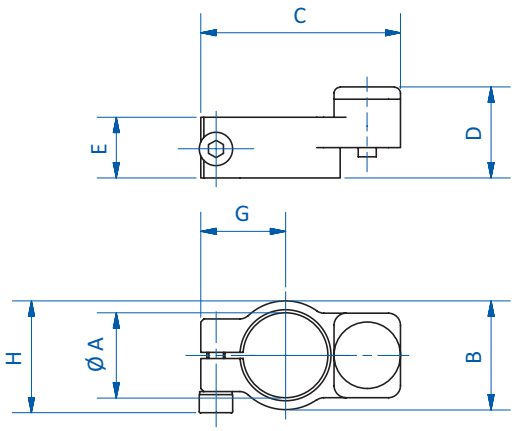
Technical data

Item no.	Suitable for gripper fingers	Clamping Ø [mm]	Weight [g]	Replacement parts
GR04.036	GR04.034, GR04.035	14	11	--
GR04.046	GR04.040, GR04.041, GR04.044, GR04.045	20	16	--
GR04.034-H	GR04.034, GR04.035	14	6	GR04.034-HNBR
GR04.044-H	GR04.040, GR04.041, GR04.044, GR04.045	20	13	GR04.044-HNBR

Dimensions



GR04.036 | GR04.046



GR04.034-H | GR04.044-H

Item no.	Ø A [mm]	B [mm]	H [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
GR04.036	14	18	23.6	34	16.5	10	11.5	15
GR04.046	20	24	29.6	45	14.5	10	16.5	18
GR04.034-H	14	18	18.5	33	15	10	--	14
GR04.044-H	20	24	24	44.5	13	10	--	17

Application examples

> Gripper finger with stop element without HNBR pad



> Gripper finger with stop element with HNBR pad



Extension tubes



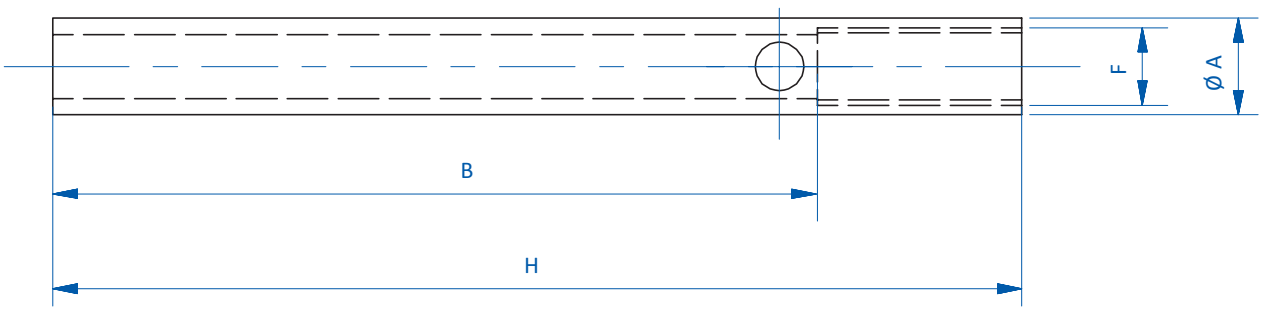
Product notes

> Compatible with locator pins, finger grippers and sprue grippers

Technical data

Item no.	Clamping Ø [mm]	Weight [g]	Suitable locator pins
GR06.020	10	10	GR06.001 (p.89)
GR06.021A	14	22	GR06.002A (p.89)
GR06.022	20	28	GR06.003 (p.89)

Dimensions



Item no.	F	Ø A [mm]	B [mm]	H [mm]
GR06.020	M8x1	10	87	100
GR06.021A	M12x1	14	82	100
GR06.022	M17x1	20	82	100

2-finger parallel grippers



Product notes

> Gripper with high gripping force
> Double-acting for inside/outside gripping and short duty cycles
> Single-acting: normally open (NO), compressed air for closing, opening via return spring
> Body and jaws made of high-strength aluminum alloy
> Options
  - Base jaws for customization
  - Sensors for monitoring gripper action via piston position
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N
  - T-slot (straight): GR04.203P, GR04.203N
> Connector cable for sensors:
  - 20.503: 3-pole M8, cable straight, length 2,500 mm, open wire
  - 20.507: 3-pole M8, cable 90°, length 2,000 mm, open end
  - 20.570: 3-pole M8, length 1,500 mm, end with plug 3-pole M8

Technical data

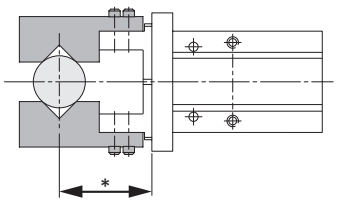
Item no.	Principle of operation	Operating pressure [bar (psi)]	Piston diameter [mm]	Stroke per gripper jaw [mm]	Closing force at 5 bar (72,5 psi) [N]	Opening force at 5 bar (72,5 psi) [N]	Max. operating frequency [1/min]	Operating temperature [°C (°F)]	Weight [g]	Accessories
GR04.122-10	Double-acting	3 - 7 (43.5 - 101.5)	10	2	16	11	180	-10 - 60 (14 - 140)	120	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.050 (p.240)
GR04.122-10S	Single-acting	3 - 7 (43.5 - 101.5)	10	2	16	11	180	-10 - 60 (14 - 140)	120	
GR04.122-16	Double-acting	3 - 7 (43.5 - 101.5)	16	3	44	33	180	-10 - 60 (14 - 140)	160	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.051 (p.240)
GR04.122-16S	Single-acting	3 - 7 (43.5 - 101.5)	16	3	44	33	180	-10 - 60 (14 - 140)	160	

Continued on the next page

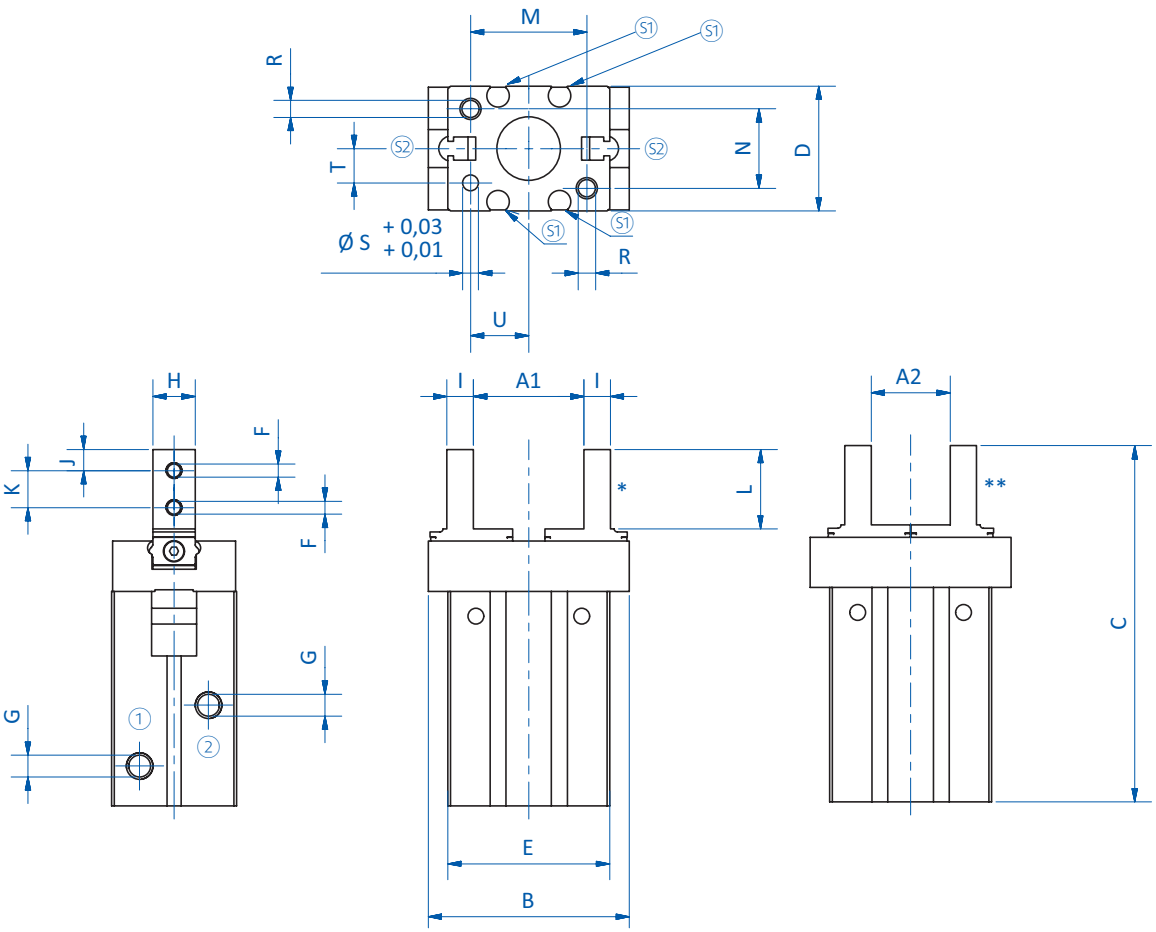
Technical data

Item no.	Principle of operation	Operating pressure [bar (psi)]	Piston diameter [mm]	Stroke per gripper jaw [mm]	Closing force at 5 bar (72,5 psi) [N]	Opening force at 5 bar (72,5 psi) [N]	Max. operating frequency [1/min]	Operating temperature [°C (°F)]	Weight [g]	Accessories
GR04.122-20	Double-acting	3 - 7 (43.5 - 101.5)	20	5	65	40	180	-10 - 60 (14 - 140)	300	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.052 (p.240)
GR04.122-20S	Single-acting	3 - 7 (43.5 - 101.5)	20	5	65	40	180	-10 - 60 (14 - 140)	300	
GR04.122-25	Double-acting	3 - 7 (43.5 - 101.5)	25	7	105	66	180	-10 - 60 (14 - 140)	365	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.053 (p.240)
GR04.122-25S	Single-acting	3 - 7 (43.5 - 101.5)	25	7	105	66	180	-10 - 60 (14 - 140)	365	
GR04.122-32	Double-acting	3 - 7 (43.5 - 101.5)	32	11	225	156	60	-10 - 60 (14 - 140)	860	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.054 (p.240)
GR04.122-32S	Single-acting	3 - 7 (43.5 - 101.5)	32	11	225	156	60	-10 - 60 (14 - 140)	860	
GR04.122-40	Double-acting	3 - 7 (43.5 - 101.5)	40	15	320	255	60	-10 - 60 (14 - 140)	950	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410) Connector cable: 20.570 (p.410) Mounting bracket: GR06.055 (p.240)
GR04.122-40S	Single-acting	3 - 7 (43.5 - 101.5)	40	15	320	255	60	-10 - 60 (14 - 140)	950	

Distance to gripping point (* see diagrams)



Dimensions



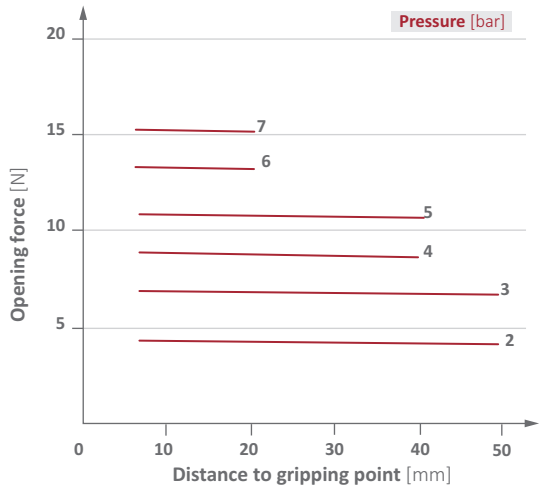
S1 = Sensor slot for GR04.202 and GR04.280 S2 = Sensor slot for GR04.203 ① = Compressed air supply (open) ② = Compressed air supply (close)
* = Gripper jaw opened ** = Gripper jaw closed

Item no.	A1 [mm]	A2 [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F	G	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	N [mm]	R	Ø S [mm]	T [mm]	U [mm]
GR04.122-10	15.2	11.2	29	57	16.4	23	M2,5	M3	5	4	3	5.7	12	18	12	M3	2	5.2	7.6
GR04.122-10S	15.2	11.2	29	57	16.4	23	M2,5	M3	5	4	3	5.7	12	18	12	M3	2	5.2	7.6
GR04.122-16	20.9	14.9	38	67.3	23.6	30.6	M3	M5	8	5	4	7	15	22	15	M4	3	6.5	11
GR04.122-16S	20.9	14.9	38	67.3	23.6	30.6	M3	M5	8	5	4	7	15	22	15	M4	3	6.5	11
GR04.122-20	26.3	16.3	50	84.8	27.6	42	M4	M5	10	8	5	9	20	32	18	M5	4	7.5	16.8
GR04.122-20S	26.3	16.3	50	84.8	27.6	42	M4	M5	10	8	5	9	20	32	18	M5	4	7.5	16.8
GR04.122-25	33.3	19.3	63	102.7	33.6	52	M5	M5	12	10	6	12	25	40	22	M6	4	10	21.8
GR04.122-25S	33.3	19.3	63	102.7	33.6	52	M5	M5	12	10	6	12	25	40	22	M6	4	10	21.8
GR04.122-32	48	26	97	113	40	60	M6	M5	15	12	7	14	29	46	26	M6	5	12	23
GR04.122-32S	48	26	97	113	40	60	M6	M5	15	12	7	14	29	46	26	M6	5	12	23
GR04.122-40	60	30	119	139	48	72	M8	M5	18	14	9	17	36	56	32	M8	5	14	29
GR04.122-40S	60	30	119	139	48	72	M8	M5	18	14	9	17	36	56	32	M8	5	14	29

Continued on the next page

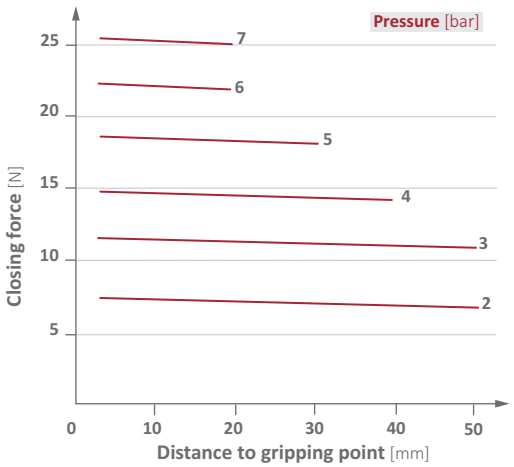
Diagrams

> Opening force as a function of distance to gripping point and feed pressure



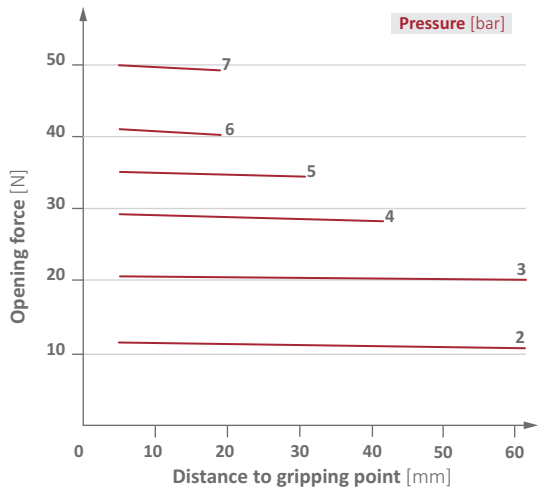
GR04.122-10 | GR04.122-10S

> Closing force as a function of distance to gripping point and feed pressure



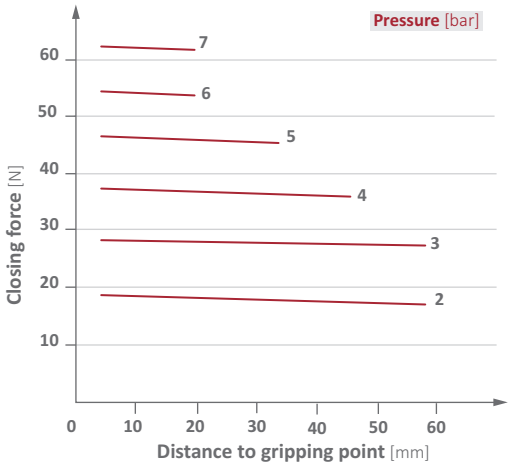
GR04.122-10 | GR04.122-10S

> Opening force as a function of distance to gripping point and feed pressure



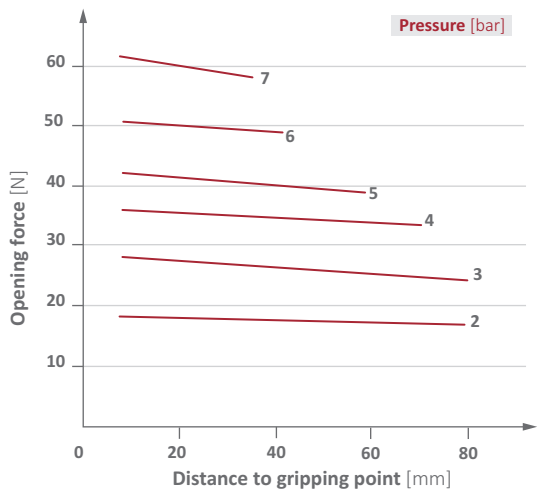
GR04.122-16 | GR04.122-16S

> Closing force as a function of distance to gripping point and feed pressure



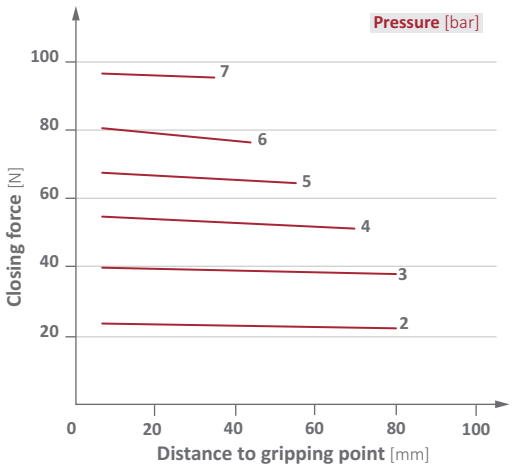
GR04.122-16 | GR04.122-16S

> Opening force as a function of distance to gripping point and feed pressure



GR04.122-20 | GR04.122-20S

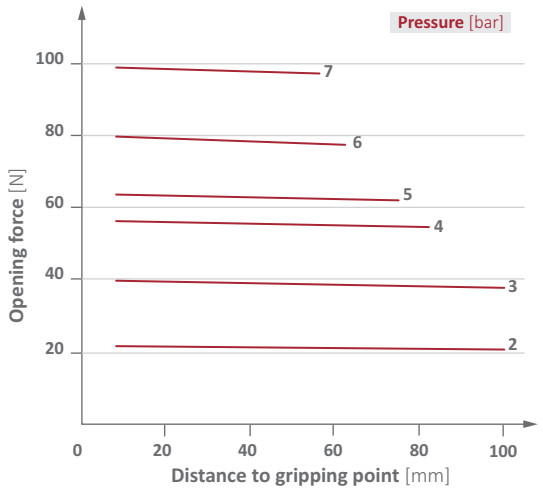
> Closing force as a function of distance to gripping point and feed pressure



GR04.122-20 | GR04.122-20S

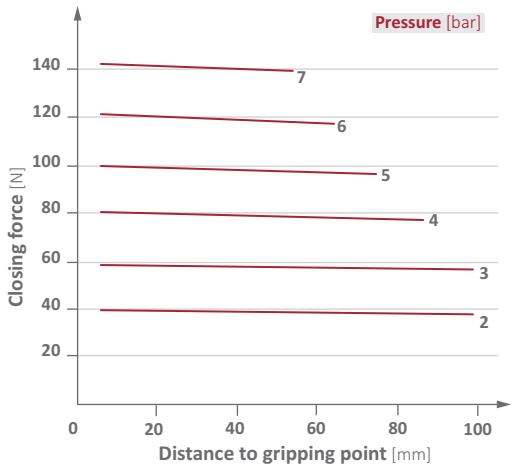
Diagrams

> Opening force as a function of distance to gripping point and feed pressure



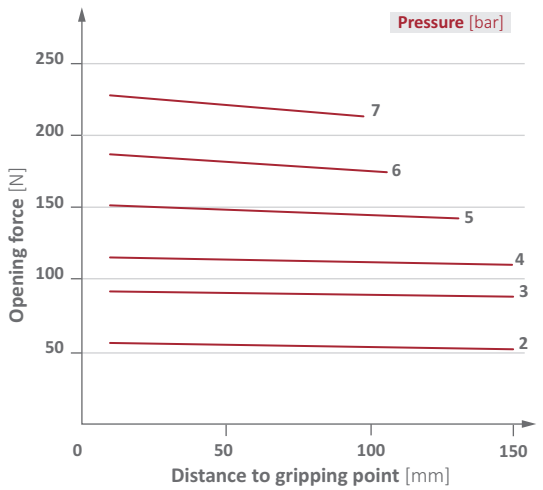
GR04.122-25 | GR04.122-25S

> Closing force as a function of distance to gripping point and feed pressure



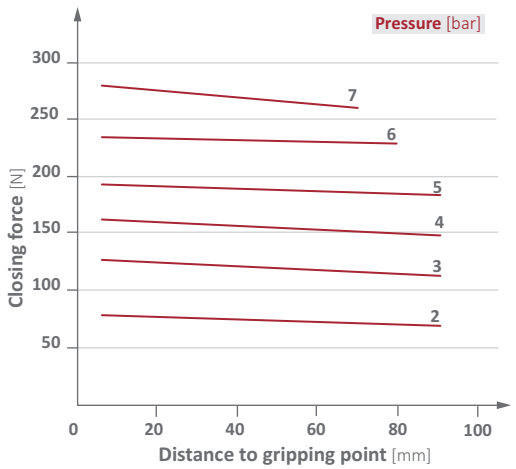
GR04.122-25 | GR04.122-25S

> Opening force as a function of distance to gripping point and feed pressure



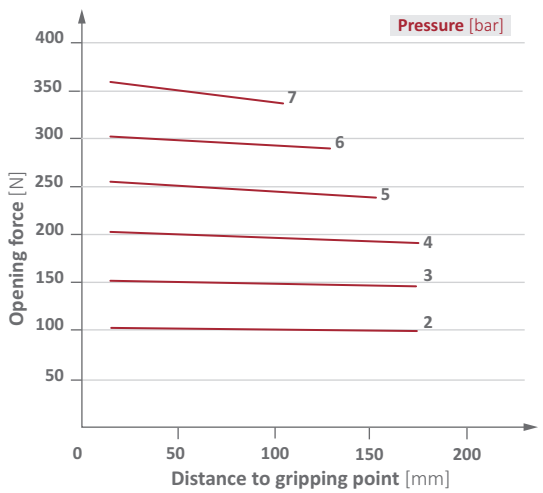
GR04.122-32 | GR04.122-32S

> Closing force as a function of distance to gripping point and feed pressure



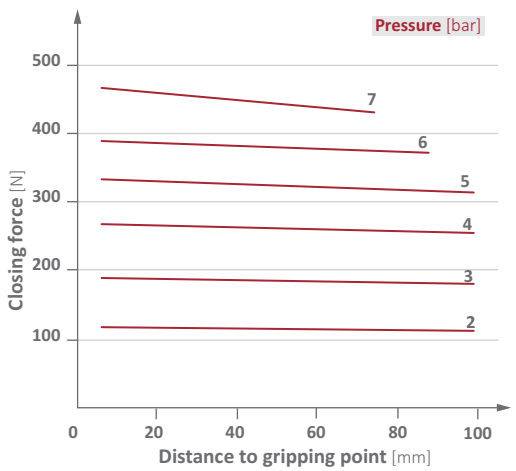
GR04.122-32 | GR04.122-32S

> Opening force as a function of distance to gripping point and feed pressure



GR04.122-40 | GR04.122-40S

> Closing force as a function of distance to gripping point and feed pressure



GR04.122-40 | GR04.122-40S

Base jaws for parallel grippers





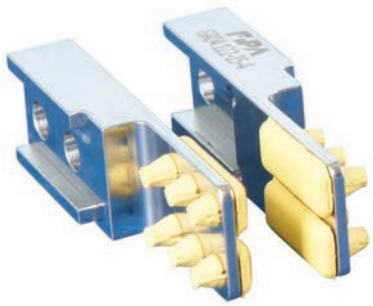
Product notes

> Base jaws aluminum (index -1) for customization
> Base jaws steel (index -4) with HNBR pads enable soft gripping
> Base jaws with index -4 come with HNBR pads
> Screws included in scope of delivery

Technical data

Item no.	Suitable for parallel grippers	Weight [g]	Replacement parts
GR04.122-10-1	GR04.122-10, GR04.122-10S	20	--
GR04.122-16-1	GR04.122-16, GR04.122-16S	24	--
GR04.122-20-1	GR04.122-20, GR04.122-20S	37	--
GR04.122-25-1	GR04.122-25, GR04.122-25S	53	--
GR04.122-32-1	GR04.122-32, GR04.122-32S	106	--
GR04.122-40-1	GR04.122-40, GR04.122-40S	156	--
GR04.122-10-4	GR04.122-10, GR04.122-10S	29	GR04.103-4HNBR
GR04.122-16-4	GR04.122-16, GR04.122-16S	49	GR04.103-4HNBR
GR04.122-20-4	GR04.122-20, GR04.122-20S	61	GR04.130C-4HNBR
GR04.122-25-4	GR04.122-25, GR04.122-25S	85	GR04.103-4HNBR
GR04.122-32-4	GR04.122-32, GR04.122-32S	136	GR04.103-4HNBR
GR04.122-40-4	GR04.122-40, GR04.122-40S	230	GR04.130C-4HNBR

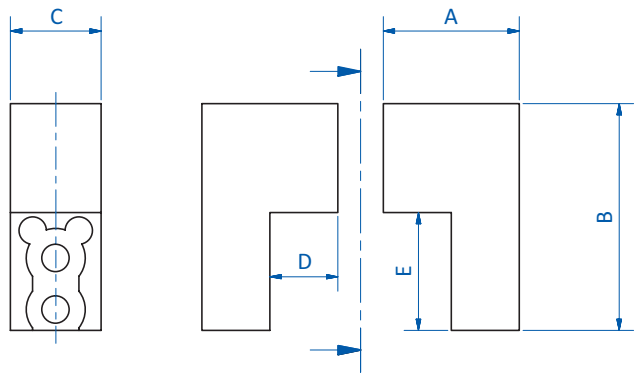
Base jaws with HNBR pads



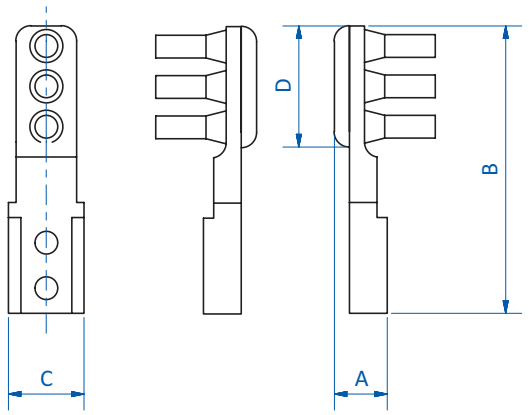




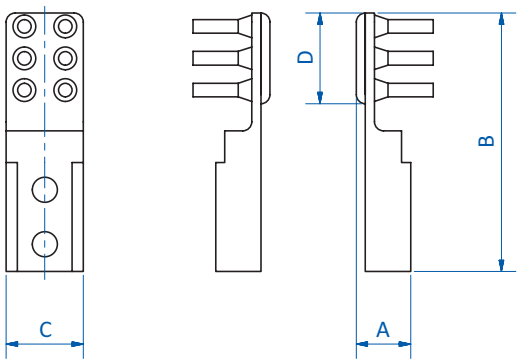
Dimensions



GR04.122-10-1 | GR04.122-16-1 | GR04.122-20-1 | GR04.122-25-1 | GR04.122-32-1 | GR04.122-40-1



GR04.122-10-4 | GR04.122-16-4 | GR04.122-20-4



GR04.122-25-4 | GR04.122-32-4 | GR04.122-40-4

Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]
GR04.122-10-1	15	25	10	7.5	13
GR04.122-16-1	17.9	28	13	10.4	16
GR04.122-20-1	21.5	33	15	14	21
GR04.122-25-1	25	38	17	17.5	26
GR04.122-32-1	36.4	42	20	22.9	30
GR04.122-40-1	40.4	49	23	26.9	37
GR04.122-10-4	7.5	45.2	10	20	--
GR04.122-16-4	9.5	57	13	20	--
GR04.122-20-4	10.5	57	15	24	--
GR04.122-25-4	12	57	17	20	--
GR04.122-32-4	15.2	57	20	20	--
GR04.122-40-4	17.3	64	24	24	--

2-finger parallel grippers – high gripping force



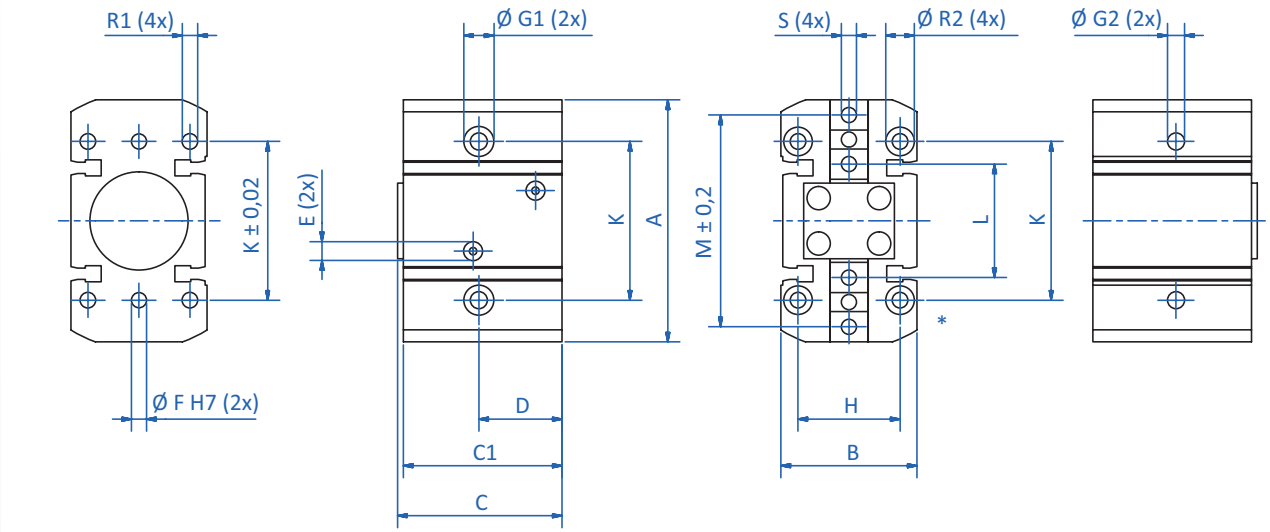
Product notes

> Grippers with high gripping force taking high bending moments
> Compact design
> Double-acting for inside/outside gripping and short duty cycles
> Body made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position
> Gripping force values are valid for a holding position L = 25 mm measured from top of gripper
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
- T-slot (straight) for sensors: GR04.203P, GR04.203N

Technical data

Item no.	GR04.600-12	GR04.600-16	GR04.600-20	GR04.600-26	GR04.600-32
Operating pressure [bar (psi)]	3 - 7 (43.5 - 101.5)	3 - 7 (43.5 - 101.5)	3 - 7 (43.5 - 101.5)	3 - 7 (43.5 - 101.5)	3 - 7 (43.5 - 101.5)
Piston diameter [mm]	12	16	20	26	32
Stroke per gripper jaw [mm]	6	8	10	13	16
Closing force at 6 bar (87 psi) [N]	240	320	550	750	1,200
Opening force at 6 bar (87 psi) [N]	280	370	600	830	1,300
Max. operating frequency [1/min]	180	180	180	180	180
Operating temperature [°C (°F)]	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)
Weight [g]	280	450	760	1,400	2,500
Suitable sensors	GR04.203N (p.404) GR04.203P (p.404)	GR04.203N (p.404) GR04.203P (p.404)	GR04.203N (p.404) GR04.203P (p.404)	GR04.203N (p.404) GR04.203P (p.404)	GR04.203N (p.404) GR04.203P (p.404)

Dimensions



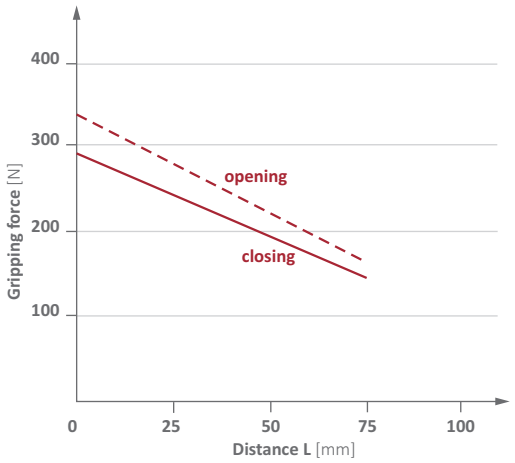
* = Gripper jaw closed

Item no.	GR04.600-12	GR04.600-16	GR04.600-20	GR04.600-26	GR04.600-32
A [mm]	64	80	100	125	160
B [mm]	36	42	50	60	72
C [mm]	43.8	53	61	70	84
C1 [mm]	42	51	59	68	82
D [mm]	22	23	20	36	34
E	M5	M5	Rc1/8	Rc1/8	Rc1/8
Ø F [mm]	4	4	5	6	6
Ø G1	7.5x13	9x16	11x19	15x14	15x15
Ø G2 [mm]	4	5.1	6.6	9	9
H [mm]	27	32	38	45	56
K [mm]	42	52	66	82	100
L	28 (min)	38 (min)	46 (min)	60 (min)	78 (min)
M [mm]	56	70	88	108	142
R1	M5	M5	M6	M8	M8
Ø R2	7.5x26	7.5x33	9.1x45	11x42	11x56
S	M4x8	M5x10	M6x12	M6x13	M8x17

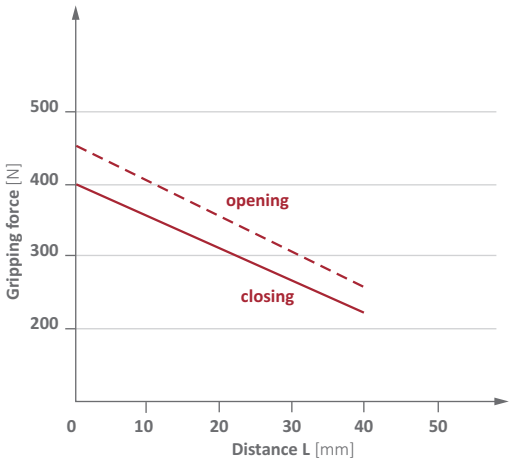
Continued on the next page

Diagrams

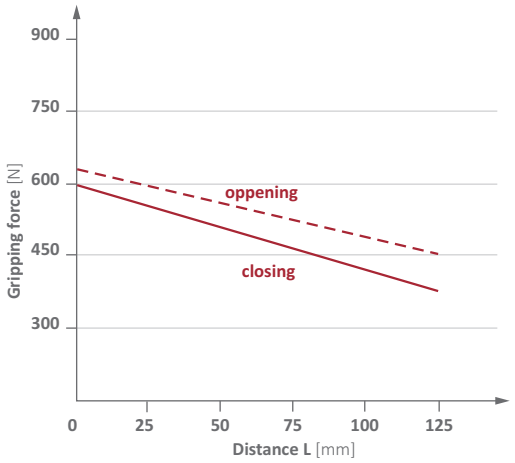
> Gripping force piston diameter 12 mm



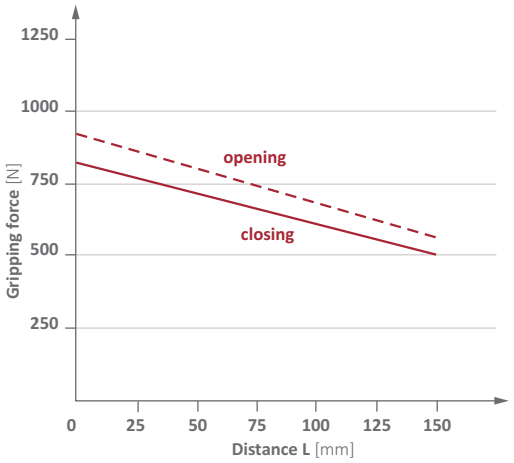
> Gripping force piston diameter 16 mm



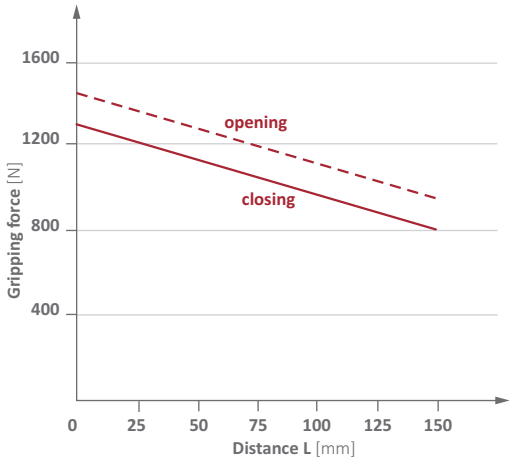
> Gripping force piston diameter 20 mm



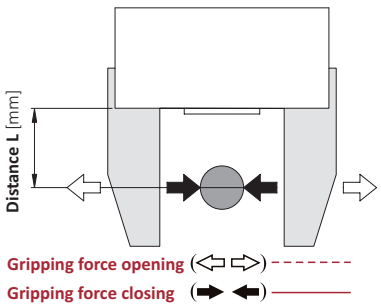
> Gripping force piston diameter 26 mm



> Gripping force piston diameter 32 mm



> Description of holding position L



Parallel grippers for large strokes – piston diameter 10 - 20 mm



Product notes

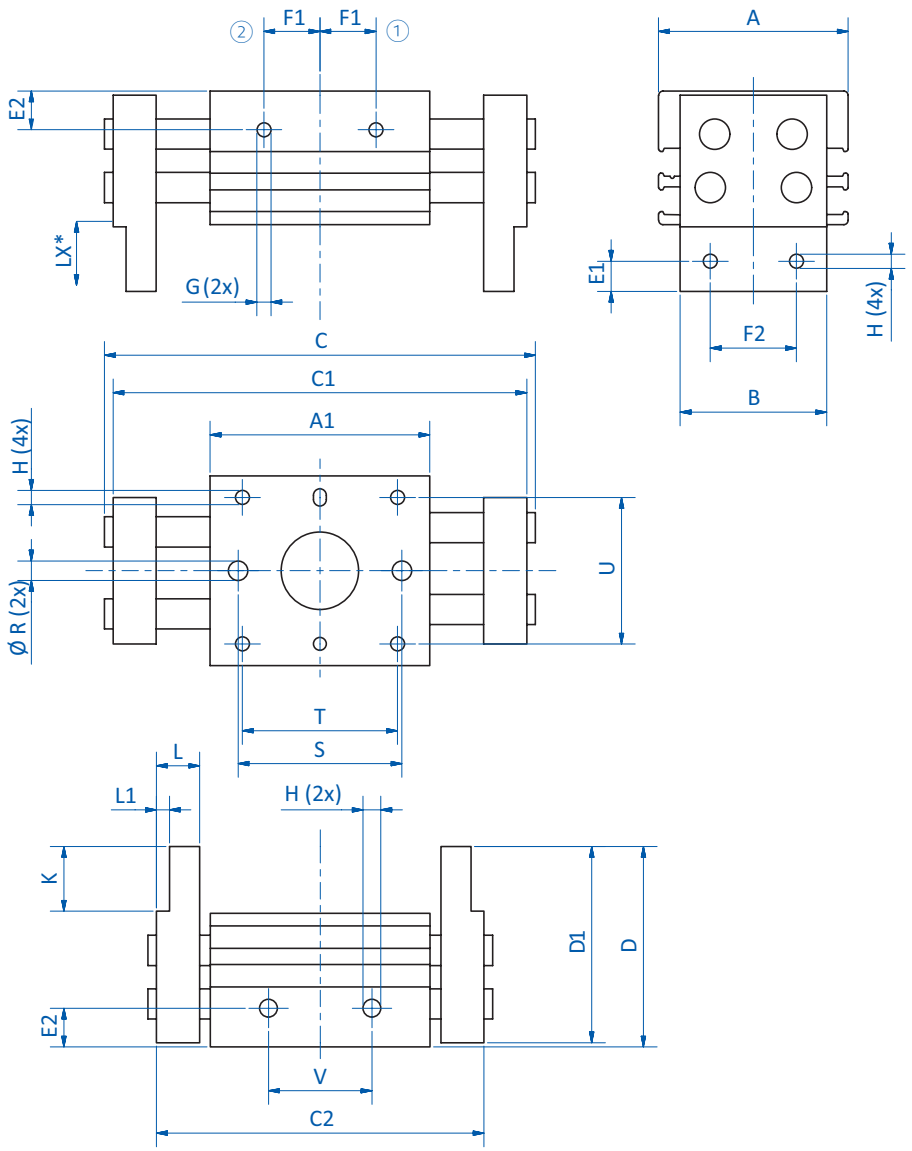
> Gripper for large strokes for handling large parts
> Double-acting for inside/outside gripping and short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position optionally available
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
- T-slot (straight) for sensors: GR04.199, GR04.199/NPN

Technical data

Item no.	GR04.510	GR04.510-1	GR04.510-2	GR04.516	GR04.516-1	GR04.516-2	GR04.520	GR04.520-1	GR04.520-2
Operating pressure [bar (psi)]	1.5 - 6 (21.8 - 87)	1.5 - 6 (21.8 - 87)	1.5 - 6 (21.8 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Piston diameter [mm]	10	10	10	16	16	16	20	20	20
Stroke per gripper jaw [mm]	10	20	30	15	30	40	20	40	50
Closing force at 6 bar (87 psi) [N]	22	22	22	60	60	60	100	100	100
Operating temperature [°C (°F)]	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)
Weight [g]	280	350	430	600	800	950	1,000	1,500	1,700
Suitable sensors	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)	GR04.199 (p.404) GR04.199/ NPN (p.404)

Continued on the next page

Dimensions



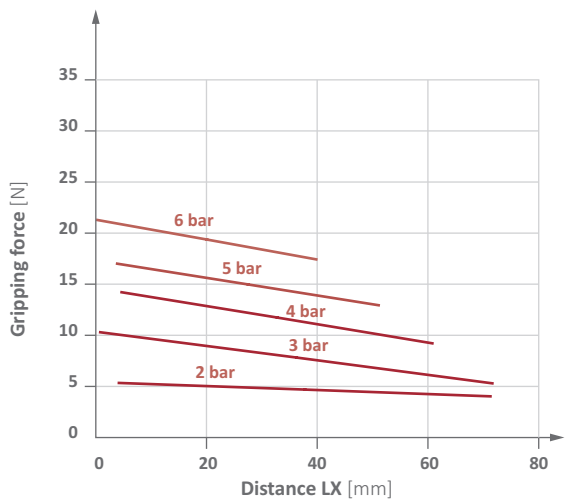
* = LX: Distance gripper jaws – workpiece ① = Compressed air supply (open) ② = Compressed air supply (close)

Item no.	GR04.510	GR04.510-1	GR04.510-2	GR04.516	GR04.516-1	GR04.516-2	GR04.520	GR04.520-1	GR04.520-2
A [mm]	44	44	44	55	55	55	65	65	65
A1 [mm]	51	67	85	60	90	110	71	113	133
B [mm]	35	35	35	44.8	44.8	44.8	54	54	54
C [mm]	101	142	180	130	200	240	159	259	300
C1 [mm]	97	138	176	126	196	236	156	256	297
C2 [mm]	74.5	96.5	114.5	92.5	134.5	154.5	116	176	199.5
D [mm]	46.5	46.5	46.5	59	59	59	70	70	70
D1 [mm]	46	46	46	58	58	58	69	69	69
E1 [mm]	7	7	7	8	8	8	10	10	10
E2 [mm]	9	9	9	10	10	10	11	11	11
F1 [mm]	12	19.5	28.5	14.1	29.4	39.4	16.9	34.4	50
F2 [mm]	20	20	20	25	25	25	30	30	30
G	M5	M5	M5	M5	M5	M5	M5	M5	M5

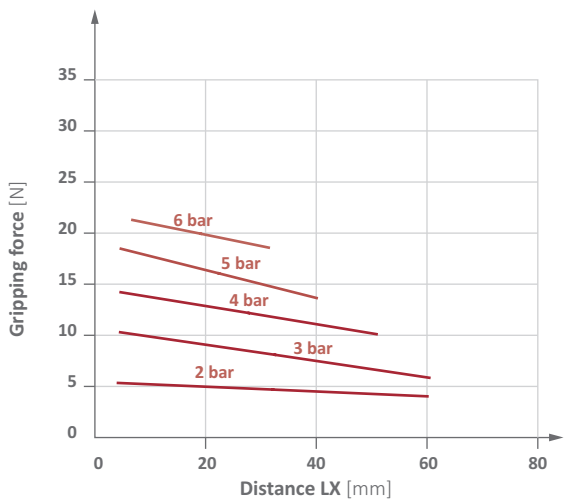
Item no.	GR04.510	GR04.510-1	GR04.510-2	GR04.516	GR04.516-1	GR04.516-2	GR04.520	GR04.520-1	GR04.520-2
H	M4	M4	M4	M5	M5	M5	M6	M6	M6
K [mm]	15	15	15	19	19	19	24	24	24
L [mm]	10	10	10	12.8	12.8	12.8	17	17	17
L1 [mm]	3	3	3	4	4	4	4.5	4.5	4.5
Ø R [mm]	4.5	4.5	4.5	5.5	5.5	5.5	6.6	6.6	6.6
S [mm]	38	54	72	40	70	90	54	96	116
T [mm]	36	52	70	46	75	95	58	100	120
U [mm]	34	34	34	43	43	43	52	52	52
V [mm]	26	42	60	28	58	78	38	80	100

Diagrams

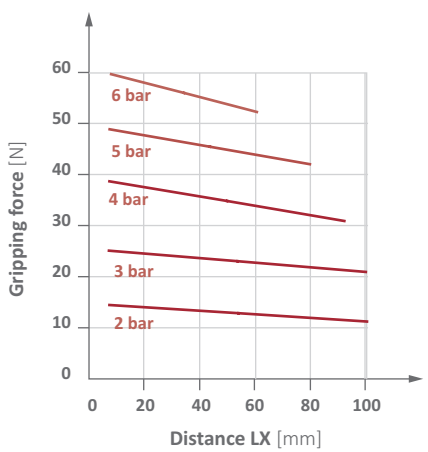
> Gripping force piston diameter 10 mm – standard version



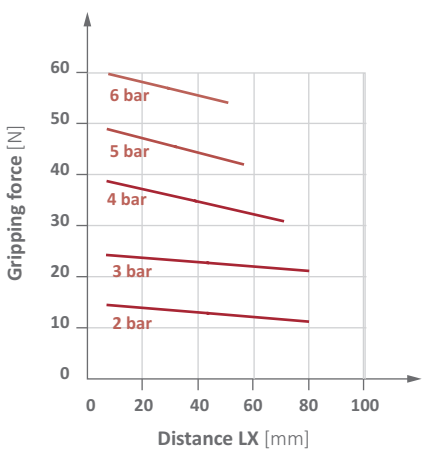
> Gripping force piston diameter 10 mm – versions 1 & 2



> Gripping force piston diameter 16 mm – standard version



> Gripping force piston diameter 16 mm – versions 1 & 2

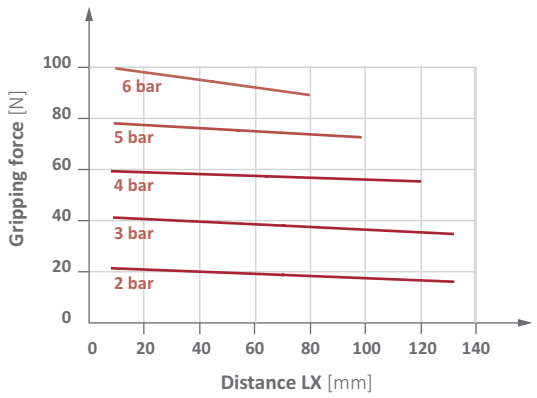


* = LX distance to gripping point

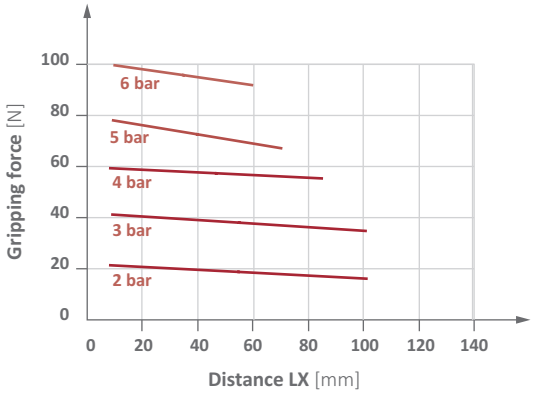
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Diagrams

> Gripping force piston diameter 20 mm – standard version

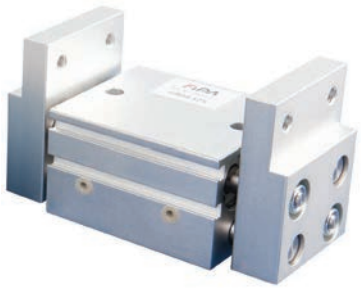


> Gripping force piston diameter 20 mm – versions 1 & 2



* = LX distance to gripping point

Parallel grippers for large strokes – piston diameter 25 - 32 mm



Product notes

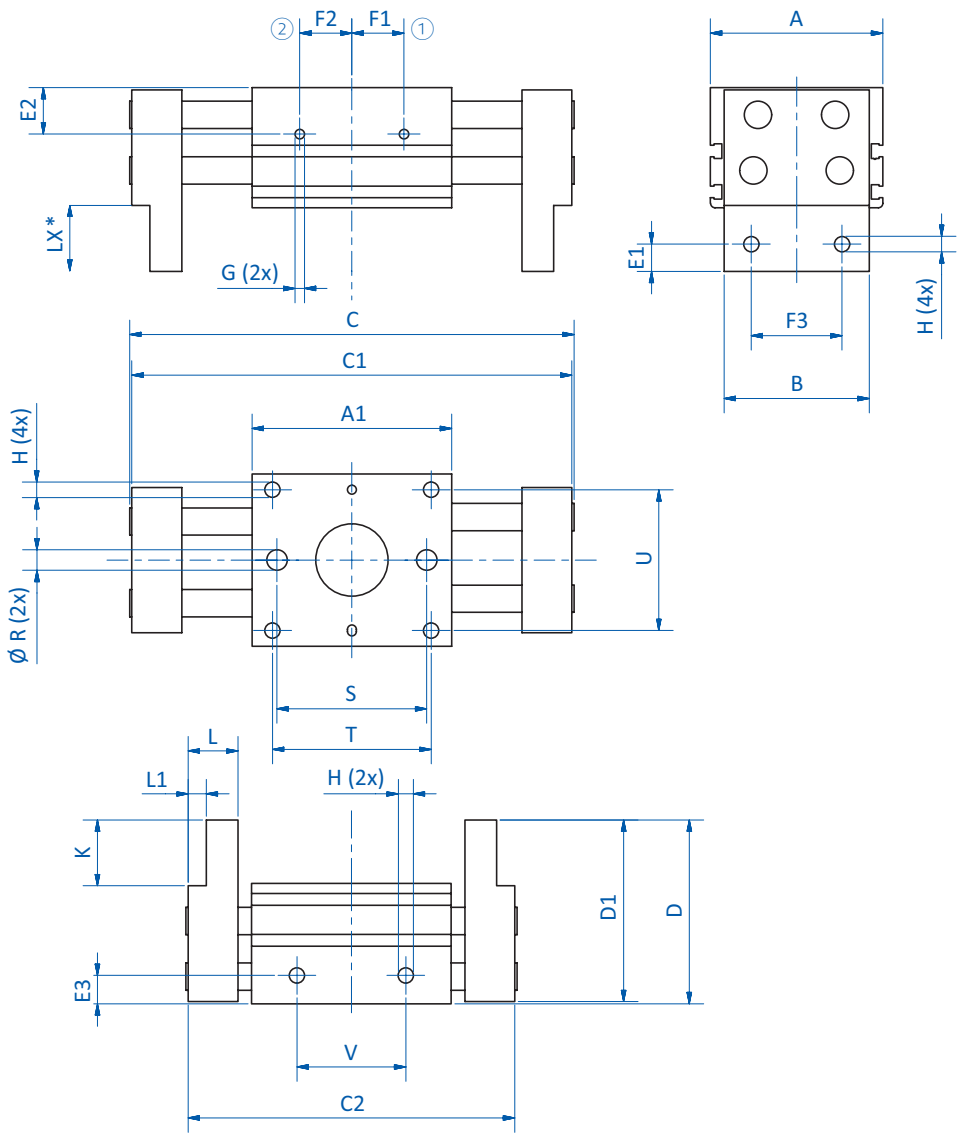
> Grippers for large strokes for handling large parts
> Double-acting for inside/outside gripping and short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position optionally available
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
- T-slot (straight) for sensors: GR04.199, GR04.199/NPN

Technical data

Item no.	GR04.525	GR04.525-1	GR04.525-2	GR04.532	GR04.532-1	GR04.532-2
Operating pressure [bar (psi)]	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Piston diameter [mm]	25	25	25	32	32	32
Stroke per gripper jaw [mm]	25	50	60	35	60	80
Closing force at 6 bar (87 psi) [N]	160	160	160	300	300	300
Operating temperature [°C (°F)]	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)
Weight [g]	1,700	2,500	2,800	2,900	3,800	4,700
Suitable sensors	GR04.199 (p.404) GR04.199/NPN (p.404)	GR04.199 (p.404) GR04.199/NPN (p.404)	GR04.199 (p.404) GR04.199/NPN (p.404)	GR04.199 (p.404) GR04.199/NPN (p.404)	GR04.199 (p.404) GR04.199/NPN (p.404)	GR04.199 (p.404) GR04.199/NPN (p.404)

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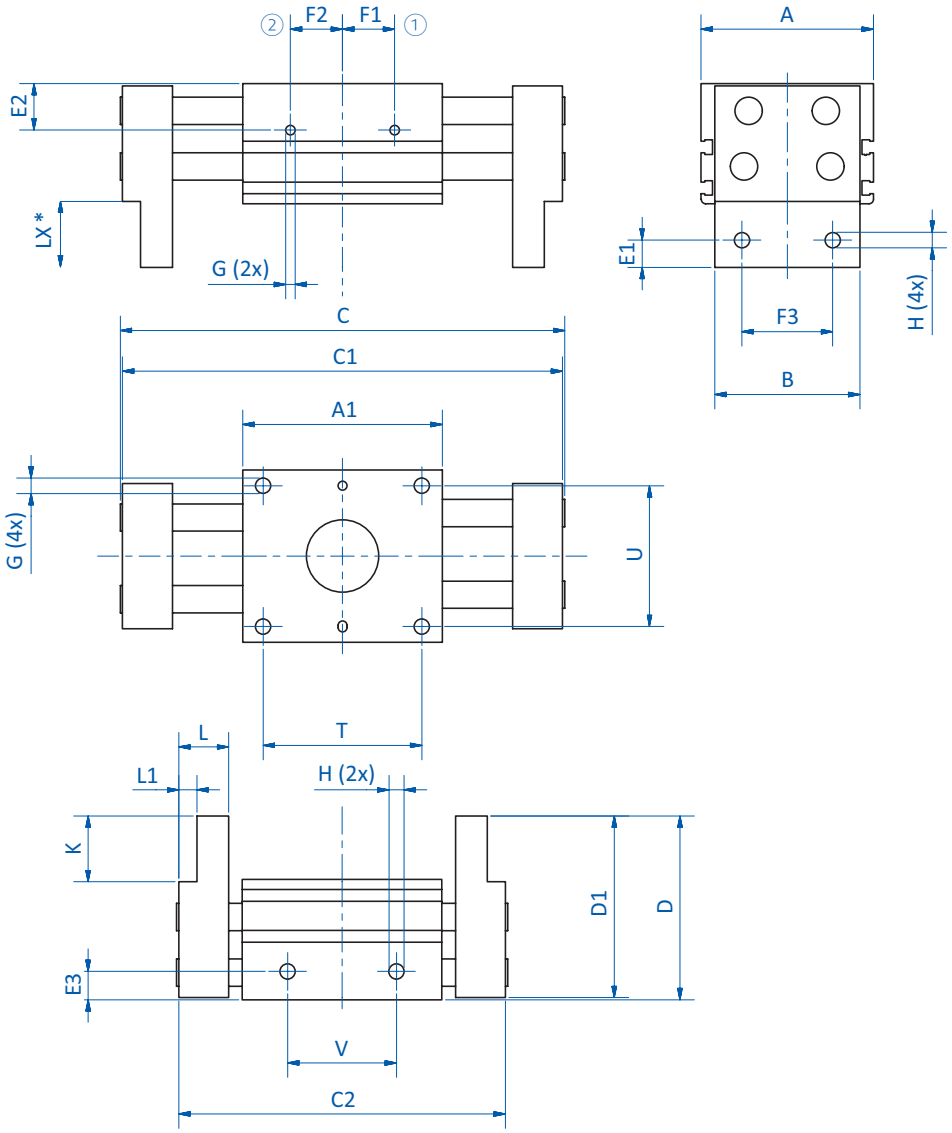
Dimensions



GR04.525 | GR04.525-1 | GR04.525-2

* = LX: Distance gripper jaws – workpiece ① = Compressed air supply (open) ② = Compressed air supply (close)

Dimensions



GR04.532 | GR04.532-1 | GR04.532-2

* = LX: Distance gripper jaws – workpiece ① = Compressed air supply (open) ② = Compressed air supply (close)

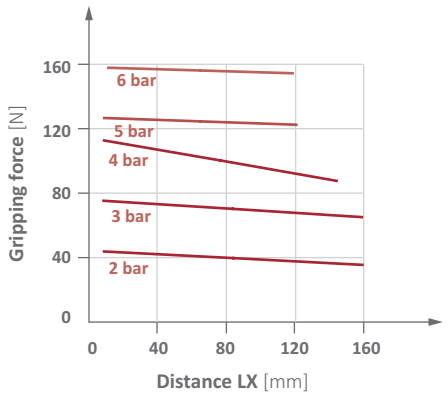
Item no.	GR04.525	GR04.525-1	GR04.525-2	GR04.532	GR04.532-1	GR04.532-2
A [mm]	76	76	76	82	82	82
A1 [mm]	88	142	160	110	158	202
B [mm]	64	64	64	70	70	70
C [mm]	196.5	328	366	272	370	454
C1 [mm]	195	326	364	268	366	450
C2 [mm]	144	226	244	198	246	290
D [mm]	81	81	81	100	100	100
D1 [mm]	80	80	80	99	99	99
E1 [mm]	12	12	12	15	15	15
E2 [mm]	20.5	20.5	20.5	22	22	22
E3 [mm]	12.5	12.5	12.5	16	16	16

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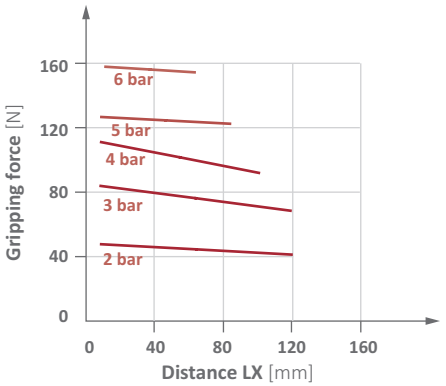
Item no.	GR04.525	GR04.525-1	GR04.525-2	GR04.532	GR04.532-1	GR04.532-2
F1 [mm]	22	50	59	30	54	76
F2 [mm]	22	23	24	30	54	76
F3 [mm]	40	40	40	50	50	50
G	M5	M5	M5	M8	M8	M8
H	M8	M8	M8	M10	M10	M10
K [mm]	29	29	29	32	32	32
L [mm]	22	22	22	24	24	24
L1 [mm]	8	8	8	9	9	9
Ø R [mm]	9	9	9	--	--	--
S [mm]	66	120	138	--	--	--
T [mm]	70	124	142	86	134	178
U [mm]	62	62	62	64	64	64
V [mm]	48	102	120	54	102	146

Diagrams

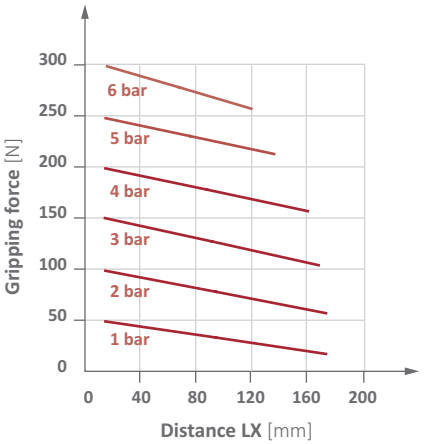
> Gripping force piston diameter 25 mm – standard version



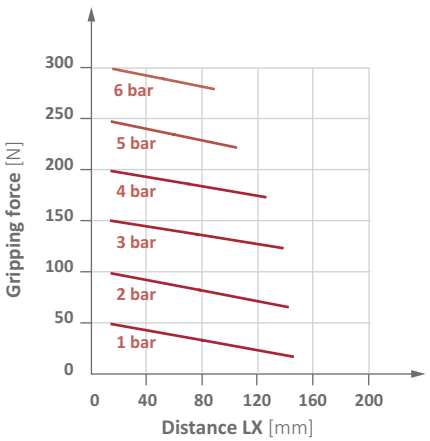
> Gripping force piston diameter 25 mm – versions 1 & 2



> Gripping force piston diameter 32 mm – standard version



> Gripping force piston diameter 32 mm – versions 1 & 2



* = LX distance to gripping point

3-finger grippers





Product notes

> Grippers with high gripping force
> Compact design
> Double-acting for inside/outside gripping and short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position optionally available
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
- T-slot (straight) for sensors: GR04.199, GR04.199/NPN

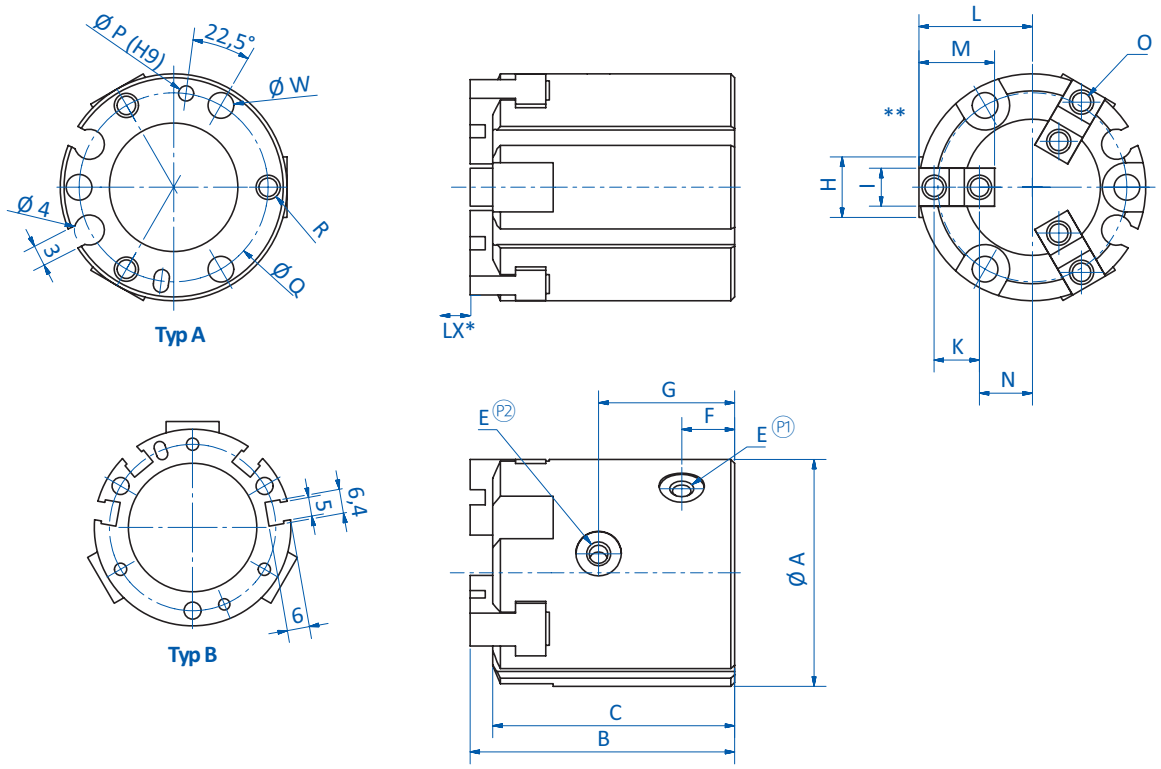
Calculation of the inner gripping diameter:
> Min.: dimensions W closed x 2
> Max.: dimensions W opened x 2

Technical data

Item no.	GR04.125-16	GR04.125-25	GR04.125-32	GR04.125-40	GR04.125-50	GR04.125-60	GR04.125-80
Operating pressure [bar (psi)]	2 - 6 (29 - 87)	2 - 6 (29 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Piston diameter [mm]	16	25	32	40	50	63	80
Stroke per gripper jaw [mm]	2	3	4	5	6	8	10
Closing force at 5 bar (72,5 psi) [N]	14	42	74	118	187	335	500
Opening force at 5 bar (72,5 psi) [N]	16	47	82	130	204	359	525
Operating frequency [Hz]	120	120	60	60	60	60	30
Operating temperature [°C (°F)]	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)
Weight [g]	62	139	240	354	542	1,000	1,850
Accessories	Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Mounting bracket: GR06.125-16 (p.241)	Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Mounting bracket: GR06.125-25 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-32 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-40 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-50 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-60 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-80 (p.241)

Continued on the next page

Dimensions

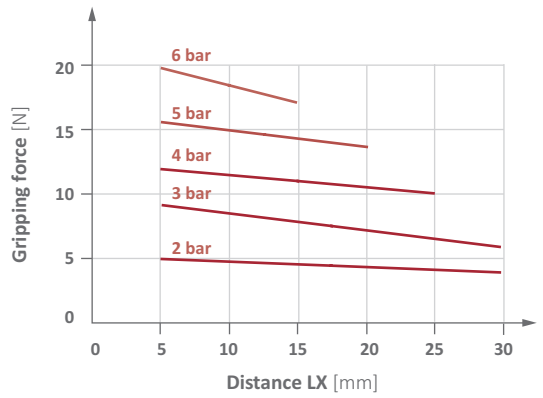


* = LX: Distance between the gripper jaw and the gripper (see gripper force diagrams) P1 = Compressed air supply (open) P2 = Compressed air supply (close) ** = Gripper jaw closed

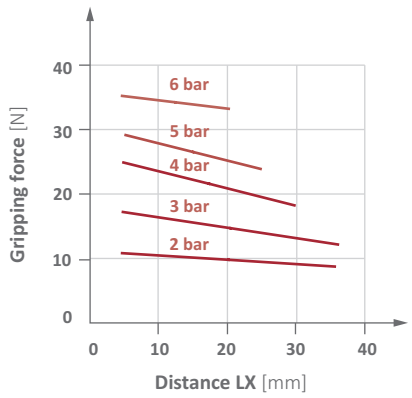
Item no.	GR04.125-16	GR04.125-25	GR04.125-32	GR04.125-40	GR04.125-50	GR04.125-60	GR04.125-80
Ø A [mm]	30	42	52	62	70	86	106
B [mm]	35	40	44	47	55	66	82
C [mm]	32	37	41	44	52	62	77
E	M3x0.5x11	M5x0.8x15	M5x0,8	M5x0,8	M5x0,8	M5x0,8	G1/8
F [mm]	7	7	8	8	9	12	13.5
G [mm]	18	22	24	26	29	34	40.5
H [mm]	8	12	14	16	18	24	28
I [mm]	5	6	8	8	10	12	14
K [mm]	6	8	11	12	14	17	20
L open [mm]	17	24	32	35	41	51	63.3
L closed [mm]	15	21	28	31	35	43	53.3
M [mm]	10	14	20	21	24	28	32
N open [mm]	9	13	16.5	19	21	28.5	37.3
N closed [mm]	7	9	12.5	14	15	20.5	27.3
O	M3x0.5x5	M3x0.5x5	M4x0.7x8	M4x0.7x8	M5x0.8x10	M5x0.8x10	M6x1x12
Ø P	2x2	3x3	3x3	4x4	4x4	5x5	5x5
Ø Q [mm]	25	34	44	53	62	76	95
R	M3x0.5x4	M4x0.5x7	M4x0.7x6	M5x0.8x0.7	M5x0.8x10	M6x1x9	M6x1x12
Ø W [mm]	3.4	4.5	4.5	5.5	5.5	6.5	6.5
Model	A	A	B	B	B	B	B

Diagrams

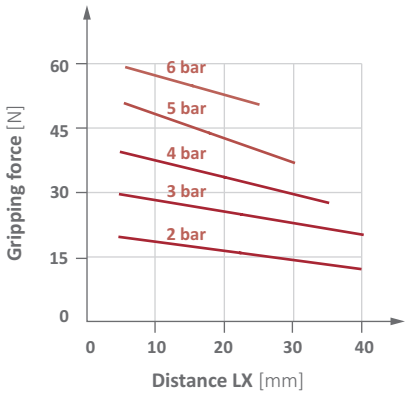
> Gripping force piston diameter 16 mm



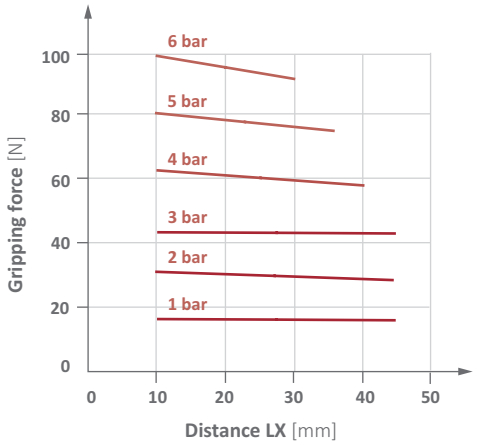
> Gripping force piston diameter 20 mm



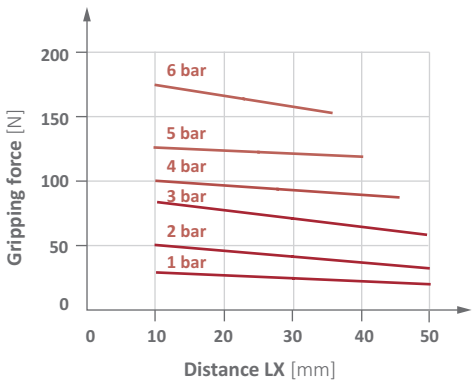
> Gripping force piston diameter 25 mm



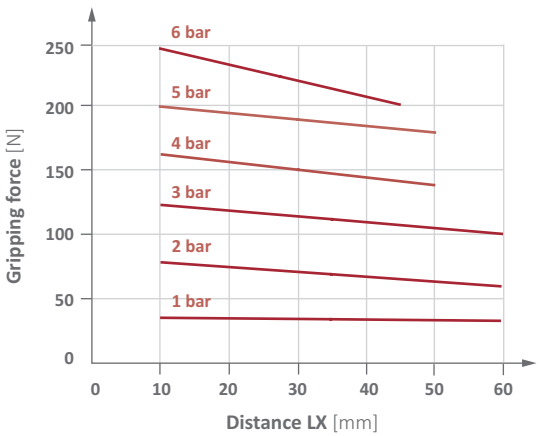
> Gripping force piston diameter 32 mm



> Gripping force piston diameter 40 mm



> Gripping force piston diameter 50 mm



* = LX distance to gripping point

3-finger grippers for large strokes



Product notes

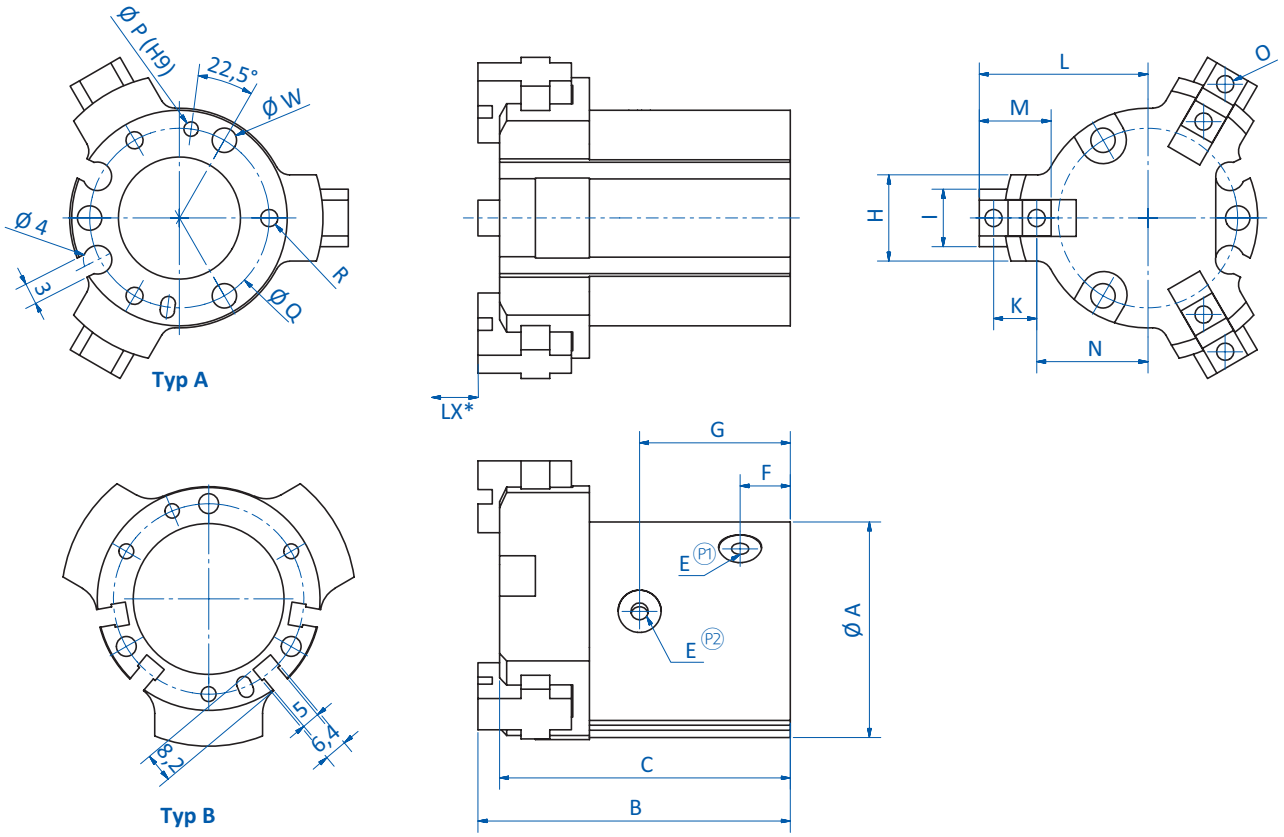
> Grippers with stroke more than double of GR04.125 at same gripping force
> Compact and flat design
> Double-acting for inside/outside gripping and short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position optionally available
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N

Calculation of the inner gripping diameter:
> Min.: dimensions W closed x 2
> Max.: dimensions W opened x 2

Technical data

Item no.	GR04.125-16L	GR04.125-25L	GR04.125-32L	GR04.125-40L	GR04.125-50L
Operating pressure [bar (psi)]	2 - 6 (29 - 87)	2 - 6 (29 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Piston diameter [mm]	16	25	32	40	50
Stroke per gripper jaw [mm]	5	6	8	10	14
Closing force at 5 bar (72,5 psi) [N]	14	42	74	118	187
Opening force at 5 bar (72,5 psi) [N]	16	47	82	130	204
Operating frequency [Hz]	120	120	60	60	60
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	100	190	373	600	930
Accessories	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Mounting bracket: GR06.125-16 (p.241)	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Mounting bracket: GR06.125-25 (p.241)	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Mounting bracket: GR06.125-32 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-40 (p.241)	Sensor: GR04.199 (p.404) Sensor: GR04.199/NPN (p.404) Mounting bracket: GR06.125-50 (p.241)

Dimensions



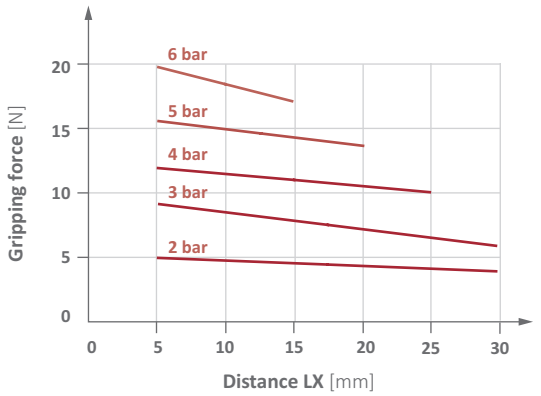
* = LX: Distance between the gripper jaw and the gripper (see gripper force diagrams) (P1) = Compressed air supply (open) (P2) = Compressed air supply (close)

Item no.	GR04.125-16L	GR04.125-25L	GR04.125-32L	GR04.125-40L	GR04.125-50L
Ø A [mm]	30	42	52	62	70
B [mm]	43.5	49	58	64	77.5
C [mm]	40.5	46	55	61	74.5
E	M3	M5	M5	M5	M5
F [mm]	7	7	8	9	9
G [mm]	21	23.5	28	31	38
H [mm]	12	19	24	30	32
I [mm]	8	13	16	18	20
K [mm]	6	8	11	12	14
L open [mm]	23.5	30	42	47.5	60
L closed [mm]	18.5	24	34	37.5	46
M [mm]	10	14	20	21	24
N open [mm]	15.5	19	26.5	31	41
N closed [mm]	10.5	13	18.5	21	27
O	M3/5deep	M3/6deep	M4/8deep	M4/8deep	M5/10deep
Ø P	2x2	3x3	3x3	4x4	4x4
Ø Q [mm]	25	34	44	53	62
R	M3x0.5x1.5	M4x0.7x1.5	M4x0.7x6	M5x0.8x10	M5x0.8x10
Ø W [mm]	3.4	4.5	4.5	5.5	5.5
Model	A	A	B	B	B

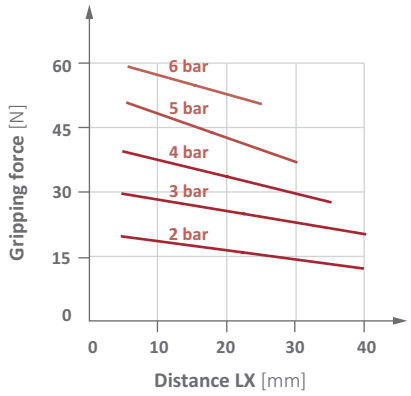
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Diagrams

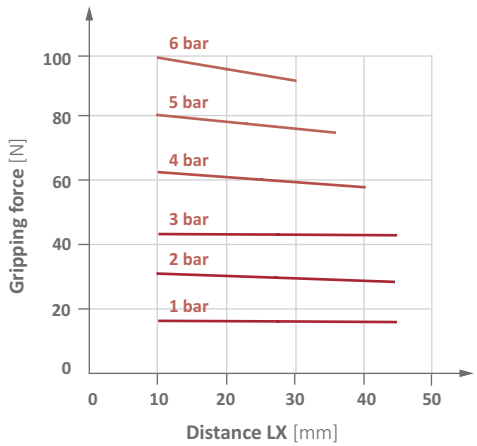
> Gripping force piston diameter 16 mm



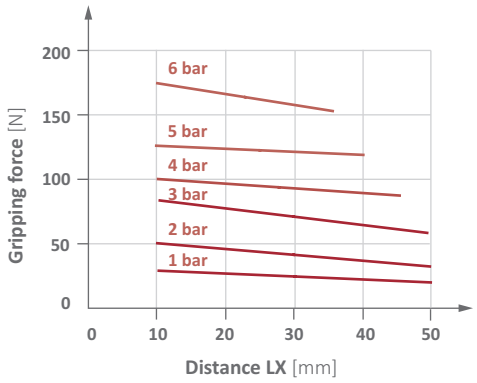
> Gripping force piston diameter 25 mm



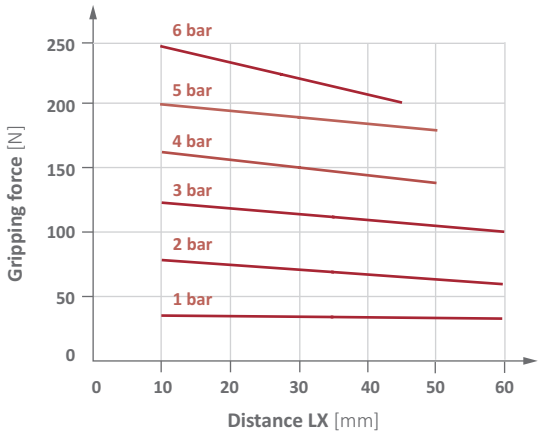
> Gripping force piston diameter 32 mm



> Gripping force piston diameter 40 mm



> Gripping force piston diameter 50 mm



* = LX distance to gripping point

2-finger angular grippers 40°



Product notes

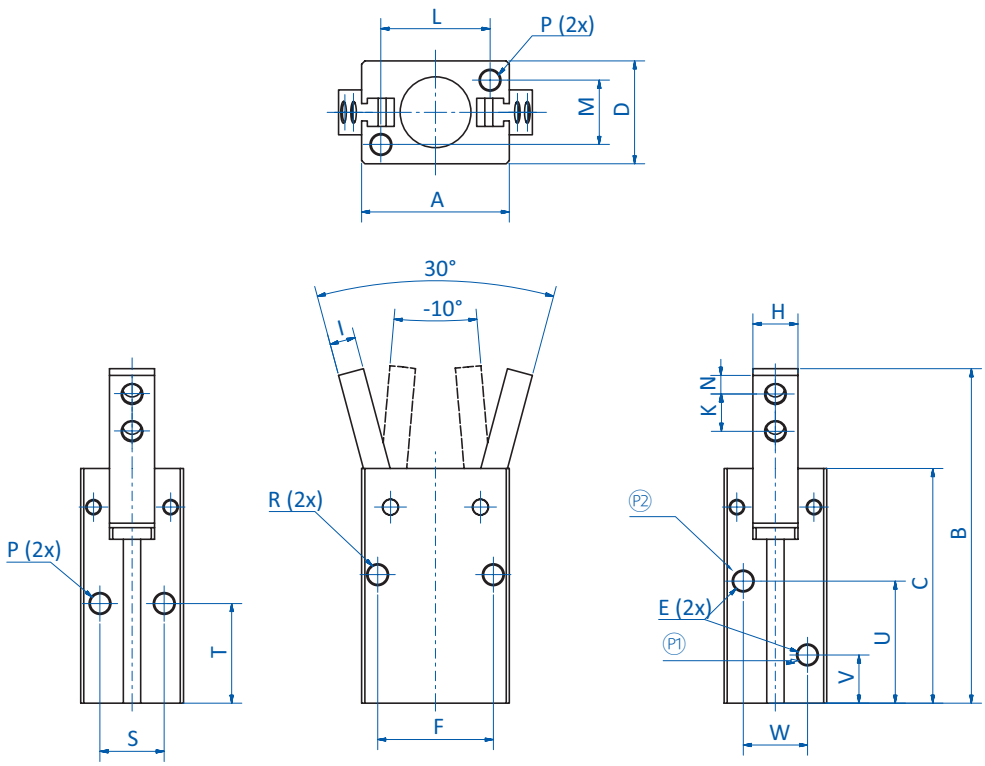
> Grippers for undercuts, clamping, mounting and pick & place applications
> Double-acting: Inside/outside gripping and short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Sensors for monitoring gripper action via piston position optionally available
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air
> PNP and NPN sensors:
- T-slot (straight) for sensors: GR04.203P, GR04.203N

Technical data

Item no.	GR04.123-10	GR04.123-16	GR04.123-20	GR04.123-25	GR04.123-32
Pressure range [bar (psi)]	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)
Piston diameter [mm]	10	16	20	25	32
Angle stroke open [°]	-10	-10	-10	-10	-10
Angle stroke closed [°]	30	30	30	30	30
Max. closing torque at 6 bar [Ncm]	11	47	100	199	358
Max. opening torque at 6 bar [Ncm]	15	65	135	252	476
Max. operating frequency [1/min]	80	80	80	80	80
Operating temperature [°C (°F)]	0 - 60 (32 - 140)	0 - 60 (32 - 140)	0 - 60 (32 - 140)	0 - 60 (32 - 140)	0 - 60 (32 - 140)
Weight [g]	100	120	200	330	560
Accessories	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Mounting bracket: GR06.050 (p.240) Base jaw: GR04.123-10-1 (p.236)	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Mounting bracket: GR06.051 (p.240) Base jaw: GR04.123-16-1 (p.236)	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Mounting bracket: GR06.052 (p.240) Base jaw: GR04.123-20-1 (p.236)	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Mounting bracket: GR06.053 (p.240) Base jaw: GR04.123-25-1 (p.236)	Sensor: GR04.203N (p.404) Sensor: GR04.203P (p.404) Connector cable: 20.503 (p.410) Mounting bracket: GR06.054 (p.240) Base jaw: GR04.123-32-1 (p.236)

Continued on the next page

Dimensions

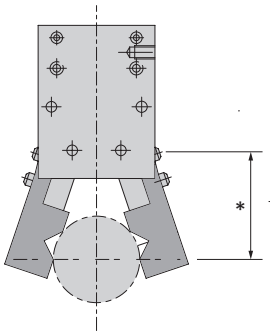


S1 = Sensor slot for GR04.203 P1 = Compressed air supply (open) P2 = Compressed air supply (close)

Item no.	GR04.123-10	GR04.123-16	GR04.123-20	GR04.123-25	GR04.123-32
A [mm]	23	34	45	52	60
B [mm]	52	64	75	89	100
C [mm]	36.5	45.5	53	61	68
D [mm]	16	22	26	32	40
E	M3	M5	M5	M5	M5
F [mm]	18	24	30	36	44
H [mm]	7	9	12	14	18
I [mm]	4	6	7	9	10
K [mm]	6	8	10	12	14
L [mm]	17	26	35	40	46
M [mm]	10	14	16	20	26
N [mm]	3	3	4	5	6
P	M3	M4	M5	M6	M6
R	M3	M4	M5	M6	M6
S [mm]	10	14	16	20	26
T [mm]	15.5	21	22	24.5	30
U [mm]	19	25.5	28	31	33.5
V [mm]	7.5	7.5	8	9	10
W [mm]	10	12	13	18	24

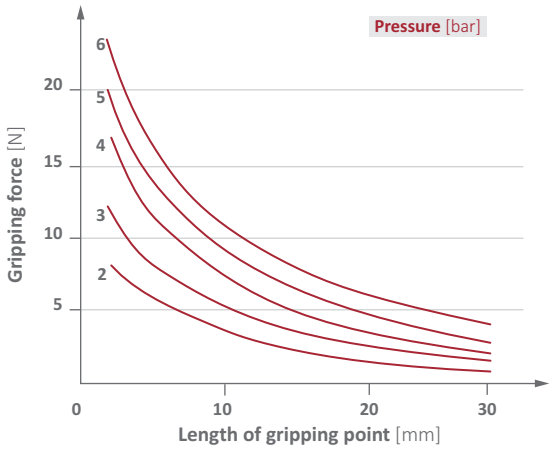
Diagrams

> Length of gripping point (* see diagrams)



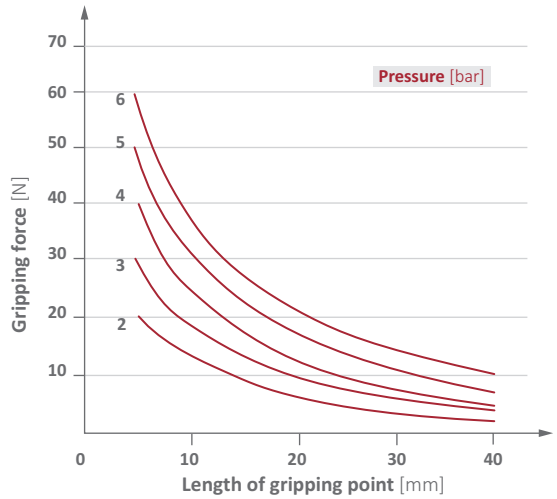
GR04.123-10 | GR04.123-16 | GR04.123-20 | GR04.123-25 | GR04.123-32

> Gripping force as a function of length of gripping point and feed pressure



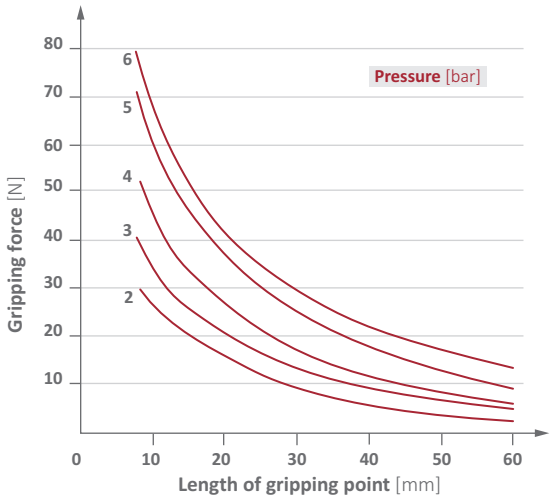
GR04.123-10

> Gripping force as a function of length of gripping point and feed pressure



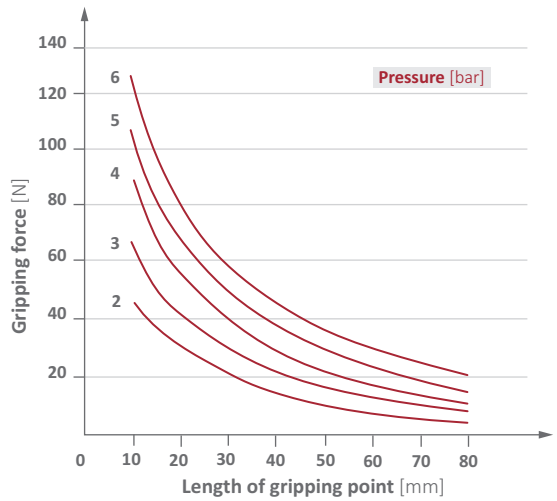
GR04.123-16

> Gripping force as a function of length of gripping point and feed pressure



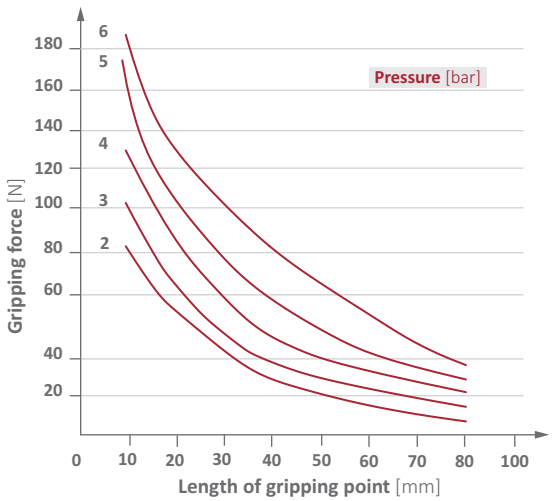
GR04.123-20

> Gripping force as a function of length of gripping point and feed pressure



GR04.123-25

> Gripping force as a function of length of gripping point and feed pressure



GR04.123-32

Base jaws for angular grippers



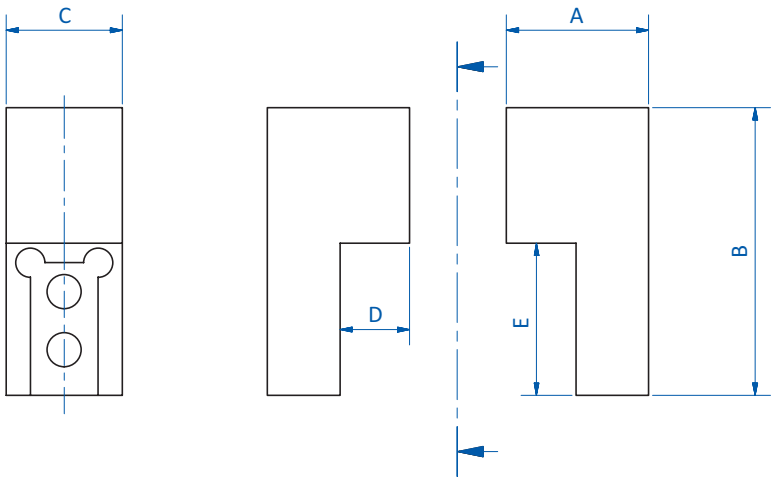
Product notes

> Aluminum blanks for customized jaws
> Screws included in scope of delivery

Technical data

Item no.	Suitable for angular grippers	Weight [g]
GR04.123-10-1	GR04.123-10	18
GR04.123-16-1	GR04.123-16	30
GR04.123-20-1	GR04.123-20	38
GR04.123-25-1	GR04.123-25	56
GR04.123-32-1	GR04.123-32	150

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
GR04.123-10-1	14.7	29.7	12	7.2	15.7
GR04.123-16-1	20.5	31.5	14	13	17.5
GR04.123-20-1	24	36	17	16.5	21
GR04.123-25-1	29.8	40	19	20.8	26
GR04.123-32-1	33	44	23	24	29

2-finger angular gripper 180° – self-centering





Product notes

> High gripping force with high gripping precision
> Gripping of objects located behind large undercuts; clamping and assembly of parts
> Suitable for dusty environments due to dust protection seals
> Double-acting, short duty cycles
> Body and jaws made of high-strength aluminum alloy
> Versatile use with customized gripper jaws
> Optional parts monitoring by detection of piston position
> Principle of operation: double-acting
> Medium: filtered and oiled/unoiled air

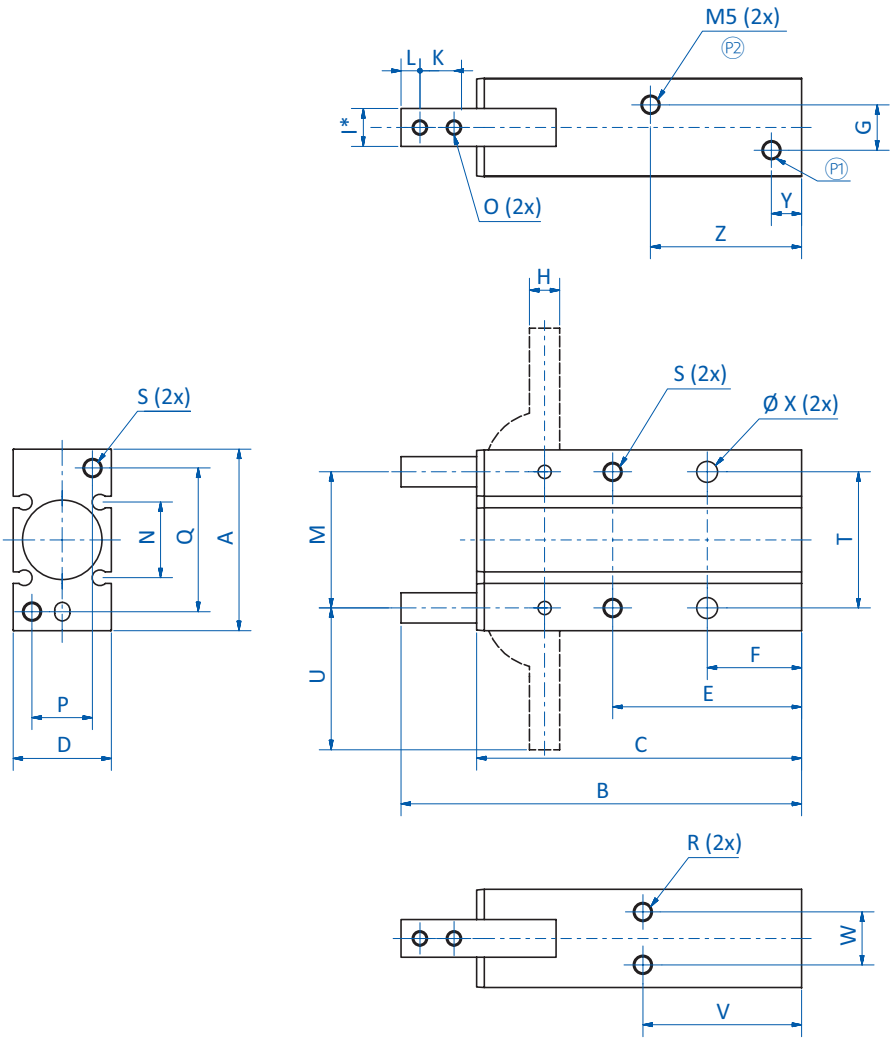
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N
> Extension cable for sensors:
  - 20.503: 3-pole M8, length 2,500 mm, open wire
  - 20.570: 3-pole M8, length 1,500 mm, end with plug 3-pole M8

Technical data

Item no.	GR04.121-10	GR04.121-16	GR04.121-20	GR04.121-25
Pressure range [bar (psi)]	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Effective gripping torque [Nm]	0.16	0.54	1.1	2.28
Piston diameter [mm]	10	16	20	25
Angle stroke open [°]	180 - 182	180 - 182	180 - 182	180 - 182
Angle stroke closed [°]	-3	-3	-3	-3
Repeat accuracy [mm]	+/- 0.2	+/- 0.2	+/- 0.2	+/- 0.2
Max. operating frequency [1/min]	60	60	60	60
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	80	150	320	600
Accessories	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.570 (p.410)	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.570 (p.410)	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.570 (p.410)	Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404) Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Connector cable: 20.503 (p.410) Connector cable: 20.570 (p.410)

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Dimensions



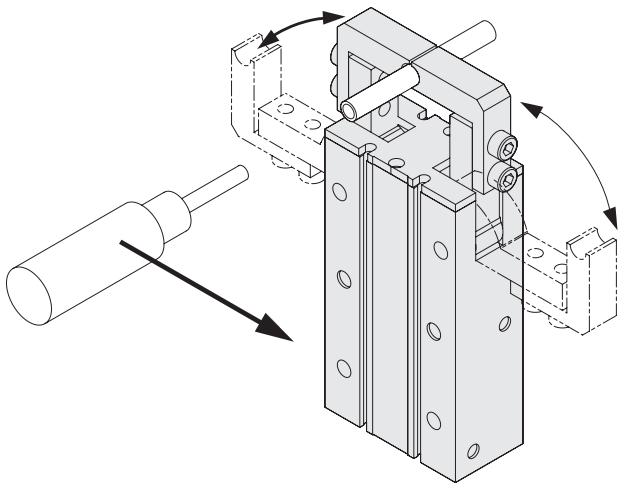
* = Tolerance: -0.005 mm to -0.025 mm P1 = Compressed air supply (open) P2 = Compressed air supply (close)

Item no.	GR04.121-10	GR04.121-16	GR04.121-20	GR04.121-25
A [mm]	30	38	48	58
B [mm]	71	84	106	131
C [mm]	58	69	86	107
D [mm]	15	20	26	30
E [mm]	35	41	50	60
F [mm]	18	20	25	30
G [mm]	3	8	12	14
H [mm]	4	5	8	10
I [mm]	6	8	10	12
K [mm]	6	7	9	12
L [mm]	3	4	5	6
M [mm]	22	28	36	45
N [mm]	13	18	20	24
O	M3	M3	M4	M5
P [mm]	9	12	16	18
Q [mm]	24	30	38	46

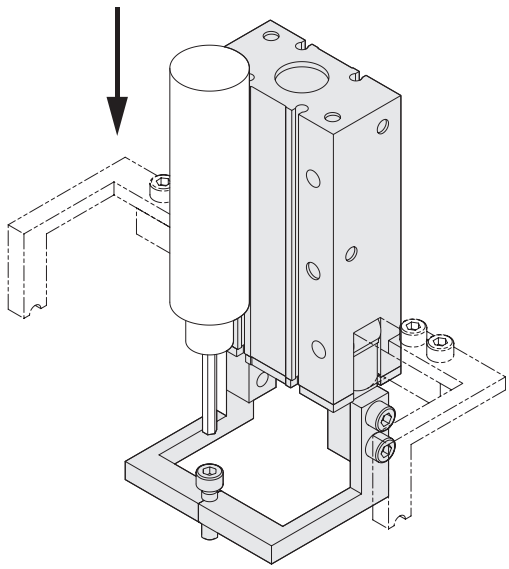
Item no.	GR04.121-10	GR04.121-16	GR04.121-20	GR04.121-25
R	M3x4	M4x5	M5x8	M6x10
S	M3x6	M4x8	M5x10	M6x12
T [mm]	24	30	36	42
U [mm]	23.5	28.5	37	45
V [mm]	30	33	42	50
W [mm]	9	12	14	16
Ø X [mm]	3.4	4.5	5.5	6.6
Y [mm]	7	7	8	8
Z [mm]	30	32	40	50

Application examples

> Clamping

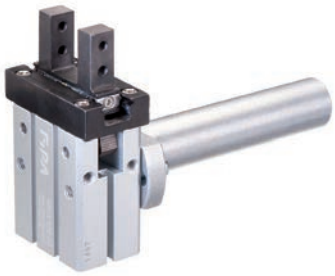


> Assembly



Mounting brackets for parallel and angular grippers





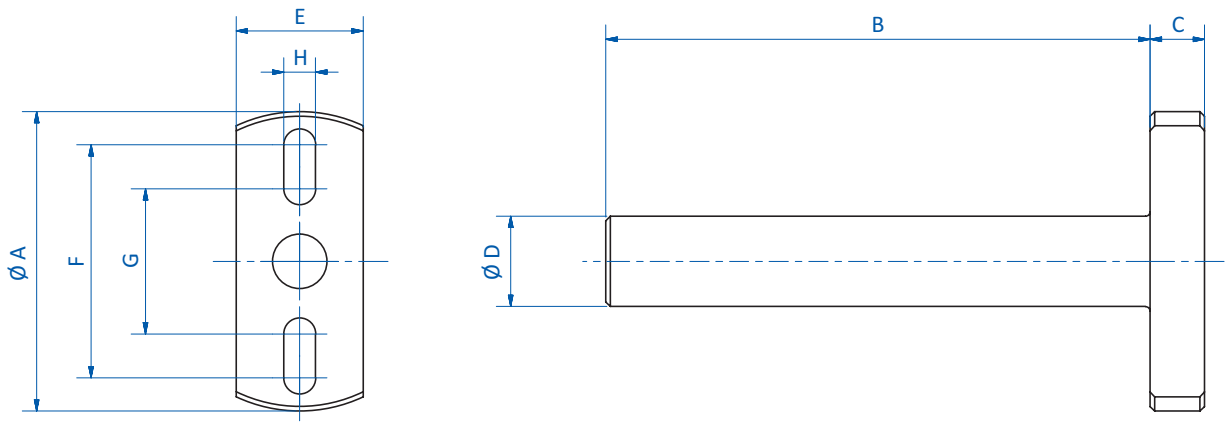
Product notes

> Brackets for mounting parallel or angular grippers to extrusions
> Compatible with many brands of grippers due to slotted mounting holes

Technical data

Item no.	Suitable for	Weight [g]
GR06.050	GR04.122-10, GR04.123-10	14
GR06.051	GR04.122-16, GR04.123-16	16
GR06.052	GR04.122-20, GR04.123-20	52
GR06.053	GR04.122-25, GR04.123-25	56
GR06.054	GR04.122-32, GR04.123-32	110
GR06.055	GR04.122-32	152

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
GR06.050	33	60	6	10	14	25.7	16	3.5
GR06.051	39	60	6	14	18	32.5	22	4.5
GR06.052	49	90	8	20	24	40	30	5.5
GR06.053	59	90	8	20	24	50	32	6.5
GR06.054	64	120	8	30	32	53	44	6.5
GR06.055	79	120	10	30	40	64.5	56	8.5

Mounting brackets for 3-finger grippers





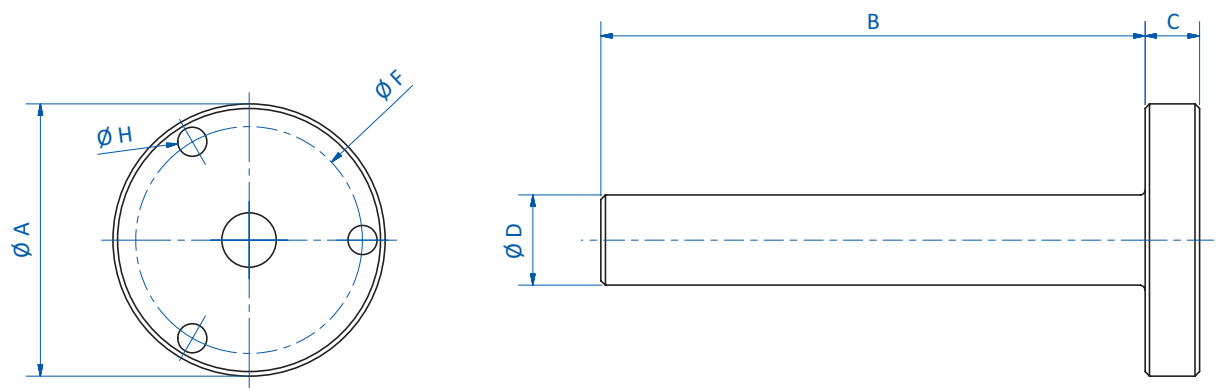
Product notes

> Brackets for mounting 3-finger parallel grippers to extrusions

Technical data

Item no.	Suitable for	Weight [g]
GR06.125-16	GR04.125-16L	18
GR06.125-25	GR04.125-25L	34
GR06.125-32	GR04.125-32L	74
GR06.125-40	GR04.125-40L	102
GR06.125-50	GR04.125-50L	232
GR06.125-60	GR04.125-60L	216
GR06.125-80	GR04.125-80L	388

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	Ø D [mm]	Ø F [mm]	Ø H [mm]
GR06.125-16	30	60	6	10	25	3.2
GR06.125-25	42	90	6	14	34	4.2
GR06.125-32	52	90	8	20	44	4.2
GR06.125-40	62	120	8	20	53	5.3
GR06.125-50	70	150	8	30	62	5.3
GR06.125-60	86	150	8	30	76	6.3
GR06.125-80	106	150	10	30	95	6.3

ID grippers for diameters from 3 - 10 mm





FOOD GRADE GRIPPER HEADS

Product notes

> Gripping within small recesses
> Expansion grippers for small or lightweight parts
> Compact and lightweight design
> Food grade gripper heads made of polyamide (FDA approved material)
> Body made of high-strength, anodized aluminum
> Gripper heads can be easily exchanged
> Optional monitoring of piston position
> ID grippers from Series GR04.F02-65 come with O-ring (food grade silicone) for improved holding force
> PNP and NPN sensors:
- C-slot (straight): GR04.198, GR04.198NPN

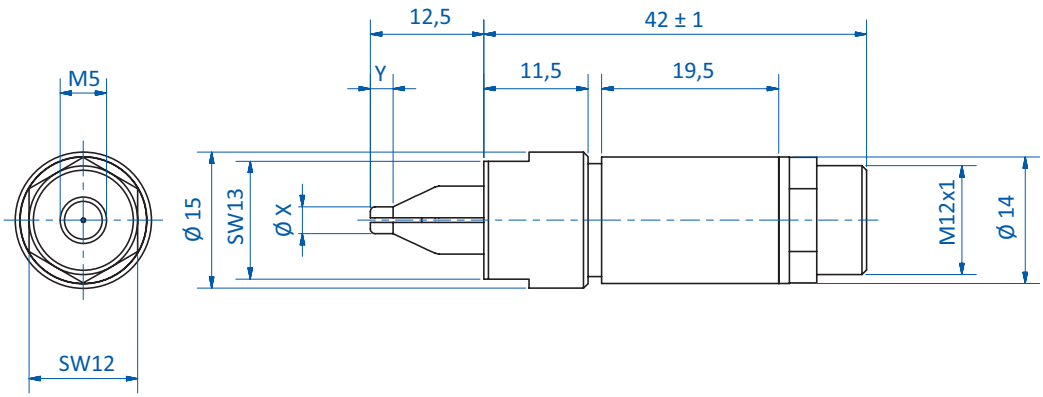
Technical data

Item no.	For parts having an inner Ø from/to [mm]	Optimal operating pressure [bar (psi)]	Clamping Ø [mm]	Weight [g]	Accessories
GR04.F01-35	3.5 - 3.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F01-A35
GR04.F01-40	4 - 4.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F01-A40
GR04.F01-45	4.5 - 4.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F01-A45
GR04.F02-50	5 - 5.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A50
GR04.F02-55	5.5 - 5.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A55
GR04.F02-60	6 - 6.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A60
GR04.F02-65	6.5 - 6.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A65

Technical data

Item no.	For parts having an inner Ø from/to [mm]	Optimal operating pressure [bar (psi)]	Clamping Ø [mm]	Weight [g]	Accessories
GR04.F02-70	7 - 7.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A70
GR04.F02-75	7.5 - 7.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A75
GR04.F02-80	8 - 8.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A80
GR04.F02-85	8.5 - 8.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A85
GR04.F02-90	9 - 9.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A90
GR04.F02-95	9.5 - 9.9	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A95
GR04.F02-100	10 - 10.4	6 (87)	14	21	Extension tube: GR06.021A (p.90) Sensor mounting bracket: GR04.038S (p.204) Sensor: GR04.198 (p.404) Sensor: GR04.198/NPN (p.404) ID gripper head – spare part: GR04.F02-A100

Dimensions

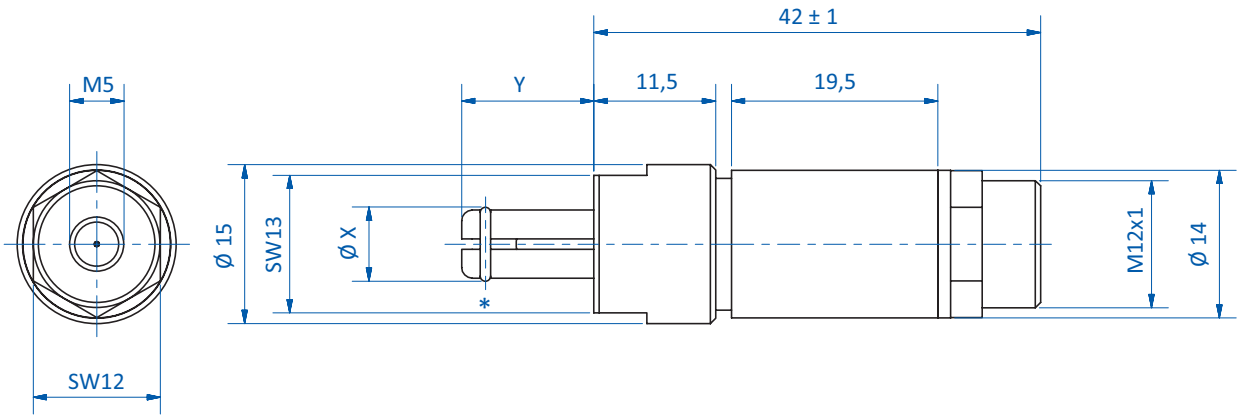


GR04.F01-35 | GR04.F01-40 | GR04.F01-45 | GR04.F02-50 | GR04.F02-55 | GR04.F02-60

* = O-ring ID gripper from Series GR04.F02-65

Continued on the next page

Dimensions



GR04.F02-65 | GR04.F02-70 | GR04.F02-75 | GR04.F02-80 | GR04.F02-85 | GR04.F02-90 | GR04.F02-95 | GR04.F02-100

* = O-ring ID gripper from Series GR04.F02-65

Item no.	**X** [mm]	**Y** [mm]
GR04.F01-35	3	2.5
GR04.F01-40	3.5	3.5
GR04.F01-45	4	5
GR04.F02-50	4.5	5
GR04.F02-55	5	5
GR04.F02-60	5.5	5
GR04.F02-65	6.5	5.5
GR04.F02-70	7	12.5
GR04.F02-75	7.5	12.5
GR04.F02-80	8	12.5
GR04.F02-85	8.5	12.5
GR04.F02-90	9	12.5
GR04.F02-95	9.5	12.5
GR04.F02-100	10	12.5

ID grippers for diameters 8 - 81 mm



Product notes

> Single-acting grippers with high holding force
> Gripper bellow expanded by pneumatically driven piston, clamps workpiece at its inner surface
> Ventilation of gripper resets piston and bellow and releases workpiece
> Piston movement adjustable to position of gripped object
> Holding force controlled by feed pressure
> Robust body, made of anodized, high-strength aluminum alloy
> Elastomer bellows available in EPDM or silicone
> Easy and non-destructive exchange of bellows
> Piston movement adjustable to position of gripped object, bellow is not inflated, no risk of bursting

Downward piston movement (workpiece pushed):
> Clamp the black part of gripper body or using optional extension tubes or threaded mounting brackets
Upward piston movement (workpiece drawn):
> Clamp the red part of gripper body

Technical data

Item no.	Elastomer	For parts having an inner Ø from/to [mm]	Optimal operating pressure [bar (psi)]	Weight [g]	Accessories
GR04.F208	EPDM	8 - 10	8 (116)	25	Extension tube: GR06.034 (p.249), EPDM elastomer: GR04.208-1, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F208-SI	Silicone	8 - 10	8 (116)	25	Extension tube: GR06.034 (p.249), Silicone elastomer: GR04.208-2, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F210	EPDM	10.5 - 13	8 (116)	26	Extension tube: GR06.034 (p.249), EPDM elastomer: GR04.210-1, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F210-SI	Silicone	10.5 - 13	8 (116)	26	Extension tube: GR06.034 (p.249), Silicone elastomer: GR04.210-2, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F212	EPDM	13 - 17	8 (116)	28	Extension tube: GR06.034 (p.249), EPDM elastomer: GR04.212-1, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F212-SI	Silicone	13 - 17	8 (116)	28	Extension tube: GR06.034 (p.249), Silicone elastomer: GR04.212-2, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F214	EPDM	15 - 19	8 (116)	31	Extension tube: GR06.034 (p.249), EPDM elastomer: GR04.214-1, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F214-SI	Silicone	15 - 19	8 (116)	31	Extension tube: GR06.034 (p.249), Silicone elastomer: GR04.214-2, Mounting bracket: GR02.280 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F218	EPDM	19 - 23.5	8 (116)	53	Extension tube: GR06.034 (p.249), EPDM elastomer: GR04.218-1, Mounting bracket: GR02.281 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F218-SI	Silicone	19 - 23.5	8 (116)	53	Extension tube: GR06.034 (p.249), Silicone elastomer: GR04.218-2, Mounting bracket: GR02.281 (p.250), Mounting bracket: GR02.227 (p.251)
GR04.F222	EPDM	23.5 - 31	8 (116)	83	Extension tube: GR06.035 (p.249), EPDM elastomer: GR04.222-1, Mounting bracket: GR02.282 (p.250), Mounting bracket: GR02.228 (p.251)
GR04.F222-SI	Silicone	23.5 - 31	8 (116)	83	Extension tube: GR06.035 (p.249), Silicone elastomer: GR04.222-2, Mounting bracket: GR02.282 (p.250), Mounting bracket: GR02.228 (p.251)
GR04.F227	EPDM	29 - 36.5	8 (116)	117	Extension tube: GR06.035 (p.249), EPDM elastomer: GR04.227-1, Mounting bracket: GR02.283 (p.250), Mounting bracket: GR02.228 (p.251)

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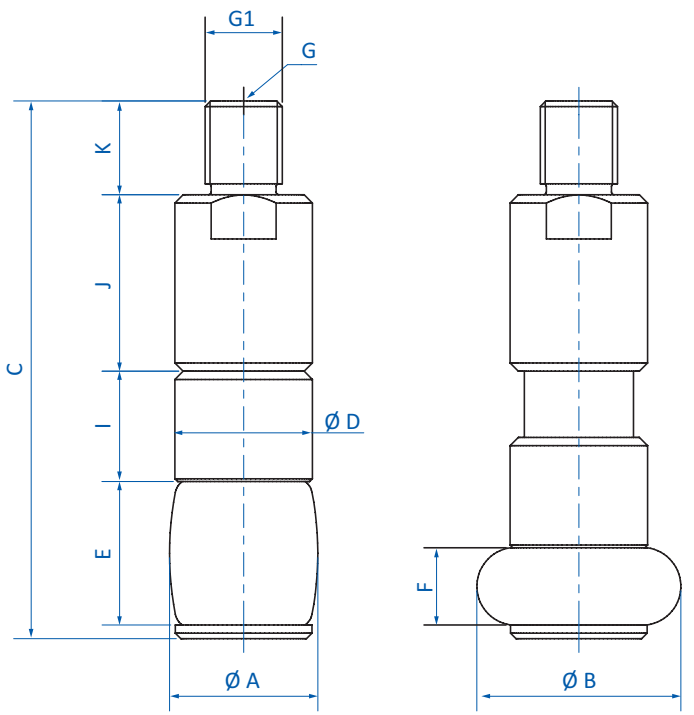
Technical data

Item no.	Elastomer	For parts having an inner Ø from/to [mm]	Optimal operating pressure [bar (psi)]	Weight [g]	Accessories
GR04.F227-SI	Silicone	29 - 36.5	8 (116)	117	Extension tube: GR06.035 (p.249), Silicone elastomer: GR04.227-2, Mounting bracket: GR02.283 (p.250), Mounting bracket: GR02.228 (p.251)
GR04.F233	EPDM	34 - 44	8 (116)	182	Extension tube: GR06.036 (p.249), EPDM elastomer: GR04.233-1, Mounting bracket: GR02.284 (p.250), Mounting bracket: GR02.229 (p.251)
GR04.F233-SI	Silicone	34 - 44	8 (116)	182	Extension tube: GR06.036 (p.249), Silicone elastomer: GR04.233-2, Mounting bracket: GR02.284 (p.250), Mounting bracket: GR02.229 (p.251)
GR04.F241	EPDM	41 - 58	8 (116)	364	Extension tube: GR06.036 (p.249), EPDM elastomer: GR04.241-1, Mounting bracket: GR02.285 (p.250), Mounting bracket: GR02.229 (p.251)
GR04.F241-SI	Silicone	41 - 58	8 (116)	364	Extension tube: GR06.036 (p.249), Silicone elastomer: GR04.241-2, Mounting bracket: GR02.285 (p.250), Mounting bracket: GR02.229 (p.251)
GR04.F251	EPDM	52 - 64	8 (116)	611	Extension tube: GR06.037 (p.249), EPDM elastomer: GR04.251-1, Mounting bracket: GR02.286 (p.250), Mounting bracket: GR02.232 (p.86)
GR04.F251-SI	Silicone	52 - 64	8 (116)	611	Extension tube: GR06.037 (p.249), Silicone elastomer: GR04.251-2, Mounting bracket: GR02.286 (p.250), Mounting bracket: GR02.232 (p.86)
GR04.F263	EPDM	63 - 81	8 (116)	1,051	EPDM elastomer: GR04.263-1, Mounting bracket: GR02.287 (p.250), Mounting bracket: GR02.233 (p.251)
GR04.F263-SI	Silicone	63 - 81	8 (116)	1,051	Silicone elastomer: GR04.263-2, Mounting bracket: GR02.287 (p.250), Mounting bracket: GR02.233 (p.251)

Elastomer replacement

EPDM [included in delivery] Color black	**Silicone** Color red
> Non-marking > Heat-resistant to 130 °C (266 °F)	> Very long service life > Heat-resistant to 200 °C (392 °F)

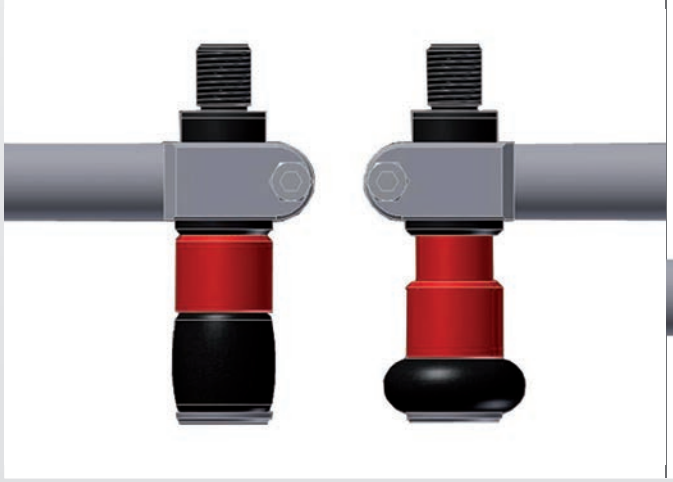
Dimensions



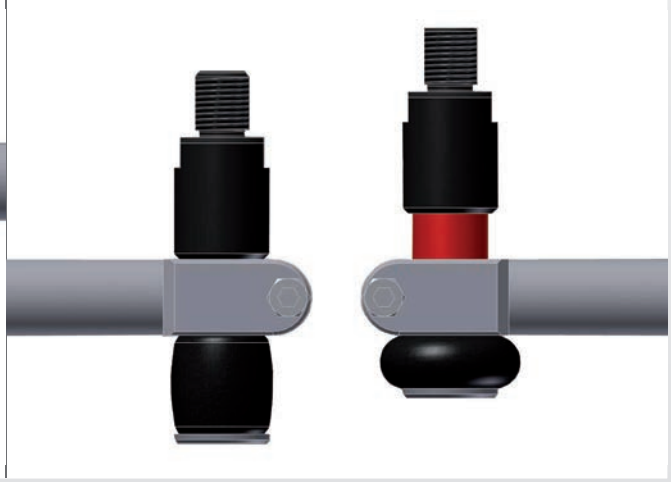
Item no.	G	G1	Ø A [mm]	Ø B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]	I [mm]	J [mm]	K [mm]
GR04.F208	M5	M12x1.5	8	10	67	16	7	3.5	11	23	15
GR04.F208-SI	M5	M12x1.5	8	10	67	16	7	3.5	11	23	15
GR04.F210	M5	M12x1.5	10.5	13	69	16	8.5	4.5	11	23	15
GR04.F210-SI	M5	M12x1.5	10.5	13	69	16	8.5	4.5	11	23	15
GR04.F212	M5	M12x1.5	13	17	71	16	10.5	5	11	23	15
GR04.F212-SI	M5	M12x1.5	13	17	71	16	10.5	5	11	23	15
GR04.F214	M5	M12x1.5	15	19	73	16	13	6	11	23	15
GR04.F214-SI	M5	M12x1.5	15	19	73	16	13	6	11	23	15
GR04.F218	M5	M12x1.5	19	23.5	78	20	16.5	9	20	23.5	15
GR04.F218-SI	M5	M12x1.5	19	23.5	78	20	16.5	9	20	23.5	15
GR04.F222	M5	M14x1,5	23.5	31	93	23	21	9	20	32	17
GR04.F222-SI	M5	M14x1,5	23.5	31	93	23	21	9	20	32	17
GR04.F227	M5	M14x1,5	29	36.5	98	25	26	14	20	32	17
GR04.F227-SI	M5	M14x1,5	29	36.5	98	25	26	14	20	32	17
GR04.F233	G1/8	M16x1.5	34	44	113	30	33.5	24	20	37.5	19
GR04.F233-SI	G1/8	M16x1.5	34	44	113	30	33.5	24	20	37.5	19
GR04.F241	G1/8	M16x1.5	41	58	138	40	41.5	14	20	54.5	19
GR04.F241-SI	G1/8	M16x1.5	41	58	138	40	41.5	14	20	54.5	19
GR04.F251	G1/8	M20x1.5	52	64	148	50	53	35	30	42	19
GR04.F251-SI	G1/8	M20x1.5	52	64	148	50	53	35	30	42	19
GR04.F263	G1/8	M24x1.5	63	81	176	60	61	36	36	56	19
GR04.F263-SI	G1/8	M24x1.5	63	81	176	60	61	36	36	56	19

Installation examples

> Clamping the upper part of gripper body enables downward piston movement (workpiece pushed) GR02.280 - GR02.287



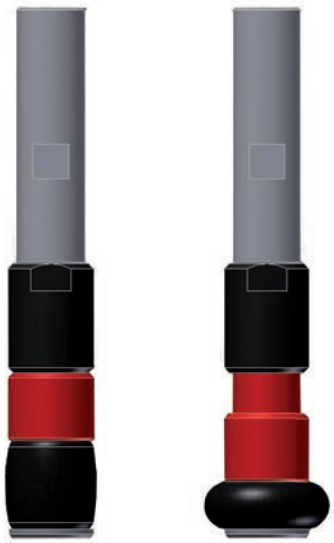
> Clamping the lower gripper body enables upward piston movement (workpiece drawn) GR02.280 - GR02.287



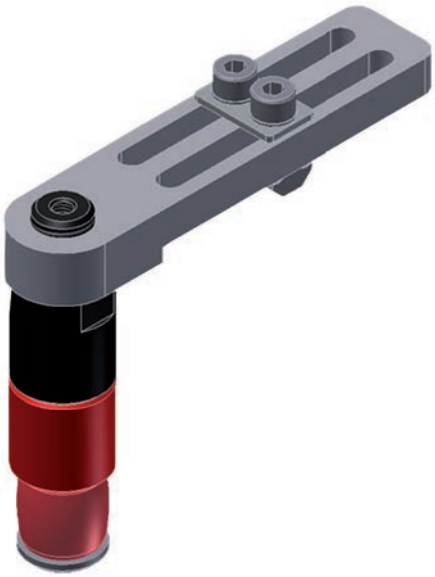
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Installation examples

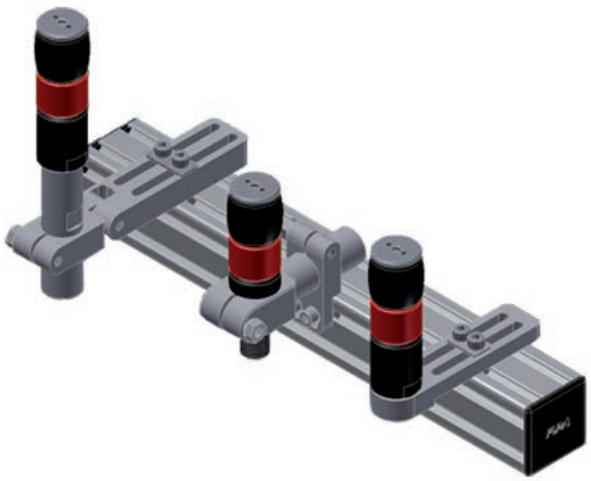
> Clamping to extension tubes enables downward piston movement (workpiece pushed) GR06.034 - GR06.037



> Fitting to threaded mounting brackets enables downward piston movement (workpiece pushed) GR02.227 - 229 and GR02.233



> Application example



Extension tubes for ID grippers





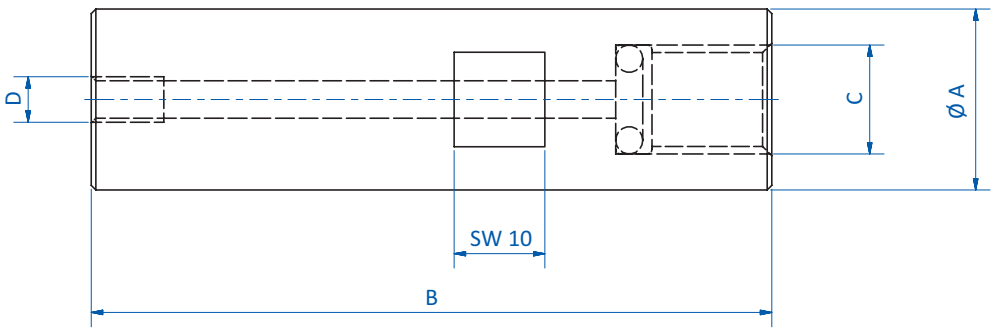
Product notes

> Extension tubes with rear-side compressed air connection and through hole
> For mounting ID grippers to angle clamps
> Suitable for ID grippers GR04 with index F
> Not compatible with ID grippers with index N

Technical data

Item no.	Suitable for	Weight [g]
GR06.034	GR04.F208 - GR04.F218	56
GR06.035	GR04.F222 - GR04.F227	54
GR06.036	GR04.F233 - GR04.F241	45
GR06.037	GR04.F251	118

Dimensions



Item no.	Ø A [mm]	B [mm]	C	D
GR06.034	20	75	M12x1.5	M5
GR06.035	20	75	M14x1.5	M5
GR06.036	20	75	M16x1.5	G1/8
GR06.037	30	75	M20x1.5	G1/8

Mounting brackets for ID grippers





Product notes

> Mounting brackets for variable angle installation of ID grippers
> Clamping grippers to upper part (red) enables upward movement, workpiece is drawn
> Clamping grippers to bottom part (black) or clamping to extension tube enables downward movement, workpiece is pushed
> Suitable for ID grippers GR04 with index F

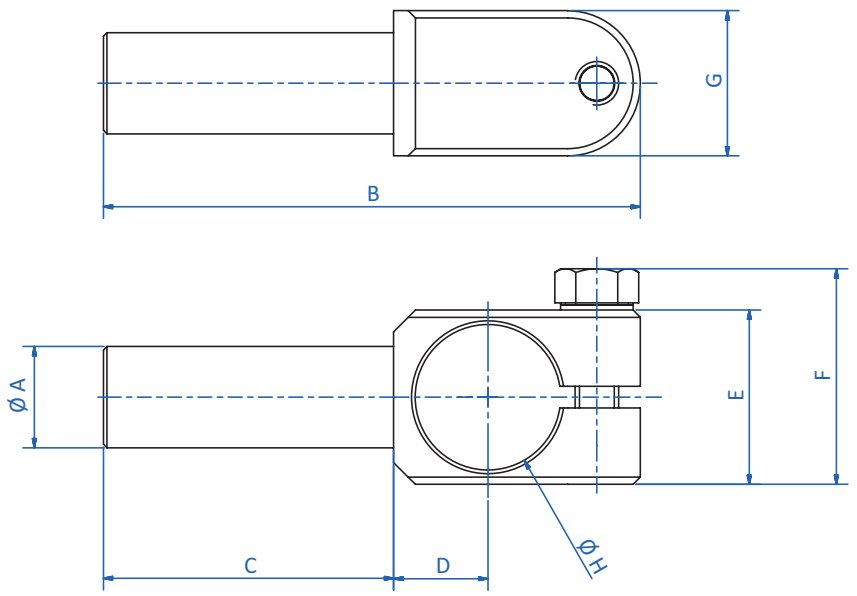
Technical data

Item no.	Suitable for expansion grippers	Weight [g]
GR02.280	GR04.F208, GR04.F212, GR04.F214	18
GR02.281	GR04.F218	36
GR02.282	GR04.F222	40
GR02.283	GR04.F227	50
GR02.284	GR04.F233	57
GR02.285	GR04.F241	68
GR02.286	GR04.F251	145
GR02.287	GR04.F263	172

Dimensions

Ø A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Ø H [mm]
10	60	30	11	20	26	10	16
14	74	40	13	24	30	20	20
14	77	40	14.5	27	33	20	23
20	89	50	15.5	29	35	20	25
20	94	50	18	34	40	20	30
20	104	50	23	44	45	20	40
30	124	60	27	54	50	30	50
30	134	60	32	64	57	30	60

Dimensions



Threaded mounting brackets for ID grippers





Product notes

> Threaded mounting brackets for installation the grippers on profiles
> Threaded mounting bracket enables downward movement of piston of ID gripper, workpiece is pushed
> Suitable for ID grippers GR04 with index F
> Slot nuts and mounting screws included in scope of delivery

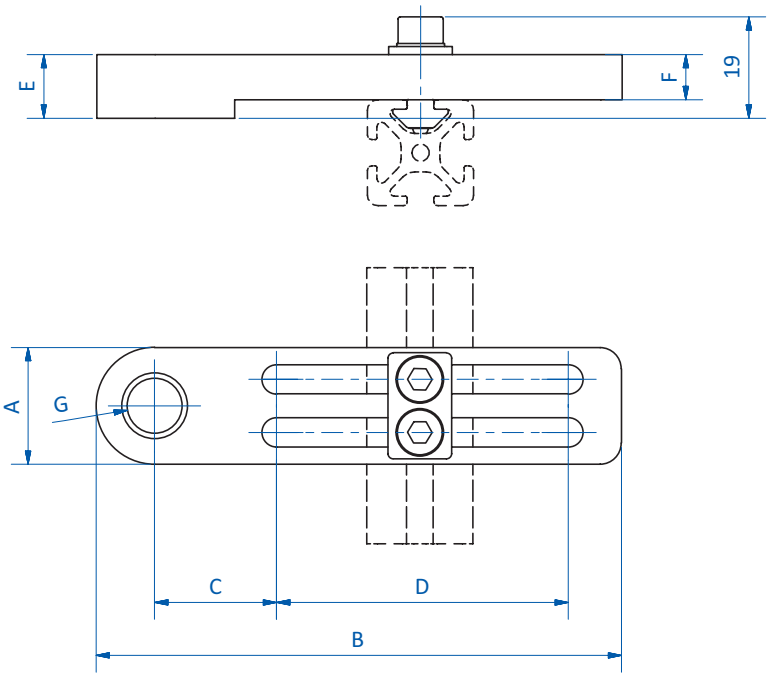
Technical data

Item no.	Suitable for expansion grippers	Weight [g]
GR02.227	GR04.F208 - GR04.F218	50
GR02.228	GR04.F222 - GR04.F227	53
GR02.229	GR04.F233 - GR04.F241	57
GR02.232	GR04.F251	63
GR02.233	GR04.F263	70

Dimensions

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G
22	99	23	55	12	8.5	M12x1.5
24	99	22	55	12	8.5	M14x1.5
26	99	21	55	12	8.5	M16x1.5
M20x1.5	28	110	12	8.5	65	21
32	110	21	65	12	8.5	M24x1.5

Dimensions



Special ID & OD grippers

CUSTOM GRIPPERS FOR INSERTS



Special pneumatic ID gripper

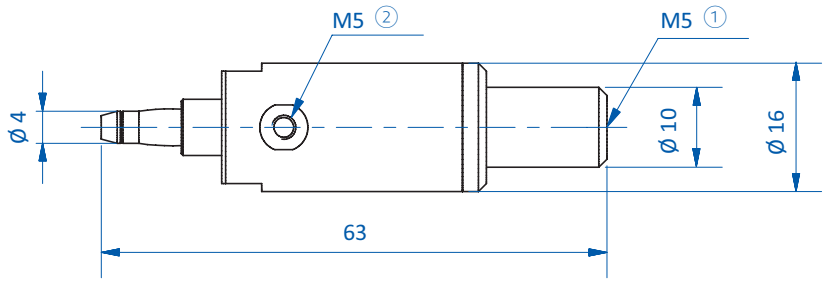


Special vacuum OD gripper

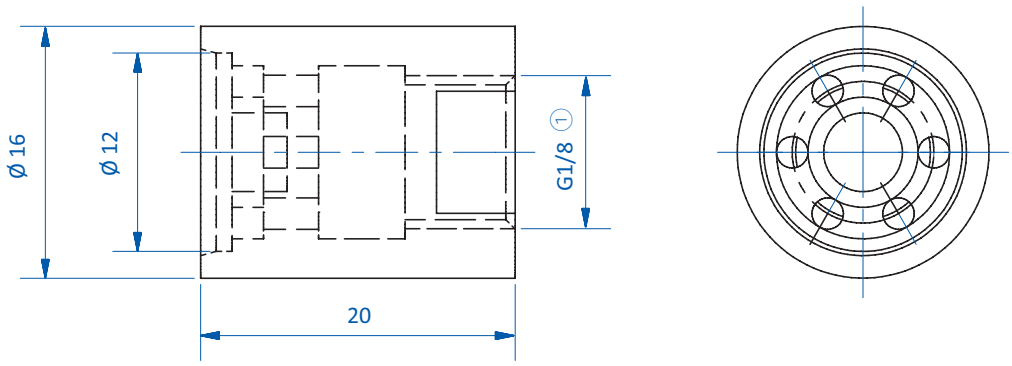
Product notes

> Customized ID & OD grippers for inserts such as stem nuts or threaded bushings
> Gripper customized to workpiece specifications
> Pneumatically driven:
  - Clamping the workpiece with its inner contour
  - Single-acting or double-acting for short cycle times
> Vacuum-driven:
  - For gripping parts on the face if ID pick-up is not permitted
> Lightweight and compact housing, made from aluminum or brass
> Dimensioned items below are for illustration only and not available as standard
> We will be happy to develop the gripper that matches your application

Dimensions



GR09.xx2

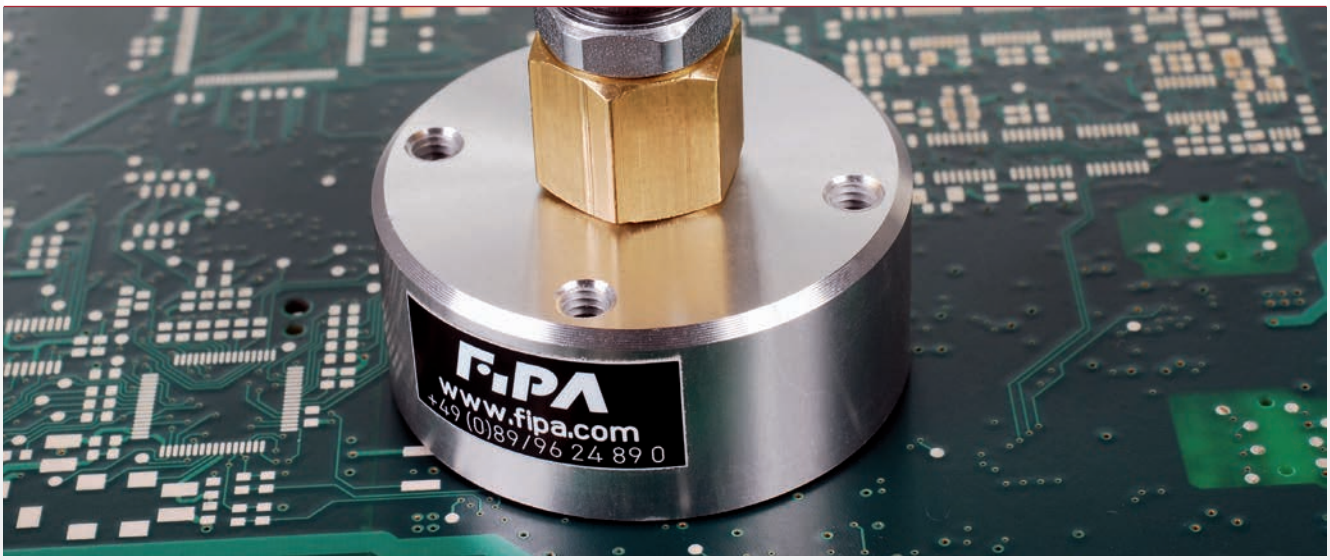


GR09.xx3

① = Compressed air connection for extending the piston ② = Compressed air connection for stripping for product release ① = Vacuum connection

Notes:

FIPA Special grippers





Needle grippers

> For materials that are non-dimensionally stable or difficult to handle with vacuum
> Alignment to material thickness via adjustable lift
> Double-acting, enables short duty cycles

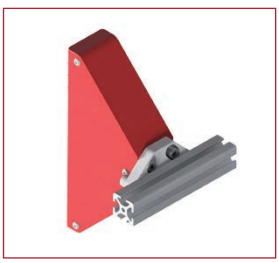
> See page 256



Needle grippers – slim design, with sensor

> Internal lift guiding for extra slim design
> Sensor for monitoring gripper action via piston position (needles extracted/retracted)

> See page 257

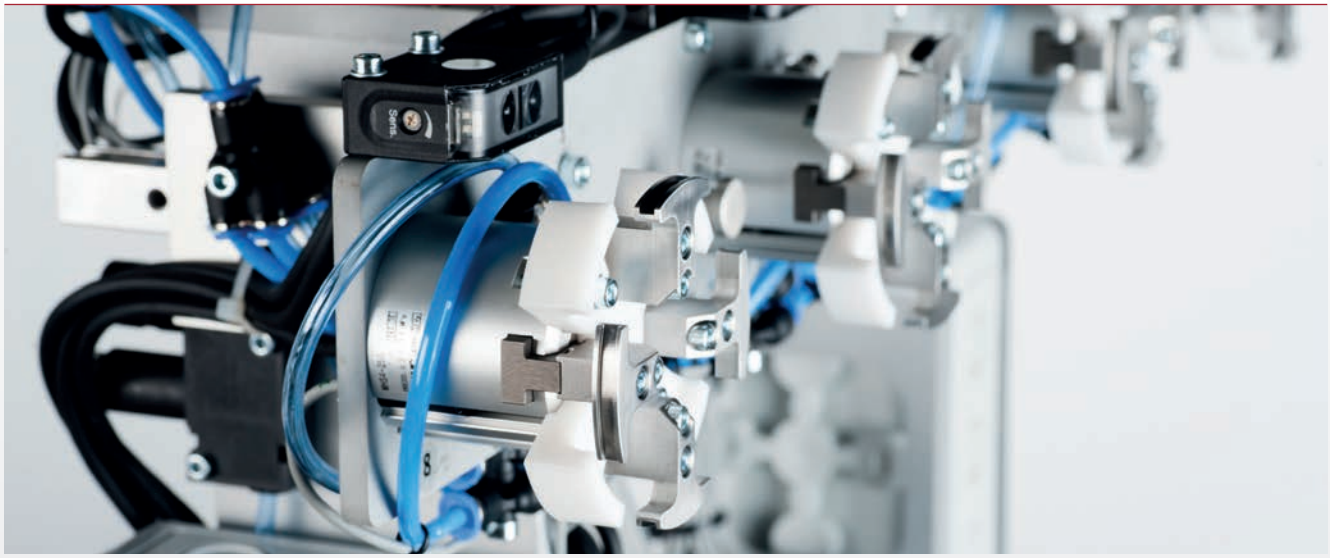


Mounting brackets for needle gripper

> Installation on SLine and MLine extrusion systems or on spring loaded suction fingers

> See page 267

FIPA Special grippers





Magnetic grippers

> Secure handling of sheet metal and ferromagnetic workpieces with and without recesses

MG series

> Combination of electronic and permanent magnet
> High cycle times for thin and/or alloyed metal sheets thanks to negligible residual magnetism after switching off the magnetic force
> Holding force up to 700 N
> No compressed air required
> Very energy-efficient, as a short electrical pulse is only required for product release

> See page 269



Bernoulli vacuum cups – SX-B and SX-B-PK

> Non-contact, deformation-resistant transport of thin and sensitive products
> No ejector, requires compressed air only
> Suitable for porous products thanks to high volume flow
> Series for direct contact with food (approval in accordance with FDA/EC1935/2004)

> See page 270



Modular grippers

> Customized gripper tools made of polyamide
> Easy adaption to robots
> Integrated media channels to minimize piping complexity
> Food grade material

> See page 278

Needle grippers GR04.711

NEW



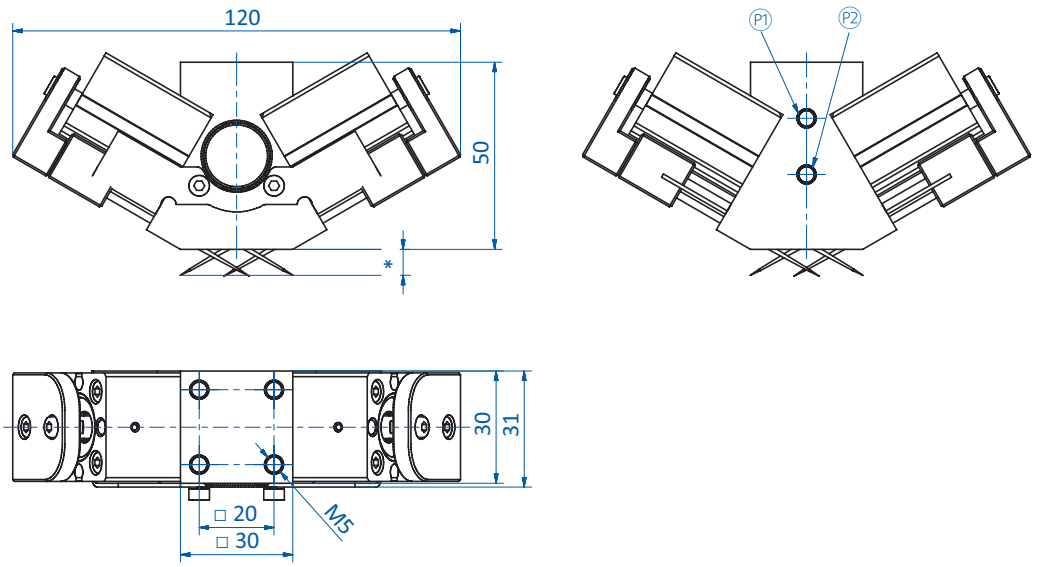
Product notes

> Gripper for materials that are non-dimensionally stable or difficult to handle with vacuum
> Stroke limitation by spacer plates
> Needles centrally crossed for firm grip
> Double-acting enables short duty cycles: separate compressed air connections for extraction/retraction of needles
> Needles can be individually replaced

Technical data

Item no.	GR04.711-25	GR04.711-40	GR04.711-60
Principle of operation	Double-acting	Double-acting	Double-acting
Stroke [mm]	2.5	4	6
Number of needles [Pcs.]	12	12	12
Needle diameter [mm]	2	2	2
Infeed angle [°]	30	30	30
Operating pressure [bar (psi)]	2.5 - 8 (36.3 - 116)	2.5 - 8 (36.3 - 116)	2.5 - 8 (36.3 - 116)
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	313	311	310
Suitable spare needle block	GR04.711-P4	GR04.711-P4	GR04.711-P4

Dimensions



P1 = Compressed air connection M5 needles extended P2 = Compressed air connection M5 needles retracted * = Stroke

Needle grippers GR04.740B



Product notes

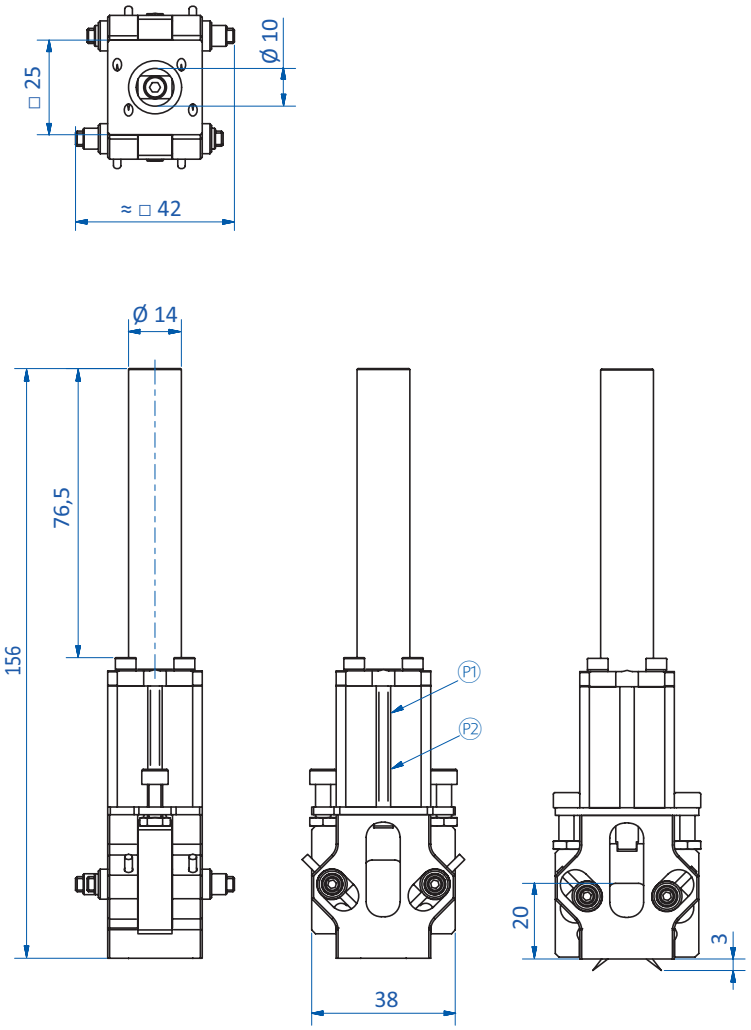
> Slim design due to internal stroke guiding
> Gripper for materials that are non-dimensionally stable or difficult to handle with vacuum
> Alignment to material thickness via adjustable stroke
> Double-acting, enables short duty cycles, separate compressed air connections for extraction/retraction of needles
> Internal stroke guiding for extra slim design
> Sensor for monitoring gripper action via piston position (needles extracted/retracted)
> Stroke corresponds to maximum entry depth of needles
> Sensors and spare needle sets with ten needles each, available as accessories
> PNP and NPN sensors:
- C-nut (cable: 90°): GR04.202P, GR04.202N
- C-nut (cable: straight, short design): GR04.280P, GR04.280N

Technical data

Item no.	**GR04.740B**
Principle of operation	Double-acting
Stroke [mm]	0 - 3
Number of needles [Pcs.]	4
Needle diameter [mm]	2
Infeed angle [°]	45
Operating pressure [bar (psi)]	2 - 8 (29 - 116)
Operating temperature [°C (°F)]	-10 - 80 (14 - 176)
Weight [g]	226
Accessories	Spare needle kit: GR04.740-30N Sensor: GR04.280N (p.404) Sensor: GR04.280P (p.404) Sensor: GR04.202N (p.404) Sensor: GR04.202P (p.404)

Continued on the next page

Dimensions



P1 = Compressed air connection M5 needles extended P2 = Compressed air connection M5 needles retracted

Needle grippers GR04.700 and GR04.730



GR04.700



GR04.730

Product notes

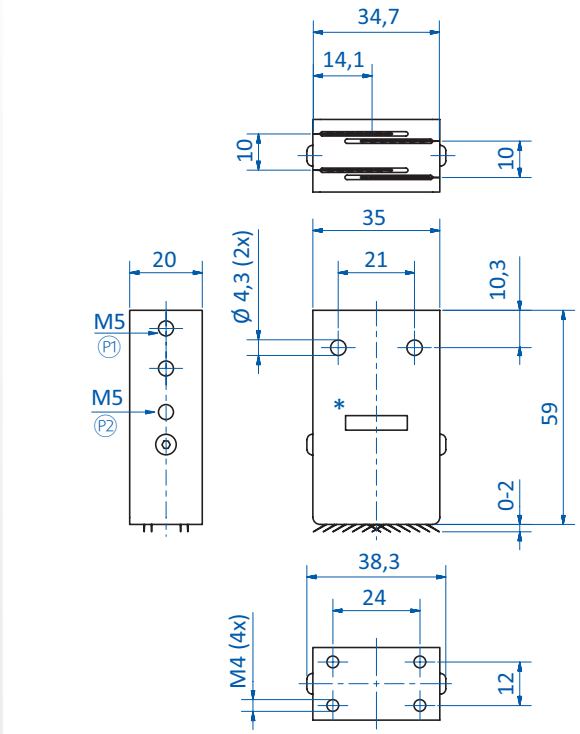
> Small needle diameter for low entry depth, blow-off function for fast product release
> Grippers with flat entry angle enables handling of thin or flat parts
> Knurled screw for stroke adjustment to textile thickness
> GR04.700: double-acting enables short duty cycles: separate compressed air connections for extraction/retraction of needles
- Additional compressed air inlet (A) for fast product release
> GR04.730: single-acting, compressed air connection for needle extraction, reset via return spring
> Stroke corresponds to maximum entry depth of needles
> Spare needle plates available as accessories

Technical data

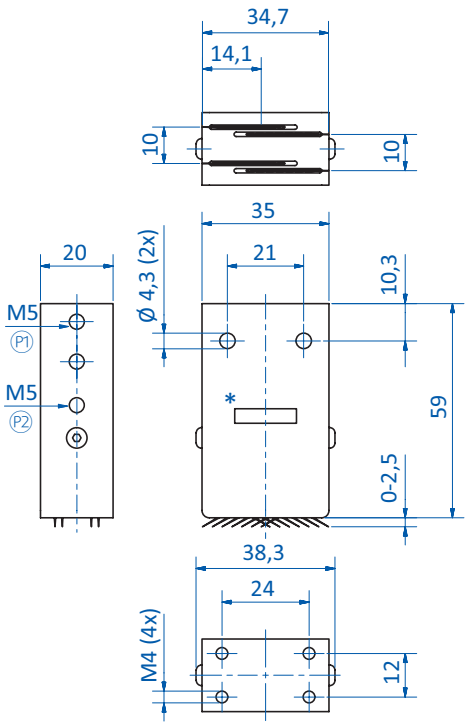
Item no.	GR04.700-20	GR04.700-25	GR04.730-20
Principle of operation	Double-acting	Double-acting	Single-acting
Stroke [mm]	0 - 2	0 - 2.5	0 - 2
Number of needles [Pcs.]	32	32	32
Needle diameter [mm]	0.7	0.7	0.7
Infeed angle [°]	30	30	30
Operating pressure [bar (psi)]	4 - 7 (58 - 101.5)	4 - 7 (58 - 101.5)	4 - 7 (58 - 101.5)
Operating temperature [°C (°F)]	-0 - 70 (32 - 158)	-0 - 70 (32 - 158)	-0 - 70 (32 - 158)
Weight [g]	114	114	250
Accessories	Spare needle kit: GR04.700-20N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.700-25N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.730-20N Mounting bracket: GR07.041 (p.267)

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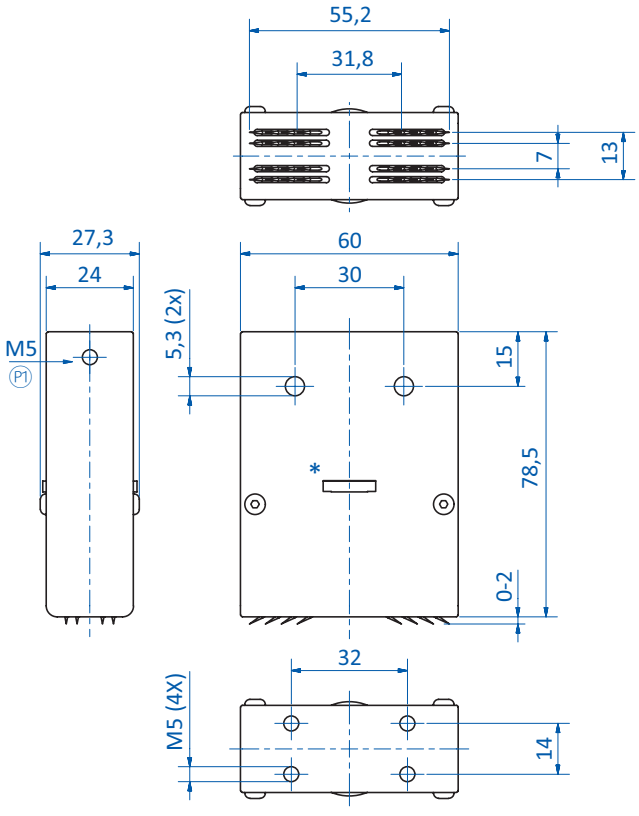
Dimensions



GR04.700-20



GR04.700-25



GR04.730-20

* = Stroke adjustment with knurled screw P1 = Compressed air connection M5 needles extended
P2 = Compressed air connection M5 needles retracted

Needle grippers GR04.710 and GR04.720



GR04.710



GR04.720 with spring load

Product notes

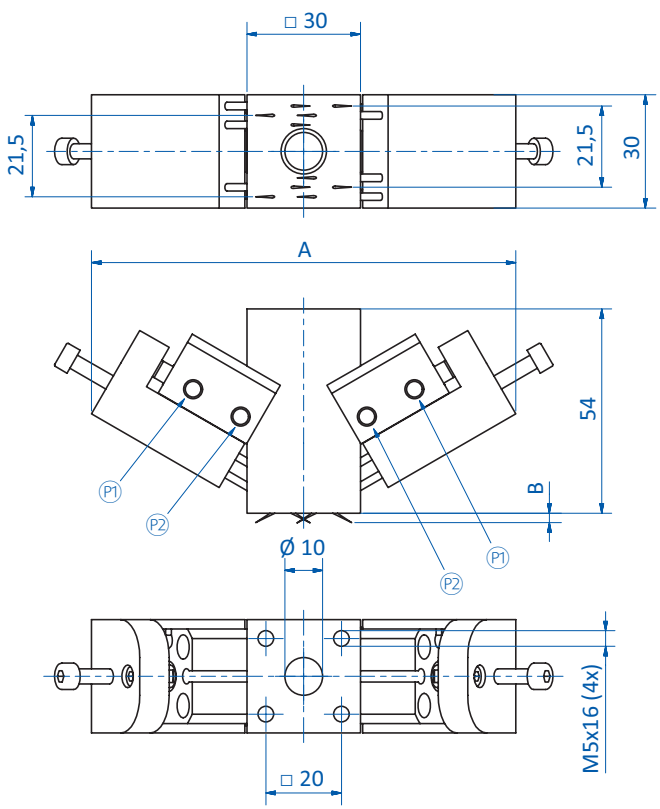
> Strokes adjustable to material thickness
> Grippers for materials that are non-dimensionally stable or difficult to handle with vacuum
> Central bore hole (Ø 10 mm) to allow insertion of gripper into stack rails for pick & place
> Stroke limitation adjustable to material thickness
> Needles centrally crossed for firm grip
> Double-acting enables short duty cycles: separate compressed air connections for extraction/retraction of needles
> Needles can be individually replaced
> Spare needle sets, each containing ten pieces available

Technical data

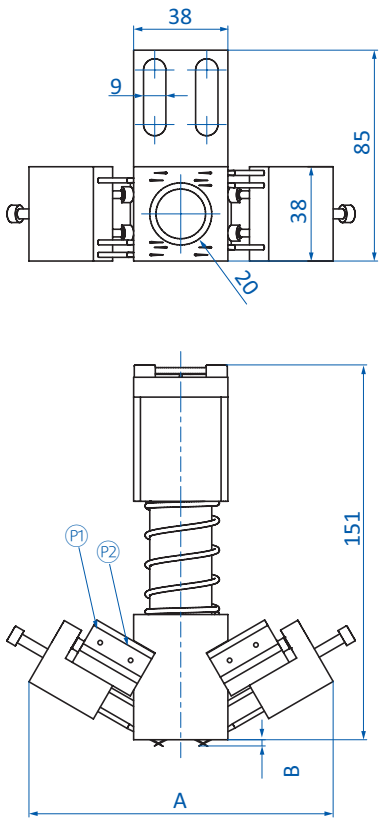
Item no.	GR04.710-25	GR04.710-50	GR04.710-75	GR04.710-100	GR04.720-25	GR04.720-50
Principle of operation	Double-acting	Double-acting	Double-acting	Double-acting	Double-acting	Double-acting
Stroke [mm]	0 - 2.5	0 - 5	0 - 7.5	0 - 10	0 - 2.5	0 - 5
Stroke suspensions [mm]	--	--	--	--	35	35
Number of needles [Pcs.]	10	10	10	10	10	10
Needle diameter [mm]	2	2	2	2	2	2
Infeed angle [°]	30	30	30	30	30	30
Operating pressure [bar (psi)]	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)	2 - 8 (29 - 116)
Operating temperature [°C (°F)]	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)
Weight [g]	240	298	310	340	492	512
Accessories	Spare needle kit: GR04.710-50N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.710-50N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.710-75AN Spare needle kit: GR04.710-75N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.710-75AN Spare needle kit: GR04.710-75N Mounting bracket: GR07.040 (p.267)	Spare needle kit: GR04.720-25N	Spare needle kit: GR04.720-25N

Continued on the next page

Dimensions



GR04.710-25 | GR04.710-50 | GR04.710-75 | GR04.710-100



GR04.720-25 | GR04.720-50

Ⓟ1 = Compressed air connection M5 needles extended Ⓟ2 = Compressed air connection M5 needles retracted

Item no.	GR04.710-25	GR04.710-50	GR04.710-75	GR04.710-100	GR04.720-25	GR04.720-50
A [mm]	111.5 - 123	120 - 138	128 - 154	138.5 - 173	123 - 131.5	131.5 - 149
B [mm]	0 - 2.7	0 - 5	0 - 7.5	0 - 10	0 - 2.5	0 - 5

Needle grippers GR04.715



RETRACTION OF NEEDLES CAN BE CONTROLLED SEPARATELY FOR BOTH SIDES

Product notes

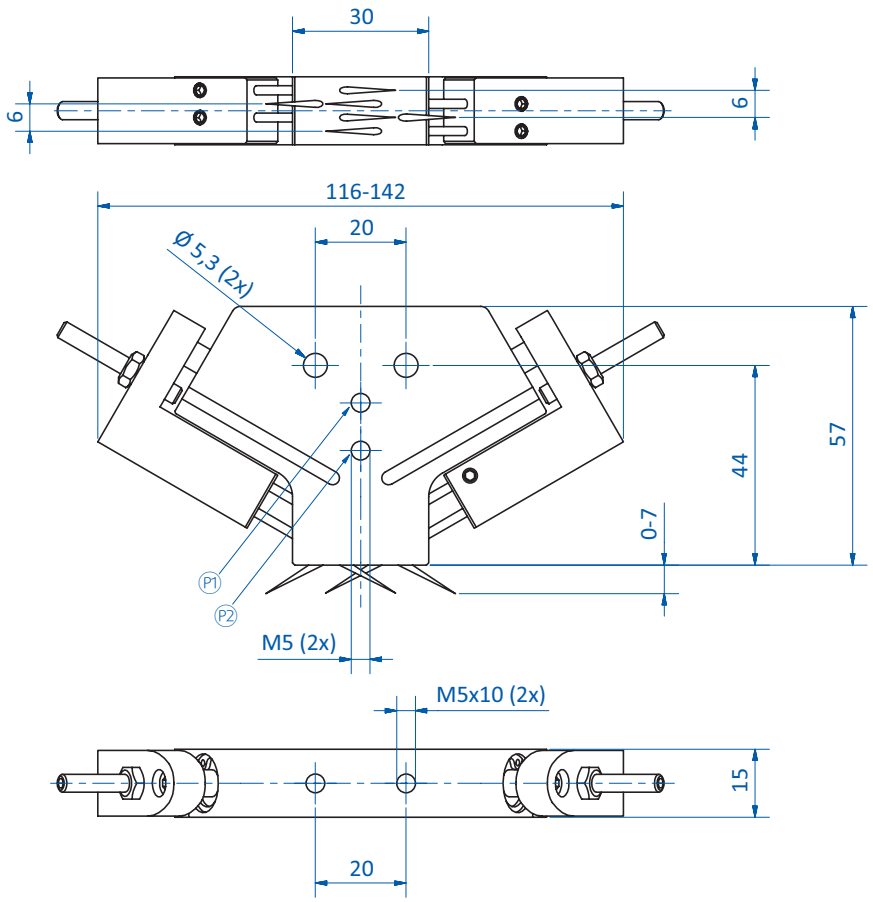
> Grippers for workpieces or materials that are non-dimensionally stable or difficult to handle with vacuum
> Narrow design
> Stroke can be adjusted to material thickness
> Double-acting enables short duty cycles: separate compressed air connections for extraction/retraction of needles on the face-side, alternatively one connection/each for separate extraction, one connection for central retraction
> Needles can be individually replaced
> Spare needle sets, each containing ten pieces available

Technical data

Item no.	**GR04.715-70**
Principle of operation	Double-acting
Stroke [mm]	0 - 7
Number of needles [Pcs.]	6
Needle diameter [mm]	2
Infeed angle [°]	30
Operating pressure [bar (psi)]	2 - 8 (29 - 116)
Operating temperature [°C (°F)]	-10 - 80 (14 - 176)
Weight [g]	195
Accessories	Spare needle kit: GR04.715-70N Mounting bracket: GR07.042 (p.268)

Continued on the next page

Dimensions



P1 = Bore holes M5 for separate extraction of needles per side P2 = Bore hole M5 for central retraction of needles

Needle grippers GR04.725

ESPECIALLY SUITED FOR HANDLING HEAVIER WORKPIECES



Product notes

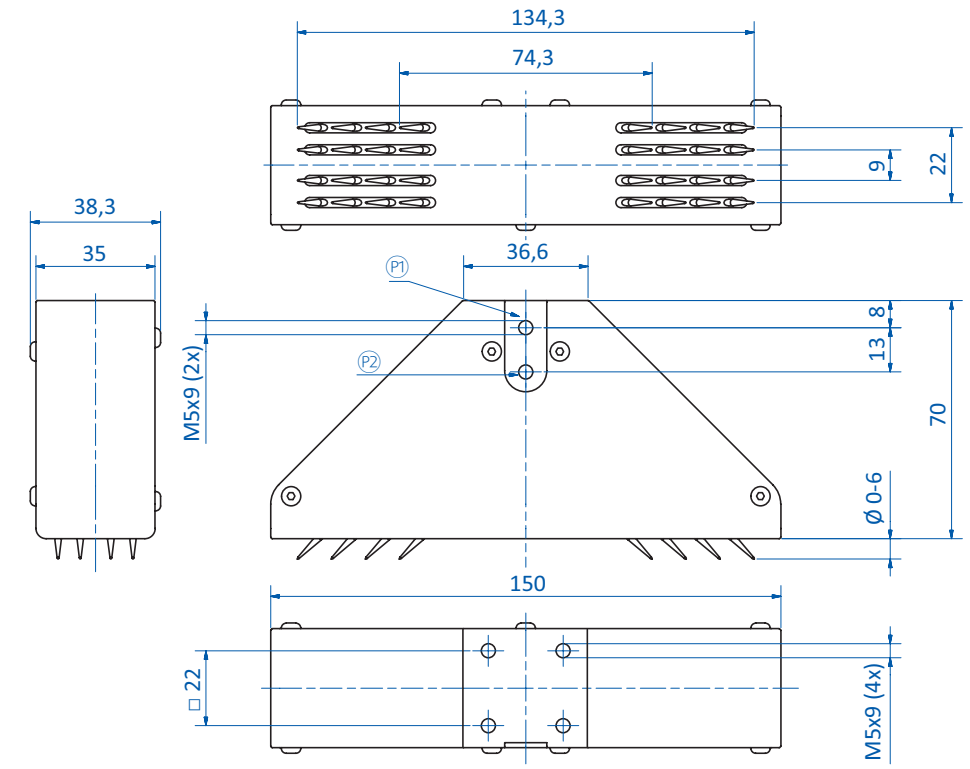
> Grippers for materials that are non-dimensionally stable or difficult to handle with vacuum
> Stroke can be adjusted to material thickness
> Double-acting enables short duty cycles: separate compressed air connections for extraction/retraction of needles
> Spare needle plates, available

Technical data

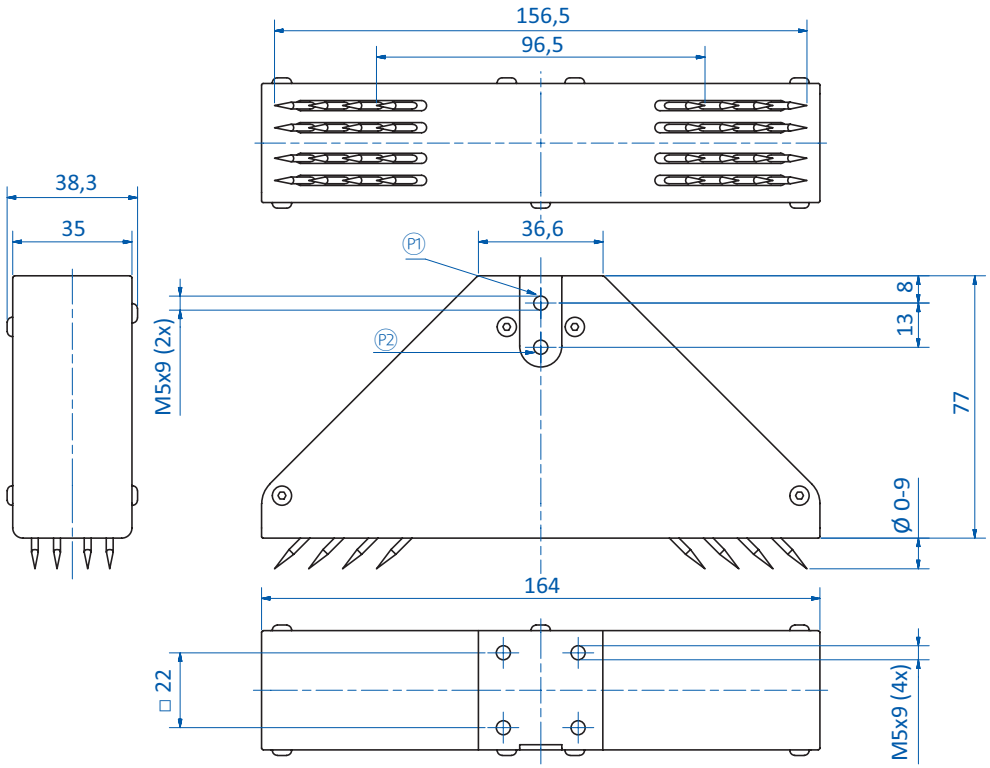
Item no.	GR04.725-60	GR04.725-90
Principle of operation	Double-acting	Double-acting
Stroke [mm]	6	9
Number of needles [Pcs.]	32	32
Needle diameter [mm]	2	2
Infeed angle [°]	45	45
Max. gripping force [N]	360	360
Operating pressure [bar (psi)]	2 - 8 (29 - 116)	2 - 8 (29 - 116)
Operating temperature [°C (°F)]	-10 - 80 (14 - 176)	-10 - 80 (14 - 176)
Weight [g]	450	480
Accessories	Spare needle kit: GR04.725-60N Mounting bracket: GR07.041 (p.267)	Spare needle kit: GR04.725-90N Mounting bracket: GR07.041 (p.267)

Continued on the next page

Dimensions



GR04.725-60



GR04.725-90

P1 = Compressed air connection M5 needles extended P2 = Compressed air connection M5 needles retracted

Mounting plates for needle gripper



Product notes

> Mounts needle grippers on the SLine and MLine extrusion systems or spring loaded suction fingers
> Two bore holes for DIN 912-M5, for mounting on extrusion
> Slot nuts and screws included in scope of delivery

Technical data

Item no.	Suitable for	Weight [g]	Suitable suction fingers
GR07.040	GR04.700, GR04.710	21	GR03.090A (p.117), GR03.091A (p.117), GR03.130A, GR03.131A
GR07.041	GR04.725, GR04.730	27	GR03.090A (p.117), GR03.091A (p.117), GR03.130A, GR03.131A

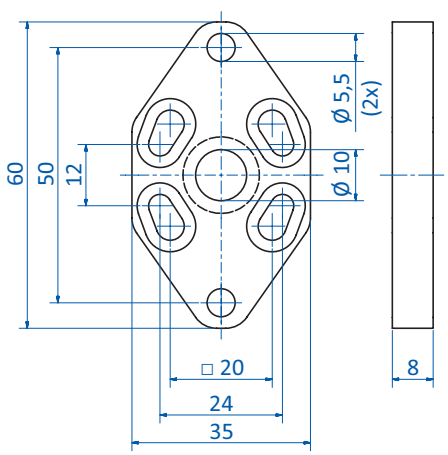
Application examples



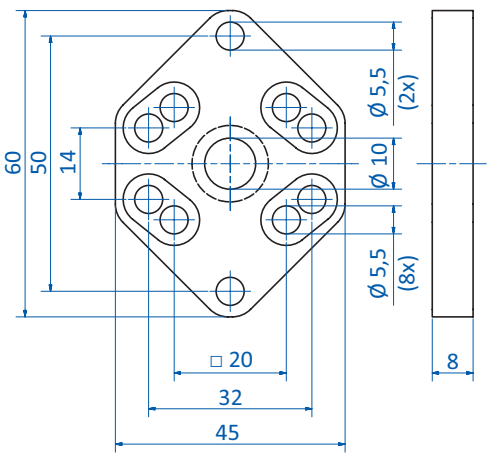


Installation example for needle gripper GR04.700 on spring loaded suction finger or FIPA SLine extrusion system

Dimensions



GR07.040



GR07.041

Mounting bracket for needle gripper GR04.715



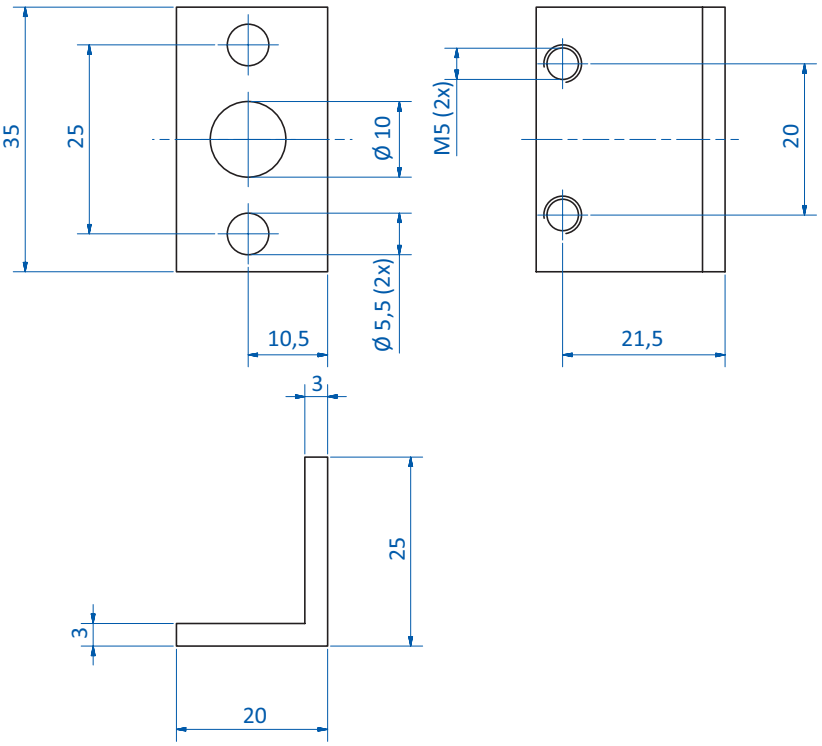
Product notes

> Mounted needle gripper on the SLine and MLine extrusion systems or on spring loaded suction finger
> Two bore holes for DIN 912-M5, for mounting on extrusion with slot nuts
> Slot nuts and screws included in scope of delivery

Technical data

Item no.	Weight [g]	Suitable suction fingers
GR07.042	11	GR03.090A (p.117) GR03.091A (p.117) GR03.130A GR03.131A

Dimensions



Magnetic grippers – electrical controlled





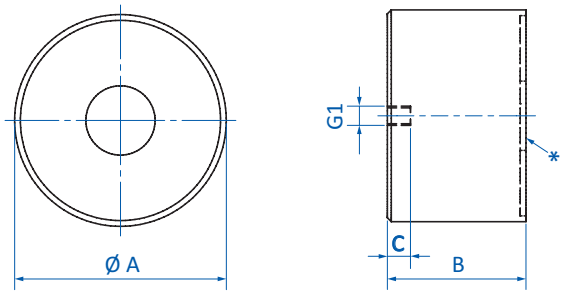
Product notes

> Safe handling of sheet metal or ferromagnetic workpieces with or without recesses
> Very high holding force thanks to high-performance permanent magnet
> Safe holding of the workpiece during power failures
> NC normally closed
> Short cycle times for thin and/or alloyed metal sheets thanks to negligible residual magnetism after switching off the magnetic force
> No compressed air required
> Very energy-efficient as a short electrical pulse is only required for product release
> Robust design
> Indicated holding forces are valid for direct placement, without air gap, on the flat holding surface

Technical data

Item no.	MG35	MG55	MG70
Principle of operation	Electrical	Electrical	Electrical
Rated power [W]	4.6	9	13.3
Gripping force [N]	160	420	720
Residual gripping force [N]	< 1	< 1	< 1
Operating voltage of the switch-off coil [V]	24	24	24
Power-on time [ED]	25 % ED at < 2 min.	25 % ED at < 2 min.	25 % ED at < 2 min.
Min. recommended sheet thickness [mm]	3	4.5	6
Protection class	IP65	IP65	IP65
Max. operating temperature [°C (°F)]	0 - 70 (32 - 158)	0 - 70 (32 - 158)	0 - 70 (32 - 158)
Weight [g]	200	500	900
Suitable fittings	270.448	270.449	270.450

Dimensions



* = Holding surface

Item no.	MG35	MG55	MG70
G1	M4	M5	M8
Ø A [mm]	35	55	70
B [mm]	30	36	45
C [mm]	5	6	8

Bernoulli vacuum cups SX-B



Housing made of anodized aluminum

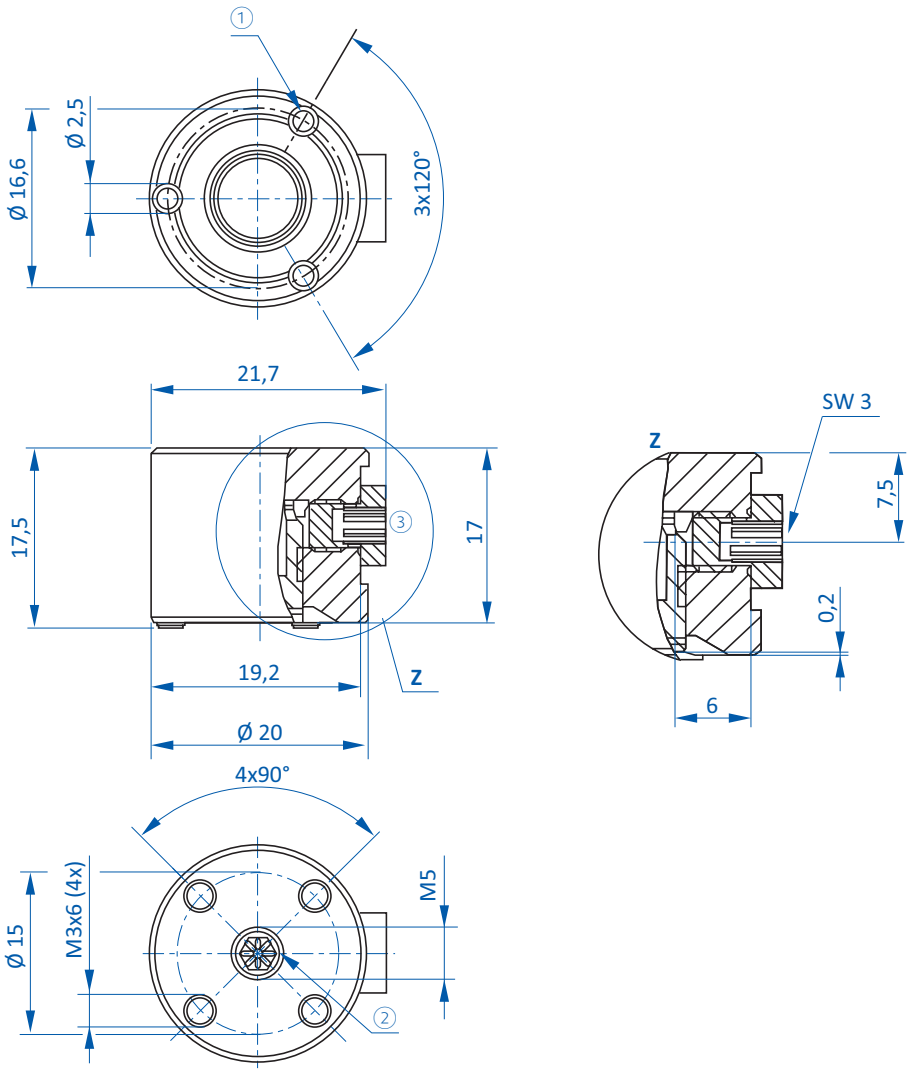
Product notes

> Integrated vacuum generation on the Bernoulli principle
> Non-contact, deformation-resistant transport of thin and sensitive products
> Suitable for porous products thanks to high volume flow at low vacuum level
> Easy to install, system flexibly expandable through lateral compressed air inlets
> Long life cycle due to maintenance-free operation
> Only operate with unoiled, dry compressed air
> With 65.530 and 65.540, the pads can be removed for contact-free applications
> Pads are included in scope of delivery

Technical data

Item no.	65.510	65.520	65.530	65.540
Model	SX-B-20	SX-B-30	SX-B-40	SX-B-60
Operating pressure [bar (psi)]	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)	1 - 6 (14.5 - 87)
Holding force at 5 bar (72,5 psi) [N]	2.6	4	6.4	13
Air consumption at 5 bar (72.5 psi) [Nl/min]	95	100	100	150
Max. particle size [µm]	40	40	40	40
Ambient air temperature [°C (°F)]	5 - 60 (41 - 140)	5 - 60 (41 - 140)	5 - 60 (41 - 140)	5 - 60 (41 - 140)
Weight [g]	50	70	120	260
Suitable pads	78.521	78.521	78.522	78.522

Dimensions

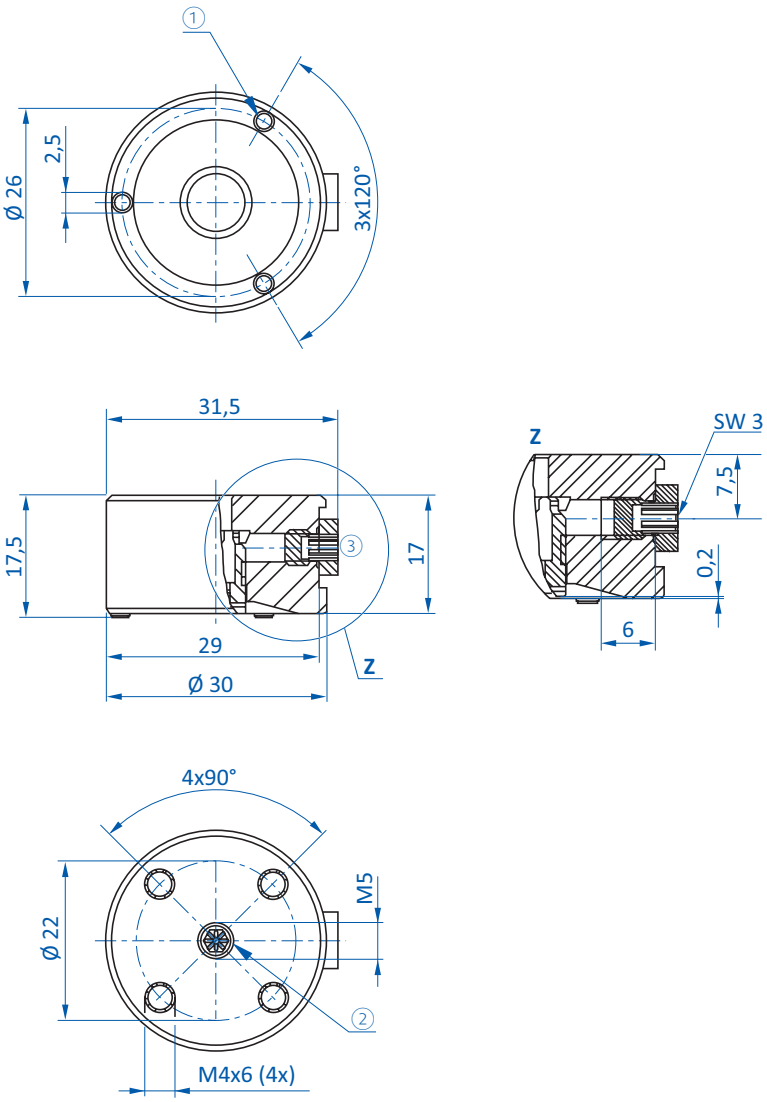


65.510

① = Pads ② = Compressed air connection ③ = Alternative compressed air connection

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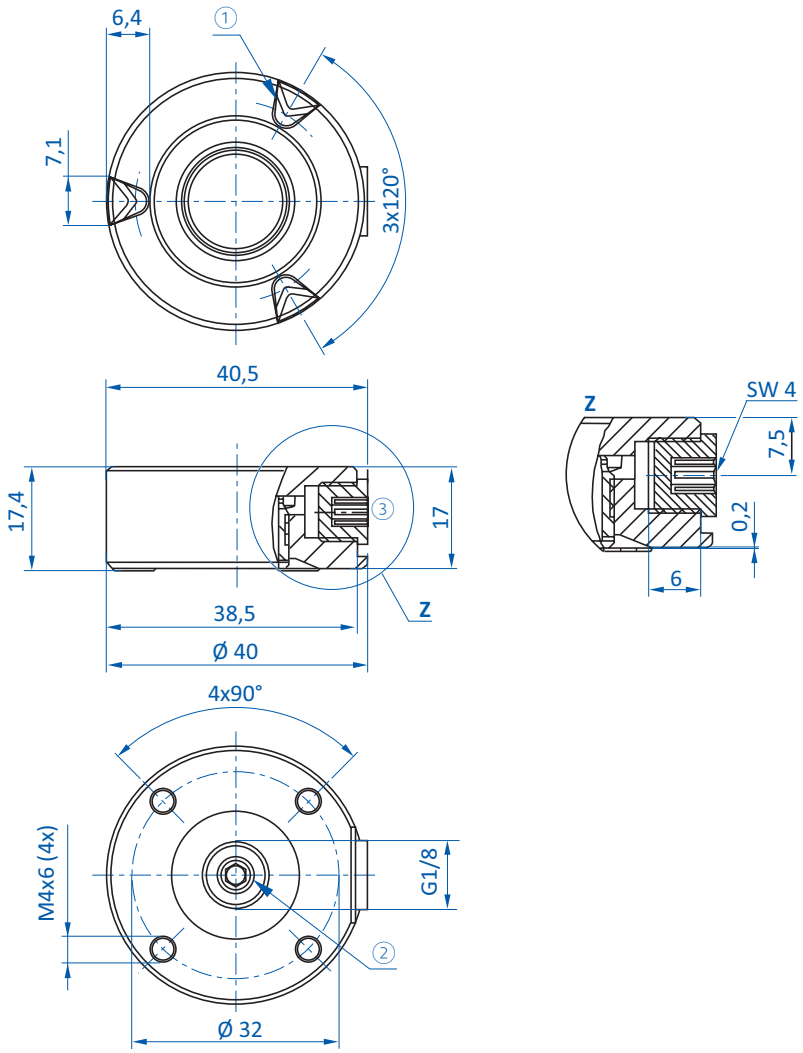
Dimensions



65.520

① = Pads ② = Compressed air connection ③ = Alternative compressed air connection

Dimensions

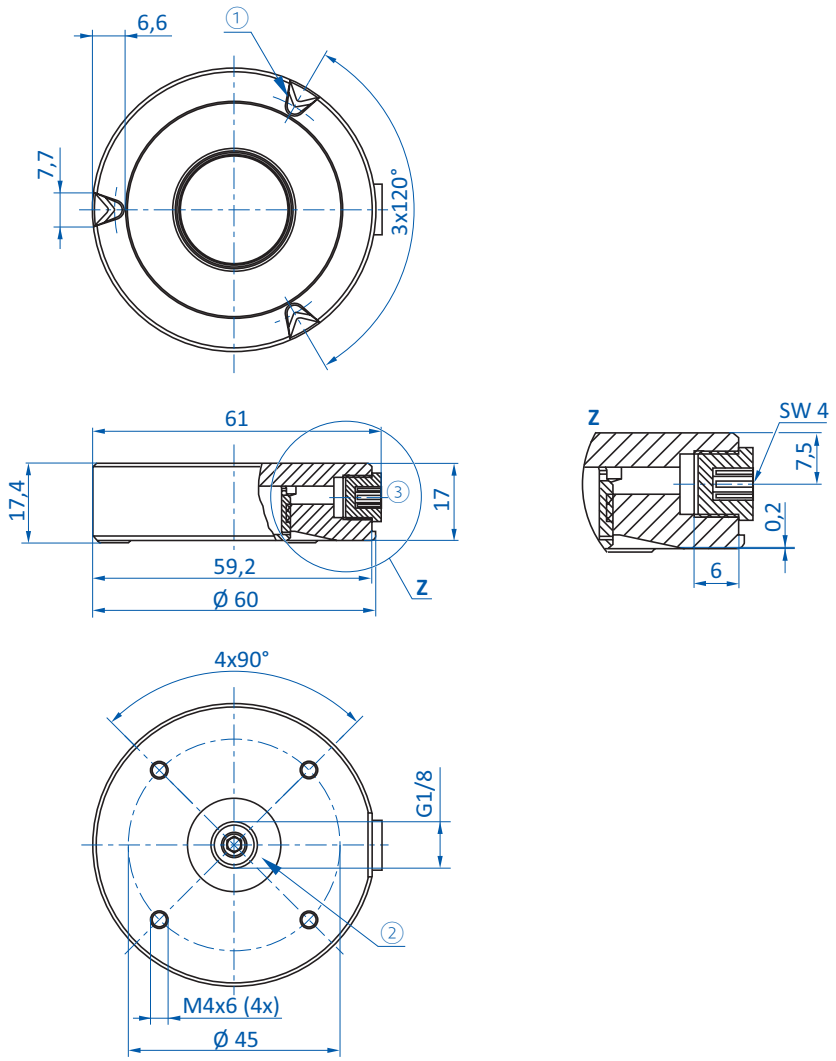


65.530

① = Pads ② = Compressed air connection ③ = Alternative compressed air connection

Continued on the next page

Dimensions

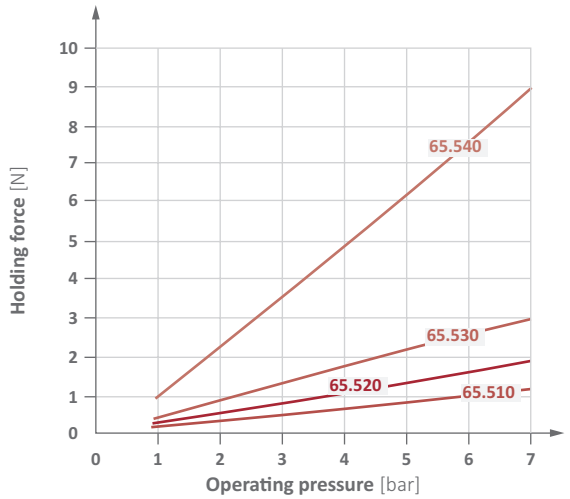


65.540

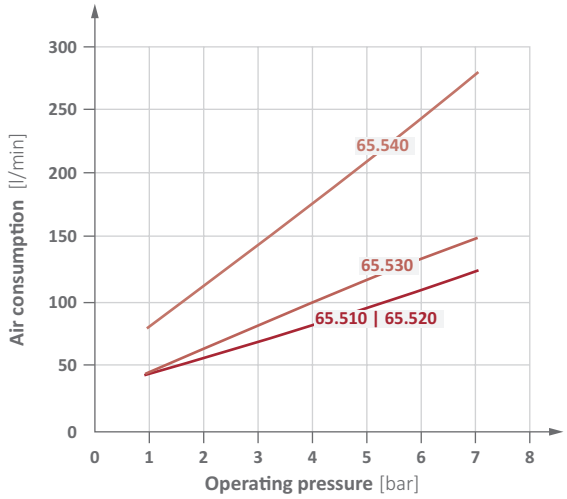
① = Pads ② = Compressed air connection ③ = Alternative compressed air connection

Diagrams

> Holding force as a function of operating pressure



> Air consumption as a function of operating pressure



Bernoulli vacuum cups SX-B-PK

SUITABLE FOR FOODSTUFFS



Body and blind screws made of polyetheretherketone (PEEK), nozzle made of stainless steel

Product notes

> Integrated vacuum generation on the Bernoulli principle
> No ejector, requires compressed air only
> Non-contact, deformation-resistant transport of thin and sensitive products
> Suitable for direct contact with food products (approval by FDA/EC1935/2004)
> Suitable for porous products thanks to high volume flow at low vacuum level
> Easy to install, system flexibly expandable through lateral compressed air inlets
> Long life cycle due to maintenance-free operation
> Only operated with oil-free, dry compressed air

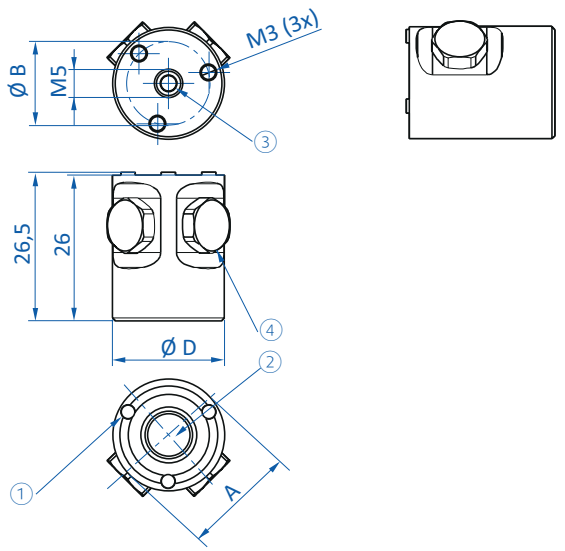
Technical data

Item no.	65.510-PK	65.520-PK	65.530-PK	65.540-PK
Model	SX-B-PK-20	SX-B-PK-30	SX-B-PK-40	SX-B-PK-60
Operating pressure [bar (psi)]	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)
Holding force at 5 bar (72,5 psi) [N]	2.5	3	5.5	12
Air consumption at 5 bar (72.5 psi) [Nl/min]	150	150	150	220
Max. particle size [µm]	40	40	40	40
Medium	Compressed air	Compressed air	Compressed air	Compressed air
Ambient air temperature [°C (°F)]	5 - 60 (41 - 140)	5 - 60 (41 - 140)	5 - 60 (41 - 140)	5 - 60 (41 - 140)
Weight [g]	10	20	30	70
Suitable silicone pads	78.510	78.510	78.512	78.512

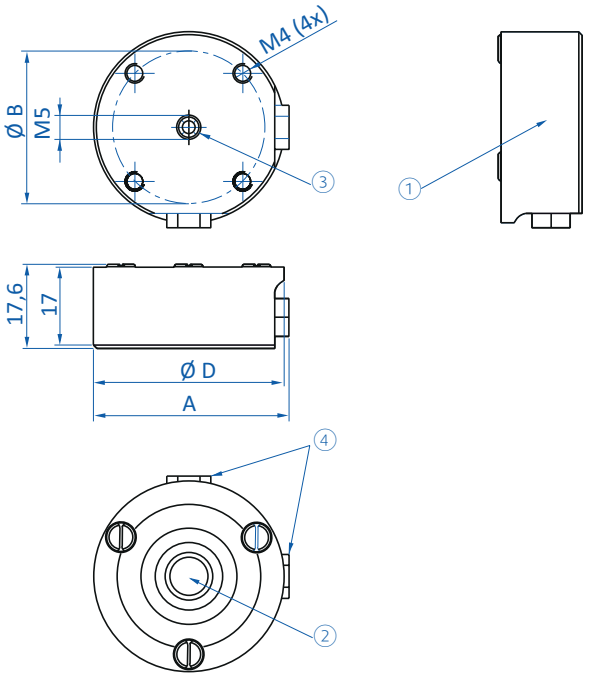
Technical specifications

> Highly resistant against diverse chemicals used in the food industry
> Suitable for all conventional CIP (cleaning-in-place) and SIP (sterilization-in-place) processes
> Hygienic product design enables quick and easy cleaning
> Materials:
- Housing: polyetheretherketone
- Pad: silicone
- Nozzle: stainless steel
- Seals: fluorocaoutchouc
- Blanking screw: polyetheretherketone

Dimensions



65.510-PK



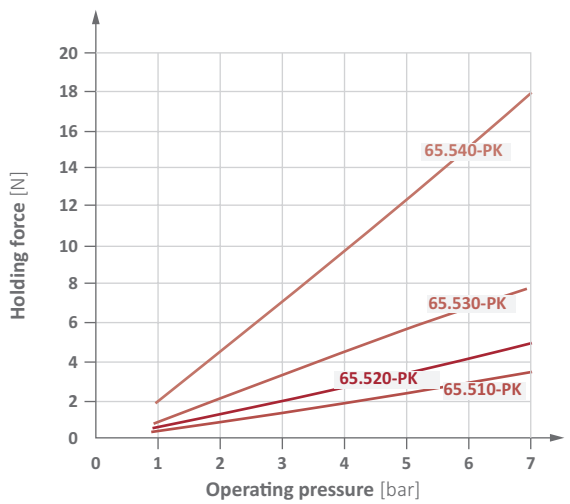
65.520-PK | 65.530-PK | 65.540-PK

① = Silicone rubber pads ② = Nozzle ③ = Compressed air connection ④ = Alternative compressed air connection

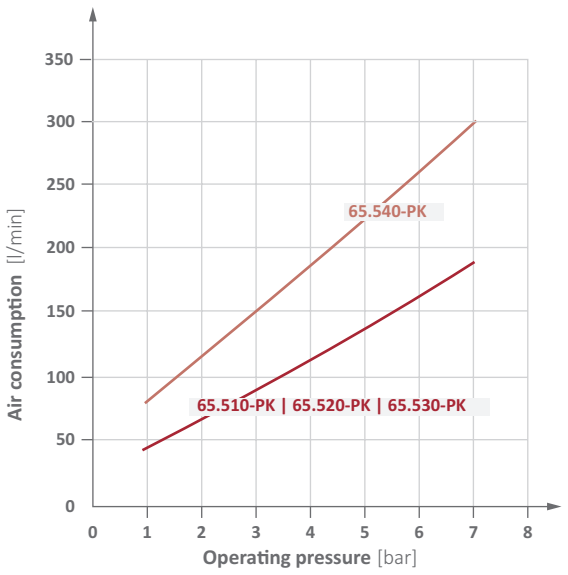
Item no.	65.510-PK	65.520-PK	65.530-PK	65.540-PK
A [mm]	21	31	41	61
Ø B [mm]	15	22	32	45
Ø D [mm]	20	30	40	60

Diagrams

> Holding force as a function of operating pressure



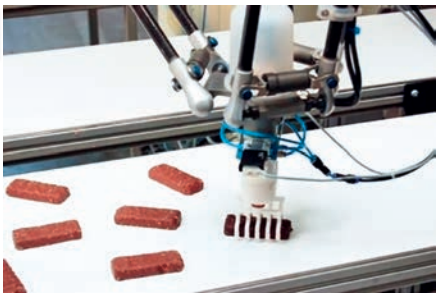
> Air consumption as a function of operating pressure



PA grippers



SUITABLE FOR FOODSTUFFS

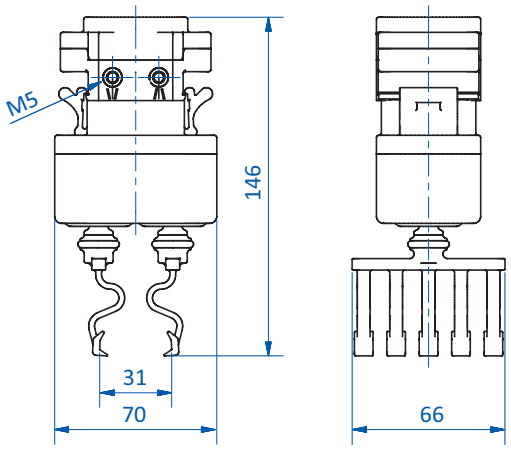


Customized design example

Product notes

> Grippers are customized to the workpiece
> Connection to robots such as Delta Robots
> Double-acting
> All components made of FDA compliant material
> Material: polyamide-based high-performance plastic
> The product examples displayed are based on customer specifications
> We would be pleased to develop your customized solution

Dimensions



Application examples

> Modular gripper for cans – the gripper design follows the contours of the handling item, to enable rapid acceleration



> Modular gripper with integrated ejector EMM and Varioflex® bellows vacuum cups for height compensation



Air nippers at a glance 281

Selection blade shapes 282

Air nippers – manual and automatic operation 286

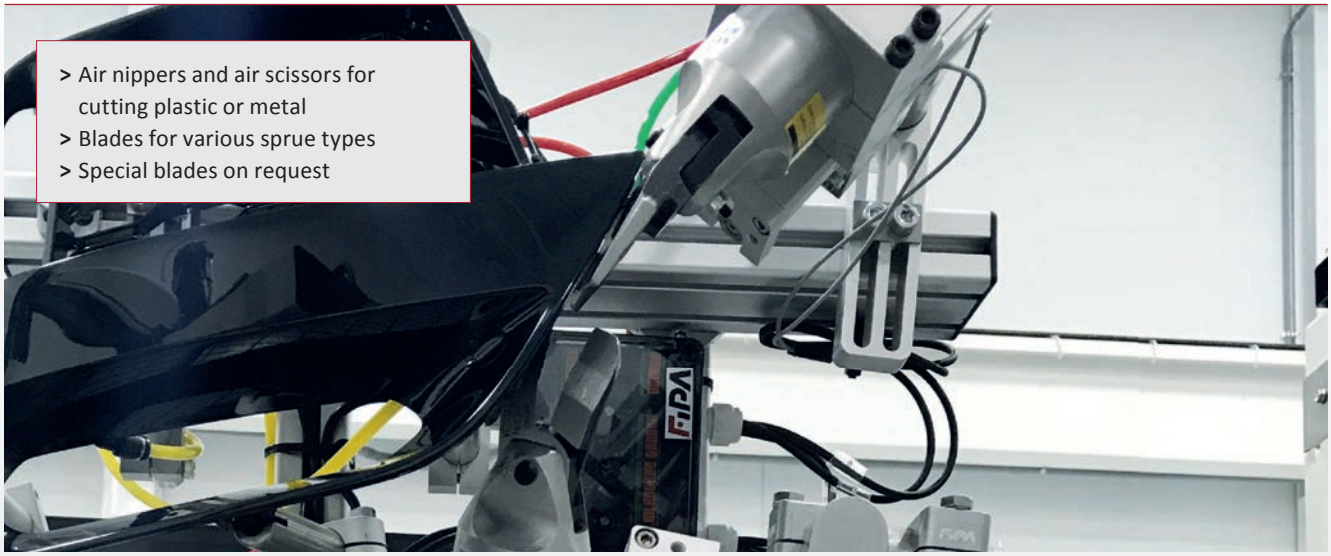
Air nippers – stationary 308

Air shears 321

Accessories 325

Notes:

FIPA Air nippers



> Air nippers and air scissors for cutting plastic or metal
> Blades for various sprue types
> Special blades on request



Air nippers for manual or automatic operation

> Installation on robot arms or cutting stations
> Cutting off sprues as well as cutting metal wire
> Round or square body

> See page 286



Stationary air nippers with/without lift

> Installation on cutting stations or automated equipment
> Adjustable lift for cutting flush to the workpiece
> Double-acting models for short cycles

> See page 308



Air shears for manual or automatic operation

> Cutting of special plastics and textiles
> Double-acting models for short cycles

> See page 321



Blades for plastic or metal

> Blades for various sprue types
> Special blades on request

> See pages after respective nipper type

Blades for plastic – nippers for manual and automatic operation

Item number	Page	Cutting capacity [mm]		Air nippers		
		PP/PE	ABS	GT-N [manually]	GT-NR [round]	GT-NS [rectangular]
Straight cutting edge						
						
Standard type						
N3AJ	296	2	--	x	x	x
N10LAB2		4	2.6	x	x	x
N20AJ		7	5	x	x	x
N20AB39		7	5	x	--	x
N30AJ		10	6.5	x	x	x
Extra long blade						
N20AJL	296	7	5	x	x	x
N30AJL		10	6.5	x	x	x
N50AJL		15	8	x	x	x
Angled cutting edge						
						
Blade with flat angle						
N3AP	298	2	--	x	x	x
N5AP		2	--	x	x	x
N7AP		3	2	x	x	x
N10AP		4	2.6	x	--	--
N10LAB152		4	2.6	x	--	x
N10LAP		4	2.6	--	x	x
N12AP		4.5	4	x	--	--
N20AA239		6	4	x	--	x
N20AA27		6.5	4.5	x	--	x
N20AB360		7	5	--	--	x
N30AA114		10	6.5	x	x	x
N30AP		10	6.5	x	x	x
N50AB		15	8	--	x	x
N50ABH41		18	8	--	x	x
Blade with deep angle						
N7PF	298	3	2	x	x	x
N10LPF		4	2.6	--	x	x
N20PF		7	5	x	x	x
N30PF		10	6.5	x	x	x
Laterally facing blades						
						
Blade with 90° laterally facing cutting edge						
N20AML	300	10x1.5	8x1	x	x	x
N20AMR		10x1.5	8x1	x	x	x
N30AML		15x2	10x1.5	x	x	x
N30AMR		15x2	10x1.5	x	x	x
Blades, L-shape						
						
Long blade with 90° angle						
N20AL	301	7	5	x	x	x
N30AL525		10	6.5	x	x	x

Blades for plastic – nippers for manual and automatic operation

Item number	Page	Cutting capacity [mm]		Air nippers		
		PP/PE	ABS	GT-N [manually]	GT-NR [round]	GT-NS [rectangular]
Blades, Z-shape						
Offset blade						
N20AH	302	7	5	x	x	x
N30AH		10	6.5	x	x	x
Blades, nipper style						
For cutting applications						
N3AE	303	2	--	x	x	x
N5AE		2	--	x	x	x
N7AE		3	2	x	x	x
N10AE		4	2.6	x	x	x
N20AE		7	5	x	x	x
N30AE		10	6.5	x	x	x
N50AE		12	6.5	x	x	--

Blades for metal – nippers for manual and automatic operation

Item number	Page	Cutting capacity [mm]			Air nippers		
		Copper wire	Steel wire	Piano wire	GT-N [manually]	GT-NR [round]	GT-NS [rectangular]
Straight cutting edge							
Blade with an unbeveled edge (anvil principle) to cut thin wire							
N3BJ	304	1	0.5	--	x	x	x
N5BJ		1	0.5	--	x	x	x
N7BJ		1.6	1	--	x	x	x
Blade in clipper type shape with carbide tips to cut thicker wire or thin pipe							
N20BFB	304	2.6	2	1.2	x	x	x
N50AS		5.5	4.5	--	x	x	--
Angled cutting edge							
Blade with an unbeveled edge (anvil principle) to cut thin wire							
N3AS	306	1	0.5	--	x	x	x
N3HS		1	0.5	0.2	x	x	x
N5AS		1	0.5	--	x	x	x
N5HS		1	0.5	0.3	x	x	x
N7AS		1.6	1	--	x	x	x
N7HS		1.6	1	0.5	x	x	x
N10AS		1.8	1.2	--	x	--	--
N10HS		2.3	1.7	--	x	--	--
N10LAS		1.8	1.2	--	--	x	x
N12AS		2.3	1.7	--	x	--	--
N12HS		1.3	2.7	--	x	--	--
N20AS		2.6	2	--	x	x	x
N20HS		2.6	2	1	x	x	x
N30AS		3.3	2.8	--	x	x	x
Blade with an unbeveled edge (anvil principle) and carbide tips							
N30BBB	306	3.3	2.8	1.2	x	x	x
Blade with carbide tips							
N50BBB	306	5.5	4.5	2	x	x	--

Blades for plastic – stationary nippers with or without lift

Item number	Page	Cutting capacity [mm] PP/PE	Cutting capacity [mm] ABS	Air nippers GT-NF [without lift]	Air nippers GT-NY [with lift]
Straight cutting edge					
					
Standard type					
NY05AJ	311	3	2	x	x
NY10AJ		3.5	2.3	x	x
NY15AJ		4	2.6	x	x
NY20AJ		5	3.4	x	x
Reverse cutting edge if cutting flush to workpiece with blade "AJ" is not possible					
NY05RAJ	311	3	2	x	x
NY10RAJ		3.5	2.3	x	x
NY15RAJ		4	2.6	x	x
NY25RAJ		5	3.4	x	x
Extra long blade					
NY05AJL	311	3	2	x	x
NY10AJL		3.5	2.3	x	x
NY15AJL		4	2.6	x	x
NY25AJL		5	3.4	x	x
Extra thin blade for restricted spaces					
NY05AJT	311	3	2	x	x
NY10AJT		3.5	2.3	x	x
NY15AJT		4	2.6	x	x
Soldered carbide tip for cutting hard plastics or plastics containing fiberglass					
NY05AJB	311	3	2	x	x
NY10AJB		3.5	2.3	x	x
NY15AJB		4	2.6	x	x
NY25AJB		5	3.4	x	x
Blades, Z-shape					
					
Offset blade for overcoming obstacles or for narrow sprues					
NY05AH	313	3	2	x	x
NY10AH		3.5	2.3	x	x
NY15AH		4	2.6	x	x
NY25AH		5	3.4	x	x
Reverse cutting edge if cutting flush to workpiece with blade "AH" is not possible					
NY05RAH	313	3	2	x	x
NY10RAH		3.5	2.3	x	x
NY15RAH		4	2.6	x	x
NY25RAH		5	3.4	x	x

Blades for metal – stationary nippers with or without lift

Item number	Page	Cutting capacity [mm] Copper wire	Cutting capacity [mm] Steel wire	Air nippers GT-NF [without lift]	Air nippers GT-NY [with lift]
Straight cutting edge					
					
Blade with an unbeveled edge (anvil principle)					
NY05BJ	315	1.6	1	x	x
NY05RBJ		1.6	1	x	x

FIPA challenge accepted

Blades for plastic – vertical stationary nippers with lift

Item number	Page	Cutting capacity [mm] PP/PE	Cutting capacity [mm] ABS	Air nippers GT-NT
Straight cutting edge				
				
Standard type				
NT03AJ	318	1.5	1	x
NE05AJ		2.5	1.5	x
NT05AJ		2.5	1.5	x
NE10AJ		3.5	2.3	x
NT10AJ		3.5	2.3	x
NT20AJ		5	3.4	x
Extra long blade				
NT05AJL	318	2.5	1.5	x
NT10AJL		3.5	2.3	x
NT20AJL		5	3.4	x
Extra thin blade for restricted spaces				
NT03AJT	318	1.5	1	x
NT05AJT		2.5	1.5	x
NT10AJT		3.5	2.3	x
Blade with HSS-tip for cutting hard plastic				
NT05AJH	318	2.5	1.5	x
NT10AJH		3.5	2.3	x
NT20AJH		5	3.4	x
Carbide tip for cutting hard plastic or plastic with glass fiber				
NT05AJB	318	2.5	1.5	x
NT10AJB		3.5	2.3	x
NT20AJB		5	3.4	x
Blades, pliers shape				
				
For universal cutting applications				
NT05AE	320	2.5	1.5	x
NT10AE		3.5	2.3	x

Blades for air scissors

Item number	Page	Cutting capacity [mm] Kevlar	Cutting capacity [mm] Band steel	Air nippers GT-NWR [round]	Air nippers GT-NWS [rectangular]
Blades for single-acting air scissors for cutting kevlar, aramid, glass or carbon fiber					
					
H30ME	322	1	--	x	x
H30MEL		1	--	x	x
H12ME30K		0.3	--	x	--
H120SK		--	15 x 0.5	x	--

Item number	Page	Cutting capacity [mm] Copper wire	Cutting capacity [mm] Steel wire	Air nippers GT-HWR [round]	Air nippers GT-HWS [rectangular]
Blades for double-acting air scissors for cutting copper or steel wire					
					
HW1J	324	1	0.5	x	x
HW10J		1.8	1.2	--	x

Air nippers – automatic, round/square

AIR NIPPERS FOR PLASTIC AND METAL



Air nippers, round



Air nippers, square

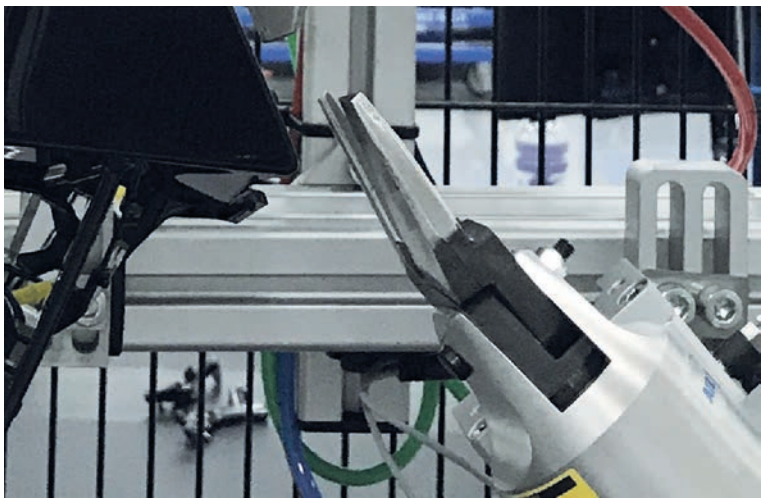
Product notes

> Air nippers for EOAT robot arms or cutting stations
> Round body can be mounted in any angle position
> Square body comes with bore holes on five surfaces
> Rear air connection can be rotated 180°
> GT-NS20H-1: air nipper with adjustable cutting opening
> Pressure booster to increase cutting force optionally available

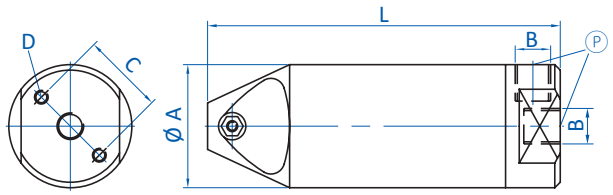
Technical data

Item no.	Housing	Max. cutting force [N]	Air consumption [cm³/stroke]	Operating pressure [bar (psi)]	Height blade [mm]	Connection [G]	Accessories
GT-NR3	Round	294	45	4 - 5 (58 - 72.5)	7	G1/8	--
GT-NR5	Round	392	64	4 - 5 (58 - 72.5)	7	G1/8	--
GT-NR7	Round	490	116	4 - 5 (58 - 72.5)	9	G1/8	--
GT-NR10L	Round	588	116	4 - 6 (58 - 87)	12	G1/8	Mounting bracket: GT-NR10H (p.325) Mounting bracket: GT-NR10GR (p.328) Mounting bracket: GT-NR10S (p.326) Mounting bracket: GT-NR10ST2 (p.327) Pressure amplifier: P-10L (p.295)
GT-NR20	Round	1,372	230	5 - 6 (72.5 - 87)	12	G1/8	Mounting bracket: GT-NR20H (p.325) Mounting bracket: GT-NR20S (p.326) Mounting bracket: GT-NR20ST2 (p.327) Pressure amplifier: P-20 (p.295)
GT-NR30	Round	2,744	584	5 - 6 (72.5 - 87)	17	G1/8	Mounting bracket: GT-NR30H (p.325) Mounting bracket: GT-NR30S (p.326) Mounting bracket: GT-NR30ST2 (p.327) Pressure amplifier: P-30 (p.295)
GT-NR50	Round	4,704	1,170	5 - 6 (72.5 - 87)	25.2	G1/4	Mounting bracket: GT-NR50H (p.325) Mounting bracket: GT-NR50ST2 (p.327) Pressure amplifier: P-50 (p.295)
GT-NS3	Square	294	45	4 - 5 (58 - 72.5)	7	G1/8	--
GT-NS5	Square	392	64	4 - 5 (58 - 72.5)	7	G1/8	--
GT-NS7	Square	490	116	4 - 5 (58 - 72.5)	9	G1/8	--
GT-NS10L	Square	588	116	4 - 6 (58 - 87)	12	G1/8	Pressure amplifier: P-10L (p.295)
GT-NS20	Square	1,372	230	5 - 6 (72.5 - 87)	12	G1/8	Pressure amplifier: P-20 (p.295)
GT-NS20H-1	Square	1,372	230	5 - 6 (72.5 - 87)	12	G1/8	Pressure amplifier: P-20 (p.295)
GT-NS30	Square	2,744	584	5 - 6 (72.5 - 87)	17	G1/8	Pressure amplifier: P-30 (p.295)

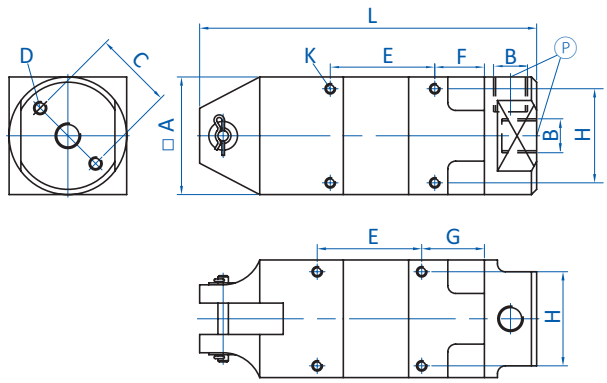
Application example



Dimensions



GT-NR3 | GT-NR5 | GT-NR7 | GT-NR10L | GT-NR20 | GT-NR30 | GT-NR50



GT-NS3 | GT-NS5 | GT-NS7 | GT-NS10L | GT-NS20 | GT-NS20H-1 | GT-NS30

Ⓟ = Compressed air connection

Item no.	A [mm]	B	C [mm]	D	E [mm]	F [mm]	G [mm]	H [mm]	K	L [mm]
GT-NR3	23	G1/8	17	M3	--	--	--	--	--	110
GT-NR5	30	G1/8	20	M4	--	--	--	--	--	94
GT-NR7	34	G1/8	22	M4	--	--	--	--	--	113
GT-NR10L	36	G1/8	24	M4	--	--	--	--	--	113
GT-NR20	45	G1/8	30	M5	--	--	--	--	--	129
GT-NR30	56	G1/8	40	M6	--	--	--	--	--	165
GT-NR50	75	G1/4	50	M8	--	--	--	--	--	222
GT-NS3	23	G1/8	17	M3x8	40	19	24	19	M3x3.5	110
GT-NS5	30	G1/8	20	M4x10	30	14	19	24	M3x5	94
GT-NS7	36	G1/8	24	M4x10	30	18	23	28	M4x5.5	113
GT-NS10L	36	G1/8	24	M4x10	30	18	23	28	M4x5.5	113
GT-NS20	45	G1/8	30	M5x12	40	19	24	36	M4x7	129
GT-NS20H-1	45	G1/8	30	M5x12	40	19	24	36	M4x7	129
GT-NS30	56	G1/8	40	M6x12	60	20	30	46	M5x10	170

Air nippers for manual operation



AIR NIPPERS FOR PLASTIC AND METAL

Product notes

> Manually operated air nippers with safety lever
> Round shaped body with knurling for safe grip
> GT-N20, N30 and N50 come with stopcock to lock compressed air supply
> Pressure booster to increase cutting force optionally available

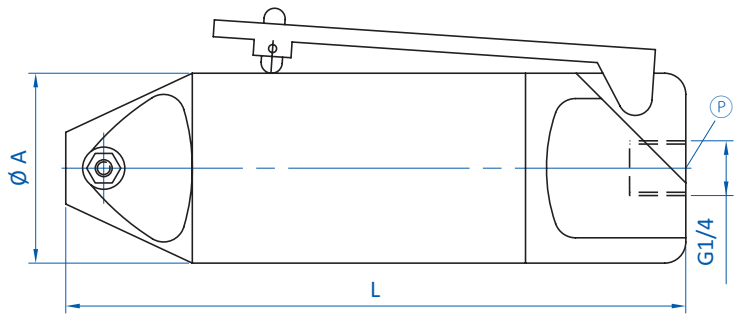
Technical data

Item no.	Max. cutting force [N]	Air consumption [cm³/stroke]	Operating pressure [bar (psi)]	Height blade [mm]	Connection [G]	Weight [g]	Pressure amplifier
GT-N3	294	45	4 - 5 (58 - 72.5)	7	G1/4	100	--
GT-N5	392	64	4 - 5 (58 - 72.5)	7	G1/4	140	--
GT-N7	490	116	4 - 5 (58 - 72.5)	9	G1/4	190	--
GT-N10	588	116	4 - 6 (58 - 87)	9	G1/4	200	P-10L (p.295)
GT-N12	735	116	5 - 6 (72.5 - 87)	12	G1/4	220	P-10L (p.295)
GT-N20	1,372	230	5 - 6 (72.5 - 87)	12	G1/4	430	P-20 (p.295)
GT-N30	2,744	584	5 - 6 (72.5 - 87)	17	G1/4	685	P-30 (p.295)
GT-N50	4,704	1,220	5 - 6 (72.5 - 87)	25.2	G1/4	1,220	P-50 (p.295)

Dimensions

Ø A [mm]	L [mm]
23	112
30	103
34	123
34	132
36	132
45	156
56	193
75	237

Dimensions



Ⓟ = Compressed air connection

Blades for plastic – Series SF-05



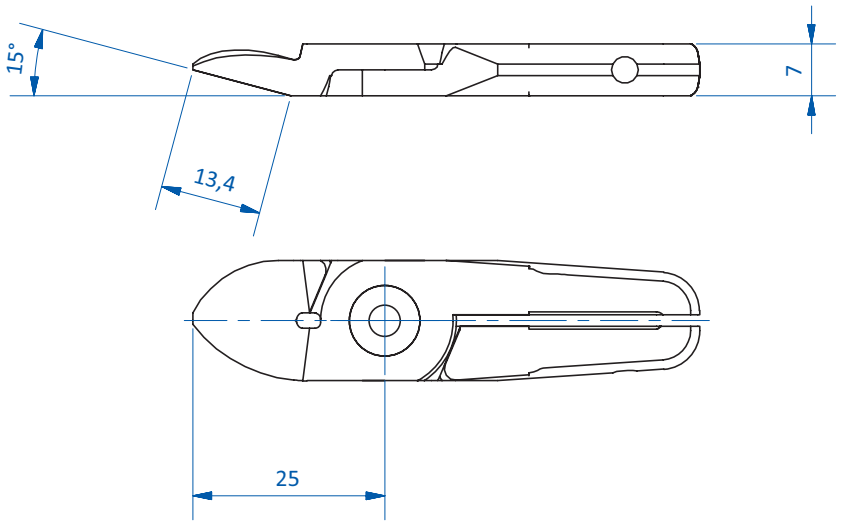
Product notes

> Forged blades from high alloy steel and heat surface treated
> Suitable for all nippers of the size 5

Technical data

Item no.	Plug design	Max. opening width [mm]	Max. sprue diameter [mm]	Material	Weight [g]	Air nippers
SF05.A15.25	15° angle	5	2	Ferrous alloy	34	GT-N5 (p.288) GT-NR5 (p.286) GT-NS5 (p.286)

Dimensions



Blades for plastic – Series SF-10





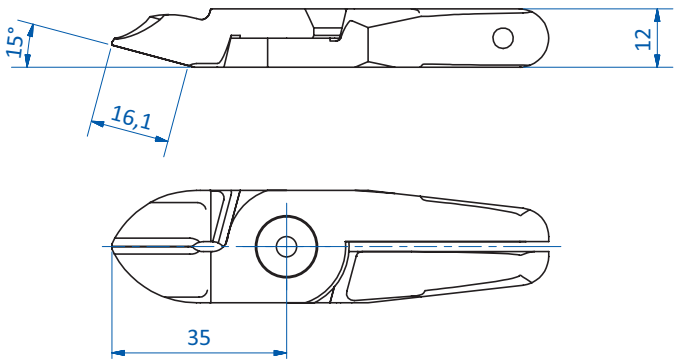
Product notes

> Forged blades from high alloy steel and heat surface treated
> Suitable for all nippers of the size 10

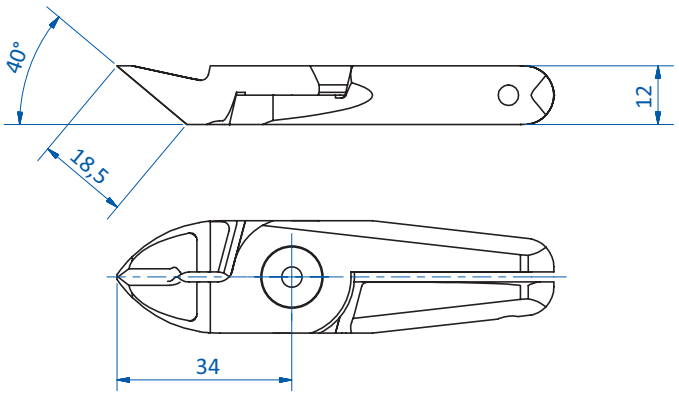
Technical data

Item no.	Plug design	Max. opening width [mm]	Max. sprue diameter [mm]	Material	Weight [g]	Air nippers
SF10.A15.35	15° angle	4.5	3	Ferrous alloy	110	GT-NR10L (p.286) GT-NS10L (p.286)
SF10.A40.34	40° angle	6.5	4	Ferrous alloy	112	GT-NR10L (p.286) GT-NS10L (p.286)

Dimensions



SF10.A15.35



SF10.A40.34

Blades for plastic – Series SF-20



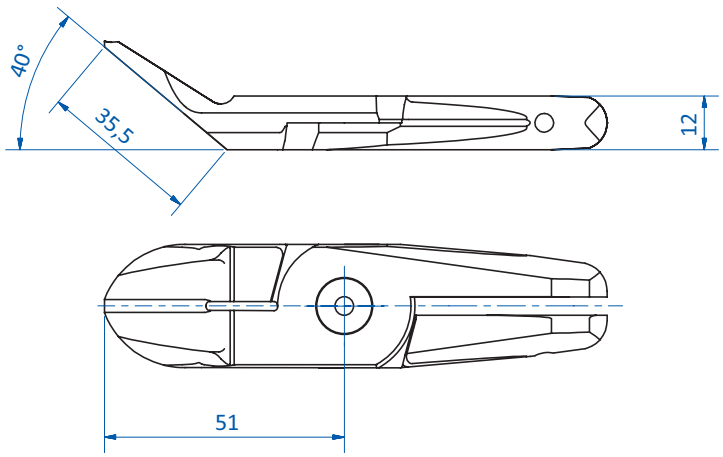
Product notes

> Forged blades from high alloy steel and heat surface treated
> Suitable for all nippers of the size 20

Technical data

Item no.	Plug design	Max. opening width [mm]	Max. sprue diameter [mm]	Material	Weight [g]	Air nippers
SF20.A40.51	40° angle	17	9	Ferrous alloy	170	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
SF20.A90.41	90° angle	14	8	Ferrous alloy	200	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
SF20.I36	Inline	11.5	6	Ferrous alloy	120	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
SF20.I65	Inline	22	8	Ferrous alloy	198	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
SF20.P48	Perpendicular	16.5	8	Ferrous alloy	178	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)

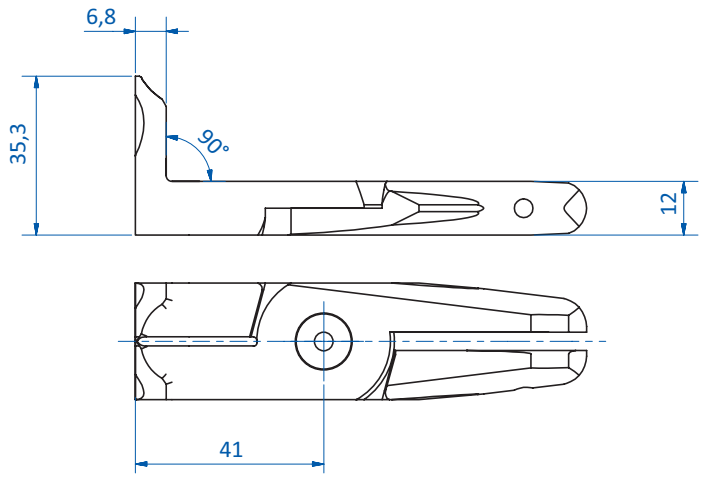
Dimensions



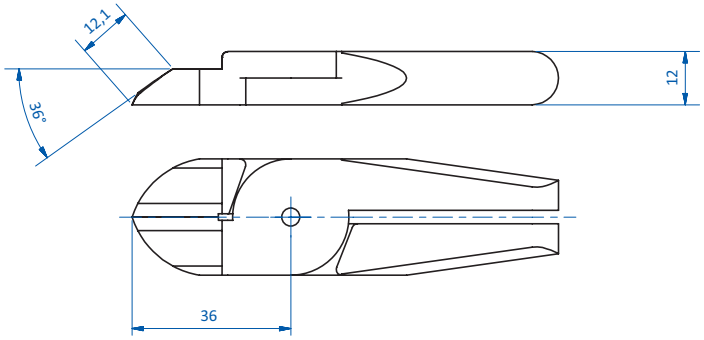
SF20.A40.51

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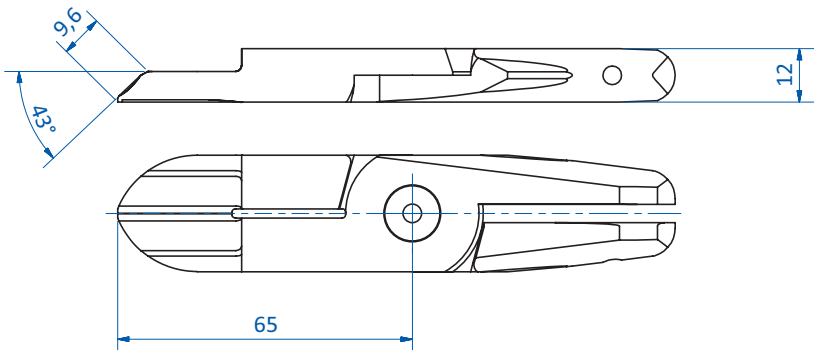
Dimensions



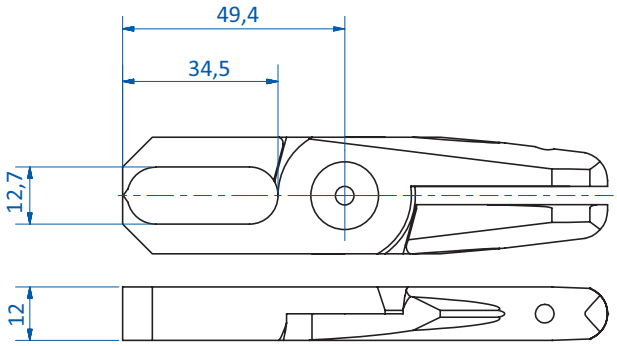
SF20.A90.41



SF20.I36



SF20.I65



SF20.P48

Blades for plastic – Series SF-30



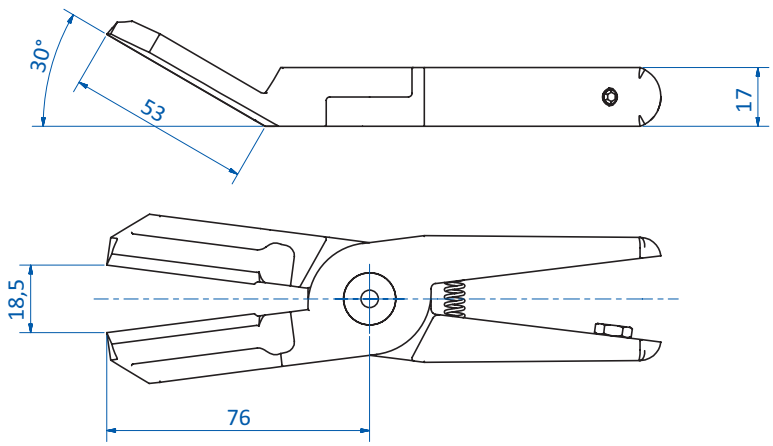
Product notes

> Forged blades from high alloy steel and heat surface treated
> Suitable for all nippers of the size 30

Technical data

Item no.	Plug design	Max. opening width [mm]	Max. sprue diameter [mm]	Material	Weight [g]	Air nippers
SF30.A30.76	30° angle	18.5	9	Ferrous alloy	378	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
SF30.I53	Inline	12.5	9	Ferrous alloy	365	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
SF30.I74	Inline	19	9	Ferrous alloy	464	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
SF30.P45	Perpendicular	10	9	Ferrous alloy	374	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)

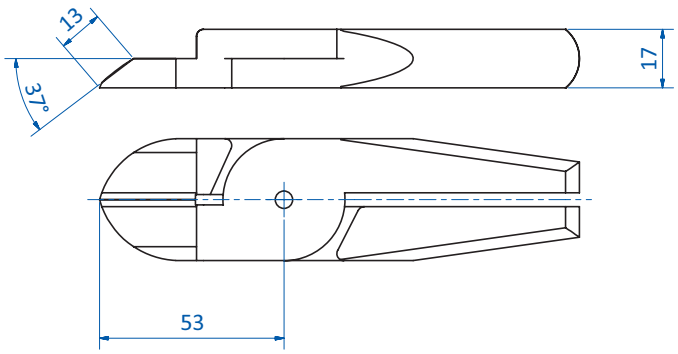
Dimensions



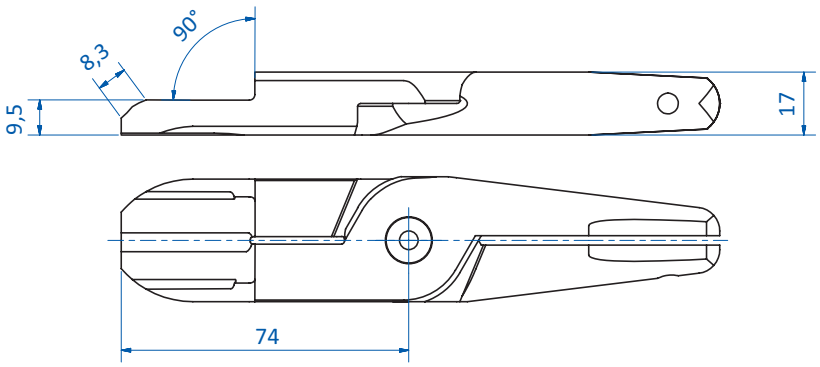
SF30.A30.76

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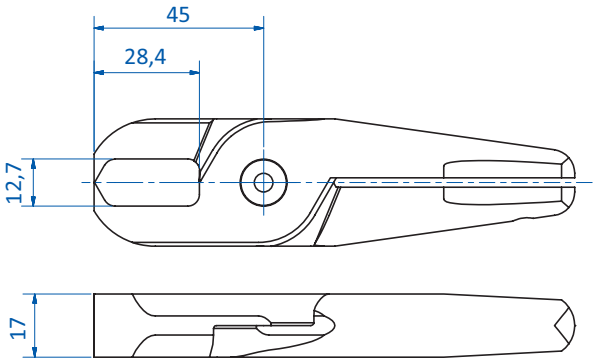
Dimensions



SF30.I53



SF30.I74



SF30.P45

Pressure booster for air nippers GT-N, GT-NR, GT-NS





Air nippers GT-NS20 with pressure booster

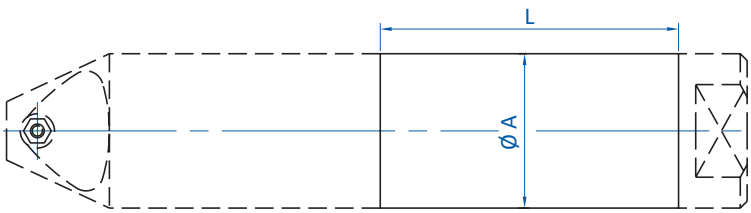
Product notes

> Pressure booster for retrofitting
> Increase in cutting force if the required cutting force cannot be achieved with a standard nipper
> Order example air nipper GT-N20 incl. booster P-20: GT-NP20

Technical data

Item no.	Total cutting force [N]	Air consumption [cm³/stroke]	Weight [g]	Air nippers
P-10L	980	223	110	GT-N10 (p.288) GT-NR10L (p.286) GT-NS10L (p.286) GT-N12 (p.288)
P-20	2,254	508	208	GT-N20 (p.288) GT-NR20 (p.286) GT-NS20 (p.286)
P-30	4,410	956	315	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
P-50	7,742	2,670	776	GT-N50 (p.288) GT-NR50 (p.286)

Dimensions



Item no.	Ø A [mm]	L [mm]
P-10L	36	71
P-20	45	87
P-30	56	92
P-50	75	133

Blades for plastic, straight



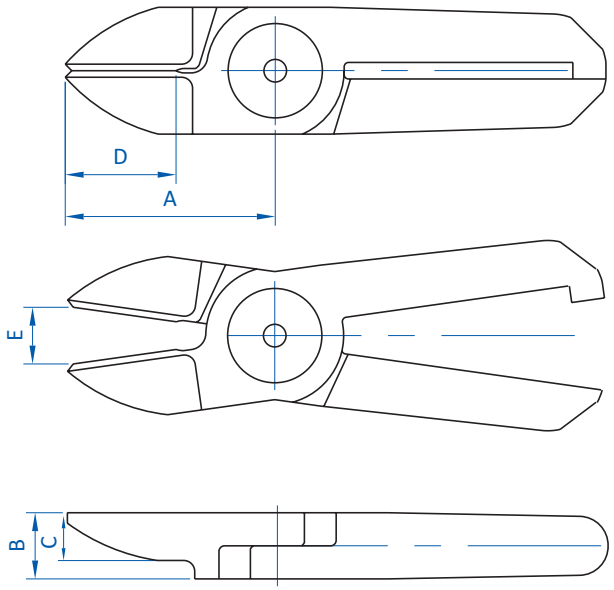
Product notes

> Blades with straight cutting edge for clean cuts
> AJ, LAB2 and AB39: standard blade
> AJL: blade extra long

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
N3AJ	Ferrous alloy	2	--	40	GT-N3 (p.288) GT-NR3 (p.286) GT-NS3 (p.286)
N10LAB2	Ferrous alloy	4	2.6	120	GT-NR10L (p.286) GT-NS10L (p.286)
N20AJ	Ferrous alloy	7	5	125	GT-N20 (p.288) GT-NS20 (p.286) GT-NR20 (p.286)
N20AB39	Ferrous alloy	7	5	185	GT-N20 (p.288) GT-NS20 (p.286)
N20AJL	Ferrous alloy	7	5	230	GT-N20 (p.288) GT-NR20 (p.286) GT-NS20 (p.286)
N30AJ	Ferrous alloy	10	6.5	370	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
N30AJL	Ferrous alloy	10	6.5	470	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)
N50AJL	Ferrous alloy	15	8	1,430	GT-N50 (p.288) GT-NR50 (p.286)

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]
N3AJ	24	7	4	12	5.5
N10LAB2	61	12	7	36	10
N20AJ	35	12	8	18	11
N20AB39	61	12	7	36	14
N20AJL	65	12	7	20	16
N30AJ	52	17	8	28	11
N30AJL	75	17	8	25	19
N50AJL	110	25	15	35	26

Blades for plastic, angled





Model PF

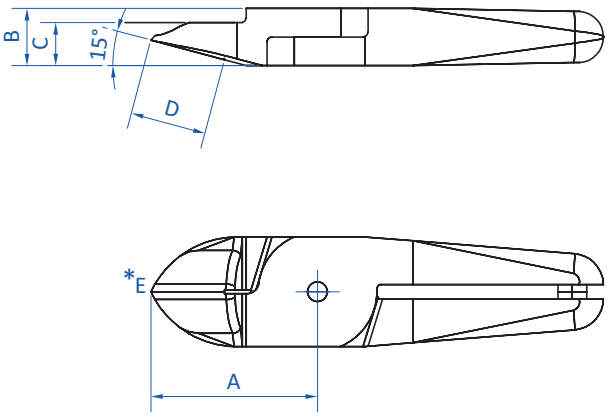
Product notes

> Blades with angled cutting edge
> Model PF: blades with deep angle
> All other blades with standard angle

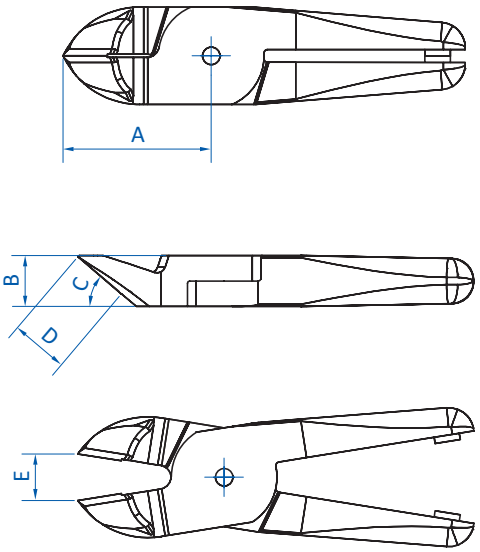
Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
N3AP	Ferrous alloy	2	--	35	GT-N3 (p.288), GT-NR3 (p.286), GT-NS3 (p.286)
N5AP	Ferrous alloy	2	--	40	GT-N5 (p.288), GT-NR5 (p.286), GT-NS5 (p.286)
N7AP	Ferrous alloy	3	2	80	GT-N7 (p.288), GT-NR7 (p.286), GT-NS7 (p.286)
N7PF	Ferrous alloy	3	2	80	GT-N7 (p.288), GT-NR7 (p.286), GT-NS7 (p.286)
N10AP	Ferrous alloy	4	2.6	85	GT-N10 (p.288)
N10LAB152	Ferrous alloy	4	2.6	165	GT-NR10L (p.286)
N10LAP	Ferrous alloy	4	2.6	120	GT-NR10L (p.286), GT-NS10L (p.286)
N10LPF	Ferrous alloy	4	2.6	120	GT-NR10L (p.286), GT-NS10L (p.286)
N12AP	Ferrous alloy	4.5	4	135	GT-N12 (p.288)
N20AA239	Ferrous alloy	6	4	195	GT-N20 (p.288), GT-NS20 (p.286)
N20AA27	Ferrous alloy	6.5	4.5	145	GT-N20 (p.288), GT-NS20 (p.286)
N20AB360	Ferrous alloy	7	5	185	GT-NS20 (p.286)
N20AP	Ferrous alloy	7	5	125	GT-NS20 (p.286), GT-N20 (p.288), GT-NR20 (p.286)
N20PF	Ferrous alloy	7	5	130	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
N30AA114	Ferrous alloy	10	6.5	385	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N30AP	Ferrous alloy	10	6.5	380	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N30PF	Ferrous alloy	10	6.5	390	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N50AB	HSS steel	15	8	1,100	GT-N50 (p.288), GT-NR50 (p.286)
N50ABH41	HSS steel	18	8	1,000	GT-N50 (p.288), GT-NR50 (p.286)

Dimensions



N3AP | N5AP | N7AP | N10AP | N10LAP | N12AP | N20AP | N30AP



N7PF | N10LPF | N20PF | N30PF

* = width of opening

Item no.	A [mm]	B [mm]	C [°]	D [mm]	E [mm]
N3AP	24	7	15	11.5	4
N5AP	24	7	15	11.5	4
N7AP	27	9	30	11.5	4
N7PF	27	9	40	10.5	4
N10AP	27	9	30	11.5	5
N10LAB152	61	12	15	35	10
N10LAP	35	12	15	16	5
N10LPF	35	12	40	13.5	5
N12AP	35	12	15	16	5
N20AA239	52.3	12	40	27	14
N20AA27	45	12	23	25	12
N20AB360	61	12	15	35	16
N20AP	35	12	15	16	11
N20PF	35	12	40	13.5	11
N30AA114	76.3	17	30	50	20
N30AP	66	17	15	38	16
N30PF	58	17	30	25	15
N50AB	90	25	30	29	21
N50ABH41	119.6	25	30	40	29

Blades for plastic, laterally facing



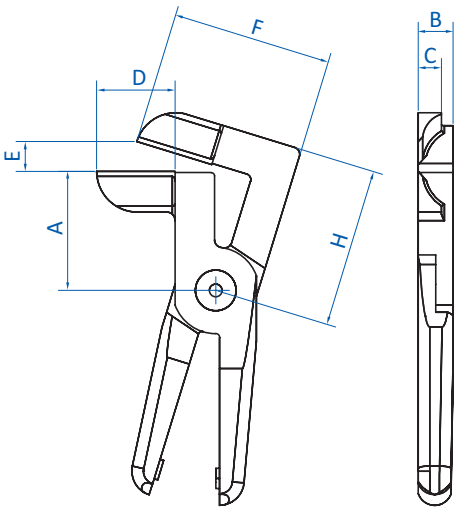
Product notes

> Blades with 90° bend cutting edge for sprues in restricted spaces, e.g. sprues of two opposing parts
> AML: blade with left orientation
> AMR: blade with right orientation

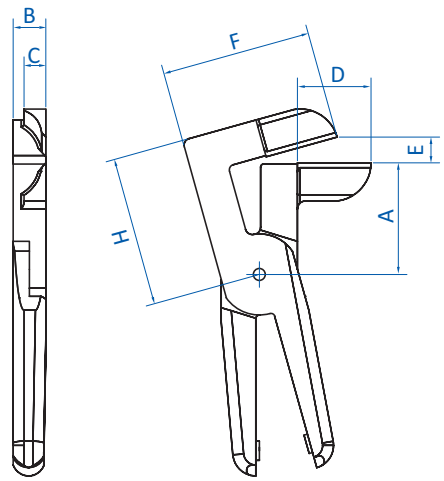
Technical data

Item no.	Material	Max. cutting thickness [mm] PP/PE	Max. cutting thickness [mm] ABS	Weight [g]	Air nippers
N20AML	Ferrous alloy	10x1.5	8x1	270	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
N20AMR	Ferrous alloy	10x1.5	8x1	270	GT-NR20 (p.286), GT-NS20 (p.286), GT-N20 (p.288)
N30AML	Ferrous alloy	15x2	10x1.5	520	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N30AMR	Ferrous alloy	15x2	10x1.5	520	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)

Dimensions



N20AML | N30AML



N20AMR | N30AMR

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	H [mm]
N20AML	41	12	8	27	9.5	55	55
N20AMR	41	12	8	27	9.5	55	55
N30AML	39	17	10	36	13	68	55
N30AMR	39	17	10	36	13	68	55

Blades for plastic, L-shape



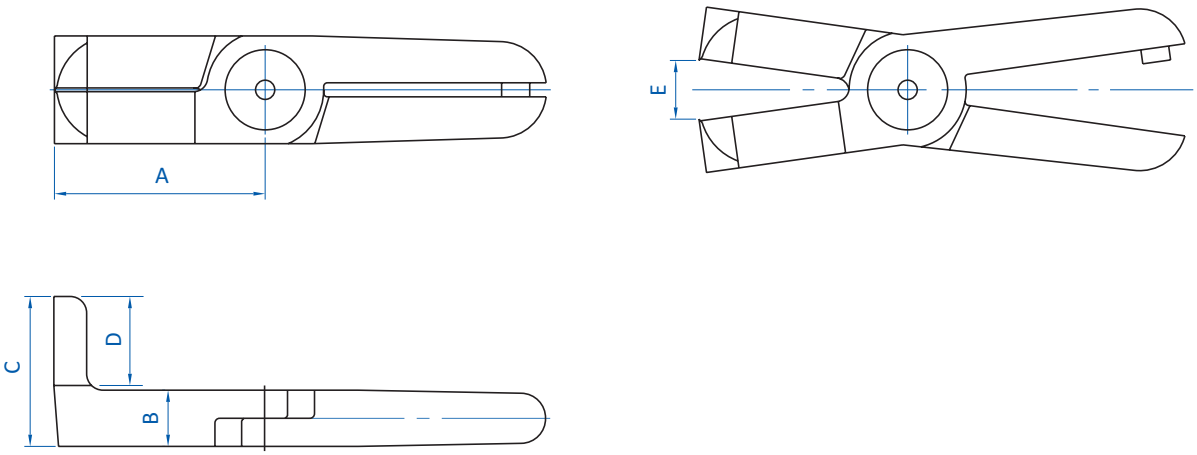
Product notes

> Long blades with 90° angle for clean cuts

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
N20AL	Ferrous alloy	7	5	135	GT-N20 (p.288) GT-NR20 (p.286) GT-NS20 (p.286)
N30AL525	Ferrous alloy	10	6.5	395	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
N20AL	45	12	32	18	12
N30AL525	60	26	62	36	16

Singular blades for plastic, Z-shape



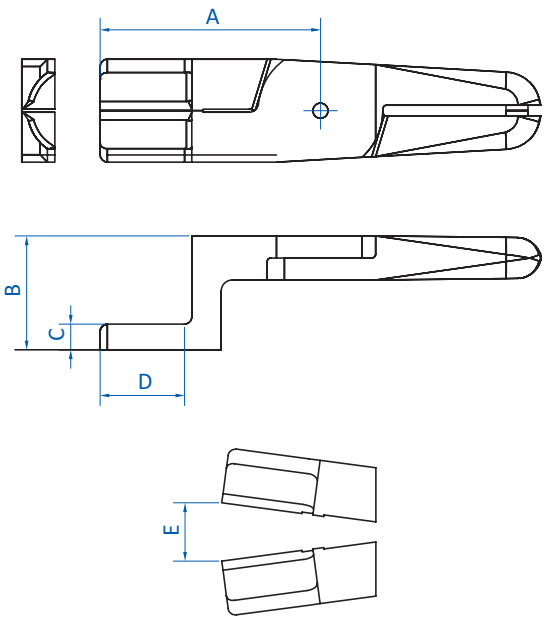
Product notes

> Blades with offset cutting edge for overcoming obstacles or for narrow sprues

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
N20AH	Ferrous alloy	7	5	240	GT-N20 (p.288) GT-NR20 (p.286) GT-NS20 (p.286)
N30AH	Ferrous alloy	10	6.5	450	GT-N30 (p.288) GT-NR30 (p.286) GT-NS30 (p.286)

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
N20AH	60	31	7	23	16
N30AH	80	65	8	34	22

Blades for plastic, nipper style



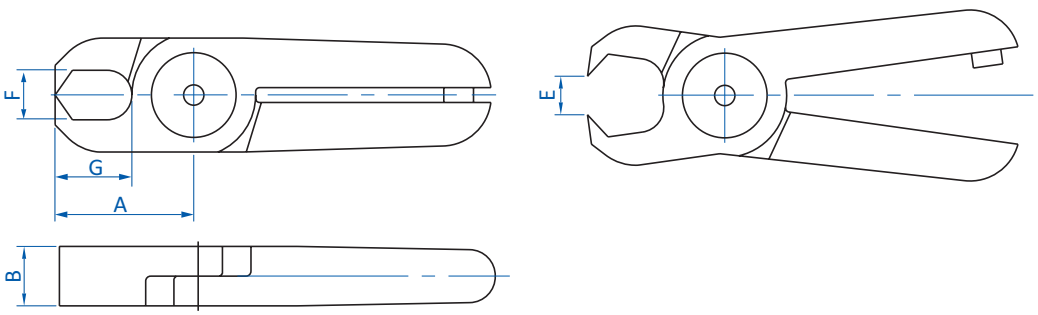
Product notes

> Blades, nipper style, for cutting applications

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
N3AE	Ferrous alloy	2	--	35	GT-N3 (p.288), GT-NR3 (p.286), GT-NS3 (p.286)
N5AE	Ferrous alloy	2	--	40	GT-N5 (p.288), GT-NR5 (p.286), GT-NS5 (p.286)
N7AE	Ferrous alloy	3	2	85	GT-N7 (p.288), GT-NR7 (p.286), GT-NS7 (p.286)
N10AE	Ferrous alloy	4	2.6	120	GT-N10 (p.288), GT-NR10L (p.286), GT-NS10L (p.286)
N20AE	Ferrous alloy	7	5	135	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
N30AE	Ferrous alloy	10	6.5	395	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N50AE	Ferrous alloy	12	6.5	1,000	GT-N50 (p.288), GT-NR50 (p.286)

Dimensions



Item no.	A [mm]	B [mm]	F x G [mm]	E [mm]
N3AE	20	7	6x6.6	3.5
N5AE	20	7	6x6.6	3.5
N7AE	26	9	8x8.8	4
N10AE	26	9	8x15.5	10
N20AE	28	12	10x15.5	8
N30AE	45	17	13x28	12
N50AE	128	25	25x90	30

Blades for metal, straight





Model BJ

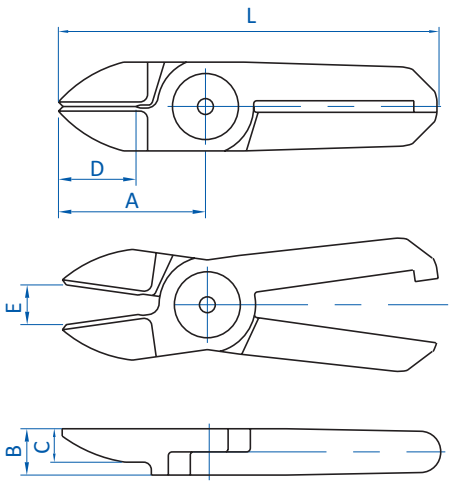
Product notes

> Straight blades with one unbeveled cutting edge using the anvil principle or with carbide tips for extra strength
> BJ: blades using anvil principle to cut thin wire
> N20BFB and N50AS: blades in clipper type shape with carbide tips to cut thicker wire or thin pipes

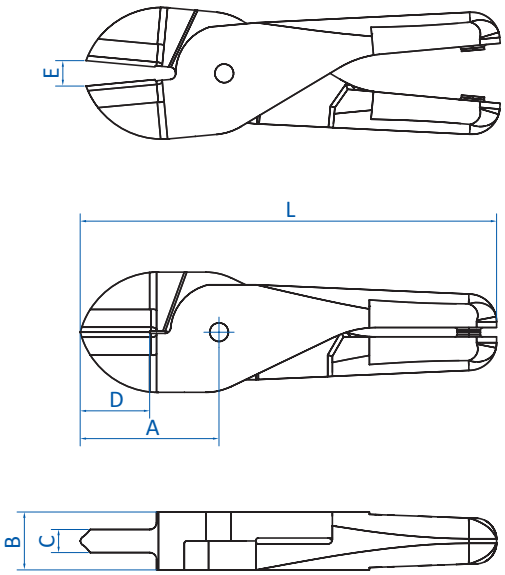
Technical data

Item no.	Material	Max. cutting thickness [mm]			Weight [g]	Air nippers
		Copper wire	Steel wire	Piano wire		
N3BJ	Ferrous alloy	1	0.5	--	35	GT-N3 (p.288) GT-NR3 (p.286) GT-NS3 (p.286)
N5BJ	Ferrous alloy	1	0.5	--	40	GT-N5 (p.288) GT-NR5 (p.286) GT-NS5 (p.286)
N7BJ	Ferrous alloy	1.6	1	--	75	GT-N7 (p.288) GT-NR7 (p.286) GT-NS7 (p.286)
N20BFB	Sintered alloy	2.6	2	1.2	150	GT-N20 (p.288) GT-NR20 (p.286) GT-NS20 (p.286)
N50AS	Ferrous alloy	5.5	4.5	--	950	GT-N50 (p.288) GT-NR50 (p.286)

Dimensions



N3BJ | N5BJ | N7BJ



N20BFB | N50AS

Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]	**L** [mm]
N3BJ	24	7	5.8	13	5	64
N5BJ	24	7	5.8	13	4	64
N7BJ	27	9	7.5	13	5	81
N20BFB	35	12	5	17	8	95
N50AS	60	25	10	30	11	180

Blades for metal, angled



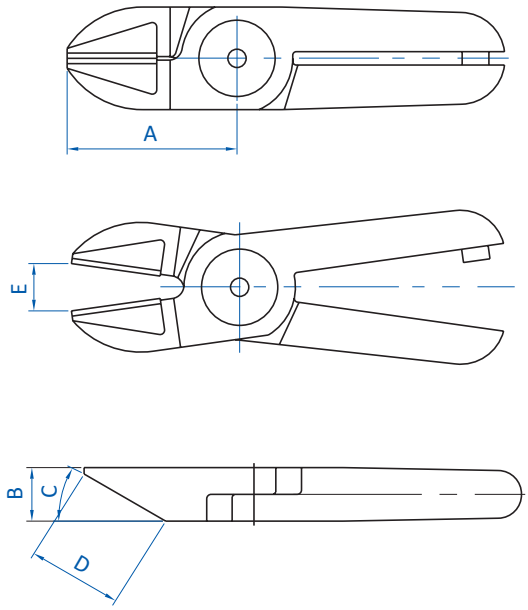
Product notes

> Blades with a beveled cutting edge using the anvil principle
> N30BBB and N50BBB: blades with carbide tips to cut hard wire such as high steel wire or piano wire

Technical data

Item no.	Material	Max. cutting thickness [mm]			Weight [g]	Air nippers
		Copper wire	Steel wire	Piano wire		
N3AS	Ferrous alloy	1	0.5	--	35	GT-N3 (p.288), GT-NR3 (p.286), GT-NS3 (p.286)
N3HS	HSS steel	1	0.5	0.2	35	GT-N3 (p.288), GT-NR3 (p.286), GT-NS3 (p.286)
N5AS	Ferrous alloy	1	0.5	--	40	GT-N5 (p.288), GT-NR5 (p.286), GT-NS5 (p.286)
N5HS	HSS steel	1	0.5	0.3	40	GT-N5 (p.288), GT-NR5 (p.286), GT-NS5 (p.286)
N7AS	Ferrous alloy	1.6	1	--	80	GT-N7 (p.288), GT-NR7 (p.286), GT-NS7 (p.286)
N7HS	HSS steel	1.6	1	0.5	80	GT-N7 (p.288), GT-NR7 (p.286), GT-NS7 (p.286)
N10AS	Ferrous alloy	1.8	1.2	--	85	GT-N10 (p.288)
N10HS	HSS steel	2.3	1.7	--	85	GT-N10 (p.288)
N10LAS	Ferrous alloy	1.8	1.2	--	120	GT-NR10L (p.286), GT-NS10L (p.286)
N12AS	Ferrous alloy	2.3	1.7	--	135	GT-N12 (p.288)
N12HS	HSS steel	1.3	2.7	--	95	GT-N12 (p.288)
N20AS	Ferrous alloy	2.6	2	--	140	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
N20HS	HSS steel	2.6	2	1	135	GT-N20 (p.288), GT-NR20 (p.286), GT-NS20 (p.286)
N30AS	Ferrous alloy	3.3	2.8	--	370	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N30BBB	Sintered alloy	3.3	2.8	1.2	365	GT-N30 (p.288), GT-NR30 (p.286), GT-NS30 (p.286)
N50BBB	Sintered alloy	5.5	4.5	2	955	GT-N50 (p.288), GT-NR50 (p.286)

Dimensions



Item no.	A [mm]	B [mm]	C [°]	D [mm]	E [mm]
N3AS	24	7	25	12	4
N3HS	24	7	25	12	4
N5AS	24	7	25	12	4
N5HS	24	7	25	12	4
N7AS	27	9	30	13.5	4
N7HS	27	9	30	13.5	4
N10AS	27	9	30	13.5	5
N10HS	27	9	30	13.5	5
N10LAS	35	12	30	20	5
N12AS	35	12	30	20	5
N12HS	35	12	30	20	9
N20AS	35	12	30	20	9
N20HS	26	12	40	10	7
N30AS	43	17	30	25	9
N30BBB	36	17	40	18	7
N50BBB	46	25	35	19	9

Stationary air nippers – horizontal without stroke

AIR NIPPERS FOR PLASTIC AND METAL



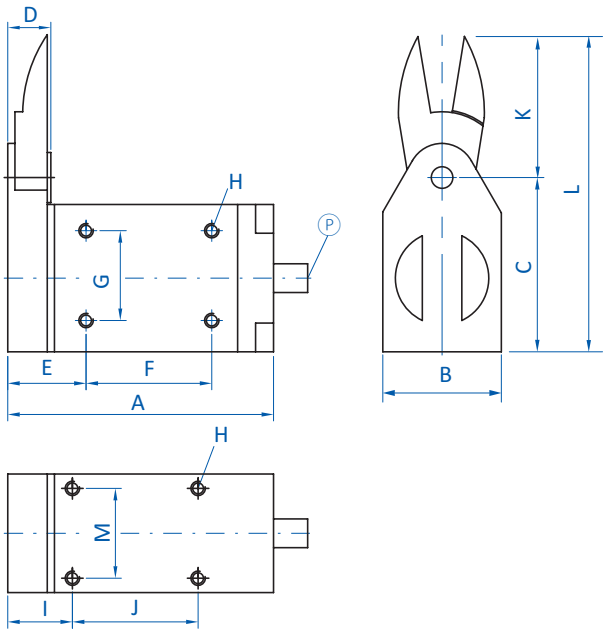
Product notes

> Nippers, lightweight and compact, for easy installation in restricted spaces
> To be used with cutting stations or automated equipment
> Mounting holes at three sides
> Max. blade opening and nipper length "K" refer to blades with index "AJ" resp. "RAJ"
> Blades are not included in the scope of delivery. Please order separately.

Technical data

Item no.	Max. cutting force [N]	Air consumption [cm³/stroke]	Operating pressure [bar (psi)]	Max. opening for cutting [mm]	Pipe connection [mm]	Weight [g]
GT-NF05	343	43	4 - 5 (58 - 72.5)	4	4	101
GT-NF10	490	63	4 - 5 (58 - 72.5)	6	4	143
GT-NF15	784	128	4 - 5 (58 - 72.5)	8	4	219

Dimensions



Ⓟ = Compressed air connection 4 mm x 2.5 mm

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]
GT-NF05	59.9	23	39.5	8.6	25.9	17	26	M3	21.9	17	22	61.5	18
GT-NF10	65.1	28	43.5	8.8	27.1	20	30	M3.5	23.1	20	24	67.5	22
GT-NF15	73	33	48.5	10.2	29	25	34	M4	25	25	27	75.5	26

Stationary air nippers – horizontal with stroke



Product notes

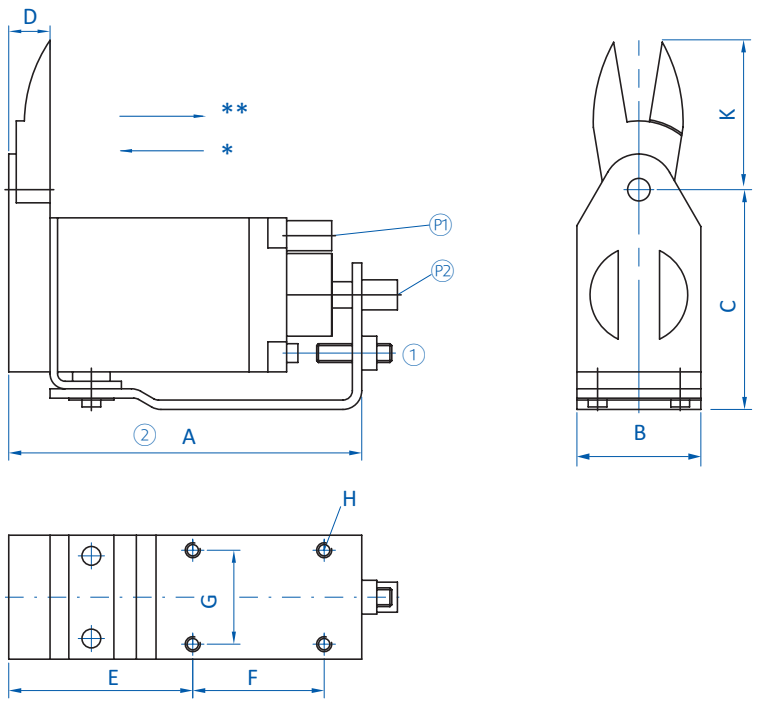
> Nippers, lightweight and compact, for easy assembly in restricted spaces
> To be used with cutting stations or automated equipment
> Stroke single-acting with return spring
> Horizontal, adjustable stroke enables cutting flush to the workpiece
> Connection via hose nipples or quick fittings
> Version (-R): push stroke models
> All others: pull stroke models
> Max. opening width and length "K" refer to blades with index "AJ" or "RAJ"
> Blades are not included in the scope of delivery. Please order separately.

Technical data

Item no.	Max. cutting force [N]	Air consumption [cm³/stroke]	Max. stroke [mm]	Operating pressure [bar (psi)]	Pipe connection with hose nipple [mm]	Pipe connection with quick connect fittings [mm]	Weight [g]
GT-NY05	343	48	3	4 - 5 (58 - 72.5)	2.5	--	155
GT-NY05R	343	48	3	4 - 5 (58 - 72.5)	2.5	--	155
GT-NY05-4	343	48	3	4 - 5 (58 - 72.5)	--	4x2,5	155
GT-NY05R-4	343	48	3	4 - 5 (58 - 72.5)	--	4x2,5	155
GT-NY10	490	68	3	4 - 5 (58 - 72.5)	2.5	--	210
GT-NY10R	490	68	3	4 - 5 (58 - 72.5)	2.5	--	210
GT-NY10-4	490	68	3	4 - 5 (58 - 72.5)	--	4x2,5	210
GT-NY10R-4	490	68	3	4 - 5 (58 - 72.5)	--	4x2,5	210
GT-NY15	784	136	3	4 - 5 (58 - 72.5)	2.5	--	319
GT-NY15R	784	136	3	4 - 5 (58 - 72.5)	2.5	--	319
GT-NY15-4	784	136	3	4 - 5 (58 - 72.5)	--	4x2,5	319
GT-NY15R-4	784	136	3	4 - 5 (58 - 72.5)	--	4x2,5	319
GT-NY25	980	184	5	5 - 6 (72.5 - 87)	4	--	580
GT-NY25R	980	184	5	5 - 6 (72.5 - 87)	4	--	580
GT-NY25-6	980	184	5	5 - 6 (72.5 - 87)	--	6x4	580
GT-NY25R-6	980	184	5	5 - 6 (72.5 - 87)	--	6x4	580

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Dimensions



P1 = Compressed air connection for cutting P2 = Compressed air connection for stroke * = Push stroke (Version -R) ** = Pull stroke
1 = Stroke adjustment
2 = Models NY: A = Distance from start of nipper to cutting position / Models NY-R: A = Distance from start of nipper to starting position

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H	K [mm]
GT-NY05	75.9	23	48	8.6	41	25	15	M4	22
GT-NY05R	75.9	23	48	8.6	41	25	15	M4	22
GT-NY05-4	75.9	23	48	8.6	41	25	15	M4	22
GT-NY05R-4	75.9	23	48	8.6	41	25	15	M4	22
GT-NY10	82.1	28	52	8.8	42	30	20	M4	24
GT-NY10R	82.1	28	52	8.8	42	30	20	M4	24
GT-NY10-4	82.1	28	52	8.8	42	30	20	M4	24
GT-NY10R-4	82.1	28	52	8.8	42	30	20	M4	24
GT-NY15	93	33	58	10	48	35	25	M4	27
GT-NY15R	93	33	58	10	48	35	25	M4	27
GT-NY15-4	93	33	58	10	48	35	25	M4	27
GT-NY15R-4	93	33	58	10	48	35	25	M4	27
GT-NY25	109	42	69	13	55	40	30	M5	31
GT-NY25R	109	42	69	13	55	40	30	M5	31
GT-NY25-6	109	42	69	13	55	40	30	M5	31
GT-NY25R-6	109	42	69	13	55	40	30	M5	31

Blades for plastic, straight



Product notes

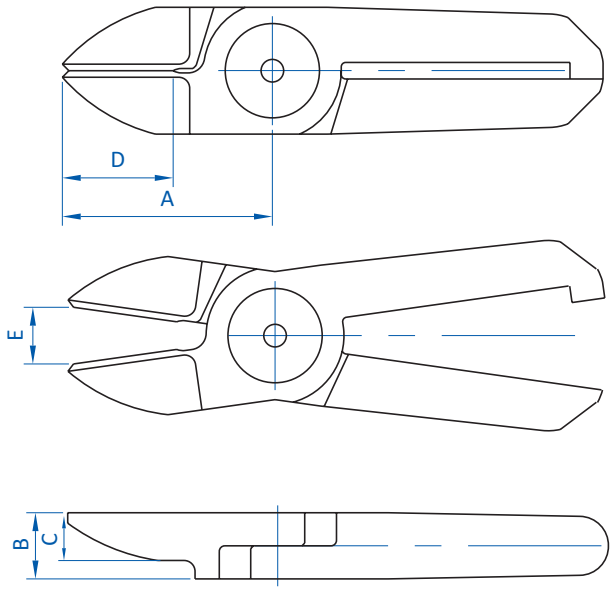
> Straight blades that can be applied at the right angle to the gate
> Models with a variety of cutting edges to cover different applications
> AJ: standard blade
> RAJ: reverse cutting edge if cutting flush to workpiece with blade "AJ" is not possible
> AJT: blade extra thin
> AJL: blade extra long to overcome distance between sprue and nipper
> AJB:
- Soldered carbide tips for cutting hard plastics or plastics containing fiberglass
- Higher lifetime in demanding applications

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
NY05AJ	Ferrous alloy	3	2	22	GT-NF05 (p.308), GT-NY05 (p.309), GT-NY05-4 (p.309)
NY05AJB	Ferrous alloy	3	2	22	GT-NF05 (p.308), GT-NY05 (p.309), GT-NY05-4 (p.309)
NY05AJL	Ferrous alloy	3	2	29	GT-NF05 (p.308), GT-NY05 (p.309), GT-NY05-4 (p.309)
NY05AJT	Ferrous alloy	3	2	21	GT-NF05 (p.308), GT-NY05 (p.309), GT-NY05-4 (p.309)
NY05RAJ	Ferrous alloy	3	2	22	GT-NF05 (p.308), GT-NY05-4 (p.309), GT-NY05R (p.309), GT-NY05R-4 (p.309)
NY10AJ	Ferrous alloy	3.5	2.3	28	GT-NF10 (p.308), GT-NY10 (p.309), GT-NY10-4 (p.309)
NY10AJB	Sintered alloy	3.5	2.3	28	GT-NF10 (p.308), GT-NY10-4 (p.309), GT-NY10R (p.309)
NY10AJL	Ferrous alloy	3.5	2.3	37	GT-NF10 (p.308), GT-NY10 (p.309), GT-NY10-4 (p.309)
NY10AJT	Ferrous alloy	3.5	2.3	26	GT-NF10 (p.308), GT-NY10 (p.309), GT-NY10-4 (p.309)
NY10RAJ	Ferrous alloy	3.5	2.3	28	GT-NF10 (p.308), GT-NY10R (p.309), GT-NY10R-4 (p.309)
NY15AJ	Ferrous alloy	4	2.6	41	GT-NF15 (p.308), GT-NY15 (p.309), GT-NY15-4 (p.309)
NY15AJB	Sintered alloy	4	2.6	41	GT-NF15 (p.308), GT-NY15-4 (p.309), GT-NY15R (p.309)
NY15AJL	Ferrous alloy	4	2.6	50	GT-NF15 (p.308), GT-NY15 (p.309), GT-NY15-4 (p.309)
NY15RAJ	Ferrous alloy	4	2.6	41	GT-NF15 (p.308), GT-NY15R (p.309), GT-NY15R-4 (p.309)
NY15AJT	Ferrous alloy	4	2.6	38	GT-NF15 (p.308), GT-NY15 (p.309), GT-NY15R-4 (p.309)
NY25AJ	Ferrous alloy	5	3.4	77	GT-NY25 (p.309), GT-NY25-6 (p.309)
NY25RAJ	Ferrous alloy	5	3.4	77	GT-NY25 (p.309), GT-NY25R-6 (p.309)
NY25AJB	Sintered alloy	5	3.4	77	GT-NY25 (p.309), GT-NY25R-6 (p.309)
NY25AJL	Ferrous alloy	5	3.4	88	GT-NY25 (p.309), GT-NY25-6 (p.309)

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Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
NY05AJ	22	7	5	10.5	4
NY05AJB	22	7	5	10.5	4
NY05AJL	31	7	5	10.5	5.5
NY05AJT	22	7	3	10.5	4
NY05RAJ	22	7	5	10.5	4
NY10AJ	24	7.2	5	12	6
NY10AJB	24	7.2	5	12	6
NY10AJL	33	7.2	5	12	8
NY10AJT	24	7.2	3	12	6
NY10RAJ	24	7.2	5	12	6
NY15AJ	27	8.2	5.5	13	8
NY15AJB	27	8.2	5.5	13	8
NY15AJL	38	8.2	5.5	13	11
NY15RAJ	27	8.2	5.5	13	8
NY15AJT	27	8.2	3.5	13	8
NY25AJ	31	10	6	16	9
NY25RAJ	31	10	6	16	9
NY25AJB	31	10	6	16	9
NY25AJL	46	10	6	16	13

Blades for plastic, Z-shape



Product notes

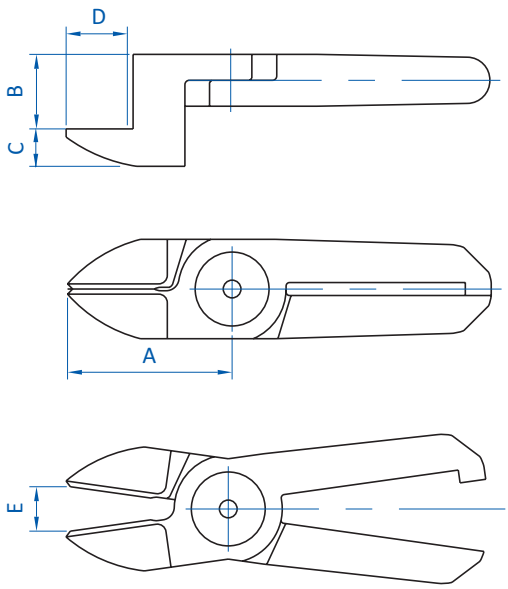
> Blades with offset cutting edge for overcoming obstacles or for narrow sprues
> AH: standard blade
> RAH: reverse cutting edge if cutting flush to workpiece with blade "AH" is not possible

Technical data

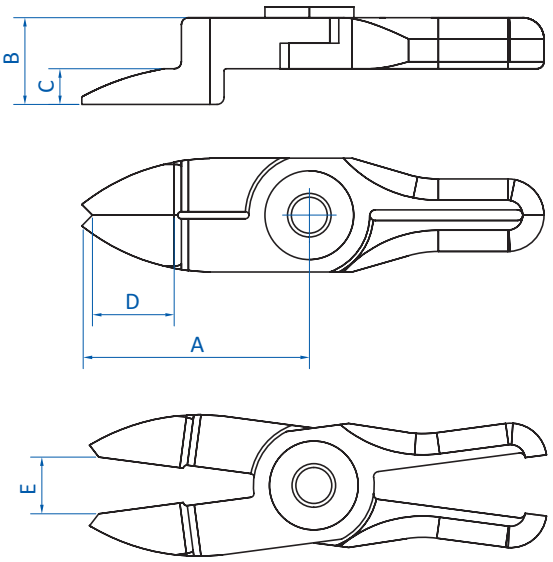
Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
NY05AH	Ferrous alloy	3	2	37	GT-NF05 (p.308) GT-NY05-4 (p.309) GT-NY05 (p.309)
NY05RAH	Ferrous alloy	3	2	31	GT-NF05 (p.308) GT-NY05R-4 (p.309) GT-NY05R (p.309)
NY10AH	Ferrous alloy	3.5	2.3	43	GT-NF10 (p.308) GT-NY10-4 (p.309) GT-NY10 (p.309)
NY10RAH	Ferrous alloy	3.5	2.3	40	GT-NF10 (p.308) GT-NY10R (p.309) GT-NY10R-4 (p.309)
NY15AH	Ferrous alloy	4	2.6	76	GT-NF15 (p.308) GT-NY15-4 (p.309) GT-NY15 (p.309)
NY15RAH	Ferrous alloy	4	2.6	52	GT-NF15 (p.308) GT-NY15R-4 (p.309) GT-NY15R (p.309)
NY25AH	Ferrous alloy	5	3.4	110	GT-NY25 (p.309) GT-NY25-6 (p.309)
NY25RAH	Ferrous alloy	5	3.4	89	GT-NY25 (p.309) GT-NY25R (p.309) GT-NY25R-6 (p.309)

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Dimensions



NY05AH | NY10AH | NY15AH | NY25AH



NY05RAH | NY10RAH | NY15RAH | NY25RAH

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
NY05AH	31	14	5	13	5.5
NY05RAH	30	7	5	12	5
NY10AH	33	15	5	15	8
NY10RAH	32	7	5	15	7
NY15AH	38	16	5.5	16	11
NY15RAH	35	7.7	5.5	15	9
NY25AH	46	18	6	19	13
NY25RAH	42	10	5	18	12

Blades for metal wire, straight



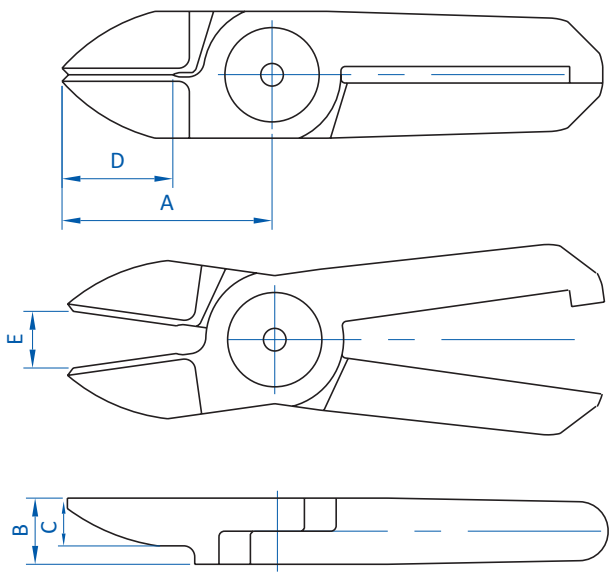
Product notes

> Straight blades that can be applied at the right angle to the gate
> Blades for cutting metal, unbeveled cutting edge using the anvil principle
> BJ: standard blade
> RBJ: reverse cutting edge, if cutting flush to workpiece with blade "BJ" is not possible

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		Copper wire	Steel wire		
NY05BJ	Ferrous alloy	1.6	1	22	GT-NF05 (p.308) GT-NY05-4 (p.309) GT-NY05 (p.309)
NY05RBJ	Ferrous alloy	1.6	1	22	GT-NF05 (p.308) GT-NY05R (p.309) GT-NY05R-4 (p.309)

Dimensions



Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
NY05BJ	22	7	5	9	3.5
NY05RBJ	22	7	5	10.5	4

Nippers for plastics – vertical, with stroke

ADJUSTABLE BLADE OPENING AND REVERSABLE BLADES



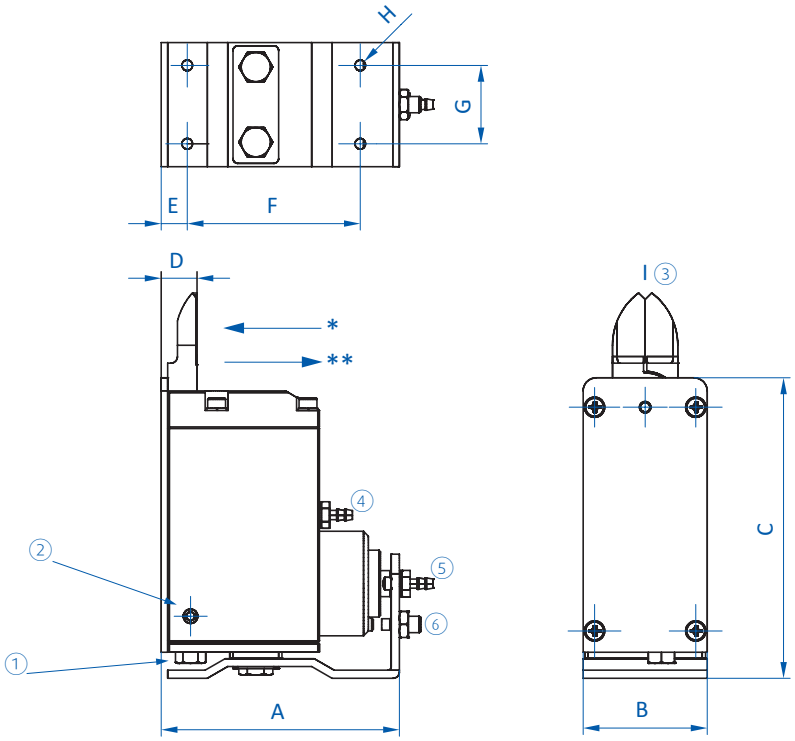
Product notes

> Nippers, lightweight and compact, for easy assembly in confined spaces
> To be used in cutting stations
> Adjustable horizontal stroke and maximum blade opening
> Blades can be reversed to enable cutting flush to the workpiece
> Max. opening width "I" refers to blades with index "AJ"
> Blades are not included in the scope of delivery. Please order separately.

Technical data

Item no.	Max. cutting force [N]	Air consumption [cm³/stroke]	Max. opening for cutting [mm]	Stroke [mm]	Effective direction	Operating pressure [bar (psi)]	Pipe connection with hose nipple [mm]	Pipe connection with quick connect fittings [mm]	Weight [g]
GT-NT03	147	27	1.5 - 3	0 - 3	Pull	4 - 5 (58 - 72.5)	2.5	--	178
GT-NT03R	147	27	1.5 - 3	0 - 3	Push	4 - 5 (58 - 72.5)	2.5	--	178
GT-NT03-4	147	27	1.5 - 3	0 - 3	Pull	4 - 5 (58 - 72.5)	--	4x2,5	178
GT-NT03R-4	147	27	1.5 - 3	0 - 3	Push	4 - 5 (58 - 72.5)	--	4x2,5	178
GT-NT05	196	47	3 - 6	0 - 3	Pull	4 - 5 (58 - 72.5)	2.5	--	325
GT-NT05R	196	47	3 - 6	0 - 3	Push	4 - 5 (58 - 72.5)	2.5	--	325
GT-NT05-4	196	47	3 - 6	0 - 3	Pull	4 - 5 (58 - 72.5)	--	4x2,5	325
GT-NT05R-4	196	47	3 - 6	0 - 3	Push	4 - 5 (58 - 72.5)	--	4x2,5	325
GT-NT10	441	82	4 - 7	0 - 3	Pull	4 - 5 (58 - 72.5)	2.5	--	515
GT-NT10R	441	82	4 - 7	0 - 3	Push	4 - 5 (58 - 72.5)	2.5	--	515
GT-NT10-6	441	82	4 - 7	0 - 3	Pull	4 - 5 (58 - 72.5)	--	6x4	515
GT-NT10R-6	441	82	4 - 7	0 - 3	Push	4 - 5 (58 - 72.5)	--	6x4	515
GT-NT20	931	203	4.5 - 9	0 - 8	Pull	5 - 6 (72.5 - 87)	4	--	930
GT-NT20R	931	203	4.5 - 9	0 - 8	Push	5 - 6 (72.5 - 87)	4	--	930
GT-NT20-6	931	203	4.5 - 9	0 - 8	Pull	5 - 6 (72.5 - 87)	--	6x4	930
GT-NT20R-6	931	203	4.5 - 9	0 - 8	Push	5 - 6 (72.5 - 87)	--	6x4	930

Dimensions



* = Push stroke ** = Pull stroke (Version -R) ① = Blade opening adjustment ② = Locking ③ = Max. blade opening ④ = Connection air nipper ⑤ = Connection stroke movement ⑥ = Stroke adjustment

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H	I [mm]
GT-NT03	62	19	68.1	9	7	43	14	M3	3
GT-NT03R	62	19	68.1	9	7	43	14	M3	3
GT-NT03-4	62	19	68.1	9	7	43	14	M3	3
GT-NT03R-4	62	19	68.1	9	7	43	14	M3	3
GT-NT05	64	32	71.1	9	7	45	20	M4	6
GT-NT05R	64	32	71.1	9	7	45	20	M4	6
GT-NT05-4	64	32	71.1	9	7	45	20	M4	6
GT-NT05R-4	64	32	71.1	9	7	45	20	M4	6
GT-NT10	73	38	88.1	11	8	52	24	M4	7
GT-NT10R	73	38	88.1	11	8	52	24	M4	7
GT-NT10-6	73	38	88.1	11	8	52	24	M4	7
GT-NT10R-6	73	38	88.1	11	8	52	24	M4	7
GT-NT20	103	44	102.1	14	10	80	28	M5	9
GT-NT20R	103	44	102.1	14	10	80	28	M5	9
GT-NT20-6	103	44	102.1	14	10	80	28	M5	9
GT-NT20R-6	103	44	102.1	14	10	80	28	M5	9

Blades for plastic, for vertical air nippers, straight



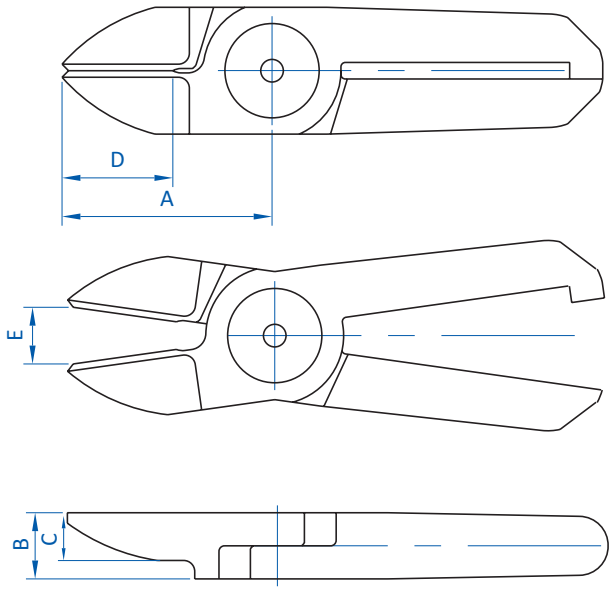
Product notes

> Straight blades that can be applied at the right angle to the gate
> Models with a variety of cutting edges to cover different applications
> AJ: standard blade
> AJT: blade extra thin
> AJL: blade extra long to overcome distance between sprue and nipper
> AJB: brazed carbide tips for cutting hard plastics or plastics containing fiberglass, increased durability
> AJH: brazed high-speed steel tip for cutting hard plastic

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
NT03AJ	Ferrous alloy	1.5	1	20	GT-NT03 (p.316)
NT03AJT	Ferrous alloy	1.5	1	19	GT-NT03 (p.316)
NE05AJ	Ferrous alloy	2.5	1.5	35	GT-NT05 (p.316)
NT05AJ	Ferrous alloy	2.5	1.5	30	GT-NT05 (p.316)
NT05AJB	Sintered alloy	2.5	1.5	30	GT-NT05 (p.316)
NT05AJH	HSS steel	2.5	1.5	30	GT-NT05 (p.316)
NT05AJL	Ferrous alloy	2.5	1.5	39	GT-NT05 (p.316)
NT05AJT	Ferrous alloy	2.5	1.5	29	GT-NT05 (p.316)
NE10AJ	Ferrous alloy	3.5	2.3	70	GT-NT10 (p.316)
NT10AJ	Ferrous alloy	3.5	2.3	62	GT-NT10 (p.316)
NT10AJB	Sintered alloy	3.5	2.3	76	GT-NT10 (p.316)
NT10AJH	HSS steel	3.5	2.3	76	GT-NT10 (p.316)
NT10AJL	Ferrous alloy	3.5	2.3	62	GT-NT10 (p.316)
NT10AJT	Ferrous alloy	3.5	2.3	65	GT-NT10 (p.316)
NT20AJ	Ferrous alloy	5	3.4	120	GT-NT20 (p.316)
NT20AJB	Ferrous alloy	5	3.4	120	GT-NT20 (p.316)
NT20AJH	HSS steel	5	3.4	120	GT-NT20 (p.316)
NT20AJL	Ferrous alloy	5	3.4	114	GT-NT20 (p.316)

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]
NT03AJ	24	7	4	11	3
NT03AJT	24	7	2.3	11	3
NE05AJ	24	7	3.5	12	6
NT05AJ	29	7	5	15	6
NT05AJB	29	7	5	15	6
NT05AJH	29	7	5	15	6
NT05AJL	36	7	5	15	7
NT05AJT	29	7	3	15	6
NE10AJ	27	9	4.5	12	7
NT10AJ	35	9	6	17	7
NT10AJB	35	9	6	17	7
NT10AJH	35	9	6	17	7
NT10AJL	47	9	6	17	9
NT10AJT	35	9	4	17	7
NT20AJ	40	12	6	20	9
NT20AJB	40	12	6	20	9
NT20AJH	40	12	6	20	9
NT20AJL	57	12	6	20	12

Blades for plastic, for vertical air nippers, nipper style



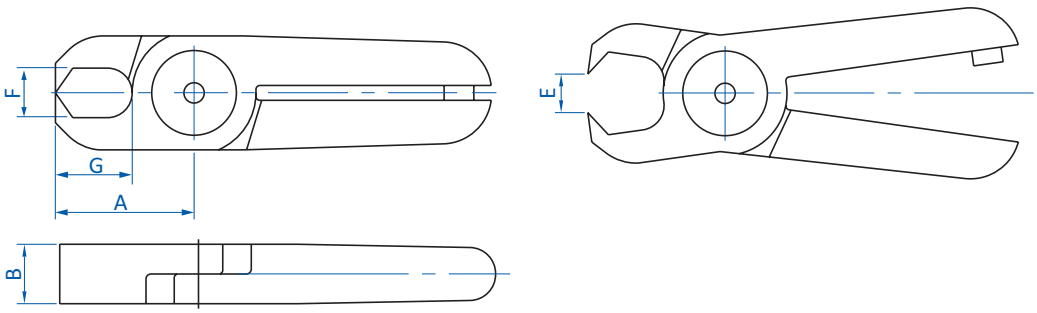
Product notes

> Blades, nipper style, for universal cutting applications

Technical data

Item no.	Material	Max. cutting thickness [mm]		Weight [g]	Air nippers
		PP/PE	ABS		
NT05AE	Ferrous alloy	2.5	1.5	36	GT-NT05 (p.316)
NT10AE	Ferrous alloy	3.5	2.3	75	GT-NT10 (p.316)

Dimensions



Item no.	A [mm]	B [mm]	E [mm]	F [mm]	G [mm]
NT05AE	29	7	6	6	18
NT10AE	35	9	7	8	21.5

Special air shears – round/square, single-acting



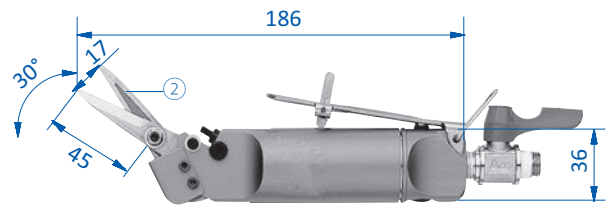
Product notes

> Pneumatic shears for robots, cutting stations or manual operation
> For precision cutting of kevlar, aramid, glass and carbon fiber
> GT-H30, GT-HS30, GT-H12K: designed to cut synthetic materials; not suitable for thick cardboard, tin plate, wire, wood, etc.
> Blades are not included in the scope of delivery. Please order separately.

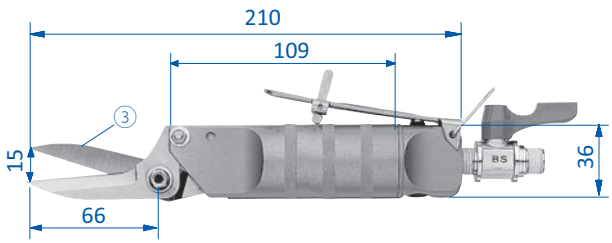
Technical data

Item no.	Housing	Air consumption [cm³/stroke]	Operating pressure [bar (psi)]	Functional principle	Length incl. blade [mm]	Connection [G]	Max. cutting thickness [mm]		Weight [g]
							Band steel	Kevlar	
GT-H12K	Round	116	2 (29)	Manually	186	R1/8	--	0.3	290
GT-H120K	Round	116	5 - 6 (72.5 - 87)	Manually	211	R1/8	15x0.5	--	340
GT-H30	Round	584	3 (43.5)	Manually	280	R1/8	--	1	1,030
GT-HS30	Square	584	3 (43.5)	Automatically	260	R1/8	--	1	970

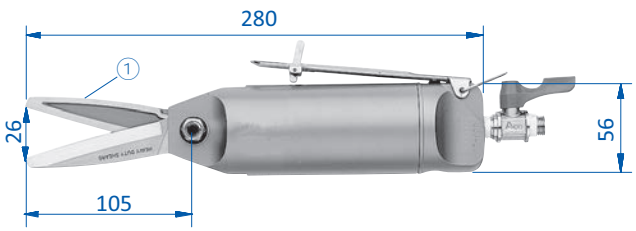
Dimensions



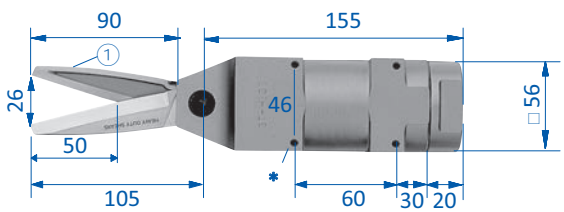
GT-H12K



GT-H120K



GT-H30



GT-HS30

① = Blade shown: H30ME ② = Blade shown: H12ME30K ③ = Blade shown: H120SK * = 4 x 4 bore holes M5

Blades for special air shears, single-acting



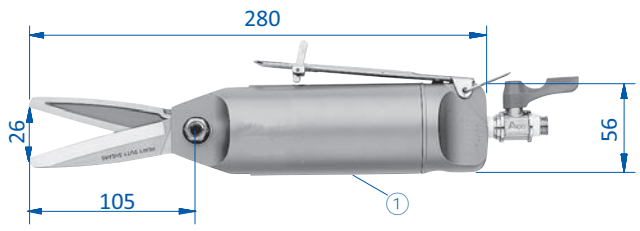
Product notes

> Blades for cutting synthetic materials, e.g. kevlar, aramid, glass and carbon fiber
> With the exception of H120SK not suitable for thick cardboard, sheet tin, wire, wood

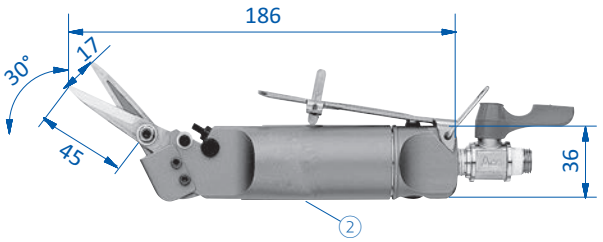
Technical data

Item no.	Max. opening for cutting [mm]	Effective cutting length [mm]	Max. cutting thickness [mm]		Weight [g]	Air nippers
			Kevlar	Band steel		
H30ME	26	50	1	--	280	GT-H30 (p.321) GT-HS30 (p.321)
H12ME30K	17	28	0.3	--	56	GT-H12K (p.321)
H120SK	15	38	--	15x0.5	115	GT-H120K (p.321)

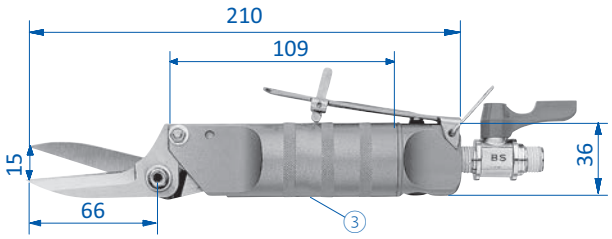
Dimensions



H30ME



H12ME30K



H120SK

① = Special air shear shown: GT-H30 ② = Special air shear shown: GT-H12K ③ = Special air shear shown: GT-H120K

Air shears – round/square, double-acting



FOR FAST CYCLE TIMES

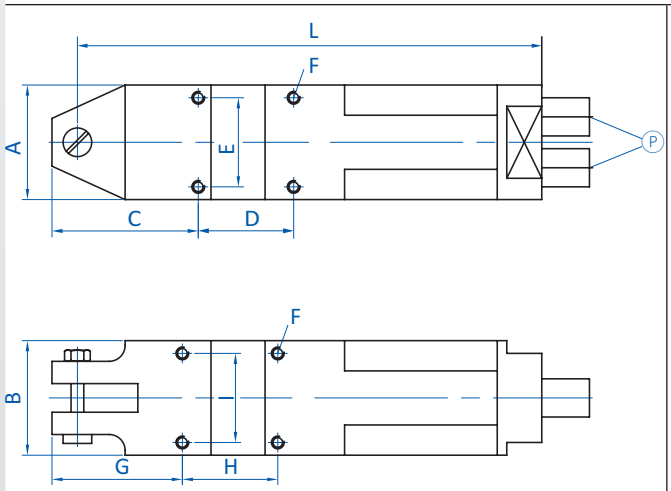
Product notes

> Pneumatic shears for robots, cutting stations or manual operation
> Cutting of paper, film, steel or copper wire, etc.
> Double-acting, separate control of opening and closing to enable short duty cycles
> Continuous cutting process as no return spring required
> Blades are not included in the scope of delivery. Please order separately.

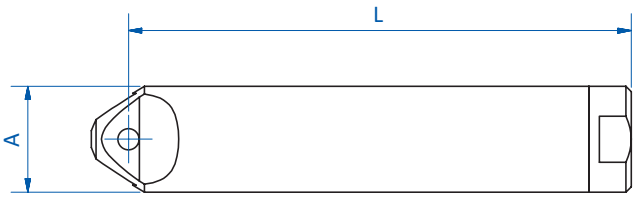
Technical data

Item no.	Housing	Max. cutting force [N]	Air consumption [cm³/stroke]	Operating pressure [bar (psi)]	Pipe connection [mm]	Weight [g]
GT-HWS1	Square	294	45	4 - 5 (58 - 72.5)	4	116
GT-HWR1	Round	294	45	4 - 5 (58 - 72.5)	4	84
GT-HWS10	Square	588	116	4 - 5 (58 - 72.5)	6	356
GT-HWR10	Round	588	116	4 - 5 (58 - 72.5)	6	295

Dimensions



GT-HWS1 | GT-HWS10



GT-HWR1 | GT-HWR10

Ⓟ = Compressed air connection

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F	G [mm]	H [mm]	I [mm]	L [mm]
GT-HWS1	20	23	--	--	--	M3	24	40	16	95
GT-HWR1	20	--	--	--	--	--	--	--	--	95
GT-HWS10	36	36	45.5	30	28	M4	41	30	28	146
GT-HWR10	36	--	--	--	--	--	--	--	--	146

Blades for double-acting air shears



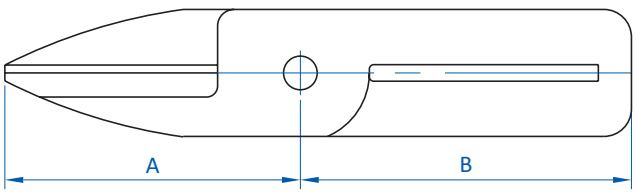
Product notes

> Blades for double-acting air shears
> Suitable for cutting copper or steel wire

Technical data

Item no.	Max. opening for cutting [mm]	Effective cutting length [mm]	Max. cutting thickness [mm]		Weight [g]	Air nippers
			Copper wire	Steel wire		
HW1J	3	17	1	0.5	116	GT-HWR1 (p.323) GT-HWS1 (p.323)
HW10J	5	28	1.8	1.2	84	GT-HWR10 (p.323) GT-HWS10 (p.323)

Dimensions



Item no.	**A** [mm]	**B** [mm]
HW1J	25	30
HW10J	40	55

Air-nipper mounting brackets



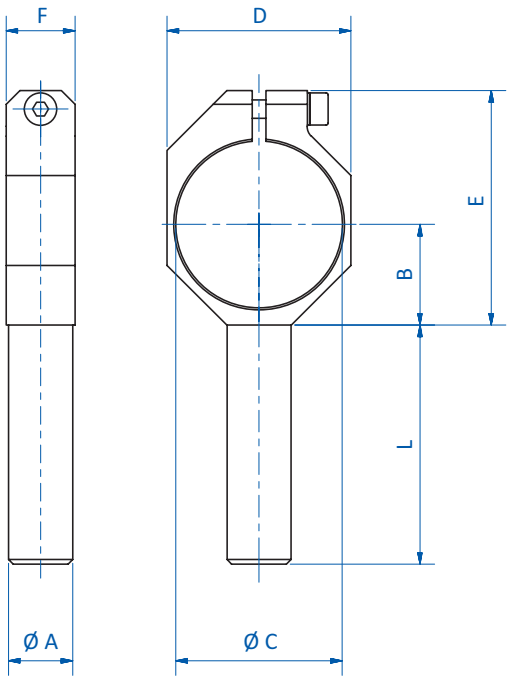
Product notes

> Mounting brackets to fasten air nippers to angle clamps

Technical data

Item no.	Clamping Ø [mm]	Weight [g]	Air nippers
GT-NR10H	14	38	GT-NR10L (p.286)
GT-NR20H	20	71	GT-NR20 (p.286)
GT-NR30H	20	79	GT-NR30 (p.286)
GT-NR50H	20	149	GT-NR50 (p.286)

Dimensions



Item no.	Ø **A** [mm]	**B** [mm]	Ø **C** [mm]	**D** [mm]	**E** [mm]	**F** [mm]	**L** [mm]
GT-NR10H	14	22	36	40	51	15	52
GT-NR20H	20	30	45	50	65	20	52
GT-NR30H	20	35	56	60	75	20	52
GT-NR50H	20	45	75	85	95	20	52

Mounting clamps for air nippers





Air nipper GT-NR20 with mounting clamp

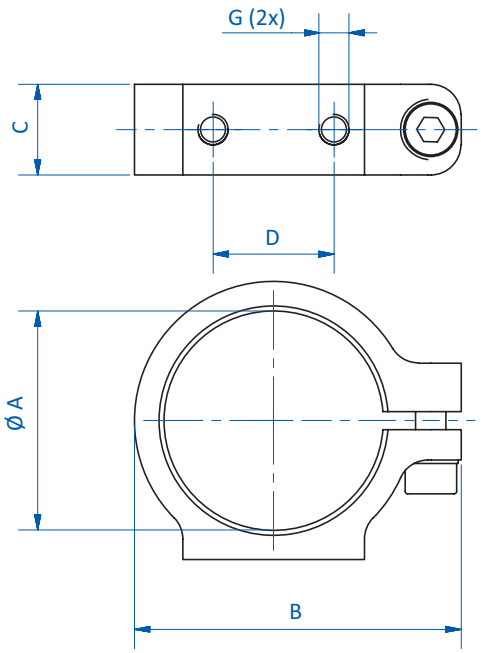
Product notes

> Space-saving assembly of air nippers on extrusions and special machines
> The clamps are part of air nipper fittings GT-NR10ST2 to GT-NR30ST2

Technical data

Item no.	Weight [g]	Air nippers
GT-NR10S	36	GT-NR10L (p.286)
GT-NR20S	39	GT-NR20 (p.286)
GT-NR30S	46	GT-NR30 (p.286)

Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	G
GT-NR10S	36	54	15	20	M5
GT-NR20S	45	62.5	15	20	M5
GT-NR30S	56	73.5	15	20	M5

Clamps with angle brackets – for direct mounting

Mounting air nippers on EOAT or special machines





Air nipper GT-NR20 assembled on extrusion SLine

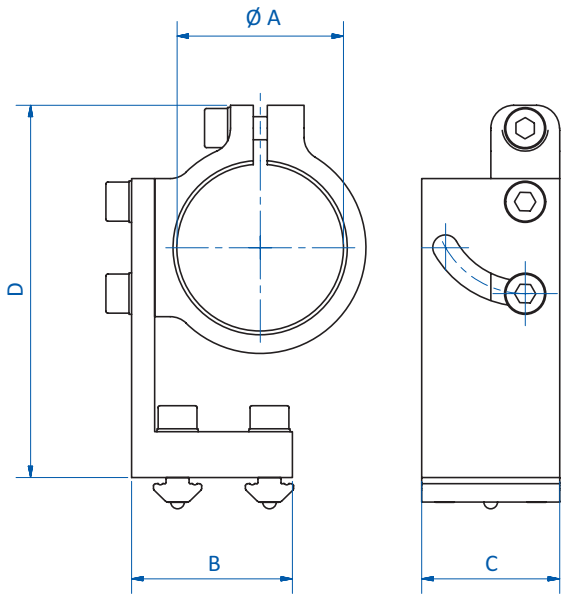
Product notes

> Mounting bracket for installation on grippers or special machines
> Easy positioning of the air nipper thanks to 2x 90° adjustable design
> Versatile thanks to alternative installation using slot nuts or threaded shaft holder
> Slot nuts and mounting screws for installation on FIPA SLine and MLine extrusions included in scope of delivery

Technical data

Item no.	Weight [g]	Air nippers
GT-NR10ST2	116	GT-NR10L (p.286)
GT-NR20ST2	119	GT-NR20 (p.286)
GT-NR30ST2	125	GT-NR30 (p.286)
GT-NR50ST2	165	GT-NR50 (p.286)

Dimensions



Item no.	Ø **A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]
GT-NR10ST2	36	35	30	81
GT-NR20ST2	45	35	30	87.5
GT-NR30ST2	56	35	30	90.5
GT-NR50ST2	75	35	30	109.5

Gripper clamps



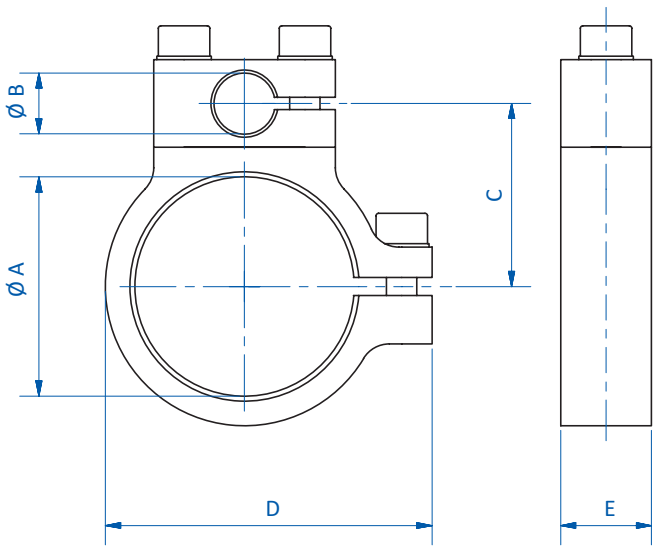
Product notes

> Mounting of the grippers to the air nippers for holding the sprue during the cutting process
> Optimal adjustment by using elbow gripper arms

Technical data

Item no.	Weight [g]	Air nippers
GT-NR10GR	57	GT-NR10L (p.286)
GT-NR20GR	60	GT-NR20 (p.286)
GT-NR30GR	66	GT-NR30 (p.286)

Dimensions



Item no.	Ø A [mm]	Ø B [mm]	C [mm]	D [mm]	E [mm]
GT-NR10GR	36	10	30.25	54	15
GT-NR20GR	45	10	34.75	62.5	15
GT-NR30GR	56	10	40.25	73.5	15

Linear technology at a glance 331

Lifting cylinders 332

Short lifting cylinders 336

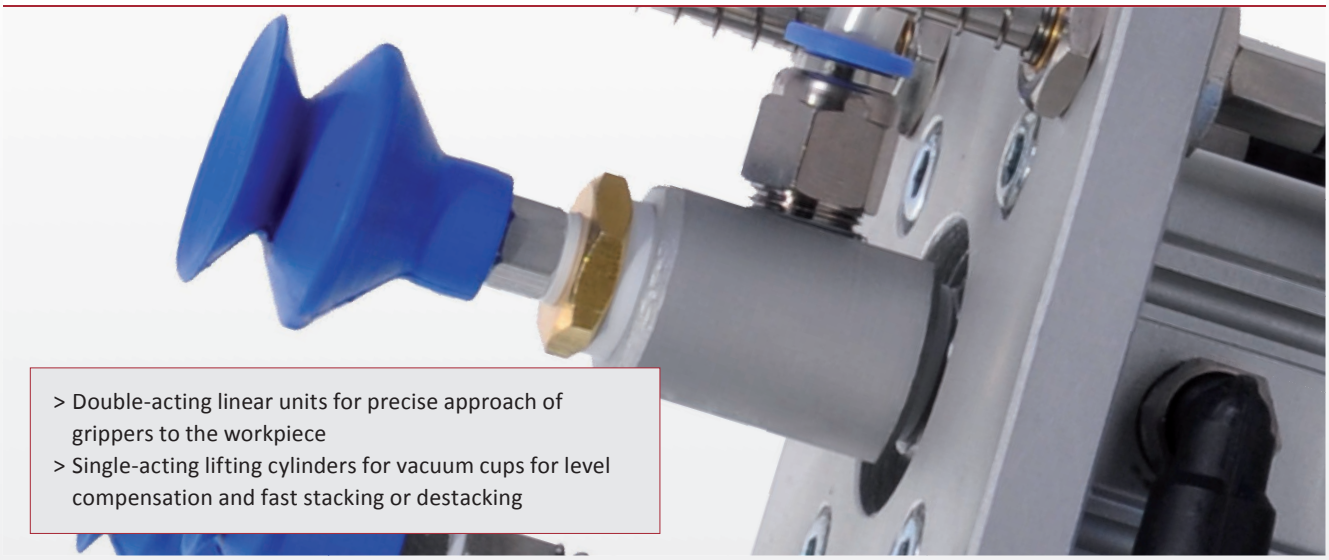
Dual-piston cylinders 338

Guide blocks 340

Accessories 350

Notes:

FIPA Linear technology



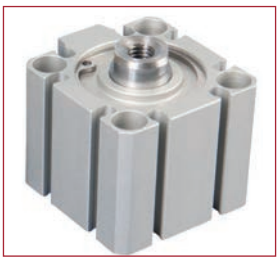
> Double-acting linear units for precise approach of grippers to the workpiece
> Single-acting lifting cylinders for vacuum cups for level compensation and fast stacking or destacking



Lifting cylinders – vacuum-operated or operated by compressed air

> Torsionally rigid piston plunger for fast stacking or destacking of flat objects such as cards, signs, veneer
> Fixation of workpieces in cutting stations
> Model 55.005 comes with integrated blow-off function for short duty cycles

> See page 332



Short stroke cylinders

> Space-saving, lightweight design
> Sensors for optional monitoring of piston position
> To be used as gripping or holding tool when combined with pressure plates GR07.196 - GR07.199

> See page 336



Dual-piston cylinders

> Feed lift of grippers and cutting tools
> Torsionally rigid dual-piston design and precise slide bearing guiding for high loads
> Sensors for optional monitoring of piston position

> See page 338



Guide blocks

> Feed lift of grippers and cutting tools
> GR07.506 to GR07.520 come in extra slim design for space-saving installation
> Sensors for optional monitoring of piston position

> See page 346

Lifting cylinders – operated by compressed air

With blow-off feature, torsionally rigid



Product notes

> Picking-up and stacking of flat and sensitive objects such as signs, card, labels, veneer in the correct position using non-rotating piston rod
> Integrated vacuum generation
> Very short cycle times due to integrated compressed air pulse during placement
> Very compact design in robust aluminum housing
> Long service life of around 25 million cycles thanks to Hartcoat® treated running surfaces
> Optional monitoring of piston position

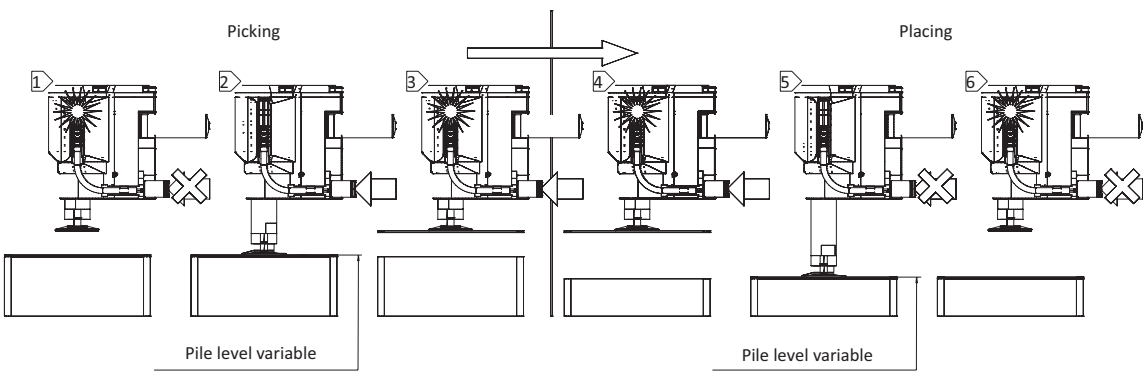
Notes

> For release of workpiece in defined position compressed air line needs to be shut and ventilated by means of a 3/2-way valve. Otherwise the piston will not extend and the workpiece will fall down.

Technical data

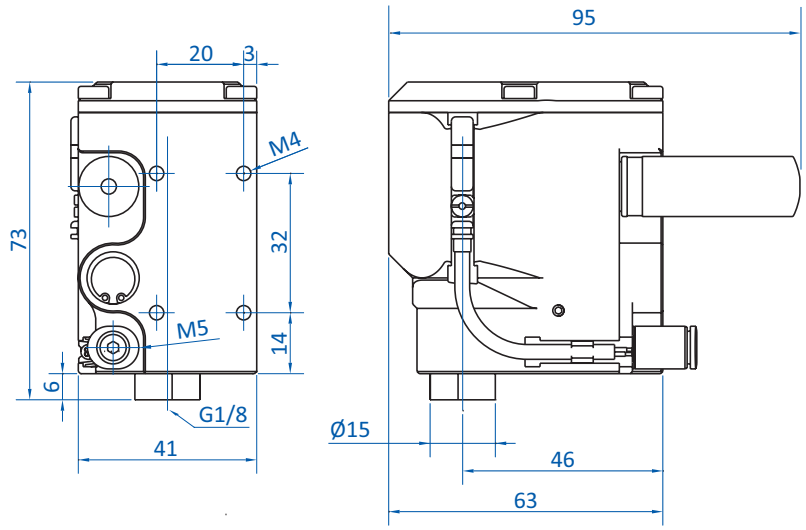
Item no.	Stroke [mm]	Lifting force at 6 bar (87 psi) [N]	Operating pressure [bar (psi)]	Volume flow at 6 bar (87 psi) [Nl/min]	Operating temperature [°C (°F)]	Weight [g]	Accessories
55.005	25	8	5 - 8 (72.5 - 116)	48	5 - 80 (41 - 176)	220	Silencer: 72.028 (p.398) Magnetic field sensor: 55.099

Wiring diagram



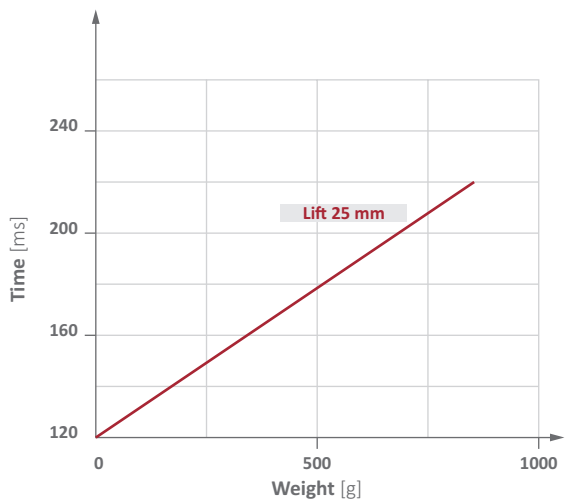
Process:
1. Initial position: compressed air off, piston drawn in, magnetic sensor in operation
2. Compressed air switched on, piston moves out, workpiece is pulled in, piston retracts with the workpiece to the initial position
3. Workpiece sucked in and lifted, compressed air on, magnetic field sensor in operation
4. Transport movement
5. Switch off compressed air, piston moves out with the workpiece, places the workpiece and retracts to the initial position
6. Initial position: compressed air off, piston drawn in, magnetic sensor in operation

Dimensions

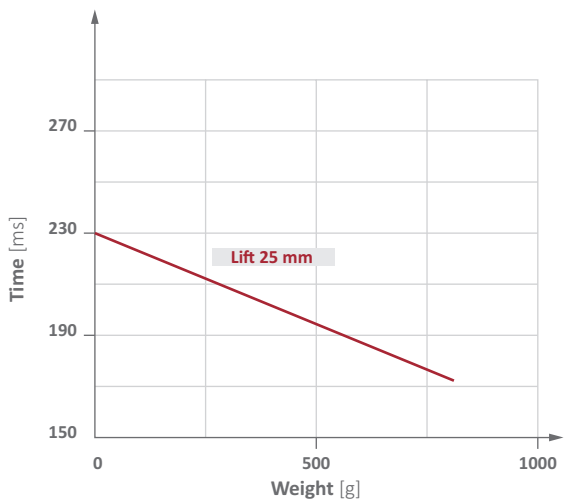


Diagrams

> Double stroke lifting time against weight, pressure 6 bar (87 psi)



> Double stroke placing time against weight, pressure 6 bar (87 psi)



Lifting cylinders – vacuum-operated

Torsionally rigid



55.000 | 55.001 | 55.004



55.002

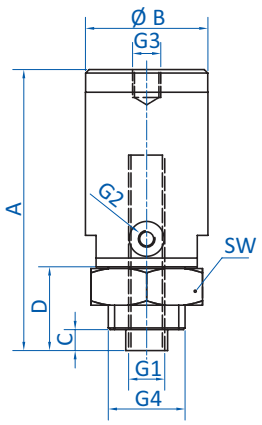
Product notes

> Picking-up and stacking flat and sensitive objects such as e.g. signs, cards, paper, veneers
> Suitable for short cycle times
> Application e.g. for workpiece positioning in cutting stations
> Robust aluminum housing, Hartcoat® treated
> Non-rotating piston rod
> Low-noise version
> 55.002: stacking and lifting of metal sheet and heavy parts
> Not suitable for workpieces permeable to air
> Customized sizes on request

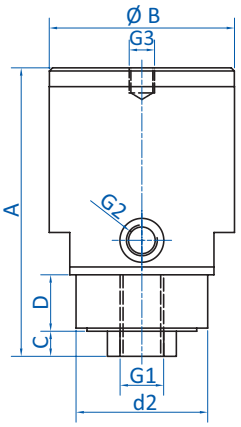
Technical data

Item no.	Stroke [mm]	Volume flow at 80 % vacuum [Nl/min]	Lifting force at 80 % vacuum [N]	Cycle time (extend-suction-lift) [s]	Operating temperature [°C (°F)]	Weight [g]
55.000	17	15	3	0.3	5 - 80 (41 - 176)	39
55.001	25	35	7	0.4	5 - 80 (41 - 176)	111
55.002	30	35	50	1.4	5 - 80 (41 - 176)	331
55.004	40	35	7	0.8	5 - 80 (41 - 176)	138

Dimensions



55.000 | 55.001 | 55.004

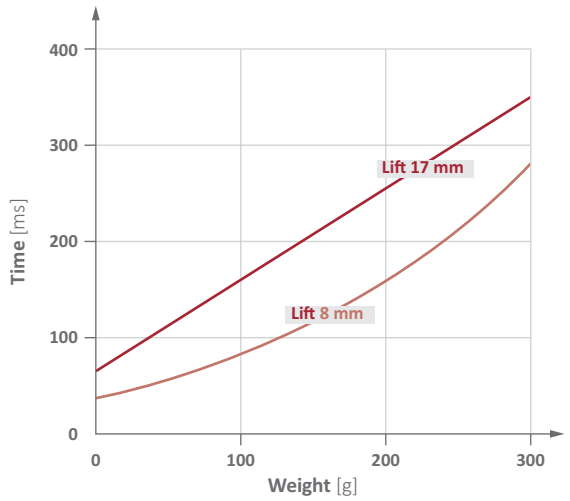


55.002

Item no.	G1	G2	G3	G4	A [mm]	Ø B [mm]	C [mm]	D [mm]	d2 [mm]	SW
55.000	M5	M5	M6	M16x1.5	55.5	24	4	16	--	19
55.001	G1/8	M5	M8	M22x1.5	78	35	6	22	--	27
55.002	G1/4	G1/4	M10	--	92	59	8	18	42	--
55.004	G1/8	G1/8	M8	M22x1.5	99	35	9	24	--	27

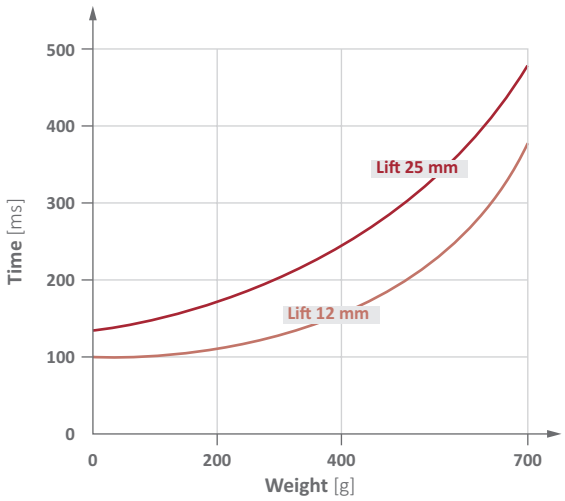
Diagrams

> Double stroke lifting time against weight



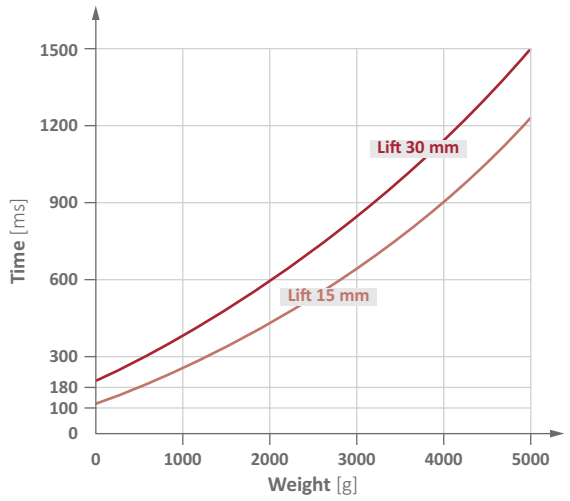
55.000

> Double stroke lifting time against weight



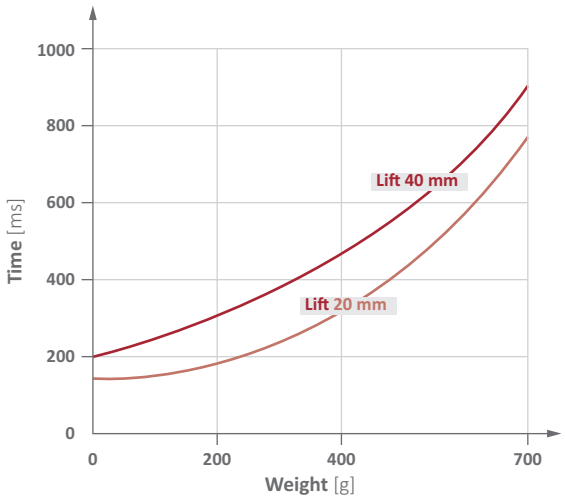
55.001

> Double stroke lifting time against weight



55.002

> Double stroke lifting time against weight



55.004

Short stroke cylinders – double-acting





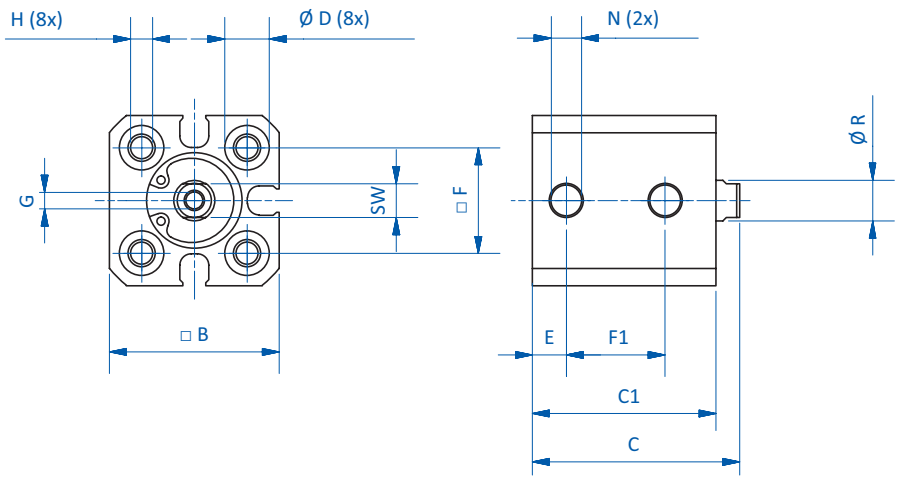
Product notes

> Elements to guide gripper components such as vacuum cups to the workpiece
> Double-acting, separate compressed air connections for extraction and rectraction
> Medium: filtered and oiled/unoiled air
> Sensors for optional detection of piston position (extracted/retracted)
> Screws and lock washers included in scope of delivery
> Further stroke versions available on request
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N
> Can be used as gripper tool when combined with pressure plates GR07.196 - GR07.199

Technical data

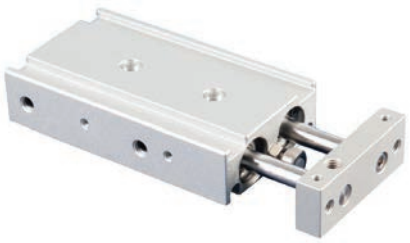
Item no.	Compressed air connection	Operating pressure [bar (psi)]	Piston diameter [mm]	Stroke [mm]	Operating temperature [°C (°F)]	Weight [g]	Accessories
GR07.012-5	M5	0.5 - 9.9 (7.3 - 143.6)	12	5	-5 - 60 (23 - 140)	8	
GR07.012-10	M5	0.5 - 9.9 (7.3 - 143.6)	12	10	-5 - 60 (23 - 140)	9	
GR07.016-5	M5	0.5 - 9.9 (7.3 - 143.6)	16	5	-5 - 60 (23 - 140)	16	
GR07.016-10	M5	0.5 - 9.9 (7.3 - 143.6)	16	10	-5 - 60 (23 - 140)	18	
GR07.016-20	M5	0.5 - 9.9 (7.3 - 143.6)	16	20	-5 - 60 (23 - 140)	22	
GR07.016-30	M5	0.5 - 9.9 (7.3 - 143.6)	16	30	-5 - 60 (23 - 140)	26	
GR07.020-5	M5	0.5 - 9.9 (7.3 - 143.6)	20	5	-5 - 60 (23 - 140)	28	
GR07.020-10	M5	0.5 - 9.9 (7.3 - 143.6)	20	10	-5 - 60 (23 - 140)	31	
GR07.020-20	M5	0.5 - 9.9 (7.3 - 143.6)	20	20	-5 - 60 (23 - 140)	37	Mounting bracket: GR07.002 (p.351)
GR07.020-30	M5	0.5 - 9.9 (7.3 - 143.6)	20	30	-5 - 60 (23 - 140)	44	Sensor: GR04.202N (p.404)
GR07.020-50	M5	0.5 - 9.9 (7.3 - 143.6)	20	50	-5 - 60 (23 - 140)	56	Sensor: GR04.202P (p.404)
GR07.025-5	M5	0.5 - 9.9 (7.3 - 143.6)	25	5	-5 - 60 (23 - 140)	44	Sensor: GR04.280N (p.404)
GR07.025-10	M5	0.5 - 9.9 (7.3 - 143.6)	25	10	-5 - 60 (23 - 140)	48	Sensor: GR04.280P (p.404)
GR07.025-20	M5	0.5 - 9.9 (7.3 - 143.6)	25	20	-5 - 60 (23 - 140)	57	
GR07.025-30	M5	0.5 - 9.9 (7.3 - 143.6)	25	30	-5 - 60 (23 - 140)	66	
GR07.025-50	M5	0.5 - 9.9 (7.3 - 143.6)	25	50	-5 - 60 (23 - 140)	84	
GR07.032-5	G1/8	0.5 - 9.9 (7.3 - 143.6)	32	5	-5 - 60 (23 - 140)	78	
GR07.032-10	G1/8	0.5 - 9.9 (7.3 - 143.6)	32	10	-5 - 60 (23 - 140)	86	
GR07.032-20	G1/8	0.5 - 9.9 (7.3 - 143.6)	32	20	-5 - 60 (23 - 140)	105	
GR07.032-30	G1/8	0.5 - 9.9 (7.3 - 143.6)	32	30	-5 - 60 (23 - 140)	117	
GR07.032-50	G1/8	0.5 - 9.9 (7.3 - 143.6)	32	50	-5 - 60 (23 - 140)	125	

Dimensions

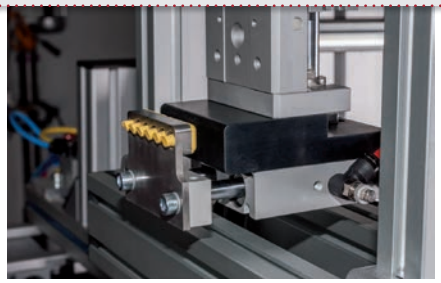


Item no.	□ B [mm]	C [mm]	C1 [mm]	Ø D [mm]	E [mm]	□ F [mm]	F1 [mm]	G	H	SW	L [mm]	N	Ø R [mm]
GR07.012-5	25	30.5	27	6.5x4	5	15.5	14.5	M3x6	M4x7	5	--	M5	6
GR07.012-10	25	35.5	32	6.5x4	5	15.5	19.5	M3x6	M4x7	5	--	M5	6
GR07.016-5	29	30.5	27	6.5x4	5	20	14.5	M4x8	M4x7	6	--	M5	8
GR07.016-10	29	35.5	32	6.5x4	5	20	19.5	M4x8	M4x7	6	--	M5	8
GR07.016-20	29	45.5	42	6.5x4	5	20	29.5	M4x8	M4x7	6	--	M5	8
GR07.016-30	29	55.5	52	6.5x4	5	20	39.5	M4x8	M4x7	6	--	M5	8
GR07.020-5	36	39	34.5	9x7	5.5	25.5	20	M5x7	M6x10	8	--	M5	10
GR07.020-10	36	44	39.5	9x7	5.5	25.5	25	M5x7	M6x10	8	--	M5	10
GR07.020-20	36	54	49.5	9x7	5.5	25.5	35	M5x7	M6x10	8	--	M5	10
GR07.020-30	36	64	59.5	9x7	5.5	25.5	45	M5x7	M6x10	8	--	M5	10
GR07.020-50	36	84	79.5	9x7	5.5	25.5	65	M5x7	M6x10	8	--	M5	10
GR07.025-5	40	42.5	37.5	9x7	5.5	28	21	M6x12	M6x10	10	--	M5	12
GR07.025-10	40	47.5	42.5	9x7	5.5	28	26	M6x12	M6x10	10	--	M5	12
GR07.025-20	40	57.5	52.5	9x7	5.5	28	36	M6x12	M6x10	10	--	M5	12
GR07.025-30	40	67.5	62.5	9x7	5.5	28	46	M6x12	M6x10	10	--	M5	12
GR07.025-50	40	87.5	82.5	9x7	5.5	28	66	M6x12	M6x10	10	--	M5	12
GR07.032-5	45	45	38	9x7	7.5	34	20	M8x13	M6x10	14	7	G1/8	16
GR07.032-10	45	50	43	9x7	7.5	34	25	M8x13	M6x10	14	7	G1/8	16
GR07.032-20	45	60	53	9x7	7.5	34	35	M8x13	M6x10	14	7	G1/8	16
GR07.032-30	45	70	63	9x7	7.5	34	45	M8x13	M6x10	14	7	G1/8	16
GR07.032-50	45	90	83	9x7	7.5	34	65	M8x13	M6x10	14	7	G1/8	16

Dual-piston cylinders – double-acting



HIGH PRECISION CYLINDER GUIDING, ANTI-TWIST PROTECTION



Combination of dual-piston cylinder and guide block

Product notes

> Unit to precisely guide gripper components such as vacuum cups to the workpiece
> Double-acting, separate compressed air connections for extraction and rectraction
> Sensors for optional detection of piston position (extracted/retracted)
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N
> Medium: filtered and oiled/unoiled air

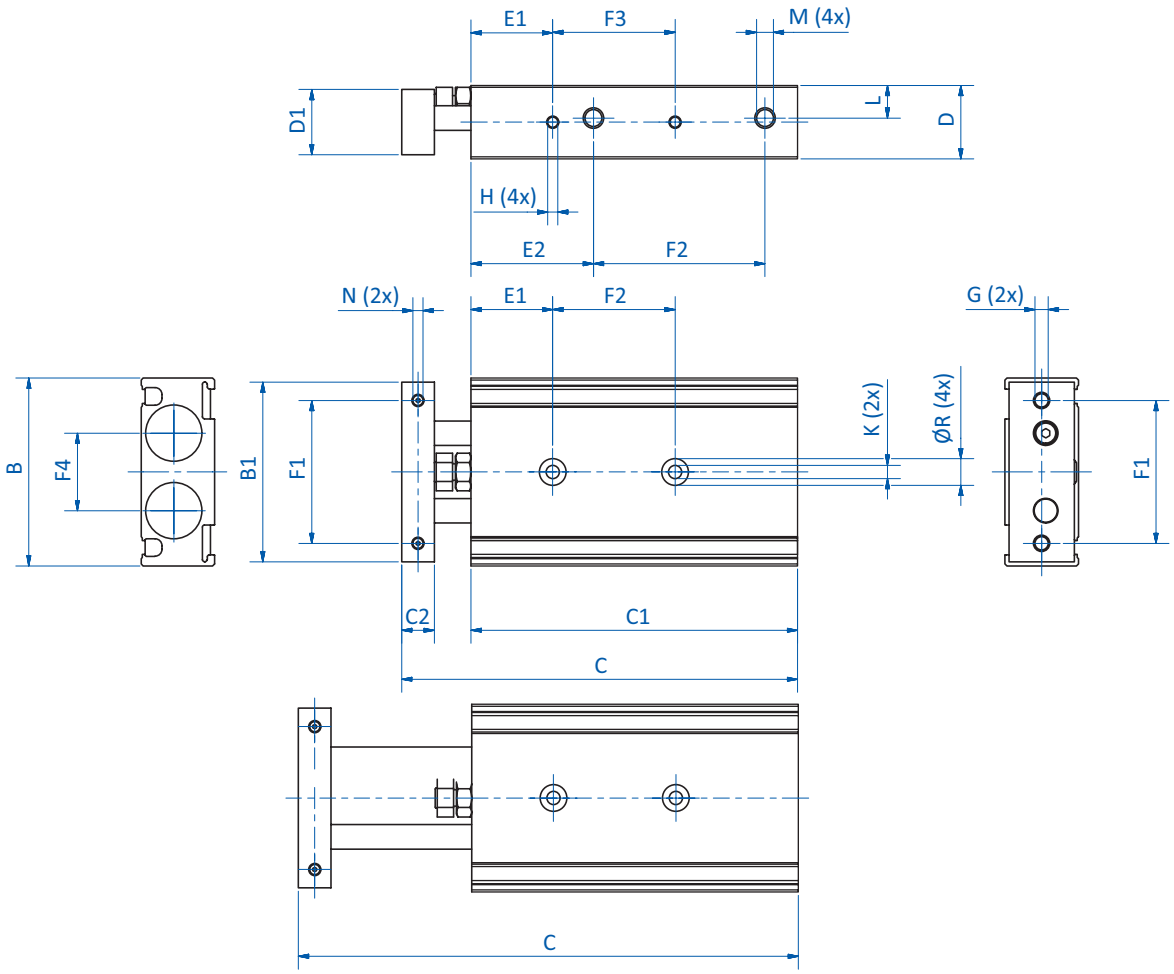
Technical data

Item no.	GR07.112-25	GR07.112-50	GR07.112-75	GR07.116-25	GR07.116-50	GR07.116-75	GR07.116-100
Compressed air connection	M5	M5	M5	M5	M5	M5	M5
Operating pressure [bar (psi)]	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)	1 - 7 (14.5 - 101.5)
Piston diameter [mm]	12	12	12	16	16	16	16
Stroke [mm]	25	50	75	25	50	75	100
Operating temperature [°C (°F)]	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)	-5 - 70 (23 - 158)
Weight [g]	180	230	280	290	360	435	510
Suitable sensors	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	--	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)

Theoretical cylinder force depending on the working pressure

	Cylinder force [N]			
	GR07.112-xx		GR07.116-xx	
Working pressure [bar]	Move out	Move in	Move out	Move in
1	16	10	35.5	25
1.5	23.5	15	53	38
2	31.5	20	70.5	50.5
3	47	30	106	75.5
4	63	40	141	101
5	78.5	50	176.5	126
6	94	60	212	151
7	110	70	247	176.5

Dimensions



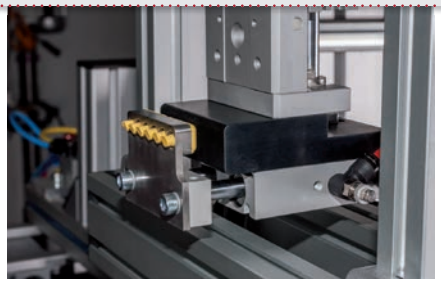
① = Compressed air connection M5

Item no.	GR07.112-25	GR07.112-50	GR07.112-75	GR07.116-25	GR07.116-50	GR07.116-75	GR07.116-100
L [mm]	8.5	8.5	8.5	9.5	9.5	9.5	9.5
B [mm]	46	46	46	58	58	58	58
B1 [mm]	44	44	44	58	58	58	58
C [mm]	97 - 122	122 - 172	147 - 222	104 - 129	129 - 179	154 - 229	179 - 279
C1 [mm]	80	105	130	85	110	135	160
C2 [mm]	8	8	8	10	10	10	10
D [mm]	18	18	18	20	20	20	20
D1 [mm]	16	16	16	18	18	18	18
E1 [mm]	20	20	20	30	30	30	30
E2 [mm]	30	30	30	38.5	38.5	38.5	38.5
F1 [mm]	35	35	35	45	45	45	45
F2 [mm]	42	67	92	38.5	63.5	88.5	114
F3 [mm]	30	40	50	25	35	45	55
F4 [mm]	19	19	19	25	25	25	25
G	M4x0.7	M4x0.7	M4x0.7	M5x0.8	M5x0.8	M5x0.8	M5x0.8
H	M3x4,5	M3x4,5	M3x4,5	M4x5	M4x5	M4x5	M4x5
K	M4	M4	M4	M5	M5	M5	M5
M	M5	M5	M5	M5	M5	M5	M5
N	M3x5	M3x5	M3x5	M4x6	M4x6	M4x6	M4x6
Ø R	6,5x3,3	6,5x3,3	6,5x3,3	8x4,4	8x4,4	8x4,4	8x4,4

Guide blocks piston diameter 8 mm – double-acting

HIGH PRECISION COMBINATION OF CYLINDER AND LINEAR GUIDING





Combination of guide block and dual-piston cylinder

Product notes

> Unit to precisely guide gripper components such as sprue grippers or nippers to the workpiece
> Double-acting, separate compressed air connections for extraction and rectraction
> Sensors for optional detection of piston position (extracted/retracted)
> Stroke adjusters available on request
> Linear guide blocks can also be used to move gripped workpieces more closely together, to prepare the items for example for pick & place by vacuum grippers
> PNP and NPN sensors:
- C-slot (90° angle): GR04.202P, GR04.202N
- C-slot (straight, short design): GR04.280P, GR04.280N

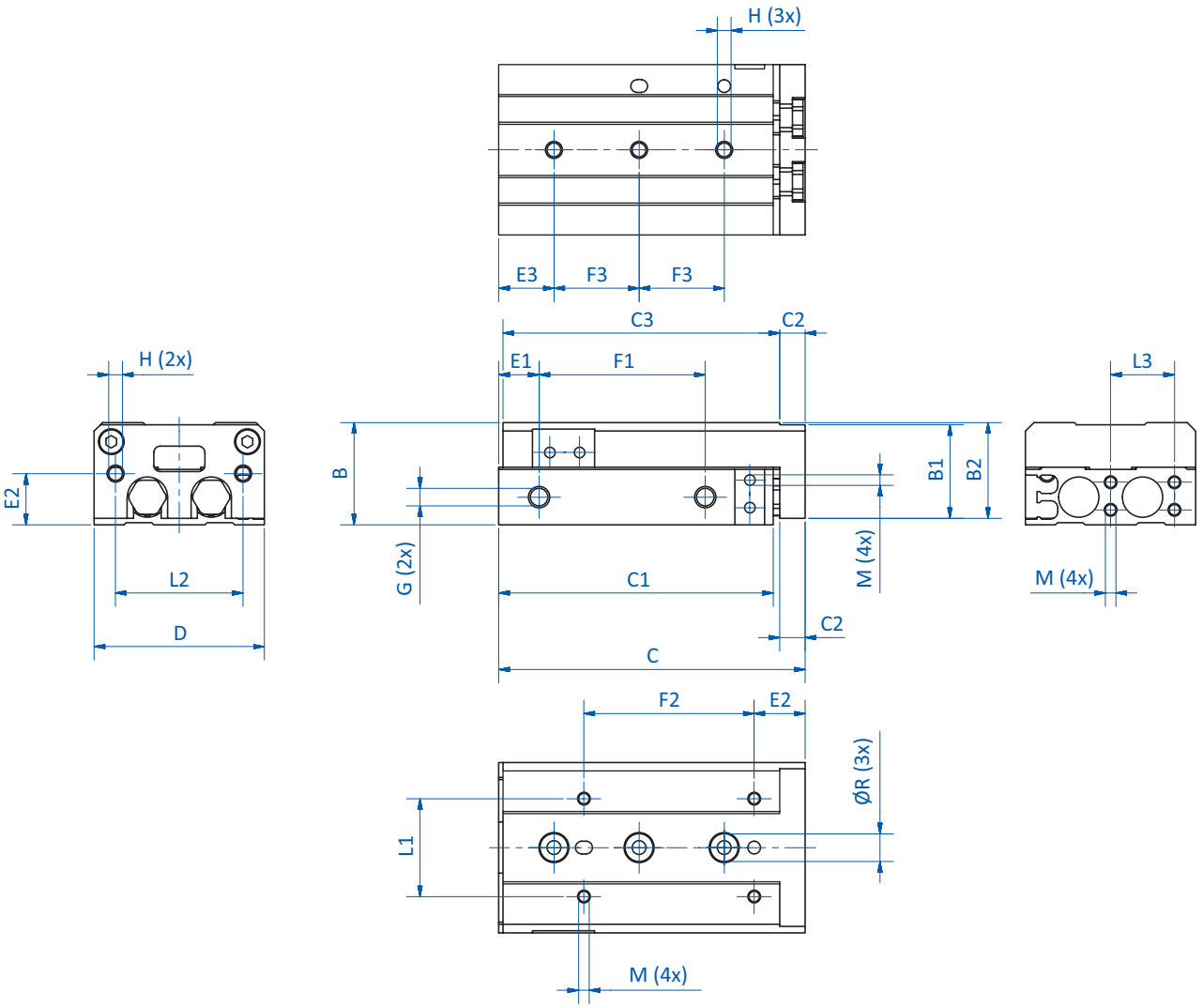
Technical data

Item no.	**GR07.208-30**	**GR07.208-50**	**GR07.208-75**
Compressed air connection	2xM5	2xM5	2xM5
Operating pressure [bar (psi)]	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)
Piston diameter [mm]	8	8	8
Stroke [mm]	30	50	75
Medium	Filtered and oiled/unoiled air	Filtered and oiled/unoiled air	Filtered and oiled/unoiled air
Operating temperature [°C (°F)]	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)
Weight [g]	190	285	410
Suitable sensors	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)

Theoretical cylinder force depending on the working pressure

	Cylinder force [N]					
	GR07.208-xx		**GR07.216-xx**		**GR07.220-xx**	
Working pressure [bar]	Move out	Move in	Move out	Move in	Move out	Move in
2	20	15	80	60	126	94
3	30	23	121	91	188	141
4	40	30	161	121	251	188
5	51	38	201	151	314	236
6	61	45	241	181	377	283
7	71	53	281	211	400	330
Effective piston surface [mm²]	101	75	402	302	628	471

Dimensions



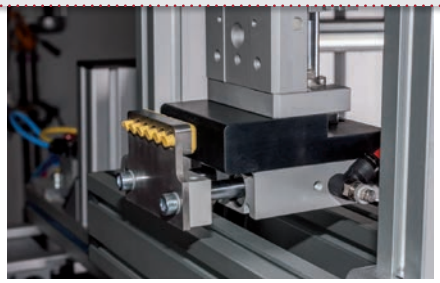
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Item no.	GR07.208-30	GR07.208-50	GR07.208-75
B [mm]	24	24	24
B1 [mm]	22	22	22
B2 [mm]	22.5	22.5	22.5
C [mm]	72 - 102	108 - 158	158 - 233
C1 [mm]	64.5	100.5	150.5
C2 [mm]	6	6	6
C3 [mm]	65	101	151
D [mm]	40	40	40
E1 [mm]	9.5	24.5	38.5
E2 [mm]	12	12	12
E3 [mm]	13	20	27
F1 [mm]	39	60	96
F2 [mm]	40	38	50
F3 [mm]	20	23	28
G	M5	M5	M5
H	M4x8	M4x8	M4x8
L1 [mm]	23	23	23
L2 [mm]	30	30	30
L3 [mm]	15	15	15
M	M3x4	M3x4	M3x4
N	--	--	--
Ø R [mm]	7	7	7

Guide blocks piston diameter 16 & 20 mm – double-acting

HIGH PRECISION COMBINATION OF CYLINDER AND LINEAR GUIDING





Combination of guide block and dual-piston cylinder

Product notes

> Unit to precisely guide gripper components such as sprue grippers or nippers to the workpiece
> Double-acting, separate compressed air connections for extraction and rectraction
> Sensors for optional detection of piston position (extracted/retracted)
> Stroke adjusters available on request
> Linear guide blocks can also be used to move gripped workpieces more closely together, to prepare the items for example for pick & place by vacuum grippers
> PNP and NPN sensors:
- C-slot (90° angle): GR04.202P, GR04.202N
- C-slot (straight, short design): GR04.280P, GR04.280N

Technical data

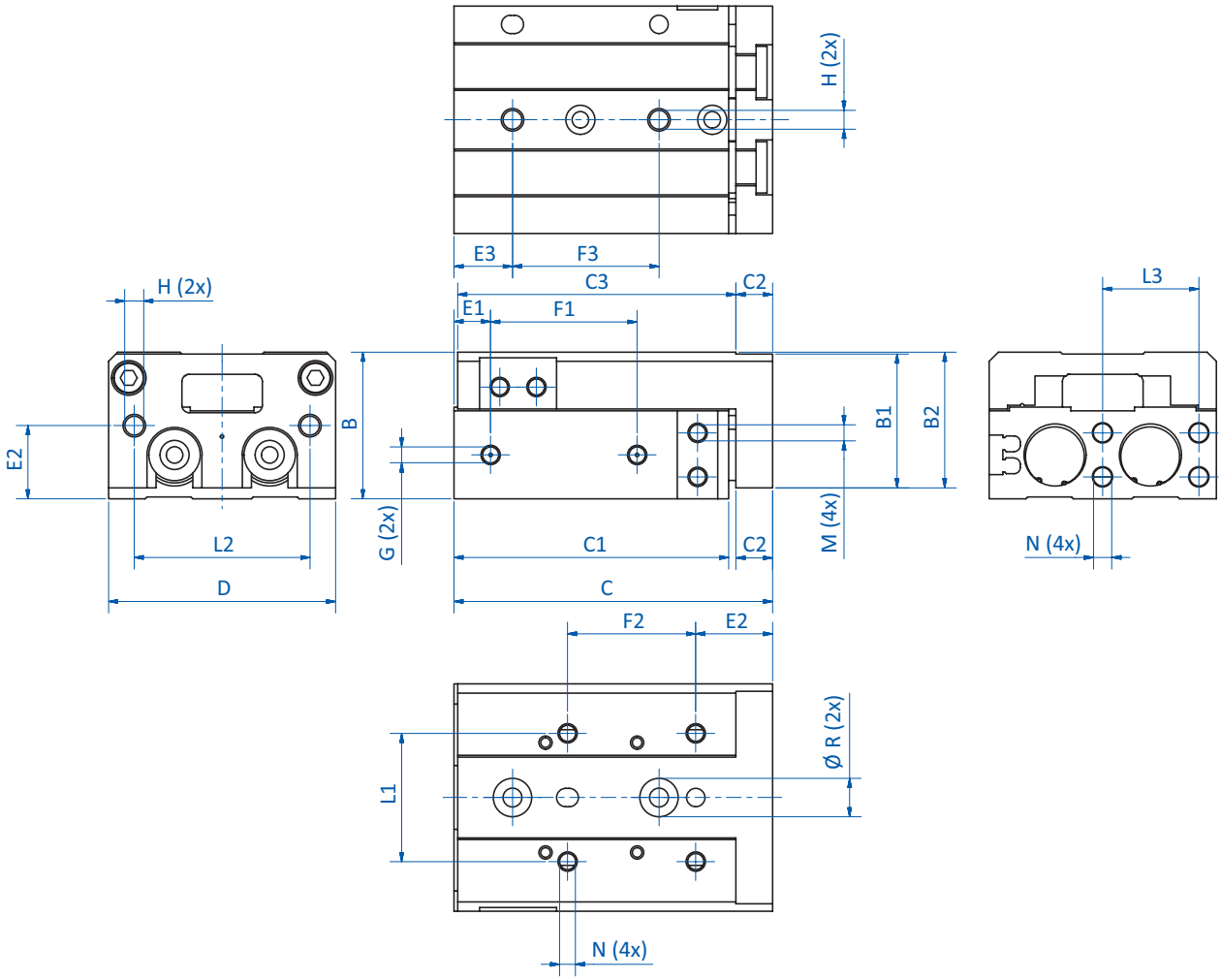
Item no.	GR07.216-30	GR07.216-50	GR07.216-75	GR07.216-100	GR07.220-10	GR07.220-30	GR07.220-50	GR07.220-75	GR07.220-100	GR07.220-125	GR07.220-150
Compressed air connection	2xM5	2xM5	2xM5	2xM5	2xG1/8	2xG1/8	2xG1/8	2xG1/8	2xG1/8	2xG1/8	2xG1/8
Operating pressure [bar (psi)]	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)	1.5 - 7 (21.8 - 101.5)
Piston diameter [mm]	16	16	16	16	20	20	20	20	20	20	20
Stroke [mm]	30	50	75	100	10	30	50	75	100	125	150
Medium	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air	Filtered and oiled/ unoiled air
Operating temperature [°C (°F)]	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)	-5 - 60 (23 - 140)
Weight [g]	602	762	1,095	1,410	1,010	1,010	1,250	1,630	2,150	2,670	3,190
Suitable sensors	GR04.202N (p.404) GR04.202P (p.404) GR04.280N (p.404) GR04.280P (p.404)										

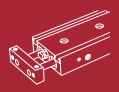
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Theoretical cylinder force depending on the working pressure

	Cylinder force [N]					
	GR07.208-xx		GR07.216-xx		GR07.220-xx	
Working pressure [bar]	Move out	Move in	Move out	Move in	Move out	Move in
2	20	15	80	60	126	94
3	30	23	121	91	188	141
4	40	30	161	121	251	188
5	51	38	201	151	314	236
6	61	45	241	181	377	283
7	71	53	281	211	400	330
Effective piston surface [mm²]	101	75	402	302	628	471

Dimensions





Item no.	GR07.216-30	GR07.216-50	GR07.216-75	GR07.216-100	GR07.220-10	GR07.220-30	GR07.220-50	GR07.220-75	GR07.220-100	GR07.220-125	GR07.220-150
B [mm]	40	40	40	40	50	50	50	50	50	50	50
B1 [mm]	36.5	36.5	36.5	36.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
B2 [mm]	37	37	37	37	46	46	46	46	46	46	46
C [mm]	87 - 117	112 - 162	162 - 237	210 - 310	97 - 107	97 - 107	122 - 172	161 - 236	214 - 314	268 - 393	320 - 304.5
C1 [mm]	75	100	150	198	81.5	81.5	106.5	145.5	198.5	252.2	304.5
C2 [mm]	10	10	10	10	13	13	13	13	13	13	13
C3 [mm]	76	101	151	199	83	83	108	147	200	254	306
D [mm]	62	62	62	62	76	76	76	76	76	76	76
E1 [mm]	10	15	40	55	10	10	10	10	58	70	87
E2 [mm]	20 - 21	20 - 21	20 - 21	20 - 21	25 - 27	25 - 27	25 - 27	25 - 27	25 - 27	25 - 27	25 - 27
E3 [mm]	16	21	26	39	15	15	15	19	37	41	19
F1 [mm]	40	60	85	118	44	44	69	108	113	155	190
F2 [mm]	35	30	55	65	50	50	35	60	70	70	80
F3 [mm]	40	30	35	35	45	45	35	35	35	38	44
G	M5	M5	M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
H	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12	M6x12
L1 [mm]	35	35	35	35	46	46	46	46	46	46	46
L2 [mm]	48	48	48	48	58	58	58	58	58	58	58
L3 [mm]	26	26	26	26	30 (2x)	30 (2x)	30 (2x)	30 (2x)	30 (2x)	30 (2x)	30 (2x)
M	M5x5,5	M5x5,5	M5x5,5	M5x5,5	M6x6,5	M6x6,5	M6x6,5	M6x6,5	M6x6,5	M6x6,5	M6x6,5
N	M5x7	M5x7	M5x7	M5x7	M5x8 (6x)	M5x8 (6x)	M5x8 (6x)	M5x8 (6x)	M5x8 (6x)	M5x8 (6x)	M5x8 (6x)
Ø R [mm]	10.5	10.5	10.5	10.5	11	11	11	11	11	11	11

Guide blocks, extra narrow design – double-acting





Product notes

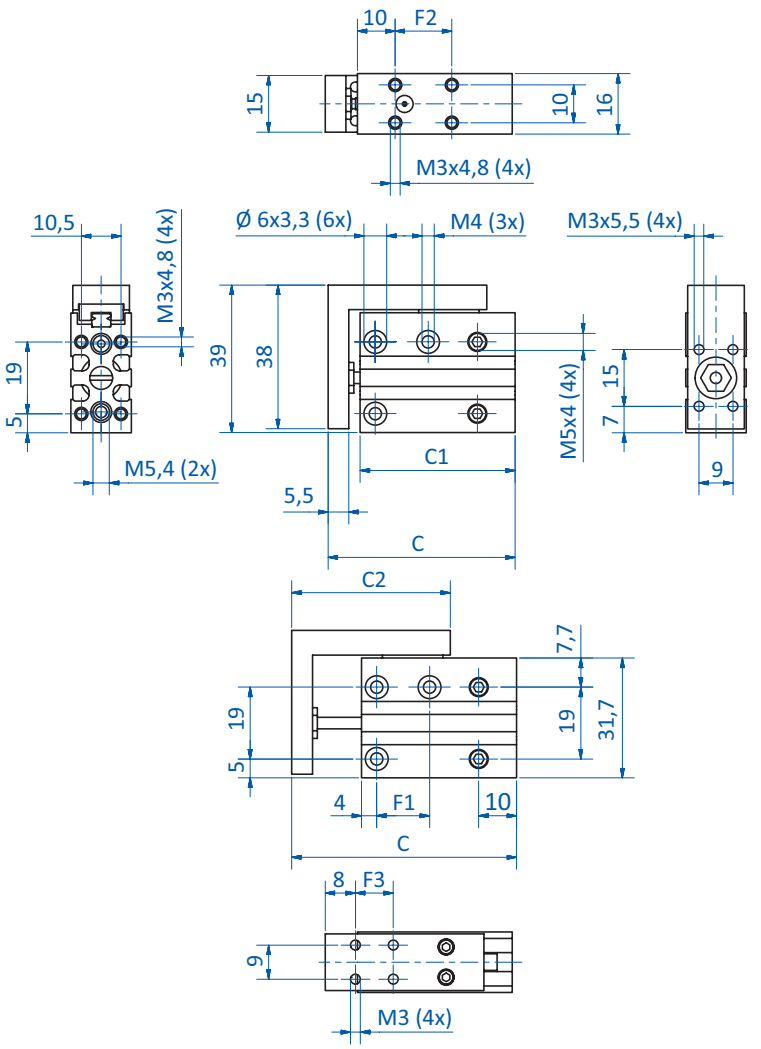
> Unit to precisely guide gripper components such as sprue grippers or nippers to the workpiece
> Extra narrow construction for space-saving assembly
> Optional position monitoring through detection of piston position
> Principle of operation: double-acting
> Extension cables for sensors:
  - 20.503: 3-pole M8, straight, length 2,500 mm, open wire
  - 20.507: 3-pole M8, straight, length 2,000 mm, open wire
  - 20.570: 3-pole M8, length 1,500 mm, end with plug 3-pole M8
> PNP and NPN sensors:
  - C-slot (90° angle): GR04.202P, GR04.202N
  - C-slot (straight, short design): GR04.280P, GR04.280N

Other strokes available on request

Technical data

Item no.	Operating pressure [bar (psi)]	Piston diameter [mm]	Stroke [mm]	Piston speed [mm/sec]	Operating temperature [°C (°F)]	Weight [g]	Accessories
GR07.506-10	1.2 - 7 (17.4 - 101.5)	6	10	50 - 500	-5 - 60 (23 - 140)	70	
GR07.506-20	1.2 - 7 (17.4 - 101.5)	6	20	50 - 500	-5 - 60 (23 - 140)	80	
GR07.506-30	1.2 - 7 (17.4 - 101.5)	6	30	50 - 500	-5 - 60 (23 - 140)	100	Sensor: GR04.202N (p.404)
GR07.510-10	1.2 - 7 (17.4 - 101.5)	10	10	50 - 500	-5 - 60 (23 - 140)	125	Sensor: GR04.202P (p.404)
GR07.510-20	1.2 - 7 (17.4 - 101.5)	10	20	50 - 500	-5 - 60 (23 - 140)	150	Sensor: GR04.280N (p.404)
GR07.510-30	1.2 - 7 (17.4 - 101.5)	10	30	50 - 500	-5 - 60 (23 - 140)	170	Sensor: GR04.280P (p.404)
GR07.516-10	1.2 - 7 (17.4 - 101.5)	16	10	50 - 500	-5 - 60 (23 - 140)	230	Connector cable: 20.503 (p.410)
GR07.516-20	1.2 - 7 (17.4 - 101.5)	16	20	50 - 500	-5 - 60 (23 - 140)	260	Connector cable: 20.507 (p.410)
GR07.516-30	1.2 - 7 (17.4 - 101.5)	16	30	50 - 500	-5 - 60 (23 - 140)	290	Connector cable: 20.570 (p.410)

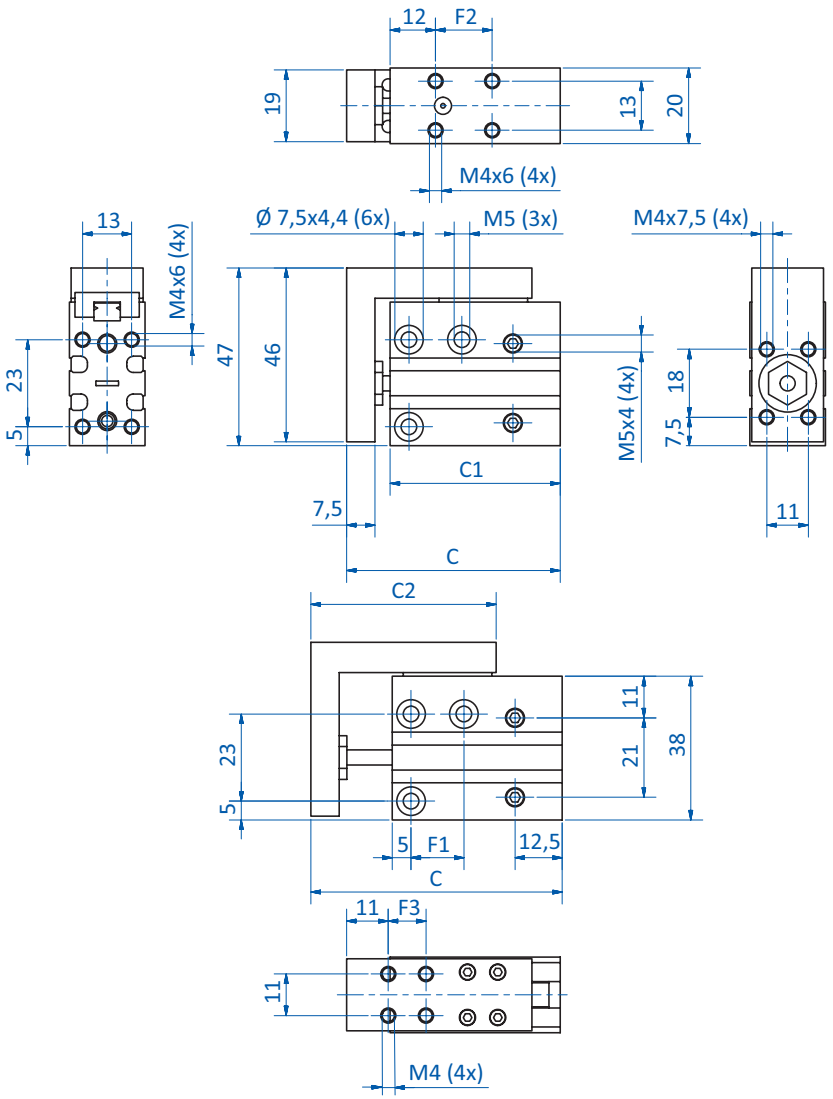
Dimensions



GR07.506-10 | GR07.506-20 | GR07.506-30

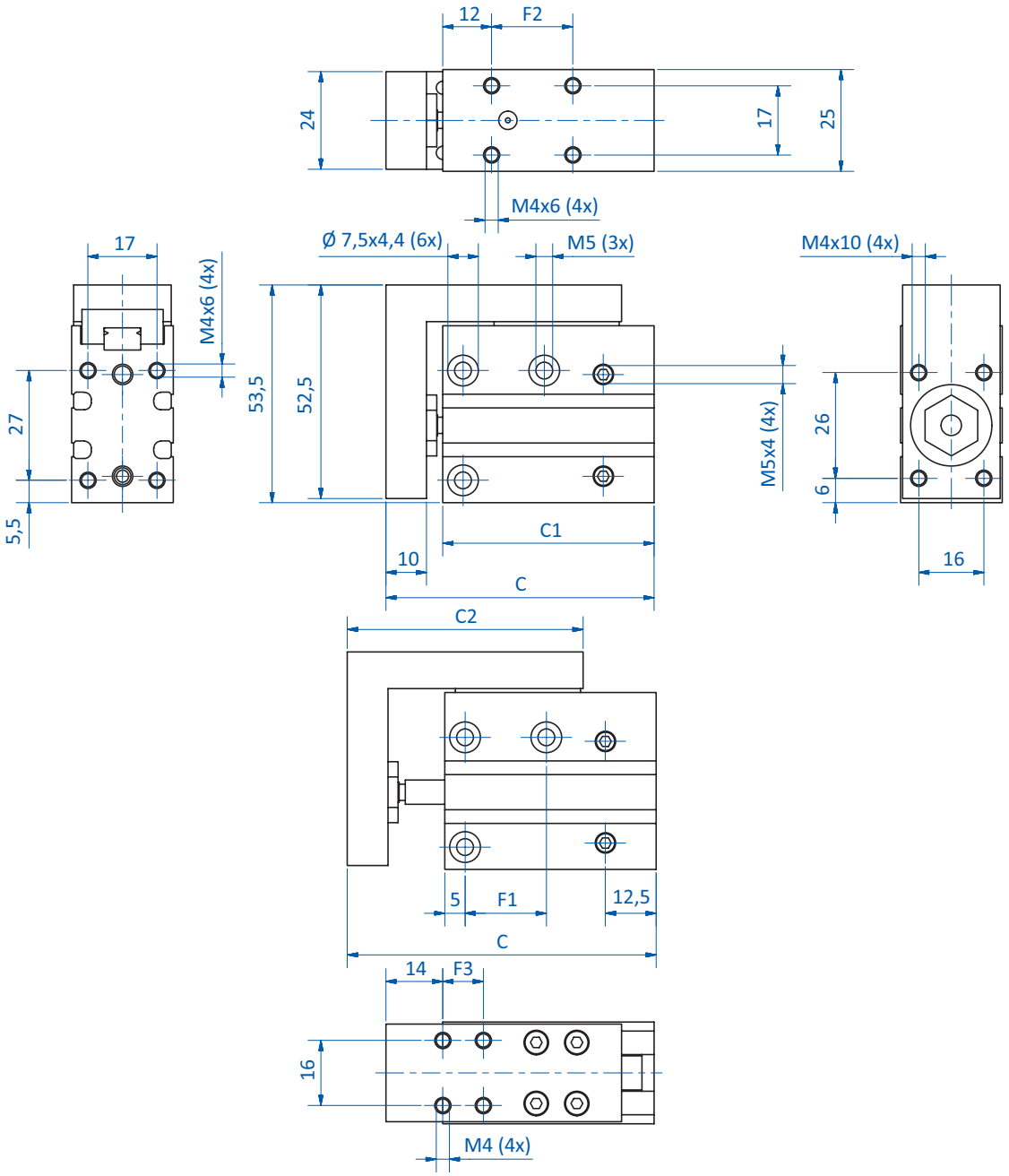
Continued on the next page

Dimensions



GR07.510-10 | GR07.510-20 | GR07.510-30

Dimensions



GR07.516-10 | GR07.516-20 | GR07.516-30

Item no.	**C** [mm]	**C1** [mm]	**C2** [mm]	**F1** [mm]	**F2** [mm]	**F3** [mm]
GR07.506-10	49.5 - 59.5	41	42	14	15	10
GR07.506-20	51 - 52	51	52	24	25	20
GR07.506-30	69.5 - 99.5	61	62	30	35	30
GR07.510-10	56.5 - 66.5	45	49	14	15	10
GR07.510-20	66.5 - 86.5	55	59	24	25	20
GR07.510-30	76.5 - 106.5	65	69	30	35	30
GR07.516-10	66 - 76	52	58	20	20	10
GR07.516-20	76 - 96	62	68	30	30	20
GR07.516-30	86 - 116	72	78	40	40	30

Pressure plates





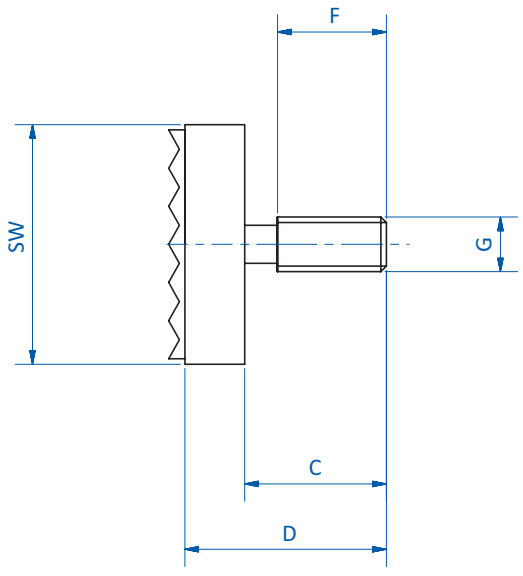
Product notes

> Pressure plates with threads e.g. for screwing into short lifting cylinders as gripping or holding tools
> GR07.196-198 with grooved natural rubber pad
> GR07.199 with steel cover

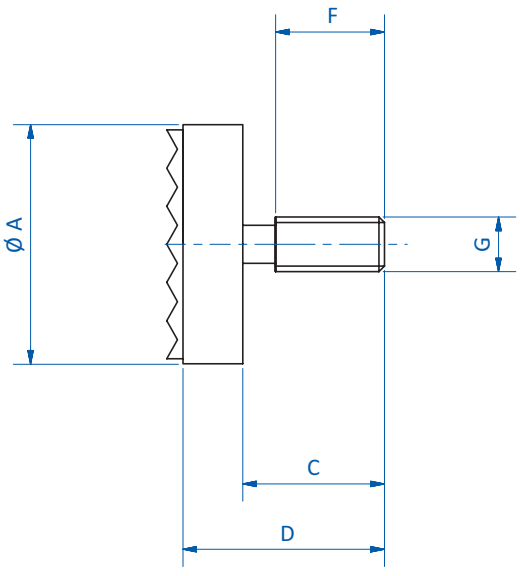
Technical data

Item no.	Weight [g]
GR07.196	12
GR07.197	12
GR07.198	7
GR07.199	2

Dimensions



GR07.196 | GR07.197 | GR07.198



GR07.199

Item no.	SW	Ø A [mm]	C [mm]	D [mm]	F [mm]	G
GR07.196	22	--	13	18.5	10	M5
GR07.197	22	--	11.5	17	8.5	M4
GR07.198	22	--	7	11.7	5	M3
GR07.199	--	12	9	12.3	6	M3

Fittings for compact cylinders





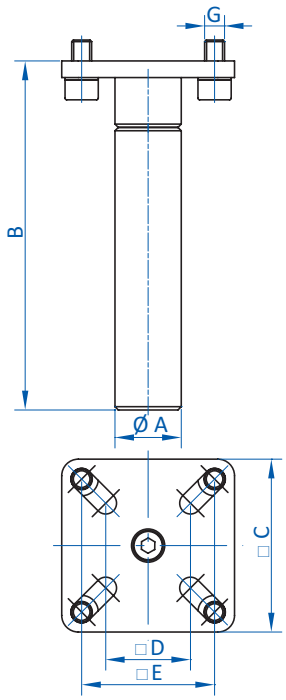
Product notes

> Integration of compact cylinders into gripper systems
> Compatible with all compact cylinders complying with ISO 21287 standards

Technical data

Item no.	Weight [g]
GR07.001	125
GR07.002	52

Dimensions



Item no.	Ø A [mm]	B [mm]	□ C [mm]	□ D [mm]	□ E [mm]	G
GR07.001	20	105	52	25.5	40	M6
GR07.002	14	105	29	15.5	20	M4

Angle arms for compact cylinders – adjustable



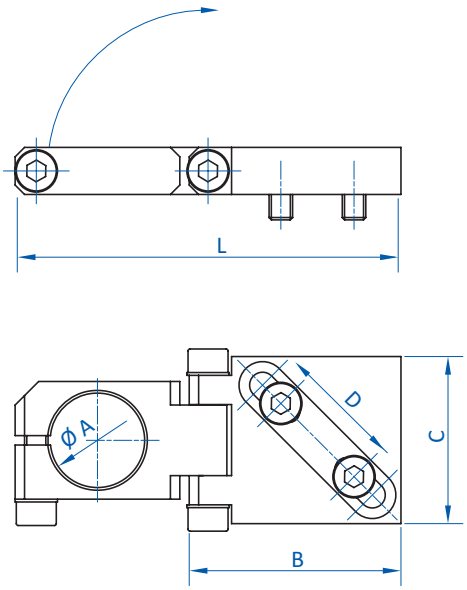
Product notes

> Variable mounting of gripper components on compact cylinders or extrusion systems
> Compatible with all compact cylinders (anti-twist) complying with ISO 21287 standards

Technical data

Item no.	Weight [g]
GR07.030	73

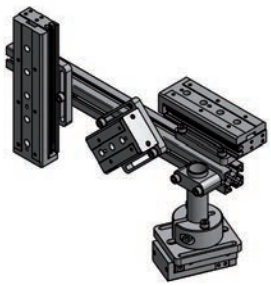
Dimensions



Item no.	Ø A [mm]	B [mm]	C [mm]	D [mm]	L [mm]
GR07.030	20	45	35.5	17 - 33	82

Mounting plate for guide blocks





Installation on FIPA MLine extrusion system

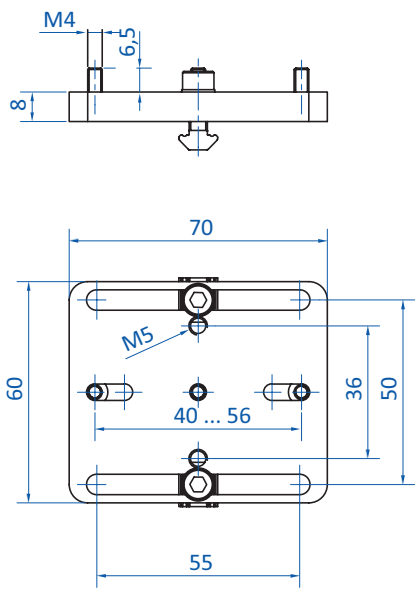
Product notes

> Mounting of guide blocks to SLine and MLine extrusions
> GR07.022: suitable for GR07.208 on SLine and MLine extrusion systems
> GR07.024: suitable for GR07.220 on XLine extrusion system
> Slot nuts and screws included in scope of delivery

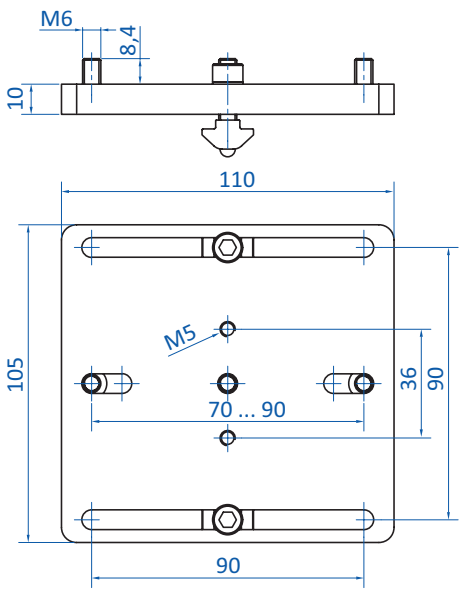
Technical data

Item no.	Weight [g]
GR07.022	71
GR07.024	266

Dimensions



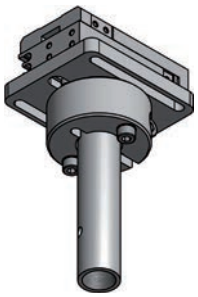
GR07.022



GR07.024

Mounting ring for linear components





Application example: guide blocks
with mounting ring and mounting plate

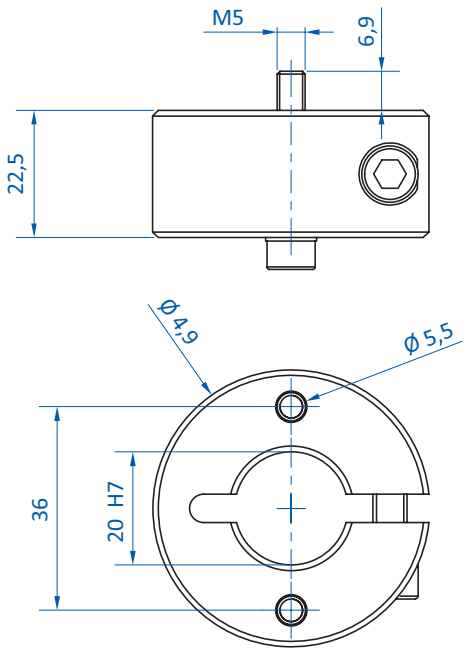
Product notes

> Mounting of linear components on extrusion systems via extension tubes with Ø 20 mm clamp
> Particularly suitable for guide blocks rails and dual piston cylinder
> Screws included in scope of delivery

Technical data

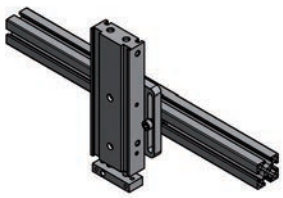
Item no.	Weight [g]	Accessories
GR07.021	96	Mounting bracket: GR07.022 (p.353) Mounting bracket: GR07.024 (p.353) Mounting bracket: GR07.026 (p.355) Mounting bracket: GR07.028 (p.355) Extension tube: GR06.022 (p.90) Cross clamp: GR02.022 (p.83) Angle clamp: GR02.013A (p.79)

Dimensions



Mounting plate for dual-piston cylinders





Assembly on FIPA MLine extrusions

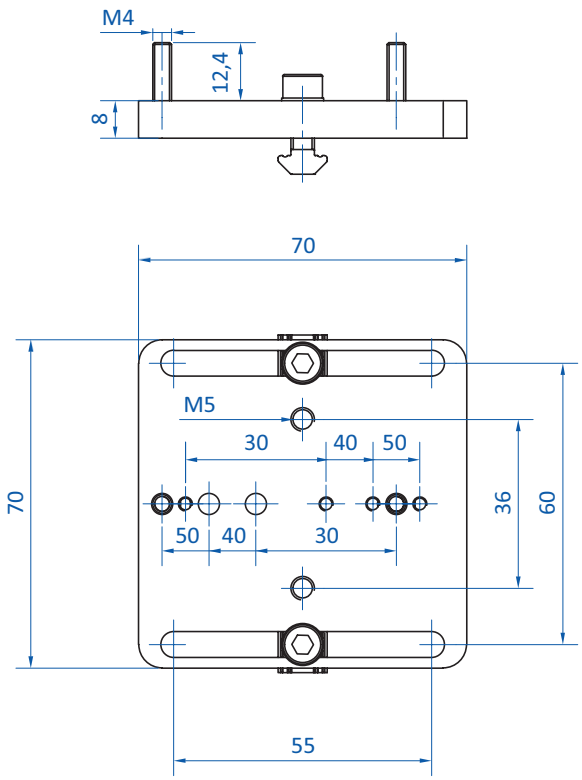
Product notes

> Mounting of dual-piston cylinders on SLine and MLine extrusion systems
> Slot nuts and screws included in scope of delivery

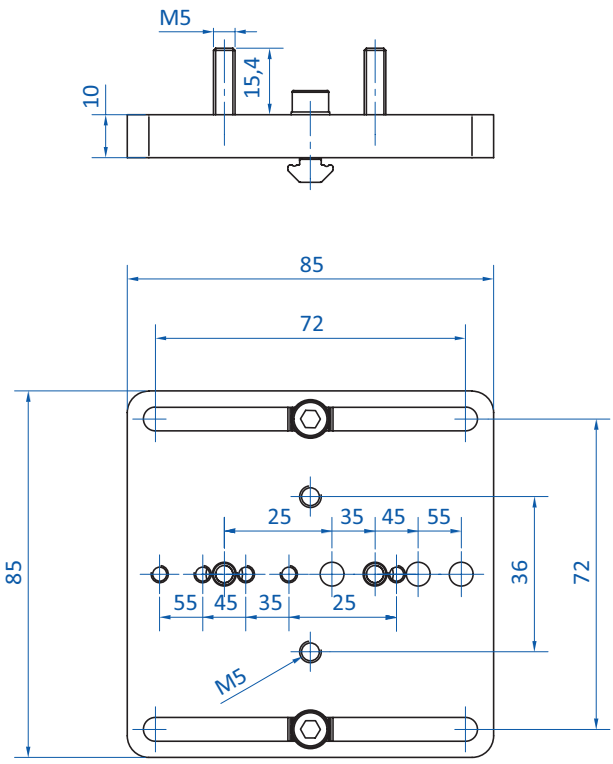
Technical data

Item no.	Suitable for	Weight [g]
GR07.026	GR07.110	102
GR07.028	GR07.115	182

Dimensions



GR07.026



GR07.028

Notes:

Control technology and system monitoring at a glance 358

Pressure regulators 360

Vacuum filters 364

Valve technology 366

Vacuum/Pressure switches 376

FIPA Control technology and system monitoring





"Inline" pressure regulators

> Limitation of holding force of grippers
> Defined reduction in operating pressure for ejectors
> Models with integrated gauge (32.582 - 32.586)

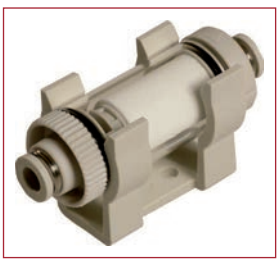
> See page 360



Vacuum regulators

> Maintain system vacuum independent of porosity of workpiece and fluctuations of vacuum supply

> See page 362



Vacuum filters

> Retent impurities and liquids taken in the vacuum system for example by vacuum cups or pumps
> Protect vacuum pumps or ejectors from damage or excessive wear

> See page 364



Flow control valves

> Maintain system vacuum by closing non-covered suction openings
> Handling of dense or porous workpieces

> See page 366

FIPA Control technology and system monitoring



Pressure valves

> Control of compressed air circuits
> Optional construction of valve clusters

> See page 367



Vacuum valves

> 2/2-way and 3/2-way valves with short switching times and high flow for fast vacuum build-up
> Optional construction of valve clusters

> See page 371



Vacuum/Pressure switches

> Monitoring of vacuum / compressed air and optimize cycle times and improve gripper system effeciency

Mini vacuum switch 20.040/20.041

> PNP/NPN Outputs
> Hysteresis is fixed
> LED-diode

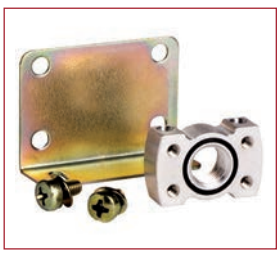


Vacuum switch 20.021/20.022

> 2 x PNP outputs
> 7-segment LED-display
> Compact, round design (20.022)

> See page 376





Mounting brackets for vacuum switches and pressure switches

> Adapters and mounting brackets for flange assembly, front panel mounting or mounting on extrusions

> See page 380

For additional products please refer to the FIPA Vacuum Technology Catalog.
Our technical customer service will be happy to help you find the optimal products for your application. (email: info@fipa.com; phone: +49 89 962489-0)

"Inline" pressure regulators with pressure gauge



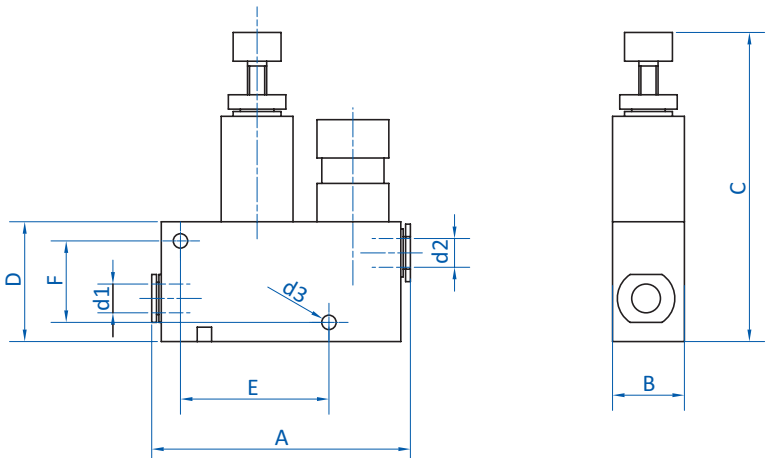
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Easy installation thanks to vertical and horizontal cross holes
> Pressure adjustment by means of knurled screw, pressure monitoring by means of gauges (readout in MPa)
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.582	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	48
32.583	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	48
32.584	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	48
32.585	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	73
32.586	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	73

Dimensions



Item no.	d1 [mm]	d2 [mm]	d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
32.582	4	4	3.2	55	15	63	25	30	17
32.583	6	4	3.2	55.5	15	63	25	30	17
32.584	6	6	3.2	56	15	63	25	30	17
32.585	8	6	3.2	69	19	67.5	29	39	21
32.586	8	8	3.2	69	19	67.5	29	39	21

"Inline" pressure regulators



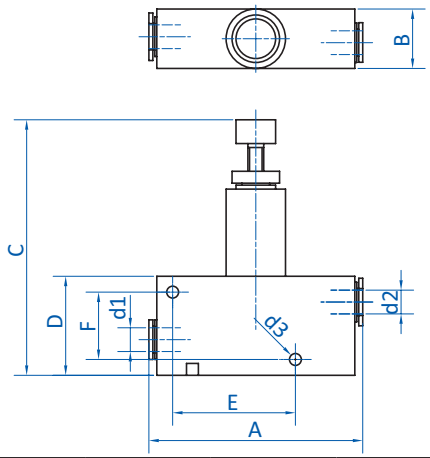
Product notes

> Defined reduction in operating pressure for ejectors, limitation of holding force of grippers
> Pressure adjustment by means of knurled screw
> Integrated overpressure protection
> Only suitable for compressed air

Technical data

Item no.	Operating pressure [bar (psi)]	Regulating range [bar (psi)]	Accuracy (±) [%]	Operating temperature [°C (°F)]	Weight [g]
32.577	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	36
32.578	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	36
32.579	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	36
32.580	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	60
32.581	0 - 9 (0 - 130.5)	1 - 8 (14.5 - 116)	5	0 - 60 (32 - 140)	60

Dimensions



Item no.	d1 [mm]	d2 [mm]	d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
32.577	4	4	3.2	44	15	63	25	30	17
32.578	6	4	3.2	44.5	15	63	25	30	17
32.579	6	6	3.2	45	15	63	25	30	17
32.580	8	6	3.2	57	19	68	29	39	21
32.581	8	8	3.2	57	19	68	29	39	21

Vacuum regulators



Vacuum regulator 33.105 with vacuum gauge

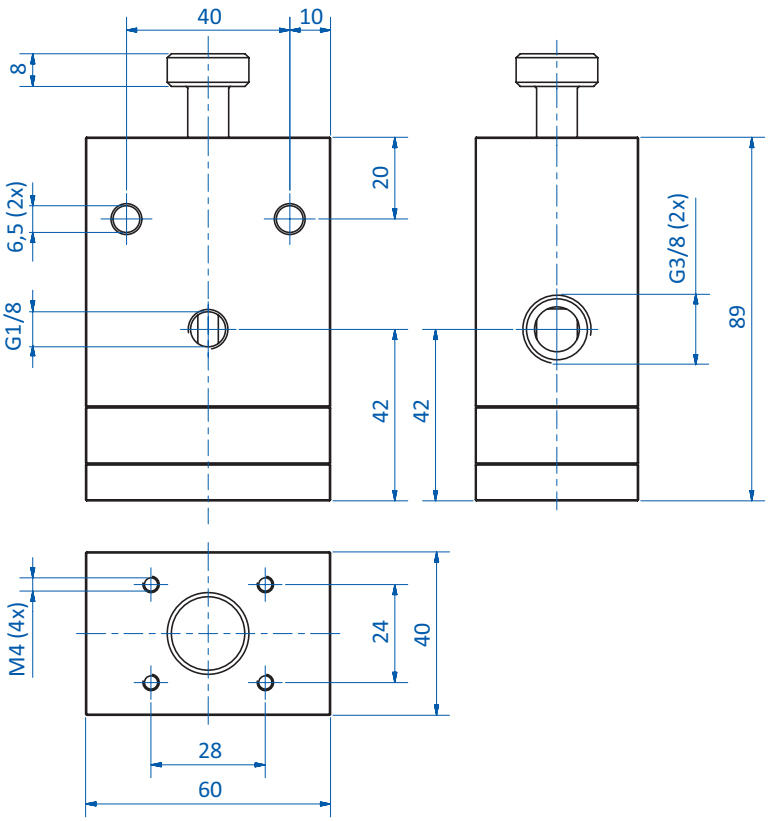
Product notes

> Vacuum adjustment of consumer loads, such as vacuum cups in handling systems
> Integration of a vacuum gauge recommended
> Blow-off is possible if vacuum gauge is not connected
> Any installation position
> Vacuum gauge not included in scope of delivery

Technical data

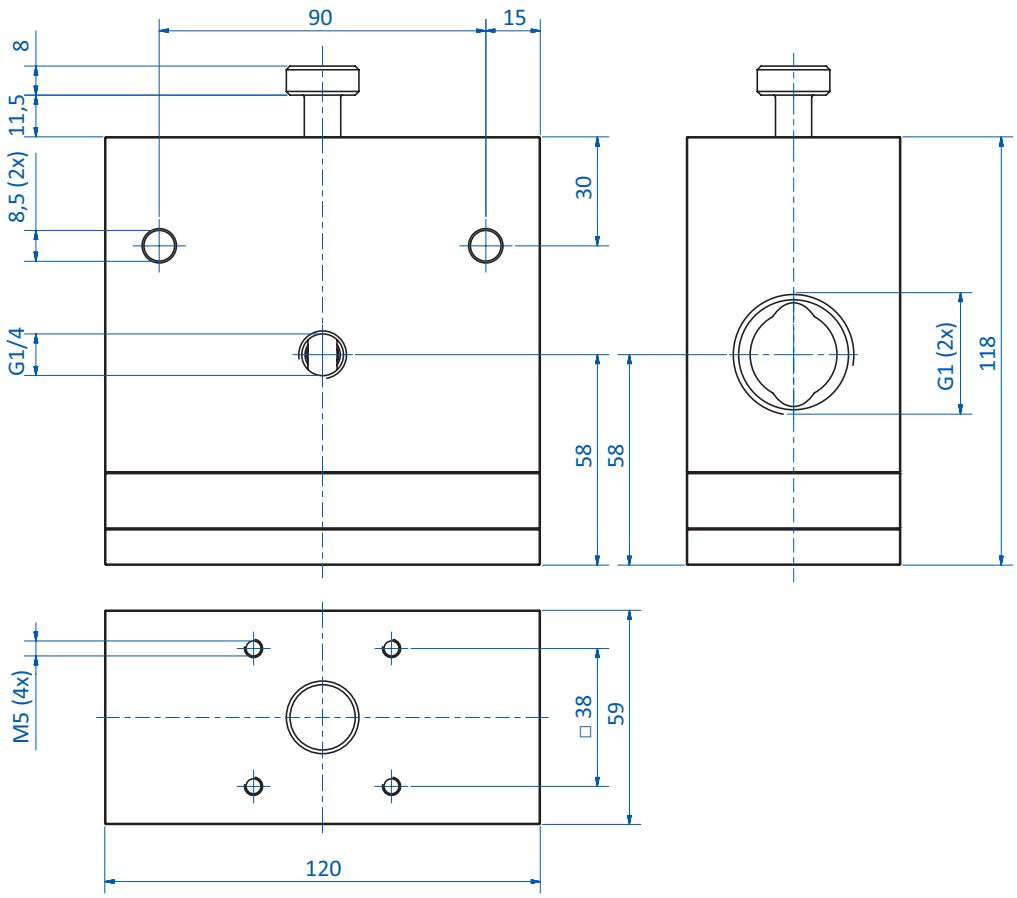
Item no.	Max. flow rate [m³/h]	Regulating range [mbar (psi)]	Operating temperature [°C (°F)]	Weight [kg]	Suitable vacuum gauge
33.105	10	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	0.6	91.001
33.120	80	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	2.1	91.003

Dimensions



33.105

Dimensions



33.120

Plug-in filters





71.070 and 71.071: plug-in pipe (Ø d1) fits in Ø 4 mm / 6 mm tubing connections

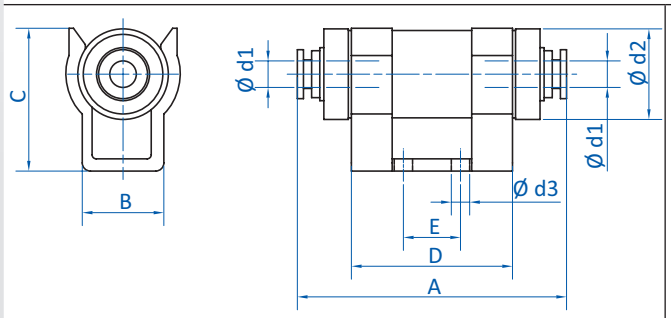
Product notes

> Trapping impurities and liquids which can be suctioned via the vacuum cup or other systems
> To protect vacuum components (e.g. ejectors) from damage or excessive wear
> 71.000 - 71.004: economical use due to replaceable filter cartridges

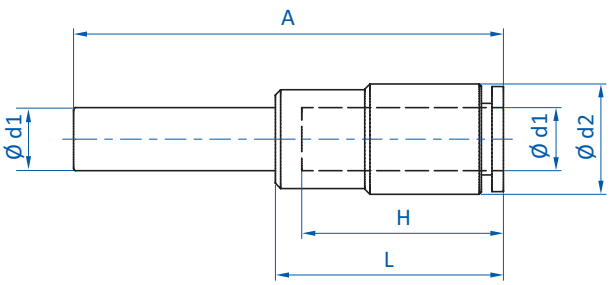
Technical data

Item no.	Filter surface [cm²]	Grade of filtration [µm]	Weight [g]	Accessories
71.000	7.5	10	16	Mounting bracket: VFUH2 Spare cartridge: 71.005-Kartusche
71.001	7.5	10	17	Mounting bracket: VFUH2 Spare cartridge: 71.005-Kartusche
71.002	12.5	10	25	Mounting bracket: VFUH3 Spare cartridge: 71.006-Kartusche
71.003	12.5	10	27	Mounting bracket: VFUH3 Spare cartridge: 71.006-Kartusche
71.004	12.5	10	33	Mounting bracket: VFUH3 Spare cartridge: 71.006-Kartusche
71.070	0.8	10	1.5	--
71.071	1.1	10	2.5	--

Dimensions



71.000 | 71.001 | 71.002 | 71.003 | 71.004



71.070 | 71.071

Item no.	Ø d1 [mm]	Ø d2 [mm]	Ø d3 [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	H [mm]	L [mm]
71.000	4	18.5	4.5	58	18	29	33	10	--	--
71.001	6	18.5	4.5	60	18	29	33	10	--	--
71.002	6	22.2	4.5	66.5	20	35	39.5	14	--	--
71.003	8	22.2	4.5	70.1	20	35	39.5	14	--	--
71.004	10	22.2	4.5	72.7	20	35	39.5	14	--	--
71.070	4	8	--	38.6	--	--	--	--	11	21.5
71.071	6	10	--	41	--	--	--	--	11.6	21.8

Filter / Condensate trap

Precipitation of condensable vapors



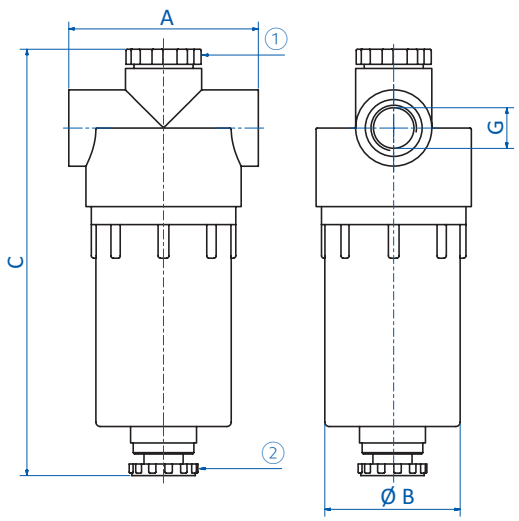
Product notes

> Efficient and reliable separation of water droplets out of vacuum systems
> Easy installation after vacuum pumps or ejectors
> Housing made of transparent plastics for filtration monitoring
> Drainage valve at the bottom to discharge the collected condensate
> Filter needs to be ventilated before opening

Technical data

Item no.	Max. volume flow [m³/h]	Max. filling capacity [cm³]	Grade of filtration [µm]	Filter material	Max. input pressure [bar (psi)]	Max. operating temperature [°C (°F)]	Weight [kg]	Suitable spare cartridges
71.035	10.6	30	100	Stainless steel mesh	7.3 (105.9)	122 (252)	0.6	71.035-Kartusche
71.036	17.7	25	50	Polyethylene - sintered	7.3 (105.9)	122 (252)	0.8	71.036-Kartusche
71.037	21.2	40	30	Synthetic felt	0.5 (7.3)	122 (252)	1.7	71.037-Kartusche
71.038	35.3	50	30	Synthetic felt	7.3 (105.9)	122 (252)	5	71.038-Kartusche
71.039	58.9	100	30	Synthetic felt	7.3 (105.9)	122 (252)	9.3	71.039-Kartusche

Dimensions



① = Bleeding screw ② = Blow-off screw

Item no.	G	A [mm]	Ø B [mm]	C [mm]
71.035	G3/8	80	75	135
71.036	G1/2	87	60	196
71.037	R3/4	125	100	255
71.038	G1	175	150	370
71.039	G1 1/2	220	190	450

Flow control valves with flow pin

For handling of porous products



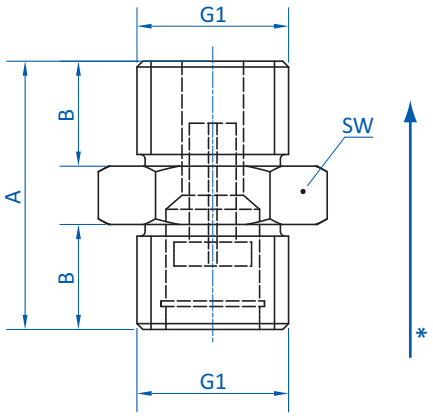
Product notes

> Sealing of unused suction openings to maintain the system vacuum
> Limited leakage prevents premature triggering with porous workpieces
> Compact design
> Optimal installation position is vertical

Technical data

Item no.	Suction power to achieve 30 % vacuum [Nl/min]	Suction power to achieve 60 % vacuum [Nl/min]	Max. flow rate with blow-off at 5 bar (72.5 psi) [Nl/min]	Flow pin bore hole diameter [mm]	Leakage loss [m^3/h]	Weight [g]
63.036	5	5	370	0.8	0.46	8
63.037	11	11	620	1.2	1.04	8
63.038	17	18	480	1.5	1.62	8
63.055	3	3	320	0.6	0.21	8

Dimensions



* = Flow direction

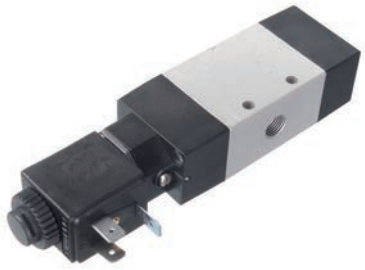
Item no.	G1	A [mm]	B [mm]	SW
63.036	G1/4	23	9	17
63.037	G1/4	23	9	17
63.038	G1/4	23	9	17
63.055	G1/8	16	5	12

Solenoid valves for compressed air

Indirectly controlled, with spring reset



36.060



36.061

Product notes

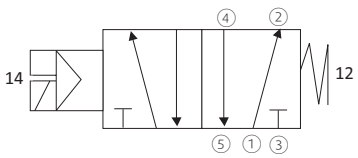
> Suitable for compressed air
> 36.060: for use e.g. to increase cycle times for ejectors without valve technology
Example: vacuum and blow-off control for multi-chamber ejectors e.g. 65.410
- 1x compressed air vacuum generation
- 1x compressed air blow-off
> 36.061: for use e.g. as a blow-off control valve for 3/2-way vacuum valves
> Robust and lightweight housing
> Included in scope of delivery: coil and DIN plug 10.006 for 24 VDC, IP65

Technical data

Item no.	Nominal width [mm]	Nominal flow rate at 6 bar [m³/h]	Control pressure [bar (psi)]	Design	Supply voltage [VDC]	Duty ratio [%]	Max. power consumption [W]	Protection class	Material	Operating temperature [°C (°F)]	Weight [g]
36.060	6	37.2	2.5 - 10 (36.3 - 145)	5/2	24	100	3.8	IP65	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	180
36.061	6	37.2	2.5 - 10 (36.3 - 145)	3/2	24	100	3.8	IP65	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	260

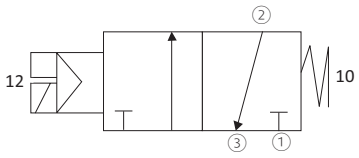
Wiring diagrams

36.060



Assignment
① Compressed air inlet
②, ④ Working connection
③, ⑤ Bleeding

36.061

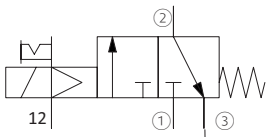


Assignment
① Compressed air inlet
② Working connection
③ Bleeding (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

Continued on the next page

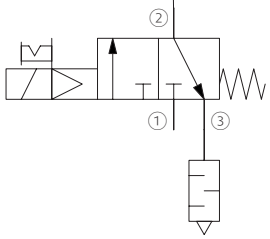
Application example: usage of 36.061 as control valve to activate blow-off of 3/2-way vacuum valves (here: valve 36.520)

36.520



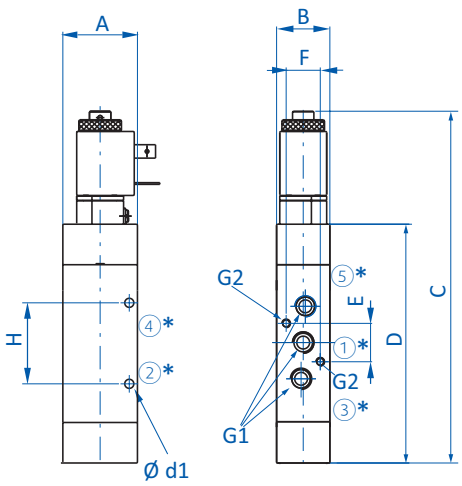
Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

36.061

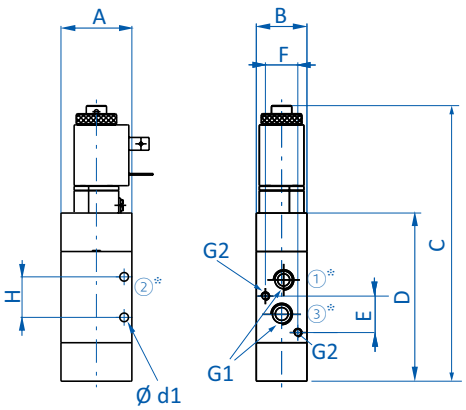


Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

Dimensions



36.060



36.061

* = Assignment see wiring diagrams

Item no.	G1	G2	A [mm]	B [mm]	C [mm]	D [mm]	Ø d1 [mm]	E [mm]	F [mm]	H [mm]
36.060	G1/8	M4	35	25	153	100	4.25	18	16	38
36.061	G1/8	M4	35	25	136	83	4.25	18	16	20

2/2-way electromagnetic vacuum valves, directly controlled



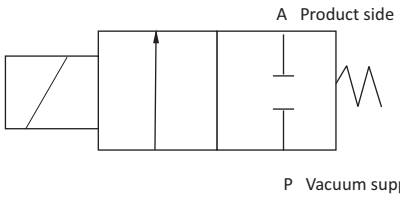
Product notes

> Very high suction power at small size for short evacuation time and fast vacuum build-up
> Short response time
> Robust brass housing and compact design for demanding applications
> Also suitable for positive pressure
> Incl. energy-saving coil for minimized power consumption and less heat development
> Energy-saving coil 24 VDC or 230 VAC and DIN plug IP65 included
> Further available voltages:
- VAC: 115, 48, 24
- VDC: 12

Technical data

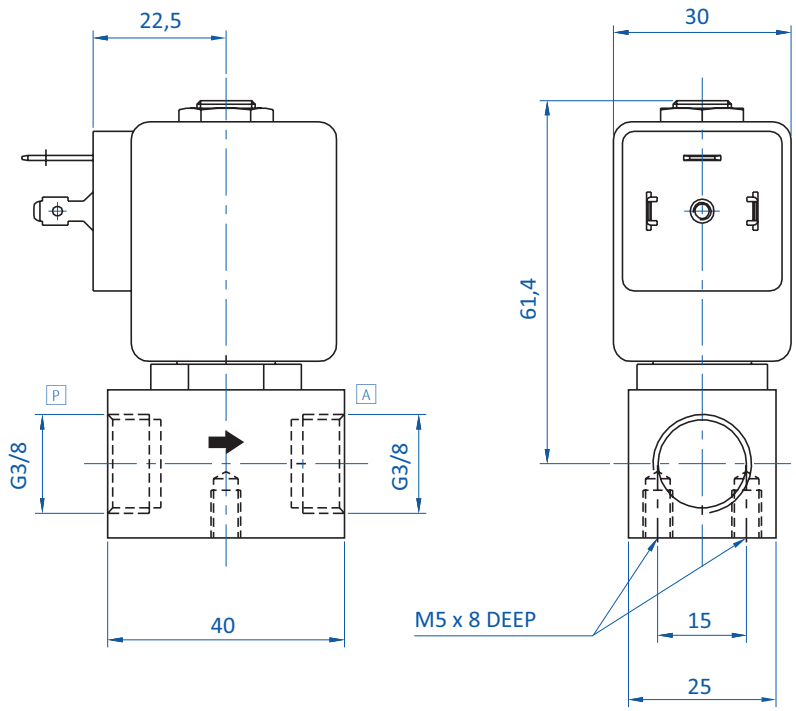
Item no.	36.004-24VDC	36.004-230VAC
Nominal width [mm]	7	7
Nominal flow rate [m³/h]	4.8	4.8
Pressure range [bar (psi)]	-0.99 - 5 (-14.4 - 72.5)	-1 - 4 (-14.5 - 58)
Operating principle	NC	NC
Switching time [ms]	20	20
Power-on time [ED]	100 %	100 %
Max. power consumption [W]	18	9
Protection class	IP65	IP65
Operating temperature [°C (°F)]	-10 - 60 (14 - 140)	-10 - 60 (14 - 140)
Weight [g]	520	520
Accessories	Plug: 10.007 Coil: 10.0050/24VDC	Plug: 10.007 Coil: 10.0050/230VAC

Wiring diagram



Continued on the next page

Dimensions



A = Product side P = Vacuum supply

3/2-way solenoid vacuum valve, directly controlled



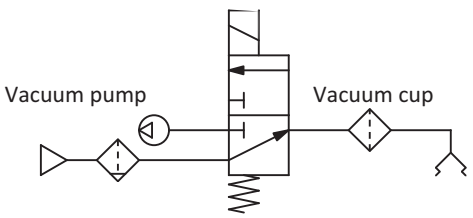
Product notes

> Very high suction power at small size for short evacuation time and fast vacuum build-up
> Small, compact and lightweight
> Suction on/off, blow-off or ventilation of vacuum cups
> HNBR diaphragm allows for flexible installation due to resistance against low ozone concentrations
> Fast switching time
> Factory set NO, can be switched to NC by the customer
> To be mounted in any position
> Resistance against low ozone concentration
> Included in scope of delivery: coil 24 VDC and DIN plug
> Other voltages on request

Technical data

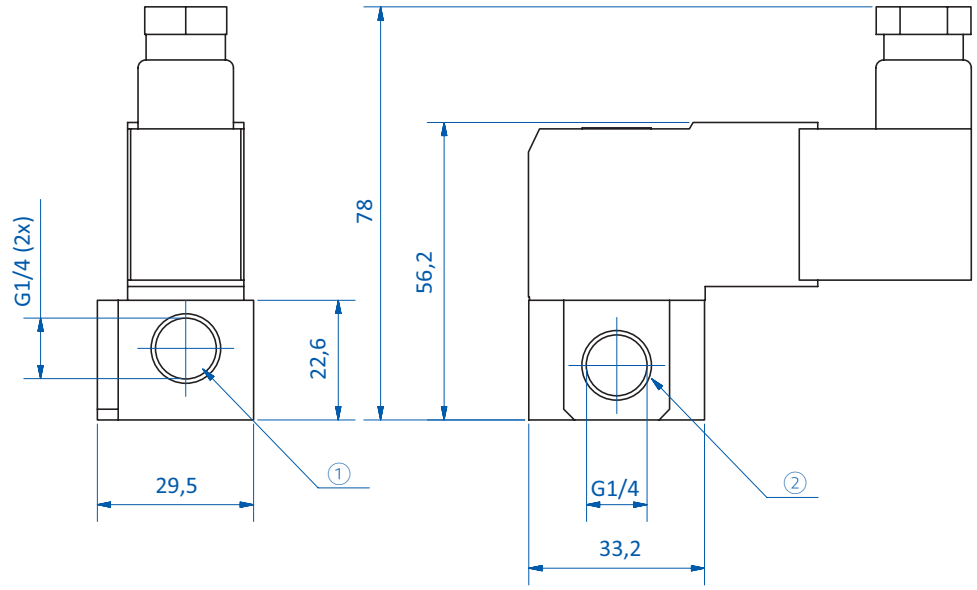
Item no.	**36.003**
Connection	G 1/4
Nominal width [mm]	4.5
Nominal flow rate [m³/h]	2.1
Pressure range [bar (psi)]	-1 - 0 (-14.5 - 0)
Max. switching frequency [Hz]	10
Response time [ms]	20
Protection class	IP65
Operating principle	NC/NO
Duty ratio [%]	75
Operating voltage [VDC]	24
Power consumption [W]	4
DIN-plug	Yes
Operating temperature [°C (°F)]	-10 - 50 (14 - 122)
Weight [g]	155

Wiring diagram



Continued on the next page

Dimensions



① = Vacuum supply ② = Compressed air, blow-off

3/2-way solenoid vacuum valves, pneumatically supported with spring reset



36.210 | 36.211



36.515 - 36.525

Product notes

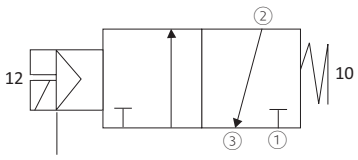
> Suction, blow-off, ventilation of vacuum cups
> High suction power at small construction for short evacuation times and fast vacuum build-up
> Short switching times
> Function: NC/NO as vacuum supply and blow-off/ventilation inlets can be exchanged
> NO: safe gripping of workpiece during power failure
> Robust and lightweight housing
> 36.210 and 36.211: coil and DIN plug included in scope of delivery
> 36.515 - 36.525: delivery without coil and plug; please order: Power consumption: 24 VDC: 5 W, 230 VAC: 5 W

Technical data

Item no.	Nominal width [mm]	Nominal flow rate [m³/h]	Pressure range [bar (psi)]	Operating principle	Control pressure [bar (psi)]	Switching time [ms]	Material	Operating temperature [°C (°F)]	Weight [g]	Accessories
36.210	10	10	-0.99 - 0 (-14.4 - 0)	NC	2.5 (36.3)	22	Aluminum anodized	-5 - 50 (23 - 122)	360	--
36.211	10	10	-0.99 - 0 (-14.4 - 0)	NO	2.5 (36.3)	22	Aluminum anodized	-5 - 50 (23 - 122)	360	--
36.515	15	20	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	390	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.520	20	40	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	370	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006
36.525	25	90	-0.99 - 0 (-14.4 - 0)	NO/NC	2.5 (36.3)	90	High resistant, fiberglass reinforced Polyarylamide (IXEF®)	-5 - 50 (23 - 122)	500	Solenoid coil: 10.0058/230VAC Solenoid coil: 10.0052/24VDC Plug: 10.006

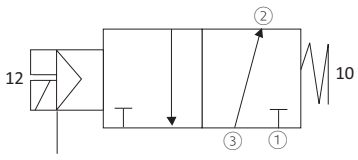
Wiring diagrams

NO: Normally open



Assignment:
① = P (ventilation (blow-off))
② = A (product side)
③ = R (vacuum supply)

NC: Normally closed



Assignment:
① = P (vacuum supply)
② = A (product side)
③ = R (ventilation (blow-off))

Continued on the next page

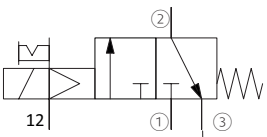
Pilot valve



> Manual mode for functional test: setscrew in position "0"
> Automatic mode: setscrew in position "1"

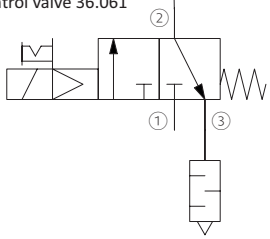
Wiring diagram: how to combine vacuum valve with pneumatic control valve for blow-off

Vacuum valve 36.520



Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

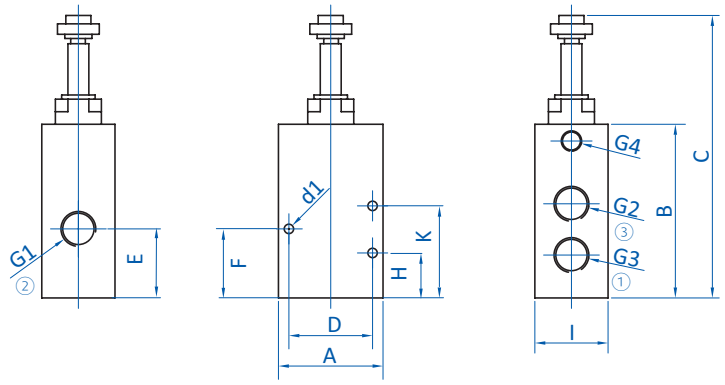
Control valve 36.061



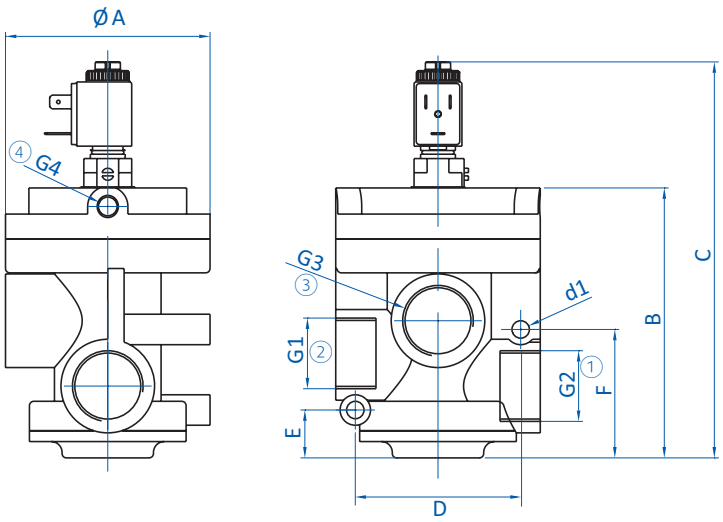
Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

Application example: 3/2-way vacuum valves 36.520 with control valve 36.061

Dimensions



36.210 | 36.211



36.515 | 36.520 | 36.525

① = Vacuum supply/Ventilation (blow-off) ② = Product side ③ = Ventilation (blow-off) / Vacuum supply ④ = Control pressure connection

Item no.	G1	G2	G3	G4	Ø A [mm]	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]	H [mm]	I [mm]	K [mm]
36.210	G3/8	G3/8	G3/8	G1/8	--	50	83	137	40	4.5	33	32.8	22.5	35	44
36.211	G3/8	G3/8	G3/8	G1/8	--	50	83	137	40	4.5	33	32.8	22.5	35	44
36.515	G1/2	G1/2	G1/2	G1/8	75	--	101	155	63	6.5	22.5	55	--	--	--
36.520	G3/4	G3/4	G3/4	G1/8	75	--	101	155	63	6.5	22.5	55	--	--	--
36.525	G1	G1	G1	G1/8	92	--	114.5	168.5	63	6.9	22	58	--	--	--

Vacuum switch – electronic with analog output



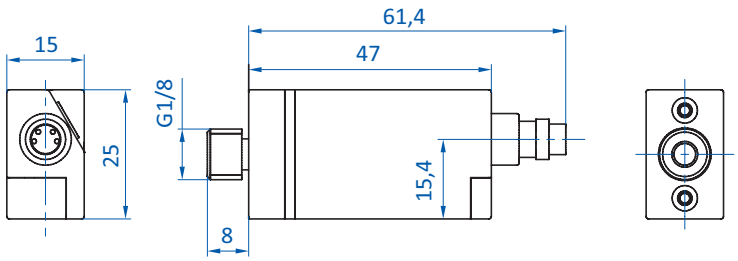
Product notes

> Analog output enables monitoring of the continuous vacuum trend
> Compact and light design for installation directly on the vacuum cup
> LED-display in plug connection
> As an option: mounting rail 20.008-H incl. slot nuts for mounting the vacuum switch, e.g. on FIPA SLine extrusions

Technical data

Item no.	**20.007**
Adjustable range [mbar (psi)]	-999 - 0 (-14.5 - 0)
Hysteresis	0 - 30 %
Analog output [VDC]	1 - 5
Switching logic	Contact breaker (NC)
Response time [ms]	< 5
Thermal error	± 3 % from measuring range
Overpressure safety [bar (psi)]	3 (43.5)
Supply voltage [VDC]	18 - 30
Current consumption [mA]	< 20
Electric connection	Plug M8x1, 4-pin
Protection class	IP50
Suitable media	Dry, unoiled air and non-abrasive gases
Operating temperature [°C (°F)]	0 - 50 (32 - 122)
Weight [g]	85
Accessories	Mounting rail: 20.008-H Connector cable: 20.501 (p.410) Connector cable: 20.502 (p.410)

Dimensions



Mini vacuum switch – electronic with digital output





Example: mini vacuum switch 20.040 on ejector EBA.08H.2-A and flat vacuum cup Ø 40 mm

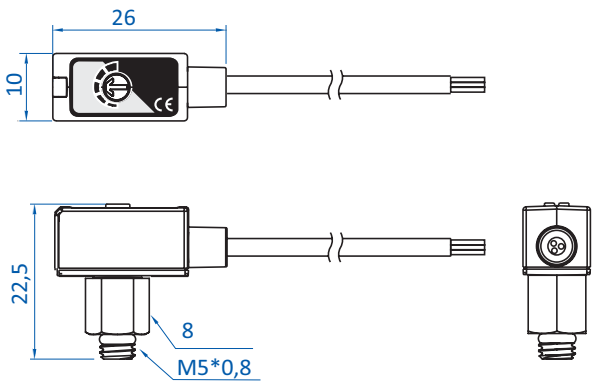
Product notes

> Switch outputs a digital signal when a specific vacuum level is reached
> Vacuum level is manually set with a potentiometer screw
> Hysteresis is fixed
> Red LED indicates set level reached
> Space-saving installation on ejectors thanks to very small design
> Included in scope of delivery: cable 1.5 m, 3-pole, open wire

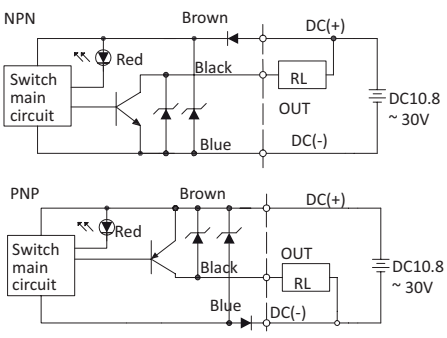
Technical data

Item no.	20.040	20.041
Adjustable range [mbar (psi)]	-990 - 0 (-14.4 - 0)	-990 - 0 (-14.4 - 0)
Hysteresis	3 % from default setting	3 % from default setting
Digital switching outputs	PNP	NPN
Response time [ms]	~ 1	~ 1
Repeat accuracy [%]	≤ ± 1 % from measuring range	≤ ± 1 % from measuring range
Overpressure safety [bar (psi)]	2 (29)	2 (29)
Supply voltage [VDC]	10.8 - 30	10.8 - 30
Max. current consumption [mA]	10	10
Vacuum connection	M5	M5
Protection class	IP40	IP40
Suitable media	Filtered, oiled or unoiled air or neutral gases	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	0 - 60 (32 - 140)	0 - 60 (32 - 140)
Weight [g]	20	20

Dimensions



Wiring diagrams



Vacuum switch – electronic with two digital outputs and display



GS02.001



20.022

Product notes

> Monitoring of vacuum levels, e.g. in handling systems
> Optimization of cycle times to improve the economy of vacuum systems
> Two freely adjustable digital outputs to set lower and upper threshold values
> Additional analog output
> 7-segment LED-display
> Protection class IP65 (no ventilation tube required)
> Integrated reverse voltage protection
> Compact, lightweight and robust design
> Flexible mounting: GS.001 can be rotated 360° after installation

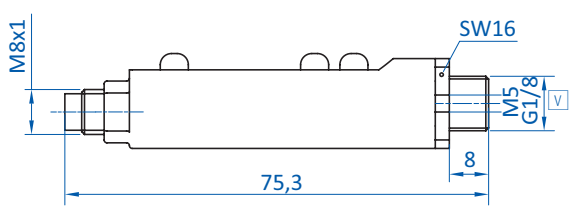
Notes

> Transient emissions: EN 61000-6-4:2007; EN 61326-2-3:2006
> Interference resistance: EN 61000-6-2:2005; EN 61326-2-3:2006
> Vacuum values can be displayed and adjusted by the customer in following units: MPa, bar, inHg, mmHg

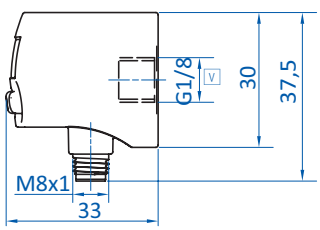
Technical data

Item no.	GS02.001	20.022
Measuring range [bar (inHg)]	-1 - 0 (-29.5 - 0)	-1 - 0 (-29.5 - 0)
Digital switching outputs	2x PNP (NO or NC)	2x PNP (NO or NC)
Repeat accuracy [%]	± 0.2 % from measuring range	± 0.2 % from measuring range
Overpressure safety [bar (psi)]	6 (87)	6 (87)
Supply voltage [VDC]	11 - 30	11 - 30
Current consumption [mA]	< 55	< 55
Max. switching current [mA]	125	125
Electric connection	Plug M8x1, 4-pin	Plug M8x1, 4-pin
Protection class	IP65	IP65
Suitable media	Filtered, oiled or unoiled air or neutral gases	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	0 - 50 (32 - 122)	0 - 50 (32 - 122)
Weight [g]	25	45
Accessories	Adapter: 20.522 (p.380), Adapter: 20.523 (p.380), Adapter: 20.511 (p.380), Connector cable: 20.501 (p.410), Connector cable: 20.502 (p.410), Wall clip: 20.520 (p.383)	Connector cable: 20.501 (p.410), Connector cable: 20.502 (p.410), Mounting bracket: 20.514 (p.382), Mounting bracket: 20.515 (p.382)

Dimensions



GS02.001



20.022

V = Vacuum connection

Pressure switches – electronic with two digital switching outputs





Diagram with installation kit 20.515 for control panel installation

Product notes

> Intelligent sensor for pressure monitoring
> Adjustable with "teaching" feature
> Switching point and hysteresis can be programmed as desired
> Simple operation using button functions and LCD-display
> Small and robust

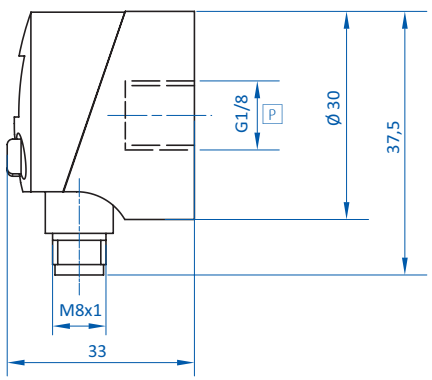
Notes

> Transient emissions: EN 61000-6-4:2007; EN 61326-2-3:2006
> Interference resistance: EN 61000-6-2:2005; EN 61326-2-3:2006
> Vacuum values can be displayed and adjusted by the customer in following units: MPa, bar, psi

Technical data

Item no.	**20.023**
Measuring range [bar (inHg)]	0 - 10 (0 - 295.3)
Digital switching outputs	2x PNP (NO/NC)
Repeat accuracy [%]	± 0.2 % from measuring range
Overpressure safety [bar (psi)]	0.2 (2.9)
Supply voltage [V]	11 - 30
Current consumption [mA]	< 55
Max. switching current [mA]	125
Electric connection	Plug M8x1, 4-pin
Protection class	IP65
Suitable media	Filtered, oiled or unoiled air or neutral gases
Operating temperature [°C (°F)]	0 - 50 (32 - 122)
Weight [g]	40
Accessories	Connector cable: 20.501 (p.410), Connector cable: 20.502 (p.410), Mounting bracket: 20.514 (p.382), Mounting bracket: 20.515 (p.382)

Dimensions



P = Compressed air connection

Adapter and mounting brackets for vacuum switches and pressure switches



20.522 | 20.523



20.511

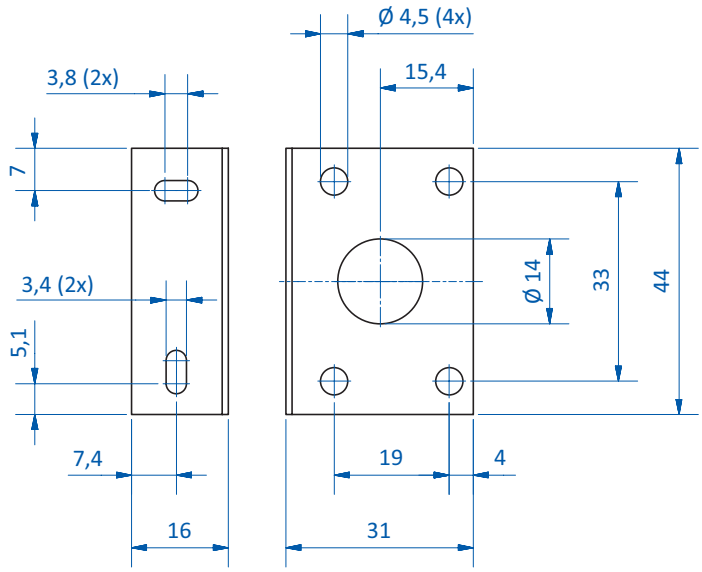
Ordering notes

> Mounting material included in scope of delivery

Technical data

Item no.	Description	Suitable for vacuum/pressure switches
20.511	Push-in fitting G1/8, hose-Ø 6 mm with mounting angle	20.020, GS02.001, 20.026, 20.027
20.522	Adapter with angle bracket for flange assembly	20.020, GS02.001, 20.026, 20.027
20.523	Adapter for flange assembly	20.020, GS02.001, 20.026, 20.027

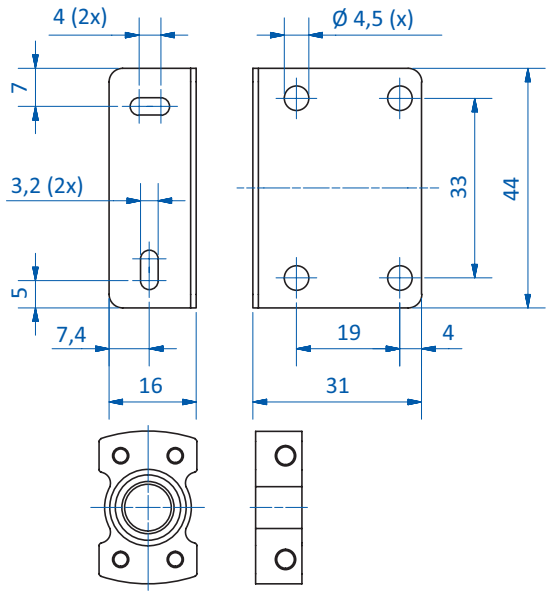
Dimensions



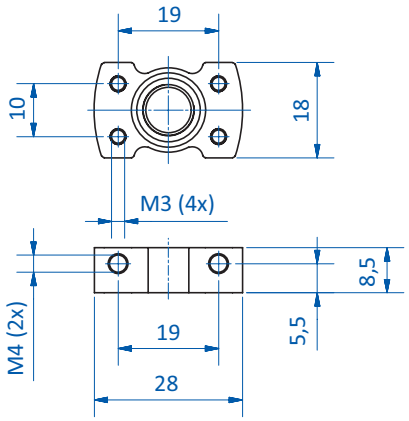
20.511

* = Push-in fitting G1/8, tubing Ø 6 mm not displayed

Dimensions



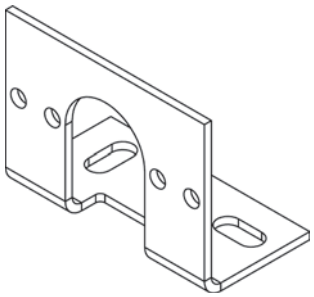
20.522



20.523

* = Push-in fitting G1/8, tubing Ø 6 mm not displayed

Mounting frame and brackets for front panel mounting





Example application: gauge 20.023 with installation kit 20.515

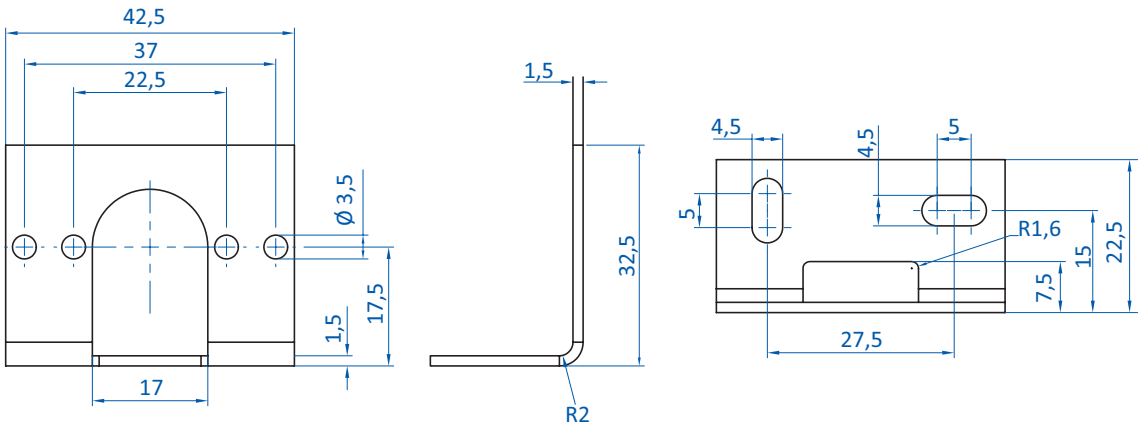
Product notes

> Mounting material included in scope of delivery

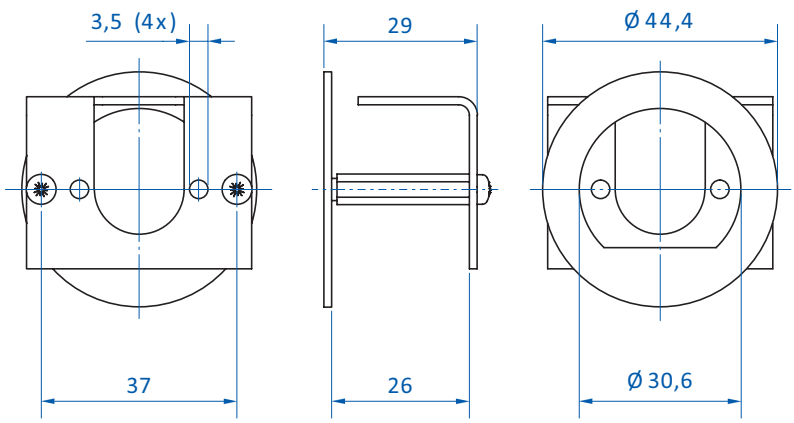
Technical data

Item no.	Description	Suitable for vacuum/pressure switches
20.514	Bracket	20.022, 20.023, 91.012
20.515	Mounting frame with bracket	20.022, 20.023, 91.012

Dimensions



20.514



20.515

* = Installation frame drilling dimensions

Clip 16 mm for wall mounting

Suitable for vacuum switches 20.020 and GS02.001



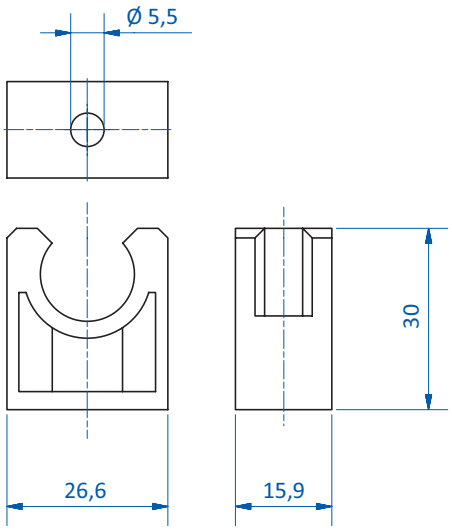
Product notes

> Mounting via through hole Ø 5 mm located centric at bottom side

Technical data

Item no.	Suitable for vacuum/pressure switches
20.520	20.020, GS02.001

Dimensions



Notes:

Vacuum generation at a glance 386

Inline ejectors 388

Base ejectors 390

Heavy-duty ejectors 392

Ejectors with air saving function 394

Silencers for vacuum ejectors 398

FIPA Vacuum generation



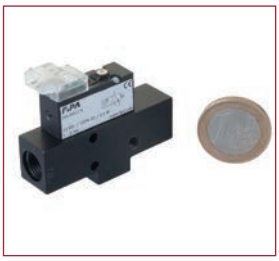
> FIPA offers a broad range of vacuum generators – pneumatically operated or motor-driven
> High suction power for short gripping time



Inline ejectors EIL

> Easy installation directly in the tubing line close to the vacuum cup
> Small and light

> See page 388



Base ejectors with integrated blow-off

> Installation directly on vacuum cups
> Small and light
> Ideally suited for robotic applications with very short cycles such as Delta Robots or similar

> See page 390



Heavy-duty ejectors

> Compensation of compressed air fluctuations between 3 and 6 bar
> Additional inlet for blow-off for fast product release or vacuum switch connection for process monitoring (65.111, 65.130)
> Rectangular design enables block assembly in centralized or decentralized vacuum systems

> See page 392



Ejectors with air-saving function EMA

> Electronic vacuum and blow-off control
> Electronic air-saving function reduces operating costs up to 90 % with dense workpieces
> Compact design, installation near to the vacuum cup

> See page 394

FIPA Vacuum generation



Rotary vane vacuum pumps – oil-free

> Handling of dense workpieces in dry areas
> Suitable for load alternation and continuous operation
> Available in single-phase and three-phase designs
> Any installation position
> Very low maintenance



Piston pumps

> Small output at compact design
> Suitable for dry and wet areas
> Long-life and low maintenance thanks to the permanently lubricated piston seals
> Oil-free operation
> Also suitable as compressors



Rotary vane vacuum pumps – oil-lubricated

> Handling dense and porous workpieces
> Partially suitable for applications in wet areas
> Suitable for continuous operation in product-dependent vacuum levels
> Available in single-phase and three-phase designs
> Horizontal installation position



Centralized vacuum units

> Supply of several modules via a central station
> Made up of one to three oil-lubricated vacuum pumps
> Incl. vacuum tank and electronic control



Side channel blowers – single-stage and double-stage

> Handling of porous workpieces, such as cardboard boxes or untreated wooden pallets
> Double-stage design offers higher suction power at the same vacuum level for effective leak compensation
> Suitable for use in wet and dry areas
> Suitable for continuous operation
> Horizontal and vertical installation
> Practically maintenance-free



Accessories

Vacuum tanks

> Storage for compressed air, vacuum and non-aggressive liquids
> Energy-saving assembly of compressed air and vacuum
> For compressed air / vacuum networks with fluctuating demand

For additional product information please refer to the FIPA Vacuum Technology Catalog.
Our technical customer service will be happy to help you find the optimal products for your application.
(email: info@fipa.com; phone: +49 89 962489-0)

Inline ejectors EIL

Compressed air and vacuum connection via quick fittings, lateral exhaust



V = Vacuum connection P = Compressed air connection EX = Exhaust outlet

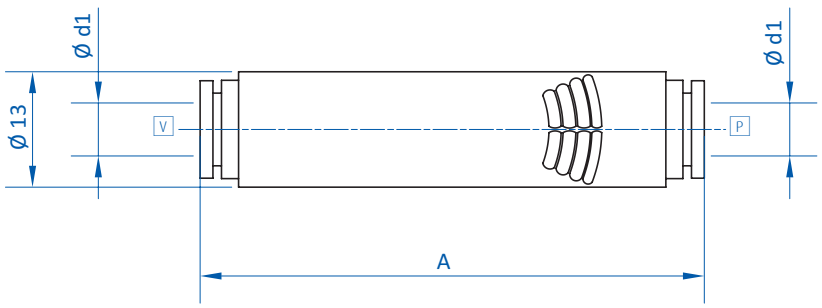
Product notes

> Easy installation directly in the tubing line close to the vacuum cup
> High suction power enables short gripping times
> Index H: ejectors for non-air-permeable products (max. vacuum degree 85 %)
> Index L: ejectors for air-permeable products, resp. in case of higher leakage (increased suction, max. vacuum degree 60 %)

Technical data

Item no.	EIL.05H.1	EIL.05H.2	EIL.05L.1	EIL.05L.2	EIL.07H.1	EIL.07H.2	EIL.07L.1	EIL.07L.2
Nozzle diameter [mm]	0.5	0.5	0.5	0.5	0.7	0.7	0.7	0.7
Optimal operating pressure [bar (psi)]	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)	5 (72.5)
Suction power at 5 bar (72.5 psi) [Nl/min]	8	8	14	14	13	13	28	28
Air consumption at 5 bar (72.5 psi) [Nl/min]	14	14	14	14	28	28	28	28
Final vacuum at 5 bar (72.5 psi) [%]	85	85	60	60	85	85	60	60
Evacuation time 0 to 70 % [s/l]	13	13	--	--	7.5	7.5	--	--
Evacuation time 0 to 45 % [s/l]	--	--	4	4	--	--	2	2
Weight [g]	13	15	13	15	13	15	13	15
Suitable plug-in filter	71.071 (p.364)	--	71.071 (p.364)	--	71.071 (p.364)	--	71.071 (p.364)	--

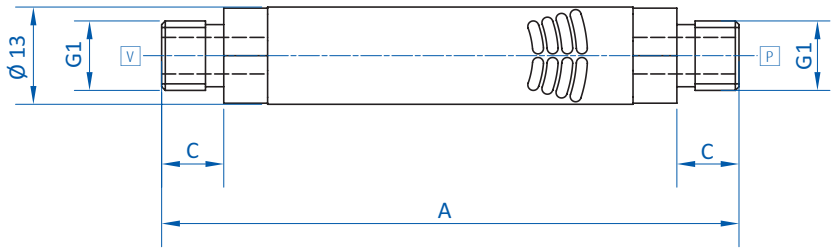
Dimensions



EIL.05H.1 | EIL.05L.1 | EIL.07H.1 | EIL.07L.1

V = Vacuum connection P = Compressed air connection

Dimensions



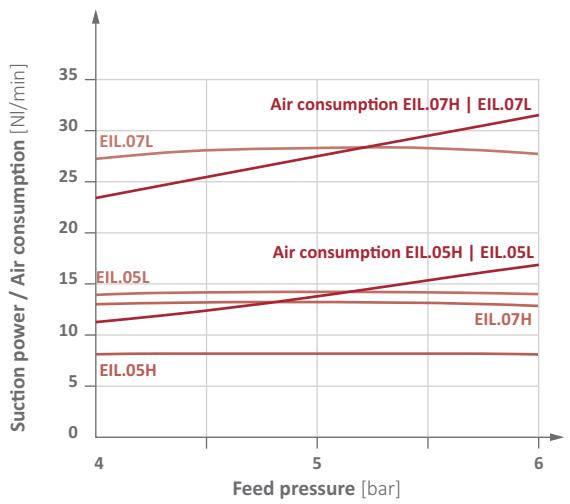
EIL.05H.2 | EIL.05L.2 | EIL.07H.2 | EIL.07L.2

V = Vacuum connection P = Compressed air connection

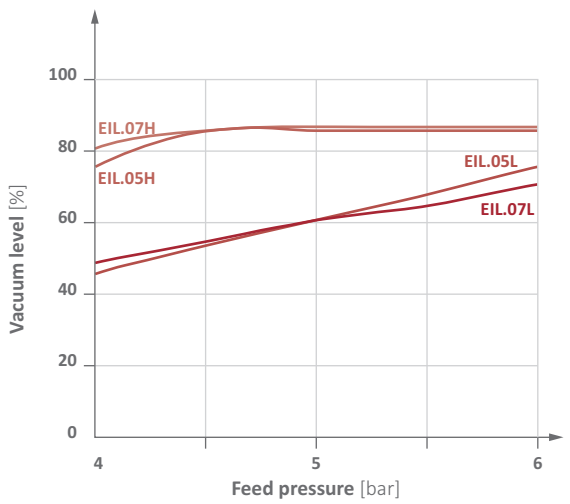
Item no.	EIL.05H.1	EIL.05H.2	EIL.05L.1	EIL.05L.2	EIL.07H.1	EIL.07H.2	EIL.07L.1	EIL.07L.2
G1	--	G1/8	--	G1/8	--	G1/8	--	G1/8
d1 [mm]	6	--	6	--	6	--	6	--
A [mm]	61	78	61	78	61	78	61	78
C [mm]	--	8	--	8	--	8	--	8

Diagrams

> Suction power and air consumption against feed pressure



> Vacuum level against feed pressure

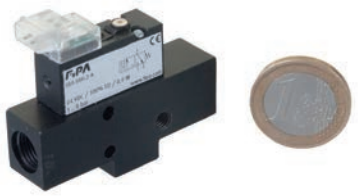


Suction power [Nl/min] at vacuum level

Item no.	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %
EIL.05H.1	8	5.3	4.2	3.9	3.3	2.5	1.3	0.4	0.1
EIL.05H.2	8	5.3	4.8	3.9	3.3	2.5	1.3	0.4	0.1
EIL.05L.1	14	11.9	9	6.8	4.3	2.2	0.1	--	--
EIL.05L.2	14	11.9	9	6.8	4.3	2.2	0.1	--	--
EIL.07H.1	13	10.8	9.2	8.1	7	5.2	4.1	2.7	1.1
EIL.07H.2	13	10.8	9.2	8.1	7	5.2	4.1	2.7	1.1
EIL.07L.1	28	26	22.1	17.6	10.8	5.4	1.9	--	--
EIL.07L.2	28	26	22.1	17.6	10.8	5.4	1.9	--	--

Base ejectors with integrated blow-off

VERY SHORT RESPONSE TIME, SAFE AND GENTLE PRODUCT RELEASE





Example: ejector EBA.08H.2-A with digital mini vacuum switch 20.040, closed diffusor silencer 72.000 and flat vacuum cup Ø 40 mm

Product notes

> Small and very light for installation directly on vacuum cups for fast vacuum build-up and short gripping times
> Blow-off from a fast-reacting micro valve enables very short cycle times
> Graded blow-off boost effect: initially the blow-off is supported by ambient air, for placement that is both quick and gentle
> Robust design and long service life of > 100 million switching cycles
> M5 connection for digital mini vacuum switch to ensure reliable process monitoring
> Ideally suited for robotic applications with very short cycles such as Delta Robots (e.g. FlexPickers)

Ordering notes

> Included in delivery: control cable 20.550, length 1.5 m, 2-wire, free end

Technical data

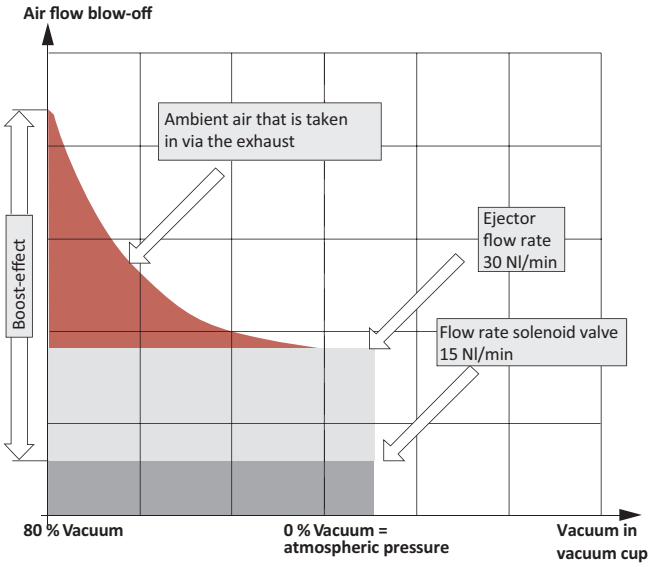
Item no.	**EBA.08H.2-A**
Nozzle diameter [mm]	0.8
Optimal operating pressure [bar (psi)]	5 (72.5)
Max. operating pressure [bar (psi)]	8 (116)
Final vacuum [%]	85
Suction power at 5 bar (72.5 psi) [Nl/min]	25
Air consumption at 5 bar (72.5 psi) [Nl/min]	30
Flow rate solenoid valve [Nl/min]	15
Blow-off volumes of flow [Nl/min]	110 - 45
Power-on time solenoid valve (ED) [%]	100
Power-on/-off time solenoid valve [ms]	5
Power consumption solenoid valve [W]	0.9
Control voltage	24 VDC ± 10 %
Protection class	IP40
Operating temperature [°C (°F)]	-10 - 50 (14 - 122)
Weight [g]	35
Accessories	Connector cable: 20.550 (p.410), Vacuum switch: 20.040 (p.377), Vacuum switch: 20.041 (p.377), Silencer: 72.000 (p.399), Silencer: 72.028 (p.398)

Control cable 20.550



Cable assignment: red (+), black (-)

Integrated blow-off with boost-effect

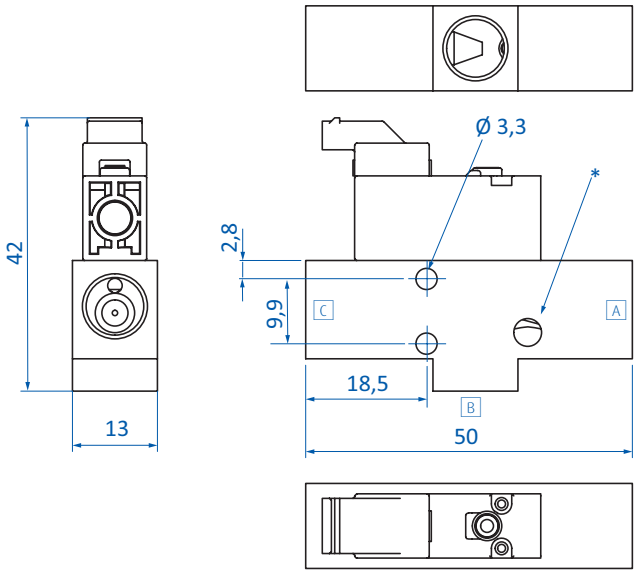


Evacuation / Blow-off time

Evacuation / Blow-off time 1 liter volume up to % vacuum / atmospheric pressure [sec.]		
0 → 50 % / 50 % → 0	0 → 60 % / 60 % → 0	0 → 70 % / 70 % → 0
1.8 / 0.5	2.5 / 0.56	3.9 / 0.61

Evacuation / Blow-off time: example with Ø 30 mm flat suction cups, volume 1.7 cm³ up to % vacuum / atmospheric pressure [ms]		
0 → 50 % / 50 % → 0	0 → 60 % / 60 % → 0	0 → 70 % / 70 % → 0
3 / < 1	4 / < 1	7 / 1

Dimensions



A = Compressed air connection G1/8-female B = Vacuum connection G1/8-female C = Exhaust outlet G1/8-female
* = M5 connection for vacuum switches

Heavy-duty ejectors

Vacuum generation for use under harsh operating conditions



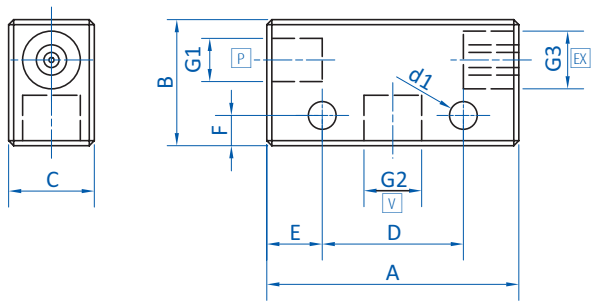
Product notes

> Robust and compact aluminum housing
> Compensation of compressed air fluctuations between 3 and 6 bar (43.5 and 87 psi)
> Additional inlet for blow-off for fast product release or vacuum switch connection for process monitoring (65.111, 65.130)
> Rectangular design enables block assembly in centralized or decentralized vacuum systems

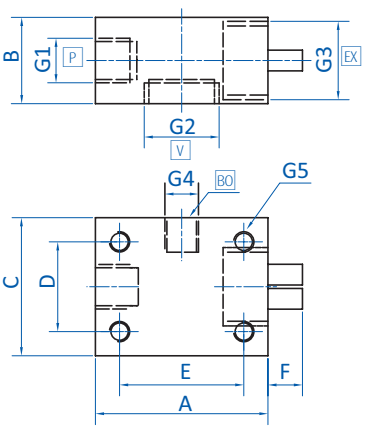
Technical data

Item no.	Optimal operating pressure [bar (psi)]	Max. operating pressure [bar (psi)]	Final vacuum [%]	Suction power [Nl/min]	Air consumption to 4 bar (58 psi) [Nl/min]	Evacuation time 0 to 70 % [s/l]	Weight [g]	Accessories
65.102A	4 (58)	6 (87)	85	30	50	3.5	48	Silencer: 72.001 (p.399) Silencer: 72.029 (p.398)
65.111	4 (58)	6 (87)	85	33	60	3	120	Silencer: 72.002 (p.399) Silencer: 72.030 (p.398)
65.120	4 (58)	6 (87)	85	85	130	1.5	125	Silencer: 72.031 (p.398)
65.130	4 (58)	6 (87)	85	130	240	0.7	225	Silencer: 72.033 (p.398)

Dimensions



65.102A



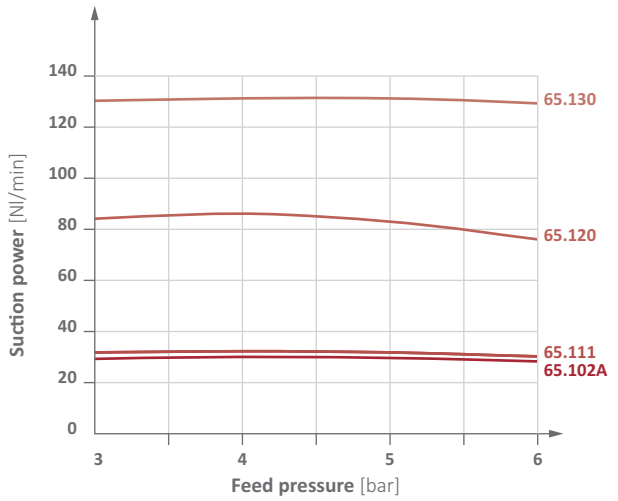
65.111 | 65.120 | 65.130

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Blow-off (65.111 and 65.130)

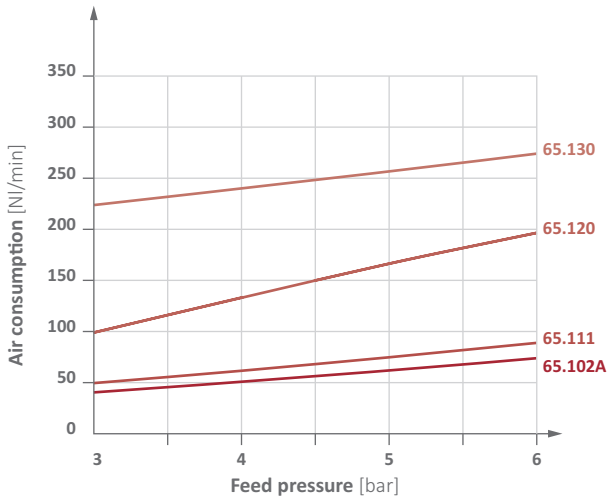
Item no.	G1	G2	G3	G4	G5	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]
65.102A	G1/8	G1/4	G1/4	--	--	50	25	17	28	5.5	11	6
65.111	G1/4	G1/2	G3/8	G1/8	6.5	50	25	40	25	--	34	8
65.120	G1/4	G1/2	G1/2	G1/8	M6	50	25	40	25	--	34	10
65.130	G1/4	G1/2	G1	G1/8	M6	60	40	40	25	--	34	--

Diagrams

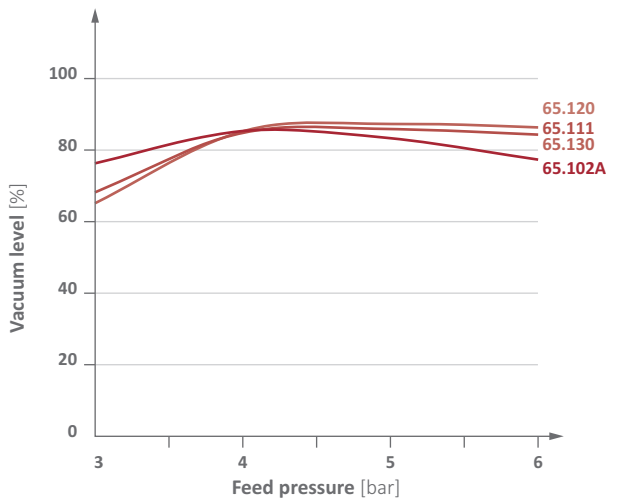
> Suction power against feed pressure



> Air consumption against feed pressure



> Vacuum level against feed pressure



Suction power [Nl/min] at vacuum level

Item no.	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %
65.102A	25	23	19	15	13	8	4	1
65.111	25	23	20	17	13	8	4	1
65.120	76	66	55	41	34	22	12	3
65.130	182	160	135	69	52	33	17	6

Ejectors with air-saving function EMA

Double energy efficient by integrated pressure control and electronic air-saving function



SAVES UP TO 90 % OF ENERGY

Product notes

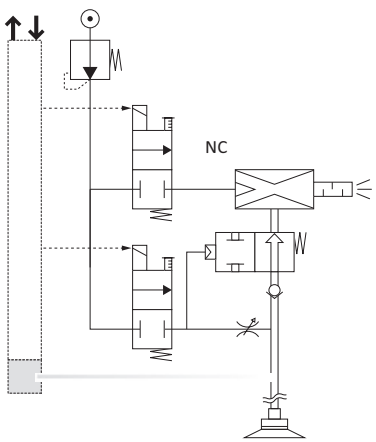
> Electronic air-saving function reduces operating costs by up to 90 % with dense workpieces
> Pressure regulation energy-saving function at constant 3.5 bar (50.76 psi) reduces operating costs by up to 50 % with porous workpieces
- Energy saving increases along with the difference between supply pressure and operating pressure
> Electronic vacuum and blow-off control for short cycle times
> Manual adjustment of the blow-off flow rate using a setscrew
> Very compact design with integrated open silencer
> Dust-resistant design, no additional filters required
> NO-version on request
> Smaller nozzle diameters on request
> If the ejector experiences power failure, the workpiece is only held by the vacuum between non-return valve and product surface
> Vacuum and blow-off are controlled using a single signal

Technical data

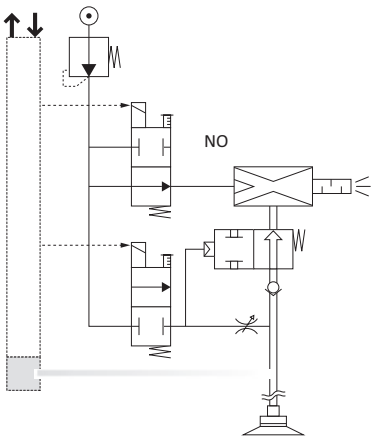
Item no.	EMA.90x14
Nozzle diameter [mm]	1.4
Feed pressure [bar (psi)]	4 - 8 (58 - 116)
Internal working pressure [bar (psi)]	3.5 (50.8)
Final vacuum [%]	90
Suction power [Nl/min]	70
Air consumption [Nl/min]	90
Protection class	IP65
Operating principle	NC
Control voltage	24 VDC (adjusted) ± 10 %
Current consumption for vacuum and blow-off feature [mA]	30 (0.7 W)
Noise level [dB(A)]	68
Operating temperature [°C (°F)]	10 - 60 (50 - 140)
Weight [g]	130
Suitable connector cable	20.501 (p.410) 20.502 (p.410)

Pneumatic diagram

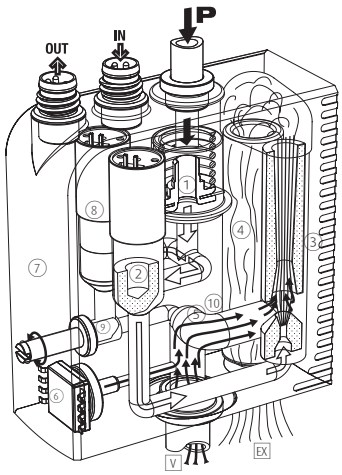
Solenoid valve NC

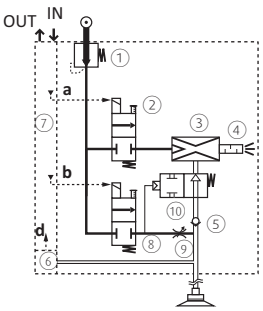


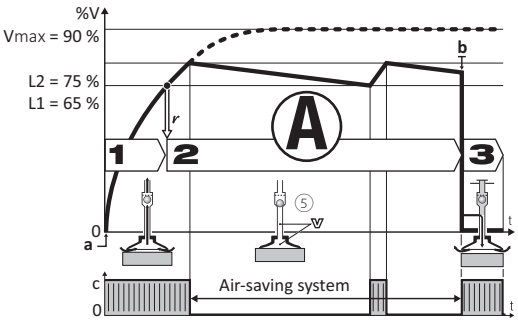
Solenoid valve NO



Operating principle EMA series







1. Gripping the workpiece
The vacuum solenoid valve ② starts the cycle. Venturi nozzle ③ is supplied with compressed air and generates the vacuum to grip the item quickly with the vacuum cup → short-term energy consumption.

2. Operations on the suctioned item
The vacuum level is continually monitored by the vacuum switch ⑥. When the vacuum threshold limit L1 (65 %) is reached the signal "Item gripped" is triggered. This gives a green light for the scheduled operation (transfer, processing, etc.). When the vacuum reaches the threshold limit L2 (75 %), the compressed air supply to the venturi nozzles via the solenoid valve ⑤ is interrupted. Energy consumption falls to zero. The item remains gripped because of the vacuum that remains because of the closed non-return valve. Tiny leakages often lead to a slow release of the vacuum. If the vacuum falls to the threshold limit of 65 %, new vacuum is briefly generated, i.e. until the threshold limit L2 (75 %) is reached.

3. Releasing the workpiece
At the end of the procedures blow-off is triggered. The blow-off valve ⑧ generates an air jet that closes the closing valve ⑩. This blows off the item using the air pressure regulator ⑨ so that it can be released more quickly.

Continued on the next page

Nozzle diameter and energy-saving potential

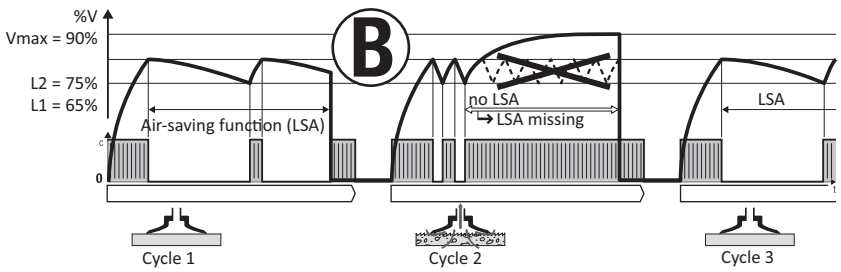
Air-saving control cycle self-adaptation

Cycle 1:
Deals with an airtight product under the influence of LSA, resulting in optimum energy savings

Cycle 2:
The porous product generates leaks that provoke repeated intermittent vacuum regeneration. The anomaly is automatically detected and the cycle goes on without LSA. An LSA missing signal is emitted and displayed, and production goes on.

Cycle 3:
Illustrates the automatic return to the LSA cycle as soon as leaks are eliminated due to airtight products. Vacuum level will be maintained.

The compact-ejector EMA thus provides maximum energy saving, without any limitations to the performance and functioning of the overall production system.



Without automatic air-saving system			With automatic air-saving system		
Nozzle diameter [mm]	Suction power [Nl/min]	Air consumption [Nl/min]	Suction duration (65 % vacuum) [sec]	Suction duration (75 % vacuum) [sec]	Air consumption [Nl/min]
1	29	44	2.38	3.33	2.2
1.2	45	65	1.53	2.15	2.2
1.4	70	90	0.99	1.38	2.2

> Automatic air-saving system activation allows a larger tube diameter to grip more quickly without increased consumption.

Example of the air-saving potential

The examples show how the automatic air-saving function reduces the energy demand:
> 75 % energy saved during product transfer
> 97 % energy saved during holding products while they are further processed or treated
The investment will often amortise itself within a couple of months.

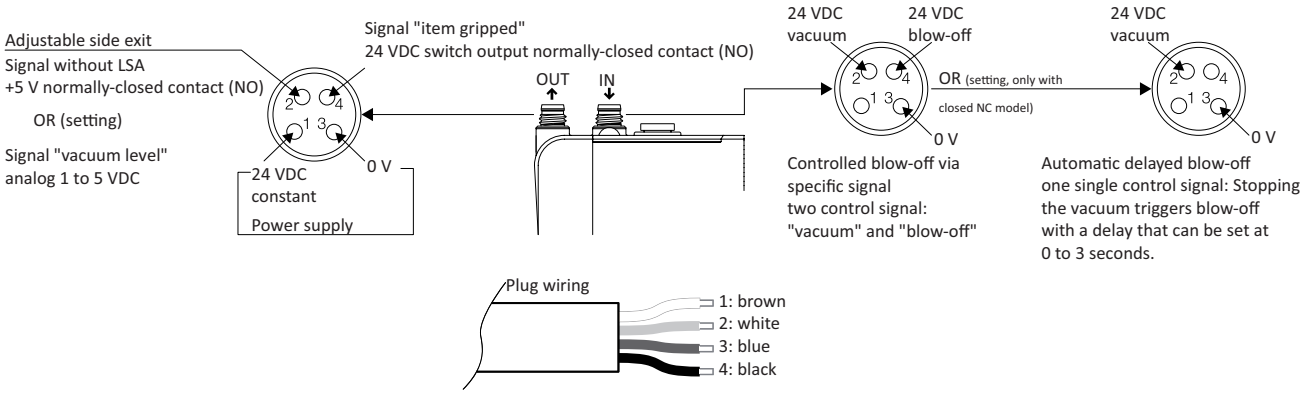
Gripping + transfer (nozzle Ø 1.4 mm, evacuation of 0.2 l)

Phase	Duration	Air consumption		
		without "LSA"	with "LSA"	
Grip	0.28 s	0.4 Nl	0.4 Nl	air-saving potential
Transfer	1.20 s	1.8 Nl	0	
Placement	0.14 s	0.2 Nl	0.2 Nl	
		2.4 Nl →	0.6 Nl →	75 %

Fixation + operation process (nozzle Ø 1.4 mm, evacuation of 0.4 l)

Phase	Duration	Air consumption		
		without "LSA"	with "LSA"	
Fixation	0.55 s	0.8 Nl	0.8 Nl	air-saving potential
Operation process	60 s	90 Nl	0	
Placement	0.14 s	0.2 Nl	0.2 Nl	
		91 Nl →	1.0 Nl →	97 %

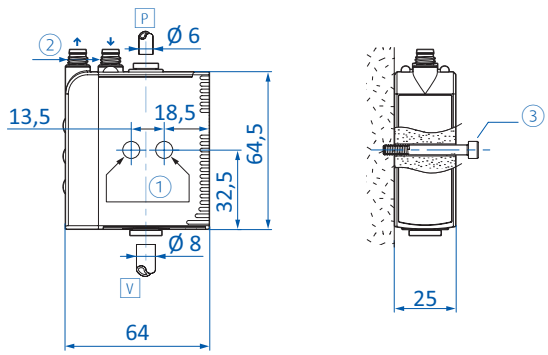
Wiring diagram



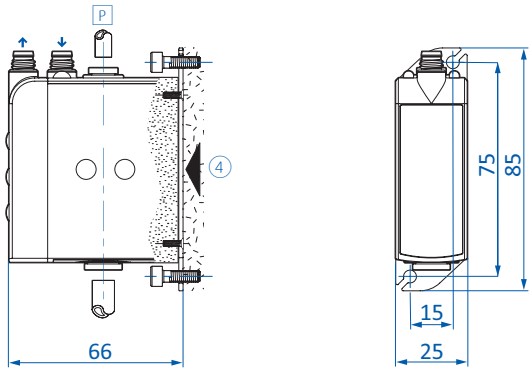
> Output signal "object gripped", 24 VDC, switching output NO, switching current 125 mA, PNP
> Adjustable side output:
1. Signal without air-saving function, +5 V switching output NO: e.g. signal for failure indication
2. Signal "vacuum level", analog, 1-5 VDC of measuring range

Dimensions and mounting options

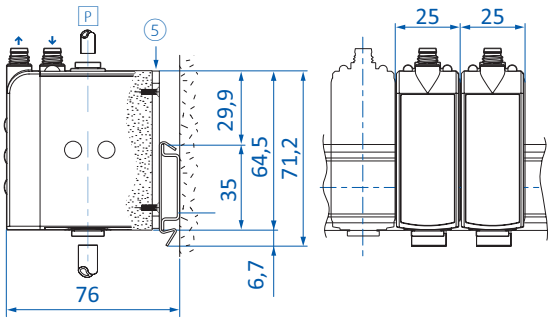
> Mounting sideways



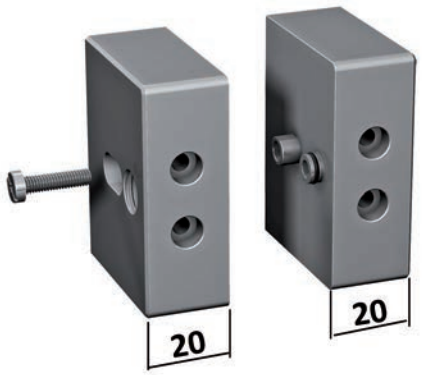
> Mounting in the front



> Block mounting on a DIN rail



> EMA.FIX-B endpieces, with connecting screws and closing pins for collecting main



P = Compressed air connection V = Vacuum connection ① = 2 Bore holes for 4 mm screws ② = M8 plug ③ = 2 Continuous screws ④ = Mounting plate with 4 screws (Item no. EMM.FIX-V) ⑤ = Mounting plate for DIN rail with 4 screws (Item no. EMM.FIX-D) – on plate per EMM module

Evacuation time [sec.] for 1 liter at vacuum level

Item no.	55 %	60 %	65 %	70 %	75 %	80 %
EMA.90x14	0.73	0.85	0.99	1.16	1.38	1.7

Open silencers for ejectors



Product notes

> Suitable for heavy-duty ejectors
> Open design, specially suitable for dusty, high-particle environments (e.g. wood industry)

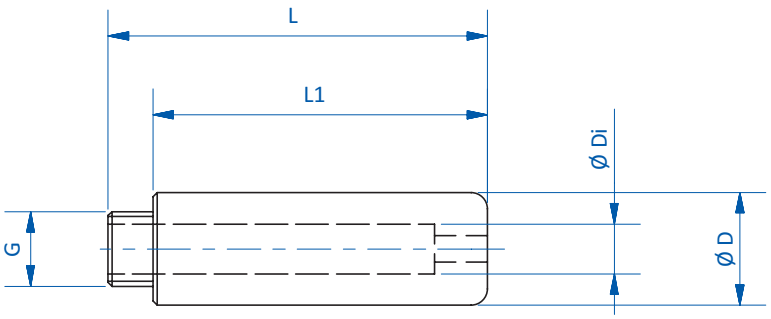
Technical data

Item no.	Weight [g]
72.028	3
72.029	20
72.030	25
72.031	35
72.032	55
72.033	175

Dimensions

G	Ø D [mm]	Ø Di [mm]	L [mm]	L1 [mm]
G1/8	14	7	46	41
G1/4	20	11	73	65
G3/8	24	11	72	64
G1/2	30	17	128	121
G3/4	40	17	126	119
G1	49	26	126	119

Dimensions



Closed silencers for ejectors





Product notes

> Closed diffusor/silencer specially designed for dust-free environments
> Suitable for heavy-duty ejectors

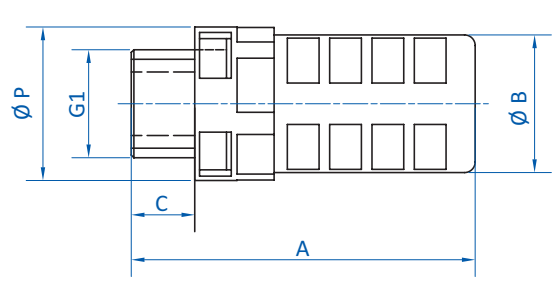
Technical data

Item no.	Weight [g]
72.045	5
72.000	2
72.001	3.5
72.002	12
72.003	15
72.007	5.5
72.008	3
72.009	6.5

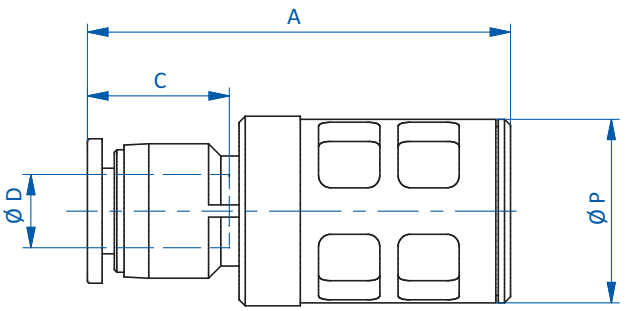
Dimensions

G1	Ø D [mm]	A [mm]	Ø B [mm]	C [mm]	Ø P [mm]
G1/8	--	41	18	6	--
G1/8	--	28	15.5	6	15.5
G1/4	--	38	17.5	8	17.5
G3/8	--	58	26	10	26.5
G1/2	--	66	29	12	29
--	4	30	--	11	10.5
--	6	34.5	--	11.5	15.5
--	8	48.5	--	17.5	17.5

Dimensions



72.045 | 72.000 | 72.001 | 72.002 | 72.003



72.007 | 72.008 | 72.009

Silencers with filter function



Series 1: brass construction with stainless steel wire fabric



Series 2: brass construction with sintered material

Product notes

> Combination of silencer and air filter
> 72.015 - 72.021: also suitable as protective filter for 3/2-way valves at ventilation/blow-off inlet (under contaminated environmental conditions)
> 72.022 - 72.027: can be mounted directly into the vacuum cup or the fitting, temperature-resistant up to 120 °C (248 °F)

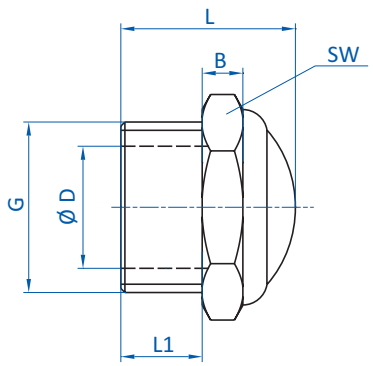
Technical data

Item no.	Series	Weight [g]
72.015	1	2
72.016	1	6
72.017	1	10
72.018	1	15
72.019	1	25
72.020	1	38
72.021	1	56
72.022	2	1
72.023	2	3
72.024	2	6
72.025	2	12

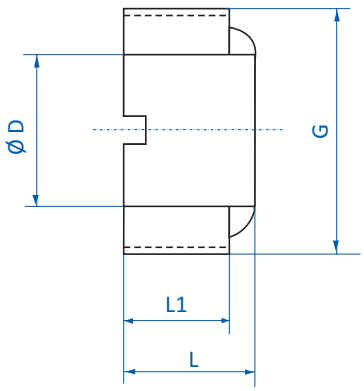
Dimensions

G	B [mm]	Ø D [mm]	L [mm]	L1 [mm]	SW
M5	3.5	2.5	9.5	4	8
G1/8	4	6	14	6	13
G1/4	5	8.5	18.5	8	16
G3/8	6	11	19.5	8	19
G1/2	5	15	22.5	10	24
G3/4	6	20	25.5	10	30
G1	6.5	26	31	11.5	36
G1/8	--	5.5	4.5	3.5	--
G1/4	--	7	6.8	4.5	--
G3/8	--	9.5	6.8	5	--
G1/2	--	12	9	7	--

Dimensions



72.015 | 72.016 | 72.017 | 72.018 | 72.019 | 72.020 | 72.021



72.022 | 72.023 | 72.024 | 72.025

Electronics and sensors at a glance 403

Sensors 404

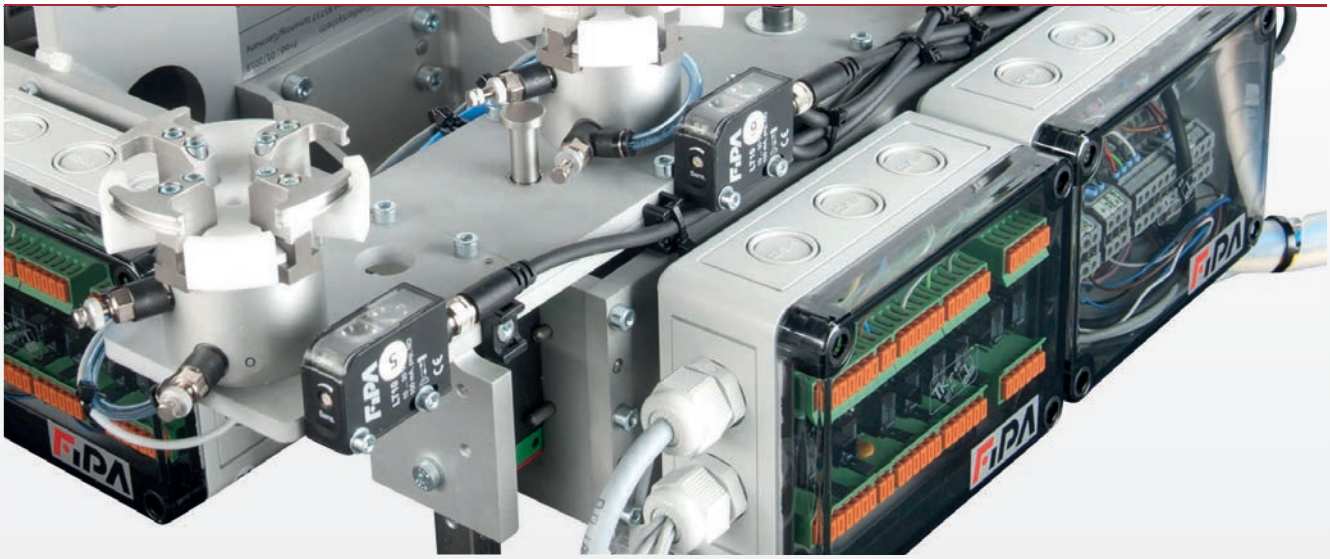
Cables and plugs 410

Reflective sensors 412

Signal transmitters 418

Notes:

FIPA Electronics and sensors





Magnetic and proximity sensors

> Sensors for active gripping elements, linear units, compact cylinders
> PNP or NPN switching functions
> With control LED

> See page 404



Connector cables and adapter plugs

> Connection of vacuum switches, sensors or ejectors
> Weather- and oil-resistant
> Jacks/plugs M8 or M12 size, 3, 4, or 5 wires

> See page 410



Reflective sensors and suitable mounting brackets

> Optical presence monitoring of workpiece
> Light or dark switching with LED-display
> Any mounting position

> See page 414



Signal transmitters and switchboxes

> Collection of sensor signals
> Either with or without logics (logic AND/OR)
> 2 - 12 inlets

> See page 419

Magnetic sensors





Product notes

> C- and T-slot sensors for active gripping elements, linear units, compact cylinders
> PNP or NPN switching functions
> With control LED
> PNP-Sensors: connect supply voltage +Vs (mainly 24 V) with digital input signal
> NPN-Sensors: connect digital input signal with ground signal 0 V
> Cable and M8 3-pole plug included in scope of delivery
> Connector cable for sensors:
  - 20.503: 3-pole M8, cable straight, length 2,500 mm, open wire
  - 20.507: 3-pole M8, cable 90°, length 2,000 mm, open wire
  - 20.570: 3-pole M8, length 1,500 mm, end with plug 3-pole M8

Technical data

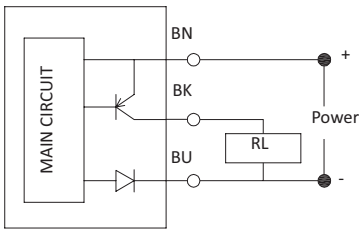
Item no.	Nut-Model	Electric connection	Plug design	Operating voltage [VDC]	Max. switching current [mA]	Max. power consumption [W]	Protection class	Cable length [mm]	Operating temperature [°C [°F]]	Weight [g]	Suitable connector cable
GR04.198	C	PNP	Straight	6 - 30	200	6	IP67	300	-10 - 70 (14 - 158)	18	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.198/NPN	C	NPN	Straight	6 - 30	200	6	IP67	300	-10 - 70 (14 - 158)	18	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.202P	C	PNP	90° elbow	5 - 30	50	1.5	IP67	150	-10 - 70 (14 - 158)	25	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.202N	C	NPN	90° elbow	5 - 30	50	1.5	IP67	150	-10 - 70 (14 - 158)	25	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.280P	C	PNP	Straight, short	4.5 - 28	50	1.5	IP67	150	-10 - 70 (14 - 158)	21	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.280N	C	NPN	Straight, short	4.5 - 28	50	1.5	IP67	150	-10 - 70 (14 - 158)	21	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.199	T	PNP	Straight	10 - 30	100	3	IP67	150	-10 - 70 (14 - 158)	25	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)

Technical data

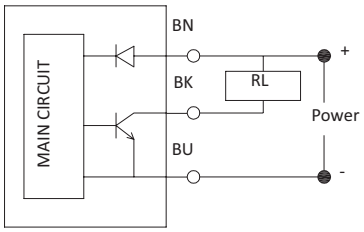
Item no.	Nut-Model	Electric connection	Plug design	Operating voltage [VDC]	Max. switching current [mA]	Max. power consumption [W]	Protection class	Cable length [mm]	Operating temperature [°C (°F)]	Weight [g]	Suitable connector cable
GR04.199/NPN	T	NPN	Straight	10 - 30	100	3	IP67	150	-10 - 70 (14 - 158)	25	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.203P	T	PNP	Straight	5 - 30	200	6	IP67	150	-10 - 70 (14 - 158)	27	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)
GR04.203N	T	NPN	Straight	5 - 30	200	6	IP67	150	-10 - 70 (14 - 158)	27	20.503 (p.410) 20.507 (p.410) 20.570 (p.410)

Wiring diagrams

PNP

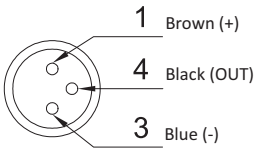


NPN



BN = Brown, BK = Black, BU = Blue

Plug assignment

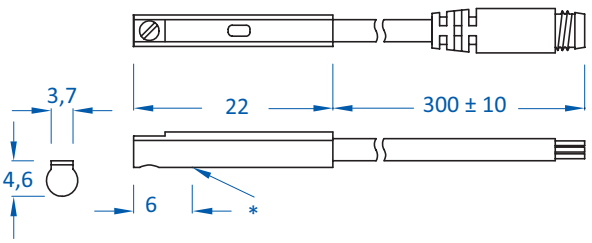


Continued on the next page

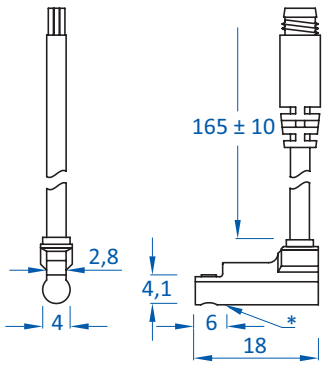
Application example



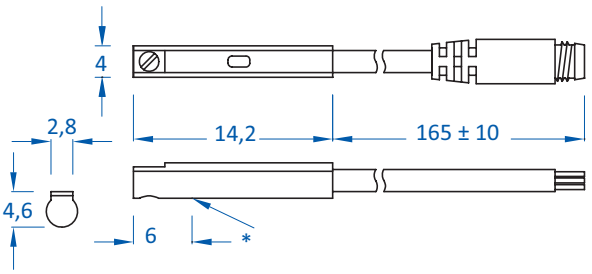
Dimensions



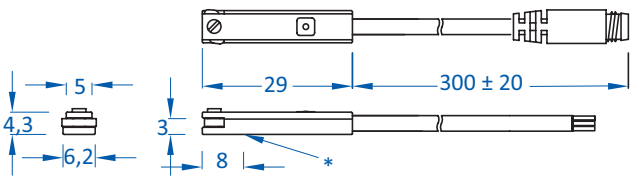
GR04.198 | GR04.198/NPN



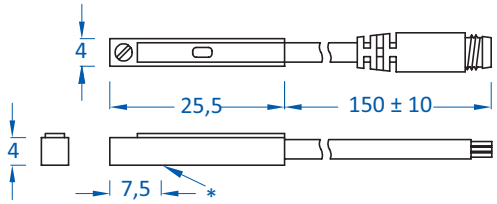
GR04.202P | GR04.202N



GR04.280P | GR04.280N



GR04.199 | GR04.199/NPN

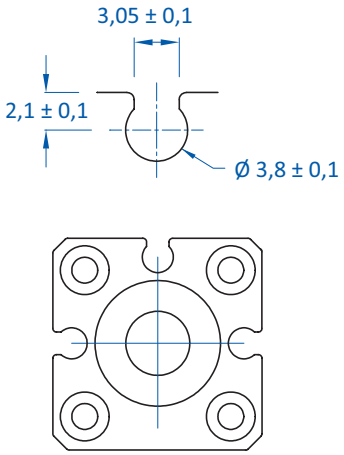


GR04.203P | GR04.203N

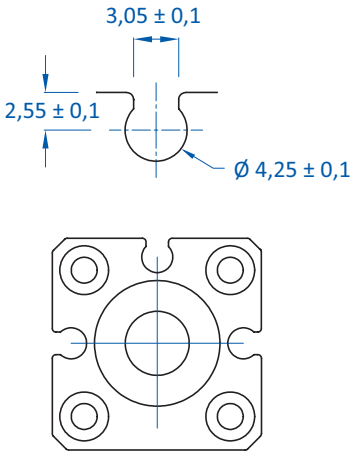
* = Sensing point

Matching nut dimensions

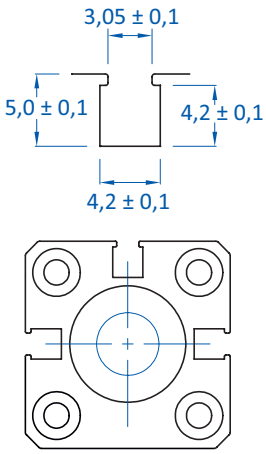
> GR04.198



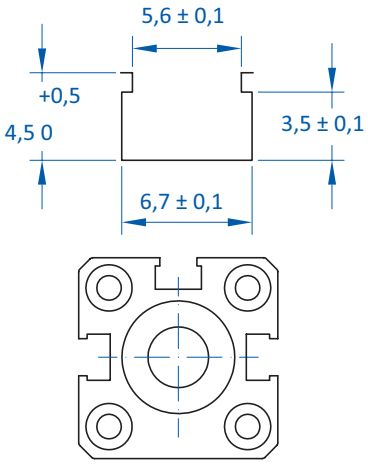
> GR04.202 | GR04.280



> GR04.203



> GR04.199



Inductive sensors



GS04.001 | GS04.002

Product notes

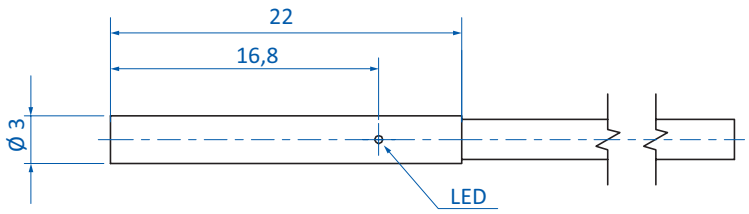
> Sensors for sprue grippers or parallel grippers
> PNP or NPN switching functions
> Integrated control LED
> GS04.001, GS04.002: sensors for GR04.131D/E, GR04.140B; detection of jaw position (open/closed)

Included in scope of delivery:
> GR04.193P/N: 0.3 m cable, 3-pole, open wires (see accessories for suitable connectors for extension cables)
> GS04.001, GS04.002: 0.2 m cable and M8 3-pole plug
> GS04.003, GS04.004: 2 m cable, 3-pole, open wires

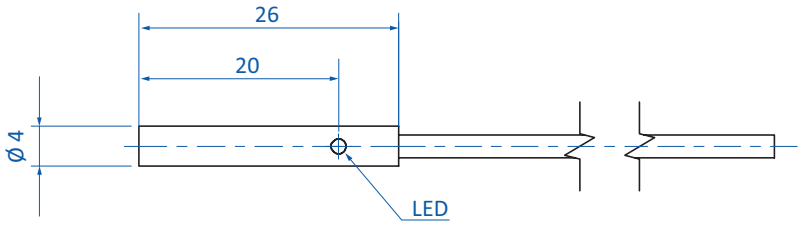
Technical data

Item no.	Electric connection	Operating voltage [VDC]	Max. switching current [mA]	Protection class	Operating temperature [°C (°F)]	Cable length [mm]	Weight [g]	Accessories
GS04.003	PNP	10 - 30	100	IP67	-25 - 70 (-13 - 158)	2,000	16	Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GS04.004	NPN	10 - 30	100	IP67	-25 - 70 (-13 - 158)	2,000	16	Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GR04.193P	PNP	10 - 30	200	IP67	-20 - 70 (-4 - 158)	200	25	Plug connector: 20.527 (p.411) Plug connector: 20.528 (p.411) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GR04.193N	NPN	10 - 30	200	IP67	-20 - 70 (-4 - 158)	200	25	Plug connector: 20.527 (p.411) Plug connector: 20.528 (p.411) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GS04.001	PNP	10 - 30	100	IP67	-20 - 70 (-4 - 158)	200	38	Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)
GS04.002	NPN	10 - 30	100	IP67	-20 - 70 (-4 - 158)	200	38	Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)

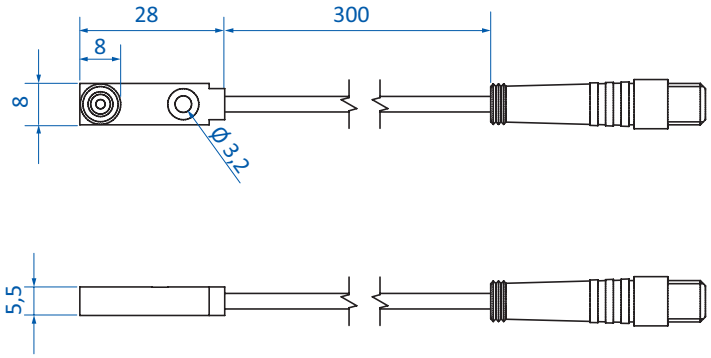
Dimensions



GS04.003 | GS04.004



GR04.193P | GR04.193N



GS04.001 | GS04.002

Connector cables M8, M12, 2 to 5-pin, material PUR





Product notes

> Electric connection of vacuum switches, sensors or ejectors
> Weather- and abrasion-resistant

Technical data

Item no.	Contact	Plug design	Cable length [mm]	Suitable for
20.503	Socket M8, 3-pin, open cable	Straight	2,000	Connection of sensors and sensor grippers
20.504	Plug M8, 3-pin 90°, socket M8, 3-pin	90° elbow	300	Connection of sensors and sensor grippers
20.507	Socket M8, 3-pin, open cable	90° elbow	2,000	Connection of sensors and sensor grippers
20.570	Plug M8, 3-pin, socket M8, 3-pin	Straight	1,500	Connection of sensors and sensor grippers
20.501	Socket M8, 4-pin, open cable	Straight	5,000	Connection of vacuum switches or compact ejectors
20.502	Plug M8, 4-pin, open cable	90° elbow	5,000	Connection of vacuum switches or compact ejectors
20.518	Socket M12, 4-pin, open cable	Straight	2,000	Connection of vacuum switches or compact ejectors
20.519	Socket M12, 4-pin, open cable	90° elbow	2,000	Connection of vacuum switches or compact ejectors
20.508	Socket M12, 5-pin, open cable	Straight	2,000	Connection of compact ejectors
20.509	Socket M12, 5-pin, open cable	90° elbow	2,000	Connection of compact ejectors
20.550	Special plug, 2-pin, open cable	Straight	1,500	Connection of base ejectors with blow-off boost EBA.08H.2-A

Plug connectors M8/3-pin



Technical data

Item no.	Electric connection	Weight [g]
20.527	Plug	5
20.528	Socket	5

Adapter plug



Product notes

> Adapter plug M8/3-pin, socket on M8/4-pin plug
> Adapter plug M8/4-pin, socket on M8/3-pin plug

Technical data

Item no.	Weight [g]
M8B3 / M8S4	10
M8B4 / M8S3	10

Reflective sensors M18

LT19 DETECTS EVEN TRANSPARENT PLASTIC PARTS



LT19



LT18OHT (light sensor with background suppression, fixing nuts not displayed)

Product notes

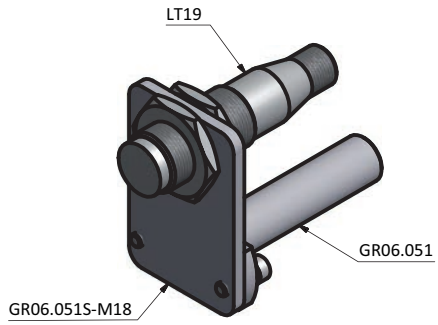
> Sensors for optical presence monitoring of workpiece
> Light or dark switching with LED-display
> With or without background suppression
> Adjustable sensitivity
> Robust aluminum body
> Any mounting position

Two fixing nuts, tightening torque 20 Nm, included in scope of delivery

Technical data

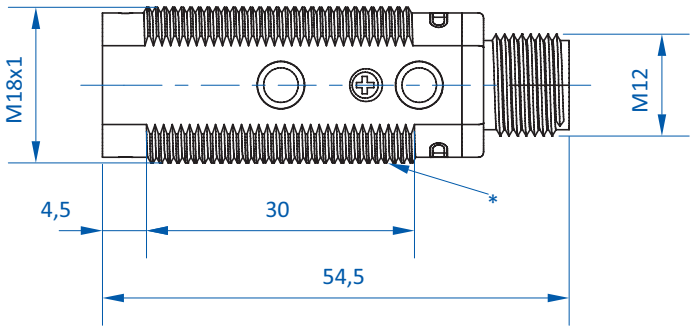
Item no.	LT19	LT19/NPN	LT18OHT	LT18OHT/NPN
Adjustable range [mm]	70 - 400	70 - 400	70 - 400	70 - 400
Operating voltage [V]	6 - 30	6 - 30	10 - 36	10 - 36
Current consumption [mA]	< 30	< 30	< 25	< 25
Max. switching current [mA]	100	100	200	200
Protection class	IP67	IP67	IP67	IP67
Switching point principle	light / dark	light / dark	light	light
Background suppression	no	no	yes	yes
Ambient air temperature [°C (°F)]	-25 - 55 (-13 - 131)	-25 - 55 (-13 - 131)	-25 - 55 (-13 - 131)	-25 - 55 (-13 - 131)
Weight [g]	39	39	45	45
Suitable fittings	GR06.051 (p.240) GR06.051S-M18 (p.416)	GR06.051 (p.240) GR06.051S-M18 (p.416)	GR06.051 (p.240) GR06.051S-M18 (p.416)	GR06.051 (p.240) GR06.051S-M18 (p.416)

Application example

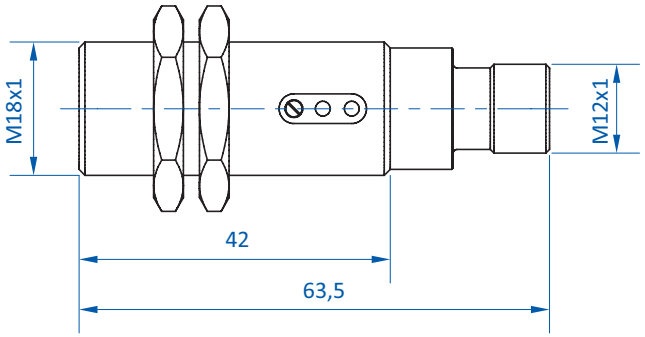


Sensor with mounting bracket

Dimensions



LT19 | LT19/NPN



LT18OHT | LT18OHT/NPN

* = Fixing nuts not shown

Reflective sensors – compact





Installation example with angle arm and rotatable mounting bracket GR06.045S

Product notes

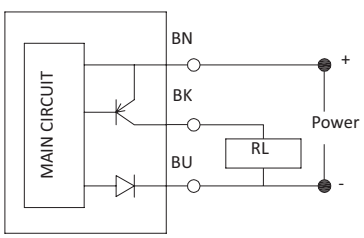
> Sensors for optical presence monitoring of workpiece
> Long scanning range at small foot print
> Adjustable sensitivity
> LED-display
> Lightweight body
> Any mounting position
> Mounting bracket GR06.045S for angle variable installation on extrusions optionally available
> Connector cable for sensors:
  - 20.503: 3-pole M8, length 2,500 mm, open wire
  - 20.507: 3-pole M8, length 2,000 mm, end with socket 3-Pole M8 available

Technical data

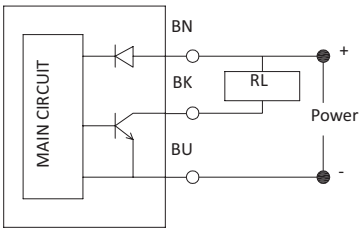
Item no.	LT10	LT10/NPN
Adjustable range [mm]	0 - 600	0 - 600
Sensor	PNP	NPN
Operating voltage [V]	10 - 30	10 - 30
Current consumption [mA]	< 25	< 25
Max. switching current [mA]	100	100
Protection class	IP67	IP67
Background suppression	no	no
Ambient air temperature [°C (°F)]	-25 - 60 (-13 - 140)	-25 - 60 (-13 - 140)
Weight [g]	19	19
Accessories	Mounting bracket: GR06.045S (p.417) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)	Mounting bracket: GR06.045S (p.417) Connector cable: 20.503 (p.410) Connector cable: 20.507 (p.410)

Wiring diagrams

LT10

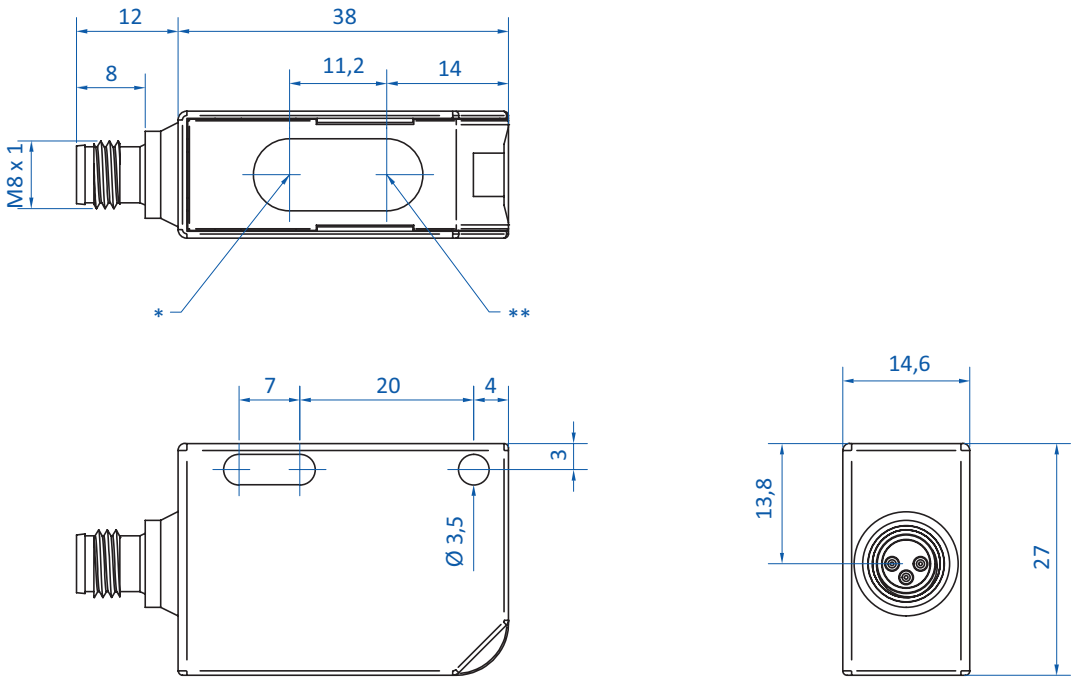


LT10/NPN



BN = Brown, BK = Black, BU = Blue

Dimensions

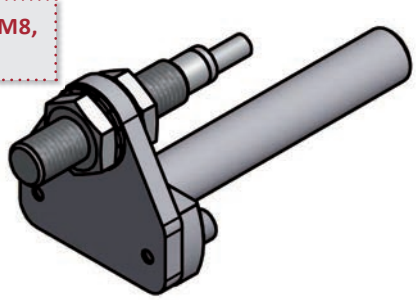


* = Opt. axis transmitter ** = Opt. axis receiver

Mounting brackets for reflective sensors

SUITABLE FOR SENSORS WITH M8, M12 OR M18 MALE THREAD





Application example with fitting GR06.050

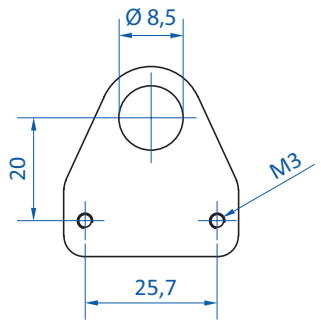
Product notes

> Mounting bracket for part control
> Optional brackets with clamping shaft for mounting sensors to profiles

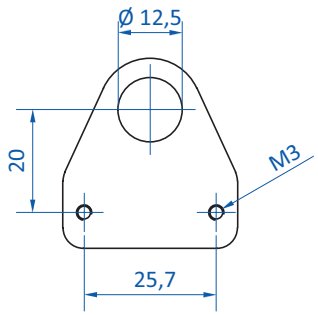
Technical data

Item no.	Suitable for	Weight [g]	Suitable fittings
GR06.050S-M8	Common M8 sensors	9	GR06.050 (p.240)
GR06.050S-M12	Common M12 sensors	9	GR06.050 (p.240)
GR06.051S-M18	LT18OHT, LT18OHT/NPN, LT19, LT19/NPN	23	GR06.051 (p.240)

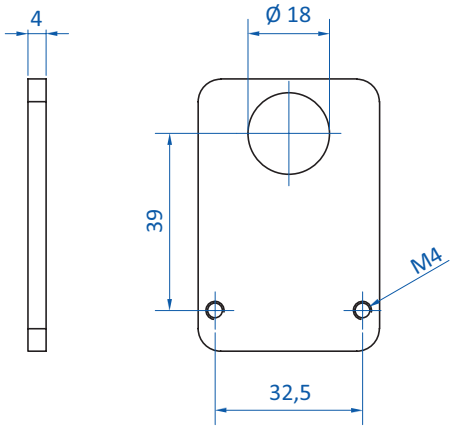
Dimensions



GR06.050S-M8



GR06.050S-M12



GR06.051S-M18

Mounting brackets for compact sensors

FITS WITH MANY COMPACT SENSORS ON THE MARKET





Installation example with sensor LT10 and angle arm

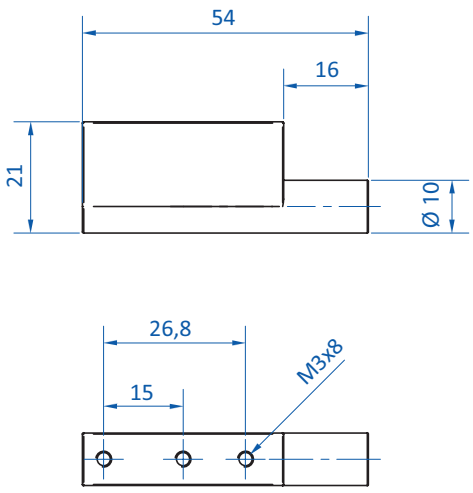
Product notes

> Mounting bracket for sensor installation on extrusions
> Freely rotatable, when combined with angle arms or other gripper components with clamping diameter 10 mm
> A choice of suitable clamping elements can be found under accessories

Technical data

Item no.	Suitable for	Weight [g]
GR06.045S	Reflective sensor LT10, LT10/NPN; Profile - shaft - adapter GR01.110; Angle clamp GR02.010A; Cross clamp GR02.020; Angle arm GR02.070A; Quick-change systems GR02.240	23

Dimensions



Signal transmitters M8 – without logics

COLLECTION AND TRANSMISSION OF SENSOR SIGNALS



Product notes

> Transmits up to twelve sensor signals to the robot controller
> Suitable for PNP/NPN sensors or 2-pole actuators
> LED switching status display
> Signals can be coupled via the external robot controller
> Common output:
- 20.540: 8-pole M12 plug, 1.9 m, open end, wire color to DIN 47100/11.79
- 20.541 and 20.542: 15-pole D-sub-plug, cable length 2 m, open end, wire color to DIN 47100/11.79

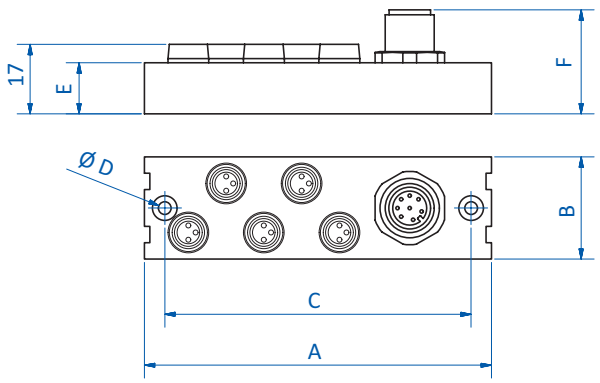
Technical data

Item no.	Number of slots M8	Power supply [V]	Weight [g]
20.540	5	24	65
20.541	8	24	120
20.542	12	24	250

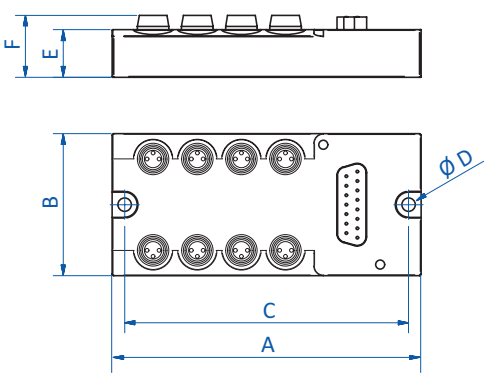
Pin assignment: M8 jack according to IEC 947-5-2

> Slot 0-7, or 0-11:
Signal line: socket 4
DC 24 V: socket 1
0 V: socket 3

Dimensions



20.540



20.541 | 20.542

Item no.	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]
20.540	85	25	75	3.1	12.5	25.45
20.541	98	45	90	4.3	15.1	19.6
20.542	125.6	45	117.6	4.3	15.1	19.6

Sensor-relay-switchboxes



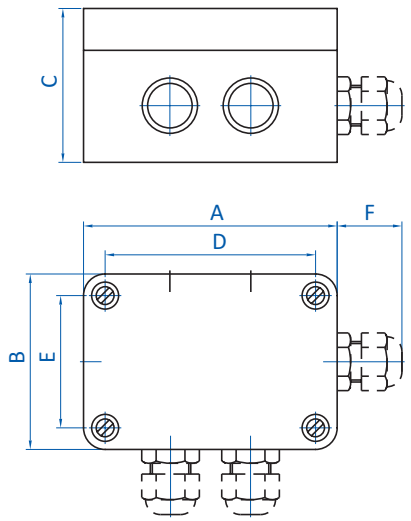
Product notes

> Reduction of necessary inputs on the robot control via bundling (series switching logic AND) of several sensor signals
> Inputs PNP, NPN or potential-free contact (NO or NC)
> Outputs PNP, NPN or potential-free contact (NO)
> Input LEDs for simplified troubleshooting
> Assembly on SLine, MLine or XLine extrusions
> Connection of several switchboxes possible
> Slot nuts and screws for SLine/MLine included in scope of delivery

Technical data

Item no.	Max. number of inputs	Max. number of outputs	Operating voltage [V]	Protection class	Weight [g]
GS01.004	4	4	24	IP65	180
GS01.006	6	6	24	IP65	171
GS01.008	8	8	24	IP65	230
GS01.012	12	12	24	IP65	325

Dimensions



Item no.	**A** [mm]	**B** [mm]	**C** [mm]	**D** [mm]	**E** [mm]	**F** [mm]
GS01.004	94	65	57	79	50	25
GS01.006	94	94	57	79	79	25
GS01.008	130	94	57	115	79	25
GS01.012	180	94	57	165	79	25

T-coupler bundlers with and/or logic





20.526

Product notes

> T-coupler connects 2x M8-female with 1x M8-male
> Interconnection of sensor signals on gripper systems
> Please note for 20.525 and 20.525/NPN:
If more than five sensors need to be connected we recommend to use switchboxes such as GS01.006 instead of T-couplers

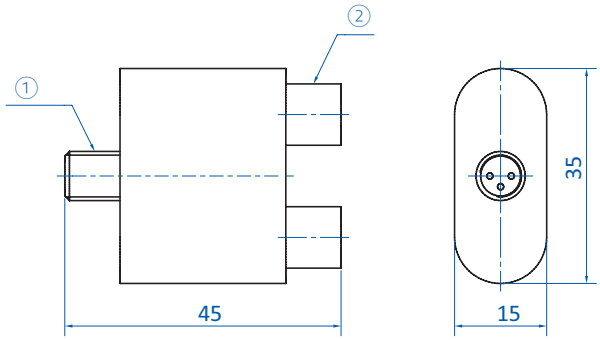
Technical data

Item no.	Electric connection	Operating voltage [VDC]	Protection class	Logic	Weight [g]
20.524	PNP / NPN	24	IP67	2x or	15
20.525	PNP	24	IP67	2x and	15
20.525/NPN	NPN	24	IP67	2x and	15
20.526	PNP	10 - 35	IP67	2x and/or	25

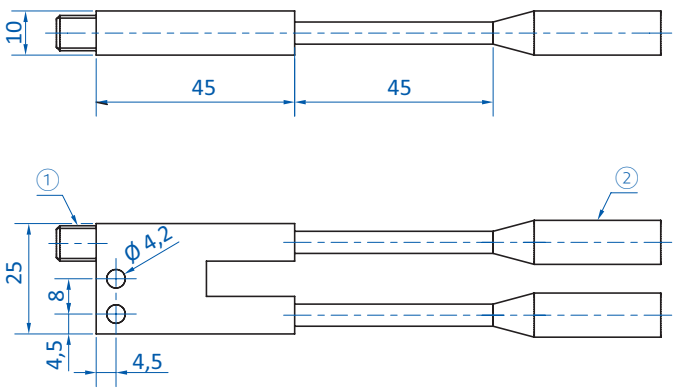
Application example



Dimensions



20.524 | 20.525 | 20.525/NPN



20.526

① = Plug, 3-pin M8x1 ② = Socket, 3-pin M8x1

Item no.	**A** [mm]	**B** [mm]	**C** [mm]
20.524	45	35	15
20.525	45	35	15
20.525/NPN	45	35	15
20.526	45	25	10

Signal converters M8 / signal inverter M8



CONVERT SENSOR SIGNALS INDEPENDENT OF ROBOT CONTROLLER

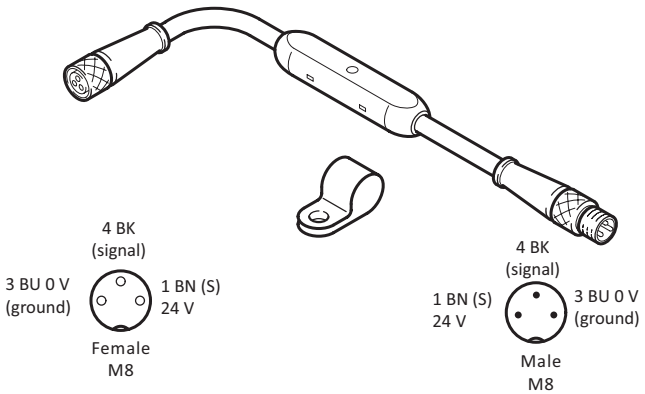
Product notes

> Signal converter/signal inverter comes in two types:
  - PNP inverter 20.530 for grippers with indirect part detection
  - PNP-NPN converter 20.531 for using PNP sensors in NPN circuits
> LEDs to display status and switching state
> Using model 20.530 with grippers with indirect part detection, enables signal activation if a part has been gripped
> Recommended for use with grippers GR04.091, GR04.111A, GR04.130F

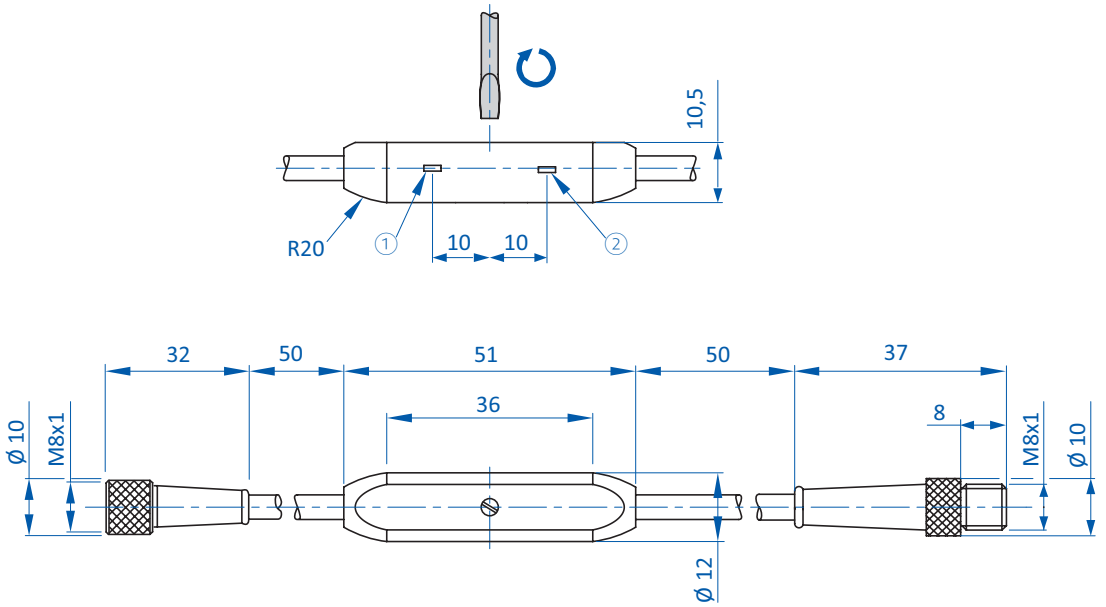
Technical data

Item no.	20.530	20.531
Input signal	PNP	PNP
Output signal	PNP	NPN
Connection	M8x1	M8x1
Max. ampacity [mA]	200	200
Operating voltage [VDC]	10 - 35	10 - 35
Current consumption [mA]	< 20	< 20
Max. switching frequency [Hz]	3,500	5,000
Minimum pulse duration [ms]	> 0.1	> 0.1
Protection class	IP67	IP67
Ambient air temperature [°C (°F)]	-25 - 70 (-13 - 158)	-25 - 70 (-13 - 158)
Weight [g]	17	17

Plug assignment



Dimensions



① = LED status ② = LED switching output

Notes:

Tubing at a glance 426

Tubing 428

Accessories for tubing 432

Connectors at a glance 434

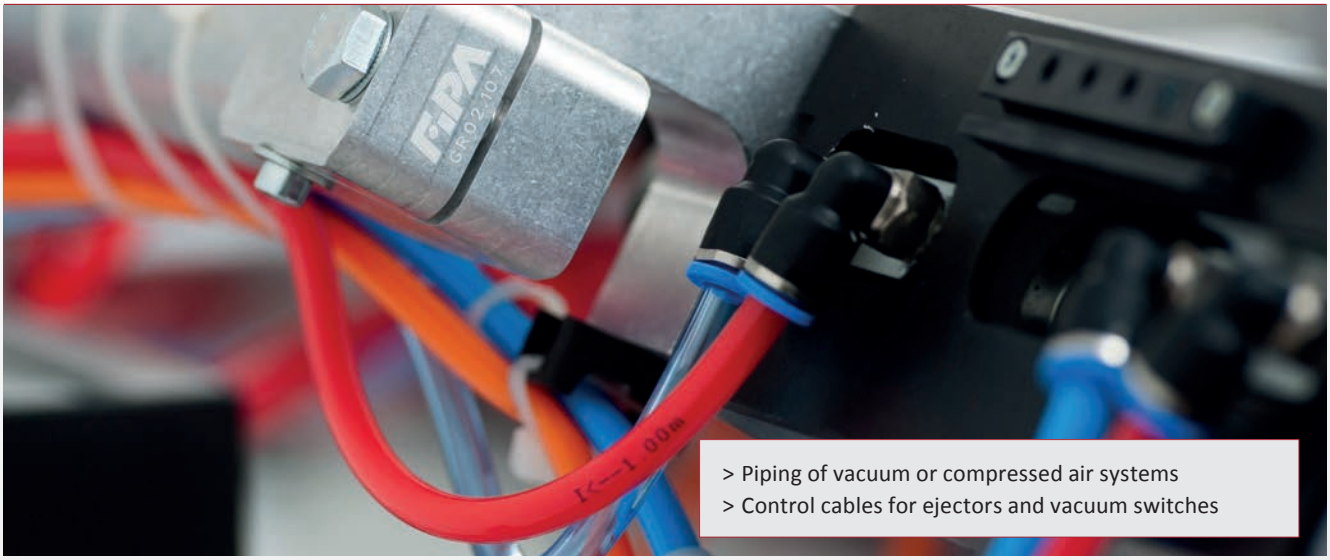
Vacuum manifolds 435

Push-in fittings and plug-in connectors – standard 437

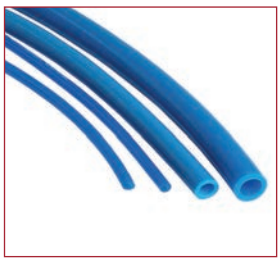
Screw connectors and plug-in connectors – mini 449

Accessories 453

FIPA Tubing



> Piping of vacuum or compressed air systems
> Control cables for ejectors and vacuum switches



Flexible vacuum pressure tubing made from polyurethane (PUR)

> Very small bending radius
> Standard blue transparent or intransparent

61.090 - 61.096
> High chemical stability and mechanical resistance
> Outer diameter toleranced tubing, making them suitable for quick fittings

61.056 - 61.062
> Available in a wide range of colors
> Outer diameter toleranced tubing, making them suitable for quick fittings

61.020 - 61.030
> Suitable for use in trailing chains, corrugated external surface

61.005S - 61.011S
> Self-extinguishing, flame-resistant according to DIN 4102 B1, corrugated external surface

> See page 428



Vacuum and pressure tubing made from transparent fluororesin (PFA)

> Excellent resistance to chemicals, temperature and weather conditions
> Used predominantly in chemical, foodstuff and medical industries

> See page 430



Highly flexible, soft PVC tubing for pressure applications

> Suitable for frequently occurring pivoting motions and oscillations
> Not suitable for vacuum

> See page 431

FIPA Tubing



Accessories:

Tubing nipples with male M and G threads

> See page 432



Reinforcing sleeves, especially for soft tubings

> See page 433



Tubing cutter with measuring tape

> See page 433

Flexible vacuum and pressure tubing made from PUR blue transparent



SUITABLE FOR INSTALLATION IN DRAG CHAINS

Product notes

> High flexibility enables small bending curve to build compact tubing systems
> Suitable for air and tap water
> Cut marks at 500 mm intervals facilitate installation
> High chemical and mechanical resistance
> Very high oil resistance
> Rule of thumb for installation in drag chain: bending radius = 10 x outer diameter of tubing

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.090	3	2	8	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	7	20
61.091	4	2.5	10	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	9	20
61.092	6	4	15	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	19	20
61.093	8	5	15	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	36	20
61.094	10	6.5	20	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	54	20
61.096	12	9	30	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	68	20

Flexible vacuum and pressure tubing made of blue PUR



SUITABLE FOR INSTALLATION IN DRAG CHAINS

Product notes

> High flexibility enables small bending curve to build compact tubing systems
> Suitable for air and tap water
> Cut marks at 500 mm intervals facilitate installation
> Rule of thumb for installation in drag chain: bending radius = 10 x outer diameter of tubing

Ordering notes

> Standard length 20 m, color blue
> Available in various tubing lengths and a wide selection of colors (black, red, orange, ocher, yellow, green, blue, light blue, transparent, pure white)
> 61.062 standard color is black
> Length of 50 m generally only available in black

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.056	3	2	8	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	7	20 / 50 / 100
61.057	4	2.5	10	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	9	20 / 50 / 100
61.058	6	4	15	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	19	20 / 50 / 100
61.059	8	5	15	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	36	20 / 50 / 100
61.060	10	6.5	20	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	54	20 / 50 / 100
61.061	12	8	30	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	74	20 / 50 / 100
61.062	16	11	60	-1 - 8 (-14.5 - 116)	29 (420.6)	-15 - 60 (5 - 140)	128	20 / 50 / 100

Vacuum and pressure tubing made of transparent fluororesin (PFA)



FOR CHEMICAL, FOODSTUFF AND MEDICAL INDUSTRIES

Product notes

> Excellent resistance to chemicals, temperature and weather conditions
> Very smooth, transparent inner surface
> Suitable for air, water and corrosive fluids
> 61.069 to 61.073: suitable for cleanroom applications

Ordering notes

> Standard packaging unit: 5 meters

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range for air / gas [bar (psi)]	Pressure range for liquids [bar (psi)]	Operating pressure 20 °C (68 °F) [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.063	4	2.5	20	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	49 (710.7)	-65 - 260 (-85 - 500)	18	5 / 20
61.064	6	4	30	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	49 (710.7)	-65 - 260 (-85 - 500)	36	5 / 20
61.065	8	6	48	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	39 (565.6)	-65 - 260 (-85 - 500)	50	5 / 20
61.066	10	7.5	60	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	39 (565.6)	-65 - 260 (-85 - 500)	78	5 / 20
61.067	12	9	72	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	59 (855.7)	-65 - 260 (-85 - 500)	112	5 / 20
61.068	16	13	78	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	34 (493.1)	-65 - 260 (-85 - 500)	154	5 / 20
61.069	4	2.5	20	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	49 (710.7)	-65 - 260 (-85 - 500)	55	5
61.070	6	4	30	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	49 (710.7)	-65 - 260 (-85 - 500)	95	5
61.071	8	6	30	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	39 (565.6)	-65 - 260 (-85 - 500)	125	5
61.072	10	7.5	60	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	39 (565.6)	-65 - 260 (-85 - 500)	190	5
61.073	12	9	72	-0.99 - 9 (-14.4 - 130.5)	3 (43.5)	39 (565.6)	-65 - 260 (-85 - 500)	270	5

Highly flexible tubing made of soft PVC for light pressure applications



SUITABLE FOR FOODSTUFFS

Product notes

> Unpressurized and low-pressure applications with concurrent pivoting motions and oscillations
> High flexibility enables sharp turning radii for compact tubing systems
> FDA approval for aqueous foods
> Extremely resistant to acids and bases
> Color transparent
> Not suitable for vacuum

Technical data

Item no.	Outer diameter [mm]	Inner diameter [mm]	Minimum bending radius [mm]	Pressure range [bar (psi)]	Usage temperature [°C (°F)]	Weight [g/m]	Packing unit [m]
61.211	4	2	5	0 - 1 (0 - 14.5)	-10 - 60 (14 - 140)	9	20
61.212	6	4	14	0 - 1 (0 - 14.5)	-5 - 60 (23 - 140)	17	20
61.213	8	6	25	0 - 0.5 (0 - 7.3)	-5 - 60 (23 - 140)	23	20
61.214	10	7	25	0 - 0.5 (0 - 7.3)	-10 - 60 (14 - 140)	36	20

Tubing nipples with external thread



Product notes

> Select the tubing inner diameter about 1 - 2 mm smaller than the tubing nipple

Technical data

Item no.	For hose inner Ø [mm]	Material
62.062	4	Brass
62.063	6	Brass

Dimensions

G1	SW
M5	7
M5	7

Reinforcing sleeves

Material: stainless steel





Product notes

> We recommend the use of reinforcing for all soft tubing
> Reinforced sleeves also recommended for water transportation

Technical data

Item no.	Hose outer Ø [mm]	Hose inner Ø [mm]
WR 0425	4	2.5
WR 0640	6	4
WR 0850	8	5
WR 0860	8	6
WR 1280	12	8
WR 1290	12	9
WR 1613	16	13

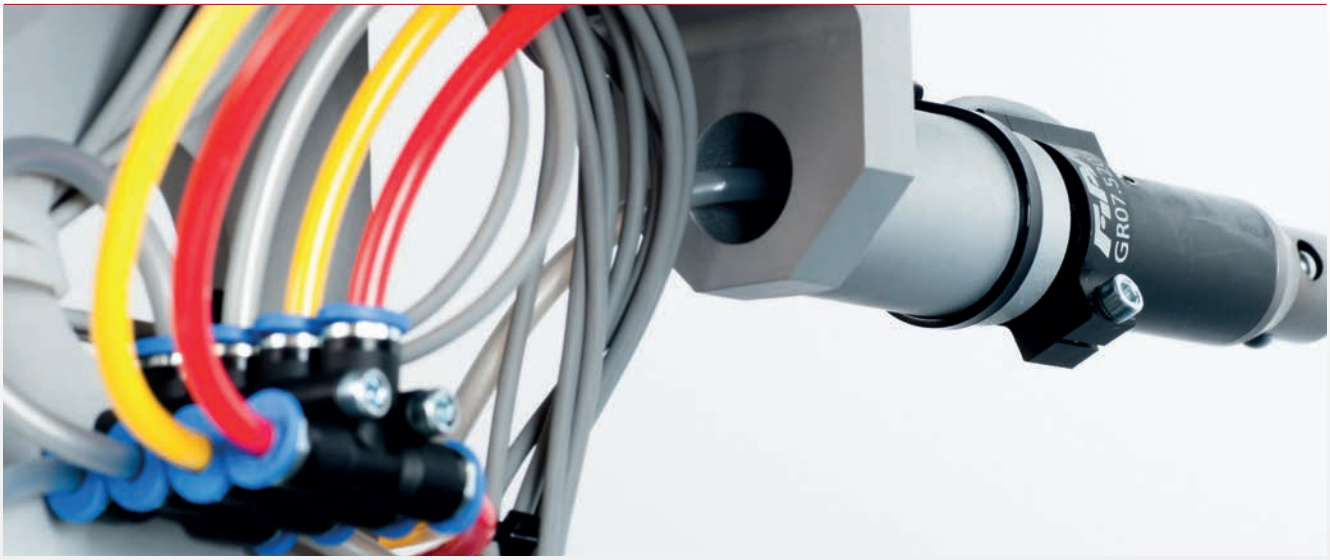
Tubing cutter with measuring tape



Technical data

Item no.	Compatible hose Ø [mm]
61.083	3 - 16

FIPA Push-in fittings





Vacuum manifolds

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Inlets on one or both sides
> Up to six inlets or outlets, male and female threads from M5 to G1 1/4
> Design: aluminum or brass

> See page 435



Push-in fittings and plug-in connectors – standard

> Suitable for vacuum and pressure applications (-1 - 10 bar)
> M, G and R male and female threads, straight or 90° version
> T- and Y-manifolds, 2-way and 3-way angle swivel screw connections
> Stackable plug-in connector (QC-3-3M - QC 8-8)
> Lock connection push-in connectors 30.761 - 20.765 (straight); 30.774 - 30.778 (90°): locking of compressed air or vacuum during hose disassembly, release after reconnection
> Rotation screw connections for mounting in with fast-running machines

> See page 437

Push-in fittings and plug-in connectors – mini

> Suitable for vacuum and pressure applications (-1 - 10 bar)
> 40 % smaller than standard version
> M, R and G male and female threads, straight, 45° or 90° version
> T-manifold
> Easy assembly and disassembly thanks to elliptical mini release ring

> See page 449



Accessories

> Double nipples
> Thread adapters
> Threaded sockets
> Screw plugs
> Sealing rings

> See page 453

Manifolds for simple assembly of vacuum loads

Outputs on one side, at the front



Product notes

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Material: aluminum

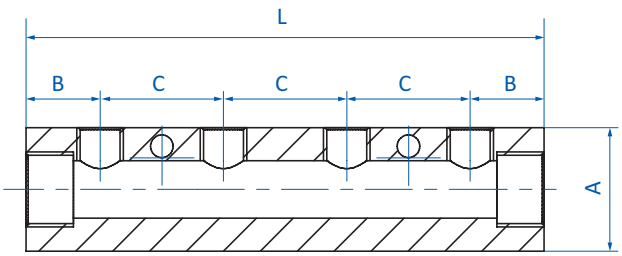
Technical data

Item no.	Input connection	Output connection	Suitable sealing plugs
79.000	2x 1/8	2x M5	77.000 (p.455), 77.009 (p.455)
79.001	2x 1/8	4x M5	77.000 (p.455), 77.009 (p.455)
79.002	2x 1/8	6x M5	77.000 (p.455), 77.009 (p.455)
79.003	2x 1/4	2x 1/8	77.008 (p.455), 77.009 (p.455)
79.004	2x 1/4	4x 1/8	77.008 (p.455), 77.009 (p.455)
79.005	2x 1/4	6x 1/8	77.008 (p.455), 77.009 (p.455)
79.006	2x 3/8	2x 1/4	77.008 (p.455), 77.010 (p.455)
79.007	2x 3/8	4x 1/4	77.008 (p.455), 77.010 (p.455)
79.008	2x 3/8	6x 1/4	77.008 (p.455), 77.010 (p.455)
79.009	2x 3/8	2x 1/4	77.009 (p.455), 77.010 (p.455)
79.010	2x 3/8	4x 1/8	77.009 (p.455), 77.010 (p.455)
79.011	2x 3/8	6x 1/8	77.009 (p.455), 77.010 (p.455)
79.012	2x 1/2	2x 1/4	77.007 (p.455), 77.008 (p.455)
79.013	2x 1/2	4x 1/4	77.007 (p.455), 77.008 (p.455)
79.014	2x 1/2	6x 1/4	77.007 (p.455), 77.008 (p.455)

Dimensions

A [mm]	B [mm]	C [mm]	L [mm]
20	15	15	45
20	15	15	75
20	15	15	105
30	15	30	60
30	15	30	120
30	15	30	180
40	18	36	72
30	18	36	144
30	18	36	216
40	18	30	72
30	18	30	126
30	18	30	186
40	22	36	80
40	22	36	152
40	22	36	224

Dimensions



Manifolds for simple assembly of vacuum loads

Outputs on both sides, at the front and rear



Product notes

> Construction of vacuum systems by means of simple installation of push-in fittings or quick fittings
> Material: aluminum

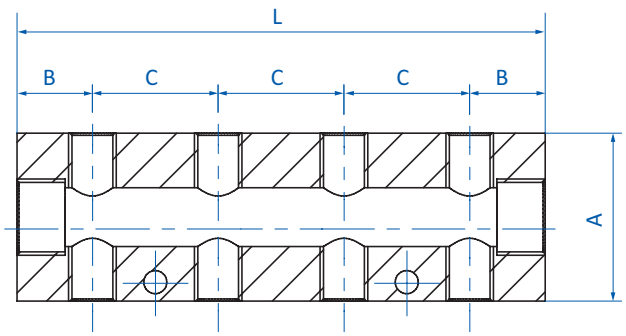
Technical data

Item no.	Input connection	Output connection	Suitable sealing plugs
79.015	2x 1/8	2+2 x M5	77.000 (p.455) 77.009 (p.455)
79.016	2x 1/8	4+4 x M5	77.000 (p.455) 77.009 (p.455)
79.017	2x 1/4	2+2 x 1/8	77.008 (p.455) 77.009 (p.455)
79.018	2x 1/4	4+4 x 1/8	77.008 (p.455) 77.009 (p.455)
79.019	2x 3/8	2+2 x 1/4	77.008 (p.455) 77.010 (p.455)
79.020	2x 3/8	4+4 x 1/4	77.008 (p.455) 77.010 (p.455)
79.023	2x 1/2	2+2 x 1/4	77.007 (p.455) 77.008 (p.455)
79.024	2x 1/2	4+4 x 1/4	77.007 (p.455) 77.008 (p.455)

Dimensions

A [mm]	B [mm]	C [mm]	L [mm]
20	15	15	45
20	15	15	75
30	15	30	60
30	15	30	120
40	18	36	72
40	18	36	144
40	22	36	80
40	22	36	152

Dimensions



Straight male stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.000	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.001	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.002	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.003	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.004	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.005	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.006	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.007	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.008	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.009	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.010	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.011	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.002-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.003-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.006-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.007-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.008-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.011-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8

Cartridge male stud connectors, round, hex key



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.200	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.201	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.202	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.203	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.204	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.205	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.206	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.207	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.208	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.209	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Straight male stud connectors with cut-off valve

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data				Dimensions	
Item no.	Effective passage area [mm²]	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.761	1.6	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.762	2	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.763	2.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.764	7.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.765	7.3	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4

Female stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.050	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.051	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.052	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.053	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.054	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.055	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.056	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Straight tube connectors – equal



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.223	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.224	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.225	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8

Straight tube reducers



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.075	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.076	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6

90° elbow male connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.100	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.101	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.102	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.103	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.104	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.105	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.106	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.107	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.108	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.109	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.110	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.111	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.102-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.103-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.106-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.107-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.108-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.109-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/8
30.110-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/4
30.111-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8

90° elbow female connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.170	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.171	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.172	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.173	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.174	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.175	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.176	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.177	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.178	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.179	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.180	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.181	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.172-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.173-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/4
30.176-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8
30.177-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/4
30.178-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G3/8
30.179-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/8
30.180-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G1/4
30.181-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	8	G3/8

90° male elbows with cut-off valve

Locking of compressed air or vacuum during disassembly, release after reconnection



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.774	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.775	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	G1/8
30.776	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.777	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	G1/8
30.778	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	G1/4

90° elbow connectors – equal



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.270	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.271	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.272	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8

Male banjo connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.300	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.301	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.302	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.303	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.304	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.305	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.306	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.307	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.308	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Male branch tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.332	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.333	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.334	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.335	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.336	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.337	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.338	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.339	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.340	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.341	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.342	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.343	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Equal tube tee connectors



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.390	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.391	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.392	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8

Unequal tube tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.399	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.400	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6

Equal Y-connectors



Technical data			Dimensions
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]
30.431	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4
30.432	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6
30.433	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8

Unequal Y-connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
30.440	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
30.441	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6

Male Y-connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.403	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.404	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.405	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.406	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.407	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.408	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.409	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.410	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.411	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.412	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.413	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Elbow Y male connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.518	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.519	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.520	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.521	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.522	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.523	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.524	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.525	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.527	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.528	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.529	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Push-in connectors QC

Available as an option: connecting strap for parallel circuit = QB-H, for series circuit = QB-T



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
QC3-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	3
QC3-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	4
QC3-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	6
QC4-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	3
QC4-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	4
QC4-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	6
QC6-3M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	3
QC6-4M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4
QC6-6M	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	6
QC6-6	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	6
QC6-8	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	8
QC8-6	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	6
QC8-8	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	8

Two stack banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.599	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.600	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.601	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.602	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.603	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.604	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.605	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.606	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.607	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.608	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2

Two stack, twin banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.649	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.650	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.651	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.652	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.653	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.654	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.655	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.656	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.657	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.658	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2

3-way male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.490	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.491	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.492	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.493	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.494	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.495	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.496	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.497	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.498	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.499	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.500	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.501	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8

Three stack, twin banjos



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.674	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.675	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/4
30.676	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R3/8
30.677	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8
30.678	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/4
30.679	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R3/8
30.680	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/8
30.681	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/4
30.682	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R3/8
30.683	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	8	R1/2

Mini male stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.900	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.901	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.902	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.903	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.904	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.905	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.906	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.907	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.908	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.906-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	4	G1/8
30.910-G	-0.95 - 15 (-13.8 - 217.6)	-20 - 80 (-4 - 176)	6	G1/8

Mini male stud connectors, round, hex key



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.921	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.922	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.923	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.924	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.925	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.926	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.927	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.928	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini tube fittings, cartridge



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.932	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.933	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.934	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M8
30.935	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M8

Mini female stud connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.914	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.915	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.916	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.917	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5

Mini 45° male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.976	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.977	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.978	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.979	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.980	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.981	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.982	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini unequal tube tee connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D1 [mm]	Ø D2 [mm]
31.025	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	3
31.026	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	4

Mini extended male elbow connectors



Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.963	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.964	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.965	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.966	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.967	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.968	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.969	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.970	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini male elbow connectors



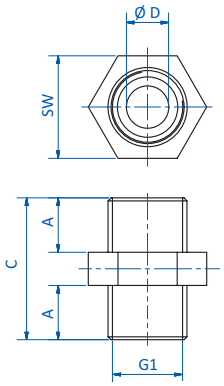
Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.949	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.950	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.951	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.952	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.953	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.954	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.955	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
30.956	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
30.957	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
30.958	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Mini male branch equal tee connectors



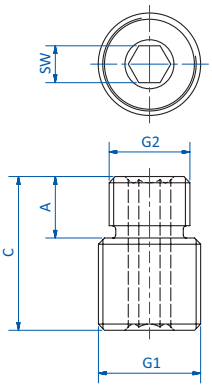
Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	G
30.993	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M3
30.994	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M5
30.995	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	3	M6
30.996	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M3
30.997	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M5
30.998	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	M6
30.999	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	4	R1/8
31.000	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M5
31.001	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	M6
31.002	-0.95 - 15 (-13.8 - 217.6)	0 - 60 (32 - 140)	6	R1/8

Double nipples, equal thread – SZ-GA-MM



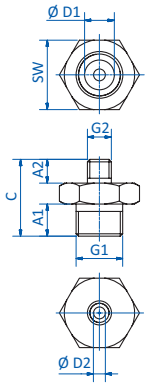
Technical data		Dimensions				
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]	SW
270.420	Brass	M5	5	13	2.5	7
270.059	Brass	G1/8	7	18	5	14
270.120	Brass	G1/4	9	23.5	7	17
270.121	Nickel-plated brass	G3/8	9	23	11	19

Reducing bushes with hex socket – SZ GA- MMI



Technical data		Dimensions				
Item no.	Material	G1 (male)	G2 (male)	A [mm]	C [mm]	SW
270.561	Aluminum	G3/8	G1/4	10	25	6
270.562	Aluminum	G3/8	M10	12	27	5
270.563	Aluminum	G3/8	M14	12	27	6
270.564	Aluminum	G1/4	G1/4	--	22	5
270.565	Aluminum	G1/4	M10	12	24	5
270.566	Aluminum	G1/4	M14	11	24	5

Reducing nipples – SZ-GA-RMM

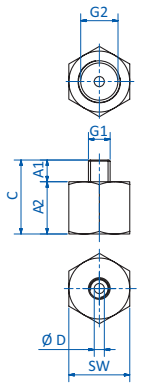


Technical data

Dimensions

Item no.	Material	G1 (male)	G2 (male)	A1 [mm]	A2 [mm]	C [mm]	D1 [mm]	D2 [mm]	SW
270.280	Nickel-plated brass	G1/8	M5	6.5	4.8	15.5	6	2.4	14
270.279	Aluminum	G1/8	M6	9	7	21	3	3	14
270.131	Brass	G1/8	M8	7	6	18	4	4	14
270.107	Aluminum	G1/8	M12	7.5	8.5	21	5.6	5.6	17
270.227	Brass	G1/4	M5	9	5	19	7.5	2.5	17
270.320	Aluminum	G1/4	M10	10	10	25	5.5	5.5	17
270.108	Aluminum	G1/4	M12	8	8	21	5.5	5.5	17
270.181	Nickel-plated brass	G1/4	G1/8	9	8	22	4	4	17

Reducing bushings male/female – SZ-GA-MF

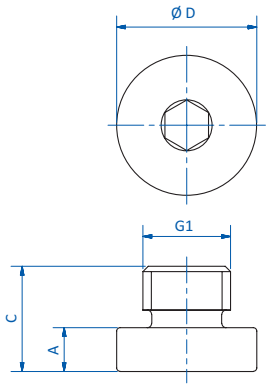


Technical data

Dimensions

Item no.	Material	G1 (male)	G2 (female)	A1 [mm]	A2 [mm]	C [mm]	Ø D [mm]	SW
270.423	Nickel-plated brass	M5	M5	4	7	11	2	8
270.079	Brass	M5	G1/8	5	12	17	2.3	14
270.576	Steel galvanized	M12	G1/4	10	12	22	6.5	17
270.577	Steel galvanized	M16	G3/8	10	15	25	10	24
270.302	Nickel-plated brass	G1/8	M5	6	4	10	--	14
270.303	Nickel-plated brass	G1/8	M6	8	5	13	--	13
270.334	Nickel-plated brass	G1/8	G1/4	6	10	20	5.3	17
270.304	Aluminum	G1/4	M6	10	5	15	--	17
270.090	Brass	G1/4	M10	5.7	4	11.5	--	19
270.088	Aluminum	G1/4	M10	12	16	28	4	17
270.245	Brass	G1/4	G1/8	9	4	13	--	17
270.078	Brass	G1/4	G1/4	10	18	28	7.5	17
270.567	Aluminum	G1/4	G3/8	11	16	27	4	20
270.560	Aluminum	G3/8	G1/4	11	5	16	--	22

Blanking plugs with O-ring seal – SZ-SCV

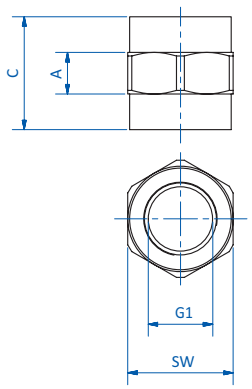


Technical data

Dimensions

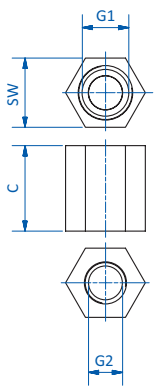
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]
77.000	Nickel-plated brass	M5	2	6	8
77.009	Nickel-plated brass	G1/8	3	11	17
77.008	Nickel-plated brass	G1/4	3	9.5	14
77.007	Nickel-plated brass	G1/2	3.5	13.5	25
77.010	Nickel-plated brass	G3/8	3.5	12.5	20

Threaded bushes – SZ-GA-FF



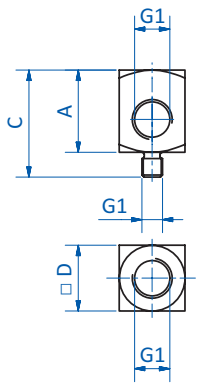
Technical data		Dimensions			
Item no.	Material	G1 (female)	A [mm]	C [mm]	SW
270.343	Nickel-plated brass	G1/8	5.5	15	14
270.182.O	Aluminum	G1/4	20	20	19
270.579	Aluminum	G3/8	23	23	22

Reducing bushes – SZ-GA-RFF



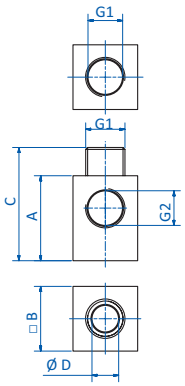
Technical data		Dimensions			
Item no.	Material	G1 (female)	G2 (female)	C [mm]	SW
270.306	Aluminum	G1/8	M5	14	13
270.307	Aluminum	G1/8	M6	14	13
270.308	Aluminum	G1/4	M6	17.5	17
270.089	Aluminum	G1/4	M10	21	17
270.228	Nickel-plated brass	G3/8	G1/4	21.5	22

Elbow connectors AG – SZ-WAA



Technical data		Dimensions				
Item no.	Material	G1 (female)	G2 (male)	A [mm]	C [mm]	□ D [mm]
GR07.010	Steel nickel-plated	G1/8	M5	20	26	16
GR07.011	Steel nickel-plated	G1/4	M6	33	43	25
GR07.012	Steel nickel-plated	G1/4	M8	33	43	25
GR07.013	Steel nickel-plated	G1/4	G1/8	25	35	20

Elbow connectors IG – SZ-WAI



Technical data

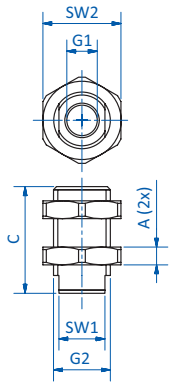
Item no.	Material
270.395	Aluminum
270.396	Aluminum

Dimensions

Item no.	G1 (female+male)	G2 (female)	A [mm]	□ B [mm]	C [mm]	Ø D [mm]
270.395	G1/8	G1/8	21	16	28	6.6
270.396	G1/4	G1/8	26	18	36	8

Bulkhead connectors – SZ-SVS

Allow for height adjustment during vacuum cup installation



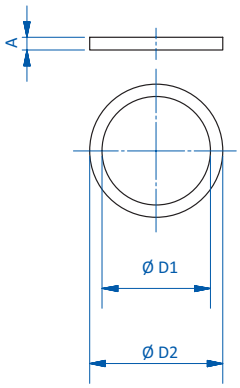
Technical data

Item no.	Material bushing	Material screw nut
270.518	Stainless steel	Steel galvanized
270.519	Stainless steel	Steel galvanized

Dimensions

Item no.	G1 (female)	G2 (male)	A [mm]	C [mm]	SW1	SW2
270.518	G1/8	M16	5	30	13	22
270.519	G1/4	M20	5	30	--	24

Sealing rings – SZ-DR



Technical data

Item no.	For outside thread	Material
78.052	M5	Rigid PVC white
78.053	G1/8	Rigid PVC white
78.054	G1/4	Rigid PVC white
78.051	G3/8	Rigid PVC white
78.055	G1/2	Rigid PVC white
78.056	G3/4	Rigid PVC white

Dimensions

Item no.	A [mm]	Ø D1 [mm]	Ø D2 [mm]
78.052	1	5.4	7.9
78.053	2	10.3	13.5
78.054	2	13.3	18
78.051	2	17.5	21.3
78.055	2	21.2	27.9
78.056	2	26.8	33

Ordering notes

1 packing unit = 100 pieces

Vacuum cups: holding forces



Calculation

The force exerted by a vacuum cup holding or lifting a workpiece depends on many factors. These include the acceleration, the safety factor, turning and tilting moments, the elasticity of the material and even the design of the vacuum cup.

Regardless of such factors, the holding power of a vacuum cup can easily be identified by the following formula:

$$\text{Holding power in N} = \frac{\text{active suction surface in cm}^2 \times \text{vacuum available in \%}}{10}$$

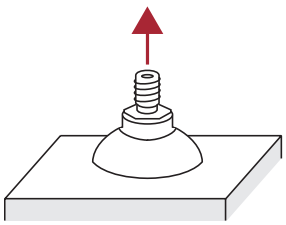
The following applies: The holding power of a vacuum cup is proportional to the active suction surface.

To determine the necessary vacuum cup diameter or the required active suction surface, the following formula helps:

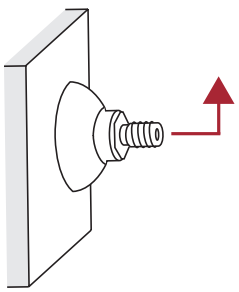
$$\text{Vacuum cup diameter in mm} = 113 \times \sqrt{\frac{\text{weight in kg} \times \text{safety factor}}{\text{underpressure in \%} \times \text{number of vacuum cups}}}$$

Important: the safety factor (dependent on the lifting direction)

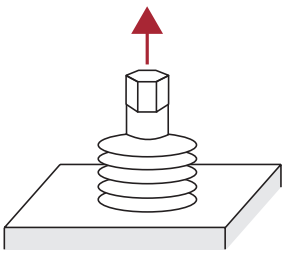
Min. 2x safety factor

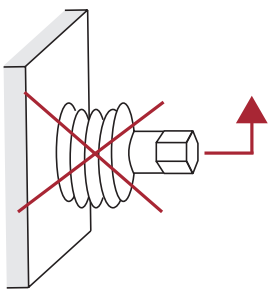


Min. 4x safety factor



Min. 2x safety factor





Average values for vacuum cups in standard applications

Vacuum cup diameter [mm]	**Effective diameter** approx. [mm]	**Effective suction surface** approx. [cm²]	**Theoretical holding force 20 % vacuum** [N]	**Theoretical holding force 60 % vacuum** [N]	**Theoretical holding force 80 % vacuum** [N]	**Volume flat approx.** [cm³]	**Volume bellows approx.** [cm³]	**Recommended internal tubing diameter approx.** [mm]
1	0.80	0.0050	0.01	0.03	0.04	0.001	0.05	2
2	1.60	0.0201	0.04	0.12	0.16	0.001	0.05	2
3	2.40	0.0452	0.09	0.27	0.36	0.002	0.05	2
4	3.20	0.0804	0.16	0.48	0.64	0.003	0.05	2
5	4.00	0.1257	0.25	0.75	1.01	0.005	0.1	2
6	5.17	0.2101	0.42	1.26	1.68	0.008	0.1	2
7	6.03	0.2860	0.57	1.72	2.29	0.015	0.1	2
8	6.90	0.3736	0.75	2.24	2.99	0.03	0.2	2
9	7.76	0.4728	0.95	2.84	3.78	0.05	0.2	2
10	8.62	0.5837	1.17	3.50	4.67	0.07	0.5	4
11	9.48	0.7063	1.41	4.24	5.65	0.1	0.5	4
12	10.34	0.8405	1.68	5.04	6.72	0.1	1	4
13	11.21	0.9864	1.97	5.92	7.89	0.2	1	4
14	12.07	1.1440	2.29	6.86	9.15	0.3	1	4
15	12.93	1.3133	2.63	7.88	10.51	0.4	3	4
16	13.79	1.4942	2.99	8.97	11.95	0.5	3	4
17	14.66	1.6868	3.37	10.12	13.49	0.5	3	4
18	15.52	1.8911	3.78	11.35	15.13	0.6	3	4
19	16.38	2.1071	4.21	12.64	16.86	0.7	5	4
20	17.24	2.3347	4.67	14.01	18.68	0.8	5	4
25	21.55	3.6480	7.30	21.89	29.18	1.3	5	4
30	25.86	5.2531	10.51	31.52	42.02	1.3	5	4
35	30.17	7.1501	14.30	42.90	57.20	2.7	10	4
40	34.48	9.3389	18.68	56.03	74.71	3.8	10	4
45	38.79	11.8195	23.64	70.92	94.56	5	20	4
50	43.10	14.5920	29.18	87.55	116.74	7	20	6
60	51.72	21.0124	42.02	126.07	168.10	10	30	6
70	60.34	28.6003	57.20	171.60	228.80	20	50	6
80	68.97	37.3554	74.71	224.13	298.84	25	60	6
90	77.59	47.2780	94.56	283.67	378.22	30	100	6
100	86.21	58.3679	116.74	350.21	466.94	40	200	9
125	107.76	91.1998	182.40	547.20	729.60	80	300	9
150	129.31	131.3277	262.66	787.97	1,050.62	180	500	9
175	150.86	178.7516	357.50	1,072.51	1,430.01	250	650	12
200	172.41	233.4715	466.94	1,400.83	1,867.77	430	800	12
250	215.52	364.7992	729.60	2,188.80	2,918.39	500	1,600	12
300	258.62	525.3109	1,050.62	3,151.87	4,202.49	600	2,000	12
350	301.72	715.0065	1,430.01	4,290.04	5,720.05	1,500	3,000	12
400	344.83	933.8860	1,867.77	5,603.32	7,471.09	2,000	5,000	12
500	431.03	1,459.1969	2,918.39	8,755.18	11,673.58	4,000	x	16
600	517.24	2,101.2436	4,202.49	12,607.46	16,809.95	6,500	x	16

The information provided above consists of average values for smooth, dry product surfaces without a safety factor.
The application, shape of the vacuum cup and product qualities (e.g. surface texture or air permeability) may result in deviations.

Air volume to be evacuated per meter of tubing, dependent on the internal tubing diameter

Internal tubing diameter [mm]	**Cross section** [mm^2]	**Air volume per meter** [cm^3]	**Air volume per meter** [l]
2	3.14	3.1	0.003
3	7.07	7.1	0.007
4	12.56	12.6	0.013
6	28.26	28.3	0.028
7	38.47	38.5	0.038
8	50.24	50.2	0.050
9	63.59	63.6	0.064
10	78.50	78.5	0.079
11	94.99	95.0	0.095
12	113.04	113.0	0.113
14	153.86	153.9	0.154
16	200.96	201.0	0.201
18	253.34	254.3	0.254
20	314.00	314.0	0.314
25	490.63	490.6	0.491
32	803.84	803.8	0.804
35	961.63	961.6	0.962
38	1,133.54	1,133.5	1.134
40	1,256.00	1,256.0	1.256

Required inner diameter D in case of branching of tubing

Number of tubing	**Calculation** [diameter D x factor]
1	D x 1
2	D x 0.71
4	D x 0.50
8	D x 0.36
16	D x 0.25
32	D x 0.18

Example calculation

If tubing with an inner diameter of 40 mm branches out to become 4 tubes, each of these tubes requires an internal diameter of 20 mm.
If tubing with an inner diameter of 40 mm branches out to become 16 tubes, each of these tubes requires an internal diameter of 10 mm.

Required internal diameter for compressed air tubing lines

Air flow rate [liters/min.]	Tubing length [m]																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
100	3	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6
200	4	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7
300	5	5	6	6	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9
400	5	6	7	7	7	8	8	8	8	8	9	9	9	9	9	9	9	9	10	10
500	6	7	7	8	8	8	9	9	9	9	9	9	10	10	10	10	10	10	10	11
600	6	7	8	8	9	9	9	9	10	10	10	10	10	10	11	11	11	11	11	11
700	7	8	8	9	9	9	10	10	10	10	11	11	11	11	11	11	12	12	12	12
800	7	8	9	9	9	10	10	10	11	11	11	11	11	12	12	12	12	12	12	13
900	7	8	9	9	10	10	11	11	11	11	12	12	12	12	12	12	13	13	13	13
1,000	7	9	9	10	10	11	11	11	12	12	12	12	12	13	13	13	13	13	13	14
1,100	8	9	10	10	11	11	11	12	12	12	12	13	13	13	13	13	14	14	14	14
1,200	8	9	10	11	11	11	12	12	12	13	13	13	13	14	14	14	14	14	14	15
1,300	8	9	10	11	11	12	12	12	13	13	13	14	14	14	14	14	14	15	15	15
1,400	8	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	15	15	15	15
1,500	9	10	11	11	12	12	13	13	13	14	14	14	14	15	15	15	15	15	16	16
1,600	9	10	11	12	12	13	13	13	14	14	14	15	15	15	15	15	16	16	16	16
1,700	9	10	11	12	13	13	13	14	14	14	15	15	15	15	16	16	16	16	16	17
1,800	9	11	12	12	13	13	14	14	14	15	15	15	15	16	16	16	16	17	17	17
1,900	9	11	12	12	13	14	14	14	15	15	15	16	16	16	16	16	17	17	17	17
2,000	10	11	12	13	13	14	14	15	15	15	16	16	16	16	17	17	17	17	17	18
2,100	10	11	12	13	14	14	14	15	15	16	16	16	16	17	17	17	17	17	18	18
2,200	10	11	12	13	14	14	15	15	15	16	16	16	17	17	17	17	18	18	18	18
2,300	10	12	13	13	14	15	15	15	16	16	16	17	17	17	17	18	18	18	18	18
2,400	10	12	13	14	14	15	15	16	16	16	17	17	17	17	18	18	18	18	19	19
2,500	10	12	13	14	14	15	15	16	16	17	17	17	17	18	18	18	18	19	19	19
2,600	11	12	13	14	15	15	16	16	16	17	17	17	18	18	18	18	19	19	19	19
2,700	11	12	13	14	15	15	16	16	17	17	17	18	18	18	19	19	19	19	19	20
2,800	11	13	14	14	15	16	16	17	17	17	18	18	18	19	19	19	19	19	20	20
2,900	11	13	14	15	15	16	16	17	17	18	18	18	18	19	19	19	19	20	20	20
3,000	11	13	14	15	15	16	17	17	17	18	18	18	19	19	19	20	20	20	20	20
3,100	11	13	14	15	16	16	17	17	18	18	18	19	19	19	19	20	20	20	20	21
3,200	11	13	14	15	16	16	17	17	18	18	19	19	19	19	20	20	20	20	21	21
3,300	12	13	14	15	16	17	17	18	18	18	19	19	19	20	20	20	20	21	21	21
3,400	12	13	15	15	16	17	17	18	18	19	19	19	20	20	20	20	21	21	21	21
3,500	12	14	15	16	16	17	18	18	18	19	19	19	20	20	20	21	21	21	21	22
3,600	12	14	15	16	17	17	18	18	19	19	19	20	20	20	21	21	21	21	22	22
3,700	12	14	15	16	17	17	18	18	19	19	20	20	20	21	21	21	21	22	22	22
3,800	12	14	15	16	17	17	18	19	19	19	20	20	20	21	21	21	22	22	22	22
3,900	12	14	15	16	17	18	18	19	19	20	20	20	21	21	21	21	22	22	22	22
4,000	12	14	16	16	17	18	18	19	19	20	20	20	21	21	21	22	22	22	22	23
4,100	13	14	16	17	17	18	19	19	20	20	20	21	21	21	22	22	22	22	23	23
4,200	13	15	16	17	18	18	19	19	20	20	20	21	21	22	22	22	22	23	23	23
4,300	13	15	16	17	18	18	19	19	20	20	21	21	21	22	22	22	23	23	23	23
4,400	13	15	16	17	18	18	19	20	20	20	21	21	21	22	22	22	23	23	23	23
4,500	13	15	16	17	18	19	19	20	20	21	21	21	22	22	22	23	23	23	23	24
4,600	13	15	16	17	18	19	19	20	20	21	21	22	22	22	22	23	23	23	24	24
4,700	13	15	16	17	18	19	20	20	21	21	21	22	22	22	23	23	23	24	24	24
4,800	13	15	17	18	18	19	20	20	21	21	22	22	22	23	23	23	23	24	24	24
4,900	13	15	17	18	19	19	20	20	21	21	22	22	22	23	23	23	24	24	24	24
5,000	14	16	17	18	19	19	20	21	21	21	22	22	23	23	23	24	24	24	24	25
5,500	14	16	17	18	19	20	21	21	22	22	23	23	23	24	24	24	25	25	25	26
6,000	14	17	18	19	20	21	21	22	22	23	23	24	24	25	25	25	26	26	26	26
6,500	15	17	19	20	21	21	22	23	23	24	24	25	25	25	26	26	26	27	27	27
7,000	15	18	19	20	21	22	23	23	24	24	25	25	26	26	26	27	27	27	28	28
7,500	16	18	20	21	22	22	23	24	24	25	25	26	26	27	27	27	28	28	28	29
8,000	16	18	20	21	22	23	24	24	25	26	26	26	27	27	28	28	28	29	29	29
8,500	16	19	21	22	23	24	24	25	26	26	27	27	28	28	28	29	29	29	30	30
9,000	17	19	21	22	23	24	25	25	26	27	27	28	28	29	29	29	30	30	30	31
9,500	17	20	21	23	24	25	25	26	27	27	28	28	29	29	29	30	30	31	31	31
10,000	17	20	22	23	24	25	26	27	27	28	28	29	29	30	30	30	31	31	32	32

Values at an operating pressure of 6 bar and a pressure drop of 0.5 bar
Design example: At a required air flow rate of 2,000 liters per minute and a tubing length of 10 m, the required internal diameter is 15 mm.

Questionnaire F 350 | FIPA Gripper assembly

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From:

Company: _____

Name: _____

Street: _____

City/Country/Zipcode: _____

Phone/Fax: _____

Email: _____

Industry: _____

Please complete the following questionnaire carefully so that we can select the optimal product for you.

Please help us to offer you the best service:
> Please send us 3D-CAD data of your part, tool and sprue (in STEP or IGES file format)
> If you have no 3D-CAD data available, please send us 2D drawings with measure details
> If possible, please send us a photo or a sample
> Please send us drawings of the robot adapter (2D, AutoCAD or PDF)

We will contact you if important information is missing. Please note, only if all information is completely available, we can ensure the optimal choice for you.

Handling

1. Robot type

☐ Linear
☐ Swivel axes _____ No. of axes
☐ Model name _____

Robot entry ☐ Top ☐ Side
Robot wrist flip ☐ Yes ☐ No
Robot wrist rotation ☐ Yes ☐ No
Robot payload capacity _____ kg

Existing robot side quick-changer
☐ Yes ☐ No
Manufacturer/Type:
_____

2. Media supply

Number of vacuum circuits _____
Number of compressed air circuits
_____ bar (_____ psi)
Hose diameter _____ mm
☐ OD ☐ ID
Hose length _____ mm

3. Vacuum generation

☐ By FIPA
☐ By the customer
☐ Number of ejectors ____ Type ____
☐ Pump
☐ Side channel blower
☐ Other: _____

4. Field bus connection

☐ ASI
☐ Profibus
☐ Other: _____
_____
_____

5. Electric gripper system interface – continued on page 2

Sensor type ☐ PNP ☐ NPN

Electrical connector type (robot side):

☐ M8 connector (3 pins) (female connector at robot)
☐ M12 connector (4 pins) (female connector at robot)
☐ SUB-D connector (25 pins) (female connector at robot, please attach specification incl. pin-out!)

5. Electric gripper system interface – continued from page 1

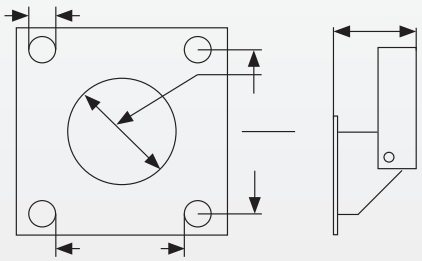
☐ Electrical contacts at quick-change system (please attach specification incl. pin-out!)

☐ Other (please specify) _____

In order to keep the wiring simple and to save digital inputs at the controller unit, sensors can be AND-combined to supply a common output signal. This common output signal will be positive as long as all sensors supply a positive output signal. Please specify which sensors shall be AND-combined (e.g. “all part detection sensors”): _____

Gripper Mounting

1. Sketch – robot adapter plate



2. Robot adapter plate

Size _____ mm

Spring loaded ☐ Lift _____ mm

Type: _____

Name: _____

3. Gripper base plate

Size _____ mm

Spring loaded ☐ Lift _____ mm

Type: _____

Name: _____

4. Comments: _____

Tool

1. Tool opening size _____ mm

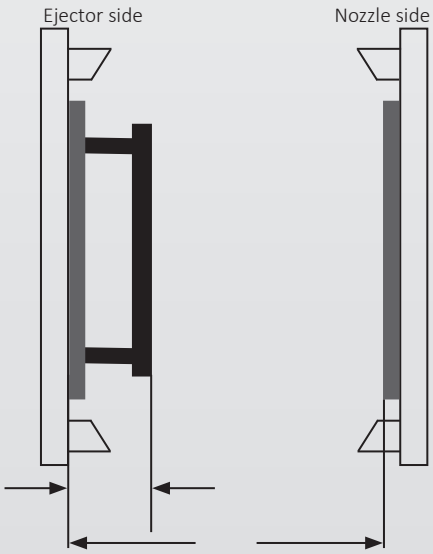
2. Robot space requirement in x-direction _____ mm

Robot space requirement in y-direction _____ mm

Robot space requirement in z-direction _____ mm

Die-casting machine

1. Sketch



Tie-bar thickness: _____ mm

Tie-bar spacing - horizontal: _____ mm

Tie-bar spacing - vertical: _____ mm

Typ of mold: ☐ Hot runner ☐ 3-plate mold ☐ Vertical corepull ☐ Subgated ☐ Other explain below

_____

_____

Ejection: ☐ Moving half ☐ Fixed half

Do parts fall or sag during or after ejection? ☐ Yes ☐ No

Is any force, twisting, bending, lifting required to remove parts?

☐ Yes ☐ No

Double stroke? ☐ Yes ☐ No

Description _____

Questionnaire F 350 | FIPA Gripper assembly

Component

1. Material

- ☐ Fabric
- ☐ Film
- ☐ Metal
- ☐ Magnetic material
- ☐ Silicon
- ☐ Plastic _____ Type
- ☐ Other: _____

2. Surface

- ☐ Non-marking
- ☐ Matt
- ☐ Shiny
- ☐ Textured
- ☐ Grained
- ☐ Other: _____

3. Subsequent process stages

- ☐ Cutting station
- ☐ Other: _____

4. Feeding of injection-mold

- ☐ Roll
- ☐ Magazine
- ☐ Provisioning
- ☐ Vibrating conveyor

5. Further Information

Part name / I.D. _____

Part temperature during ejection: _____ °C (_____ °F)

Total shot weight: _____

Number of cavities: _____

Application

1. Item insert

- ☐ Ejector side
- ☐ Nozzle side

Technical specifications available

☐ Yes ☐ No

2. Item placed on:

- ☐ Conveyor belt
- ☐ Pallet
- ☐ Container
- ☐ Tray
- ☐ Fixture
- ☐ Other

3. Cycle time:

Withdrawal time _____ seconds

Feeding time _____ seconds

Total cycle time _____ seconds

4. Description of process

Gripper design

1. Gripper elements

☐ Vacuum cups	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	
☐ Gripper fingers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	With monitoring ☐ Yes ☐ No
☐ Parallel grippers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	With monitoring ☐ Yes ☐ No
☐ Sprue grippers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	With monitoring ☐ Yes ☐ No
☐ Magnetic grippers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	
☐ Air nippers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	
☐ Needle grippers	_____ (quantity)	☐ Fixed	☐ Spring loaded	☐ Lifting cylinder	

2. Parts inspection

☐ Vacuum _____ (quantity)

☐ Optical _____ (quantity)

3. Degating required

☐ N/A

☐ On EOAT

☐ Separate degate-station

4. Further information

Gripper dimensions (LxWxH in mm) _____

Dimenstions of inserted parts (preferably supply drawing or sample part) _____

_____

☐ Functional/requirement specification	☐ Yes	☐ No	of _____ to be used
☐ Relevant factory standards	☐ Yes	☐ No	of _____ to be used

5. Comments

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Questionnaire F 400 | Customized grippers

To:

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FIPA Ltd. | Thailand
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From:

Company: _____

Name: _____

Street: _____

City/Country/Zipcode: _____

Phone/Fax: _____

Email: _____

Industry: _____

Please complete the following questionnaire carefully so that we can select the optimal product for you.

Robot-gripper interface

1. Robot type: _____

2. Handling type

- ☐ Linear
- ☐ Swivel axes _____ No. of axes
- ☐ Delta robot (3-leg); FlexPicker

Model name: _____

_____

- ☐ Other _____

2. Media supply

Number of vacuum circuits _____

Number of compressed air circuits

_____ bar (_____ psi)

Hose diameter _____ mm

Hose length _____ mm

3. Vacuum generation

- ☐ by FIPA
- ☐ by the customer
- ☐ Number of ejectors _____

Model name: _____

- ☐ Pump

Model name: _____

- ☐ Side channel blower

Model name: _____

- ☐ Other: _____

4. Comments: _____

_____

Application

1. Type of product to be handled: _____

Product weight: _____ g

Product dimensions (LxWxH): _____ mm

CAD available: ☐ yes ☐ no

2. Item picked from

- ☐ Conveyor belt
- ☐ Pallet
- ☐ Container
- ☐ Tray
- ☐ Fixture
- ☐ Other

3. Item placed on

- ☐ Conveyor belt
- ☐ Pallet
- ☐ Container
- ☐ Tray
- ☐ Fixture
- ☐ Other

4. Cycle time

Pick-up _____ seconds

Placement _____ seconds

5. Description of application

Gripper Design

Integrated vacuum generation required ☐ Yes ☐ No

Media feed-through required: ☐ Yes ☐ No

Interference contours (e.g. gripping space between products):

Labelling

Colouring

Special cleaning regulations

Description of process

Current solution

Improvements required

Questionnaire F 200 | Cutting Test

To:

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From:

Company: _____

Name: _____

Street: _____

City/Country/Zipcode: _____

Phone/Fax: _____

Email: _____

Industry: _____

Please answer the following questions carefully, so we can make the best cutting tests for you. Please note that you can type in the document; printing out is not necessary. Please email or fax this form back to us.

1. Please check appropriate box

FIPA customer? ☐ Yes ☐ No ☐ Urgent ☐ Please call

2. Material

☐ Copper specification (e.g. CuZn) _____ annealed

☐ Steel specification (e.g. St 37) _____ hardened

☐ Other specification _____

☐ Plastic specification (e.g. PA, PP, POM) _____

Glass fibre reinforced _____ %

Temperature of workpiece when cut _____ °C _____ ° F)

3. Dimensions

diam. _____ mm, _____ x _____ mm

☐ **Sample of workpiece attached**

To:

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From:

Company: _____

Name: _____

Street: _____

City/Country/Zipcode: _____

Phone/Fax: _____

Email: _____

Industry: _____

Please answer the following questions carefully so we can select the vacuum unit best suited for your purpose.
Please note that you can type in the document; printing out is not necessary. Please email or fax this form back to us.

1. Please quote for the following application:

_____

2. What kind of parts are you handling?

_____

3. The objects are

- ☐ Round
- ☐ Oval
- ☐ Square
- ☐ Rectangular
- ☐ Curved
- ☐ Unstable

3a. Material

.....

4. Dimensions, Weight

Length _____mm

Width _____ mm

Height _____ mm

Diam. _____ mm

Weight _____ g/kg

5. Lifting direction







6. Surface

- ☐ Smooth
- ☐ Rough
- ☐ Textured
- ☐ Rippled
- ☐ Oily
- ☐ Scaled
- ☐ Wet
- ☐ Dry
- ☐ Porous

7. Temperature

Briefly

_____ °C _____ °F)

Continously

+ _____ °C _____ °F)

- _____ °C _____ °F)

8. Use

- ☐ Indoor
- ☐ Outdoor

9. Vacuum generating:

☐ Vacuum pump ☐ Vacuum ejector ☐ existing ☐ not existing

Power capacity _____

Vacuum Cups

16. In use?

☐ No ☐ Yes, following type _____

17. Annual requirement? **approx.** _____ pieces

10. Duty cycle _____

11. Distance _____

12. Suck in time _____

13. Positioning accuracy _____

14. Acceleration _____

15. Environment _____

FIPA will gladly perform individual handling tests free of charge on samples of the objects to be carried. Alternatively please feel free to request sample cups for your own tests.

Questionnaire F 150 | Vacuum pumps

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Fax +66 2 294-4149 | sales.th@fipa.com

From:

Company: _____

Name: _____

Street: _____

City/Country/Zipcode: _____

Phone/Fax: _____

Email: _____

Industry: _____

Please answer the following questions carefully so we can select the vacuum pump best suited for your purpose. Please note that you can type in the document; printing out is not necessary. Please email or fax this form back to us.

1. Please specify the branch of industry in which the pump will be used

☐ Packaging ☐ Food & beverage ☐ Glass
☐ Graphic arts ☐ Wood-working ☐ Plastic
☐ Marble/Stone ☐ Metal/Sheet metal
☐ _____

2. What will the pump be used for?

☐ Handling ☐ Degasification of silicon mixture
☐ Vacuum clamping ☐ Degasification of synthetic resin
☐ Degasification of laminated materials
☐ Evacuating tanks: Liters: _____ / Time: _____

3. Location of pump

☐ Indoor ☐ Outdoor ☐ Mobile
☐ Temperature range: ____ to ____ °C ____ to ____ °F)
☐ Relative humidity (e.g. tropical areas) _____ %

4. Medium to be sucked

☐ Dry air ☐ Humid air ☐ Oily air ☐ Water vapor
☐ Water ☐ Grinding sludge
☐ Aggressive gases (which): _____
Temperature of medium: _____ °C (_____ °F)

5. Suction capacity _____ m^3/h or _____ NL/min

6. Vacuum level (in continuous operation):

_____ mbar _____ inHg) or _____ % vacuum

7. Duty cycle

Continuous operation ☐ 8 - 10 h/day ☐ 16 - 18 h/day
Intermittent operation:
Operating interval of pump? _____

8. Back diffusion

Must leakage of the medium be prevented when the pump is switched off? (Check valve for oil-lubricated vacuum pump) Yes ☐ No ☐

9. Maintenance of vacuum

Must the vacuum be maintained for a certain period (e.g. for putting down loads in case of power failure)?
☐ Yes ☐ No

10. Vacuum tank

☐ Available (_____ liters) ☐ Desired (_____ liters)
☐ Capacity suggested by FIPA

11. Maintenance

Is the pump accessible for maintenance? ☐ Yes ☐ No
Is sufficient cooling available for the pump? ☐ Yes ☐ No
Is remote monitoring of pump condition possible? (e.g. oil level)
☐ Yes ☐ No

12. General information if new pump is desired

☐ Only one pump is required
☐ Number of pumps needed per year: _____
☐ Delivery desired within: _____
☐ Replacement

13. In case of replacement please fill out

☐ Brand until now _____ ☐ Suction capacity _____
☐ Vacuum level _____ ☐ Electricity supply _____

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FIPA challenge accepted

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