VACUUM COMPONENTS

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 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.

Inhalt

Notizen:

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

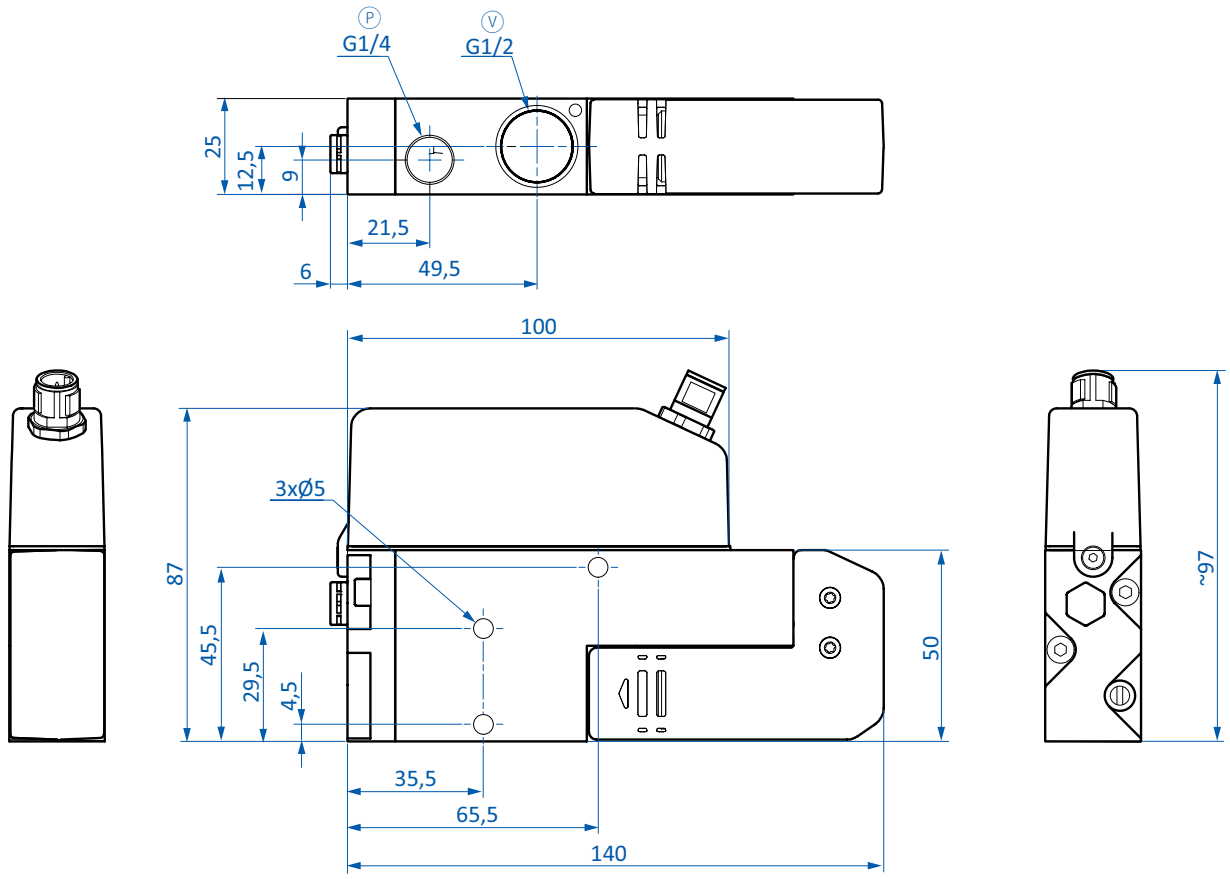
> Supply voltage 24 VDC
> Voltage output signals 24 VDC (PNP) max. 100 mA
> Voltage input signals 24 VDC (PNP)
> Protection class IP65 (with connector)
> Operating temperature 0 - +50 °C (32 - 122 °F)

Model selection

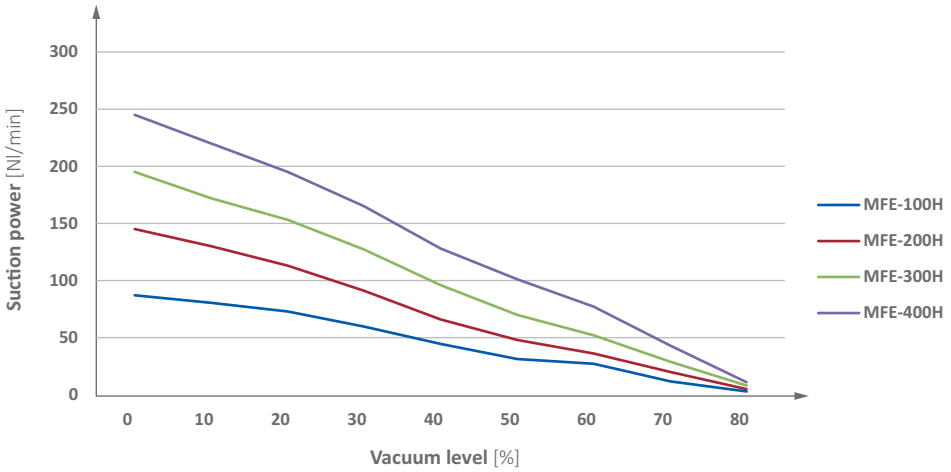
Ordering example:
MFE-100H-A-D-S = 80 Nl/min, operating principle NC, connection M12 5-pin, with silencer
MFE-400H-B-S-S = 245 Nl/min, operating principle NO, connection M12 8-pin, with silencer

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

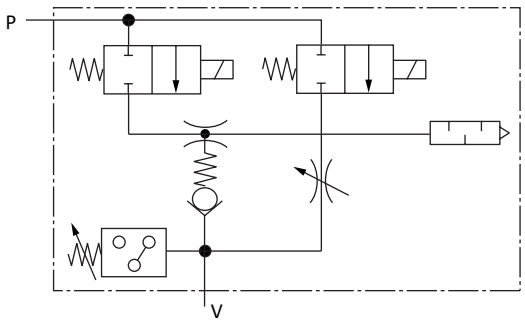


Suction power against vacuum level [Nl/min] at 5 bar (72.5 psi)

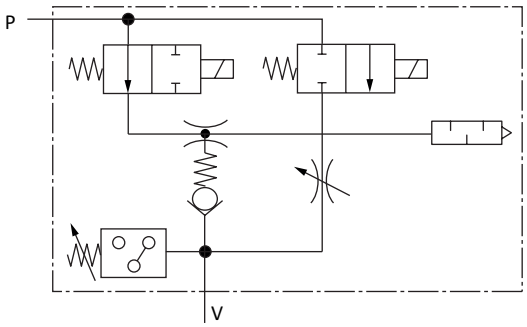


Wiring diagrams

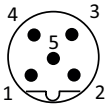
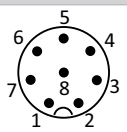
MFE-xxxx-A-x-x NC Ejector



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

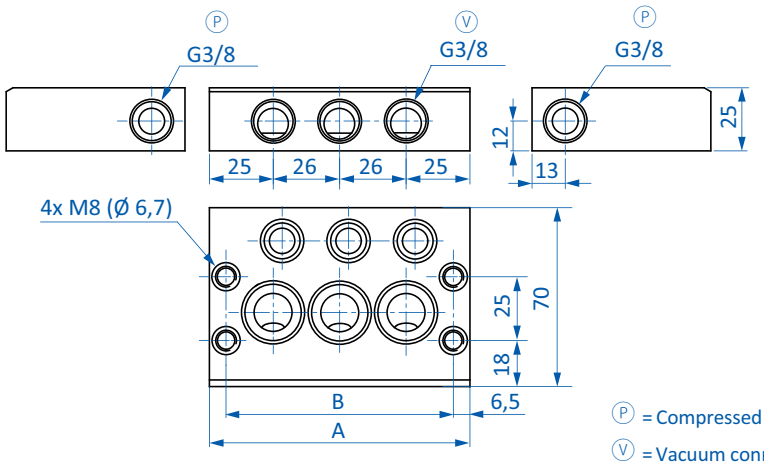
Accessories: cable and adapter

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

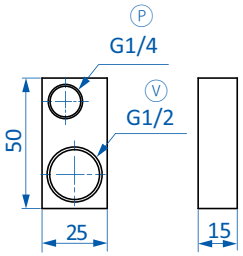
MFE-xxxx-x-S-x
> 20.558 Connecting cable 2 m 90° elbow

Accessories: mainfold and blind plate

Manifolds



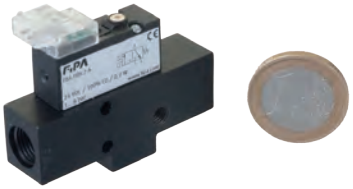
Blind plate



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

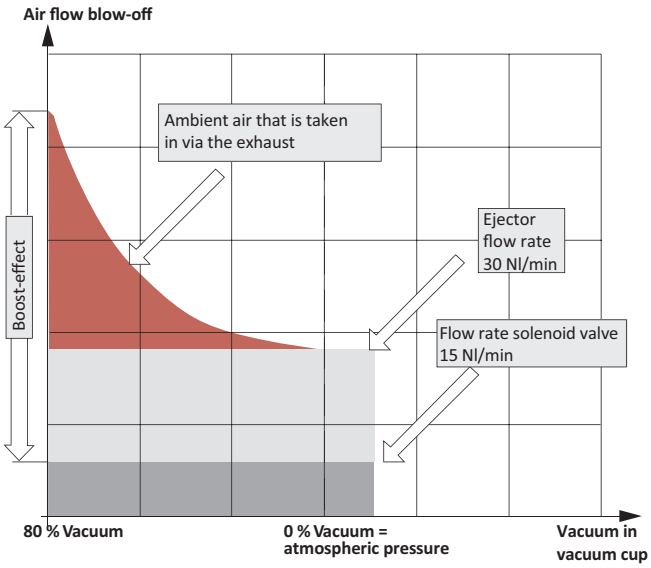
Technical data

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

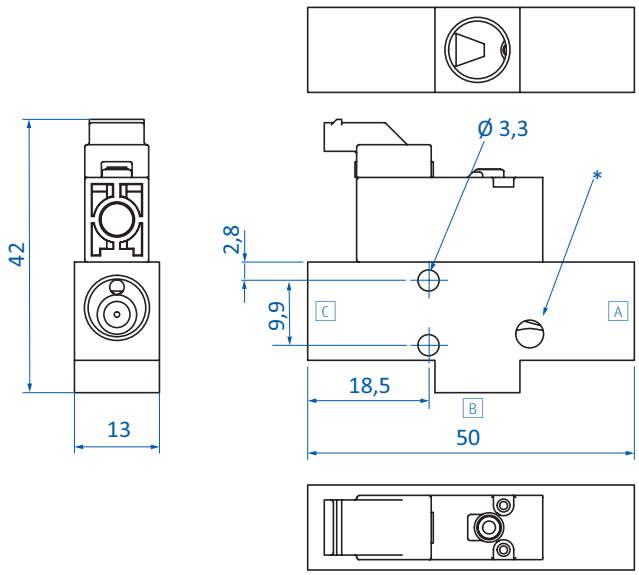


Evacuation / Blow-off time

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

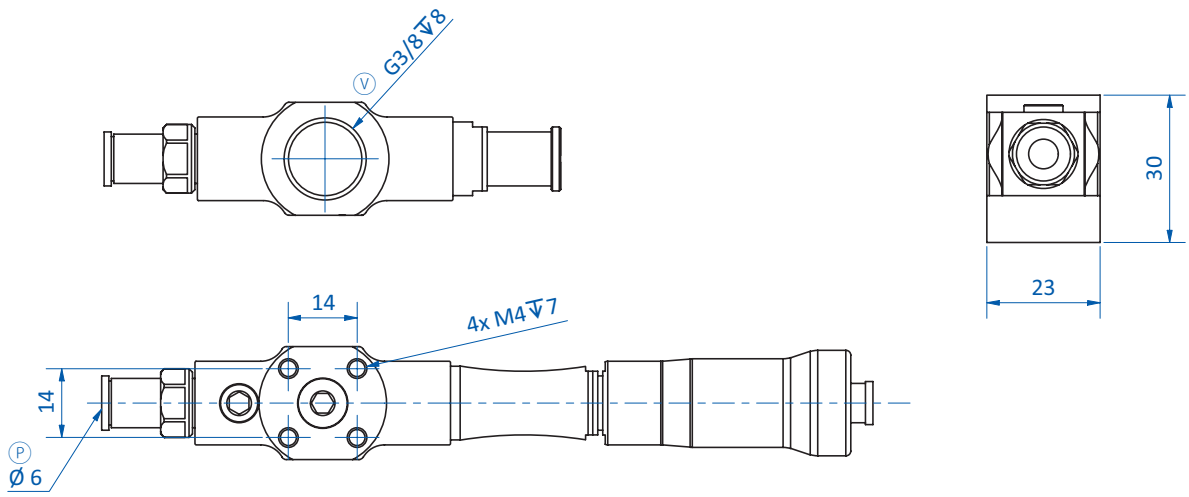
Ordering example:
FGS-N-S08-2 = 46 Nl/min, low air consumption, without silencer
FGS-N-P12-3-S = 68 Nl/min, low operating pressure, with silencer

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)

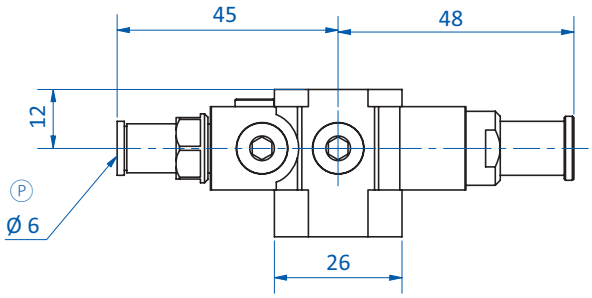
Suitable vacuum switches

> 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

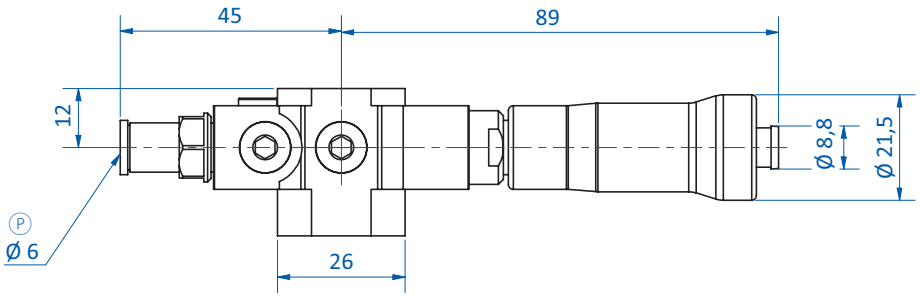
Dimensions



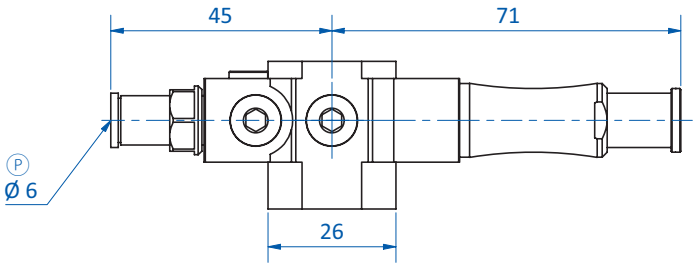
FGS-N-S08-2 | FGS-N-S08-2-S | FGS-N-S08-3 | FGS-N-S08-3-S | FGS-N-P12-2 | FGS-N-P12-2-S | FGS-N-P12-3 | FGS-N-P12-3-S



FGS-N-S08-2 | FGS-N-P12-2



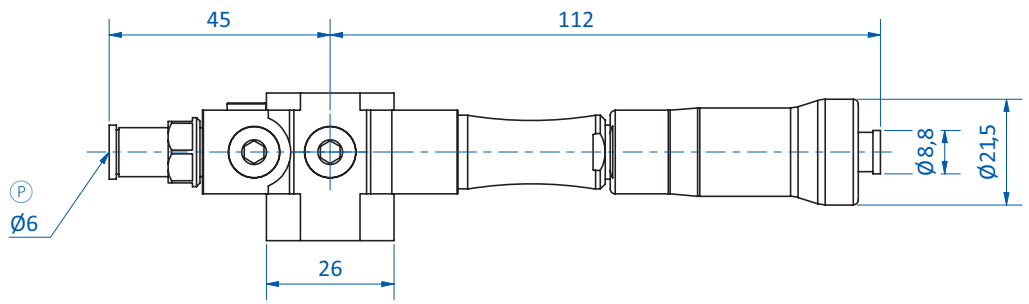
FGS-N-S08-2-S | FGS-N-P12-2-S



FGS-N-S08-3 | FGS-N-P12-3

Ⓟ = Compressed air connection Ⓥ = Vacuum connection

Dimensions

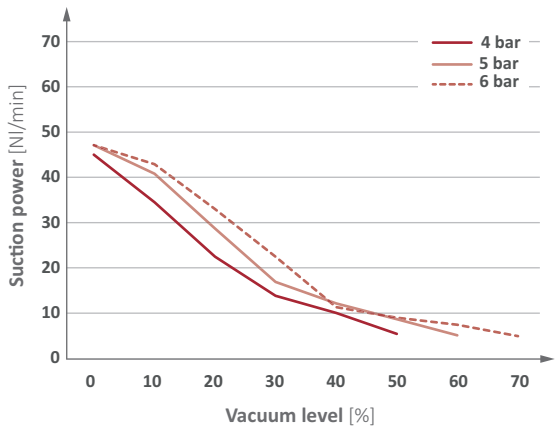


FGS-N-S08-3-S | FGS-N-P12-3-S

Ⓟ = Compressed air connection Ⓥ = Vacuum connection

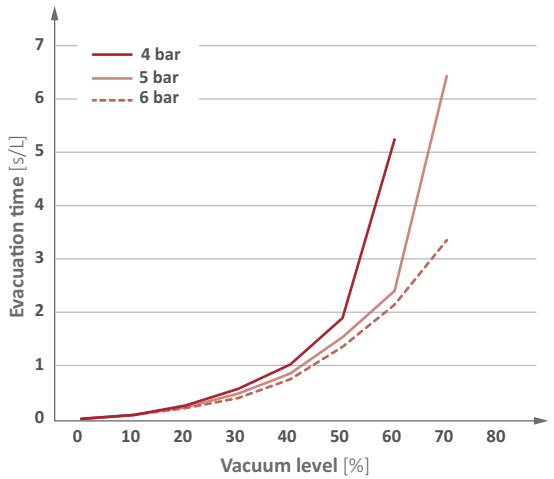
Diagrams

> Suction power against vacuum level [Nl/min]



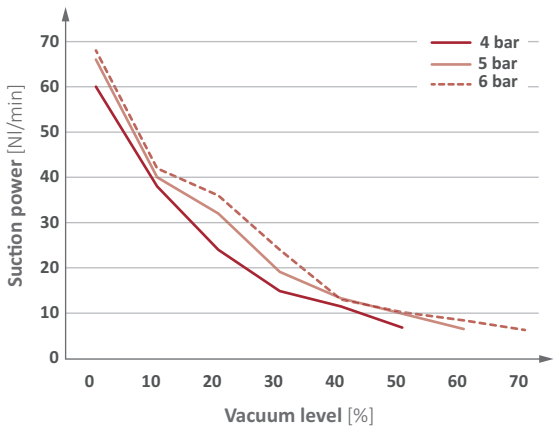
FGS-N-S08-2 | FGS-N-S08-2-S

> Evacuation time against vacuum level [s/L]



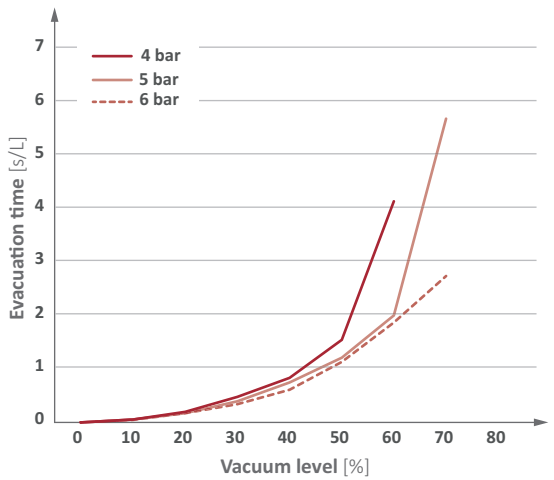
FGS-N-S08-2 | FGS-N-S08-2-S

> Suction power against vacuum level [Nl/min]



FGS-N-S08-3 | FGS-N-S08-3-S

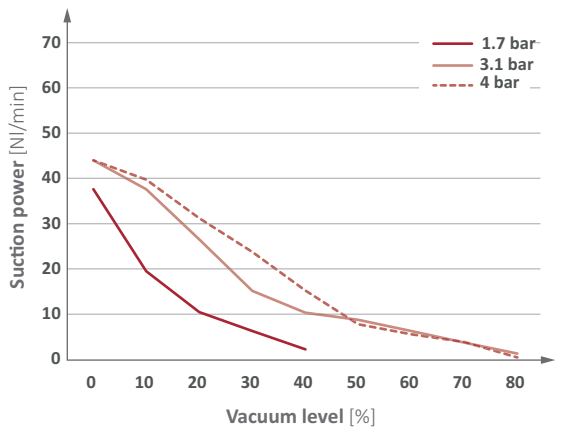
> Evacuation time against vacuum level [s/L]



FGS-N-S08-3 | FGS-N-S08-3-S

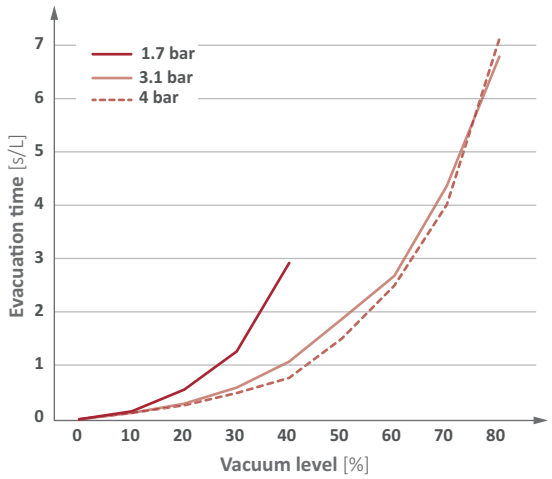
Diagrams

> Suction power against vacuum level [Nl/min]



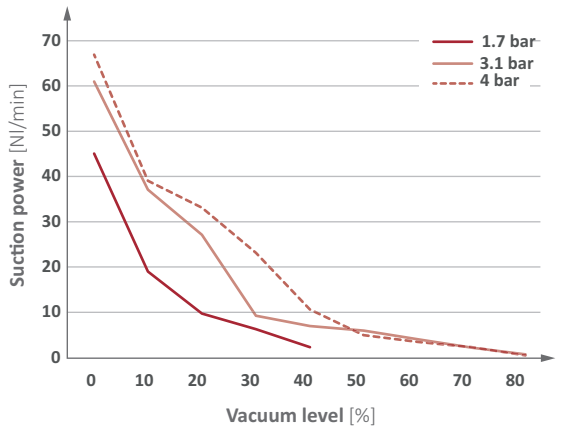
FGS-N-P12-2 | FGS-N-P12-2-S

> Evacuation time against vacuum level [s/L]



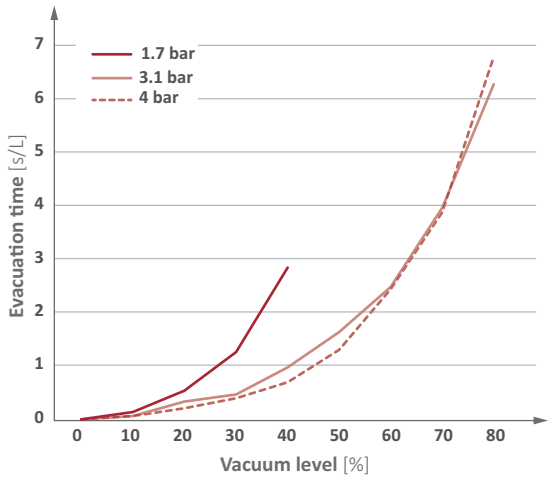
FGS-N-P12-2 | FGS-N-P12-2-S

> 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

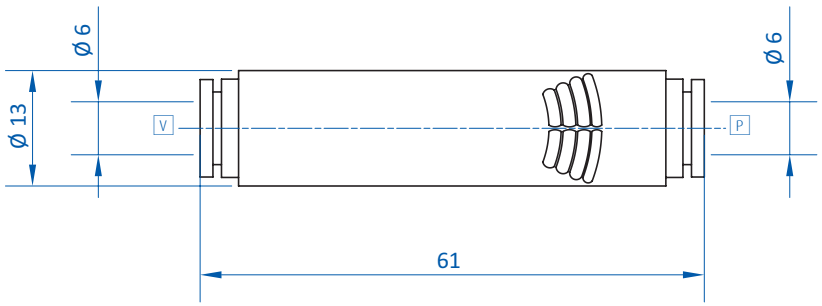
Product notes

> 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

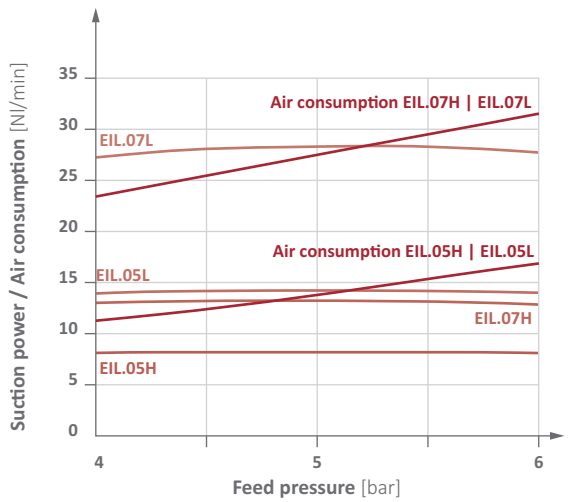
Dimensions



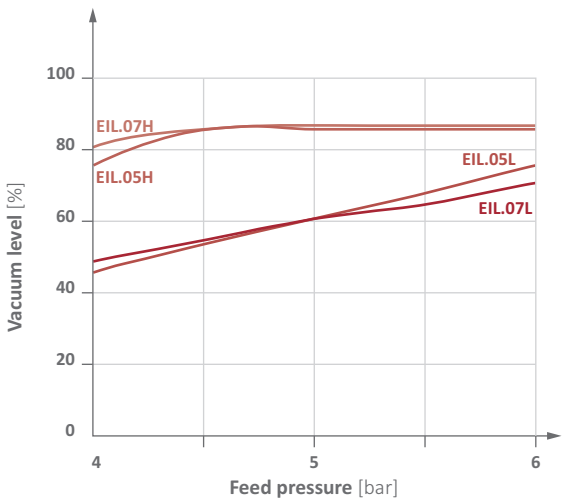
V = Vacuum connection P = Compressed air connection

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

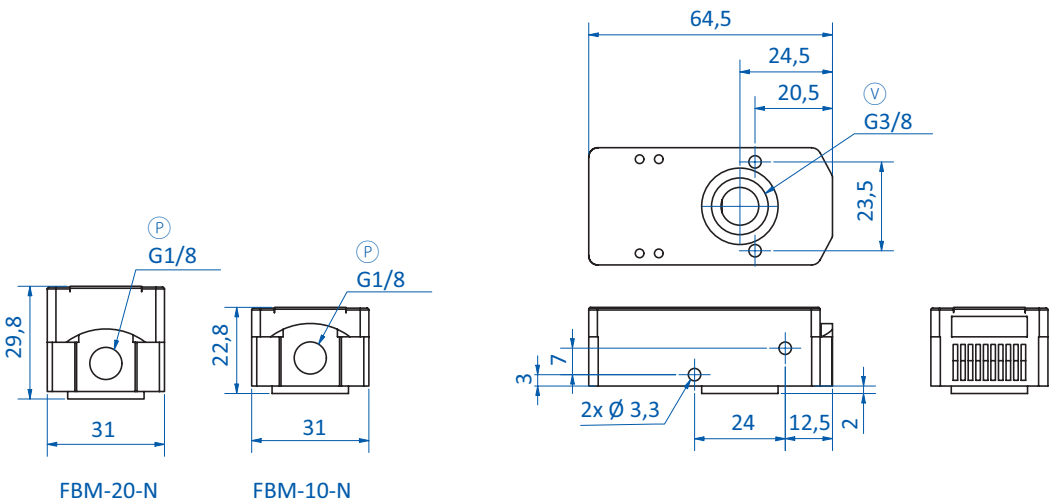
Technical data

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

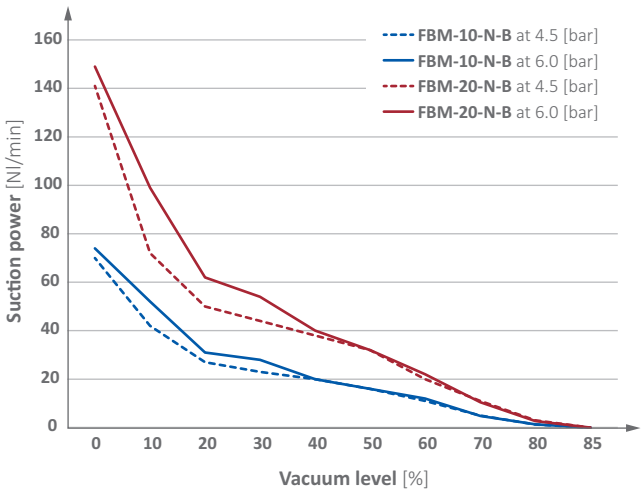
Dimensions



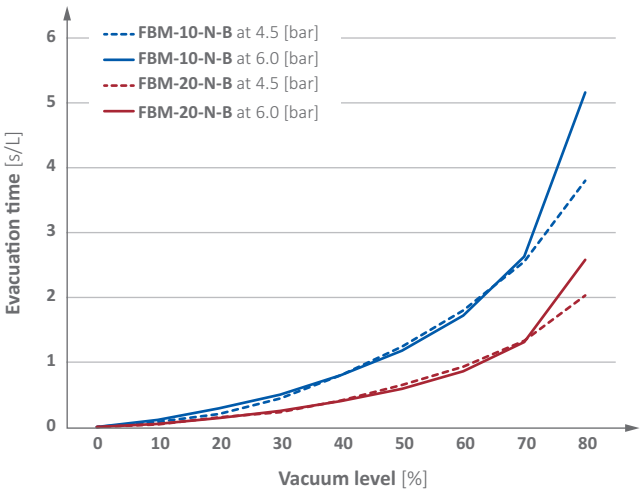
Ⓟ = Compressed air connection Ⓥ = Vacuum connection

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

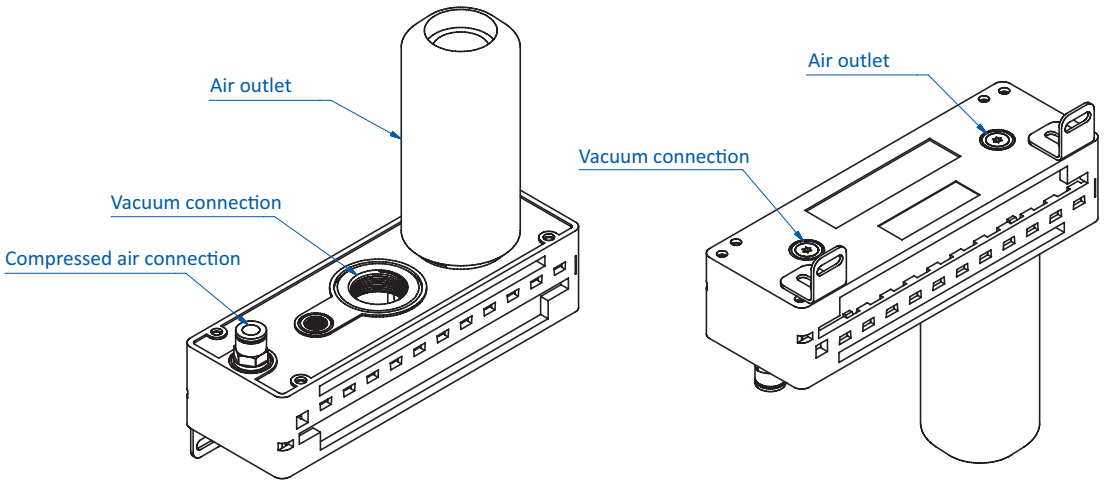
Model selection

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)

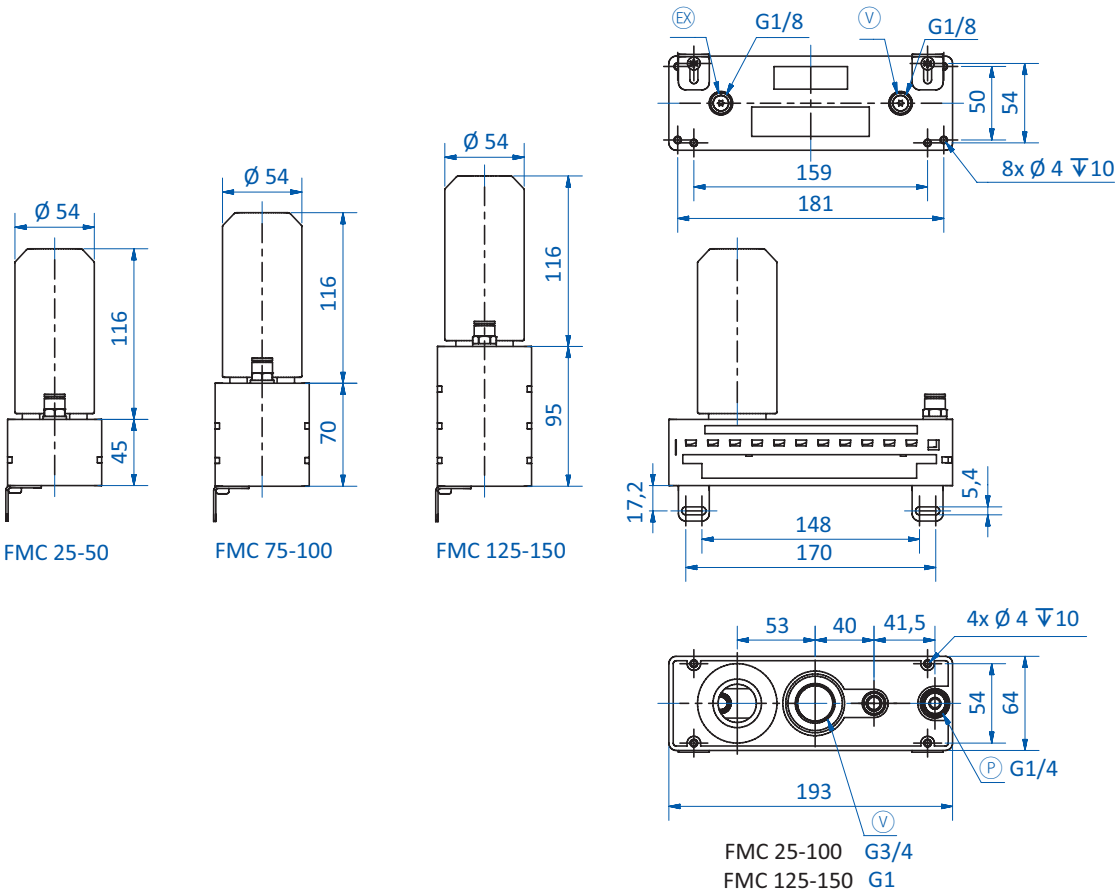
** Suction power see technical data*

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



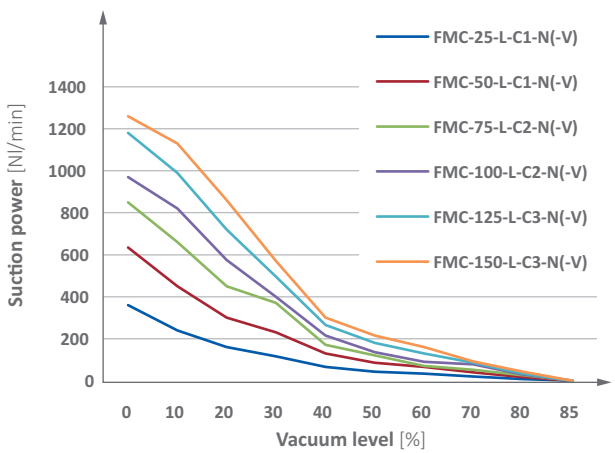
Dimensions



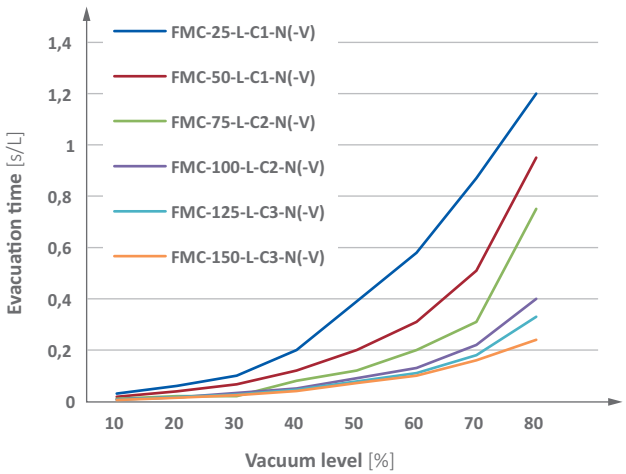
Ⓟ = Compressed air connection Ⓥ = Vacuum connection Ⓔⓧ = Air outlet

Diagrams

> Suction power against vacuum level [Nl/min] at 6 bar (87 psi)

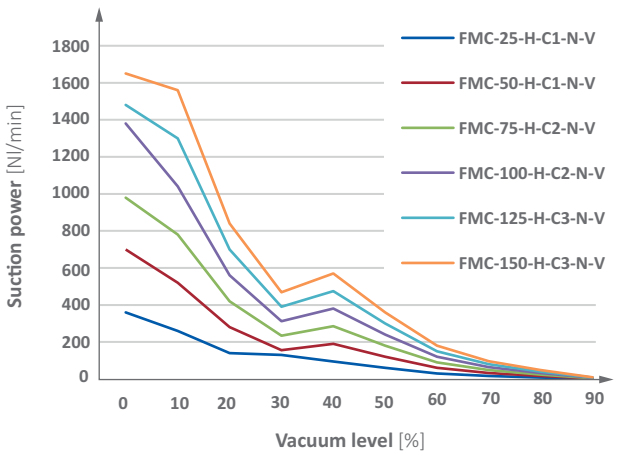


> Evacuation time against vacuum level [s/L] at 6 bar (87 psi)

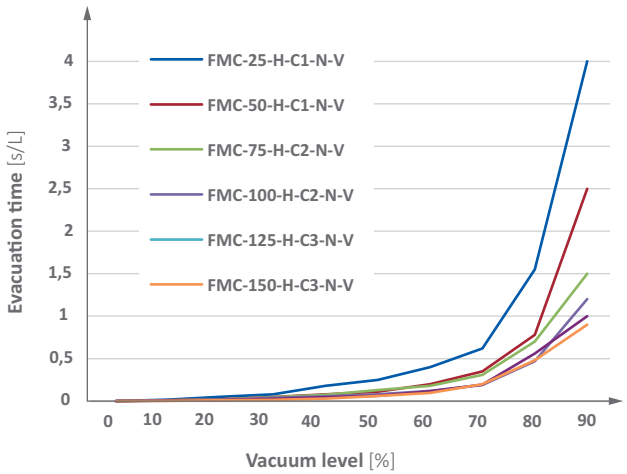


Diagrams

> 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

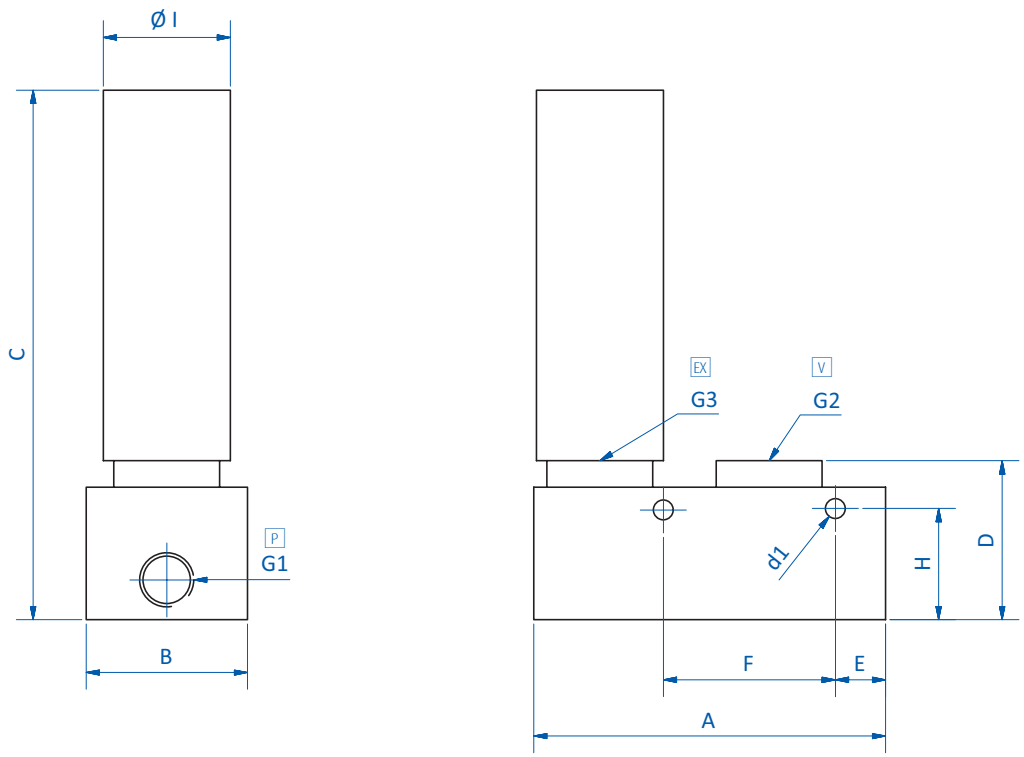
Product notes

> 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

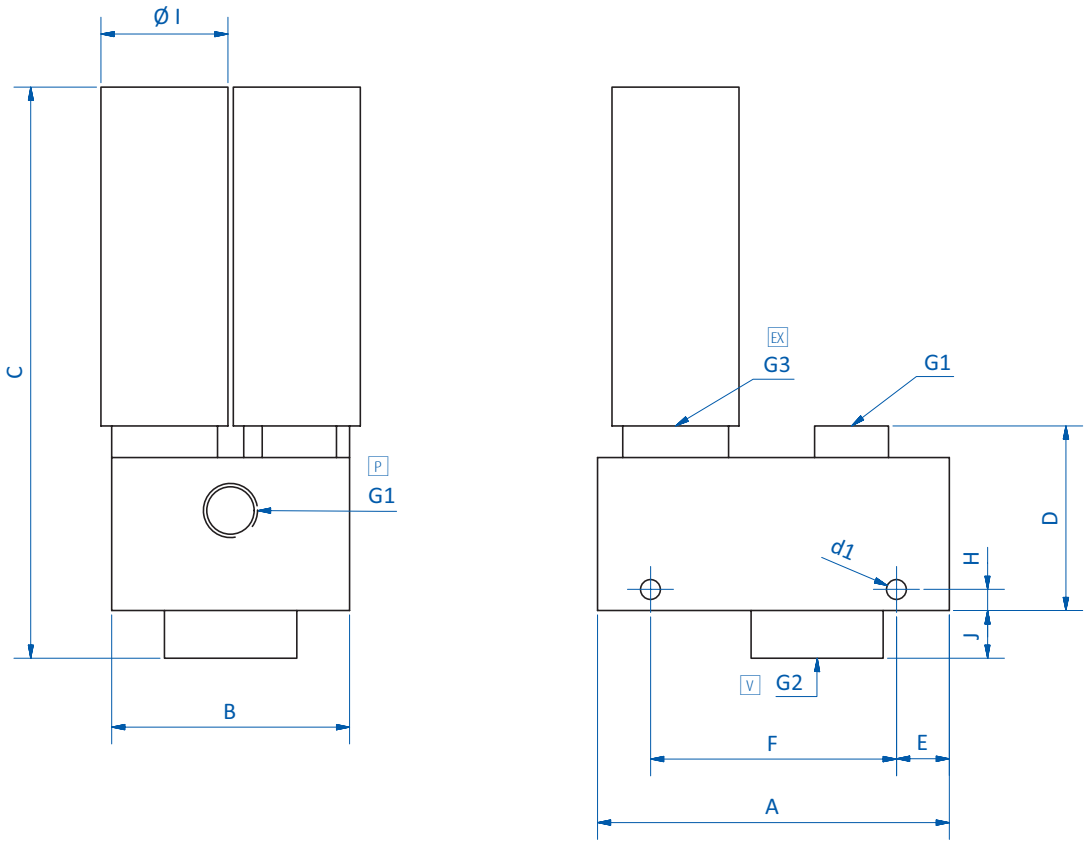
Dimensions



65.310 | 65.320

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

Dimensions

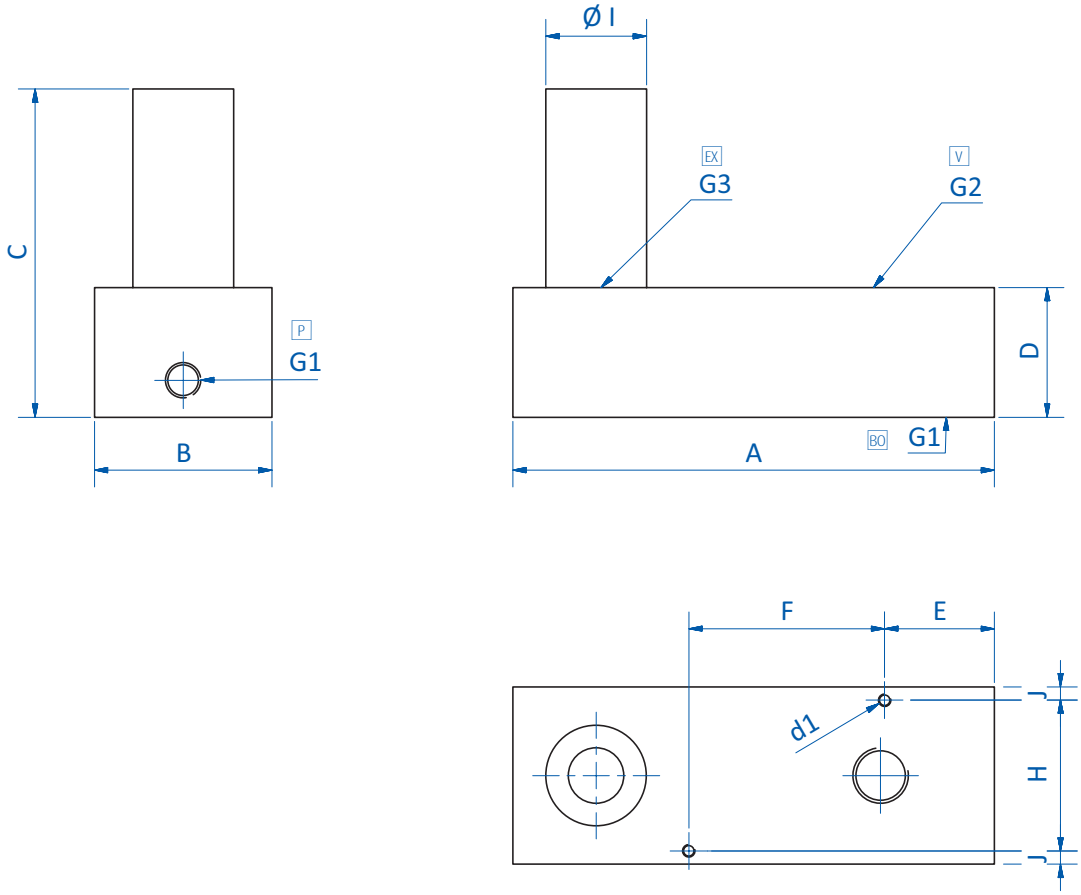


65.330

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

Continued on the next page

Dimensions



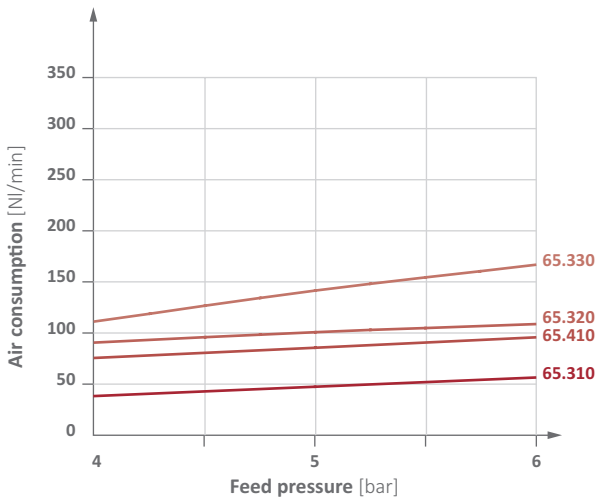
65.410

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Compressed air connection for blow-off

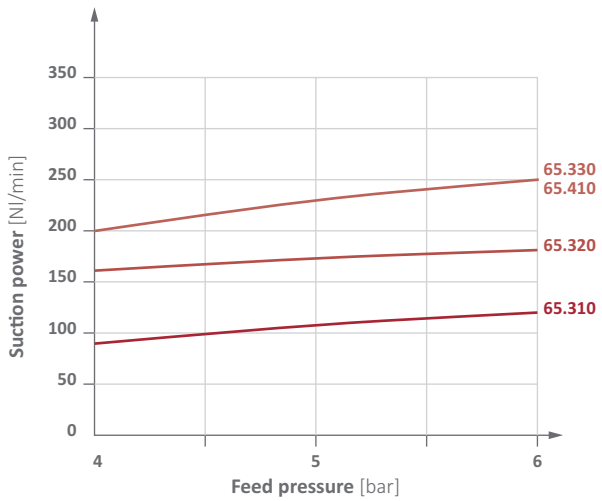
Item no.	G1	G2	G3	A [mm]	B [mm]	C [mm]	D [mm]	d1	E [mm]	F [mm]	H [mm]	Ø I [mm]	J [mm]
65.310	G1/8	G3/8	G3/8	66.5	30.5	100	30	3.7	9.5	32.5	21	24	--
65.320	G1/8	G3/8	G3/8	66.5	30.5	100	30	3.7	9.5	32.5	21	24	--
65.330	G1/8	G1/2	G3/8	66.5	45	107.9	35	3.7	10	46.5	4	24	9
65.410	G1/4	G1/2	G3/4	182	67	124	49	M4	41.5	74	57	38	5

Diagrams

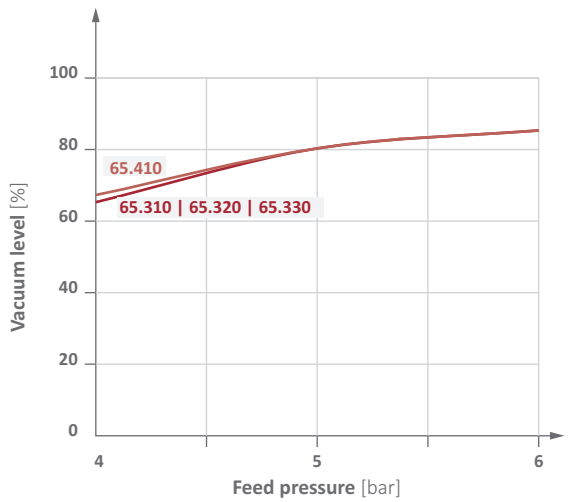
> Air consumption against feed pressure



> 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

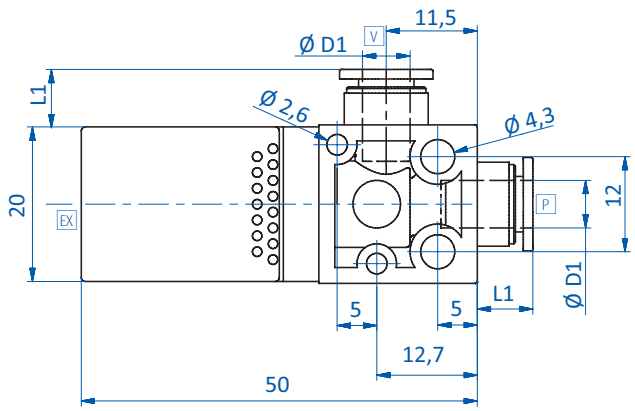
Item no.	Nozzle diameter [mm]	Optimal operating pressure [bar (psi)]	Final vacuum [%]	Suction power [Nl/min]	Air consumption [Nl/min]	Operating temperature [°C (°F)]	Weight [g]	Suitable filter and silencer-set
EBO.05H.4	0.5	5 (72.5)	90	7	11.5	0 - 60 (32 - 140)	18	72.105
EBO.07H.1	0.7	5 (72.5)	93	13	23	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

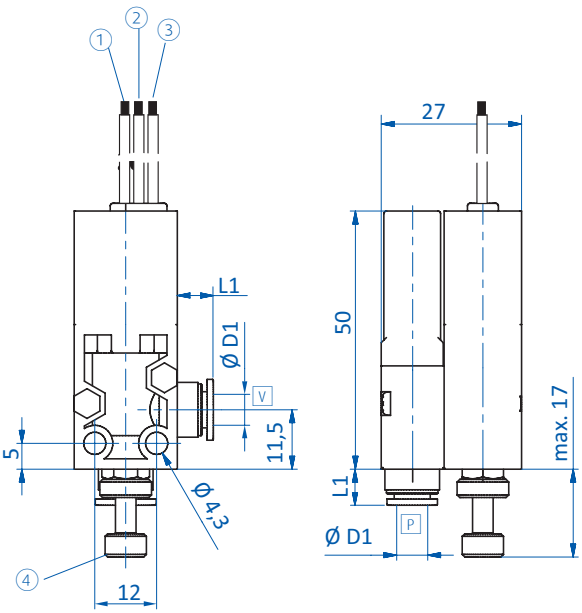
Ordering example:
EBO.05H.4 = Nozzle diam. 0.5 mm for dense products, hose diam. 4 mm, without vacuum switch
EBO.07L.1-S = Nozzle diam. 0.7 mm for porous products, hose diam. 6 mm, with mechanical / electrical vacuum switch

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

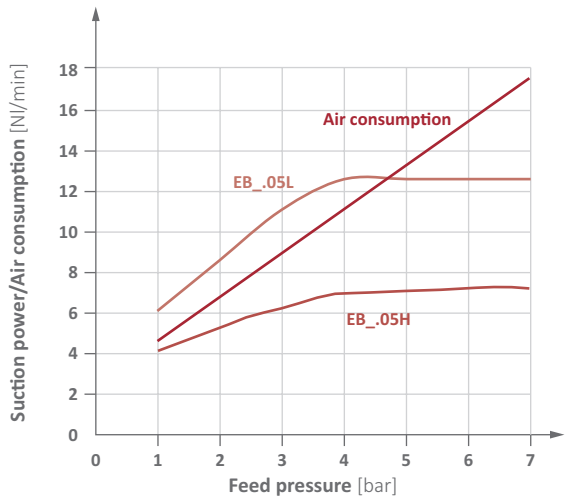
P = Compressed air side with tubing connection V = Vacuum side with tubing connection EX = Exhaust outlet (R) ① = White ② = Red (NC) ③ = Black (NO) ④ = Knurled screw

Continued on the next page

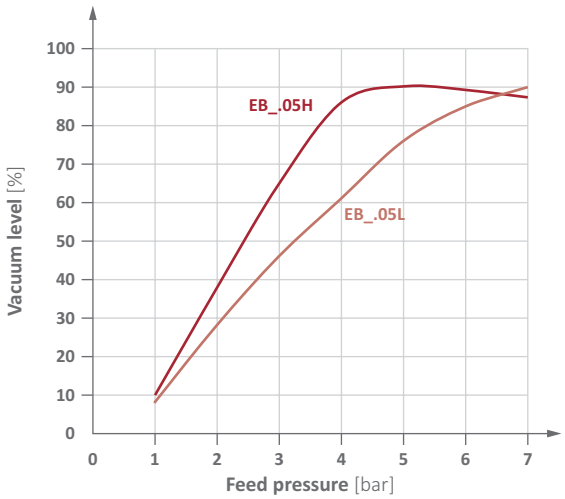
Item no.	Ø **D1** [mm]	**L1** [mm]
EBO.05H.4	4	6.6
EBO.07H.1	6	7
EBO.10H.1	6	7
EBO.12H.1	6	7
EBO.05L.4	4	6.6
EBO.07L.1	6	7
EBO.10L.1	6	7
EBO.07P.1	6	7
EBO.10P.1	6	7
EBO.12P.1	6	7
EBO.05H.4-S	4	6.6
EBO.07H.1-S	6	7
EBO.10H.1-S	6	7
EBO.12H.1-S	6	7
EBO.05L.4-S	4	6.6
EBO.07L.1-S	6	7
EBO.10L.1-S	6	7
EBO.07P.1-S	6	7
EBO.10P.1-S	6	7
EBO.12P.1-S	6	7

Diagrams

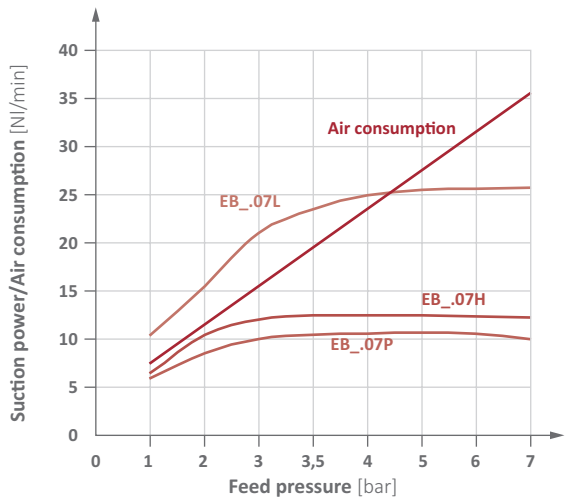
> Suction power and air consumption against feed pressure



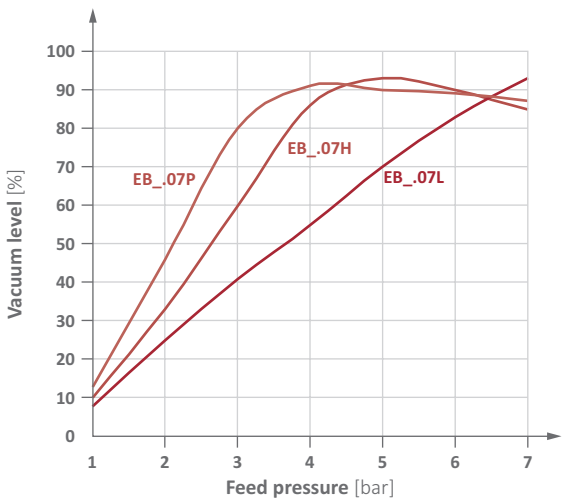
> Vacuum level against feed pressure



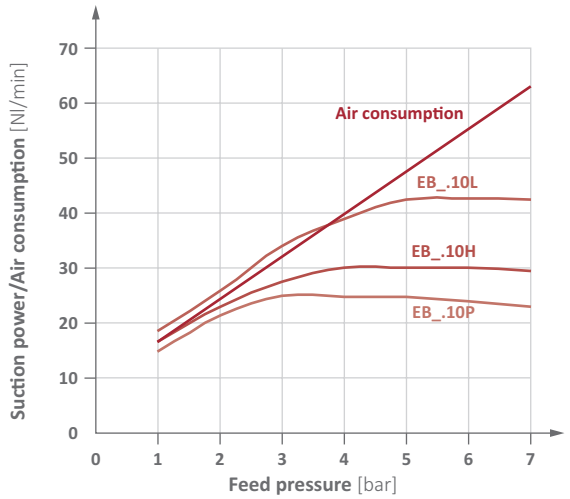
> Suction power and air consumption against feed pressure



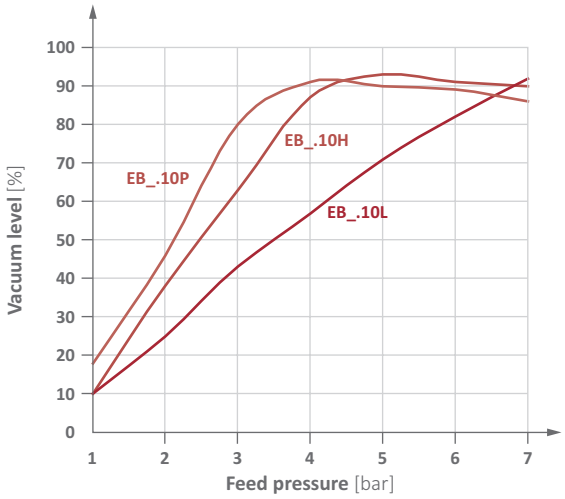
> Vacuum level against feed pressure



> Suction power and air consumption against feed pressure

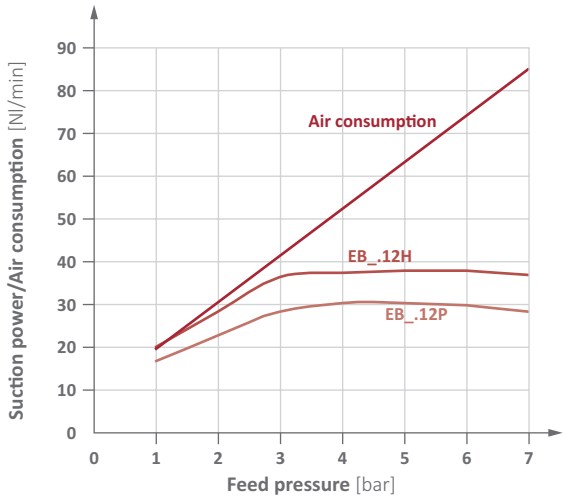


> Vacuum level against feed pressure

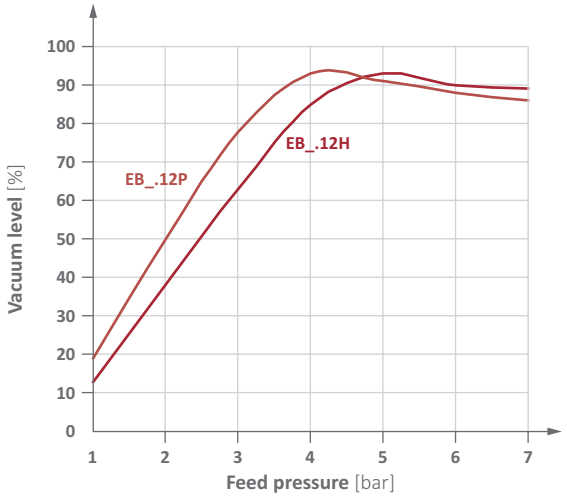


Diagrams

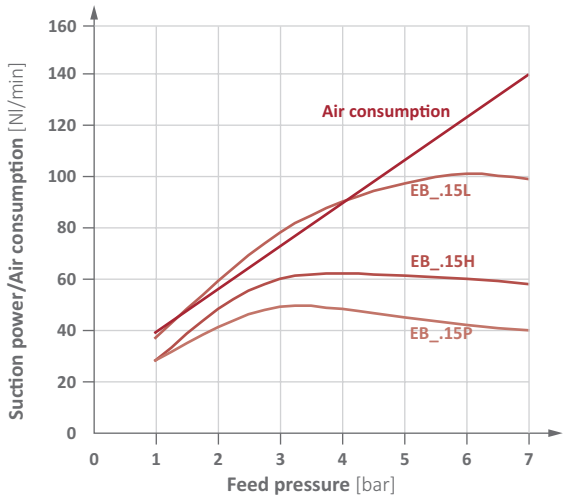
> Suction power and air consumption against feed pressure



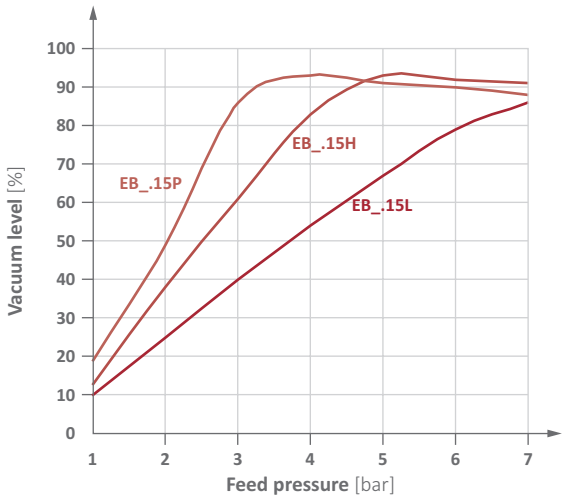
> Vacuum level against feed pressure



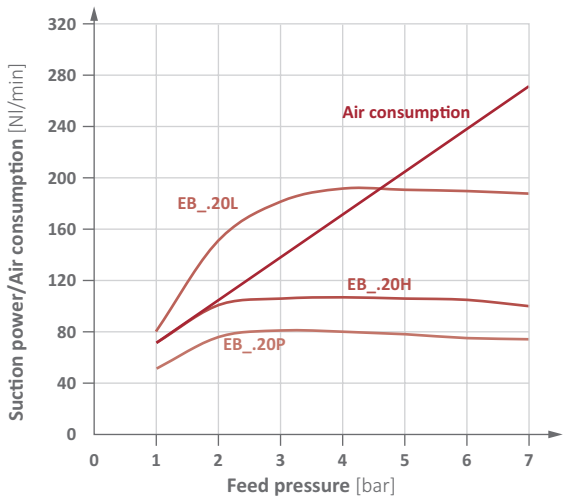
> Suction power and air consumption against feed pressure



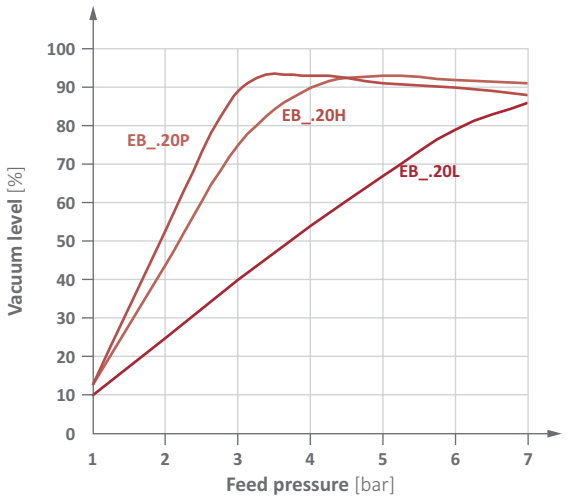
> Vacuum level against feed pressure



> 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

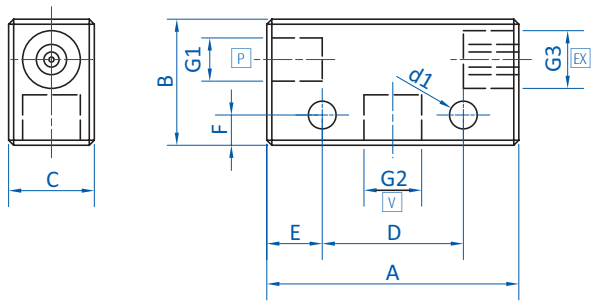
Product notes

> 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

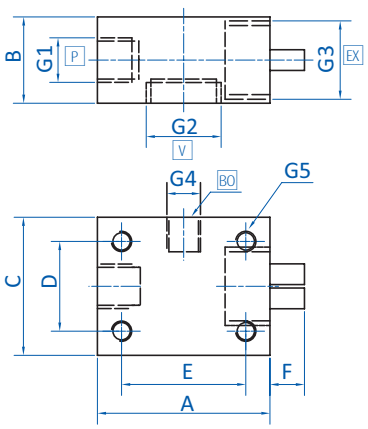
Technical data

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



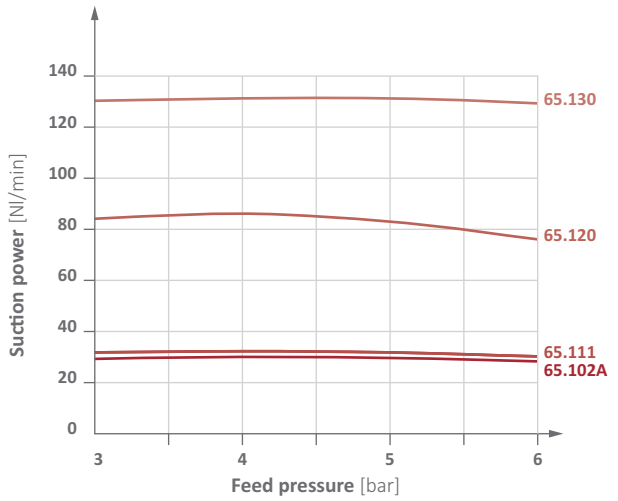
65.111 | 65.120 | 65.130

P = Compressed air connection V = Vacuum connection EX = Exhaust BO = Blow-off (65.111 and 65.130)

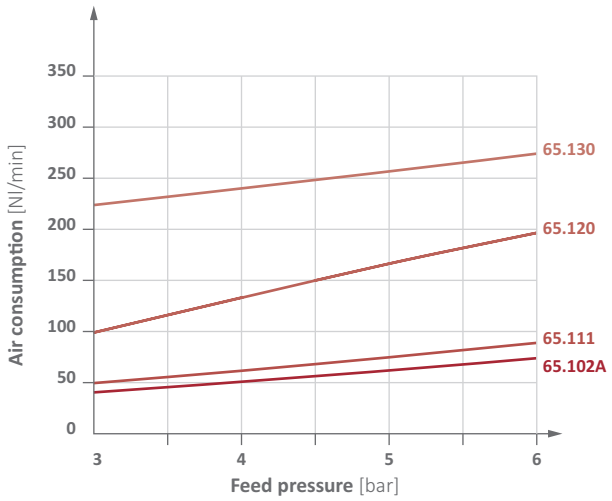
Item no.	G1	G2	G3	G4	G5	A [mm]	B [mm]	C [mm]	D [mm]	d1 [mm]	E [mm]	F [mm]
65.102A	G1/8	G1/4	G1/4	--	--	50	25	17	28	5.5	11	6
65.111	G1/4	G1/2	G3/8	G1/8	6.5	50	25	40	25	--	34	8
65.120	G1/4	G1/2	G1/2	--	M6	50	25	40	25	--	34	10
65.130	G1/4	G1/2	G1	G1/8	M6	60	40	40	25	--	34	--

Diagrams

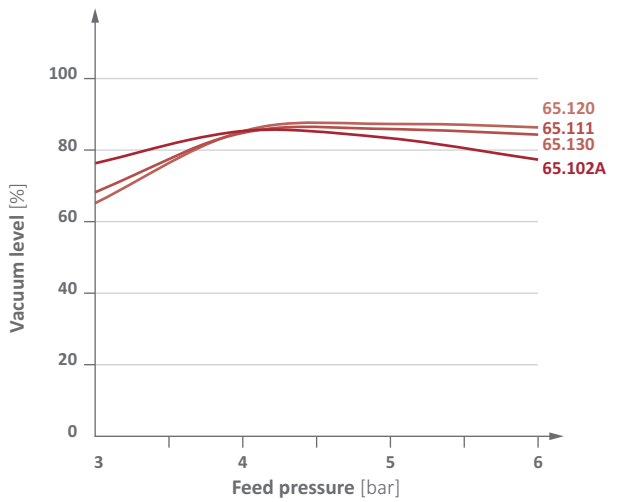
> Suction power against feed pressure



> Air consumption against feed pressure



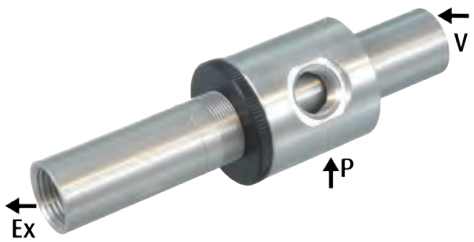
> Vacuum level against feed pressure



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

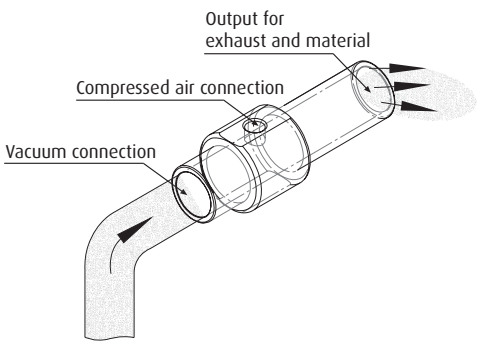
> High suction power for safe handling of air-permeable products or generally in the presence of high leakage
> Gentle transportation of powdery substances or small-size products such as granular material, coffee, flour
> Extraction of non-aggressive vapors and gases
> Volume of suction air and required 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



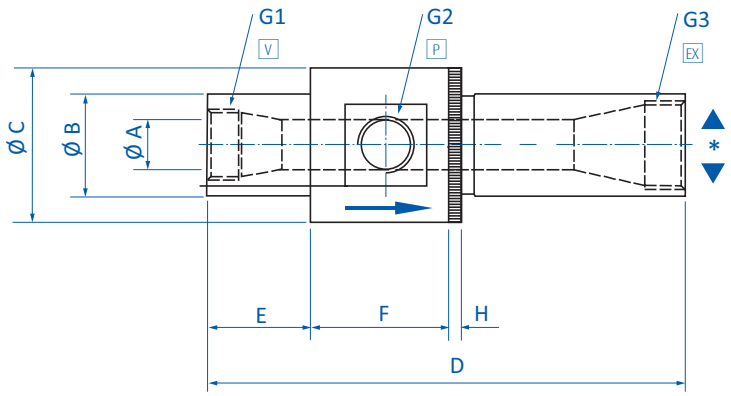
Air consumption [Nl/min] at vacuum level (feed pressure 5.5 bar (79.8 psi))

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

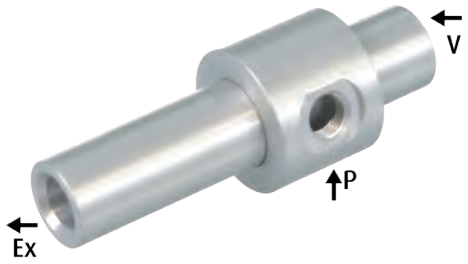
Dimensions



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

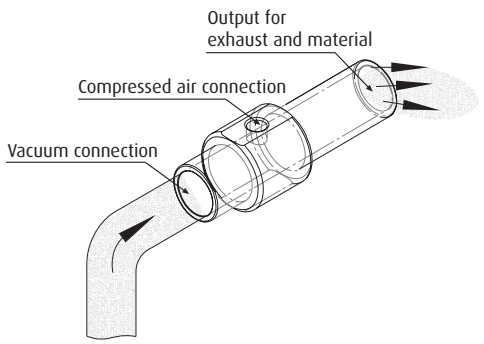
> Very high suction power for high transportation throughput
> Gentle transportation of powdery substances or small-size products such as granular material, pills, chippings
> Extraction of non-aggressive vapors and gases
> Can even be used in rough conditions thanks to the robust, maintenance-free construction
> 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

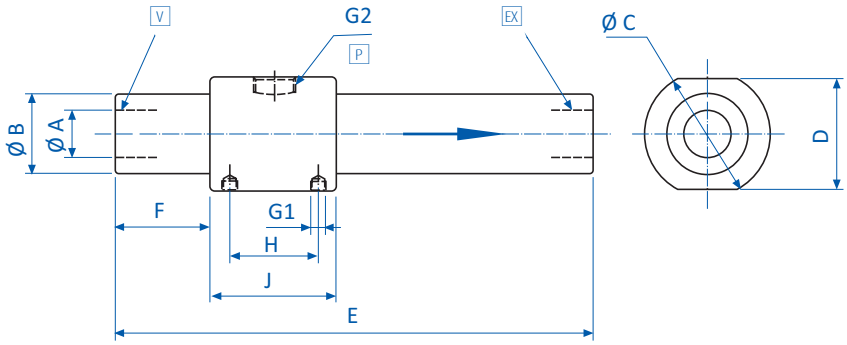
Technical data

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	--

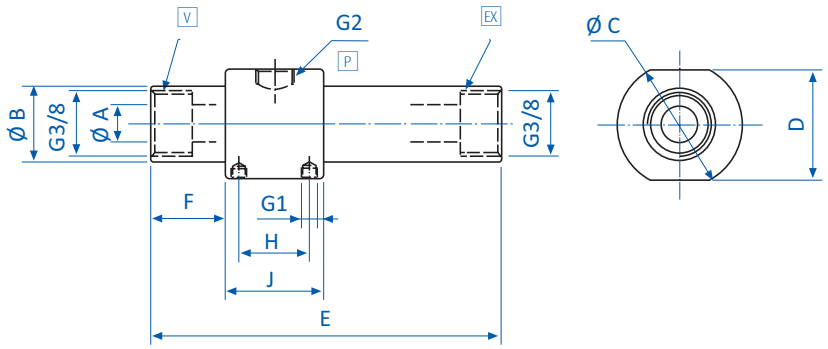
Functional principle



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)

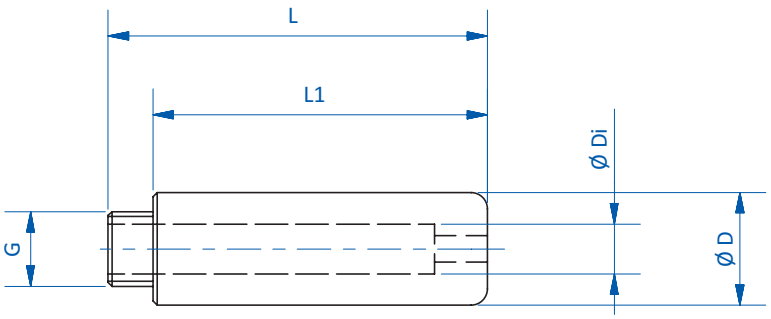
Technical data

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

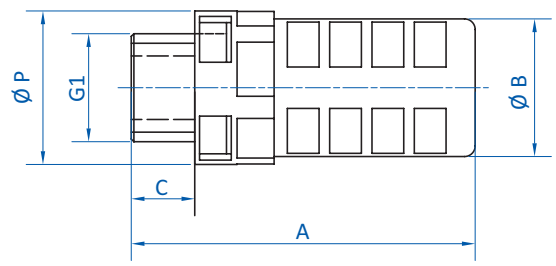
Technical data

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

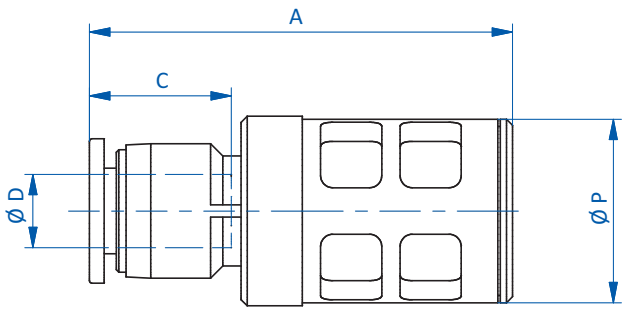
Dimensions

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)

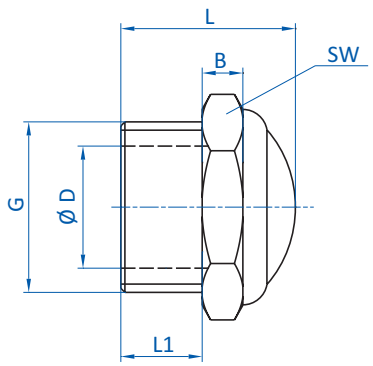
Technical data

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

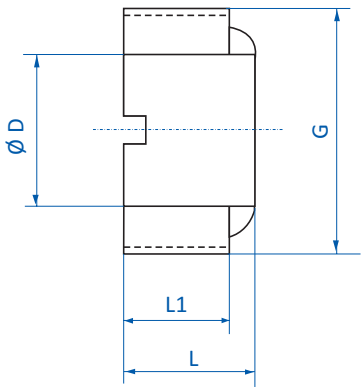
Dimensions

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

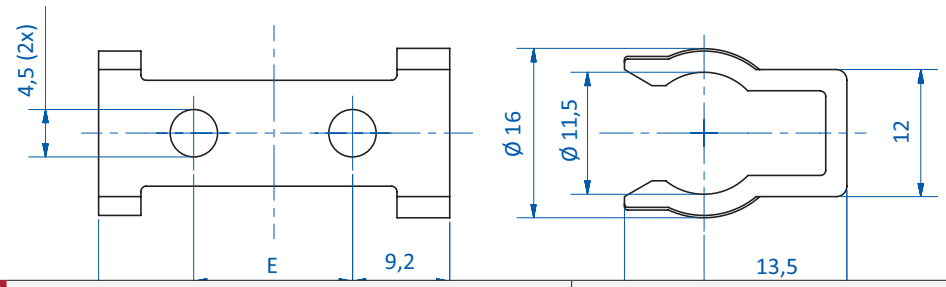
Inline ejectors EIL – accessories

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

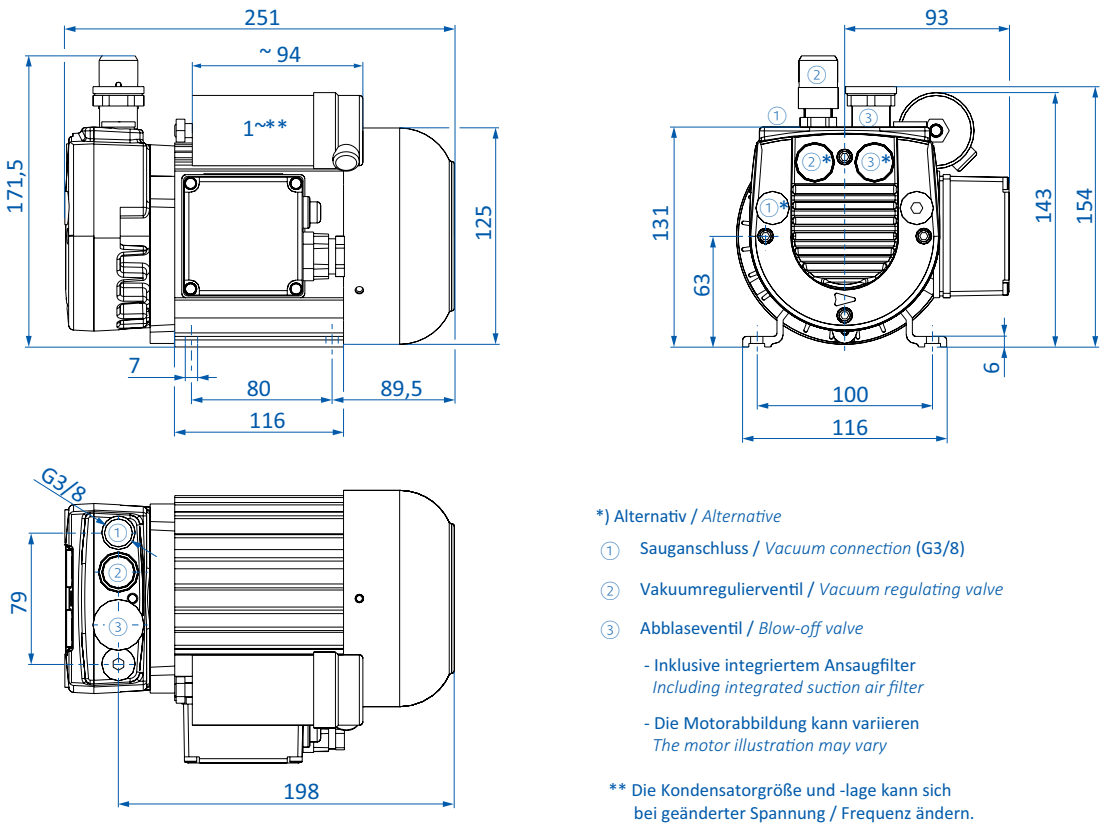
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

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*

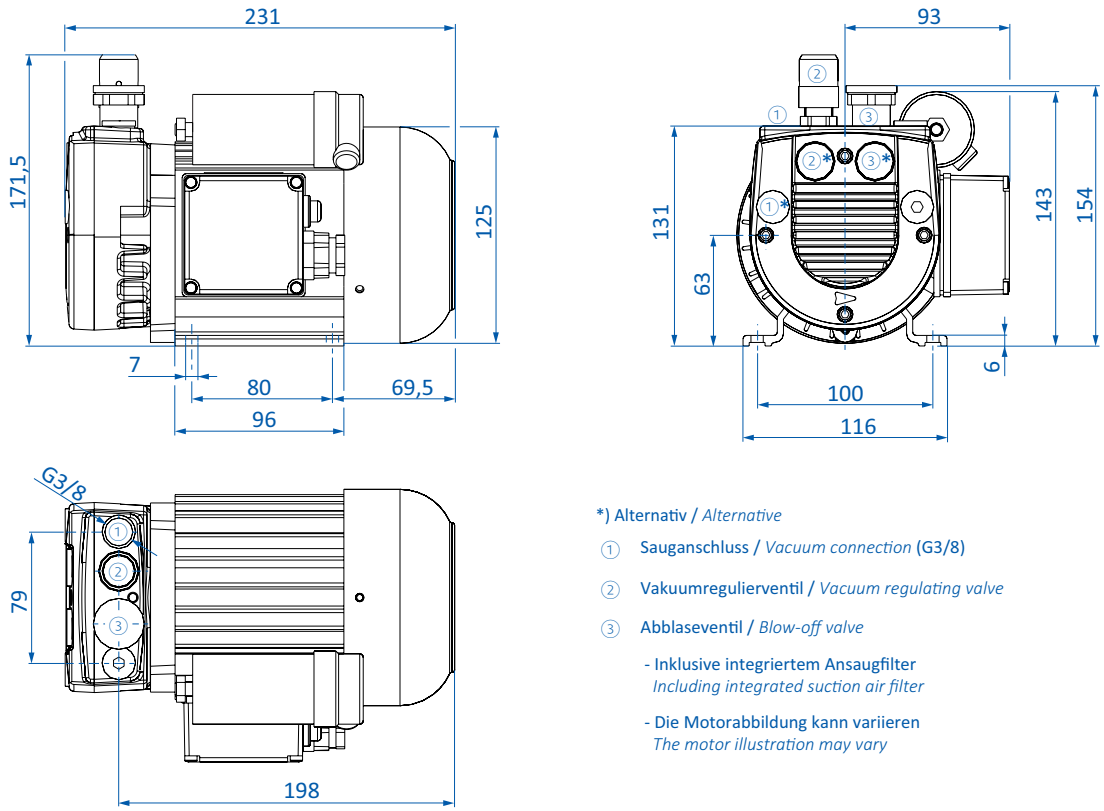
③ Abblaseventil / *Blow-off valve*

- 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

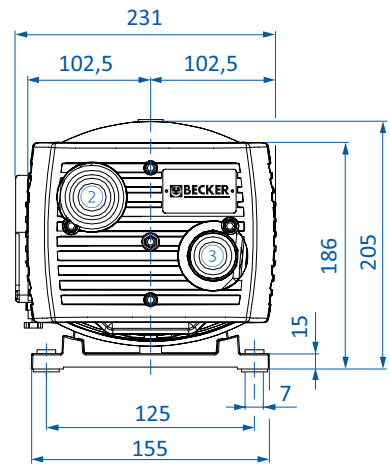
Product notes

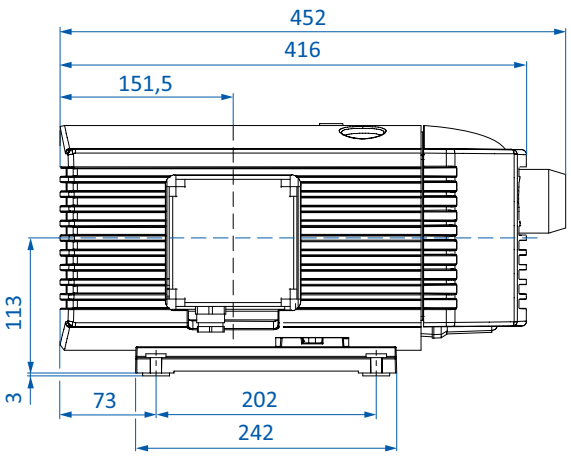
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

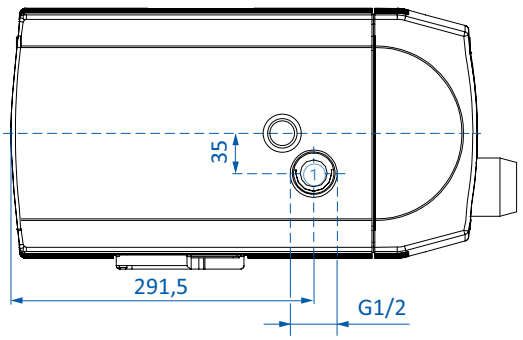
Technical data

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

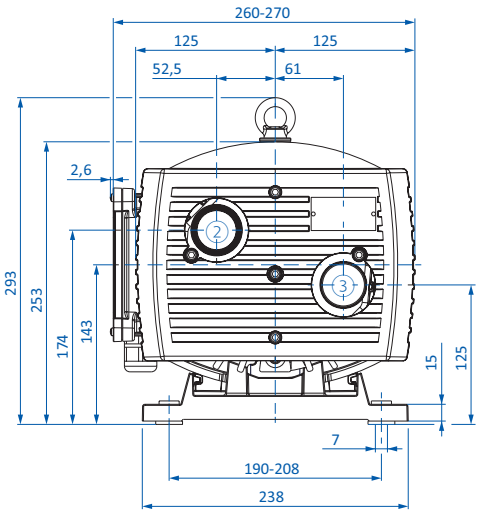
Product notes

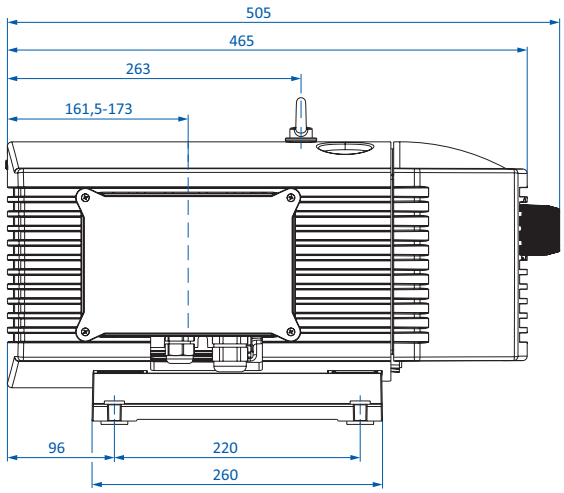
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting slides move and separate the individual working chambers from each other.

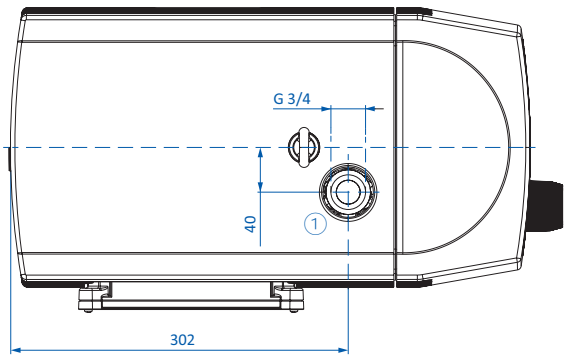
Technical data

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

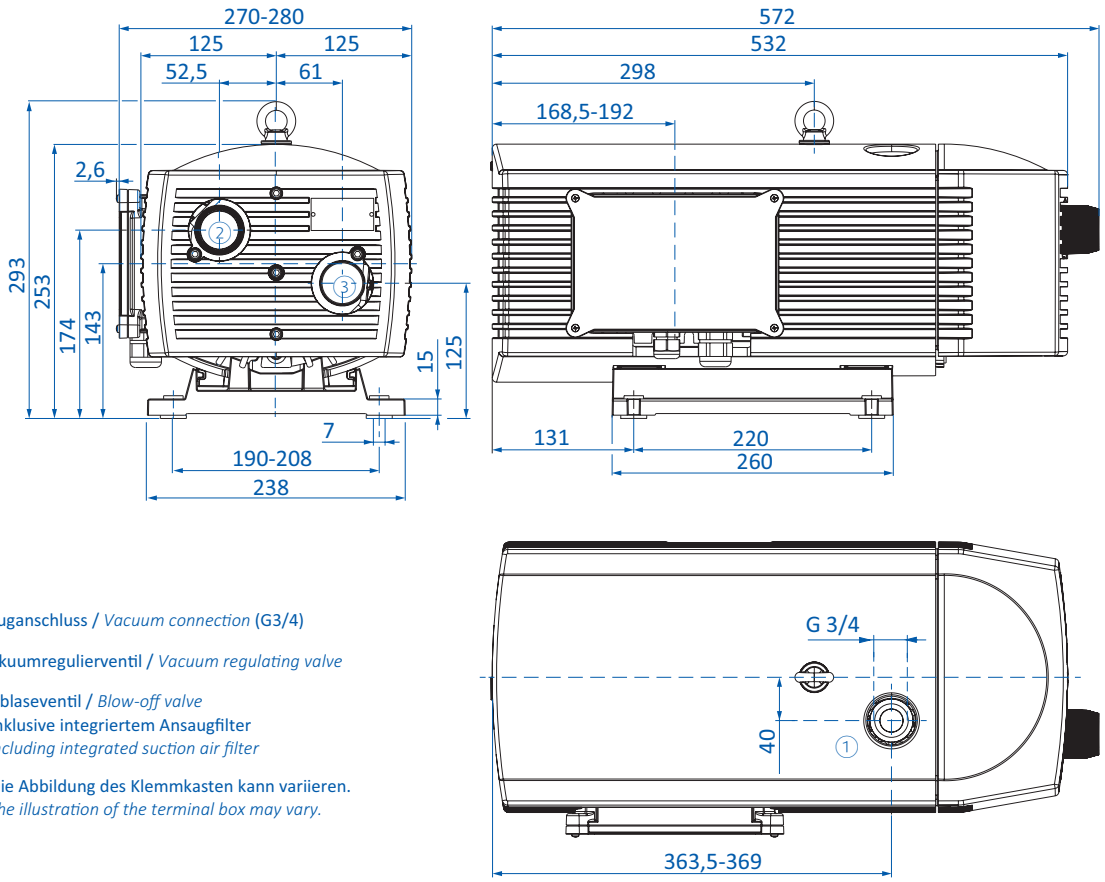
Product notes

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

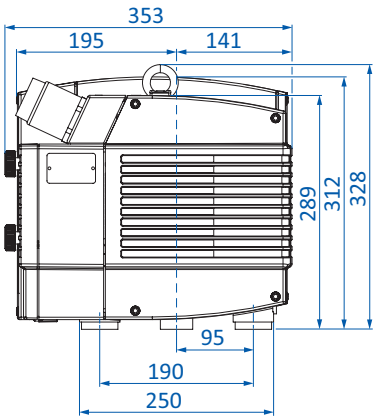
Product notes

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.

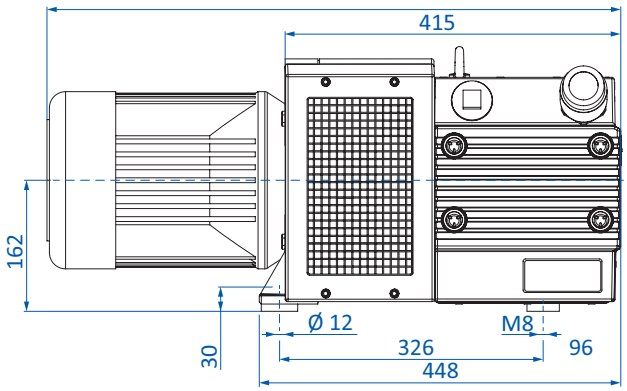
Technical data

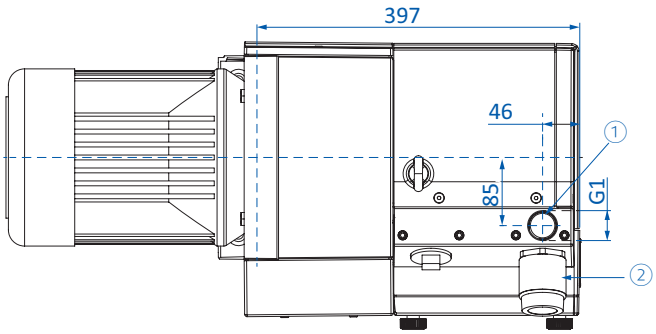
Item no.	VPT.60A-3-EU	VPT.60A-3-US
Motor type	3-phasig for the european market	3-phasig especially for the North American market
Rated power at 50 Hz [kW]	2.2	--
Rated power at 60 Hz [kW]	2.6	2.6
Power supply at 50 Hz [V]	230 / 400	--
Power supply at 60 Hz [V]	230 / 400	208 / 230 / 460
Current consumption 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

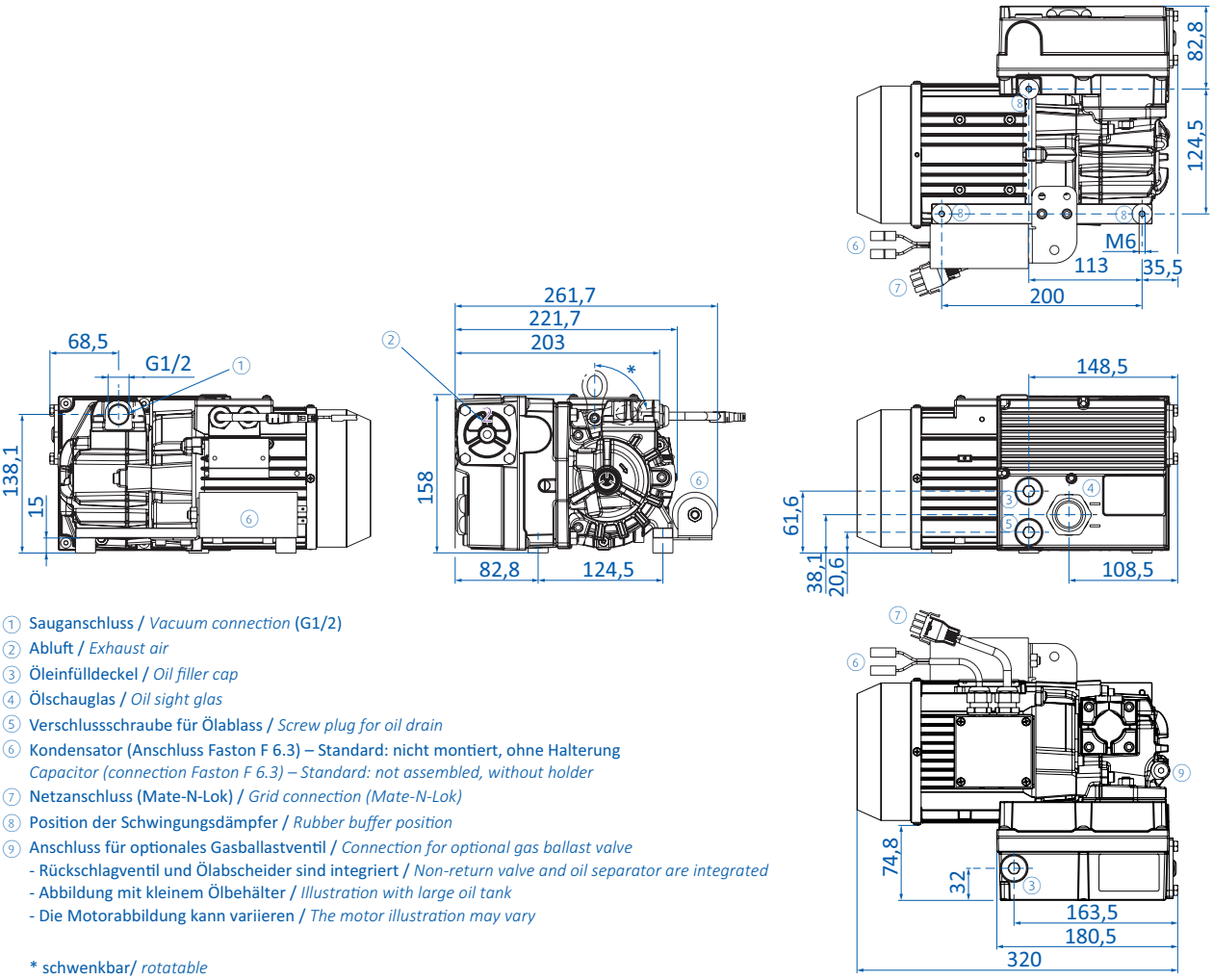
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. 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

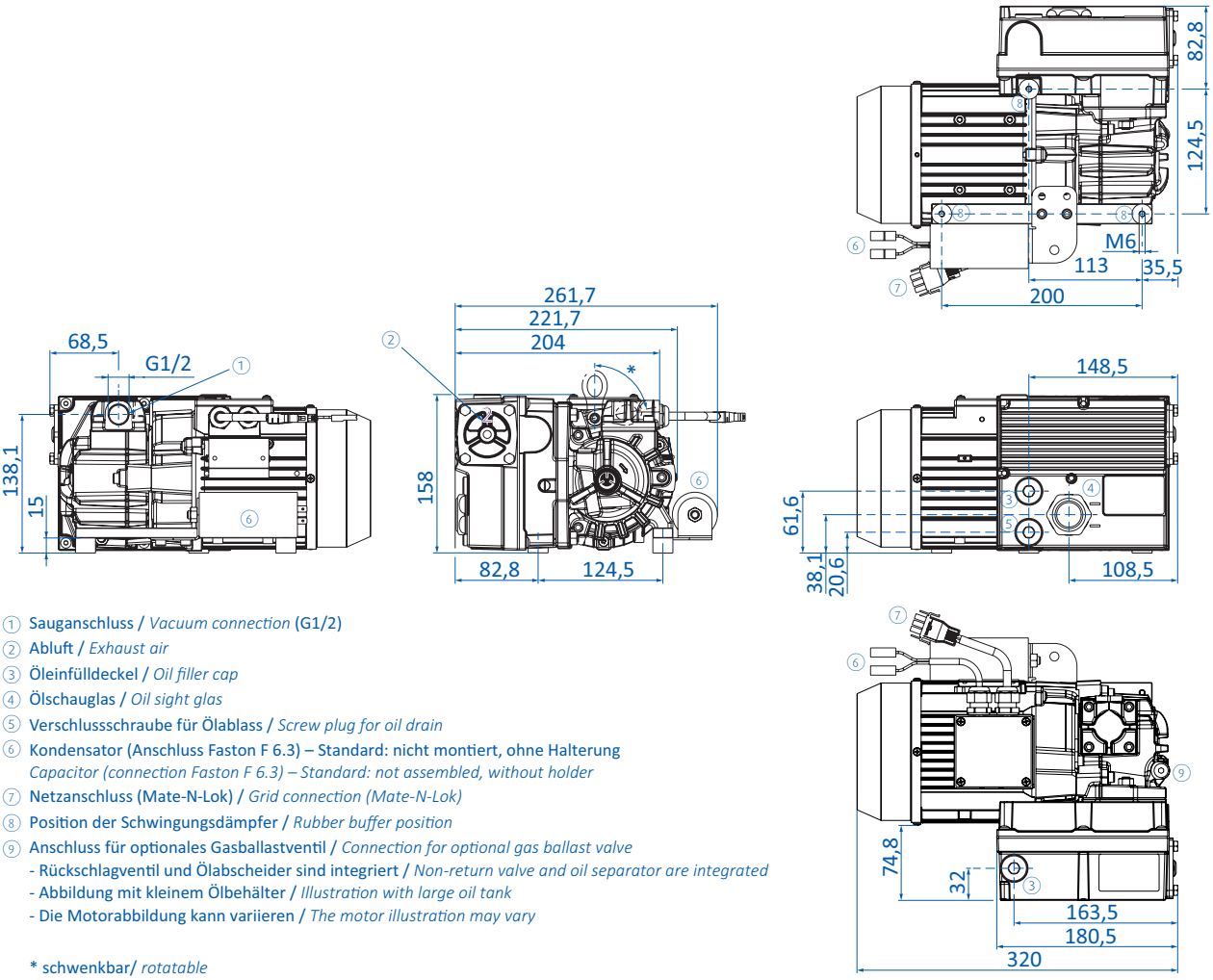
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. 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.

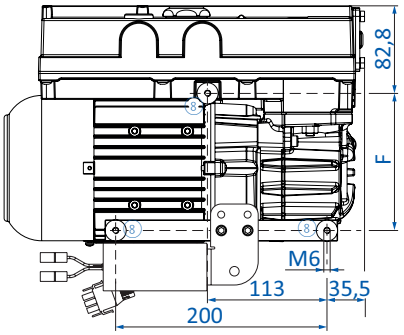
NOTE:
The pump is delivered without oil. Please order the oil suitable for your application.

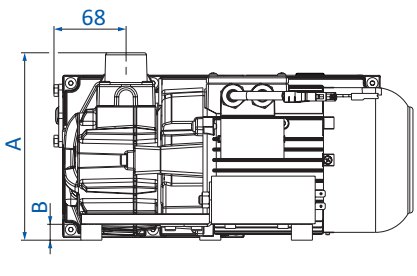
Technical data

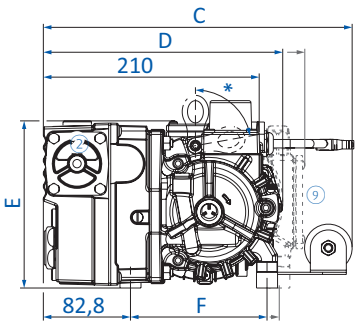
Item no.	**VPO.25A-3**
Motor type	3-phase
Rated power at 50 Hz [kW]	0.75
Rated power at 60 Hz [kW]	0.9
Power supply at 50 Hz [V]	230 / 400
Power supply at 60 Hz [V]	265 / 460 / 230 / 400
Current consumption at 50 Hz [A]	3.1 / 1.8
Current consumption at 60 Hz [A]	3.1 / 1.8 / 3.3 / 1.9
Suction power at 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

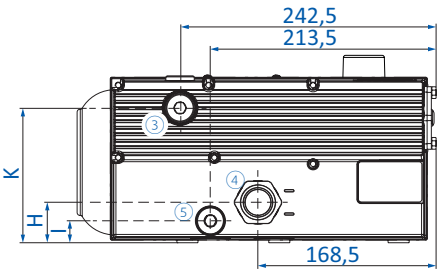
Dimensions

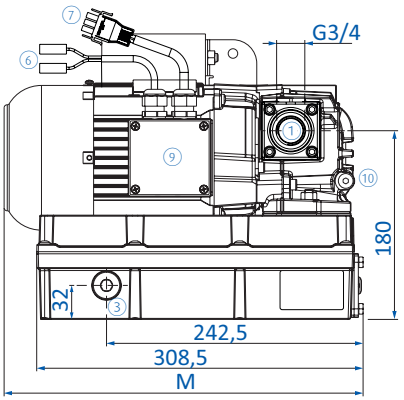
Motor	A	B	C	D	E	F	H	I	K	M
BG 71	171	15	267	225,2	158	129,7	38,1	20,6	127,6	340
BG 80	176	20	295	247,1	162,6	140,2	43,1	25,6	132,6	353,5











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

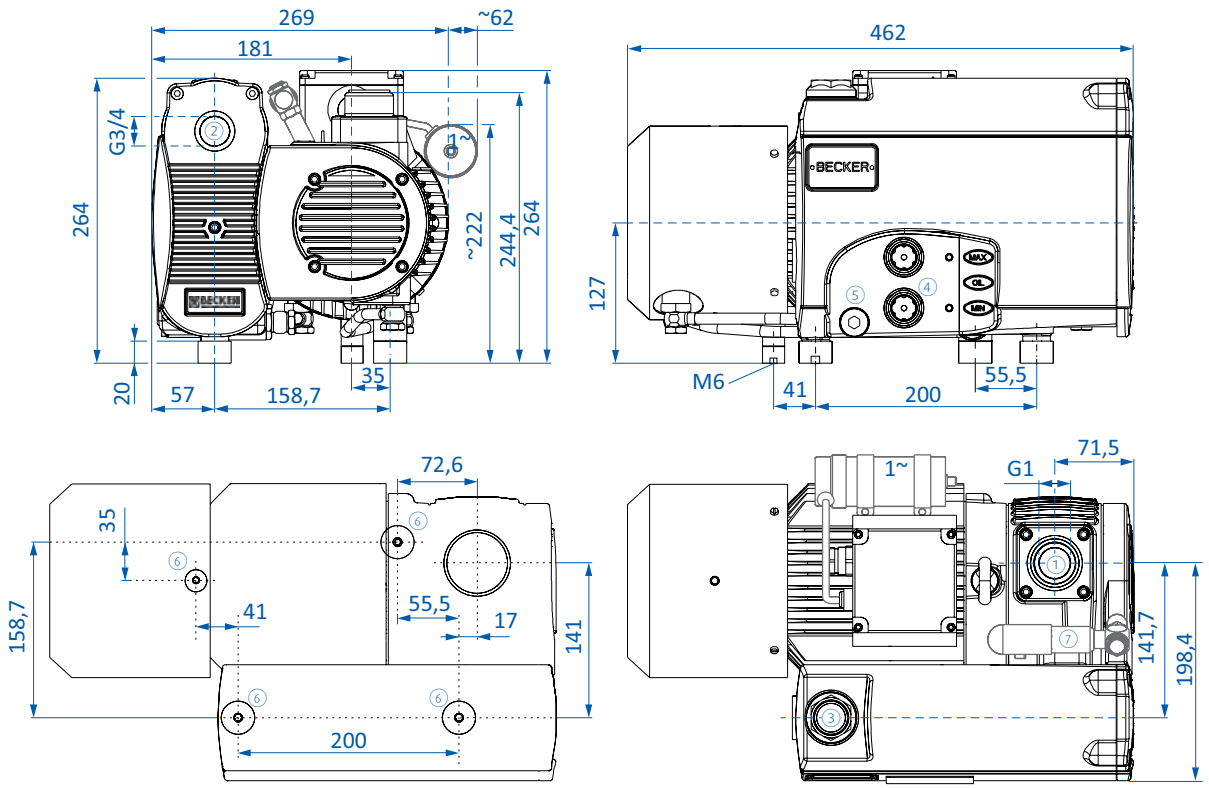
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. 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

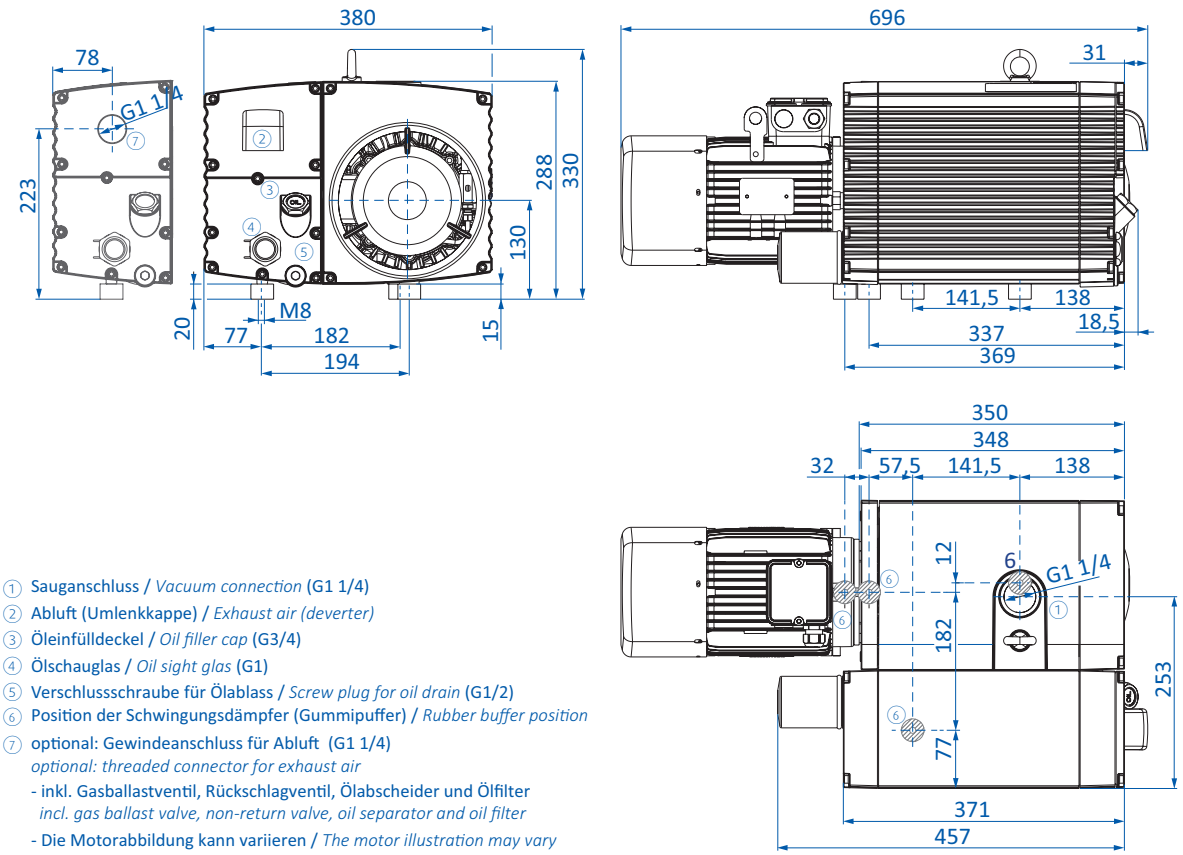
The robustly designed rotary vane pumps are suitable for higher pressure differences in vacuum and/or pressure applications. An eccentrically mounted rotor with slots rotates in a cylindrical housing, in which precisely fitting vanes move and separate the individual working chambers from each other. 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

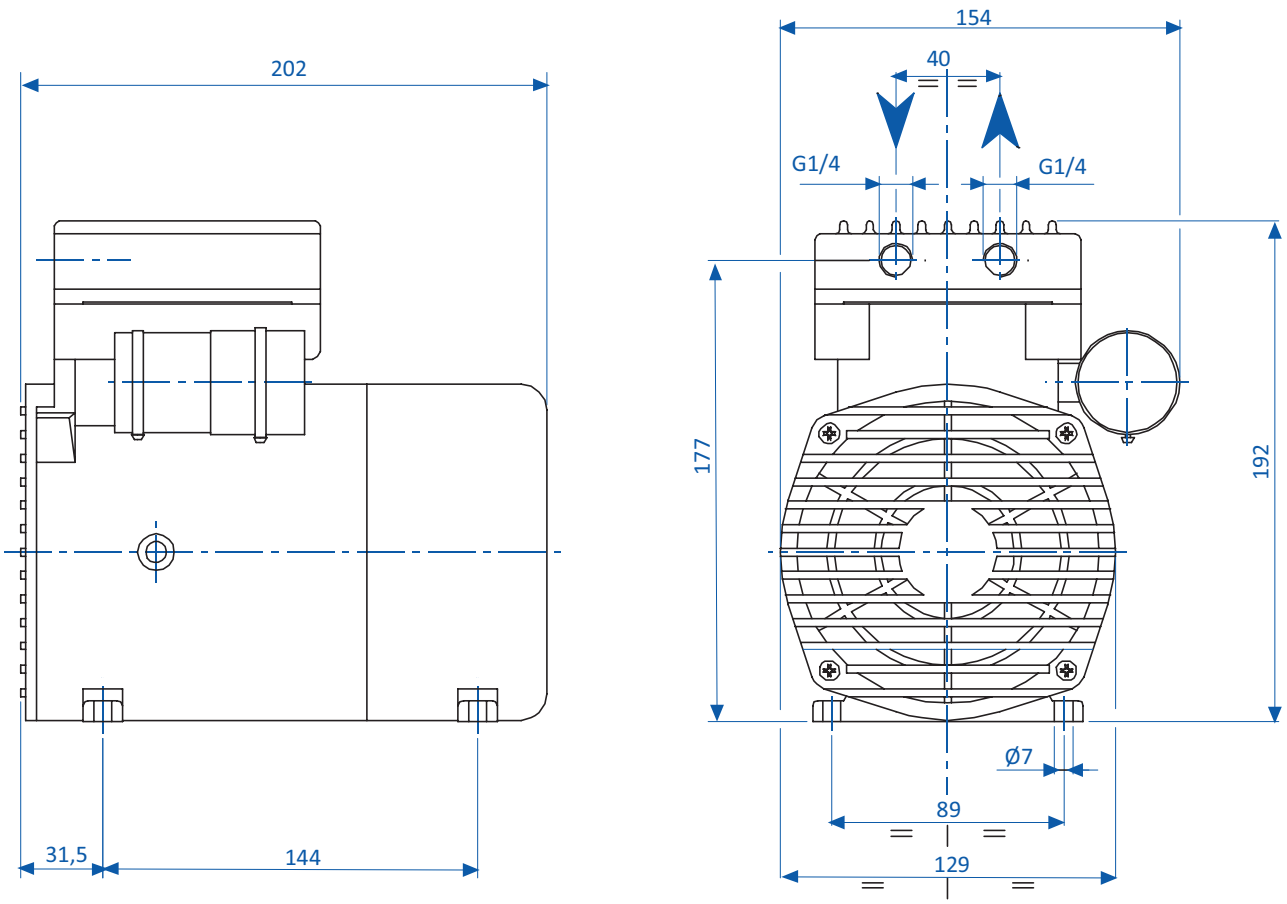
Notes

> A 3/2-way valve must be installed at the inlet in case of pressure-vacuum alternating operation

Technical data

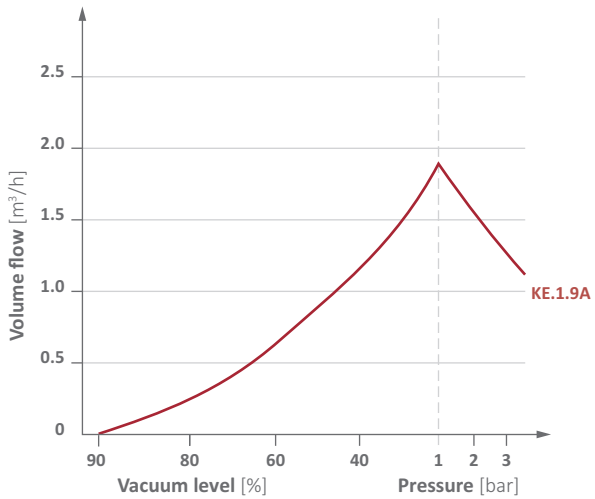
Item no.	**KE.1.9A-1**
Suction power at 50 Hz [m^3/h]	1.9
Suction power at 60 Hz [m^3/h]	2.2
Final vacuum abs. [mbar (inHg)]	110 (3.2)
Power supply [V]	220 - 240
Rated power at 50 Hz [kW]	0.2
Noise level at 50 Hz [dB(A)]	50
Noise level at 60 Hz [dB(A)]	52
Operating temperature [°C (°F)]	40 - 45 (104 - 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

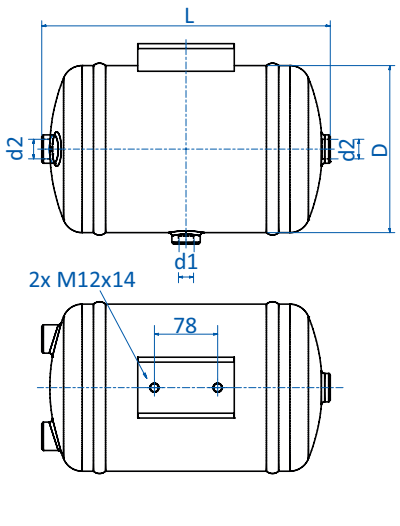
Technical data

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

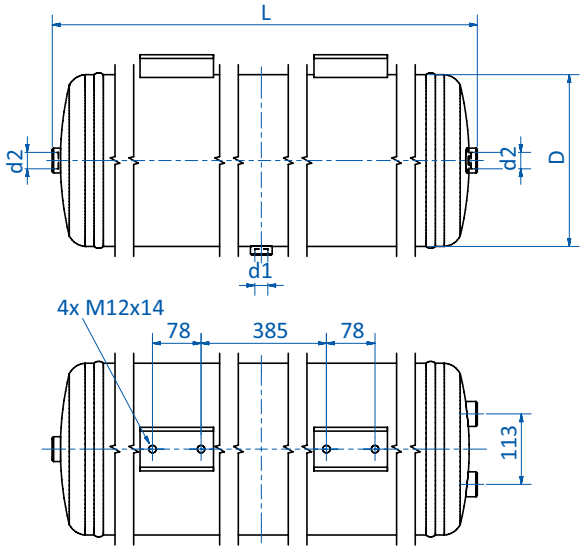
Dimensions

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



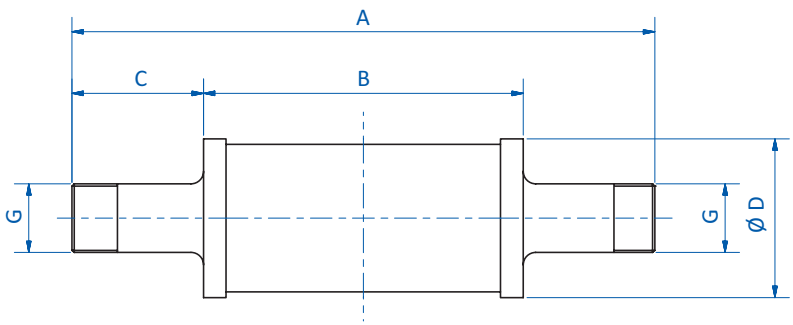
92.004

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

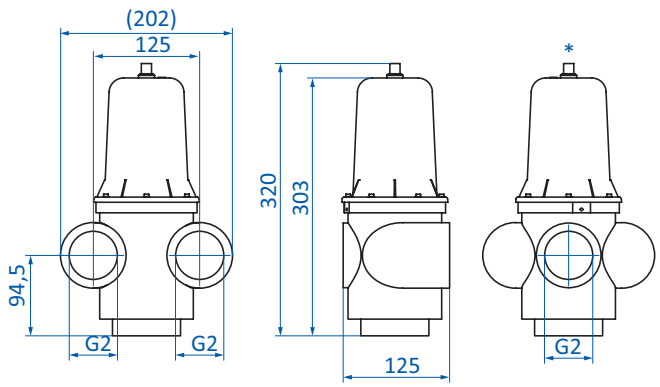
Notes

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

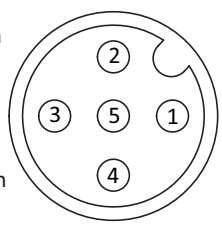
Item no.	**33.097**
Suction power [m³/h]	300
Pressure [mbar (psi)]	800 (11.6)
Power supply [VDC]	24 +/- 10%
Power consumption [W]	10
Duty ratio [%]	100
Direction of rotation [°]	-45 / 0 / +45
Mean control time [s]	0.5
Minimum time interval between successive cycles [s]	0.5
Medium	Unlubricated, filtered 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

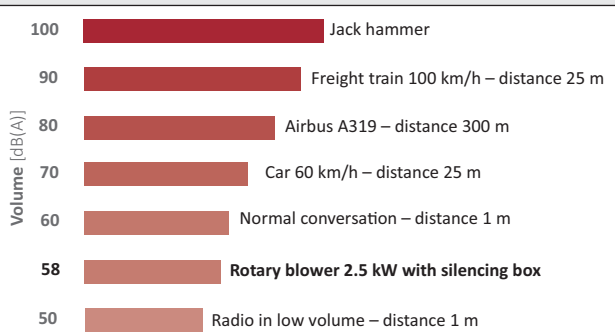
> Reduces the noise level by approx. 10 dB/A.
> Continuous noise pollution can lead to hearing damage. We can help you minimize the noise pollution for your employees, and we would be pleased to provide advice.
> Protects the pump or side channel blower from dirt and damage

Ordering notes

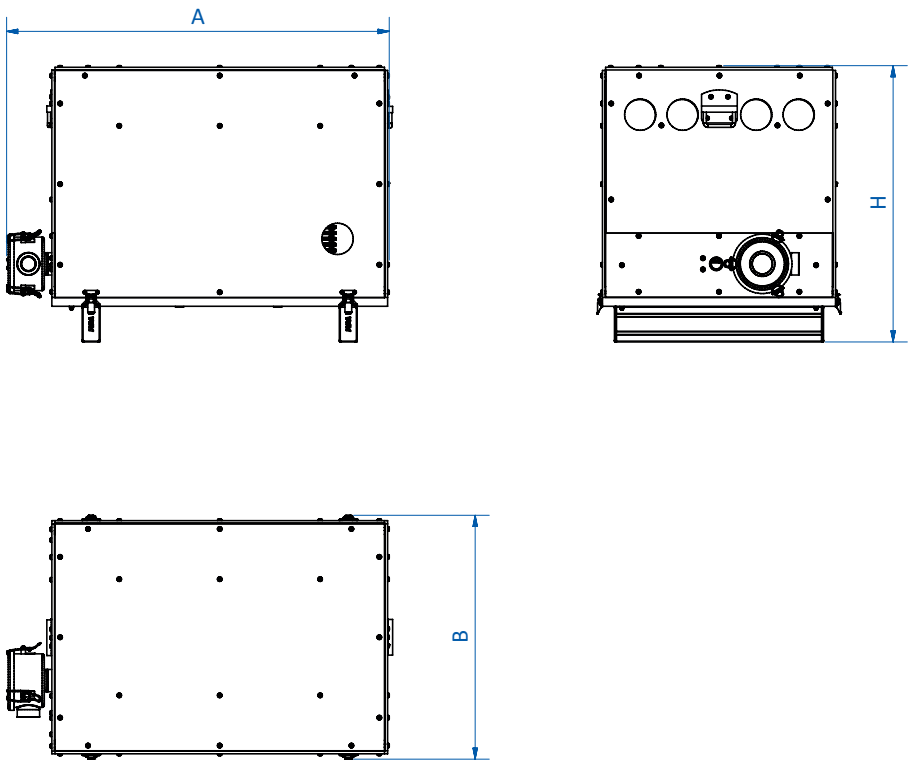
> Pump or side channel compressor and filter as well as the installation are not included in the scope of delivery

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

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)

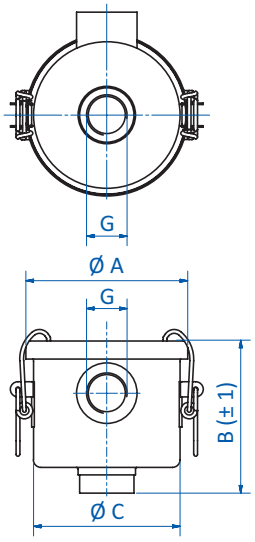
Technical data

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

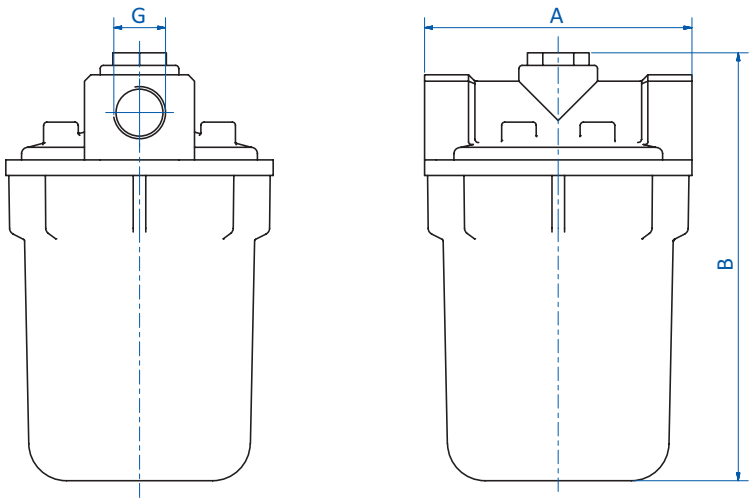
Technical data

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

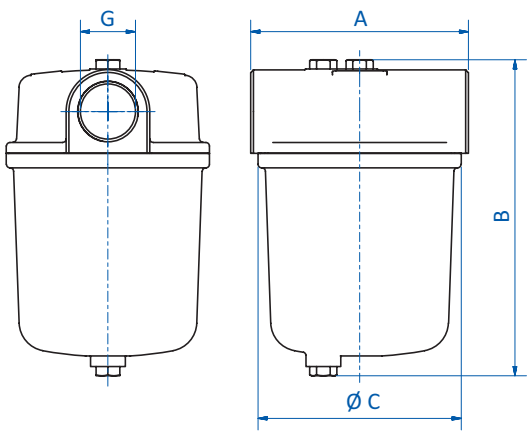
Technical data

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

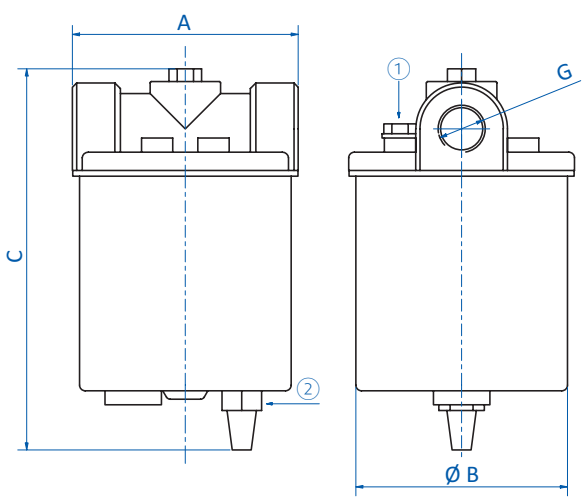
Product notes

> 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

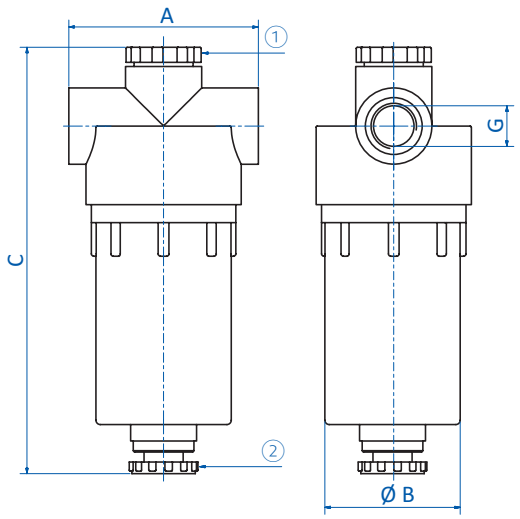
Technical data

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

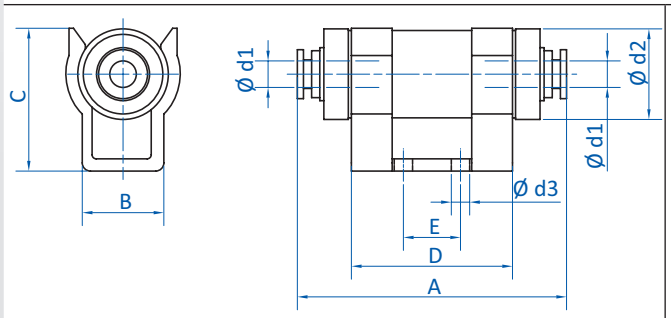
Product notes

> 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

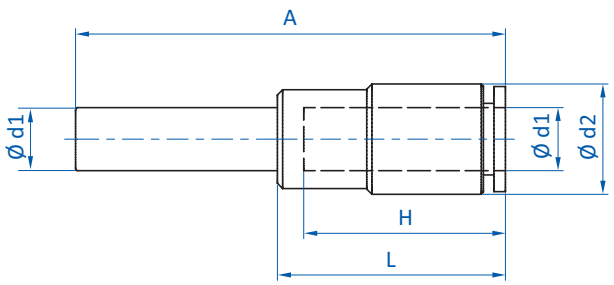
Technical data

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

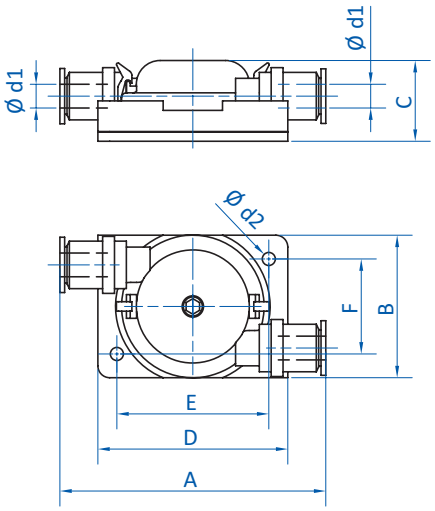
Technical data

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

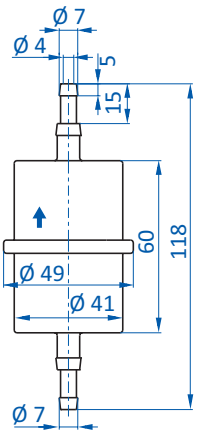
Product notes

> 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

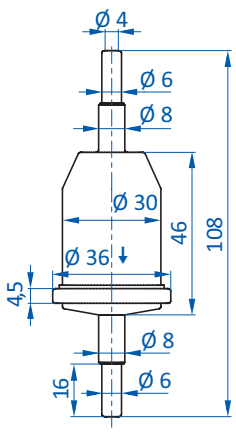
Technical data

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 – screw-in type

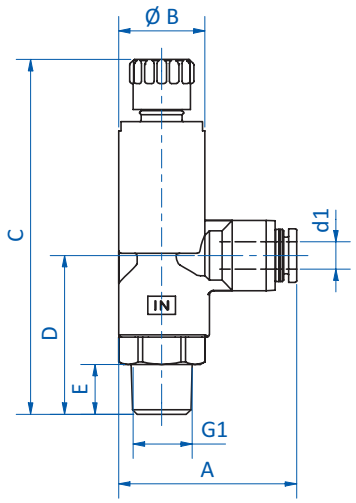
Product notes

> 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

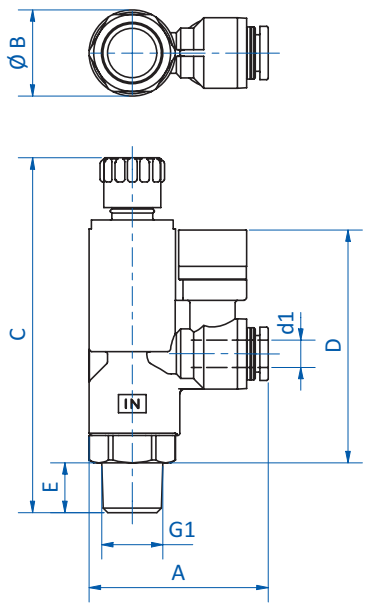
Product notes

> 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

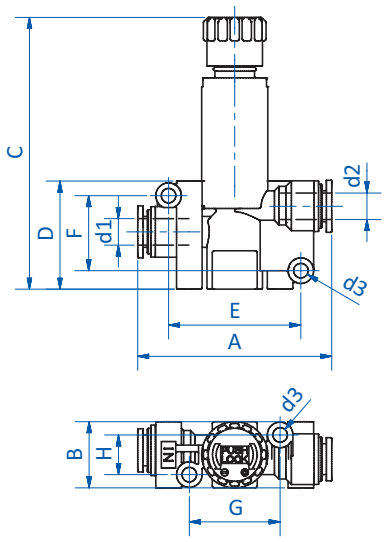
Product notes

> 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

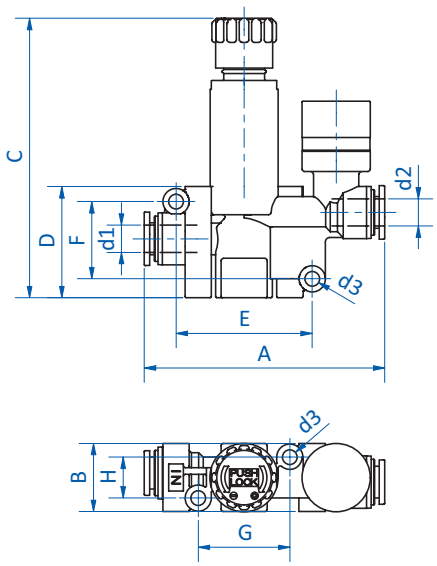
Product notes

> 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)

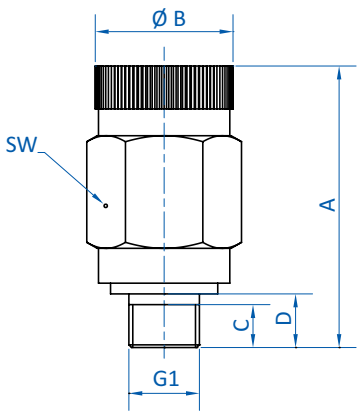
Notes

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

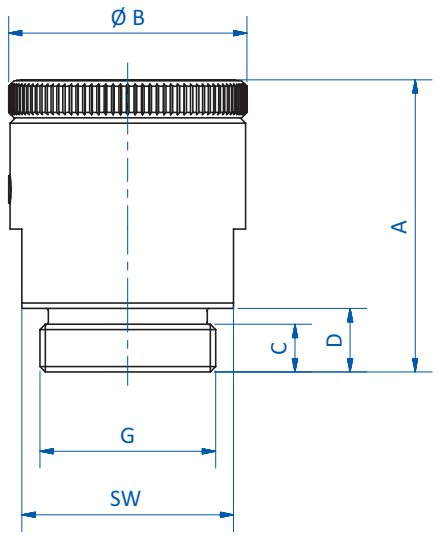
Technical data

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

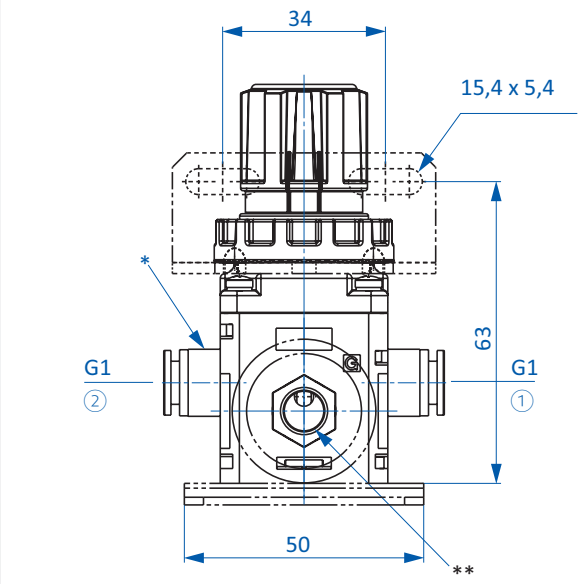
Technical data

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

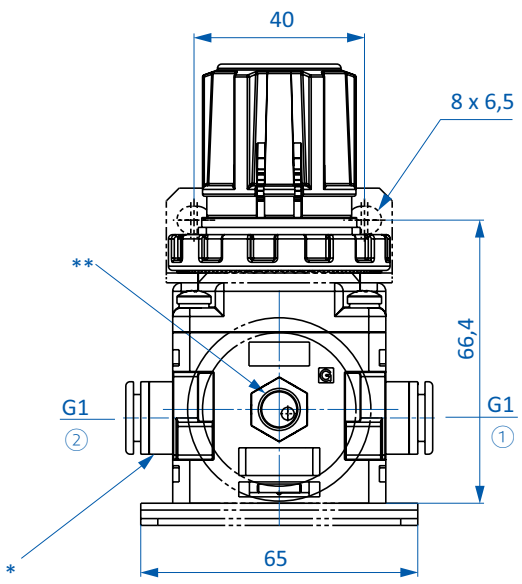
Dimensions

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

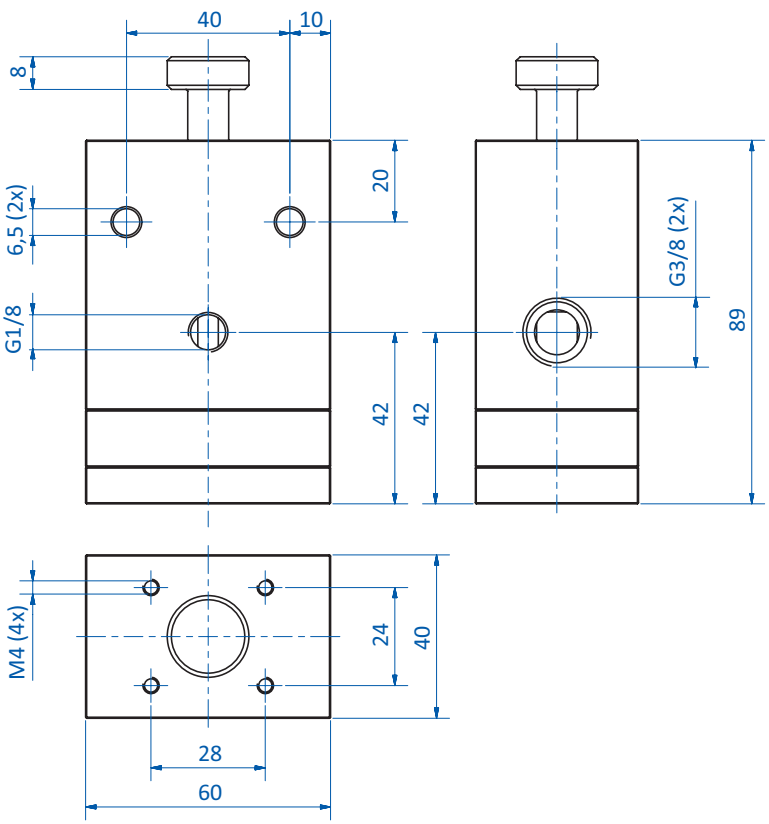
Product notes

> 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

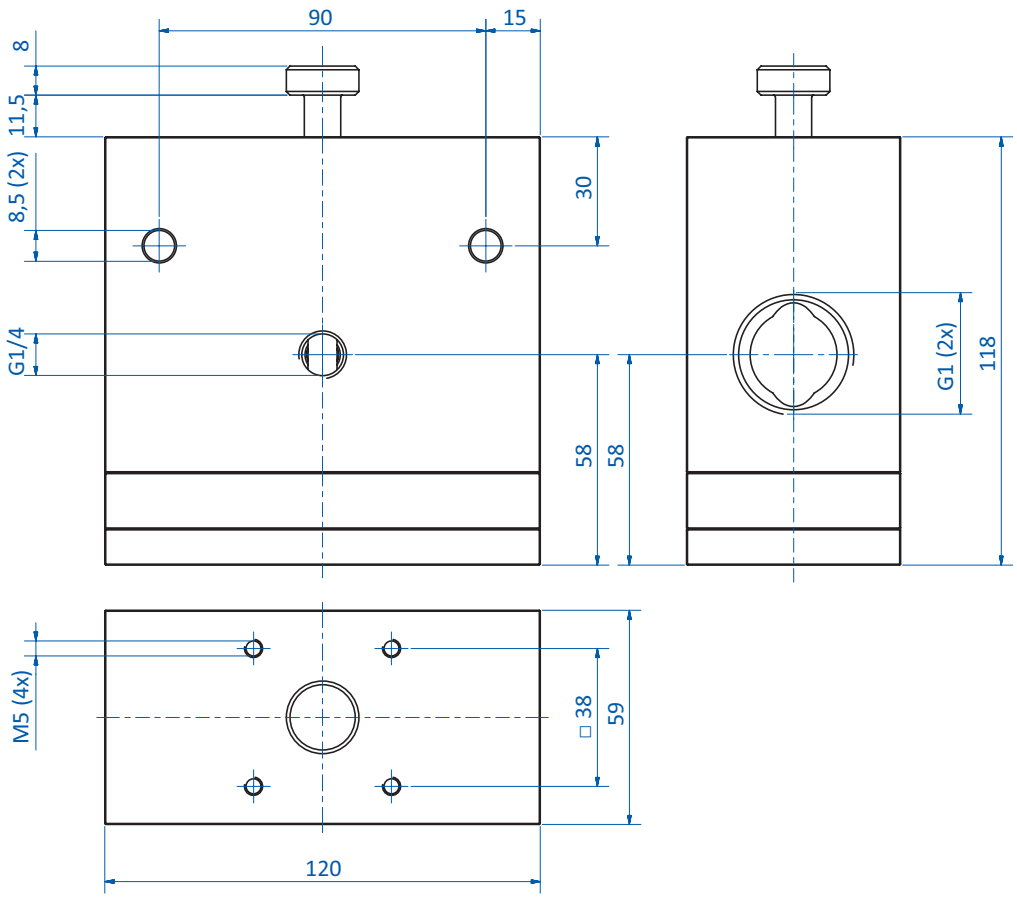
Item no.	Maximum control volume [m³/h]	Regulating range [mbar (psi)]	Operating temperature [°C (°F)]	Weight [kg]	Suitable vacuummeter
33.105	10	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	0.6	91.001
33.120	80	-200 - -999 (-2.9 - -14.5)	-10 - 80 (14 - 176)	2.1	91.003

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

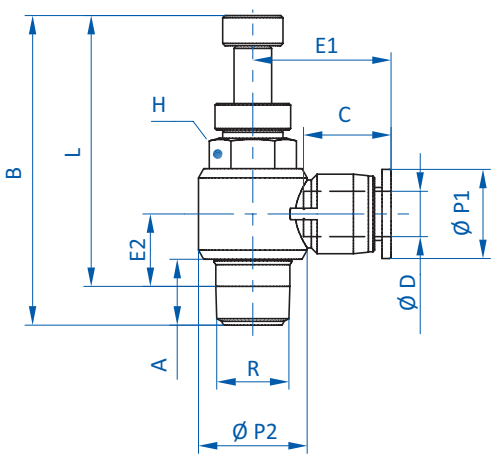
Technical data

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

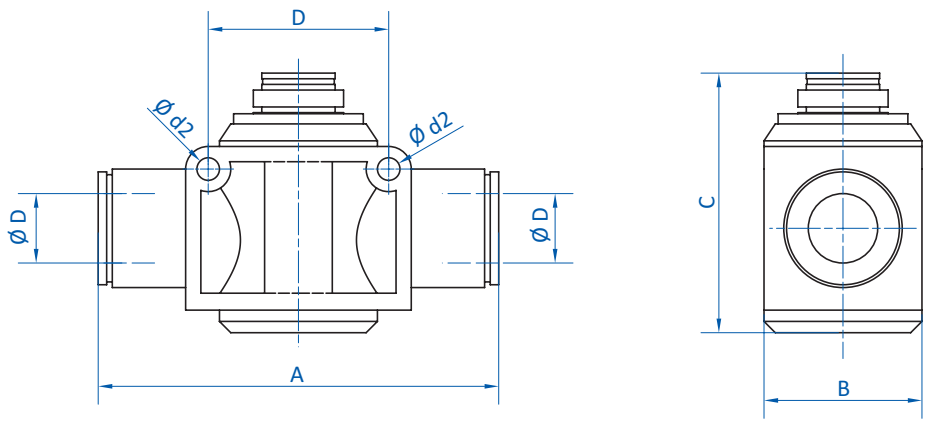
Product notes

> 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

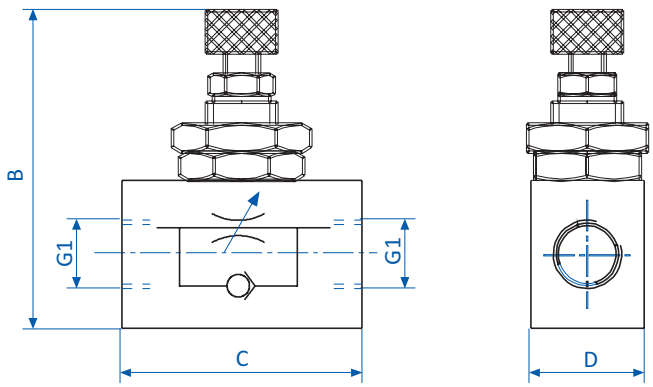
Product notes

> 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

2/2-way solenoid vacuum valves, directly controlled

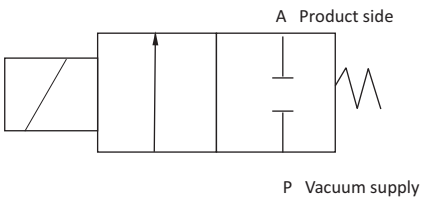
Product notes

> 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

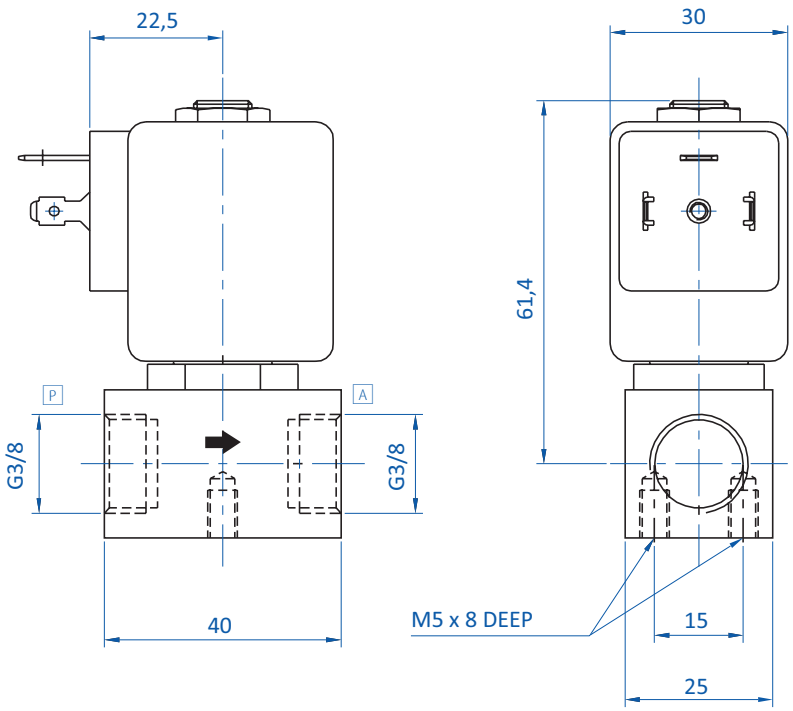
Technical data

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

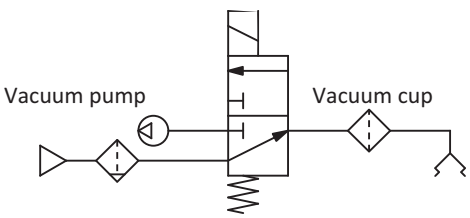
Product notes

> 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

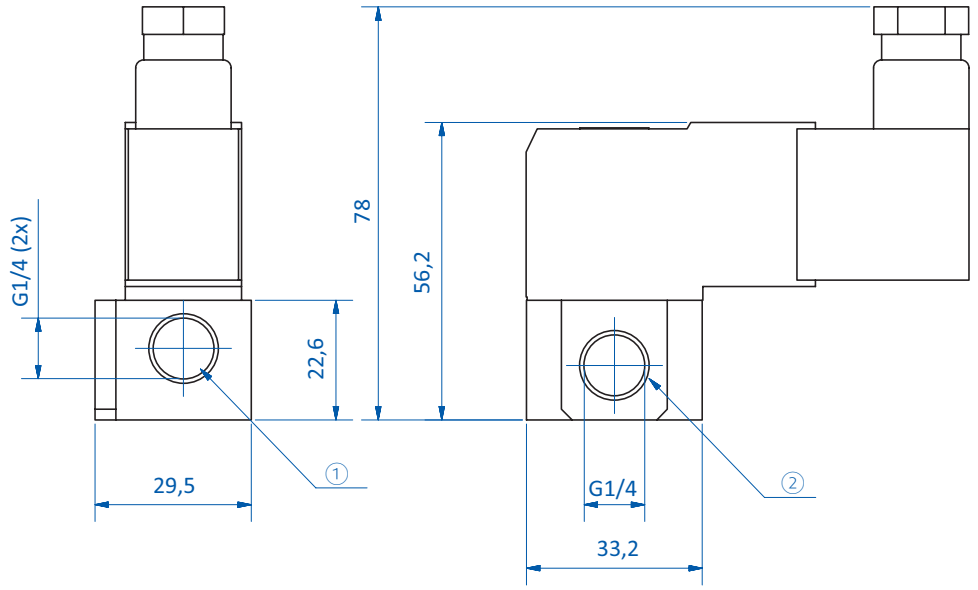
Technical data

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

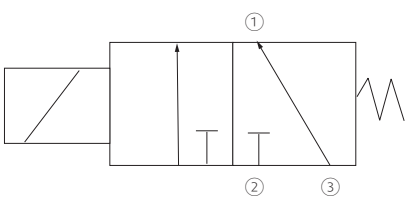
Ordering notes

> 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

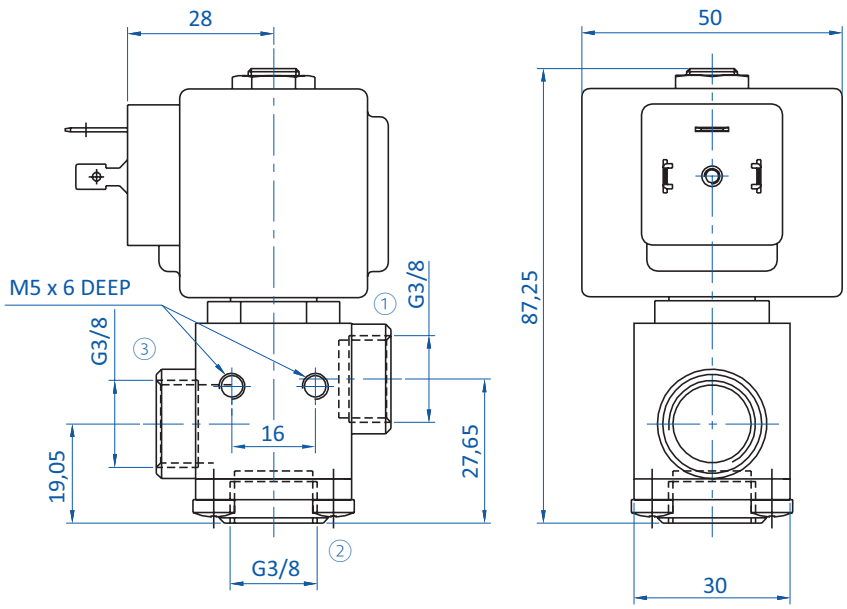
Item no.	36.009/24VDC	36.009/230VAC
Nominal width [mm]	13	13
Nominal flow rate [m^3/h]	8.8	8.8
Pressure range [bar (psi)]	-0.99 - 2 (-14.4 - 29)	-0.99 - 4 (-14.4 - 58)
Operating principle	NC	NC
Closing time [ms]	21	21
Duty ratio [%]	100	100
Power consumption [W]	12	12
Protection class	IP65	IP65
Plug	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

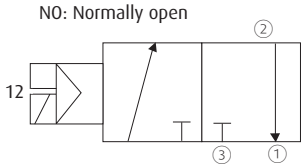
> 36.610 and 36.611: Coil and DIN plug included in scope of delivery
> 36.615 to 36.625: Delivery without coil and plug; please order: Power consumption: 24 VDC: 5 W, 230 VAC: 5 VA

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

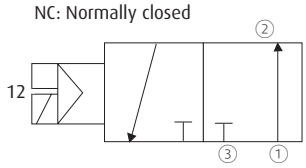
Wiring diagrams

NO: Normally open



Assignment:
① = P (Vacuum supply)
② = A (Product side)
③ = R (Ventilation (Blow-off))

NC: Normally closed

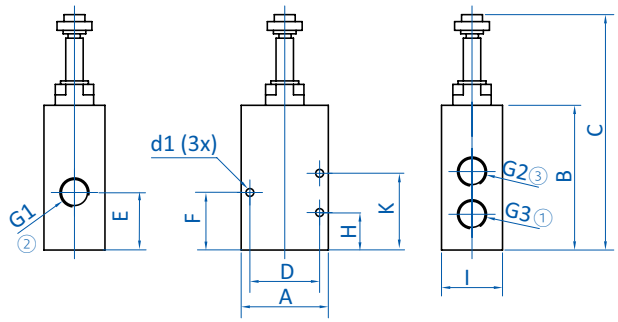


Assignment:
① = P (Ventilation (Blow-off))
② = A (Product side)
③ = R (Vacuum supply)

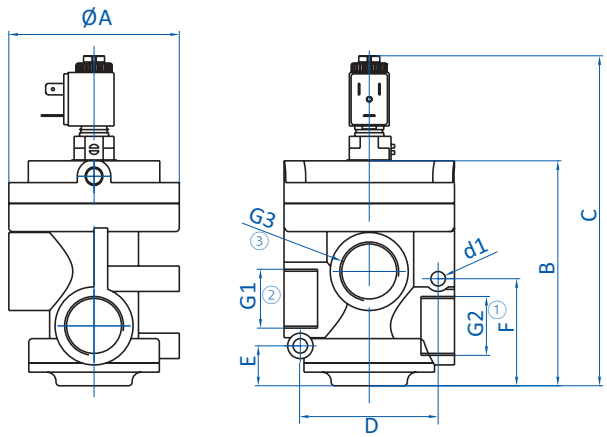
Pilot valve

> 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

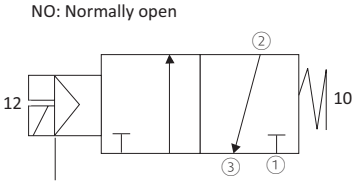
> Suction, blow-off, ventilation of vacuum cups
> High suction power at small construction for short evacuation times and fast vacuum build-up
> Short switching times
> Function: NC/NO as vacuum supply and blow-off/ventilation inlets can be exchanged
> NO: safe gripping of workpiece during power failure
> 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

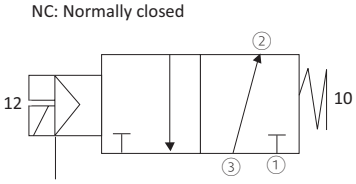
Wiring diagrams

NO: Normally open



Assignment:
① = P (ventilation (blow-off))
② = A (product side)
③ = R (vacuum supply)

NC: Normally closed



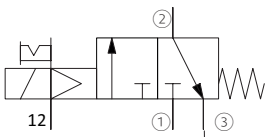
Assignment:
① = P (vacuum supply)
② = A (product side)
③ = R (ventilation (blow-off))

Pilot valve

> Manual mode for functional test: setscrew in position "0"
> Automatic mode: setscrew in position "1"

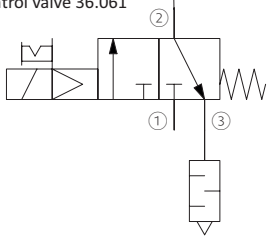
Wiring diagram: how to combine vacuum valve with pneumatic control valve for blow-off

Vacuum valve 36.520



Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

Control valve 36.061

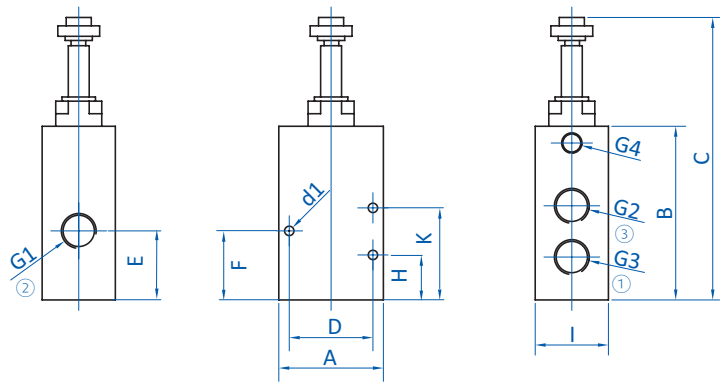


Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

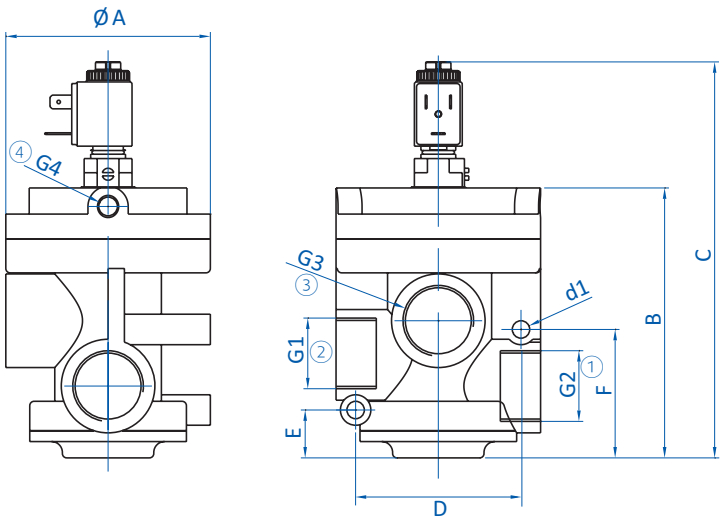
Application example: 3/2-way vacuum valves 36.520 with control valve 36.061

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.

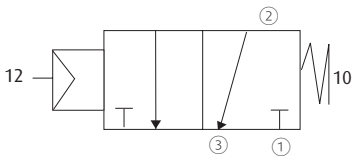
Technical data

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

Continued on the next page

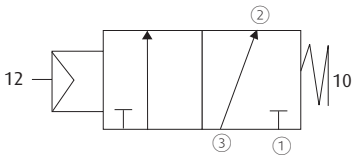
Wiring diagrams

NO: Normally open



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

NC: Normally closed

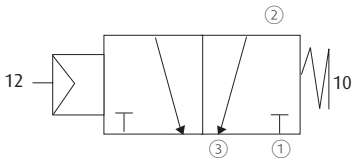


Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

36.810 | 36.811

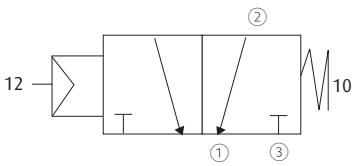
Wiring diagrams

NO: Normally open



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

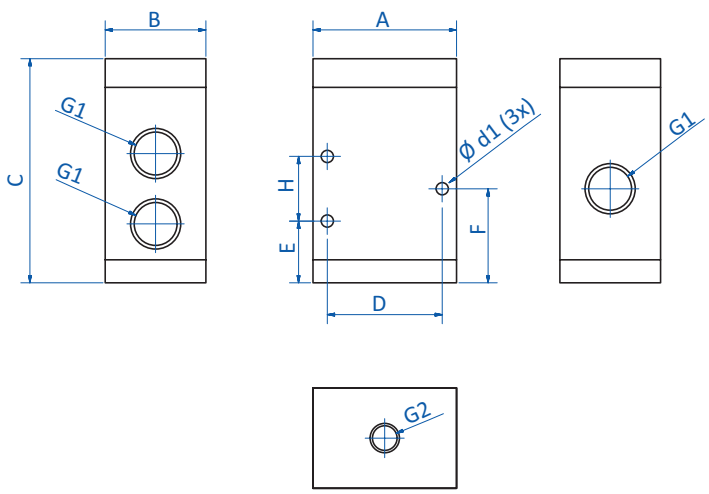
NC: Normally closed



Description of connections:
① = R (Compressed air, blow-off)
② = A (Product side)
③ = P (Vacuum supply)

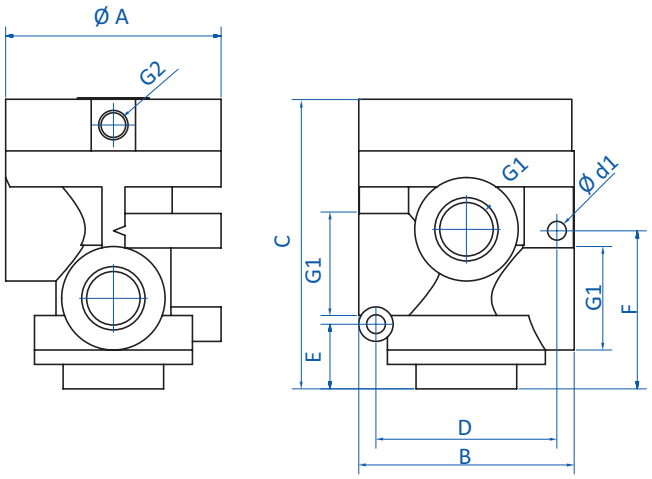
36.815 | 36.820 | 36.825 | 36.335 | 36.336 | 36.340 | 36.341

Dimensions

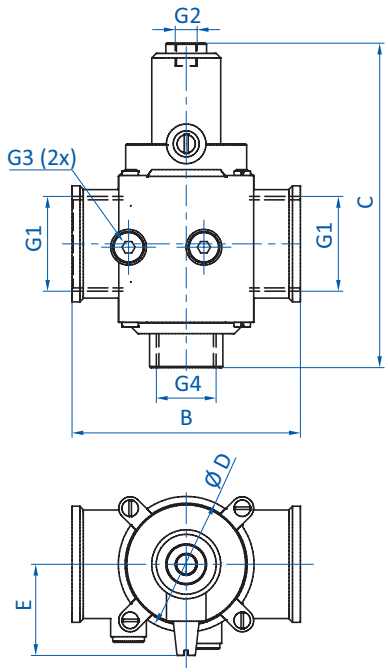


36.810 | 36.811

Dimensions



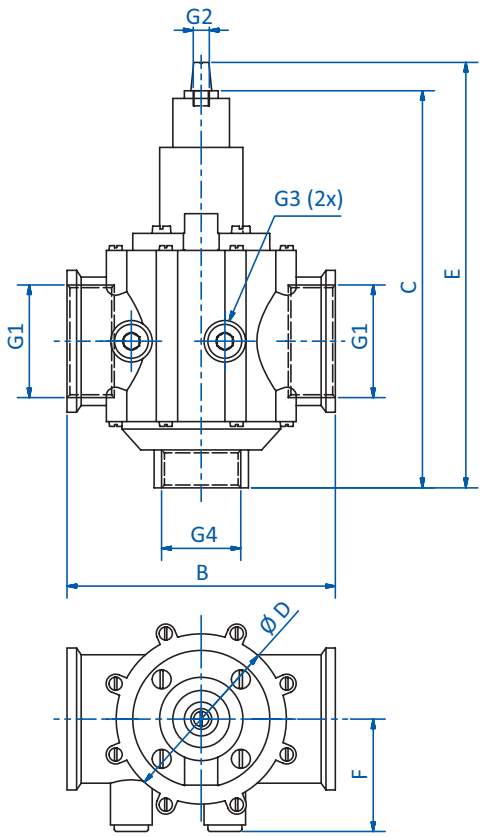
36.815 | 36.820 | 36.825



36.335 | 36.336

Continued on the next page

Dimensions



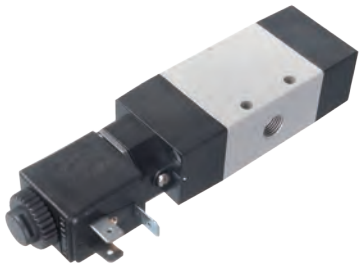
36.340 | 36.341

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

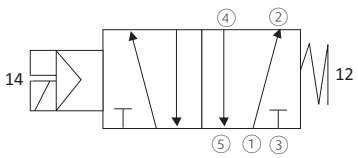
> Suitable for compressed air
> 36.060: for use e.g. to increase cycle times for ejectors without valve technology
Example: vacuum and blow-off control for multi-chamber ejectors e.g. 65.410
- 1x compressed air vacuum generation
- 1x compressed air blow-off
> 36.061: for use e.g. as a blow-off control 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

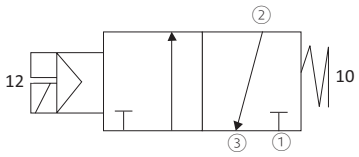
Wiring diagrams

36.060



Assignment
① Compressed air inlet
②, ④ Working connection
③, ⑤ Bleeding

36.061

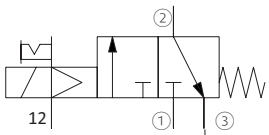


Assignment
① Compressed air inlet
② Working connection
③ Bleeding (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

Continued on the next page

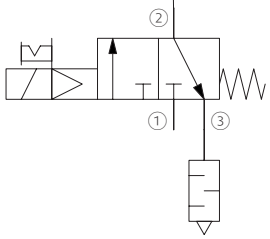
Application example: usage of 36.061 as control valve to activate blow-off of 3/2-way vacuum valves (here: valve 36.520)

36.520



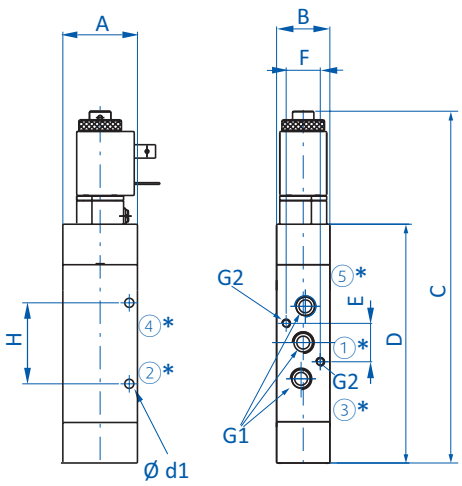
Assignment
① Vacuum supply
② Product side
③ Ventilation (blow-off)

36.061

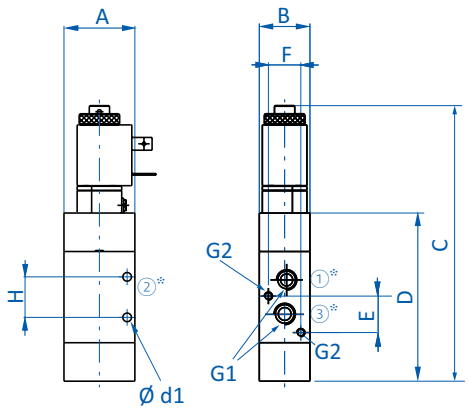


Assignment
① Compressed air inlet
② Compressed air output
③ Use of silencer (e.g. 72.016): This connects valve to atmospheric pressure and enables release of product in case of failure of compressed air line

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

Flow control valves with flow pin

For handling of porous products

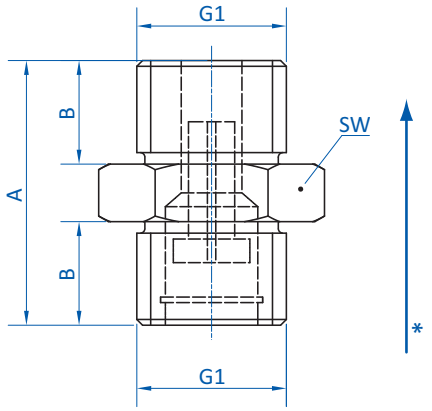
Product notes

> 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

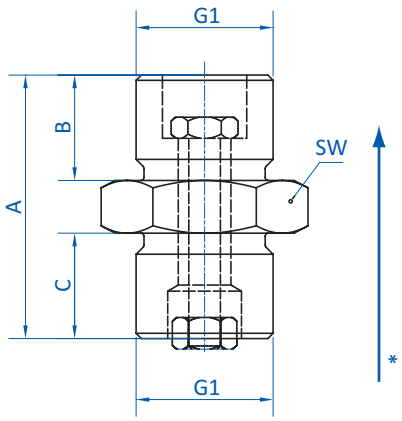
Notes

> 63.015 can be plugged directly into a vacuum cup to conserve space

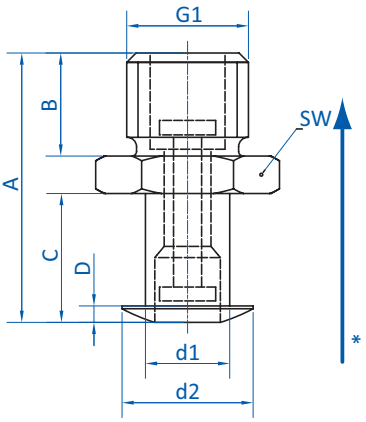
Technical data

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

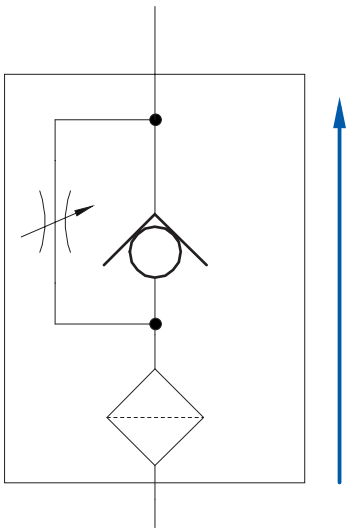
Product notes

> 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

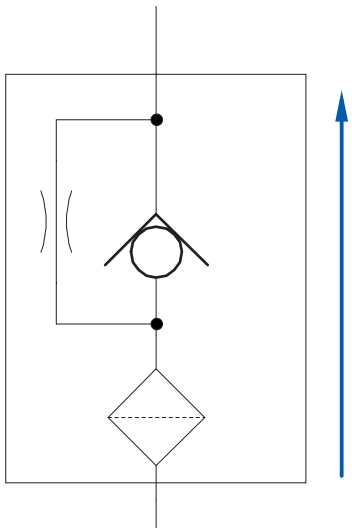
Technical data

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



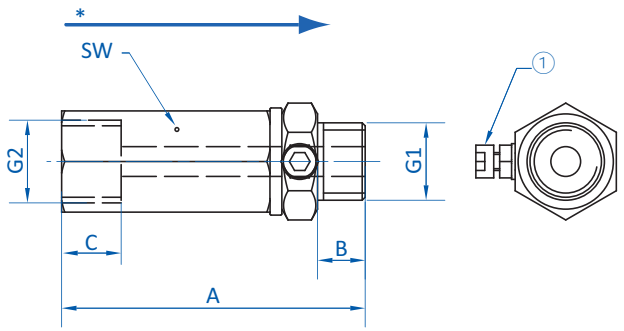
63.003



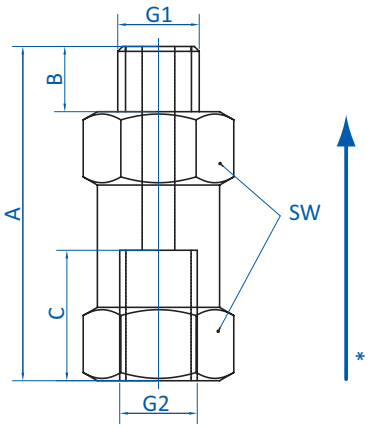
63.001 | 63.002 | 63.008 | 63.011 | 63.012 | 63.060

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

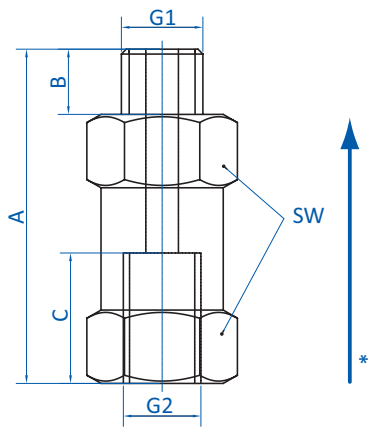
Product notes

> 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

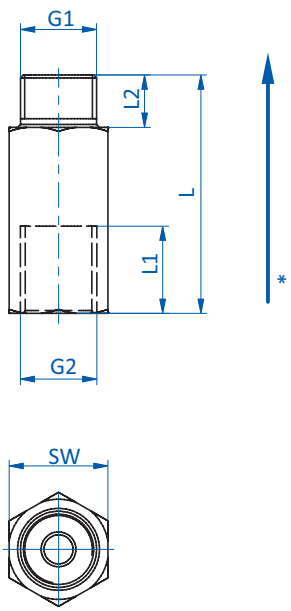
Notes

> These valves work only if the vacuum is switched on after the vacuum cup has been set in position

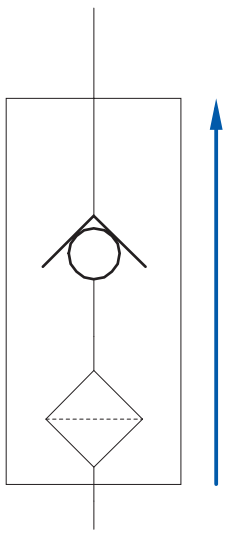
Technical data

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

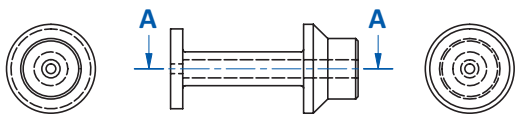
Product notes

> 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

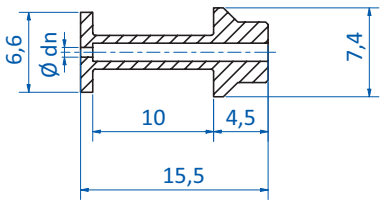
Item no.	Free passage Ø [mm]	Suction power to achieve 60 % vacuum [Nl/min]	Colour	Design	Material	Weight [g]	Suitable for
270.730	0.8	7	white	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.731	1	9	blue	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.732	1.3	14	black	Plug-In	POM	0.2	SBP2-20 & SBP2-40
270.733	1.5	17	white	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

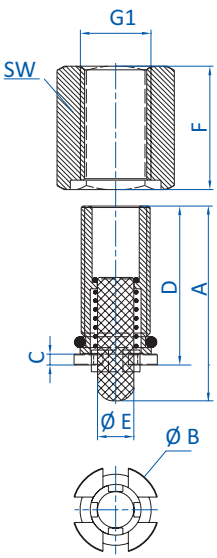
Notes

> Touch valves are directly screwed into vacuum cup, no further fittings needed

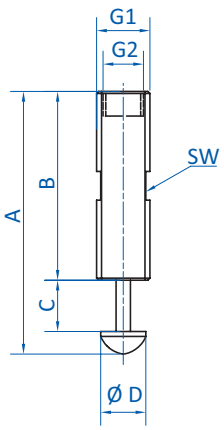
Technical data

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

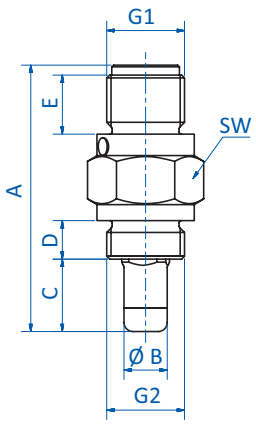


270.129 | 270.130



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

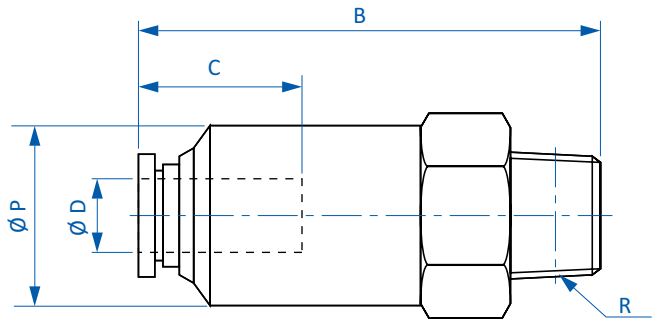
Technical data

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

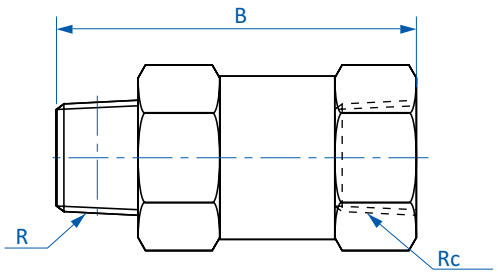
Technical data

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

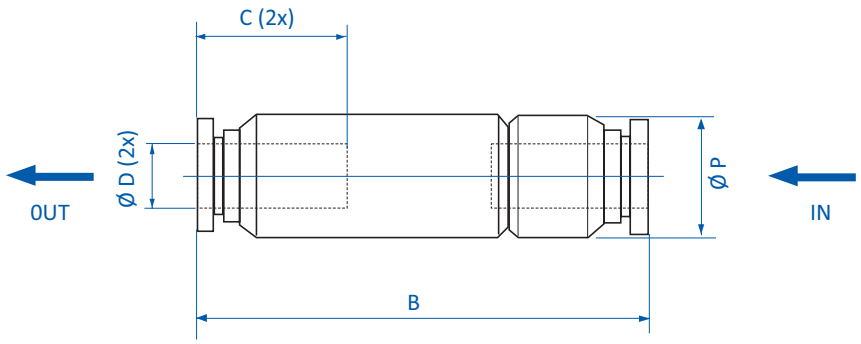
Dimensions



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

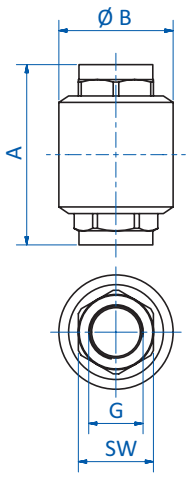
Product notes

> 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

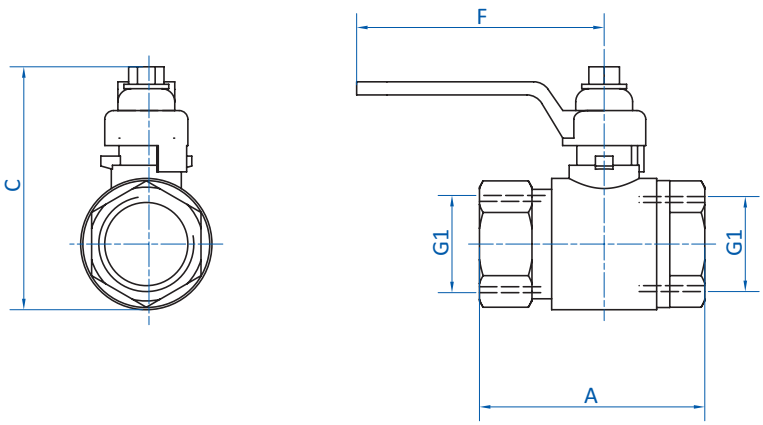
Technical data

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

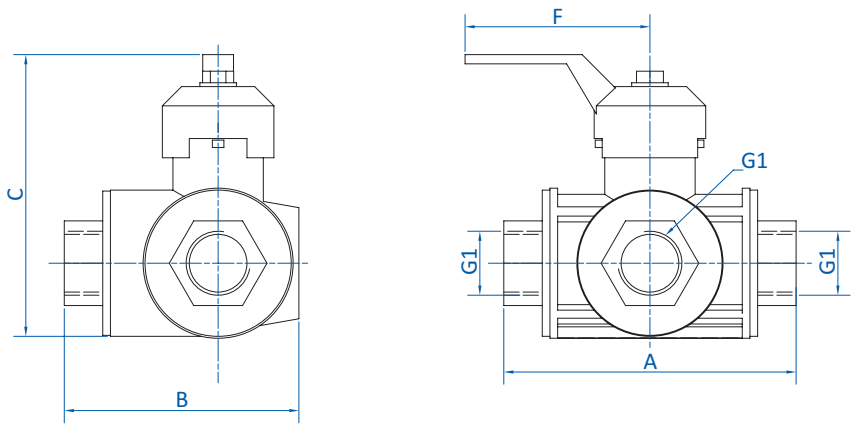
Technical data

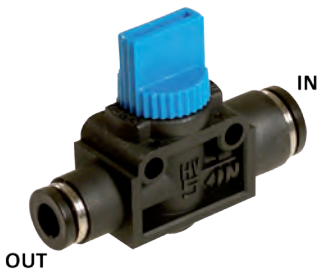
Item no.	Free passage [mm]	Pressure range [bar (psi)]	Weight [g]
33.084	10	0 - 30 (0 - 435.1)	160
33.085	12	0 - 30 (0 - 435.1)	190
33.086	14	0 - 30 (0 - 435.1)	300
33.087	18	0 - 30 (0 - 435.1)	490
33.088	23	0 - 30 (0 - 435.1)	850

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

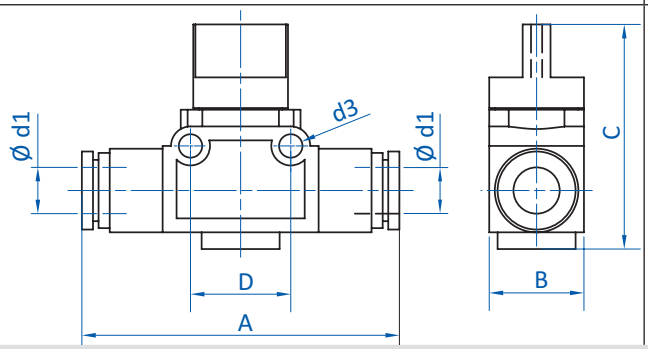
Technical data

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

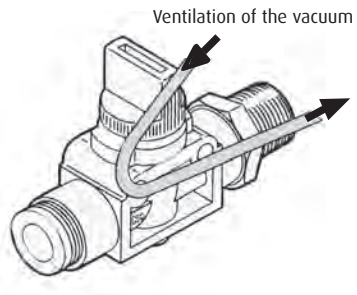
Dimensions

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 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

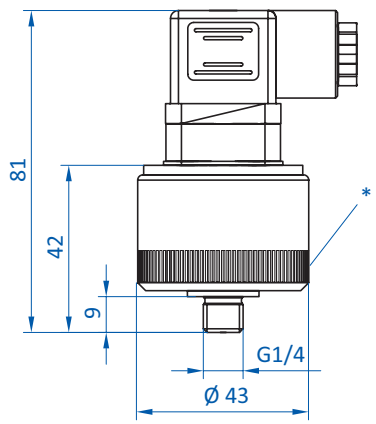
Ordering notes

> If desired the switching point can be preset

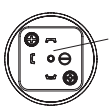
Technical data

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



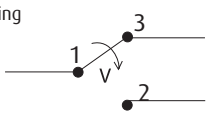
Electrical connection / changeover contact



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

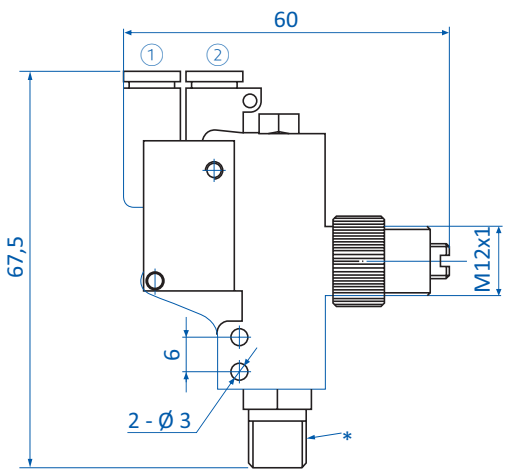
Notes

> 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

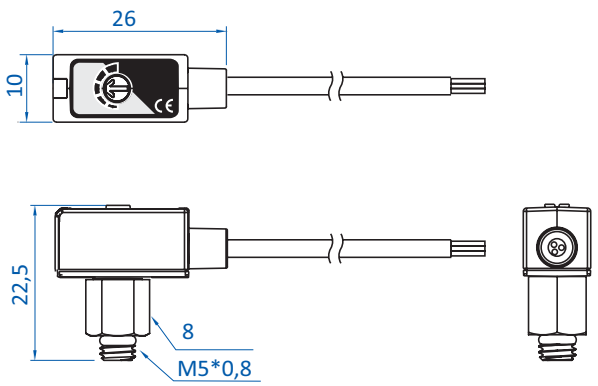
Product notes

> 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

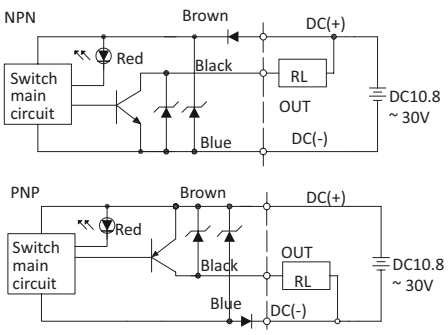
Technical data

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

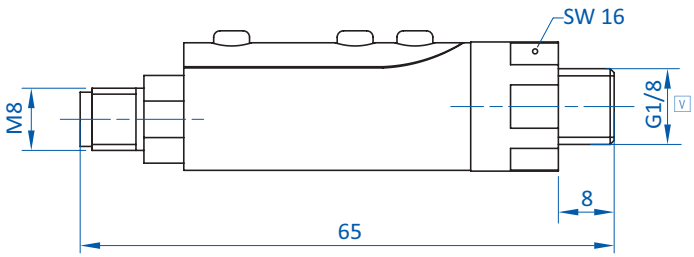
Notes

> Transient emissions: EN 61000-6-4:2007; EN 61326-2-3:2006
> Interference resistance: EN 61000-6-2:2005; EN 61326-2-3:2006

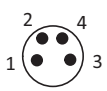
Technical data

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

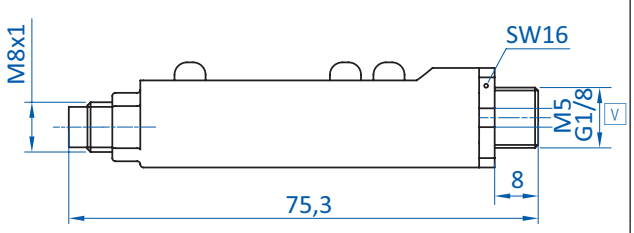
Notes

> 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

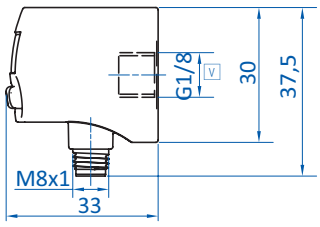
Technical data

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

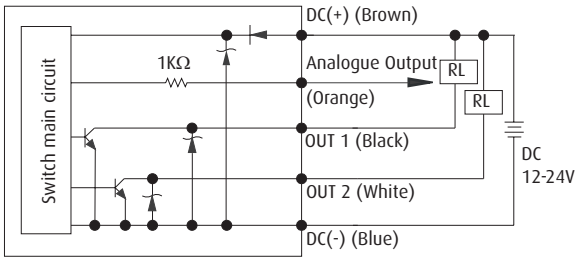
Technical data

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

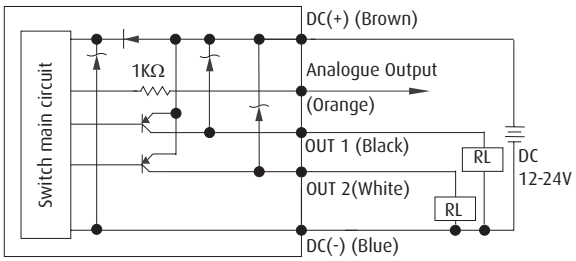
Continued on the next page

Wiring diagrams

20.035 (NPN)

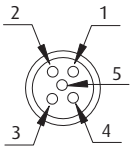


20.036 (PNP)



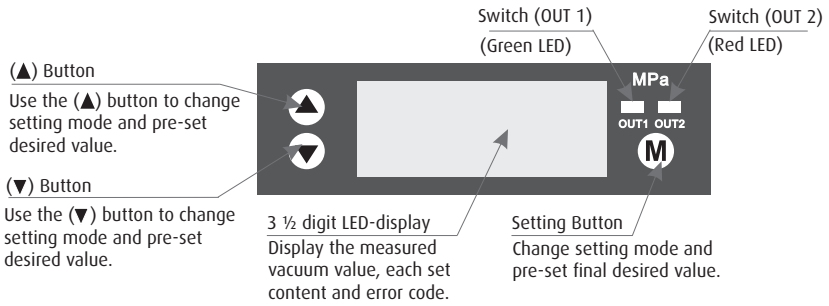
Plug assignment

20.035 and 20.036

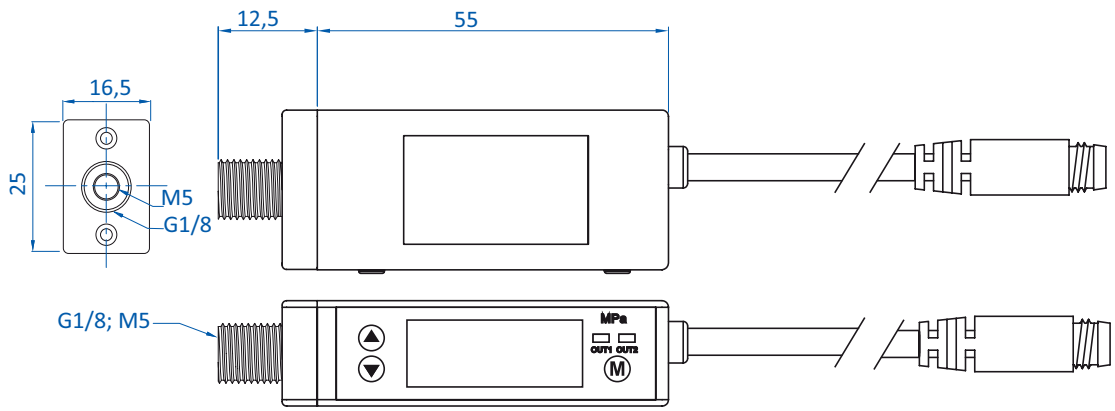


(1) Brown (+)
(2) White (OUT 2)
(3) Blue (-)
(4) Black (OUT 1)
(5) Orange (analogue OUT 1-5)

Panel instructions



Dimensions



Vacuum / Pressure switches – electronic with digital output

Compact design

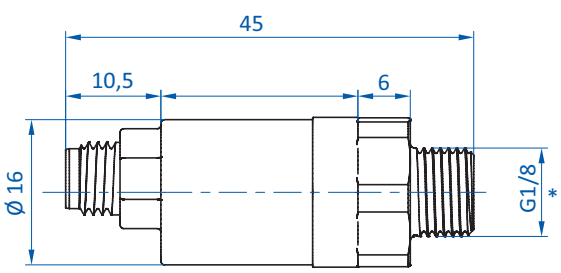
Product notes

> 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)

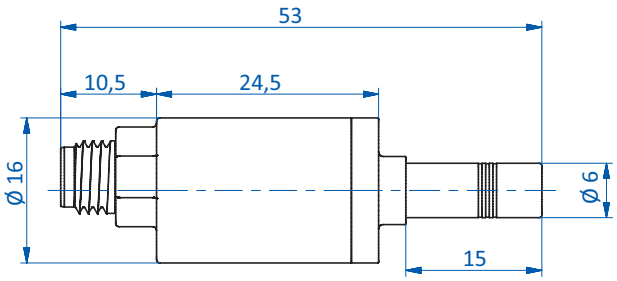
Technical data

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

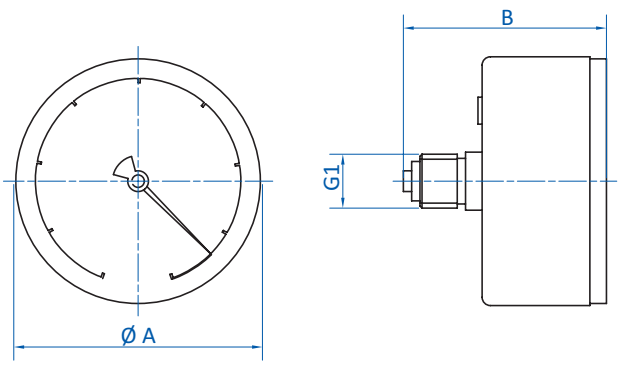
Technical data

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

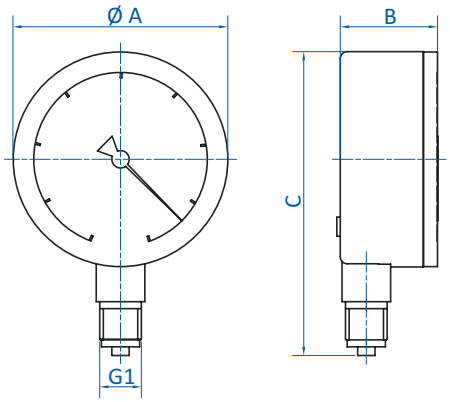
Dimensions

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

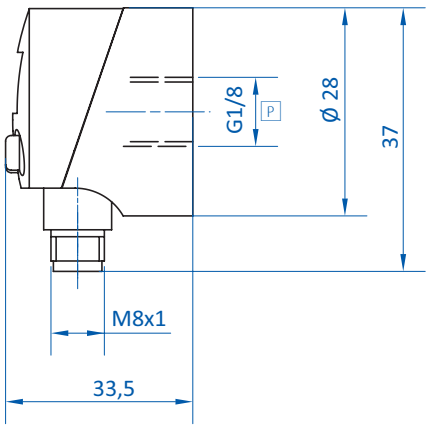
Notes

> 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

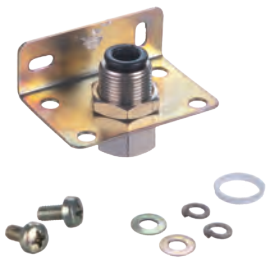
Dimensions



P = Pressure / Vacuum connection

Adapter and mounting brackets for vacuum switches and pressure switches

20.522 | 20.523



20.511

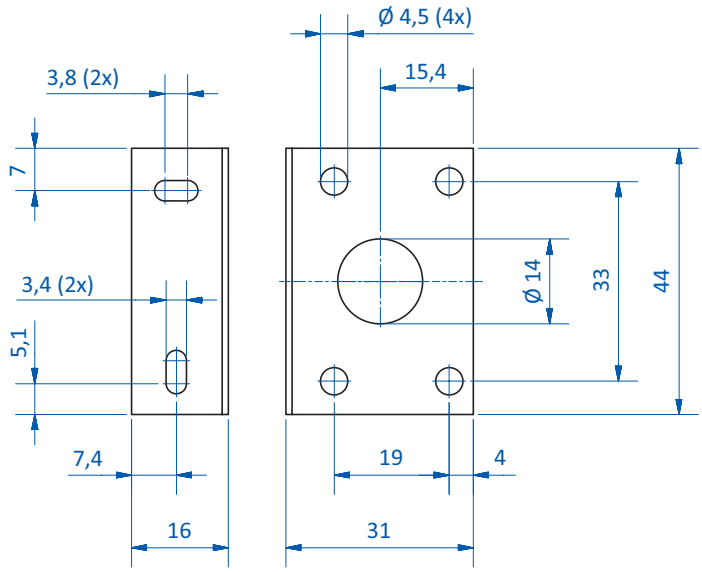
Ordering notes

> 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

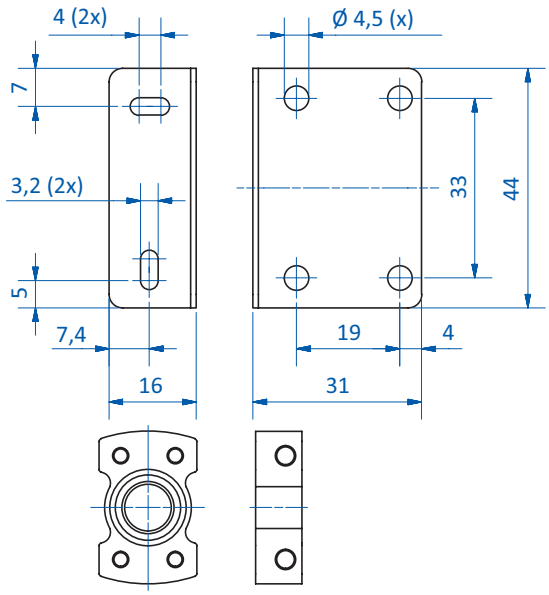
Dimensions



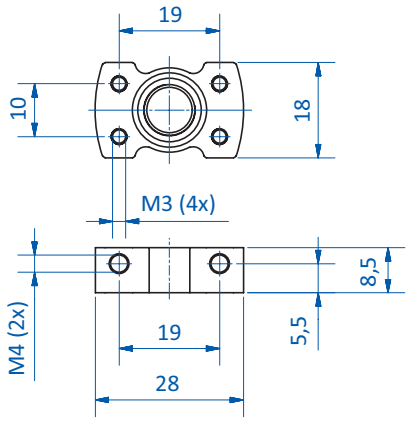
20.511

* = 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

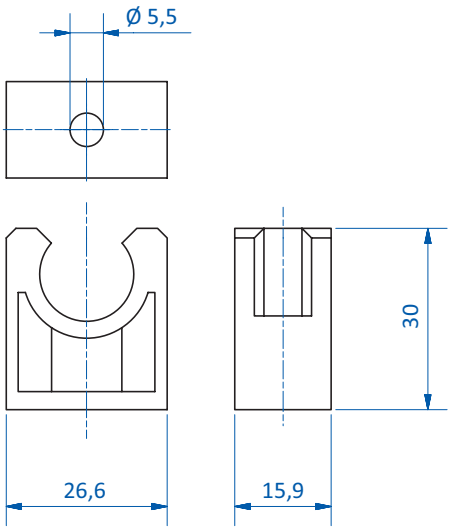
Product notes

> 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



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.

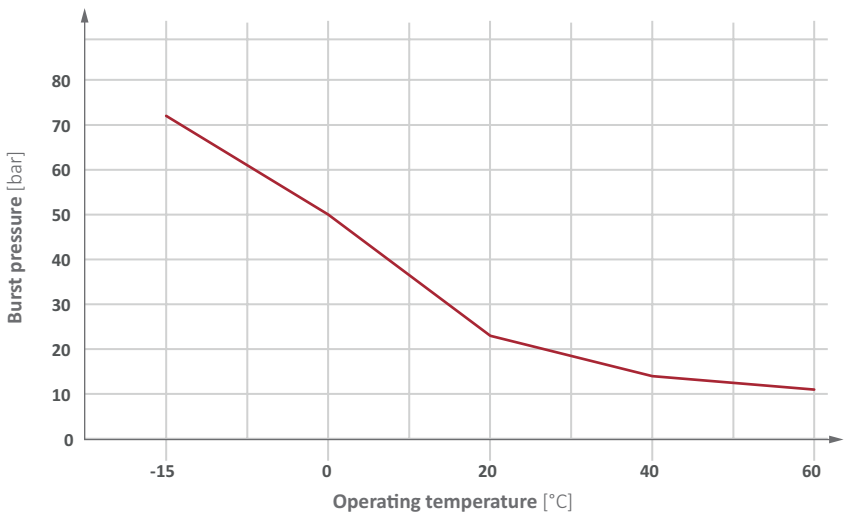
Technical data

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

Continued on the next page

Spiral tubing made of black PUR for vacuum and pressure applications

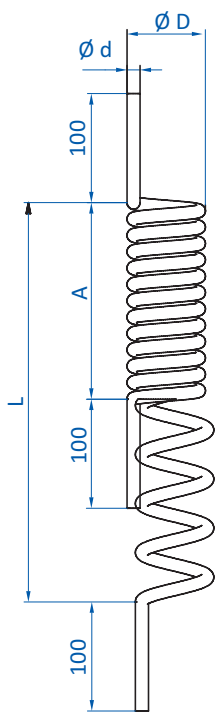
Technical data

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

Dimensions

Item no.	For hose inner diameter [mm]	Material	G1	SW
62.020	6	Nickel-plated brass	G1/8-male	12
62.021	8	Nickel-plated brass	G1/8-male	12
62.022	10	Nickel-plated brass	G1/8-male	12
62.023	6	Nickel-plated brass	G1/4-male	12
62.024	8	Nickel-plated brass	G1/4-male	14
62.025	10	Nickel-plated brass	G1/4-male	14
62.026	12	Nickel-plated brass	G1/4-male	14
62.027	16	Nickel-plated brass	G3/4-male	27
62.028	19	Nickel-plated brass	G3/4-male	32
62.029	25	Nickel-plated brass	G3/4-male	32
62.030	10	Nickel-plated brass	G1/2-male	22
62.031	12	Nickel-plated brass	G1/2-male	22
62.033	16	Nickel-plated brass	G1/2-male	22
62.034	18	Nickel-plated brass	G1/2-male	22
62.035	26	Brass	G1-male	37
62.036	32	Nickel-plated brass	G1 1/4-male	50
62.037	38	Nickel-plated brass	G2 1/2-male	55
62.065	32	Brass	G1 1/2-male	48
62.040	50	Brass	G1 1/2-male	52
62.041	50	Brass	G2-male	70
62.042	63	Brass	G2 1/2-male	80
62.045	6	Brass	G3/8-male	19
62.046	9	Brass	G3/8-male	19
62.047	12	Brass	G3/8-male	19
62.048	16	Nickel-plated brass	R3/8-male	17
62.060	14	Nickel-plated brass	G1/2-male	24
62.061	32	Brass	G1-male	36
62.062	4	Brass	M5-male	7
62.063	6	Brass	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

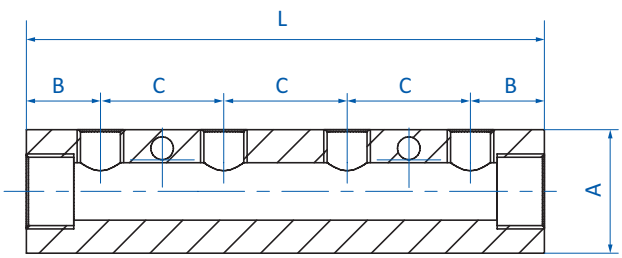
Technical data

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

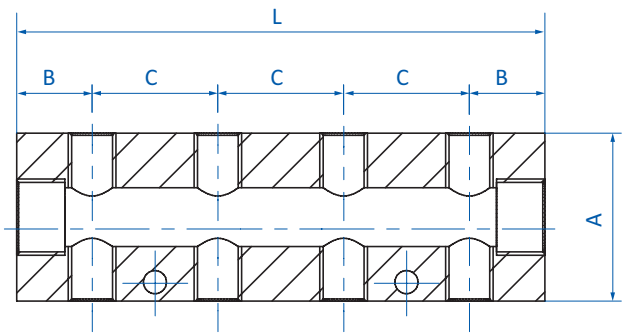
Technical data

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

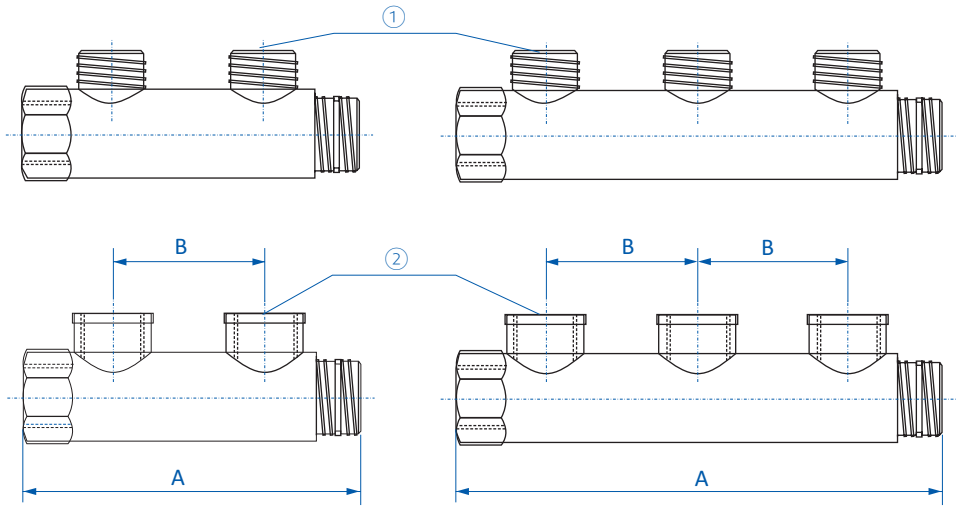
Technical data

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

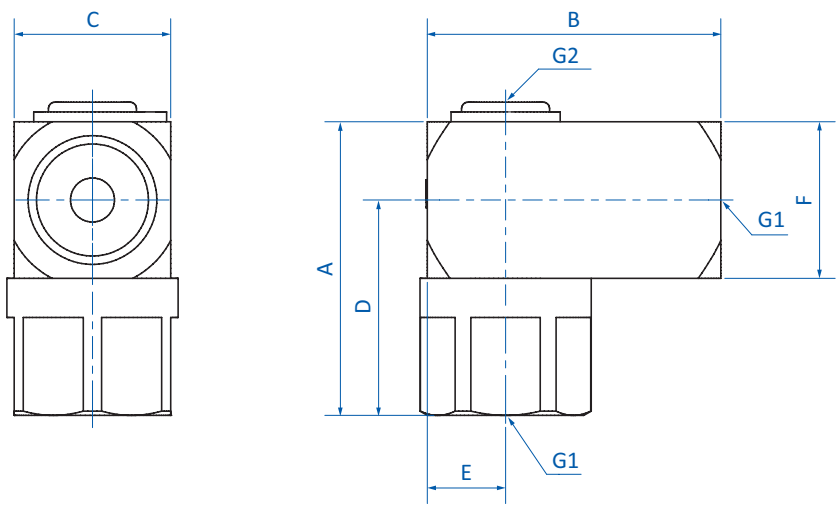
Product notes

> 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

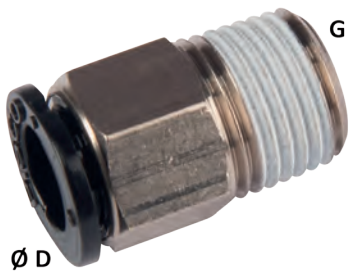
Item no.	Nominal width [mm]	Nominal flow rate [Nl/min]	U max. [1/min]	Operating temperature [°C (°F)]	Weight [g]
30.816	5	425	500	-10 - 85 (14 - 185)	69
30.817	5	465	550	-10 - 85 (14 - 185)	58
30.818	8	1,350	300	-10 - 85 (14 - 185)	150

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

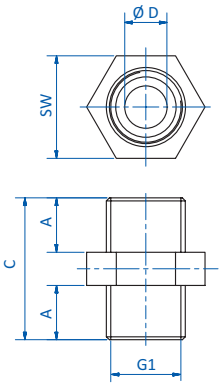
Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	Ø P [mm]
CPP20-6W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	6	11
CPP20-8W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	8	11
CPP20-10W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	10	11
CPP20-12W	-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

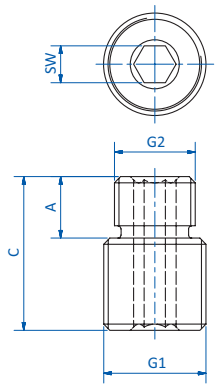
Technical data			Dimensions	
Item no.	Pressure range [bar (psi)]	Operating temperature [°C (°F)]	Ø D [mm]	Ø P [mm]
CPP20L-8W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	8	11
CPP20L-10W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	10	11
CPP20L-12W	-0.95 - 13 (-13.8 - 188.5)	0 - 60 (32 - 140)	12	11

Double nipples, equal thread – SZ-GA-MM



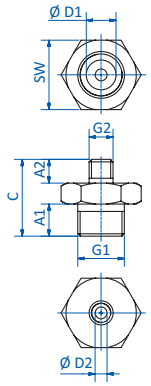
Technical data		Dimensions				
Item no.	Material	G1 (male)	A [mm]	C [mm]	Ø D [mm]	SW
270.420	Brass	M5	5	13	2.5	7
270.059	Brass	G1/8	7	18	5	14
270.120	Brass	G1/4	9	23.5	7	17
270.121	Nickel-plated brass	G3/8	9	23	11	19
270.122	Brass	G1/2	12	30	13	24
270.123	Brass	G3/4	16	40	18	32
270.124	Brass	G1	13.5	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



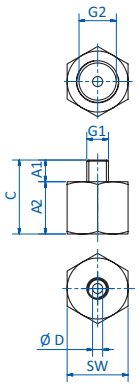
Technical data		Dimensions				
Item no.	Material	G1 (male)	G2 (male)	A [mm]	C [mm]	SW
270.561	Aluminum	G3/8	G1/4	10	25	6
270.562	Aluminum	G3/8	M10	12	27	5
270.563	Aluminum	G3/8	M14	12	27	6
270.564	Aluminum	G1/4	G1/4	--	22	5
270.565	Aluminum	G1/4	M10	12	24	5
270.566	Aluminum	G1/4	M14	11	24	5

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

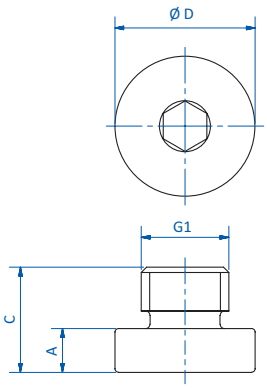
Reducing bushings male/female – SZ-GA-MF



Technical data

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

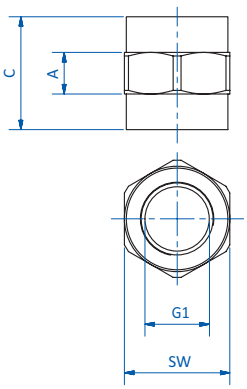
Blanking plugs with O-ring seal – SZ-SCV



Technical data

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

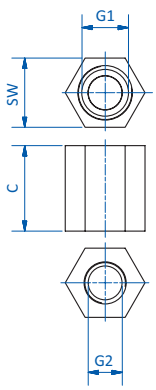
Threaded bushes – SZ-GA-FF



Technical data

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

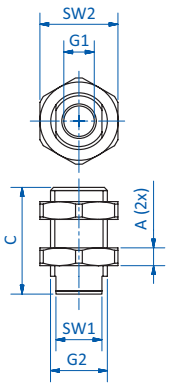


Technical data

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	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

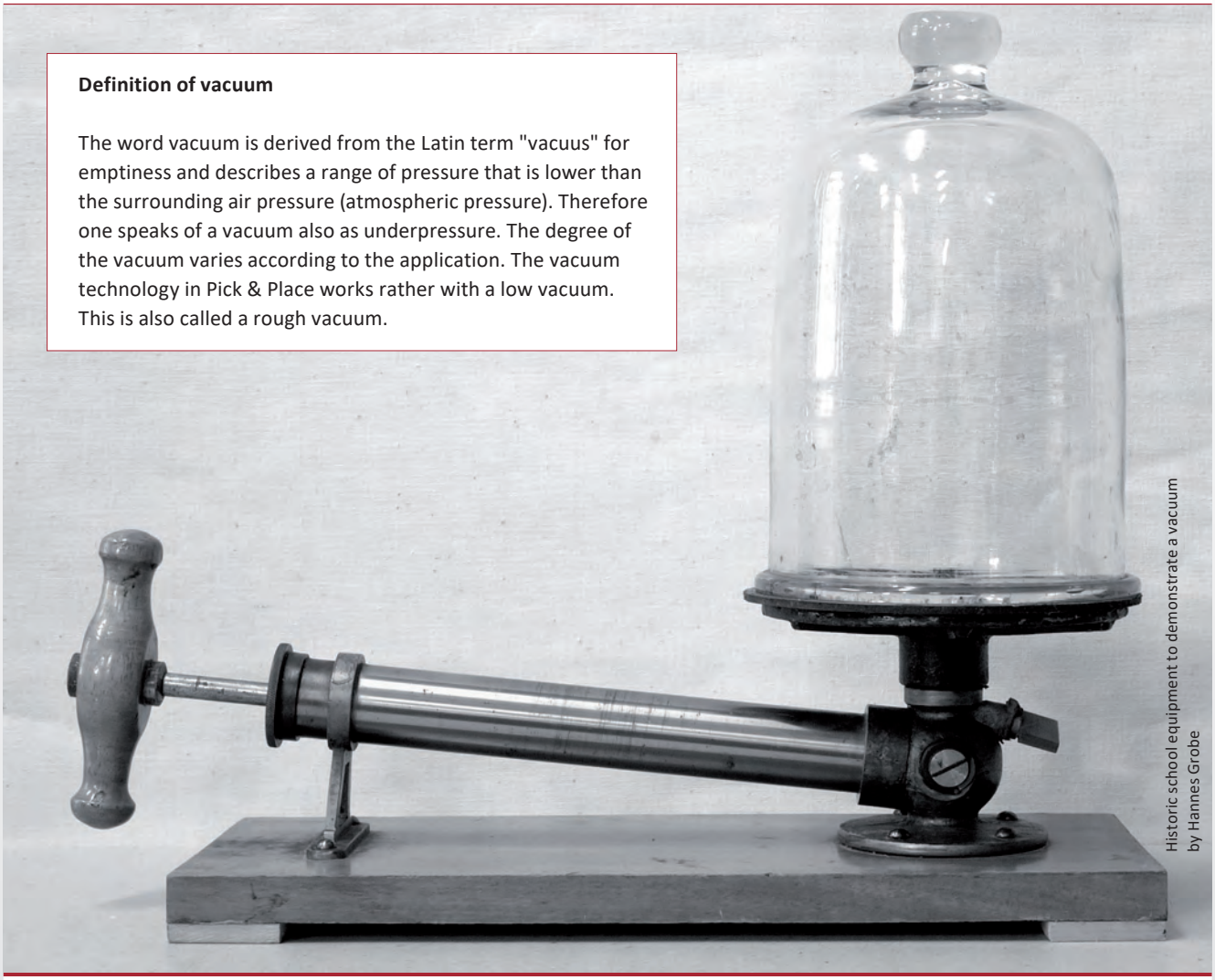
Notes:

Notes:

Vacuum: Basics

Definition of vacuum

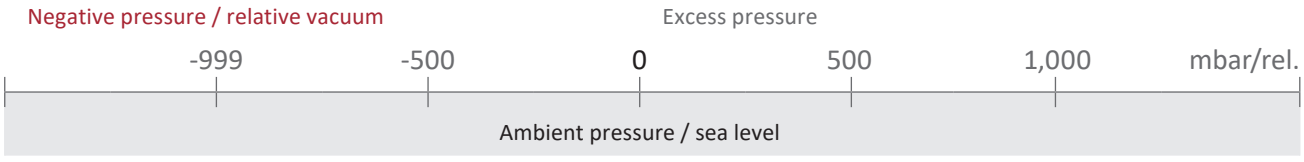
The word vacuum is derived from the Latin term "vacuus" for emptiness and describes a range of pressure that is lower than the surrounding air pressure (atmospheric pressure). Therefore one speaks of a vacuum also as underpressure. The degree of the vacuum varies according to the application. The vacuum technology in Pick & Place works rather with a low vacuum. This is also called a rough vacuum.



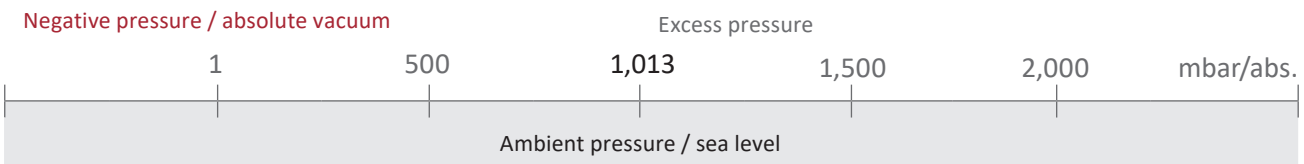
Historic school equipment to demonstrate a vacuum by Hannes Grobe

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:

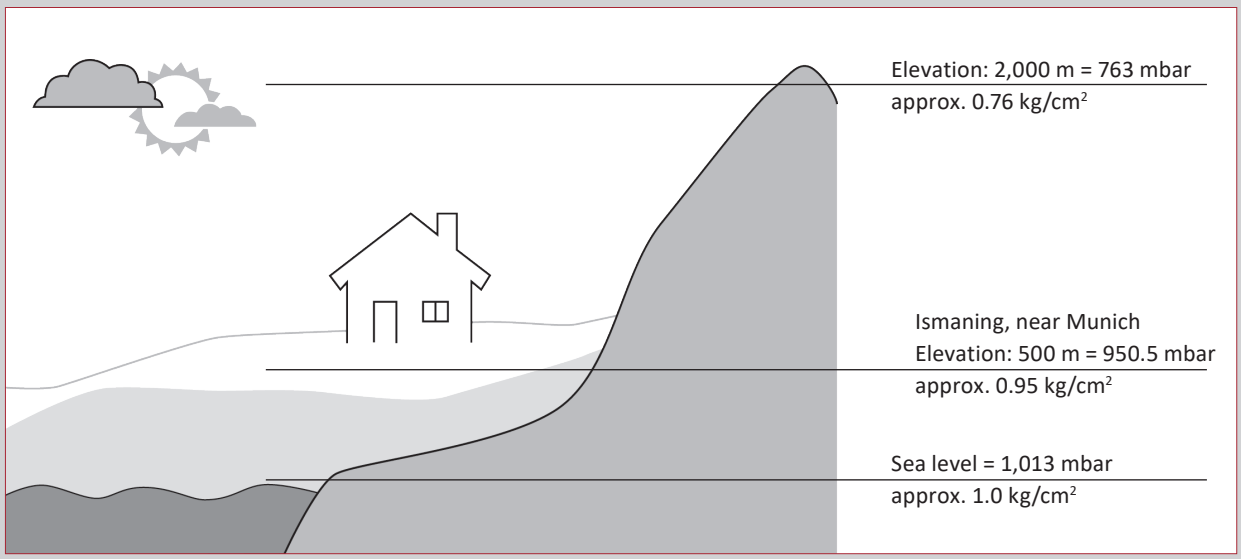
Vacuum / pressure conversion table

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
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 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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