

## SUPERVISION AND CONTROL

For best performance and efficiency in vacuum systems, it is important to supervise and control the flow of compressed air and vacuum.



### VACUUM SWITCHES

A vacuum switch can be used for many different applications.

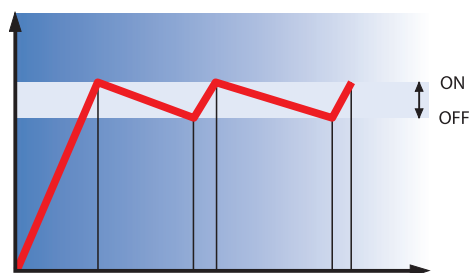
- ▶ Converts a vacuum signal to an electric or pneumatic signal
- ▶ Actuates at a pre-set vacuum level
- ▶ Sequence signal in vacuum systems
- ▶ Safety signal for low vacuum level
- ▶ Signal at correct vacuum level
- ▶ Energy-saving systems

### HYSTERESIS

Vacuum switches have different hysteresis. The hysteresis is the difference between the ON and the OFF levels.

The need or demand for small or large hysteresis is different depending on application.

When you want a fixed vacuum level, a small hysteresis is good, but if you want to use the switch for an ES application, a large hysteresis is necessary.



## DESCRIPTION OF THE OUTPUTS FROM ELECTRONIC VACUUM SWITCHES

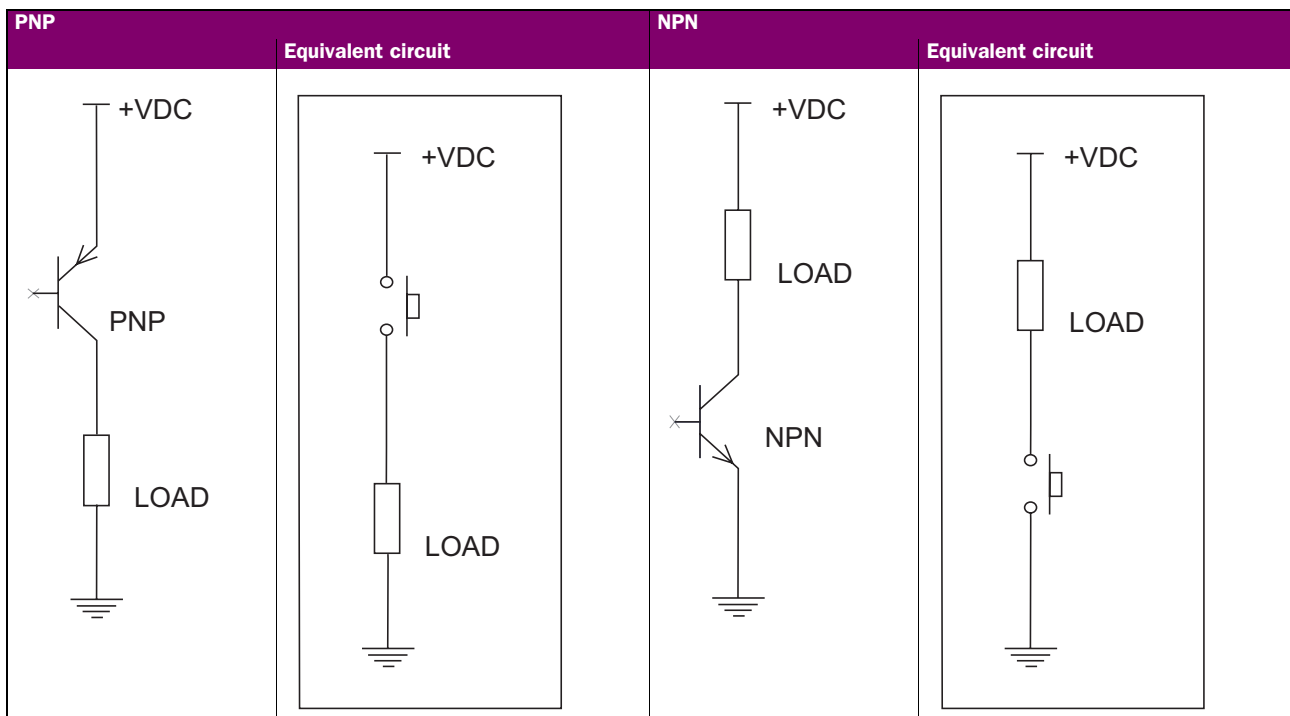
### PNP/NPN OUTPUT, WHAT DOES IT MEAN?

A PNP transistor is generally connected to the positive rail and is sourcing the load.  
The NPN is sinking the load and is generally connected to the ground.

If a load is higher than the output can handle, an extra transistor or relay can be used.

See example below.

### PNP/NPN



### OHM'S LAW

Ohm's Law can be described to be the basic law within electronics.

It defines the relation between voltage, current and resistance.

The current is directly proportional to the voltage drop over a resistance.

Example: One volt over a one ohm resistor makes one ampere current through the resistor.

Electric power, measured in Watt, is a result of the voltage \* current.

### UNITS

U = Voltage (V)olt

I = Current (A)mp)(mA = 0,001 A)

R = Resistance (R) (Ohm)(kOhm = 1000 Ohm)

P = Power (W)att

### FORMULAS

$U = R \cdot I$   $I = U/R$ ,  $R = U/I$

$P = U \cdot I$   $U = P/I$ ,  $I = P/U$

Example:  $100\text{mA} = 2.4\text{W}/24\text{V}$

## VACUUM SWITCHES, INDUCTIVE UNIVERSAL



The adjustable vacuum switches are actuated at a set vacuum level and set by a knob.

The pre-set vacuum switches are actuated at a pre-set vacuum level, non-adjustable.

- ▶ Converts a vacuum signal to an electric signal.
- ▶ Vacuum-actuated membrane linked to a proximity-inductive universal switch.
- ▶ The output functions PNP NO, PNP NC, NPN NO and NPN NC are available in the vacuum switch.
- ▶ The switch must be connected in series with the load.

### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.6
Material		PBT, PVC, PA SS NBR, POM Al, CuZn
Temperature range	°C	-25–80
Weight	g	50–65
Connection Vacuum		M5
Hysteresis	kPa	2
Cable		2 x 0.14 mm <sup>2</sup> x 2m
Supply voltage	VDC	24 (5–36)
Safety classification		IP67
Current Output, max	mA	200
Voltage drop, max	VDC	4.6

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value			
		3116064	3116089	3116090	3116091
Signal range	-kPa	10–95	10±1	30±3	70±5

### Supplement

PNP NO = Normally Open, Positive logic. As the switch is activated, the gate at the feed current (+) closes and contact is established.

PNP NC = Normally Closed, Positive logic. As the switch is activated, the gate at the feed current (+) opens and contact is interrupted.

NPN NO = Normally Open, Negative logic. As the switch is activated, the gate at ground (-) closes and contact is established.

NPN NC = Normally Closed, Negative logic. As the switch is activated, the gate at ground (-) opens and contact is interrupted.

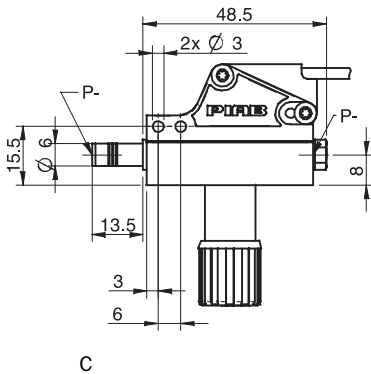
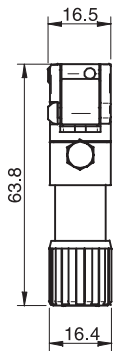
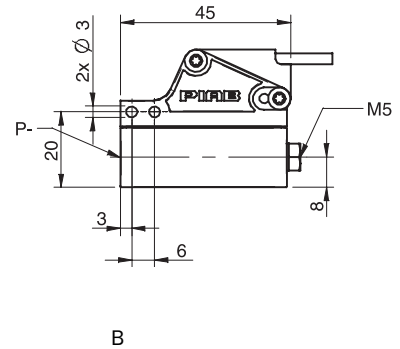
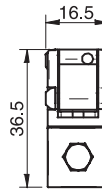
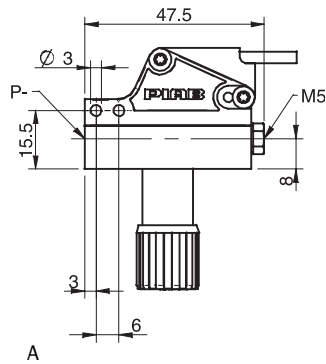
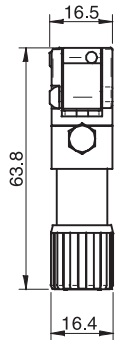
### Note:

NO, Normally Open, in electrical circuits corresponds to an open circuit breaker, which means that, if the gate is open, no current can pass through.

NO, Normally Open, in pneumatic circuits corresponds to an open valve, which means that, if the valve is open, compressed air passes through.

## ORDERING INFORMATION

	Description	Art. No.
A	Vacuum switch, inductive universal, adjustable with knob	3116064
B	Vacuum switch, inductive universal, pre-set (Signal range 10 -kPa)	3116089
B	Vacuum switch, inductive universal, pre-set (Signal range 30 -kPa)	3116090
B	Vacuum switch, inductive universal, pre-set (Signal range 70 -kPa)	3116091
C	Vacuum switch, inductive universal, adjustable with knob Ø6	0104350



## ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Connection set for vacuum switch	0100488

Contents: Barrel nipple G1/8" M5 long, hose connector 4/2 M5. Material: Nickel-plated brass, SS, PA66, NBR, PA6. Fits: All pre-set and adjustable vacuum switches.

## VACUUM SWITCHES, ELECTRO-MECHANICAL



The adjustable vacuum switches are actuated at a set vacuum level and set by a knob.

The pre-set vacuum switches are actuated at a pre-set vacuum level, non-adjustable.

- ▶ Converts a vacuum signal to an electric signal.
- ▶ Vacuum-actuated membrane linked to an electro-mechanical switch.
- ▶ Output function NO or NC.

### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.6
Material		PBTP, PVC, PA, SS, NBR, POM, Al, CuZn
Temperature range	°C	-20–80
Weight	g	50–62
Connection vacuum		M5
Function output		NO/NC
Hysteresis	kPa	10
Cable		3 x 0.75 mm <sup>2</sup> x 0.5 m
Voltage supply, max.	VAC/VDC	250/30
Safety classification		IP67
Current output, max	mA	5000

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value			
		3116068	3116061	3116095	3116096
Signal range	-kPa	15–95	15–95	25±5	65±10

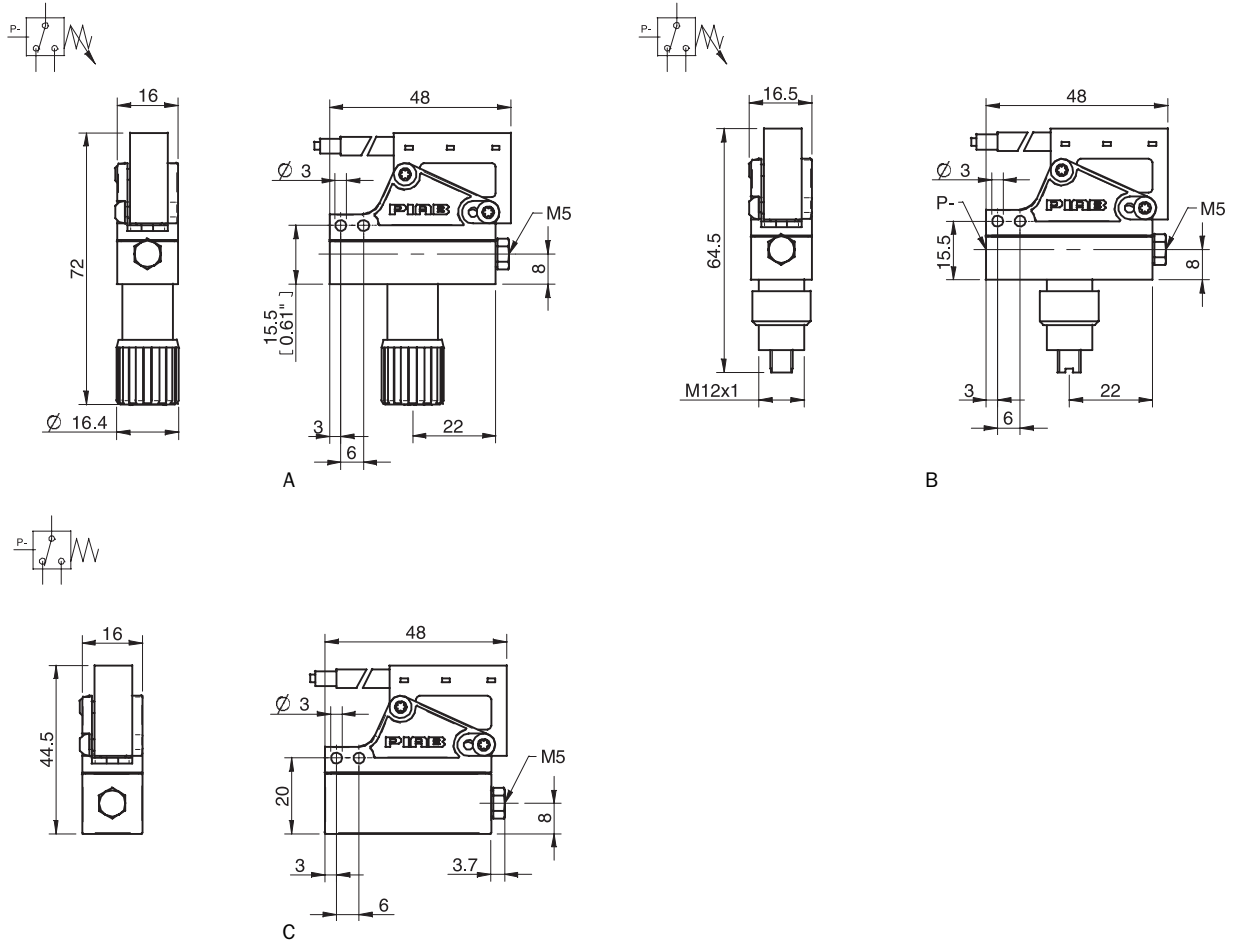
#### Note:

NO, Normally Open, in electrical circuits corresponds to an open circuit breaker, which means that, if the gate is open, no current can pass through.

NO, Normally Open, in pneumatic circuits corresponds to an open valve, which means that, if the valve is open, compressed air passes through.

## ORDERING INFORMATION

	Description	Art. No.
A	Vacuum switch, electro-mechanical, adjustable with knob	3116068
B	Vacuum switch, electro-mechanical, adjustable with screw	3116061
C	Vacuum switch, electro-mechanical, pre-set (Signal range 25 -kPa)	3116095
C	Vacuum switch, electro-mechanical, pre-set (Signal range 65 -kPa)	3116096



## ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Connection set for vacuum switch	0100488

Contents: Barrel nipple G1/8" M5 long, hose connector 4/2 M5. Material: Nickel-plated brass, SS, PA66, NBR, PA6. Fits: All pre-set and adjustable vacuum switches.

## VACUUM SWITCHES, PNEUMATIC



The adjustable vacuum switches are actuated at a set vacuum level and set by a knob.

The pre-set vacuum switches are actuated at a pre-set vacuum level, non-adjustable.

- ▶ Converts a vacuum signal to a pneumatic signal.
- ▶ Vacuum-actuated membrane linked to a pneumatic switch.
- ▶ Output function NO or NC.
- ▶ Narrow or wide hysteresis.

### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.6
Pressure range	MPa	0.15–0.8
Material		PA, SS, NBR, POM, Al, CuZn
Temperature range	°C	-10–60
Weight	g	39
Connection vacuum		M5

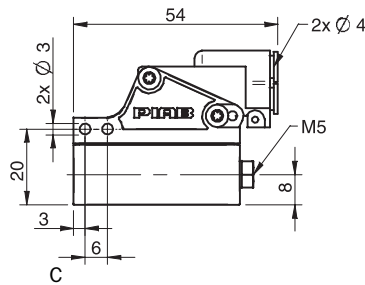
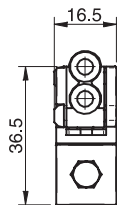
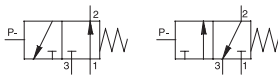
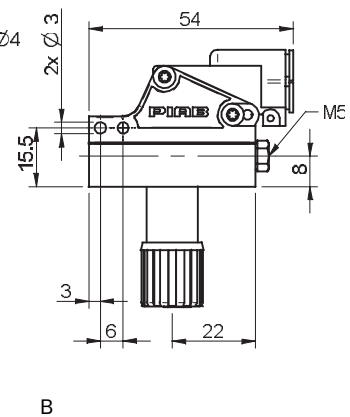
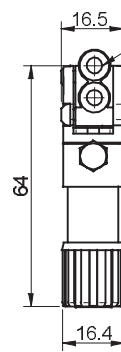
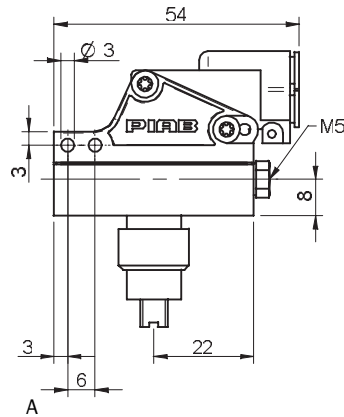
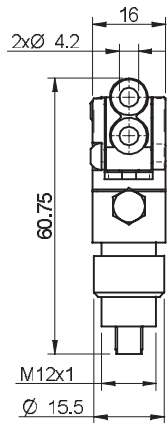
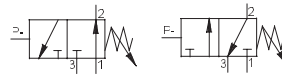
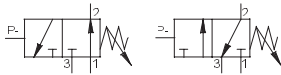
### TECHNICAL DATA, SPECIFIC

Description	Unit	Value								
		3116069	3116062	3116070	3116063	3116083	3116084	3116085	3116087	3116088
Signal range	-kPa	10–95		15–95		10±2	25±4	65±8	30±5	70±10
Function output		NO		NC			NO		NC	
Hysteresis	kPa	3		12			3		12	

NO, Normally Open, in pneumatic circuits corresponds to an open valve, which means that, if the valve is open, compressed air passes through.

## ORDERING INFORMATION

Description	Art. No.
A Vacuum switch, pneumatic, adjustable with screw (NO)	3116062
A Vacuum switch, pneumatic, adjustable with screw (NC)	3116063
B Vacuum switch, pneumatic, adjustable with knob (NO)	3116069
B Vacuum switch, pneumatic, adjustable with knob (NC)	3116070
C Vacuum switch, pneumatic, preset (NO 10 -kPa)	3116083
C Vacuum switch, pneumatic, preset (NO 25 -kPa)	3116084
C Vacuum switch, pneumatic, preset (NO 65 -kPa)	3116085
C Vacuum switch, pneumatic, preset (NC 30 -kPa)	3116087
C Vacuum switch, pneumatic, preset (NC 70 -kPa)	3116088



## ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Connection set for vacuum switch	0100488

Contents: Barrel nipple G1/8" M5 long, hose connector 4/2 M5. Material: Nickel-plated brass, SS, PA66, NBR, PA6. Fits: All pre-set and adjustable vacuum switches.



## VACUUM SWITCH MINI, PRE-SET



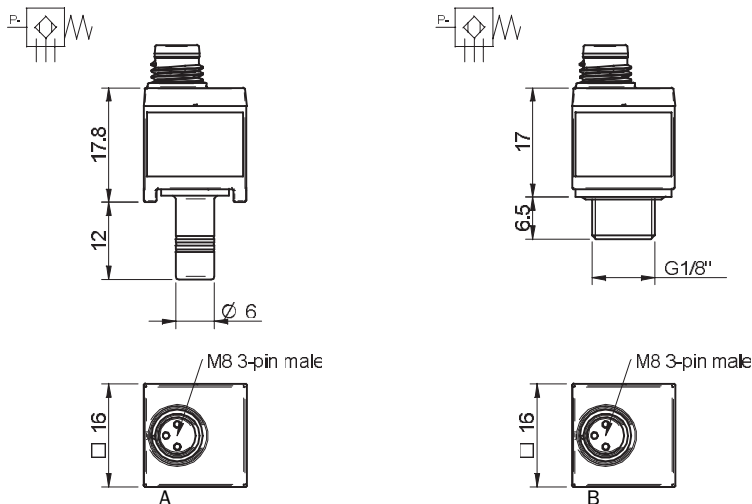
- ▶ Electromechanical vacuum switch with digital output
- ▶ Very low weight and small format
- ▶ Preferably installed near the suction cup
- ▶ PNP NO/NC or NPN NO/NC output depending on type of connection
- ▶ Preset switching points at 30, 50 or 70 -kPa
- ▶ Vacuum connection with push-in connector with D=6 or G1/8" male thread
- ▶ Built-in red LED that indicates status
- ▶ M8 3-pin electric connection plug

### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.2
Material		PA, TPU, SS, CuZn(Au)
Temperature range	°C	-25 – +85
Weight	g	5
Signal range	-kPa	30, 50 or 70 +5/-3
Function		PNP NO/NC, NPN NO/NC
Hysteresis	kPa	6 ± 1
Voltage	VDC	24 (12-30)
Safety classification		IP40
Current max	mA	100 inductive/400 resistive
Voltage drop, max (100mA/24V inductive load)	VDC	0.055
Response time	ms	4
Display		Red LED
Electric connection		M8 3-pin male

### ORDERING INFORMATION

	Description	Art. No.
A	Vacuum switch VS4015, Ø6, 30 -kPa	0110245
A	Vacuum switch VS4015, Ø6, 50 -kPa	0110246
A	Vacuum switch VS4015, Ø6, 70 -kPa	0110247
B	Vacuum switch VS4016, G1/8" male, 30 -kPa	0110248
B	Vacuum switch VS4016, G1/8" male, 50 -kPa	0110249
B	Vacuum switch VS4016, G1/8" male, 70 -kPa	0110250



### ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Cable M8 3-pin female L=2m	0108141

## VACUUM SWITCH, ADJUSTABLE WITH ANALOGUE OUTPUT



- ▶ 1 output NO and 1 analogue output
- ▶ 2 m cable included, female connector
- ▶ Fits vacuum pump P3010

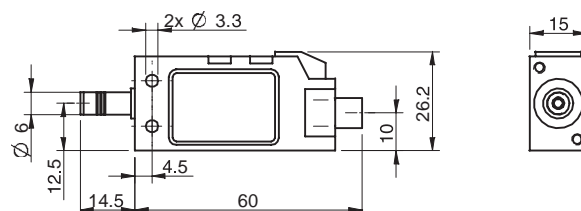
### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.2
Vacuum range	-kPa	0-100
Material		PC, POM, NBR, SS
Temperature range	°C	-20-70
Weight	g	50
Connection vacuum		D=6/M5
Function		NO, NPN/PNP
Hysteresis	%	1-15
Supply voltage	VDC	10.8-30
Voltage output	VDC	1-5
Safety classification		IP40
Analogue output, current max. (load resistance min. 5kΩ)	mA	1
Humidity	% RH	35-85
Response time	ms	2
Accuracy at 25°C		±3% F.S.
Current consumption, max	mA	17
High-voltage resistant	VAC	500
Insulation at 500 VDC	MΩ	100
Vibration resistance, 1,5 mm, XYZ, 2 h	Hz	10-500
Electric connection		M8 4 pin male
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

### ORDERING INFORMATION

Description	Art. No.
Vacuum switch, adjustable, PNP NO MM8	0107729
Vacuum switch, adjustable, NPN NO MM8	0107730



## VACUUM SWITCH, ADJUSTABLE WITH LED-DISPLAY



- ▶ 2 outputs, NO
- ▶ M8 4-pin male connector
- ▶ LED - display

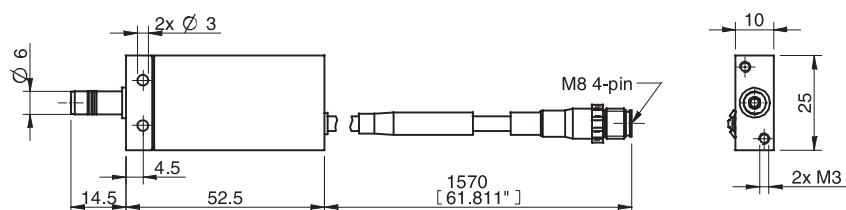
### TECHNICAL DATA

Description	Unit	Value
Pressure, max	MPa	0.2
Vacuum range	-kPa	0–100
Material		PC, POM, NBR, Al
Temperature range	°C	-10–60
Weight	g	52
Connection vacuum		D=6/M5
Function		NO, NPN/PNP
Hysteresis	kPa	2
Voltage supply	VDC	12–24
Voltage output	VDC	1–5
Dielectric strength, 1 min	VAC	500
Safety classification		IP40
Analogue output, current max. (load resistance min. 5kΩ)	mA	1
Humidity	%RH	35–85
Response time	ms	2
Accuracy at 25°C		±3% F.S
Current consumption, maximum	mA	35
Insulation resistance, at 500 VDC	MO/MW	100
Display		2-digits LED
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

### ORDERING INFORMATION

Description	Art. No.
Vacuum switch, adjustable, PNP NO DM8	0107732
Vacuum switch, adjustable, NPN NO DM8	0107733



## VACUUM SWITCH, ADJUSTABLE WITH 1 OUTPUT



- ▶ 1 output NO
- ▶ M8 3-pin male connector
- ▶ 2m cable included, female connector

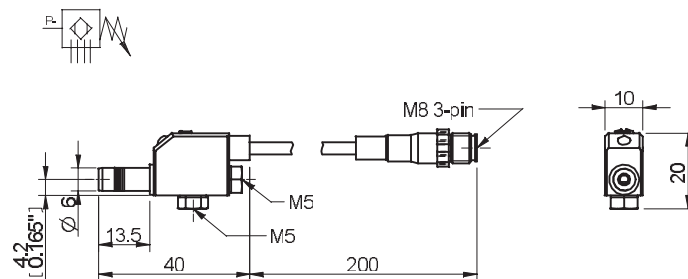
### TECHNICAL DATA

Description	Unit	Value
Pressure, max.	MPa	0.2
Vacuum range	-kPa	0–100
Material		PC, Al
Temperature range	°C	-10–60
Weight	g	6
Connection vacuum		D=6/M5
Hysteresis		±2% F.S.
Voltage supply	VDC	10.8–30
Safety classification		IP40
Humidity	%RH	35–85
Response time, approx.	ms	1
Accuracy, at 25°C		±3% F.S.
Current consumption, max	mA	20
High-voltage resistance	VDC	500
Insulation at 500 VDC	MΩ	100
Vibration resistance, 1.5 mm, XYZ, 2 h	Hz	10–55
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

### ORDERING INFORMATION

Description	Art. No.
Vacuum switch, adjustable, PNP NO LM8	0107731



## VACUUM SWITCH, ADJUSTABLE



- ▶ 1 output NC
- ▶ Cable 1.5 m
- ▶ Range from pressure to vacuum

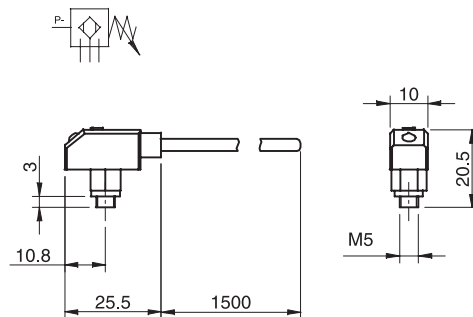
### TECHNICAL DATA

Description	Unit	Value
Pressure,max.	MPa	0.6
Vacuum/pressure range	kPa	-100~300
Material		PC, SS, PSC,CuZn, PA
Temperature range	°C	-10~60
Weight	g	6
Connection vacuum		M5
Hysteresis		±2% F.S.
Voltage supply	VDC	10.8~30
Safety classification		IP40
Humidity	%RH	35~85
Response time, approx.	ms	1
Accuracy, at 25°C		±3% F.S.
Current consumption, max	mA	20
High-voltage resistance	VDC	500
Insulation at 500 VDC	MOhm	100
Vibration resistance, 1.5 mm, XYZ, 2 h	Hz	10~55
Display		LED
Current output, max	mA	80

Note: Normally closed, opens at set value from -100~300 kPa.

### ORDERING INFORMATION

Description	Art. No.
Vacuum switch PNP M5	0110358
Vacuum switch NPN M5	0110359



## SOLENOID VALVE DS 23 FOR CONTROL ON/OFF



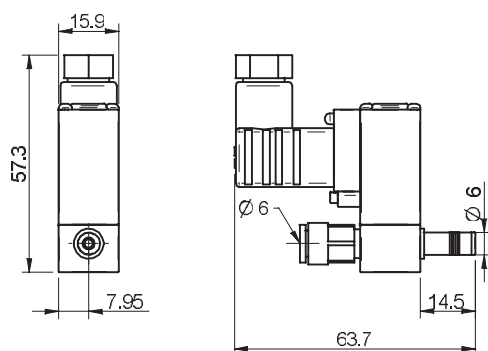
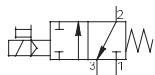
- ▶ 3/2 Valve
- ▶ Body with 3 M5 ports, port 1 and 2 in-line
- ▶ Nominal diameter of 2.3 mm
- ▶ Suitable for compressed air, filtration 40µ
- ▶ 2.5 W solenoid
- ▶ Manual override

### TECHNICAL DATA

Description	Unit	Value
Feed pressure, max	MPa	0.7
Feed pressure	MPa	0.2-0.6
Material		Ni, Al, SS, POM, CuZn, NBR
Working temperature	°C	-18-50
Weight	g	100
Connection compressed air		D=6
Connection exhaust		D=6
Supply voltage	VDC	24
Safety classification, DIN (c) socket		IP65
Display		LED
Flow, nominal	NI/s	1.3
kv		1.2
Lifespan, mechanical	cycles	100,000,000
Power consumption	W	2.5
Load time rating	%	100
Electrical connection		DIN (c) socket

### ORDERING INFORMATION

Description	Art. No.
Solenoid valve DS 23 for control ON/OFF	0104274



## VACUSTAT, 2/2 NO



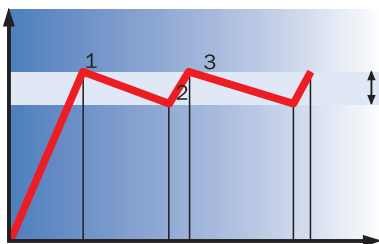
- ▶ The Vacustat is a vacuum-controlled 2/2 NO valve with adjustable vacuum level for switching.
- ▶ The Vacustat comes in two variations: Vacustat 1 with small hysteresis and Vacustat 2 with large hysteresis.
- ▶ Minimises consumption of compressed air by controlling the incoming air flow to a vacuum pump.
- ▶ The vacuum pump must be fitted with a non-return valve.
- ▶ The Vacustat is recommended for vacuum pumps in sealed systems.
- ▶ Fits PIAB vacuum pump size 5–120.

### TECHNICAL DATA

Description	Unit	Value
Feed pressure	MPa	0.4–0.7
Material		PA, AI, SS, NBR, PUR, TPU, POM, CuZn
Temperature range	°C	0–60
Weight	g	90
Connection vacuum		2 x M5
Connection compressed air		2 x 1/8" NPSF
Signal range	-kPa	15–99
Function		2/2 NO
Hysteresis	kPa	2/8
Flow, nominal	NI/s	8.6
kv		7.8
Life span, mechanical	cycles	>10,000,000
Diameter, nominal	mm	3.7

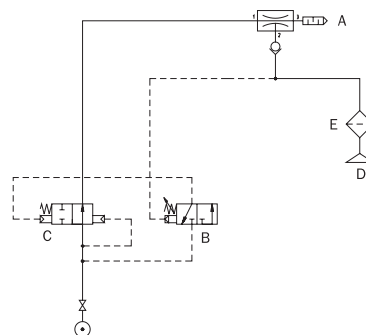
#### Function

A vacuum-controlled valve shuts off the flow of compressed air to the pump when the pre-set vacuum level is reached (1). The vacuum level is set by a knob. Because of minor leakage in a vacuum system the vacuum level drops, and after a while the start-up level of the valve is reached (2). Then the pump will start and work until the shut-off level is reached again (3), etc.



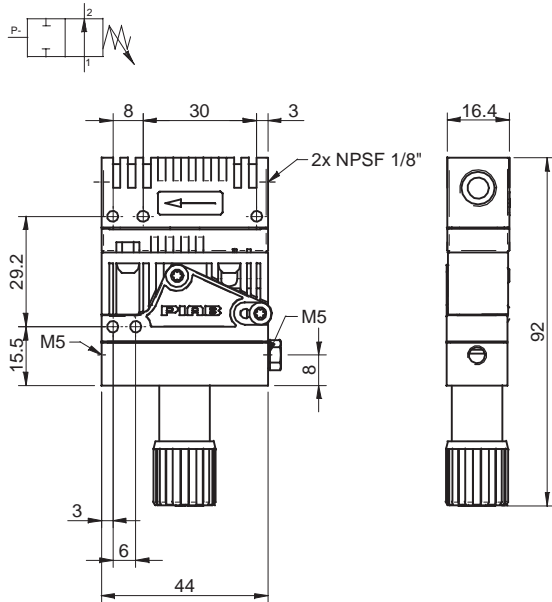
#### Connection

- A = Vacuum pump with non-return valve
- B = Vacuum switch
- C = Feed valve
- D = Suction cup
- E = Vacuum filter



## ORDERING INFORMATION

Description	Art. No.
Vacustat 1 with small hysteresis	0101074
Vacustat 2 with large hysteresis	0101075

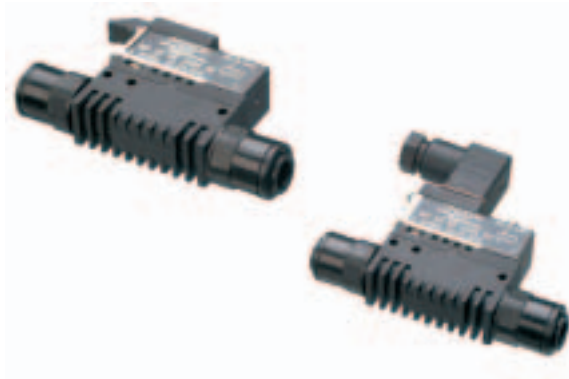


## ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Connection kit for Vacustat	0100750



## ELECTRICALLY CONTROLLED 2/2 VALVES DIP 55



- ▶ On/off valve
- ▶ 1/8" NPSF ports
- ▶ 0.6 W solenoid
- ▶ Electrical connections: plug-in contacts and DIN (c)
- ▶ Suitable for PIAB vacuum pumps up to Classic size.
- ▶ Manual override

### TECHNICAL DATA

Description	Unit	Value
Feed pressure, range	MPa	0.4–0.7 MPa
Material		PPS, PA, TPU, AI, NBR, CuZn, PUR
Temperature range	°C	0–60
Weight	g	102
Connection compressed air		2 x NPSF 1/8"
Function		NC
Supply voltage	VDC	24
Display		LED
Flow, nominal	NI/s	8.6
Kv		7.8
Lifespan, mechanical	cycles	10,000,000
Power consumption	W	0.6
Load time rating	%	100
Bore-through diameter, nominal	mm	3.7

Electrical connections are included.

Compressed air, filtration 40µm, non-lubricated.

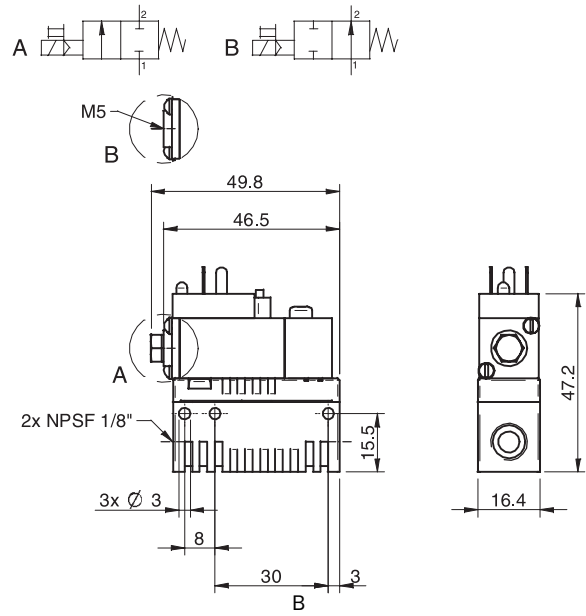
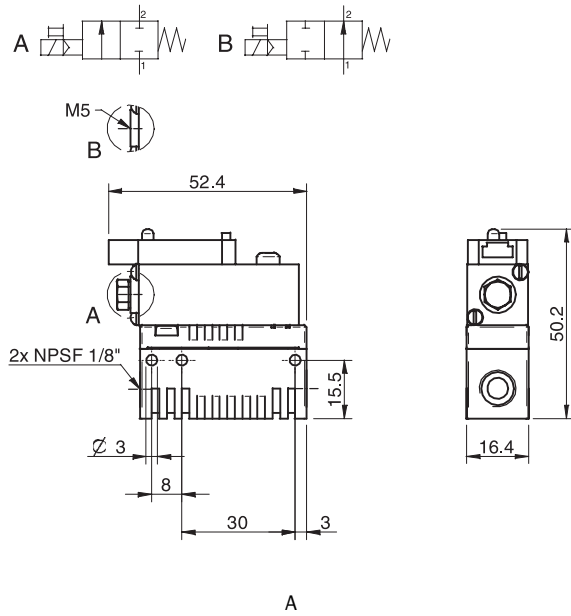
### TECHNICAL DATA, SPECIFIC

Description	Value			
	0101016 DIP 55 NC 2406SE	0101071 DIP55 NC 2406 SD	0101017 DIP 55 NO 2406 SE	0101072 DIP 55 NO 2406 SD
Electrical connection	Plug-in connection *	DIN (c) *	Plug-in connection *	DIN (c) *
Safety specification	—	IP65	—	IP65

\*) Electrical connections are included. \* Electrical connections are to be ordered separately.

## ORDERING INFORMATION

	Description	Art. No.
A	Electrically controlled 2/2 valve DIP55 NC 2406 SE	0101016
A	Electrically controlled 2/2 valve DIP55 NO 2406 SE	0101017
B	Electrically controlled 2/2 valve DIP55 NC 2406 SD	0101071
B	Electrically controlled 2/2 valve DIP55 NO 2406 SD	0101072



## VACTRAP™



- ▶ Check valve that "traps" the vacuum pressure in vacuum systems for an indefinite period of time in sealed applications, such as when handling sheet metal or glass with suction cups.
- ▶ The object can be handled with an extremely high degree of safety even if the supply of compressed air should be cut off, if a pump failure should occur or if the emergency stop should be activated, thus preventing the object from being dropped.
- ▶ Equipped with a built-in blow-off valve to provide quick release of the object.
- ▶ Available in a special version in which the vacuum pump and blow-off connections are interconnected (x-drilled), making it suitable for ejectors with integrated blow-off valve, such as PIAB's AVM™ models.

### TECHNICAL DATA

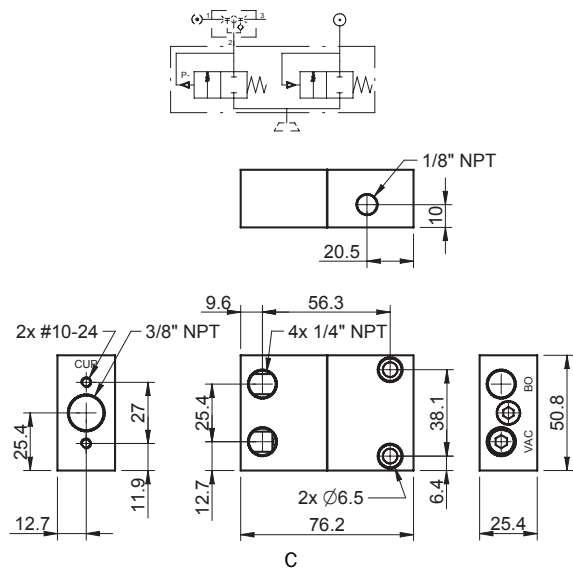
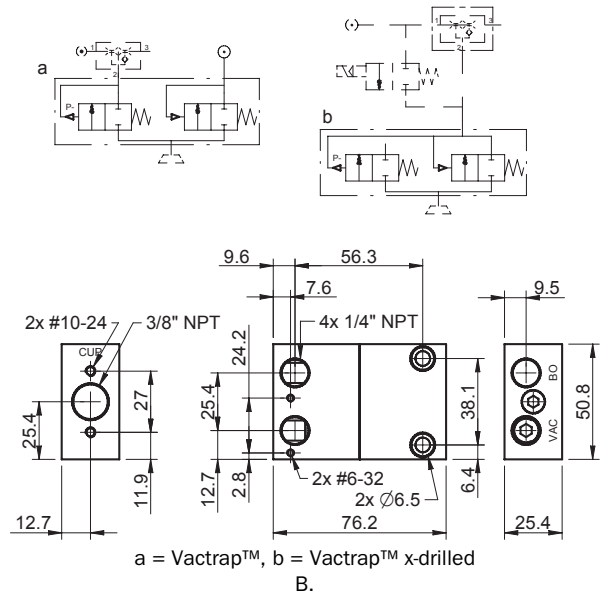
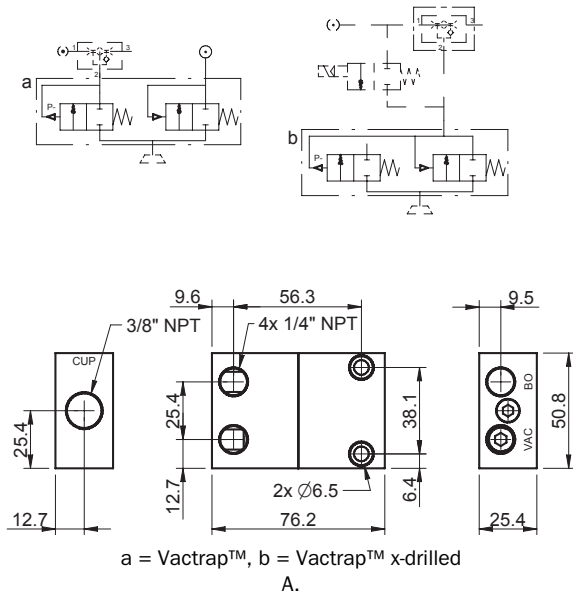
Description	Unit	Value
Feed pressure, max., blow-off	MPa	0.7
Feed pressure, min., breakaway blow-off	MPa	0.25
Material		AL, Steel, Ceramic

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value						
		0109233	0111167	0110454	0109234	0110455	0111154	0109235
Temperature range	°C	-28-65	-10-150	-28-65	-28-65	-28-65	-28-65	-28-65
Weight	g	235	235	235	230	233	230	110
Extra		—	—	—	Vacuum detection G1/8" fem.	x-drilled vacuum/blow-off	x-drilled vacuum/blow-off	—
Vacuum flow, max.	NI/s	0.7	0.7	0.7	0.7	0.7	0.7	0.5
Sealing material		NBR	Viton			NBR		

## ORDERING INFORMATION

	Description	Art. No.
A	Vactrap™ VT-1A	0109233
A	Vactrap™ VT-1A, Viton® sealing	0111167
B	Vactrap™ VT-1A, extra mounting	0110454
C	Vactrap™ VT-1A, extra vacuum port 1/8"	0109234
A	Vactrap™ VT-1AGM, x-drilled vacuum/blow-off	0110455
B	Vactrap™ VT-1AGM, x-drilled vacuum/blow-off, extra mounting	0111154
D	Vactrap™ VT-2A	0109235



## VACUUM FILTERS



- ▶ To filter dust and other small particles from the vacuum flow.
- ▶ Reduces the risk of operation breakdown or stoppage in the pump.
- ▶ Replaceable filter element.
- ▶ Available with special filter element with increased filter area

### TECHNICAL DATA

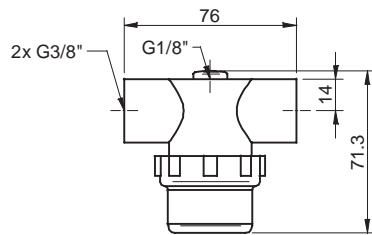
Description	Unit	Value
Pressure range	MPa	-0.1–0 MPa
Material		PA, PC, PE
Temperature range	°C	-20–80
Removal efficiency	µm	10

### TECHNICAL DATA, SPECIFIC

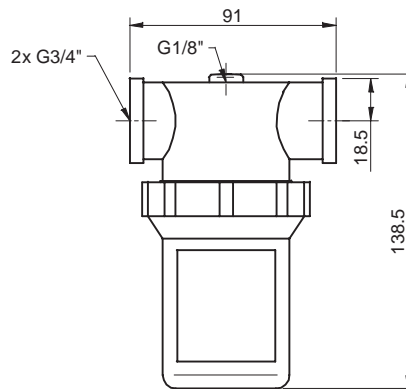
Description	Unit	Value				
		3116671	3116651	3116652	3116672	3116653
Weight	g	70	168	170	424	550
Flow nominal	l/s	2.5	15	15	42	85
Volume Internal	cm <sup>3</sup>	45	195	205	495	675
Filter area	m <sup>2</sup>	0.003	0.010	0.010	0.019	0.023

## ORDERING INFORMATION

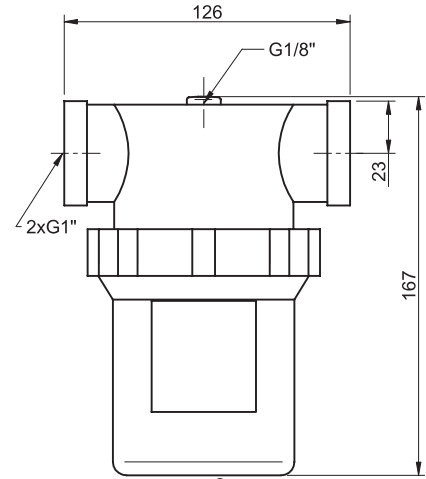
	Description	Art. No.
A	Vacuum filter G3/8"	3116671
B	Vacuum filter G3/4"	3116652
C	Vacuum filter G1"	3116672
D	Vacuum filter G1 1/2"	3116653
E	Vacuum filter G1/2"	3116651
E	Vacuum filter G1/2" (special)	0110521
B	Vacuum filter G3/4" (special)	0110522
D	Vacuum filter G1 1/2" (special)	0110523



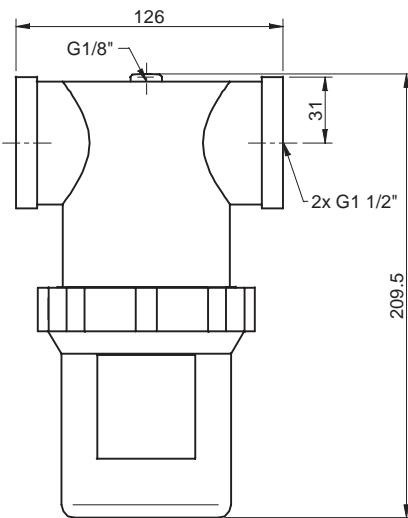
A



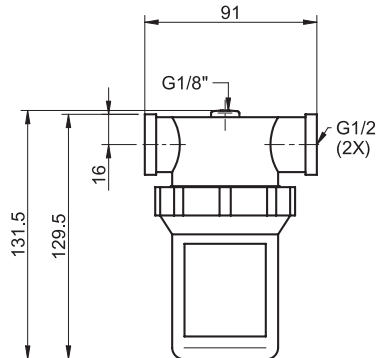
B



C



D



E

## TECHNICAL DATA, ACCESSORIES

Description	Unit	Value					
		3116673	3116674	3116675	3116676	3116223	3116224
Weight	g	7	26	50	74	80	144
Filter area	m <sup>2</sup>	0.003	0.010	0.019	0.023	0.028	0.074
Removal efficiency	µm	10	10	10	10	5	5

## ORDERING INFORMATION, ACCESSORIES

Description	Art. No.
Filter element 3/8"	3116673
Filter element 1/2" & 3/4"	3116674
Filter element 1"	3116675
Filter element 1 1/2"	3116676
Filter element 1/2" & 3/4" (special)	3116223
Filter element 1 1/2" (special)	3116224

## FILTER FITTINGS



- ▶ Adjustable mounting angle due to the use of locking nut.
- ▶ No need for seal with Teflon tape or glue due to the use of O-ring seals.

### TECHNICAL DATA

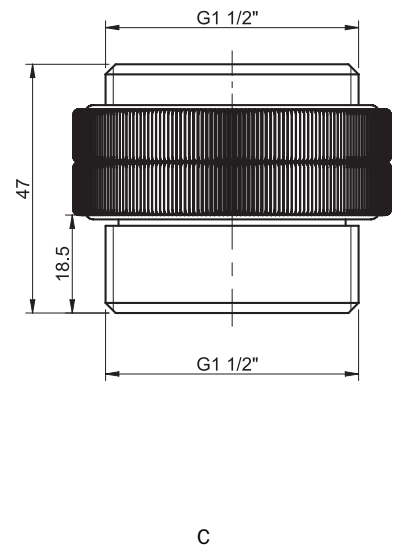
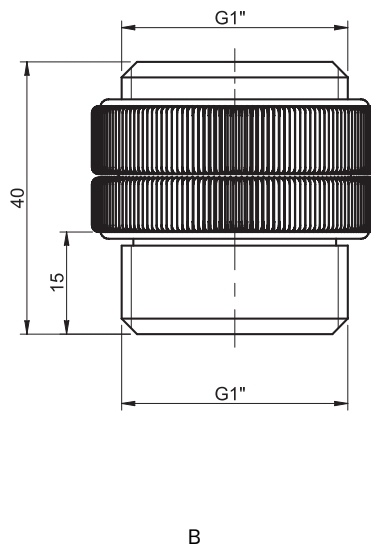
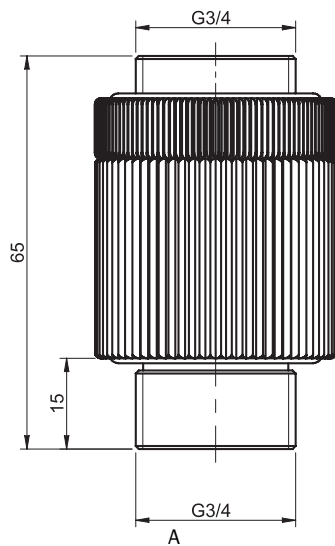
Description	Unit	Value
Material		Al, NBR
Temperature range	°C	-20-80

### TECHNICAL DATA, SPECIFIC

Description	Unit	3330052	0113979	3330051
Weight	g	90	58	110
Connection		2x G1"		

### ORDERING INFORMATION

	Description	Art. No.
A	Filter fitting 3/4"	3330052
B	Filter fitting 1"	0113979
C	Filter fitting 1 1/2"	3330051



## SILENCER COAX®



- ▶ Reduces noise from the exhaust
- ▶ Compatible with aluminium holders for MINI and MIDI COAX® cartridges
- ▶ Simple snap locking when mounting
- ▶ Through-flow design that eliminates the risk of impaired performance due to clogging of the silencer

### TECHNICAL DATA

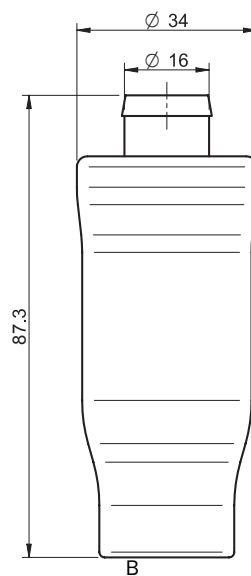
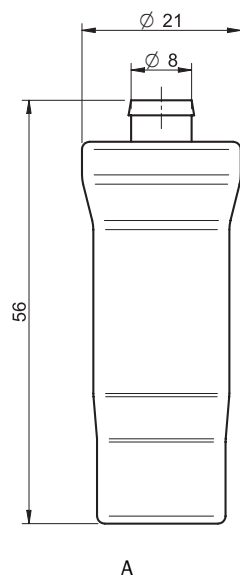
Description	Unit	Value
Material		PA, TPU, PE
Temperature range	°C	-20–80
Noise level reduction	dB(A)	≥10

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value	
		0111977	0111976
Weight	g	8.64	36.56

### ORDERING INFORMATION

	Description	Art. No.
A	Silencer COAX® MINI	0111977
B	Silencer COAX® MIDI	0111976





## SILENCERS



- ▶ Reduce noise from exhaust
- ▶ Flow-through design

### TECHNICAL DATA

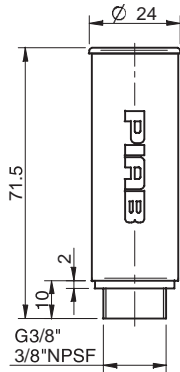
Description	Unit	Value
Noise level reduction, approximately	dB(A)	-10
Material		PA, HDPE
Temperature range	°C	-20-100

### TECHNICAL DATA, SPECIFIC

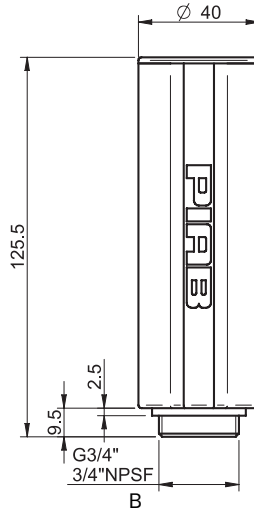
Description	Unit	Value			
		3216009	3216002	0112499/0113003	0103224
Weight	g	14	61	95.1	425

## ORDERING INFORMATION

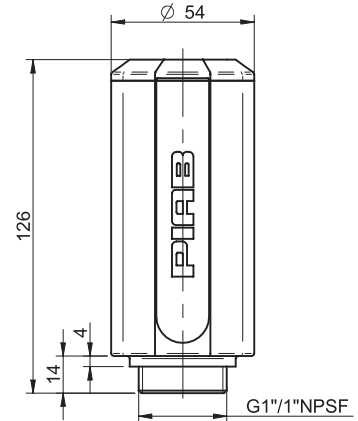
	Description	Art. No.
A	Silencer G3/8"	3216009
B	Silencer G3/4"	3216002
C	Silencer G1"	0112499
C	Silencer 1"NPSF	0113003
D	Silencer G1½"	0103224



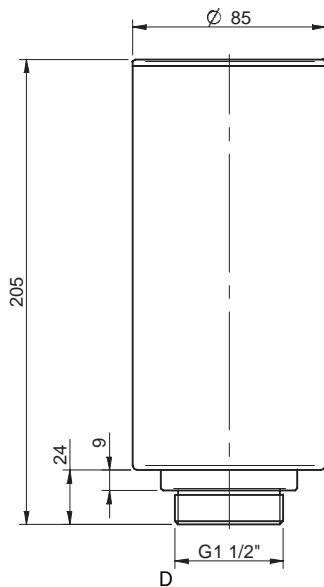
A



B



C



D

## VACUUM GAUGE AND MANOMETERS



- ▶ Analogue indicator, springjoint – lever system
- ▶ The instruments include nut for installation on a panel

### TECHNICAL DATA

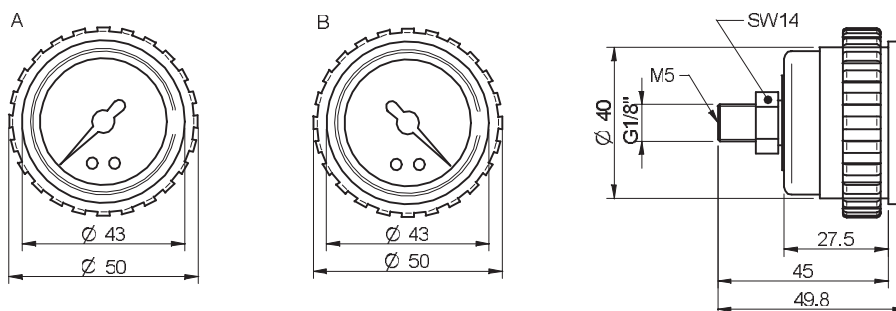
Description	Unit	Value
Accuracy, of full scale	%	2.5
Material		CuZn, ABS, PMMA

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value		
		3101602	3101603	3101626
Weight	g	90	55	50
Signal range	MPa	0–0.1	0–1	0–0.25
Medium		Vacuum	Over pressure	

### ORDERING INFORMATION

	Description	Art. No.
B	Vacuum gauge 100 -kPa	3101602
A	Manometer 1 MPa	3101603
A	Manometer 250 kPa	3101626



## CONNECTION KITS



- ▶ Push-in connectors with hose dimensions compatible with the pump connections.
- ▶ Corrosion-resistant material.
- ▶ Complete kit for one pump.

### TECHNICAL DATA

Description	Unit	Value
Temperature range	°C	-25-75
Material		POM, NBR, SS, CuZn, Al

### TECHNICAL DATA, SPECIFIC

Description	0104901	0104902	3207005	0104903	3207010	3401008
Connection kit for vacuum pump	MINI 5	MINI 10	MINI 5	MINI 5-20	CLASSIC 25-120	MAXI*
Connection plate	A	A	B	B, C	D	All
Hose dimension ** for compressed air	d=2 mm	d=4 mm	D=4 mm	D=6 mm	D=8 mm	D=6 or 4 mm
Hose dimension ** for vacuum	D=4 or 6 mm	D=6 or 8 mm	D=8 mm	D=10 mm	d=12, 19, 25 mm	—

\* Remote control, \*\* d = inner diameter, D = outer diameter

### ORDERING INFORMATION

Description	Art. No.
Connection kit for pump MINI 5, connection plate A	0104901
Connection kit for pump MINI 10, connection plate A	0104902
Connection kit for pump MINI 5, connection plate B	3207005
Connection kit for pump MINI 5-20, connection plate C and pump MINI 10-20, connection plate B	0104903
Connection kit for pump CLASSIC 25-120, connection plate D	3207010
Connection kit for pump MAXI*, all connection plates	3401008

## PILOT REGULATOR



- ▶ Pilot operated pressure regulator with secondary pressure relief and flow compensation
- ▶ Suitable for remote control
- ▶ Can be mounted in any position

### TECHNICAL DATA

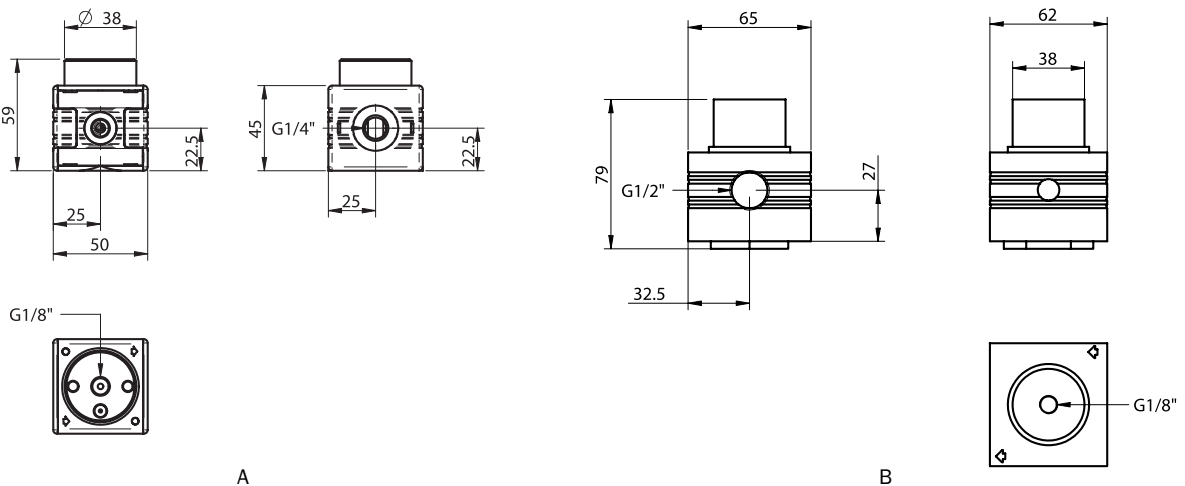
Description	Unit	Value
Feed pressure, max	MPa	1.6
Air consumption, internal	NI/s	0.8xP <sub>2</sub> /60
Temperature range	°C	0-60
Pressure, outlet P <sub>2</sub>	MPa	0.05-0.8

### TECHNICAL DATA, SPECIFIC

Description	Unit	Value	
		0114283	0107531
Weight	g	400	500
Connection, P <sub>1</sub> /P <sub>2</sub>		G1/4"	G1/2"
Connection, pilot		G1/8"	G1/8"
Connection, gauge		G1/8"	G1/4"
Flow, At P <sub>1</sub> =0.7 & P <sub>2</sub> =0.6, P=0.1 MPa	NI/s	9.17	31.7

### ORDERING INFORMATION

	Description	Art. No.
A	Pressure regulator, pilot operated, G1/4"	0114283
B	Pressure regulator, pilot operated, G1/2"	0107531



## COMPRESSED AIR FILTER REGULATOR



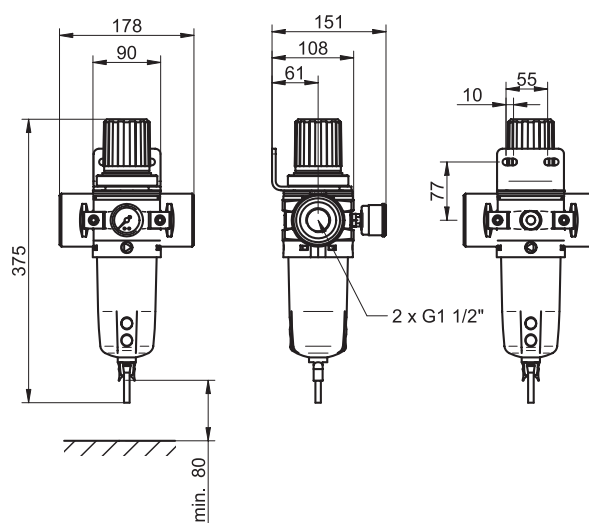
- ▶ Separates particles and condensate from the compressed air.
- ▶ Reduces the risk of operation breakdown or stoppage of the pump.
- ▶ Replaceable filter element.
- ▶ Manometer is included.

### TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	1.75
Temperature range	°C	-10-50
Weight	g	2200
Connection		G 1 1/2"
Flow, max (at $P_1=0.7$ & $P_2=0.7$ , $\Delta P=0.1$ MPa)	NI/s	133
Particle size, min.	$\mu\text{m}$	30

### ORDERING INFORMATION

Description	Art. No.
Compressed air filter regulator 1 1/2"	0113033



Description	Art. No.
Filter element 1 1/2"	0113052