www.suco.de

PRESSURE MONITORING

Tradition and Innovation

1938
Robert Scheuffele opens a mechanical workshop.

1945
Partnership formed by Robert Scheuffele and Georg Fuhrmann.

1950 ...
*Registration of the name SUCO (**S**cheuffele **u**nd **Co**) as a trademark. Development and production of centrifugal clutches and brakes. Market leader in Germany and abroad. The Company moves into a new production and administration building.*

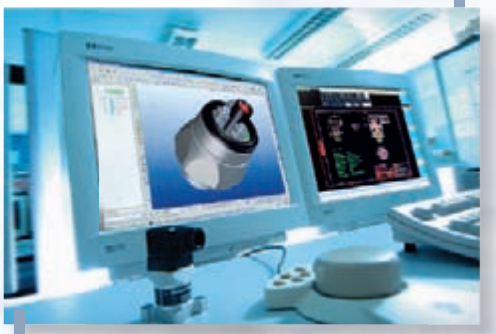
1960 ...
Electromagnetic clutches and brakes incorporated into the production program. Development and production of pressure and vacuum switches started.

1970 ...
Establishment of a comprehensive dealer and sales network throughout Europe. SUCO mechanical pressure and vacuum switches become leaders in their markets.

1985
Start of the development of the American market.

1997 ...
Creation of a distribution network in Asia. ISO 9001 certification of the company.

From a mechanical workshop to an international industrial manufacturer



Design and development of new products using the latest CAD tools.

To simulate realistic environmental conditions and loads, our products are subject to extensive trials and tests.

Assembly and testing of pressure switches on semi or fully automated plants.

Fully-automatic setting of switching point with computer-aided documentation of results.

Suco cares for qualified training in both commercial and technical professions. Qualified personel formed by SUCO guarantees the positive development of our company.

Capacity and schedule planning of production orders to make optimum use of the available human, machinery and material resources.

Ultra-modern production plant with integrated, fully-automatic component handling for high efficiency.

Encapsulating equipment for customer-specific ready-wired pressure switches for highest degree of protection (leak tightness).

State-of-the-art measurement and inspection equipment for quality assurance in receiving and production.

From here our products are dispatched to any country in the world.

1999
Founding of a subsidiary company, SUCO VSE, in France.

2001
Certification ISO 9001:2000.

2004
Inauguration of the new building with modern production hall and 600 m² office area.

2005
Change of corporate name to SUCO Robert Scheuffele GmbH & Co. KG.

2007
Founding of a subsidiary company, SUCO Technologies Inc., in the USA.

2009
An additional floor to the manufacturing building was added, creating approx. 1.000 m² of new production capacity.
Newest Certification Standard: ISO 9001:2008.

2010
Acquisition of the company ESI Technology Ltd., Wrexham, Wales.

Pressure-control systems overview

Pressure-control systems overview

Order correctly – it's quite simple

Explanation of SUCO order numbers

$p_{max.}$ in bar	Adjustment range in bar	Tolerance in bar at room temperature	Thread	Order number:				
0170 Diaphragm pressure switch with spade terminals								
			M 10x1 keg.	0170	457 01	X	001	
100 [1)]	0.3 – 1.5	± 0.2	M 12x1.5	0170	457 02	X	002	
			G 1/4	0170	457 03	X	003	

Your order number: 0170 – 457 02 – 2 – 002

The first four digits indicate the type number: Our example:
Diaphragm pressure switch with spade terminals, type 0170

By these three digits, the type of construction and the setting range are determined. Our example:
overpressure safe up to 100 bar, adjustment range 0.3 – 1.5 bar.

These two digits provide information about the desired thread.
Our example: M 12x1.5.

Important - the code for the seal material:

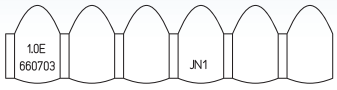
1 for NBR (Buna-N): hydraulic fluid, machine oil, heating oil, etc.
2 for EPDM: water, brake fluid, ozone, acetylene, etc.
3 for FKM: hydraulic fluid, petrol/gasoline, etc.

The last three digits are reserved for further differentiation of the switch. In our example, 002

Abbreviated coding explanation is embossed on the hex surface areas of the pressure switches.

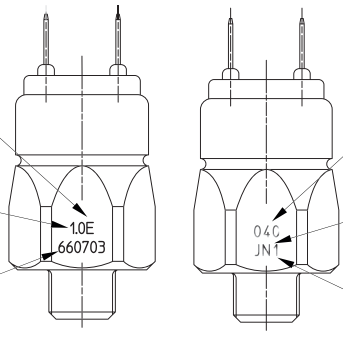
Coding or way of short embossment on the switch body

Example: 0166-40703-1-027 adjusted on rising 1,0 bar



Face front side:

Face back side:



Switch type
E = normally opened (no)
A = normally closed (nc)

Adjusted pressure

Short form of the part number

01 66 – 4 0703 - 1 - 040

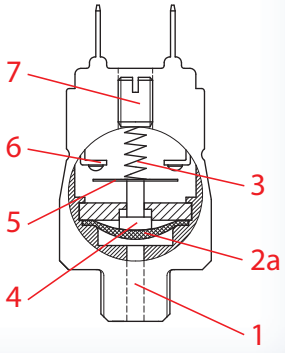
End number if it is a special version

Date of manufacturing
according DIN EN 60062

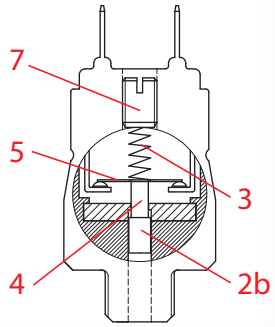
Diaphragm- / seal material
1 = NBR (Buna-N) 8 = Silicone
2 = EPDM 9 = H-NBR
3 = FKM (Viton®)

Technical explanations

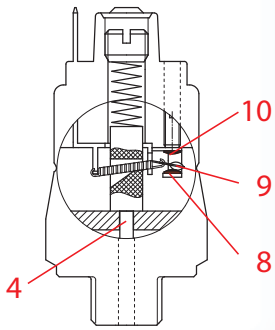
Diaphragm pressure switch
Normally open



Piston pressure switch
Normally closed



Changeover



How does a pressure switch work?

Description of operation for a normally open switch whose contacts close at its operating point:
Pressure enters through the connection (1) and acts on the diaphragm (2a) as well as on the piston (2b). If the force resulting from this pressure is greater than the force exerted by the preloaded compression spring (3), then the plunger (4) moves taking with it the contact disc (5), which closes the circuit between the contacts (6). When the pressure falls again by an amount greater than the hysteresis, the switch opens again.

For a normally closed switch, the action of the contacts is reversed. By turning the set screw (7), the pressure switch can be adjusted within its pressure range.

By using a micro-switch with changeover function, the normally open and normally closed operation can be combined into a single pressure switch. The plunger (4) operates the swivel contact (9). In the unpressurized state, the circuit is closed by the normally closed contact (8). If the pressure applied exceeds the adjusted set point, then the swivel contact changes and closes the circuit using the normally open contact (10).

IP degree of protection

The IP degree of protection is a defined labeling for the level of protection (sealing) of electrical equipment enclosures according to IEC 60529 (formerly DIN 40050 - Class 2). It measures the sealing ability of a housing against the entry of solid foreign substances, against the penetration of hazardous materials and against the entry of water.

The IP degree of protection code consists of two digits, describing the protection of a housing against the entry of solid foreign substances and water. The numeric code that is assigned not only reflects the personal safety level but also the functional protection of the respective medium- to long-term functional safety level of an electrical equipment.

Definition of degree of protection IP65, IP67
Definition of the term 6:
Protection against entry of dust (dust proof). Complete contact protection.

Definition of the term 5:
A jet of water from a nozzle applied against the equipment from any direction must not have any harmful effect.

Definition of the term 7:
Protection against water when the equipment (pressure switch) is immersed in water under specified pressure and time conditions. Water must not enter the equipment in harmful quantities.

Definition for the degree of protection IP6K9K
The standard DIN 40050-9 supplements IEC 60529 with added IP degree of protection for high-pressure (80-100 bar) and high temperature (80 °C) in cleaning applications. Devices for these requirements not only have to be dust-proof, but also be able to withstand the stresses during highpressure cleaning and the use of steam jets.

Definition of the term 6K:
Dust must not penetrate. Letter K:
Specific to the electrical equipment of road vehicles.

Definition of the term 9K:
Protection against the entry of water at high pressure-/ steam jet cleaning. Water that had been applied to from every direction at very high pressure against the body must not cause damaging effects.

We guarantee IP67 or IP6K9K compliance for many of our ready-wired pressure switches, as well as for many switches with integrated plugs.

Hysteresis

Hysteresis (dead bend / differential) is the term given to the difference between the switching points when the pressure is rising and when it is falling. For pressure switches with non-adjustable hysteresis, it is a function of the switch design. For SUCO switches with adjustable hysteresis, it can typically be set in the range 10 to 30% of the switching point. The hysteresis is dependent on the set switching point. The specification represents only a typical average value (see the hysteresis diagram on page 9 on the right side).

Switching frequency

The switching frequency provides information about the possible number of switching cycles per minute. The figure given of 200/minute is intended only as a guideline. Depending on the type of switch and the operating conditions, a considerably higher number of cycles can be achieved.

Vacuum

The technical data mentioned for our vacuum range are given in millibars (mbar) below atmospheric pressure.

RoHS compliance

RoHS = **R**estriction **o**f **H**azardous **S**ubstances (Directive 2002/95/EC).

SUCO RoHS compliant

Gas applications

Our pressure switches are suitable for liquid and gaseous media. Gaseous media, however, place special demands on leak-tightness. The leakage rate varies with the type of gas, the working pressure and the permeability of the seal material.

Due to their lower leakage, diaphragm pressure switches are more suitable for gas applications than piston-type pressure switches. However, the latter can also be used if certain precautions (e.g., venting of the switch body) are taken.
Please consult us if you have gas applications.

Set point tolerances

The switching point tolerances we quote refer to room temperature (RT) operation and a pressure switch in new condition. The effect of temperature and aging can change the switching points additionally.

Membrane materials

NBR (Buna-N)

The most widely used standard material. A special SUCO material mixture, which shows good low temperature flexibility, so that even at low temperatures, the tightness of the pressure switch is maintained.

EPDM

Ideal for those applications with brake fluid. In addition, particularly suitable for applications in which (grey) water is used. For oxygen applications, there exists an approval from the BAM (Federal Institute for Material Testing). Oils must not come in contact with the material as this may cause swelling and softening of the material.

FKM (Viton ®)

A diaphragm material that is suitable for high temperature stress and has special chemical resistance properties. It has been tested in the hydraulic sector and has been proven to work successfully with critical oils.

Silicone

Silicone is applicable for use in an extensive temperature range. The SUCO Silicone diaphragm is FDA-approved (Food & Drug Administration) for the food sector. Silicone is a soft material that is reserved for sensitive low pressure applications under 10 bar.

H-NBR

A special SUCO material mixture optimized for ester-based bio-oils. Due to the multitude of bio-oils on the market, the suitability of the material for each oil must be determined. This diaphragm material can also be used for a variety of mineral and synthetic oils.

Media compatibility

The data in our catalogue concerning compatibility with various media refers to the seal materials of our pressure switches.

Product information

The technical information in this catalogue is based on tests made during product development and based on empirically gathered values. They may not be applicable in all cases.

It is the responsibility of the user to test the suitability of our products for the particular application (for example, the verification of material compatibility) and use may only be appropriate if proven in field tests.

Utilisation category

The utilisation category describes amongst other things, the voltages and currents, as well as the type of load for which our pressure switches are designed to conform to DIN EN 60947-5-1.

Alternating current

AC12: Switching of resistive loads and semiconductor loads in input circuits of optocouplers (e.g., PLC inputs).

AC14: Switching of electromagnetic loads of 72 VA.

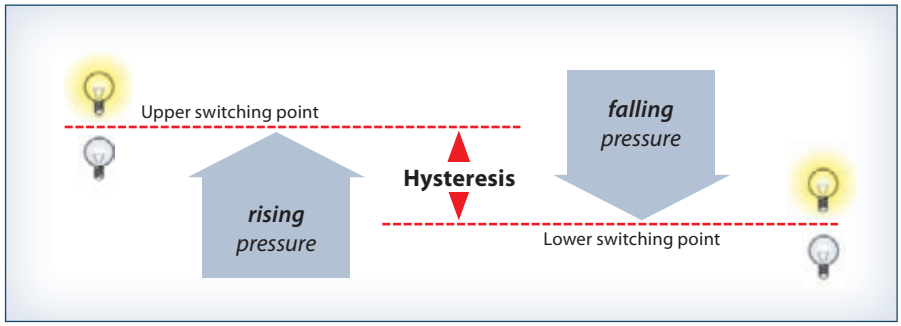
Direct current

DC12: Switching of resistive loads and burdens in semiconductor input circuits of optocouplers (e.g. PLC inputs).

DC13: Switching of solenoid.

Specifications subject to change.

Hysteresis diagram



Conversion table for pressure units

Abbreviation for unit	Name of unit	Pa= N/m²	bar	Torr	lbf/in², PSI
1 Pa = N/m²	Pascal	1	0.00001	0.0075	0.00014
1 bar	Bar	100 000	1	750.062	14.5
1 Torr = 1 mm Hg	Millimeters of mercury	133.322	0.00133	1	0.01934
1 lbf/in² = 1 PSI	Pound-force per square inch	6894	0.06894	51.71	1

Conversion table for temperature units

	K	°C	F
K	1	K-273.15	9/5 K-459.67
°C	°C +273.15	1	9/5 °C +32
F	5/9 (F+459.67)	5/9 (F-32)	1

Selection Matrix

		0110	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0140	0141	0150	0151	0159	0161	0162	0163	0164	0165	0166	0167	0168	0169
	Catalogue page	12	12	12	12	12	12	12	12	12	12	12	12	12	12	29	29	52	53	43	44	44	18	24	48	20	25	22	23
	Mechanical	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Electronic																												
	Pressure	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■	■	■	■
	Vacuum																	■	■										
	NO or NC	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■				■	■		■	■	■	■
	Changeover															■	■	■		■	■	■			■				
Voltage	Max. 42 V	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■				■	■		■	■	■	■
	Max. 250 V															■	■	■		■	■	■			■				
	Max. 24 V / 50 mA																												
	5 VDC ± 10%																												
	12/18 – 30/32/36 V																												
Adjustment range	100 – 950 mbar																	■											
	200 – 950 mbar																		■										
	-1 – 0 bar																												
	0 – 10 bar																												
	0 – 16 bar																												
	0 – 25 bar																												
	0 – 40 bar																												
	0 – 60 bar																												
	0 – 100 bar																												
	0 – 160 bar																												
	0 – 250 bar																												
	0 – 400 bar																												
	0 – 600 bar																												
	0 – 1000 bar																												
	0.1 – 1 bar	■		■		■		■		■		■		■									■	■		■	■	■	
	0.2 – 2 bar																			■									
	0.3 – 1.5 bar															■													
	0.5 – 1 bar																				■	■							
	0.5 – 5 bar																			■	■	■							
	1.0 – 6 bar																								■				
	1.0 – 10 bar	■		■		■		■		■		■		■		■				■	■	■	■	■		■	■	■	
	2.0 – 20 bar																			■									
	5.0 – 50 bar																			■					■				
	10 – 20 bar	■		■		■		■		■		■		■		■							■	■		■	■	■	
	10 – 50 bar																				■	■							
	10 – 100 bar																			■									
	20 – 50 bar	■		■		■		■		■		■		■		■							■	■		■		■	
	20 – 100 bar																								■				
	25 – 250 bar																			■									
	40 – 400 bar																			■									
	50 – 100 bar																				■	■							
	50 – 150 bar		■		■		■		■		■		■		■		■												■
	50 – 200 bar																												
	100 – 300 bar																												
	100 (200) – 400 bar																				■	■			■				
Overpressure safety up to	2 times p_{nom}																												
	4 times p_{nom}																												
	25 bar																												
	35 bar																	■	■								■		
	100 bar																												
	200 bar																			■	■	■			■				
	300 bar	■		■		■		■		■		■		■		■										■		■	
	600 bar		■		■		■		■		■		■		■					■	■	■	■	■	■				■
Body form	Hex 22																												
	Hex 24	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■				■	■		■	■	■	■
	Hex 27															■	■												
	Square 30 / 32																	■		■	■	■			■ *)				
Body material	Zinc-plated steel	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						■			■		■	■
	Stainless steel																							■					
	Brass																		■								■		
	Aluminium																	■		■	■	■			■				
Special versions	ATEX-version																								■				
	Special connections															■	■		■				■	■		■	■	■	■

*) see technical data

0170	0171	0175	0180	0181	0183	0184	0185	0186	0187	0190	0191	0194	0195	0196	0197	0240	0241	0340	0341	0520	0570	0605	0610	0620	0705	0710	0720		
30	30	45	31	31	32	33	33	36	36	34	34	35	35	37	37	40	40	49	49	56	57				59	59	59	Catalogue page	
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									Mechanical	
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■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Pressure	
																						■	■	■				Vacuum	
																				■	■							NO or NC	
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									Changeover	
■	■																											Max. 42 V	Voltage
		■	■	■	■	■	■	■	■							■	■	■	■									Max. 250 V	
										■	■	■	■	■	■													Max. 24 V / 50 mA	
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																				■*)	■*)		■*)	■*)		■*)	■*)	12/18 – 30/32/36 V	
																												100 – 950 mbar	Adjustment range
																												200 – 950 mbar	
																						■	■	■				-1 – 0 bar	
																				■	■	■	■	■	■	■	■	0 – 10 bar	
																						■	■	■	■	■	■	0 – 16 bar	
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																									■	■	■	0 – 60 bar	
																				■	■	■	■	■	■	■	■	0 – 100 bar	
																						■	■	■	■	■	■	0 – 160 bar	
																				■		■	■	■	■	■	■	0 – 250 bar	
																					■	■	■	■	■	■	■	0 – 400 bar	
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		■																										0.1 – 1 bar	
																												0.2 – 2 bar	
■			■			■				■		■				■		■										0.3 – 1.5 bar	
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					■																							100 – 300 bar	
					■																							100 (200) – 400 bar	
																				■*)	■*)	■*)	■*)	■*)				2 times p_{nom}	Overpressure safety up to
																									■*)	■*)	■*)	4 times p_{nom}	
																												25 bar	
		■																										35 bar	
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	■			■	■		■		■		■		■		■		■		■									600 bar	
																						■	■	■	■	■	■	Hex 22	Body form
																												Hex 24	
■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								Hex 27	
		■*)																		■*)	■*)							Square 30 / 32	
■	■		■	■	■	■	■			■	■	■	■			■	■	■	■	■								Zinc-plated steel	Body material
								■	■					■	■							■	■	■	■	■	■	Stainless steel	
																												Brass	
		■																			■							Aluminium	
																		■	■									ATEX-version	Special versions
■	■		■	■	■			■	■	■	■			■	■	■	■	■	■			■	■	■	■	■	■	Special connections	

*) see technical data

Pressure switch hex 24 with integrated plug

Normally open or normally closed, maximum voltage 42 V

- ***Stable switching point even after high load and long use.***
- ***Switching point easily adjustable[1] – also during operation.***
- ***High overpressure safety, small compact switches, available as no or nc.***

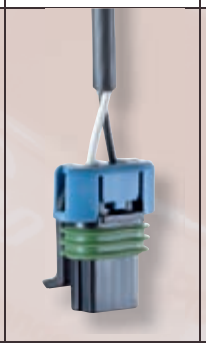
- High degree of protection: IP67, IP6K9K (except for AMP Junior Timer)
- Reduced assembly time:
  simple, quick attachment by rotation or plug connection
- Innovative solution based on long-term proven technology
- Fast mounting with socket wrench (nut) possible
  (except for 0114 / 0115 and 0116 / 0117)

Technical data

Voltage:	max. 42 V
Current rating (resistive):	max. 4 Ampere
Contact capacity:	100 VA
Temperature stability for diaphragm/ seal materials:	NBR -40 °C – +100 °C EPDM -30 °C – +120 °C FKM -5 °C – +120 °C Silicone -40 °C – +120 °C HNBR -30 °C – +120 °C
Switching frequency:	min: 200 / min.
Mechanical life expectancy:	10^6 switching cycles (for diaphragm pressure switches the switching life applies to pressure up to a max. of 50 bar)
Pressure rise rate:	≤ 1 bar / ms
Hysteresis:	average value 5 – 30% depending on type, not adjustable
Vibration resistance:	10 g / 5 – 200 Hz sine wave
Shock resistance:	294 m/s^2; 14 ms half sine wave
Degree of protection:	up to IP67 / IP6K9K according to the manufacturer's specifications for the respective plug-in system only when plugged in, otherwise IP00
Weight in grams:	approx. 90 g

[1] The pressure switches can also be supplied as preset by the factory. Our preset switches are sealed with lacquer paint and have the set pressure value embossed on their body

Accessories: Female plugs with 2 m cable, 2 x 0,5 mm² except 1-1-22-653-117: 3 x 0,34 mm²

Deutsch DT06-2S (for DT04-2P)	AMP-Superseal	Packard MetriPack 280	Deutsch DT06-3S (for DT04-3P)	AMP Junior Timer	Bayonet DIN 72585 A1-2.1	M12x1 DIN EN 61076-2-LF
						
Order number for female plugs:						
1-1-10-653-118	1-1-12-653-113	1-1-14-653-114	1-1-16-653-115	1-1-18-653-116	1-1-20-653-112	1-1-22-653-117

Plug types

						
Deutsch DT04-2P	AMP Superseal	Packard MetriPack 280	Deutsch DT04-3P (A+B)	AMP Junior Timer	Bayonet DIN 72585 A1-2.1	M12x1 DIN EN 61076-2-D (1 + 3)
IP67, IP6K9K	IP67	IP67	IP67, IP6K9K	IP65, IPx4K	IP67, IP6K9K	IP67
x ≈ 61 mm	x ≈ 61 mm	x ≈ 62 mm	x ≈ 63 mm	x ≈ 54 mm	x ≈ 49 mm	x ≈ 51 mm

Please insert the respective type designation into your order number:

Order numbers of diaphragm pressure switches see page 14

0110 ...	0112 ...	0114 ...	0116 ...	0118 ...	0120 ...	0122 ...

Order numbers of piston pressure switches see page 15

0111 ...	0113 ...	0115 ...	0117 ...	0119 ...	0121 ...	0123 ...

Pressure switch hex 24 with integrated plug

Diaphragm pressure switches

- No or nc, max. voltage 42 V (according to the standard hex 24)
- Made of zinc-plated steel (Cr VI-free)
- Overpressure safe up to 300 bar [1)]

Degree of protection IPXX

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

When using oxygen, the relevant safety regulations have to be observed. In addition, we recommend that a maximum operating pressure of 10 bar will not be exceeded.

- *Our pressure switches are also available with factory preset switching points.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*

Diaphragm pressure switches with integrated plug

Adjustment range in bar (tolerance in bar at room temperature)	Thread	Normally open (no) —› |:				Normally closed (nc)—› :|			
0.1 – 1 (± 0.2)	M 10x1 con.	XXXX	403 01	X	009	XXXX	404 01	X	013
	M 12x1.5	XXXX	403 02	X	010	XXXX	404 02	X	014
	G 1/4	XXXX	403 03	X	011	XXXX	404 03	X	015
	NPT 1/8	XXXX	403 04	X	012	XXXX	404 04	X	016
	G 1/8	XXXX	403 28	X	603	XXXX	404 28	X	604
	M 10x1 cyl.	XXXX	403 13	X	003	XXXX	404 13	X	004
1 – 10 (± 0.5)	M 10x1 con.	XXXX	407 01	X	025	XXXX	408 01	X	029
	M 12x1.5	XXXX	407 02	X	026	XXXX	408 02	X	030
	G 1/4	XXXX	407 03	X	027	XXXX	408 03	X	031
	NPT 1/8	XXXX	407 04	X	028	XXXX	408 04	X	032
	G 1/8	XXXX	407 28	X	607	XXXX	408 28	X	608
	M 10x1 cyl.	XXXX	407 13	X	007	XXXX	408 13	X	008
10 – 20 (± 1.0)	M 10x1 con.	XXXX	411 01	X	041	XXXX	412 01	X	045
	M 12x1.5	XXXX	411 02	X	042	XXXX	412 02	X	046
	G 1/4	XXXX	411 03	X	043	XXXX	412 03	X	047
	NPT 1/8	XXXX	411 04	X	044	XXXX	412 04	X	048
	G 1/8	XXXX	411 28	X	611	XXXX	412 28	X	612
	M 10x1 cyl.	XXXX	411 13	X	011	XXXX	412 13	X	012
20 – 50 (± 2.0)	M 10x1 con.	XXXX	415 01	X	057	XXXX	416 01	X	061
	M 12x1.5	XXXX	415 02	X	058	XXXX	416 02	X	062
	G 1/4	XXXX	415 03	X	059	XXXX	416 03	X	063
	NPT 1/8	XXXX	415 04	X	060	XXXX	416 04	X	064
	G 1/8	XXXX	415 28	X	615	XXXX	416 28	X	616
	M 10x1 cyl.	XXXX	415 13	X	015	XXXX	416 13	X	016

Plug types (photo see page 13)

Deutsch DT04-2P	0110	XXX XX	X	XXX	0110	XXX XX	X	XXX
AMP Superseal	0112	XXX XX	X	XXX	0112	XXX XX	X	XXX
Packard MetriPack 280	0114	XXX XX	X	XXX	0114	XXX XX	X	XXX
Deutsch DT04-3P (A+B)	0116	XXX XX	X	XXX	0116	XXX XX	X	XXX
AMP Junior Timer	0118	XXX XX	X	XXX	0118	XXX XX	X	XXX
Bayonet DIN 72585 A1-2.1	0120	XXX XX	X	XXX	0120	XXX XX	X	XXX
M12x1 DIN EN 61076-2-D (1 + 3)	0122	XXX XX	X	XXX	0122	XXX XX	X	XXX

Diaphragm material[2)] - application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen, etc.	**1**
EPDM	Brake fluid, ozone, acetylene, hydrogen, etc.	**2**
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	**3**

Order number:	01XX – XXX XX – X – XXX	01XX – XXX XX – X – XXX

[1)] Static value. Dynamic value is 30-50% lower. The values refer to the hydraulic or pneumatic part of the pressure switch.

[2)] Temperature range of the seal materials, see page 12.

Pressure switch hex 24 with integrated plug

Piston pressure switches

- No or nc, max. voltage 42 V (according to the standard hex 24)
- Made of zinc-plated steel (Cr VI-free)
- Overpressure safe up to 600 bar [1)]

Adjustment range in bar (tolerance in bar at room temperature)	Thread	Normally open (no) —› |:	Normally closed (nc)—› :|

Piston pressure switches with integrated plug

50 – 150 (± 5)	M 10x1 con.	XXXX	419	01	X	009	XXXX	420	01	X	013
	M 12x1.5	XXXX	419	02	X	010	XXXX	420	02	X	014
	G 1/4	XXXX	419	03	X	011	XXXX	420	03	X	015
	NPT 1/8	XXXX	419	04	X	012	XXXX	420	04	X	016
	G 1/8	XXXX	419	28	X	603	XXXX	420	28	X	604
	M 10x1 cyl.	XXXX	419	13	X	003	XXXX	420	13	X	004

Plug versions (photo see page 13)

Deutsch DT04-2P	0111	XXX	XX	X	XXX	0111	XXX	XX	X	XXX
AMP Superseal	0113	XXX	XX	X	XXX	0113	XXX	XX	X	XXX
Packard MetriPack 280	0115	XXX	XX	X	XXX	0115	XXX	XX	X	XXX
Deutsch DT04-3P (A+B)	0117	XXX	XX	X	XXX	0117	XXX	XX	X	XXX
AMP Junior Timer	0119	XXX	XX	X	XXX	0119	XXX	XX	X	XXX
Bayonet DIN 72585 A1-2.1	0121	XXX	XX	X	XXX	0121	XXX	XX	X	XXX
M12x1 DIN EN 61076-2-LF (1 + 3)	0123	XXX	XX	X	XXX	0123	XXX	XX	X	XXX

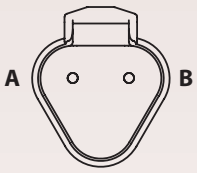
Seal material [2)] - application

NBR (Buna-N)	Hydraulic / machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3

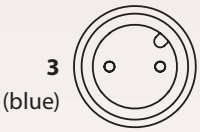
Order number:	01XX – XXX XX – X – XXX	01XX – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

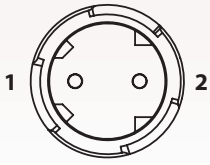
Plug pin assignments (male)



DT04-3P



M 12x1



Bayonet

[1)] Static value. Dynamic value is 30-50% lower. The values refer to the hydraulic or pneumatic part of the pressure switch.

[2)] Temperature range of the seal materials, see page 12.

Pressure switches hex 24

Normally open or normally closed, maximum voltage 42 V

- *Low-cost solution for mechanical pressure monitoring.*
- *Stable switching point even after long use and high load.*
- *Switching point easily adjustable[1] – also during use.*
- *High pressure resistance, compact, small switch available as normally closed (nc) or normally open (no).*
- *Ready-wired versions with the plug that you require - see page 38 following.*

Technical data

Voltage	max. 42 V
Current rating (resistive):	max. 4 Ampere
Contact rating:	100 VA
Temperature stability for diaphragm / seal materials:	NBR -40 °C – +100 °C EPDM -30 °C – +120 °C FKM -5 °C – +120 °C Silicone -40 °C – +120 °C HNBR -30 °C – +120 °C
Switching frequency:	200 / min.
Mechanical life expectancy:	10^6 cycles (life expectancy of diaphragm pressure switches only for pressures up to max. 50 bar)
Pressure rise rate:	≤ 1 bar/ms
Hysteresis:	average value 5 – 30 % depending on type, not adjustable
Vibration resistance:	10 g / 5 – 200 Hz sine-wave
Shock resistance:	294 m/s^2; 14 ms half-sine-wave
Degree of protection:	IP65 Terminals IP00
Weight in grams:	approx. 90 g

[1] The pressure switches can also be factory preset. Our preset switches are sealed with lacquer paint and have the set pressure embossed on their body.

Pressure switches hex 24

With fitted rubber cap: Degree of protection IP54

Technical data

Type:		0163	0164	0166	0167	0168	0169
Material:	Zinc-plated steel (Cr VI-free)	■		■		■	■
	Stainless steel		■				
	Brass				■		
Overpressure safe up to:	35 bar				■		
	300 bar			■		■	
	600 bar	■	■				■

Accessories

Rubber protective cap

with central cable feed
for 1.5 - 5 mm diameter cable

With fitted cap IP54

Suitable for voltages up to 42 V

Order number:

1-1-66-621-010

Rubber protective cap

with central cable feed
for 1.5 - 5 mm diameter cable

With fitted cap IP54

Suitable for voltages up to 42 V

Order number:

1-1-66-621-003

Degree of protection IPXX

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar (50 bar series 0164) must not be exceeded.

0163

Diaphragm pressure switches 42 V

- Zinc-plated steel body (CrVI-free)
- With M3 screw terminals
- Overpressure safe up to 600 bar[1)]

With male thread

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|			
0163 Diaphragm pressure switches with M3 screw terminals										
0.1 – 1 (± 0.2)	M 10x1 con.	0163	401 01	X	001	0163	402 01	X	005
	M 12x1.5	0163	401 02	X	002	0163	402 02	X	006
	G 1/4	0163	401 03	X	003	0163	402 03	X	007
	NPT 1/8	0163	401 04	X	004	0163	402 04	X	008
	G 1/8	0163	401 28	X	601	0163	402 28	X	602
	M 10x1 cyl.	0163	401 13	X	001	0163	402 13	X	002
1 – 10 (± 0.5)	M 10x1 con.	0163	405 01	X	017	0163	406 01	X	021
	M 12x1.5	0163	405 02	X	018	0163	406 02	X	022
	G 1/4	0163	405 03	X	019	0163	406 03	X	023
	NPT 1/8	0163	405 04	X	020	0163	406 04	X	024
	G 1/8	0163	405 28	X	605	0163	406 28	X	606
	M 10x1 cyl.	0163	405 13	X	005	0163	406 13	X	006
10 – 20 (± 1.0)	M 10x1 con.	0163	409 01	X	033	0163	410 01	X	037
	M 12x1.5	0163	409 02	X	034	0163	410 02	X	038
	G 1/4	0163	409 03	X	035	0163	410 03	X	039
	NPT 1/8	0163	409 04	X	036	0163	410 04	X	040
	G 1/8	0163	409 28	X	609	0163	410 28	X	610
	M 10x1 cyl.	0163	409 13	X	009	0163	410 13	X	010
20 – 50 (± 2.0)	M 10x1 con.	0163	413 01	X	049	0163	414 01	X	053
	M 12x1.5	0163	413 02	X	050	0163	414 02	X	054
	G 1/4	0163	413 03	X	051	0163	414 03	X	055
	NPT 1/8	0163	413 04	X	052	0163	414 04	X	056
	G 1/8	0163	413 28	X	613	0163	414 28	X	614
	M 10x1 cyl.	0163	413 13	X	013	0163	414 13	X	014

- *Our pressure switches are also available with factory preset switching points.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	**1**
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	**2**
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	**3**

See page 16 for temperature ranges of diaphragm / seal materials

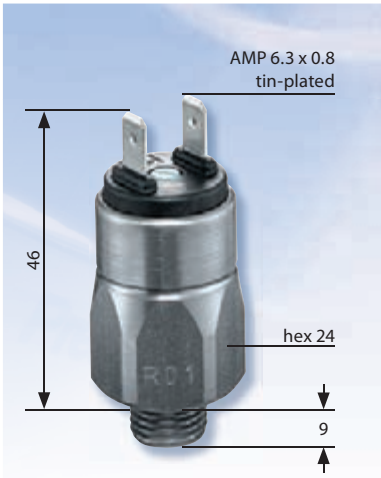
Order number:	**0163 –XXX XX–X–XXX**

Accessories see page 17

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With spade terminals
- Overpressure safe up to 600 bar[1)]

With male thread



Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|				
0163 Diaphragm pressure switches with spade terminals											
0.1 – 1 (± 0.2)	M 10x1 con.	0163	403 01	X	009	0163	404 01	X	013
	M 12x1.5	0163	403 02	X	010	0163	404 02	X	014
	G 1/4	0163	403 03	X	011	0163	404 03	X	015
	NPT 1/8	0163	403 04	X	012	0163	404 04	X	016
	G 1/8	0163	403 28	X	603	0163	404 28	X	604
	M 10x1 cyl.	0163	403 13	X	003	0163	404 13	X	004
1 – 10 (± 0.5)	M 10x1 con.	0163	407 01	X	025	0163	408 01	X	029
	M 12x1.5	0163	407 02	X	026	0163	408 02	X	030
	G 1/4	0163	407 03	X	027	0163	408 03	X	031
	NPT 1/8	0163	407 04	X	028	0163	408 04	X	032
	G 1/8	0163	407 28	X	607	0163	408 28	X	608
	M 10x1 cyl.	0163	407 13	X	007	0163	408 13	X	008
10 – 20 (± 1.0)	M 10x1 con.	0163	411 01	X	041	0163	412 01	X	045
	M 12x1.5	0163	411 02	X	042	0163	412 02	X	046
	G 1/4	0163	411 03	X	043	0163	412 03	X	047
	NPT 1/8	0163	411 04	X	044	0163	412 04	X	048
	G 1/8	0163	411 28	X	611	0163	412 28	X	612
	M 10x1 cyl.	0163	411 13	X	011	0163	412 13	X	012
20 – 50 (± 2.0)	M 10x1 con.	0163	415 01	X	057	0163	416 01	X	061
	M 12x1.5	0163	415 02	X	058	0163	416 02	X	062
	G 1/4	0163	415 03	X	059	0163	416 03	X	063
	NPT 1/8	0163	415 04	X	060	0163	416 04	X	064
	G 1/8	0163	415 28	X	615	0163	416 28	X	616
	M 10x1 cyl.	0163	415 13	X	015	0163	416 13	X	016

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 16 for temperature ranges of diaphragm / seal materials

Order number:	0163 –XXX XX–X–XXX

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

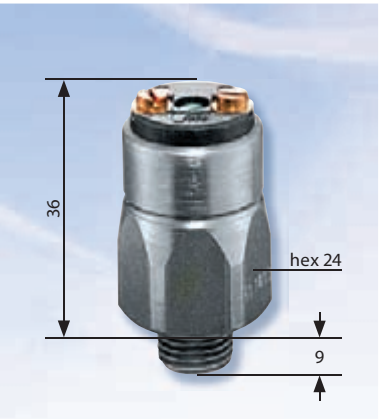
[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0166

Diaphragm pressure switches 42 V

- Zinc-plated steel body (CrVI-free)
- With M3 screw terminals
- Overpressure safe up to 300 bar[1)]

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|			
0166 Diaphragm pressure switches with M3 screw terminals										
0.1 – 1 (± 0.2)	M 10x1 con.	0166	401 01	X	001	0166	402 01	X	005
	M 12x1.5	0166	401 02	X	002	0166	402 02	X	006
	G 1/4	0166	401 03	X	003	0166	402 03	X	007
	NPT 1/8	0166	401 04	X	004	0166	402 04	X	008
	G 1/8	0166	401 28	X	601	0166	402 28	X	602
	M 10x1 cyl.	0166	401 13	X	001	0166	402 13	X	002
1 – 10 (± 0.5)	M 10x1 con.	0166	405 01	X	017	0166	406 01	X	021
	M 12x1.5	0166	405 02	X	018	0166	406 02	X	022
	G 1/4	0166	405 03	X	019	0166	406 03	X	023
	NPT 1/8	0166	405 04	X	020	0166	406 04	X	024
	G 1/8	0166	405 28	X	605	0166	406 28	X	606
	M 10x1 cyl.	0166	405 13	X	005	0166	406 13	X	006
10 – 20 (± 1.0)	M 10x1 con.	0166	409 01	X	033	0166	410 01	X	037
	M 12x1.5	0166	409 02	X	034	0166	410 02	X	038
	G 1/4	0166	409 03	X	035	0166	410 03	X	039
	NPT 1/8	0166	409 04	X	036	0166	410 04	X	040
	G 1/8	0166	409 28	X	609	0166	410 28	X	610
	M 10x1 cyl.	0166	409 13	X	009	0166	410 13	X	010
20 – 50 (± 2.0)	M 10x1 con.	0166	413 01	X	049	0166	414 01	X	053
	M 12x1.5	0166	413 02	X	050	0166	414 02	X	054
	G 1/4	0166	413 03	X	051	0166	414 03	X	055
	NPT 1/8	0166	413 04	X	052	0166	414 04	X	056
	G 1/8	0166	413 28	X	613	0166	414 28	X	614
	M 10x1 cyl.	0166	413 13	X	013	0166	414 13	X	014

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	**1**
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	**2**
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	**3**

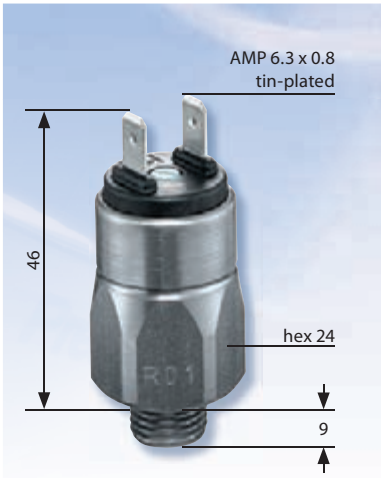
See page 16 for temperature ranges of diaphragm / seal materials

Order number:	**0166 –XXX XX–X–XXX**

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With spade terminals
- Overpressure safe up to 300 bar[1)]

With male thread



Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|				
0166 Diaphragm pressure switches with spade terminals											
0.1 – 1 (± 0.2)	M 10x1 con.	0166	403 01	X	009	0166	404 01	X	013
	M 12x1.5	0166	403 02	X	010	0166	404 02	X	014
	G 1/4	0166	403 03	X	011	0166	404 03	X	015
	NPT 1/8	0166	403 04	X	012	0166	404 04	X	016
	G 1/8	0166	403 28	X	603	0166	404 28	X	604
	M 10x1 cyl.	0166	403 13	X	003	0166	404 13	X	004
1 – 10 (± 0.5)	M 10x1 con.	0166	407 01	X	025	0166	408 01	X	029
	M 12x1.5	0166	407 02	X	026	0166	408 02	X	030
	G 1/4	0166	407 03	X	027	0166	408 03	X	031
	NPT 1/8	0166	407 04	X	028	0166	408 04	X	032
	G 1/8	0166	407 28	X	607	0166	408 28	X	608
	M 10x1 cyl.	0166	407 13	X	007	0166	408 13	X	008
10 – 20 (± 1.0)	M 10x1 con.	0166	411 01	X	041	0166	412 01	X	045
	M 12x1.5	0166	411 02	X	042	0166	412 02	X	046
	G 1/4	0166	411 03	X	043	0166	412 03	X	047
	NPT 1/8	0166	411 04	X	044	0166	412 04	X	048
	G 1/8	0166	411 28	X	611	0166	412 28	X	612
	M 10x1 cyl.	0166	411 13	X	011	0166	412 13	X	012
20 – 50 (± 2.0)	M 10x1 con.	0166	415 01	X	057	0166	416 01	X	061
	M 12x1 5	0166	415 02	X	058	0166	416 02	X	062
	G 1/4	0166	415 03	X	059	0166	416 03	X	063
	NPT 1/8	0166	415 04	X	060	0166	416 04	X	064
	G 1/8	0166	415 28	X	615	0166	416 28	X	616
	M 10x1 cyl.	0166	415 13	X	015	0166	416 13	X	016

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 16 for temperature ranges of diaphragm / seal materials

Order number:	0166 – XXX XX – X – XXX

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

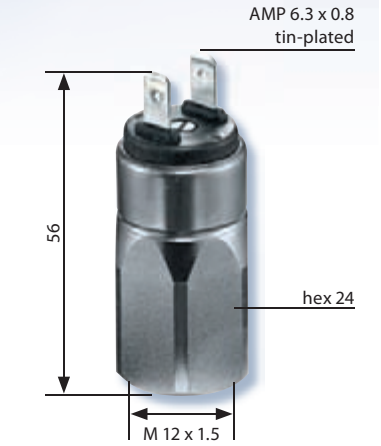
[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0168

Diaphragm pressure switches 42 V

- Zinc-plated steel body (CrVI-free)
- With M3 screw terminals or spade terminals
- Overpressure safe up to 300 bar[1)]
- With female thread for compression fittings acc. to DIN 2353

With female thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|			
0168 Diaphragm pressure switches with M3 screw terminals										
0.1 – 1 (± 0.2)	M 12x1.5 female	0168	401 16	X	001	0168	402 16	X	002
1 – 10 (± 0.5)		0168	405 16	X	005	0168	406 16	X	006
10 – 20 (± 1.0)		0168	409 16	X	009	0168	410 16	X	010
20 – 50 (± 2.0)		0168	413 16	X	013	0168	414 16	X	014
0168 Diaphragm pressure switches with spade terminals										
0.1 – 1 (± 0.2)	M 12x1.5 female	0168	403 16	X	003	0168	404 16	X	004
1 – 10 (± 0.5)		0168	407 16	X	007	0168	408 16	X	008
10 – 20 (± 1.0)		0168	411 16	X	011	0168	412 16	X	012
20 – 50 (± 2.0)		0168	415 16	X	015	0168	416 16	X	016

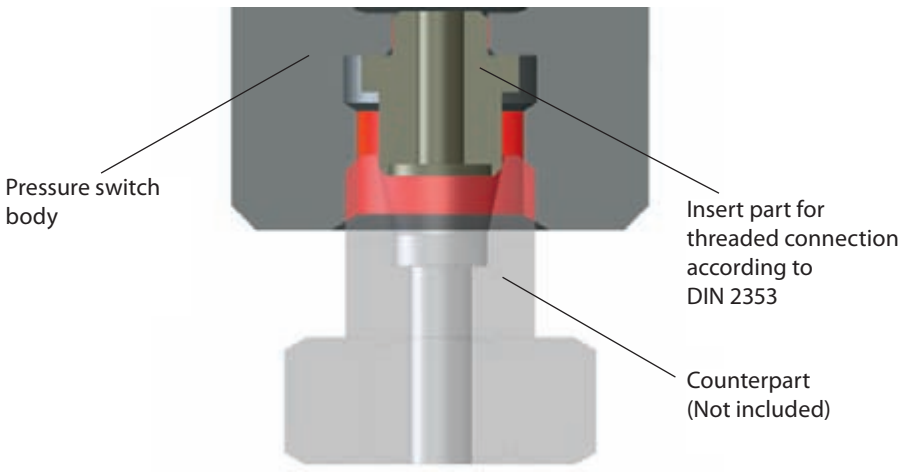
Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	**1**
EPDM	Water, brake fluid, ozone, acetylene, hydrogen etc.	**2**
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	**3**

See page 16 for temperature ranges of diaphragm / seal materials

Order number:	**0168 – XXX 16 – X – XXX**

Sealing gasket type 0168
Body insertion with counterpart fitting



[1)] Static value. Dynamic value is 30-50% lower. The values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With M3 screw terminals or spade terminals
- Overpressure safe up to 600 bar[1)]

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|			
0169 Piston pressure switches with M3 screw terminals										
50 – 150 (± 5.0)	M 10x1 con.	0169	417 01	X	001	0169	418 01	X	005
	M 12x1.5	0169	417 02	X	002	0169	418 02	X	006
	G 1/4	0169	417 03	X	003	0169	418 03	X	007
	NPT 1/8	0169	417 04	X	004	0169	418 04	X	008
	G 1/8	0169	417 28	X	601	0169	418 28	X	602
	M 10x1 cyl.	0169	417 13	X	001	0169	418 13	X	002
0169 Piston pressure switches with spade terminals									
50 – 150 (± 5.0)	M 10x1 con.	0169	419 01	X	009	0169	420 01	X	013
	M 12x1.5	0169	419 02	X	010	0169	420 02	X	014
	G 1/4	0169	419 03	X	011	0169	420 03	X	015
	NPT 1/8	0169	419 04	X	012	0169	420 04	X	016
	G 1/8	0169	419 28	X	603	0169	420 28	X	604
	M 10x1 cyl.	0169	419 13	X	003	0169	420 13	X	004

Seal material – areas of application

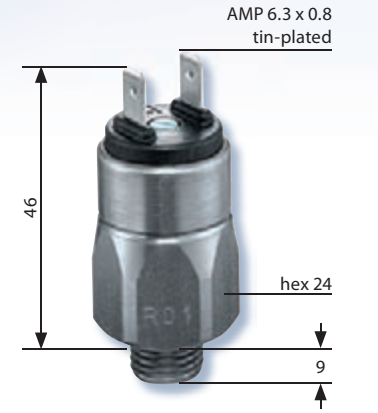
NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 16 for temperature ranges of diaphragm / seal materials

Order number:	0169 –XXX XX –X–XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0164

Diaphragm pressure switches 42 V with stainless steel body

- Body made of stainless steel (1.4305 / AISI 303)
- With M3 screw or spade terminals
- Overpressure safe up to 600 bar[1)]

With male thread

G 1/4-E including seal ring

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|				
0164 Diaphragm pressure switches with screw terminals											
0.1 – 1 (± 0.2)	R 1/8	0164	401 12	X	001	0164	402 12	X	002
	G 1/4-E	0164	401 41	X	001	0164	402 41	X	002
	R 1/4	0164	401 46	X	001	0164	402 46	X	002
1 – 10 (± 0.5)	R 1/8	0164	405 12	X	005	0164	406 12	X	006
	G 1/4-E	0164	405 41	X	005	0164	406 41	X	006
	R 1/4	0164	405 46	X	005	0164	406 46	X	006
10 – 20 (± 1.0)	R 1/8	0164	409 12	X	009	0164	410 12	X	010
	G 1/4-E	0164	409 41	X	009	0164	410 41	X	010
	R 1/4	0164	409 46	X	009	0164	410 46	X	010
20 – 50 (± 2.0)	R 1/8	0164	413 12	X	013	0164	414 12	X	014
	G 1/4-E	0164	413 41	X	013	0164	414 41	X	014
	R 1/4	0164	413 46	X	013	0164	414 46	X	014
0164 Diaphragm pressure switches with spade terminals											
0.1 – 1 (± 0.2)	R 1/8	0164	403 12	X	003	0164	404 12	X	004
	G 1/4-E	0164	403 41	X	003	0164	404 41	X	004
	R 1/4	0164	403 46	X	003	0164	404 46	X	004
1 – 10 (± 0.5)	R 1/8	0164	407 12	X	007	0164	408 12	X	008
	G 1/4-E	0164	407 41	X	007	0164	408 41	X	008
	R 1/4	0164	407 46	X	007	0164	408 46	X	008
10 – 20 (± 1.0)	R 1/8	0164	411 12	X	011	0164	412 12	X	012
	G 1/4-E	0164	411 41	X	011	0164	412 41	X	012
	R 1/4	0164	411 46	X	011	0164	412 46	X	012
20 – 50 (± 2.0)	R 1/8	0164	415 12	X	015	0164	416 12	X	016
	G 1/4-E	0164	415 41	X	015	0164	416 41	X	016
	R 1/4	0164	415 46	X	015	0164	416 46	X	016

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	**1**
EPDM	Water, brake fluid, ozone, acetylene, hydrogen etc.	**2**
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	**3**

See page 16 for temperature ranges of diaphragm / seal materials

Order number:	**0164 –XXX XX–X–XXX**

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Brass body
- With M3 screw terminals or spade terminals
- Overpressure safe up to 35 bar[1)]

Adjustment range in bar (tolerance at room temperature)	Thread	Normally open (no) –› |:				Normally closed (nc) –› :|				
0167 Diaphragm pressure switches with M3 screw terminals											
0.1 – 1 (± 0.2)	M 10x1 con.	0167	401	01	X	001	0167	402	01	X	004
	R 1/8	0167	401	12	X	002	0167	402	12	X	005
	R 1/2	0167	401	07	X	003	0167	402	07	X	006
	G 1/4	0167	401	03	X	037	0167	402	03	X	038
	G 1/8	0167	401	28	X	001	0167	402	28	X	002
1 – 10 (± 0.5)	M 10x1 con.	0167	405	01	X	013	0167	406	01	X	016
	R 1/8	0167	405	12	X	014	0167	406	12	X	017
	R 1/2	0167	405	07	X	015	0167	406	07	X	018
	G 1/4	0167	405	03	X	041	0167	406	03	X	042
	G 1/8	0167	405	28	X	005	0167	406	28	X	006
10 – 20 (± 1.0)	M 10x1 con.	0167	409	01	X	025	0167	410	01	X	028
	R 1/8	0167	409	12	X	026	0167	410	12	X	029
	R 1/2	0167	409	07	X	027	0167	410	07	X	030
	G 1/4	0167	409	03	X	045	0167	410	03	X	046
	G 1/8	0167	409	28	X	009	0167	410	28	X	010
0167 Diaphragm pressure switches with spade terminals											
0.1 – 1 (± 0.2)	M 10x1 con.	0167	403	01	X	007	0167	404	01	X	010
	R 1/8	0167	403	12	X	008	0167	404	12	X	011
	R 1/2	0167	403	07	X	009	0167	404	07	X	012
	G 1/4	0167	403	03	X	039	0167	404	03	X	040
	G 1/8	0167	403	28	X	003	0167	404	28	X	004
1 – 10 (± 0.5)	M 10x1 con.	0167	407	01	X	019	0167	408	01	X	022
	R 1/8	0167	407	12	X	020	0167	408	12	X	023
	R 1/2	0167	407	07	X	021	0167	408	07	X	024
	G 1/4	0167	407	03	X	043	0167	408	03	X	044
	G 1/8	0167	407	28	X	007	0167	408	28	X	008
10 – 20 (± 1.0)	M 10x1 con.	0167	411	01	X	031	0167	412	01	X	034
	R 1/8	0167	411	12	X	032	0167	412	12	X	035
	R 1/2	0167	411	07	X	033	0167	412	07	X	036
	G 1/4	0167	411	03	X	047	0167	412	03	X	048
	G 1/8	0167	411	28	X	011	0167	412	28	X	012

Diaphragm material – areas of application

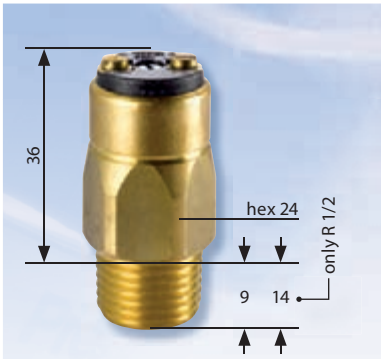
NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Water, brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

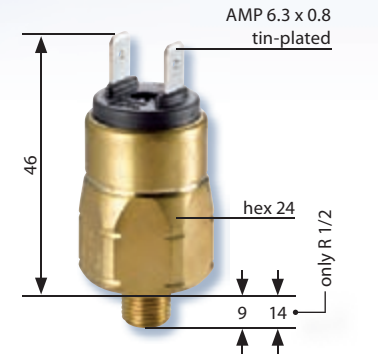
See page 16 for temperature ranges of diaphragm / seal materials

Order number:	0167 –XXX XX–X–XXX

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

With male thread





- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm materials are available on request, e.g. HNBR or silicone.*

Accessories see page 17

Pressure switch hex 27

Changeover switch with silver or gold contacts

- *Easily adjustable switching point.*
- *Factory adjustable hysteresis (except type 0140/0141) [1].*
- *High overpressure safety and long life even under harsh operating conditions.*
- *Ready-wired versions with your desired connectors (see p. 38).*
- *Deliverable with socket device or protective cap according to IP65.*

[1] *Our preset switches are sealed with lacquer paint and the set pressure is embossed on the body.*

Technical data

Temperature stability for diaphragm / seal materials:	NBR EPDM FKM Silicone HNBR	-40°C – +100°C -30°C – +120°C -5°C – +120°C -40°C – +120°C -30°C – +120°C
Switching frequency:	200 / min.	
Mechanical life expectancy:	10^6 cycles (life expectancy of diaphragm pressure switches only for pressures up to max. 50 bar)	
Pressure rise rate:	≤ 1 bar / ms	
Hysteresis (Only preset at factory):	adjustable average value 10-30% depending on type Type 0140/0141 not adjustable	
Vibration resistance:	10 g / 5 – 200 Hz sine-wave	
Shock resistance:	294 m / s^2; 14 ms half-sine-wave	
Degree of protection:	IP65 with suitable connector installed terminals IP00	
Weight in grams:	0140 / 0141 0170 / 0171, 0180 / 0181, 0183, 0186, 0187, 0190 / 0191, 0196, 0197	approx. 100 g
	0184 / 0185, 0194 / 0195	approx. 130 g

Electrical values

Rated operating voltage U_e	Rated operational current I_e		Utilisation category[2]
250 Volt AC 50 / 60 Hz	4 Ampere	(2 Ampere)[1)]	AC 12
250 Volt AC 50 / 60 Hz	1 Ampere		AC 14
24 Volt DC	4 / 2 Ampere	(2 / 1 Ampere)[1)]	DC 12 / DC 13
50 Volt DC	2 / 1 Ampere	(1 / 0.5 Ampere)[1)]	DC 12 / DC 13
75 Volt DC	1 / 0.5 Ampere	(0.5 / 0.25 Ampere)[1)]	DC 12 / DC 13
125 Volt DC	0.3 / 0.2 Ampere	(0.2 / 0.1 Ampere)[1)]	DC 12 / DC 13
250 Volt DC	0.25 / 0.2 Ampere	(0.15 / 0.1 Ampere)[1)]	DC 12 / DC 13
Rated insulation voltage U_i:	300 Volt		
Rated operating current U_{imp}:	2.5 kV	(4 kV) [1)]	
Rated thermal current I_{the}:	5 Ampere		
Switching overvoltage:	< 2.5 kV		
Rated frequency:	DC and 50 / 60 Hz		
Short circuit current rating of the device:	to 5 Ampere	(to 3.5 Ampere)[1)]	
Rated short-circuit current:	< 350 Ampere		
IP class of protection according to EN60529:1991+A1:1999:	IP65 with socket device		
Tightening torque of terminal screws:	< 0.35 Nm (concerns only type 0140 / 0141, 0184 / 0185, 0194 / 0195)		
Cable diameter:	0.5 – 1.5 mm²		

[1)] Figures in brackets for series 0140 / 0141
[2)] Explanations see page 9

Switching performance and materials overview

Type	0140	0141	0170	0171	0180	0181	0183	0184	0185	0186	0187	0190	0191	0194	0195	0196	0197
24 V												■	■	■	■	■	■
42 V			■	■													
250 V	■	■			■	■	■	■	■	■	■						
50 mA												■	■	■	■	■	■
2 A	■	■															
4 A			■	■	■	■	■	■	■	■	■						
Gold contacts												■	■	■	■	■	■
Silver contacts	■	■	■	■	■	■	■	■	■	■	■						
Adjustable hysteresis			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Zinc-plated steel (CrVI-free)	■	■	■	■	■	■	■	■	■			■	■	■	■		
Stainless steel 1.4305										■	■					■	■
DIN–socket device								■	■					■	■		

CE marking

SUCO pressure switches rated with an operating limit of 250 V are covered by the Low Voltage Directive 73/23/EC.

An EC Declaration of Conformity has been issued for these pressure switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

Degree of protection IPXX

The type approval does not apply without restriction to all environmental conditions.
It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar (50 bar for stainless steel enclosures) must not to be exceeded.

Pressure switch hex 27

Accessories and applications

- Socket device IP65 or rubber capped IP54 for increased protection
- Easy installation with mountable socket device
- Thread adapters for special threads

hex 27 accessories

				
	Rubber protective cap with two cable feeds for 1.7 to 2.3 mm diameter cable **When rubber cap attached IP54** Suitable for voltages up to 42 V	**Socket device** Threaded connection Pg9 (Tightening range 6 - 9 mm) **When attached to socket device IP65** Suitable for voltages up to 250 V	**Socket device with indicator light** According to DIN EN 175301- 803-A (DIN 43650) Threaded connection Pg9 (Tightening range 6 - 9 mm) **When attached to socket device IP65** Suitable for 24 V or 250 V	**Thread adapter for special threads** from G1/4-DIN3852-E to R1/4 acc. to DIN 2999 including FKM seals
0170 / 0171	■	■		■
0180 / 0181	■ (Up to max 42 V)	■		■
0183	■ (Up to max 42 V)	■		
0184 / 0185			■ 24 V or 250 V (upon request) see also page 33	■
0190 / 0191	■	■		■
0194 / 0195			■ (24 V on request) also see page 35	■
0186 / 0187	■ (Up to max 42 V)	■		■
0196 / 0197	■	■		■
Order number:	**1-1-70-621-007**	**1-1-80-652-002**	**24 VDC: 1-1-84-652-011** **250 VAC: 1-1-84-652-010**	**1-1-00-420-009**

- Zinc-plated steel body (CrVI-free)
- With integrated changeover switch and silver contacts
- Overpressure safe up to 300 / 600 bar [1)]
- Incl. polyamide cap, degree of protection IP65

With male thread

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:				
0140 Diaphragm pressure switch with screw terminals								
300[1)]	0.3 – 1.5	± 0.2	G 1/4	0140	457	03	X	003
			NPT 1/8	0140	457	04	X	300
			NPT 1/4	0140	457	09	X	305
			7/16-20 UNF	0140	457	20	X	310
			9/16-18 UNF	0140	457	21	X	315
	1 – 10	± 0.5	G 1/4	0140	458	03	X	006
			NPT 1/8	0140	458	04	X	301
			NPT 1/4	0140	458	09	X	306
			7/16-20 UNF	0140	458	20	X	311
			9/16-18 UNF	0140	458	21	X	316
	10 – 20	± 1.0	G 1/4	0140	459	03	X	009
			NPT 1/8	0140	459	04	X	302
			NPT 1/4	0140	459	09	X	307
			7/16-20 UNF	0140	459	20	X	312
			9/16-18 UNF	0140	459	21	X	317
	20 – 50	± 2.0	G 1/4	0140	461	03	X	012
			NPT 1/8	0140	461	04	X	303
			NPT 1/4	0140	461	09	X	308
			7/16-20 UNF	0140	461	20	X	313
			9/16-18 UNF	0140	461	21	X	318
0141 Piston pressure switch with screw terminals								
600[1)]	50 – 150	± 5.0	G 1/4	0141	460	03	X	003
			NPT 1/8	0141	460	04	X	304
			NPT 1/4	0141	460	09	X	309
			7/16-20 UNF	0141	460	20	X	314
			9/16-18 UNF	0141	460	21	X	319

Diaphragm / seal material – areas of application

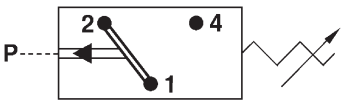
NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 26

Order number:	014X – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Protection class 2, protective insulation* ⧈
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



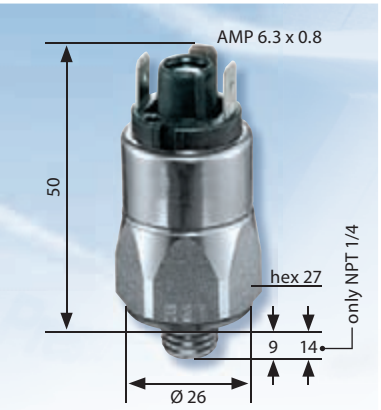
[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0170/0171

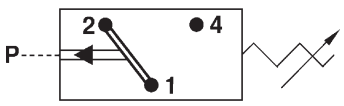
Diaphragm / piston pressure switches 42 V

- Zinc-plated steel body (CrVI-free)
- With changeover switch and silver contacts
- Overpressure safe up to 100 / 300 / 600 bar [1)]
- Hysteresis adjustable at works

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories see page 28

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0170 Diaphragm pressure switch with spade terminals							
100[1)]	0.3 – 1.5	± 0.2	M 10x1 con.	0170	457 01	X	001
			M 12x1.5	0170	457 02	X	002
			G 1/4	0170	457 03	X	003
			NPT 1/8	0170	457 04	X	318
			NPT 1/4	0170	457 09	X	314
			7/16-20 UNF	0170	457 20	X	301
			9/16-18 UNF	0170	457 21	X	302
300[1)]	1 – 10	± 0.5	M 10x1 con.	0170	458 01	X	040
			M 12x1.5	0170	458 02	X	041
			G 1/4	0170	458 03	X	042
			NPT 1/8	0170	458 04	X	343
			NPT 1/4	0170	458 09	X	340
			7/16-20 UNF	0170	458 20	X	341
			9/16-18 UNF	0170	458 21	X	342
	10 – 50	± 3.0	M 10x1 con.	0170	459 01	X	007
			M 12x1.5	0170	459 02	X	008
			G 1/4	0170	459 03	X	009
			NPT 1/8	0170	459 04	X	320
			NPT 1/4	0170	459 09	X	316
			7/16-20 UNF	0170	459 20	X	305
			9/16-18 UNF	0170	459 21	X	306
	10 – 100	± 3.0 – 5.0	M 10x1 con.	0170	461 01	X	010
			M 12x1.5	0170	461 02	X	011
			G 1/4	0170	461 03	X	012
			NPT 1/8	0170	461 04	X	321
			NPT 1/4	0170	461 09	X	317
			7/16-20 UNF	0170	461 20	X	307
			9/16-18 UNF	0170	461 21	X	308
0171 Piston pressure switch with spade terminals							
600[1)]	50 – 200	± 5.0	M 10x1 con.	0171	460 01	X	001
			M 12x1.5	0171	460 02	X	002
			G 1/4	0171	460 03	X	003
			NPT 1/8	0171	460 04	X	304
			NPT 1/4	0171	460 09	X	303
			7/16-20 UNF	0171	460 20	X	301
			9/16-18 UNF	0171	460 21	X	302

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 26

Order number:	017X – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With changeover switch and silver contacts
- Overpressure safe up to 100 / 300 / 600 bar [1)]
- Hysteresis adjustable at works

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0180 Diaphragm pressure switch with spade terminals							
100[1)]	0.3 – 1.5	± 0.2	M 10x1 con.	0180	457 01	X	001
			M 12x1.5	0180	457 02	X	002
			G 1/4	0180	457 03	X	003
			NPT 1/8	0180	457 04	X	318
			NPT 1/4	0180	457 09	X	314
			7/16-20 UNF	0180	457 20	X	301
			9/16-18 UNF	0180	457 21	X	302
300[1)]	1 – 10	± 0.5	M 10x1 con.	0180	458 01	X	040
			M 12x1.5	0180	458 02	X	041
			G 1/4	0180	458 03	X	042
			NPT 1/8	0180	458 04	X	343
			NPT 1/4	0180	458 09	X	340
			7/16-20 UNF	0180	458 20	X	341
			9/16-18 UNF	0180	458 21	X	342
	10 – 50	± 3.0	M 10x1 con.	0180	459 01	X	007
			M 12x1.5	0180	459 02	X	008
			G 1/4	0180	459 03	X	009
			NPT 1/8	0180	459 04	X	320
			NPT 1/4	0180	459 09	X	311
			7/16-20 UNF	0180	459 20	X	305
			9/16-18 UNF	0180	459 21	X	306
	10 – 100	± 3.0 – 5.0	M 10x1 con.	0180	461 01	X	010
			M 12x1.5	0180	461 02	X	011
			G 1/4	0180	461 03	X	012
			NPT 1/8	0180	461 04	X	321
			NPT 1/4	0180	461 09	X	312
			7/16-20 UNF	0180	461 20	X	307
			9/16-18 UNF	0180	461 21	X	308
0181 Piston pressure switch with spade terminals							
600[1)]	50 – 200	± 5.0	M 10x1 con.	0181	460 01	X	001
			M 12x1.5	0181	460 02	X	002
			G 1/4	0181	460 03	X	003
			NPT 1/8	0181	460 04	X	304
			NPT 1/4	0181	460 09	X	303
			7/16-20 UNF	0181	460 20	X	301
			9/16-18 UNF	0181	460 21	X	302

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 26

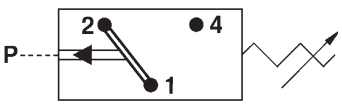
Order number:	018X – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

With male thread

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



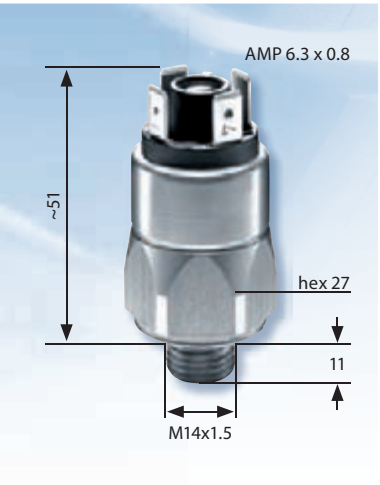
Accessories see page 28

0183

Piston pressure switches 250 V

- Zinc-plated steel body (CrVI-free)
- With changeover switch and silver contacts
- Overpressure safe up to 600 bar[1)], hysteresis adjustable at works
- Adjustment range: 100 – 400 bar
- Installation height only 62 mm

Thread similar ISO 6149-3
(Incl. O-ring for sealing)



$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:				
0183 Piston pressure switch with spade terminals								
600[1)]	100 – 300	± 10.0	M 14x1.5	0183	462 45	X	051
	200 – 400			0183	463 45	X	061

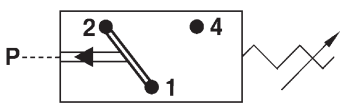
Seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

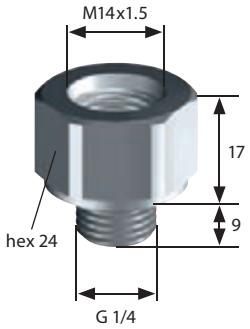
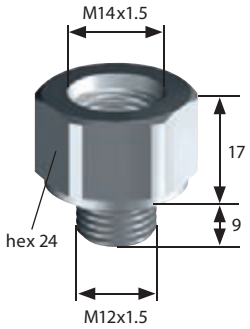
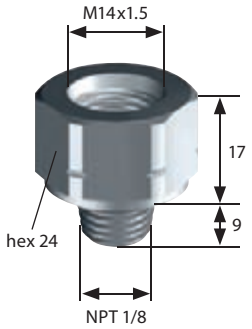
Temperature ranges of seal materials see page 26

Order number:	**0183 – XXX 45 – X – XXX**

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories

Adapter From M 14 x 1.5 to G 1/4	**Adapter** From M 14 x 1.5 to M 12 x 1.5	**Adapter** From M 14 x 1.5 to NPT 1/8
		
Order number: 1-1-83-420-006	**Order number: 1-1-83-420-007**	**Order number: 1-1-83-420-008**

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

Accessories see page 28

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With socket device similar to DIN EN 175301 (DIN 43650)
- With changeover switch and silver contacts
- Overpressure safe up to 100 / 300 / 600 bar[1)]
- Hysteresis adjustable at works

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0184 Diaphragm pressure switch							
100[1)]	0.3 – 1.5	± 0.2	M 10x1 con.	0184	457 01	X	001
			M 12x1.5	0184	457 02	X	002
			G 1/4	0184	457 03	X	003
			NPT 1/8	0184	457 04	X	318
			NPT 1/4	0184	457 09	X	314
			7/16-20 UNF	0184	457 20	X	301
			9/16-18 UNF	0184	457 21	X	302
300[1)]	1 – 10	± 0.5	M 10x1 con.	0184	458 01	X	040
			M 12x1.5	0184	458 02	X	041
			G 1/4	0184	458 03	X	042
			NPT 1/8	0184	458 04	X	343
			NPT 1/4	0184	458 09	X	340
			7/16-20 UNF	0184	458 20	X	341
			9/16-18 UNF	0184	458 21	X	342
	10 – 50	± 3.0	M 10x1 con.	0184	459 01	X	007
			M 12x1.5	0184	459 02	X	008
			G 1/4	0184	459 03	X	009
			NPT 1/8	0184	459 04	X	320
			NPT 1/4	0184	459 09	X	311
			7/16-20 UNF	0184	459 20	X	305
			9/16-18 UNF	0184	459 21	X	306
	10 – 100	± 3.0– 5.0	M 10x1 con.	0184	461 01	X	010
			M 12x1.5	0184	461 02	X	011
			G 1/4	0184	461 03	X	012
			NPT 1/8	0184	461 04	X	321
			NPT 1/4	0184	461 09	X	312
			7/16-20 UNF	0184	461 20	X	307
			9/16-18 UNF	0184	461 21	X	308
0185 Piston pressure switch							
600[1)]	50 – 200	± 5.0	M 10x1 con.	0185	460 01	X	001
			M 12x1.5	0185	460 02	X	002
			G 1/4	0185	460 03	X	003
			NPT 1/8	0185	460 04	X	304
			NPT 1/4	0185	460 09	X	303
			7/16-20 UNF	0185	460 20	X	301
			9/16-18 UNF	0185	460 21	X	302

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

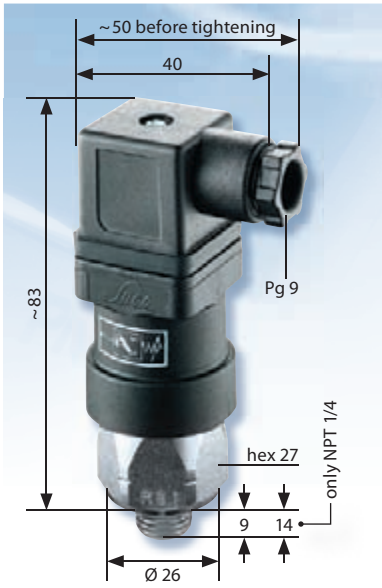
Temperature ranges of diaphragm / seal materials see page 26

Order number:	018X – XXX XX – X – XXX

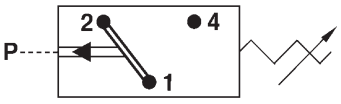
Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



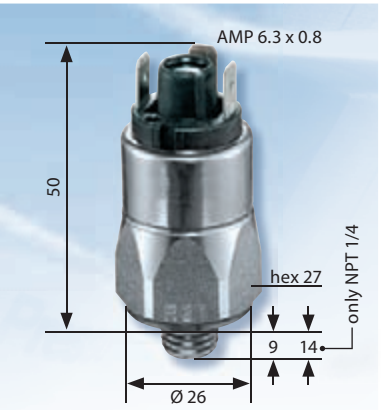
Accessories see page 28

0190/0191

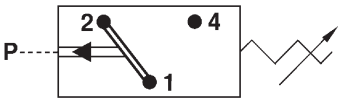
Diaphragm / piston pressure switches 24 V with gold contacts

- Zinc-plated steel body (CrVI-free), with spade terminals
- With changeover switch
- Max. voltage 24 V
- Overpressure safe up to 100/300/600 bar[1)]
- Hysteresis adjustable at works

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories see page 28

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0190 Diaphragm pressure switch with spade terminals							
100[1)]	0.3 – 1.5	± 0.2	M 10x1 con.	0190	457 01	X	001
			M 12x1.5	0190	457 02	X	002
			G 1/4	0190	457 03	X	003
			NPT 1/8	0190	457 04	X	318
			NPT 1/4	0190	457 09	X	314
			7/16-20 UNF	0190	457 20	X	301
			9/16-18 UNF	0190	457 21	X	302
300[1)]	1 – 10	± 0.5	M 10x1 con.	0190	458 01	X	040
			M 12x1.5	0190	458 02	X	041
			G 1/4	0190	458 03	X	042
			NPT 1/8	0190	458 04	X	343
			NPT 1/4	0190	458 09	X	340
			7/16-20 UNF	0190	458 20	X	341
			9/16-18 UNF	0190	458 21	X	342
	10 – 50	± 3.0	M 10x1 con.	0190	459 01	X	007
			M 12x1.5	0190	459 02	X	008
			G 1/4	0190	459 03	X	009
			NPT 1/8	0190	459 04	X	320
			NPT 1/4	0190	459 09	X	316
			7/16-20 UNF	0190	459 20	X	305
			9/16-18 UNF	0190	459 21	X	306
	10 – 100	± 3.0 – 5.0	M 10x1 con.	0190	461 01	X	010
			M 12x1.5	0190	461 02	X	011
			G 1/4	0190	461 03	X	012
			NPT 1/8	0190	461 04	X	321
			NPT 1/4	0190	461 09	X	317
			7/16-20 UNF	0190	461 20	X	307
			9/16-18 UNF	0190	461 21	X	308
0191 Piston pressure switch with spade terminals							
600[1)]	50 – 200	± 5.0	M 10x1 con.	0191	460 01	X	001
			M 12x1.5	0191	460 02	X	002
			G 1/4	0191	460 03	X	003
			NPT 1/8	0191	460 04	X	304
			NPT 1/4	0191	460 09	X	303
			7/16-20 UNF	0191	460 20	X	301
			9/16-18 UNF	0191	460 21	X	302

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 26

Order number:	019X – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Zinc-plated steel body (CrVI-free)
- With socket device similar to DIN EN 175301 (DIN 43650)
- With changeover switch
- Overpressure safe up to 100/300/600 bar[1)]
- Hysteresis adjustable at works

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0194 Diaphragm pressure switch							
100[1)]	0.3 – 1.5	± 0.2	M 10x1 con.	0194	457 01	X	001
			M 12x1.5	0194	457 02	X	002
			G 1/4	0194	457 03	X	003
			NPT 1/8	0194	457 04	X	318
			NPT 1/4	0194	457 09	X	314
			7/16-20 UNF	0194	457 20	X	301
			9/16-18 UNF	0194	457 21	X	302
300[1)]	1 – 10	± 0.5	M 10x1 con.	0194	458 01	X	040
			M 12x1.5	0194	458 02	X	041
			G 1/4	0194	458 03	X	042
			NPT 1/8	0194	458 04	X	343
			NPT 1/4	0194	458 09	X	340
			7/16-20 UNF	0194	458 20	X	341
			9/16-18 UNF	0194	458 21	X	342
	10 – 50	± 3.0	M 10x1 con.	0194	459 01	X	007
			M 12x1.5	0194	459 02	X	008
			G 1/4	0194	459 03	X	009
			NPT 1/8	0194	459 04	X	320
			NPT 1/4	0194	459 09	X	311
			7/16-20 UNF	0194	459 20	X	305
			9/16-18 UNF	0194	459 21	X	306
	10 – 100	± 3.0 – 5.0	M 10x1 con.	0194	461 01	X	010
			M 12x1.5	0194	461 02	X	011
			G 1/4	0194	461 03	X	012
			NPT 1/8	0194	461 04	X	321
			NPT 1/4	0194	461 09	X	312
			7/16-20 UNF	0194	461 20	X	307
			9/16-18 UNF	0194	461 21	X	308
0195 Piston pressure switch							
600[1)]	50 – 200	± 5.0	M 10x1 con.	0195	460 01	X	001
			M 12x1.5	0195	460 02	X	002
			G 1/4	0195	460 03	X	003
			NPT 1/8	0195	460 04	X	304
			NPT 1/4	0195	460 09	X	303
			7/16-20 UNF	0195	460 20	X	301
			9/16-18 UNF	0195	460 21	X	302

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil. heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

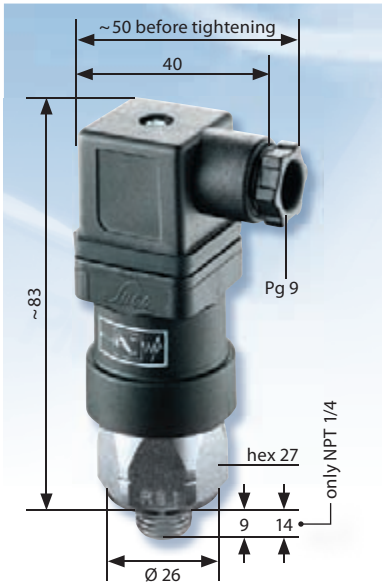
Temperature ranges of diaphragm / seal materials see page 26

Order number:	019X – XXX XX – X – XXX

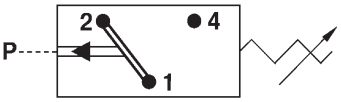
Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories see page 28

0186/0187

Diaphragm / piston pressure switches 250 V with stainless steel body

- Stainless steel (1.4305 / AISI 303) body
- With changeover switch and silver contacts
- Max. voltage 250 V
- Overpressure safe up to 300/600 bar[1)]
- Hysteresis adjustable at works

With male thread

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0186 Diaphragm pressure switch with spade terminals							
300[1)]	0.5 – 5	± 0.2	G 1/4	0186	457 03	X	003
	1 – 10	± 0.5		0186	458 03	X	006
	10 – 50	± 3.0		0186	459 03	X	009
	10 – 100	± 3.0 – 5.0		0186	461 03	X	012
0187 Piston pressure switch with spade terminals							
600[1)]	50 – 200	± 5.0	G 1/4	0187	460 03	X	003

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Water[2)], Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

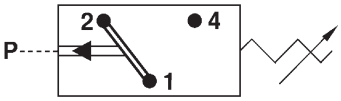
Temperature ranges of diaphragm / seal materials see page 26

[2)] Not recommended for piston pressure switches.

Order number:	018X – XXX 03 – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories see page 28

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Stainless steel (1.4305 / AISI 303) body
- With changeover switch and gold contacts
- Max. voltage 24 V
- Overpressure safe up to 300/600 bar[1)]
- Hysteresis adjustable at works

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0196 Diaphragm pressure switch with spade terminals							
300[1)]	0.5 – 5	± 0.2	G 1/4	0196	457 03	X	003
	1 – 10	± 0.5		0196	458 03	X	006
	10 – 50	± 3.0		0196	459 03	X	009
	10 – 100	± 3.0 – 5.0		0196	461 03	X	012
0197 Piston pressure switch with spade terminals							
600[1)]	50 – 200	± 5.0	G 1/4	0197	460 03	X	003

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Water[2)], Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 26

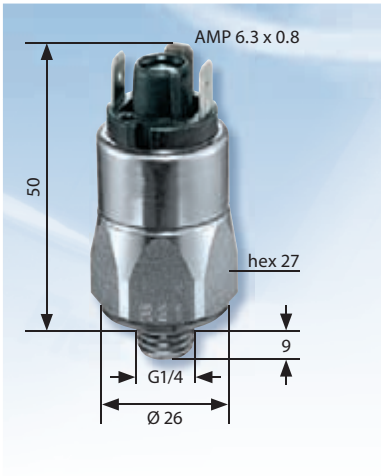
[2)] Not recommended for piston pressure switches.

Order number:	019X – XXX 03 – X–XXX

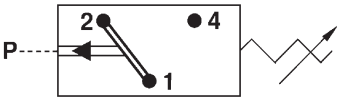
Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

With male thread



- *Our pressure switches are also available with factory preset switching points.*
- *Ready-wired versions can be found starting on page 38 following.*
- *We offer other body materials and connecting threads upon request.*
- *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*
- *For further technical data see page 26/27.*



Accessories see page 28

Ready-wired pressure switches hex 24 / hex 27

Customized finishing

- *Connector types with different cable lengths according to customer needs for all switches of the hex 24 and hex 27 series.*
- *Degree of protection according to the connector specification of the manufacturer.*
- *Adjustable switching points that maintain their setting.*
- *0240 / 0241 also adjustable even after sealing.*
- *Factory preset pressure switching points are embossed on the switch body.*

Technical explanations

Our pressure switches mostly have a degree of protection IP65. This may not be adequate for all applications. Especially for commercial vehicles, mobile hydraulics and similar applications where IP67 or IP6K9K may be required.

Ready-wired switches offer a maximum of protection against dust and water. This allows that the pressure switch itself can be used in any possible assembly position while the electrical connection can be transfered to climate-wise uncritical and vibration-free places.

SUCO is able to ready-wire all commercially available connectors attaching customized cable lengths. This not only ensures a great deal of flexibility but also the possibility to supply small quantities without claiming expensive tooling costs.

The technical data of ready-wired pressure switch types are substantially the same as those of the standard types. Differences in the technical data will be agreed with the customer and defined on a customer-specific drawing of the ready-wired pressure switch.

Ready-wired pressure switches hex 24 / hex 27

Customized finishing

- Many pressure switches series of hex series 24 and 27 can be individually wired according to customer needs.
- Let us advise you.

Standard ranges suitable for ready-wiring

			
0163 / 0166 **0164** **0167** **0169**	**0168**	**0170 / 0171** **0180 / 0181** **0190 / 0191** **0196 / 0197**	**0140 / 0141**
See pages 16 bis 25 for technical data	See pages 16 / 17 and 22 for technical data	See pages 26 bis 37 for technical data	See pages 26 / 27 and 29 for technical data
The switching point is factory preset and cannot be changed subsequently. It is therefore essential that the switching point is stated when the order is placed.			The switching point is adjustable even after sealing.

- *SUCO has developed special solutions of pressure switches for pneumatic and gaseous applications.*
  Please ask for individual technical advice with regard to your special application.

A selection from the wide variety of connectors we can supply

Bayonet-connector acc. DIN 72585	
AMP Junior Timer	
Cannon connector	
AMP Superseal	
Packard connector (Weather Pack 2-wire)	
Packard connector (Weather Pack 3-wire)	
Deutsch connector (DT 06 - 2S)	
Deutsch connector (DT 04 - 2P)	
Deutsch connector (DT 04 - 3P)	

- *Further connectors available on request.*
- *We supply the type and length of cable you need.*

0240/0241

Diaphragm / piston pressure switch

- With changeover switch and silver contacts
- Switching point can be adjusted after potting, degree of protection **IP67**
- Depending on connection, suitable for 42 V or 250 V

CE marking

SUCO pressure switches rated with an operating limit of 250 V are covered by the Low Voltage Directive 73/23/EC.

An EC Declaration of Conformity has been issued for these pressure switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

Degree of protection type IP67

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar must not be exceeded.

Technical data

Voltage:	max. 42 V / 250 V depending on connection
Current:	max. 2 Ampere
Protection class:	2, protective insulation ⧈
Temperature resistance of the membrane / seal materials	NBR (Buna-N) -40°C – +100°C EPDM -30°C – +120°C FKM -5°C – +120°C Silicone -40°C – +120°C HNBR -30°C – +120°C
Switching frequency:	200 / min.
Mechanical life expectancy:	10^6 cycles (for diaphragm pressure switches, life expectancy value only applicable for pressures up to max. 50 bar)
Pressure rise rate:	≤ 1 bar / ms
Hysteresis:	Average value of 10-20% (not adjustable)
Vibration resistance:	10 g / 5 – 200 Hz sine wave
Shock resistance:	294 m / s^2; 14 ms half sine wave
Materials:	Zinc-plated steel body Protective cover anodised aluminium
Cable:	Standard length 2 m with wire end sleeves
Degree of protection:	IP67
Weight in grams:	approx. 100 g

- Made of zinc-plated steel (Cr VI-free)
- Overpressure safe to 300 / 600 bar[1)]
- Switching point adjustable during operation
- Safety class 2, safety insulation ⧈

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0240 Diaphragm pressure switches							
300[1)]	0.3 – 1.5	± 0.2	G 1/4	0240	457 03	X	003
			NPT 1/8	0240	457 04	X	300
			NPT 1/4	0240	457 09	X	305
			7/16-20 UNF	0240	457 20	X	310
			9/16-18 UNF	0240	457 21	X	315
	1 – 10	± 0.5	G 1/4	0240	458 03	X	006
			NPT 1/8	0240	458 04	X	301
			NPT 1/4	0240	458 09	X	306
			7/16-20 UNF	0240	458 20	X	311
			9/16-18 UNF	0240	458 21	X	316
	10 – 20	± 1.0	G 1/4	0240	459 03	X	009
			NPT 1/8	0240	459 04	X	302
			NPT 1/4	0240	459 09	X	307
			7/16-20 UNF	0240	459 20	X	312
			9/16-18 UNF	0240	459 21	X	317
	20 – 50	± 2.0	G 1/4	0240	461 03	X	012
			NPT 1/8	0240	461 04	X	303
			NPT 1/4	0240	461 09	X	308
			7/16-20 UNF	0240	461 20	X	313
			9/16-18 UNF	0240	461 21	X	318
0241 Piston pressure switches							
600[1)]	50 – 150	± 5.0	G 1/4	0241	460 03	X	003
			NPT 1/8	0241	460 04	X	304
			NPT 1/4	0241	460 09	X	309
			7/16-20 UNF	0241	460 20	X	314
			9/16-18 UNF	0241	460 21	X	319

Diaphragm / seal material – areas of application

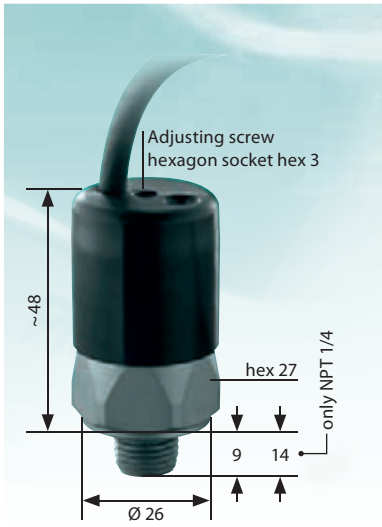
NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 40

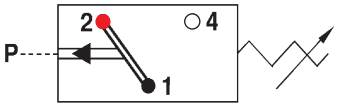
Order number:	024X – XXX XX – X – XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

With male thread



Contact assignment:
- ● 1 = black
- ● 2 = red
- ○ 4 = white



■ ***Options:***
– other cable lengths and connectors on request
– fixed preset switching point

■ *We offer other body materials and connecting threads upon request.*

■ *Other diaphragm- / seal materials are available on request, e.g. HNBR or silicone for diaphragm pressure switches.*

[1)] Static value. Dynamic value is 30-50% lower. The values refer to the hydraulic or pneumatic part of the pressure switch.

Pressure switches 30 A/F

Changeover switch

CE marking

SUCO pressure switches rated with an operating limit of 250 V are covered by the Low Voltage Directive 73/23/EC.

An EC Declaration of Conformity has been issued for these pressure switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

- ***Mounting options for wall or manifold mounting enable easy, free-maintenance installation.***
- ***Easily user-adjustable switching point.***
- ***High overpressure safety.***
- ***Socket device allows easy assembly on site.***

Technical data

Temperature stability for diaphragm / seal materials:	NBR -40 °C – +100 °C EPDM -30 °C – +120 °C FKM -5 °C – +120 °C
Switching frequency:	200 / min.
Mechanical life expectancy:	10^6 cycles (life expectancy of diaphragm pressure switches only for pressures up to max. 50 bar)
Pressure rise rate:	≤ 1 bar/ms
Hysteresis:	Type 0159: approx. 10 – 30 % (not adjustable) Type 0161, 0162, 0175: approx. 10 – 30 % (factory adjustable)
Vibration resistance:	10 g / 5 – 200 Hz sine-wave
Shock resistance:	294 m/s^2; 14 ms half-sine-wave
Body material:	Aluminium
Degree of protection:	IP 65 socket device fitted
Weight in grams:	Type 0159, 0161, 0162 approx. 240 g Type 0175: approx. 310 g

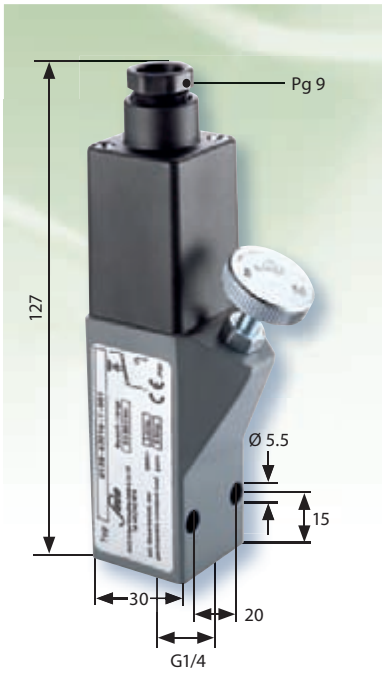
Electrical Values **0159** **0161/0162**

Rated operating voltage U_e:	Rated operating current I_e		Application category
250 Volt AC 50 / 60 Hz	2.5 Ampere	5 Ampere	AC 12
250 Volt AC 50 / 60 Hz	1 Ampere	1 Ampere	AC 14
24 Volt DC	2 / 2 Ampere	3.5 / 3.5 Ampere	DC 12 / DC 13
50 Volt DC	1 / 0.5 Ampere	2 / 1 Ampere	DC 12 / DC 13
75 Volt DC	0.75 / 0.4 Ampere	1 / 0.5 Ampere	DC 12 / DC 13
125 Volt DC	0.3 / 0.2 Ampere	0.3 / 0.2 Ampere	DC 12 / DC 13
250 Volt DC	0.3 / 0.2 Ampere	0.25 / 0.2 Ampere	DC 12 / DC 13

Rated insulation voltage U_i:	300 V
Rated impulse withstand voltage U_{imp}:	2.5 kV
Rated thermal current I_{the}:	6 Ampere
Switching overvoltage:	< 2.5 kV
Rated frequency:	DC und 50 / 60 Hz
Short circuit current rating:	0159: up to 2.5 Ampere 0161/0162: up to 6.3 Ampere
Rated short-circuit current:	< 350 Ampere
Tightening torque of terminal screws:	< 0.35 Nm
Cross section:	0.5 – 1.5 mm^2

- Aluminium body
- With changeover switch and silver contacts
- Overpressure safe to 200 / 600 bar[1)]
- Max. voltage 250 V
- Switching point continuously adjustable by turning knurled screw while in operation.

With female thread



$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:				

0159 Diaphragm pressure switches

200[1)]	0.2 – 2	± 0.2 – 0.3	G 1/4 female	0159	426 14	X	001
	0.5 – 5	± 0.2 – 0.5		0159	427 14	X	001
	1 – 10	± 0.5		0159	428 14	X	001
	2 – 20	± 1.0		0159	429 14	X	001
	5 – 50	± 3.0		0159	430 14	X	001
	10 – 100	± 3.0 – 5.0		0159	431 14	X	001

0159 Piston pressure switches

600[1)]	10 – 100	± 3.0 – 5.0	G 1/4 female	0159	432 14	X	001
	25 – 250	± 5.0 – 7.0		0159	433 14	X	001
	40 – 400	± 5.0 – 9.0		0159	434 14	X	001

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

Temperature ranges of diaphragm / seal materials see page 42

Order number:	0159 – XXX 14 – X – 001

Degree of protection IP65

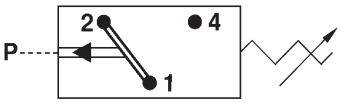
The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated, and whether it can be used for special applications which could not be foreseen by us.

Warning !

When using oxygen, the relevant accident prevention regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar is not exceeded.

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data and electrical values see page 42 .*



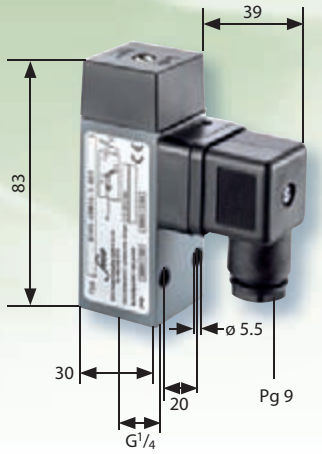
[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0161/0162

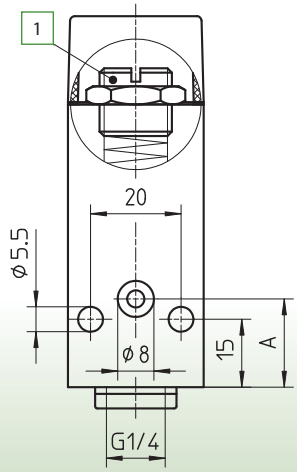
Diaphragm / piston pressure switches 250 V

- Aluminium body
- With changeover switch and silver contacts
- Overpressure safe to 200/600 bar[1)]
- With socket device similar to DIN EN 175301 (DIN 43650)
- Adjustable hysteresis at works

0161 With female thread



0162 Manifold mounting



$p_{max.}$ in bar	Adjustment range in bar (tolerance at room temperature)		dim. A in mm	Female thread G 1/4				Manifold mounting			
Diaphragm pressure switches				**0161**				**0162** [2)]			
200[1)]	0.5 – 1	(± 0.2)	15	0161	436 14	X	001	0162	436 14	X	001
	0.5 – 5	(± 0.2 – 0.5)		0161	437 14	X	001	0162	437 14	X	001
	1 – 10	(± 0.5)		0161	438 14	X	001	0162	438 14	X	001
	10 – 50	(± 3.0)		0161	439 14	X	001	0162	439 14	X	001
	50 – 100	(± 3.0 – 5.0)		0161	440 14	X	001	0162	440 14	X	001
Piston pressure switches				**0161**				**0162** [2)]			
600[1)]	100 – 400	(± 5.0 – 9.0)	19.5	0161	441 14	X	001	0162	441 14	X	001

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	**1**	
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	**2**	
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	**3**	

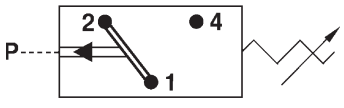
See page 42 for temperature ranges of diaphragm materials

Order number:	016X – XXX 14 – X – 001

[2)] **0162:** Scope of supply includes O-ring NBR 5x1.5mm

[1] To adjust the set point, loose the locknut and turn the set screw with a screwdriver. Clock-wise screwing increases the switching pressure. After adjusting, tighten the locknut again.

- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data and electrical values see page 42.*



Degree of protection IP65

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated, and whether it can be used for special applications which could not be foreseen by us.

Warning !

When using oxygen, the relevant accident prevention regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar is not exceeded.

Piston pressure switches are only to a limited extent suitable for use with gases. See explanation on page 9.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

- Aluminium body
- With changeover switch and silver contacts
- Overpressure safe to 25 bar[1)]
- With socket device similar to DIN EN 175301 (DIN 43650)
- Adjustable hysteresis at works

With female thread

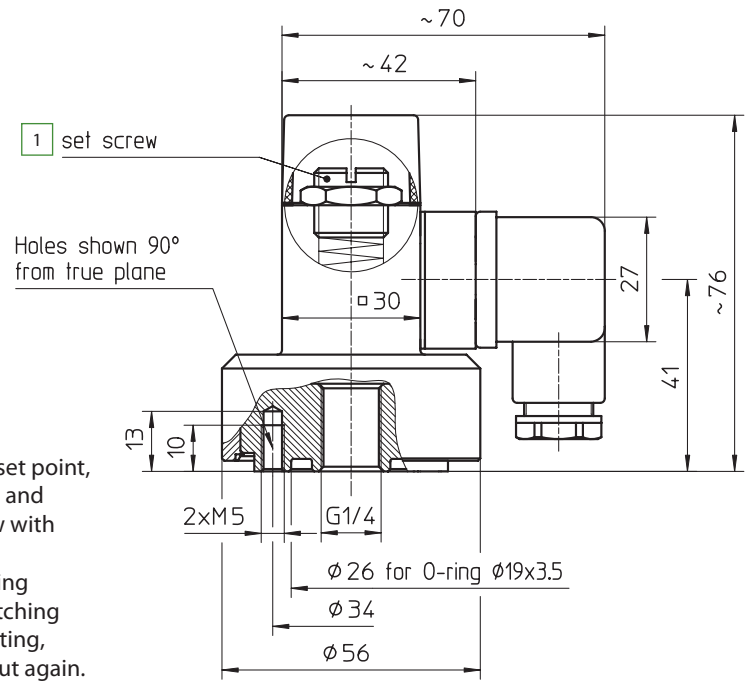
$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:				
0175 Diaphragm pressure switches								
25[1)]	0.1 – 1	± 0.1 – 0.2	G 1/4 female	0175	435	14	X	001

Diaphragm material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

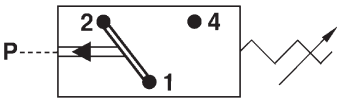
See page 42 for temperature ranges of diaphragm materials

Order number:	0175 – 435 14 – X – 001



1 To adjust the set point, loose the locknut and turn the set screw with a screwdriver. Clock-wise screwing increases the switching point. After adjusting, tighten the locknut again.

- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data and electrical values see page 42.*



Degree of protection IP65

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated, and whether it can be used for special applications which could not be foreseen by us.

Warning !

When using oxygen, the relevant accident prevention regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar is not exceeded.

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

Explosion-protected pressure switches

To ATEX standard

- *ATEX-certified for use in potentially explosive areas.*
- *Changeover switch for reliable operation.*
- *Switching point can be easily adjusted by the user while in operation.*
- *Compact design.*
- *Outstanding price / performance ratio.*

Technical data

	0165	0340	0341
ATEX protection zone:	1 and 2	22	22
Contact rating:	max. 1 A / 250 VAC max. 0.25 A / 250 VDC	max. 2 A / 250 VAC	
Temperature range:	NBR: -20 °C – +80 °C EPDM: -20 °C – +80 °C FKM: -5 °C – +80 °C		
Switching frequency:	200 / min.		
Mechanical life expectancy:	10^6 cycles		
Pressure rise rate:	≤ 1 bar/ms		
Hysteresis:	10 – 30 % (depending on type, non-adjustable)		
Vibration resistance:	10 g / 5 – 200 Hz sine-wave		
Shock resistance:	294 m/s^2; 14 ms half-sine-wave		
Cable length:	standard length 2 m with wire end sleeves, also available with lengthes up to 5 m		
Conductor cross-section:	3 x 0.75 mm^2	3 x 0.5 mm^2	
Body material:	aluminium	zinc-plated steel (CrVI-free) anodised aluminium	
Degree of protection:	IP65		
Weight in grams:	approx. 380 g	approx. 230 g	approx. 230 g

Technical explanations

Explosion-protected pressure switches are classified by ATEX and approved according to the type of combustible material that may be expected where they are to be used.
The sub-divisions are:

Gases and Vapours	Dusts	Methane dust

Our pressure switches are suitable for gases and vapours, or for dust according to the type chosen. **They are not suitable for use in methane dust (mining applications).**

The table provides an overview of the sub-division into zones, equipment groups and equipment categories.

Conditions in locations with potentially explosive atmosphere

Com-bustible material	Occurence of combustible material in location	Designation of location with specified hazard	Marking required on equipment to be used in the specified zone	
			Equipment group	Equipment category
Gases Vapours	Continously present, for long periods or frequently	Zone 0	II	1G
	Occurs occasionally	Zone 1	II	2G or 1G
	Unlikely to occur, and then only seldom or for short periods	Zone 2	II	3G or 2G or 1G
Dusts	Continously present, for long periods or frequently	Zone 20	II	1D
	Occurs occasionally	Zone 21	II	2D or 1D
	Occurs if accumulated dust is whirled up, and then only seldom or for short periods	Zone 22	II	3D or 2D or 1D
Methane dust	–	Mining industry	I	M1
	–	Mining industry	I	M1 or M2

CE marking

SUCO pressure switches meet ATEX Standards which refer to Explosive Safety Directive 94/9/EC.

An EC Declaration of Conformity has been issued for these series of pressure switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

Degree of protection IP65

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar must not be exceeded.

0165

Diaphragm / piston pressure switches 250 V

ATEX 0102 CE

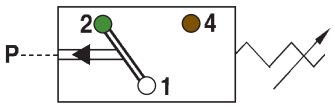
II 2G Ex d II C T6 / T5 X (gas-protected zone 1 and 2)

- Aluminium body
- With changeover switch
- Max. voltage 250 V
- Overpressure safe up to 200 / 600 bar[1)]

With female thread

Contact assignment:

○ 1 = white
● 2 = green
● 4 = brown



- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data see page 46.*

$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:				
0165 Diaphragm pressure switches								
200 [1)]	1 – 6	± 0.5	G 1/4 female	0165	448	14	X	001
	5 – 50	± 3.0		0165	449	14	X	001
0165 Piston pressure switches								
600[1)]	20 – 100	± 3.0 – 5.0	G 1/4 female	0165	450	14	X	001
	100 – 400	± 5.0 – 9.0		0165	451	14	X	001

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 46 for temperature ranges of diaphragm / seal materials

Order number:	**0165 – XXX 14 – X – 001**

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

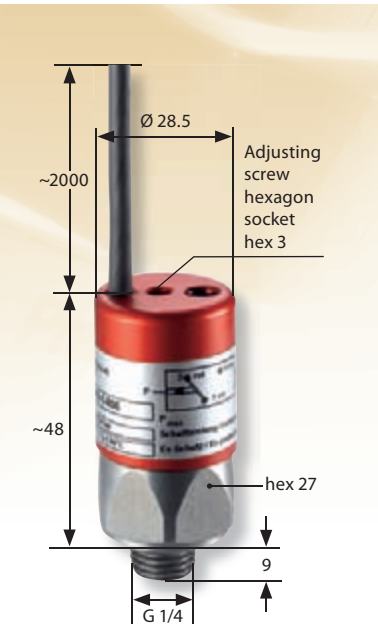
[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

ATEX CE

II 3D IP65 T90°C (dust-protected zone 22)

- Zinc-plated steel body (CrVI-free), protective cover anodised aluminium
- With changeover switch
- Max. voltage 250 V, protection class 2, protective insulation ⧈
- Overpressure safe up to 300 / 600 bar[1)]

With male thread



$p_{max.}$ in bar	Adjustment range in bar	Tolerance at room temperature	Thread	Order number:			
0340 Diaphragm pressure switches							
300[1)]	0.3 – 1.5	± 0.2	G 1/4	0340	457 03	X	003
	1 – 10	± 0.5 – 1.0		0340	458 03	X	006
	10 – 20	± 1.0		0340	459 03	X	009
	20 – 50	± 2.0		0340	461 03	X	012
0341 Piston pressure switches							
600[1)]	50 – 150	± 5.0	G 1/4	0341	460 03	X	003

Diaphragm / seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD). petrol/gasoline etc.	3

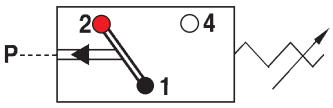
See page 46 for temperature ranges of diaphragm / seal materials

Order number:	034X – XXX 03 – X–XXX

Piston pressure switches are only to a limited extent suitable for use with gases.
See explanation on page 9.

Contact assignment:

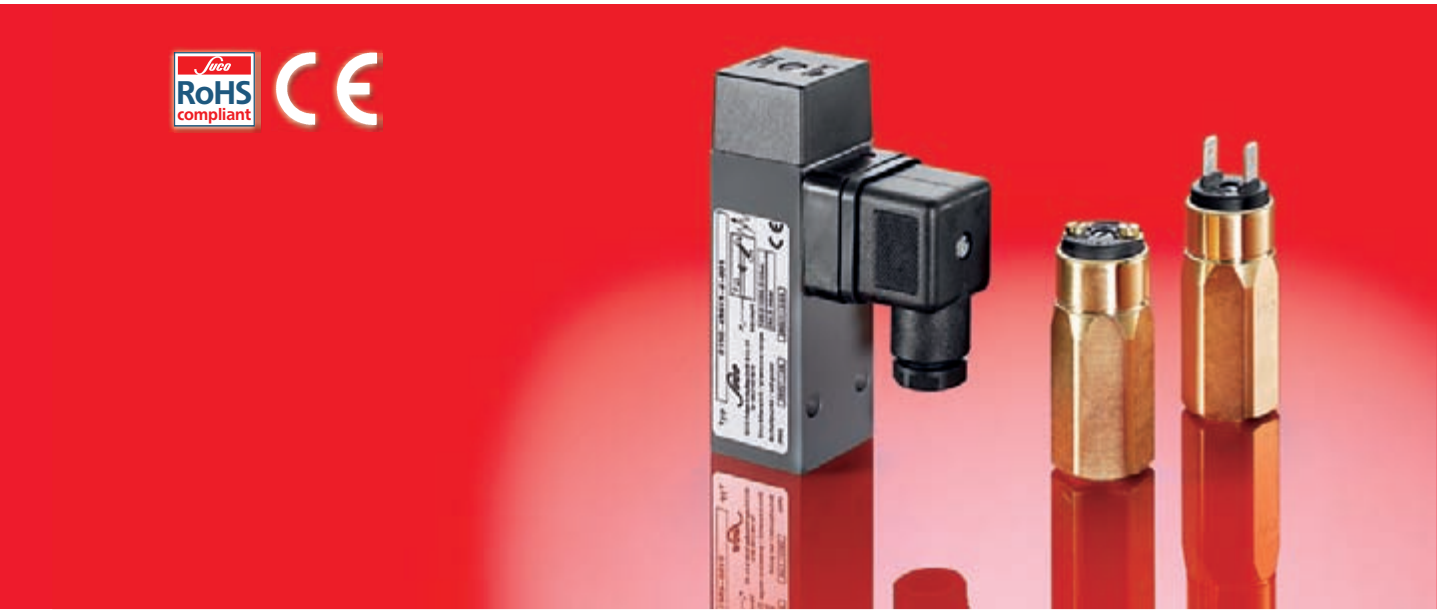
● 1 = black
● 2 = red
○ 4 = white



- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data see page 46.*

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

Vacuum switches



- *Switching point easily adjustable.*
- *High overpressure resistance and long working life even under harsh operating conditions.*
- *Type 0150 as a change-over switch and with the possibility for manifold mounting.*
- *Type 0151 as normally open or normally closed.*

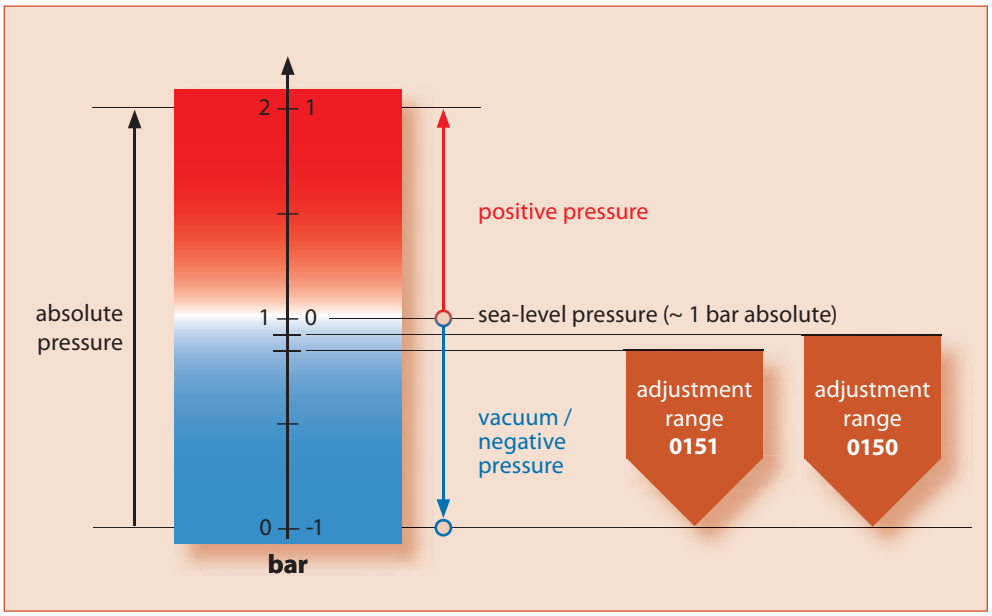
0150 / 0151 Technical data

Type:	0150	0151
Voltage:	max. 250 V	max. 42 V
Contact rating:	see table below*	≤ 4 A / 100 VA
Temperature stability:	-20 °C – +100 °C	-15 °C – +120 °C
Switching frequency:	200 / min.	
Mechanical life expectancy:	10^6 cycles	
Pressure rise rate:	≤ 1 bar/ms	
Vibration resistance:	10 g / 5 – 200 Hz sine-wave	
Shock resistance:	294 m/s²; 14 ms half-sine-wave	
Body material:	aluminium	brass
Degree of protection:	IP65 socket device fitted	IP65, terminals IP00
Weight in grams:	approx. 270 g	approx. 140 g

***0150 Electrical values** (for technical explanation see also page 9)

Rated operating voltage U_e:	Rated operational current I_e / Application category
250 Volt AC 50 / 60 Hz	5 Ampere / AC 12
250 Volt AC 50 / 60 Hz	1 Ampere / AC 14
24 Volt DC	3.5 / 3.5 Ampere / DC 12 / DC 13
50 Volt DC	2 / 1 Ampere / DC 12 / DC 13
75 Volt DC	1 / 0.5 Ampere / DC 12 / DC 13
125 Volt DC	0.3 / 0.2 Ampere / DC 12 / DC 13
250 Volt DC	0.25 / 0.2 Ampere / DC 12 / DC 13
Rated insulation voltage U_i:	300 Volt
Rated operating current U_{imp}:	2.5 kV
Rated thermal current I_{the}:	6 Ampere
Switching overvoltage:	< 2.5 kV
Rated frequency:	DC and 50 / 60 Hz
Short circuit current rating of the device:	to 6.3 Ampere
Rated short-circuit current:	< 350 Ampere
Tightening torque of terminal screws:	< 0.35 Nm
Cable diameter:	0.5 – 1.5 mm²

Comparison absolute pressure / relative pressure



Indication: Desired switching points within the range of the vacuum have to be indicated relatively to the atmospheric pressure (normal pressure).

Accessories

		
Rubber protective cap for series 0151 with central cable feed for 1.5 – 5 mm cable diameter **With fitted cap** **IP54** Suitable for voltages up to 42 V	**Rubber protective cap** for series 0151 with two cable entries for 1.7 – 2.2 mm cable diameter **With fitted cap** **IP54** Suitable for voltages up to 42 V	**Socket device** **with indicator light** for series 0150 similar to DIN EN 175301-803-A (DIN 43650) Screw fixing Pg9 (cramping of cable to 6-9 mm) **With fitted socket device** **IP65** Suitable for 24 V or 250 V
Order number:	**Order number:**	**Order number:**
1-1-66-621-010	**1-1-66-621-003**	**24 VDC: 1-1-61-652-021** **250 VAC: 1-1-61-652-020**

RoHS compliant

CE marking

SUCO vacuum switches rated with a voltage up to 250 V are covered by the Low Voltage Directive 73/23/EEC.
An EC Declaration of Conformity has been issued for these vacuum switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

Degree of protection IPXX

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

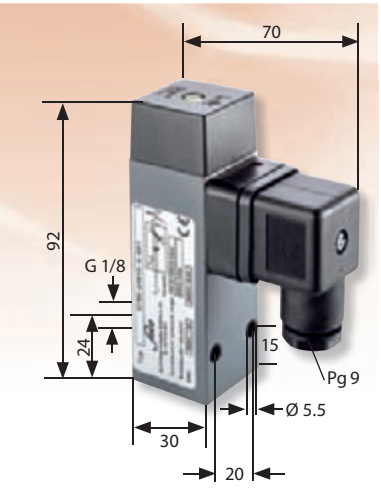
When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar must not be exceeded.

0150

Vacuum switch 250 V, with built-in changeover switch

- Aluminium body
- Max. voltage 250 V
- Overpressure safe up to 20 bar[1)]
- With socket device similar to DIN EN 175301 (DIN 43650)
- Hysteresis approx. 50 – 150 mbar (non-adjustable)

With female thread



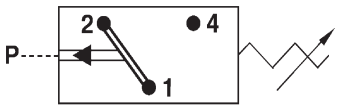
$p_{max.}$ in bar	Adjustment range in mbar (rel.)	Tolerance in mbar (at room temperature)	Thread	Order number:			
0150 Vacuum switch							
20[1)]	100 – 950	± 50	G 1/8 female	0150	456 15	4	001

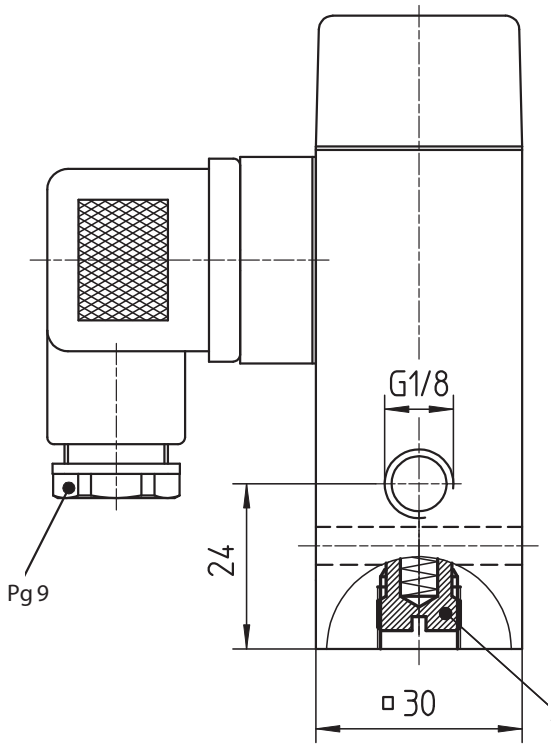
Diaphragm material – areas of application

ECO	Air, oils, greases, fuels	4

Temperature stability: - 20 °C – + 100° C

Order number:	0150 – 456 15 – 4 – 001





The switching point will be changed by the setting screw on the vacuum side.

- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data and accessories see page 50/51.*

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

0151

Vacuum switch 42 V, normally open or normally closed

- Brass body
- With M3 screw or spade terminals
- Max. voltage 42 V
- Overpressure safe up to 35 bar[1)]

$p_{max.}$ in bar	Adjustment range in mbar (rel.)	Tolerance in mbar (at room temperature)	Thread	Order number:			
0151 Vacuum switch with screw terminals, normally open (no) →|:							
35[1)]	200 – 950	± 100	G 1/8 female	0151	452 15	3	001
0151 Vacuum switch with M3 screw terminals, normally closed (nc) →:|							
35[1)]	200 – 950	± 100	G 1/8 female	0151	453 15	3	001
0151 Vacuum switch with spade terminals, normally open (no) →|:							
35[1)]	200 – 950	± 100	G 1/8 female	0151	454 15	3	001
0151 Vacuum switch with spade terminals, normally closed (nc) →:|							
35[1)]	200 – 950	± 100	G 1/8 female	0151	455 15	3	001

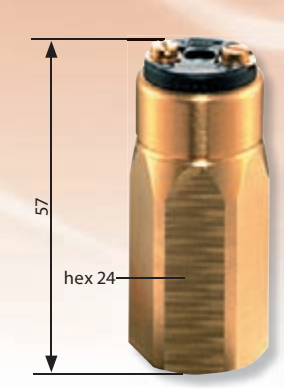
Diaphragm material – areas of application

FKM	Air, oils, greases, fuels	3

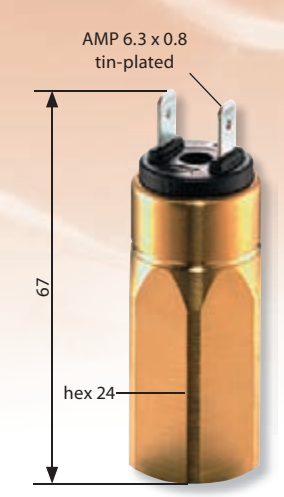
Temperature range: - 15 °C – + 120° C

Order number:	0151 – XXX 15 – 3 – 001

With female thread



With female thread



- *Our pressure switches are also available with factory preset switching points.*
- *For further technical data and accessories see page 50/51.*

[1)] Static pressure, dynamic pressures should be 30 to 50% lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

Electronic pressure switches

CE marking

SUCO electronic switches are covered by the EMC Directive 89/336/EC.

An EC Declaration of Conformity has been issued for these pressure switches and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

- Ceramic sensor with thick film technology for high accuracy
- Electronic evaluation of switching point permits extremely small or very large hysteresis settings
- Switching point easily set by the user (menu guided for type 0570)

Technical data

	0520	0570
Switching function:	Normally open / normally closed	Normally open / normally closed, programmable, 2 switching points, time-delayed switching, zero-resetting, peak-value memory (within setting range), switching-point counter
Hysteresis:	2 – 95 % FS programmable at our works (max. tolerance ± 1.0 % full scale)	1 – 99 % FS programmable using key-pad
Adjustment:	Switching point can be set on site by the customer using an screw-driver via setting potentiometer when operating voltage is applied	Programmable using key-pad on front face
Outputs:	Transistor output (1.4 A DC12 / PNP)	2 transistor outputs (each 1.4 A DC12 / PNP) 1 analogue output (4 – 20 mA)
Indication of output status:	–	By 2 LEDs (yellow)
Time-delayed switching:	–	Adjustable 0 – 3.0 s
Pressure display:	–	Current pressure can be shown in bar or PSI on 3-digit LED-display (red)
Materials:	zinc-plated steel body (CrVI-free)	Medium-contact parts anodised aluminium, body made of die-casted zinc
Access coding:	–	The switch can have a number code between 1 and 999
Supply voltage:	18 – 36 VDC	12 – 30 VDC
Degree of protection:	IP65	
Switching time:	< 4 ms	
Accuracy:	± 0.5 % (full scale at room temperature)	
Temperature range:	NBR, EPDM: - 20 °C – +80 °C FKM: - 5 °C – + 80 °C	
Temperature compensation:	- 20 °C – + 80 °C, error ≤ ± 1.5 % overall	
Temperature drift:	± 0.2 % / 10 K	
Life expectancy:	5 x 10^6 cycles	
Pressure rise rate:	≤ 1 bar / ms	
Vibration resistance:	10 g at 5 – 2000 Hz sine-wave	
Shock resistance:	294 m / s^2, 14 ms half-sine-wave to DIN 40046	
EMV:	acc. to EN 50081-1, EN 50081-2, EN 50082-2	
Weight in grams:	approx. 240 g	approx. 340 g

Degree of protection IP65

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

Oxygen warning!

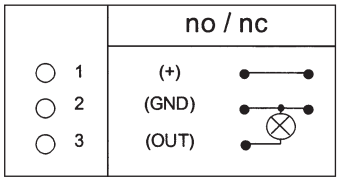
When using oxygen, the relevant safety regulations must be observed. In addition, we recommend that a maximum operating pressure of 10 bar must not be exceeded.

0520

Electronic pressure switches

- Zinc-plated steel body (CrVI-free)
- Ceramic sensor of thick film technology
- High accuracy
- Supply voltage 18 – 36 VDC
- Overpressure safe to 20 / 150 / 500 bar[1)]
- Hysteresis programmable in our works from 2 – 95 % FS
- Simple, mechanical adjustment of switching point
- Socket device included

With female thread



Our pressure switches are also available with factory preset switching points.

For further technical data and electrical values see page 55.

$p_{max.}$ in bar	Burst pressure in bar	Adjustment range in bar	Hysteresis[2)] in bar	Thread	Order number:				
0520 Electronic pressure switches normally open (no) →|:									
20[1)]	25	0 – 10	0.5[2)]	G 1/4 female	0520	470	14	X	001
150[1)]	175	0 – 100	5[2)]		0520	472	14	X	001
500[1)]	600	0 – 250	10[2)]		0520	474	14	X	001
0520 Electronic pressure switches normally closed (nc) →:|									
20[1)]	25	0 – 10	0.5[2)]	G 1/4 female	0520	471	14	X	001
150[1)]	175	0 – 100	5[2)]		0520	473	14	X	001
500[1)]	600	0 – 250	10[2)]		0520	475	14	X	001

Seal material – areas of application

NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 55 for temperature ranges of seal materials

Order number:	0520 – XXX 14 – X – 001

[1)] Static pressure, dynamic pressures should be 30 to 50 % lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

[2)] Factory set, if no special customer request.

- Anodised aluminium and zinc die-cast body
- Ceramic sensor of thick film technology
- Supply voltage 12 – 30 VDC
- Overpressure safe up to 20 / 150 / 600 bar[1)]
- Programmable using key-pad on front side
- Time-delayed switching (adjustable 0 – 3 s)
- Peak-value memory (within setting range)
- Coding to prevent misuse
- Socket device included

$p_{max.}$ in bar	Burst pressure in bar	Adjustment range in bar	Thread	Order number:

0570 Electronic pressure switches

20[1)]	25	0 – 10	G 1/4 female	0570	467 14	X	001
150[1)]	175	0 – 100		0570	468 14	X	001
600[1)]	700	0 – 400		0570	469 14	X	001

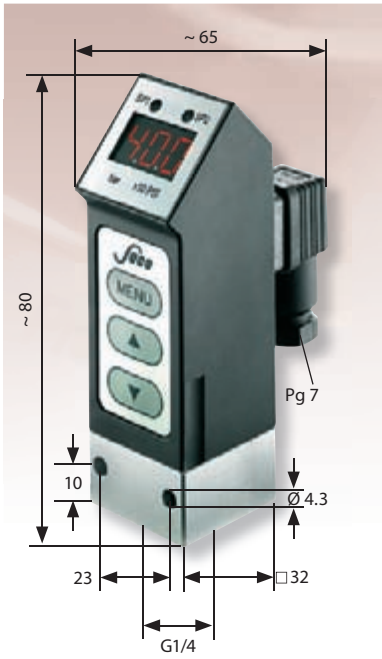
Seal material – areas of application

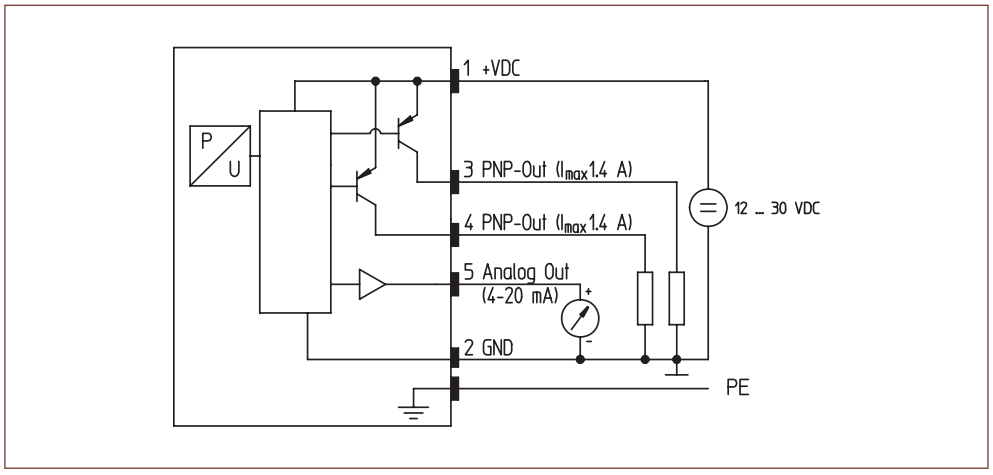
NBR	Hydraulic / machine oil, heating oil, air, nitrogen etc.	1
EPDM	Brake fluid, ozone, acetylene, hydrogen etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline etc.	3

See page 55 for temperature ranges of seal materials

Order number:	0570 – XXX 14 – X – 001

With female thread





For further technical data and electrical values see page 55.

[1)] Static pressure, dynamic pressures should be 30 to 50 % lower. These values refer to the hydraulic or pneumatic part of the pressure switch.

Pressure transmitters / transducers

- The pressure transmitters / transducers shown in this brochure are only a small range of our possibilities
- High overpressure safety for use in mobile hydraulics
- Long life time even with high pressure change rates
- Wetted parts made of stainless steel and titanium to ensure problem-free medium compatibility
- Silicon-on-Sapphire technology (SoS) for highest accuracy, reliability and safe process monitoring
- Customized versions on request
- For further product series see also www.esi-tec.com

Type	0705	0710	0720
Output signal:	0.5 – 4.5 V ratiometric	0 – 10 V (3-wire)	4 – 20 mA (2-wire)
Supply voltage U_b:	5 VDC ± 10 % max. 6.5 VDC	12 – 32 VDC	10 – 32 VDC
Maximum load:	≥ 4.7 kΩ	≥ 4.7 kΩ	≤ (U_b – 10 V) / 20 mA
Accuracy:	±0.5 % FS at room temperature		
Long term stability:	±0.1 % FS p. a.		
Repeatability:	±0.1 % FS		
Thermal error:	±0.01 % FS / °C		
Compensated temperature range:	-40 °C – +80 °C		
Temperature range ambient:	-40 °C – +100 °C		
Temperature range media:	-40 °C – +125 °C		
Mechanical life expectancy:	10^7 pulses up to p_{nom}		
Overload factor p_o [1]:	4x p_{nom}, static (above 600 bar: p_o = 1.650 bar)		
Burst pressure [1]:	8x p_{nom}, static (above 400 bar: burst pressure = 2.000 bar)		
Wetted part materials:	stainless steel 1.4305 / SAE Grade 303, titanium		
Maximum pressure rise rate:	< 5.0 bar / ms		
Response time 10 – 90 %:	< 2 ms		
Resistance against vibrations:	20 g, 4 – 2000 Hz DIN EN 60068-2-6		
Shock proof:	Half sine 500 m/s², 11 ms DIN EN 60068-2-29		
IP-protection class:	IP67 at M 12x1, DIN 72585 (Bayonet) and cable connection IP65 at DIN EN 175301-803		
EMC:	EMV 89/336/EG, EN 61000-6-2, EN 61000-6-3		
Max. length of connection cable:	30 m		
Protection against reverse polarity, short-circuit and over voltage surges:	built-in		
Standard-Pressure ranges p_{nom}:	0 – 10 bar; 0 – 16 bar; 0 – 25 bar; 0 – 40 bar; 0 – 60 bar; 0 – 100 bar; 0 – 160 bar; 0 – 250 bar; 0 – 400 bar; 0 – 600 bar		
Weight in grams:	approx. 80 g (DIN 175301 approx. 110 g)		

[1] Static pressure. Dynamic pressure should be 30 to 50 % lower. These values refer to the hydraulic or pneumatic part of the pressure transmitters / transducers.

CE marking

SUCO pressure transmitters / transducers are covered by the EMV-directive 89/336/EC. An EC Declaration of Conformity has been issued for these pressure transmitters / transducers and is on file at our offices. The corresponding switches bear the CE mark in our catalogue.

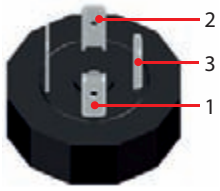
Degree of protection

The type approval does not apply without restriction to all environmental conditions. It is the responsibility of the user to check whether the electrical connection complies with regulations other than those stated and whether it can be used for special applications which could not be foreseen by us.

0705/0710/0720

Technical explanations

DIN EN 175301-803-A



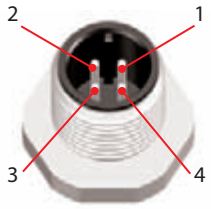
0705 + 0710	0720
1: U_{out}	1: nc
2: Gnd	2: I_{out}
3: Uv+	3: Uv+

x ~ 60 mm (without connector)
x ~ 76 mm (with connector)

d = Ø 30 mm

Order number: 001

M 12 – DIN EN 61071-2-101 D



0705 + 0710	0720
1: Uv+	1: Uv+
2: U_{out}	2: nc
3: Gnd	3: I_{out}
4: nc	4: nc

x ≈ 54 mm

d = Ø 22 mm

Order number: 002

DIN 72585-A1-4.1

0705 + 0710	0720
1: Uv+	1: Uv+
2: Gnd	2: nc
3: U_{out}	3: I_{out}
4: nc	4: nc

x ≈ 65 mm

d = Ø 27 mm

Order number: 004

Cable connection

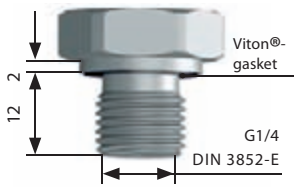
1: red
2: white
3: black

0705 + 0710	0720
1: Uv+	1: Uv+
2: Gnd	2: nc
3: U_{out}	3: I_{out}

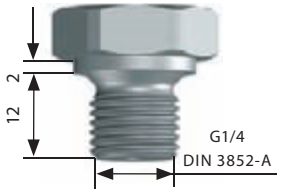
x ~ 44 mm (+ 20 mm bend relief)
length of cable ~ 2 m

d = Ø 22 mm

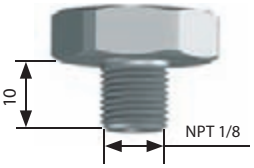
Order number: 011



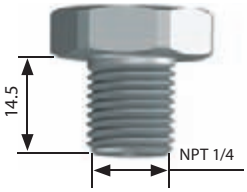
Order number: 41



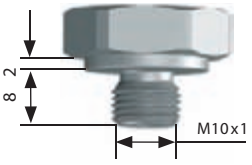
Order number: 03



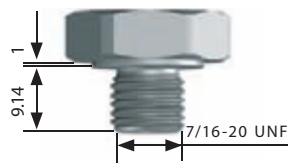
Order number: 04



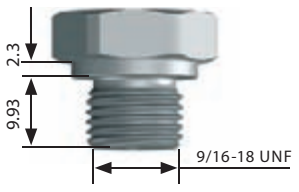
Order number: 09



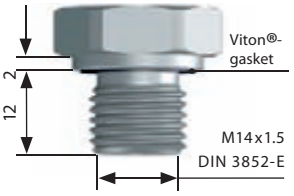
Order number: 13



Order number: 20



Order number: 21



Order number: 42

	Type	Pressure range	Pressure connection	Pressure units	Electrical connection

Type

0.5 – 4.5 V ratiometric	0705
0 – 10 V 3-wire	0710
4 – 20 mA 2-wire	0720

Pressure range

0 – 10 bar (approx. 145 PSI)	101
0 – 16 bar (approx. 232 PSI)	161
0 – 25 bar (approx. 362 PSI)	251
0 – 40 bar (approx. 580 PSI)	401
0 – 60 bar (approx. 870 PSI)	601
0 – 100 bar (approx. 1.450 PSI)	102
0 – 160 bar (approx. 2.320 PSI)	162
0 – 250 bar (approx. 3.620 PSI)	252
0 – 400 bar (approx. 5.800 PSI)	402
0 – 600 bar (approx. 8.700 PSI)	602

Pressure connection

G 1/4 – DIN 3852-E	41
G 1/4 – DIN 3852-A	03
NPT 1/8	04
NPT 1/4	09
M 10 x 1 tap.	13
7 / 16 – 20 UNF	20
9 / 16 – 18 UNF	21
M 14 x 1.5 – DIN 3852-E	42

Pressure units

bar	B
PSI	P

Electrical connection

DIN EN 175301-803-A (DIN 43 650-A) Socket device included	001
M 12 – DIN EN 61071-2-101 D	002
DIN 72585-A1-4.1 (Bayonet)	004
Cable connection (length of cable 2 m standard)	011

Order number:	**07XX**	–	**XXX**	–	**XX**	–	**X**	–	**XXX**

Accessories
(not included)

Socket device M12x1 straight

Order number:
1-6-00-652-016

Socket device M12x1 angular

Order number:
1-6-00-652-017

Abbreviation for unit	Pa = N/m²	bar	lbf/in², PSI
1 Pascal	1	0.00001	0.00014
1 bar	100.000	1	14.5
1 lbf/in², PSI	6894	0.06894	1

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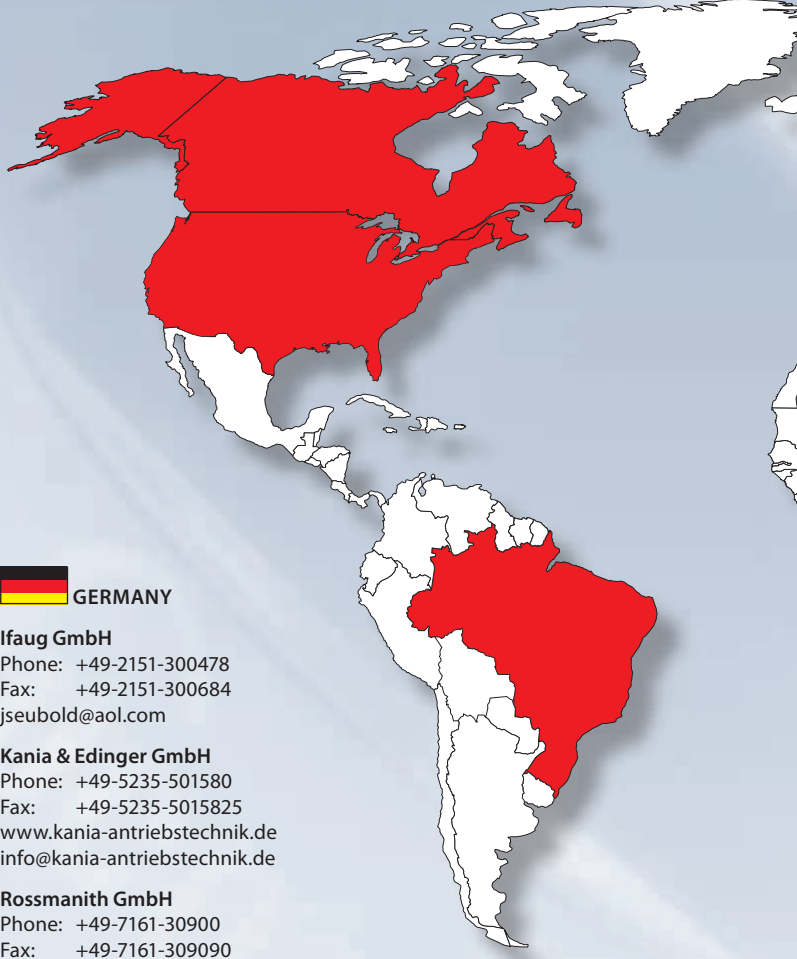

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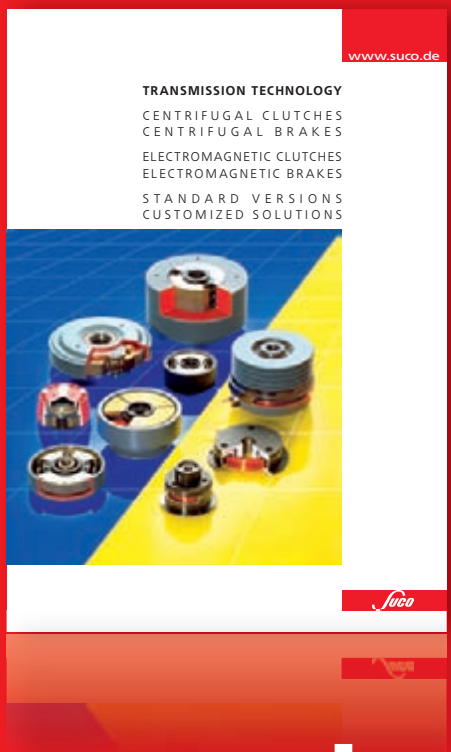

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