

M • Mechanical Pressure Switches



Pressure switches hex 27

Changeover with silver or gold contacts



- Switching point can be adjusted when fitted on site ¹⁾
- Factory adjustable hysteresis (except types 0140 and 0141)
- High overpressure safety and long service life under harsh conditions
- Operating voltage up to 250 V
- Series 0140 / 0141 with protective insulation
- For ready-wired customized versions refer to chapter M.5, starting at page 62
- For pressure switches with integrated connectors refer to chapter M.2, starting at page 32

¹⁾ Pressure switches can also be supplied preset at factory.
Our preset switches are sealed with lacquer paint, set points are embossed on the housing.

Pressure switches hex 27

Technical data

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hex 27



Temperature resistance of sealing materials:	NBR (max. overpressure up to 100 bar)	-30°C ... +100°C
	NBR (max. overpressure up to 300/600 bar)	-40°C ... +100°C
	EPDM	-30°C ... +120°C
	EPDM-W270 (in diaphragm pressure switch)	-20°C ... +100°C
	FKM (in diaphragm pressure switch)	-5°C ... +120°C
	FKM (in piston pressure switch)	-15°C ... +120°C
	Silicone (in diaphragm pressure switch)	-40°C ... +120°C
	HNBR	-30°C ... +120°C
Switching frequency:	200/min.	
Mechanical life expectancy:	1,000,000 cycles (for diaphragm pressure switches, life expectancy value only applies for switching pressures to max. 50 bar)	
Pressure rise rate:	≤ 1 bar/ms	
Hysteresis (only adjustable at factory):	Adjustable average value 10 ... 30 % depending on type Types 0140 and 0141 cannot be adjusted	
Vibration resistance:	10g; 5 ... 200Hz sine wave; DIN EN 60068-2-6	
Shock resistance:	294 m/s ² ; 14 ms half sine wave; DIN EN 60068-2-6, DIN EN 60068-2-29	
Protection class:	IP65 with socket device, terminals IP00	
Weight:	approx. 100g	

Switching performance and materials overview

Type	0140	0141	0170	0171	0180	0181	0183	0186	0187	0190	0191	0196	0197
5 ... 24 VDC										●	●	●	●
10 ... 42 VAC/DC			●	●									
10 ... 250 VAC/DC	●	●			●	●	●	●	●				
3 ... 50 mA										●	●	●	●
10 mA ... 2 A	●	●											
10 mA ... 4 A			●	●	●	●	●	●	●				
Gold contacts										●	●	●	●
Silver contacts	●	●	●	●	●	●	●	●	●				
Adjustable hysteresis			●	●	●	●	●	●	●	●	●	●	●
Zinc-plated steel (CrVI-free)	●	●	●	●	●	●	●			●	●		
Stainless steel 1.4305								●	●			●	●

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0140 / 0141		
Rated working voltage U_e	Rated working current I_e	Usage category ¹⁾
250 VAC 50 / 60 Hz	2 A	AC 12
24 VDC	2/1 A	DC 12 / DC 13
50 VDC	1/0.5 A	DC 12 / DC 13
75 VDC	0.5/0.25 A	DC 12 / DC 13
125 VDC	0.2/0.1 A	DC 12 / DC 13
250 VDC	0.15/0.1 A	DC 12 / DC 13
Rated insulation voltage U_i :	300 V	
Rated impulse withstand voltage U_{imp} :	4 kV	
Conventional thermal current I_{the} :	5 A	
Switching overvoltage:	< 2.5 kV	
Rated frequency:	DC and 50/60Hz	
Nominal current of short-circuit mechanism:	to 3.5 A	
Rated short-circuit current:	< 350 A	
IP class of protection according to EN60529:1991+A1:1999:	IP65 with connector	
Tightening torque of terminal screws:	< 0.35 Nm	
Connector cross-section:	0.5 – 1.5 mm ²	

0170 / 0171 / 0180 / 0181 / 0183 / 0186 / 0187 / 0190 / 0191 / 0196 / 0197		
Rated working voltage U_e	Rated working current I_e	Usage category ¹⁾
250 VAC 50 / 60 Hz	4 A	AC 12
250 VAC 50 / 60 Hz	1 A	AC 14
24 VDC	4/2 A	DC 12 / DC 13
50 VDC	2/1 A	DC 12 / DC 13
75 VDC	1/0.5 A	DC 12 / DC 13
125 VDC	0.3/0.2 A	DC 12 / DC 13
250 VDC	0.25/0.2 A	DC 12 / DC 13
Rated insulation voltage U_i :	300 V	
Rated impulse withstand voltage U_{imp} :	2.5 kV	
Conventional thermal current I_{the} :	5 A	
Switching overvoltage:	< 2.5 kV	
Rated frequency:	DC and 50/60Hz	
Nominal current of short-circuit mechanism:	to 5 A	
Rated short-circuit current:	< 350 A	
IP-Protection class nach EN60529:1991+A1:1999:	IP65 with connector	

¹⁾ For technical explanations refer to page 9

0140 / 0141

Diaphragm / piston pressure switches 250 V

- Protection class 2, protective insulation
- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 300 / 600 bar¹⁾
- Includes polyamide cap, protection class IP65

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0140 Diaphragm pressure switches with screw terminals

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
			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
300 ¹⁾	0.3 - 1.5	± 0.2	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
	1 - 10	± 0.5	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
	10 - 20	± 1.0	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	
20 - 50	± 2.0	G 1/4		
		NPT 1/8		
		NPT 1/4		
		7/16-20 UNF		
		9/16-18 UNF		

0141 Piston pressure switches with screw terminals

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
			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

Seal material – Application areas

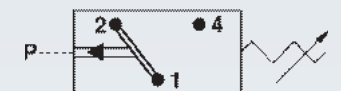
Seal material	Application areas	Order number
NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.

Your order number: **014X - XXX XX - X - XXX**

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¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

0170 / 0171

Diaphragm / piston pressure switches up to 42 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 100 / 300 / 600 bar¹⁾
- Hysteresis adjustable at factory



$p_{max.}$ in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0170 Diaphragm pressure switches with spade terminal

100 ¹⁾	0.3 – 1.5	± 0.2	G 1/4	0170 – 457 03 – X – 003
			M 10x1 con.	0170 – 457 01 – X – 001
			M 12x1.5 cyl.	0170 – 457 02 – X – 002
			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
	1 – 10	± 0.5	G 1/4	0170 – 458 03 – X – 042
			M 10x1 con.	0170 – 458 01 – X – 040
			M 12x1.5 cyl.	0170 – 458 02 – X – 041
			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
300 ¹⁾	10 – 50	± 3.0	G 1/4	0170 – 459 03 – X – 009
			M 10x1 con.	0170 – 459 01 – X – 007
			M 12x1.5 cyl.	0170 – 459 02 – X – 008
			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	G 1/4	0170 – 461 03 – X – 012
			M 10x1 con.	0170 – 461 01 – X – 010
			M 12x1.5 cyl.	0170 – 461 02 – X – 011
			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 switches with spade terminal

600 ¹⁾	50 – 200	± 5.0	G 1/4	0171 – 460 03 – X – 003
			M 10x1 con.	0171 – 460 01 – X – 001
			M 12x1.5 cyl.	0171 – 460 02 – X – 002
			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

Seal material – Application areas

NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.



Your order number:

017X – XXX XX – X – XXX



¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

0180 / 0181

Diaphragm / piston pressure switches up to 250 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 100 / 300 / 600 bar¹⁾
- Hysteresis adjustable at factory

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0180 Diaphragm pressure switches with spade terminal

100 ¹⁾	0.3 – 1.5	± 0.2	G 1/4	0180 – 457 03 – X – 003
			M 10x1 con.	0180 – 457 01 – X – 001
			M 12x1.5 cyl.	0180 – 457 02 – X – 002
			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

	1 – 10	± 0.5	G 1/4	0180 – 458 03 – X – 042
			M 10x1 con.	0180 – 458 01 – X – 040
			M 12x1.5 cyl.	0180 – 458 02 – X – 041
			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

300 ¹⁾	10 – 50	± 3.0	G 1/4	0180 – 459 03 – X – 009
			M 10x1 con.	0180 – 459 01 – X – 007
			M 12x1.5 cyl.	0180 – 459 02 – X – 008
			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	G 1/4	0180 – 461 03 – X – 012
			M 10x1 con.	0180 – 461 01 – X – 010
			M 12x1.5 cyl.	0180 – 461 02 – X – 011
			NPT 1/8	0180 – 461 04 – X – 321
			NPT 1/4	0180 – 461 09 – X – 317
			7/16-20 UNF	0180 – 461 20 – X – 307
			9/16-18 UNF	0180 – 461 21 – X – 308

0181 Piston pressure switches with spade terminal

600 ¹⁾	50 – 200	± 5.0	G 1/4	0181 – 460 03 – X – 003
			M 10x1 con.	0181 – 460 01 – X – 001
			M 12x1.5 cyl.	0181 – 460 02 – X – 002
			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

Seal material – Application areas

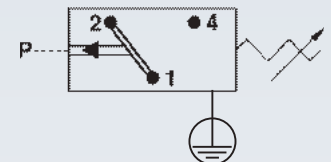
NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.

Your order number: **018X – XXX XX – X – XXX**

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¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

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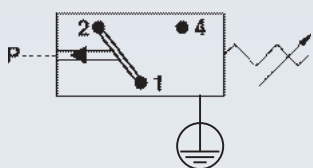
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0183

Piston pressure switches up to 250 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 600 bar¹⁾, Hysteresis adjustable at factory
- Adjustment range: 100 – 400 bar
- Height only 51 mm

Thread similar to ISO 6149-3
(including O-ring for sealing)



p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0183 Piston pressure switches with spade terminal

600 ¹⁾	100 – 300	± 10.0	M 14x1.5 DIN 6149-3	0183 – 462 45 – X – 051
	200 – 400			0183 – 463 45 – X – 061

Seal material – Application areas

NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.



Your order number: 0183 – 462 45 – X – XXX

¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

Accessory ▶

Not included in the delivery.
Please order separately.

Order number ▶

Thread adapters

from M 14 x 1.5		
to G 1/4	to M12 x 1.5	to NPT 1/8
1-1-83-420-006	1-1-83-420-007	1-1-83-420-008

0186 / 0187

Diaphragm / piston pressure switches up to 250 V with stainless steel housing

- Stainless steel housing (1.4305 / AISI 303)
- Changeover with silver contacts
- Overpressure safety up to 300 / 600 bar¹⁾ (EPDM-W270 and silicone diaphragm up to 35 bar²⁾)
- Hysteresis adjustable at factory

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0186 Diaphragm pressure switches with spade terminal

300 ¹⁾⁺²⁾	0.5 – 5	± 0.3	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 terminal

600 ¹⁾	50 – 200	± 5.0	G 1/4	0187 – 460 03 – X – 003
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Seal material – Application areas

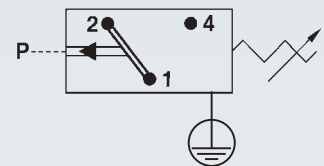
NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
EPDM-W270	Drinking water (only in diaphragm, p _{max} ≤ 35 bar)	5
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
Silicone	Water, food products, air, etc. (only in diaphragm, p _{max} ≤ 35 bar)	8
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.

Your order number: **018X – XXX 03 – X – XXX**

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¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

²⁾ Overpressure safety of diaphragm pressure switch up to 300 bar. Functional reliability only up to 35 bar with diaphragm materials EPDM-W270 and silicone.



0190 / 0191

Diaphragm / piston pressure switches up to 24 V with gold contacts

- Zinc-plated steel (CrVI-free), with spade terminal
- Changeover with gold contacts
- Overpressure safety up to 100/300/600 bar¹⁾
- Hysteresis adjustable at factory



$p_{max.}$ in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0190 Diaphragm pressure switches with spade terminal

100 ¹⁾	0.3 – 1.5	± 0.2	G 1/4	0190 – 457 03 – X – 003
			M 10x1 con.	0190 – 457 01 – X – 001
			M 12x1.5 cyl.	0190 – 457 02 – X – 002
			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
	1 – 10	± 0.5	G 1/4	0190 – 458 03 – X – 042
			M 10x1 con.	0190 – 458 01 – X – 040
			M 12x1.5 cyl.	0190 – 458 02 – X – 041
			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
300 ¹⁾	10 – 50	± 3.0	G 1/4	0190 – 459 03 – X – 009
			M 10x1 con.	0190 – 459 01 – X – 007
			M 12x1.5 cyl.	0190 – 459 02 – X – 008
			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	G 1/4	0190 – 461 03 – X – 012
			M 10x1 con.	0190 – 461 01 – X – 010
			M 12x1.5 cyl.	0190 – 461 02 – X – 011
			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 switches with spade terminal

600 ¹⁾	50 – 200	± 5.0	G 1/4	0191 – 460 03 – X – 003
			M 10x1 con.	0191 – 460 01 – X – 001
			M 12x1.5 cyl.	0191 – 460 02 – X – 002
			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

Seal material – Application areas

NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.



Your order number:

019X – XXX XX – X – XXX



¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

0196 / 0197

Diaphragm / piston pressure switches up to 24 V with stainless steel housing

- Stainless steel housing (1.4305 / AISI 303)
- Fitted with changeover contact and gold contacts
- Overpressure safety up to 300 / 600 bar¹⁾
(EPDM-W270 and silicone diaphragm up to 35 bar²⁾)
- Hysteresis adjustable at factory

p _{max.} in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
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0196 Diaphragm pressure switches with spade terminal

300 ¹⁾⁺²⁾	0.5 – 5	± 0.3	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 switches with spade terminal

600 ¹⁾	50 – 200	± 5.0	G 1/4	0197 – 460 03 – X – 003
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Seal material – Application areas

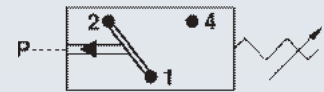
NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
EPDM-W270	Drinking water (only in diaphragm, p _{max} ≤ 35 bar)	5
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
Silicone	Water, food products, air, etc. (only in diaphragm, p _{max} ≤ 35 bar)	8
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.

Your order number: **019X – XXX 03 – X – XXX**

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hex 27



¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

²⁾ Overpressure safety of diaphragm pressure switch up to 300 bar. Functional reliability only up to 35 bar with diaphragm materials EPDM-W270 and silicone.

