

# 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 bar<sup>1)</sup>
- Hysteresis adjustable at factory

p <sub>max.</sub> 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

p <sub>max.</sub> in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
100 <sup>1)</sup>	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
300 <sup>1)</sup>	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
	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

p <sub>max.</sub> in bar	Adjustment range in bar	Tolerance in bar at room temperature	Male thread	Order number
600 <sup>1)</sup>	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

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

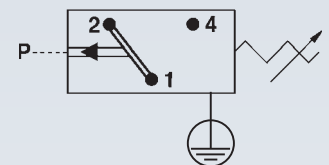
<sup>1)</sup> Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

M.4

hex 27

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Changeover with silver or gold contacts



- Switching point can be adjusted when fitted on site <sup>1)</sup>
- 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

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

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## Technical data

M.4

hex 27



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Temperature resistance of sealing materials:	NBR (max. overpressure up to 100 bar)	-30 °C ... +100 °C
	NBR (max. overpressure up to 300 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 <sup>2</sup> ; 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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# Pressure switches hex 27

## Electrical values

<b>0140 / 0141</b>		
Rated working voltage $U_e$	Rated working current $I_e$	Usage category <sup>1)</sup>
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 <sup>2</sup>	

<b>0170 / 0171 / 0180 / 0181 / 0183 / 0186 / 0187 / 0190 / 0191 / 0196 / 0197</b>		
Rated working voltage $U_e$	Rated working current $I_e$	Usage category <sup>1)</sup>
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	

<sup>1)</sup> For technical explanations refer to page 9