

0186 / 0187

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

- Stainless steel housing (AISI 303 / 1.4305)
- Snap action with silver contacts
- Overpressure safety up to 4,350 / 8,700 psi (300 / 600 bar)¹⁾ (EPDM-W270 and silicone diaphragm up to 500 psi / 35 bar)²⁾
- Differential adjustable at factory

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

4,350 psi ¹⁾⁺²⁾ (300 bar) ¹⁾⁺²⁾	7.25 - 72.5 psi (0.5 - 5 bar)	± 4.35 psi (± 0.3 bar)	1/4 BSPP	0186 - 457 03 - X - 003
	14.5 - 145 psi (1 - 10 bar)	± 7.25 psi (± 0.5 bar)		0186 - 458 03 - X - 006
	145 - 725 psi (10 - 50 bar)	± 43.5 psi (± 3.0 bar)		0186 - 459 03 - X - 009
	145 - 1,450 psi (10 - 100 bar)	± 43.5 - 72.5 psi (± 3.0 - 5.0 bar)		0186 - 461 03 - X - 012

0187 Piston pressure switch with spade terminal

8,700 psi ¹⁾ (600 bar) ¹⁾	725 - 2,900 psi (50 - 200 bar)	± 7.25 psi (± 0.5 bar)	1/4 BSPP	0187 - 460 03 - X - 003
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Seal material – Application areas

NBR (BunaN)	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, hydrogen, oxygen, acetylene, etc.	2
EPDM-W270	Drinking water (only in diaphragm, p _{max} ≤ 500 psi / 35 bar)	5
FKM (Viton®)	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
Silicone	Water, food products, air, etc. (only in diaphragm, p _{max} ≤ 500 psi / 35 bar)	8
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

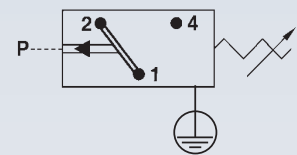
Refer to page 53 for the temperature range and application thresholds of sealing materials.

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.



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Technical data

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Temperature resistance of sealing materials:	NBR (BunaN) (max. overpressure up to 1,450 psi (100 bar))	-22 °F ... +212 °F (-30 °C ... +100 °C)
	NBR (BunaN) (max. overpressure up to 4,350 psi (300/600 bar))	-40 °F ... +212 °F (-40 °C ... +100 °C)
	EPDM	-22 °F ... +248 °F (-30 °C ... +120 °C)
	EPDM-W270 (in diaphragm pressure switch)	-4 °F ... +212 °F (-20 °C ... +100 °C)
	FKM (Viton®) (in diaphragm pressure switch)	+23 °F ... +248 °F (-5 °C ... +120 °C)
	FKM (Viton®) (in piston pressure switch)	+5 °F ... +248 °F (-15 °C ... +120 °C)
	Silicone (in diaphragm pressure switch)	-40 °F ... +248 °F (-40 °C ... +120 °C)
	HNBR	-22 °F ... +248 °F (-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:	≤ 14.5 psi/ms (≤ 1 bar/ms)	
Differential (only adjustable at factory):	Adjustable average value 10 ... 30 % depending on type Types 0140 and 0141 cannot be adjusted	
Vibration resistance:	10g; 5 ... 200 Hz 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. 3.5 oz (100 g)	

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 differential			●	●	●	●	●	●	●	●	●	●	●
Zinc-plated steel (CrVI-free)	●	●	●	●	●	●	●			●	●		
Stainless steel 1.4305								●	●			●	●



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Electrical values

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 50/60 Hz	
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 50/60 Hz	
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

Socket devices and protective caps

- IP65 socket devices or IP54 rubber protective caps for increased protection
- Simple installation with plug-in socket devices

 <p>60 Ø 28</p>	 <p>46 Ø 28</p>	 <p>55 Ø 31</p>	 <p>~ 54 45 Ø 34</p>
<p>Rubber protective cap</p> <p>With central cable feed-through for 1.5 – 5 mm cable diameter</p> <p>With rubber protective cap fitted: IP54</p> <p>Suitable for voltages up to 42 V</p>	<p>Rubber protective cap</p> <p>With two cable feed-throughs for 1.7 – 2.2 mm cable diameter</p> <p>With rubber protective cap fitted: IP54</p> <p>Suitable for voltages up to 42 V</p>	<p>Rubber protective cap</p> <p>With two cable feed-throughs for 1.7 – 2.3 mm cable diameter</p> <p>With rubber protective cap fitted: IP54</p> <p>Suitable for voltages up to 42 V</p>	<p>Socket device</p> <p>PG9 screw fitting (tightening range 6 – 9 mm)</p>  <p>With socket device fitted: IP65</p> <p>Suitable for voltages up to 250 V</p>
<p>suitable for series</p> <p>0151 / 0163 / 0164 / 0166 0167 / 0168 / 0169</p>	<p>suitable for series</p> <p>0151 / 0163 / 0164 / 0166 0167 / 0168 / 0169</p>	<p>suitable for series</p> <p>0170 / 0171 / 0180* / 0181* 0183* / 0186* / 0187* 0190 / 0191 / 0196 / 0197</p> <p>(*up to 42 V)</p>	<p>suitable for series</p> <p>0170 / 0171 / 0180 / 0181 0183 / 0186 / 0187 0190 / 0191 / 0196 / 0197</p>
<p>Order number:</p> <p>1-1-66-621-010</p>	<p>Order number:</p> <p>1-1-66-621-003</p>	<p>Order number:</p> <p>1-1-70-621-007</p>	<p>Order number:</p> <p>1-1-80-652-002</p>

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Snap action with silver or gold contacts



- Switching point can be adjusted when fitted on site ¹⁾
- Factory adjustable differential (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.