



0170 / 0171

Diaphragm / piston pressure switches up to 42 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 100 / 400 / 700 bar¹⁾
- Hysteresis adjustable at factory

| P_{max} in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---------------------|----------------------------|---|-------------|----------------|
|---------------------|----------------------------|---|-------------|----------------|

0170 Diaphragm pressure switches with spade terminal

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|-------------------|-------------------------|-------|---------------|-------------------------|
| 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 | | | |

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|-------------|-------------------------|-------|---------------|-------------------------|
| | 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 | | | |

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|-------------------|-------------------------|-------|---------------|-------------------------|
| 400 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

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|----------------------|----------|-------|---------------|-------------------------|
| 700 ^{1) 2)} | 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 1/4 | 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, air, nitrogen, etc. | 1 |
| EPDM | Brake fluid, hydrogen, oxygen, acetylene, etc. | 2 |
| FKM | Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc. | 3 |
| FFKM | Hot water, chemical acids, diluted alkalis, ketones, esters, alcohols | 6 |
| HNBR³⁾ | Hydraulic/machine oil, ester-based bio-oils | 9 |

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



Article 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.

²⁾ Excluding the thread sizes G 1/8, R 1/8, NPT 1/8 and M 10x1 cylindrical/conical.

³⁾ HNBR diaphragm not available for pressure ranges between 0.3 - 1.5 bar.

Pressure switches hex 27

Changeover with silver or gold contacts



- Switching point can be adjusted when fitted on site¹⁾
- 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 details

M.4
hex 27



| | | |
|---|---|--------------------|
| Temperature resistance of sealing materials | NBR (diaphragm pressure switches, $p_{max} = 300 / 400$ bar) | -40 °C ... +100 °C |
| | NBR (diaphragm pressure switch, $p_{max} = 100$ bar) (piston pressure switch) | -30 °C ... +100 °C |
| | EPDM | -30 °C ... +120 °C |
| | EPDM-TW (diaphragm pressure switch) | -20 °C ... +100 °C |
| | FKM (diaphragm pressure switch) | -5 °C ... +120 °C |
| | FKM (piston pressure switch) | -15 °C ... +120 °C |
| | FFKM | -20 °C ... +120 °C |
| | Silicone (diaphragm pressure switch) | -40 °C ... +120 °C |
| HNBR | -30 °C ... +120 °C | |
| Burst pressure (diaphragm pressure switch, overpressure resistance 100 bar) | 200 bar | |
| Burst Pressure (diaphragm pressure switch, overpressure resistance 400 bar) | 700 bar (for threads M10, G 1/8, R 1/8, NPT 1/8 and type 0140 up to max. 600 bar) | |
| Burst pressure (Piston pressure switch) | 1,000 bar (for threads M10, G 1/8, R 1/8, NPT 1/8 and type 0140 up to max. 600 bar) | |
| 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 | $\leq 1,000$ bar/s | |
| Hysteresis (only adjustable at factory) ¹⁾ | Adjustable average value 10 ... 30 % depending on type Types 0140 and 0141 cannot be adjusted | |
| Vibration resistance | 10 g; 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. 100 g | |

Switching performance and materials overview

| Type | 0140 | 0141 | 0170 | 0171 | 0180 | 0181 | 0183 | 0186 | 0187 | 0190 | 0191 | 0196 | 0197 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 5 ... 24 V DC | | | | | | | | | | ● | ● | ● | ● |
| 10 ... 42 V AC/DC | | | ● | ● | | | | | | | | | |
| 10 ... 250 V AC/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 | | | | | | | | ● | ● | | | ● | ● |

¹⁾ see notes on hysteresis in the technical explanations (page 15-16)



Pressure switches hex 27

Electrical values

| 0140 / 0141 | | |
|--|---|------------------------------|
| Rated working voltage U_e : | Rated working current I_e | Usage category ¹⁾ |
| 250 VAC 50 / 60 Hz | 2 A | AC12 |
| 24 VDC | 2 / 1 A | DC12 / DC13 |
| 50 VDC | 1 / 0.5 A | DC12 / DC13 |
| 75 VDC | 0.5 / 0.25 A | DC12 / DC13 |
| 125 VDC | 0.2 / 0.1 A | DC12 / DC13 |
| 250 VDC | 0.15 / 0.1 A | DC12 / DC13 |
| 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 DIN EN 60529:1991+A1:1999: | IP65 with socket device, terminals IP00 | |
| 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 | AC12 |
| 250 VAC 50 / 60 Hz | 1 A | AC14 |
| 24 VDC | 4 / 2 A | DC12 / DC13 |
| 50 VDC | 2 / 1 A | DC12 / DC13 |
| 75 VDC | 1 / 0.5 A | DC12 / DC13 |
| 125 VDC | 0.3 / 0.2 A | DC12 / DC13 |
| 250 VDC | 0.25 / 0.2 A | DC12 / DC13 |
| 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 class of protection according to DIN EN 60529:1991+A1:1999: | IP65 with socket device, terminals IP00 | |