# 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 details

| | | |
|---|---|---|
| Temperature resistance of sealing materials | NBR (diaphragm pressure switches, $p_{max}$ = 300 / 400 bar) | -40 °C … +100 °C |
| | NBR (diphragm 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 | ≤ 1,000 bar/s | |
| Hysteresis (only adjustable at factory) [1] | Adjustable average value 10 … 30 % depending on type<br>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/s²; 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 | |

[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 bar[1)]
- Includes polyamide cap, protection class IP65







| $p_{max}$ in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|
| **0140 Diaphragm pressure switches 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 switches 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 |

### 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 |
| HNBR | Hydraulic/machine oil, ester-based bio-oils | 9 |

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

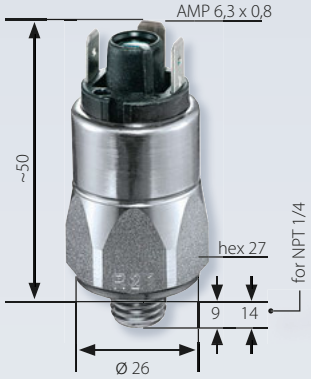
| Article number: | 014X – XXX XX – X – XXX |
|---|---|

[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 / 400 / 700 bar[1)]
- 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** | | | | |
| 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 |
| 400[1)] | 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 |
| | 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** | | | | |
| 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 |
| HNBR[3)] | 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.

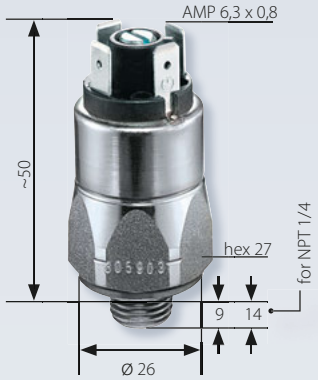
# 0180 / 0181

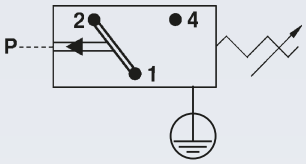
## Diaphragm / piston pressure switches up to 250 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 100 / 400 / 700 bar[1)]
- Hysteresis adjustable at factory



| $p_{max}$ in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|
| **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 |
| 400[1)] | 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 - 312 |
| | | | 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** | | | | |
| 700[1) 2)] | 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 1/4 | 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, 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 |
| HNBR[3)] | Hydraulic/machine oil, ester-based bio-oils | 9 |

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

| Article number: | 018X – 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.

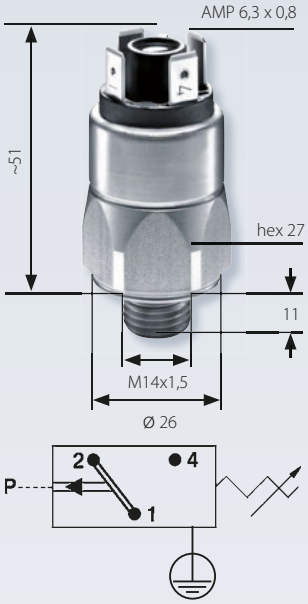
# M.4
hex 27

# 0183

## Piston pressure switches up to 250 V

- Zinc-plated steel (CrVI-free)
- Changeover with silver contacts
- Overpressure safety up to 600 bar[1], 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 at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|

**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, 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.

| Article number: | 0183 – 46X 45 – X – XXX |
|---|---|

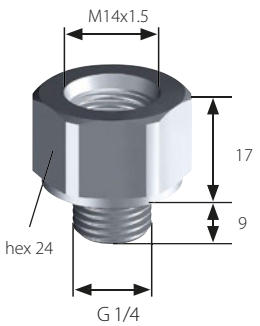
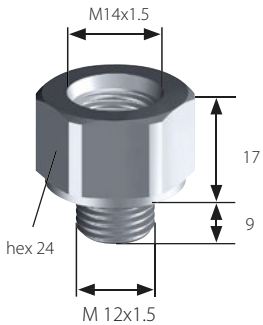
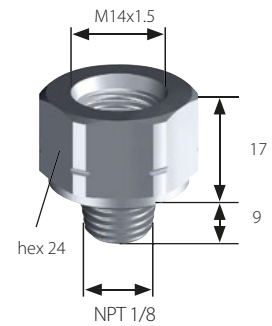
[1] Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

## Accessory

Not included in the delivery.
Please order separately.

### Thread adapters

from **M14 x 1.5**

| to **G 1/4** | to **M12 x 1.5** | to **NPT 1/8** |
|---|---|---|
|   |   |   |
| **Article number** 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 100 / 400 / 600 / 700 bar[1)]
  EPDM-TW and silicone diaphragm up to max. 35 bar[2)]
- Hysteresis adjustable at factory

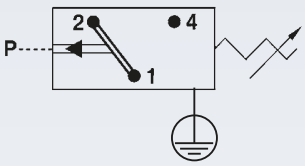
### 0186 Diaphragm pressure switches with spade terminal

| $p_{max}$ in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|
| 100[1)] | 0.3 - 1.5 | ± 0.2 | G 1/4 DIN 3852-2-A | 0186 - 446 60 - X - 001 |
| | 1 - 10 | ± 0.5 | | 0186 - 458 60 - X - 050 |
| 400[1)] | 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 switches with spade terminal

| | | | | |
|---|---|---|---|---|
| 700[1)] | 50 - 200 | ± 5.0 | G 1/4 | 0187 - 460 03 - X - 003 |
| 600[1) 3)] | | | NPT 1/8 | 0187 - 460 04 - X - 304 |




### Seal material – Application areas

| | | |
|---|---|---|
| NBR | Hydraulic/machine oil, air, nitrogen, etc. | 1 |
| EPDM | Brake fluid, water, hydrogen, oxygen, acetylene, etc. | 2 |
| EPDM-TW[2)] | Drinking water ($p_{max} \leq 35$ bar) | 5 |
| FKM | Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc. | 3 |
| FFKM | Hot water, chemical acids, diluted alkalis, ketones, esters, alcohols | 6 |
| Silicone[2)] | Water, food products, air, etc. ($p_{max} \leq 35$ 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.

| Article number: | 018X – XXX 03 – X – XXX |
|---|---|

[1)] Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.
[2)] Functional safety and reliability only up to max. 35 bar with EPDM-TW and silicone diaphragm.
[3)] Including the thread sizes G 1/8, R 1/8 and M 10x1 cylindrical/conical.

# 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 / 400 / 700 bar[1)]
- Hysteresis adjustable at factory







| $p_{max}$ in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|
| **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 |
| 400[1)] | 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 |
| | 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** | | | | |
| 700[2)] | 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 1/4 | 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, air, nitrogen, etc. | 1 |
| EPDM | Brake fluid, water, hydrogen, oxygen, acetylene, etc. | 2 |
| FKM | Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc. | 3 |
| FFKM | Hot water, chemical acids, diluted alkalis, ketones, ester's, alcohols | 6 |
| HNBR[3)] | Hydraulic/machine oil, ester-based bio-oils | 9 |

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

| Article 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.
[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.

# 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 100 / 400 / 600 / 700 bar[1)]
  EPDM-TW and silicone diaphragm up to max. 35 bar[2)]
- Hysteresis adjustable at factory



| $p_{max}$ in bar | Adjustment range in bar | Tolerance at room temperature in bar | Male thread | Article number |
|---|---|---|---|---|
| **0196 Diaphragm pressure switches with spade terminal** | | | | |
| 100[1)] | 0.3 - 1.5 | ± 0.2 | G 1/4 DIN 3852-2-A | 0196 - 446 60 - X - 001 |
| | 1 - 10 | ± 0.5 | | 0196 - 458 60 - X - 050 |
| 400[1)] | 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** | | | | |
| 700[1)] | 50 - 200 | ± 5.0 | G 1/4 | 0197 - 460 03 - X - 003 |
| 600[1) 3)] | | | NPT 1/8 | 0197 - 460 04 - X - 304 |







### Seal material – Application areas

| | | |
|---|---|---|
| NBR | Hydraulic/machine oil, air, nitrogen, etc. | 1 |
| EPDM | Water, Brake fluid, hydrogen, oxygen, acetylene, etc. | 2 |
| EPDM-TW[2)] | Drinking water ($p_{max} \leq 35$ bar) | 5 |
| FKM | Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc. | 3 |
| FFKM | Hot water, chemical acids, diluted alkalis, ketones, ester's, alcohols | 6 |
| Silicone[2)] | Water, food products, air, etc. ($p_{max} \leq 35$ 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.

| Article number: | 019X – XXX 03 – X – XXX |
|---|---|

[1)] Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.
[2)] Functional safety and reliability only up to max. 35 bar with EPDM-TW and silicone diaphragm.
[3)] Including the thread sizes G 1/8, R 1/8 and M 10x1 cylindrical/conical.