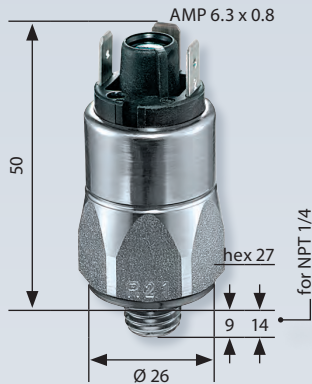


M.4

hex 27

hidra[matic]

Downloaded from: [www.hidramatic.com](http://www.hidramatic.com)



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

| p <sub>max.</sub><br>in bar | Adjustment<br>range in bar | Tolerance in bar at<br>room temperature | Male thread | Order number |
|-----------------------------|----------------------------|---|-------------|--------------|
|-----------------------------|----------------------------|---|-------------|--------------|

### 0190 Diaphragm pressure switches with spade terminal

|                   |           |             |               |                         |
|-------------------|-----------|-------------|---------------|-------------------------|
| 100 <sup>1)</sup> | 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 <sup>1)</sup> | 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 <sup>1)</sup> | 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, 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



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

# Pressure switches hex 27

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.

# Pressure switches hex 27

## Technical data

M.4

hex 27



hidra[matic]

Downloaded from: [www.hidramatic.com](http://www.hidramatic.com)

|  |   |                    |
|--|---|--------------------|
| 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<br>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;<br>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        |      |      |      |      |      |      |      | ●    | ●    |      |      | ●    | ●    |

M

# 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