



General technical explanations can be found in our catalog.

Technical data sheets

## **Mechanical pressure switches for hydrogen applications**



## Mechanical pressure switches for hydrogen applications

**0H64, 0H69,  
0H86, 0H87,  
0H96, 0H97,  
0H83**

**Type 0H64, 0H69, 0H86, 0H87, 0H96, 0H97, 0H83**

|   |  |
|---|--|
| Temperature range                           | EPDM -30 °C ... +120 °C  |
| Burst pressure 0H64, 0H69                   | 700 bar  |
| Burst pressure 0H86, 0H96                   | 700 bar  |
| Burst pressure 0H87, 0H97, 0H83             | 1.000 bar  |
| Switching frequency                         | 200 / min  |
| Mechanical lifetime                         | 1.000.000 Switching cycles (for diaphragm pressure switches, the service life applies only to switching pressures up to max. 50 bar) |
| Rate of pressure rise                       | ≤ 1.000 bar/s  |
| Hysteresis 0H64, 0H69                       | Not adjustable   |
| Hysteresis (only adjustable in the factory) | Adjustable average value 10 ... 30% depending on type  |
| Vibration resistance                        | 10 g; 5 ... 200 Hz Sinus; DIN EN 60068-2-6   |
| Shock resistance                            | 294 m/s <sup>2</sup> ; 14 ms Semi-sinus; DIN EN 60068-2-27, DIN EN 60068-2-27  |
| Protection class                            | IIP65 with attached cable plug, terminals IP00   |
| Weight 0H64, 0H69                           | appr. 90 g   |
| Weight 0H86 / 0H87, 0H96 / 0H97, 0H83       | appr. 100 g  |

### Overview switching capacity and materials

| Type                               | 0H64 | 0H69 | 0H86 / 0H87 | 0H96 / 0H97 | 0H83 |
|------------------------------------|------|------|-------------|-------------|------|
| 5 ... 24 VDC                       |      |      |             | ●           |      |
| 10 ... 42 VAC/DC                   | ●    | ●    |             |             |      |
| 10 ... 250 VAC/DC                  |      |      | ●           |             | ●    |
| 3 ... 50 mA                        |      |      |             | ●           |      |
| 10 mA ... 4 A                      | ●    | ●    | ●           |             | ●    |
| Gold contacts                      |      |      |             | ●           |      |
| Silver contacts                    | ●    | ●    | ●           |             | ●    |
| Adjustable hysteresis              |      |      | ●           | ●           | ●    |
| Stainless steel 1.4404 (AISI 316L) | ●    | ●    | ●           | ●           | ●    |



## Mechanical pressure switches for hydrogen applications

**0H64, 0H69,  
0H86, 0H87,  
0H96, 0H97,  
0H83**

### Type 0H86, 0H87, 0H83

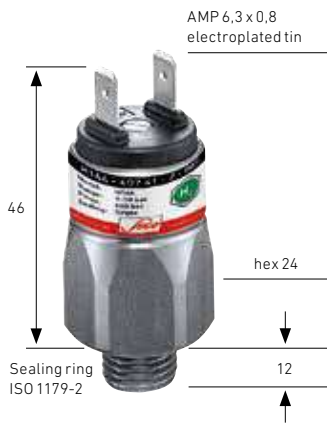
| Rated operating voltage $U_e$              | Rated operational current $I_e$ | Usage category |
|--|---------------------------------|----------------|
| 250 VAC 50 / 60 Hz                         | 4 A                             | AC12           |
| 250 VAC 50 / 60 Hz                         | 1 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 electricity $I_{the}$ | 5 A                             |                |
| Switching overvoltage                      | < 2,5 kV                        |                |
| Rated frequency                            | DC and 50 / 60 Hz               |                |
| Rated current of the short-circuit device  | up to 5 A                       |                |
| Conditional short circuit current          | < 350 A                         |                |

# 0H64

hex 24

Diaphragm pressure switch up to max. 42 V with stainless steel housing for hydrogen applications

- Housing made of stainless steel 1.4404 (AISI 316L)
- With push-in connection
- Overpressure-proof up to 600 bar\*



| Setting range<br>(Tolerance for room temperature) | External thread | Part number<br>NO contact →: | Part number<br>NC contact →: |
|---|-----------------|------------------------------|------------------------------|
|---|-----------------|------------------------------|------------------------------|

**0H64 Diaphragm pressure switch with stainless steel housing**

|                    |                    |                         |                         |
|--------------------|--------------------|-------------------------|-------------------------|
| 0,1 – 1 (±0,2) bar | G 1/4-E ISO 1179-2 | 0H64 - 403 41 - 2 - 080 | 0H64 - 404 41 - 2 - 080 |
| 0,5 – 3 (±0,3) bar | G 1/4-E ISO 1179-2 | 0H64 - 423 41 - 2 - 080 | 0H64 - 424 41 - 2 - 080 |
| 1 – 10 (±0,5) bar  | G 1/4-E ISO 1179-2 | 0H64 - 407 41 - 2 - 080 | 0H64 - 408 41 - 2 - 080 |
| 10 – 20 (±1) bar   | G 1/4-E ISO 1179-2 | 0H64 - 411 41 - 2 - 080 | 0H64 - 412 41 - 2 - 080 |
| 20 – 50 (±2) bar   | G 1/4-E ISO 1179-2 | 0H64 - 415 41 - 2 - 080 | 0H64 - 416 41 - 2 - 080 |

**Sealing materials - areas of application**

|             |   |          |
|-------------|---|----------|
| <b>EPDM</b> | Hydrogen, oxygen, water, forming gases,<br>all inert and non-toxic gaseous or liquid media ** | <b>2</b> |
|-------------|---|----------|



\* Static value. Dynamic value 30 to 50 % lower.

\*\* We offer other seal and material combinations for numerous media.

# 0H69

hex 24

Piston pressure switch up to max. 42 V with stainless steel housing for hydrogen applications

- Housing made of stainless steel 1.4404 (AISI 316L)
- With push-in connection or screw connection M3
- Overpressure-proof up to 600 bar\*



|  |                        |                                     |                                     |
|--|------------------------|-------------------------------------|-------------------------------------|
| <b>Setting range</b><br>(Tolerance for room temperature) | <b>External thread</b> | <b>Part number</b><br>NO contact →: | <b>Part number</b><br>NC contact →: |
|--|------------------------|-------------------------------------|-------------------------------------|

**0H69** Piston pressure switch with stainless steel housing

|                    |                   |                         |                         |
|--------------------|-------------------|-------------------------|-------------------------|
| 50 – 150 (± 5) bar | G1/4-E ISO 1179-2 | 0H69 - 419 41 - 2 - 080 | 0H69 - 420 41 - 2 - 080 |
|--------------------|-------------------|-------------------------|-------------------------|

**Sealing materials - areas of application**

|             |  |   |
|-------------|--|---|
| <b>EPDM</b> | Hydrogen, oxygen, water, forming gases, all inert and non-toxic gaseous or liquid media ** | 2 |
|-------------|--|---|

\* Static value. Dynamic value 30 to 50 % lower.  
 \*\* We offer other seal and material combinations for numerous media.



# 0H86 / 0H87

hex 27

Diaphragm or piston pressure switch up to max. 250 V with plug-in connection for hydrogen applications

- Housing made of stainless steel 1.4404 (AISI 316L)
- With built-in changeover contact with silver contacts
- Overpressure safe up to 400 / 700 bar\*
- Hysteresis adjustable at the factory



| P <sub>max</sub> in bar | Setting range in bar | Tolerance at room temperature in bar | External thread | Article number |
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|

**0H86 Diaphragm pressure switch with plug-in connection**

|      |          |            |                    |                         |
|------|----------|------------|--------------------|-------------------------|
| 400* | 0,5 – 5  | ±0,3       | G 1/4-E ISO 1179-2 | 0H86 - 457 41 - 2 - 080 |
|      | 1 – 10   | ±0,5       |                    | 0H86 - 458 41 - 2 - 080 |
|      | 10 – 50  | ±3,0       |                    | 0H86 - 459 41 - 2 - 080 |
|      | 10 – 100 | ±3,0 – 5,0 |                    | 0H86 - 461 41 - 2 - 080 |

**0H87 Piston pressure switch with plug-in connection**

|      |          |      |                    |                         |
|------|----------|------|--------------------|-------------------------|
| 700* | 50 – 200 | ±0,5 | G 1/4-E ISO 1179-2 | 0H87 - 460 41 - 2 - 080 |
|------|----------|------|--------------------|-------------------------|

**Sealing materials - areas of application**

|      |  |   |
|------|--|---|
| EPDM | Hydrogen, oxygen, water, forming gases, all inert and non-toxic gaseous or liquid media ** | 2 |
|------|--|---|



\* Static value. Dynamic value 30 to 50 % lower.

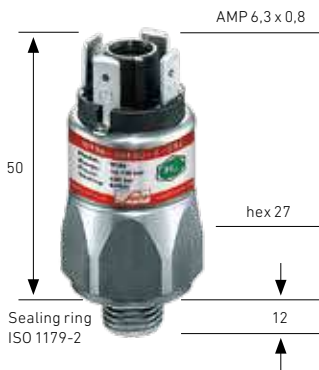
\*\* We offer other seal and material combinations for numerous media.

## 0H96 / 0H97

hex 27

Diaphragm or piston pressure switch up to max. 24 V with plug-in connection for hydrogen applications

- Housing made of stainless steel 1.4404 (AISI 316L)
- With built-in changeover contact
- With gold contacts overpressure safe up to 400 / 700 bar\*
- Hysteresis adjustable at the factory



| P <sub>max</sub> in bar | Setting range in bar | Tolerance at room temperature in bar | External thread | Article number |
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|

**0H96 Diaphragm pressure switch with plug-in connection**

| 400* | 0,5 – 5  | ±0,3       | G 1/4-E ISO 1179-2 | 0H96 - 457 41 - 2 - 080 |
|------|----------|------------|--------------------|-------------------------|
|      | 1 – 10   | ±0,5       |                    | 0H96 - 458 41 - 2 - 080 |
|      | 10 – 50  | ±3,0       |                    | 0H96 - 459 41 - 2 - 080 |
|      | 10 – 100 | ±3,0 – 5,0 |                    | 0H96 - 461 41 - 2 - 080 |

**0H97 Piston pressure switch with plug-in connection**

|      |          |      |                    |                         |
|------|----------|------|--------------------|-------------------------|
| 700* | 50 – 200 | ±5,0 | G 1/4-E ISO 1179-2 | 0H97 - 460 41 - 2 - 080 |
|------|----------|------|--------------------|-------------------------|

**Sealing materials - areas of application**

|      |  |   |
|------|--|---|
| EPDM | Hydrogen, oxygen, water, forming gases, all inert and non-toxic gaseous or liquid media ** | 2 |
|------|--|---|



\* Static value. Dynamic value 30 to 50 % lower.

\*\* We offer other seal and material combinations for numerous media.n an.

# 0H83

hex 27

Piston pressure switch up to max. 250 V  
with plug-in connection for hydrogen applications

- Housing made of stainless steel 1.4404 (AISI 316L)
- With built-in changeover contact with silver contacts
- Overpressure safe up to 600 bar<sup>1</sup>, hysteresis adjustable at the factory
- Adjustment range: 100 – 400 bar\*
- Overall height only 51 mm



| P <sub>max</sub><br>in bar | Setting range<br>in bar | Tolerance at room<br>temperature in bar | External thread | Article number |
|----------------------------|-------------------------|---|-----------------|----------------|
|----------------------------|-------------------------|---|-----------------|----------------|

**0H83** Piston pressure switch with plug-in connection

|      |           |       |                          |                         |
|------|-----------|-------|--------------------------|-------------------------|
| 600* | 100 – 300 | ±10,0 | M 14 x 1,5<br>DIN 6149-3 | 0H83 - 462 45 - 2 - 080 |
|      | 200 – 400 |       |                          | 0H83 - 463 45 - 2 - 080 |

**Sealing materials - areas of application**

|             |   |   |
|-------------|---|---|
| <b>EPDM</b> | Hydrogen, oxygen, water, forming gases,<br>all inert and non-toxic gaseous or liquid media ** | 2 |
|-------------|---|---|

\* Static value. Dynamic value 30 to 50 % lower.

\*\* We offer other seal and material combinations for numerous media.





## Explosion-proof pressure switches for hydrogen applications

### 0H44 / 0H45

#### Type 0H44 / 0H45

|                             |  |         |                     |
|-----------------------------|--|---------|---------------------|
| <b>ATEX protection zone</b> | 1 + 2  | 21 + 22 | Mining              |
| <b>Substance group</b>      | Gases / Vapors   | Dusts   | Methane / Coal dust |
| <b>Temperature range</b>    | EPDM -20 °C ... +80 °C   |         |                     |
| <b>Switching frequency</b>  | 200 / min  |         |                     |
| <b>Mechanical lifetime</b>  | 1.000.000 switching cycles   |         |                     |
| <b>Pressure rise rate</b>   | ≤ 1.000 bar/s  |         |                     |
| <b>Hysteresis</b>           | 10 ... 30 % (type-dependent, not adjustable)   |         |                     |
| <b>Vibration resistance</b> | 10 g; 5 ... 200 Hz sinus; DIN EN 60068-2-6   |         |                     |
| <b>Shock resistance</b>     | 294 m/s <sup>2</sup> ; 14 ms semi-sinus; DIN EN 60068-2-27   |         |                     |
| <b>Cable length</b>         | Standard length ~2 m with ferrule,<br>also available in ~5 m length as well as special length on request |         |                     |
| <b>Protection class</b>     | IP65   |         |                     |
| <b>Cable cross section</b>  | 3 x 0,5 mm <sup>2</sup>  |         |                     |
| <b>Housing material</b>     | Stainless steel 1.4404 (AISI 316L)   |         |                     |
| <b>Weight in gram</b>       | appr. 230 g  |         |                     |

#### Electrical values

| Rated operating voltage $U_o$              | Rated operational current $I_o$ |
|--|---------------------------------|
| 250 VAC 50 / 60 Hz, AC 12                  | 2 A                             |
| 250 VAC 50 / 60 Hz, AC 14                  | 1 A                             |
| 24 VDC, DC 12 / DC 13                      | 2 / 1 A                         |
| 50 VDC, DC 12 / DC 13                      | 1 / 0,5 A                       |
| 75 VDC, DC 12 / DC 13                      | 0,5 / 0,25 A                    |
| 125 VDC, DC 12 / DC 13                     | 0,2 / 0,1 A                     |
| 250 VDC, DC 12 / DC 13                     | 0,15 / 0,1 A                    |
| Rated insulation voltage $U_i$             | 300 V                           |
| Rated impulse withstand voltage $U_{imp}$  | 4 kV                            |
| Conventional thermal electricity $I_{the}$ | 5 A                             |
| Switching overvoltage                      | < 2,5 kV                        |
| Rated frequency                            | DC and 50 / 60 Hz               |
| Rated current of the short-circuit device  | up to 3,5 A                     |
| Conditional short circuit current          | < 350 A                         |





# Explosion-proof pressure switches for hydrogen applications

0H44 / 0H45

## Technical Explanations

The classification of explosion-proof pressure switches is made according to the respective flammable substances. The subdivision is made into:

|                |       |                     |
|----------------|-------|---------------------|
| Gases / Vapors | Dusts | Methane / Coal dust |
|----------------|-------|---------------------|

## ATEX / IECEx marking for pressure switches

Our pressure switches are designed for gases and vapors (G), dusts (D) and methane / coal dust (M) in mining.

The following table shows an overview of the Ex-protection zones, device groups and categories. The applications covered by our pressure switches (according to Ex-area) are highlighted.

## Conditions in the hazardous area

| Combustible fabrics | Temporary behavior of the flammable substances in the hazardous area                | Division potentially explosive areas | Required marking of the usable equipment |                 |
|---------------------|---|--------------------------------------|--|-----------------|
|                     |   |                                      | Device group                             | Device category |
| Dusts / Vapors      | are present constantly, for a long time or frequently                               | Zone 0                               | II                                       | 1G              |
|                     | occasionally occur  | Zone 1                               | II                                       | 2G              |
|                     | are unlikely to occur, if they do, only rarely or briefly                           | Zone 2                               | II                                       | 2G              |
| Dusts               | are present constantly, for a long time or frequently                               | Zone 20                              | III                                      | 1D              |
|                     | occasionally occur  | Zone 21                              | III                                      | 2D              |
|                     | robably do not occur due to whirled up dust, if so, only rarely or for a short time | Zone 22                              | III                                      | 3D or 2D        |
| Methane / Coal dust | Operation with explosion hazard   | -                                    | I  | M1              |
|                     | Shutdown in case of explosion hazard  | -                                    | I  | M2 or M1        |



# OH44 / OH45

hex 27 ATEX

Diaphragm or piston pressure switch up to max. 250 V with ATEX for hydrogen applications

**ATEX CE II 2G Ex db IIC T6/T5 Gb (gases and vapors, zones 1 + 2)**

**ATEX CE II 2D Ex tb IIIC T80°C/T100°C Db (dusts, zones 21 + 22)**

**ATEX CE I M2 db I Mb (mining)**

**Approval according to IECEx system**

- Housing made of stainless steel 1.4404 (AISI 316L)
- Max. voltage 250 V, IP65, protection class 2, protective insulation
- Overpressure proof up to 300 / 600 bar\*.



| P <sub>max</sub> in bar | Setting range in bar | Tolerance at room temperature in bar | External thread | Article number |
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|
|-------------------------|----------------------|--------------------------------------|-----------------|----------------|

**OH44 Diaphragm pressure switch**

|      |           |            |                   |                         |
|------|-----------|------------|-------------------|-------------------------|
| 300* | 0,3 – 1,5 | ±0,2       | G1/4-E ISO 1179-2 | 0H44 - 457 41 - 2 - 020 |
|      | 1 – 10    | ±0,5 – 1,0 |                   | 0H44 - 458 41 - 2 - 020 |
|      | 10 – 20   | ±1,0       |                   | 0H44 - 459 41 - 2 - 020 |
|      | 20 – 50   | ±2,0       |                   | 0H44 - 461 41 - 2 - 020 |

**OH45 Piston pressure switch**

|      |          |      |                   |                         |
|------|----------|------|-------------------|-------------------------|
| 600* | 50 – 150 | ±5,0 | G1/4-E ISO 1179-2 | 0H45 - 460 41 - 2 - 020 |
|------|----------|------|-------------------|-------------------------|

**Sealing materials - areas of application**

|      |  |   |
|------|--|---|
| EPDM | Hydrogen, oxygen, water, forming gases, all inert and non-toxic gaseous or liquid media ** | 2 |
|------|--|---|

\* Static value. Dynamic value 30 to 50 % lower.  
 \*\* We offer other seal and material combinations for numerous media.

<sup>(1)</sup> Piston pressure switch  
<sup>(2)</sup> Diaphragm pressure switch

