



Mechanical Pressure Switches

for overpressure, vacuum pressure
and differential pressure



measuring
•
monitoring
•
analysing

SCH



- Switching range:
-1 ... +0.1 bar
-250 ... +100 mbar,
1 ... 16 mbar a 16 ... 63 bar
- Temperature:
max. 70 °C
- Material:
copper, brass,
stainless steel, NBR
- Connection: G ½, G ¼



P3

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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
Head Office:
+49(0)6192 299-0
+49(0)6192 23398
info.de@kobold.com
www.kobold.com

General Description

Mode of operation

The pressure applied in the sensor housing (1) acts on the measuring bellows (2).

Pressure changes lead to movements of the measuring bellows (2) which are transferred through a pressure pin (4) to the switching rocker (5). The switching rocker is supported on hardened pivot points (6).

As the pressure increases the switching rocker (5) moves upwards and operates the micro-switch (7). The spring (8), the initial stress of which can be changed by the setting screw (9) (switching point setting), acts as opposing force. The travelling nut (10) is moved by turning the setpoint spindle, and the initial stress of the spring (8) is changed. The screw (11) serves for the internal adjustment of the micro switch. The counterpressure spring (12) ensures stable switching behaviour, even for low setting values.

Pressure sensors

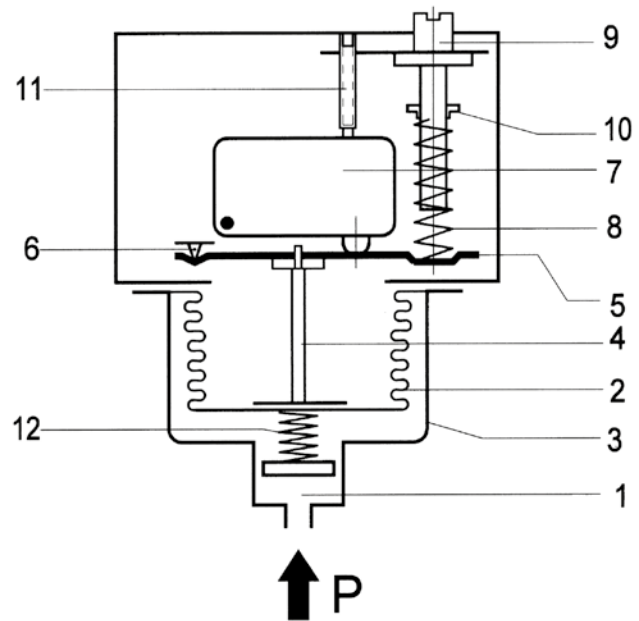
With few exceptions in the low pressure range, all pressure sensors are equipped with measuring bellows, partly made of a copper alloy but mostly in high stainless steel quality (1.4571). In comparison with the permissible values, the measuring bellows are subject to low loads and move only slightly. This results in long service life with low switching point drift and high overpressure safety. The movement of the measuring bellows is also restricted by an international stop so that the forces resulting from the overpressure cannot be transmitted to the switching mechanism.

The parts of the sensor in contact with the medium are welded together without additional materials and the sensors contain no seals. Cu bellows which are used for low pressure ranges are soldered to the sensor housing. The sensor housing and all parts in the unit in contact with the medium can also be manufactured completely in stainless steel 1.4571 (series DNS). The individual data sheets contain exact data on materials.

Pressure connection

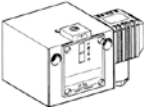
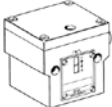
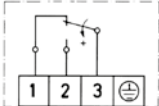
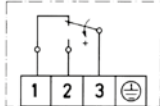
The pressure connection is designed in accordance with DIN 16288 for all pressure switches (pressure gauge connection G ½ A). They can also be connected optionally to the internal thread G ¼ in accordance with ISO 228 Part 1. Max. screw-down depth on the internal thread G ¼ = 9 mm. Differential pressure switches have two pressure connections (max. and min.) and must be connected to one internal thread G ¼ each.

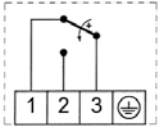
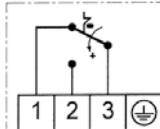
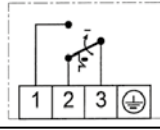
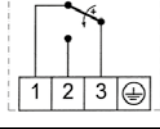
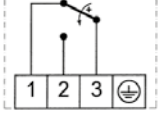
Design



- 1 = pressure connection
- 2 = measuring bellows
- 3 = sensor housing
- 4 = pressure pin
- 5 = switching rocker
- 6 = pivot points
- 7 = microswitch or other switching elements
- 8 = setpoint spring
- 9 = setting spindle (switching point setting)
- 10 = travelling nut (switching point indicator)
- 11 = adjusting screw for microswitch
- 12 = counterpressure spring



| | | |
|---|--|---|
| Technical Details | Valid for all pressure switches with microswitches of the DCM, VCM, DNM, DNS, DDC series. The technical data of the component tested units deviate partly slightly. (Please refer to model sheet) | |
| Version | Normal version Plug connection  | Terminal connection  |
| Switch housing | Aluminium die-cast GD Al Si 12 | |
| Pressure connection | G ½ external thread (pressure gauge connection) and G ¼ internal thread. Internal thread G ¼ at differential pressure switches DDCM. | |
| Switching function and connection drawing | (only for version with microswitch). Floating change-over contact. With rising pressure switching over single-pole from 3-1 to 3 - 2. | |
| |  |  |
| Switch capacity (applies only for version with microswitch) | 8 A at 250 V _{AC} 5 A at 250 V _{AC} inductive 8 A at 24 V _{DC} 0.3 A at 250 V _{DC} | 8 A at 250 V _{AC} 5 A at 250 V _{AC} inductive 8 A at 24 V _{DC} 0.3 A at 250 V _{DC} |
| Installation position | Arbitrary preferably vertical. See data sheet | |
| Protection (in vertical position) | IP 54 | IP 65 |
| EC-Type Examination Certificate Number | | |
| Electrical connection | Plug connection or terminal connection | |
| Cable entry | Pg 11 | M16 x 1.5 |
| Ambient temperature | See data sheets | |
| Switch point | Adjustable on the spindle. In switching mechanism 300 the terminal box lid must be removed. | |
| Switching difference | Adjustable or not adjustable (see model overview) | |
| Medium temperature | Max. 70 °C, temporary 85 °C | |
| | Higher medium temperatures are possible if the limit values mentioned above at the switching mechanism are ensured by suitable measures (e. g. siphon). | |
| Vacuum | All pressure switches can operate under vacuum, the device is not damaged by this. Exception: SCH-DCM 1000 | |
| Repeat accuracy of the switching points | < 1% of the working range (for pressure ranges > 1 bar) | |
| Vibration strength | Up to 4 g no noteworthy deviations. | |
| Mechanical life | With sinusoidal pressure application and room temperature, 10 x 10 ⁶ switching cycles. The expected life depends strongly upon the type of pressure application, therefore this figure can serve only as rough estimate. With pulsating pressure or pressure impacts in hydraulic systems, pressure surge reduction is recommended. | |
| Isolation values | Overvoltage category III, contamination class 3, reference surge voltage 4000 V. The conformity to DIN VDE 0110 is approved. | |
| Oil and grease-free | The parts of all pressure switches in contact with the medium are also available in oil and grease-free version. The sensors are hermetically encapsulated, they contain no seals. | |

| Option | Description | Connection diagram | Explanation |
|--------|---|--|---|
| | Normal version microswitch, single pole switching over, switching differential not adjustable |  | all pressure switches |
| 205 | Maximum limiter with manual reset device. Interlocking with increasing pressure |  | DCM025...DCM63, DNM, VCM301...VCM095, DDCM, VNS, DNS, DGM |
| 206 | Minimum limiter with manual reset device. Interlocking with falling pressure |  | DCM06...DCM63, DNM, VCM301...VCM095, DDCM, VNS, DNS, DGM |
| 213 | Gilded contacts hysteresis not adjustable Switching capacity max. 24 V _{DC} , 100 mA min. 5 V _{DC} , 2 mA |  | DCM, DNM, VCM, VNM, DDCM, VNS, DNS, DWAM, DGM |
| 301 | Terminal connection instead of plug connection protection IP 65 |  | DCM, DNM, VCM, DDCM, VNS, DNS, DGM |

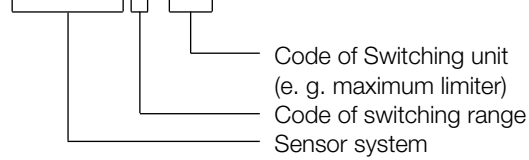


**Switch diagram
Option 217**

| | | Microswitch I (lower switch point) | | | |
|-------------------------------------|-----------------------------|------------------------------------|-------------------------|----------------------------|-------------------------|
| | | A descending, closing | B rising, closing | C descending opening | D rising, opening |
| Microswitch II (upper switch point) | 1 descending, closing | A1 | B1 | C1 | D1 |
| | 2 rising, closing | A2 | B2 | C2 | D2 |
| | 3 descending opening | A3 | B3 | C3 | D3 |
| | 4 rising, opening | A4 | B4 | C4 | D4 |

Order Example:

SCH-DCM 6 - 205



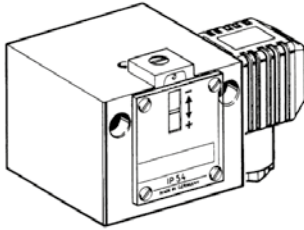
Order specification:

Pressure switch
SCH-DCM 6-205

Switch housing with switching mechanisms

The switch housings consist of high quality and seawater-resistant aluminium diecastings. Three versions are available:

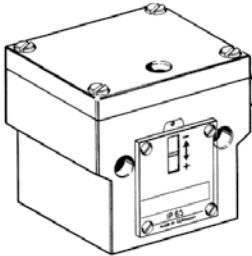
IP 54



Housing (normal version)

Plug connections to EN 175301;
Degree of protection IP 54;
Setpoint setting accessible from the outside.

IP 65



Terminal connection (option: 301)

With terminal connection box;
Degree of protection IP 65;
Setpoint setting and terminal connections accessible only after removal of the terminal box lid.

In limiter functions it is frequently necessary to retain and lock the shutdown status and to release the lock and switch on the system again only after the causes that led to the safety shutdown have been eliminated.

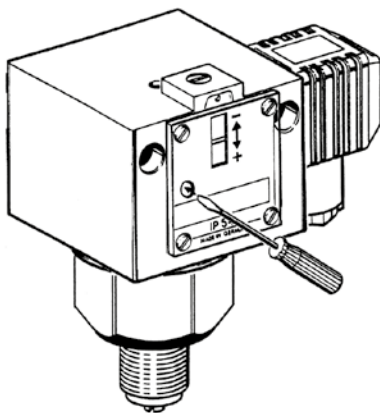
There are two possibilities for this:

1. Mechanical lock inside the pressure switch

A "bistable" microswitch is built into the limiters instead of the microswitch with automatic reset.

When the value set on the scale is reached, the microswitch switches over and remains in this position. The lock must be released by pressing the unlocking button (marked by a red dot on the scale side of the switching device). According to version, the lock can be effective with rising or falling value. Unlocking can take place only if the pressure has dropped by a certain amount or, in the case of locking, has risen back to the lower switching point.

When the pressure limiter is selected, a distinction must be made between maximum pressure and minimum pressure monitoring.

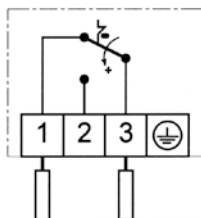


1.1 Maximum pressure limitation

Switching over and locking with rising pressure.

Option: 205

Connection to terminal 1 and 3.

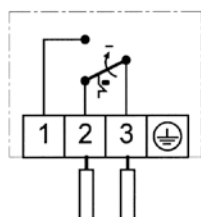


1.2 Minimum pressure limitation

Switching over and locking with falling pressure.

Option: 206

Connection to terminal 2 and 3.

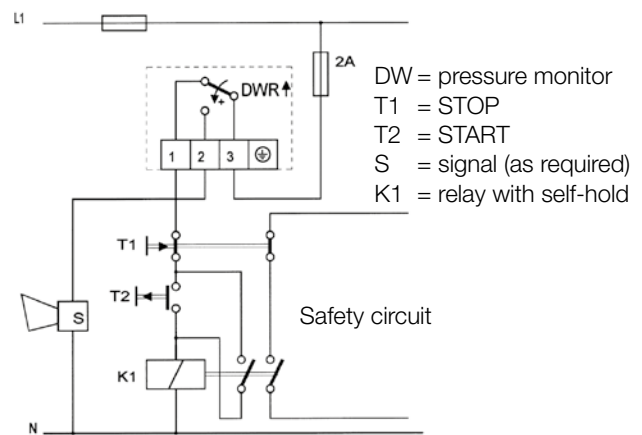


2. External electrical interlock in the switchgear cabinet (switching examples)

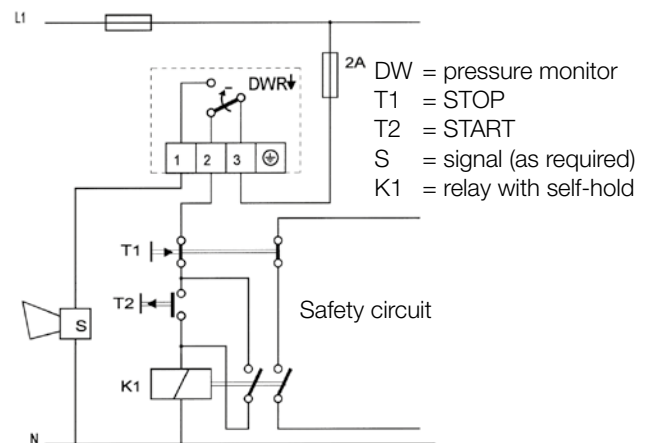
A pressure monitor (microswitch with automatic reset) can also be used as limiter if an electrical interlock is connected in series.

In pressure limitation in steam and hot water boilers, the external interlock is only permissible if it is ensured that the pressure monitor is of "special construction".

2.1 Maximum pressure limitation with external interlock



2.2 Minimum pressure limitation with external interlock



When the interlock circuit shown above is used, the requirements in accordance with DIN 57 116/VDE 0116 are fulfilled if the electrical equipment such as contactors or relays of the external interlock circuit correspond to VDE 0660 or VDE 0435 respectively.



Pressure Switches and Pressure Monitors

for overpressure for non aggressive liquid and gaseous media Model SCH-DCM

Technical Details

Pressure connection: external thread G 1/2 A (pressure gauge connection) acc. to DIN 16 288 and internal thread G 1/4 to ISO 228 part 1

Switching device: rugged housing of seawater resistant aluminium die-casting GD Al Si 12

Protection: IP 54, with vertical fitting position

Pressure sensing element:

DCM 3 ... DCM 63
metal bellows: 1.4571
sensor casing: 1.4104

DCM 025-DCM 1
diaphragm: Cu
sensor casing: Cu + Ms

DCM 4016/DCM 4025
diaphragm: NBR
sensor casing: 1.4301

DCM 1000
membrane: NBR
sensor casing: Ms

Fitting position: vertically upwards and horizontal.
DCM 4016 and 4025 vertically upwards

Max. ambient temperature at the switch unit:

-25 ... +70 °C
exception: DCM 4016, DCM 4025,
DCM 1000: -15 ... +60 °C

Max. temperature of the medium:

The maximum temperature of the medium at the pressure sensor must not exceed the allowable temperature at the switching device. Temperatures up to 85 °C are allowable for short periods. Higher temperatures of the medium are possible, provided that the upper limit at the switching device is safeguarded by suitable measures (e. g. water tube trap).

Fitting: directly in the pressure line (pressure gauge connection) or on a flat surface with 2 - off 4 mm screws

Switching pressure: adjustable externally by means of screw-driver

Switching differential: Not adjustable in the case of DCM. Externally adjustable in the case of DCMV.
For values see summary of models.

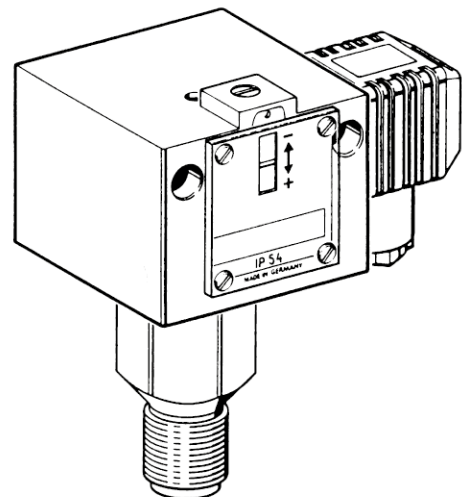
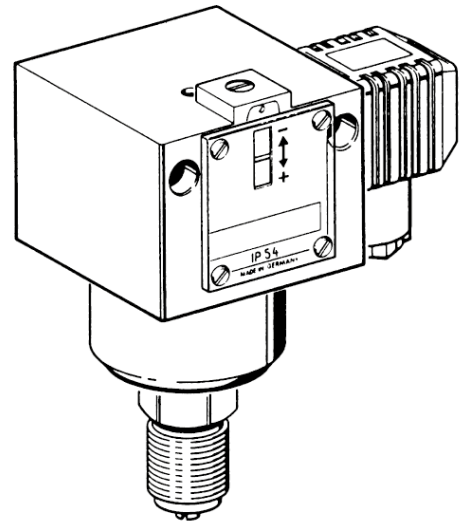
Methods of sealing: as required (may also be carried out after mounting)

Adjustment: Scale value corresponds to the lower switching point, the upper switching point is higher by the switching differential

Contact agreement: single-pole change-over switch

Switching capacity:

| | 250 V _{AC} | 250 V _{DC} | 24 V _{DC} |
|--------|---------------------|---------------------|--------------------|
| | Ω | (ind) | Ω |
| Normal | 8A | 5A | 0.3A |
| | | | 8A |





| Model | Range of adjustment | Hysteresis (Mean value) | Max. allowable pressure | Material | Dimensional drawing |
|---|---------------------|-------------------------|-------------------------|-----------------|---------------------|
| Switching difference not adjustable | | | | | |
| SCH-DCM 4016 | 1 ... 16 mbar | 2 mbar | 1 bar | NBR + 1.4301 | 1 + 11 |
| SCH-DCM 4025 | 4 ... 25 mbar | 2 mbar | 1 bar | NBR | 1 + 11 |
| SCH-DCM 1000 | 10 ... 100 mbar | 12 mbar | 10 bar | NBR + MS | 1 + 10 |
| SCH-DCM 025 | 0.04 ... 0.25 bar | 0.03 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCM 06 | 0.1 ... 0.6 bar | 0.04 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCM 1 | 0.2 ... 1.6 bar | 0.04 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCM 3 | 0.2 ... 2.5 bar | 0.1 bar | 16 bar | 1.4104 + 1.4571 | 1 + 18 |
| SCH-DCM 6 | 0.5 ... 6 bar | 0.15 bar | 16 bar | 1.4104 + 1.4571 | 1 + 18 |
| SCH-DCM 625 | 0.5 ... 6 bar | 0.25 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCM 10 | 1 ... 10 bar | 0.3 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCM 16 | 3 ... 16 bar | 0.5 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCM 25 | 4 ... 25 bar | 1 bar | 60 bar | 1.4104 + 1.4571 | 1 + 16 |
| SCH-DCM 40 | 8 ... 40 bar | 1.3 bar | 60 bar | 1.4104 + 1.4571 | 1 + 16 |
| SCH-DCM 63 | 16 ... 63 bar | 2 bar | 130 bar | 1.4104 + 1.4571 | 1 + 16 |
| SCH-DCMV 025 | 0.04 ... 0.25 bar | 0.03 ... 0.04 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCMV 1 | 0.2 ... 1.6 bar | 0.07 ... 0.55 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCMV 625 | 0.5 ... 6 bar | 0.25 ... 2 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCMV 63 | 16 ... 63 bar | 3.0 ... 10 bar | 130 bar | 1.4104 + 1.4571 | 1 + 16 |
| Switching difference adjustable | | | | | |
| SCH-DCMV 06 | 0.1 ... 0.6 bar | 0.04 ... 0.5 bar | 6 bar | Cu + Ms | 1 + 14 |
| SCH-DCMV 3 | 0.2 ... 2.5 bar | 0.15 ... 1.5 bar | 16 bar | 1.4104 + 1.4571 | 1 + 18 |
| SCH-DCMV 6 | 0.5 ... 6 bar | 0.25 ... 2.0 bar | 16 bar | 1.4104 + 1.4571 | 1 + 18 |
| SCH-DCMV 10 | 1 ... 10 bar | 0.5 ... 2.8 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCMV 16 | 3 ... 16 bar | 0.7 ... 3.5 bar | 25 bar | 1.4104 + 1.4571 | 1 + 17 |
| SCH-DCMV 25 | 4 ... 25 bar | 1.3 ... 6.0 bar | 60 bar | 1.4104 + 1.4571 | 1 + 16 |
| SCH-DCMV 40 | 8 ... 40 bar | 2.6 ... 6.6 bar | 60 bar | 1.4104 + 1.4571 | 1 + 16 |
| For smaller pressure ranges see also VCM, DGM, HCD and PSB data sheets. Options see data sheet switch units / optional function / connection diagrams. | | | | | |

Order specification

Pressure switch with plug connection, housing of aluminium die-casting

adjustment range from ... to ... bar / mbar

Switching differential adjustable / none adjustable

Model...

Technical Details

Pressure connection: external thread G 1/2 A (pressure gauge connection) acc. to DIN 16 288 and internal thread G 1/4 to ISO 228 part 1

Switching device: rugged housing of seawater resistant aluminium die-casting GD Al Si 12

Protection: IP54, with vertical fitting position

Pressure sensing element: sensor casing: 1.4104
pressure bellows: 1.4571

Fitting position: vertically upwards and horizontal

Max. ambient temperature at the switch unit: -25 ... +70 °C

Max. temperature of the medium: The maximum temperature of the medium at the pressure sensor must not exceed the allowable temperature at the switching device. Temperatures up to 85 °C are allowable for short periods. Higher temperatures of the medium are possible, provided that the upper limit at the switching device is safeguarded by suitable measures (e. g. water tube trap).

Fitting: directly in the pressure line (pressure gauge connection) or on a flat surface with 2 - off 4 mm screws

Switching pressure: adjustable externally by means of screw-driver

Switching differential: DNM: not adjustable
DNMV: externally adjustable

Methods of sealing: as required (may also be carried out after mounting)

Adjustment: Scale value corresponds to the lower switching point, the upper switching point is higher by the switching differential.

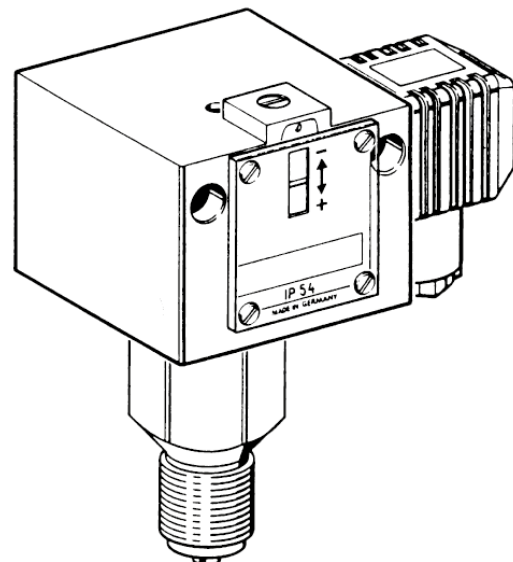
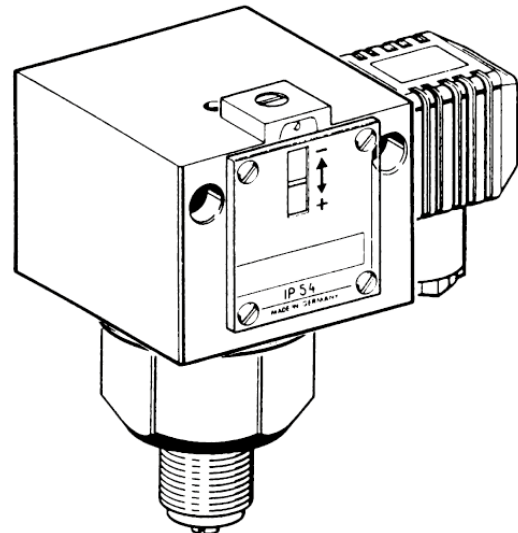
Contact agreement: single-pole change-over switch

Switching capacity:

| | 250 V _{AC} | | 250 V _{DC} | 24 V _{DC} |
|--------|---------------------|-------|---------------------|--------------------|
| | Ω | (ind) | Ω | Ω |
| Normal | 8A | 5A | 0.3A | 8A |

All parts of the SCH-DNM series of pressure switches which come into contact with the medium are made of stainless steel. The pressure sensor is welded by the most up-to-date method without added material.

The aluminium switch housing has a high resistance to the corrosive effects of the ambient atmosphere.





| Model | Range of adjustment | Hysteresis (Mean value) | Max. allowable pressure | Dimensional drawing |
|--|---------------------|-------------------------|-------------------------|---------------------|
| Switching difference not adjustable | | | | |
| SCH-DNM 6 | 0.5... 6 bar | 0.15 bar | 16 bar | 1 + 15 |
| SCH-DNM 10 | 1 ... 10 bar | 0.3 bar | 16 bar | 1 + 15 |
| Switching difference adjustable | | | | |
| SCH-DNMV 16 | 3... 16 bar | 0.7 - 3.5 bar | 25 bar | 1 + 15 |

Options see data sheet switch units / optional function /connection diagrams.

Technical Details

Pressure connection: external thread G 1/2 A (pressure gauge connection) acc. to DIN 16 288 and internal thread G 1/4 to ISO 228 part 1

Switching device: rugged housing of seawater resistant aluminium die-casting GD Al Si 12

Protection: IP54, with vertical fitting position

Pressure sensing element:
 VNM111 and VNM301
 metal bellows: 1.4571
 sensor casing: 1.4104
 VCM095, 101 and 301:
 metal bellows: Cu Zn
 sensor casing: Cu Zn
 VCM4156
 diaphragm: NBR
 sensor casing: 1.4301

Fitting position: vertically upwards and horizontal VCM 4156 vertically upwards

Max. ambient temp. at the switch unit: -25 ... +70 °C

Max. temperature of the medium: The maximum temperature of the medium at the pressure sensor must not exceed the allowable temperature at the switching device. Temperatures up to 85 °C are allowable for short periods. Higher temperatures of the medium are possible, provided that the upper limit at the switching device is safeguarded by suitable measures (e. g. water tube trap).

Fitting: Directly in the pressure line (pressure gauge connection) or on a flat surface with 2 - off 4 mm screws.

Switching pressure: adjustable externally by means of screw-driver

Switching differential: not adjustable in the case of models VCM, VNM and model VNV externally adjustable in the case of model VCMV for values see summary of models

Methods of sealing: as required (may also be carried out after mounting)

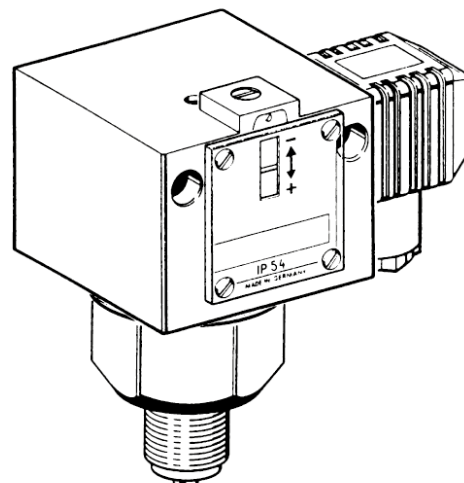
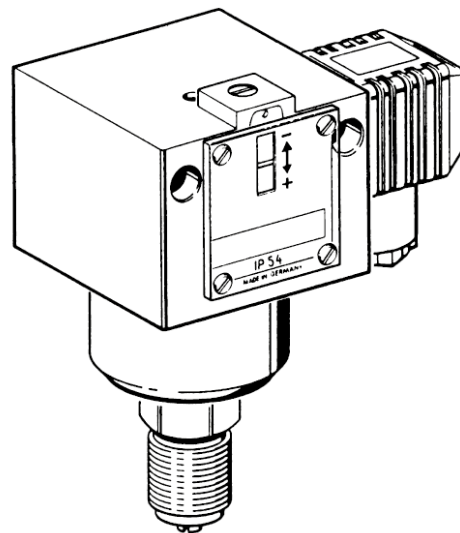
Adjustment: Scale value corresponds to the lower switching point, the upper switching point is higher by the switching differential.

Contact agreement: single-pole change-over switch

Switching capacity:

| | | | |
|--------|---------------------|---------------------|--------------------|
| | 250 V _{AC} | 250 V _{DC} | 24 V _{DC} |
| | Ω | (ind) | Ω |
| Normal | 8A | 5A | 0.3A 8A |

The Negative Pressure Switches detect the pressure difference relative to the atmospheric pressure. All data on switching pressure ranges and therefore also the scale divisions on the switch units are to be understood at the difference in pressure between the atmospheric pressure at any one time and the set switching pressure. The "zero" reference point on the scale of the unit corresponds to the atmospheric pressure at the time. The minus sign «-» by the indicated pressure stand for under-pressure below the respective atmospheric pressure.





| Model | Range of adjustment | Hysteresis (Mean value) | Max. allowable pressure | Dimensional drawing |
|--|---------------------|-------------------------|-------------------------|---------------------|
| Switching difference not adjustable | | | | |
| SCH-VCM 4156 | -15...+6 mbar | 2 mbar | 1 bar | 1 + 11 |
| SCH-VCM 301 | -250...+100 mbar | 25 mbar | 1.5 bar | 1 + 13 |
| SCH-VNM 301 | -250...+100 mbar | 45 mbar | 3 bar | 1 + 15 |
| SCH-VCM 101 | -1*...+0.1 bar | 45 mbar | 3 bar | 1 + 14 |
| SCH-VCM 095 | -0.9...+0.5 bar | 50 mbar | 3 bar | 1 + 14 |
| SCH-VNM 111 | -1*...+0.1 bar | 50 mbar | 6 bar | 1 + 15 |
| SCH-VCMV 101 | -1*...+0.1 bar | 80...350 mbar | 3 bar | 1 + 14 |
| SCH-VCMV 095 | -0.9...+0.5 bar | 90...400 mbar | 3 bar | 1 + 14 |

* In the case of very high vacuum, close to the negative pressure of -1 bar which is only theoretically possible, the switch can be adjusted only with reservations on account of the special conditions of vacuum technology. The pressure switch itself however, will not be damaged at maximum negative pressure.

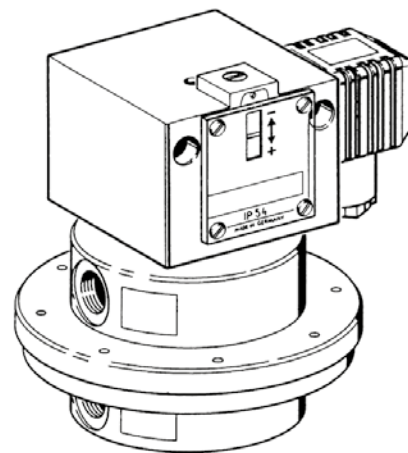
Options see data sheet switch units / optional function /connection diagrams.
For small pressure ranges see HCD data sheet.

Technical Details

- Pressure connection: internal thread G 1/4
- Switching device: rugged housing of seawater resistant aluminium die-casting GD Al Si 12
- Protection: IP 54, with vertical fitting position
- Pressure sensing element: DDCM 014-16:
pressure bellows: 1.4571
sensor casing: 1.4305
DDCM 252-6002:
diaphragm: NBR.
sensor casing: aluminium
- Fitting position: optional, preferably vertically upwards
- Max. ambient temperature at the switch unit: -25...+70 °C
- Max. temperature of the medium: The maximum temperature of the medium at the pressure sensor must not exceed the allowable temperature at the switching device. Temperatures up to 85 °C are allowable for short periods. Higher temperatures of the medium are possible, provided that the upper limit at the switching device is safeguarded by suitable measures (e. g. water tube trap).
- Fitting: directly in the pressure line (pressure gauge connection) or on a flat surface with 2 - off 4 mm screws
S (-) = lower pressure
P (+) = higher pressure
- Switching pressure: adjustable externally by means of screw-driver
- Switching differential: not adjustable, for values see summary of model
- Methods of sealing: as required (may also be carried out after mounting)
- Adjustment: Scale value corresponds to the lower switching point, the upper switching point is higher by the switching differential.
- Scale: models 252-6002 without graduation, adjustment with a pressure gauge
- Switching capacity:

| | 250 V _{AC} | | 250 V _{DC} | 24 V _{DC} |
|--------|---------------------|-------|---------------------|--------------------|
| | Ω | (ind) | Ω | Ω |
| Normal | 8A | 5A | 0.3A | 8A |

The SCH-DDCM differential pressure monitors are suitable for monitoring and controlling differential pressures, flow monitoring and automatic checking of filter plants. A double chamber system with stainless steel bellows resp. NBR diaphragm accurately detects the difference between the two applied pressures. The differential pressure to be monitored is infinitely adjustable within the ranges mentioned in the summary of models. The settings relate to the lower switching point (in the case of falling differential pressure); the upper switching point (in the case of rising differential pressure) is the value of the switching differential higher. All differential pressure control switches can also be used in the negative pressure area. Every pressure switch has two pressure connections.

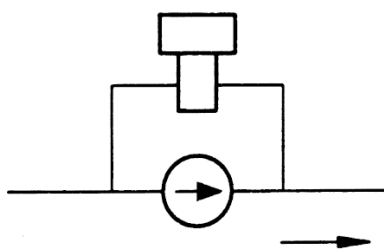


| Model | Range of adjustment | Hysteresis (Mean value) | Max. allowable pressure | Dimensional drawing |
|-------------------------------------|---------------------|-------------------------|-------------------------|---------------------|
| Switching difference not adjustable | | | | |
| SCH-DDCM 252* | 4 ... 25 mbar | 2 mbar | 0.5 bar | 1 + 20 |
| SCH-DDCM 662* | 10 ... 60 mbar | 15 mbar | 1.5 bar | 1 + 20 |
| SCH-DDCM 1602* | 20 ... 160 mbar | 20 mbar | 3 bar | 1 + 20 |
| SCH-DDCM 6002* | 100 ... 600 mbar | 35 mbar | 3 bar | 1 + 20 |
| SCH-DDCM 014* | -0.1 ... 0.4 bar | 0.15 bar | 15 bar | 1 + 21 |
| SCH-DDCM 1 | 0.2 ... 1.6 bar | 0.13 bar | 15 bar | 1 + 21 |
| SCH-DDCM 4* | 1 ... 4 bar | 0.2 bar | 25 bar | 1 + 21 |
| SCH-DDCM 6 | 0.5 ... 6 bar | 0.2 bar | 15 bar | 1 + 21 |
| SCH-DDCM 16 | 3 ... 16 bar | 0.6 bar | 25 bar | 1 + 21 |

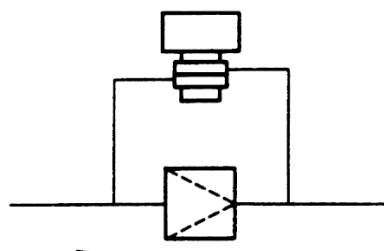
* Without graduation, only +/- scale

Options see data sheet switch units / optional function / connection diagrams.
For small pressure ranges see HCD data sheet.

Example for application



Pump monitoring



Filter monitoring

Order specification

Differential pressure monitor with plug connection, casing of die-cast aluminium
Sensor casing of stainless steel / aluminium
Range of adjustment ...to ... bar / mbar
Model ...



Pressure Switches with Stainless Steel Sensor System
optionally housing with surface protection Model SCH-DNS

Technical Details

Pressure connection: external thread G 1/2 A (pressure gauge connection) acc. to DIN 16288 and internal thread G 1/4 to ISO 228 part 1

Switching device: rugged housing of seawater resistant aluminium die-casting GD Al Si 12

Protection: IP54, with vertical fitting position

Pressure sensing element: pressure bellow, and all parts connected to media: X 6 Cr Ni Mo Ti 17 122 material No. 1.4571

Fitting position: vertically upwards and horizontal

Max. ambient temperature at the switch unit: -25 ... +70 °C

Max. temperature of the medium: The maximum temperature of the medium at the pressure sensor must not exceed the allowable temperature at the switching device. Temperatures up to 85 °C are allowable for short periods. Higher temperatures of the medium are possible, provided that the upper limit at the switching device is safeguarded by suitable measures (e. g. water tube trap).

Fitting: directly in the pressure line (pressure gauge connection) or on a flat surface with 2 - off 4 mm screws

Switching differential: for values see summary of models

Methods of sealing: as required (may also be carried out after mounting)

Adjustment: Scale value corresponds to the lower switching point, the upper switching point is higher by the switching differential

Contact agreement: single-pole change-over switch

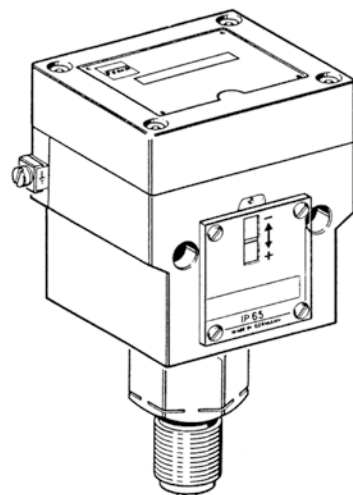
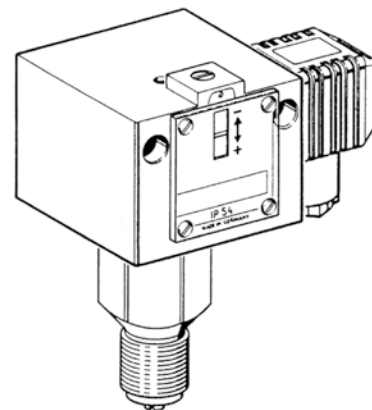
Switching capacity:

| | 250 V _{AC} | | 250 V _{DC} | 24 V _{DC} |
|--------|---------------------|-------|---------------------|--------------------|
| | Ω | (ind) | Ω | Ω |
| Normal | 8A | 5A | 0.3A | 8A |

Plastic coating: The die-cast aluminum housing is chromed and coated with chemical resistant plastic. This coating was tested for 20 days with a 3% NaCl solution. During this test, the temperature was changed 30 times between +10...80 °C. The quality of the coating was not changed during this test.

The pressure switches of series DNS are suitable for monitoring and controlling pressures in devices of the chemical industry and in the process engineering as well as wherever the pressure of aggressive liquids and gases has to be monitored.

All component parts of the sensor system are made of stainless steel (1.4571) and are welded by using the latest techniques without additional materials. The pressure sensor is hermetically encapsulated and does not contain any seal material.





| Model | Range of adjustment | Hysteresis (Mean value) | Max. allowable pressure | Dimensional drawing |
|--|---------------------|-------------------------|-------------------------|---------------------|
| Switching difference not adjustable | | | | |
| SCH-VNS 301-201 | -250...+100 mbar | 45 mbar | 3 bar | 1 + 15 |
| SCH-VNS 111-201 | -1*...+ 0.1 bar | 50 mbar | 6 bar | 1 + 15 |
| SCH-DNS 06-201 | 0.1 ... 0.6 bar | 40 mbar | 6 bar | 1 + 15 |
| SCH-DNS 1-201 | 0.2 ... 1.6 bar | 60 mbar | 6 bar | 1 + 15 |
| SCH-DNS 3-201 | 0.2 ... 2.5 bar | 0,1 bar | 16 bar | 1 + 18 |
| SCH-DNS 6-201 | 0.5 ... 6 bar | 0.15 bar | 16 bar | 1 + 18 |
| SCH-DNS 10-201 | 1 ... 10 bar | 0.3 bar | 16 bar | 1 + 16 |
| SCH-DNS 16-201 | 3 ... 16 bar | 0.5 bar | 25 bar | 1 + 16 |
| Housing with surface protection | | | | |
| SCH-DNS 025-351 | 0.04 ... 0.25 bar | 30 mbar | 6 bar | 2 + 15 |
| SCH-DNS 06-351 | 0.1 ... 0.6 bar | 40 mbar | 6 bar | 2 + 15 |
| SCH-DNS 1-351 | 0.2 ... 1.6 bar | 60 mbar | 6 bar | 2 + 15 |
| SCH-DNS 3-351 | 0.2 ... 2.5 bar | 0.1 bar | 16 bar | 2 + 18 |
| SCH-DNS 6-351 | 0.5 ... 6 bar | 0.15 bar | 16 bar | 2 + 18 |
| SCH-DNS 10-351 | 1 ... 10 bar | 0.3 bar | 16 bar | 2 + 16 |

* In the case of very high vacuum, close to the negative pressure of -1 bar which is only theoretically possible, the switch can be adjusted only with reservations on account of the special conditions of vacuum technology. The pressure switch itself however, will not be damaged at maximum negative pressure.

Options see data sheet switch units / optional function /connection diagrams



Technical Details

Pressure connection: external thread G ½ A acc. to DIN ISO 228 Part 1 (permissible only with flat gasket) and internal thread G ¼ acc. to ISO 228 Part 1 (permissible up to 4 bar)

Switching device: sea water resistant aluminium die casting GD Al Si 12

Protection: IP54, for vertical installation position

Materials of the pressure probe: see summary of models

Ambient temperature: - 25 ... + 60 °C
At ambient temperatures below 0 °C, ensure that no condensation water can rise on the inside of the sensor and in the switching device.

Max. permissible operating pressure: see summary of models

Fitting: either directly on the pipeline or with 2 screws 4 mm Ø on the wall surface

Fitting position: vertical upwards or horizontal

Adjustment: Continuously adjustable by means of screw-driver on the adjusting spindle.
The set switching difference is visible in the scale window.

Possibility of lead sealing: on request (can also be fitted subsequently)

Switching differences: Largely independent of the set switching pressure. Not adjustable. For values see summary of models.

Adjustment: Scale value corresponds to the upper switching point, the lower switching point is lower by the switching difference.

Switching capacity:

| | | | | |
|--------|---------------------|-------|---------------------|--------------------|
| | 250 V _{AC} | | 250 V _{DC} | 24 V _{DC} |
| | Ω | (ind) | Ω | Ω |
| Normal | 8A | 5A | 0.3A | 8A |

Pressure measuring connection: It must be ensured that a pressure measuring connection is available at a suitable place on the gas appliance.

| Model | Range of adjustment | Hysteresis (Mean value) | Max. operating pressure | Materials in contact with medium | Dimensional drawing |
|--|---------------------|-------------------------|-------------------------|----------------------------------|---------------------|
| Switching difference not adjustable | | | | | |
| SCH-DGM 306 | 15 ... 60 mbar | 6 mbar | 0.8 bar | Cu + Ms | 1 + 13 |
| SCH-DGM 310 | 20 ... 100 mbar | 7 mbar | 0.8 bar | Cu + Ms | 1 + 13 |
| SCH-DGM 325 | 40 ... 250 mbar | 10 mbar | 0.8 bar | Cu + Ms | 1 + 13 |
| SCH-DGM 06 | 100 ... 600 mbar | 25 mbar | 2 bar | Cu + Ms | 1 + 14 |
| SCH-DGM 1 | 0.2 ... 1.6 bar | 40 mbar | 3 bar | Cu + Ms | 1 + 14 |
| SCH-DGM 506 | 15 ... 60 mbar | 8 mbar | 5 bar | 1.4104 | 1 + 12 |
| SCH-DGM 516 | 40 ... 160 mbar | 12 mbar | 5 bar | 1.4104 | 1 + 12 |
| SCH-DGM 525 | 100 ... 250 mbar | 20 mbar | 5 bar | 1.4104 | 1 + 12 |



Applications

Adjustable differential pressure switch for monitoring over-pressure, vacuum and differential pressure of air or other non-combustible, non-aggressive gases. Possible fields of application include:

- Monitoring air filters and ventilators
- Monitoring industrial cooling-air circuits
- Overheating protection for fan heaters
- Monitoring flows in ventilation ducts
- Controlling air and fire-protection flaps
- Frost protection for heat exchangers

Versions

With this pressure switch the switching pressure can be adjusted without a pressure gauge using a scaled adjustment knob. The switching differential can also be adjusted with a screwdriver.

| Type | Adjustment range for upper switching pressure [Pascal] | Switching differential set to [Pascal] | Tolerance for upper and lower switching pressure |
|--------------|--|--|--|
| SCH-PSB-0300 | 20 ... 300 | 10 | ±15% |
| SCH-PSB-0500 | 50 ... 500 | 20 | ±15% |
| SCH-PSB-1000 | 200 ... 1000 | 100 | ±15% |

Switching pressure specifications apply to vertical installation which is also the recommended position with pressure-pipe connections pointing downwards. If the switches are installed horizontally with AMP connection terminals uppermost, the switching values are approximately 20 Pa higher.

Technical Details

Maximum operating pressure: 10 kPa for all pressure ranges
 Medium: air, non-combustible and non-aggressive gases

Temperature range


Medium and ambient temperature: -20 °C ... +70 °C (limited from +85 °C to +70 °C due to PVC-hose)
 Storage temperature: -40 °C ... +70 °C (limited from +85 °C to +70 °C due to PVC-hose)

Diaphragm material: silicone, tempered at 200 °C ge-tempert, free of gas emissions

Pressure connections: 2 plastic pipe connection pieces (P1 and P2), external diameter 6.0 mm:
 P1 for connection to higher pressure (marked +);
 P2 for connection to lower pressure (marked -)

Housing materials

Switch body: PA 6.6

Cover: PS
 Weight: 150 g
 Mechanical working life: over 10⁶ switching operations.
 Electrical rating: max. 1.0 A (0.4 A) / 250 V_{AC}
 Electrical connections: AMP flat plug 6.3x0.8 mm acc. to DIN 46244 or push-on screw terminals. Cable conduit with cable strain relief.
 Cable entry: cap nut conduit AF20
 Mounting: with fastening lugs
 Arrangement of contacts:  1 Break contact
 2 Operating contact
 3 Power supply line
 Protection: IP 54

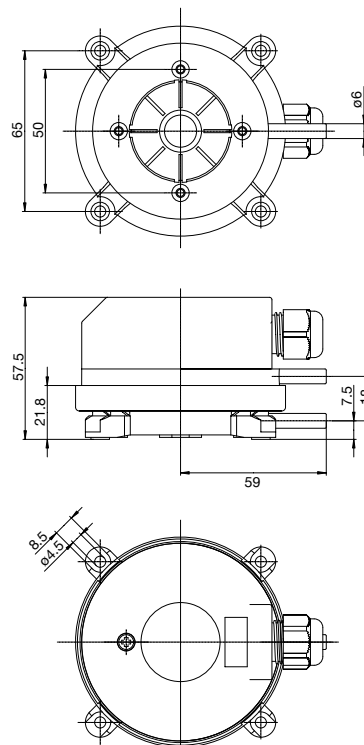
Order Details (Example: SCH-PSB-0300)

| Model | Pressure ranges [Pascal] |
|----------|--------------------------|
| SCH-PSB- | ... 0300 = 20 ... 300 |
| | ... 0500 = 50 ... 500 |
| | ... 1000 = 200 ... 1000 |

Accessories included in scope of delivery

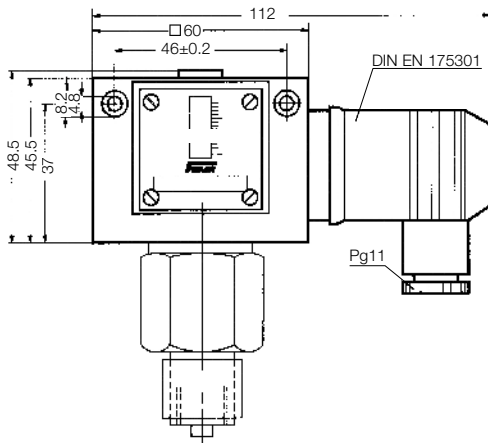
2 m PVC hose and 2 plastic tubes made of ABS
 Set consisting of three push-on screw terminals

Dimensions [mm]

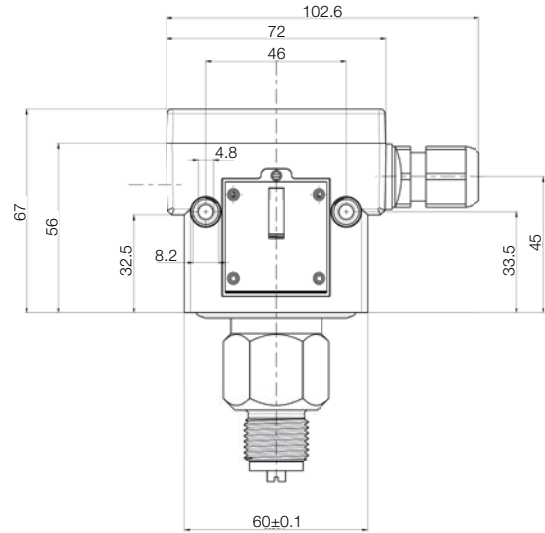


Dimensions of Switch Housings [mm]

1 Standard housing

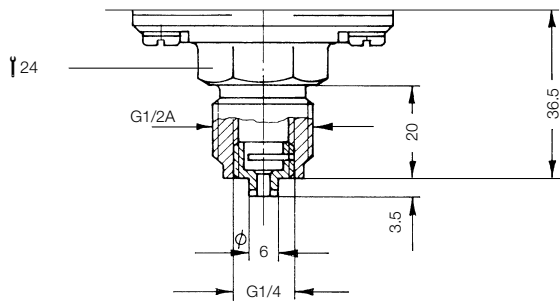


2 Terminal connection housing

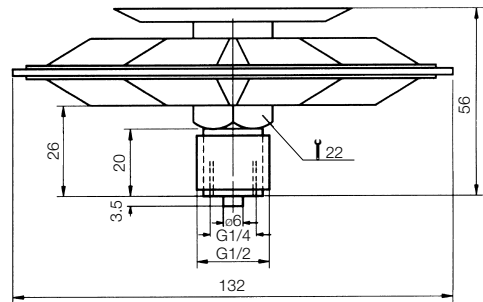


Dimensions of Pressure Sensors [mm]

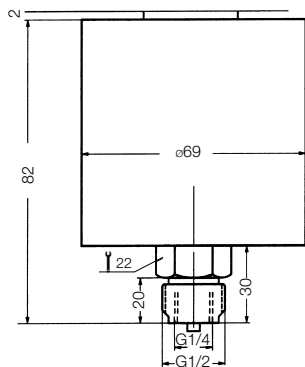
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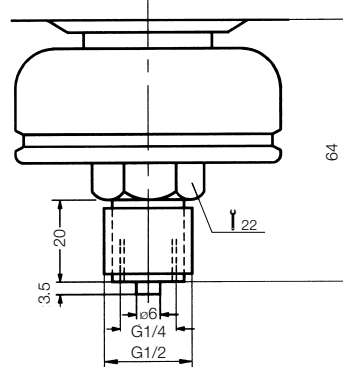
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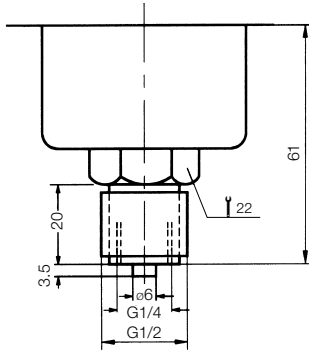
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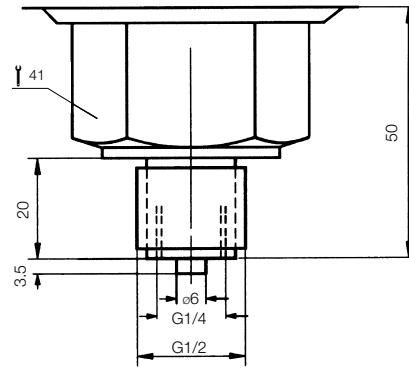
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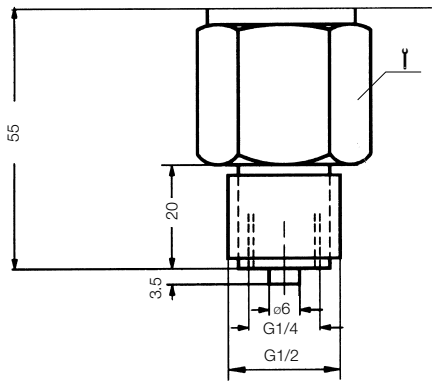
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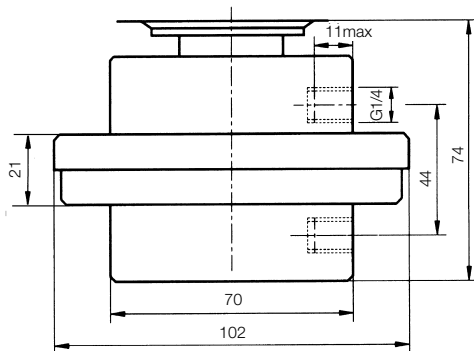


16-19

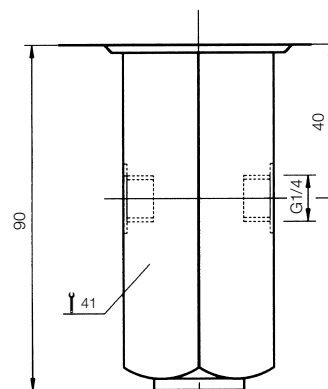


| Dimensional drawing | Y |
|---------------------|----|
| 16 | 22 |
| 17 | 24 |
| 18 | 30 |
| 19 | 32 |

20



21



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 Tél: ROUEN 02 35 59 62 50 / CAEN 02 31 35 76 45
www.corame.fr info@corame.fr