NORGREN HERION

OBSOLETE DOCUMENT
Technical Reference Only

Differential Pressure Switches Series 7DD

Bellows actuated
For aggressive gaseous and liquid fluids

- **Microswitch with gold plated contacts**
- **High accuracy (max. scattering < 1,5%)**
- **Excellent sealing properties (better than < 10^{-7} mbar · l · s^{-1})**
- **Large temperature range**

Technical data

Differential pressure switch for aggressive gases and liquids

Operating viscosity:
Up to 1000 mm^2/s

Repeatability:
± 1 %

Switching element:
Microswitch with gold plated contacts

Degree of protection:
IP 65

Ambient temperature:
- 10 to + 80 °C

Fluid temperature:
- 20 to + 100 °C

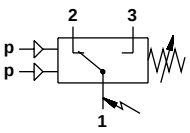
Max. temperature at switching element:
+ 80 °C max.

Mounting position:
Optional

Max. allowable vibrations:
4 g max. (sinusoidal)

Ordering example

Differential pressure switch,
operating pressure 7 bar,
Differential pressure 7 bar,
fixed hysteresis,
Type: **0819511**



Switching function:
Micro switch SPDT
Terminals 1 – 3: Contacts close on rising pressure,
Terminals 1 – 2: Contacts open on rising pressure.

Other versions available on request

– Weatherproof design
– In protection class (Ex)d 3n G5

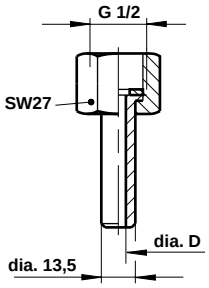
General information – Switching pressure difference not adjustable

Type	Adjustable range of differential pressure 1) $p_{vu\ min}$ ... $p_{vo\ max}$ (bar)	Switching pressure difference (bar) Lower range	Upper range	Working pressure range 2) (bar)	Max. allowable pressure 3) (bar)	Switching cycles per minute	Pressure sensor materials Housing	Sealing	Other materials	Connection External thread	Total weight (kg)	Dimen-sional drawing No.
0819111	0.2 ... 1	0.25	0.4	0.5 ... 16	20	10	St. st. 1.4305	St. st. 1.4401	St. st. 1.4301	G 1/2	1.10	01
0819211	0.2 ... 1.6	0.25	0.4	0.5 ... 16	20	10					1.10	01
0819311	0.25 ... 2.5	0.3	0.5	0.5 ... 16	20	10					1.10	01
0819411	0.3 ... 4	0.2	0.6	0.5 ... 16	20	10					1.10	01
0819511	0.5 ... 6	0.6	1	1 ... 25	30	10	St. st. 1.4305	St. st. 1.4401	St. st. 1.4301	G 1/2	1.05	02
0819611	0.5 ... 10	0.7	1.2	1 ... 25	30	10					1.05	02
0819711	0.5 ... 16	0.8	1.4	1 ... 25	30	10					1.05	02
0819716	1.0 ... 30	0.8	2	4 ... 63	70	10					1.05	03

1) The differential pressure is the pressure difference which exists in both pressure sensing elements during operation.
2) The working pressure range indicates the required minimum pressure and the operative load of the pressure sensor. Reference pressure is the atmospheric pressure.
3) Even short pressure peaks must no exceed this value (= max. test pressure).

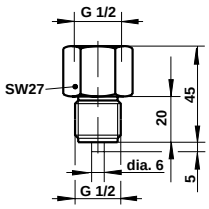
Accessoires

Screw cap
G 1/2
Seal and welding tube (St. st. 1.4301)
Dia. = 6.2 mm / Type **0550145**
Dia. = 8.2 mm / Type **0579516**



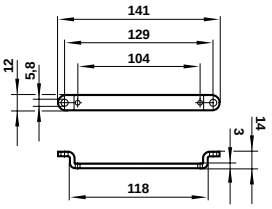
Surge damper
G 1/2
(St. st. 1.4305)

Type: **0551894**



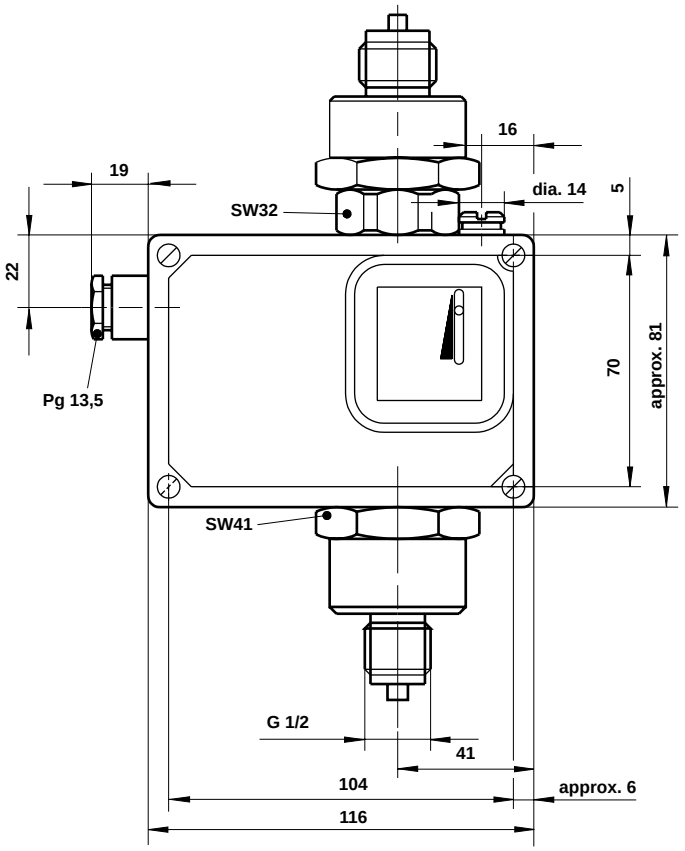
7 D-mounting support
(2 brackets and
4 screws)

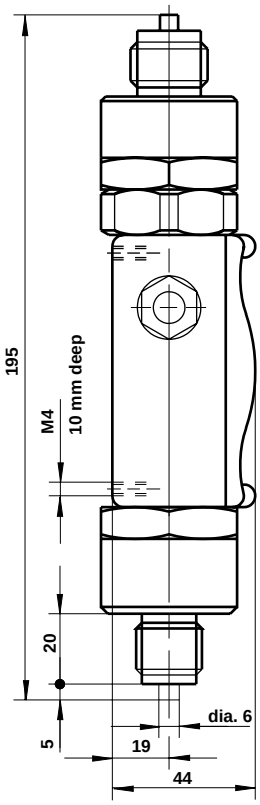
Type **0574772**



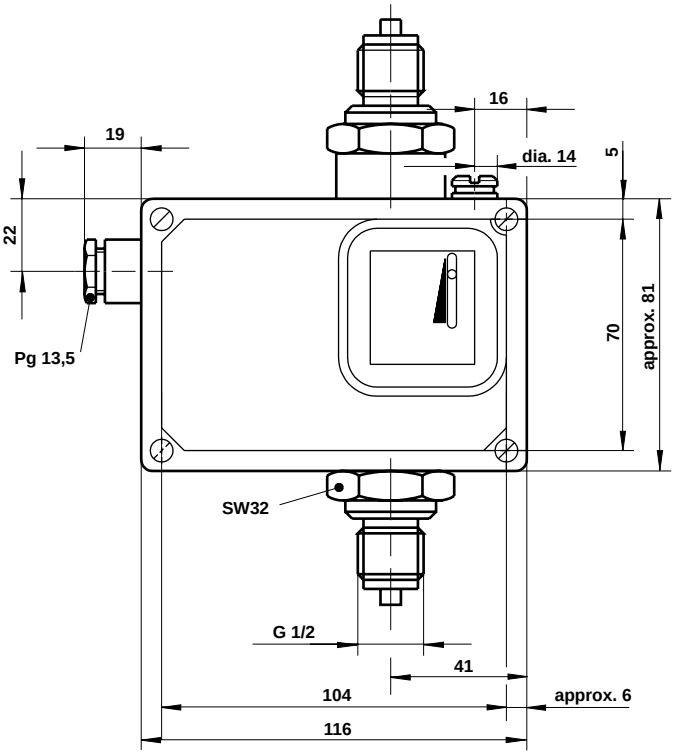
Dimensional drawings

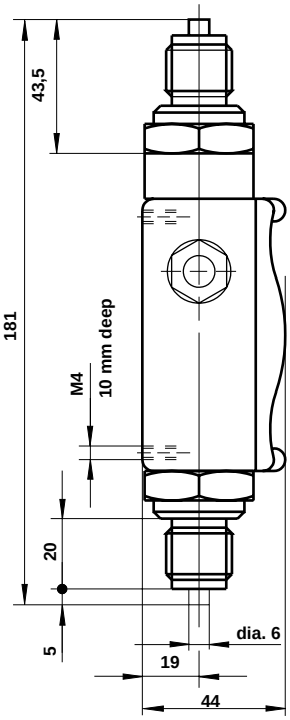
01





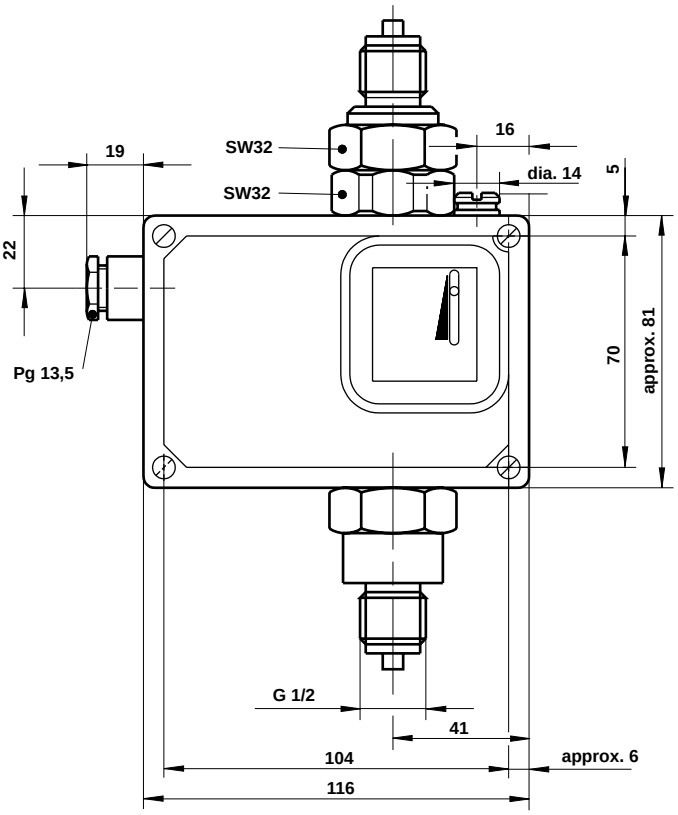
02

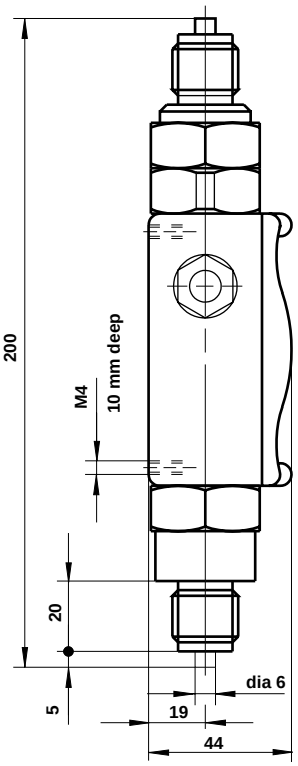




Dimensional drawing

03





Switch selection and mounting instructions

The switching points should normally be in about the middle of the adjustable range.

Do not exceed electrical ratings.

Electrical connection by a Pg 13.5 cable gland, in accordance with local regulations. For outdoor installation sufficient protection has to be provided for. Critical conditions are: Aggressiveness of air, high or low temperatures, drastic changes in temperature, solar radiation, penetration of water.

Setting of the switching points

Use differential spindle to set the upper or lower switching point, the opposite one is determined by the fixed switching pressure difference.
Turning the spindle anticlockwise shifts both switching points upwards.

Example 1:

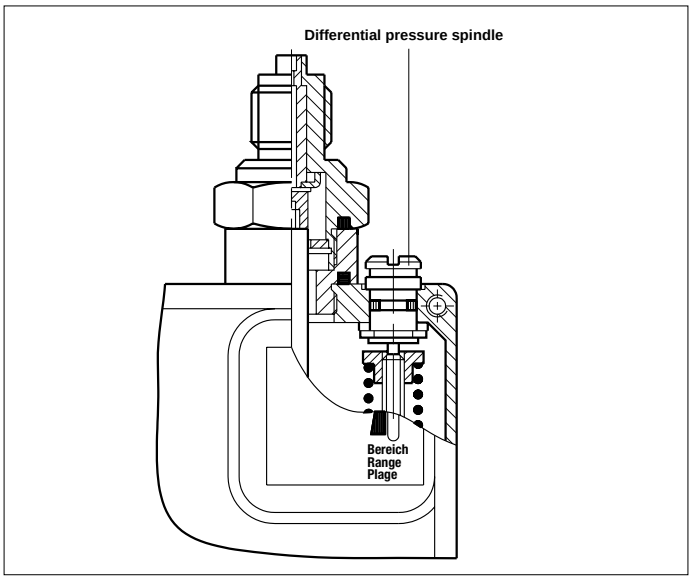
Required switching point:
2 bar with differential pressure rising (upper switching point)

Setting:
a) Set differential pressure of 2 bar between connection »+« for the higher pressure level (lower pressure sensor) and connection »–« for the lower pressure level (upper pressure sensor)
b) Tighten differential pressure spring until in stalled microswitch trips, then slowly release the tension until microswitch switches back to its normal position. Now the upper switching point with the required switching pressure of 2 bar has been set. The lower switching point is determined by the fixed switching pressure difference: Supposing the switching pressure difference is 0.25 bar, the lower switching point is 1.75 bar.

Example 2:

Required switching point:
2 bar with differential pressure falling (lower switching-point)

Setting:
a) Tighten differential pressure spring until in stalled microswitch trips. This is the lower switching point of 2 bar. The upper one is determined by the fixes pressure difference: Supposing the switching pressure difference is 0.25 bar, the upper switching point is 2.25 bar.Use pressure gauge for precise setting (a pressure switch – even if provided with a scale – is not a maesuring instrument). Switches can be adjusted even during operation.



To set precise switching points a pressure gauge is required. (The pressure switch is a switching and regulating device and not a measuring instrument - even if it has a scale to assist in the setting).
The setting can be changed at aby time, even during operation.
Differential pressure and differential spindle are provided with a releasable detend; if desired, switch can also be lead sealed.

Making and/or breaking capacity / Change-over switch with gold-plated contacts

Type of current	Type of load	Voltage U_S (V)			
		24	60	110	230
		Make and break current I (A)			
AC	Resistive load	15	15	15	15
AC	Inductive load, cos φ ≈ 0.7	4	2.5	1.5	0.9
AC	Inductive load, spark quenching with RC-link	6	4	2.5	1.5
DC	Resistive load	2	0.9	0.45	0.2
DC	Inductive load, L/R ≈ 10 ms	1	0.3	0.09	0.02
DC	Inductive load, spark quenching with diode	1.5	0.7	0.35	0.15

Reference number of switchings: 60/min.
Reference temperature + 30 °C
(with a reference temperature of + 70 °C, Imax corresponds to 50% of the tabulated values only).

Contact-life appr. 1 x 10^6 switching cycles at max. current (at 50% of max. current, contact life is appr. 3 times as long).

Mechanical life appr. 5 x 10^6 switching cycles.

For non-aggressive atmosphere, which in particular does not contain any sulphur, the following limits are valid:

Microswitch with standard silver contacts:
V_{min} appr. 8 ... 12 V, I_{min} appr. 10 mA,
Maximum values acc. to table above.

Microswitch with gold-plated contacts:
V_{min} and I_{min}: No lower limit Sensible upper limit:
V_{max} appr. 48 V, I_{max} appr. 20 mA; (for higher values silver spring contacts are completely sufficient).

Creepage and air paths correspond to insulation group B according to VDE Reg. 0110 (except contact clearence of microswitch).

Spark quenching (direct current):

1. Diode in parallel to inductive load Make sure polarity is correct when making connections.

   Dimensioning of quenching diode (rectifier):
   Rated voltage of diode $V_D \geq 1.4 \times V_{Term.}$
   Rated current of diode $I_{Rated} \geq I_{load}$
   Choose quick switching diode (recovery trr ≤ 200 ns).

2. RC-link in parallel to load (or in parallel to switching contact). Suited for direct and alternating current.

Ratings: R in [Ω] ≈ 0.2 · R_{Load} in [Ω]
C in [µF] ≈ I_{Load} in [A]