

**Microswitch with gold plated contacts  
(intrinsically safe operation)**

**Electrical connection: connector  
acc. to DIN EN 175301-803 (form A)  
or M20x1,5 (DIN 46320)**



### Technical data

Medium:

For neutral, aggressive, non-inflammable gases  
and fluids

Fluid connection:

G1/2

Operating pressure range:

-1 ... 100 bar

Temperature:

Fluid	Ambient
-10* ... +100°C	-25* ... +80°C

\*Please contact our technical service for use below +2°C.

Viscosity:

1000 mm<sup>2</sup>/s max.

Repeatability:

±1% of final value

(depending on regulating pressure)

Degree of protection (acc. to DIN 40050):

IP65

Mounting position:

Optional

Shock-/vibrations (to avoid if possible):

4 g max. (sinusoidal)/5 Hz max.

Sealing:

≤10<sup>-7</sup> mbar · l · s<sup>-1</sup>

Pulsation:

Not permitted

Switching cycles:

Max. 20/min.

### Materials:

Housing: aluminium diecast

Sensor: stainless steel

Sealing: stainless steel-bellows

### Ordering information

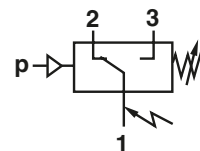
See page 2

### Alternative variants

Ex Approval acc. to ATEX 100a,  
Zone 1 and 2 Ex II 2G EEx de IIC T6)

Examination test acc. to pressure equipment  
directive 79/23/Ec (DIN 3394-3/DIN EN 1854)\*  
see data sheet N/UK 5.11.231

20D Standard pressure switch 1 ... 25 bar  
see data sheet N/UK 5.11.021



Switching function:  
Microswitch SPDT  
(commutator)

Terminals 1 - 3:  
Contacts close on  
rising pressure

Terminals 1 - 2:  
Contacts open on  
rising pressure

### Operating pressure range for 180 (adjustable switching pressure difference)

Type	Operating pressure range * pvu min. to pvo max. (VDI 3283 ) bar	Over pressure *2) bar	Switching pressure difference bar		
			lower range	upper range min.	upper range max.
180 01 15	-1 ... 0	10	0,12	0,13	0,70
180 02 15	-1 ... 1	10	0,19	0,21	1,00
180 03 15	-1 ... 1,6	10	0,22	0,24	2,50
180 04 15	-1 ... 2,5	10	0,22	0,24	2,50
180 11 15	0,05 ... 1	10	0,15	0,16	0,70
180 13 15	0,1 ... 2,5	10	0,34	0,40	2,00
180 14 15	0,5 ... 4	20	0,80	0,80	2,50
180 15 15	0,5 ... 6	20	0,80	0,90	5,00
180 16 15	0,5 ... 10	20	0,90	1,90	8,00
180 17 15	1 ... 16	50	1,70	2,00	12,00
180 18 15	1 ... 25	50	1,80	2,80	20,00
180 19 15	5 ... 63	85	3,50	4,50	20,00
180 10 15	5 ... 100	150	4,00	9,00	55,00

### Operating pressure range for 181 (fixed switching pressure difference)

Type	Operating pressure range * pvu min. to pvo max. (VDI 3283 ) bar	Over pressure *2) bar	Switching pressure difference bar		Dimensions see page
			lower range	upper range	
181 01 15	-1 ... 0	10	0,06	0,07	4
181 02 15	-1 ... 1	10	0,08	0,09	4
181 04 15	-1 ... 2,5	10	0,09	0,12	4
181 11 15	0,05 ... 1	10	0,07	0,08	4
181 14 15	0,5 ... 4	20	0,30	0,33	4
181 15 15	0,5 ... 6	20	0,30	0,35	4
181 16 15	0,5 ... 10	20	0,30	0,40	4
181 17 15	1 ... 16	50	0,70	0,80	4
181 18 15	1 ... 25	50	0,70	0,90	4
181 19 15	5 ... 63	85	1,00	2,00	4

Connector is not included; special pressure ranges on request

\* Reference pressure is the atmospheric air pressure

\*2) Short-term pressure peaks are not allowed to exceed this limit value during operations.

Operative utilization of the limit value is not permitted.

The limit value corresponds to maximum testing pressure.

### Options selector

Operating pressure range (bar)	Substitute
-1 ... 0	01
-1 ... 1	02
-1 ... 2,5	04
0,05 ... 1	11
0,5 ... 4	14
0,5 ... 6	15
0,5 ... 10	16
1 ... 16	17
1 ... 25	18
5 ... 63	19
5 ... 100	10

181 ★★ ★★★

Sensor Materials	Electrical connection	Substitute
1.4404	DIN EN 175301-803; G1/2A	10
1.4404	M20 x 1,5; G1/2A	15

### Ordering information

Pressure switch with fixed switching pressure difference, switching point at 4 bar, connection G 1/2 A, medium: water,  
Quote: **181 15 15**

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN. Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

**Accessories**

Connector	Connector	Brackets	Surge damper	Pressure port – reducing nipple
				
<b>Page 4</b>	<b>Page 5</b>	<b>Page 5</b>	<b>Page 5</b>	<b>Page 5</b>
0585418 (with LED)	0570110	0574772 (steel)	0553258 (stainless steel G1/4)	0550083 (G1/4 – G1/2)
0585420 (with glow lamp)		0553908 (stainless steel)	0574773 (brass/steel) G1/4)	0574764 (G1/4 – G3/8)
				0574765 (G1/4 – 1/4 NPT)

**Switching capacity**  
**Commutator with gold plated contacts**

Load level	Current type	Load type	Umin [V]	Max. permanent current I <sub>max</sub> [A] at U [V]					Contact life
				30 M 12x1	48	60	125	250	
Standard *3) (z.B. contractors, solenoids)	AC	ohmic	12	5	5	5	5	5	≥ 10 <sup>7</sup> switching cycles
	AC	inductive, cos φ ≈ 0,7	12	3	3	3	3	3	
	DC	ohmic	12	5	1,2	0,8	0,4	–	
	DC	inductive, L/R ≈ 10 ms	12	3	0,5	0,35	0,05	–	
Minor *4) (z.B. electronic circuits)	AC	ohmic	5 *6)	0,34	0,2	0,17	0,08	0,04	≥ 10 <sup>7</sup> switching cycles
	DC	inductive, L/R ≈ 10 ms	5 *6)	0,1	0,01	–	–	–	

Reference number: 30/min, Reference temperature: +30°C  
 Spark quenching with diode with DC and inductive load:  
 I<sub>max</sub> = 1,5 x I<sub>max</sub> of table  
 I<sub>min</sub> = 1 (mA)  
 Creepage and air paths correspond to insulation group B according to VDE Reg. 0110 (except contact clearance of microswitch).

\*3) Gold-plating not required as it would decay.  
 Max. perm. in-rush current (appr. 30 ms) I<sub>AC</sub> = max. 15 A  
 \*4) Gold-plating required (will not decay).  
 \*6) Lower value of critical voltage guarantees sufficient contact safety.  
 Lower voltages permissible under favourable conditions.

**Spark quenching with DC voltage**

1. Diode D in parallel to inductive load.  
 Observance of correct polarity (positive pole to cathode).

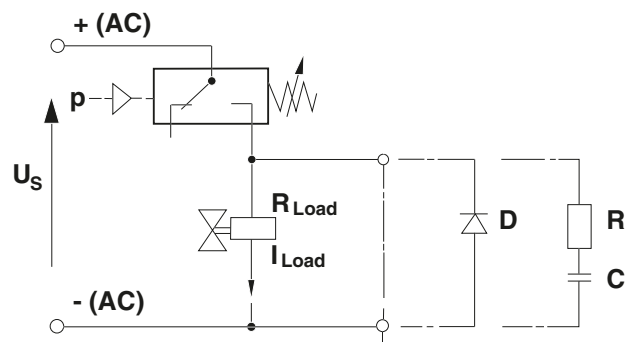
Dimensioning specifications for quenching diode:  
 Rated voltage at diode: U<sub>D</sub> ≥ 1,4 x U<sub>s</sub>

Rated current at diode: I<sub>N</sub> ≥ I<sub>Last</sub>

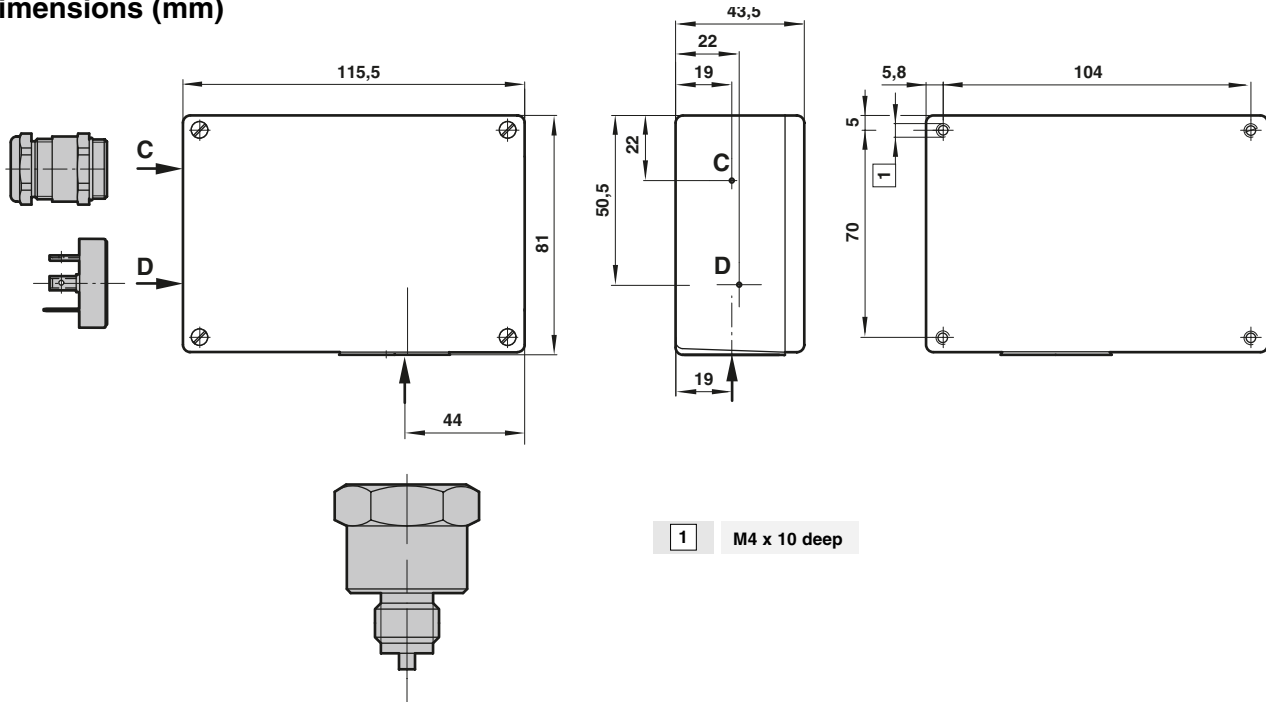
Selection of a quick switching diode (recovery time t<sub>rr</sub> ≤ 200 [ms]).

2. RC link in parallel to load in parallel to switching contact.  
 Suited for DC and AC voltage.

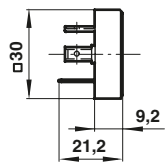
Dimensioning principles:  
 R in Ω ≈ 0,2 x R<sub>Load</sub> in Ω  
 C in [μF] ≈ I<sub>Load</sub> in [A]



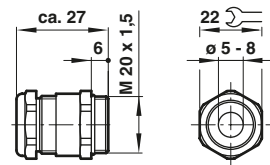
Dimensions (mm)



Electrical connection  
Connector acc. to DIN EN 175301-803,  
form A



Connector M20 x 1,5 acc. to DIN 46320



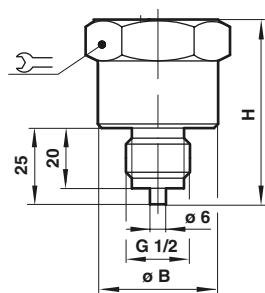
Sensor  
Combination

Operating pressure range Substitute	Sensor code		Sensor type
	00	05	
01	•	•	B
02	•	•	B
03	•	•	B
04	•	•	B
11	•	•	B
13	•	•	B
14	•	•	B
15	•	•	B
16	•	•	B
17	•	•	F
18	•	•	F
19	•	•	H
10	•	•	I

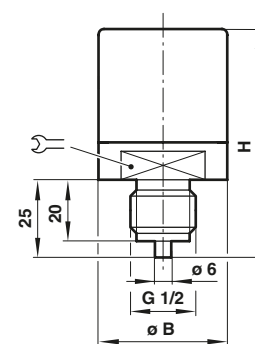
Sensor

Sensor type	H	B	⌀
B	75	42	32
E	43	37	32
H	53	37	32
I	62	37	32

Sensor type  
F, H, I



Sensor type  
B

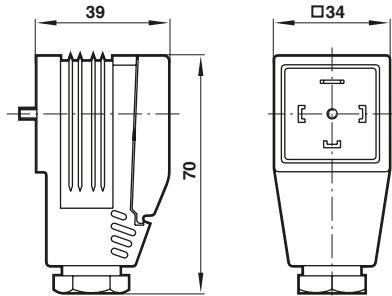


**Accessories**

**Connectors (black) with light indicator**

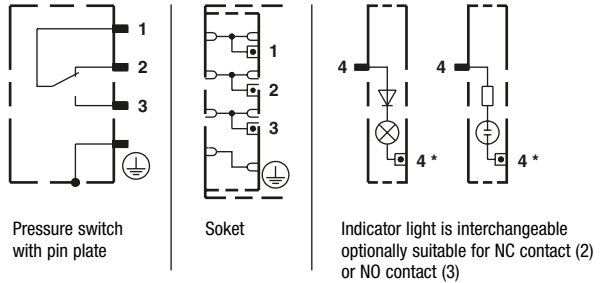
3-pin + protective conductor  
Connection acc. to DIN EN 175301-803 (form A)  
Optionally available for DC or AC

With LED 12 to 28 V **Type: 0585418**  
With glow lamp 90 to 130 V **Type: 0585419**  
With glow lamp 180 to 240 V **Type: 0585420**



**Pressure switch with – pilot lamp**

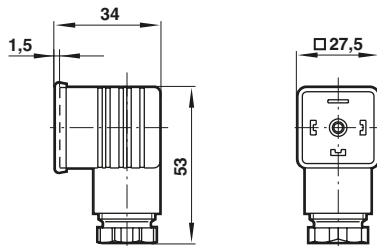
The pilot lamp shows the switching position of the connected pressure switch



\* For contact (4) a special lead (Mp resp.-) is required.

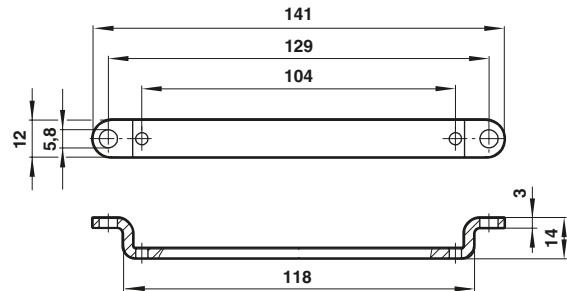
**3-pin connector with protective conductor**

Acc. to DIN EN 175301-803 (form A)  
**Type: 0570110**



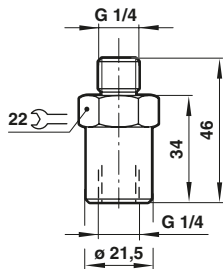
**Brackets (2 brackets and 4 screws)**

Steel **Type: 0574772**  
Stainl. steel 1.4301 (AISI 304) **Type: 0553908**



**Surge damper**

Stainless steel 1.4301 (AISI 304) **Type: 0553258**  
Brass/steel **Type: 0574773**



**Pressure port/reducing nipple**

G1/2 I ... G1/2 NPT A  
Stainless steel 1.4305  
(AISI 303/304 S)  
**Type: 0553831**

