

20D

Electro-mechanical hydraulic pressure switches

- 3 ... 420 bar
Port size: G1/4
- High accuracy
- Microswitch with gold plated contacts
- Intrinsically safe operation
- Robust metal housing
- Electrical connection: connector acc. to DIN EN 175 301-803, form A or M20x1,5 (DIN 46320)



Technical features

Medium:

Hydraulic oil, oiled compressed air and other non-inflammable fluids with sliding properties

Operating pressure:

3 ... 420 bar (44 ... 6091)

Operation:

Softseal piston, stainless steel bellows

Repeatability:

±1% of final value (depending on regulating pressure)

Port size:

G1/4

Media viscosity:

Up to 1000 mm²/s

Sealing:

≤10⁻⁷ mbar x l x s⁻¹

Pulsation:

Not permitted

Switching pressure difference:

Optional: fixed or adjustable

Switching element:

Microswitch with gold plated contacts

Mounting position:

Vertical down

Degree of protection:

IP65 for DIN EN 175301-803 (DIN 43650) form A connection
IP66 with cable gland

Electrical connection:

DIN EN 175301-803 (DIN 43650) form A or cable gland

Shock-/vibrationproof:

4 g max. (sinusoidal)/5 Hz max

Switching cycles:

20/min. maximum


Ambient/Media temperature:

0 ... +80°C (0 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).


Material:

Housing: Aluminium diecast
Sensor: Brass or stainless steel
Sealing: steel piston with NBR, lip seal or o-ring

Technical data - fixed switching pressure difference

Symbol	Differential pressure range *2) p _{vu} min ... p _{vo} max. (VDI 3283) (bar)	Final value *1) (bar)	Switching pressure difference (typical)		Model
			Lower range (bar)	Upper range (bar)	
	3 ... 40	300	5	9	1816200
	5 ... 63	300	6	13	1816300
	5 ... 100	300	6	16	1816400
	5 ... 160	300	7	19	1816500
	10 ... 220	300	10	25	1816600 0000 001 00
	10 ... 420	550	18	42	1816700 0000 002 00

Technical data - adjustable switching pressure difference

Symbol	Differential pressure range *2) p _{vu} min ... p _{vo} max. (VDI 3283) (bar)	Final value *1) (bar)	Switching pressure difference (typical)		maximum (bar)	Model
			Lower range (bar)	Upper range minimum (bar)		
	3 ... 40	300	8	13	25	1806200
	5 ... 63	300	10	16	40	1806300
	5 ... 100	300	11	16	80	1806400
	5 ... 160	300	13	22	120	1806500
	10 ... 220	300	14	28	120	1806600 0000 001 00
	10 ... 420	550	20	40	330	1806700 0000 002 00

*1) In case of vibrations, please install a surge damper; even short-term pressure peaks are not allowed to exceed this limit value during operation. Operative utilization of the limit value is not permitted. The limit value corresponds to the maximum testing pressure.

*2) Reference pressure is the atmospheric air pressure

Option selector



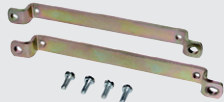
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Switching pressure difference	Substitute
Adjustable	0
Fixed	1
Pressure range (bar)	Substitute
3 ... 40	62
5 ... 63	63
5 ... 100	64
5 ... 160	65
10 ... 220	66
10 ... 420	67


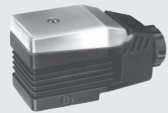
Electrical connection	Substitute
Interface for DIN EN 175301-803 form A connector *1)	00
Cable gland	05

*1) Connector is not in scope of delivery

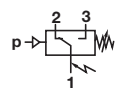
Accessories

Surge damper	Pressure port – reducing nipple	Brackets
		
Page 4	Page 4	Page 4
0553258 (stainless steel G1/4)	0550083 (G1/4 » G1/2)	0574772 (steel)
0574773 (brass/steel G1/4)	0574765 (G1/4 » 1/4 NPT)	0553908 (stainless steel)

Accessories

Connector DIN EN 175301-803	Connector with LED
	
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0570110 (Form A)	0585418

Switching function

	<p>Connector DIN EN 175301-803, form A Microswitch SPDT Terminals 1 - 3: Contacts close on rising pressure. Terminals 1 - 2: Contacts open on rising pressure.</p>
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Switching capacity

Commutator with gold plated contacts

Load level	Current type	Load type *2)	Max. permissible persistent current I _{max} [A] at U *1)		Electrical life-time
			M20 x 1,5 30 V	250 V	
Standard *3) (contractors, solenoids)	a.c.	Ohmic	7	5	≥ 2 x 10 ⁵ Switching cycles
	a.c.	Inductive, cos φ = 0,7	3	0,03	
	d.c.	Ohmic	7	0,4	
	d.c.	Inductive, L/R = 10 ms	3	0,03	

Reference number: 20/min, Reference temperature: +20°C.

Spark quenching with diode with DC and inductive load:

I_{min} = 1 mA; I_{max} = 1,5 x I_{max} of table

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

*1) Higher currents (5 A max) will cause a reduction of the durability of the micro-switch contacts. Furthermore additional measures has to be taken to fulfil the EMV regulation 2004/108/EG by the manufacturer

*2) Spark quenching/overload protection will be necessary using inductive loads.

*3) Gold-plating not required as it would decay.

Max. perm. in-rush current (appr. 30 ms) I_{AC} = max. 15 A

Recommended circuit

Spark quenching and EMV intrinsically safe

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: $U_D \geq 1,4 \times U_s$

Rated current at diode: $I_N \geq I_{Load}$

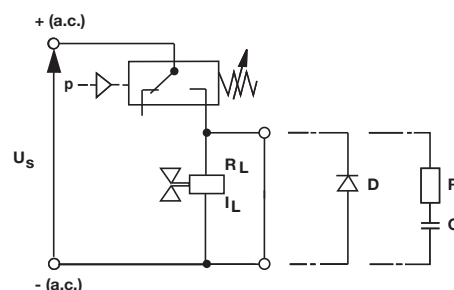
Selection of a quick switching diode (recovery time $t_{rr} \leq 200$ ms)

2. RC link in parallel to load in parallel to switching contact.

Dimensioning principles:

R_L in $\Omega \approx 0,2 \times R_{Load}$ in Ω

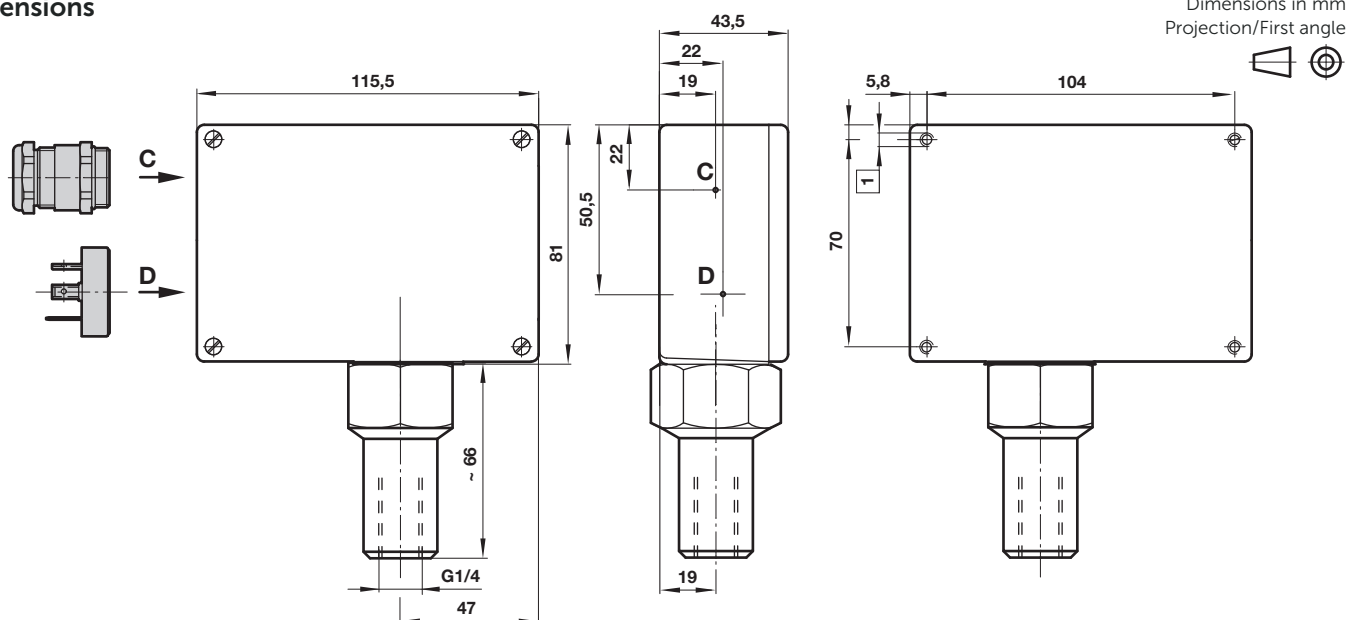
C in $[\mu F] \approx I_{Load}$ in [A]



R_L = Load resistance

I_L = Load current

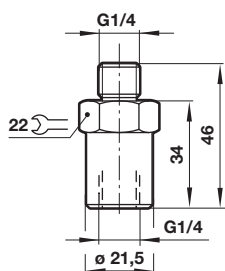
Dimensions



1 M4 x 10 deep

Surge damper

Model:
0574773 (brass)
0553258 (stainless steel
1.4301 AISI 304)

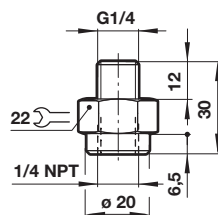
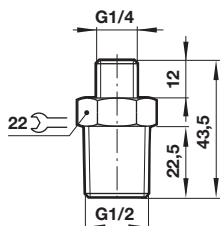


Pressure port/reducing nipple

Model: 0550083 (stainless steel
1.4305 AISI 303/304 S)

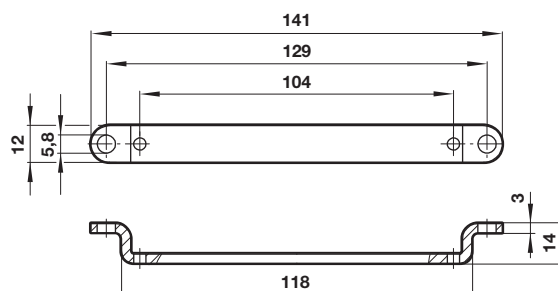
Model: 0574765 (brass)

Dimensions in mm
Projection/First angle



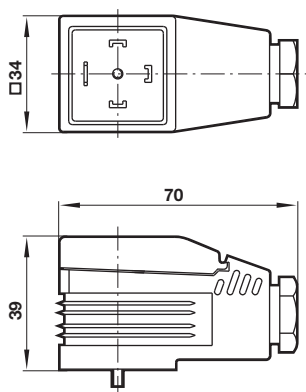
Brackets (2 brackets and 4 screws)

Model:
0574772 (steel)
0553908 (stainless steel 1.4301 AISI 304)



Connectors (black) with light indicator 3-pin + protective conductor

Connection acc. to
DIN EN 175301-803 (form A)
Voltage: 12 ... 28 V d.c./a.c.
Model: 0585418



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 features/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.