DSA: Pressure switch

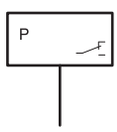
DSA14*F002

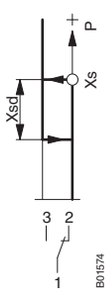
How energy efficiency is improved

Control and monitoring according to needs and with no auxiliary energy.

Features

- For regulating and monitoring pressure in liquids, gases and vapours
- Especially suitable for applications in compact installations
- Upper switching point can be set
- Fixed switching difference, no hysteresis setting is necessary
- Sealable
- Pressure sensor made of brass for non-aggressive media





Technical data

Power supply		
	Maximum load with gold-plated contacts[1)]	400 mA, 24 V, 10 VA
	Minimum load with gold-plated contacts	4 mA, 5 V
	Maximum load with silver-plated contacts	10(4) A, 250 V~, 50 W, 250 V=
	Minimum load with silver-plated contacts	100 mA, 24 V
Parameters		
	Pressure connection	G½" male
Ambient conditions		
	Admissible sensor temperature	70 °C
	Admissible ambient temperature	–20...70 °C
Construction		
	Fitting	Pipe and wall mounting
	Housing	Transparent cover
	Housing material	Impact-proof thermoplastic
	Housing-mounted plug	Standard plug with female cable connector for cable of Ø 6...10 mm
Standards and directives		
	Type of protection[2)]	IP 65 (EN 60529)
	Protection class	I (IEC 60730)
CE conformity according to[3)]	Low-voltage directive 2006/95/EC	EN 60730-1, EN 60730-2-6
	EMC directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Machine directive 2006/42/EC (according to appendix IIB)	EN ISO 12100

Overview of types

Type	Setting range	Switching difference	Maximum pressure	Admissible vacuum loading	Weight
DSA140F002	0.5...2.5 bar	0.25 bar	12 bar	-0.7 bar	0.5 kg
DSA143F002	0.5...6 bar	0.3 bar	16 bar	-0.7 bar	0.5 kg
DSA146F002	1...10 bar	0.4 bar	20 bar	-1.0 bar	0.4 kg

DSA: Pressure sensor made of brass for non-aggressive media; X_S = upper switching point

1) *If the contacts are subjected to a load greater than specified, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts*
2) *Depending on the fitting position, see the fitting instructions. The devices are not suitable for outdoor applications.*
3) *Excluded from the directive on pressure equipment 97/23/EC (as per Art. 1.3.6)*

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Accessories	
Type	Description
0035465000	Throttle screw for absorbing pressure surges, brass
0192222000	Cap nut with solder connector
0192700000	1 m capillary tube for absorbing pressure surges, copper
0214120000	Throttle screw for absorbing pressure surges, stainless steel
0259239000	Reduction piece G½" on 7/16" 20-UNF-2A for copper tubes of Ø 6 mm, brass
0292001000	Setpoint adjuster according to customer's wishes (setting accuracy: ±3% of the setting range, but a minimum of ±0.2 bar)
0292004000	Setpoint adjuster sealed (with accessory 0292001 only)
0292018001	Damping screw for absorbing pressure surges in low viscosity media
0292150001	Fixing bracket for wall mounting
0296936000	Fixing brackets for rail: top-hat rail EN 60715, 35 × 7.5 mm and 35 × 15 mm
0311572000	Screw fitting for copper tubes of Ø 6 mm, brass
0381141001	Profile sealing ring, copper, for G½"

0296936000: with accessory 0292150001 only

Description of operation

When the pressure exceeds the upper change-over point (adjustable setpoint X_S), the contacts switch from 1-2 to 1-3. When the pressure falls below the upper change-over point by the amount of the fixed switching difference Xsd, the contacts switch from 1-3 to 1-2.

Intended use

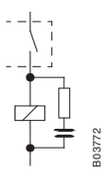
This product is only suitable for the purpose intended by the manufacturer, as described in the “Description of operation” section.
All related product documents must also be adhered to. Changing or converting the product is not admissible.

Electrical serviceable life

- The electrical switching elements are tested as per ENEC-00144 certificate 6(6) A, 250 V~, 5E4 electrical switching cycles; the temperature of the pressure switch applies
- Mechanical serviceable life of the pressure pads according to pressure 100 > 2 × 10^6 switch strokes
- Typically

cos φ = 1	cos φ = 0.6	cos φ = 0.3[4)]
10 A, 250,000 switchings 5 A, 400,000 switchings 2 A, approx. 10^6 switchings	3 A, 400,000 switchings	3 A, 250,000 switchings 2 A, 400,000 switchings 1 A, 700,000 switchings

Technical appendix



RC circuitry for inductive load

For the optimum RC circuitry, see the information from manufacturers of gates, relays, etc.
If this is not available, the inductive load can be reduced by applying the following rule of thumb:

- Capacity of the RC circuitry (µF) equal to or greater than the operating current (A)
- Resistance of the RC circuitry (Ω) approx. the same as the resistance of the coil (Ω)

Effect on switching difference

The switching difference depends slightly on the setpoint applied. The switching differences specified in the PDS sheet are typical values for the start of the range. The effect of the setpoint on the switching difference increases the switching difference by: ΔX_{sd} = (setpoint X_S – start of the range) × 0.04

[4)] *cos φ < 0.3: significant reduction in serviceable life. With RC circuitry, serviceable life as with cos φ > 0.3 (also see technical appendix)*

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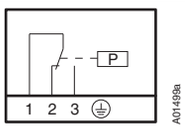
Materials

Materials that come into contact with the medium:
Pressure sensor made of brass (DSA): brass, stainless steel, nitrile rubber.

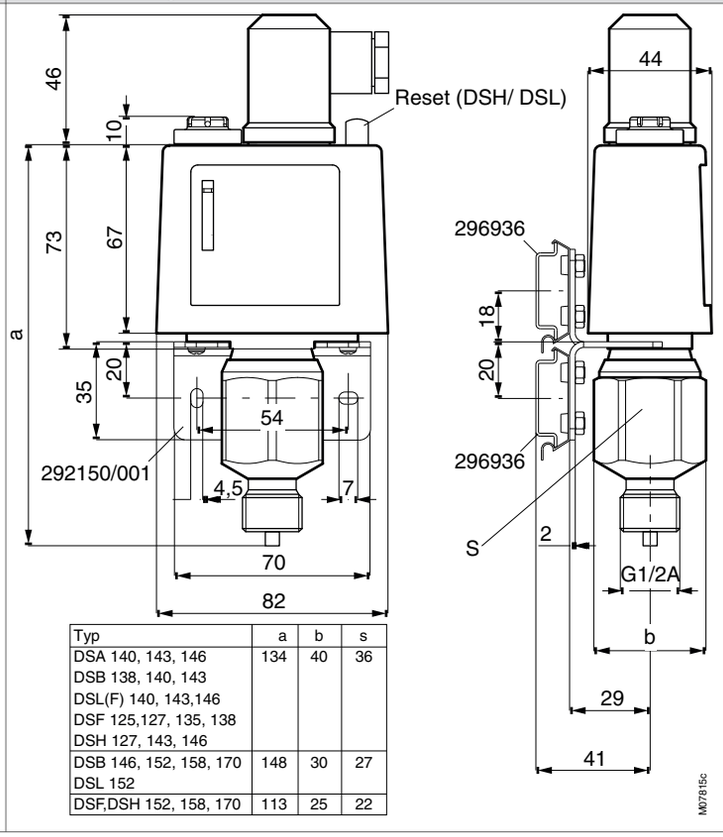
Disposal

When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram



Dimension drawing



Typ	a	b	s
DSA 140, 143, 146 DSB 138, 140, 143 DSL(F) 140, 143,146 DSF 125,127, 135, 138 DSH 127, 143, 146	134	40	36
DSB 146, 152, 158, 170 DSL 152	148	30	27
DSF,DSH 152, 158, 170	113	25	22

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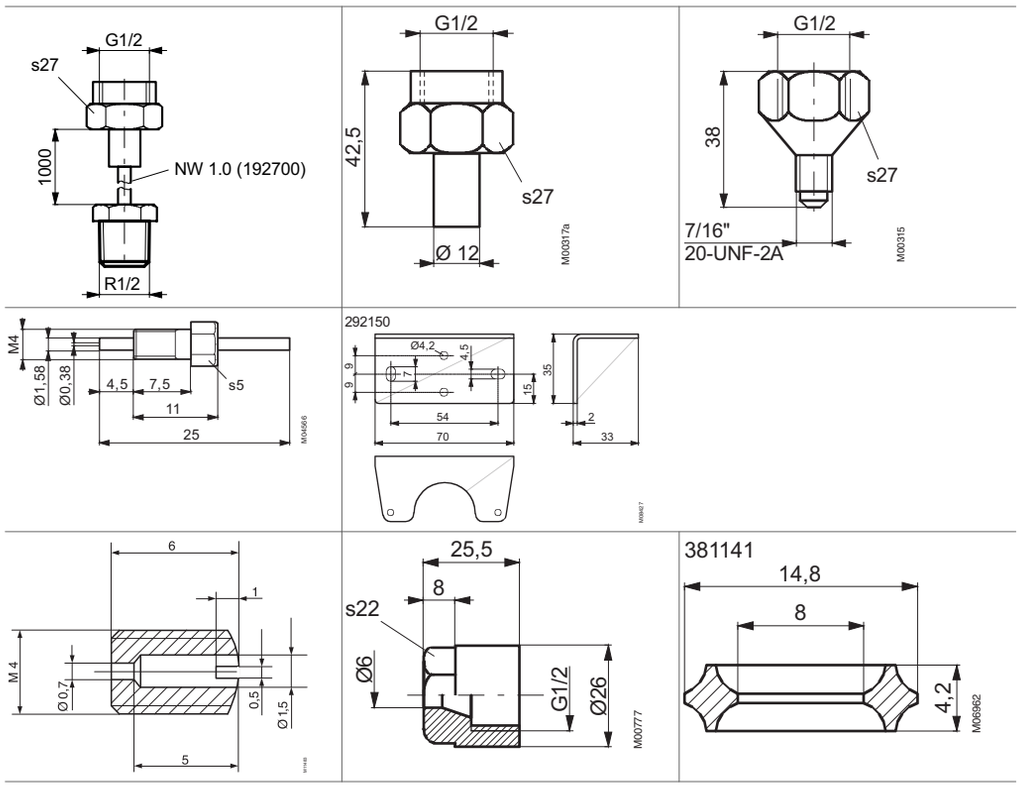
Accessories



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