Hydro-electric pressure switch

Type HED 8

RE 50061
Edition: 2017-08
Replaces: 2016-09

TB0004+TB0040

- Component series 2X
- Max. operating pressure 630 bar

Features

- For subplate mounting
- For G1/4” pipeline installation
- For flange connection according to ISO 16873
- As vertical stacking element in connection with sandwich plates according to ISO 4401
- 5 pressure ratings
- 4 adjustment types:
  - Spindle with/without protective cap
  - Spindle with scale, with/without protective cap
  - Rotary knob with scale
  - Lockable rotary knob with scale
- Electrical connection
  - With valve connector of design A (large cubic connector)
  - with M12 x 1 connector
- Micro switch with NC/NO contact function
- Potential-free switching of currents from 1 mA to 2 A
- UL approval for pressure ranges up to 350 bar

Contents

Ordering data

01	02		03		04	05	06	07	08
HED8		**–**	**2X**	**/**					*****

01	Piston type pressure switch	**HED8**
02	Flange connection (ISO 16873)1)	**OH**
	Subplate mounting	**OP**
	Pipeline installation	**OA**
03	Component series 60 ... 69 (60 ... 69: unchanged installation and connection dimensions)	**2X**
04	Max. pressure rating 50 bar	**50**
	Max. pressure rating 100 bar	**100**
	Max. pressure rating 200 bar	**200**
	Max. pressure rating 350 bar	**350**
	Max. pressure rating 630 bar	**630** [2]

Electrical connection

05	**Individual connection**	
	Without mating connector; connector DIN EN 175301-803	**K14** [3]
	Without mating connector; connector IEC 61076-2-101, M12 x 1, A-coding	**K35** [3]

Adjustment type

06	Spindle with internal hexagon, without scale, without protective cap	**no code**
	Spindle with internal hexagon, without scale, with protective cap, sealing	**S**
	Spindle with scale, without protective cap	**A** [5]
	Spindle with scale, with protective cap	**AS** [5]
	lockable rotary knob with scale	**KS** [4; 5]
	Rotary knob with scale	**KW** [5]

Seal material

07	NBR seals	**no code**
	FKM seals	**V**
	Low-temperature seal (max. 315 bar)	**MT**
	Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	
08	Further details in the plain text	

1) Sandwich plate for vertical stacking, separate order, see accessories
2) Not permissible for vertical stacking, not with low-temperature seal, without UL approval
3) Mating connectors, separate order, see accessories
4) H-key, material no. **R900008158**, is included in the scope of delivery
5) The exact setting of the switching pressure is only possible using a pressure gauge (scale is used as orientation)

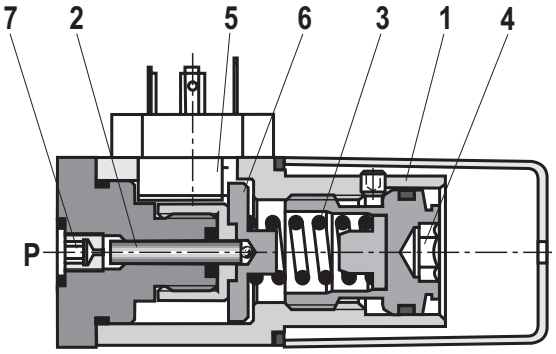
Accessories

- Sandwich plates for vertical stacking see page 12 and 14.
- Mating connectors for the electrical connection see page 16.

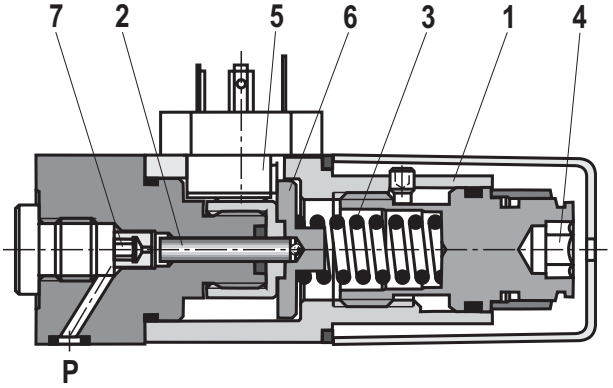
Function, section

The hydro-electric pressure switch type HED 8 is a piston type pressure switch. It basically comprises of housing (1), installation kit with piston (2), compression spring (3), adjustment element (4) and micro switch (5).
If the pressure to be monitored is below the set pressure, the micro switch (5) is operated. The pressure to be monitored is applied via the nozzle (7) at the piston (2). The piston (2) is supported by the spring plate (6) and acts against the continuously adjustable force of the compression spring (3). The spring plate (6) transmits the movement of the piston (2) onto the micro switch (5) and releases the latter when the set pressure is reached. This switches the electric circuit on or off, depending on the circuit set-up. The mechanical positive stop of the spring plate (6) protects the micro switch (5) in case of a sudden pressure drop from mechanical destruction and, in case of overpressure, prevents solid compression of the compression spring (3).

☞ **Notes:**
In order to increase the life cycle, the pressure switch should be mounted with low vibrations and protected from hydraulic pressure surges.

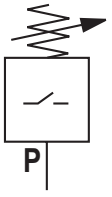


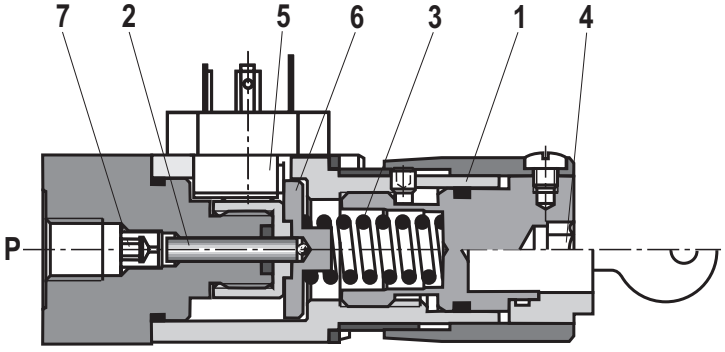
Type HED 8 **OH**-2X/...K14
Type HED 8 **OH**-2X/...K14**S**



Type HED 8 **OP**-2X/...K14**A**
Type HED 8 **OP**-2X/...K14**AS**

Symbol





Type HED 8 **OA**-2X/...K14**KW**
Type HED 8 **OA**-2X/...K14**KS**

Technical data
(For applications outside these parameters, please consult us!)

General		
Mass	kg	0.8
Installation position		any
Ambient temperature range	°C	-25 to +50 (NBR seals) -20 to +50 (FKM seals) -40 to +50 (low-temperature seals)
Sine test according to DIN EN 60068-2-6:1996-05		5...2000 Hz, max. 10 g, 10 double cycles
Transport shock according to DIN EN 60068-2-27:1995-03		15 g / 11 ms
Bump test according to DIN EN 60068-2-29:1995-03		25 g / 6 ms
Noise test according to DIN EN 60068-2-64:1996-05		20...2000 Hz 10...30 min
Conformity ▶ CE		DIN EN 61058-1: 2002 / A2: 2008 DIN EN 60947-1: 2007 / A1: 2011 DIN EN 60947-5-1: 2004 / A1: 2009 DIN EN 60529: 1991 / A2: 2013
▶ UL		UL 508 17th edition File No E223220 (up to 350 bar)
▶ CCC		GB 14048.5-2008
▶ RoHS [1]		Compliant according to EU Directive 2011/65/EU

Hydraulic							
Pressure rating		bar	50	100	200	350	630
Max. operating pressure							
Conformity	▶ NBR/FKM seals	bar	350	350	350	400	630
	▶ MT version	bar	315	315	315	315	–
Pressure adjustment range (decreasing)		bar	5...50	10...100	15...200	25...350	40...630
Pressure differential per rotation [2]		bar	≈19	≈35	≈77	≈120	≈214
Hydraulic fluid [2]			see table below				
Hydraulic fluid temperature range (at the valve operating ports)		°C	-25 ... +80 (NBR seals) -20 ... +80 (FKM seals) -40 ... +80 (low-temperature seals)				
Viscosity range		mm^2/s	10 ... 800				
Maximum permissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 20/18/15 [3]				
Load cycles			≥ 5 million				

Hydraulic fluid		**Classification**	**Suitable sealing materials**	**Standards**	**Data sheet**
Mineral base oils		HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM low-temperature seals	DIN 51524	90220
Bio-degradable	▶ Insoluble in water	HETG	NBR, FKM	ISO 15380	90221
		HEES	FKM		
	▶ Soluble in water	HEPG	FKM	ISO 15380	
Flame-resistant	▶ Water-free	HFDU, HFDR	FKM	ISO 12922	90222
	▶ Containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	NBR	ISO 12922	90223

☞ **Important information on hydraulic fluids:**

- ▶ For more information and data about the use of other hydraulic fluids, refer to data sheets above or contact us!
- ▶ There may be limitations regarding the technical data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- ▶ **Flame-resistant – contains water**:
  - – Maximum pressure differential per control edge 50 bar
  - – Pressure pre-loading at the tank port > 20% of the pressure differential, otherwise increased cavitation
  - – Life cycle as compared to operation with mineral oil HL, HLP 50 to 100%
- ▶ **Bio-degradable and flame-resistant:** When using these hydraulic fluids that are simultaneously zinc-solving, zinc may accumulate (700 mg zinc per pole tube).

Technical data

(For applications outside these parameters, please consult us!)

Electrical				
Electrical connection	▶ with “K14” connector		EN 175301-803, 3-pole + PE	
	▶ with “K35” connector		IEC 61076-2-101, M12 x 1, A-coding, 4-pole	
Protection class according to DIN EN 60529	▶ with “K14” connector		IP 65 with mating connector fitted and screwed in place	
	▶ with “K35” connector		IP 67 with mating connector fitted and screwed in place	
Maximum switching frequency		1/h	7200	
Switching accuracy (repetition accuracy)			< ± 1% of the set pressure	
Switches			according to VDE 0630-1/DIN EN 61058-1	
Transition resistance		mΩ	< 50	
Insulation coordination			Overvoltage category 3	
Contamination			Degree of contamination 3	
Bounce time	▶ ON	ms	< 5	
	▶ OFF	ms	< 5	
				Utility model according to IEC 60947
Minimum current		mA	1.0 with 24 V DC	DC-12
Maximum current	▶ with “K14” connector	A	0.5 at 50 V DC, inductive 0.2 at 125 V DC, inductive 0.1 at 250 V DC, inductive 2.0 at 250 V AC	DC-22 DC-22 DC-22 AC-12
	▶ with “K35” connector	A	0.5 with 48 V DC, inductive 2.0 with 48 V DC, ohmic load	DC-22 AC-12

Switching power			
Switching cycles	**Voltage *U* in V**	**Ohmic load max. in A** [4]	**Inductive load, max. in A**
with “K14” connector			
2 million	250, AC	2 A for 2 million circuits (AC-12)	0,5 A, cos. ϕ = 0,6 for 2 mil. circuits (AC-22)
With “K14” and “K35” connectors			
2 million	24, DC	2 A for 2 million circuits (DC-12)	0.5 A for 2 million circuits [4]
5 million	24, DC	5.0 mA for 5 million circuits (DC-12)	–

[1] Versions TYPE HED8OP-2X/630... may only be used within the scope of the exception for stationary, industrial large tools or stationary large facilities according to EU Directive 2011/65/EU.

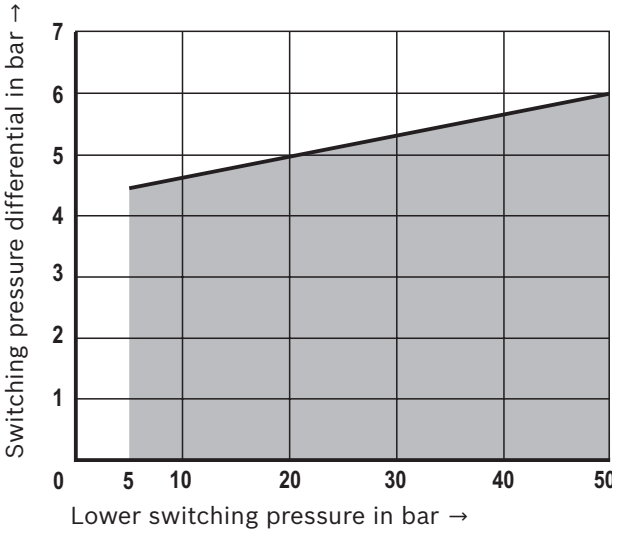
[2] Direction of rotation:
– clockwise → set pressure increase
– anti-clockwise → set pressure decrease

[3] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.
For the selection of the filters see www.boschrexroth.com/filter.

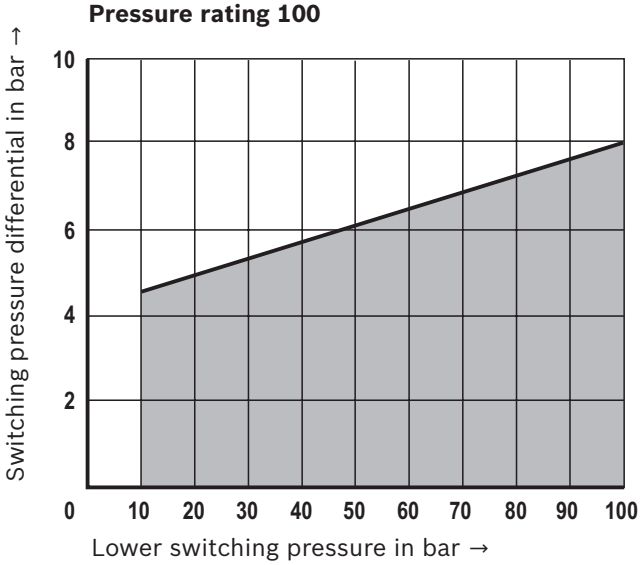
[4] Value does not comply with any utility category according to IEC 60947

Characteristic curves: Switching pressure differential
(measured with HLP46, ϑ_{Oil} = 40 ± 5 °C)

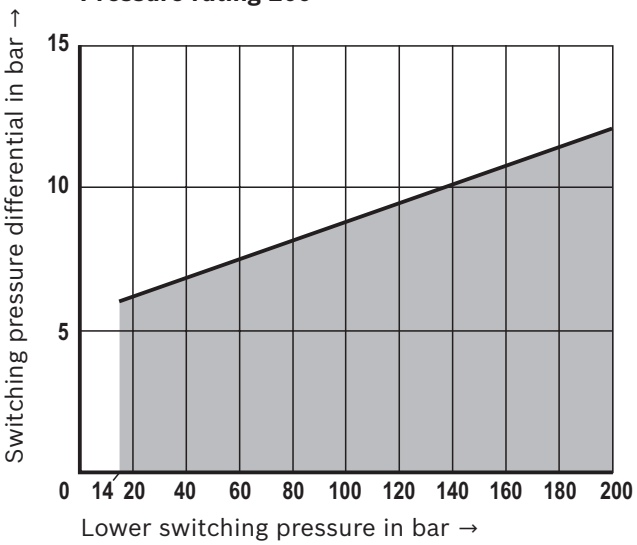
Pressure rating 50



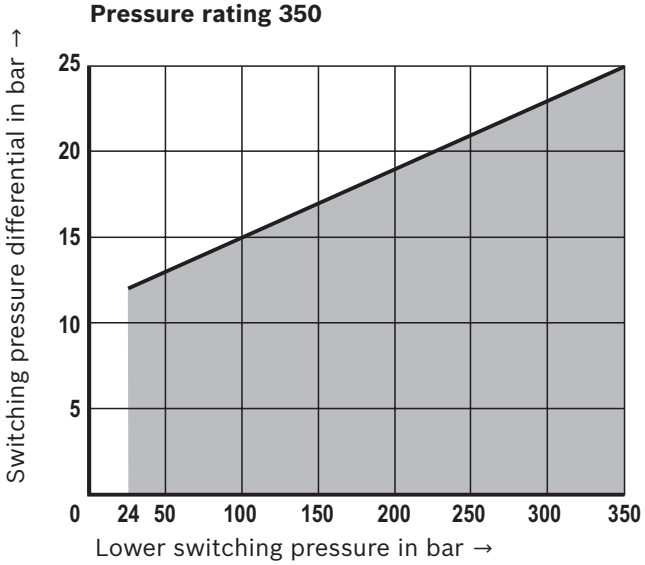
Pressure rating 100



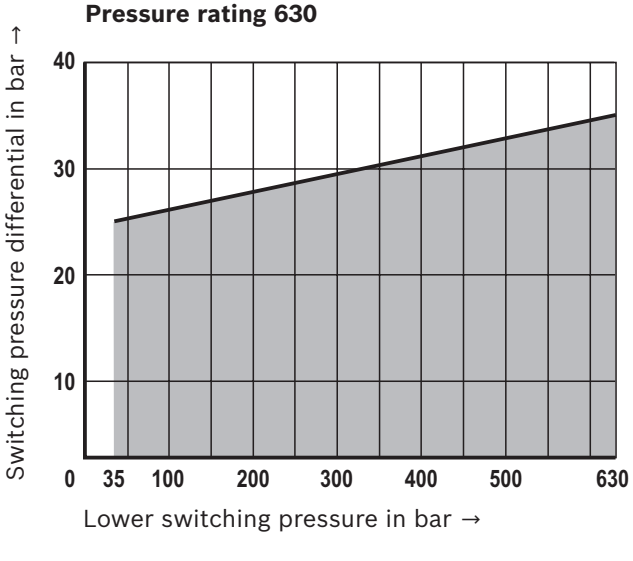
Pressure rating 200



Pressure rating 350

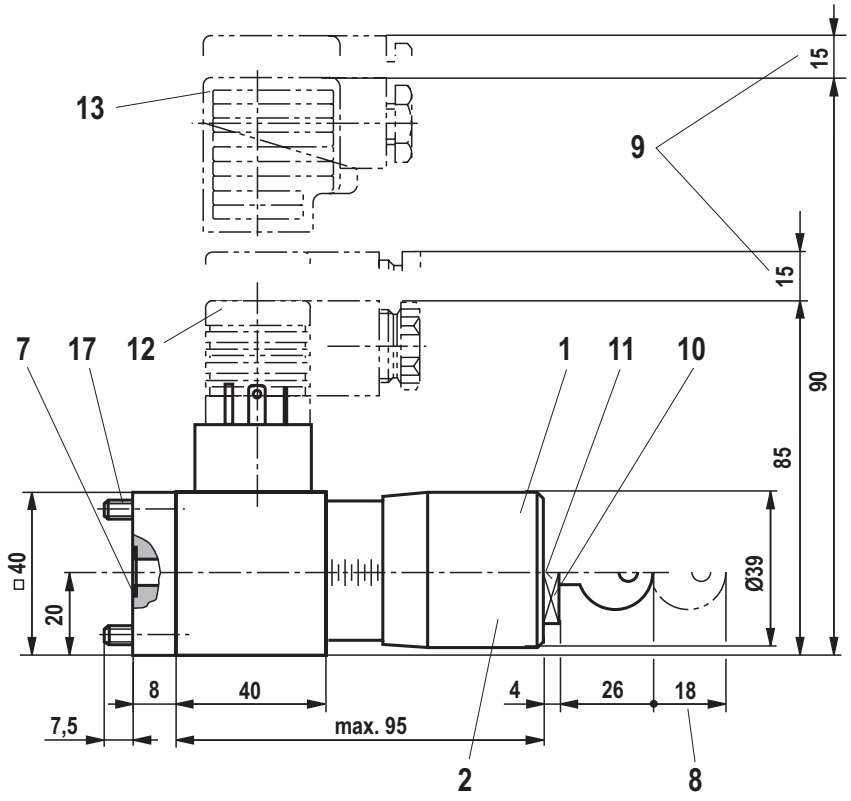


Pressure rating 630

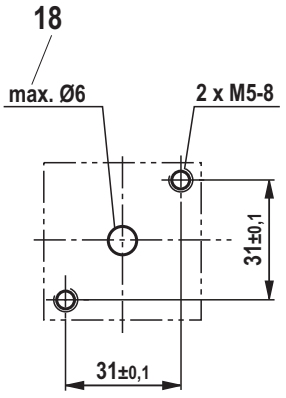


☞ **Notes:**
The switching pressure differential may increase within the course of the life cycle due to the deterioration of the oil quality and the number of load cycles.

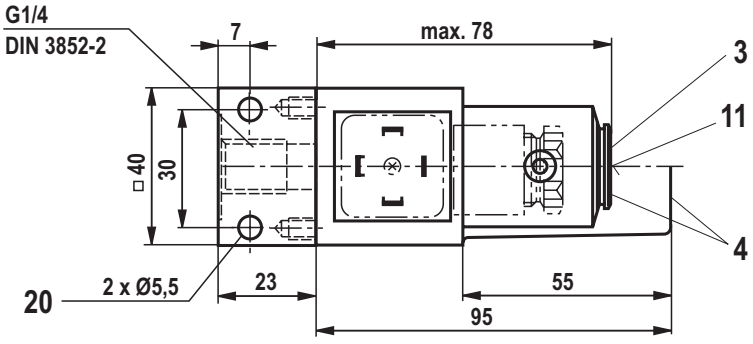
Dimensions: Type HED 8 ...**K14**
(dimensions in mm)



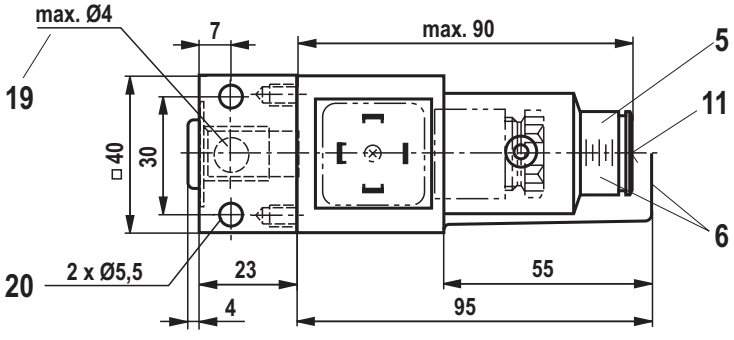
Type HED 8 **OH**...



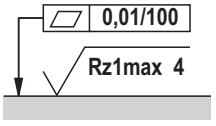
Connection dimensions



Type HED 8 **OA**...



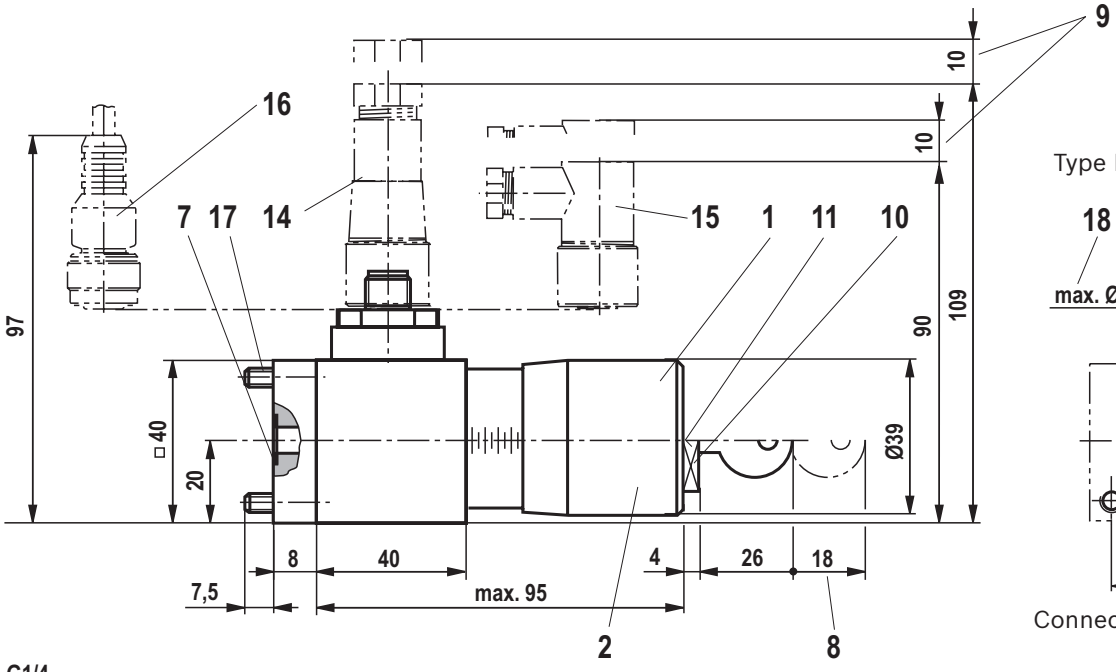
Type HED 8 **OP**...



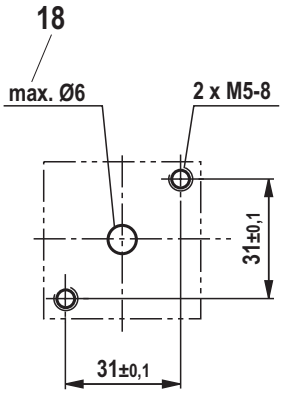
Required surface quality of the device contact surface
(for “OH” and “OP” designs)

For item explanations see page 9.

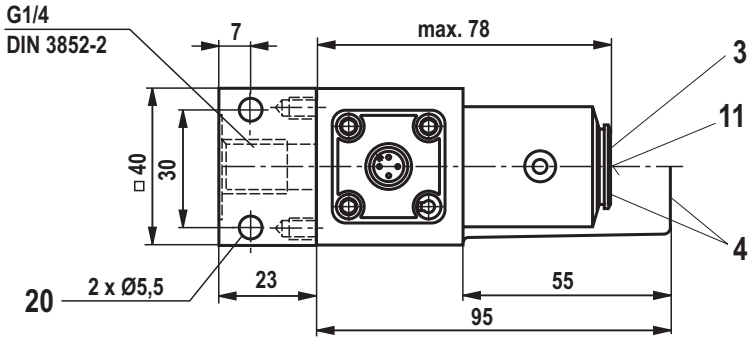
Dimensions: Type HED 8 ...**K35**
(dimensions in mm)



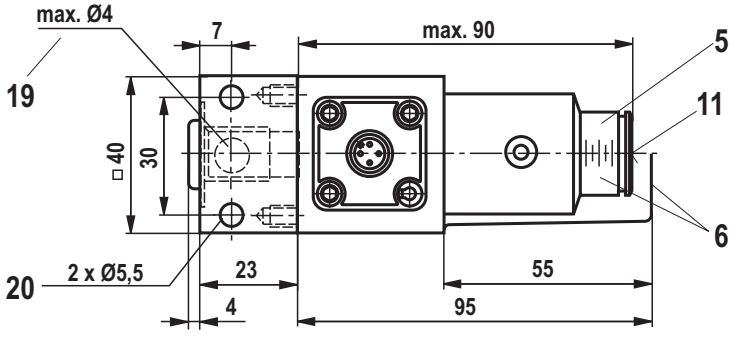
Type HED 8 **OH**...



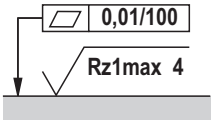
Connection dimensions



Type HED 8 **OA**...



Type HED 8 **OP**...



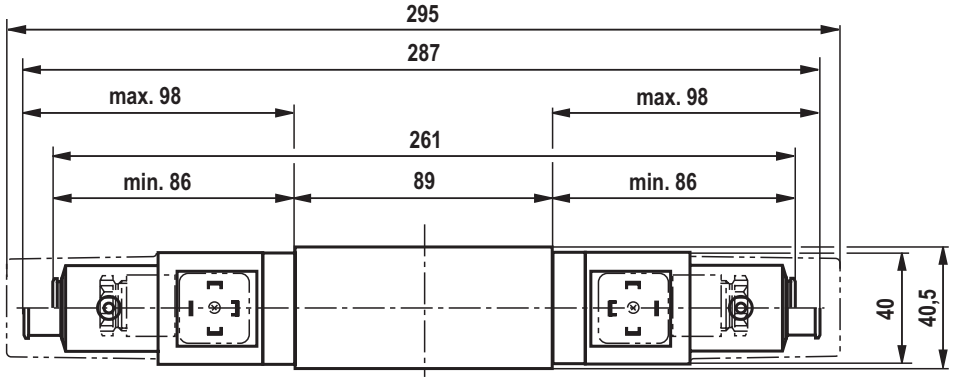
Required surface quality of the device contact surface
(for “OH” and “OP” designs)

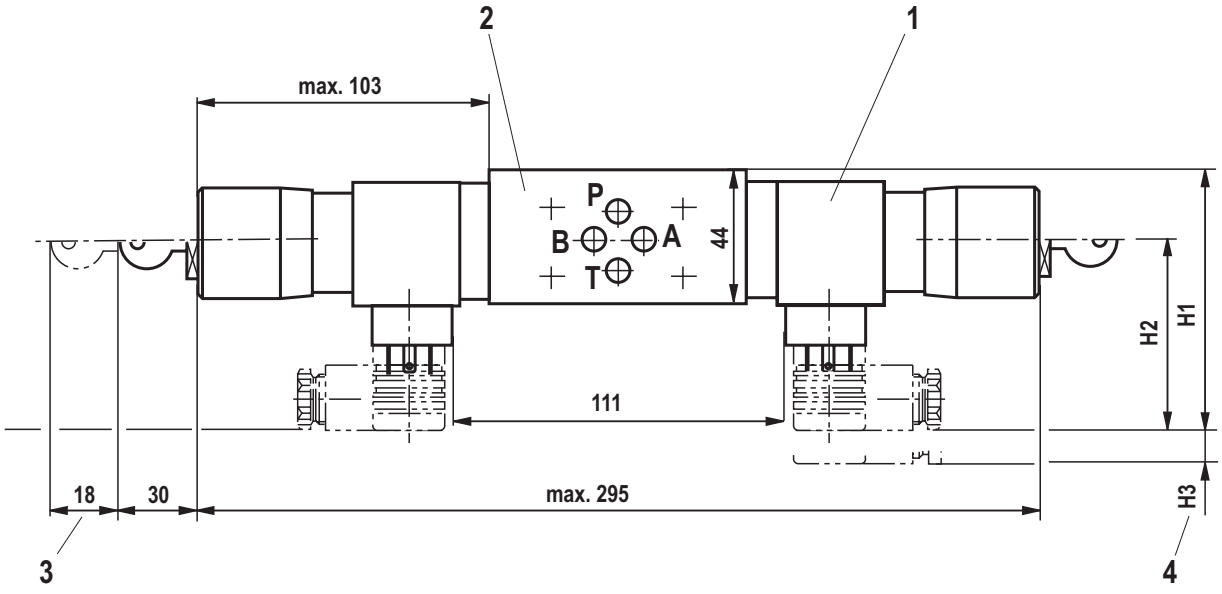
For item explanations see page 9.

Dimensions

1 Adjustment type “KW”
2 Adjustment type “KS”
3 Adjustment type “-”
4 Adjustment type “S”
5 Adjustment type “A”
6 Adjustment type “AS”
7 Seal ring
8 Space required to remove the key
9 Space required to remove the mating connector
10 Hexagon SW27 (with adjustment type “KS”)
11 Internal hexagon SW10
12 Mating connector **without** circuitry for “K14” connection (separate order see page 16)
13 Mating connector **with** circuitry for “K14” connection (separate order, see page 16)
14 Mating connector for “K35” connection (separate order see page 16)
15 Mating connector suitable for “K35”, angled (separate order see page 16)
16 Mating connector for “K35” connection with cable (separate order see page 16)
17 **Valve mounting screw** (separate order) for type HED 8 OH...
2 hexagon socket head cap screws metric
ISO 4762 - M5 x 55 - 10.9-flZn-240h-L
Friction coefficient μ_{total} = 0.09 to 0.14,
Tightening torque $\boldsymbol{M}_A = 6^{+0,5}$ Nm,
Material no. **R913000261**
18 Maximum diameter of the counterpart connection bore (type HED 8 **OH**...)
19 Maximum diameter of the counterpart connection bore (type HED 8 **OP**...)
20 **Valve mounting screws** (separate order) for type HED 8 **OA**... and ...**OP**...
2 hexagon socket head cap screws metric
ISO 4762 - M5 x 50 - 10.9-flZn-240h-L
Friction coefficient μ_{total} = 0.09 to 0.14,
Tightening torque $\boldsymbol{M}_A = 7^{+0.5}$ Nm,
Material no. **R913000064**

Installation information: Type HED 8 **OH**... in vertical stacking **NG6**
(dimensions in mm)





1 Pressure switch HED 8 OH... for use in stacking assemblies (can be assembled staggered by 4 x 90°)
The mounting option of the pressure switch depends on the set-up of the next stacking assembly subplate.

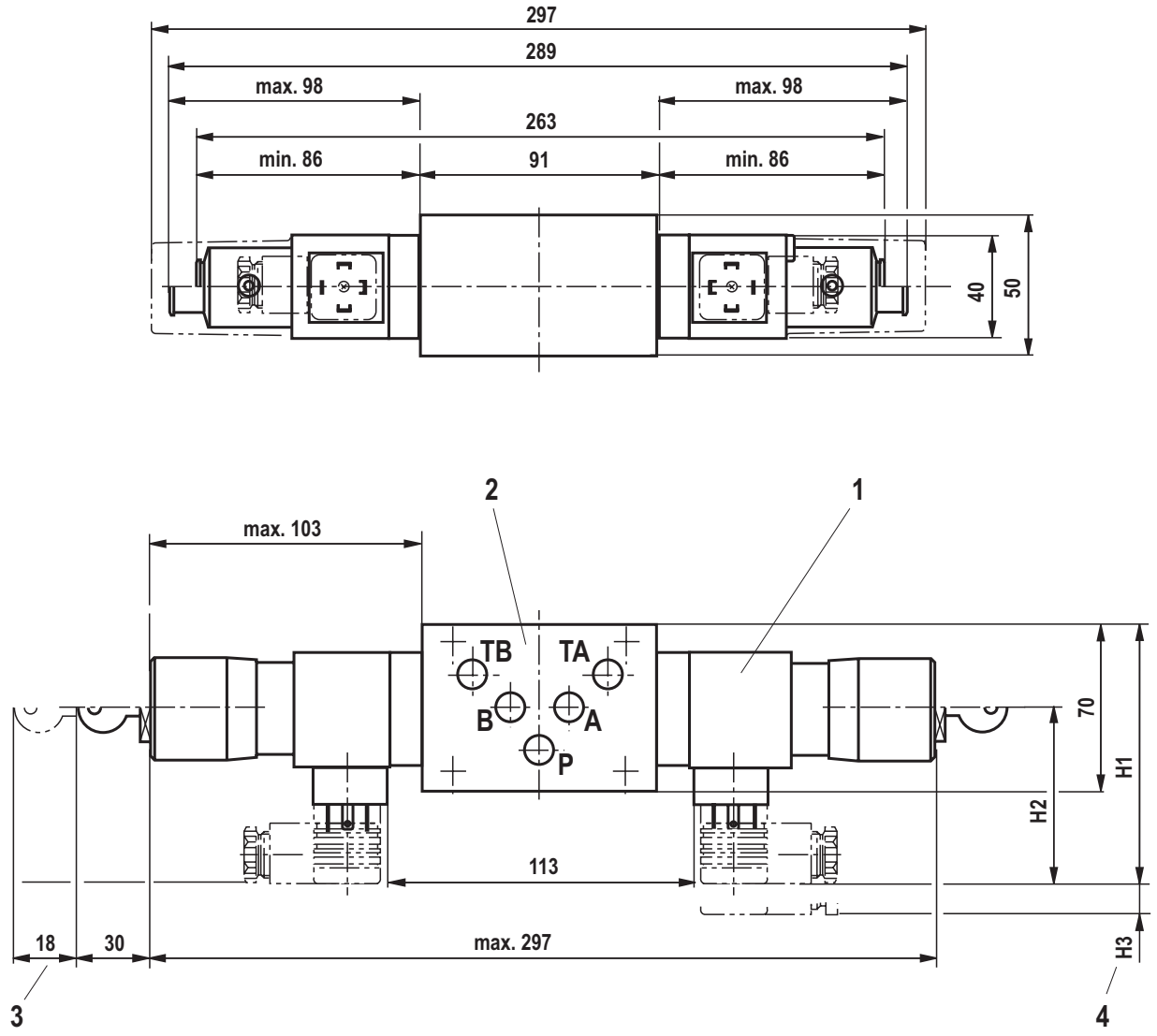
2 Sandwich plate type HSZ 06A... for use of the pressure switch as stacking element (see page 12)

3 Space required to remove the key

4 Space required to remove the mating connector

Mating connector	**H1**	**H2**	**H3**
“K14” connection, **without** circuitry	87	65	15
“K14” connection, **with** circuitry	92	70	15
“K35” connection, angled	92	70	10
“K35” connection, straight	111	89	10

Installation information: Type HED 8 **OH**... in vertical stacking **NG10**
(dimensions in mm)



1 Pressure switch HED 8 OH... for use in stacking assemblies (can be assembled staggered by 4 x 90°)
The mounting option of the pressure switch depends on the set-up of the next stacking assembly subplate.

2 Sandwich plate type HSZ 10A... for use of the pressure switch as stacking element (see page 14)

3 Space required to remove the key

4 Space required to remove the mating connector

Mating connector	**H1**	**H2**	**H3**
“K14” connection, **without** circuitry	100	65	15
“K14” connection, **with** circuitry	105	70	15
“K35” connection, angled	105	70	10
“K35” connection, straight	124	89	10

Ordering code: Sandwich plate size 6 (separate order)

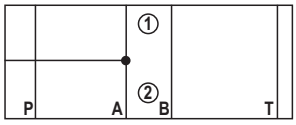
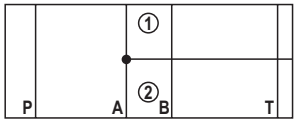
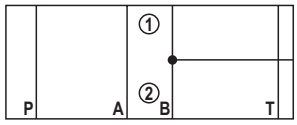
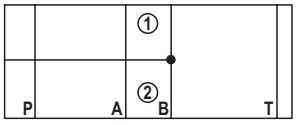
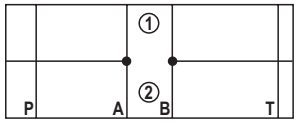
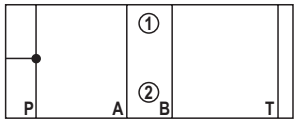
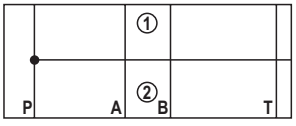
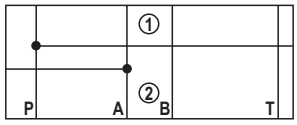
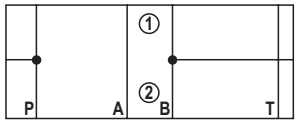
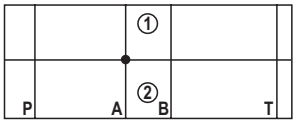
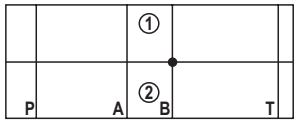
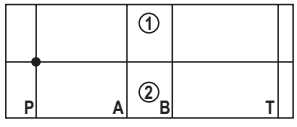
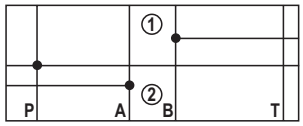
01	02	03	04		05		06		08
HSZ	**06**	**A**		**–**	**3X**	**/**		**00**	*****

01	Sandwich plate	**HSZ**
02	Size 6	**06**
03	Porting pattern according to ISO 4401-03-02-0-05	**A**
04	Variant no. (see below)	**6..**
05	Component series 30 ... 39 (30 ... 39: unchanged installation and connection dimensions)	**3X**

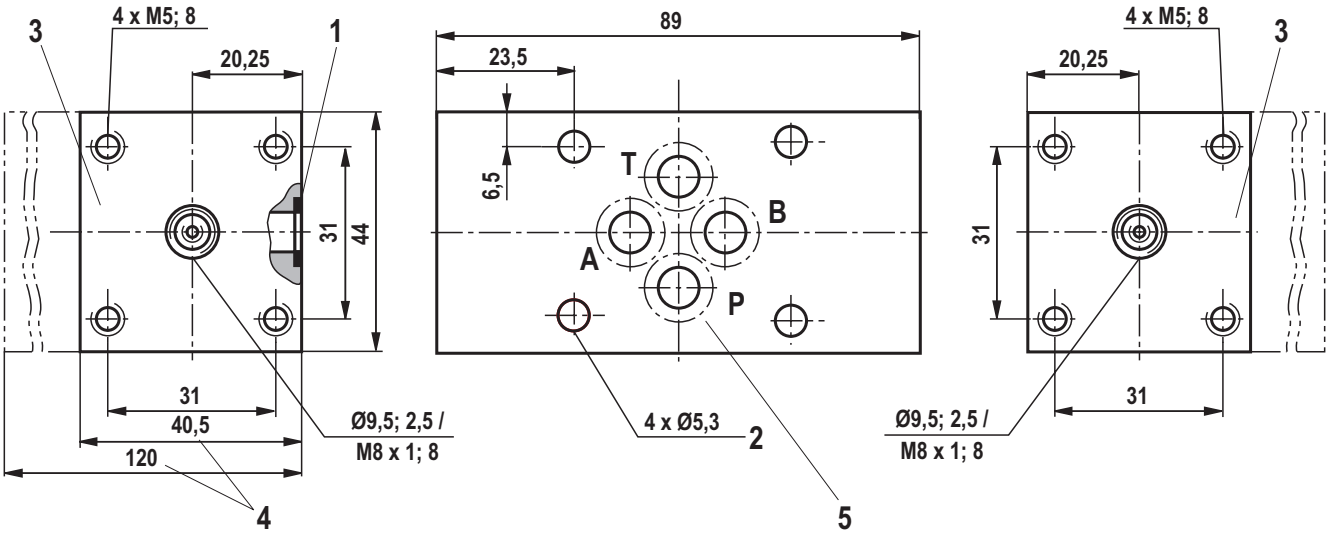
Seal material

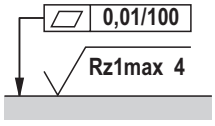
06	NBR seals	**no code**
	FKM seals	**V**
	Low-temperature seal (max. 315 bar)	**MT**
	Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	
07	Further details in the plain text	

Symbols, variant no.: Sandwich plate size 6 (① = component side, ② = plate side)

			Pressure switch effective in channel...		
	Plate height	Mass			
Variant number	40.5 mm	0.8 kg	608	609	601
	120 mm	3.0 kg	627	628	620
					
Variant number	40.5 mm	0.8 kg	602	603	604
	120 mm	3.0 kg	621	622	623
					
Variant number	40.5 mm	0.8 kg	605	606	607
	120 mm	3.0 kg	624	625	626
					
Variant number	40.5 mm	0.8 kg	610	611	612
	120 mm	3.0 kg	629	630	631
					
Variant number	40.5 mm	0.8 kg	613		
	–	–	–		

Dimensions: Sandwich plate size 6 for type HED 8 OH... as vertical stacking element (up to 350 bar) (dimensions in mm)





Required surface quality of the plate contact surface

1 Seal ring
2 Through hole for valve mounting
3 Screw-on surface for pressure switch
4 Plate height 40.5 mm or 120 mm, optional
5 Porting pattern according to ISO 4401-03-02-0-05

Ordering code: Sandwich plate size 10 (separate order)

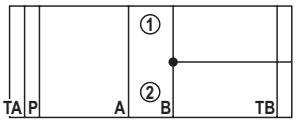
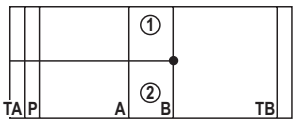
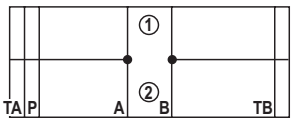
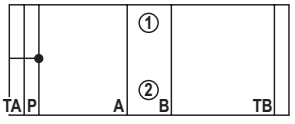
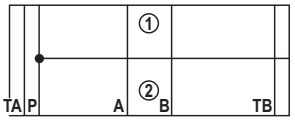
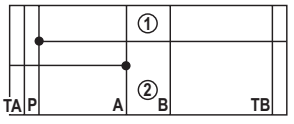
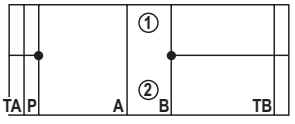
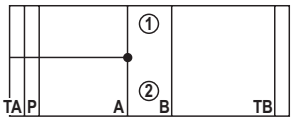
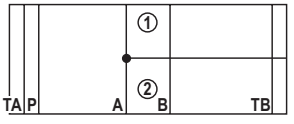
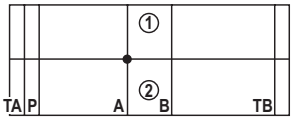
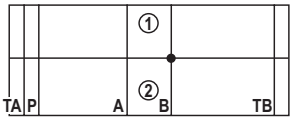
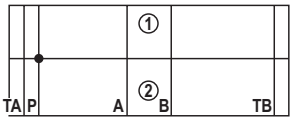
01	02	03	04		05		06		08
HSZ	**10**	**A**		**–**	**3X**	**/**		**00**	*****

01	Sandwich plate	**HSZ**
02	Size 10	**10**
03	Porting pattern according to ISO 4401-03-02-0-05	**A**
04	Variant no. (see below)	**6..**
05	Component series 30 ... 39 (30 ... 39: unchanged installation and connection dimensions)	**3X**

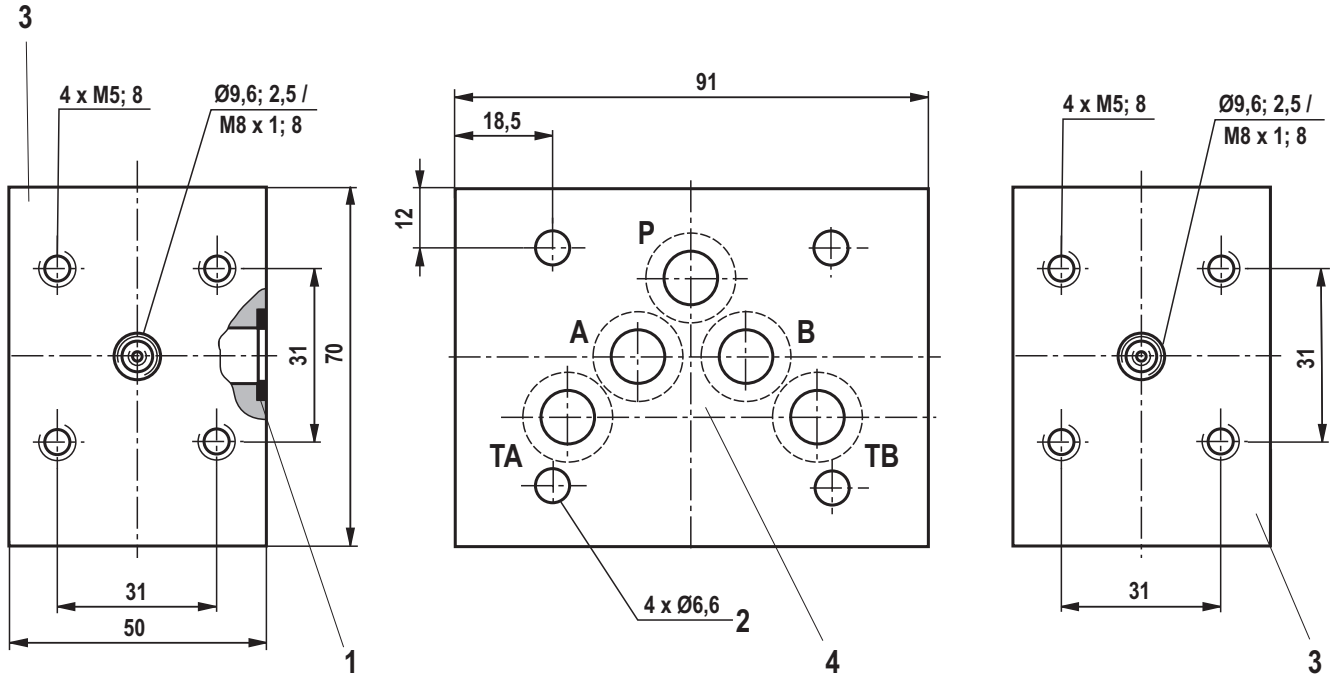
Seal material

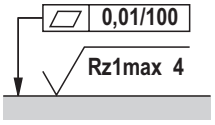
06	NBR seals	**no code**
	FKM seals	**V**
	Low-temperature seal (max. 315 bar)	**MT**
	Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	
07	Further details in the plain text	

Symbols, variant no.: Sandwich plate size 10 (① = component side, ② = plate side)

		Pressure switch effective in channel...		
Variant number	Mass			
	2 kg	601	602	603
Variant number				
	2 kg	604	605	606
Variant number				
	2 kg	607	608	609
Variant number				
	2 kg	610	611	612

Dimensions: Sandwich plate size 10 for type HED 8 OH... as vertical stacking element (up to 350 bar) (dimensions in mm)

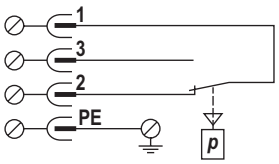
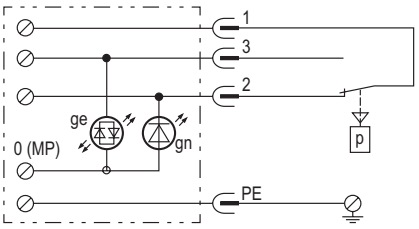
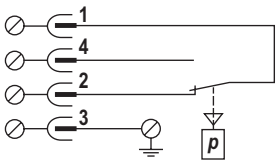




Required surface quality of the plate contact surface

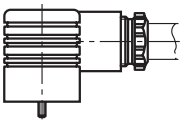
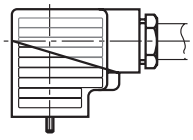
1 Seal ring
2 Through hole for valve mounting
3 Screw-on surface for pressure switch
4 Porting pattern according to ISO 4401-05-04-0-05

Electrical connection according to DIN EN 175301-803

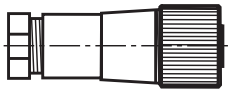
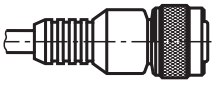
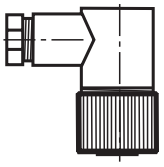
“K14” without indicator light	**“K14” with** indicator light	**“K35”**
	Mating connectors 	
Switching function Terminals 1-2: Contact opens in case of pressure increase Terminals 1-3: Contact closes in case of pressure increase		Switching function Terminals 1-2: Contact opens in case of pressure increase Terminals 1-4: Contact closes in case of pressure increase

Mating connectors according to DIN EN 175301-803

For connection “K14”

For details and more mating connectors see data sheet 08006						
	Material number					
	Without circuitry	With circuitry (indicator light) AC/DC, -20 ... +60 °C				
Color	240 V, -40 ... +125 °C	6 ... 14 V	16 ... 30 V	36 ... 60 V	90 ... 130 V	180 ... 240 V
black	**R901017012**	**R901017030**	**R901017048**	**R901017032**	**R901017035**	**R901017037**

For “K35” connection

For details and more mating connectors see data sheet 08006			
	Material number		
Color	4-pole, M12 x 1 with screw connection (PG9), -40 ... +85 °C	4-pole, M12 x 1 with PUR cable, 3 m long, -25 ... +85 °C	4-pole, M12 x 1 with screw connection (PG9), angled -40 ... +85 °C
black	**R900031155**	**R900064381**	**R900082899**

Further information

☞ **Note:**
For general notes on safety, assembly or commissioning, see operating instructions:

07600-B Hydraulic valves for industrial applications

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