

Hydro-electric pressure switch

RE 50061/07.06
Replaces: 02.06

1/18

Type HED 8

Component series 2X
Maximum operating pressure 630 bar

DINEN 61058-1 : 1993-05

IEC 60947-1 : 1999-02 / Revision 1 : 2000-08 / Revision 2 : 2001-10

IEC 60947-5-1 : 1997-10 / Revision 1 : 1999-04 / Revision 2 : 1999-10

DINEN 60529 : 2000-09



TB0004+TB0040

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Features

- For subplate mounting
- For in-pipe installation
- For flange connection, position of ports to ISO 16873
- As vertical stacking element, position of ports to DIN 24340 form A
- In horizontal stacking assemblies
- 5 pressure stages, optional
- 4 adjustment elements, optional:
 - Spindle with hexagon socket, with or without protective cap (protective cap sealable)
 - Spindle with hexagon socket and scale, with or without protective cap
 - Rotary knob with scale
 - Lockable rotary knob with scale
- Electrical connection
 - Individual connection by means of connector sockets to DIN EN 175301-803 ("K14")
 - Individual connection by means of connector sockets to IEC 60947-5-2; M12 x 1 ("K35")

Information on available spare parts:
www.boschrexroth.com/spc

Ordering code

HED 8		-2X/					*
Piston type pressure switch		Further details in clear text					
Flange connection (ISO 16873) ¹⁾		= OH		Seal material			
Subplate mounting		= OP		NBR seals			
In-pipe installation		= OA		FKM seals			
Component series 20 to 29		= 2X		(other seals on enquiry)			
(20 to 29: unchanged installation and connection dimensions)				⚠ Caution!			
Max. set pressure 50 bar		= 50		Observe compatibility of seals with hydraulic fluid used!			
Max. set pressure 100 bar		= 100					
Max. set pressure 200 bar		= 200					
Max. set pressure 350 bar		= 350					
Max. set pressure 630 bar ²⁾		= 630					
Electrical connection				No code =			
Without cable socket		= K14 ³⁾		Spindle without scale, without protective cap			
Individual connection with component plug to DIN EN 175301-803				S = Spindle without scale, with protective cap			
Without connector socket		= K35 ³⁾		A ⁵⁾ = Spindle with scale, without protective cap			
Individual connection using connector IEC 60947-5-2;				AS ⁵⁾ = Spindle with scale, with protective cap			
M12 x 1				KS ^{4; 5)} = Lockable rotary knob with scale			
				KW ⁵⁾ = Rotary knob with scale			

¹⁾ Sandwich plate for vertical stacking assembly, separate order, see pages 13 to 16

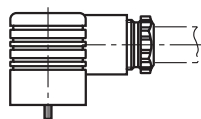
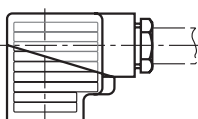
²⁾ Not permitted for vertical stacking assembly

³⁾ Cable sockets, separate order, see page 3

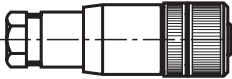
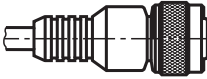
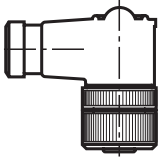
⁴⁾ H-key, material no. **R900008158**, included in scope of supply

⁵⁾ The switching pressure can only be set exactly with the help of a pressure gauge (scale serves only for orientation)

Connector sockets to DIN EN 175301-803

For details and additional connector sockets, see RE 08006						
	Material no.					
	Without circuitry	With circuitry (indicator lamp) AC/DC				
	250 V	6 ... 14 V	16 ... 30 V	36 ... 60 V	90 ... 130 V	180 ... 240 V
Colour: Black	R901017012	R901017030	R901017048	R901017032	R901017035	R901017037
<i>I</i> _{max}	16 A	4 A	4 A	4 A	4 A	4 A

Connector sockets to IEC 60947-5-2

For details and additional connector sockets, see RE 08006			
	Material no.		
Colour	Connector socket, suitable for K35 4-pin, M12 x 1 with threaded connection	Connector socket, suitable for K35-3m 4-pin, M12 x 1 with moulded-on PVC cable, 3 m long	Connector socket, suitable for K35 4-pin, M12 x 1 with threaded connection, angled
Black	R900031155	R900064381	R900082899

Standard types

Type	Material no.
HED 8 OP-2X/50K35	R901131275
HED 8 OP-2X/100K14	R901102747
HED 8 OP-2X/100K35S	R901127492
HED 8 OP-2X/200K14	R901102721
HED 8 OP-2X/350K14S	R901102365
HED 8 OP-2X/350K35S	R901127494
HED 8 OA-2X/050K14	R901101698
HED 8 OA-2X/50K14S	R901102704
HED 8 OA-2X/50K14KS	R901102702
HED 8 OA-2X/50K14KW	R901102754
HED 8 OA-2X/100K14	R901102706
HED 8 OA-2X/100K14S	R901102711
HED 8 OA-2X/100K35KS	R901126696
HED 8 OA-2X/100K14KW	R901094159
HED 8 OA-2X/200K14	R901102708
HED 8 OA-2X/200K14S	R901102727
HED 8 OA-2X/350K14	R901102710
HED 8 OA-2X/350K35	R901125561
HED 8 OA-2X/350K35A	R901127471
HED 8 OA-2X/350K35AS	R901127477
HED 8 OA-2X/350K14S	R901102778
HED 8 OA-2X/350K35S	R901127474
HED 8 OA-2X/350K14AS	R901102722
HED 8 OA-2X/350K14KW	R901102716

Type	Material no.
HED 8 OH-2X/50K14	R901102349
HED 8 OH-2X/50K14V	R901099796
HED 8 OH-2X/50K14S	R901102712
HED 8 OH-2X/50K14AV	R901099798
HED 8 OH-2X/50K14KS	R901102356
HED 8 OH-2X/50K14KSV	R901099800
HED 8 OH-2X/100K14	R901102360
HED 8 OH-2X/100K35KS	R901125068
HED 8 OH-2X/100K14V	R901099775
HED 8 OH-2X/100K14S	R901095375
HED 8 OH-2X/100K14AV	R901099780
HED 8 OH-2X/100K14KSV	R901099788
HED 8 OH-2X/200K14	R901099808
HED 8 OH-2X/200K14V	R901099789
HED 8 OH-2X/200K14S	R901102362
HED 8 OH-2X/200K14AV	R901099790
HED 8 OH-2X/350K14S	R901102713
HED 8 OH-2X/350K14V	R901099815

Further standard types and components can be found in the EPS (standard price list).

Function, sections, symbol

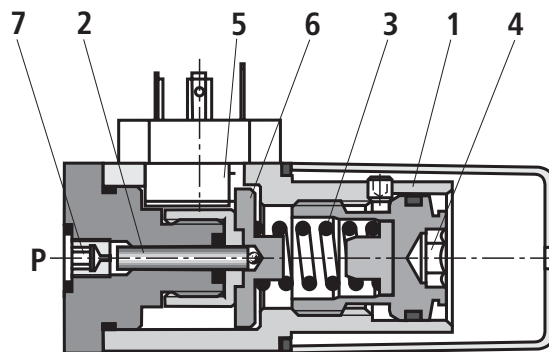
Hydro-electric pressure switches of type HED 8 are piston type pressure switches. They basically consist of housing (1), cartridge with piston (2), compression spring (3), adjustment element (4) and micro-switch (5).

If the pressure to be monitored is lower than the set value, micro-switch (5) is operated. The pressure to be monitored is applied via orifice (7) to piston (2). Piston (2) is supported on spring plate (6) and acts against the infinitely variable force of compression spring (3). Spring plate (6) transmits the movement of piston (2) to micro-switch (5) and releases the latter when the set pressure is reached. This switches the electrical circuit on or off depending on the circuitry. The mechanical limit stop of spring plate (6) protects micro-switch (5) against mechanical destruction in the event of a sudden pressure drop and, in the event of overpressure, prevents compression spring (3) from hitting the block.

Note!

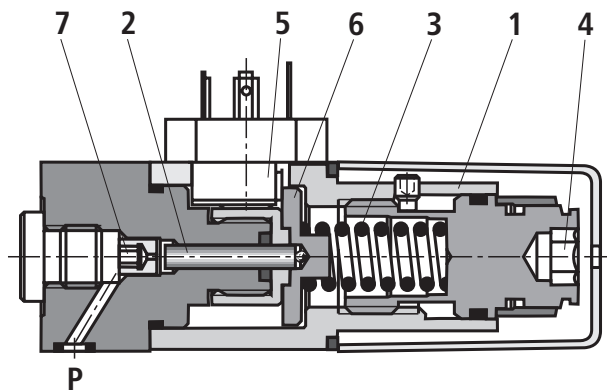
To increase the service life, the pressure switch should be mounted so as to ensure a minimum of vibration and be protected against hydraulic pressure surges.

Orifice (7) that is provided for damping purposes as a standard can be replaced to suit the required degree of damping.



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

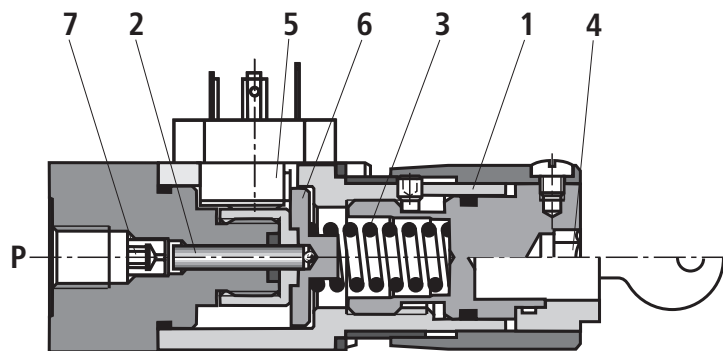
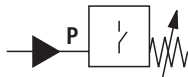
Type HED 8 OH-2X/...K14S



Type HED 8 OP-2X/...K14A

Type HED 8 OP-2X/...K14AS


Symbol



Type HED 8 OA-2X/...K14KW

Type HED 8 OA-2X/...K14KS

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

General				
Weight	– Pressure switch	kg	0.8	
	– Sandwich plate for vertical stacking assembly	• Size 6	kg	0.8 (plate height 40.5 mm, see pages 13 and 14)
				3 (plate height 120 mm, see pages 13 and 14)
		• Size 10	kg	2 (see pages 15 and 16)
Installation orientation			Optional	
Ambient temperature range			–25 to +50 (NBR seals) –20 to +50 (FKM seals)	
Vibration test to DIN EN 60068-2-6:1996			g 20 (testing time 30 minutes)	
Shock test to DIN EN 60068-2-27:1993			g 25	
Conformity			– DINEN 61058-1 : 1993-05	
			– IEC 60947-1 : 1999-02 / Revision 1 : 2000-08 / Revision 2 : 2001-10	
			– IEC 60947-5-1 : 1997-10 / Revision 1 : 1999-04 / Revision 2 : 1999-10	
			– DINEN 60529 : 2000-09	

Hydraulic			
Maximum operating pressure		bar	630
Hydraulic fluid		Mineral oil (HL, HLP) to DIN 51524 ¹⁾ ; fast bio-degradable hydraulic fluids to VDMA 24568 (see also RE 90221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycols) ²⁾ ; HEES (synthetic esters) ²⁾ ; other hydraulic fluids on enquiry	
Hydraulic fluid temperature range		°C	–25 to +80 (for NBR seals) –20 to +80 (for FKM seals)
Viscosity range		mm ² /s	10 to 800
Max. permissible degree of contamination of the hydraulic fluid; cleanliness class to ISO 4406 (c)		Class 20/18/15 ³⁾	
Load cycles		≥ 5 x 10 ⁶	

¹⁾ Suitable for NBR and FKM seals²⁾ Suitable only for FKM seals³⁾ The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, prolongs the service life of components.

For the selection of filters, see data sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

Pressure adjustment ranges

Pressure stage in bar	Maximum operating pressure in bar	Pressure adjustment range in bar (falling)	Pressure differential per turn in bar
50	350	5 ... 50	≈ 19
100	350	10 ... 100	≈ 35
200	350	15 ... 200	≈ 77
350	400	25 ... 350	≈ 120
630	630	40 ... 630	≈ 214

Direction of rotation: Clockwise → increase in set pressure

Counter-clockwise → reduction of set pressure

Technical data (for applications outside these parameters, please consult us!)**Electrical**

Electrical connection / cable socket		Plug-in connection to DIN EN 175301-803, 3-pin + PE or IEC 60047-5-2, M12 x 1
Maximum connection cross-section / cable socket	mm ²	1.5
Maximum switching frequency	1/h	7200
Type of protection to EN 60529 IEC	– „K14“	IP 65 with cable socket mounted and locked
	– „K35“	IP 67 with cable socket mounted and locked
Switching accuracy (repeatability)		< ± 1 % of adjustment range
Switch		According to VDE 0630/DIN EN 61058
Transfer resistance 1-2; 1-3	mΩ	< 50
Coordination of insulation		Overvoltage category 3
Contamination		Degree of contamination 3
Bounce time	– ON	ms < 5
	– OFF	ms < 5

Switching capacity

Load cycles	Voltage <i>U</i> in V	Resistive load, max. in A	Inductive load, max. in A
2 million	250 AC	2 A for 2 million switching operations	0.5 A cos. φ 0.6 for 2 m switching operations
2 million	24 DV	2 A for 2 million switching operations	0.5 A for 2 million switching operations

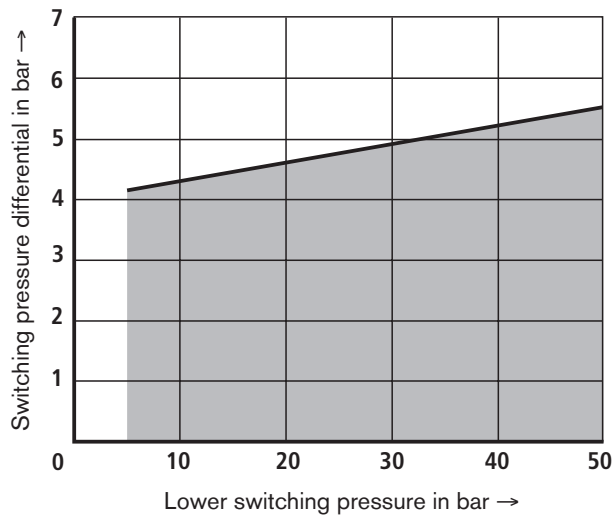
When establishing the electrical connection, properly connect the protective earth conductor (PE $\frac{1}{2}$).

 **Note!**

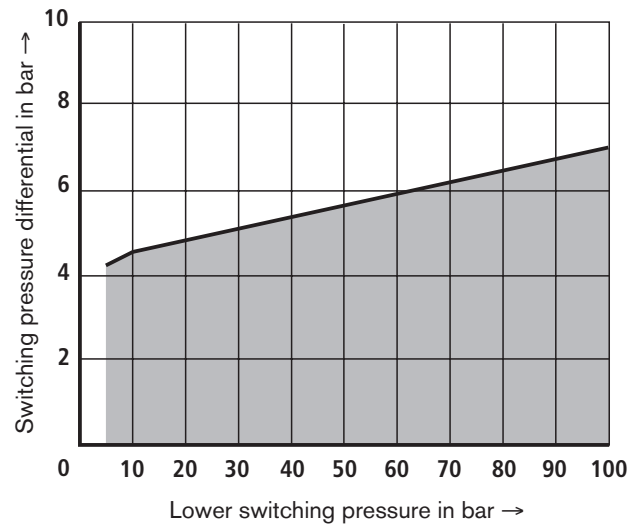
Minimum ohmic load of the switch 2.5 mA with 24 V DC

Switching pressure differential

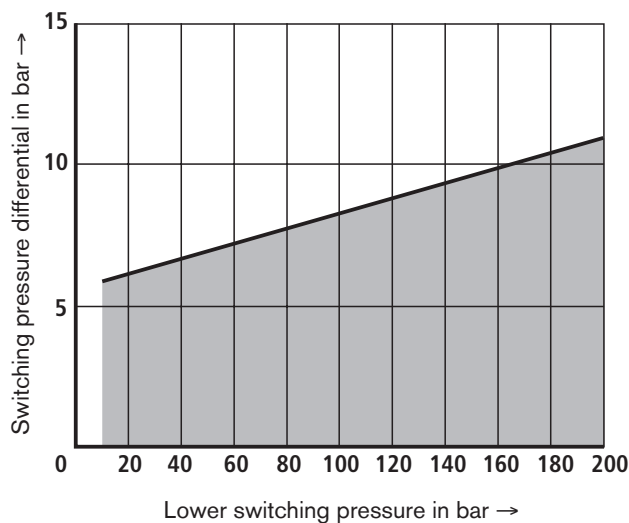
Pressure stage 50



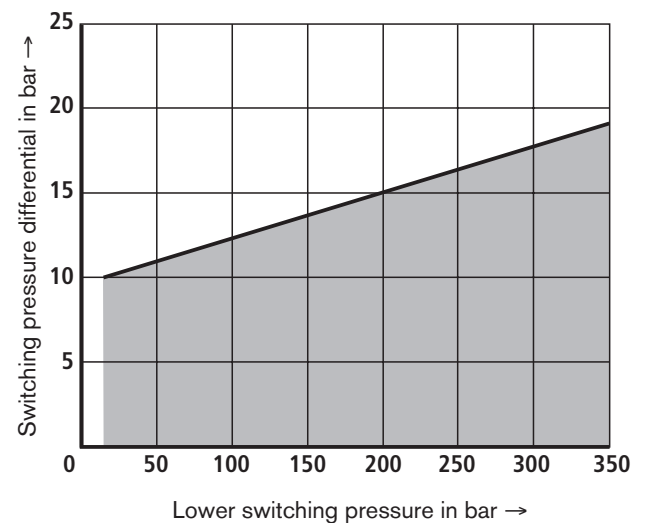
Pressure stage 100



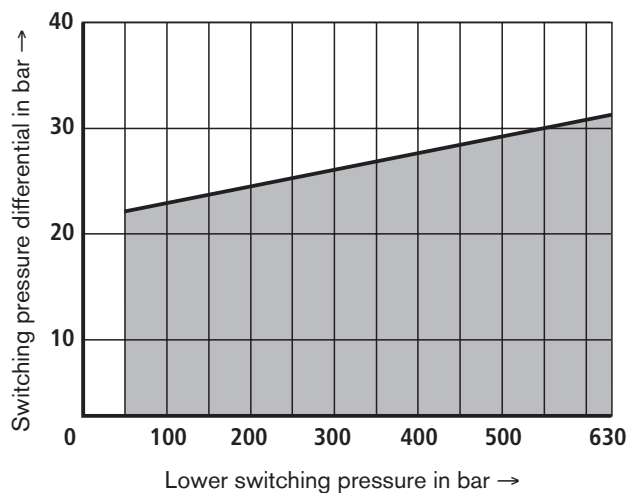
Pressure stage 200



Pressure stage 350



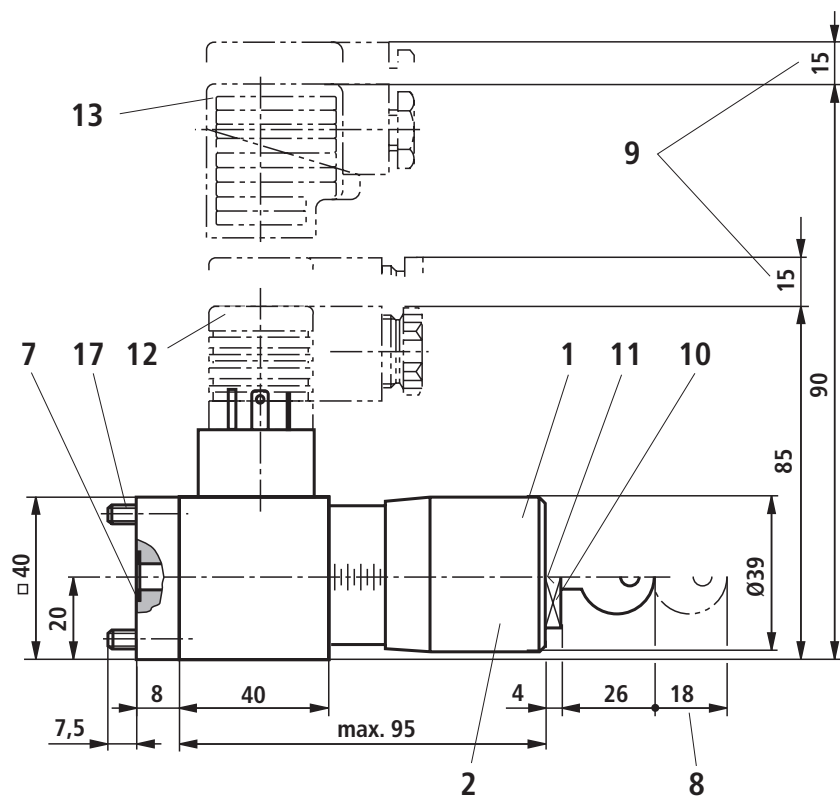
Pressure stage 630



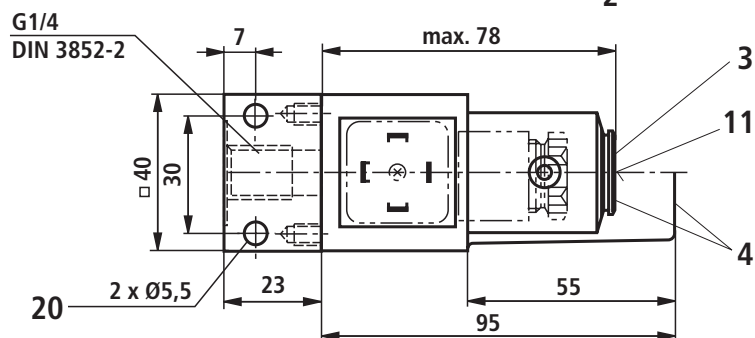
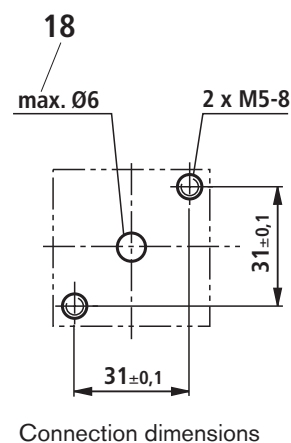
Note!

The switching pressure differential can increase over the lifetime as a result of a deterioration of the oil quality and the number of load cycles!

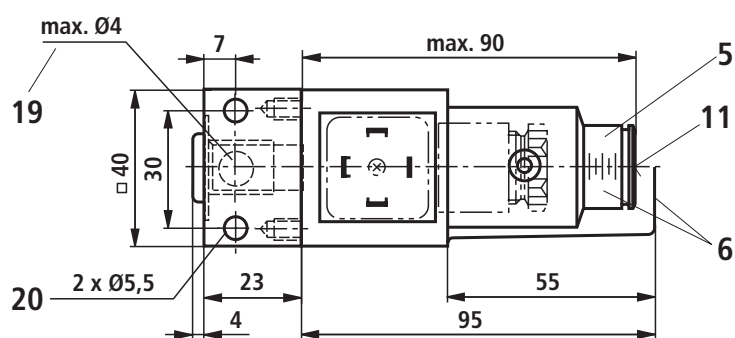
Unit dimensions: Type HED 8 ...K14 (nominal dimensions in mm)



Type HED 8 OH...

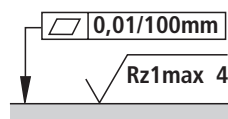


Type HED 8 OA...



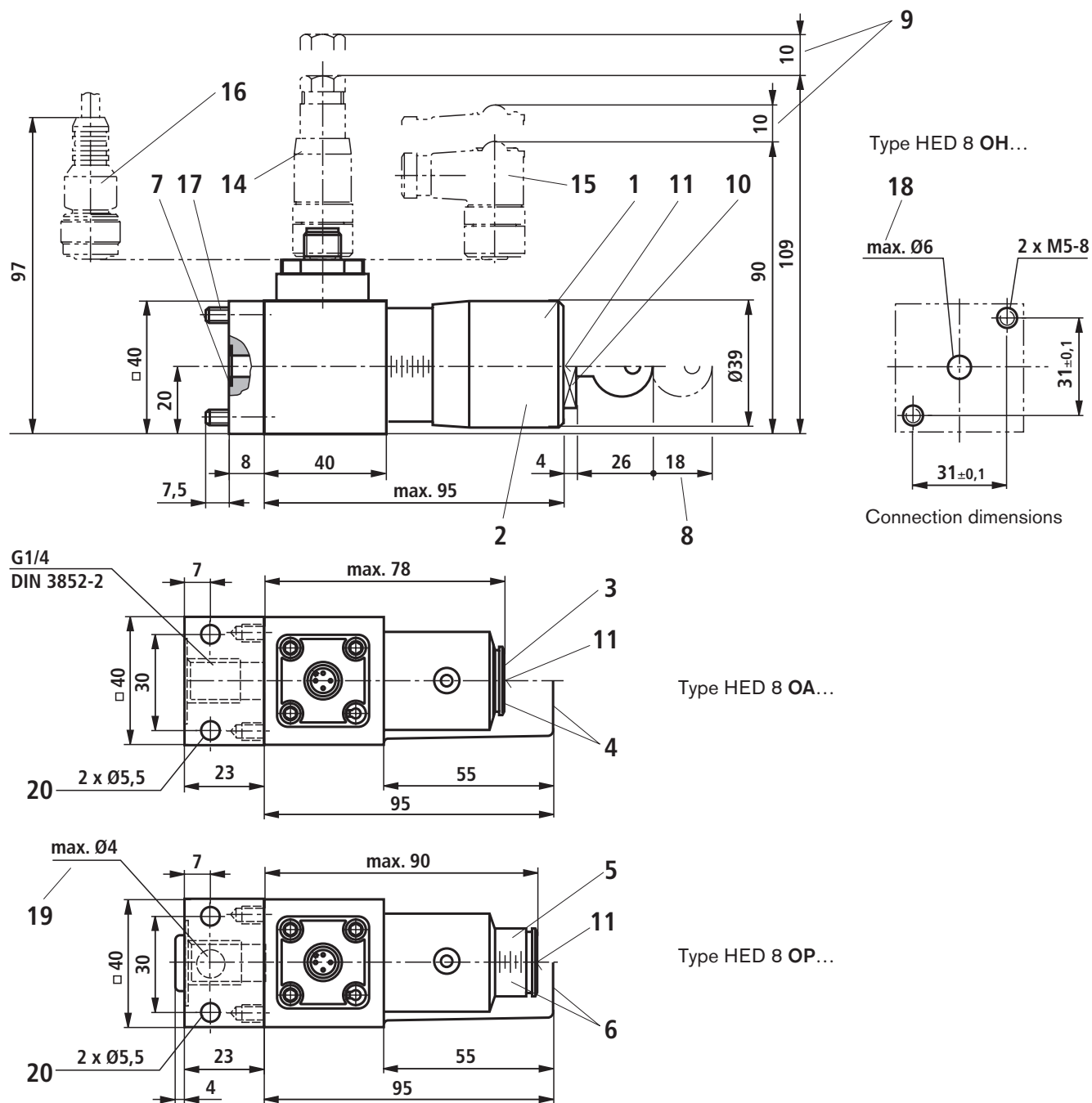
Type HED 8 OP...

For the explanation of items, see page 10



Required surface quality of the component mounting face
(for versions "OH" and "OP")

Unit dimensions: Type HED 8 ...K35 (nominal dimensions in mm)



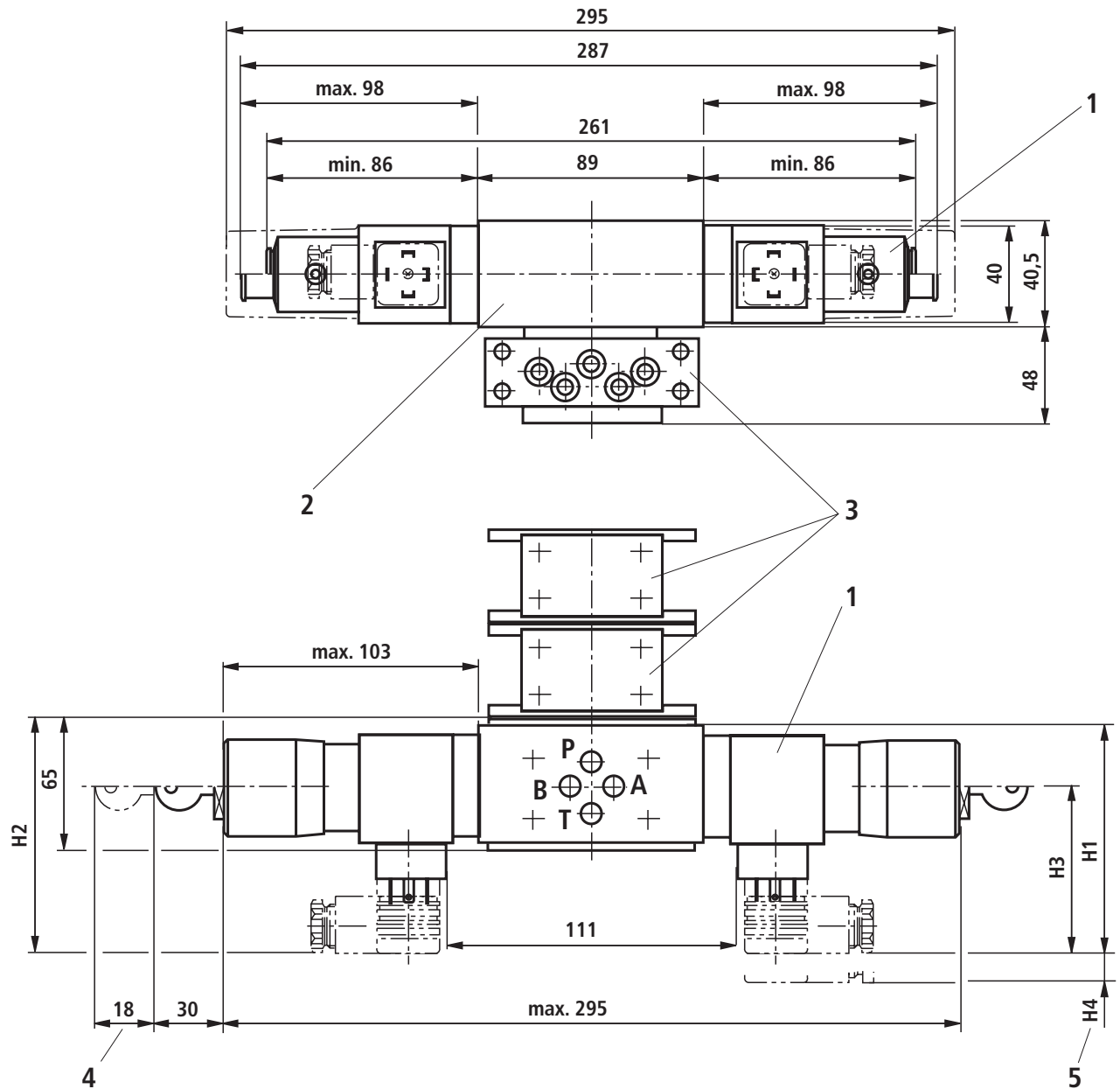
For the explanation of items, see page 10

0,01/100mm
Rz1max 4
Required surface quality of the component mounting face
(for versions "OH" and "OP")

Unit dimensions

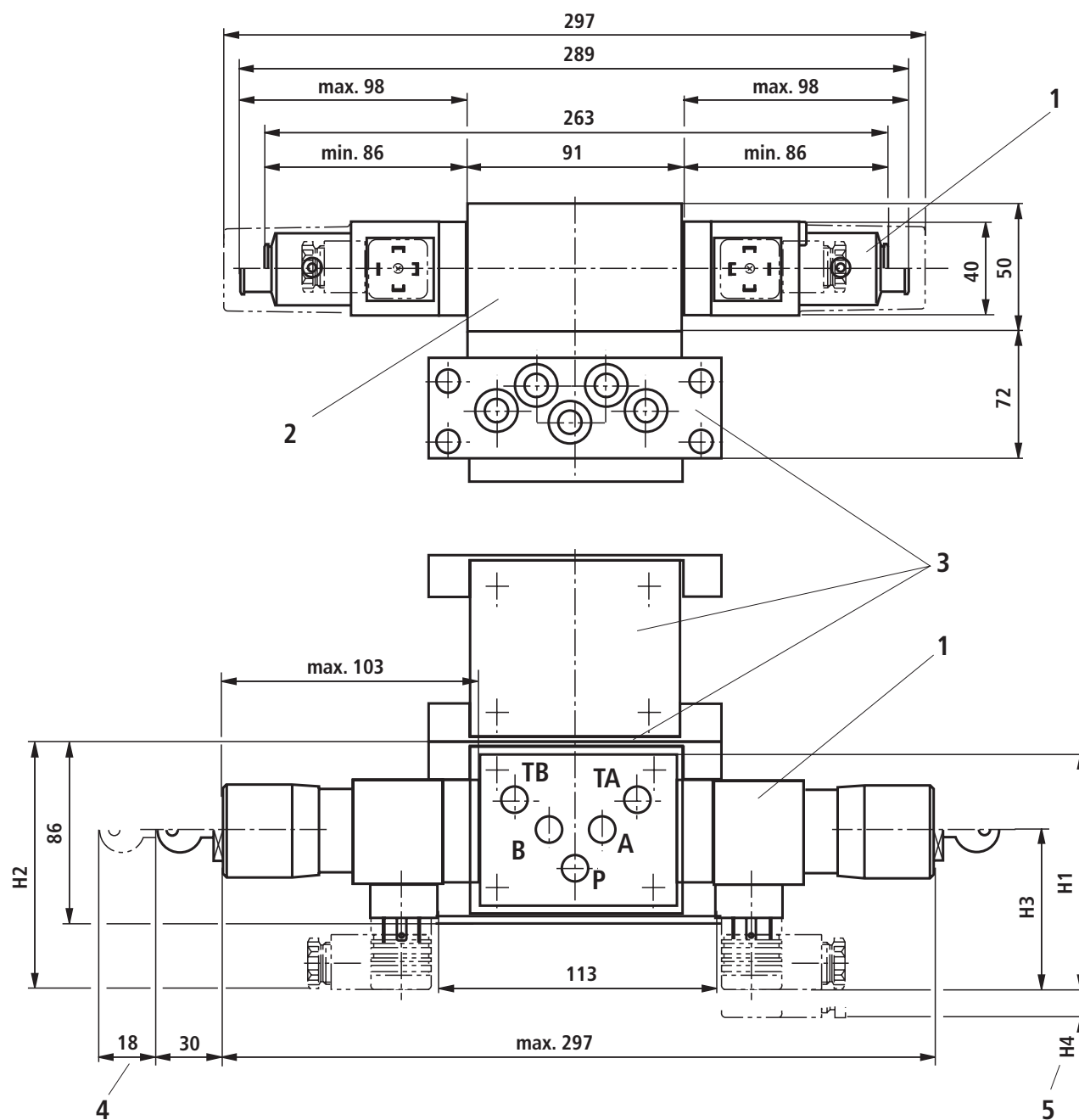
- 1 Adjustment element "KW"
- 2 Adjustment element "KS"
- 3 Adjustment element "–"
- 4 Adjustment element "S"
- 5 Adjustment element "A"
- 6 Adjustment element "AS"
- 7 Seal ring
- 8 Space required to remove key
- 9 Space required to remove cable socket
- 10 Hexagon A/F 27 (with adjustment element "KS")
- 11 Hexagon socket A/F 10
- 12 Connector socket **without** circuitry, suitable for "K14"
(separate order, see page 2)
- 13 Connector socket **with** circuitry, suitable for "K14"
(separate order, see page 2)
- 14 Connector socket suitable for "K35" 4-pin, M12 x 1 with threaded connection (separate order, see page 3)
- 15 Connector socket suitable for "K35" 4-pin, M12 x 1 with threaded connection, angled (separate order, see page 3)
- 16 Connector socket suitable for "K35-3m" 4-pin, M12 x 1 with moulded-on PVC cable, 3 m long (separate order, see page 3)
- 17 **Valve fixing screws** (type HED 8 OH...)
(separate order)
 - **2 socket head cap screws**
ISO 4762 - M5 x 55 - 10.9-fIZn-240h-L
 Friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
 tightening torque $M_T = 6^{+0.5}$ Nm,
 material no. **R913000261**
- 18 Maximum diameter of the connection bore of the mating piece (type HED 8 OH...)
- 19 Maximum diameter of the connection bore of the mating piece (type HED 8 OP...)
- 20 **Valve fixing screws**
(Type HED 8 OA... and ...OP...) (separate order)
 - **2 socket head cap screws**
ISO 4762 - M5 x 50 - 10.9-fIZn-240h-L
 Friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
 tightening torque $M_T = 7^{+0.5}$ Nm,
 material no. **R913000064**

Notes on the installation: Type HED 8 OH... in stacking assembly **size 6** (nominal dimensions in mm)



- 1 Pressure switch HED 8 OH... for use in stacking assemblies (can be rotated 4 x 90° for mounting)
The mounting options of the pressure switch depend on the adjacent stacking subplate!
- 2 Sandwich plate type HSZ 06 for use of the pressure switch as stacking element
- 3 Stacking elements
- 4 Space required to remove key
- 5 Space required to remove cable socket

Connector socket	H1	H2	H3	H4
Without circuitry "K14"	87	98	65	15
With circuitry "K14"	92	103	70	15
Angled "K35"	92	103	70	10
Straight "K35"	111	122	89	10

Notes on the installation: Type HED 8 OH... in stacking assembly size 10 (nominal dimensions in mm)


- 1 Pressure switch HED 8 OH... for use in stacking assemblies (can be rotated 4 x 90° for mounting)
The mounting options of the pressure switch depend on the adjacent stacking subplate!
- 2 Sandwich plate type HSZ 10 for use of the pressure switch as stacking element
- 3 Stacking elements
- 4 Space required to remove key
- 5 Space required to remove cable socket

Connector socket	H1	H2	H3	H4
Without circuitry "K14"	100	108	65	15
With circuitry "K14"	105	113	70	15
Angled "K35"	105	113	70	10
Straight "K35"	124	132	89	10

Ordering code: Sandwich plate size 6 (separate order)

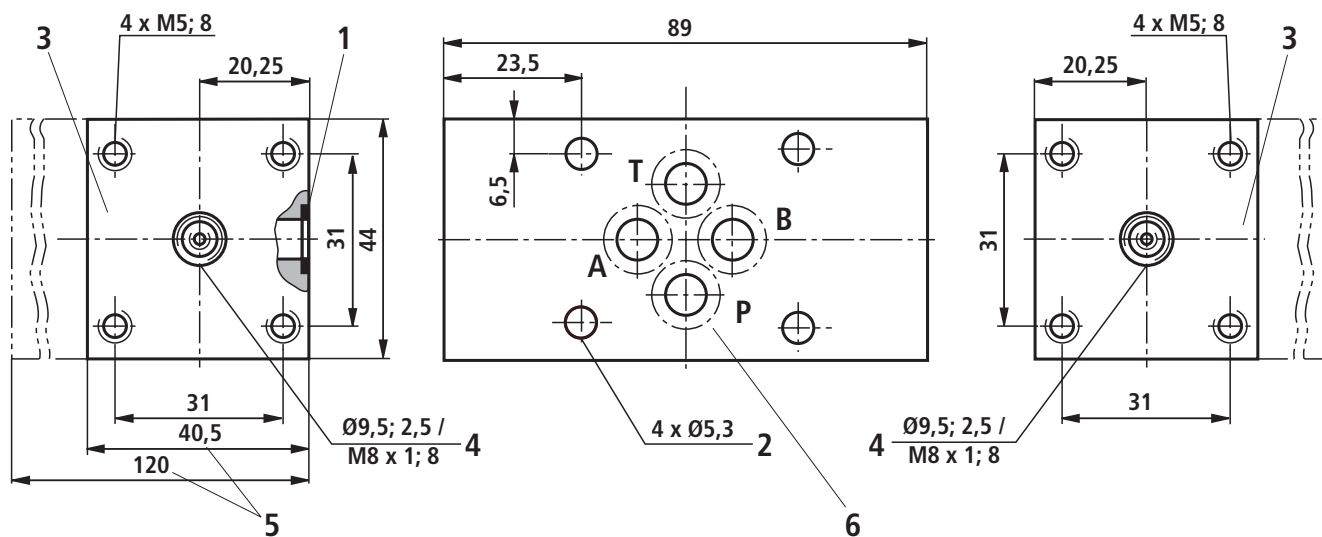
HSZ 06 A -3X/ 00 *					
Sandwich plate					Further details in clear text
Size 6	= 06				
Position of ports to DIN 24340, form A6	= A				
Variant no. (see below)	= 6..				
Component series 30 to 39 (30 to 39: unchanged installation and connection dimensions)	= 3X				
			M =		
			V =		
					Seal material
					NBR seals
					FKM seals
					(other seals on enquiry)
					⚠ Caution!
					Observe compatibility of seals with hydraulic fluid used!

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

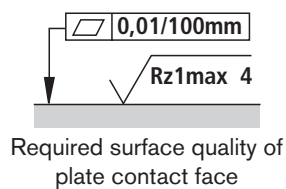
		Pressure switch effective in channel ...		
Variant number	Plate height			
Variant number	– 40.5 mm	608	609	601
	– 120 mm	627	628	620
Variant number	– 40.5 mm	602	603	604
	– 120 mm	621	622	623
Variant number	– 40.5 mm	605	606	607
	– 120 mm	624	625	626
Variant number	– 40.5 mm	610	611	612
	– 120 mm	629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

Unit dimensions: Sandwich plate size 6 (nominal dimensions in mm)

Type HED 8 OH... as vertical stacking element (to 350 bar)



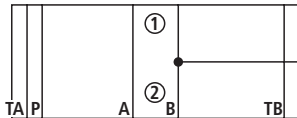
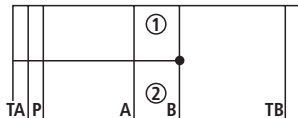
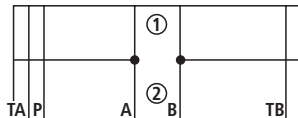
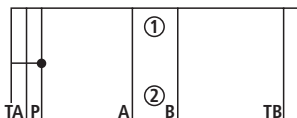
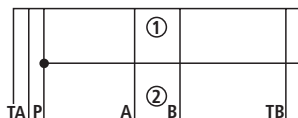
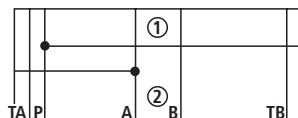
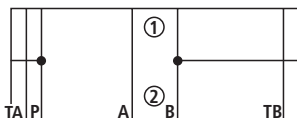
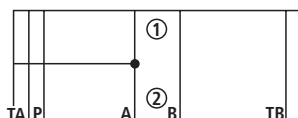
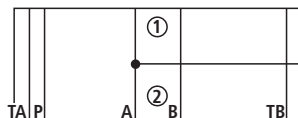
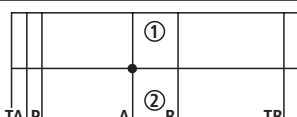
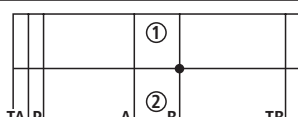
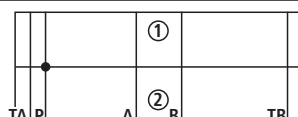
- 1 Seal ring
- 2 Through bore for valve mounting
- 3 Screw-on face for pressure switch
- 4 Measuring port, optional
- 5 Plate height 40.5 mm or 120 mm, optional
- 6 Position of ports to DIN 24340 form A6



Ordering code: Sandwich plate size 10 (separate order)

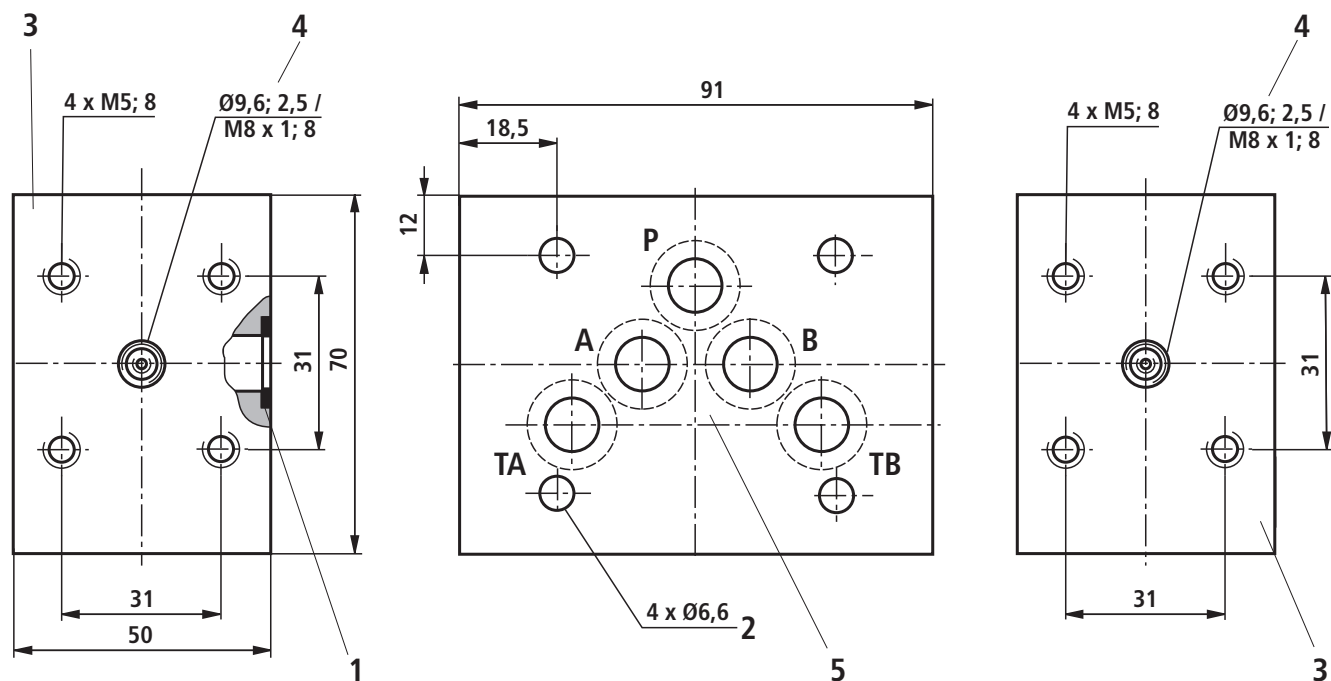
HSZ 10 A -3X/ 00 *					
Sandwich plate					Further details in clear text
Size 10	= 10				
Position of ports to DIN 24340, form A10	= A				
Variant no. (see below)	= 6..				
Component series 30 to 39 (30 to 39: unchanged installation and connection dimensions)	= 3X				
				M = V =	Seal material NBR seals FKM seals (other seals on enquiry) ⚠ Caution! Observe compatibility of seals with hydraulic fluid used!

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

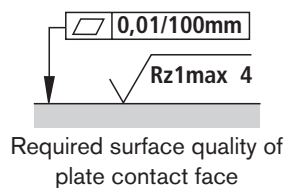
	Pressure switch effective in channel ...		
			
Variant number	601	602	603
			
Variant number	604	605	606
			
Variant number	607	608	609
			
Variant number	610	611	612

Unit dimensions: Sandwich plate size 10 (nominal dimensions in mm)

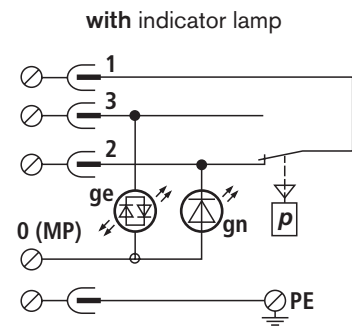
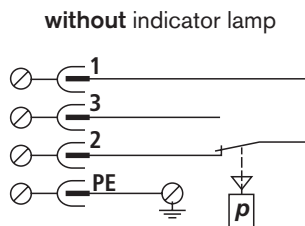
Type HED 8 OH... as vertical stacking element (up to 350 bar)



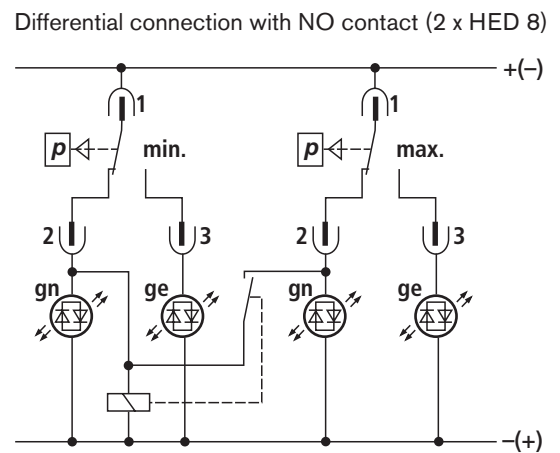
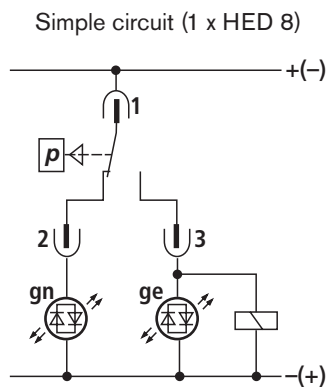
- 1 Seal ring
- 2 Through bore for valve mounting
- 3 Screw-on face for pressure switch
- 4 Measuring port, optional
- 5 Position of ports to DIN 24340 form A10



Pin assignment: Type HED 8 ...K14



Circuit examples: Type HED 8 ...K14

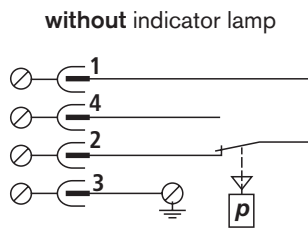


Switching function

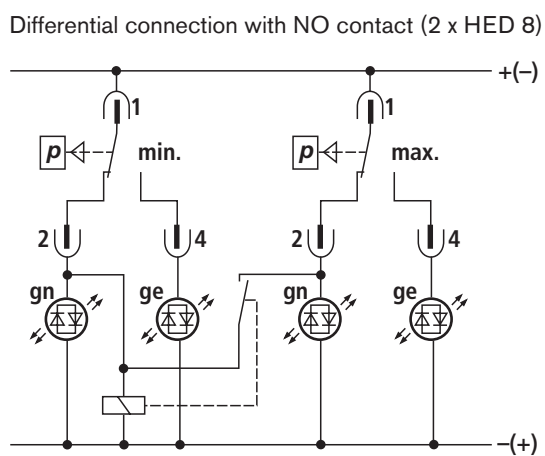
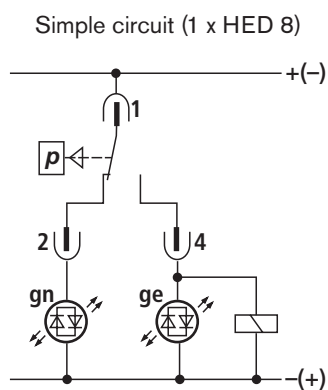
Terminals 1-2: In the case of increase in pressure (**p**) contact opening

Terminals 1-3: In the case of increase in pressure (**p**) contact closing

Pin assignment: Type HED 8 ...K35



Circuit examples: Type HED 8 ...K35



Switching function

Terminals 1-2: In the case of increase in pressure (p) contact opening

Terminals 1-3: In the case of increase in pressure (p) contact closing

Notes

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Notes
