

3DREP(E)

Proportional pressure reducing and relief valve of 3-way design

Nominal size 6

Series 2X

Maximum operating pressure 100 bar

Maximum flow 15 L/min



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Features

- 1 - Directly controlled proportional valves for the control of the pressure and direction of a flow
- 1 - Spring centered control spool
- 3 - Actuated via proportional solenoids with central thread and removable coil
- 4 - Hand override, optional
- 5 - For subplate mounting: Porting pattern to ISO4401-03-02-0-05
- 8 - Type 3DREPE with integrated electronics,
 - External control electronics for type 3DREP: RT-MSPD1-30 (for one solenoid) / RT-MSPD2-30 (for double solenoids (separate order))

Ordering details

3DREP		6	A	-	2X	/	16	E	G24	N9	K31	/	A1	M	*
01	02	03	04		05		06	07	08	09	10		11	12	13

01	3DREP	3-way proportional pressure reducing and relief valve
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02	No code	For external control electronics
	E	With integrated control electronics

03	6	NS 6
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Operating Port

04	A	Operating port A
	B	Operating port B
	C	Operating ports A and B

05	2X	Series 20 to 29 (20 to 29: unchanged installation and connection dimensions)
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Operating pressure range

06	16	16 bar
	25	25 bar
	45	45 bar

07	E	Proportional solenoid with removable coil
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08	G24	Supply voltage 24V DC
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09	No code	Without hand override
	N9	With protected hand override

3DREP		6	A	-	2X	/	16	E	G24	N9	K31	/	A1	M	*
01	02	03	04		05		06	07	08	09	10		11	12	13

Electrical connections

10	K4	With component plug to DIN EN 175301-803 (separate order)	3DREP
	K31	With component plug to DIN EN 175201-804 (separate order)	3DREPE

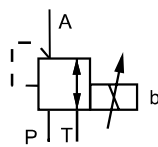
Command value

11	No code	RT-MSPD1-30 (one solenoid) / RT-MSPD2-30 (double solenoid) (separate order)	3DREP
	A1	Command value $\pm 10V$	3DREPE
	F1	Command value 4 ... (12) ... 20mA	

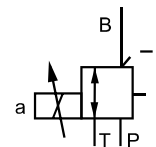
Seal material

12	M	NBR seals
	V	FKM seals
13	*	Further details in clear text

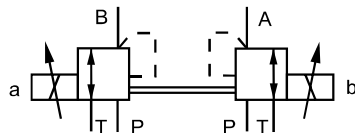
Symbols



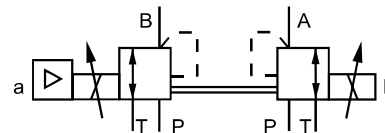
3DREP...A...



3DREP...B...



3DREP...C...



3DREPE...C...

Functions, section

The 3-way pressure reducing valve type 3DREP6.. is directly actuated by proportional solenoids. They convert an electrical input signal into a proportional pressure output signal. The proportional solenoids are controllable wet pin DC solenoids with central thread and removable coil. The solenoids are controlled optionally via external control electronics (type 3DREP) or by integrated control electronics (type 3DREPE).

Design:

- Housing (1) with mounting surface
- Control spool (2) with pressure measuring spools (3)
- Solenoids (4) with control thread
- Optional integrated valve electronics (7)

Function:

With the solenoids (4) de-energised the control spool (2) is held in its central position by compression springs. The control spool (2) is directly actuated when one of the solenoids is energised.

E.g. by energising solenoid "a" (4)

→ The pressure measuring spool (3) and control spool (2) move to the right in proportion to the electrical input signal

→ The connection from P to B and A to T is via orifice form cross-sections with progressive flow characteristics

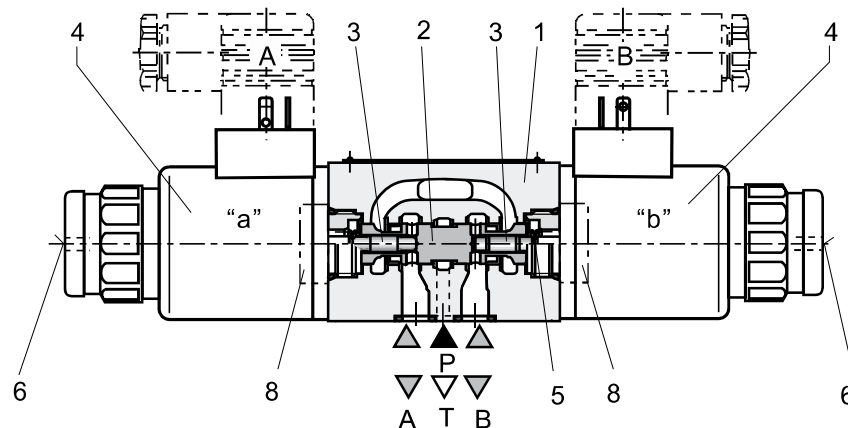
– De-energisation of the solenoid "a" (4)

→ The control spool (2) is returned to its central position by the compression springs. In the middle position the connections A and B to T are open, therefore, the pressure fluid can freely flow to tank.

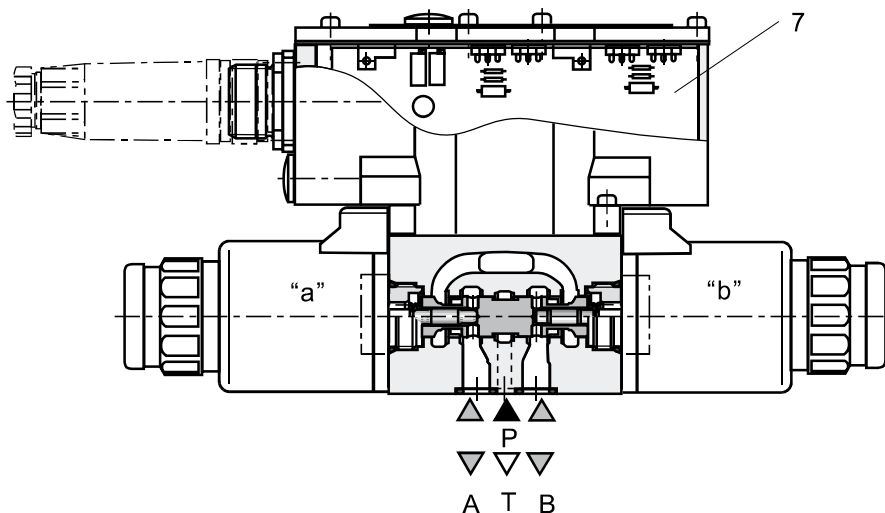
An optional hand overrides (6), makes it possible to move the control spool (2) without energising the solenoid.

Only solenoid "b" is installed in type 3DERP6A, only solenoid "a" is installed in type 3DERP6B, and plug (8) is installed to replace the other solenoid.

3DREP6...



3DREPE6...



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

General

Valve type		3DREP	3DREPE
Installation		optional, preferably horizontal	
Storage temperature range	°C	-20 ... +80	
Ambient temperature range	°C	-20 ... +70	-20 ... +50
Weight	kg	2.0	2.2

Hydraulic, proportional flow control valve (HLP46 at 40 °C ± 5 °C)

Operating pressure range	Port P	Pressure stage 16	bar	20 ... 100
		Pressure stage 25	bar	30 ... 100
		Pressure stage 45	bar	50 ... 100
	Port T		bar	0 ... 30
Max. flow ($\Delta p=50\text{bar}$)			L/min	15
Pressure fluid temperature range			°C	-20 ... +80 (preferably +40 ... +50)
Viscosity range			mm ² /s	20 ... 380 (preferably 30 ... 46)
Degree of contamination				ISO4406 17/15/12
Pressure fluid				mineral oil further fluids on request!
Hysteresis			%	≤ 5
Repeatability accuracy			%	≤ 1
Response sensitivity			%	≤ 0.5

Electrical, solenoid

Voltage type		DC	
Max. current per solenoid	A	1.5	2.5
Duty	%	100	
Coil temperature	°C	150	
Protection to DIN 40 050		IP65	

Electrical, control electronics

3DREP6	Digital	RT-MSPD2-2X	
3DREPE6	Digital	RT-3DREPE6...-2X-40/A1(F1)	
Supply voltage	Nominal voltage	VDC	24
	Lower limiting value	V	19.4
	Upper limiting value	V	35
Amplifier current consumption	I_{max}	A	1.8
	Impulse current	A	3

Electrical connection, plug-in connectors

For type 3DREP(without integrated control electronics): connector conforming to DIN EN 175301-803? (Need to order separately)

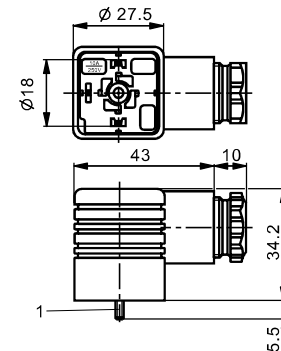
Solenoid a, colour grey

Separate order under material no. HP18110742

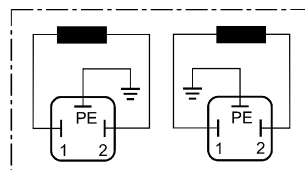
Solenoid b, colour black

Separate order under material no. HP18110741

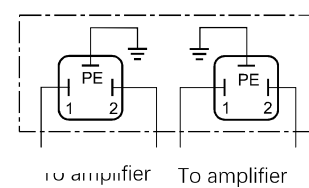
Fixing screw: M3,torque 0.5 Nm



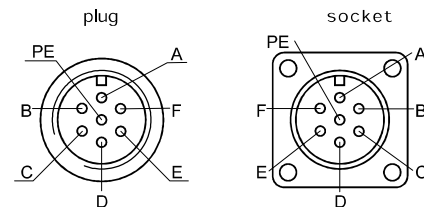
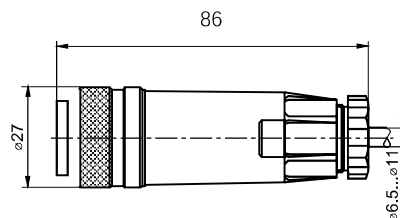
Connection on component plug



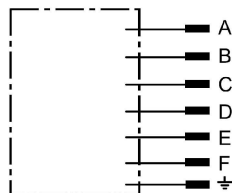
Connection on plug-in connector



For type 4WREE(with integrated control electronics): connector conforming to DIN EN 175201-804 (Need to order separately)



Pin allocation of the component plug



Metal nut structure (preferred model)

Order separately, Order No.: R00050406

Plastic nut structureOrder separately,

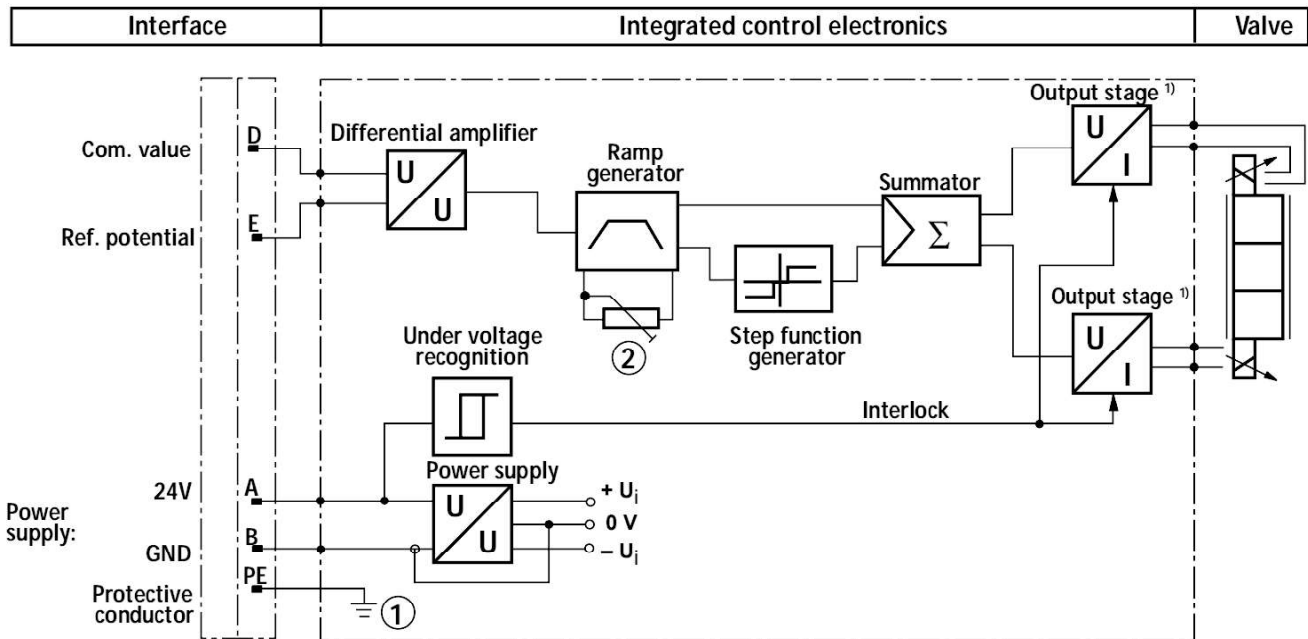
Order No.: R00050408

All-metal structureOrder separately,

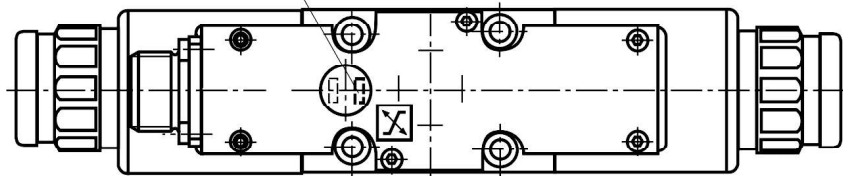
Order No.: R00050407

Function	Slot	Allocation interface A1	Allocation interface F1
Supply voltage	A	24VDC (19.4~35VDC), $I_{max} = 2 A$	
	B	0 V	
Ref. potential actual value	C	reference contact F; $R_e > 50 k\Omega$	reference contact F; $R_e < 10 \Omega$
Differential amplifier input	D	$\pm 10 V$ com. value; $R_e > 50 k\Omega$	4...20 mA com. value; $R_e > 100 \Omega$
	E	ref. potential com. value	
Measurement output (act. value)	F	$\pm 10 V$ act. value, (limiting load 5 mA)	4...20 mA act. value, load max. 300 Ω
	PE	Connected with cooling body and valve housing	

Block circuit diagram / connection allocation for the integrated electronics (3DREPE)



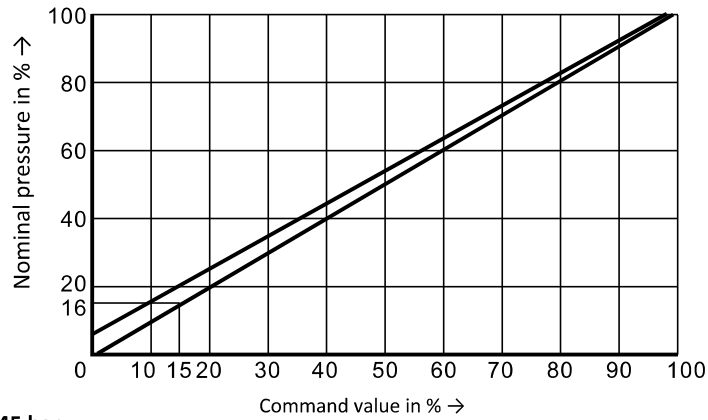
- 1 Protective conductor screwed onto housing and cover
- 2 Ramp from 0 to 5 s can be externally adjusted ($T_{up} \cong T_{down}$)



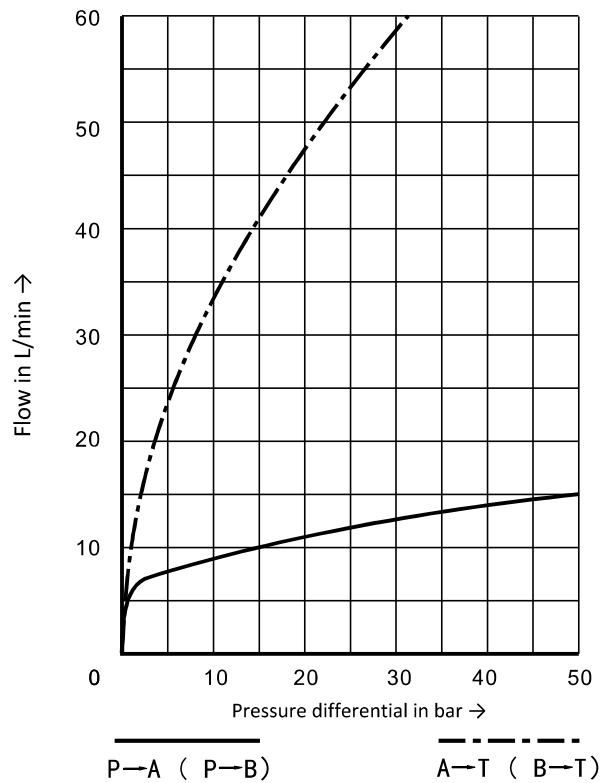
¹⁾ Output stages are current controlled

Characteristic curves (HLP46 at 40 °C ± 5 °C * $p_s = 100$ bar)

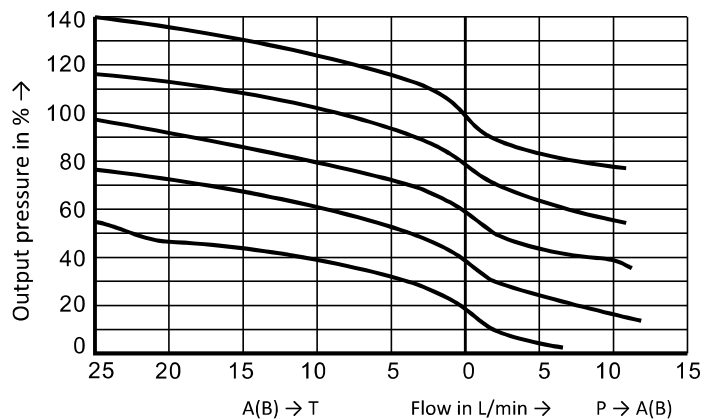
Pressure stages 16, 25 and 45 bar



Pressure stages 16, 25 und 45 bar

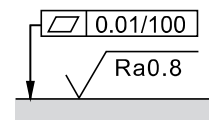
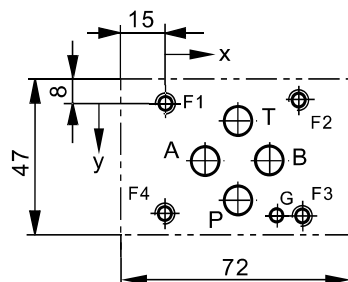
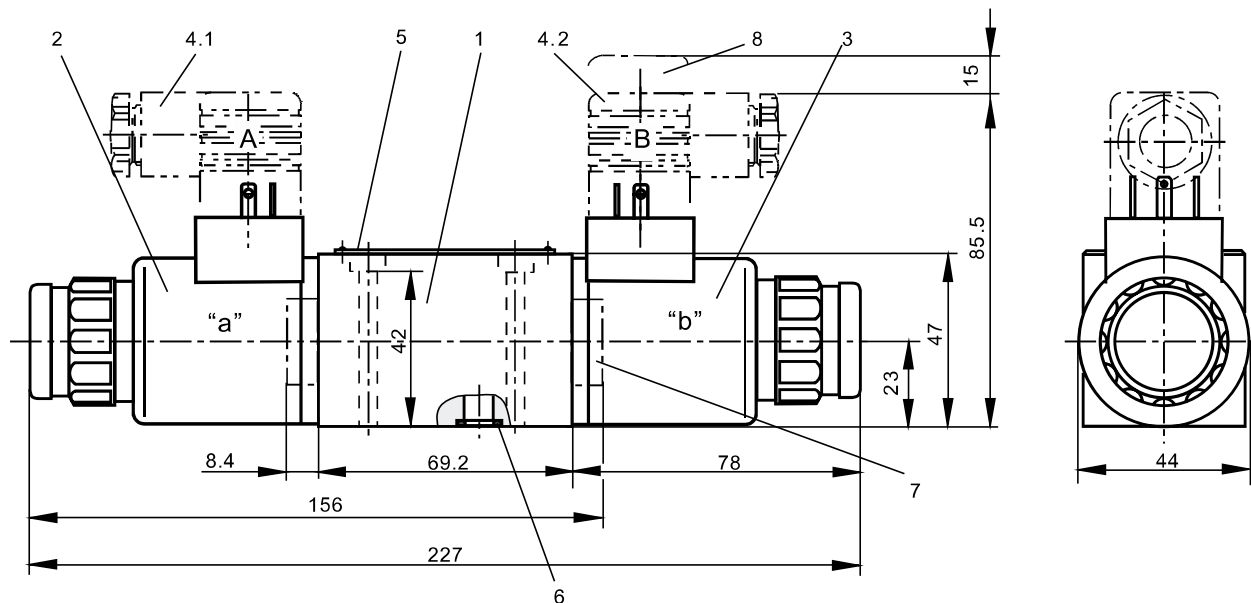


Pressure-flow relationship



Unit dimensions (dimensions in mm)

Type 3DREP6...



Required surface quality of the valve contact surface

Dimensions in mm	P	A	T	B	F1	F2	F3	F4	G
Diameter/thread	ø7.5 max	ø7.5 max	ø7.5 max	ø7.5 max	M5	M5	M5	M5	ø4
x	21.5	12.7	21.5	30.2	0	40.5	40.5	0	33
y	25.9	15.5	5.1	15.5	0	-0.75	31.75	31	31.75

- 1 Valve housing
- 2 Proportional solenoid "a"
- 3 Proportional solenoid "b"
- 4.1 Plug-in connector "A", colour grey
- 4.2 Plug-in connector "B", colour black
- 5 Name plate
- 6 R-ring 9.81 x 1.5 x 1.78 (ports A, B, P, T)
- 7 Plug for valves with one solenoid
(3DREP6A... or 3DREP6B)
- 8 Space required to remove the plug-in connector
- 9 Mounting surface, in accordance with ISO4401-03-02-0-05 oil port connection position and standard tolerances
- 10 Diameters of the ports P, A, B and T are 7.5 mm
- 11 Fixing screws: 4 GB/T 70.1 - M5 x 50 10.9
- 12 Torque: 8.9 Nm ± 10 %

