

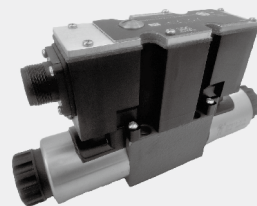


6.5

# 3-way Proportional pressure reducing valve

## Type 3DREP and 3DREPE

NG 6  
 Max pressure 100 bar  
 Max flow 15 L/min



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### Features

- Directly controlled proportional valves for the control of the pressure and direction of a flow
- 3-Way design and standard ISO 4401-03 mounting
- Operated via proportional solenoids with central thread and removable coil
- Spring centred control spool
- Hand override, optional
- 3DREP: available module amplifier
- 3DREPE: integrated electronics (OBE) with voltage input or current input (A1 resp. F1)

## Function and configuration

### General:

The 3-way pressure reducing valve type 3DREP 6... is directly actuated by proportional solenoids. They convert an electrical input signal into a proportional pressure output signal.

### Design:

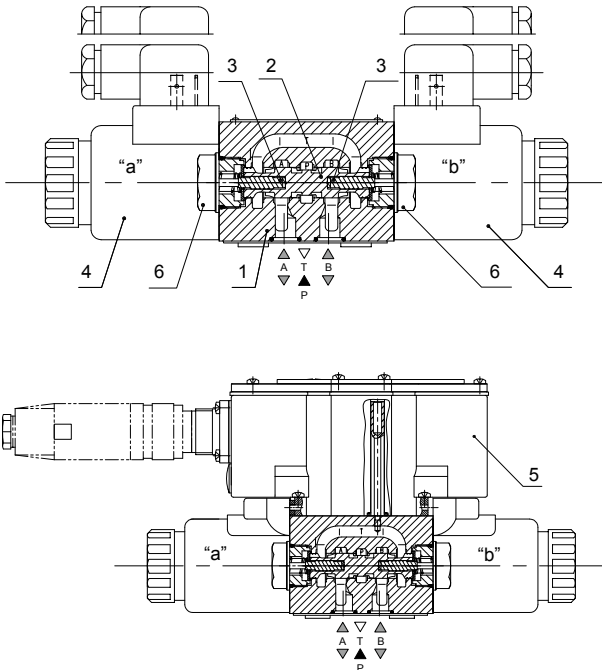
The valve mainly comprises of: Housing (1) with mounting surface, Control spool (2) with pressure measuring spools (3), Solenoids (4) with control thread and Optional integrated valve electronics (5).

### Function:

With the solenoids (4) de-energized the control spool (2) is held in its center position by compression springs. The control spool (2) is directly actuated when one of the solenoids is energized E.g. by energizing solenoid "a". 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-energization of the solenoid (4). The control spool (2) is returned to its centre position by the compression springs.

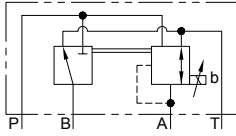
In the middle position the connections A and B to T are open, therefore, the pressure fluid can freely flow to tank.

### Type 3DREP6...-L2X/...

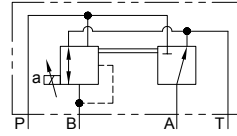


# Symbols

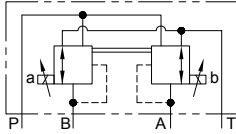
Type 3DREP6... A -L2X/...



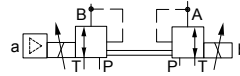
Type 3DREP6... B -L2X/...



Type 3DREP6... C -L2X/...



Type 3DREPE6...C L2X/... (simplified)  
Example of a valve with integrated control electronics



# Ordering code

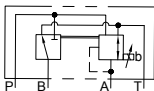
3DREP	6	-L2X	/	E	G24	/	/	/	*
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Without integrated = No code

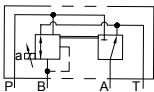
With integrate = E

Nominal size 6 = 6

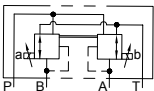
Spool symbols



=A



=B



=C

Series L20~L29 =L2X  
(L20 to L29, unchanged installation and connection dimensions)

Further information  
in plain text

V = FKM seals

No code = NBR seals

3DREP: No code

Interface A1 or F1 for 3DREPE:

A1= Command value input  $\pm 10V$

F1= Command value input 4 to 20mA

3DREP: Z4= With plug-in connector

K4= Without plug-in connector

3DREPE: K31= Without plug-in connector

Z31= With plug-in connector

No code = Without hand override

N9 = With protected hand override

Supply voltage for the control electronics

G24= Power supply voltage 24VDC

E = Proportional solenoid with removable coil

16=

Pressure stage 16 bar

25=

Pressure stage 25 bar

45=

Pressure stage 45 bar

## Technical data

<b>Hydraulic</b>			
Valve type		3DREP6...L2X	3DREPE6...L2X
Installation		optional, preferably horizontal	
Weight	KG	2.0	2.2
Ambient temperature range		°C	-20 to +70
Max. flow		L/min	15 ( $\Delta p = 50$ bar)
Hysteresis		%	≤ 5
Repeatability accuracy		%	≤ 1
Response sensitivity		%	≤ 0.5
Operating pressure range	Port P	bar	20 to 100 for pressure stage 16
	Port T		30 to 100 for pressure stage 25 50 to 100 for pressure stage 45 0 to 3
Pressure fluid		Mineral oil (HL, HLP) to DIN 51524 other pressure fluids on request	
Pressure fluid temperature range		°C	-20 to +80
Viscosity range		mm <sup>2</sup> /s	20 to 380 (preferably 30 to 46)
Degree of contamination		Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9 or 20/18/15, ISO4406	

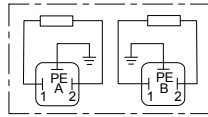
<b>Electrical</b>			
solenoid			
Valve type		3DREP6...L2X	3DREPE6...L2X
Voltage type		DC	
Command value signal	Voltage input "A1"	-	±10V
Max. current per solenoid		A	1.5
Solenoid coil resistance	Cold value at 20 °C	Ω	4.8
	Max. warm value		2
Duty		%	ED100%
Coil temperature		°C	up to 150
Valve protection to EN 60529		IP 65 with mounted and fixed plug-in connector	
Amplifier		VT-VSPA2-...-L2X	integrated
Supply voltage	Nominal voltage	VDC	24
	Lower limiting value	V	19
	Upper limiting value	V	35
Amplifier current consumption	I <sub>max</sub>	A	1.8
	Impulse current	A	4

## Electrical connections, plug-in connectors

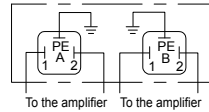
• For type 3DREP6...L2X (without integrated electronics)

### Connections on the component plug

Plug-in connector to DIN EN 175301-803 or ISO 4400



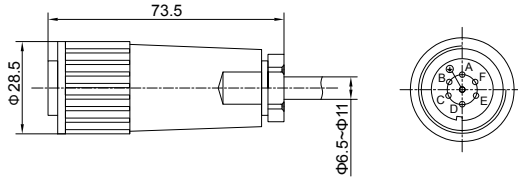
### Connections on the plug-in connector



• For type 3DREPE6...L2X (with integrated electronics (OBE))

For pin allocation also see block circuit diagram.

Plug-in connector to DIN EN 175201-804



• Integrated control electronics for type 3DREPE6

### Component plug allocation

	Contact	Interface A1 signal	Interface F1 signal
Supply voltage	A	24 VDC (U(t)=19V to 35V)	
	B	GND	
	C	n.c. <sup>1)</sup>	
Differential amplifier input	D	$\pm 10V$ , $Re > 50K\Omega$	4 to 20mA, $Re > 100\Omega$
	E	reference potential command value	
	F	n.c. <sup>1)</sup>	

<sup>1)</sup>Contacts C and F must not be connected!

### Connection cable:

Recommended:

- up to 25 m cable length type LiCY 7 × 0.75 mm<sup>2</sup>;
- up to 50 m cable length type LiCY 7 × 1.0 mm<sup>2</sup>.

For outside diameter see plug-in connector sketch. Only connect screen to PE on the supply line.

### Command value:

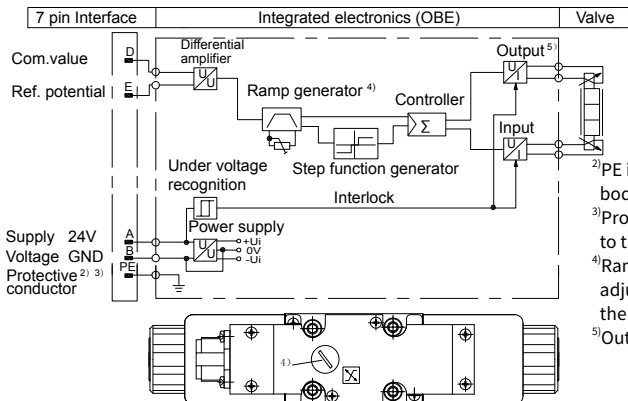
Reference potential at E and positive command value (0 to +10V or 12 to 20mA) at D result in pressure in A.

Reference potential at E and positive command value (0 to -10V or 12 to 4mA) at D result in pressure in B.

With valves with 1 solenoid on side b (design A): Reference potential at E and positive command value at D result in pressure in A.

With valves with 1 solenoid on side b (design B): Reference potential at E and positive command value at D result in pressure in B.

• Integrated electronics (OBE) for type 3DREPE6



<sup>2)</sup>PE is connected to the cooling body and the valve housing!

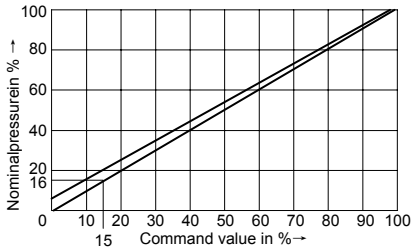
<sup>3)</sup>Protective conductor screwed to the valve housing and cover.

<sup>4)</sup>Ramp can be externally adjusted from 0 to 5s, the same applies for  $T_{up}$  and  $T_{down}$ .

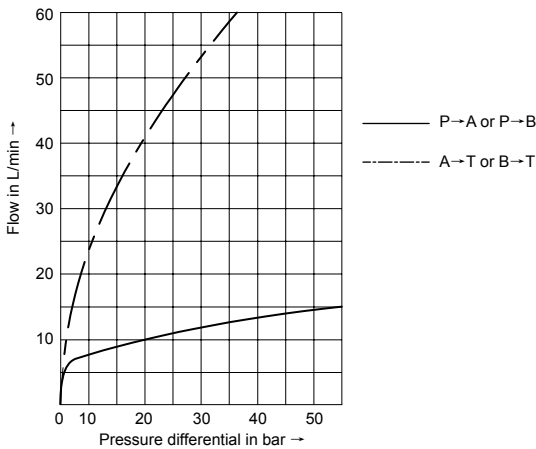
<sup>5)</sup>Output stages current regulated.

## Characteristic curves (measured with HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )

### Pressure stages 16, 25 and 45 bar

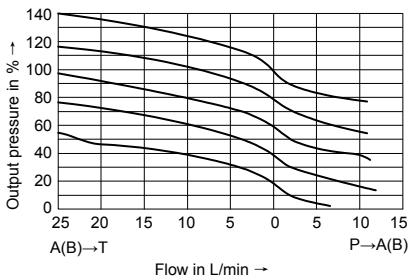


### Pressure stages 16, 25 and 45 bar



06

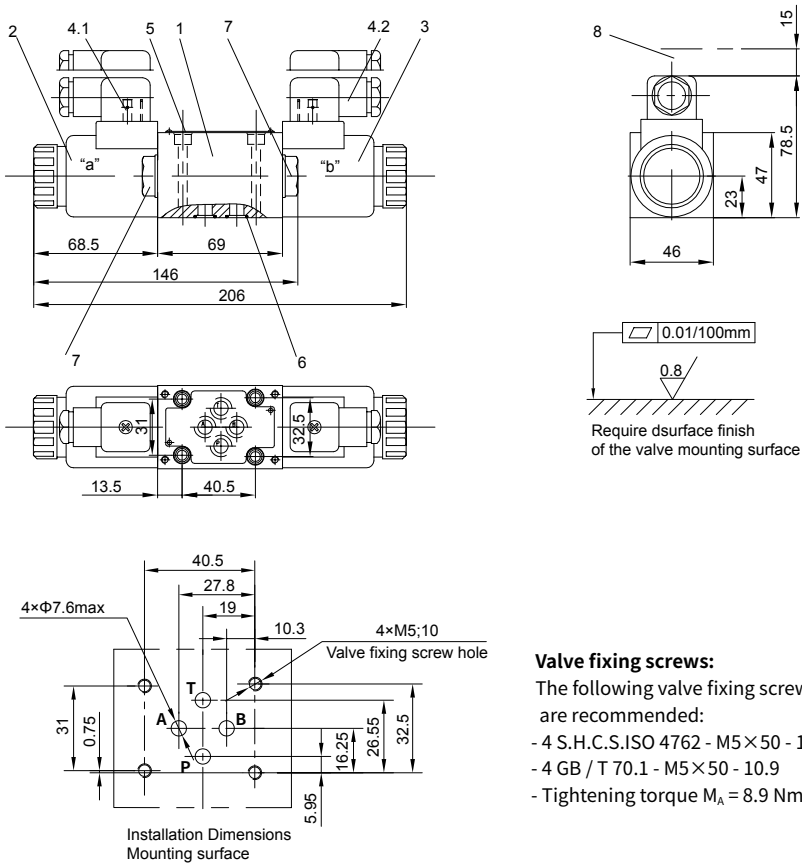
### Pressure-flow relationship



## Unit dimensions

(nominal dimensions in mm)

### Type 3DREP6...L2X



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1 Valve housing</li> <li>2 Proportional solenoid "a"</li> <li>3 Proportional solenoid "b"</li> <li>4.1 Plug-in connector "A"</li> <li>4.2 Plug-in connector "B"</li> <li>5 Name plate</li> </ul> | <ul style="list-style-type: none"> <li>6 Identical seal rings for ports A, B, P and T (R-ring <math>9.81 \times 1.5 \times 1.78</math> or O-ring <math>9.25 \times 1.78</math>)</li> <li>7 Plug for valves with one solenoid (2 switching positions, versions A or B)</li> <li>8 Space required to remove the plug-in connector</li> </ul> |
|---|--|

#### Valve fixing screws:

The following valve fixing screws are recommended:

- 4 S.H.C.S.ISO 4762 - M5×50 - 10.9
- 4 GB / T 70.1 - M5×50 - 10.9
- Tightening torque  $M_A = 8.9 \text{ Nm} \pm 10\%$

