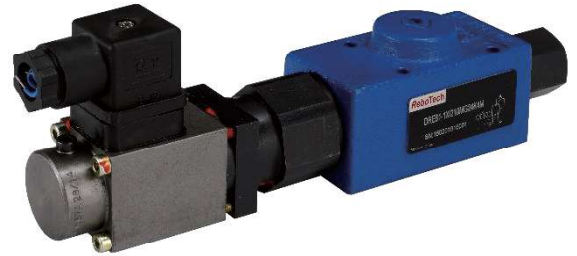


DRE(E)

Proportional pressure reducing and relief valve

Nominal size 6
 Series 2X
 Maximum operating pressure 210 bar
 Maximum flow 30 L/min



Contents

Contents
 Features
 Ordering details
 Functions, section
 Technical data
 Electrical connections
 Characteristic curves
 Unit dimensions

Features

- 1 - Pilot operated valve for pressure reduction in ports A and P1 with a pressure safety function
- 1 - Proportional solenoid operation
- 3 - For subplate mounting: Porting pattern to ISO4401-03-02-0-05
- 4 - Minimum scatter of the command value, pressure, characteristic curve via electrical compensation on the proportional solenoids
- 5 - Minimum settable pressure of 2 bar in ports A
- 6 - For type DREE: integrated control electronics: (OBE)
- 8 - For type DRE: external control electronics type RT-MSPD1-30 (separate order)

Ordering details

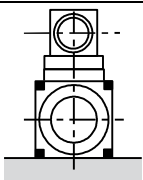
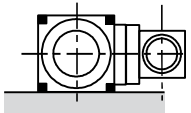
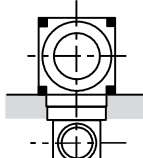
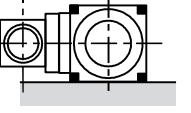
	DRE		6		1	-	1X	/	210	M	G24		K4		M	*
01	02	03	04	05	06		07		08	09	10	11	12	13	14	15

01	No code	Subplate mounting
02	DRE	Proportional pressure reducing and relief valve
03	No code	External control electronics
	E	integrated control electronics (type RT-PSGM in plug type)
04	6	NS 6

Functions

05	No code	Pressure reduction in port A (Subplate mounting)
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Position of plug-in connector (omitted for subplate mounting)

06	 1 Valve mounting interface	 2 Valve mounting interface
	 3 Valve mounting interface	 4 Valve mounting interface

	DRE		6		1	-	1X	/	210	M	G24		K4		M	*
01	02	03	04	05	06		07		08	09	10	11	12	13	14	15

07	2X	Series 20 to 29 (20 to 29: unchanged installation and connection dimensions)
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Pressure stage

08	50	50 bar
	100	100 bar
	210	210 bar

09	M	Can only be supplied without check valve
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10	G24	Control electronics supply voltage 24V DC
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11	No code	Without manual emergency
	N9	With manual emergency

Electronic connection

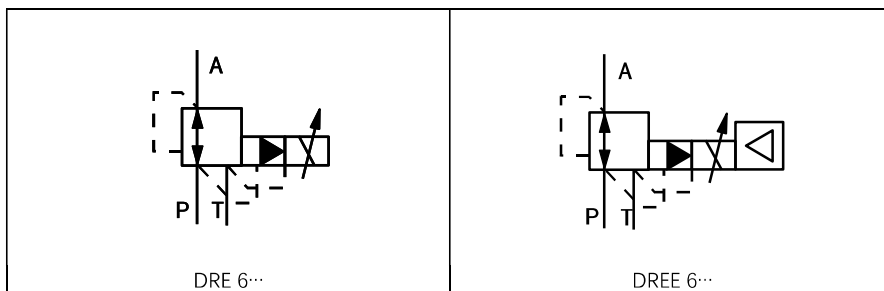
12	K4	With component plug to DIN EN 175301-803 (separate order)	DRE
	Z24	Five-core M12 socket (plug shipped with amplifier)	DREE

13	No code	RT-MSPD1-30 modular amplifier is recommended (separate order)	DRE
	A1	Command value 0-10 V	DREE
	F1	Command value 4-20 mA	

14	M	NBR seals
	V	FKM seals

15	*	Further details in clear text
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Symbols



Functions, section

Type DRE6...

The valve types DRE(E) is electrical, pilot operated 3-way pressure reducing and relief valves with a pressure safety function for the actuator.

They are used to reduce system pressure.

Design:

The valve consist of of three main components:

- Pilot operated valve (1)
- Proportional solenoid (2)
- Main valve (3) with main spool (4)

Function:

General function:

Command value dependent setting of the pressure to be reduced in port A via the proportional solenoids (2).

When port P is unpressurized spring (18) holds the main spool (4) in the initial position.

- Thereby open from A to T and closed from P to A.
- Pressure connection from port P to the ring channel (5).
- Pilot oil flows from bore (6) to port T, via the flow controller (7), the pilot valve (1) to orifice (8), the throttle gap (9) the long groove (10) and the bores (11, 12).

Pressure reduction:

Build-up of pilot pressure in control chamber (17) as a function of the command value.

Movement of the main spool (4) to the right causes pressure fluid to flow from P to A.

Actuator pressure at port A acts on the spring chamber (15) via channel (13) and orifice(14) .

Increasing the pressure at port A to the pressure set on the pilot valve (1) causes the main spool (4) to move to the left. The pressure in port A is then close to the pressure set on the pilot valve (1).

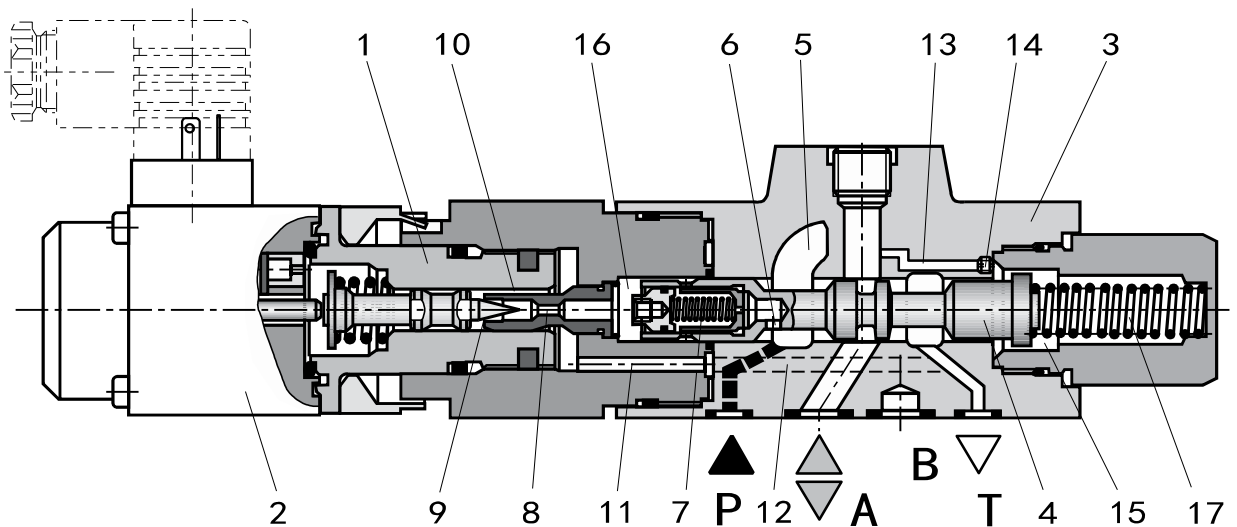
Pressure relief function:

If the pressure in port A exceeds the pressure set on pilot valve (1), the main spool (4) will move further to the left.

This permits opening of the connection from A and T, and limitation of the pressure being applied to port A to the set command value.

Type DREE6...(OBE)

The function of this type valve is the same as that of DRE 6 in principle, except that there is a plug digital controller type RT-PSGM (separate order) on the proportional solenoid valve.



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

General

Installation			optional
Storage temperature range	°C		-20 ... +80
Ambient temperature range	°C		-20 ... +70
Weight	DRE 6	kg	2.0
	DREE 6	kg	2.1

Hydraulic (HLP46 at 40 °C ± 5 °C)

Max. operating pressure	Port P	bar	315
	Port A or B	bar	210
	Port T	bar	separate and zero pressure to tank
Max. settable pressure in port A	Pressure range 50 bar	bar	50
	Pressure range 100 bar	bar	100
	Pressure range 210 bar	bar	210
Min. settable pressure at 0 command value in port A		bar	see characteristic curves on page 7
Pilot oil flow	L/min		0.65
Max. flow	L/min		30
Pressure fluid temperature range	°C		-20 ... +80
Viscosity range	mm ² /s		15 ... 380
Degree of contamination			ISO4406: 1999 20/18/15
Hysteresis	%		±2.5 % of maximum settable pressure
Repeatability	%		< ±2 % of maximum settable pressure
Linearity	DRE 6	%	±3.5 % of maximum settable pressure
Typical scatter of the command value-pressure char. curve, referring to the hysteresis char. curve, pressure increasing	DRE 6	%	±2 % of maximum settable pressure
	DREE 6	%	±3 % of maximum settable pressure
Step response Tu + Tg (measured with a standing oil column of between 0.2 and 5 litres)	10%→90%	ms	150
	90%→10%	ms	150

Electrical

Type of voltage			24 VDC
Min. coil current	mA		100
Max. coil current	mA		1600
Solenoid coil resistance	Cold value at 20°C	Ω	5
	Max. warm value	Ω	7.5
Duty	%		100
Valve protection to DIN 40 050			IP65

Integrated Control electronics

Power supply	supply voltage	VDC	24
	Lower limiting value	VDC	8
	Upper limiting value	VDC	32
Command value	Input voltage	V	0...5, RE ≥ 100KΩ
	Input voltage	V	0...10, RE ≥ 100KΩ
	Input current	mA	4...20, RE=250Ω
Protection to DIN 40 050			IP65

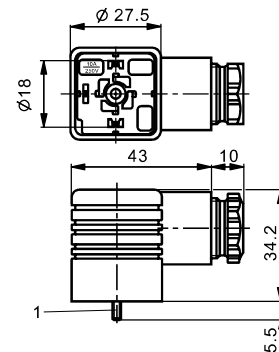
Electrical connection

For type DRE, with component plug to DIN EN 175301-803 (separate order)

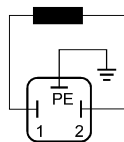
Solenoid b, color black

Separate order under material no. HP18110741

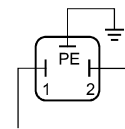
Fixing screw: M3, torque 0.5 Nm



Connection to component plug

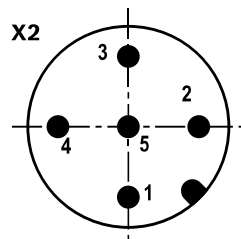


Connection to plug-in connector

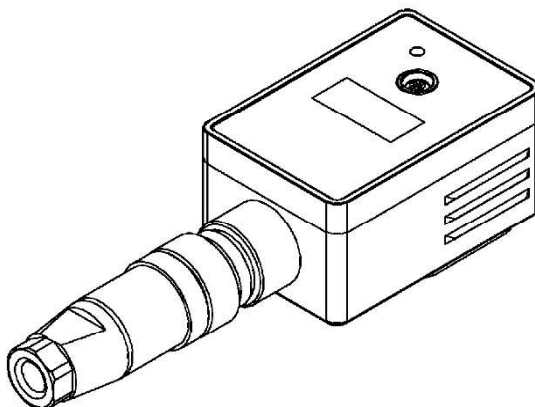


To amplifier

For type DREE, with five-core M12 socket (plug shipped with amplifier)



Terminal	Description
1	+UB supply voltage +
2	0V/CMD- supply voltage - and command value -
3	CMD+ command value+
4	485_A RS 485
5	485_B RS 485

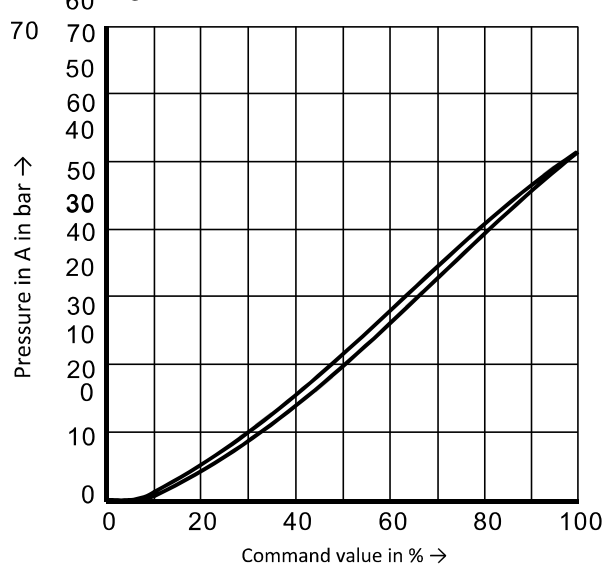


Connector thread	M12 X 1
connector terminals	5-Pole
Connector size	PG7(The diameter that can pass through is not more than 7mm)
Connector cable	5 X 0.5mm ² or 5 X 20 AWG

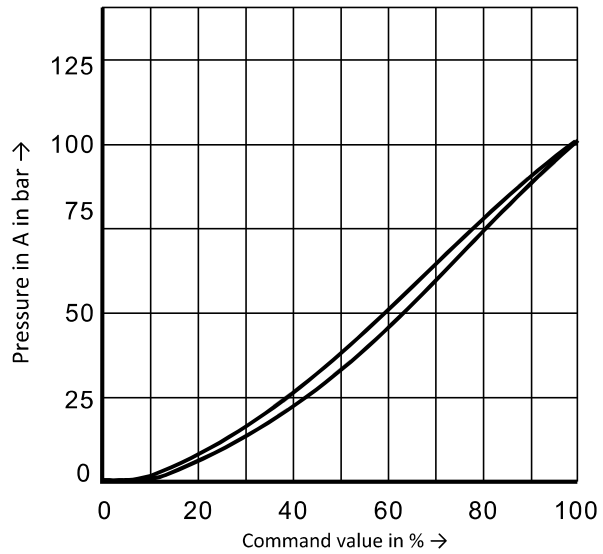
Characteristic curves (HLP46 at 40 °C ± 5 °C)

Pressure in port A in relation to the command value

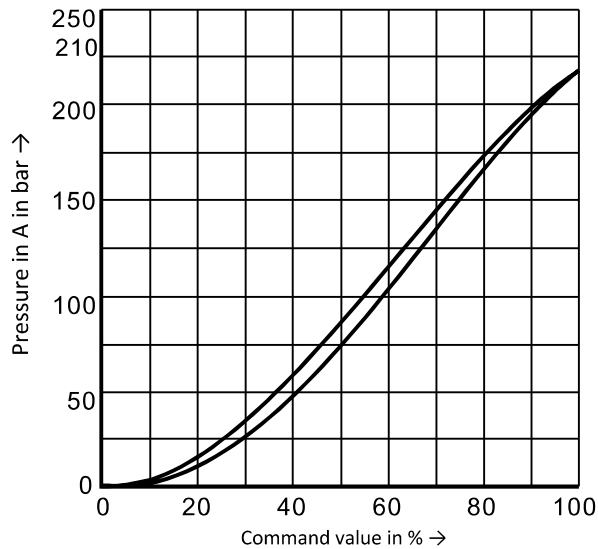
Pressure stage 50 bar



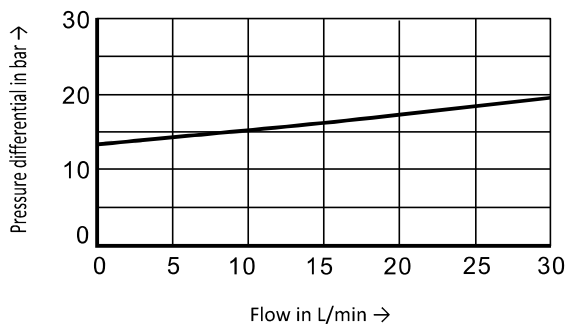
Pressure stage 100 bar



Pressure stage 210 bar



Δp - q_v -characteristic curve

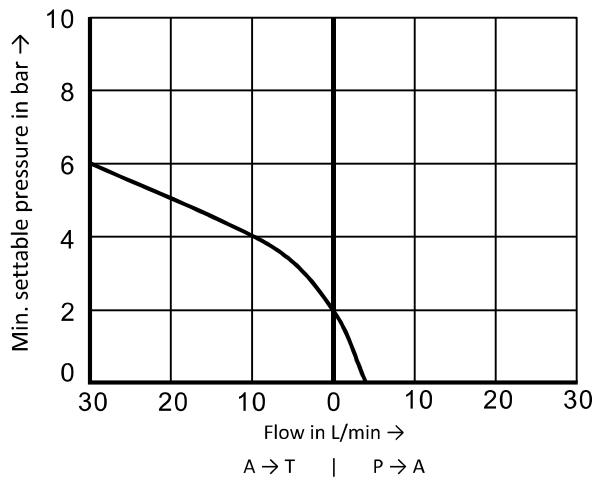


Note: The Δp value indicated corresponds to the minimum available pressure in port P minus the maximum pressure to be regulated in port A.

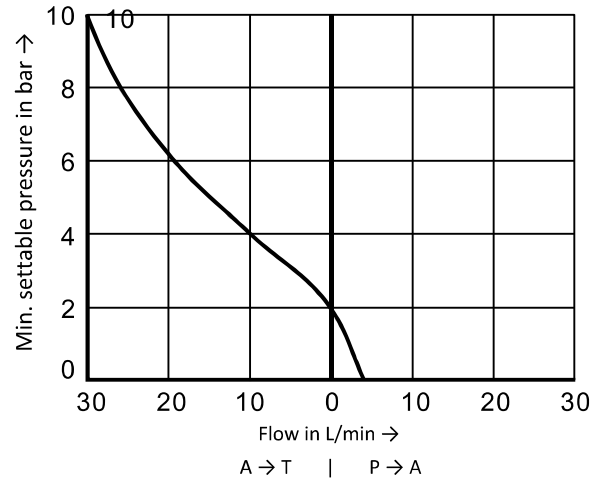
Characteristic curves (HLP46 at 40 °C ± 5 °C)

Min. settable pressure at port A at 0 V command value (without back pressure in ports T)

Pressure stage 50 bar

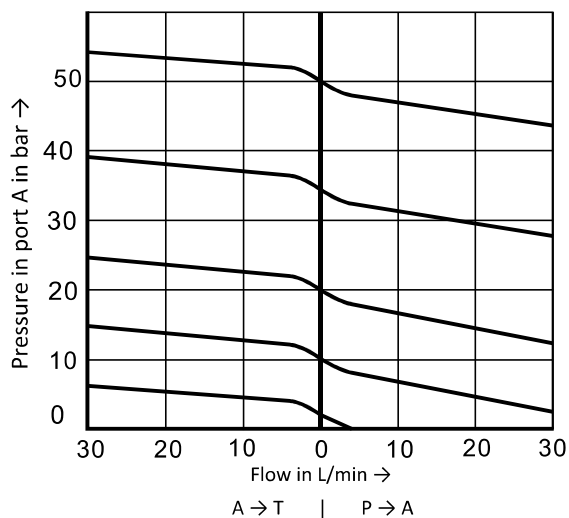


Pressure stage 100 bar/210 bar

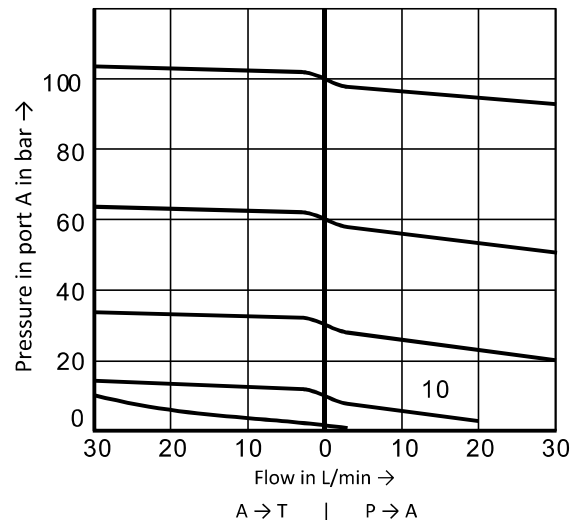


Pressure in port A – flow

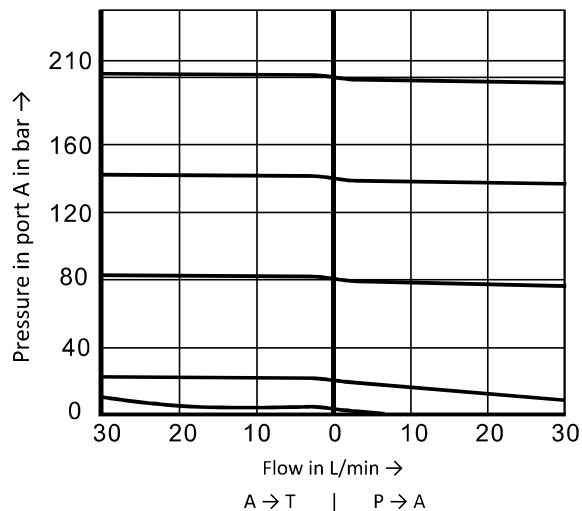
Pressure stage 50 bar



Pressure stage 100 bar

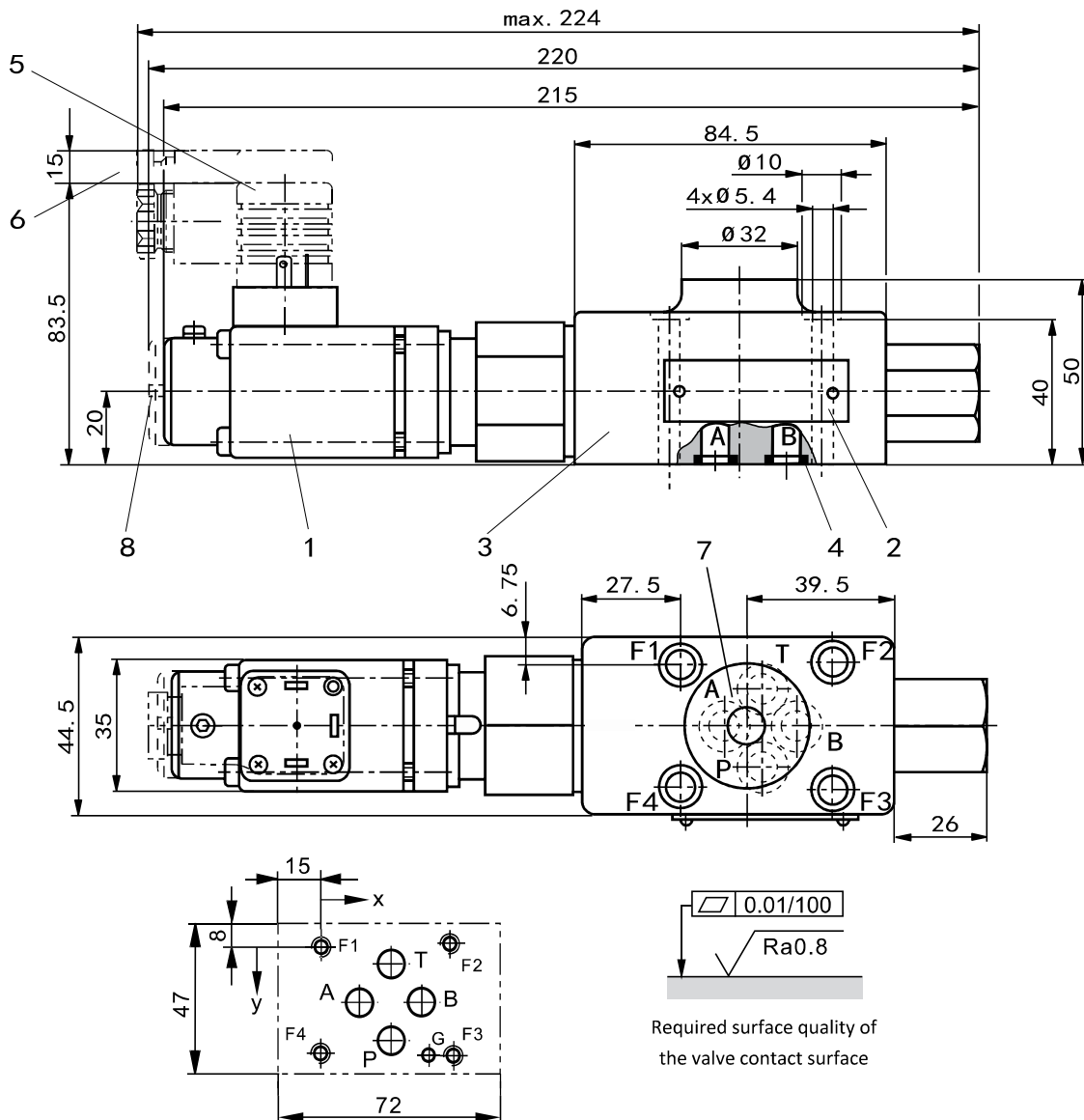


Pressure stage 210 bar



Unit dimensions (dimensions in mm)

DRE



Dimensions in mm	P	A	T	B	F1	F2	F3	F4	G
Diameter/thread	$\varnothing 7.5$ max	$\varnothing 7.5$ max	$\varnothing 7.5$ max	$\varnothing 7.5$ max	M5	M5	M5	M5	$\varnothing 4$
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. Proportional solenoid without manual emergency
2. Name plate
3. Valve housing
4. R-ring 9.81 x 1.5 x 1.78 (ports A, B, P, T)
5. Plug-in connector, see page 5
6. Space required to remove the plug-in connector
7. Porting pattern to DIN 24 340; form A6

8. Proportional solenoid with manual emergency

Valve fixing screws: 4 GB/T 70.1 - M5 x 50 10.9
 Torque: 8.9 Nm $\pm$ 10 %