

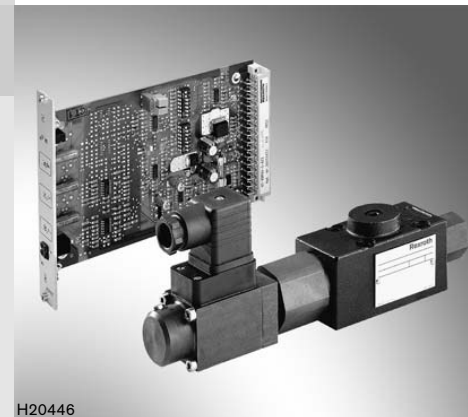
# Proportional pressure reducing valve, pilot operated

**RE 29175/07.05**  
Replaces: 11.02

1/10

## Types DRE and ZDRE

Size 6  
Component series 1X  
Maximum operating pressure 210 bar  
Maximum flow 30 l/min



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## Features

- Pilot operated valve for the reduction of the pressures in ports A and P1, with pressure relief function
- Actuation by proportional solenoids
- For subplate mounting or sandwich plate design:
  - Position of ports to DIN 24340, form A6
  - Subplates to data sheet RE 45052 (separate order, see pages 8 and 9)
- Low tolerances of the command value/pressure characteristic curve through electrical matching on the proportional solenoid
- Minimum set pressure of 2 bar in ports A or P1, see page 7
- Control electronics:
  - Analogue amplifier type VT-VSPA1(K)-1 in Euro-card format (separate order), see page 5
  - Digital amplifier type VT-VSPD-1 in Euro-card format (separate order), see page 5
  - Analogue amplifier of modular design, type VT 11132 (separate order), see page 5

Information on available spare parts:  
[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

### Ordering code

	DRE	6		-1X/	M	G24	K4		*
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Subplate mounting = **No code**  
 Sandwich plate = **Z**

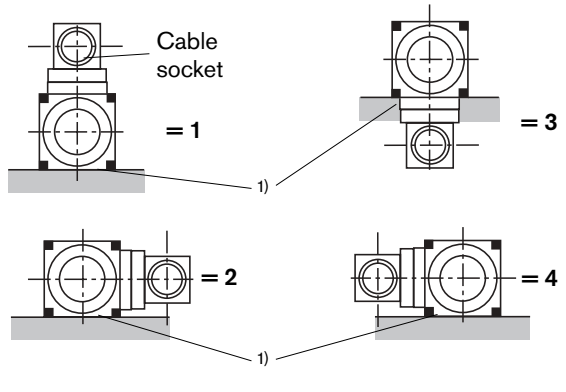
Proportional pressure reducing valve = **DRE**

Size 6 = **6**

Pressure reduction in channel A (subplate mounting) = **No code**

Pressure reduction in channel P1 (sandwich plate) = **VP**

**Position of cable socket** (not with subplate mounting)



1) Valve mounting surface (seal ring recesses in housing)

Further details in clear text

**Seal material**

**M =** NBR seals, suitable for mineral oil (HL, HLP) to DIN 51524  
**V =** FKM seals

**Electrical connection**

**K4 =** Without cable socket, with component plug to DIN EN 175301-803  
 Cable socket – separate order, see page 5

**Supply voltage of control electronics**

**G24 =** 24 V DC

**M =** Available only without check valve

**Pressure stage**

**50 =** 50 bar  
**100 =** 100 bar  
**210 =** 210 bar

**1X =** Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)

### Standard types

**Type DRE**

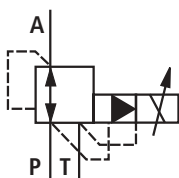
Type	Material no.
DRE 6-1X/50MG24K4M	R900954429
DRE 6-1X/100MG24K4M	R900932943
DRE 6-1X/210MG24K4M	R900928873

**Type ZDRE**

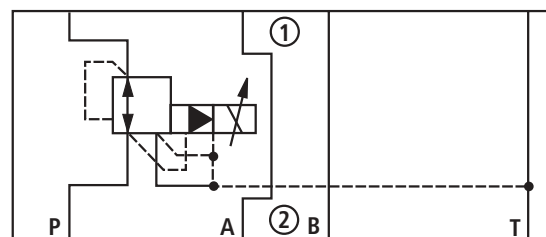
Type	Material no.
ZDRE 6 VP2-1X/50MG24K4M	R900954431
ZDRE 6 VP2-1X/100MG24K4M	R900930942
ZDRE 6 VP2-1X/210MG24K4M	R900915963

**Symbols** (for sandwich plate symbol: ① = component side, ② = plate side)

**Type DRE 6...**



**Type ZDRE 6 VP...**



## Function, section

Valves of types DRE and ZDRE are electrically pilot operated 3-way pressure reducing valves with pressure relief function for the actuator.

They are used to reduce a system pressure.

### Technical structure:

The valve consists of three main assemblies:

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

### Function:

#### Type DRE

General function:

- Command value-related adjustment of the pressure to be reduced in channel A by means of proportional solenoid (2).
- When port P is pressureless, spring (18) holds main spool (4) in the initial position.
- This causes the connection from A to T to be opened, and that from P to A to be closed.
- Pressure connection from port P to ring channel (5).
- Pilot oil flows from bore (6) to port T, via flow controller (7), pilot valve (1) to orifice (8), throttling gap (9) to longitudinal groove (10) and bores (11, 12).

Pressure reduction:

- Build-up of the pilot pressure in control chamber (17) as a function of the command value.
- Main spool (4) is shifted to the right, hydraulic fluid flows from P to A.
- The actuator pressure in port A acts via channel (13) and orifice (14) on spring chamber (15).
- An increase in pressure in port A to the pressure set on pilot valve (1) causes main spool (4) to be moved to the left. The pressure in port A becomes almost equal to the pressure set on pilot valve (1).

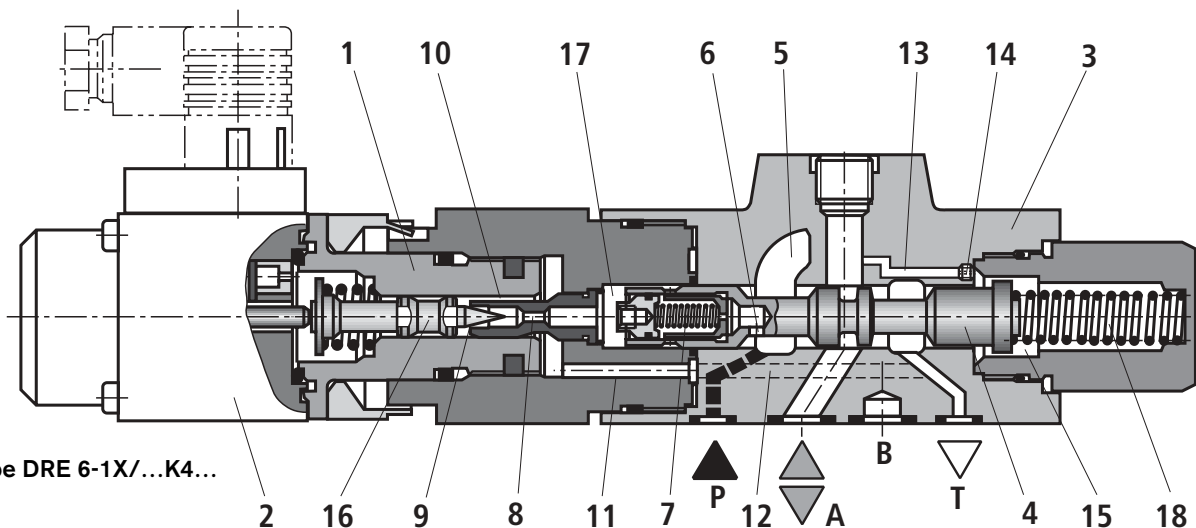
Pressure relief function:

- When the pressure in port exceeds the pressure set on pilot valve (1), main spool (4) is pushed further to the left.
- This opens the connection between A and T and limits the pressure applied in port A to the set command value.

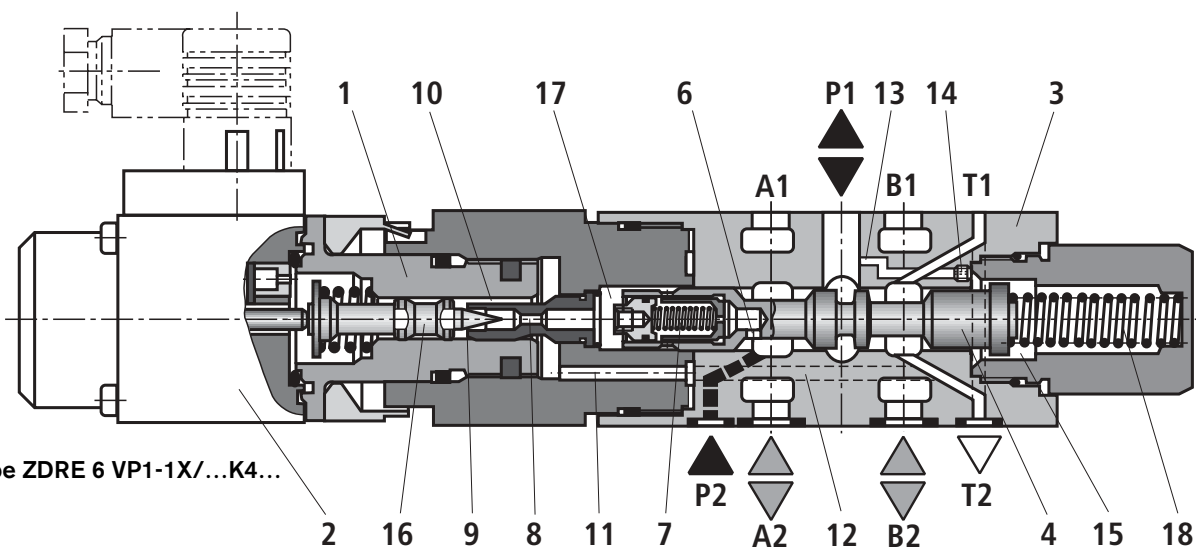
#### Type ZDRE

In principle, the function of this valve corresponds to that of type DRE 6.

The pressure is, however, reduced in channel P1.



Type DRE 6-1X/...K4...



Type ZDRE 6 VP1-1X/...K4...

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

Weight	- DRE 6	kg	1.96
	- ZDRE 6	kg	1.90
Installation orientation			Optional
Storage temperature range		°C	- 20 to + 80
Ambient temperature range		°C	- 20 to + 70

**Hydraulic** (measured with HLP 46;  $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$ )

Max. operating pressure	- Port P or P2	bar	315
	- Ports P1, A and B	bar	210
	- Port T	bar	Separately and at zero pressure to tank
Max. set pressure in channel P1 and A	- Pressure stage 50 bar	bar	50
	- Pressure stage 100 bar	bar	100
	- Pressure stage 210 bar	bar	210
Min. set pressure at 0 command value in channels P1 and A		bar	See characteristic curves on page 7
Pilot oil flow		l/min	0.65
Max. flow		l/min	30
Hydraulic fluid			Mineral oil (HL, HLP) to DIN 51524 Further hydraulic fluids on enquiry!
Max. permissible degree of contamination of the hydraulic fluid - cleanliness class to ISO 4406 (c)			Class 20/18/15 <sup>1)</sup>
Hydraulic fluid temperature range		°C	- 20 to + 80
Viscosity range		mm <sup>2</sup> /s	15 to 380
Hysteresis		%	± 2 of max. set pressure
Repeatability		%	< ± 2 of max. set pressure
Linearity		%	± 3.5 of max. set pressure
Manufacturing tolerance of command value/pressure characteristic curve, referred to hysteresis curve, rising pressure		%	± 1.5 of max. set pressure
Step response $T_u + T_g$ (measured with static hydraulic fluid column between 0.2 and 5 litres)	10 % → 90 %	ms	200 (without pressure overshoots)
	90 % → 10 %	ms	200 (without pressure overshoots)

<sup>1)</sup> 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.

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


### Electrical

Supply voltage	V	24 DC
Min. control current	mA	100
Max. control current	mA	1600
Solenoid coil resistance	- Cold value at 20 °C	$\Omega$ 5
	- Max. hot value	$\Omega$ 7.5
Duty cycle	%	100
Electrical connection	With component plug to DIN EN 175301-803	
	Cable socket to DIN EN 175301-803 <sup>2)</sup>	
Type of protection of the valve to EN 60529	IP 65 with cable socket mounted and locked	

### Control electronics

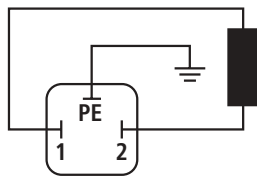
- Amplifier in Euro-card format (separate order)	analogue	VT-VSPA1(K)-1 to data sheet RE 30111
	digital	VT-VSPD-1 to data sheet RE 30123
- Amplifier of modular design (separate order)	analogue	VT 11132 to data sheet RE 29865

<sup>2)</sup> Separate order, see below

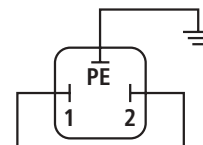
 **Note:** For details regarding **environment simulation testing** in the fields of EMC (electromagnetic compatibility), climate and mechanical stress, see RE 29175-U (declaration on environmental compatibility).

## Electrical connection, cable socket (nominal dimensions in mm)

Connection to component plug



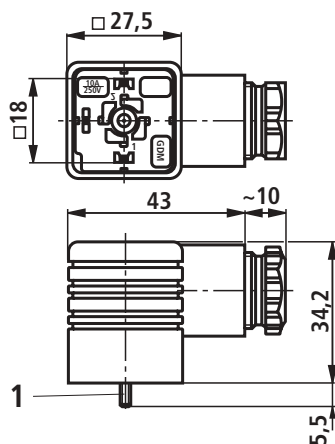
Connection to cable socket



to amplifier

Cable socket to DIN EN 175301-803

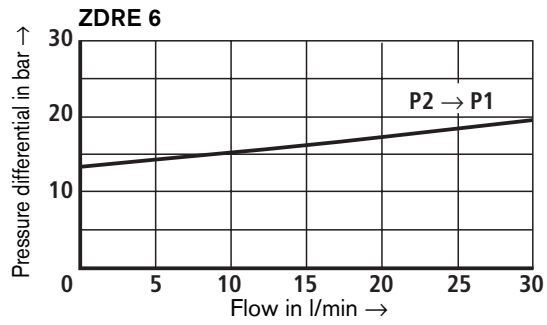
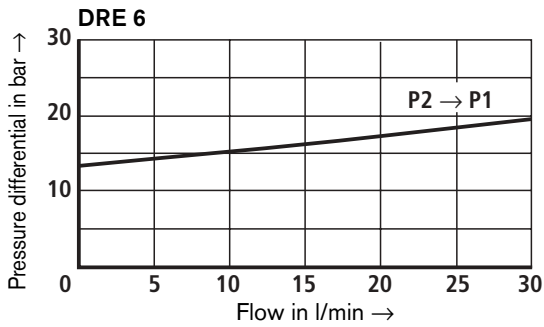
Separate order, stating material no. **R901017011**



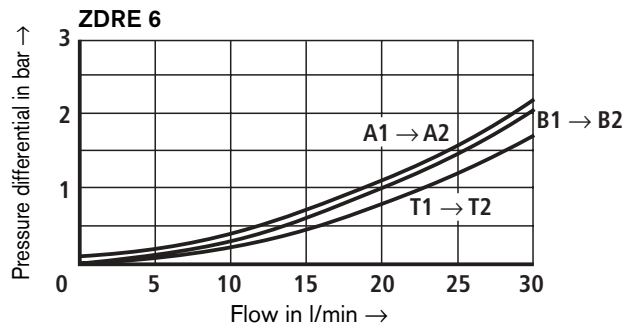
1 Fixing screw M3,  
tightening torque  $M_T = 0.5 \text{ Nm}$

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

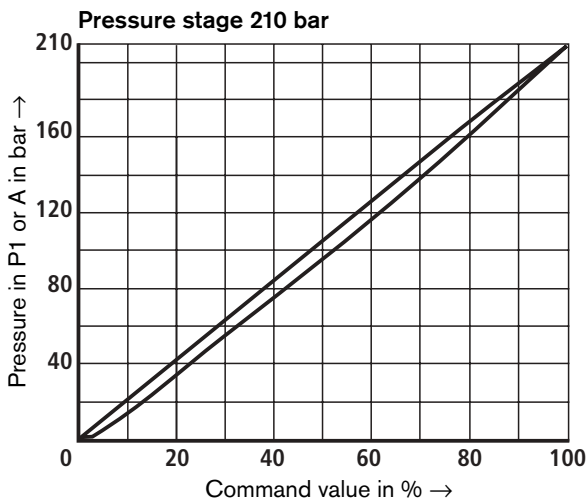
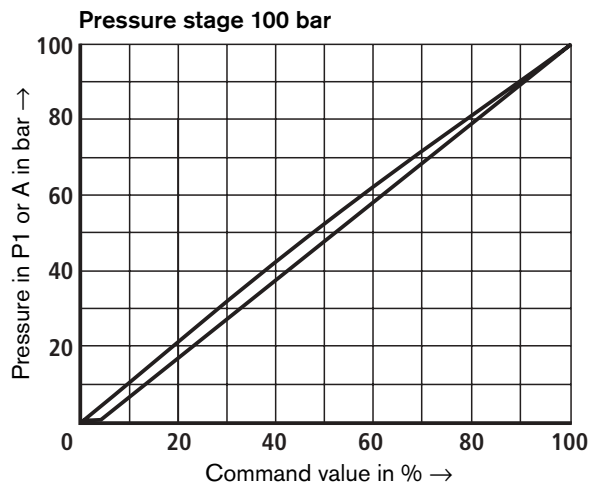
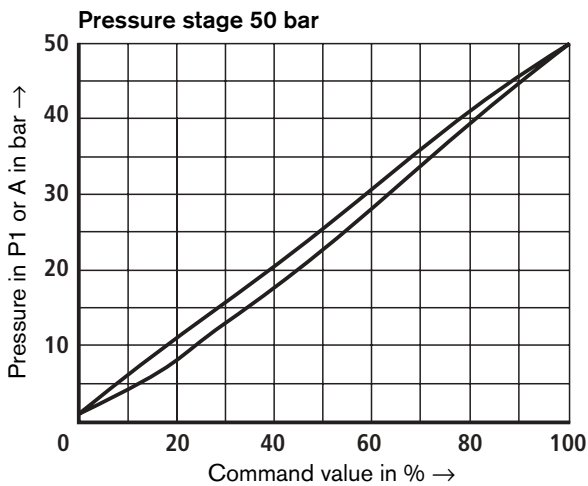
$\Delta p$ - $q_v$  characteristic curves



**Note:** The  $\Delta p$  value shown corresponds to the minimum pressure present in port P (P2) minus the maximum pressure to be controlled in port A (P1).

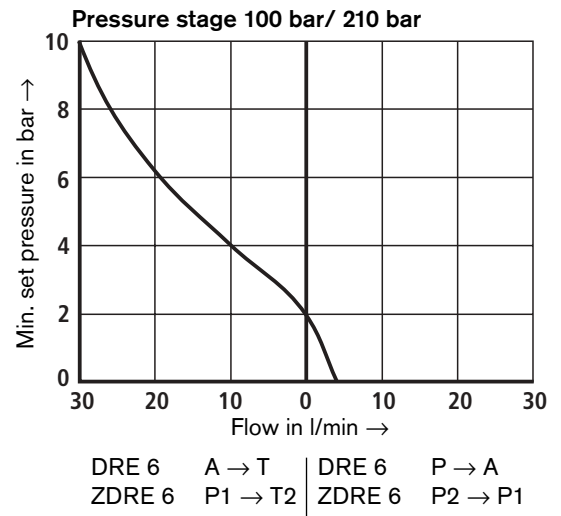
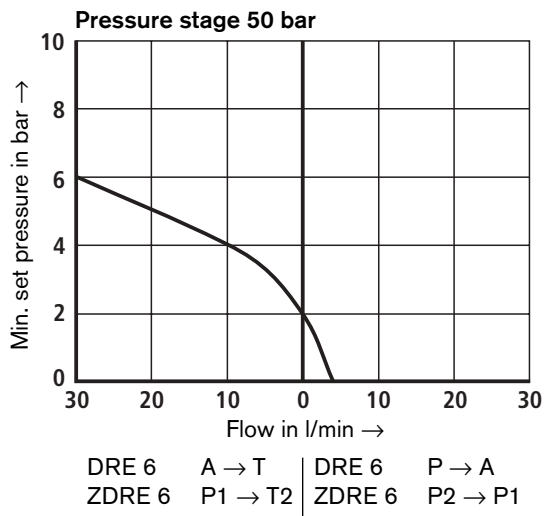


**Pressure in port P1 or A in dependence upon the command value**

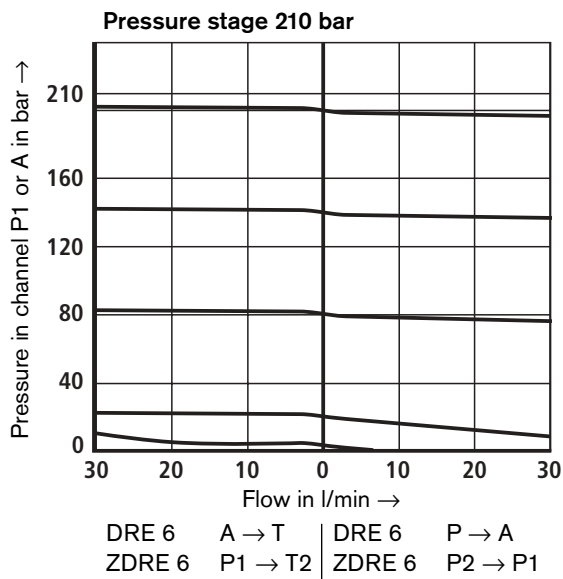
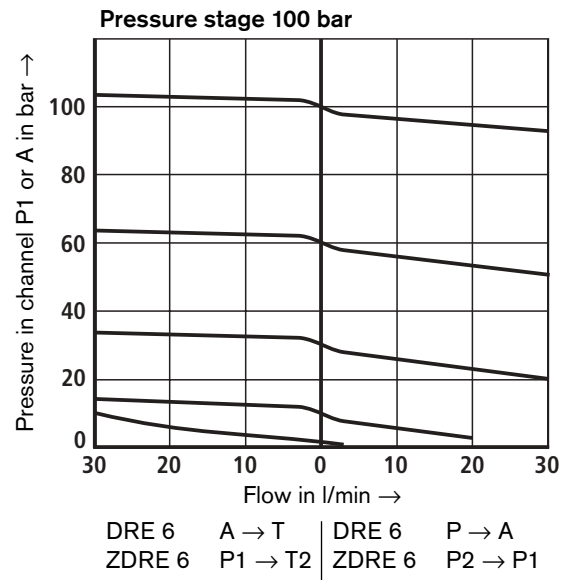
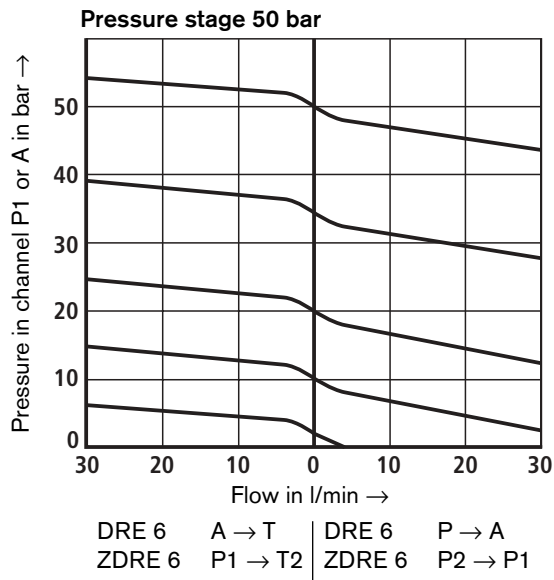


**Characteristic curves** (measured with HLP46,  $\nu_{oil} = 40\text{ °C} \pm 5\text{ °C}$ )

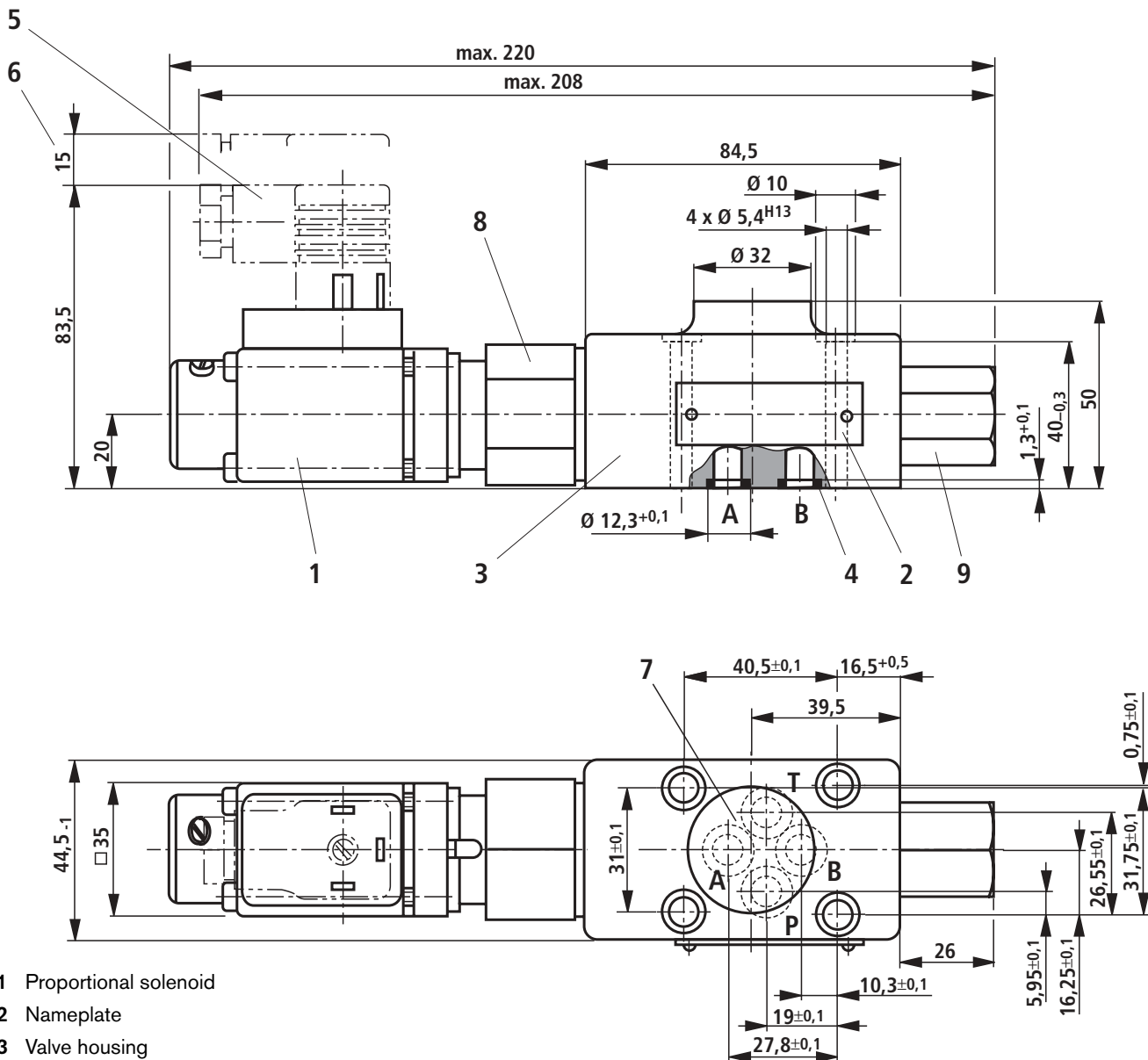
**Min. set pressure in port P1 or A at 0-V command value** (without backpressure in channel T or T1)



**Pressure in channel P1 or A – flow**



## Unit dimensions: Type DRE 6 (nominal dimensions in mm)



- 1 Proportional solenoid
- 2 Nameplate
- 3 Valve housing
- 4 Identical seal rings for ports A, B, P and T
- 5 Cable socket, separate order, see page 5
- 6 Space required to remove cable socket
- 7 Position of ports to DIN 24340; form A6
- 8 Hexagon A/F 36 (across corners  $\varnothing 39$  mm)
- 9 Hexagon A/F 24



Subplates to data sheet RE 45052 and valve fixing screws must be ordered separately.

**Subplates:**

- G 341/01 (G 1/4)
- G 342/01 (G 3/8)
- G 502/01 (G 1/2)

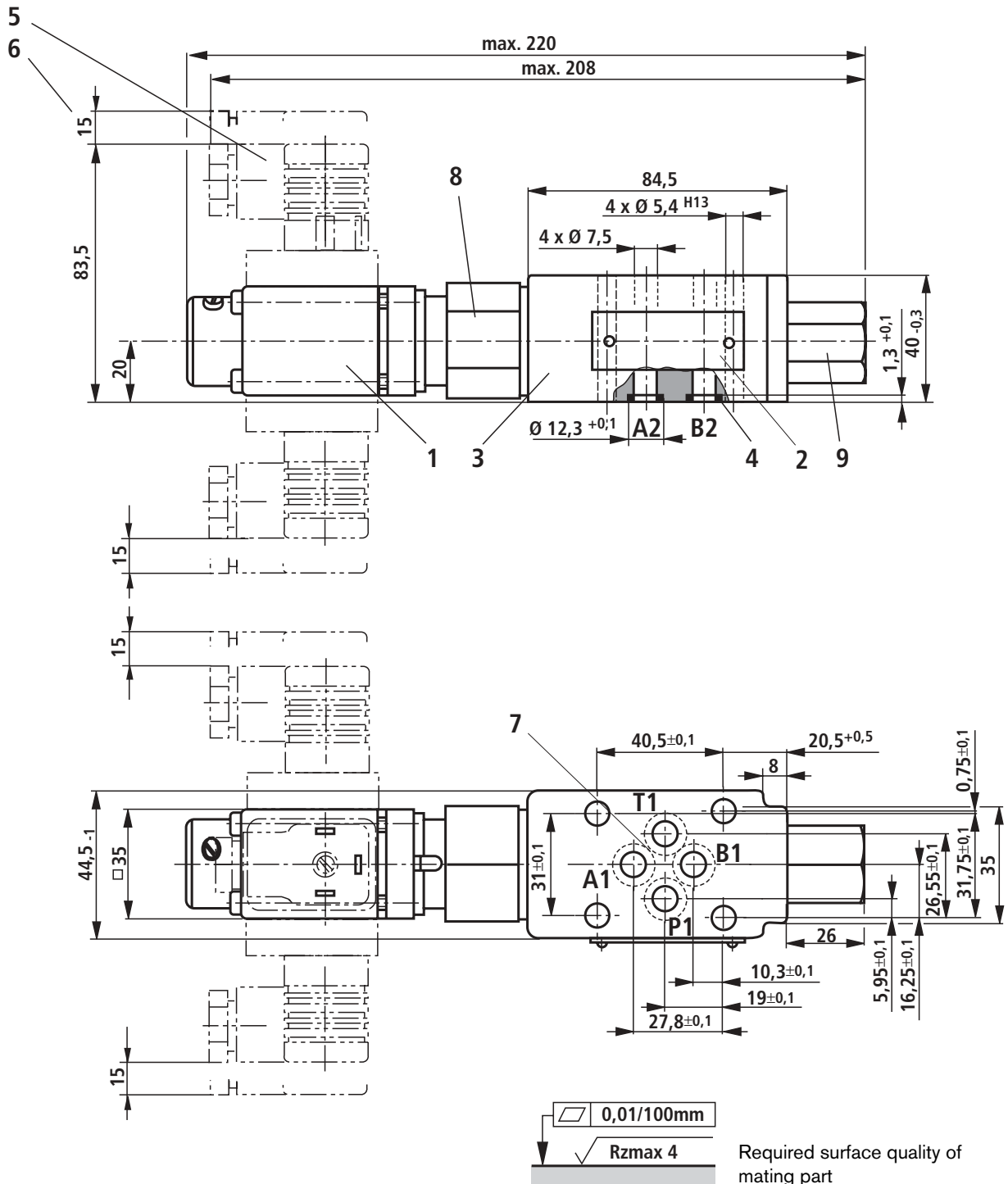
**Valve fixing screws:**

4 off M5 x 50 DIN 912-10.9;  
tightening torque  $M_T = 7$  Nm

**Tolerances to:** – General tolerances ISO 2768-mK



## Unit dimensions: Type ZDRE 6 (nominal dimensions in mm)



- 1 Proportional solenoid
- 2 Nameplate
- 3 Valve housing
- 4 Identical seal rings for ports A2, B2, P2 and T2
- 5 Cable socket, separate order, see page 5
- 6 Space required to remove cable socket
- 7 Position of ports to DIN 24340; form A6
- 8 Hexagon A/F 36 (across corners  $\varnothing 39$  mm)
- 9 Hexagon A/F 24

**Tolerances to:** – General tolerances ISO 2768-mK

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4 off M5 DIN 912-10.9;  
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## Notes

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