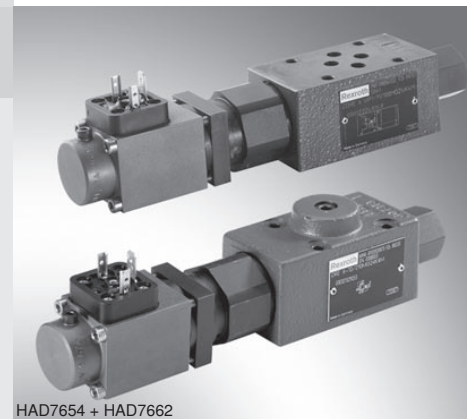


Proportional pressure reducing valve, pilot operated

RE 29175/11.09
Replaces: 07.05

1/12

Type DRE and ZDRE

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

HAD7654 + HAD7662

Table of contents

Content	Page
Features	1
Ordering code	2
Accessories (not included in scope of delivery)	2
Symbols	2
Function, section	3
Technical data	4, 5
Electrical connection, mating connector	5
Characteristic curves	6, 7, 8
Unit dimensions	9, 10

Features

- Pilot operated pressure reducing valve in ports A and P1 with pressure limitation
- Operation by means of proportional solenoid
- For subplate mounting or sandwich plate design:
Porting pattern according to DIN 24340 form A6 and ISO 4401-03-02-0-05
Subplates according to data sheet RE 45052 (separate order, see pages 8 and 9)
- Little manufacturing tolerance of the command value pressure characteristic curve due to electric adjustment
- Minimum setting pressure of 2 bar in ports A or P1, see page 7

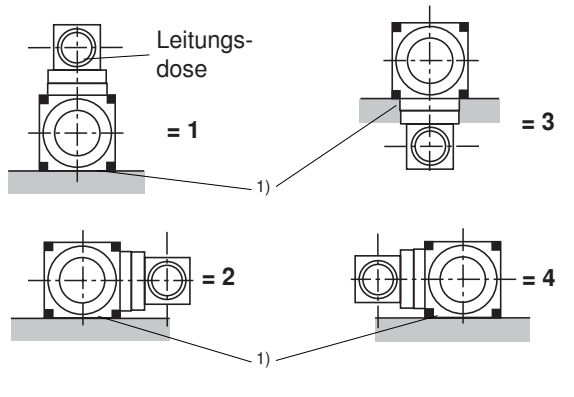
Information on available spare parts:
www.boschrexroth.com/spc

Ordering code

	DRE	6		-1X/	M	G24		K4		*
--	-----	---	--	------	---	-----	--	----	--	---

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 the mating connector
(omitted in case of subplate mounting)



1) Valve mounting face (seal ring recesses in the housing)

Further details in the plain text

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

Electrical connection
K4 = without mating connector, with connector according to DIN EN 175301-803
 Mating connector – separate order see page 5

N9 = with manual override
no code = without manual override

Supply voltage of the control electronics
G24 = Direct voltage 24 V

M = only available without check valve

Pressure rating

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

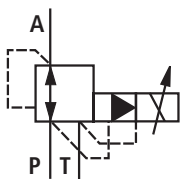
1X = Component series 10 to 19
 (10 to 19: unchanged installation and connection dimensions)

Accessories (not included in scope of delivery)

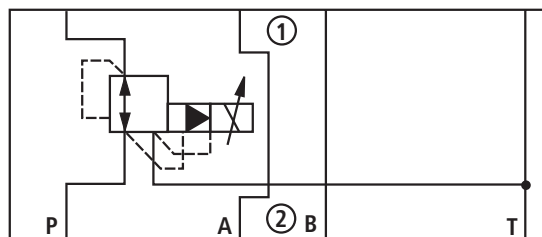
- External control for Type (Z)DRE:
 - Analog amplifier VT-MSPA1-10 in modular design according to data sheet RE 30223
 - Digital amplifier VT-VSPD-1 in Eurocard format according to data sheet RE 30523
 - Digital amplifier VT-VSPA-10 in Eurocard format according to data sheet RE 30100
 - Proportional plug-in amplifier VT-SSPA1-50-1X/V0/0-24/K24 (0...10 V)
 - VT-SSPA1-50-1X/V0/1-24/K24 (4...20 mA)
 - Plug-in amplifier according to data sheet 30116
 - Port M12 - 4-pole
- Mating connectors / details, see page 5)
 - For (Z)DRE: According to DIN EN 175301-803, material no. R901017011

Symbols (with sandwich plate symbol: ① = Component side, ② = Plate side)

Type DRE 6...



Type ZDRE 6 VP...



Function, section

The valve types DRE and ZDRE are electrically pilot operated 3-way pressure reducing valves with pressure limitation of the actuator.

They are used for reducing a system pressure.

Technical structure:

The valve consists of three main assemblies:

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

Function:

Type DRE

General function:

- Command value-dependent setting of the pressure to be reduced in channel A via the proportional solenoid (2).
- In the pressureless port P, the spring (18) holds the main spool (4) in the initial position.
- Thus, opening from A to T, blocking from P to A.
- Pressure connection from port P to the ring channel (5).
- Pilot oil flows from the bore (6) to port T, via the flow controller (7), the orifice (8) to the pilot control valve (1), the throttle gap (9) to the longitudinal groove (10) and the bores (11, 12).

Pressure reduction:

- Build-up of the pilot control pressure in the control chamber (17) as function of the command value.
- Movement of the main spool (4) to the right, hydraulic fluid flows from P to A.
- Applied actuator pressure in port A to the spring chamber (15) via channel (13) and orifice (14).
- Increase in the pressure in port A to the set pressure of the pilot control valve (1) leads to the movement of the main spool (4) to the left. Pressure in port A is almost identical with the set pressure at the pilot control valve (1).

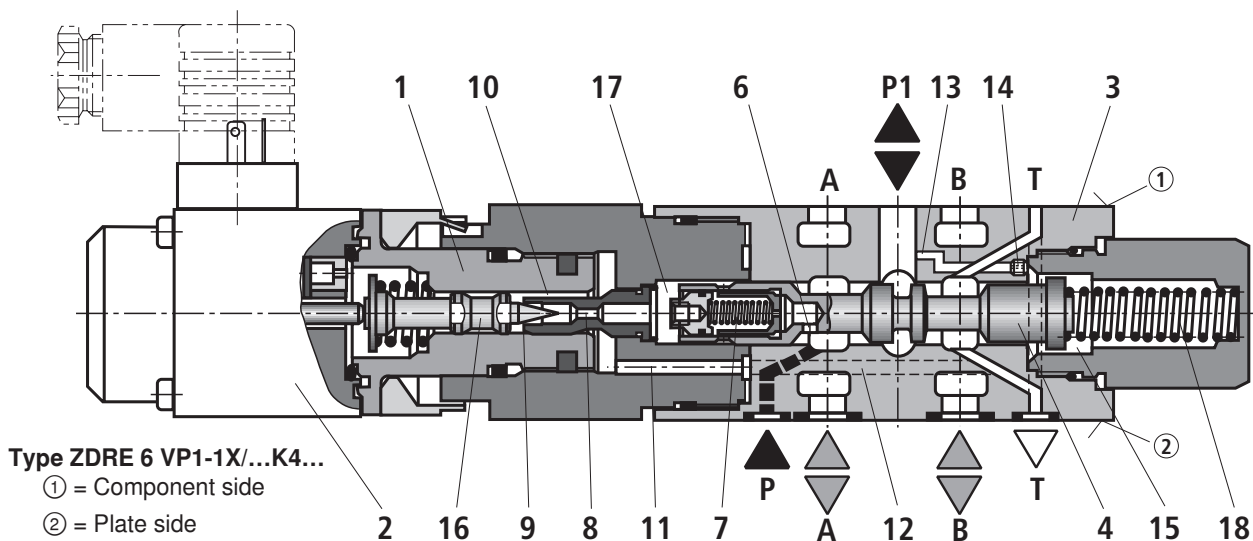
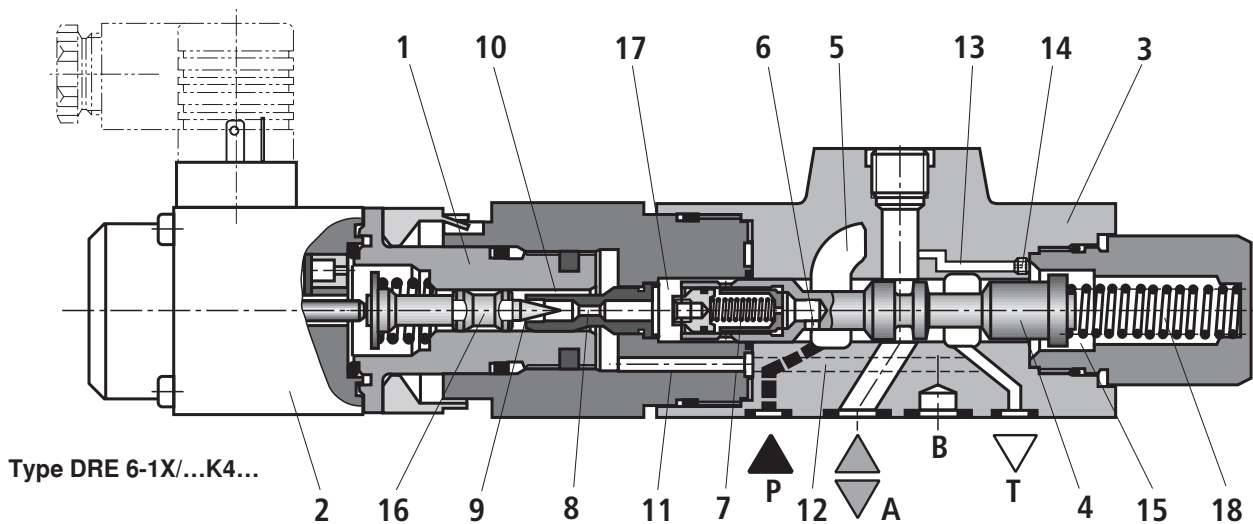
Pressure limitation:

- If the pressure in port exceeds the set pressure of the pilot control valve (1), the main spool (4) is moved further to the left.
- Thus, opening of the connection from A to T, and limitation of the pressure applied in port A to the set command value.

Type ZDRE

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

The pressure is, however, reduced in channel P1.



Technical data (For applications outside these parameters, please consult us!)**general**

Weight	- DRE 6	kg	1.96
	- ZDRE 6	kg	1.90
Installation position	Any		
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 PA	bar	315	
	- Port P1, A, and B	bar	210	
	- Port T	bar	Separately and to the tank at zero pressure	
Max. setting pressure in channel P1 and A	- Pressure rating 50 bar	bar	50	
	- Pressure rating 100 bar	bar	100	
	- Pressure rating 210 bar	bar	210	
Min. setting pressure with command value 0 in channel P1 and A	bar	See characteristic curves page 7		
Pilot flow	l/min	0.65		
Max. flow	l/min	30		
Hydraulic fluid	Mineral oil (HL, HLP) according to DIN 51524 Other hydraulic fluids upon request!			
Max. admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (c)	Class 20/18/15 ¹⁾			
Hydraulic fluid temperature range	°C	-20 to +80		
Viscosity range	mm ² /s	15 to 380		
Hysteresis	%	±2.5 of the max. setting pressure		
Repeatability	%	< ±2 of the max. setting pressure		
Linearity	%	±3.5 of the max. setting pressure		
Manufacturing tolerance of the command value pressure characteristic curve, related to the hysteresis characteristic curve, pressure increasing	%	±2 of the max. setting pressure		
Step response $T_u + T_g$	10 % → 90 %	ms	~ 150	Measured with 1 liter standing Hydraulic fluid column
	90 % → 10 %	ms	~ 150	

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

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

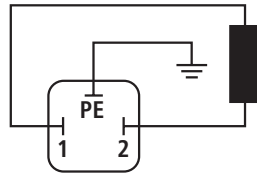
Technical data (For applications outside these parameters, please consult us!)**electrical**

Supply voltage	V	24 direct voltage	
Min. control current	mA	100	
Max. control current	mA	1600	
Solenoid coil resistance	– Cold value at 20 °C	Ω	5
	– Max. hot value	Ω	7.5
Duty cycle	%	100	
Electrical connection	with connector according to DIN EN 175301-803		
	Mating connectors according to DIN EN 175301-803 ²⁾		
Protection class of the valve according to EN 60529	IP 65 with mating connector mounted and locked		

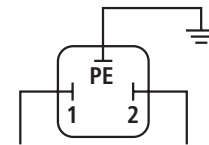
²⁾ Separate order, see below

Electrical connection (dimensions in mm)

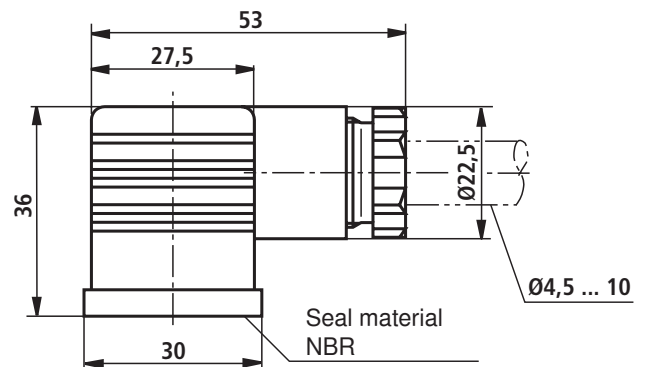
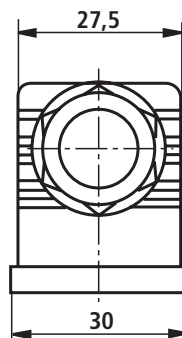
Connection at connector



Connection at mating connector

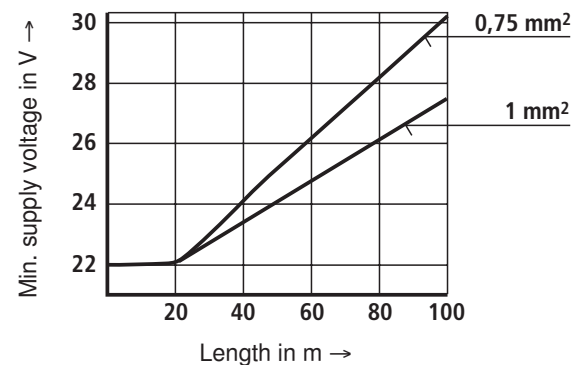


Mating connector (black) according to DIN EN 175301-803
Material no. **R901017011**
(separate order)

**Connection cable for (Z)DRE**

- Recommendation 6-wire, 0.75 or 1 mm² plus protective earthing conductor and screening
- Only connect the screening to PE on the supply side
- max. admissible length 100 m

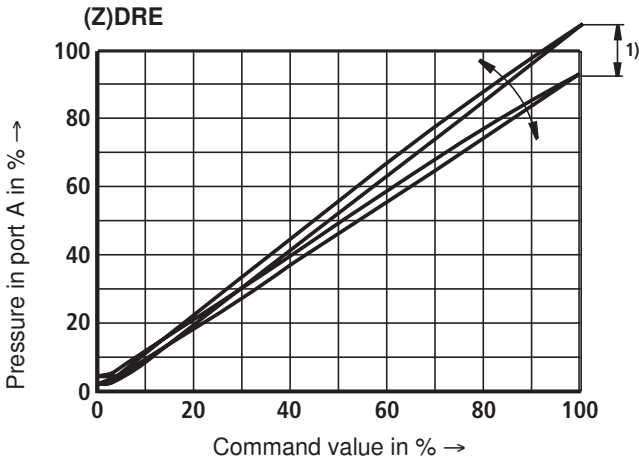
The minimum supply voltage at the power supply unit depends on the length of the supply line (see diagram).



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

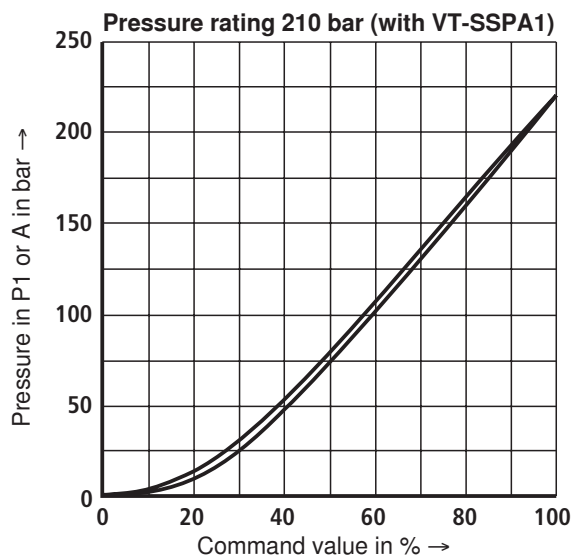
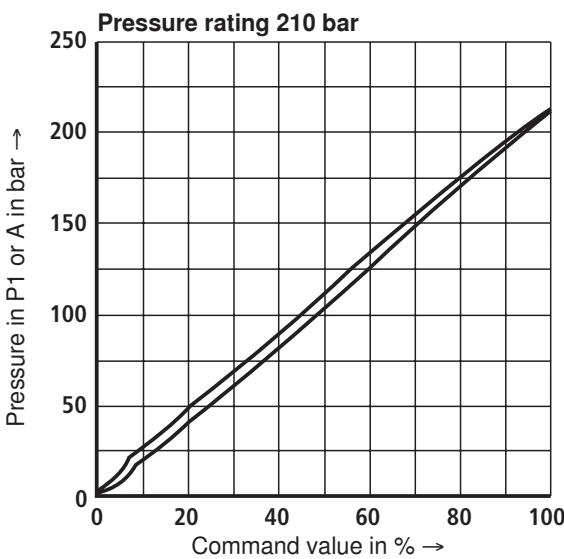
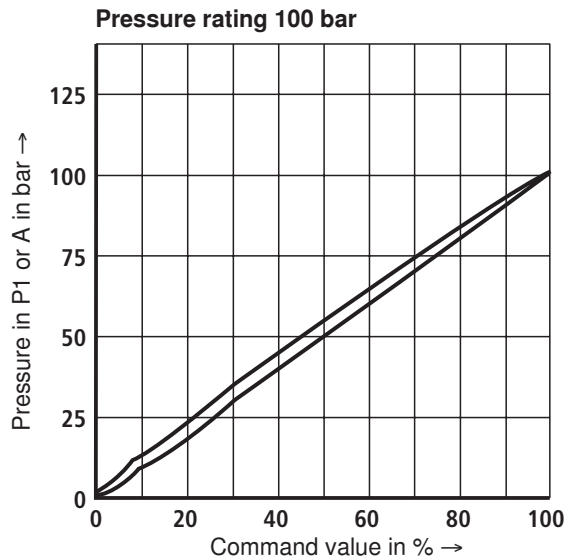
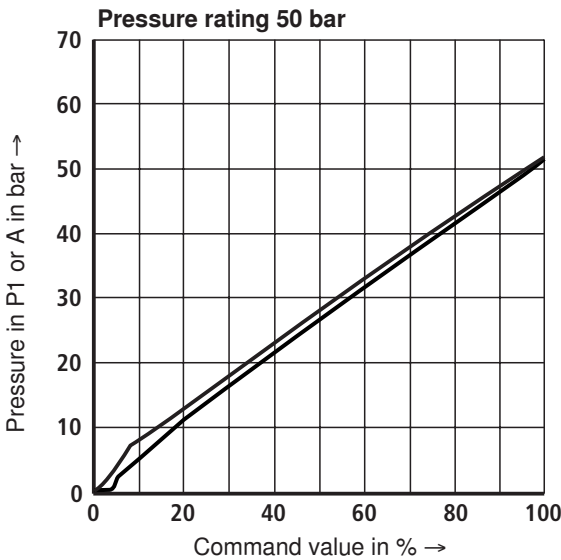
Pressure in port A depending on the command value (manufacturing tolerance)

without flow



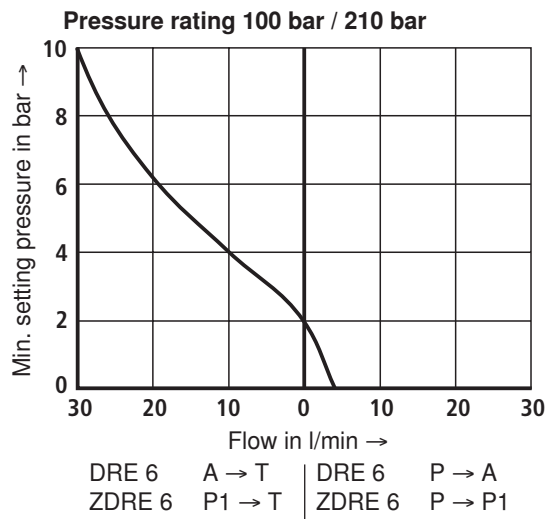
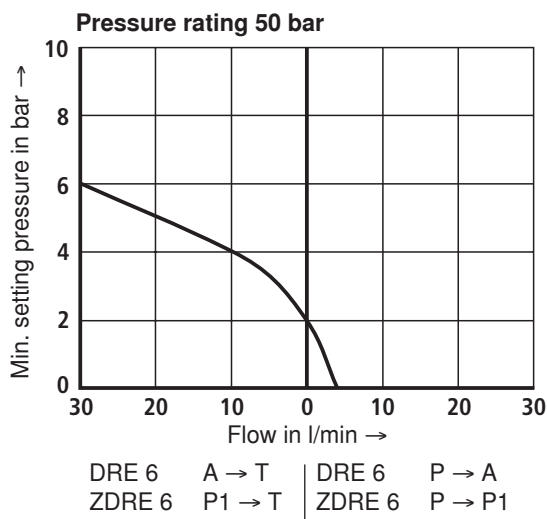
1) With valve (Z)DRE, the manufacturing tolerance at the **external amplifier** (type and data sheet see page 2) can be changed using the command value attenuator potentiometer "Gw". The digital amplifier is set using the parameter "Limit". In this connection, the control current according to the technical data must not be exceeded. In order to be able to adjust several valves to the same characteristic curve, don't set the pressure higher than the maximum setting pressure of the pressure rating with command value 100%.

Pressure in port P1 or A depending on the command value

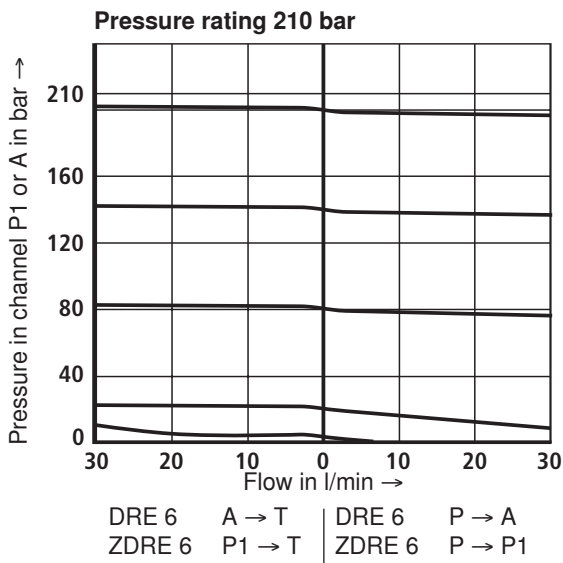
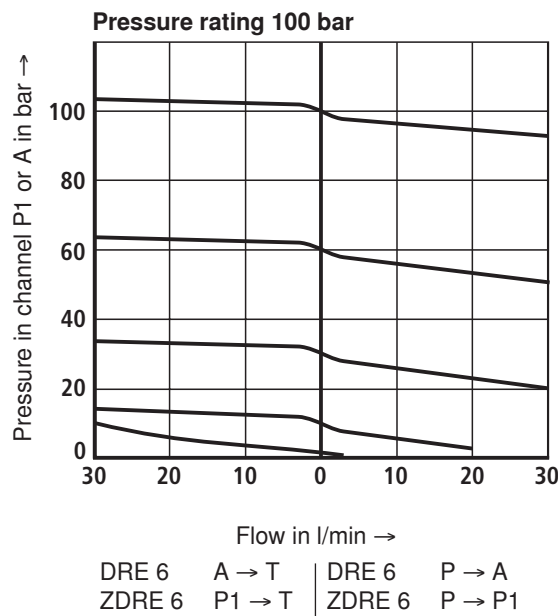
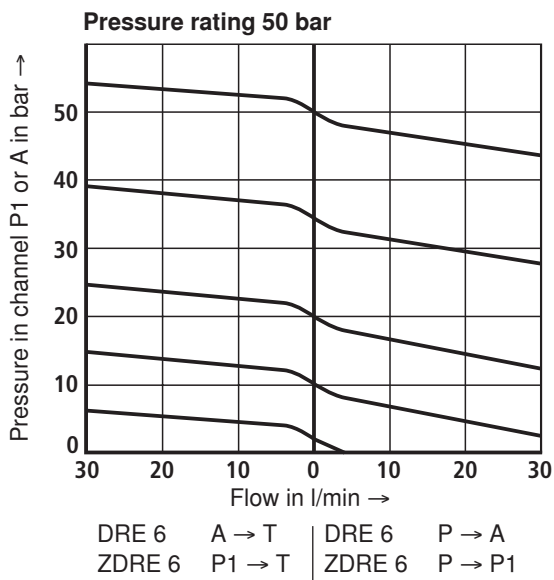


Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$)

Min. setting pressure in port P1 or A with command value 0 V (without counter pressure in channel T)

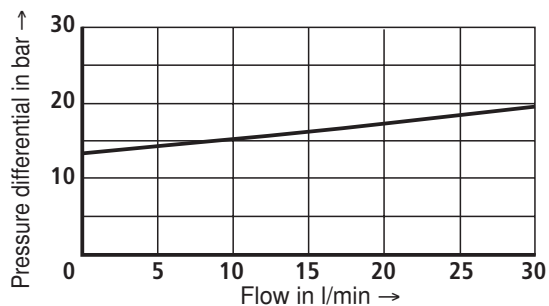


Pressure in channel P1 or A – flow

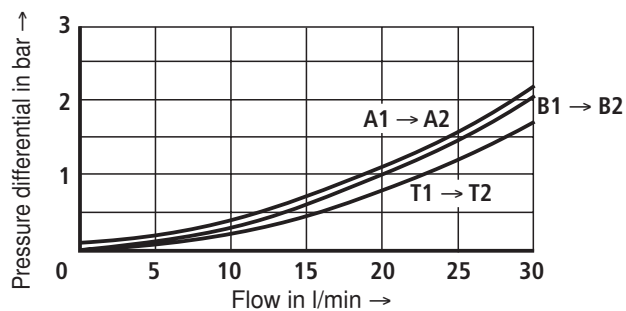


Characteristic curves (measured with HLP46, $\vartheta_{\text{Oil}} = 40 \text{ °C} \pm 5 \text{ °C}$)

Δp - q_v characteristic curves

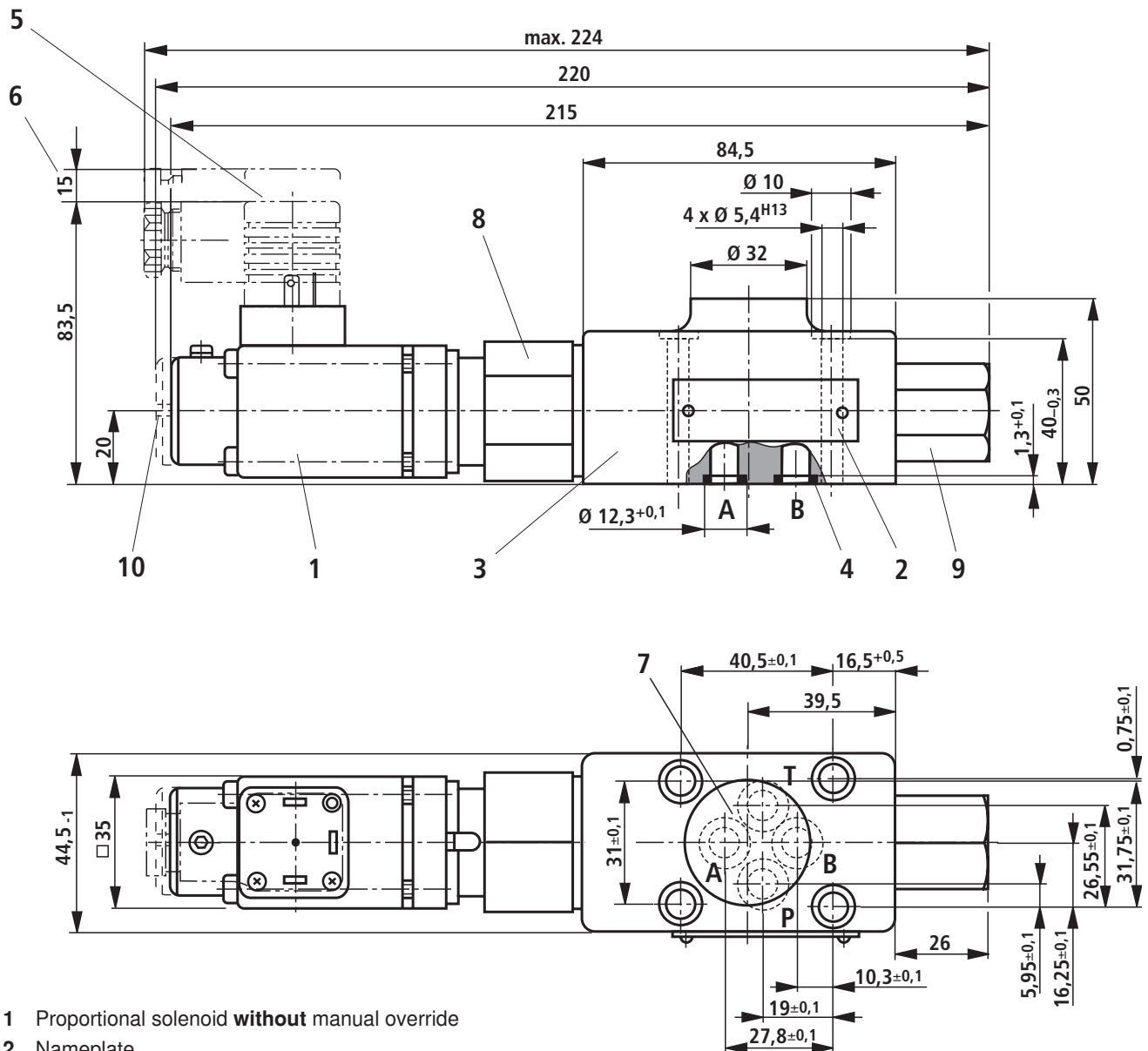


DRE 6 P → A
ZDRE 6 P2 → P1



Note: The shown Δp value corresponds to the minimum applied pressure in port P (P2) minus the maximum pressure to be controlled in port A (P1).

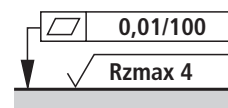
Unit dimensions: Type DRE 6 (dimensions in mm)



- 1 Proportional solenoid **without** manual override
- 2 Nameplate
- 3 Valve housing
- 4 Identical seal rings for ports A, B, P, and T
- 5 Mating connector, separate order, see page 5
- 6 Space required for removing the mating connector
- 7 Porting pattern according to DIN 24340 form A6 and ISO 4401-03-02-0-05
- 8 Hexagon SW36 (width across corners $\varnothing 39$ mm)
- 9 Hexagon SW24
- 10 Proportional solenoid **with** manual override

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

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



Required surface quality of the valve mounting face

Tolerances according to: – General tolerances ISO 2768-mK

Valve mounting screws:

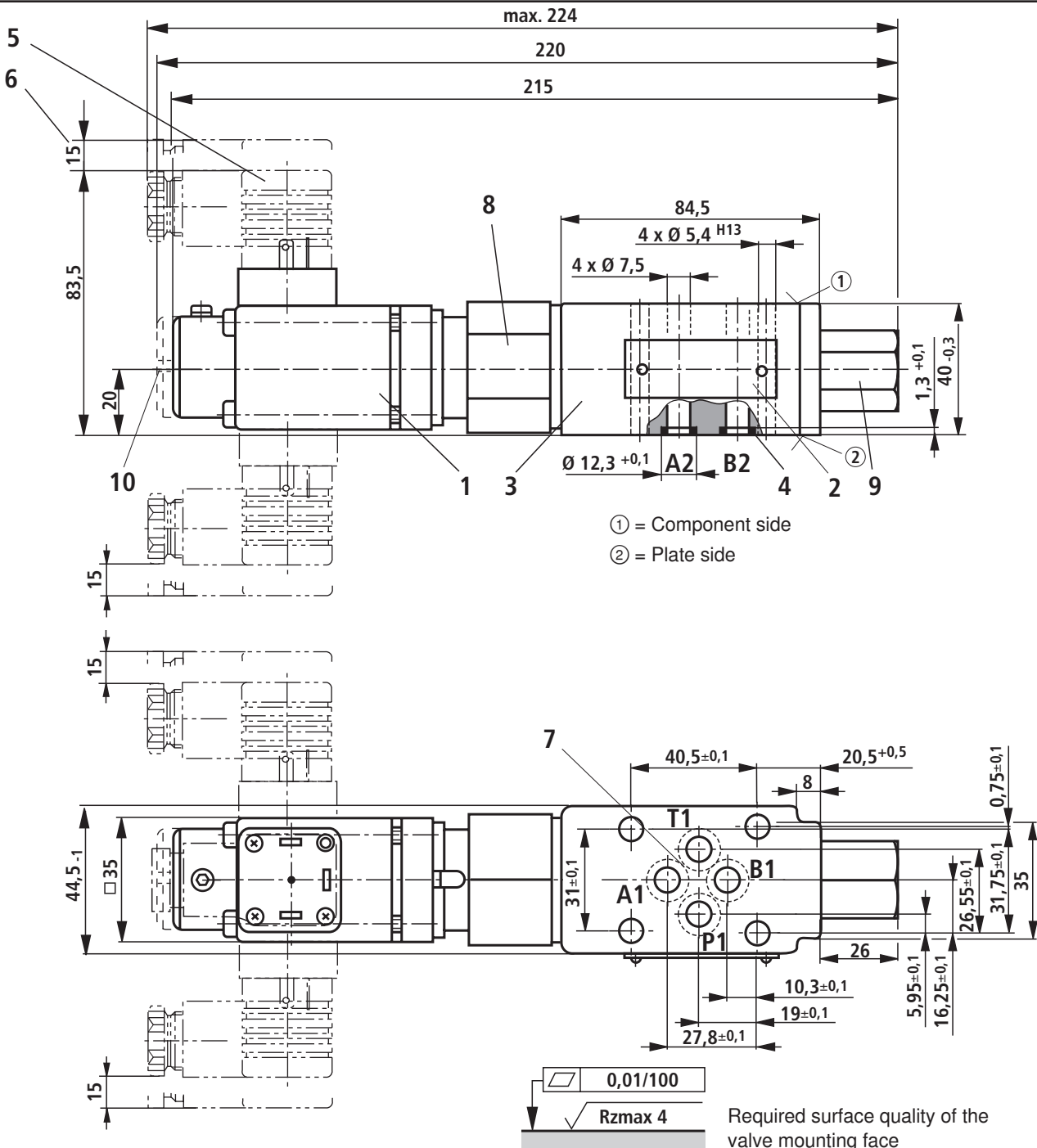
**4 hexagon socket head cap screws
ISO 4762-M5x50-10.9-fIZn-240h-L**

Friction coefficient 0.09 to 0.14 according to VDA 235-101)

Tightening torque $M_A = 7 \text{ Nm} \pm 10\%$

Material no. **R913000064**

Unit dimensions: Type ZDRE 6 (dimensions in mm)



① = Component side

② = Plate side

- 1 Proportional solenoid **without** manual override
- 2 Nameplate
- 3 Valve housing
- 4 Identical seal rings for ports A, B, P, and T
- 5 Mating connector, separate order, see page 5
- 6 Space required for removing the mating connector
- 7 Porting pattern according to DIN 24340 form A6 and ISO 4401-03-02-0-05
- 8 Hexagon SW36 (width across corners Ø39 mm)
- 9 Hexagon SW24
- 10 Proportional solenoid **with** manual override

Tolerances according to: – General tolerances ISO 2768-mK

Subplates according to data sheet RE 45052 and valve mounting 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 mounting screws:

**4 hexagon socket head cap screws
ISO 4762-M5-10.9-fIZn-240h-L**

Friction coefficient 0.09 to 0.14 according to VDA 235-101)

Tightening torque $M_A = 7 \text{ Nm} \pm 10\%$

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52 / 18-0
Fax +49 (0) 93 52 / 18-23 58
documentation@boschrexroth.de
www.boschrexroth.de

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52 / 18-0
Fax +49 (0) 93 52 / 18-23 58
documentation@boschrexroth.de
www.boschrexroth.de

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.