

Pressure sequence valve, pilot-operated

Type DZ



H7941

- ▶ Size 10 ... 32
- ▶ Component series 5X
- ▶ Maximum operating pressure 315 bar
- ▶ Maximum flow 600 l/min

Features

- ▶ Suitable for use as preload valve, sequence valve or switch-over valve
- ▶ For subplate mounting
- ▶ Porting pattern according to ISO 5781
- ▶ As cartridge valve
- ▶ 4 pressure ratings
- ▶ 4 adjustment types:
 - Rotary knob
 - Sleeve with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- ▶ Check valve, optional

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Ordering code

01	02	03	04	05	06	07	08	09	10
DZ			-	5X	/				*

01	Pressure sequence valve, pilot-operated	DZ
02	Valve complete (subplate mounting)	no code
	Pilot control valve without main spool insert (cartridge valve); (do not enter any size)	C
	Pilot control valve with main spool insert (cartridge valve); (enter size 30)	C
03	Size 10	10
	Size 20	20
	Size 30	30

Adjustment type

04	Rotary knob	1
	Sleeve with hexagon and protective cap	2
	Lockable rotary knob with scale	3 ¹⁾
	Rotary knob with scale	7
05	Component series 50 ... 59 (50 ... 59: unchanged installation and connection dimensions)	5X

Set pressure

06	50 bar	50
	100 bar	100
	200 bar	200
	315 bar	315

Pilot oil supply

07	Internal pilot oil supply, internal pilot oil return	no code
	External pilot oil supply, internal pilot oil return ²⁾	X
	Internal pilot oil supply, external pilot oil return ²⁾	Y
	External pilot oil supply, external pilot oil return	XY
08	With check valve ²⁾	no code
	Without check valve	M

Seal material (observe compatibility of seals with hydraulic fluid used, see page 5)

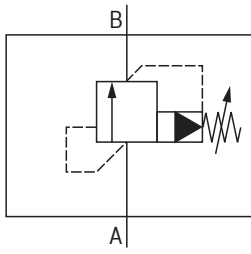
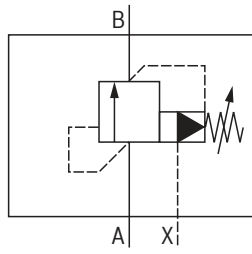
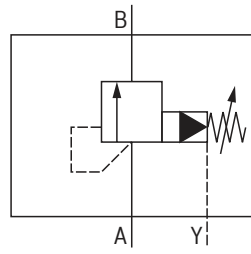
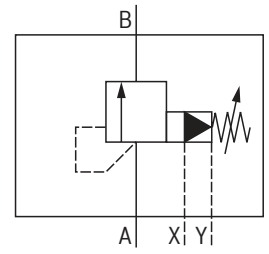
09	NBR seals	no code
	FKM seals	V
10	Further details in the plain text	

¹⁾ H-key with material no. **R900008158** is included in the scope of delivery.

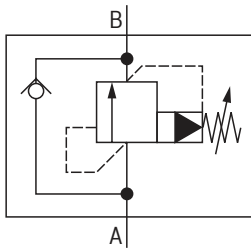
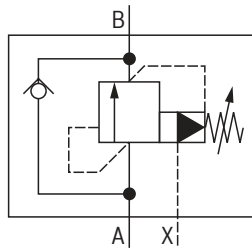
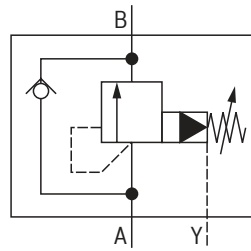
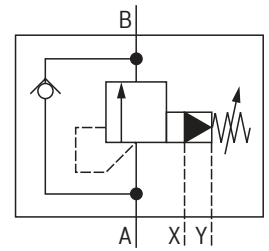
²⁾ Not with version "C"



Notice: Preferred types and standard units are contained in the EPS (standard price list).

SymbolsType DZ. . .-5X/.**M**...Type DZ. . .-5X/.**XM**...Type DZ. . .-5X/.**YM**...Type DZ. . .-5X/.**XYM**...

Type DZ. . .-5X/...

Type DZ. . .-5X/.**X**...Type DZ. . .-5X/.**Y**...Type DZ. . .-5X/.**XY**...

Function, section

The valve type DZ is a pilot-operated pressure sequence valve. It is used for the pressure-dependent connection of a second system.

The pressure sequence valve basically consists of main valve (1) with main spool insert (7) and pilot control valve (2) with adjustment type and optional check valve (3).

According to the pilot oil supply and return and the respective function, the following differentiation is made:

Preload valve type DZ... (control lines 4.1, 12 and 13 open; control lines 4.2, 14 and 15 closed)

The pressure applied in channel A acts via the control line (4.1) on the control spool (5) in the pilot control valve (2). Simultaneously, the pressure in channel A acts via the nozzle (6) on the spring-loaded side of the main spool (7). If the pressure exceeds the value set at the spring (8), the control spool (5) is moved against the spring (8). The hydraulic fluid on the spring-loaded side of the main spool (7) now flows via the nozzle (9), the control edge (10) and control lines (11) and (12) into channel B. This will create a pressure drop at the main spool (7). The main spool (7) moves upwards and opens the connection from channel A to B. The pressure in channel A exceeds the value in channel B by the value set at the spring (8). The leakage occurring at the control

spool (5) is directed internally via the spring chamber (17) of the pilot control valve and the control line (13) into channel B. If the pressure in the secondary circuit (channel B) exceeds the pressure in channel A, a check valve (3) may be optionally installed for free flow back.

Preload valve type DZ...X... (control lines 4.2, 12 and 13 open; control lines 4.1, 14 and 15 closed)

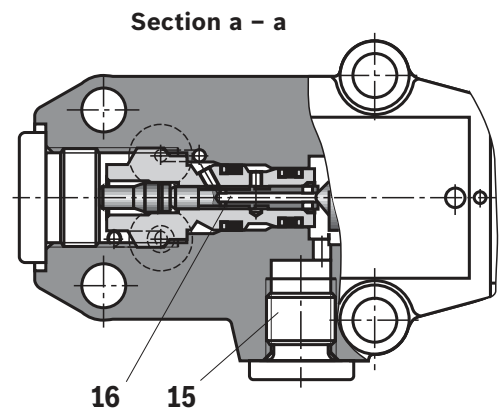
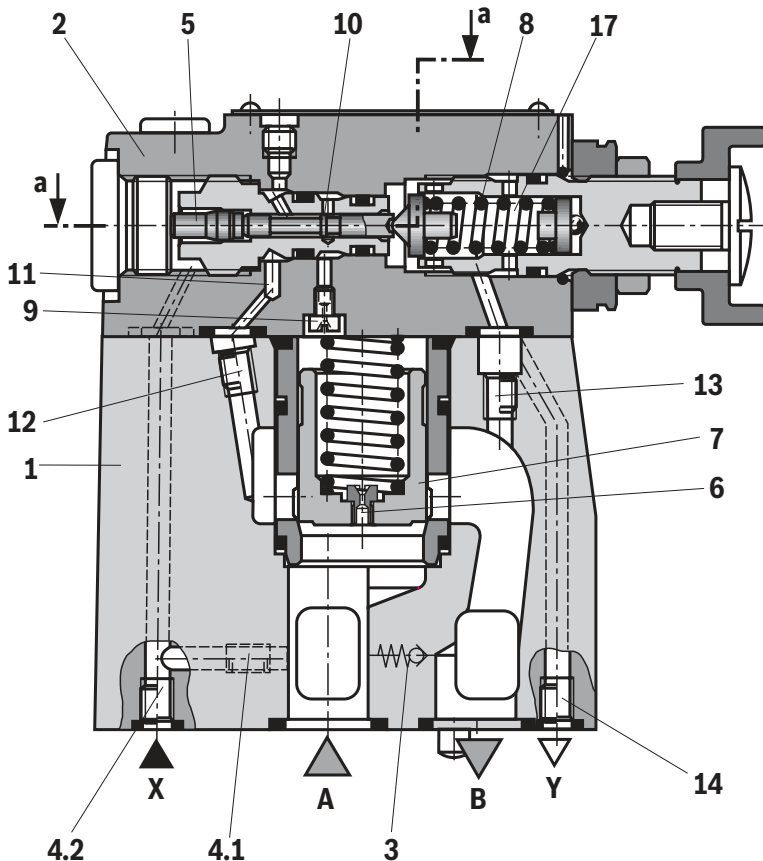
In principle, the function of this valve corresponds to the function of type DZ.... With version "X", however, the opening signal is received externally via control line X (4.2).

Sequence valve type DZ...Y... (control lines 4.1, 12 and 14 or 15 open; control lines 4.2 and 13 closed)

In principle, the function of this valve corresponds to the function of type DZ.... At version "Y", however, the leakage occurring at the control spool (5) has to be directed via line (14) or (15) to the tank by means of a depressurized connection. The pilot oil is directed via line (11) and (12) into channel B.

Circulation valve type DZ...XY... (control lines 4.2, 14 or 15 open; control lines 4.1, 12 and 13 closed)

In principle, the function of this valve corresponds to the function of type DZ.... With version "XY", however, the opening signal is received externally via control line X (4.2). The pilot oil at the control spool (16) bore and occurring leakage have to be directed via line (14) or (15) to the tank by means of a depressurized connection.



Technical data

(For applications outside these values, please consult us!)

general					
Size			10	25	32
Weight	► Type DZ ...	kg	3.4	5.3	8.0
	► Type DZC ...	kg	1.2		
	► Type DZC 30 ...	kg	1.5		
Installation position			any		
Ambient temperature range		°C	-30 ... +80 (NBR seals) -20 ... +80 (FKM seals)		

hydraulic					
Maximum operating pressure	► Port A, B, X	bar	315		
Maximum counter pressure	► Port Y	bar	315		
Minimum set pressure		bar	flow-dependent, see characteristic curves page 6		
Maximum set pressure		bar	50; 100; 200; 315		
Maximum flow	l/min		200	400	600
Hydraulic fluid			See table below		
Hydraulic fluid temperature range	°C		-30 ... +80 (NBR seals) -20 ... +80 (FKM seals)		
Viscosity range	mm²/s		10 ... 800		
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 20/18/15 ¹⁾		

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	90220
Bio-degradable	► Insoluble in water	HETG	ISO 15380	90221
		HEES		
	► Soluble in water	HEPG	ISO 15380	
Flame-resistant	► Water-free	HFDU (glycol base)	ISO 12922	90222
		HFDU (ester base)		
		HFDR		
	► Containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	ISO 12922	90223



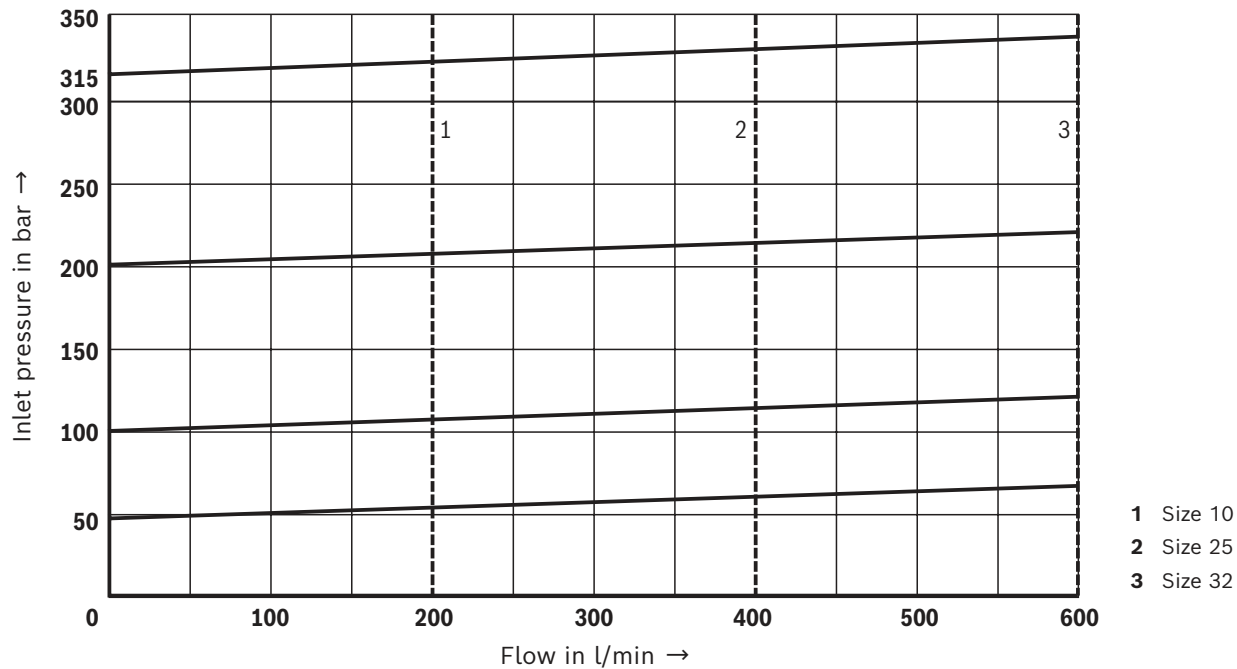
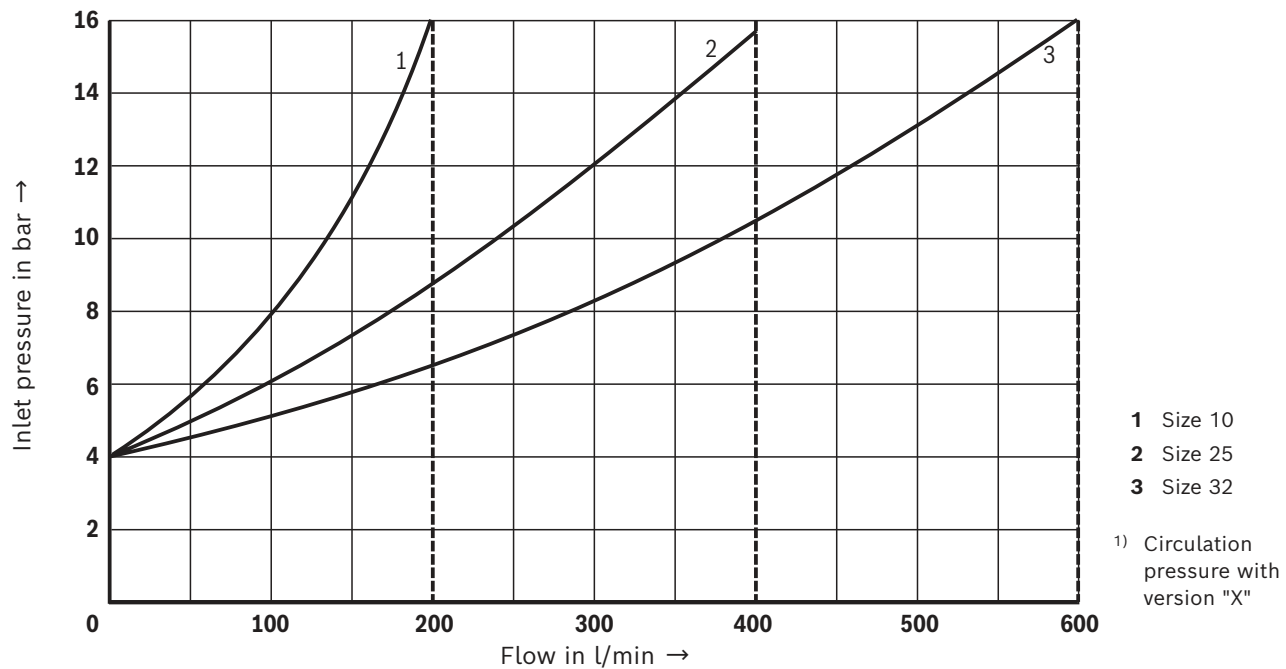
Important information on hydraulic fluids:

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.
- **Bio-degradable and flame-resistant – containing water:** If components with galvanic zinc coating (e.g. version "J3" or "J5") or parts containing zinc are used, small amounts of dissolved zinc may get into the hydraulic system and cause accelerated aging of the hydraulic fluid. Zinc soap may form as a chemical reaction product, which may clog filters, nozzles and solenoid valves – particularly in connection with local heat input.

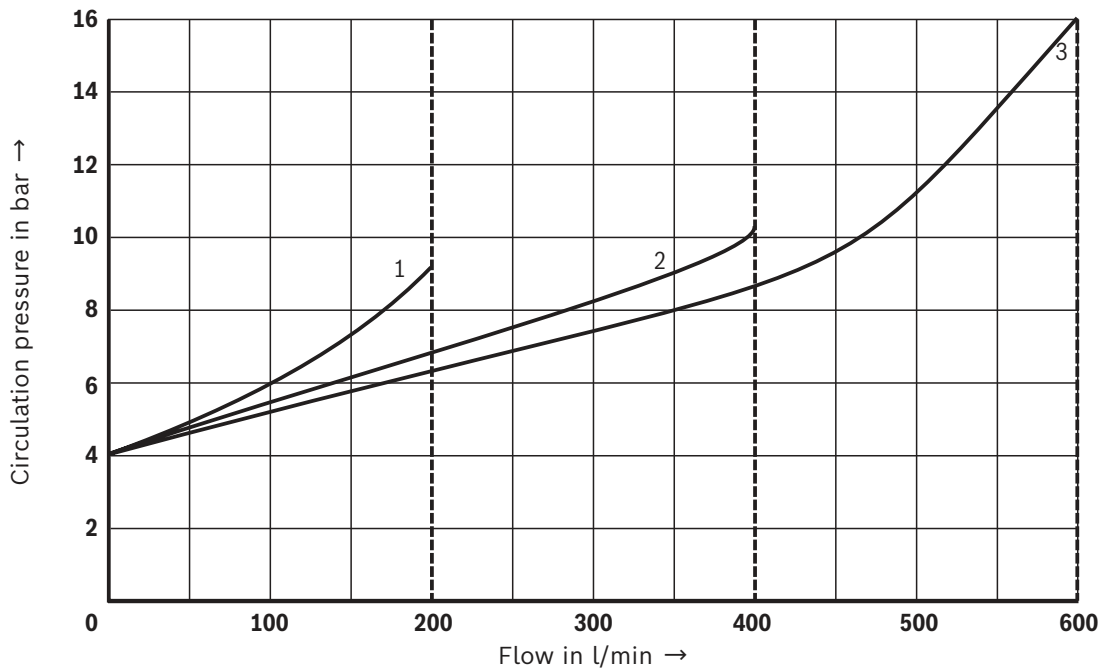
► Flame-resistant – containing water:

Due to increased cavitation tendency with HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to the use with mineral oil HLP. In order to reduce the cavitation effect, it is recommended - if possible specific to the installation - to back up the return flow pressure in ports T to approx. 20% of the pressure differential at the component.

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.
Available filters can be found at www.boschrexroth.com/filter.

Characteristic curves(measured with HLP46, $\vartheta_{\text{oil}} = 40 \pm 5 \text{ }^{\circ}\text{C}$)**Inlet pressure dependent on the flow (A → B)****Minimum inlet pressure ¹⁾ dependent on the flow (A → B)****Notice:**

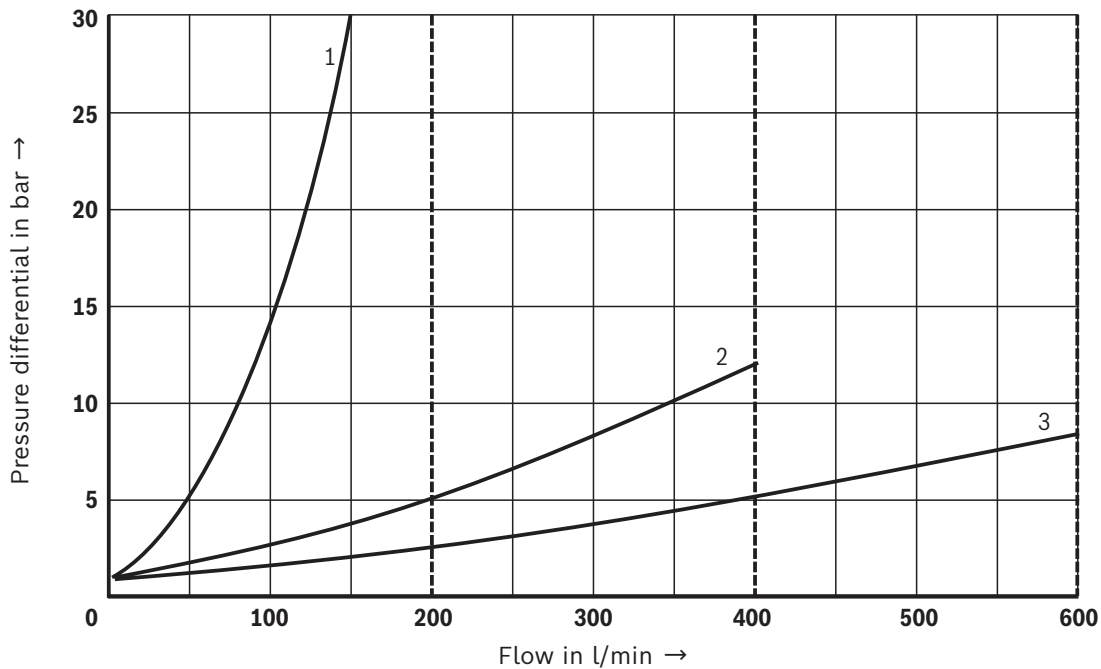
The characteristic curves apply to the pressure at the valve output $p_T = 0$ bar across the entire flow range.

Characteristic curves(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)**Circulation pressure dependent on the flow (A → B) (only version "XY")**

- 1 Size 10
- 2 Size 25
- 3 Size 32

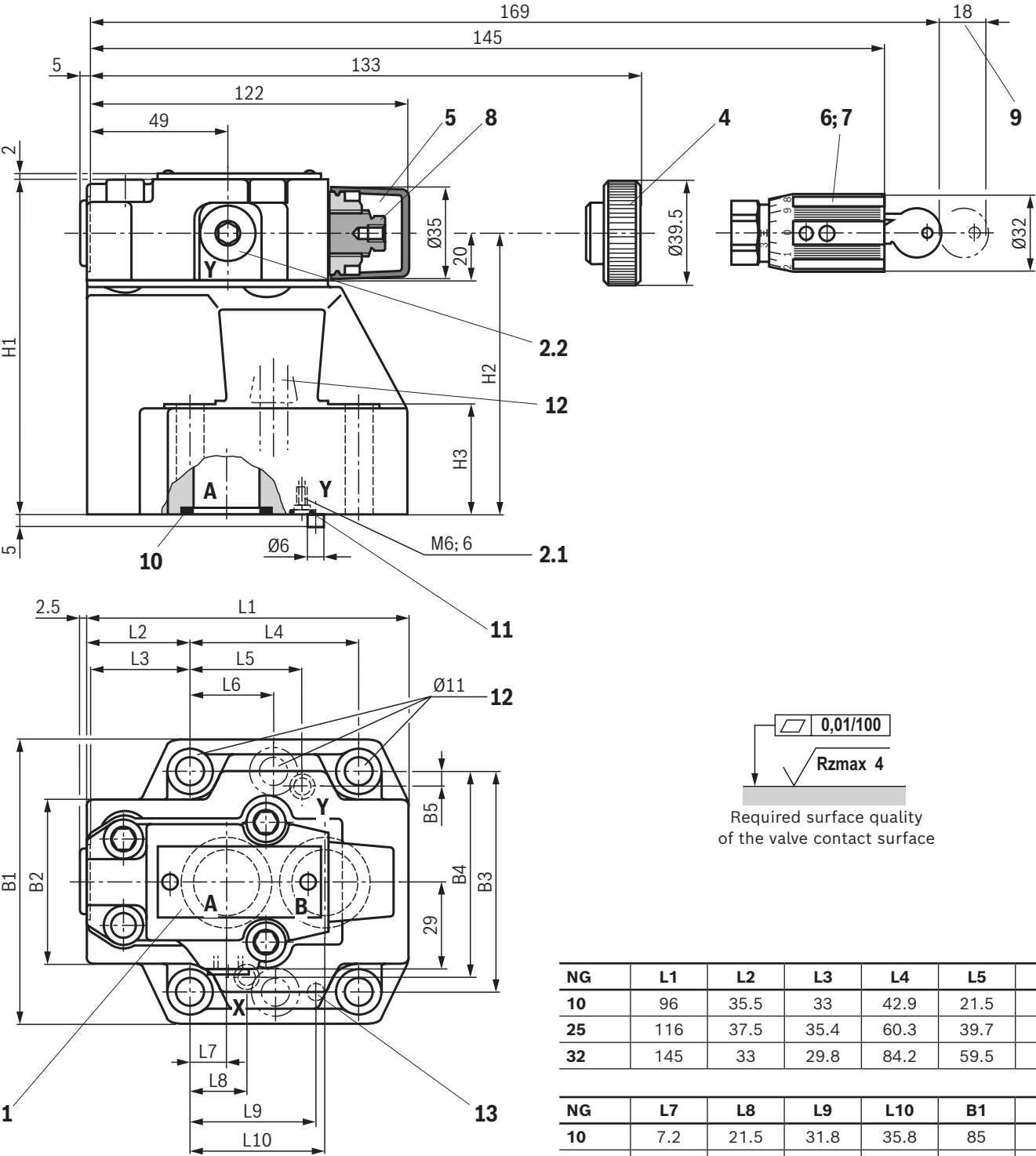
Notice:

The characteristic curves apply to the pressure at the valve output $p_T = 0 \text{ bar}$ across the entire flow range.

 Δp_{qV} characteristic curves via check valve (B → A)

- 1 Size 10
- 2 Size 25
- 3 Size 32

Dimensions: Subplate mounting
(dimensions in mm)



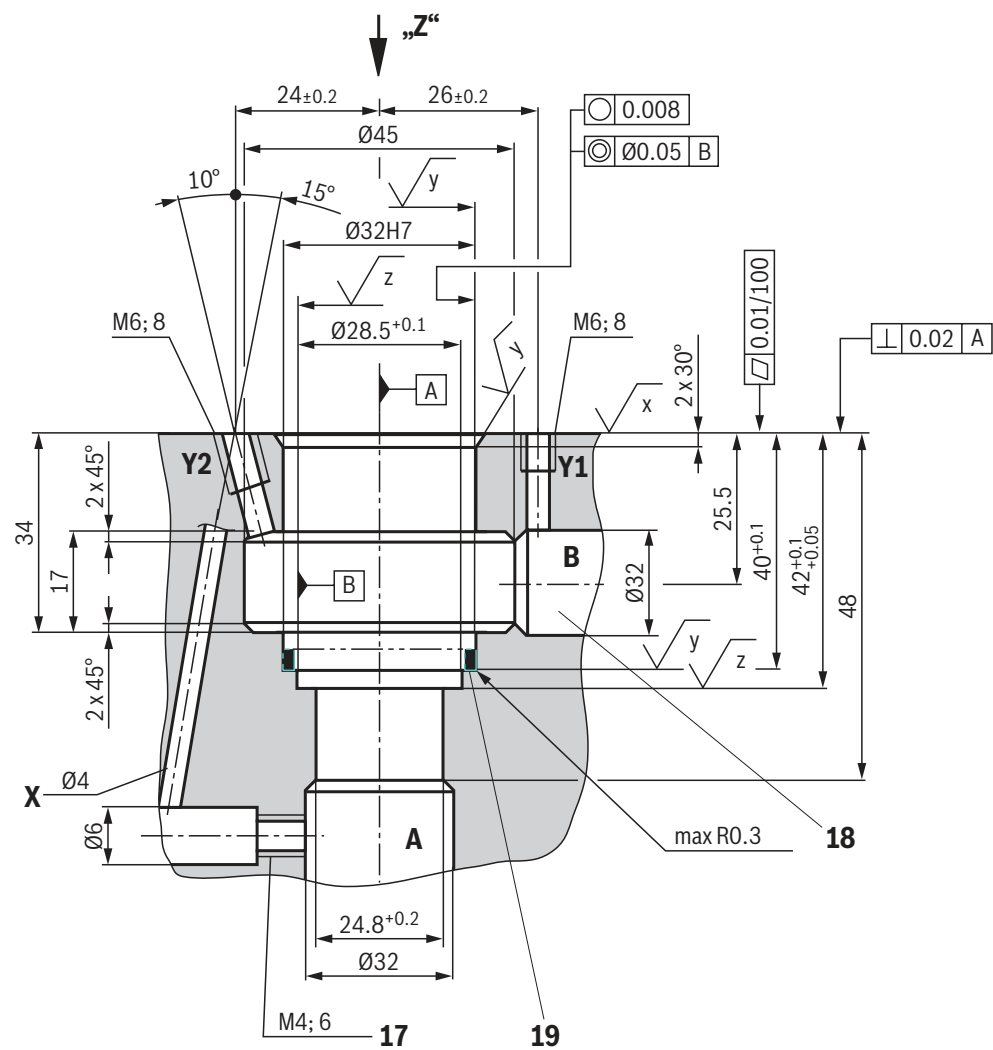
NG	L1	L2	L3	L4	L5	L6
10	96	35.5	33	42.9	21.5	–
25	116	37.5	35.4	60.3	39.7	–
32	145	33	29.8	84.2	59.5	42.1

NG	L7	L8	L9	L10	B1	B2
10	7.2	21.5	31.8	35.8	85	50
25	11.1	20.6	44.5	49.2	102	59.5
32	16.7	24.6	62.7	67.5	120	76

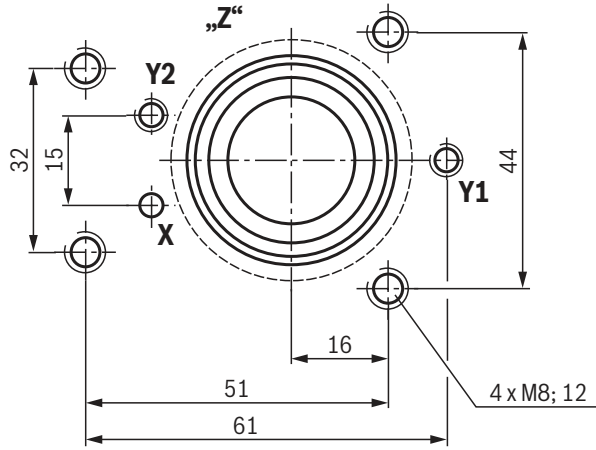
NG	B3	B4	B5	H1	H2	H3
10	66.7	58.8	7.9	112	92	28
25	79.4	73	6.4	122	102	37
32	96.8	92.8	3.8	130	110	46

For item explanations, valve mounting screws and subplates, see page 11.

Installation bore
(dimensions in mm)



View "Z"



$\sqrt{x}$	=	$\sqrt{Rz_{max} 4}$
$\sqrt{y}$	=	$\sqrt{Rz_{max} 8}$
$\sqrt{z}$	=	$\sqrt{Rz 16}$

Item explanations see page 11.

Dimensions

- 1 Name plate
- 2.1 Port Y for external pilot oil return at version "XY" or spring chamber discharge at version "Y"
- 2.2 Port Y (G1/4) optionally for external pilot oil return at version "XY" or spring chamber discharge at version "Y"
- 3.1 Port Y1 at cartridge valve for pilot oil return at version "XY" or spring chamber discharge at version "no code", "X" and "Y"
- 3.2 Port Y2 at cartridge valve for pilot oil return at version "no code", "X" and "Y"
- 4 Adjustment type "1"
- 5 Adjustment type "2"
- 6 Adjustment type "3"
- 7 Adjustment type "7"
- 8 Hexagon wrench size 10
- 9 Space required to remove the key
- 10 Identical seal rings for ports A and B
- 11 Identical seal rings for ports X, Y, Y1 and Y2
- 12 Valve mounting bores
- 13 Locking pin
- 14 Main spool insert with nozzle
- 15 Seal ring (main spool)
- 16 Support ring (main spool)
- 17 Versions "X" and "XY" without bore
- 18  **Notice:**
Bore Ø32 may intersect Ø45 at any point. However, it must be observed that the connection and valve mounting bores are not damaged.
- 19 Support ring and seal ring are to be inserted into this bore before assembly of the main spool!

Valve mounting screws (separate order)

Subplate mounting:

Size	Quantity	Hexagon socket head cap screws	Material number
10	4	ISO 4762 - M10 x 50 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 60 \text{ Nm} \pm 10\%$	R913015580
25	4	ISO 4762 - M10 x 60 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 60 \text{ Nm} \pm 10\%$	R913014770
32	6	ISO 4762 - M10 x 70 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 60 \text{ Nm} \pm 10\%$	R913014772

Cartridge valve:

Size	Quantity	Hexagon socket head cap screws	Material number
–	4	ISO 4762 - M8 x 40 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 31 \text{ Nm} \pm 10\%$	R913015798

Notice:

- For reasons of stability, exclusively the specified valve mounting screws may be used.
- The tightening torques are guidelines when using screws with the specified friction coefficients and when using a manual torque wrench (tolerance $\pm 10\%$).

Subplates (separate order) with porting pattern according to ISO 4401, see data sheet 45100.

Further information

► Subplates	Data sheet 45100
► Hydraulic fluids on mineral oil basis	Data sheet 90220
► Environmentally compatible hydraulic fluids	Data sheet 90221
► Flame-resistant, water-free hydraulic fluids	Data sheet 90222
► Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC)	Data sheet 90223
► Hydraulic valves for industrial applications	Operating instructions 07600-B
► Selection of filters	www.boschrexroth.com/filter
► Information on available spare parts	www.boschrexroth.com/spc

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