

Electric Drives
and Controls

Hydraulics

Linear Motion and
Assembly Technologies

Pneumatics

Service

Rexroth
Bosch Group

Pressure sequence valve, pilot-operated

RE 26391/06.11
Replaces: 02.03

1/10

Type DZ

Size 10, 25, 32
Component series 5X
Maximum operating pressure 315 bar
Maximum flow 600 l/min



K4663

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Features

- Suitable for use as preload, sequence or switchover valve
- 1 – For subplate mounting
- 2 – Porting pattern according to ISO 5781
- 2 – As cartridge valve
- 3 – 4 pressure ratings
- 4 – 4 adjustment types:
 - Rotary knob
 - Bushing with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- Check valve, optional

– More information:

Subplates

Data sheet 45062

Ordering code

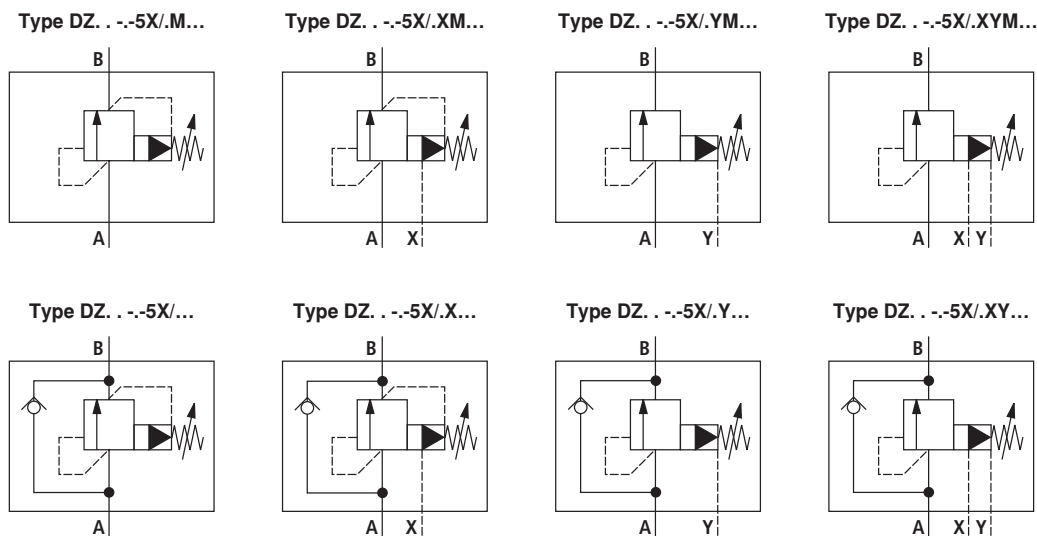
DZ		-5X/		*	
Pressure sequence valve, pilot-operated				Further details in the plain text	
Complete valve (subplate mounting)	= no code			Seal material	
Pilot control valve without main spool insert (cartridge valve) (size not entered)	= C			no code = NBR seals V = FKM seals (other seals upon request)	
Pilot control valve with main spool insert (cartridge valve) (valve size 30 entered)	= C			Attention! Observe compatibility of seals with hydraulic fluid used!	
Size 10	= 10			no code = With check valve ²⁾	
Size 25	= 20			M = Without check valve	
Size 32	= 30			Pilot oil supply	
Adjustment type				no code = Pilot oil supply internal, pilot oil discharge internal	
Rotary knob	= 1			X = Pilot oil supply external, pilot oil return internal ²⁾	
Bushing with hexagon and protective cap	= 2			Y = Pilot oil supply internal, pilot oil return external ²⁾	
Lockable rotary knob with scale	= 3 ¹⁾			XY = Pilot oil supply external, pilot oil return external (see symbols below)	
Rotary knob with scale	= 7			Setting pressure	
Component series 50 to 59 (50 to 59: Unchanged installation and connection dimensions)	= 5X			50 bar = 50 100 bar = 100 200 bar = 200 315 bar = 315	

¹⁾ H-key with Material no. **R900008158** is included in the delivery.

²⁾ Not with version "C"

Standard types and standard units are contained in the EPS (standard price list).

Symbols



Function, section

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

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

According to the pilot oil supply and return and thus the function you distinguish between:

Preload valve type DZ. . --5X/X... (control lines 4.1, 12 and 13 open; control lines 4.2, 14 and 15 closed)

The pressure applied to channel A acts via the control line (4.1) on the pilot spool (5) in the pilot control valve (2). Via the nozzle (6), the pressure in channel A simultaneously acts on the spring-loaded side of the main spool (7). If the pressure exceeds the value set at the spring (8), the pilot 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 the control lines (11) and (12) into channel B. This results in 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 that in channel B by the value set at spring (8). The leakage occurring at the pilot spool (5) is led into channel B via the spring chamber (17) of the pilot control valve and the control line (13). If the pressure in the secondary circuit (channel B) is higher than that in channel A, an optional check valve (3) can be installed for free flow back.

Preload valve type DZ. . --5X/X... (control lines 4.2, 12 and 13 open; control lines 4.1, 14 and 15 closed)

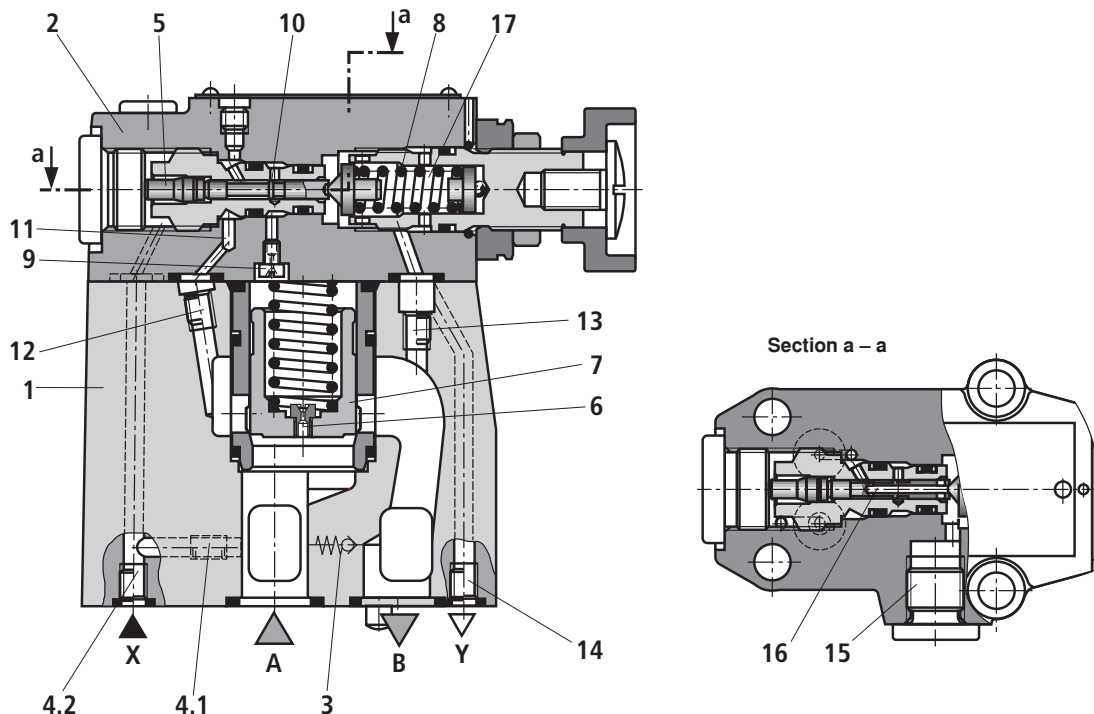
In principle, the function of this valve corresponds to the function of type DZ. . --5X/.... With version "X", the opening signal is, however, provided externally via control line X (4.2).

Sequence valve type DZ. . --5X/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. . --5X/.... With version "Y", the leakage occurring at the pilot spool (5) must, however, be led to the tank via line (14) or (15) at zero pressure. The pilot oil is led into channel B via line (11) and (12).

Bypass valve type DZ. . --5X/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. . --5X/.... With version "XY", the opening signal is, however, provided externally via control line X (4.2). The pilot oil at the bored pilot spool (16) and the occurring leakage are to be led into the tank via line (14) or (15) at zero pressure.



Technical data (For applications outside these parameters, 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 to +80 (NBR seals) -20 to +80 (FKM seals)		

hydraulic

Maximum operating pressure	- Port A, B, X	bar	315		
Maximum backpressure	- Port Y	bar	315		
Minimal setting pressure		bar	Flow-dependent, see characteristic curves page 5		
Maximum setting pressure		bar	50; 100; 200; 315		
Maximum flow		l/min	200	400	600
Hydraulic fluid			See table below		
Hydraulic fluid temperature range		°C	-30 to +80 (NBR seals) -20 to +80 (FKM seals)		
Viscosity range		mm ² /s	10 to 800		
Maximum permitted 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
Mineral oils and related hydrocarbons	HL, HLP, HLPD	NBR, FKM	DIN 51524
Environmentally compatible	- Insoluble in water	HETG	ISO 15380
		HEES	
	- Soluble in water	HEPG	ISO 15380
Flame-resistant	- Water-free	HFDR, HFDR	ISO 12922
	- Water-containing	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	ISO 12922

Important information on hydraulic fluids!

- For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!
- There may be limitations regarding the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!

- Flame-resistant – water-containing:

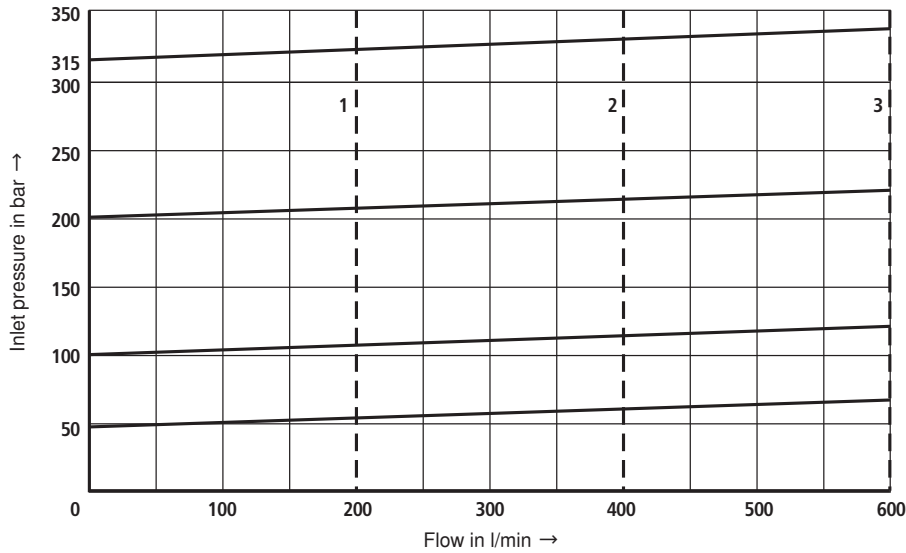
- Maximum operating pressure 210 bar
- Maximum hydraulic fluid temperature 60 °C
- Expected service life as compared to HLP hydraulic oil 30 % to 100 %

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.

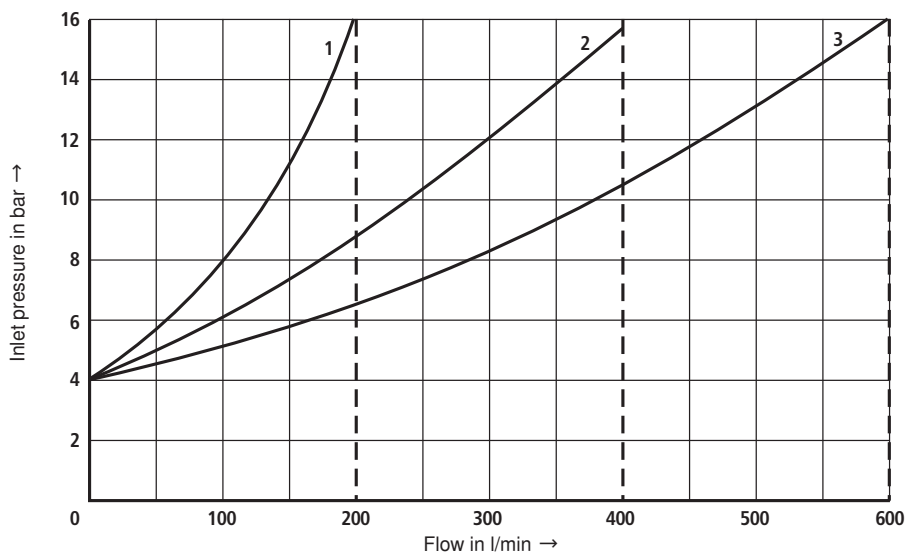
For the selection of the filters see www.boschrexroth.com/filter.

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

Inlet pressure against the flow (A → B)



Minimum inlet pressure ¹⁾ against the flow (A → B)

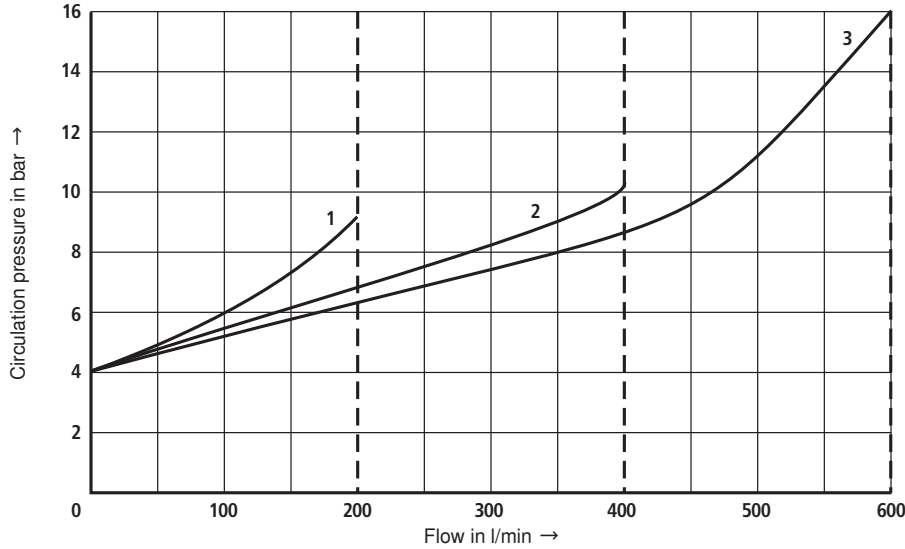


¹⁾ Circulation pressure with version "X"

The characteristic curves apply to the pressure at the valve output $p_1 = 0$ bar across the entire flow range.

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

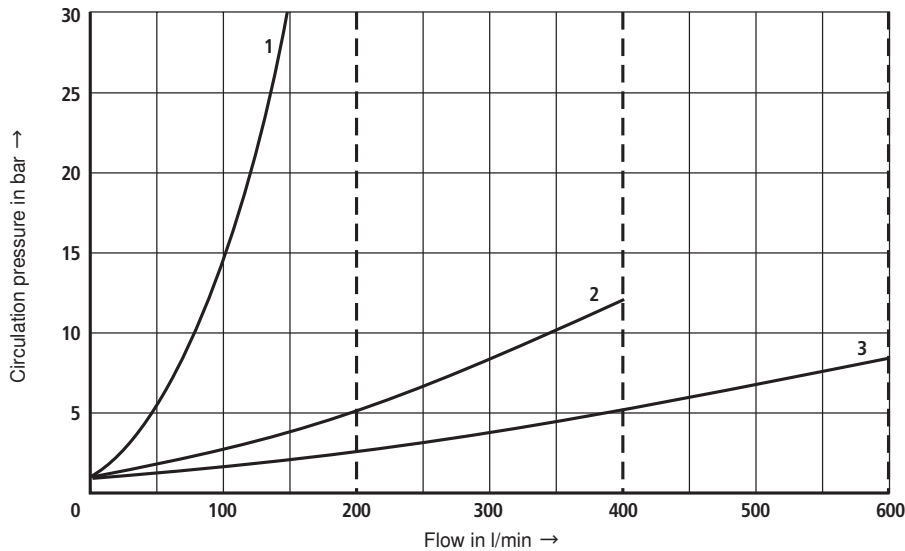
Circulation pressure against the flow (A → B) (only version "XY")



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

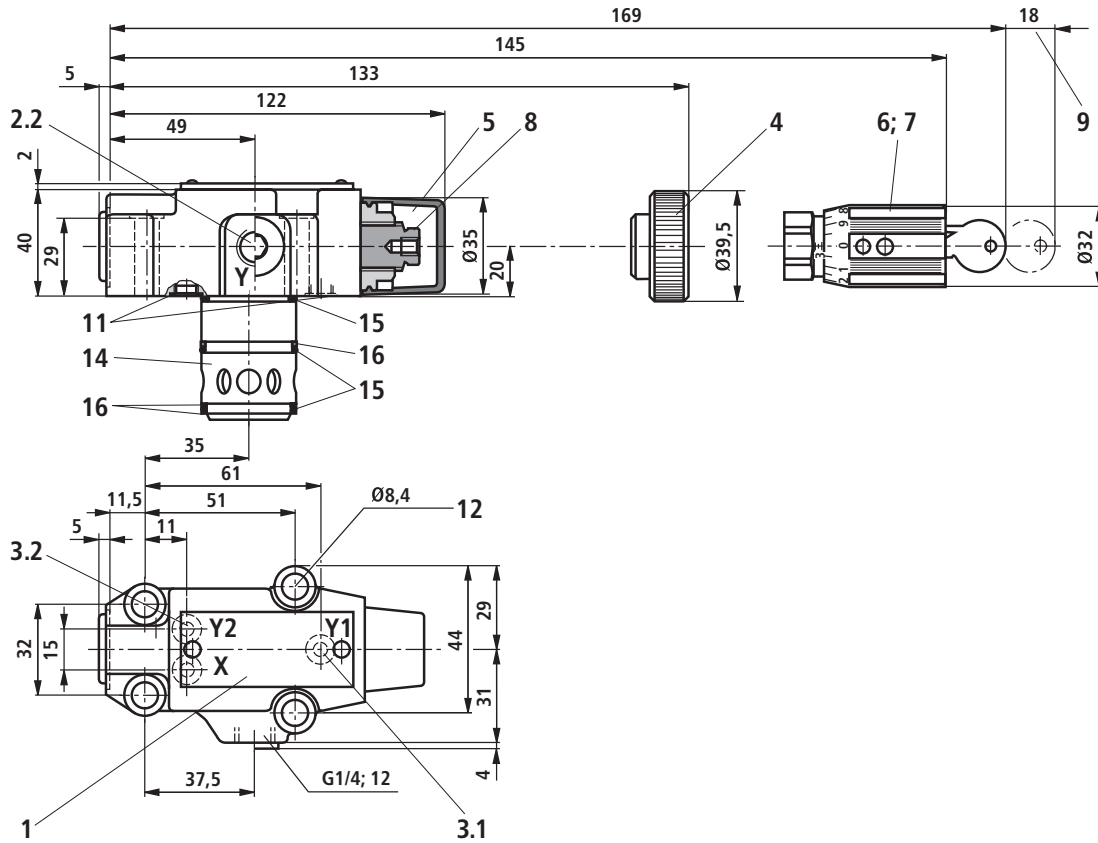
The characteristic curves apply to the pressure at the valve output $p_T = 0$ bar across the entire flow range.

Δp - q_V characteristic curves across the check valve (B → A)



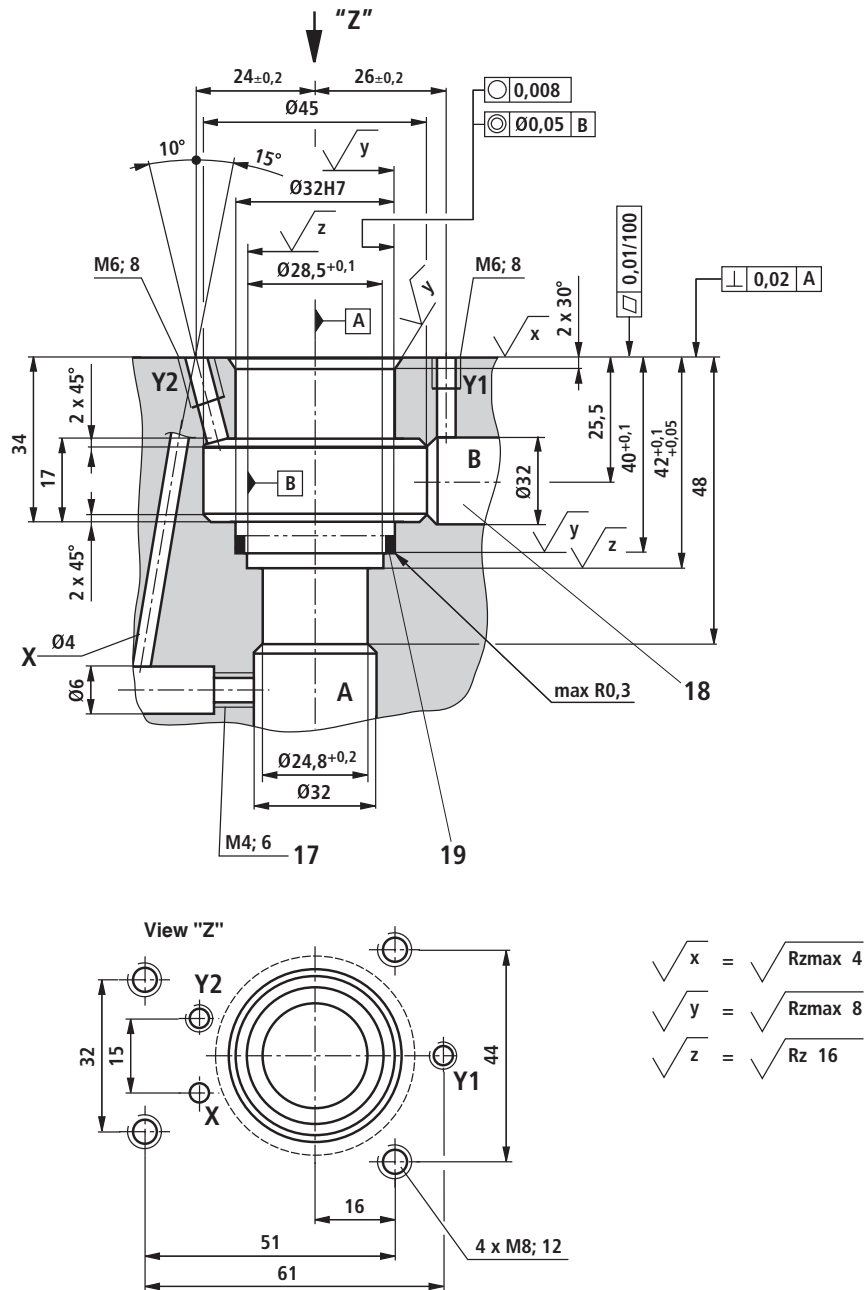
- 1 Size 10
- 2 Size 25
- 3 Size 32

Unit dimensions: Cartridge valve (dimensions in mm)




Item explanations and valve mounting screws
see page 10.

Installation bore (dimensions in mm)



Item explanations see page 10.

Unit dimensions (dimensions in mm)

- 1 Name plate
- 2.1 Port Y for external pilot oil return with version "XY" or spring chamber unloading with version "Y"
- 2.2 Port Y (G1/4) optionally for external pilot oil return with version "XY" or spring chamber unloading with version "Y"
- 3.1 Port Y1 at the cartridge valve for pilot oil return with version "XY" or spring chamber unloading with version "no code", "X" and "Y"
- 3.2 Port Y2 at the cartridge valve for pilot oil return with version "no code", "X" and "Y"
- 4 Adjustment type "1"
- 5 Adjustment type "2"
- 6 Adjustment type "3"
- 7 Adjustment type "7"
- 8 Hexagon SW10
- 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 Locating pin
- 14 Main spool insert with nozzle
- 15 Seal ring (main spool)
- 16 Support ring (main spool)
- 17 Bore is omitted for version "X" and "XY"
- 18  **Note!**
The Ø32 bore can tap a Ø45 bore at any point. However, it must be ensured that the connection and valve mounting bores are not damaged!
- 19 Support ring and seal ring must be inserted into the bore before assembly of the main spool!

Subplates according to data sheet 45062 (separate order)

– Size 10	G 460/01 (G3/8) G 461/01 (G1/2)
– Size 25	G 412/01 (G3/4) G 413/01 (G1)
– Size 32	G 414/01 (G1 1/4) G 415/01 (G1 1/2)

Valve mounting screws (separate order)

For reasons of stability, exclusively the following valve mounting screws may be used:

Subplate mounting:

- Size 10
4 ISO 4762 - M10 x 50 - 10.9-fIZn-240h-L
with friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
Tightening torque $M_A = 60 \text{ Nm} \pm 10 \%$,
Material no. **R913000471**
- Size 25
4 ISO 4762 - M10 x 60 - 10.9-fIZn-240h-L
with friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
Tightening torque $M_A = 60 \text{ Nm} \pm 10 \%$,
Material no. **R913000116**
- Size 32
6 ISO 4762 - M10 x 70 - 10.9-fIZn-240h-L
with friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
Tightening torque $M_A = 60 \text{ Nm} \pm 10 \%$,
Material no. **R913000126**

Cartridge valve:

- 4 ISO 4762 - M8 x 40 - 10.9-fIZn-240h-L**
with friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14 ,
Tightening torque $M_A = 31 \text{ Nm} \pm 10 \%$,
Material no. **R913000205**

The tightening torques are guidelines when using screws with the specified friction coefficients and when using a torque power screwdriver (tolerance $\pm 10 \%$).

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