

Pressure relief valve, pilot operated Type MHDBV...Y and MHDBV...XY



- ▶ Size 22 and 40
- ▶ Component series 3X
- ▶ Maximum operating pressure 420 bar
- ▶ Maximum flow 800 l/min

Features

- ▶ Screw-in cartridge valve
- ▶ 2 pressure ratings, optional

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Type code

01	02	03	04	05	06	07	08	09	10	11	12
MH	DBV		K	2	-	3X	/				*

Valve type

01	Mobile Hydraulics	MH
02	Pressure relief valve, pilot operated	DBV

Size

03	Size 22	22
	Size 40	40

04	Screw-in cartridge valve	K
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Adjustment type

05	Grub screw with internal/external hexagon and protective cap	2
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Series

06	Series 30 o 39 (unchanged installation and connection dimensions)	3X
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Pressure rating ¹⁾

07	Set pressure up to 100 bar	100
	Set pressure up to 420 bar	420

Pressure setting

08	Without pressure setting, with protective cap, without seal ²⁾	No code
	With pressure setting, with protective cap, with seal ³⁾	-...

Pilot oil supply and pilot oil return

09	Internal pilot oil supply, internal pilot oil return	No code
	Internal pilot oil supply, external pilot oil return	Y
	Internal pilot oil supply (with release function), external pilot oil return	XY

Sealing material

10	NBR (nitrile rubber)	M
	FKM (fluoroelastomer)	V

Mounting cavity

11	M28 × 1.5 (Size 22)	FD
	M39 × 1.5 (Size 40)	FL

12	Further details in the plain text	*
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Note

Factory-set valves are protected by means of a protective cap. In the case of subsequent re-adjustment, the warranty will become void!

¹⁾ The values refer to the screw-in cartridge valve. If the valve is installed in a housing, it has to be ensured that the set pressure of the screw-in cartridge valve does not exceed the value of the housing, which might be lower!

²⁾ Valves without factory-set pressure are delivered in a depressurized state.

³⁾ Example:
set to 300 bar: ...420-**300**...
(pressure setting at $q_V = 5...20$ l/min)

Preferred types

Type	Material number	Mounting cavity (see page 8 and 9)	Characteristic curves (see page 6)
MHDBV 22 K2-3X/420XYMFD	R900307480	FD	D1
MHDBV 22 K2-3X/420YMFD	R901224584	FD	D1
MHDBV 40 K2-3X/420XYMFL	R900308696	FL	D2
MHDBV 40 K2-3X/100YMFL	R900366656	FL	D2
MHDBV 40 K2-3X/420YMFL	R901225220	FL	D2

Functional description

General

The pressure valve type MHDBV... is a pilot operated pressure relief valve for installation in block designs. It is used to limit a system pressure. The system pressure can be set steplessly via the adjustment type (7).

Function

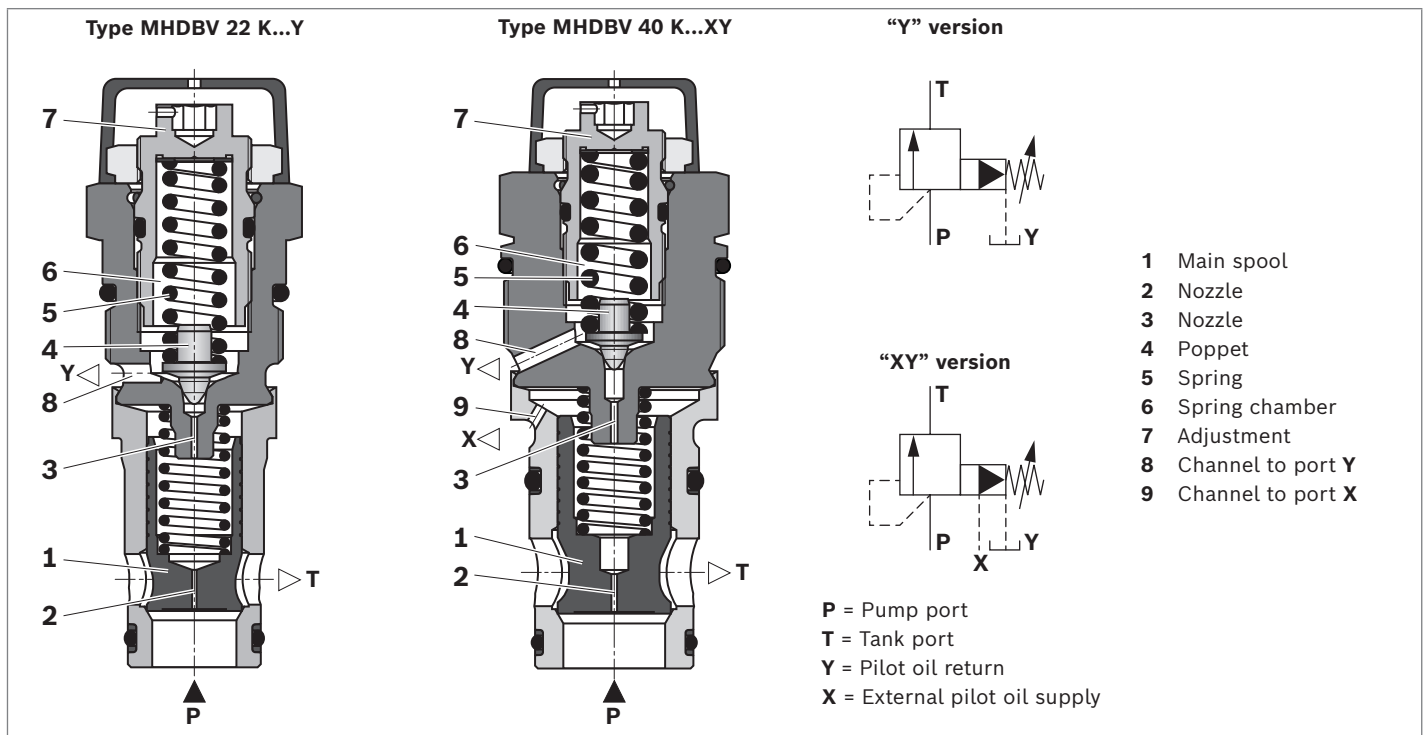
The pressure applied at port **P** acts on the main spool (1). At the same time, the pressure is applied to poppet (4) via the nozzle bores (2) and (3). If the pressure at the port **P** exceeds the value set at spring (5), then the poppet (4) opens against the spring (5). The hydraulic fluid from the

port **P** now flows into the spring chamber (6) via the nozzle bores (2) and (3). From here, the hydraulic fluid is fed externally ("Y" version) via the control line (8) into the port **T**. Due to the state of equilibrium at the main spool (1) hydraulic fluid flows from the port **P** to port **T**, maintaining the set operating pressure. The pressure relief valve can be unloaded or switched to another pressure (second pressure rating) via port **X** (9) (version "XY").

Note

The maximum operating pressure is formed from the sum of the set pressure and the return flow pressure at port **Y**.

▼ Cross-section and symbol MHDBV...Y; MHDBV...XY



Technical data

General				
Weight		kg	See table on page 7	
Installation position			Any	
Ambient temperature range		°C	–20 ... +80	
Storage temperature range		°C	–20 ... +80	
Surface protection			None – surface protection has to be ensured by painting the components or the entire assembly (e.g. valve and housing).	
Hydraulic				
Maximum operating pressure	Port P, X	p	bar	100; 420
	Port T	p_T	bar	315
Maximum counter pressure	Port Y	p_Y	bar	250
Maximum flow		q_v	l/min	See characteristic curves on page 6
Hydraulic fluid				See table on page 5
Hydraulic fluid temperature range		ϑ	°C	–30 ... +80 (NBR seal) –20 ... +80 (FKM seal)
Viscosity range		ν	mm ² /s	10 ... 380
Maximum permissible degree of contamination of the hydraulic fluid, cleanliness level according to ISO 4406 (c)				Level 20/18/15 ¹⁾
Load cycles				2 million

Note

- For applications outside these parameters, please consult us!
- The technical data was determined at a viscosity of $\nu = 41 \text{ mm}^2/\text{s}$ (HLP46; $\vartheta_{\text{oil}} = 40 \pm 5 \text{ °C}$).

¹⁾ The cleanliness classes stated for the components has to be maintained in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.
We recommend using a filter with a minimum retention rate of $\beta_{10} \geq 75$.

Hydraulic fluid

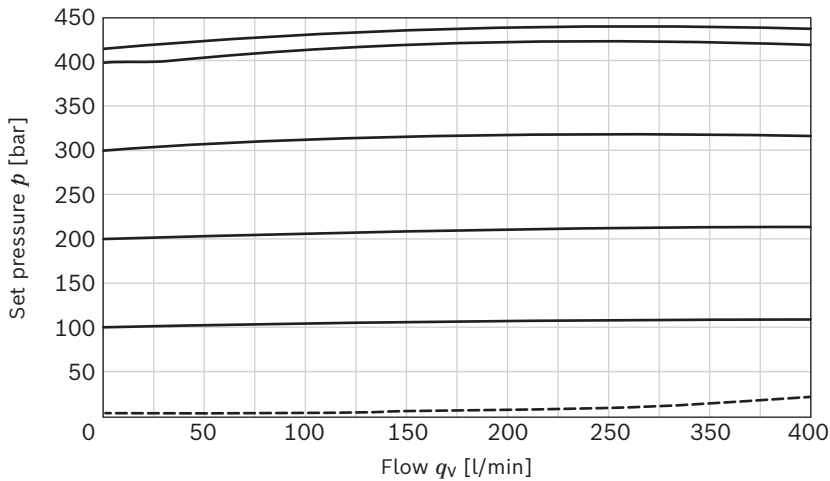
Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	NBR, FKM	DIN 51524	90220
Environmentally acceptable	Insoluble in water	HETG, HEES	FKM	ISO 15380	90221
	Soluble in water	HEPG	FKM	ISO 15380	90221

Notice

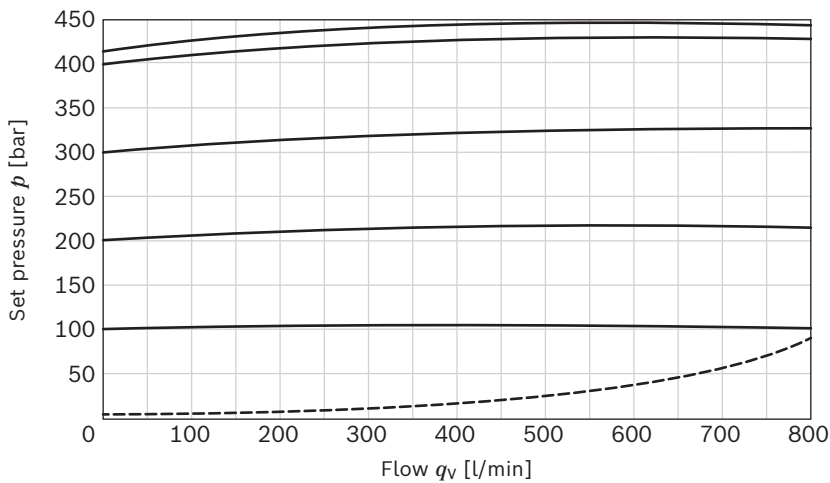
- ▶ Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- ▶ Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!
- ▶ **Environmentally acceptable:** If environmentally acceptable hydraulic fluids are used that are also zinc-solving, there may be an accumulation of zinc.

Characteristic curves

▼ p_E - q_V characteristic curves – „D1“ for size 22



▼ p_E - q_V characteristic curves – „D2“ for size 40



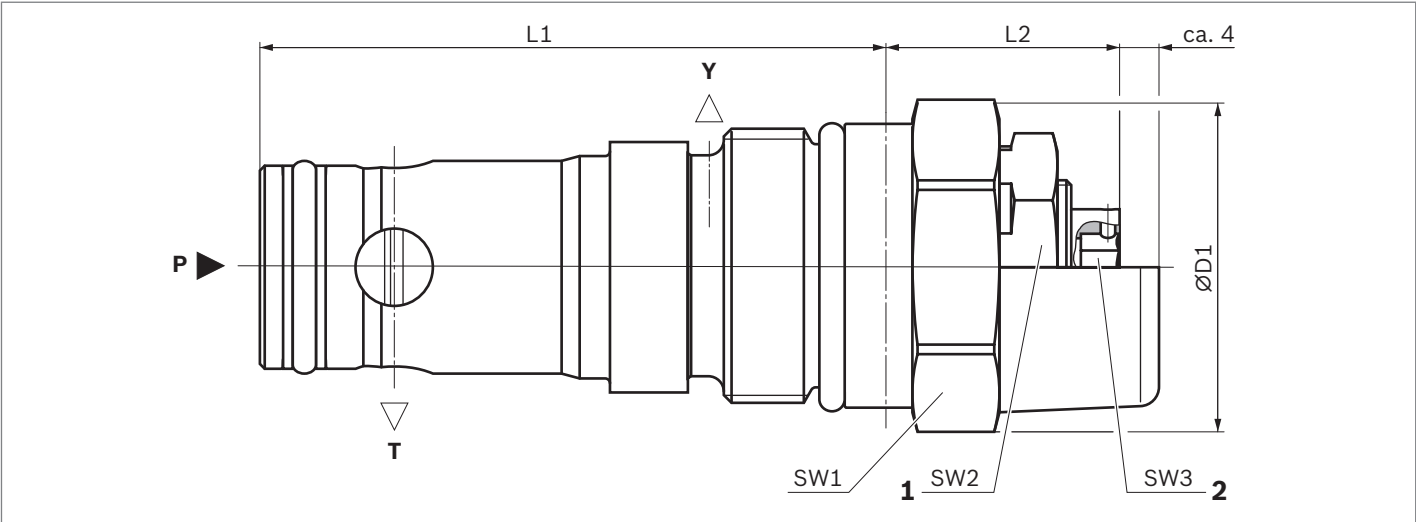
----- = Performance limit

Note

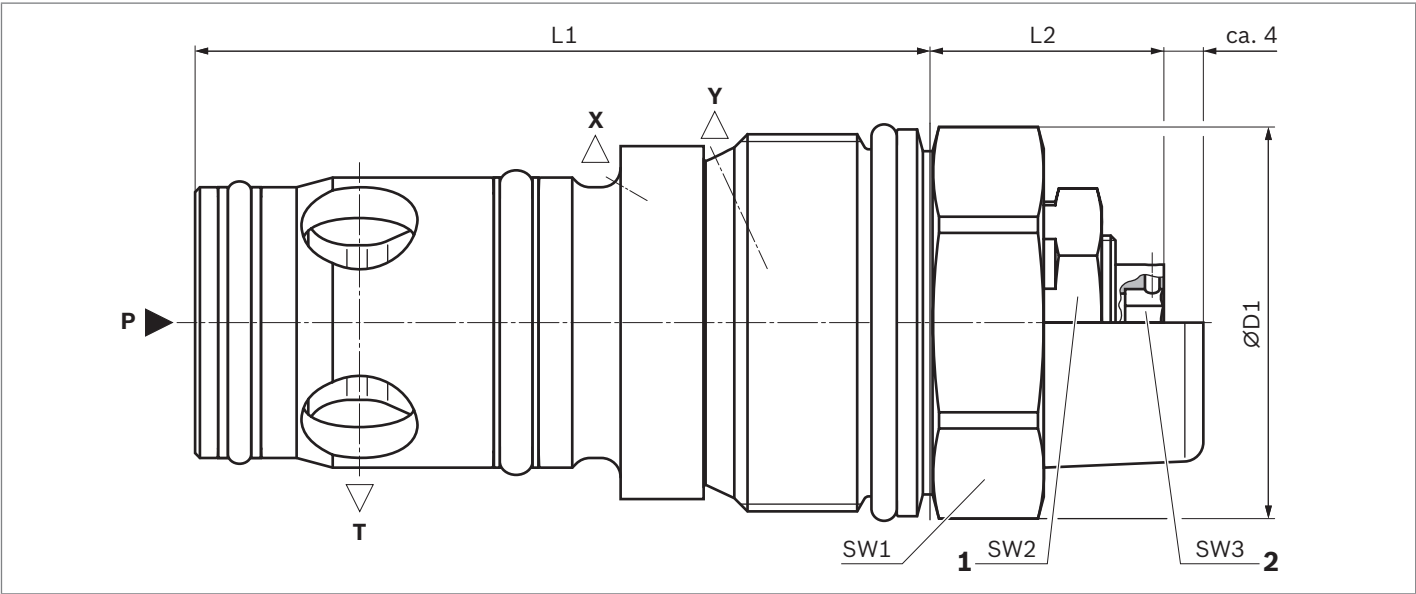
- ▶ Characteristic curves measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ } ^\circ\text{C}$.
- ▶ The characteristic curves apply to an output pressure $p_T = 0 \text{ bar}$ over the entire flow range and without housing resistance.
- ▶ They refer to the specified nominal value of the pressure stage (420).
- ▶ Below the nominal pressure, the characteristic curves become increasingly steeper.

Dimensions

▼ “Y” version



▼ “XY” version



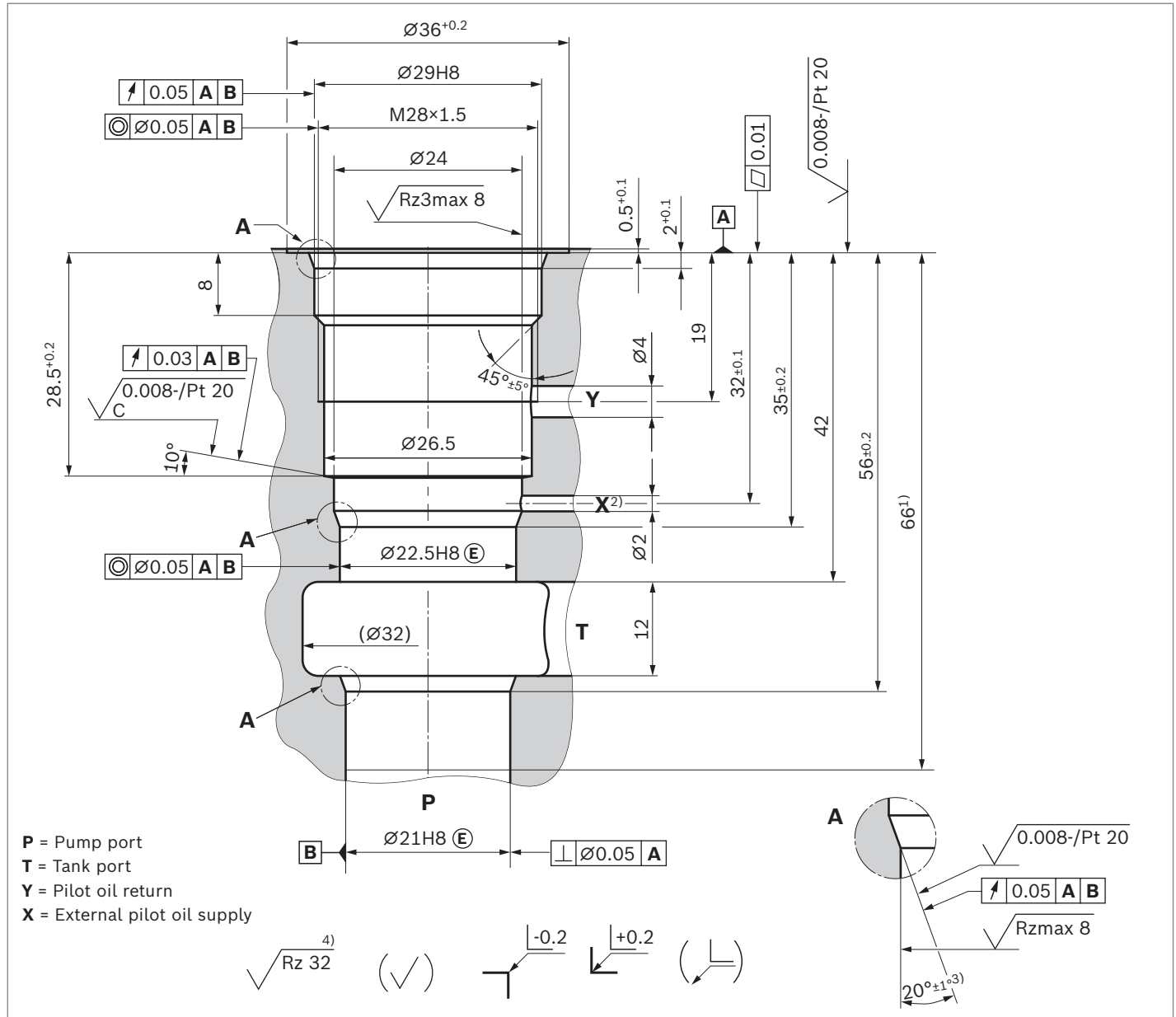
- 1 Lock nut
- 2 Internal hexagon

Size	ØD1	L1	L2	Wrench size			Tightening torque [Nm] ¹⁾		Weight [kg]
				SW1	SW2	SW3	SW1	SW2	
22	34	64.7	24.2	30	24	6	80	15	0.26
40	40.5	76	24.2	36	24	6	300	15	0.54

1) Friction coefficients, tightening torques, and preload forces interact with each other. The friction coefficients are influenced by the surface microstructure, material pairing, etc. Thus, we recommend checking the mounting characteristics with genuine parts and under boundary conditions.

Mounting cavity

▼ “FD” version (M28 × 1.5)

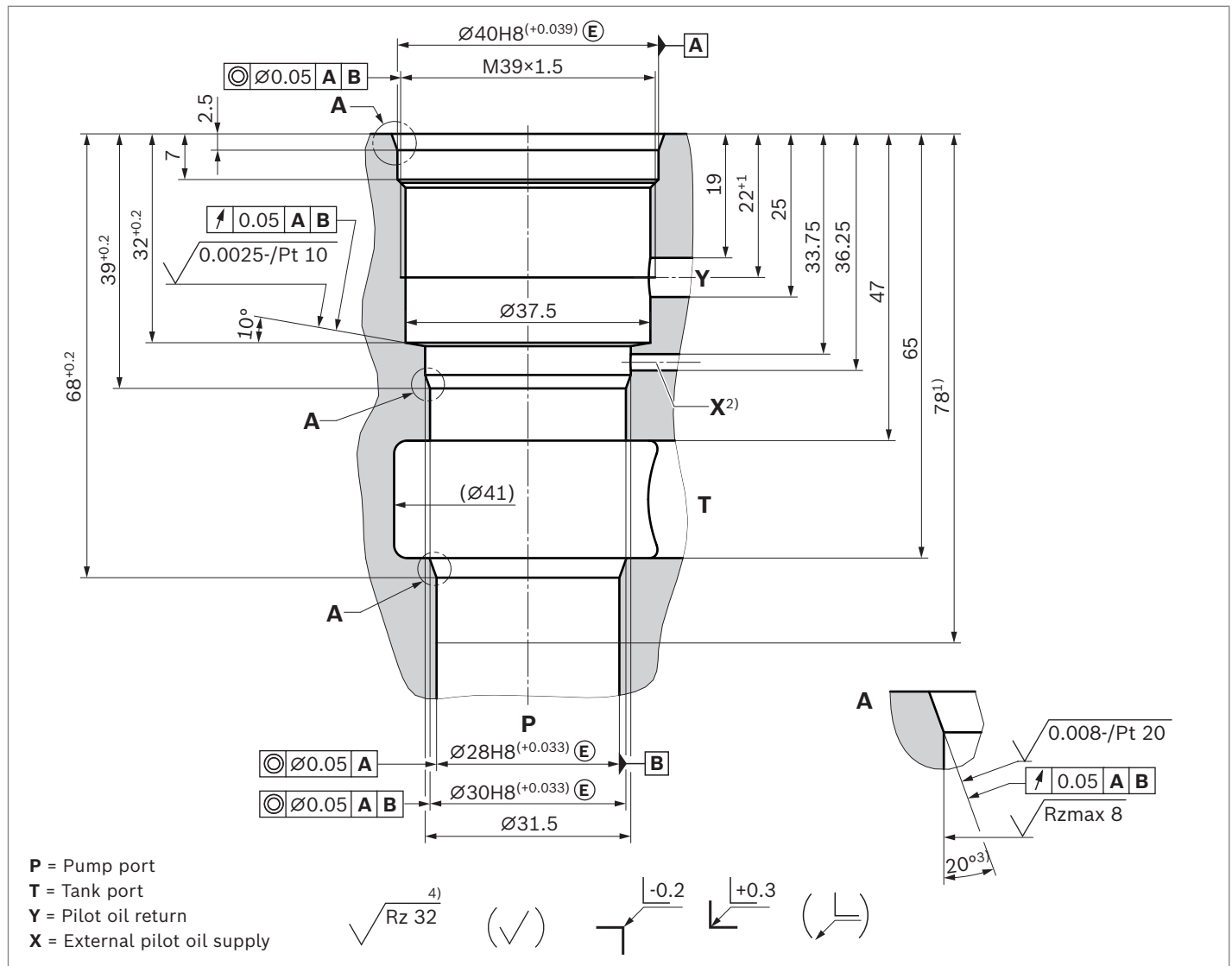


Standards:

Workpiece edges	ISO 13715
Form and position tolerance	ISO 1101
General tolerances for metal-cutting procedures	ISO 2768-mK
Tolerance	ISO 8015
Surface condition	ISO 1302

- 1) Depth of fit
- 2) Optional
- 3) All seal ring insertion faces are rounded and free of burrs
- 4) Visual inspection

▼ “FL” version (M39 × 1.5)

**Standards:**

Workpiece edges	ISO 13715
Form and position tolerance	ISO 1101
General tolerances for metal-cutting procedures	ISO 2768-mK
Tolerance	ISO 8015
Surface condition	ISO 1302

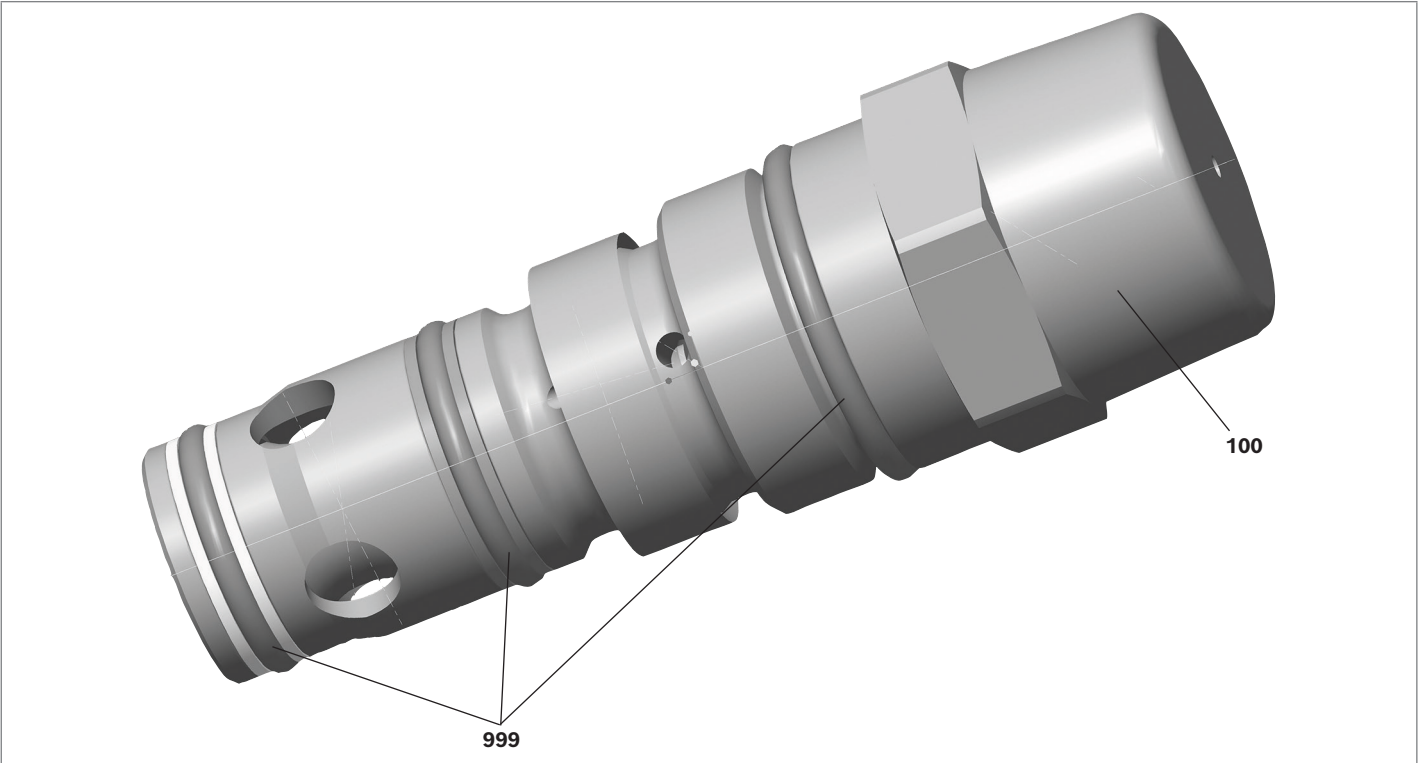
1) Depth of fit

2) Optional

3) All seal ring insertion faces are rounded and free of burrs

4) Visual inspection

Available individual components



Item	Designation	Sealing material	Material no.
100	Protective cap can be delivered separately	–	R900169348
999	Seal kit of the valve for mounting cavity “FD”	NBR	R961005016
999	Seal kit of the valve for mounting cavity “FL”	NBR	R961005014

Seal kits with other sealing materials on request.

Related documentation

- Mineral oil-based hydraulic fluids

► Environmentally acceptable hydraulic fluids
- Data sheet 90220

Data sheet 90221

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