

# 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
<b>MH</b>	<b>DBV</b>		<b>K</b>	<b>2</b>	<b>-</b>	<b>3X</b>	<b>/</b>				<b>*</b>

### Valve type

01	Mobile Hydraulics	<b>MH</b>
02	Pressure relief valve, pilot operated	<b>DBV</b>

### Size

03	Size 22	<b>22</b>
	Size 40	<b>40</b>

04	Screw-in cartridge valve	<b>K</b>
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### Adjustment type

05	Grub screw with internal/external hexagon and protective cap	<b>2</b>
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### Series

06	Series 30 or 39 (unchanged installation and connection dimensions)	<b>3X</b>
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### Pressure rating <sup>1)</sup>

07	Set pressure up to 100 bar	<b>100</b>
	Set pressure up to 420 bar	<b>420</b>

### Pressure setting

08	<b>Without</b> pressure setting, <b>with</b> protective cap, <b>without</b> seal <sup>2)</sup>	<b>No code</b>
	<b>With</b> pressure setting, <b>with</b> protective cap, <b>with</b> seal <sup>3)</sup>	<b>-...</b>

### Pilot oil supply and pilot oil return

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

### Sealing material

10	NBR (nitrile rubber)	<b>M</b>
	FKM (fluoroelastomer)	<b>V</b>

### Mounting cavity

11	M28 × 1.5 (Size 22)	<b>FD</b>
	M39 × 1.5 (Size 40)	<b>FL</b>

12	Further details in the plain text	<b>*</b>
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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

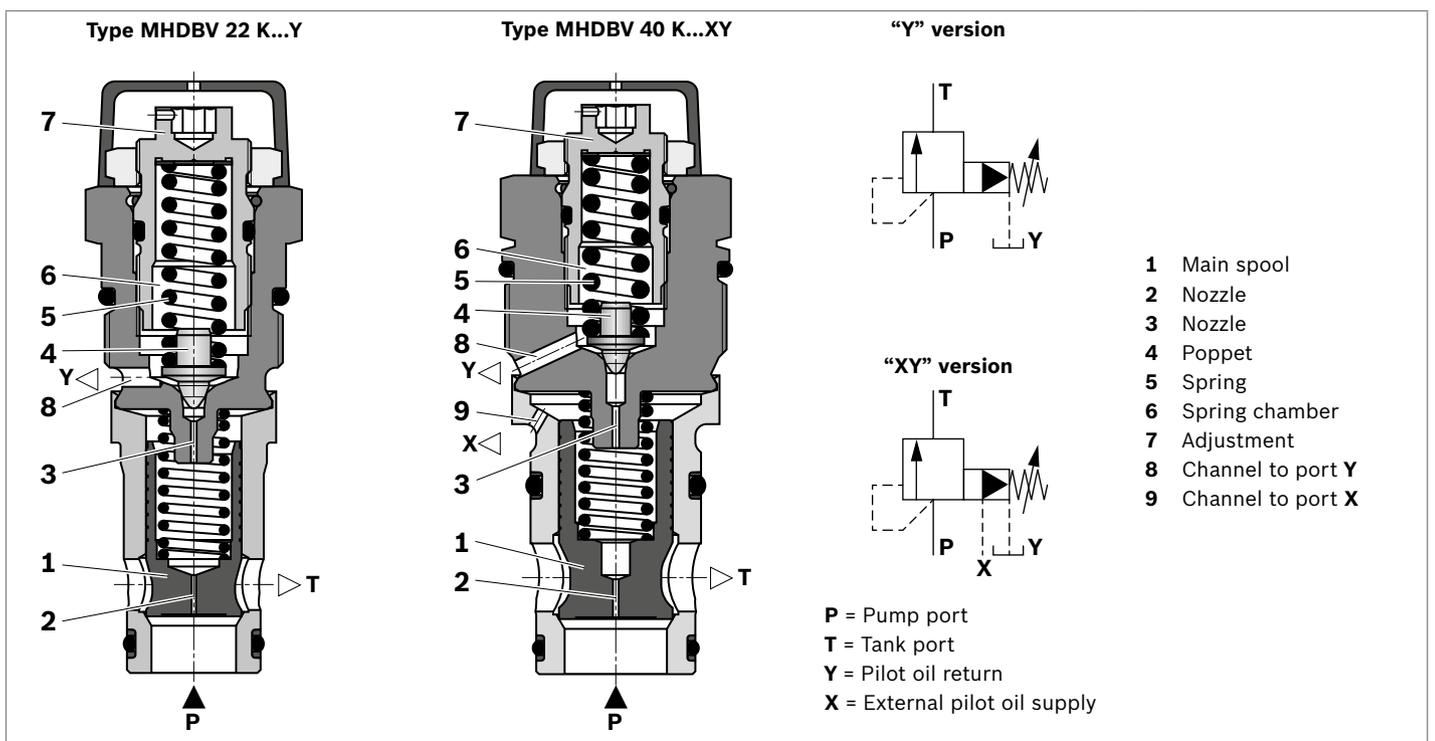
The pressure applied at port **P** acts on the main spool (1). At the same time, the pressure is applied to poppet (4) via the nozzle bores (2) and (3). If the pressure at the port **P** exceeds the value set at spring (5), then the poppet (4) opens against the spring (5). The hydraulic fluid from the

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 to +80
Storage temperature range	°C	-20 to +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 <b>P, X</b>	$p$	bar	100; 420
	Port <b>T</b>	$p_T$	bar	315
Maximum counter pressure	Port <b>Y</b>	$p_Y$	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		$\vartheta$	°C	-30 to +80 (NBR seal)
				-20 to +80 (FKM seal)
Viscosity range		$\nu$	mm <sup>2</sup> /s	10 to 380
Maximum permissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)				Class 20/18/15 <sup>1)</sup>
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;  $\vartheta_{\text{oil}} = 40 \pm 5 \text{ °C}$ ).

<sup>1)</sup> 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. For the selection of the filters see [www.boschrexroth.com/filter](http://www.boschrexroth.com/filter). We recommend using a filter with a minimum retention rate of  $\beta_{10} \geq 75$ .

## Hydraulic fluid

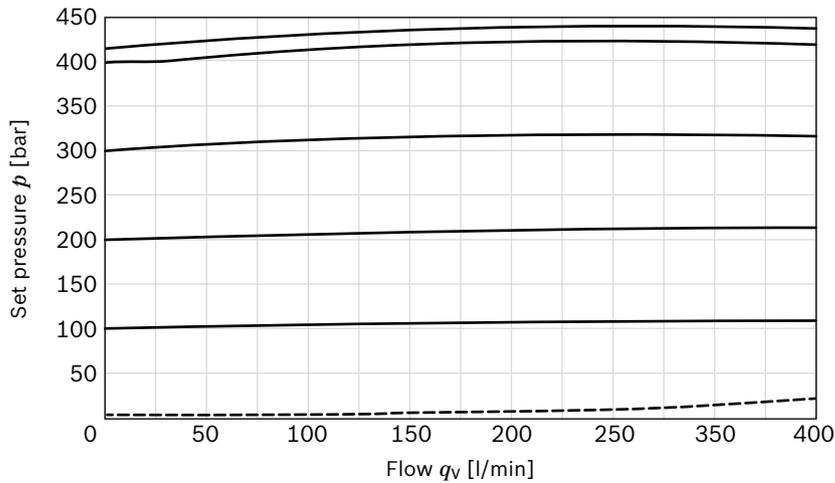
Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	NBR, FKM	DIN 51524	90220
Biodegradable	insoluble in water	HEES	NBR, FKM	ISO 15380	90221
	soluble in water	HEPG	FKM	ISO 15380	90221

### Note

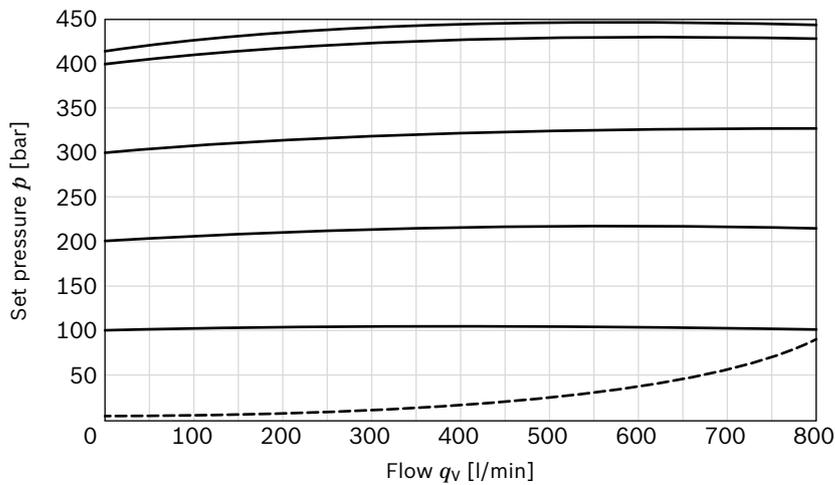
- ▶ Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- ▶ Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.).
- ▶ **Biodegradable:** When using biodegradable hydraulic fluids that are also zinc-solvent, zinc may accumulate in the fluid.

## Characteristic curves

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



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



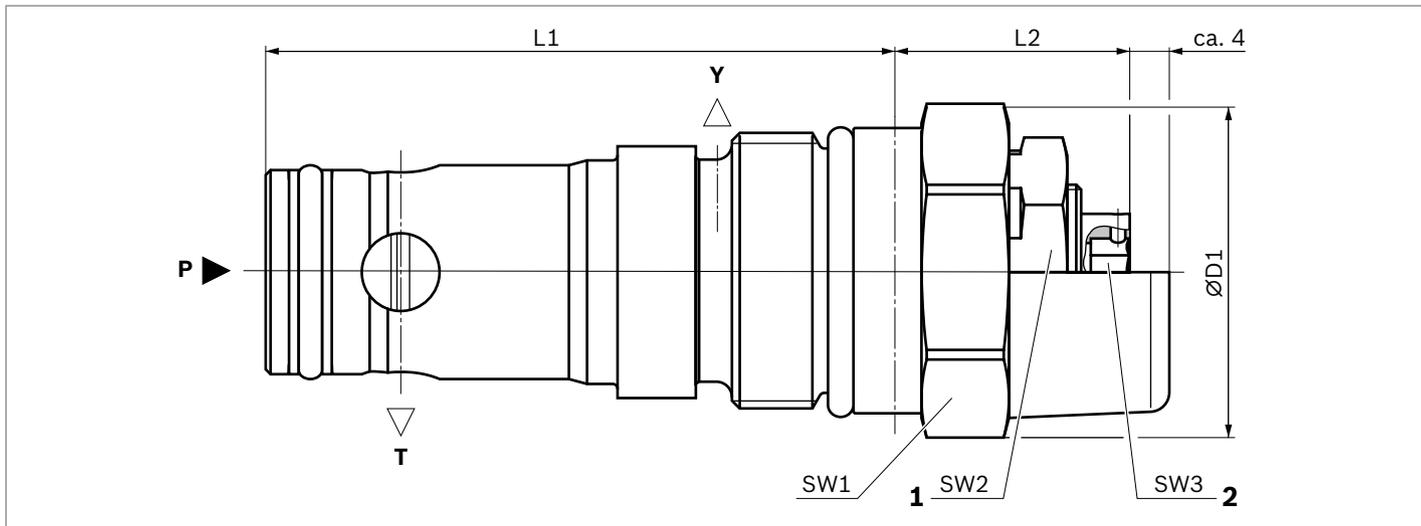
----- = Performance limit

#### Note

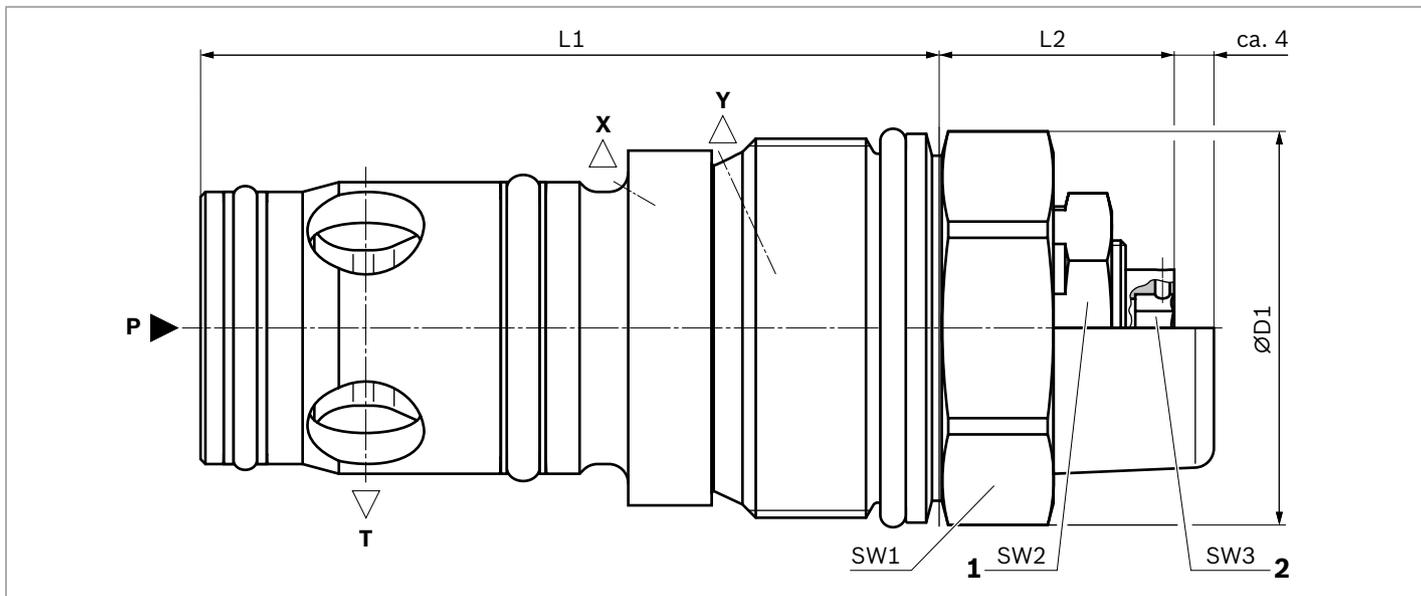
- ▶ Characteristic curves measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ .
- ▶ The characteristic curves apply to an output pressure  $p_T = 0 \text{ bar}$  over the entire flow range and without housing resistance.
- ▶ They refer to the specified nominal value of the pressure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

### Dimensions

▼ “Y” version



▼ “XY” version



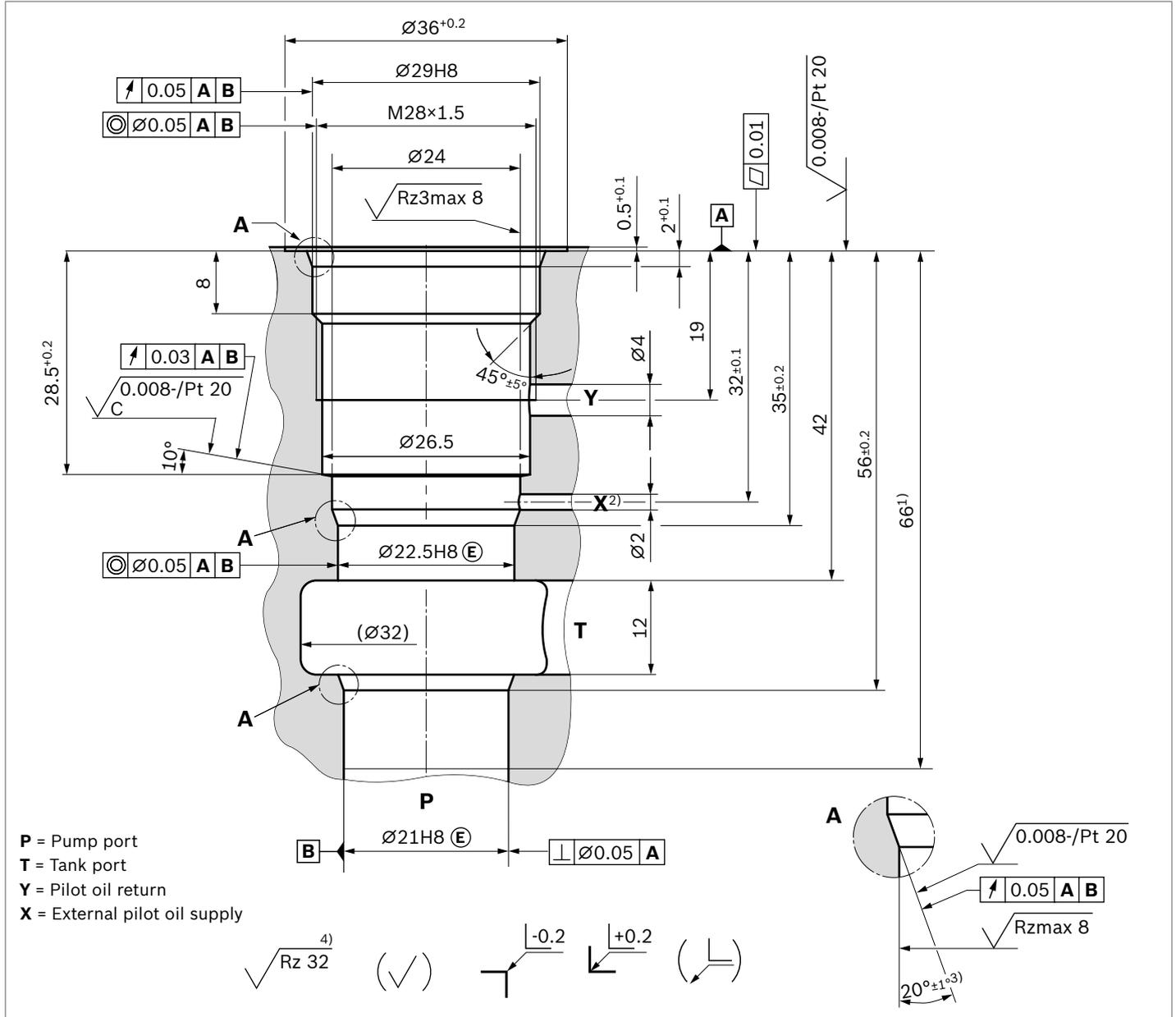
- 1 Lock nut
- 2 Internal hexagon

Size	ØD1	L1	L2	Wrench size			Tightening torque [Nm] <sup>1)</sup>		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; Drawing no. R901135263)

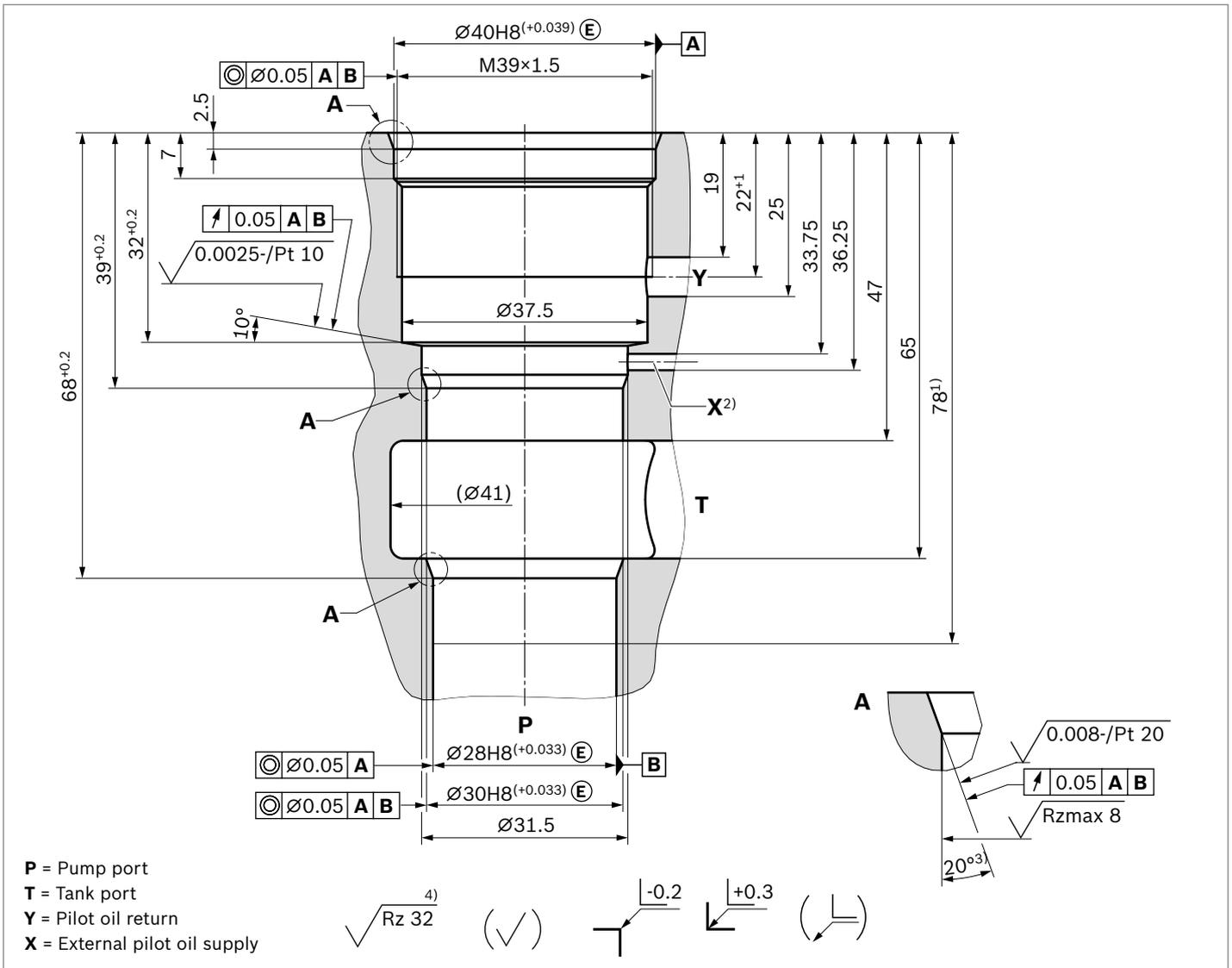


### Standards:

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; Drawing no. R9011187280)

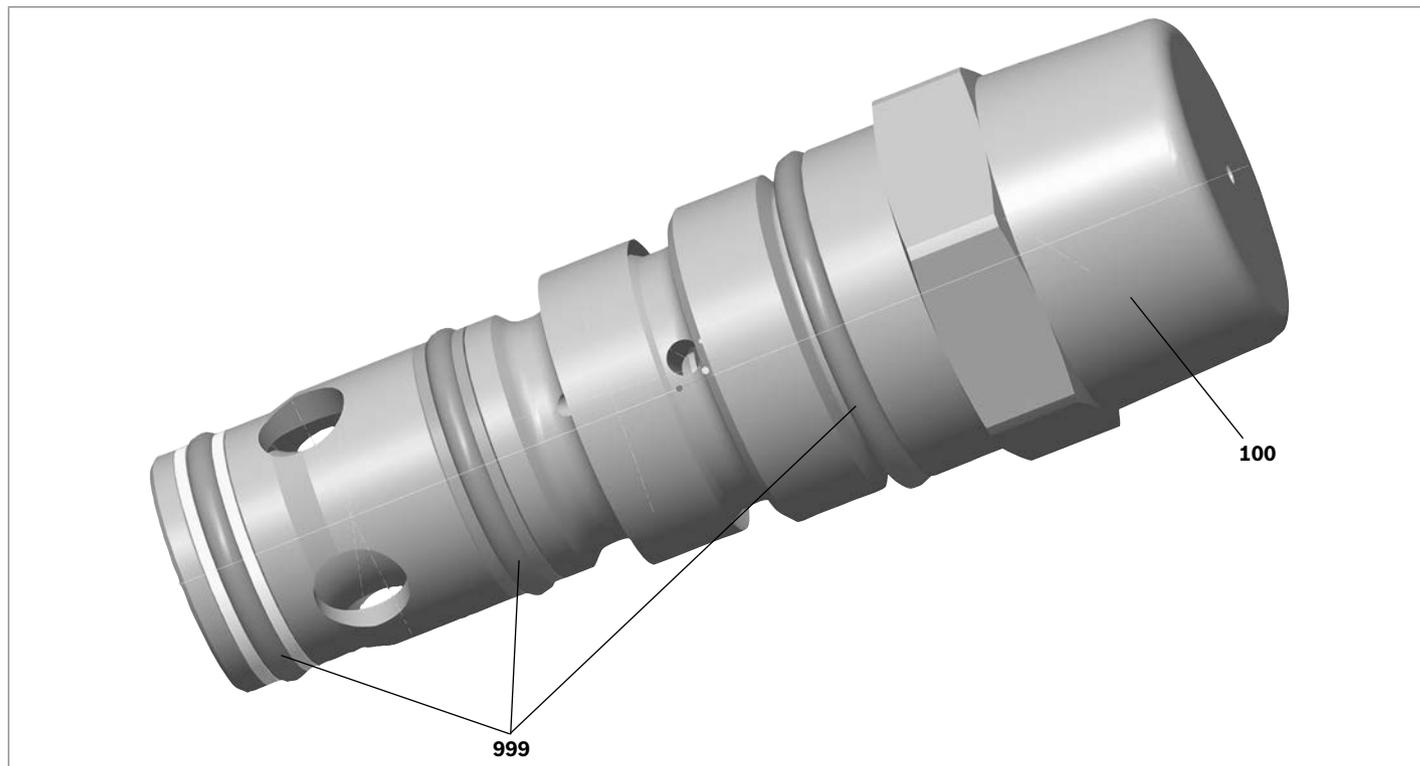


**Standards:**

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
- ▶ Filter selection

Data sheet 90220  
 Data sheet 90221  
[www.boschrexroth.com/filter](http://www.boschrexroth.com/filter)

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