RE 25731/2022-05-03
Replaces: 10.2005

rexroth
A Bosch Company

Pressure relief valve, pilot operated DB6K, DB10K

K4278-1

- Sizes 6 and 10
- Series 4X
- Maximum working pressure 315 bar
- Maximum flow
  - Size 6: 60 l/min
  - Size 10: 100 l/min

Features

- Cartridge valve
- 4 pressure stages
- 4 adjustment types, optionally:
  - Sleeve with hexagon and protective cap
  - Rotary knob
  - Rotary knob with scale
  - Lockable rotary knob with scale

Contents

Type code

01	02	03	04		05		06	07	08	09	10
DB		**K**		**/**	**4X**	**/**				**V**	*****

Valve type

01	Pressure relief valve, pilot operated	**DB**

Size

02	Size 6	**6**
	Size 10	**10**

Design

03	Cartridge valve	**K**

Adjustment type

04	Rotary knob	**1**
	Sleeve with hexagon and protective cap	**2**
	Rotary knob with scale, lockable[1)]	**3**
	Rotary knob with scale	**7**

Series

05	Series 4X (40 to 49: unchanged installation and connection dimensions)	**4X**

Pressure stage

06	Setting pressure up to 50 bar	**50**
	Setting pressure up to 100 bar	**100**
	Setting pressure up to 200 bar	**200**
	Setting pressure up to 315 bar	**315**

Pilot oil

07	Internal pilot oil supply, external pilot oil return	**Y**
	Internal pilot oil supply and external pilot oil return	**XY**

Corrosion resistance

08	None	**No code**
	High corrosion protection (720 h salt spray test according to EN ISO 9227)	**J5**

Sealing material

09	FKM (fluorocarbon rubber)	**V**

10	Further details in plain text	*****

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

Preferred types

Type	Material number
DB 6 K2-4X/50YV	R900487903
DB 6 K2-4X/100YV	R900483440
DB 6 K2-4X/200YV	R900486196
DB 6 K2-4X/315YV	R900483441
DB 10 K2-4X/50YV	R900422817
DB 10 K2-4X/100YV	R900453240
DB 10 K2-4X/200YV	R900438123
DB 10 K2-4X/315YV	R900438126

Notice
Other preferred types and standard units are contained in the EPS (standard price list).

Functional description

General

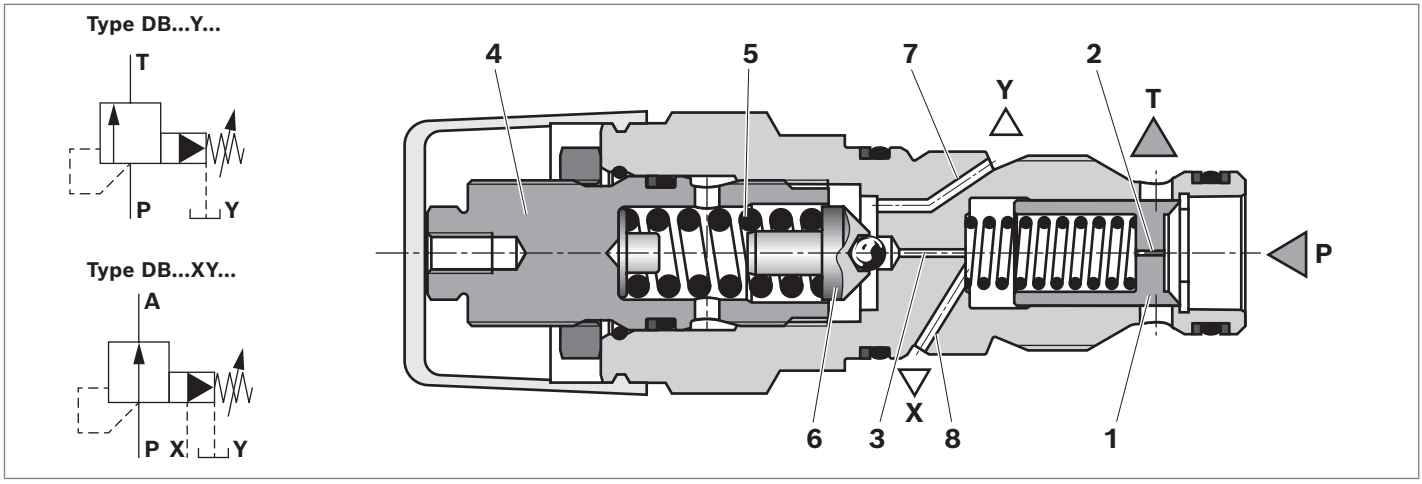
Pressure valves type DB..K.. are pilot operated pressure relief valves for installation in block constructions.
They are used to limit a system pressure.
The system pressure is set via the adjustment type (**4**).

Function

In the initial position, the valves are closed. The pressure in connection **P** acts on the control spool (**1**). At the same time, the pressure is applied via the orifice (**2**) on the spring-loaded side of the control spool (**1**) and the orifice (**3**) to the pilot poppet (**6**).
If the pressure in port **P** exceeds the value set at the spring (**5**), the pilot poppet opens (**6**). Hydraulic fluid flows from the spring-loaded side of the control spool (**1**) via the orifice (**3**) and channel (**7**) into the port **Y**.
The resulting pressure gradient displaces the control spool (**1**) and thus opens the connection from port **P** to **T** while maintaining the pressure set on the spring (**5**).
The pilot oil return from the two spring chambers is effected externally via the port **Y**.
The pressure relief valve can be relieved or switched over to another pressure (second pressure stage) via port **X** (**8**) (version "XY").

Notice
Counter pressures (port **Y**) add up to the set pressure.

▼ **Section and symbol**



1 Control spool
2 Orifice
3 Orifice
4 Adjustment type
5 Spring
6 Pilot poppet
7 Channel **Y**
8 Channel **X** (only for version "XY")

Technical data

General				
Weight (approx.)	Size 6		kg	0.15
	Size 10		kg	0.2
Installation position				Any
Ambient temperature range			°C	–20 ... +80

Hydraulic				
Maximum working pressure[1]	Port **P**	p	bar	315
Maximum set pressure	Port **P**	p_E	bar	50; 100; 200; 315
Maximum permissible counter-pressure[1]	Port **T**	p	bar	315
	Port **Y**	p	bar	315
	Port **X**	p	bar	315
Maximum flow	Size 6	q_V	l/min	60
	Size 10	q_V	l/min	100
Hydraulic fluid				See table below
Hydraulic fluid temperature range		ϑ	°C	–20 ... +80
Viscosity range		ν	mm²/s	10 ... 800
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness level per ISO 4406 (c)				Level 20/18/15[2]

Notice
For applications outside these values, please consult us!

Hydraulic fluid

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	FKM	DIN 51524	90220
Environmentally acceptable	Insoluble in water	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-dissolving, there may be an accumulation of zinc.

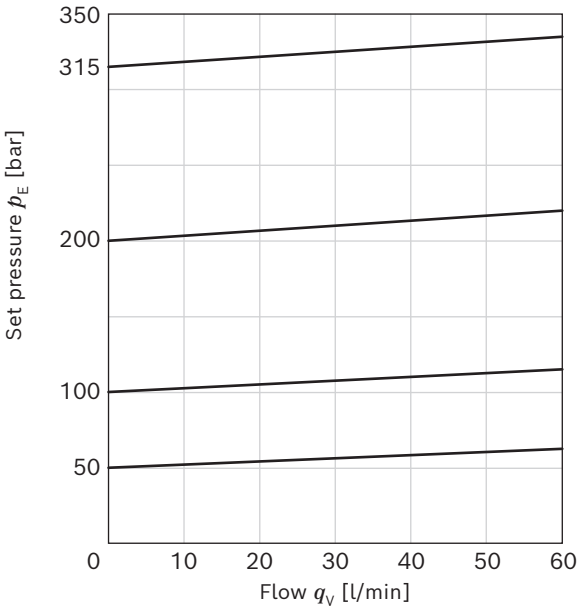
1) The maximum working pressure is the aggregate of set pressure and counter pressure!

2) Cleanliness levels specified for the components must be maintained in the hydraulic systems. Effective filtration prevents malfunctions and simultaneously extends the service life of the components.

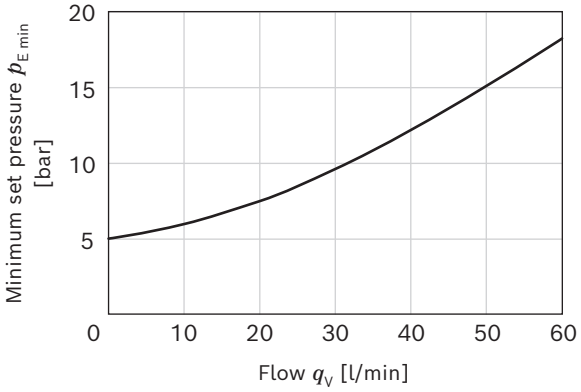
Characteristic curves

Size 6

▼ **p_E-q_V characteristic curves**

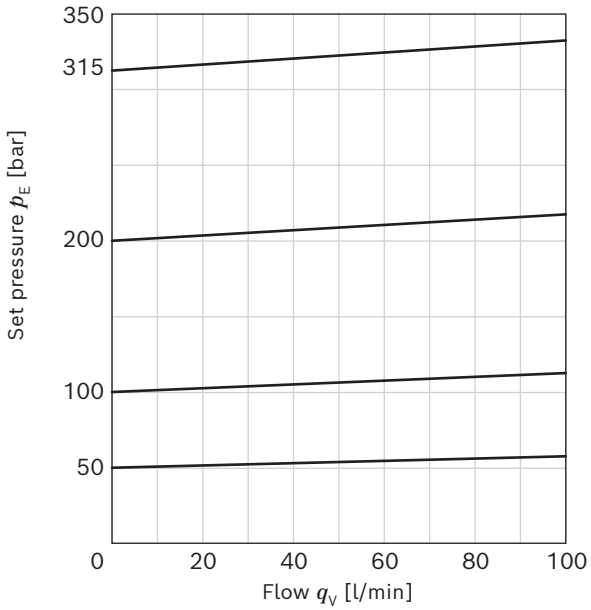


▼ **$p_{E\,min}$-q_V characteristic curve**

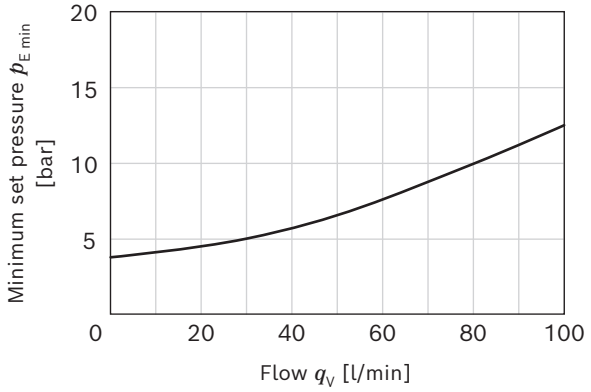


Size 10

▼ **p_E-q_V characteristic curves**



▼ **$p_{E\,min}$-q_V characteristic curve**

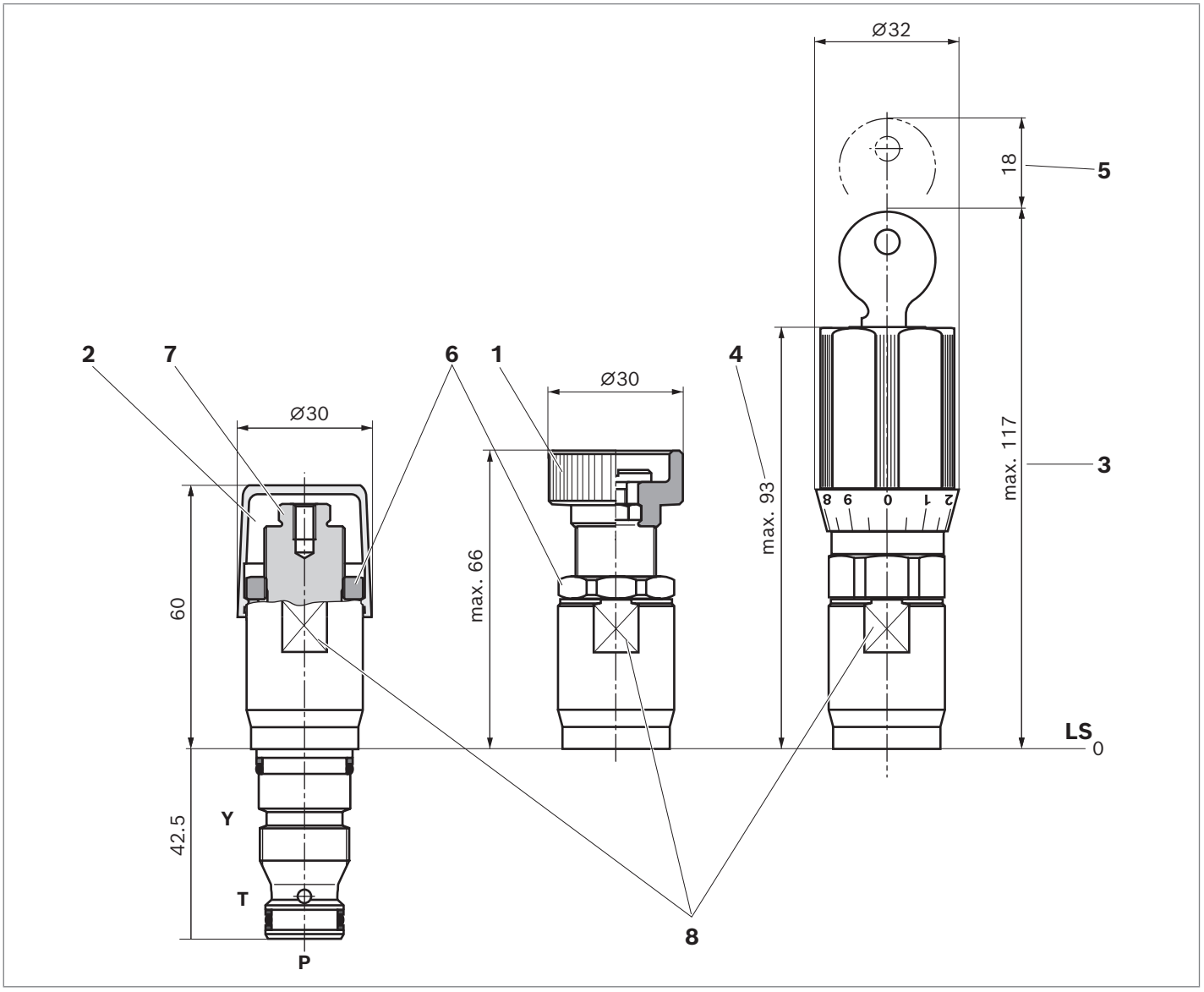


Notice

- The characteristic curves have been measured with HLP46, ϑ_{oil} = 40±5°C.
- The characteristic curves apply to output pressure = zero in the entire flow range!

Dimensions

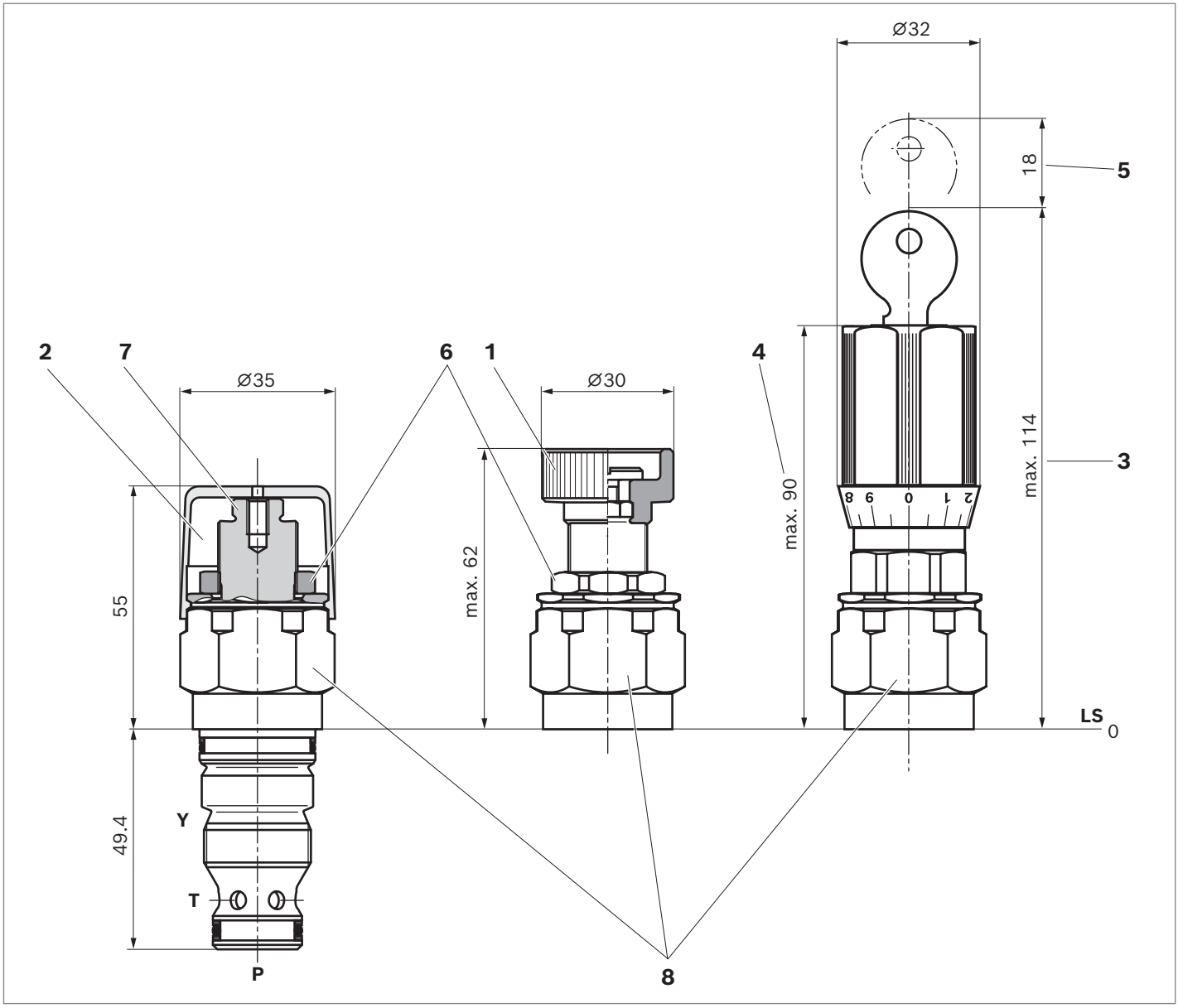
▼ **Size 6**



1 Adjustment type **"1"** – rotary knob
2 Adjustment type **"2"** – sleeve with hexagon and protective cap
3 Adjustment type **"3"** – rotary knob with scale, lockable
4 Adjustment type **"7"** – rotary knob with scale
5 Space required to remove key
6 Lock nut SW24
7 Hexagon SW10
8 Width across flats SW24, tightening torque M_A = 50 Nm

LS = location shoulder

▼ **Size 10**



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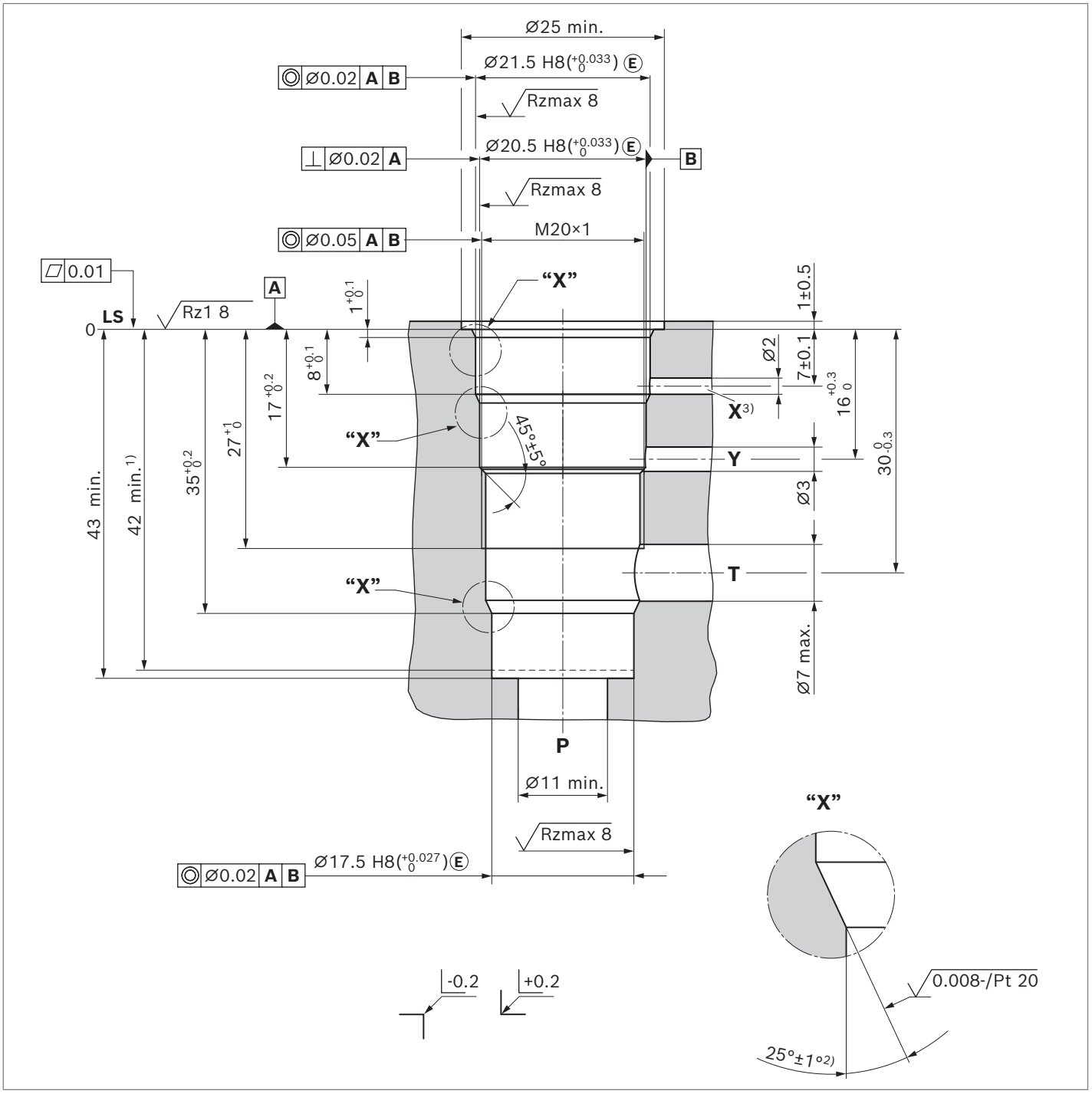
4 Adjustment type **"7"** – rotary knob with scale
5 Space required to remove key
6 Lock nut SW24
7 Hexagon SW10
8 Hexagon SW30, tightening torque M_A = 50 Nm

LS = location shoulder

Mounting cavity

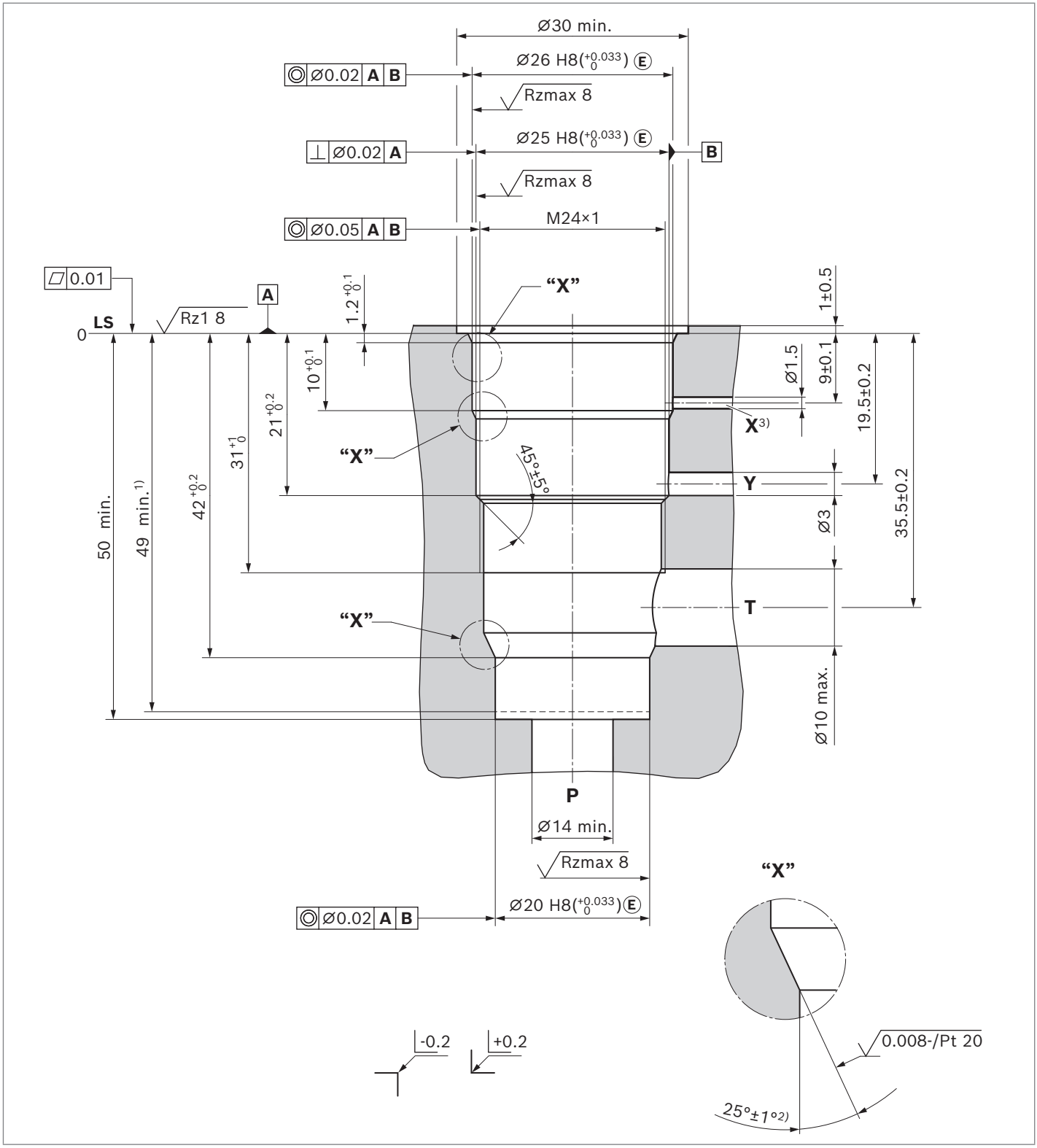
▼ **Nominal size 6 – 3 main connections; thread M20×1**



LS = location shoulder

1) Depth of fit
2) All seal ring insertion faces are rounded and free of burrs
3) Channel **X** only for version "XY"

▼ **Size 10 – 3 main ports; thread M24×1**



LS = location shoulder

1) Depth of fit
2) All seal ring insertion faces are rounded and free of burrs
3) Channel **X** only for version "XY"