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

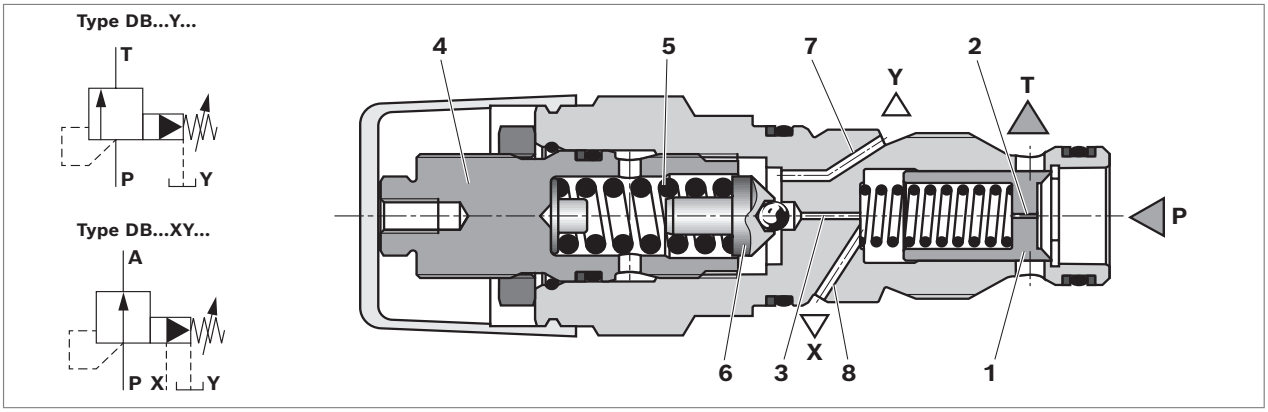
Pressure valves type DB..K.. are pilot operated pressure relief valves for installation in block constructions.
They are used to limit a system pressure.
The system pressure is set via the adjustment type (**4**).

### 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")

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## 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 | | $\vartheta$ | °C | –20 ... +80 |
| Viscosity range | | $\nu$ | 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.

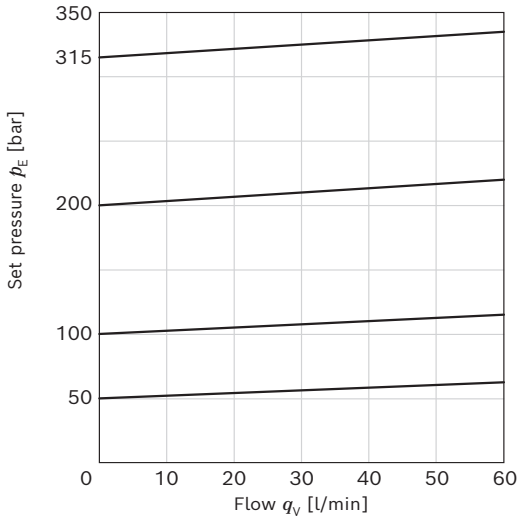
1) The maximum working pressure is the aggregate of set pressure and counter pressure!

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.

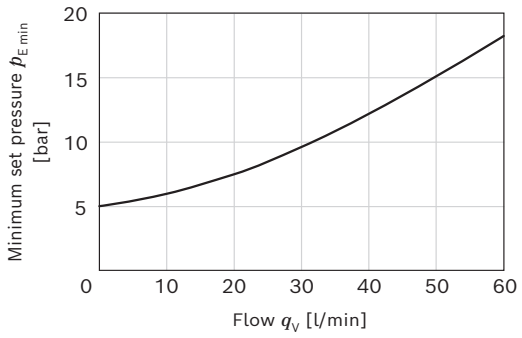
## Characteristic curves

### Size 6

▼ $p_E$-$q_V$ characteristic curves

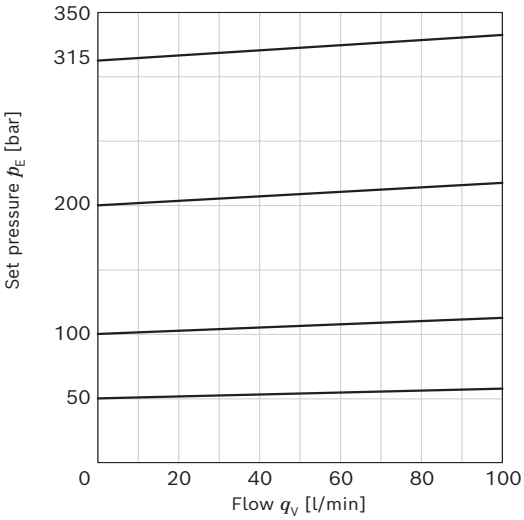



▼ $p_{E\,min}$-$q_V$ characteristic curve

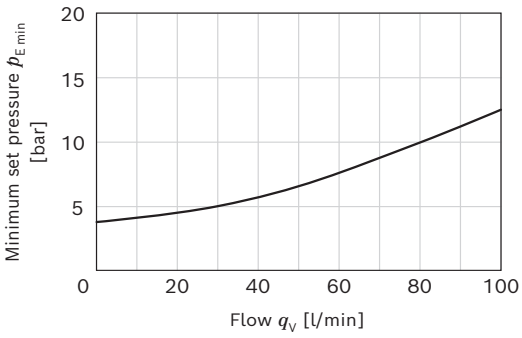



### Size 10

▼ $p_E$-$q_V$ characteristic curves




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

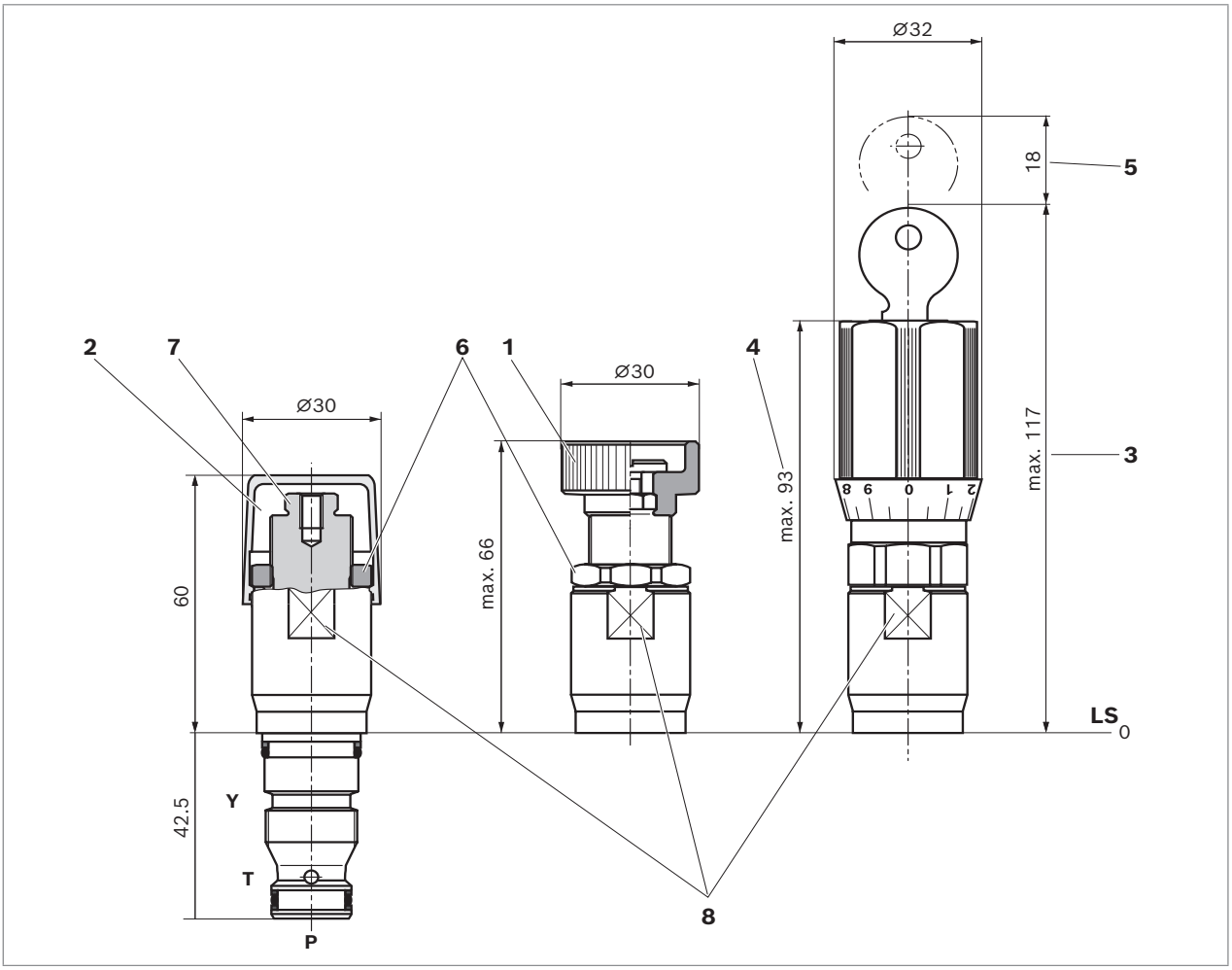



**Notice**

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

## Dimensions

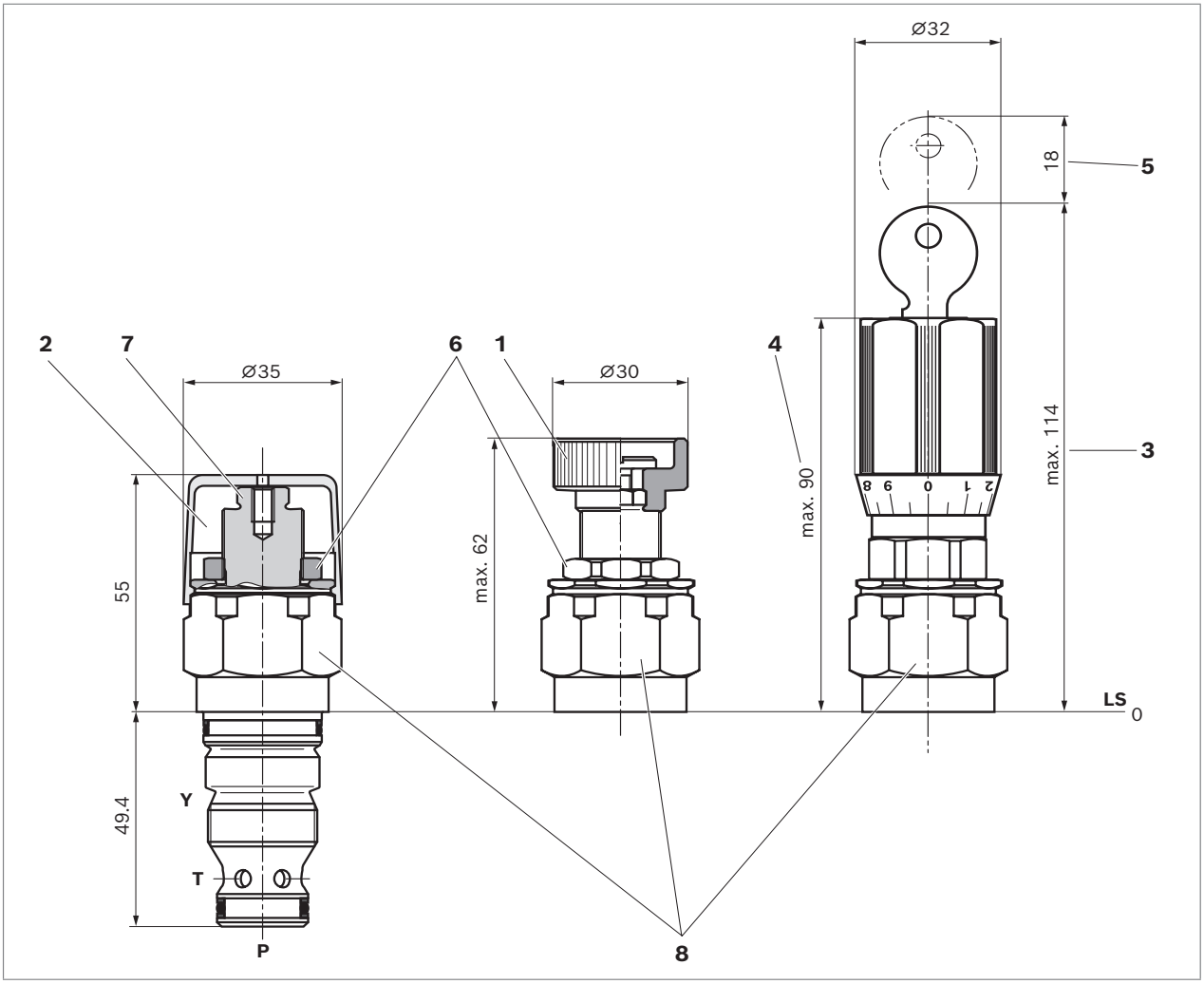
▼ **Size 6**




**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**

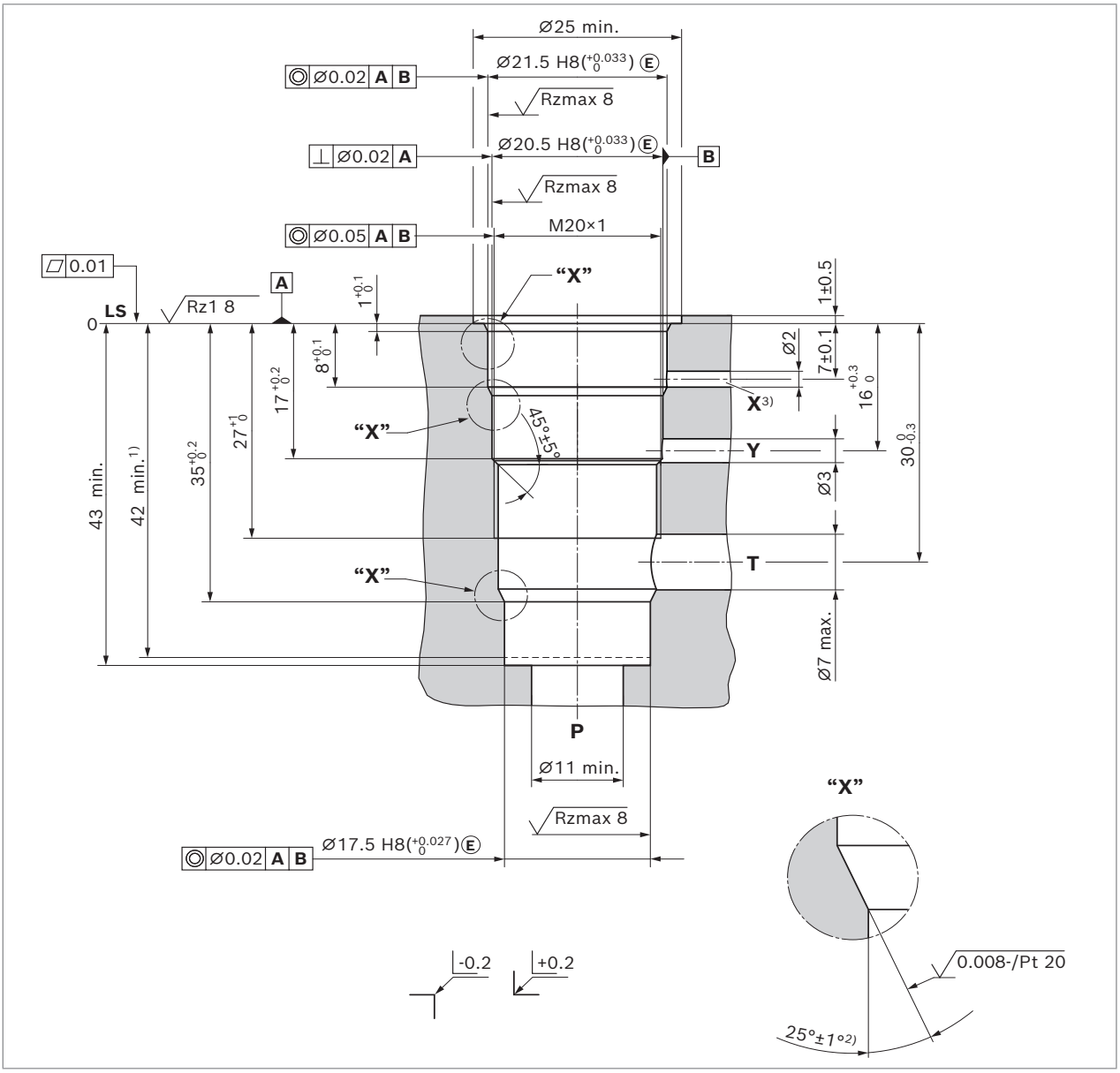



**1** Adjustment type **"1"** – rotary knob
**2** Adjustment type **"2"** – sleeve with hexagon and protective cap
**3** Adjustment type **"3"** – rotary knob with scale, lockable
**4** Adjustment type **"7"** – rotary knob with scale
**5** Space required to remove key
**6** Lock nut SW24
**7** Hexagon SW10
**8** Hexagon SW30, tightening torque $M_A$ = 50 Nm

**LS** = location shoulder

## Mounting cavity

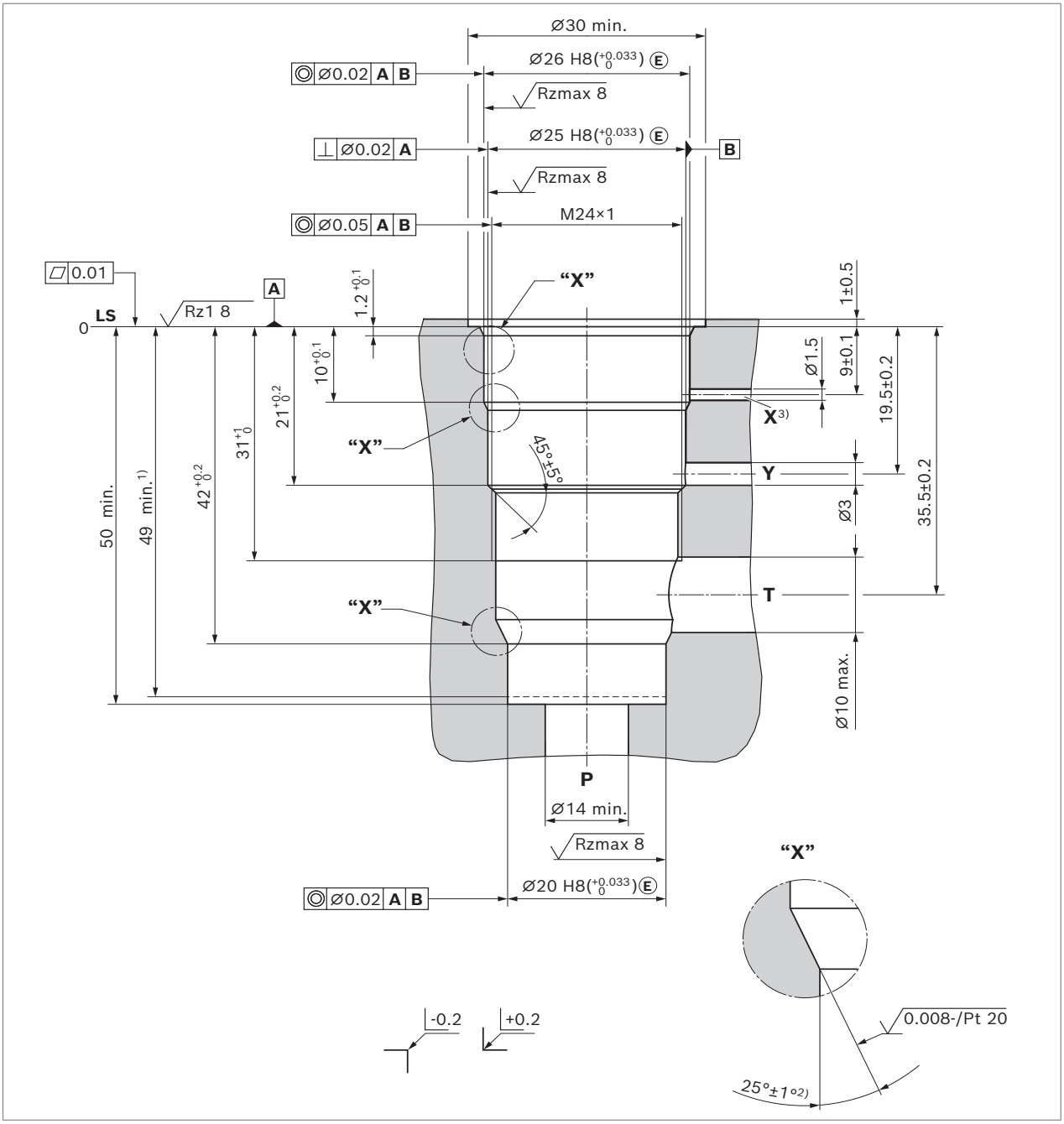
▼ **Nominal size 6 – 3 main connections; thread M20×1**




**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"