RE 26850/2022-04-26
Replaces: 2021-05-04

rexroth
A Bosch Company

# Pressure reducing valve, pilot operated DR10K


K4278/7

- Size 10
- Series 3X
- Maximum working pressure 350 bar
- Maximum flow 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 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DR** | **10** | **K** | | **/** | **3X** | **/** | | **Y** | **M** | | | ***** |

**Valve type**

| | | |
|---|---|---|
| 01 | Pressure reducing valve, pilot operated | **DR** |

**Size**

| | | |
|---|---|---|
| 02 | Size 10 | **10** |

**Design**

| | | |
|---|---|---|
| 03 | Cartridge valve | **K** |

**Adjustment type**

| | | |
|---|---|---|
| 04 | Rotary knob | **4** |
| | Sleeve with hexagon and protective cap | **5** |
| | Rotary knob with scale, lockable[1)] | **6** |
| | Rotary knob with scale | **7** |

**Series**

| | | |
|---|---|---|
| 05 | Series 3X (30 to 39: unchanged installation and connection dimensions) | **3X** |

**Pressure stage**

| | | |
|---|---|---|
| 06 | Secondary pressure up to 50 bar | **50** |
| | Secondary pressure up to 100 bar | **100** |
| | Secondary pressure up to 200 bar | **200** |
| | Secondary pressure up to 315 bar | **315** |
| | Secondary pressure up to 350 bar | **350** |

**Pilot oil**

| | | |
|---|---|---|
| 07 | Internal pilot oil supply, external pilot oil return | **Y** |

**Check valve**

| | | |
|---|---|---|
| 08 | Without check valve | **M** |

**Corrosion resistance**

| | | |
|---|---|---|
| 09 | None | **No code** |
| | High corrosion protection (720 h salt spray test according to EN ISO 9227), only for adjustment type “5” | **J5** |

**Sealing material**

| | | |
|---|---|---|
| 10 | NBR (nitrile rubber) | **No code** |
| | FKM (fluorocarbon rubber) | **V** |

| | | |
|---|---|---|
| 11 | Further details in plain text | ***** |

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

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## Preferred types

| Type | Material number |
|---|---|
| DR 10 K5-3X/50YM | R900422568 |
| DR 10 K5-3X/100YM | R900459508 |
| DR 10 K5-3X/200YM | R900438134 |
| DR 10 K5-3X/315YM | R900430682 |
| DR 10 K5-3X/50YMV | R900430976 |
| DR 10 K5-3X/100YMV | R900432731 |
| DR 10 K5-3X/200YMV | R900438117 |
| DR 10 K5-3X/315YMV | R900434144 |

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

## Functional description

### General

Pressure valves type DR10K.. are pilot operated pressure reducing valves for block design installation. They are used to reduce system pressure. The secondary pressure is set via the adjustment type (**4**).

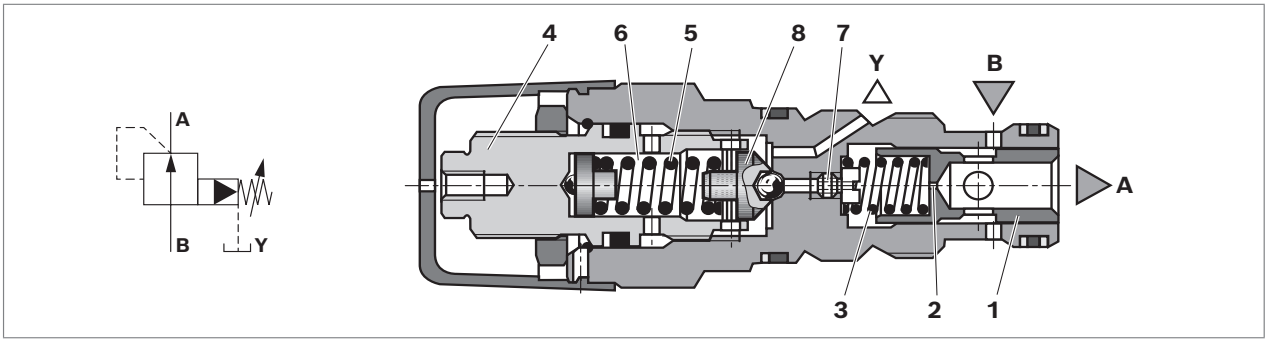
### Function

In the initial position, the valves are open. Hydraulic fluid can flow from port **B** to **A** without restrictions.
The pressure in port **A** acts simultaneously on the control spool (**1**) and via the orifice (**2**) on the spring-loaded inside of the control spool (**1**). It also acts via the orifice (**7**) on the pilot poppet (**8**).

If the pressure in port **A** exceeds the value set at the spring (**5**), the pilot poppet opens (**8**). Hydraulic fluid flows from the chamber of the spring (**3**) via the orifice (**7**), the pilot poppet (**8**) and the spring chamber (**6**) into port **Y**. The control spool (**1**) is set to control position and keeps the value set at the spring (**5**) constant in port **A**. The pilot oil return from the spring chamber (**6**) is always realized externally via port **Y**.

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

▼ **Section and symbol**




**1** Control spool
**2** Orifice
**3** Spring
**4** Adjustment type
**5** Spring
**6** Spring chamber
**7** Orifice
**8** Pilot poppet

## Technical data

| General | | | | |
|---|---|---|---|---|
| Weight (approx.) | | | kg | 0.2 |
| Installation position | | | | Any |
| Ambient temperature range | NBR seals | | °C | –30 ... +80 |
| | FKM seals | | °C | –20 ... +80 |

| Hydraulic | | | | |
|---|---|---|---|---|
| Maximum working pressure[1] | Port **B** | $p_E$ | bar | 350 |
| Secondary pressure | Port **A** | $p_A$ | bar | 50; 100; 200; 315; 350 |
| Maximum permissible counter-pressure[1] | Port **Y** | $p$ | bar | 350 |
| Maximum flow | | $q_V$ | l/min | 100 |
| Hydraulic fluid | | | | See table below |
| Hydraulic fluid temperature range | NBR seals | $\vartheta$ | °C | –30 ... +80 |
| | FKM seals | $\vartheta$ | °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 |

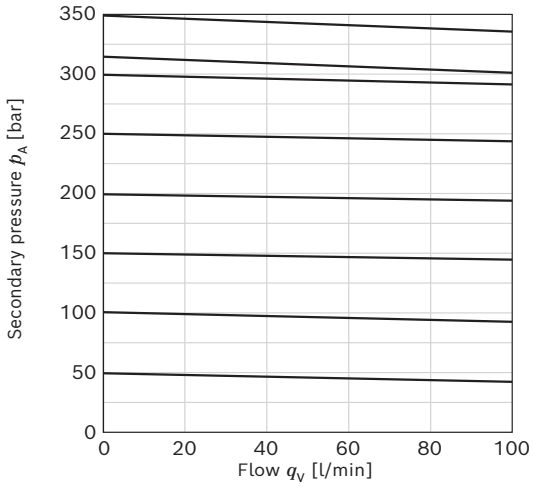
**Notice**
- Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!
- **Environmentally acceptable:** If environmentally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

1) The maximum working pressure is added up from secondary pressure and counter-pressure!

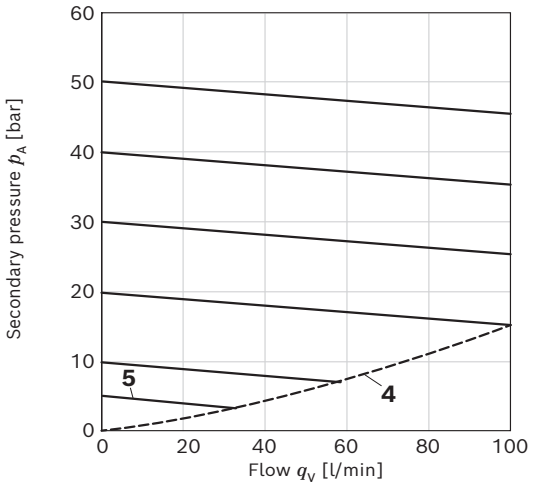
2) Cleanliness levels specified for the components must be maintained in the hydraulic systems. Effective filtration prevents malfunctions and simultaneously extends the service life of the components.

## Characteristic curves

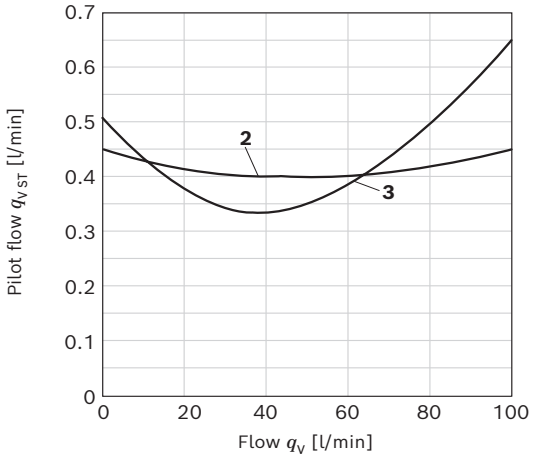
▼ **$p_A$-$q_V$ characteristic curves**



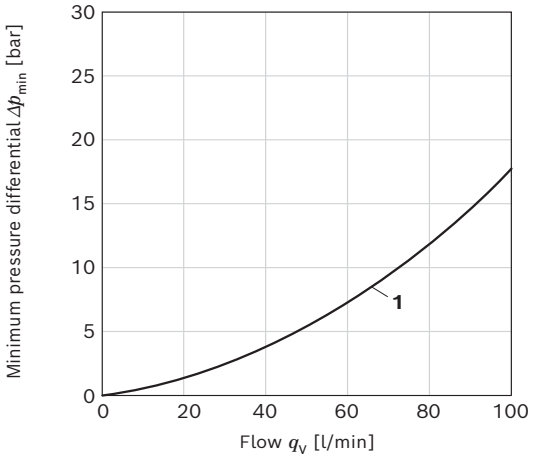

▼ **$p_A$-$q_V$ characteristic curves** (in the range up to 50 bar)




▼ **$q_{V\,ST}$-$q_V$ characteristic curves at $\Delta p$ ($p_E$ – $p_A$)**




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




**Notice**
The characteristic curves have been measured with HLP46, $\vartheta_{oil}$ = 40±5 °C.

**1** **B → A**
**2** $\Delta p$ = 50 bar
**3** $\Delta p$ = 250 bar
**4** Consumer resistance, system-dependent
**5** Minimum adjustable secondary pressure $p_A$ for all pressure stages

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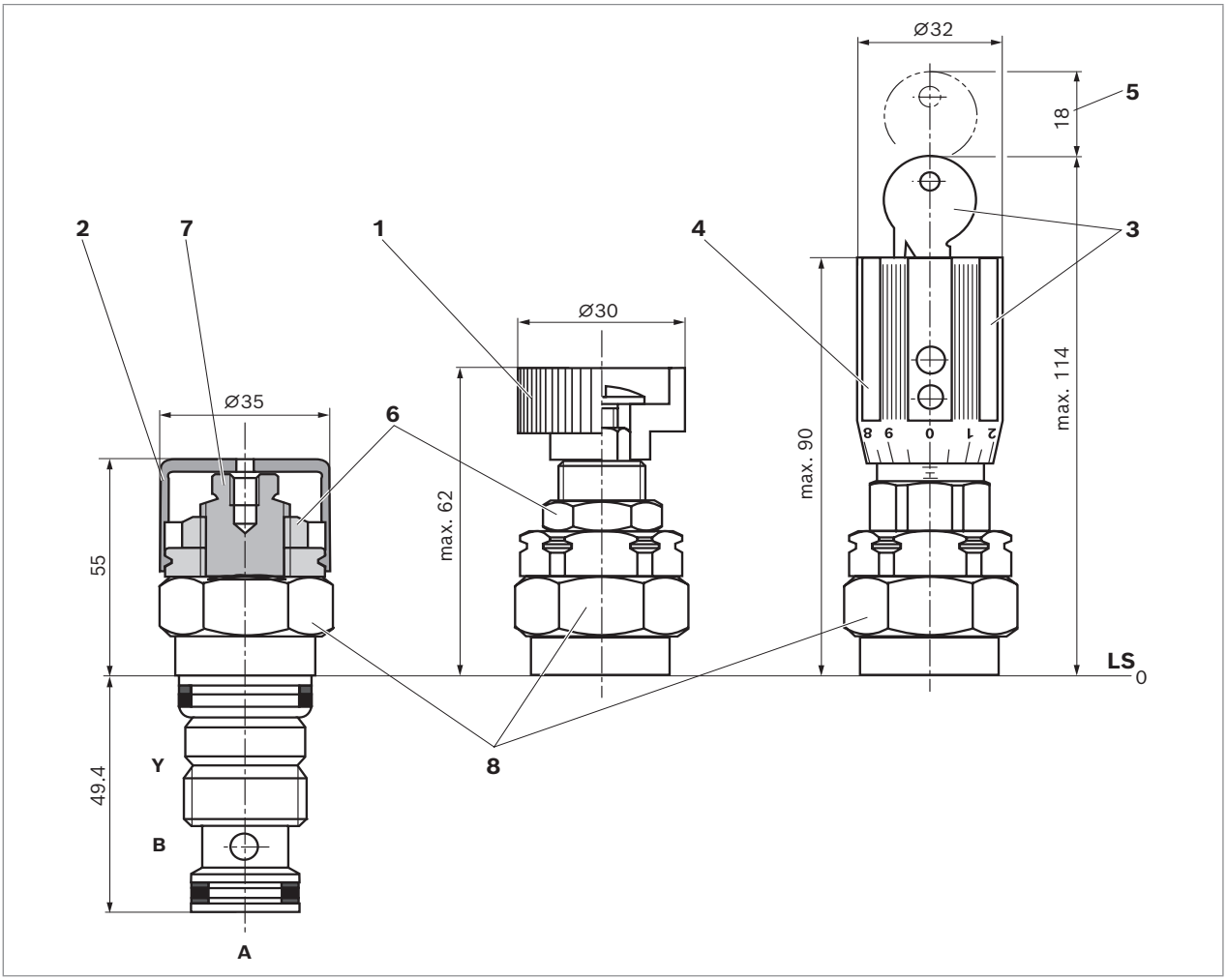
## Dimensions

▼ **DR10K**

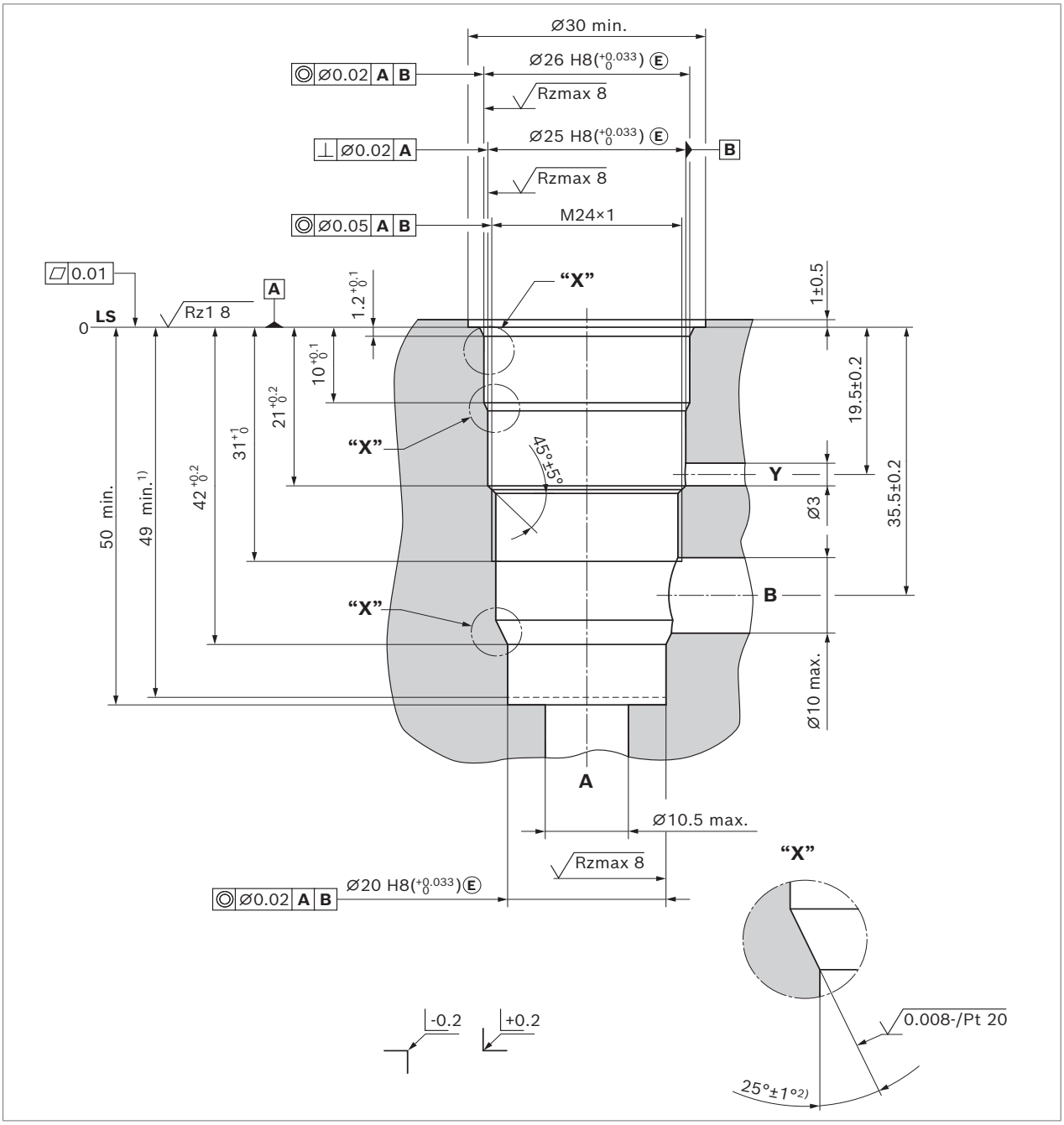



**1** Adjustment type **“4”** – rotary knob
**2** Adjustment type **“5”** – sleeve with hexagon and protective cap
**3** Adjustment type **“6”** – rotary knob with scale, lockable
**4** Adjustment type **“7”** – rotary knob with scale
**5** Space required to remove key
**6** Lock nut SW24
**7** Hexagon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

**LS** = Location Shoulder

## Mounting cavity

▼ **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

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## Related documentation

| | |
|---|---|
| ▶ Mineral oil-based hydraulic fluids | Data sheet 90220 |
| ▶ Environmentally acceptable hydraulic fluids | Data sheet 90221 |
| ▶ $MTTF_D$ values | Data sheet 90294 |

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