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	2
Preferred types	3
Functional description	3
Technical data	4
Characteristic curves	5
Dimensions	6
Mounting cavity	7
Related documentation	8

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.

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**).

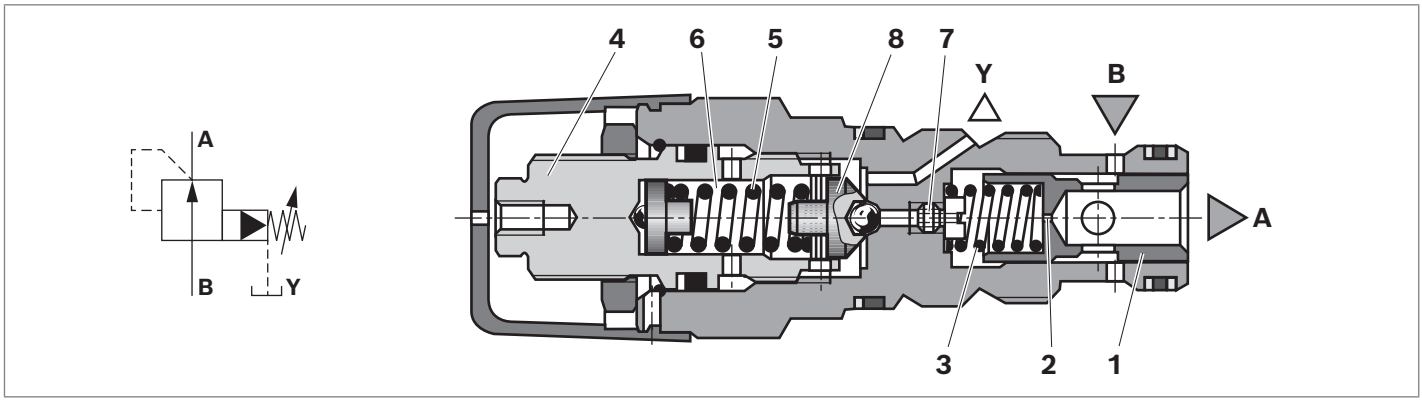
Function

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	ϑ	°C	–30 ... +80
	FKM seals	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

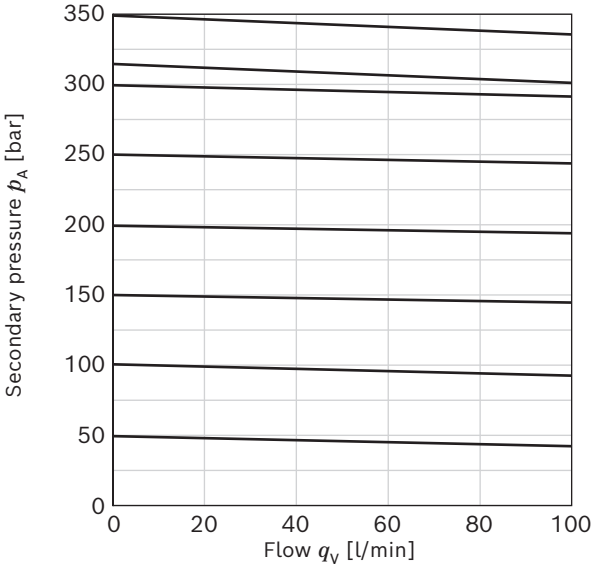
Notice
- Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!
- **Environmentally acceptable:** If environmentally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

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

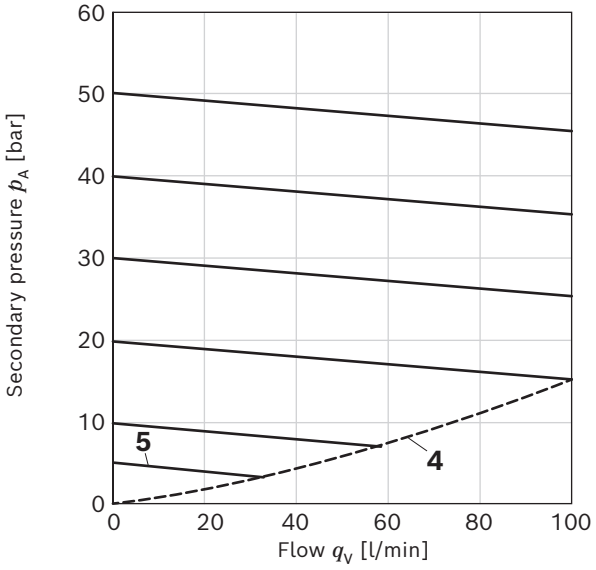
2) Cleanliness levels specified for the components must be maintained in the hydraulic systems. Effective filtration prevents malfunctions and simultaneously extends the service life of the components.

Characteristic curves

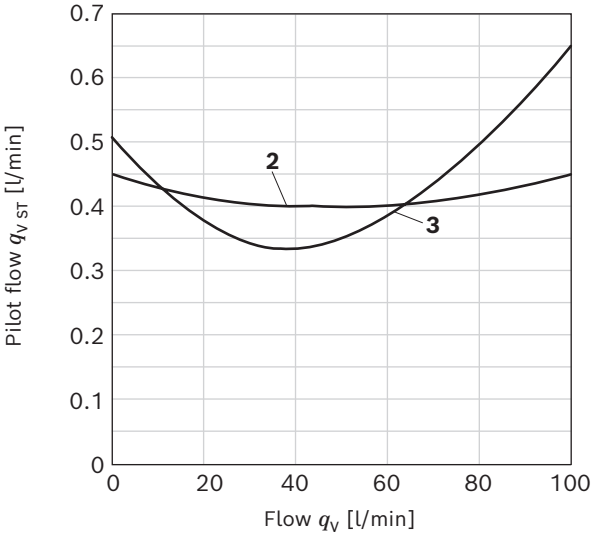
▼ **p_A-q_V characteristic curves**



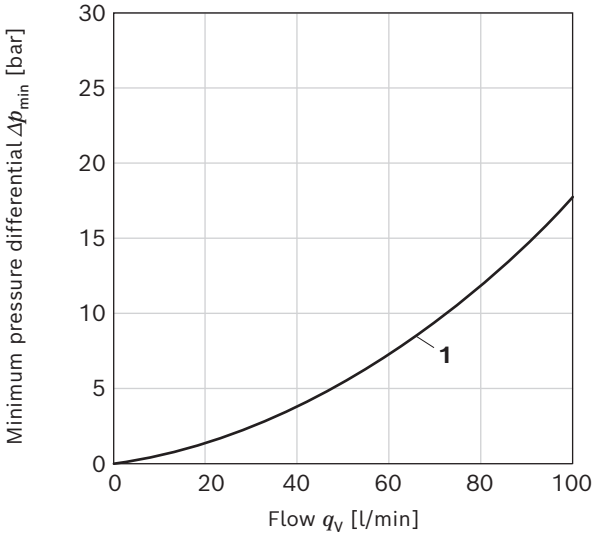
▼ **p_A-q_V characteristic curves** (in the range up to 50 bar)



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



▼ **Δp_{min}-q_V characteristic curve**

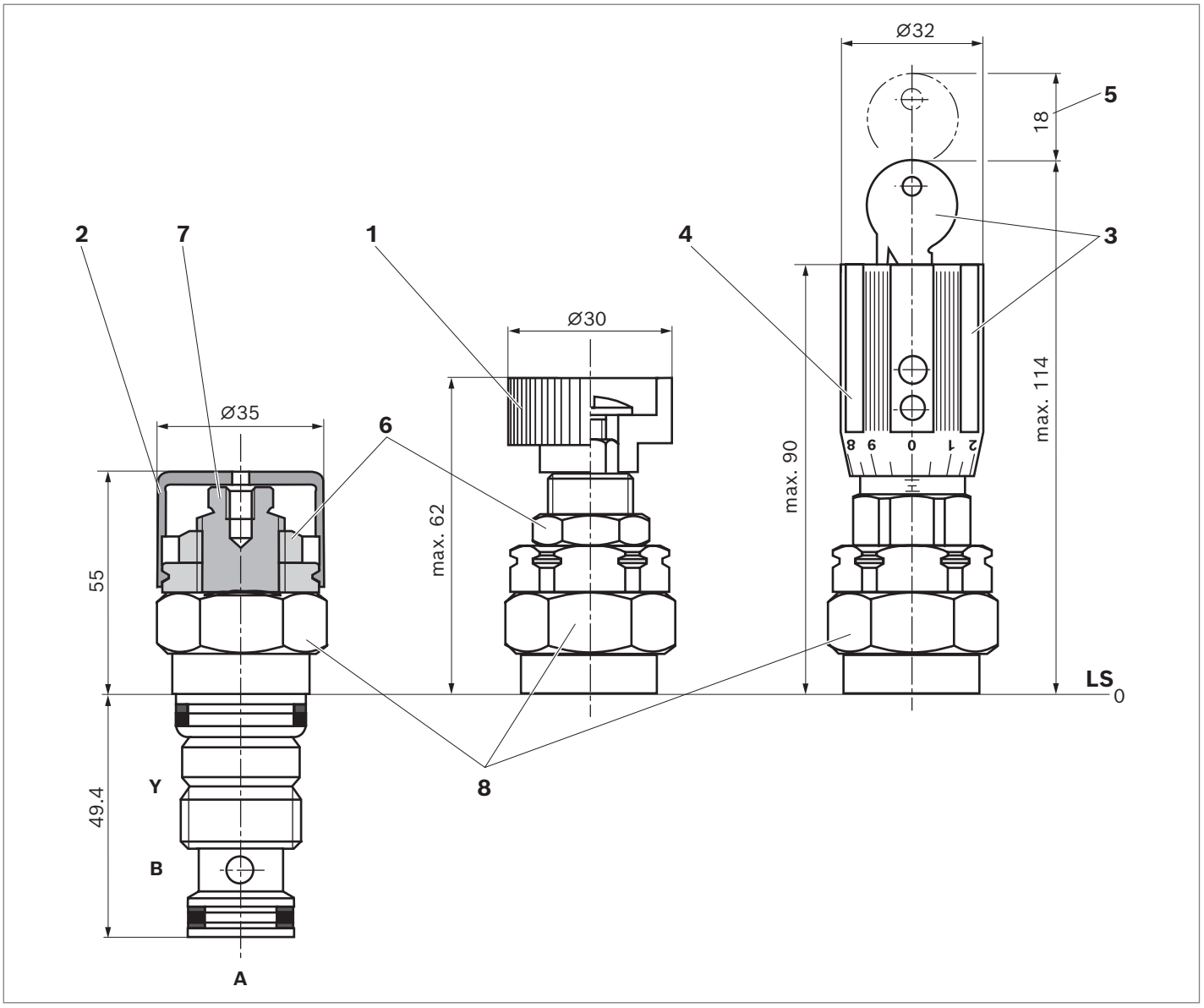


Notice
The characteristic curves have been measured with HLP46, ϑ_{oil} = 40±5 °C.

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

Dimensions

▼ **DR10K**

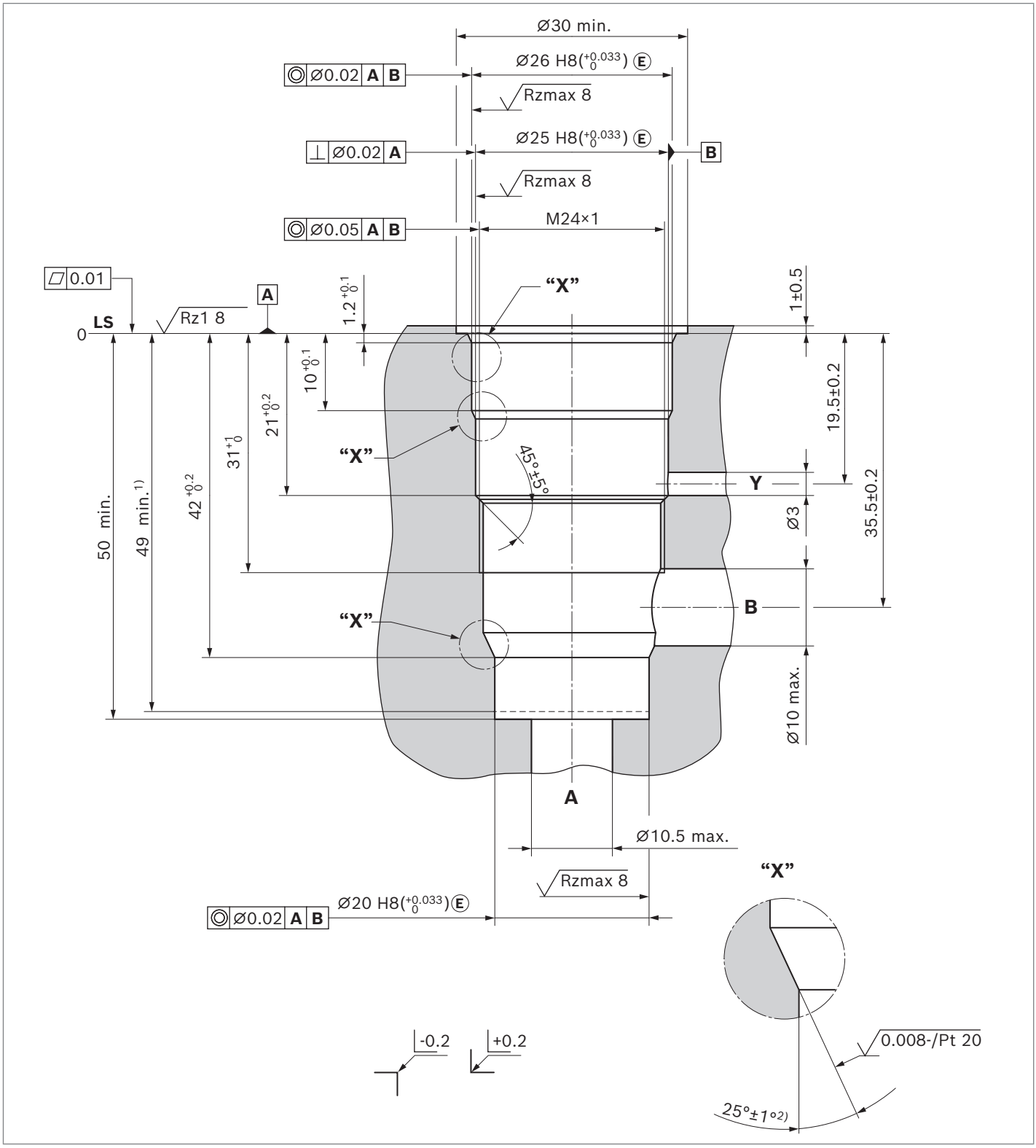


1 Adjustment type **“4”** – rotary knob
2 Adjustment type **“5”** – sleeve with hexagon and protective cap
3 Adjustment type **“6”** – rotary knob with scale, lockable
4 Adjustment type **“7”** – rotary knob with scale
5 Space required to remove key
6 Lock nut SW24
7 Hexagon SW10
8 Width across flats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

Related documentation

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