

Proportional pressure reducing valve, direct operated

RE 64658/02.10

1/10

Type MHDRE 02 K

Size 2
Component series 1X
Maximum control pressure 30 bar
Maximum flow 2.5 l/min



H7457

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Features

- Direct operated proportional pressure reducing valve for reducing a system pressure
- Installation valve
- Suitable for mobile and industrial applications
- Operation by means of proportional solenoid
- In case of power failure, the minimum pressure is set
- Recommended control electronics:
 - Mobile amplifier type RA and RC

Information on available spare parts:
www.boschrexroth.com/spc

Ordering code

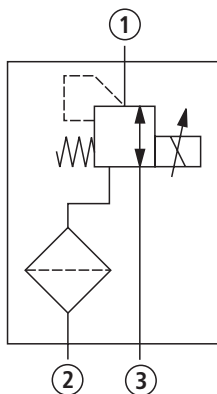
MHDRE	02	K	1X/	A			V	*
Proportional pressure reducing valve, direct operated		Further details in the plain text						
Size 2	= 02							
Installation valve	= K							
Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	= 1X							
Maximum control pressure 18 bar	= 18							
Maximum control pressure 30 bar	= 30							
Proportional solenoid, wet-pin	= A							
		Seal material						
		FKM seals (other seals upon request) Attention! Observe compatibility of seals with hydraulic fluid used!						
		Electrical connection ¹⁾						
		K40 = without mating connector with connector DT 04-2P (Deutsch plug)						
		Nominal voltage						
		G12 = DC 12 V						
		G24 = DC 24 V						

¹⁾ Mating connectors (order separately) see data sheet 08006

Standard types

Type	Material number	
	12 V	24 V
MHDRE 02 K1X/18AG .. K40V	R901123950	R901123965
MHDRE 02 K1X/30AG .. K40V	R901048962	R901048970

Symbol



- ① = Main port 1 (A)
- ② = Main port 2 (P)
- ③ = Main port 3 (T)

Function, section

General

The proportional pressure reducing valve type MHDRE 02 K is a direct operated installation valve in 3-way design. It reduces the control pressure (main port ①) proportionally to the solenoid current and functions largely independently from the input pressure (main port ②).

With a command value of 0 or in case of power failure, the minimum pressure is set. Operation is effected by means of proportional solenoid. The solenoid's interior is connected to the main port ③ and filled with hydraulic fluid.

Depending on the electric command value, these valves can be used to reduce the system pressure continuously. The valve is suitable for controlling couplings, pumps and directional valves as well as for use in proportional pilot controls (particularly in the mobile area, however also for industrial applications).

Basic principle

The valve controls the pressure in the main port ① proportionally to the current at the solenoid.

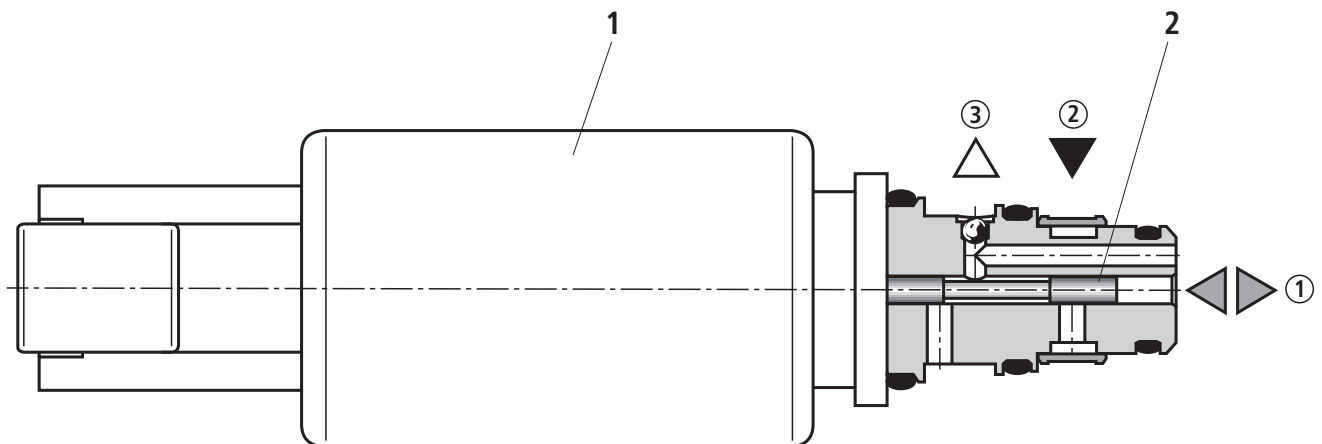
The proportional solenoid (1) converts the electric current into mechanical force that acts on the spool (2) via the armature. The spool controls the connection between the main ports.

Note!

Occurring tank pressure (main port ③) is added up to the control pressure (main port ①).

Attention!

If the valve is not installed or installed in a system that is not completely bled, the valve must not be energized as otherwise, the entering air has a very negative effect on the valves' dynamic behavior.



① = Main port 1 (A)

② = Main port 2 (P)

③ = Main port 3 (T)

Technical Data (For applications outside these parameters, please consult us!)**general**

Weight	kg	approx. 0.24
Installation position		Any - if it is ensured that no air can collect upstream the valve. Otherwise, we recommend suspended installation of the valve (electric connection downwards).
Ambient temperature range	°C	See "admissible working range" page 7
Storage temperature range	°C	-30 to +80

Environmental audits:

Salt spray test according to EN ISO 9227	h	600 (NSS test)
Surface protection Solenoid		Coating according to DIN 50962-Fe//ZnNi with thick layer passivation

hydraulic

Maximum control pressure	- Main port ①	bar	18; 30
Maximum input pressure	- Main port ②	bar	50 (with mounting clip "50") ¹⁾
Maximum backpressure	- Main port ③	bar	At zero pressure (max. 3 bar with mounting clip "50"; occurring tank pressures are added up to the control pressure (main port ①)) ¹⁾
Maximum flow ($\Delta p = 7$ bar)		l/min	2.5
Maximum leakage	- Main port ③	ml/min	100 (50 bar in ②; $I = 0$ mA, 46 cSt)
Maximum pilot oil		ml/min	250 (50 bar in ②; $I = I_{max}$, 46 cSt)
Hydraulic fluid			Mineral oil (HL, HLP) according to DIN 51524; other hydraulic fluids upon request
Hydraulic fluid temperature range		°C	-30 to +110
Viscosity range		mm ² /s	5 to 400
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			Class 20/18/15 ²⁾
Hysteresis (within tolerance band)		bar	≤ 1.5
Step response ($T_u + T_g$) 0 % → 100 %; 100 % → 0 %		ms	≤ 60 (50 bar in ②; 46 cSt, $q_v = 0$ l/min, dead volume in ① 140 cm ³)
Repeatability		%	< 2 % of the maximum control pressure
Load cycles			10 ⁷
Mesh size strainer element at the main port ②		μm	160

¹⁾ **Attention!** The specified value describes only the capability of the valve. In addition, the capability of the selected mounting clip must be observed:

Mounting clip "50" and fastening screw
ISO 4762 - M5 x 14 - 8.8 (separate order), see page 10.

²⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

For the selection of filters, see data sheets 50070, 50076, 50081, 50086, 50087 and 50088.

For more information refer to data sheets:

- 07008
- 07800
- 07900
- 64020

Technical Data (For applications outside these parameters, please consult us!)

electrical

Supply voltage	V	12 DC	24 DC
Maximum control current	A	1.7	0.95
Coil resistance at 20 °C	Ω	3.5	11.1
Duty cycle (ED) ³⁾	%	See "admissible working range" page 7	
Maximum coil temperature ⁴⁾	°C	185	
Protection class according to VDE 0470-1 (DIN EN 60529), DIN 40050-9		IP 69K (with mating connector mounted and locked)	
Chopper frequency (recommended) ⁵⁾	Hz	150	
Control electronics (separate order)		Control unit RA, see data sheet 95230 Control units RC, see data sheet 95200	
Design according to VDE 0580			

³⁾ In case of use at an altitude of more than 2000 m a.s.l., we recommend consulting the manufacturer.

⁴⁾ Due to the temperatures occurring at the surfaces of the solenoid coils, the standards ISO 13732-1 and EN 982 need to be adhered to!

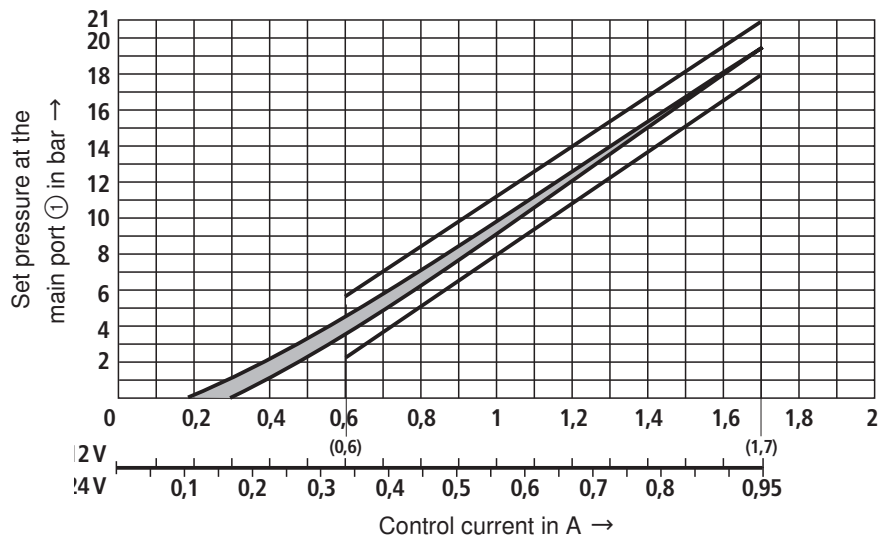
⁵⁾ The chopper frequency is to be optimized depending on the application. In this regard, observe the temperature range of the application.

Note!

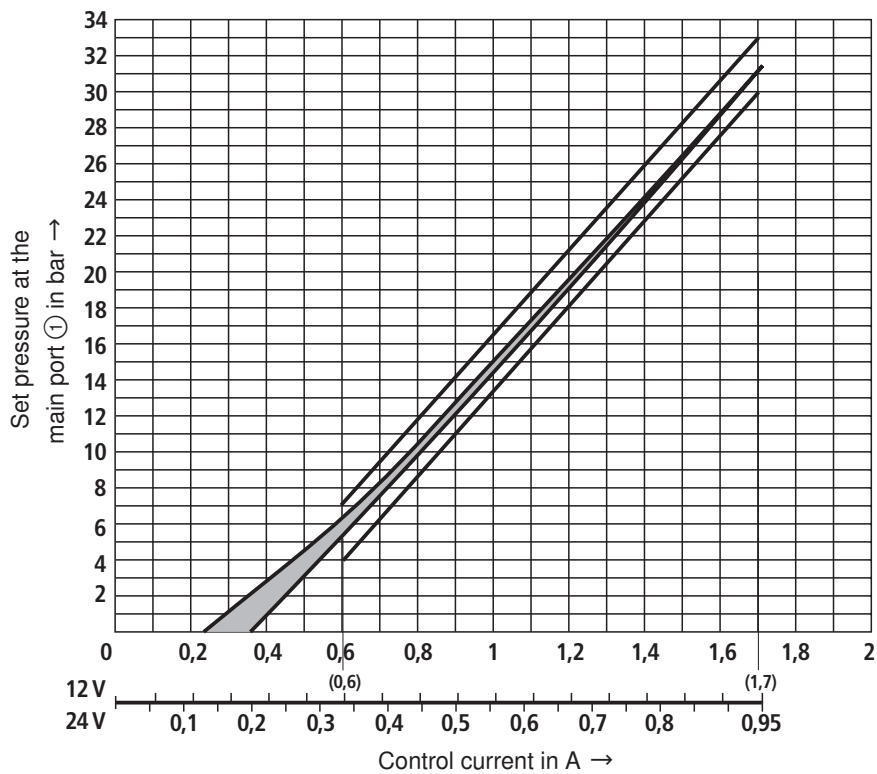
- The technical data were determined at a viscosity of $\nu = 46 \text{ mm}^2/\text{s}$ (HLP46; 40 °C).
- You can find more information on the correct use of hydraulic products of Rexroth in the data sheet 64020-B, "Hydraulic valves for mobile applications - General information".

Characteristic curves with tolerance band (measured with HLPD46, $\vartheta_{oil} = 50 \pm 5 \text{ }^\circ\text{C}$)

Control pressure 18 bar



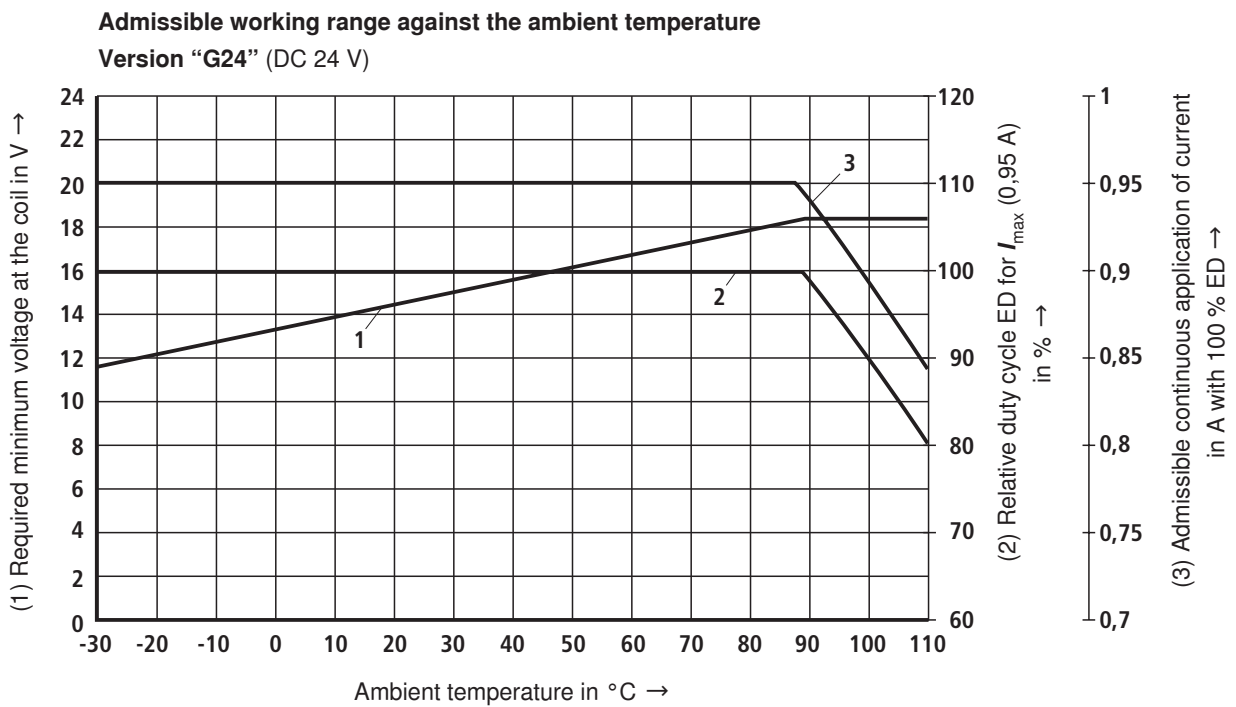
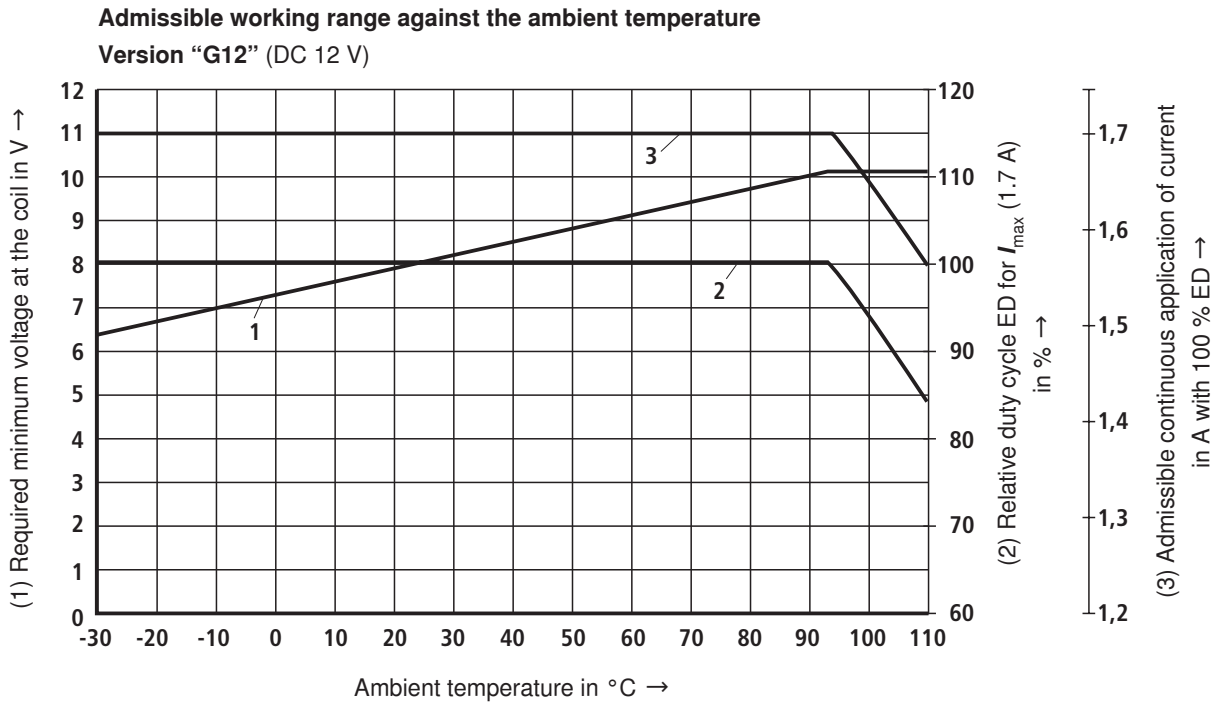
Control pressure 30 bar



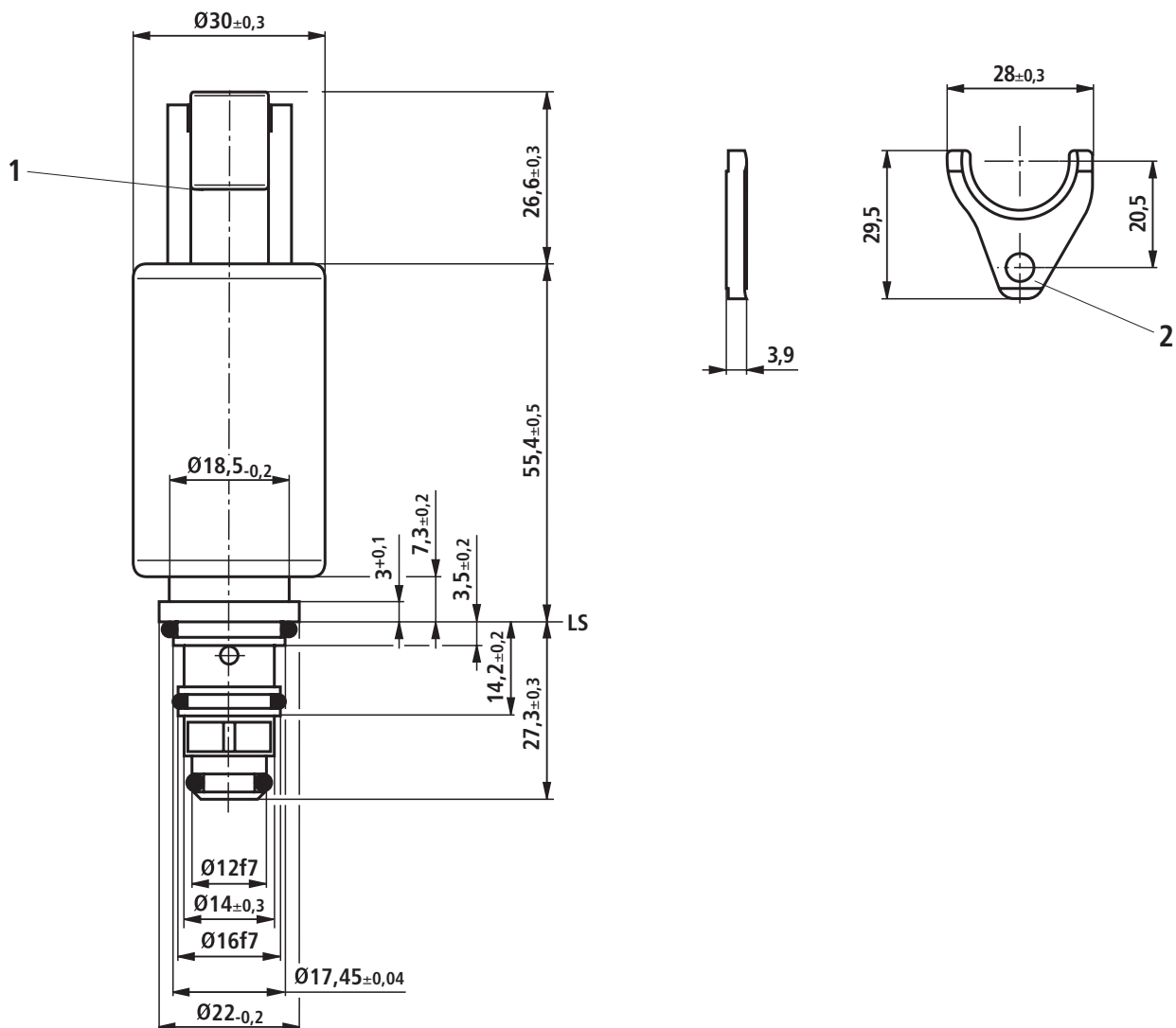
Measuring conditions:

Amplifier:	Analog amplifier RA (data sheet 95230)
Chopper frequency:	150 Hz
Input pressure:	50 bar
Dead volume at the main port ①:	135 ml

Admissible working range:



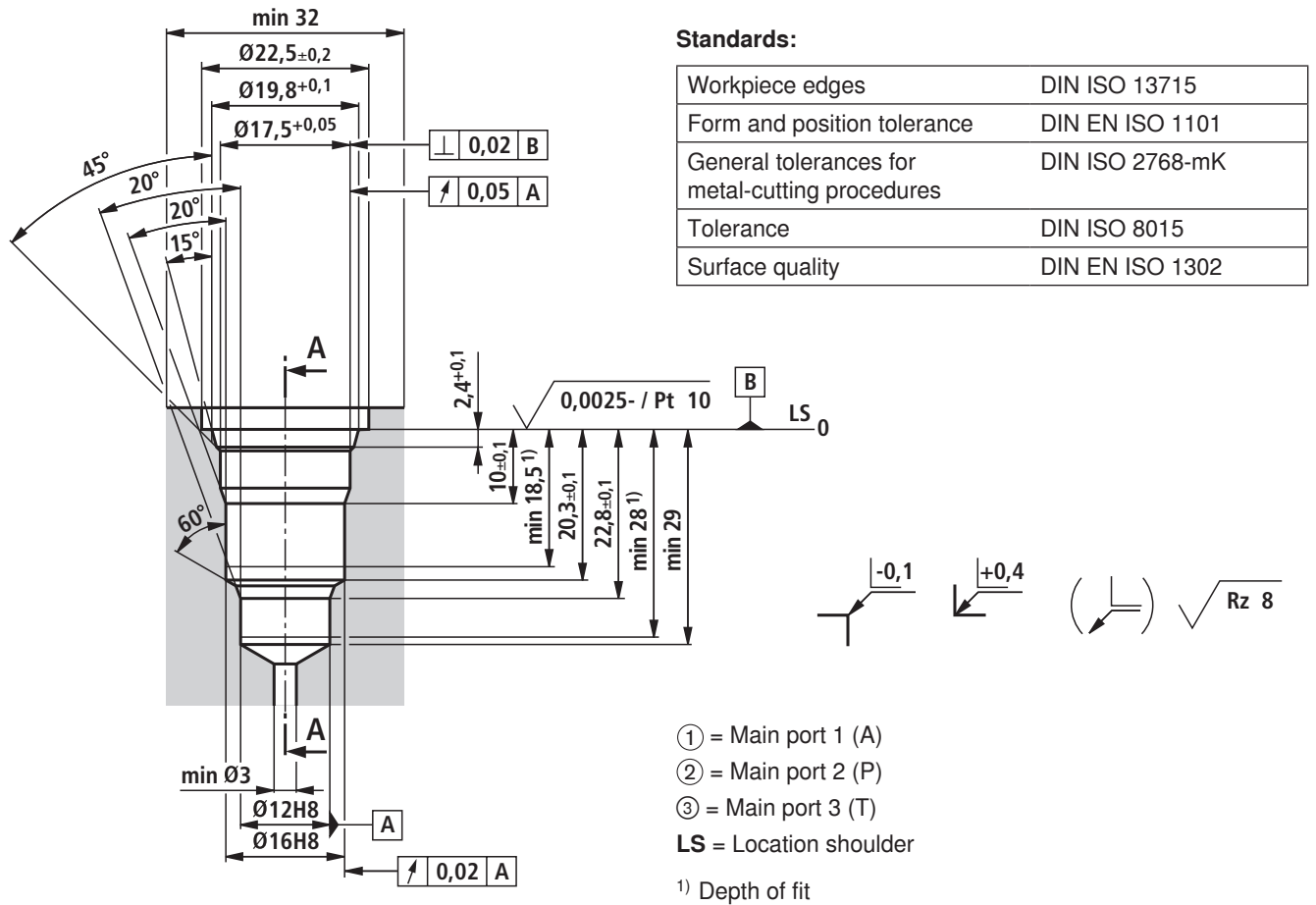
Unit dimensions (dimensions in mm)



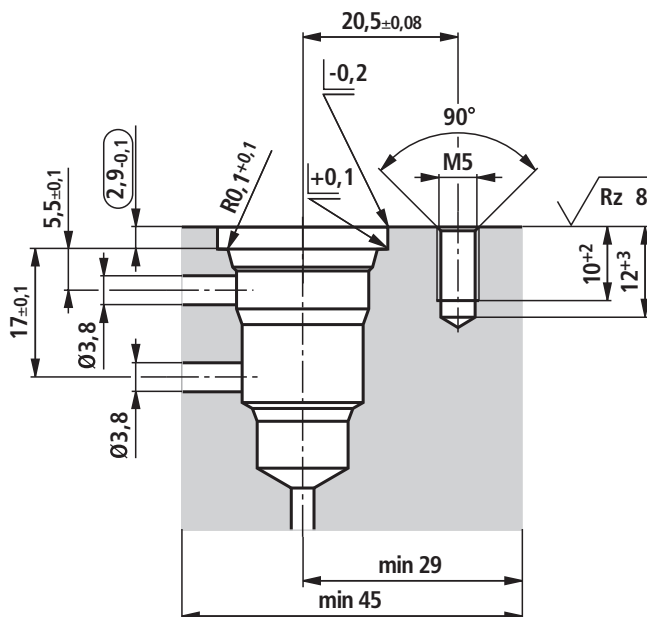
- 1 Mating connector for connector "K40"
(separate order, see data sheet 08006)
- 2 Mounting clip "50" and fastening screw
ISO 4762 - M5 x 14 - 8.8 - to 30 bar (separate order),
see page 10

- ① = Main port 1 (A)
② = Main port 2 (P)
③ = Main port 3 (T)
LS = Location shoulder

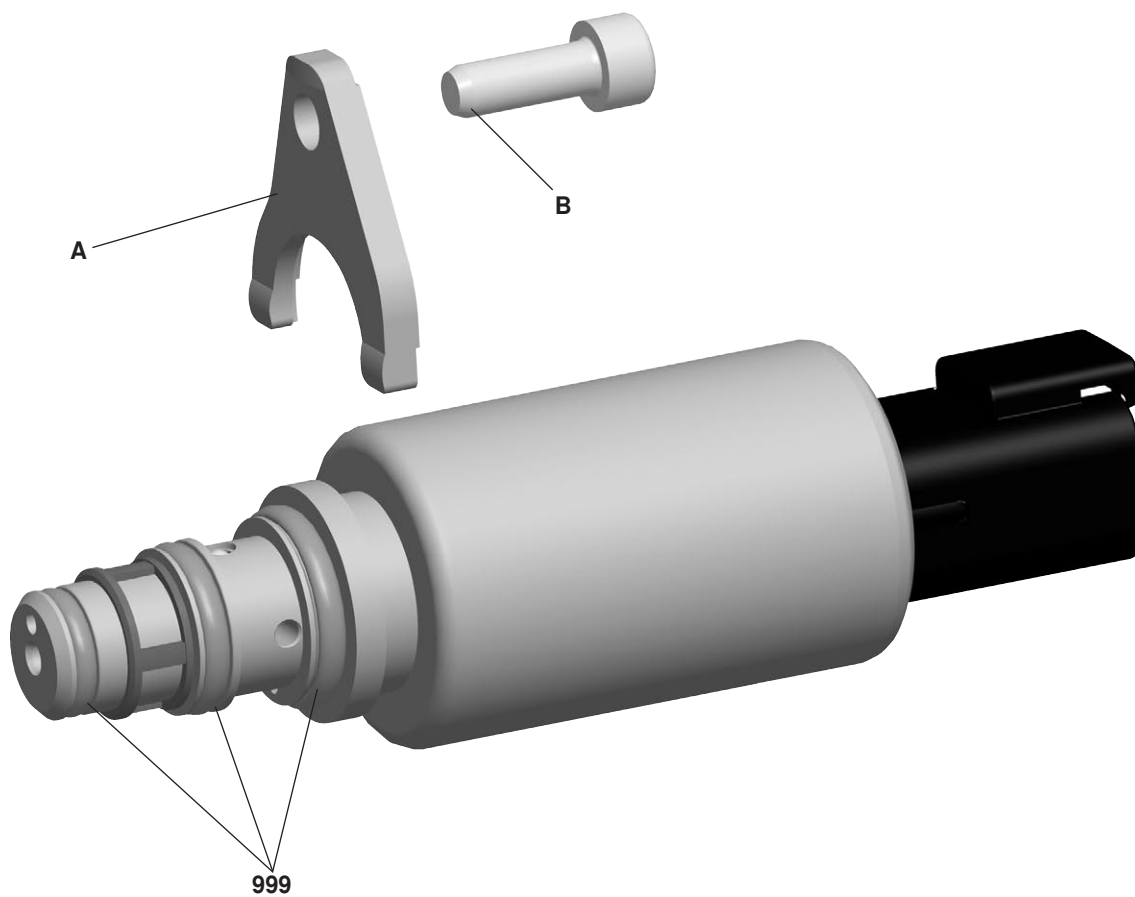
Installation bores (dimensions in mm)



Cut A – A, mounting clip “50”



Available individual components



Item	Description	Material no.
999	Seal kit of the valve (for 2 valves)	R961003681
A	Mounting clip "50" (Maximum input pressure 50 bar)	R908105638
B	Hexagon socket head cap screws ISO 4762 - M5 x 14 - 8.8 (mounting clip "50")	2910141156

Notes

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