

# Proportional pressure reducing valve, direct operated

RE 64666/02.10

1/8

## Type MHDRE 04 K

Size 4  
Component series 1X  
Maximum control pressure 30 bar  
Maximum flow 6 l/min



H7660

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## Features

- Direct operated proportional pressure reducing valve for reducing a system pressure
- Cartridge 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](http://www.boschrexroth.com/spc)

## Ordering code

MHDRE	04	K	1X/30	A			V	*
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Proportional pressure reducing valve, direct operated

Size 4 = 04

Cartridge valve = K

Component series 10 to 19 (10 to 19: Unchanged installation and connection dimensions) = 1X

Maximum control pressure 30 bar = 30

Proportional solenoid, wet-pin = A

Further details in the plain text

### Seal material

V = FKM seals  
(other seals upon request)  
Attention!  
Observe compatibility of seals with hydraulic fluid used!

### Electrical connection <sup>1)</sup>

K40 = without mating connector with connector DT 04-2P (Deutsch plug)

### Nominal voltage

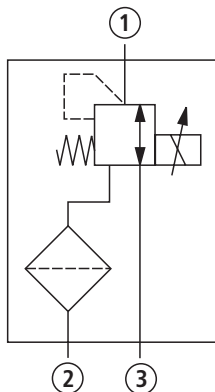
G12 = DC 12 V  
G24 = DC 24 V

<sup>1)</sup> Mating connectors (order separately) see data sheet 08006

## Standard types

Type	Material number	
	12 V	24 V
MHDRE 04 K1X/30AG..K40V	R901059491	R901067641

## 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 04 K is a direct operated cartridge 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.

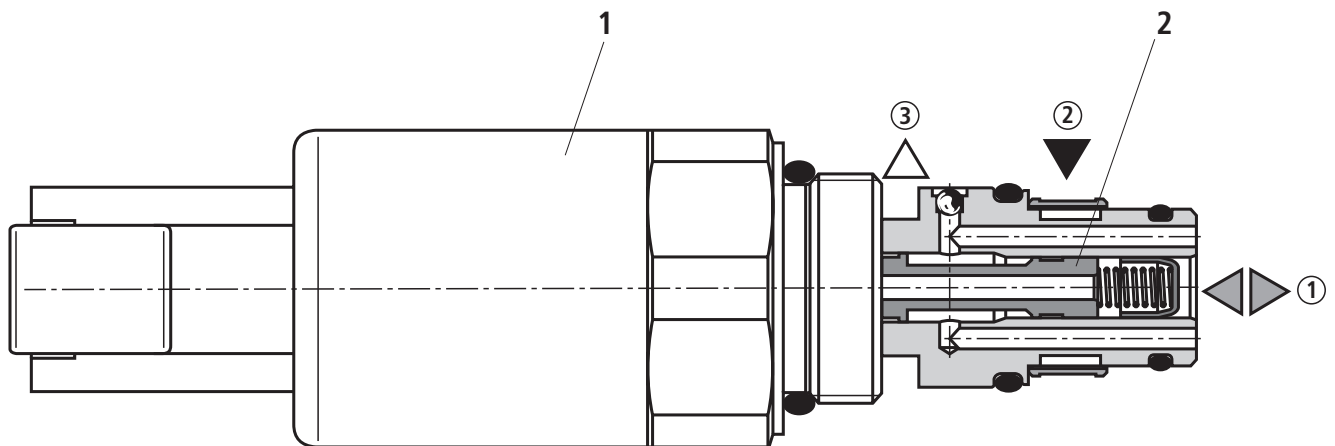
The proportional solenoid (1) converts the electric current into mechanical force that acts on the spool (2) via the armature. The spool controls the connection between the main ports.

#### 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. 0.25
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 6
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	30
Maximum input pressure – Main port ②	bar	100
Maximum backpressure – Main port ③	bar	at zero pressure (max. 30 bar, occurring tank pressures are added up to the control pressure (main port ①))
Maximum flow ( $\Delta p = 7$ bar)	l/min	6
Maximum leakage – Main port ③	ml/min	100 (50 bar in ②; $I = 0$ mA, 46 cSt)
Maximum pilot oil	ml/min	350 (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 <sup>2</sup> /s	5 to 400
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)		Class 20/18/15 <sup>1)</sup>
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 <sup>3</sup> )
Repeatability	%	< 2 % of the maximum control pressure
Load cycles		10 <sup>7</sup>
Mesh size strainer element at the main port ②	μm	160

<sup>1)</sup> 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	0.98
Coil resistance at 20 °C	Ω	3.5	11.1
Duty cycle (ED) <sup>3)</sup>	%	100	
Maximum coil temperature <sup>4)</sup>	°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) <sup>5)</sup>	Hz	200	
Control electronics (separate order)		Control unit RA, see data sheet 95230 Control units RC, see data sheet 95200	
Design according to VDE 0580			

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

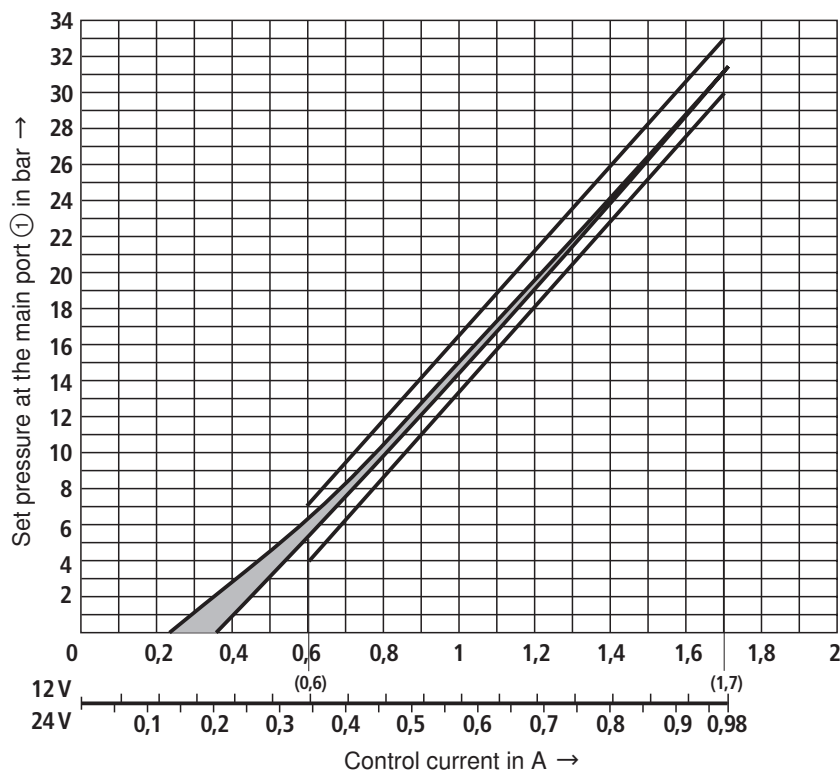
<sup>4)</sup> Due to the temperatures occurring at the surfaces of the solenoid coils, the standards ISO 13732-1 and EN 982 need to be adhered to!

<sup>5)</sup> 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, $\vartheta_{\text{oil}} = 50 \pm 5 \text{ °C}$ )

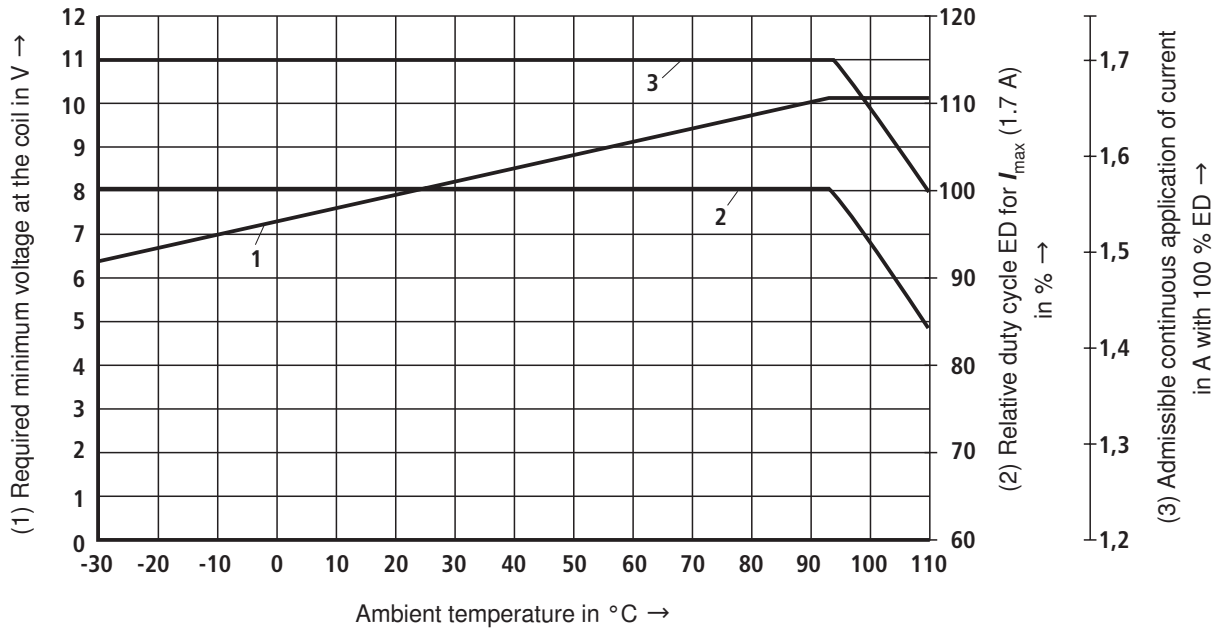


#### Measuring conditions:

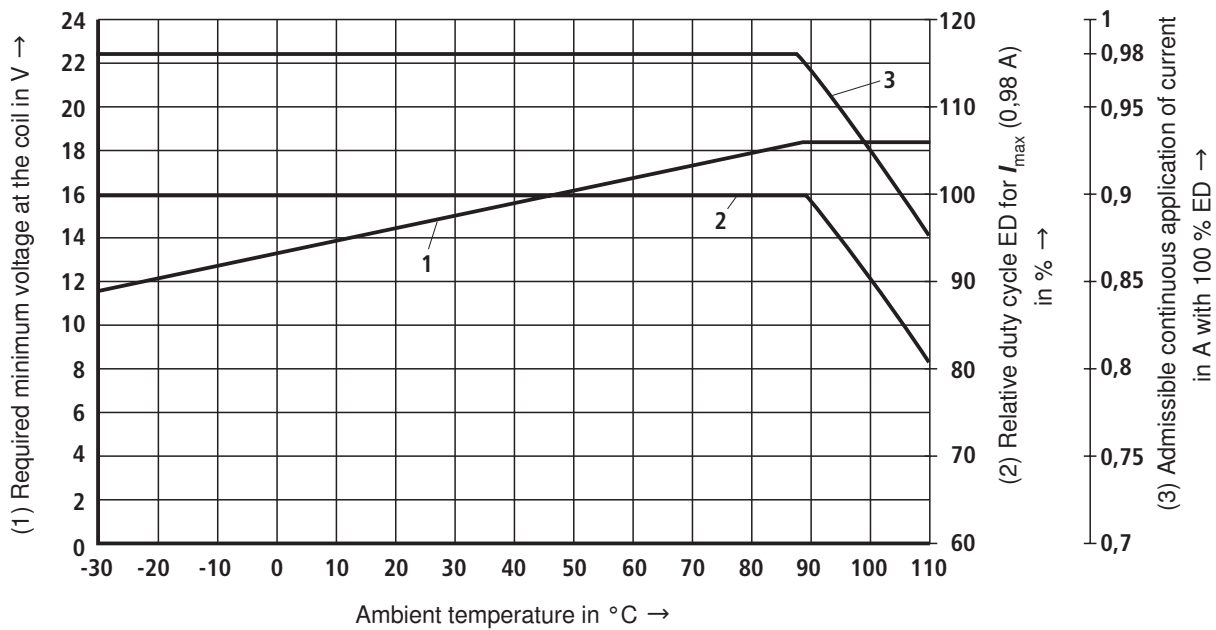
Installation position:	horizontal
Amplifier:	Analog amplifier RA (data sheet 95230)
Chopper frequency:	200 Hz
Input pressure:	50 bar
Dead volume at the main port (1):	135 ml

## Admissible working range:

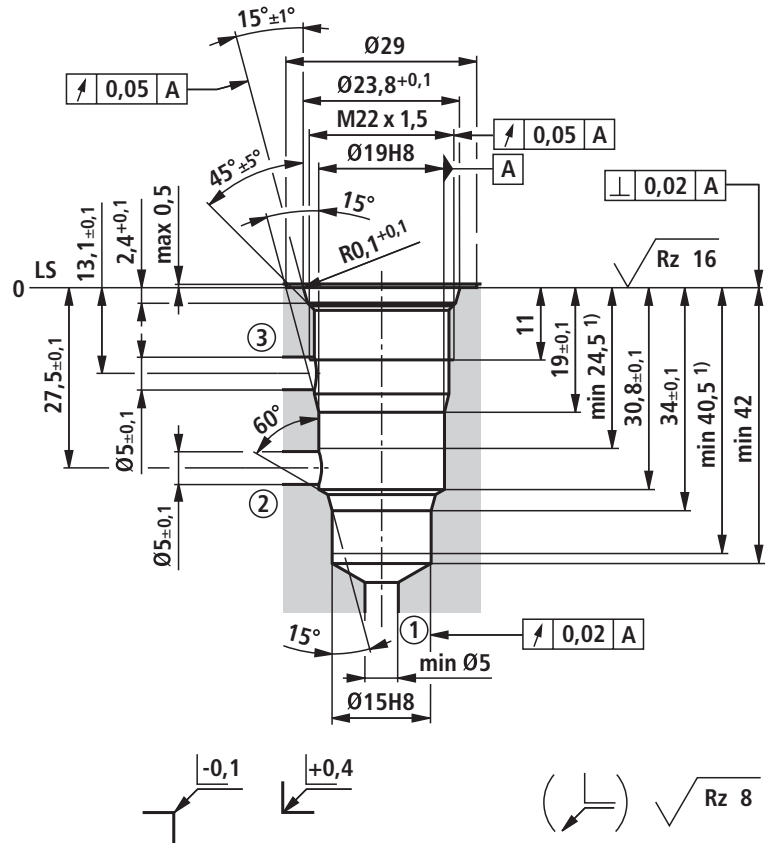
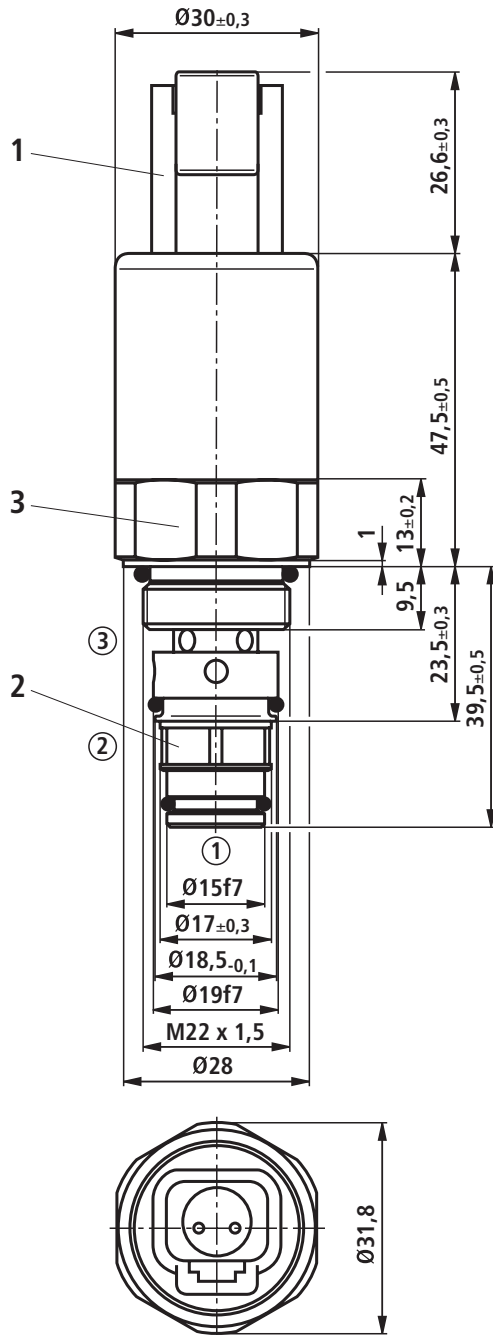
Admissible working range against the ambient temperature  
Version "G12" (DC 12 V)



Admissible working range against the ambient temperature  
Version "G24" (DC 24 V)



Unit dimensions, mounting cavity (dimensions in mm)



- 1 Mating connector for connector "K40" (separate order, see data sheet 08006)
- 2 Strainer
- 3 Flat across widths SW30;  $M_A = 12^{+5} \text{ Nm}$

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

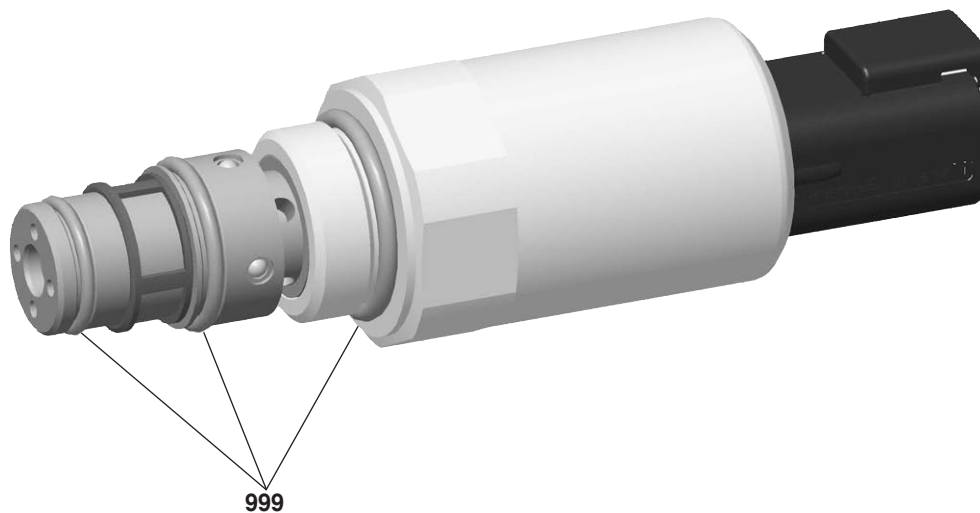
1) Depth of fit

Standards:

Workpiece edges	DIN ISO 13715
Form and position tolerance	DIN EN ISO 1101
General tolerances for metal-cutting procedures	DIN ISO 2768-mK
Tolerance	DIN ISO 8015
Surface quality	DIN EN ISO 1302

## Available individual components

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Item	Description	Material no.
999	Seal kit of the valve	R961004421