Electro-Proportional Pressure Reducing and Relieving Cartridge Valves

Designation	Description	Cavity	Data sheet	Pages
Proportional pressure reducing valve, direct operated	MHDRE 02	Special	RE 64658	1159
Proportional pressure reducing valve, direct operated	MHDRE 04	Special	RE 64666	1169
Proportional pressure reducing valve, direct operated, rising characteristic curve	MHDRE 06	Special	RE 64655	1177
Proportional pressure reducing valve	FTDRE 2	Special	RE 58032	1187
Proportional pressure reducing valve	FTDRE 4	Special	RE 58038	1191
3/2 directional valve with solenoid actuation	FTWE 2	Special	RE 58007	1197
3/2 directional valve with solenoid actuation	FTWE 4	Special	RE 58008	1201

Rexroth
Bosch Group

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

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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

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**

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

G12 = DC 12 V

G24 = DC 24 V

Nominal voltage

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

Electrical connection [1]

V = FKM seals (other seals upon request)

Attention! Observe compatibility of seals with hydraulic fluid used!

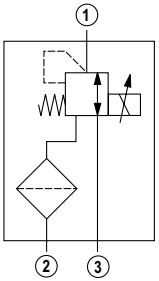
Seal material

Further details in the plain text

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.

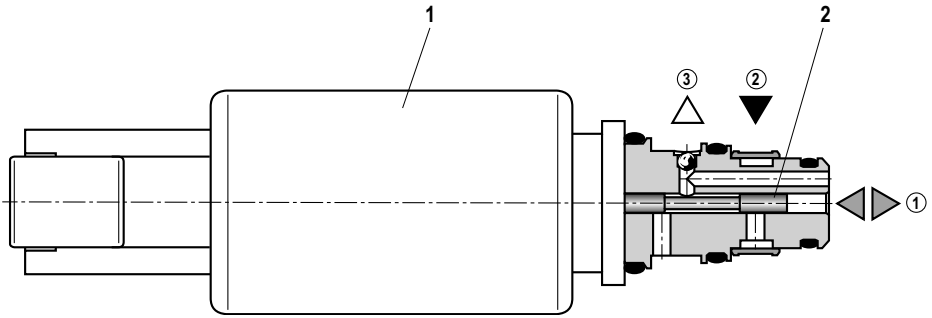
The proportional solenoid (1) converts the electric current into mechanical force that acts on the spool (2) via the armature. The spool controls the connection between the main ports.

☞ **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)

6

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 (Δp = 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		mm²/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 cm³)
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 www.boschrexroth.com/filter

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!

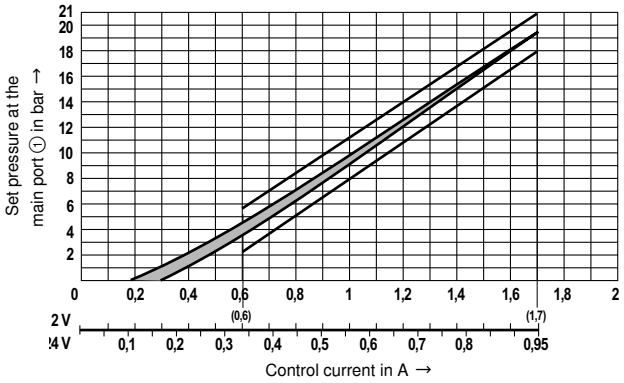
[5] The chopper frequency is to be optimized depending on the application. In this regard, observe the temperature range of the application.

☞ **Note!**

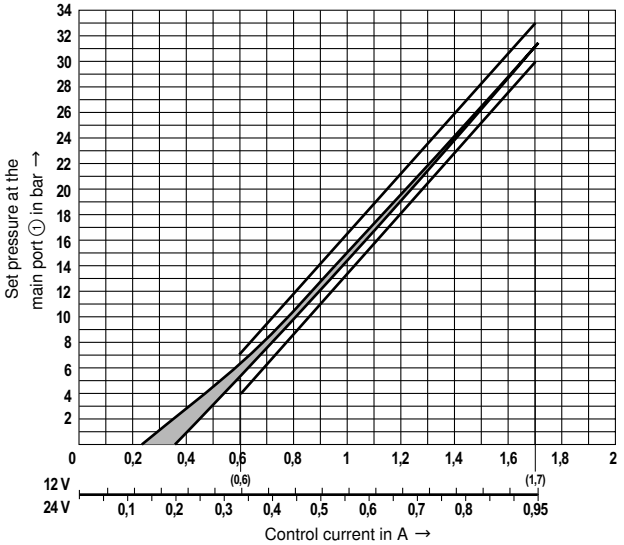
- The technical data were determined at a viscosity of v = 46 mm²/s (HLP46; 40 °C).
- You can find more information on the correct use of hydraulic products of Rexroth in the data sheet 64020-B, “Hydraulic valves for mobile applications - General information”.

Characteristic curves with tolerance band (measured with HLPD46, ϑ_{oil} = 50 ± 5 °C)

Control pressure 18 bar



Control pressure 30 bar

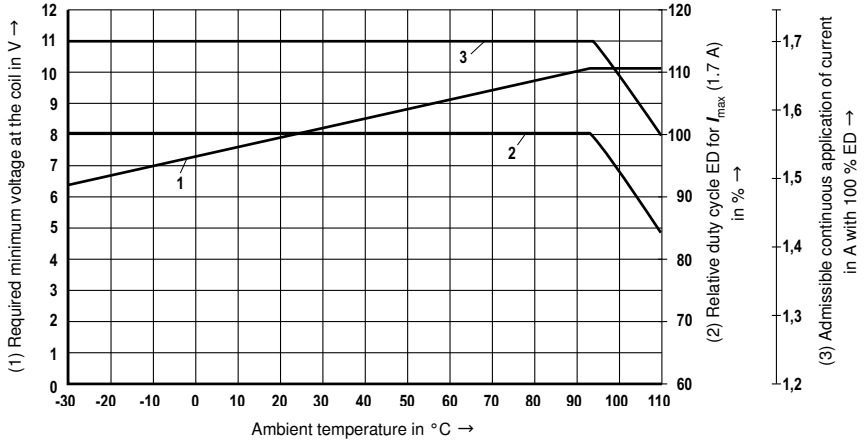


Measuring conditions:

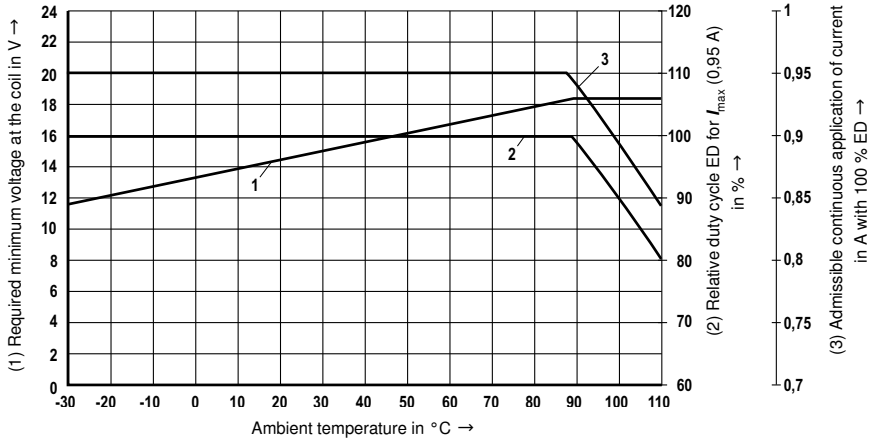
Amplifier:	Analog amplifier RA (data sheet 95230)
Chopper frequency:	150 Hz
Input pressure:	50 bar
Dead volume at the main port ①:	135 ml

Admissible working range:

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

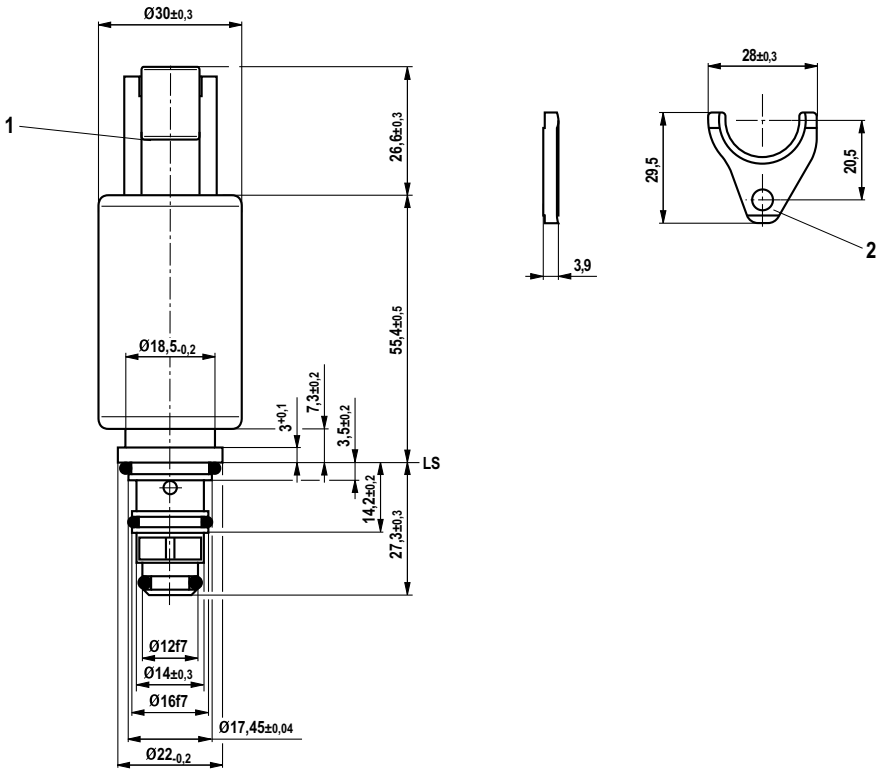


Admissible working range against the ambient temperature
Version "G24" (DC 24 V)



6

Unit dimensions (dimensions in mm)

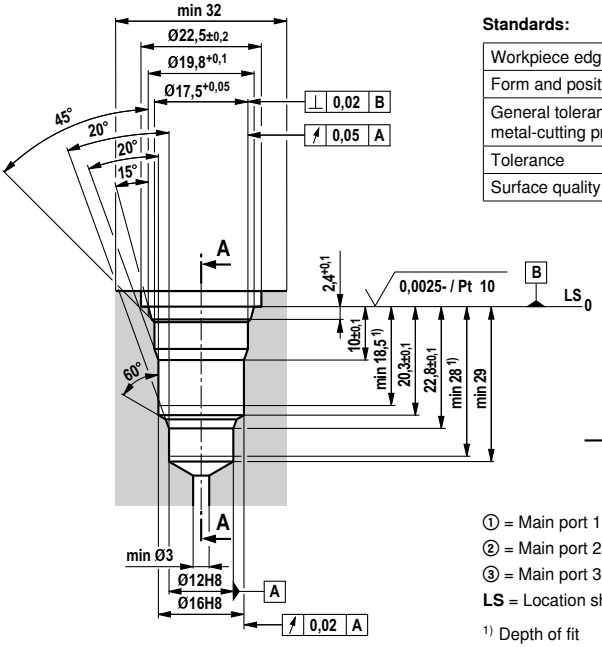


1 Mating connector for connector “K40” (separate order, see data sheet 08006)

2 Mounting clip “50” and fastening screw ISO 4762 - M5 x 14 - 8.8 – to 30 bar (separate order), see page 10

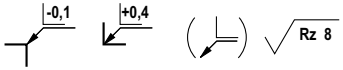
① = Main port 1 (A)
② = Main port 2 (P)
③ = Main port 3 (T)
LS = Location shoulder

Installation bores (dimensions in mm)



Standards:

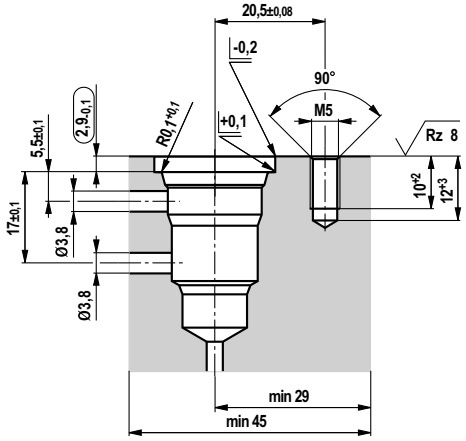
Workpiece edges	DIN ISO 13715
Form and position tolerance	DIN EN ISO 1101
General tolerances for metal-cutting procedures	DIN ISO 2768-mK
Tolerance	DIN ISO 8015
Surface quality	DIN EN ISO 1302



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

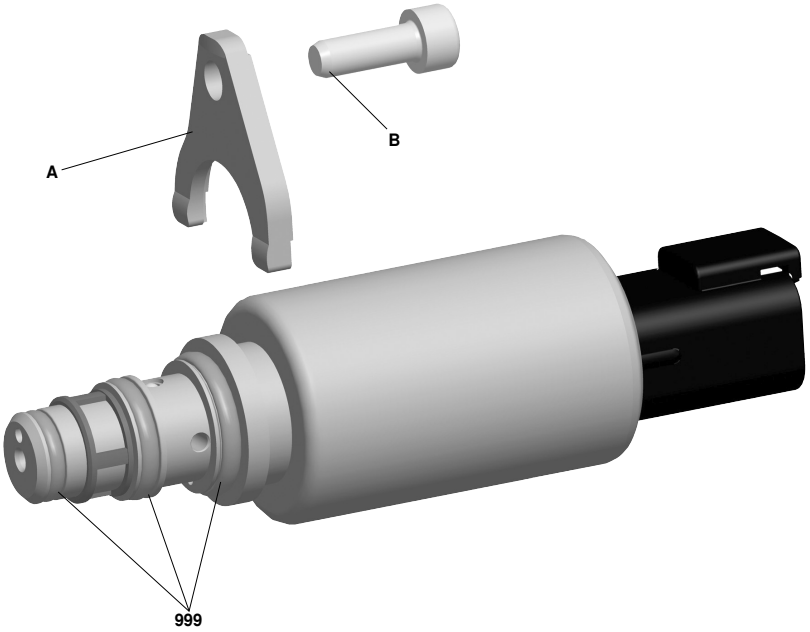
1) Depth of fit

Cut A – A, mounting clip "50"



6

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

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Rexroth
Bosch Group

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

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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

Ordering code

MHDRE	04	K	1X/30	A			V	*

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**

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

G12 = DC 12 V
G24 = DC 24 V

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

Electrical connection [1]

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

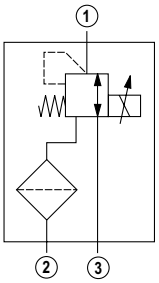
Seal material

Further details in the plain text

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.

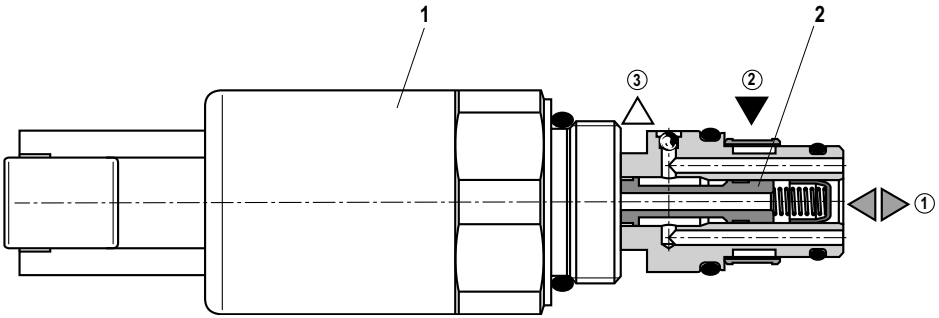
The proportional solenoid (1) converts the electric current into mechanical force that acts on the spool (2) via the armature. The spool controls the connection between the main ports.

☞ **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)

6

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 (Δp = 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^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 [1)]
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)] 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 www.boschrexroth.com/filter

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) [3]	%	100	
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	200	
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.

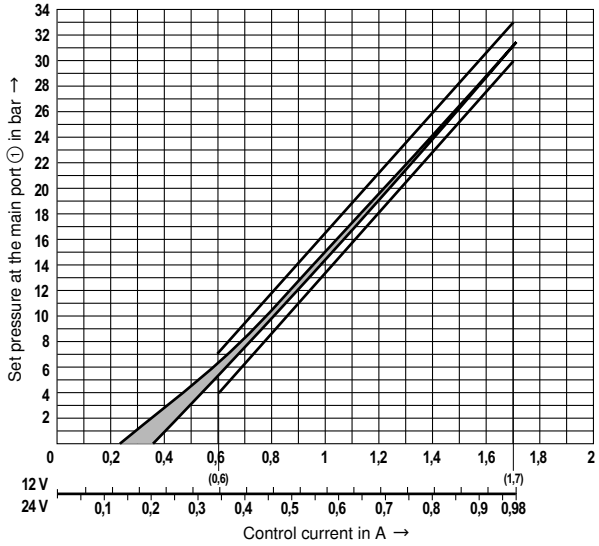
[4] Due to the temperatures occurring at the surfaces of the solenoid coils, the standards ISO 13732-1 and EN 982 need to be adhered to!

[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 v = 46 mm²/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, ϑ_{oil} = 50 ± 5 °C)



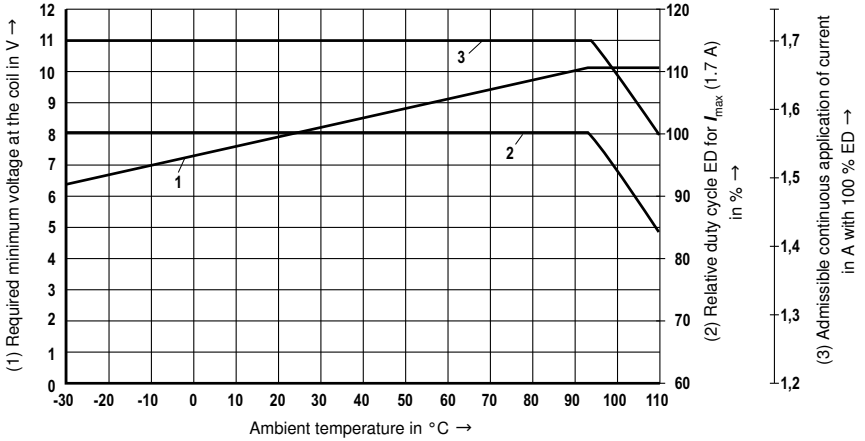
Measuring conditions:

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

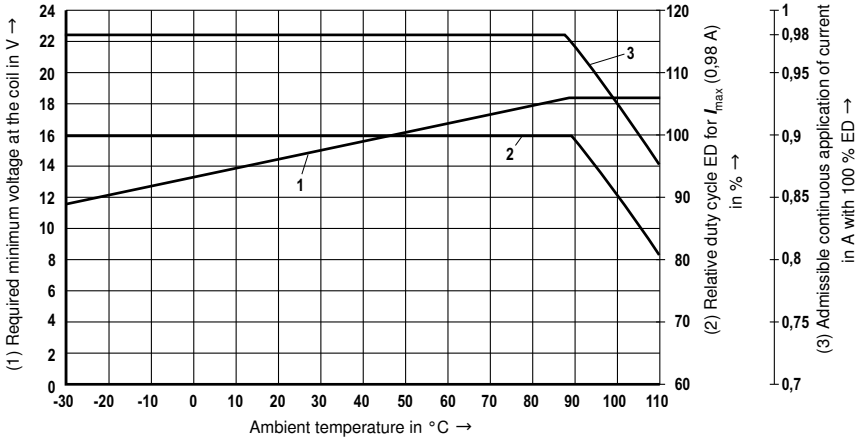
6

Admissible working range:

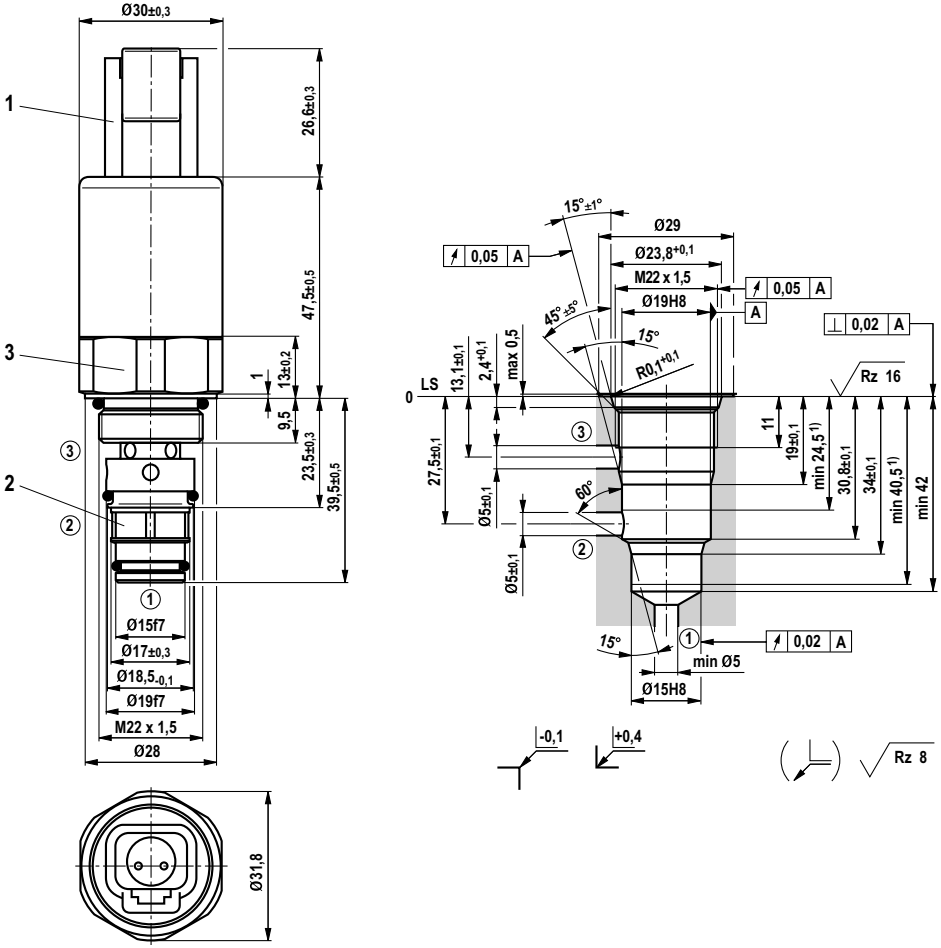
Admissible working range against the ambient temperature
Version "G12" (DC 12 V)



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} Nm

① = Main port 1 (A)

② = Main port 2 (P)

③ = Main port 3 (T)

LS = Location shoulder

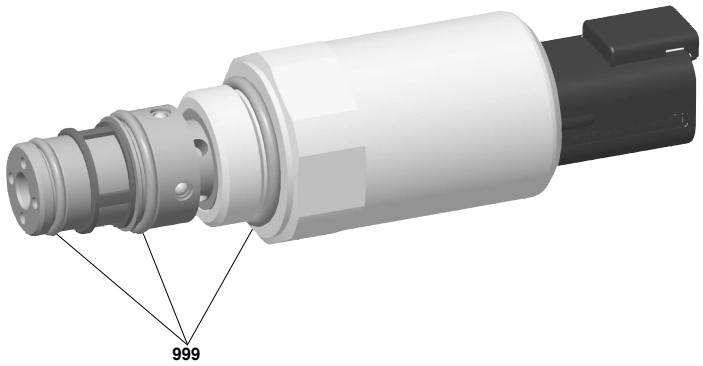
1) Depth of fit

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

6

Available individual components



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

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Rexroth
Bosch Group

Proportional pressure reducing valve, direct operated, rising characteristic curve

RE 64655/07.12 1/10
Replaces: 03.09

Type MHDRE 06 SK (high-performance)


H7475

Size 6
Component series 3X
Maximum control pressure 30 bar
Maximum flow 40 l/min

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Available individual components	10

Features

- Pilot valve
- Direct operated proportional pressure reducing valve for reducing system pressures
- As cartridge valve
- Mounting cavity R/MHDRE 06
- Suitable for mobile applications
- Actuation 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	06	S	K	3X/		A			V	*

Proportional pressure reducing valve, direct operated

Size 6 **= 06**

Rising characteristic curve **= S**

Screw-in cartridge valve **= K**

Component series 30 to 39 **= 3X**
(30 to 39: unchanged installation and connection dimensions)

Maximum control pressure 18 bar **= 18**

Maximum control pressure 20 bar **= 20**

Maximum control pressure 26 bar **= 26**

Maximum control pressure 30 bar **= 30**

Proportional solenoid, wet-pin **= A**

[1] Mating connectors (separate order) see RE 08006

Nominal voltage

G12 = DC 12 V

G24 = DC 24 V

Electrical connection [1]

K4 = Without mating connector with connector DIN EN 175301-803

K40 = Without mating connector with connector DT 04-2PA (Deutsch plug)

C4 = Wthout cable socket with connector AMP Junior Timer

Seal material

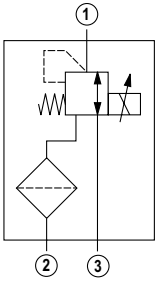
V = FKM seals
(other seals at request)
Attention!
Observe compatibility of seals with the hydraulic fluid used!

Further information in the clear text

Standard types

Type	Material number 12 V	24 V
MHDRE 06 SK3X/18AG .. K40V	R901220628	R901156353
MHDRE 06 SK3X/20AG .. K40V	R901150864	R901220641
MHDRE 06 SK3X/26AG .. K40V	R901220722	R901220719
MHDRE 06 SK3X/30AG .. K40V	R901220724	R901220723

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 06 SK is a direct operated screw-in cartridge valve in 3-way design. It reduces the control pressure (main port ①) proportionally to the solenoid current and regarding its function is largely independent of the inlet pressure (main port ②).

With command value 0 and/or in the event of a power failure, the pressure is automatically reduced to minimum. Operation is effected by a proportional solenoid. The interior of the solenoid is connected with main port ③ and filled with hydraulic fluid.

By means of these valves, the system pressure can be continuously reduced depending on the electrical command value. The valve is suitable for controlling couplings, pumps, and directional valves as well as for the use in proportional pilot controls (particularly in the mobile area).

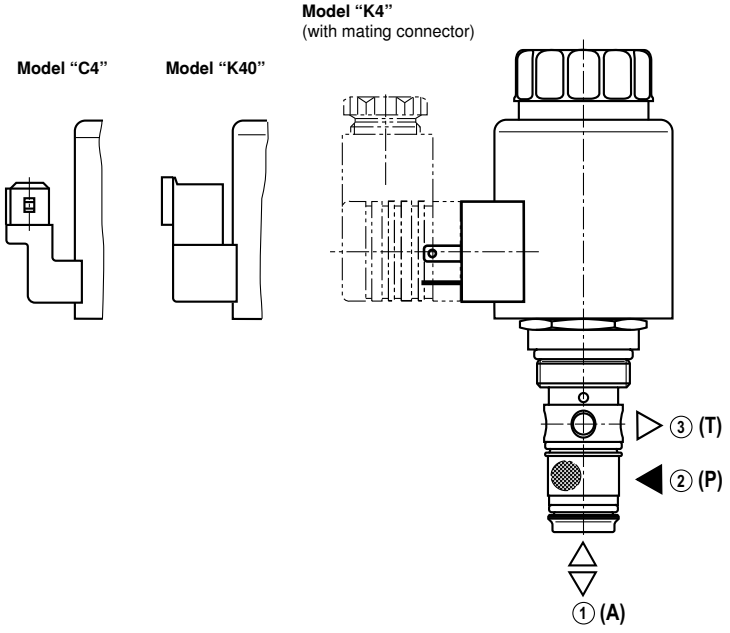
Basic principle

The valve regulates the pressure in main port ① according to the current at the solenoid. Model "S" means rising characteristic curve, i.e. increasing current results in increasing pressure (see characteristic curves, page 6 and 7).

The proportional solenoid converts the electric power into mechanical force that - via the armature - acts on the spool. The spool controls the connection between the main ports.

☞ **Note!**

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



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

6

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

general

Weight	kg	0.7
Installation position		Optional – if it is ensured that no air can collect in front of the valve. Otherwise, we recommend suspended installation of the valve.
Ambient temperature range	°C	See “admissible working range” page 5
Storage temperature range	°C	–40 to +80

Environmental tests:

Salt spray test according to ISO 9227	h	720 (NSS test)
Surface protection of solenoid		Coating according to DIN 50962-Fe//ZnNi with thick film passivation

hydraulic

Maximum control pressure	– Main port ①	bar	18; 20; 26; 30
Maximum inlet pressure	– Main port ②	bar	100
Maximum backpressure	– Main port ③	bar	At zero pressure (max. 100 bar, arising tank pressures are added up to the control pressure (main port ①)
Maximum flow		l/min	See characteristic curves on page 6
Maximum leakage	– Main port ③	ml/min	120 (50 bar in ②; I = 0 mA, 46 cSt)
Maximum pilot oil		ml/min	120 (50 bar in ②; $I = I_{max}$, 46 cSt)
Hydraulic fluid			Mineral oil (HL, HLP) according to DIN 51524; quickly biodegradable hydraulic fluids according to VDMA 24568 (also see RE 90221); HFD-R (phosphate ester); other hydraulic fluids at request
Hydraulic fluid temperature range		°C	–40 to +120
Viscosity range		mm^2/s	5 to 400
Max. admissible degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			Class 20/18/15 [1]
Hysteresis (within tolerance band)		bar	≤ 1.5 (control pressure 18; 20 bar) ≤ 2.0 (control pressure 26; 30 bar)
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
Strainer element at the main port ② (P)		µm	250

[1] The cleanliness classes specified for the components must be complied with in hydraulic systems. Efficient filtration prevents malfunctions and simultaneously increases the service life of the components.

For the filter selection, see www.beschrexroth.com/filter

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

electric

Supply voltage		V	12 DC	24 DC
Maximum control current		A	1.45	0.7
Coil resistance at 20 °C		Ω	5	22.5
Duty cycle [2]		%	100	
Maximum coil temperature [3]		°C	185	
Protection type according to VDE 0470-1 (DIN EN 60529), DIN 40050-9	– Model “K4”		IP 65 (with mating connector mounted and locked)	
	– Model “C4”		IP 66 (with mating connector mounted and locked)	
			IP 69K (with Rexroth mating connector, material no. R901022127)	
	– Model “K40”		IP 69K (with mating connector mounted and locked)	
Chopper frequency (recommended) [4]		Hz	150	
Control electronics [5]			Control device RA, see RE 95230 Control device RC, see RE 95200	
Rating according to VDE 0580				

[2] In case of use in heights of more than 2,000 m above sea level, we recommend consulting the manufacturer.

[3] 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!

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

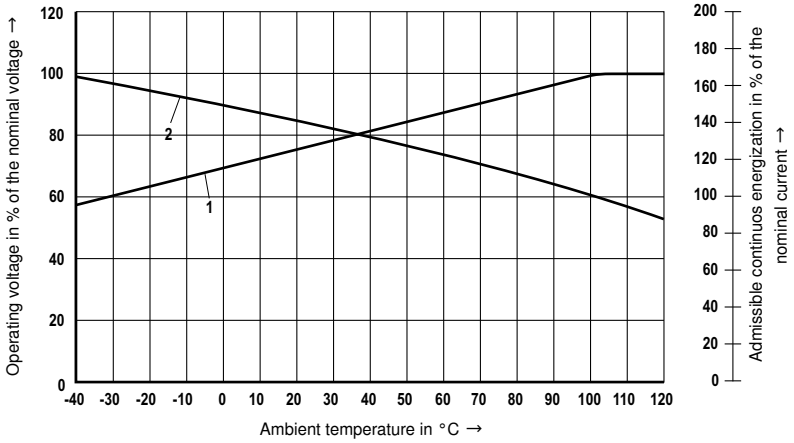
[5] Separate order, see RE 30116

☞ **Note!**

- The technical data was determined at a viscosity of v = 46 mm²/s (HLP46; 40°C).
- You can find more information on using the hydraulic products of Rexroth in the data sheet RE 64020-B, “Hydraulic valves for mobile applications - General information”.

Admissible working range

Admissible working range depending on the ambient temperature

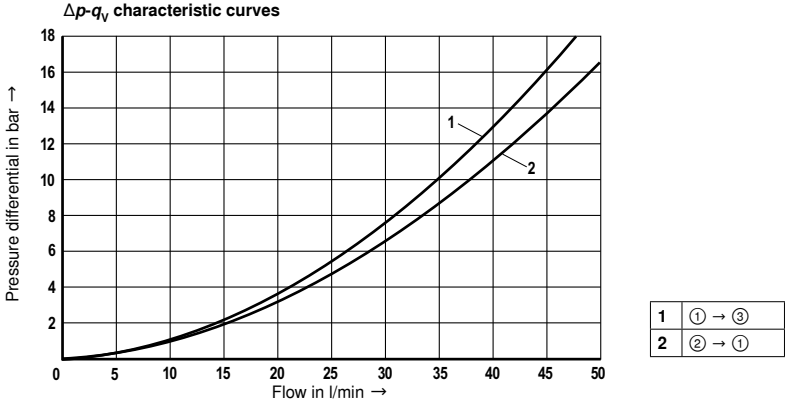


1 Required operating voltage in % of the nominal voltage

2 Admissible continuous energization in % of the nominal current

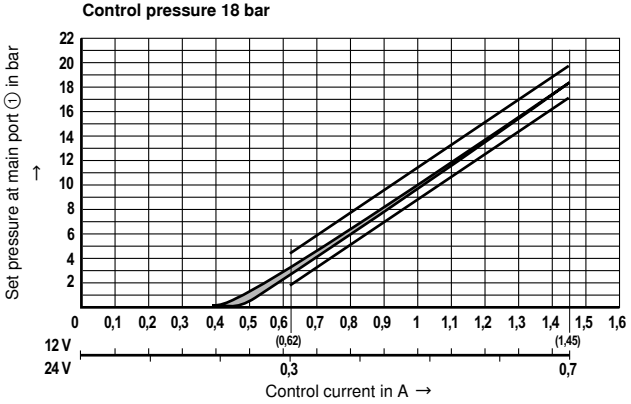
6

Characteristic curves (measured with HLP46, ϑ_{Oil} = 40 °C ± 5 °C)



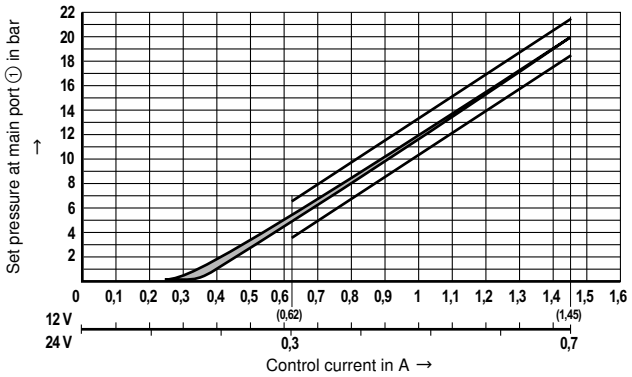
1	① → ③
2	② → ①

Characteristic curves with tolerance band (measured with HLP46, ϑ_{Oil} = 40 °C ± 5 °C)

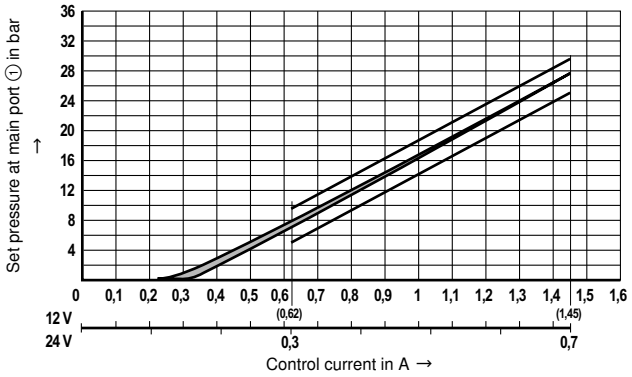


Characteristic curves with tolerance band (measured with HLP46, ϑ_{Oil} = 40 °C ± 5 °C)

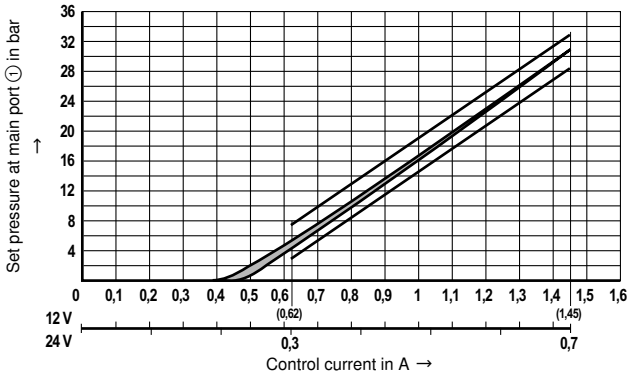
Control pressure 20 bar



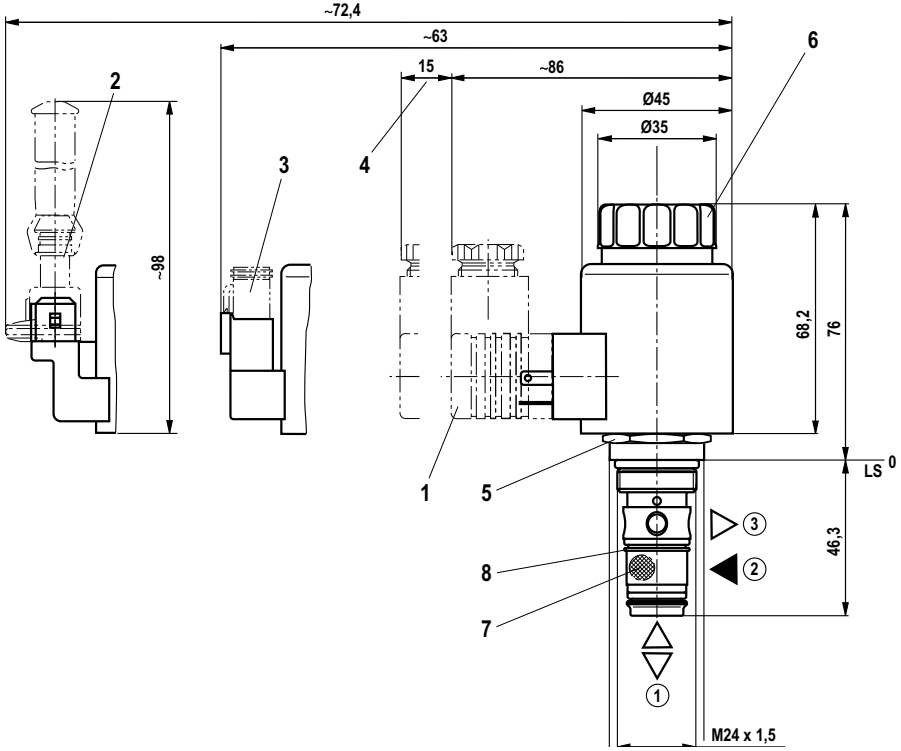
Control pressure 26 bar



Control pressure 30 bar



Unit dimensions (dimensions in mm)



1 Mating connector for connector “K4” (separate order, see RE 08006)

2 Mating connector for connector “C4” (separate order, see RE 08006)

3 Mating connector for connector “K40” (separate order, see RE 08006)

4 Space required for removing the mating connector

5 Hexagon 28 A/F; tightening torque $M_T = 10^{+2}$ Nm

6 Solenoid nut, tightening torque $M_T = 5^{+1}$ Nm

7 Strainer element; when mounting the valve, make sure that the strainer element is in the correct position (resting against item 8)!

8 Collar

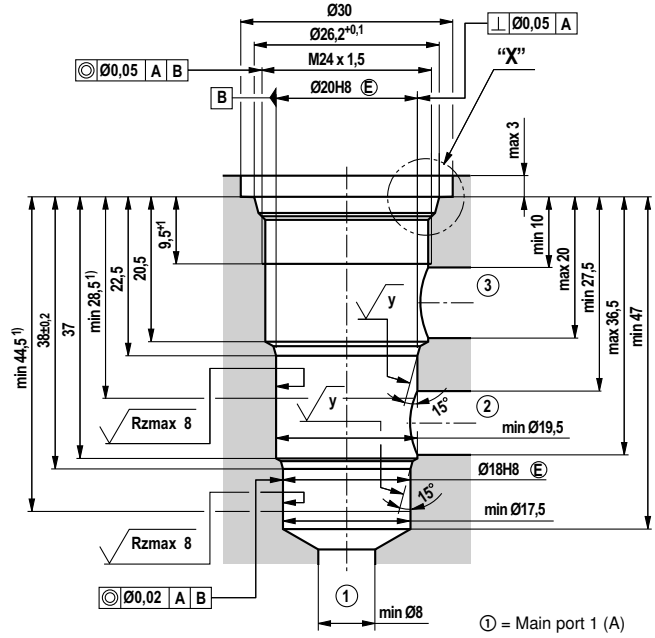
① = Main port 1 (A)

② = Main port 2 (P)

③ = Main port 3 (T)

LS = Location shoulder

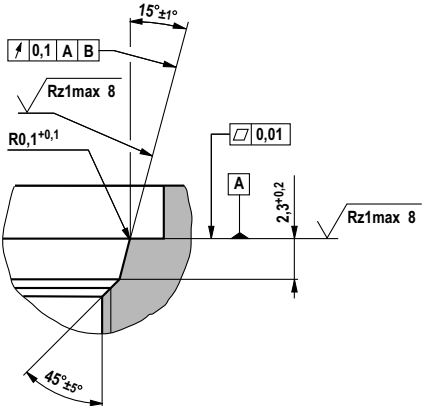
Mounting cavity R/MHDRE 06; 3 main ports (dimensions in mm)



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

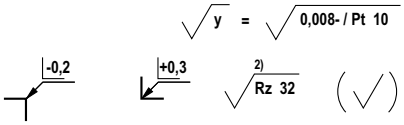
1) Depth of fit
2) Visual inspection

Detail "X"



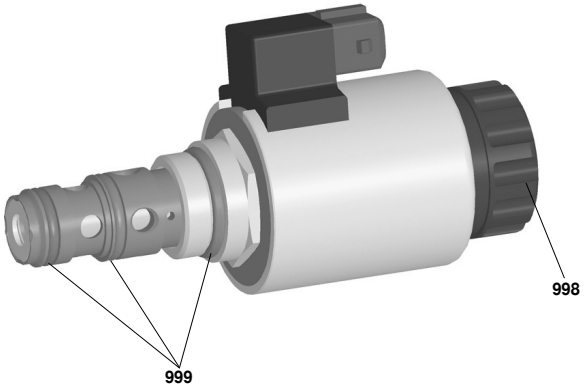
Standards:

Workpiece edges	DIN ISO 13715
Form and position tolerance	DIN EN ISO 1101
General tolerances for chip-producing processes	DIN ISO 2768-mK
Tolerance	DIN ISO 8015
Surface quality	DIN EN ISO 1302



6

Available individual components



Item	Designation	Material no.
998	Nut GZ45-01V BG	R961004245
999	Seal kit of the valve	R961003854

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RE 58 032/04.99

Replaces: 03.98

Proportional pressure reducing valve Type FTDRE 2 K

Nominal size 2
Series 3X
Maximum control pressure 18 bar
Maximum operating pressure 100 bar
Flow 2 L/min at Δp = 7 bar



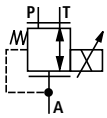
F 95 003

Type FTDRE 2 K3X/18A…C4V

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Contents	Page
Ordering details	1
Symbol	1
Function, section	2
Technical data	2 and 3
Characteristic curves	3
Unit dimensions	4

Symbol



Ordering details

FTDRE	2	K	3X/	18	A			V	*

Proportional pressure reducing valve, non standardised design, electrical actuation

Nominal size 2 **= 2**

Cartridge valve **= K**

Series 30 to 39 **= 3X**
(30 to 39: unchanged installation and connection dimensions)

Settable pressure at port A maximum 18 bar **= 18**

Solenoid wet (switches in the pressure fluid) **= A**

Nominal voltage 12 V **= G12**
Nominal voltage 24 V **= G24**

Further details in clear text (special versions on request)

V = FKM seals (for compatible pressure fluids see technical data on page 2)

Electrical connections

C2 = Terminal with plug type SS 2P (ITT Cannon), with hand override

C4 = [1] Plug, 2-pin, type Junior Timer (AMP)

[1] The hand override can only be actuated after the plug has been removed.

6

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Function, section

The proportional pressure reducing valve type FTDRE 2 K… reduces the pressure in port A in proportion to the solenoid current. It operates virtually independently from the pressure in port P.

The valve is suitable for the control of directional valves and hydraulic cylinders, particularly those in the mobile and automotive technology sectors.

The hydraulic pressure in port A acts on a spool (1) against the solenoid force.

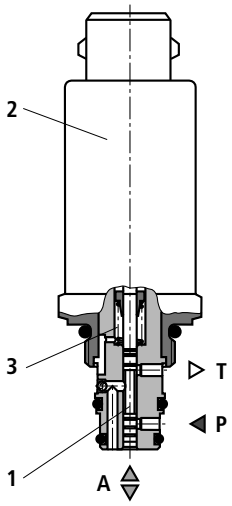
With the proportional solenoid (2) de-energised a return spring (3) at the spool (1) switches to the connection from A to T.

The valve can be supplied with the nominal voltages of 12 V and 24 V. Operation is only permissible with a suitable amplifier (see technical data).

⚠ Attention!

For mains operation an isolating transformer with separated windings is required.

For optimum operation the solenoid must be filled with the pressure fluid (also see technical data "Installation").



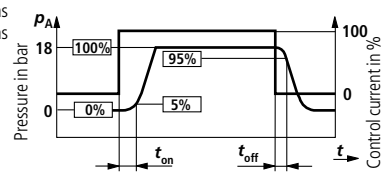
Technical data (for applications outside these parameters please consult us!)

General

Weight	kg	approx. 0.16
Installation		optional, preferably with the electrical connection hanging downwards, (when the valve is horizontally mounted or if the electrical connection is pointing upwards then a minimum back pressure p_T has to be created to ensure that the valve stays full of oil)
Ambient temperature range	°C	– 30 to + 120
Solenoid surface protection		coating to DIN 50 961-Fe/Zn 10C
Salt spray test to DIN 50 021	h	144

Hydraulic

Set pressure (p_A)		see tolerance range on page 3
Input pressure (p_P)	bar	≤ 100
Back pressure (pressure p_T at port T)	bar	zero pressure (valve pressure tight up to 30 bar) attention: back pressure p_T increases the set pressure p_A, even with current $I = 0$
Flow details valid for BP Dexron II and + 80 °C – Flow (Δp = 7 bar) – Max. leakage flow at port T at p_P = 100 bar and control current $I = 0$ – Max. control flow at p_P = 100 bar, $q_{V\,A} = 0$ and control current $I = I_{max}$	 L/min cm³/min cm³/min	 ≥ 2 (max. permitted 7.5) ≤ 80 ≤ 350
Stepped response with control current alteration (for test set-up see page 3)	t_{on} t_{off}	max. 25 ms max. 20 ms
Pressure fluid		mineral oils to DIN 51 524, ATF Dexron II, Fiat Tutela Multi F
Pressure fluid temperature range	°C	– 30 to + 80
Degree of contamination		maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We, therefore, recommended a filter with a minimum retention rate of $\beta_{10} \geq 75$.



Technical data (for applications outside these parameters please consult us!)

Electrical

Voltage type		DC	
Amplifier nominal voltage	V	12	24
Max. control current	A	1.8	0.8
Coil resistance (20 °C)	Ω	2.4	12
Duty (with amplifier)	%	100	
Electrical connection		see ordering details	
Protection to DIN 40 050, part 9	– Solenoid – Electrical connection	IP 6K5 IP 6K5	
Chopper frequency (recommended) [1]	Hz	150	
Possible control electronics in plug-in amplifier housing [2] (separate order)		FTE 0011 (see RE 58 011); FTE 0012 (see RE 58 012); FTE 0015 (see RE 58 015); FTE 0016 (see RE 58 016); FTE 0018 (see RE 58 018); FTE 0019 (see RE 58 019)	
Possible control electronics as carrier rail module [2] (separate order)		VT 11008, VT 11009, VT 11017 and VT 11018 (see RE 29 762) Power supply modules: VT 11005 (12 V, see RE 29 732) VT 11006 (24 V, see RE 29 729)	

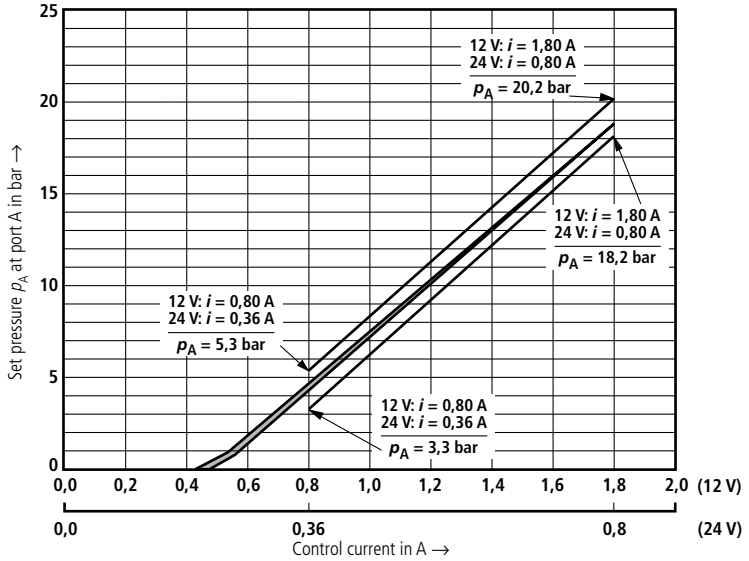
[1] The chopper frequency must be suited to the application. Please take the application temperature into account.

[2] The above mentioned control electronics type FTE… can be optionally operated with 12 V and 24 V. Thus the 12 V valve type may always be used independent from the supply voltage. When using the above mentioned control electronics types VT… the voltage must be considered.

Note:

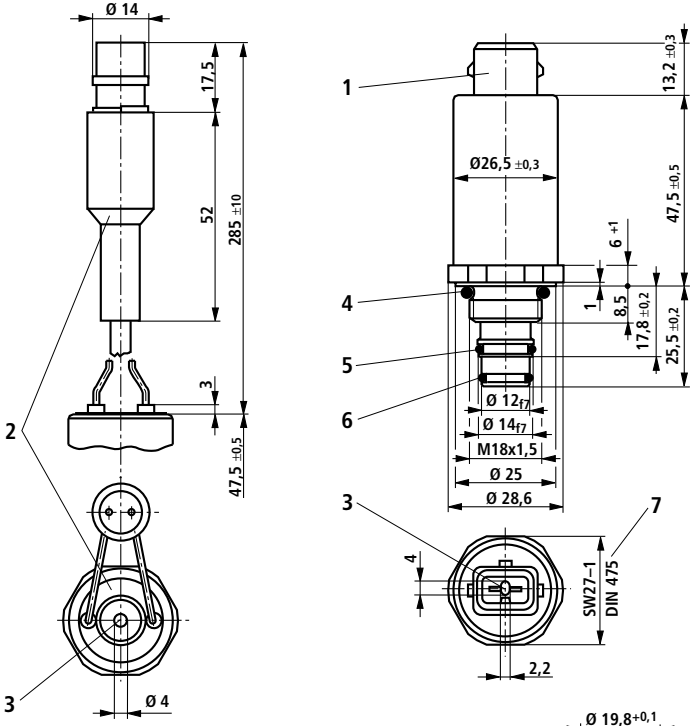
Further technical details (e.g. frequency response) on request.

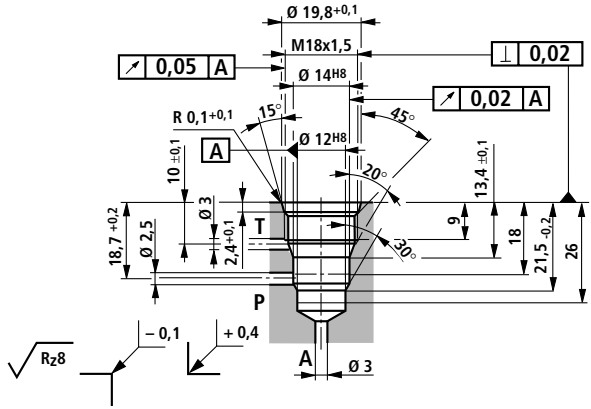
Characteristic curves with tolerance band



Amplifier:	FTE 0011	Test medium:	BP Dexron II
Chopper frequency:	f_C = 150 Hz	Test temperatuare:	ϑ = 50 °C
Installation position during testing:	horizontal	Dead volume at port A:	V = 135 mL
Inlet pressure:	p_P = 50 bar		

Unit dimensions (Dimensions in mm)





1 Version **C4**
2-pin plug, type Junior Timer (AMP)

2 Version **C2**
Terminal (AWG 18) with
2-pin plug, type SS 2P (ITT-Cannon)

3 Hand override
With version **C4** the hand override can only be actuated after the plug has been removed.

4 O-ring 15 x 2 (FKM)

5 O-ring 10.82 x 1.78 (FKM)

6 O-ring 9 x 1.5 (FKM)

7 Spanner flat 27A/F, M_A = 10 Nm + 5 Nm

8 Minimum depth of fit

Note:
For new designs these installation cavities must be used! For existing designs the installation cavity to RE 58 031 remains valid.

Required surface finish in the areas of fit and chamfer

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RE 58 038/04.99

Proportional pressure reducing valve Type FTDRE 4 K

Nominal size 4
Series 1X
Maximum control pressure 18 / 30 bar
Maximum operating pressure 210 bar
Flow 5 L/min at Δp = 7 bar

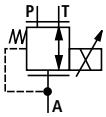


Type FTDRE 4 K1X/30A…C4V

Overview of contents

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Technical data	2 and 3
Characteristic curves	4
Unit dimensions	5

Symbol



Ordering details

FTDRE	4	K	1X/		A			V	*

Proportional pressure reducing valve, non standardised design, electrical actuation

Nominal size 4 = **4**

Cartridge valve = **K**

Series 10 to 19 = **1X**
(10 to 19: unchanged installation and connection dimensions)

Max. settable pressure at port A
18 bar = **18**
30 bar = **30**

Solenoid wet (switches in the pressure fluid) = **A**

Nominal voltage 12 V = **G12**
Nominal voltage 24 V = **G24**

Further details in clear text (special versions on request)

V = FKM seals (for compatible pressure fluids see technical data on page 2)

Electrical connections

C2 = Terminal with plug type SS 2P (ITT-Cannon), with hand override

C4 = [1] Plug, 2-pin, type Junior Timer (AMP)

[1] The hand override can only be actuated after the plug has been removed.

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Function, section

The proportional pressure reducing valve type FTDRE 4 K… reduces the pressure in port A in proportion to the solenoid current. It operates virtually independently from the pressure in port P.

The valve is suitable for the control of directional valves and hydraulic cylinders, particularly those in the mobile and automotive technology sectors.

The hydraulic pressure in port A acts on the spool (1) against the solenoid force.

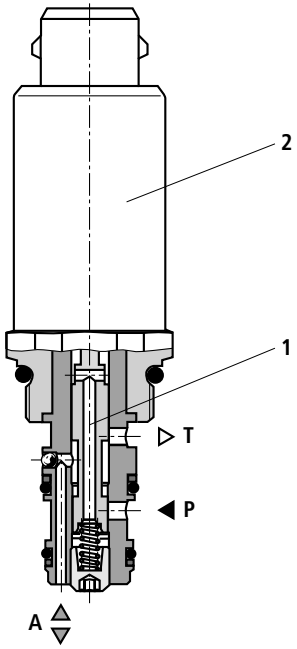
With the proportional solenoid (2) de-energised port P is closed and port A is connected to tank T.

The valve can be supplied with the nominal voltages of 12 V and 24 V. Operation is only permissible with a suitable amplifier (see technical data).

⚠ Note!

For mains operation an isolating transformer with separated windings is required.

For optimum operation the solenoid must be filled with the pressure fluid (also see technical data "Installation").



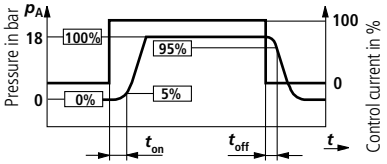
Technical data (for applications outside these parameters please consult us!)

General

Weight	kg	approx. 0.19
Installation		optional, preferably with the electrical connection hanging downwards, (when the valve is horizontally mounted or if the electrical connection is pointing upwards then a minimum back pressure p_T has to be created to ensure that the valve stays full of oil)
Ambient temperature range	°C	– 30 to + 120
Solenoid surface protection		coating to DIN 50 961-Fe/Zn 10C
Salt spray test to DIN 50 021	h	144

Technical data (for applications outside these parameters please consult us!)

Hydraulic

Control pressure (p_A) at port A		see tolerance band on page 4
Input pressure (p_P)	bar	≤ 210
Back pressure (pressure p_T at port T)	bar	zero pressure (valve pressure tight up to 30 bar) attention: back pressure p_T increases the set pressure p_A, even with current $I = 0$
Flow details valid for BP Dexron II and + 80 °C – Flow (Δp = 7 bar) – Max. leakage flow at port T at p_P = 210 bar and control current $I = 0$ – Max. control flow at p_P = 210 bar, $q_{V\,A} = 0$ and control current $I = I_{max}$	L/min cm³/min cm³/min	≥ 5 ≤ 150 ≤ 400
Stepped response with control current alteration (for test set-up see page 4)	t_{on} t_{off}	max. 40 ms max. 20 ms 
Pressure fluid		mineral oils to DIN 51 524, ATF Dexron II, Fiat Tutela Multi F
Pressure fluid temperature range	°C	– 30 to + 80
Degree of contamination		maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.

Electrical

Voltage type		DC	
Amplifier nominal voltage	V	12	24
Max. control current	A	1.8	0.8
Coil resistance (20 °C)	Ω	2.4	12
Duty (with amplifier)	%	100	
Electrical connection		see ordering details	
Protection to DIN 40 050, part 9 – Solenoid – Electrical connection		IP 6K5 IP 6K5	
Chopper frequency (recommended) [1]	Hz	200	
Possible control electronics in plug-in amplifier housing [2] (separate order)		FTE 0011 (see RE 58 011); FTE 0012 (see RE 58 012); FTE 0015 (see RE 58 015); FTE 0016 (see RE 58 016); FTE 0018 (see RE 58 018); FTE 0019 (see RE 58 019)	
Possible control electronics as carrier rail module [2] (separate order)		VT 11008, VT 11009, VT 11017 and VT 11018 (see RE 29 762) Power supply modules: VT 11005 (12 V, see RE 29 732) VT 11006 (24 V, see RE 29 729)	

[1] The chopper frequency must be suited to the application. Please take the application temperature into account.

[2] The above mentioned control electronics type FTE… can be optionally operated with 12 V and 24 V. Thus the 12 V valve type may always be used independent from the supply voltage. When using the above mentioned control electronics types VT… the voltage must be considered.

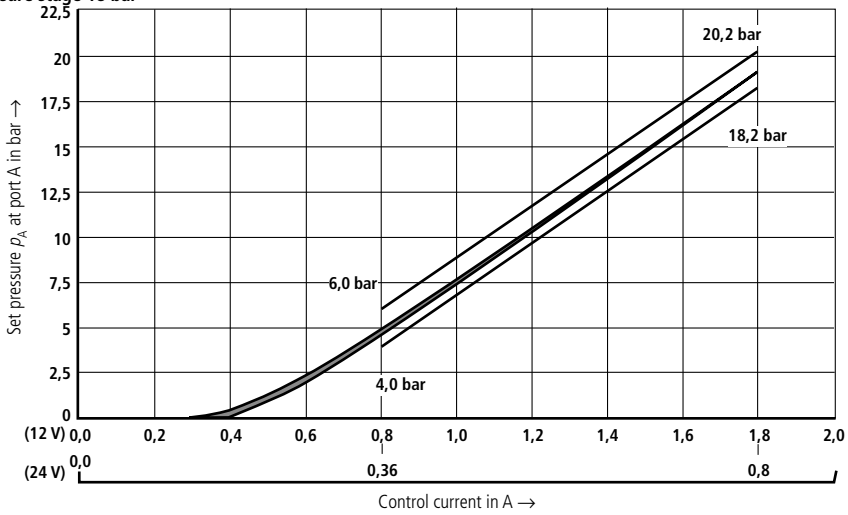
Note:

For technical details (e.g. frequency response) on request.

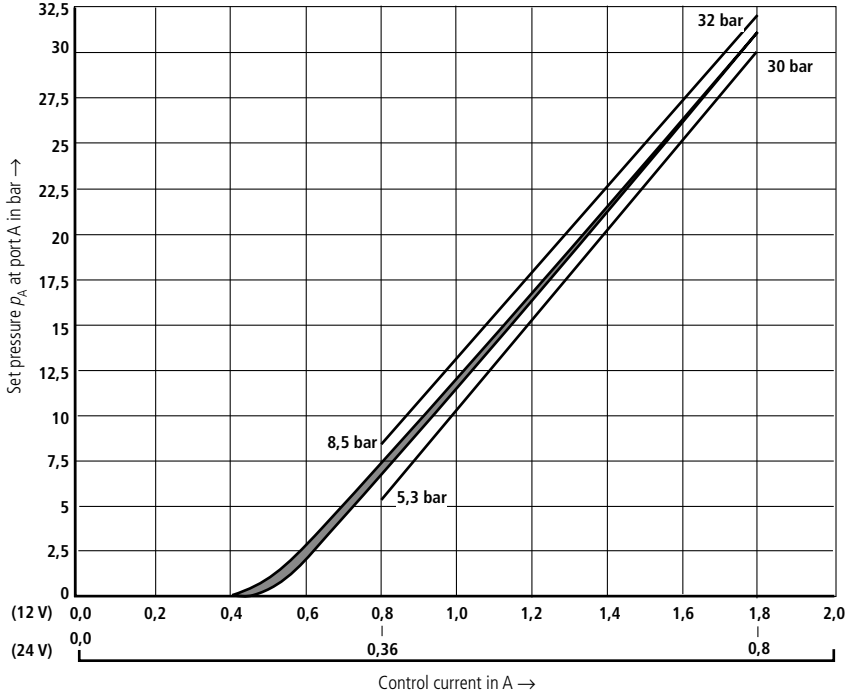
6

Characteristic curves with tolerance band

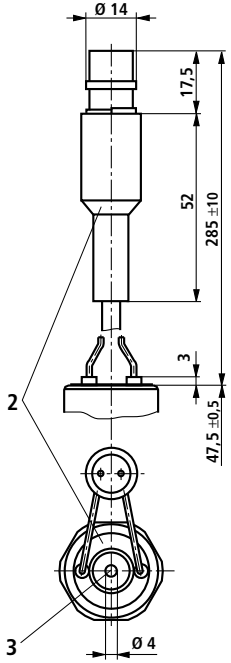
Pressure stage 18 bar

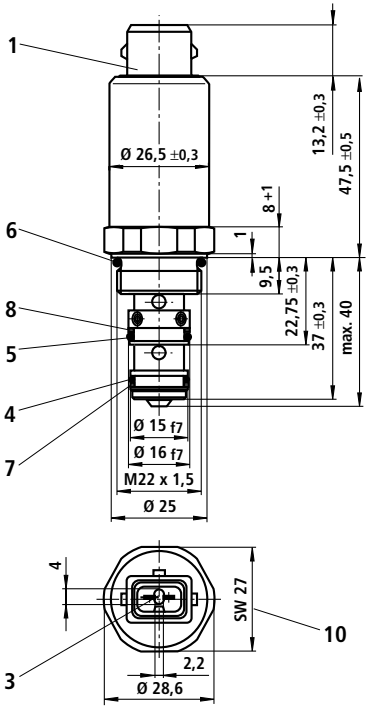


Pressure stage 30 bar



Amplifier:	FTE 0011	Test medium:	BP Dexron II
Chopper frequency:	f_C = 200 Hz	Test temperature:	ϑ = 50 °C
Installation position during testing:	horizontal	Dead volumn at port A:	V = 135 mL
Inlet pressure:	p_P = 50 bar	Hysteresis:	max. 5 %





1 Version **C4**
2-pin plug, type Junior Timer (AMP)

2 Version **C2**
Terminal (AWG 18) with
2-pin plug, type SS 2P (ITT-Cannon)

3 Hand override
With version **C4** the hand override can only be actuated after the plug has been removed.

4 O-ring 12 x 1.5 (FKM)

5 O-ring 12.42 x 1.78 (FKM)

6 O-ring 19.4 x 2.1 (FKM)

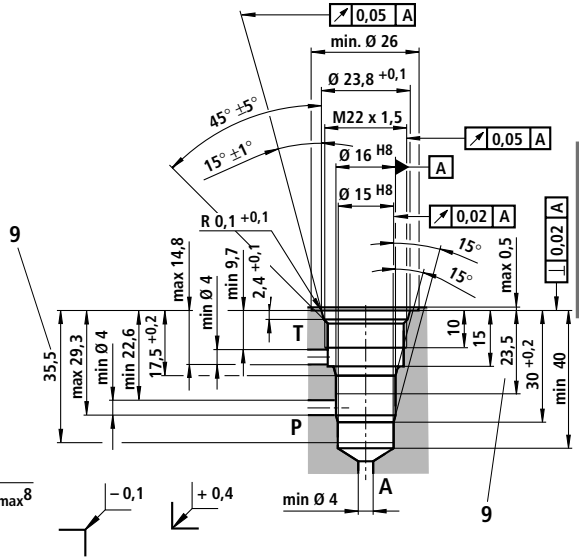
7 Back-up ring 16 x 13.4 x 1

8 Back-up ring 15 x 12.8 x 1

9 Minimum depth of fit

10 Spanner flat 27A/F, M_A = 12 Nm + 5 Nm

Required surface finish in the areas of fit and chamfer



Notes

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Rexroth
Bosch Group

3/2 Directional valve with solenoid actuation

RE 58 007/06.03 1/4
replaces: 03.96

Type FTWE 2 K



Size 2
Series 3X
Operating pressure max. 100 bar
Volume flow max. 2 L/min

Content analysis

Content	Page
Characteristics	1
Ordering code	2
Symbols	2
Section	2
Technical Data	3
Operating Curves	3
Unit Dimensions	4

Characteristics

- Directly actuated directional spool valve with solenoid actuation
- Screw-in cartridge
- Minimised installation dimensions
- Wet pin DC solenoid
- Electrical connections:
  Plug, 2 pin, type “Junior Timer” (AMP) or flexable lead with plug
- Hand override
- Designed for use in vehicles and mobile machines
- Can be supplied for use on 12 V or 24 V supplies

⚠ **Attention:**

- For mains power operation, the valve must be supplied via an isolating transformer with separate windings

6

Ordering Code

FTWE	2	K	C	3X/100	A			V	*

Directional valve,
to a non-standardised design,
electrically actuated

Size 2 **= 2**

Screw-in cartridge **= K**

Switching characterisics (others on request) **= C**

Series 30 to 39 **= 3X**
(30 to 39: unchanged instalation and connection dimensions)

Nominal pressure, max. 100 bar **= 100**

Wet pin solenoid **= A**

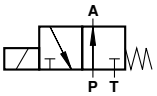
Nominal voltage 12 V **= G12**
Nominal voltage 24 V **= G24**

Electrical connections

Flexable lead with plug type SS 2P (ITT-Cannon), with hand override **= C2**
Plug, 2 pin type "Junior Timer" (AMP) 2 pin plug [1] **= C4**

[1] The hand override can only be used after the plug has been removed!

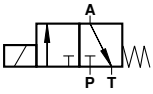
Further details in clear text
e. g. special designs:
– FTWE 2 KU3X/…
Ports P and T interchanged
when compared to the sectional drawing

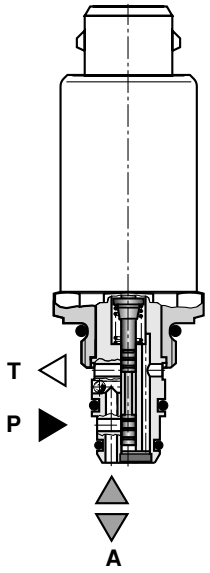


(further special designs
on request; special
installationdrawings are required
for all special designs)

V = FKM seals, for suitable fluids see technical data on page 3

Symbol, Section



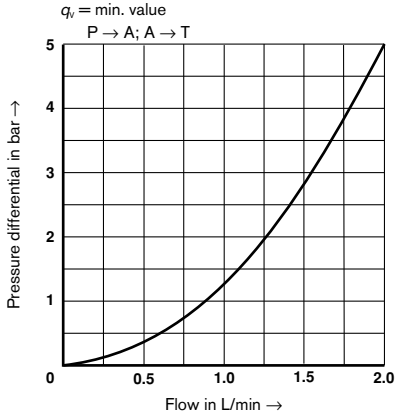


Technical Data (For applications outside these parameters, please consult us !)

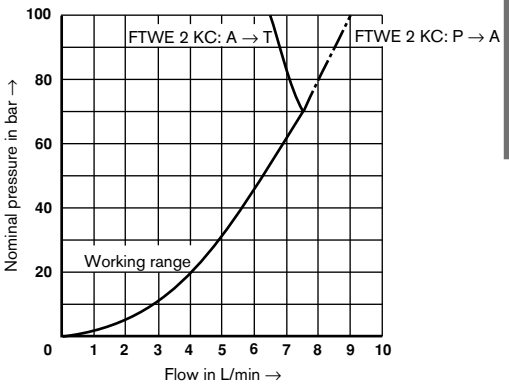
General				
Installation position			optional	
Ambient temperature range		°C	– 30 to + 80	
Solenoid surface protection			to DIN 50 961-Fe/Zn 8C	
Salt spay/mist test to DIN 50 021		hours	72	
Weight		kg	approx. 0.19	
Hydraulic				
Nominal pressure	– Ports P, A	bar	100 (static), higher inlet pressures on request	
	– Port T	bar	30 (static)	
Flow rate at $\Delta p = 5$ bar		L/min	2	
Maximum leakage flow at $\Delta p = 100$ bar, valid for $\nu = 11$ mm²/s at $\vartheta = 80$ °C		cm³/min	≤ 65	
Pressure fluid			Mineral oil to DIN 51 524 ATF Dexron II Fiat Tutela Multi F	
Pressure fluid - temperature range		°C	– 30 to + 80	
Degree of fluid contamination			Maximum permissable degree of contamination of the fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.	
Electrical				
Type of supply			DC	
Nominal voltage		V	12	24
Power requirement at 20 °C		W	14.4	14.4
Coil resistance R_{20}		ohms	10	40
Duty cycle		%	100	
Switching time	– t_{on}	ms	≥ 20	
	– t_{off}	ms	≥ 30	
Insulation to DIN 40 050	– Solenoid		IP 6K5	
part 9	– Electrical connection		IP 6K5	
Switching frequency		Hz	5	
Service life			$5 \cdot 10^6$ operations	
Possible switching amplifiers in the plug housing (must be ordered separately)			FTE 0010… to RE 58 010 FTE 0014… to RE 58 014 FTE 0017… to RE 58 017	

Characteristic curves (measured at $\nu = 27$ mm²/s at $\vartheta = 50$ °C)

Δp-q_v characteristic curve

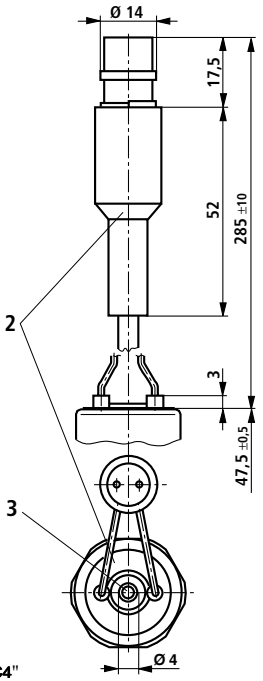


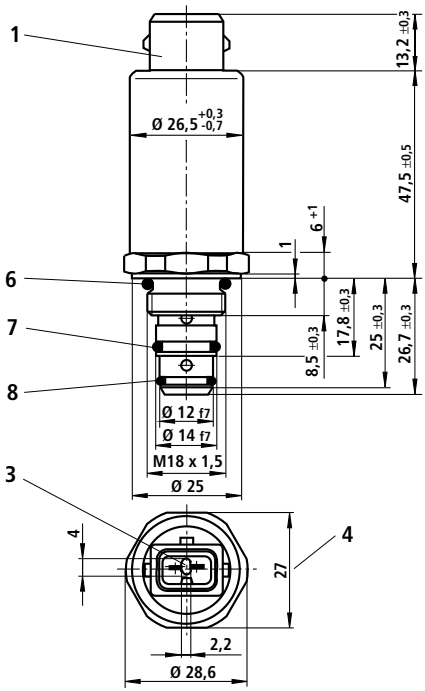
Performance limits



6

Unit Dimensions (Dimensions in mm)





1 Model "**C4**"
2 pin plug
type "Junior timer" (AMP)

2 Model "**C2**"
flexable lead (AWG 18) with protective conduit (colour black) and 2 pin plug
type SS 2P (ITT-Cannon)
with cap connector

3 Hand override

4 Spanner size 27 A/F,
Tightening torque
$M_A = 10$ Nm + 5 Nm

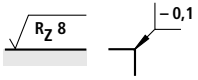
5 Depth of fit

6 O-ring 15 x 2

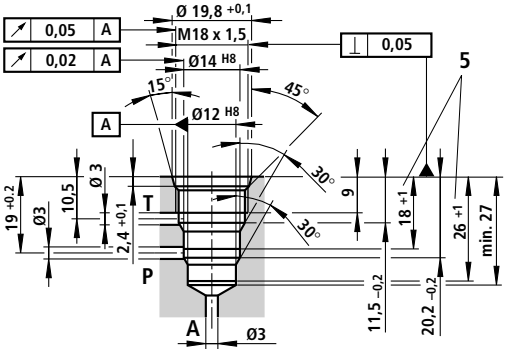
7 O-ring 10.82 x 1.78

8 O-ring 9 x 1.5

Required surface finish in fit areas and chamfers



Installation bore



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RE 58 008/06.99

Replaces: 07.96

3/2-way directional valve
Type FTWE 4 K

Nominal size 4
Series 1X
Maximum operating pressure 210 bar
Flow 7 L/min at Δp = 5 bar



F 95 014

Type FTWE 4 KC1X/210A…C4V

Overview of contents

Contents	Page
Features	1
Ordering details	1
Symbol	2
Function, section	2
Technical data	2 and 3
Characteristic curves	3
Unit dimensions	4

Features

- Direct operated directional spool valve with solenoid actuation
- Cartridge valve
- Minimised installation size
- Wet pin DC solenoid
- Electrical connection: plug, 2-pin type Junior Timer (AMP) or connection wire with plug
- Hand override
- Designed for use in vehicles, mobile applications
- The valve is supplied for the nominal voltages of 12 V or 24 V

⚠ Attention!

For mains operation an isolating transformer with seperated windings is required!

Ordering details

FTWE	4	K	C	1X	/210	A			V	*

Directional valve, Non-standardised design, Electrically actuated

Nominal size 4 **= 4**

Cartridge valve **= K**

Switching characteristic (others on request) **= C**

Series 10 to 19 **= 1X**
(10 to 19: unchanged installation and connection dimensions)

Nominal pressure max. 210 bar **= 210**

Solenoid wet (switches in the pressure fluid) **= A**

Nominal voltage 12 V **= G12**
Nominal voltage 24 V **= G24**

Further details in clear text (special versions on request)

V = FKM seals (for suitable pressure fluids see technical data on page 2)

Electrical connections

C2 = connection wire with plug type SS 2P (ITT-Cannon), with hand override

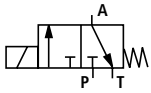
C4 = [1] plug, 2-pin, type Junior Timer (AMP)

[1] The hand override can only be actuated after the plug has been removed.

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Symbol



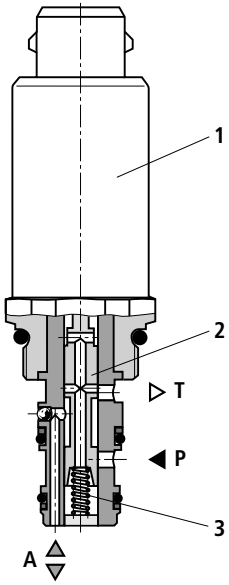
Function, section

The 3/2-way directional valve type FTWE 4 KC controls the start and stop of a flow.

With the solenoid (1) de-energised the control spool (2) is held in its initial position by the return spring (3).

The solenoid force acts on the control spool (2) and pushes it out of its normal position. The flow position from P to A is thereby opened.

The valve is particularly suitable for use in the mobile hydraulic and automotive technology branches.



Technical data (for applications outside these parameters, please consult us!)

General

Weight	kg	approx. 0.19
Installation		optional
Ambient temperature range	°C	– 40 to + 80
Solenoid surface protection		coating to DIN 50961-Fe/Zn 10C
Salt spray / mist test to DIN 50 021	h	72

Hydraulic

Max. pressure	Ports P, A	bar	210 (static), pressure peaks up to 315 bar are permissible
	Port T	bar	30 (static)
Flow details are valid for BP Dexron II and + 80 °C – Flow (Δp = 5 bar)		L/min	≥ 7
Pressure fluid			mineral oil to DIN 51 524, BP Dexron II, Fiat Tutela Multi F
Pressure fluid temperature range		°C	– 40 to + 80
Degree of contamination			Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.

Technical data (for applications outside these parameters, please consult us!)

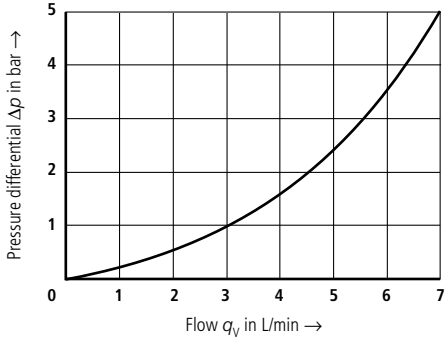
Electrical

Voltage type			DC	
Amplifier nominal voltage		V	12	24
Power consumption (20 °C)		W	14.4	14.4
Coil resistance (20 °C)		Ω	10	40
Duty		%	100	
Switching time	t_{on}	ms	≤ 30	
valid at ϑ = 50 °C and ν = 27 mm²/s	t_{off}	ms	≤ 25	
Electrical connections			see ordering details	
Protection to DIN 40 050, part 9	– Solenoid – Electrical connection		IP 6K5 IP 6K5	
Switching frequency		Hz	5	
Service life			1 x 10^7 switchings	
Possible control electronics in the plug amplifier housing (separate order)			switching amplifier, type FTE 0010 (see RE 58 010) switching amplifier, type FTE 0014 (see RE 58 014) switching amplifier, type FTE 0017 (see RE 58 017)	

Characteristic curves (measured with BP Dexron II)

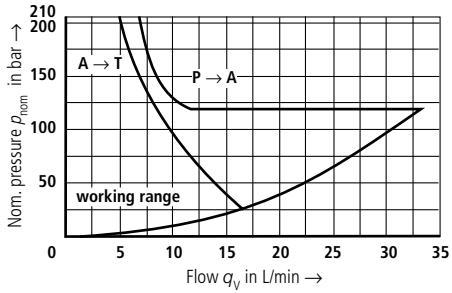
Δp-q_V-characteristic curve (measured at 80 °C)

q_V = minimum value



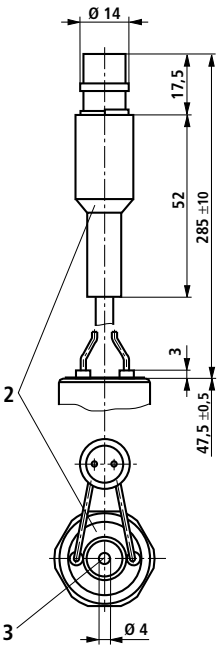
Performance limit (measured at 50 °C)

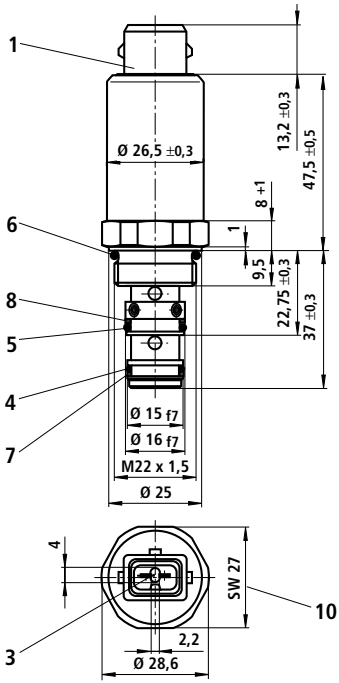
The switching performance limit was obtained with the solenoids at their operating temperature and with a 10 % under voltage.



6

Unit dimensions (Dimensions in mm)





1 Version **C4**
plug, 2-pin, type Junior Timer (AMP)

2 Version **C2**
connection wire (AWG 18) with 2-pin plug, type SS 2P (ITT-Cannon)

3 Hand override
with the **C4** version the hand override can only be actuated after the plug has been removed.

4 O-ring 12 x 1.5 (FKM)

5 O-ring 12.42 x 1.78 (FKM)

6 O-ring 19.4 x 2.1 (FKM)

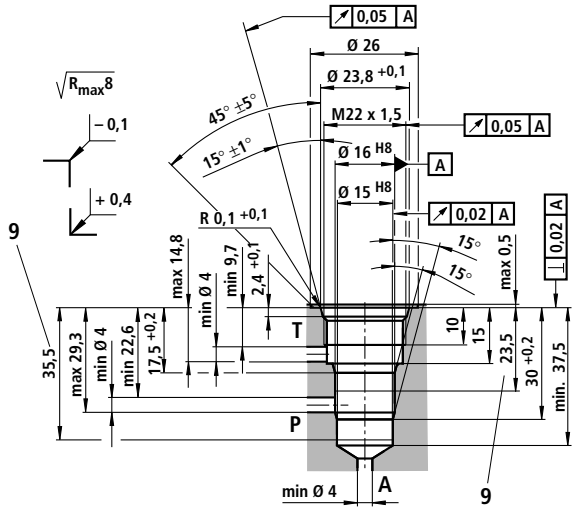
7 Back-up ring 15 x 12.8 x 1

8 Back-up ring 16 x 13.4 x 1

9 Minimum depth of fit

10 Spanner size 27 A/F,
M_A = 15 Nm + 5 Nm

Required surface finish in the areas of fits and chamfers



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Remote Control Manifolds

Designation	Description	Data sheet	Pages
Remote control manifold	HICFP	RE 64662	1207

Rexroth
Bosch Group

Remote control manifold

RE 64662/02.10 1/8

Type HICFP


H7653

Sizes 02, 04 and 06
Component series 1X
Maximum control pressure 30 bar
Maximum flow 40 l/min

Table of contents

Content	Page
Features	1
Ordering code	2
Technical data	2, 3
Unit dimensions	4, 5
Circuit example	6
Available individual components	7

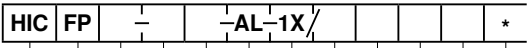
Features

- Cost-effective solution variant for electrohydraulic proportional controls of mobile control blocks
- Separate accommodation of the electrohydraulic units in the accessible and protected area of the machine
- Easy retrofitting of hydraulic and electric control
- Combines high performance and cost-effective design
- 3 sizes
- Different valve variants
- Can be adapted without any piping due to optional flange face with pilot oil, accumulator, filter and additional functions

6

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

Ordering code



Hydraulic Integrated Circuit

Remote control manifold

Size 02 **= 02**
Size 04 **= 04**
Size 06 **= 06**

Size
(Number of proportional pressure reducing valves)
1 Cartridge valve **= 1**
2 Cartridge valves **= 2**
4 Cartridge valves **= 4**
6 Cartridge valves **= 6**

Type of connection
Threaded connection, flat-sealing according to DIN 3852-2 **= A**
Threaded connection, taper-sealing according to ISO 228-1 **= B**
Flange connection, ③ flat-sealing according to DIN 3852-2 **= C**

Manifold material
Aluminum **= AL**

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

Valve fitting
XX = none
DR = Proportional pressure reducing valve Type MHDRE

18 [3] **=** Maximum control pressure 18 bar
30 = Maximum control pressure 30 bar

Nominal voltage
G12 = DC 12 V
G24 = DC 24 V

Electrical connection [1]
K4 [2] **=** without mating connector with connector DIN EN 175301-803
K40 = without mating connector with connector DT 04-2PA (Deutsch plug)
C4 [2] **=** without mating connector with connector AMP Junior-Timer

Further details in the plain text

[1] Mating connectors (order separately) see data sheet 08006
[2] Only size 06
[3] Only sizes 02 and 06

① = Main port 1 (P)
② = Main port 2 (T)
③ = Main port 3 (A1, B1, A2, ...)

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

general

Size		Size 02	Size 04	Size 06
Weight	kg	See table page 5		
Installation position		Any - if it is ensured that no air can collect upstream the valves. Otherwise, we recommend installation of the remote control manifold in a position with suspended valves.		
Ambient temperature range	°C	See “voltage tolerance” in the data sheets of the cartridge valves [1]		
Storage temperature range	°C	–30 to +80		

[1] – Type MHDRE 02 according to data sheet 64658
– Type MHDRE 04 according to data sheet 64666
– Type MHDRE 06 according to data sheet 64655

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

hydraulic

Size			Size 02	Size 04	Size 06
Maximum control pressure	– Main port ③	bar	18; 30		
Maximum input pressure	– Main port ①	bar	50	100	100
Maximum backpressure	– Main port ②		Recommended at zero pressure (occurring tank pressures are added up to the control pressure of the cartridge valves); at zero pressure up to a maximum of:		
		bar	3	100	100
Maximum flow		l/min	See data sheets of the cartridge valves [1]		
Hydraulic fluid			Mineral oil (HL, HLP) according to DIN 51524		
Hydraulic fluid temperature range		°C	–30 to +110	–30 to +110	–40 to +120
Viscosity range		mm^2/s	5 to 400		
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			See data sheets of the cartridge valves [1]		
Hysteresis (within tolerance band)		bar	See data sheets of the cartridge valves [1]		
Step response		ms	See data sheets of the cartridge valves [1]		
Repeatability		%	See data sheets of the cartridge valves [1]		
Load cycles	– Valves		10 million		
	– Flange		2 million		
Strainer element at the main port ① of the cartridge valves		μm	160	160	250

electrical

Size			Size 02	Size 04	Size 06	Size 02	Size 04	Size 06
Supply voltage		V	12 DC			24 DC		
Maximum control current		A	1.7	1.7	1.45	0.95	0.95	0.7
Coil resistance at 20 °C		Ω	3.5	3.5	5	11.1	11.1	22.5
Duty cycle (ED) [2]		%	100					
Maximum coil temperature [3]		°C	185					
Protection class according to VDE 0470-1 (DIN EN 60529), DIN 40050-9	– Version “K4”		IP 65 (with mating connector mounted and locked)					
	– Model “C4”		IP 66 (with mating connector mounted and locked)					
			IP 69K (with Rexroth mating connector, Material no. R901022127)					
	– Model “K40”		IP 69K (with mating connector mounted and locked)					
Chopper frequency (recommended) [4]		Hz	150					
Control electronics [5]			Control unit RA, see data sheet 95230 Control units RC, see data sheet 95200					
Design according to VDE 0580								

[1] – Type MHDRE 02 according to data sheet 64658
– Type MHDRE 04 according to data sheet 64666
– Type MHDRE 06 according to data sheet 64655

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

[3] 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!

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

[5] Separate order, see data sheet 30116

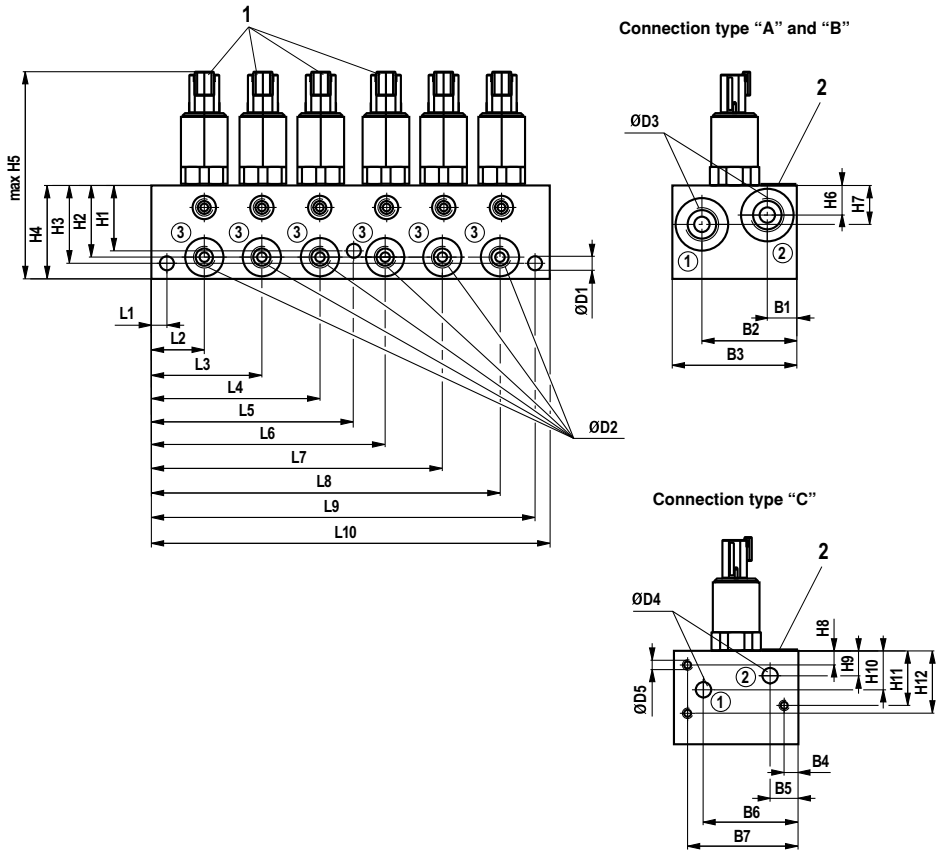
☞ **Note!**

– The technical data were determined at a viscosity of v = 46 mm^2/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”.

① = Main port 1 (P)
② = Main port 2 (T)
③ = Main port 3 (A1, B1, A2, ...)

6

Unit dimensions (dimensions in mm)



1 Proportional pressure reducing valves
– type MHDRE 02 according to data sheet 64658
– type MHDRE 04 according to data sheet 64666
– type MHDRE 06 according to data sheet 64655

2 Nameplate

① = Main port 1 (P)
② = Main port 2 (T)
③ = Main port 3 (A1, B1, A2, ...)

Dimensions see page 5.

☞ **Note!**

With size 02 and 04, orientation of the plug-in connectors may vary.

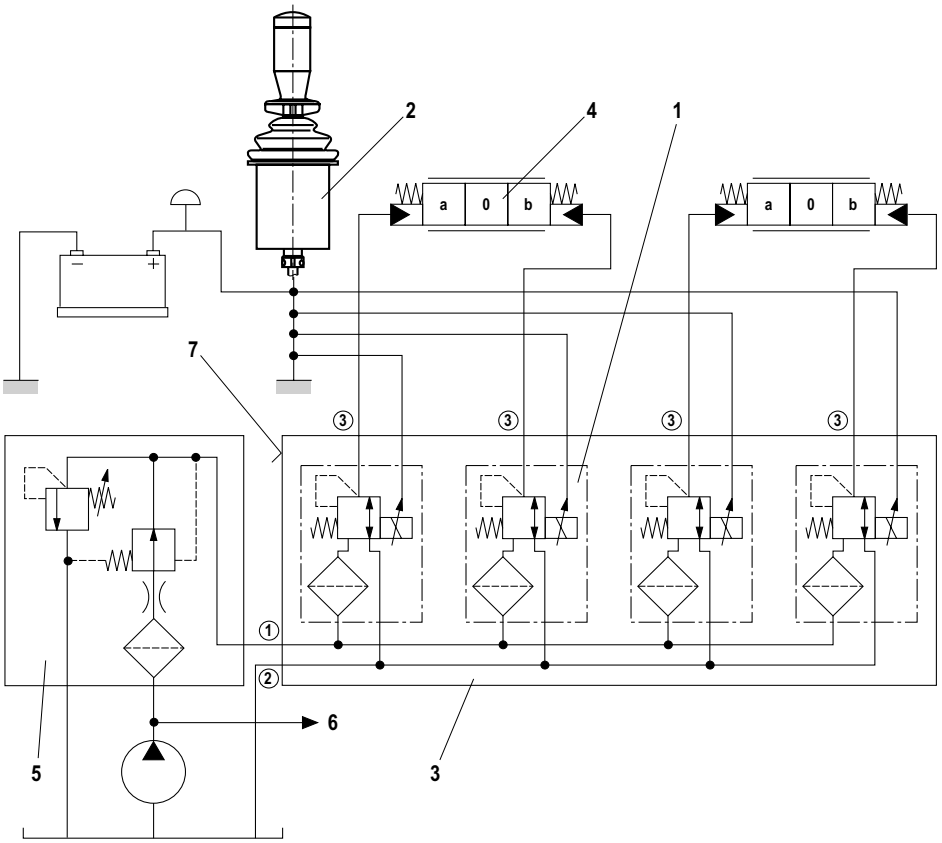
Unit dimensions

Size	Frame size	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	ØD1	ØD2	ØD3	ØD4	ØD5
02	1	10	34	–	–	–	–	–	–	55	65	6.6	G1/4	G3/8	8	M6/12
	2	10	34	71	–	–	–	–	–	95	105	6.6	G1/4	G3/8	8	M6/12
	4	10	34	71	–	91	112	149	–	170	180	6.6	G1/4	G3/8	8	M6/12
	6	10	34	71	108	129	149	186	223	245	255	6,6	G1/4	G3/8	8	M6/12
04	1	10	34	–	–	–	–	–	–	55	65	9	G1/4	G1/2	10	M6/12
	2	10	34	71	–	–	–	–	–	95	105	9	G1/4	G1/2	10	M6/12
	4	10	34	71	–	91	112	149	–	170	180	9	G1/4	G1/2	10	M6/12
	6	10	34	71	118	129	149	186	223	245	255	9	G1/4	G1/2	10	M6/12
06	1	25	50	–	–	–	–	–	–	75	85	11	G3/8	G3/4	18	M8/16
	2	25	50	95	–	–	–	–	–	120	130	11	G3/8	G3/4	18	M8/16
	4	25	50	95	–	123	150	195	–	220	230	11	G3/8	G3/4	18	M8/16
	6	25	50	95	145	172	200	245	295	230	330	11	G3/8	G3/4	18	M8/16

Size	Frame size	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
02	1	–	40	50	59	140	16	23	9	14	23	30	35
	2	–	40	50	59	140	16	23	9	14	23	30	35
	4	36	40	50	59	140	16	23	9	14	23	30	35
	6	36	40	50	59	140	16	23	9	14	23	30	35
04	1	–	45	50	59	140	19	25	9	16	25	35	40
	2	–	45	50	59	140	19	25	9	16	25	35	40
	4	42	45	50	59	140	19	25	9	16	25	35	40
	6	42	45	50	59	140	19	25	9	16	25	35	40
06	1	–	53	60	69	150	27	33	10	22	33	45	60
	2	–	53	60	69	150	27	33	10	22	33	45	60
	4	55	53	60	69	150	27	33	10	22	33	45	60
	6	55	53	60	69	150	27	33	10	22	33	45	60

Size	Frame size	B1	B2	B3	B4	B5	B6	B7	Weight in kg		
									Manifold	per cartridge valve	Total
02	1	17	58	80	9	18	58	71	0.8	0.25	1.1
	2	17	58	80	9	18	58	71	1.3	0.25	1.8
	4	17	58	80	9	18	58	71	2.2	0.25	3.2
	6	17	58	80	9	18	58	71	3.1	0.25	4.6
04	1	19	61	80	9	18	61	71	0.8	0.25	1.1
	2	19	61	80	9	18	61	71	1.3	0.25	1.8
	4	19	61	80	9	18	61	71	2.2	0.25	3.2
	6	19	61	80	9	18	61	71	3.1	0.25	4.6
06	1	92	32	110	10	27	81	100	1.6	0.7	2.3
	2	92	32	110	10	27	81	100	2.5	0.7	3.9
	4	92	32	110	10	27	81	100	4.5	0.7	7.3
	6	92	32	110	10	26	81	100	6.4	0.7	10.6

Circuit example



1 Proportional pressure reducing valves
– type MHDRE 02 according to data sheet 64658
– type MHDRE 04 according to data sheet 64666
– type MHDRE 06 according to data sheet 64655

2 Electronic remote control and modules (see overview according to data sheet 64013)

3 Remote control manifold HICFP

4 Directional valve, hydraulic actuation

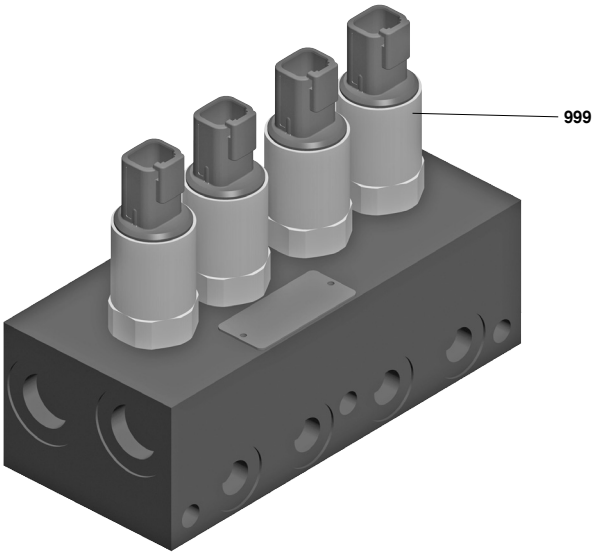
5 Pilot oil supply system (not included in scope of delivery). With connection type “C”, a customer-specific pilot oil supply can be directly flanged to the remote control manifold (see item 7)

6 Work hydraulics

7 Optional connection flange (see item 5)

① = Main port 1 (P)
② = Main port 2 (T)
③ = Main port 3 (A1, B1, A2, ...)

Available individual components



Item	Description	Date sheet no. Size 02	Size 04	Size 06
999	Proportional pressure reducing valve	64658	64666	64655

Notes

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