

# 4/2 directional spool valve direct operated with solenoid actuation

**RE 18136-05/06.12** 1/10  
Replaces: 10.09

**Type KKDE** (high-performance)

Component size 1  
Component series A  
Maximum operating pressure 350 bar  
Maximum flow 40 l/min



H6812

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## Features

- Mounting cavity R/T-31A
- Direct operated directional spool valve with solenoid actuation
- Free-flowing in both directions
- Wet-pin DC solenoids
- Rotatable solenoid coil
- With concealed manual override

Information on available spare parts:  
[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

### Ordering code (Valve without coil) <sup>1)</sup>

	<b>KKDE</b>	<b>R</b>	<b>1</b>	<b>A / H</b>	<b>V</b>	<b>*</b>
Directional spool valve, direct operated, electrically operated Maximum operating pressure 350 bar = <b>R</b> Component size = <b>1</b>						Further details in the plain text <b>Seal material</b> FKM seals (other seals upon request) Attention! Observe compatibility of seals with hydraulic fluid used! <b>V =</b> <b>N0 = without manual override</b> <b>N9 = with concealed manual override <sup>4)</sup></b> <b>H = High-performance and mounting cavity R/T-31A (see page 9)</b> <b>A = Component series</b>
4 main ports						
<b>Symbols</b>				<b>= D</b>		
				<b>= E</b>		
				<b>= F</b>		
				<b>= F</b>		
				<b>= F</b>		
				<b>= F</b>		

### Valve types (without coil) <sup>1)</sup>

Spool symbol	without manual override "N0"		with concealed manual override "N9"	
	Type	Material no.	Type	Material no.
<b>D</b>	KKDER1DA/HN0V	R901070118	KKDER1DA/HN9V	R901070125
<b>E</b>	KKDER1EA/HN0V	R901070123	KKDER1EA/HN9V	R901070127
<b>F</b>	KKDER1FA/HN0V	R901070124	KKDER1FA/HN9V	R901070129

### Available coils (separate order) <sup>1)</sup>

	Material no. for coil with connector <sup>2)</sup>		
	"K4" 03pol (2+PE) DIN EN 175301-803	"K40" 02pol K40 DT 04-2PA, make. Deutsch	"C4" 02pol C4/Z30 AMP Junior Timer
Direct voltage DC <sup>3)</sup>			
12 V	R900991678	R900729189	R900315818
24 V	R900991121	R900729190	R900315819

<sup>1)</sup> Complete valves with mounted coil upon request

<sup>2)</sup> Mating connectors (separate order), see RE 08006

<sup>3)</sup> Other voltages upon request

<sup>4)</sup> Screwable manual override "N10" possible (Material no. **R901051231**, separate order)

## Function, section, symbols

### General

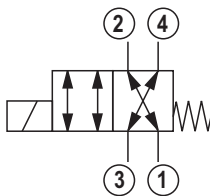
The 4/2 directional spool valves are direct operated, pressure compensated cartridge valves. They control the start, stop and direction of a flow and basically comprise a housing (1) with a movably mounted socket (2), the control spool (5) and a return spring (4).

### Function

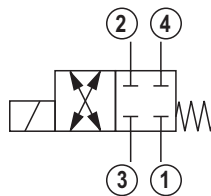
In the de-energized condition, control spool (5) is held in the initial position by the return spring (4). Control spool (5) is actuated by wet-pin DC solenoids (3). The various symbols are realized by corresponding spools (D; E, and F). The main ports ①, ②, ③, and ④ are suitable for a continuous load with an operating pressure of 350 bar and the flow can be directed into both directions (see symbols).

The manual override (6) allows for the switching of the valve without solenoid energization. It is also available in screwable version "N10" (7) (see page 2).

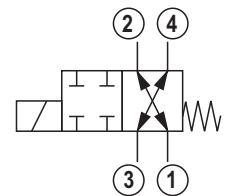
Symbol "D"



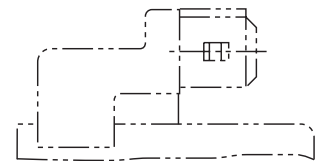
Symbol "E"



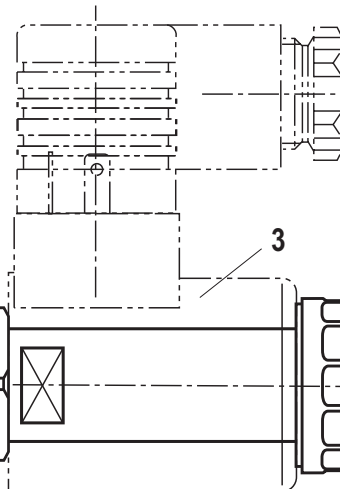
Symbol "F"



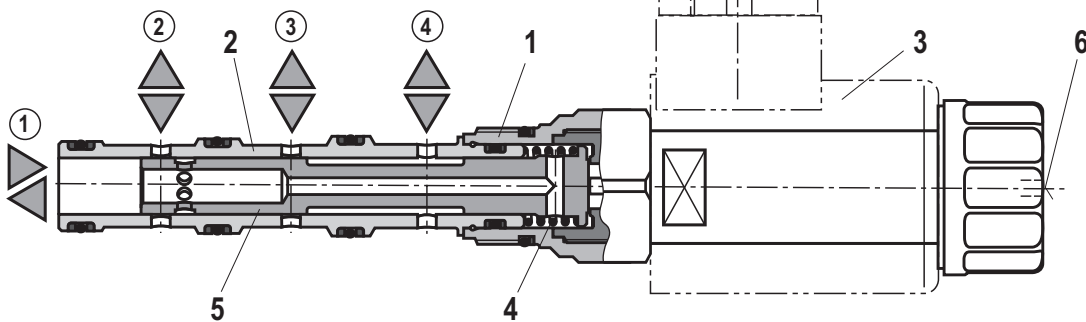
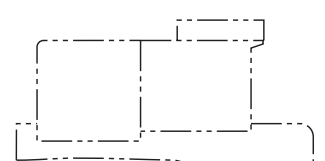
Version "C4"



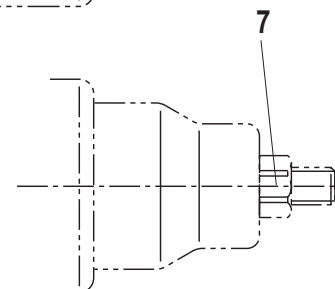
Version "K4"  
(with mating connector)



Version "K40"



Type KKDER1EA/HN9V



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

Weight	- Valve	kg	0.35
	- Coil	kg	0.25
Installation position		Any	
Ambient temperature range		°C	-40 to +110

**hydraulic**

Maximum operating pressure	bar	350 (at all ports)
Maximum flow	l/min	40
Hydraulic fluid	Mineral oil (HL, HLP) according to DIN 51524; quickly biodegradable hydraulic fluids according to VDMA 24568 (see also RE 90221); HETG (rape seed oil); HEPG (polyglycols); HEES (synthetic esters); other hydraulic fluids upon request	
Hydraulic fluid temperature range	°C	-40 to +80
Viscosity range	mm <sup>2</sup> /s	4 to 500
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)	Class 20/18/15 <sup>1)</sup>	
Load cycles	10 million (at 350 bar)	

**electrical**

Voltage type	Direct voltage	
Supply voltage <sup>2)</sup>	V	12DC; 24DC
Voltage tolerance against ambient temperature	See characteristic curve page 5	
Power consumption	W	22
Duty cycle	%	See characteristic curve page 5
Maximum coil temperature <sup>3)</sup>	°C	150
Switching time according to ISO 6403 (solenoid horizontal)	- ON	ms ≤ 80
	- OFF	ms ≤ 50
Maximum switching frequency	cy/h	15000
Protection class according to VDE 0470-1 (DIN EN 60529) DIN 40050-9	- Version "K4"	IP 65 with mating connector mounted and locked
	- Version "C4"	IP 66 with mating connector mounted and locked
		IP 69K with Rexroth mating connector (Material no. R901022127)
	- Version "K40"	IP 69K with mating connector mounted and locked

<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.

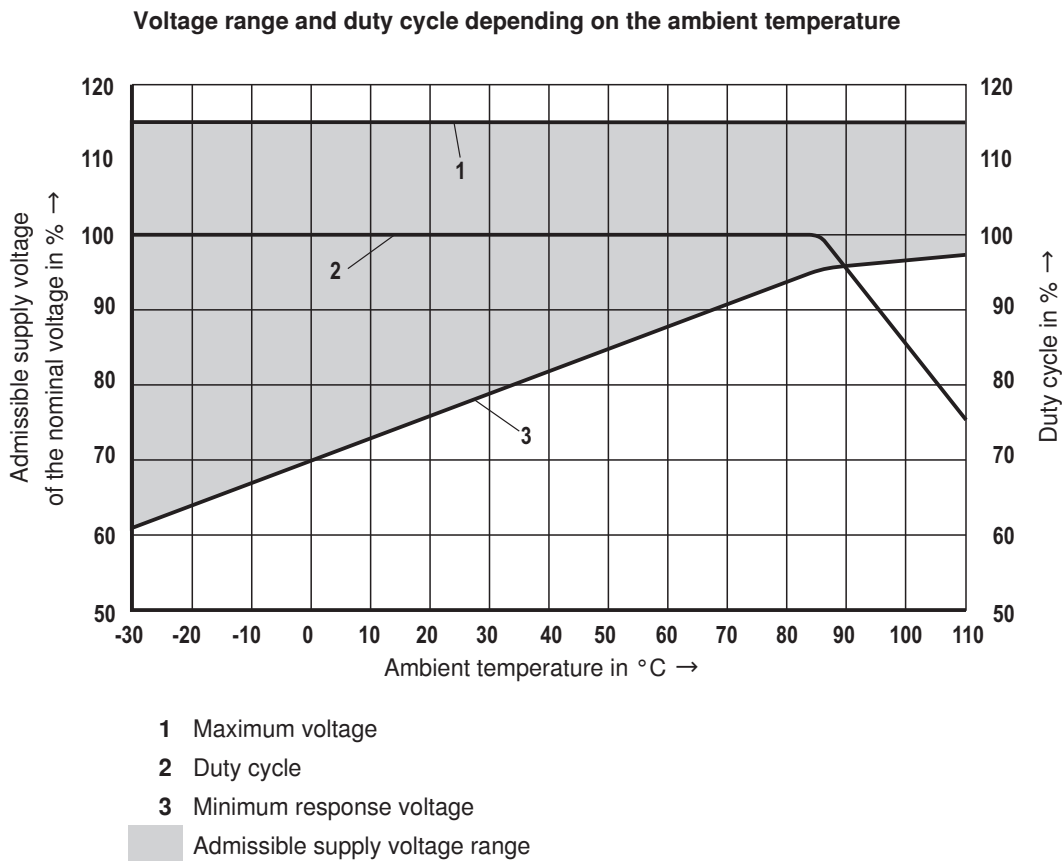
For the selection of filters, see data sheets RE 50070, RE 50076, RE 50081, RE 50086, RE 50087 and RE 50088.

<sup>2)</sup> Other voltages upon request

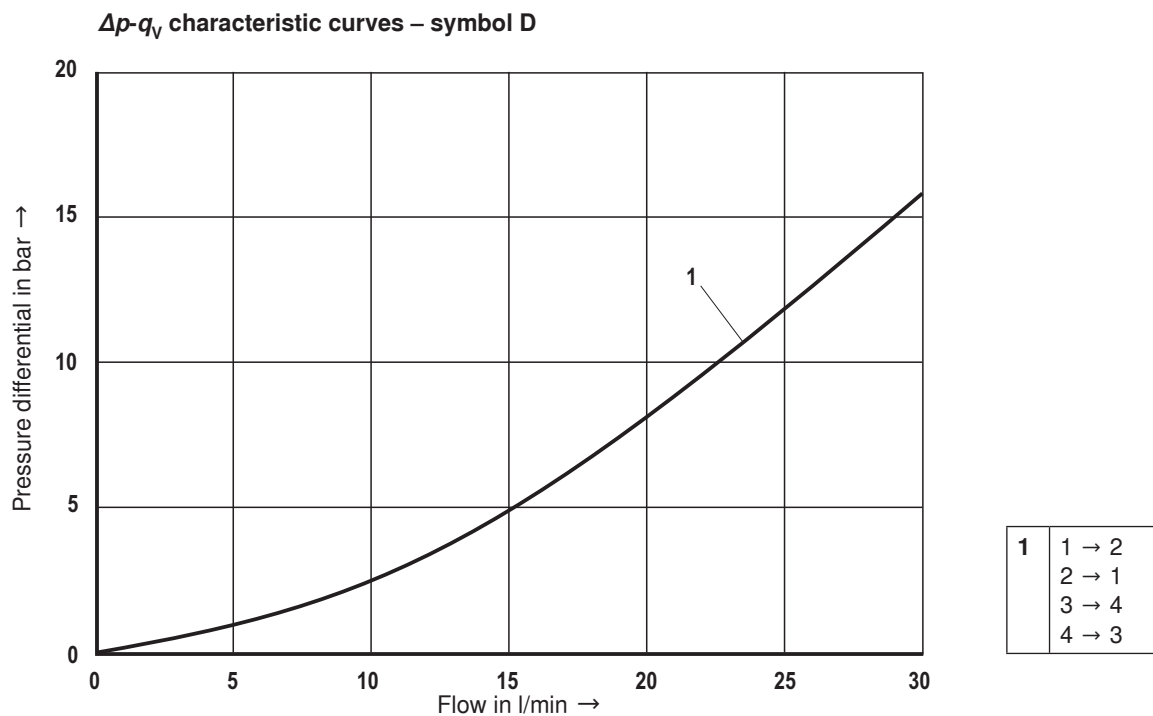
<sup>3)</sup> Due to the temperatures occurring at the surfaces of the solenoid coils, the standards ISO 13732-1 and EN 982 need to be adhered to!

**At the electrical connection "K4", the protective earthing conductor (PE  $\frac{1}{2}$ ) has to be connected properly.**

## Voltage tolerance against ambient temperature; duty cycle

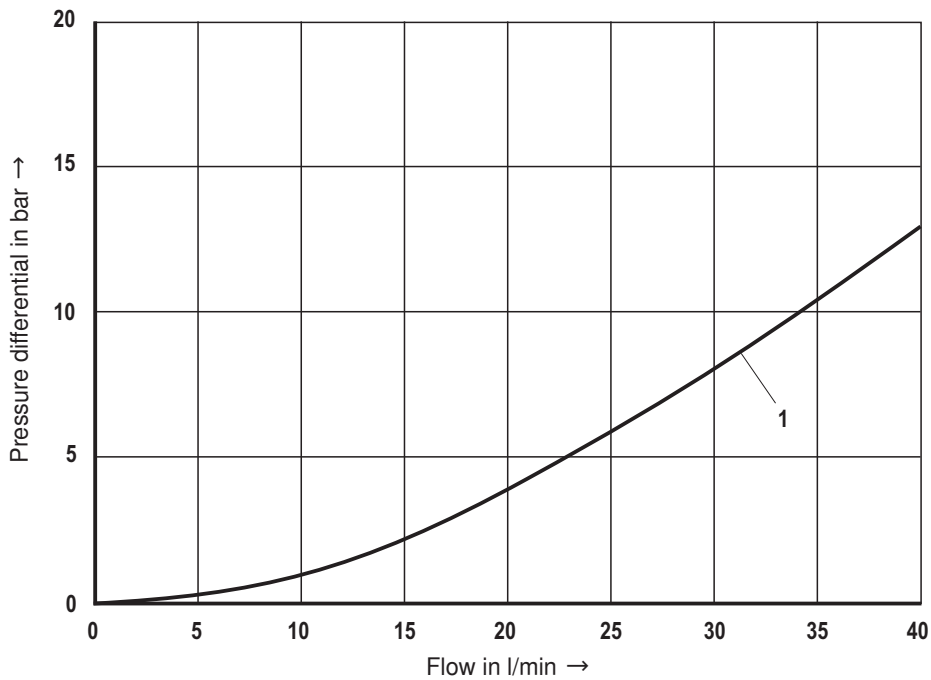


## Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$ and 24 V coil)



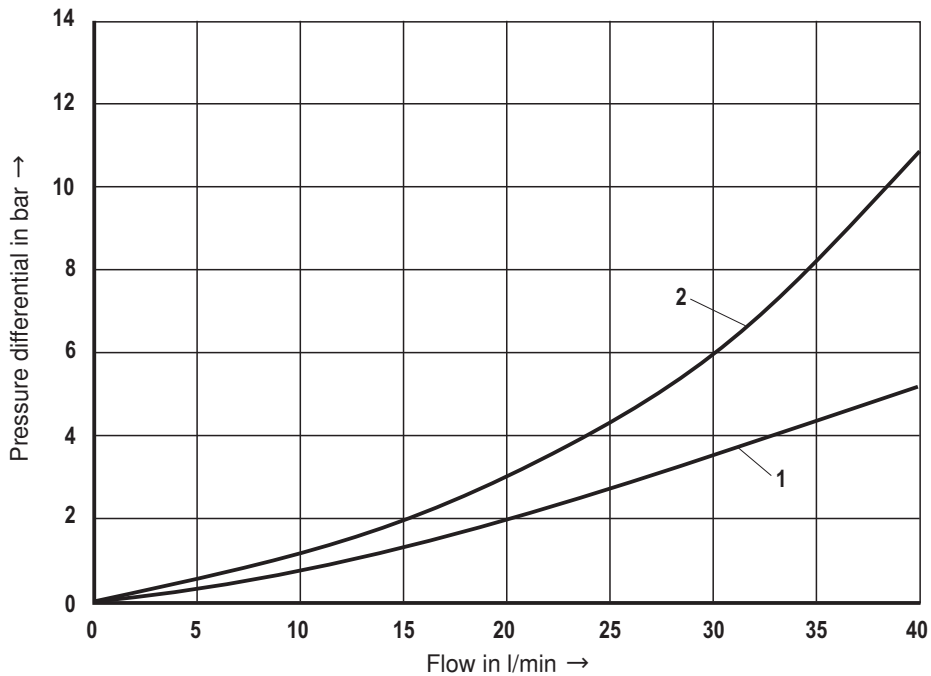
## Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$ and 24 V coil)

$\Delta p$ - $q_v$  characteristic curves – symbol E



<b>1</b>	1 → 2
	3 → 4
	2 → 1
	4 → 3

$\Delta p$ - $q_v$  characteristic curves – symbol F



<b>1</b>	1 → 2
	2 → 1
<b>2</b>	3 → 4
	4 → 3

**Performance limits** (measured with HLP46,  $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$  and 24 V coil)

**Attention!**

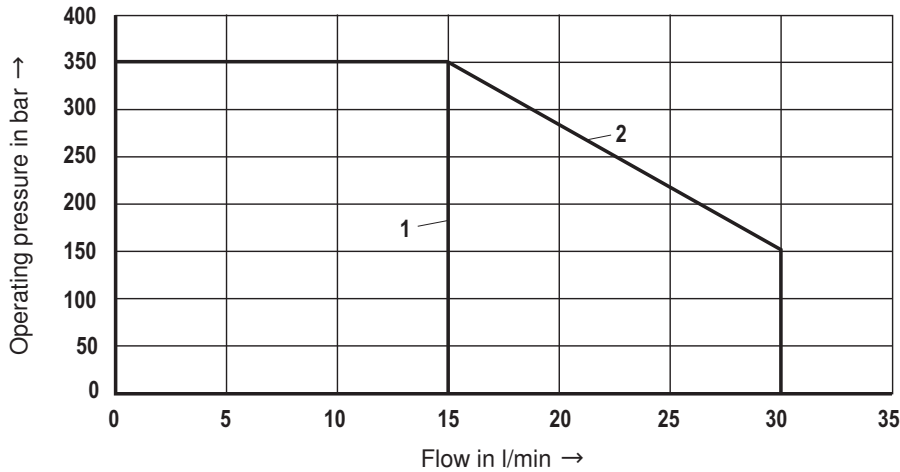
The specified performance limits are valid for operation with two directions of flow (e.g. symbol D: ① to ② and simultaneous return flow from ④ to ③).

Due to the flow forces acting within the valves, the permissible performance limit may be considerably lower with

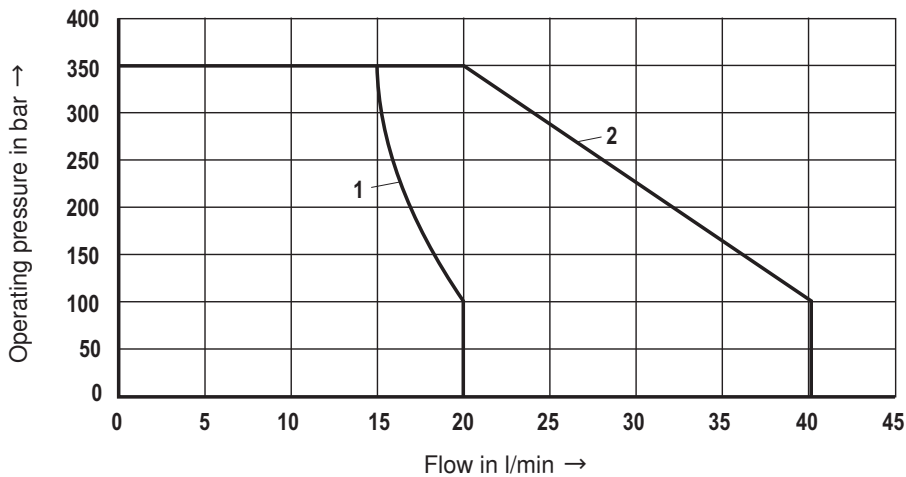
only one direction of flow (e. g. from ① to ② while port B is blocked)! In such cases, please consult us!

The performance limits were determined when the solenoids were at operating temperature and at 10 % undervoltage and without tank pre-loading.

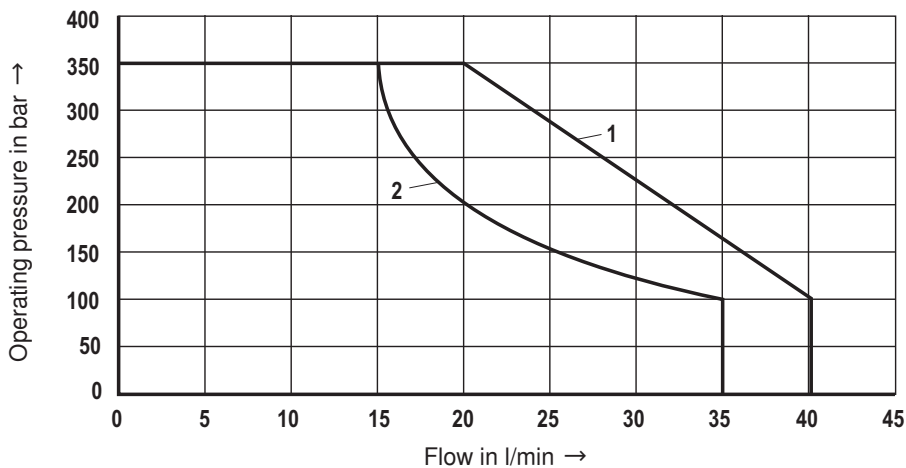
**Symbol D**



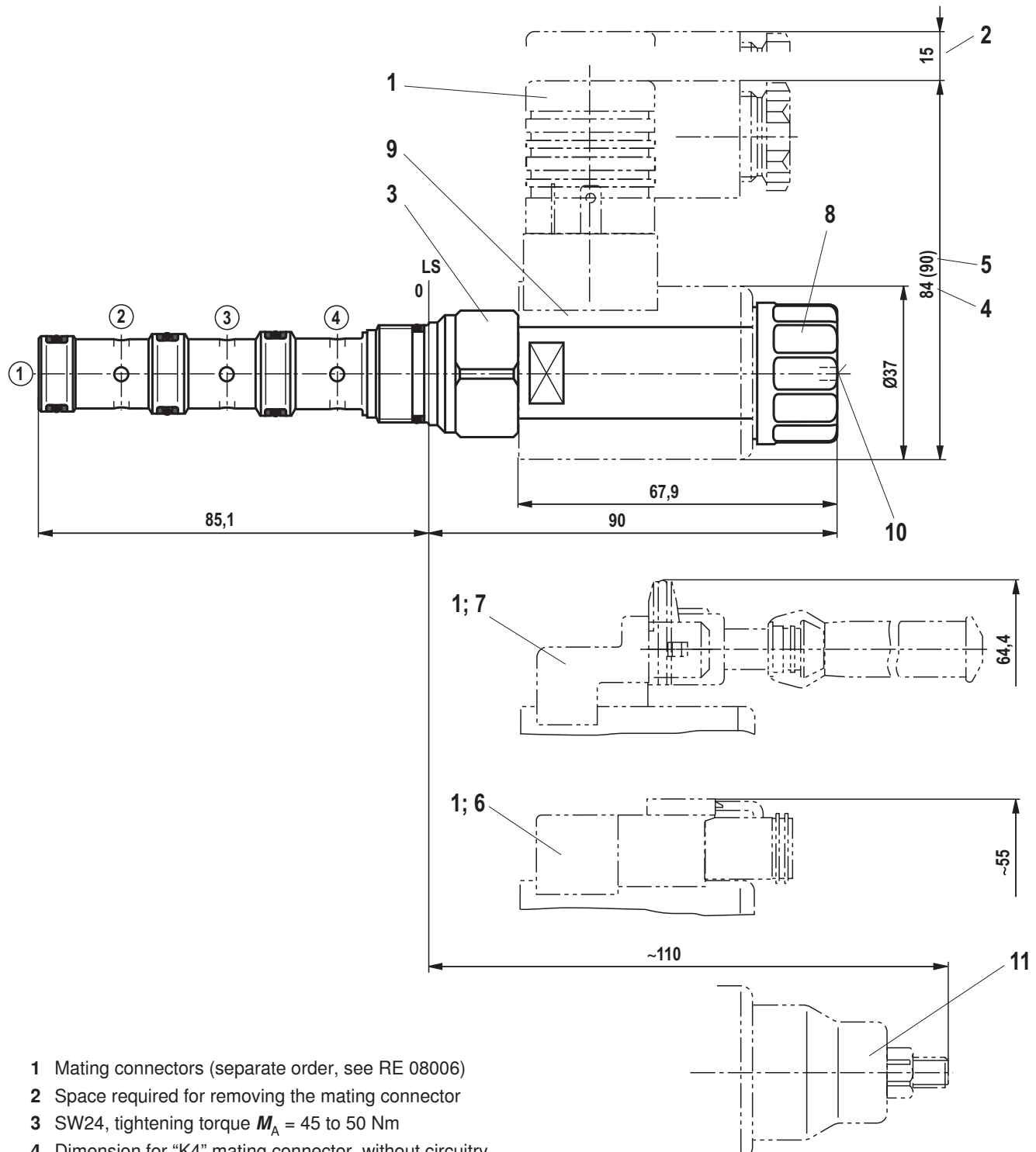
**Symbol E**



**Symbol F**



## Unit dimensions (dimensions in mm)



- 1 Mating connectors (separate order, see RE 08006)
- 2 Space required for removing the mating connector
- 3 SW24, tightening torque  $M_A = 45$  to  $50$  Nm
- 4 Dimension for "K4" mating connector, without circuitry
- 5 Dimension () for "K4" mating connector, with circuitry
- 6 Version "K40"
- 7 Version "C4"
- 8 Nut, tightening torque  $M_A = 5^{+1}$  Nm
- 9 Coil (separate order, see page 2)
- 10 Concealed manual override "N9", optional
- 11 Screwable manual override "N10" (separate order, see page 2)

① = Main port 1

② = Main port 2

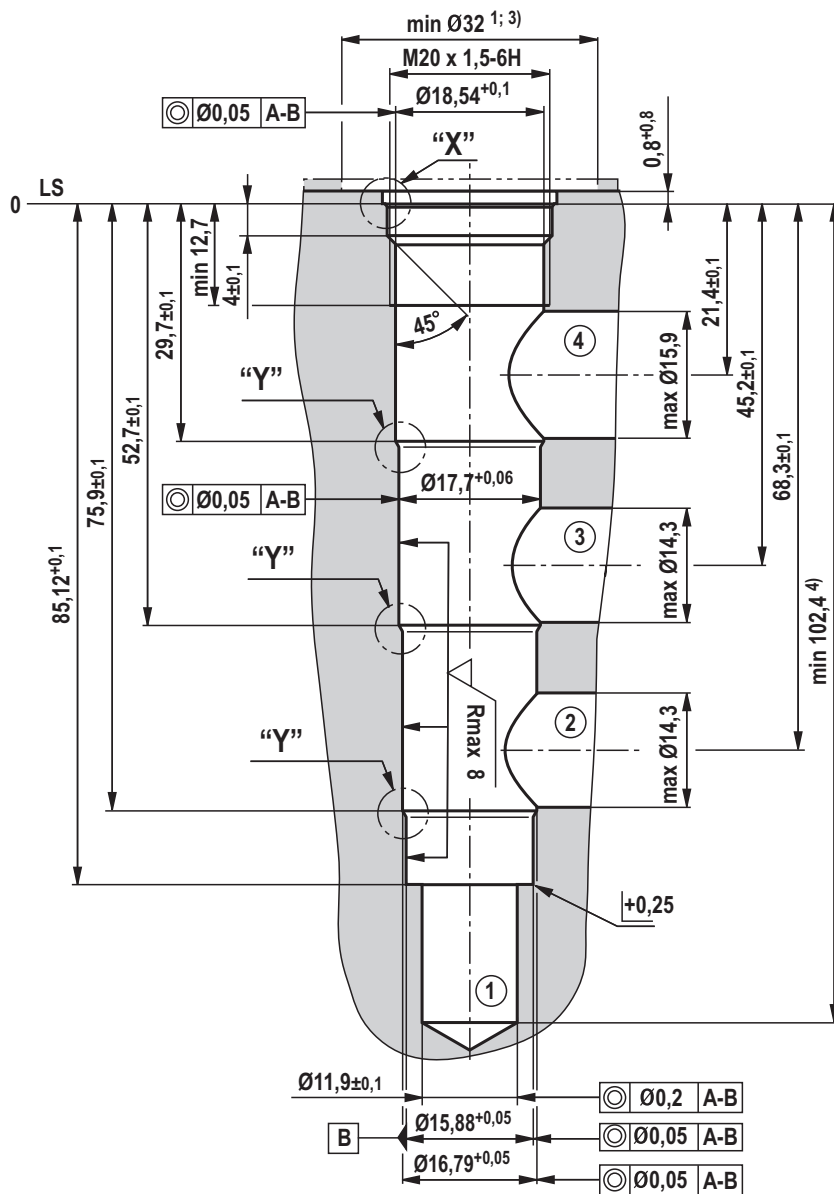
③ = Main port 3

④ = Main port 4

LS = Location shoulder



### Mounting cavity R/T-31A; 4 main ports; thread M20 x 1.5 (dimensions in mm)

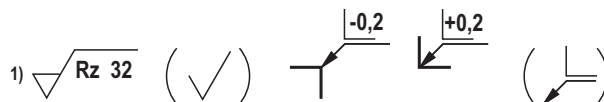
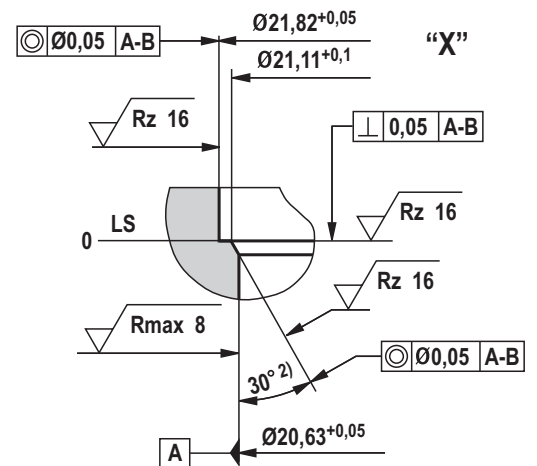
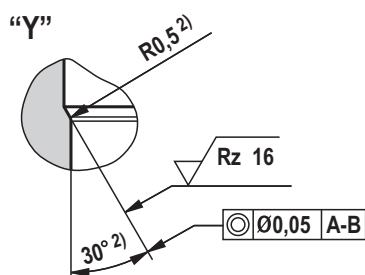


- 1) Differing from T-31A
- 2) All seal ring in section faces are rounded and free of burrs
- 3) with counterbore
- 4) Depth for moving parts

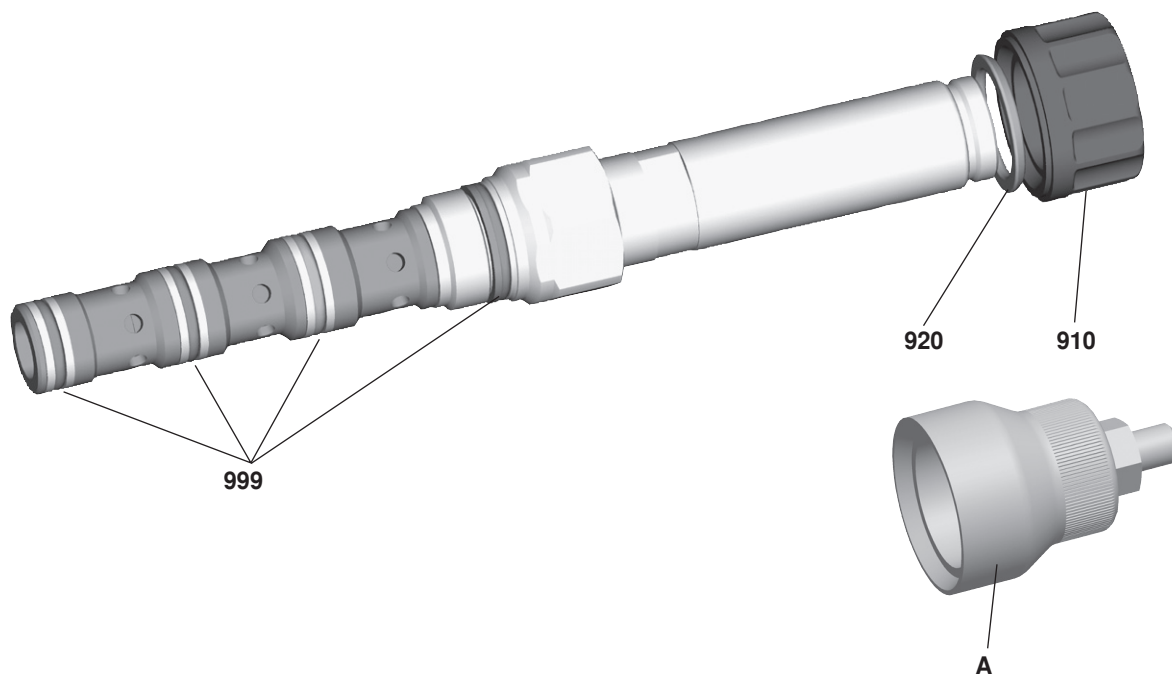
- ① = Main port 1
- ② = Main port 2
- ③ = Main port 3
- ④ = Main port 4

LS = Location Shoulder

Tolerance for all angles ± 0.5°



## Available individual components



Item	Description	Material no.
910	Nut	R900991453
920	O-ring for pole tube	R900007769
999	Seal kit of the valve	R961003413
A	Manual override "N10" <sup>1)</sup>	R901051231

Coils, separate order, see page 2

<sup>1)</sup> Only with ordering code "N9", see page 2

## Notes

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## Notes

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