

3/2 directional spool valve, direct operated with solenoid actuation

RE 18136-04/06.11 1/10
Replaces: 10.09

Type KKDE (high-performance)

Size 1
Component series A
Maximum operating pressure 350 bar
Maximum flow 60 l/min



H6810

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Features

- Direct operated directional spool valve with solenoid actuation
- Mounting cavity R/T-11A
- 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

Ordering code (valve without coil) ¹⁾

	KKDE	R	1		A / H		V	*
Directional spool valve, direct operated, electrically operated				Further details in the plain text				
Maximum operating pressure 350 bar	= R							
Size	= 1							
3 main ports								
Symbols ²⁾			= C					
			= U					
			= N0	N0 = Without manual override N9 = With concealed manual override ⁵⁾				
			= N9	H = High-performance and mounting cavity R/T-11A (see page 9) A = Component series				
Seal material FKM seals (Other seals upon request) Attention! Observe compatibility of seals with hydraulic fluid used!								

Valve types (without coil) ¹⁾

Spool symbol	without manual override "N0"		with concealed manual override "N9"	
	Type	Material no.	Type	Material no.
C	KKDER1CA/HN0V	R901070094	KKDER1CA/HN9V	R901070103
U	KKDER1UA/HN0V	R901070099	KKDER1UA/HN9V	R901070105

Available coils (separate order) ¹⁾

	Material no. for coil with connector ³⁾		
	"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 ⁴⁾			
12 V	R900991678	R900729189	R900315818
24 V	R900991121	R900729190	R900315819

¹⁾ Complete valves with mounted coil upon request

²⁾ With transition function during the switching process

³⁾ Mating connectors, separate order, see data sheet 08006

⁴⁾ Other voltages upon request

⁵⁾ Screwable manual override "N10" possible
(Material no. **R901051231**, separate order)

Function, section, symbols

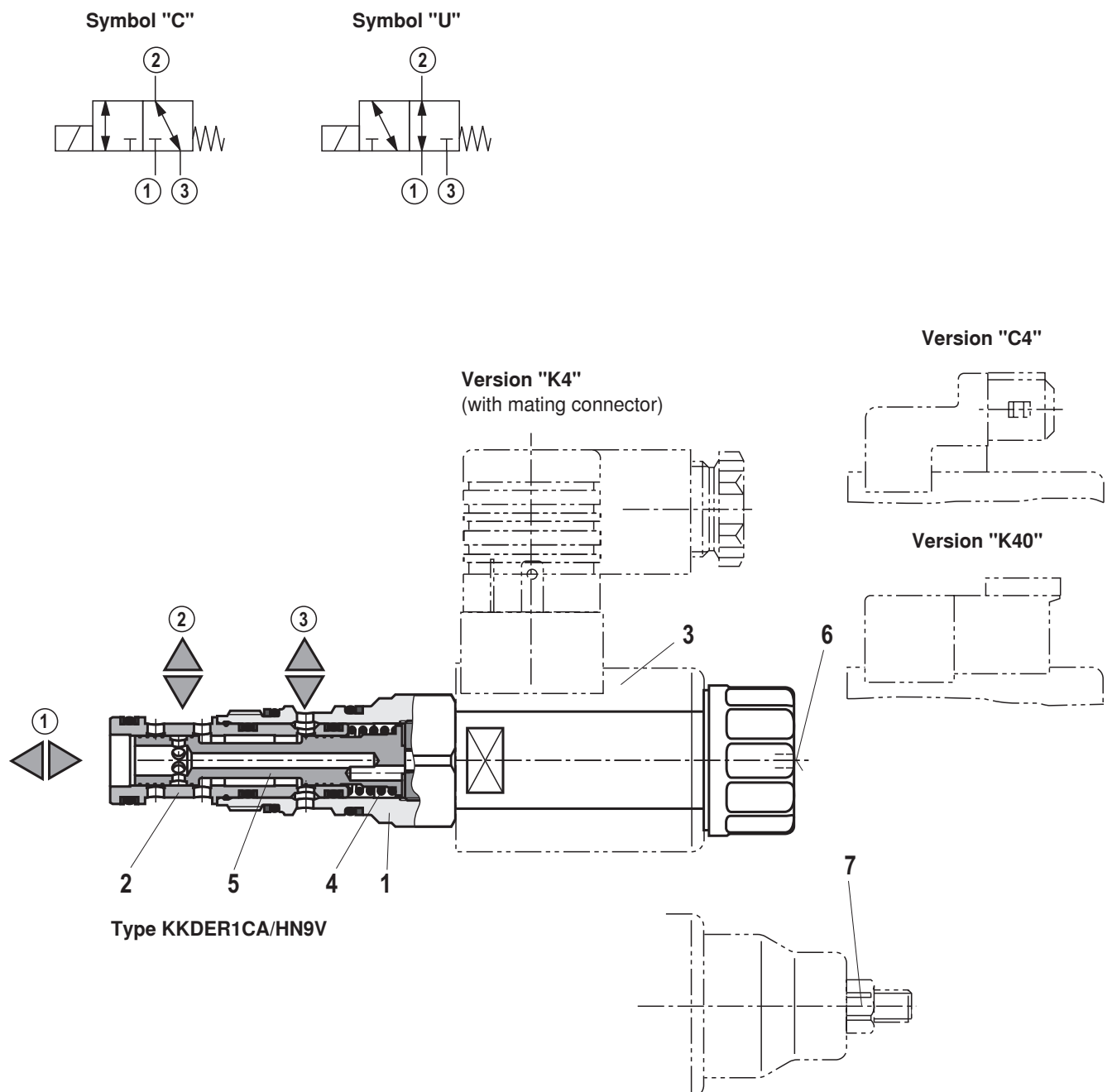
General

The 3/2 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, the control spool (5) is held in the initial position by the return spring (4). The control spool (5) is actuated by wet-pin DC solenoids (3). The symbols are realized by different spools (C or U). The main ports ①, ②, and ③ 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).




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

Weight	– Valve	kg	0.3
	– 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	60
Hydraulic fluid		See table below
Hydraulic fluid temperature range	°C	–40 to +80
Viscosity range	mm ² /s	4 to 500
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)		Class 20/18/15 ¹⁾
Load cycles		10 million (at 350 bar)

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils and related hydrocarbons	HL, HLP, HLPD, HVLP, HVLPD	FKM	DIN 51524
Environmentally compatible	– Insoluble in water HEES	FKM	ISO 15380
	HEPR	FKM	
	– Soluble in water HEPG	FKM	ISO 15380
Flame-resistant	– Water-free HFDU, HFDR	FKM	ISO 12922
	– Water-containing HFAS	FKM	ISO 12922

-  **Important information on hydraulic fluids!**
- For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!
 - There may be limitations regarding the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!
 - The flash point of the process and operating medium used must be 40 K higher than the maximum solenoid surface temperature.
 - **Flame-resistant – water-containing:** Maximum pressure differential per control edge 175 bar, otherwise, increased cavitation erosion!
Tank pre-loading < 1 bar or > 20 % of the pressure differential. The pressure peaks should not exceed the maximum operating pressures!
 - **Environmentally compatible:** When using environmentally compatible hydraulic fluids that are simultaneously zinc-soluble, zinc may accumulate in the medium (700 mg zinc per pole tube).

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 the filters see
www.boschrexroth.com/filter.

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

electric

Voltage type		Direct voltage
Supply voltage ²⁾	V	12 DC; 24 DC
Voltage tolerance against ambient temperature		See characteristic curve below
Power consumption	W	22
Duty cycle	%	See characteristic curve below
Maximum coil temperature ³⁾	°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

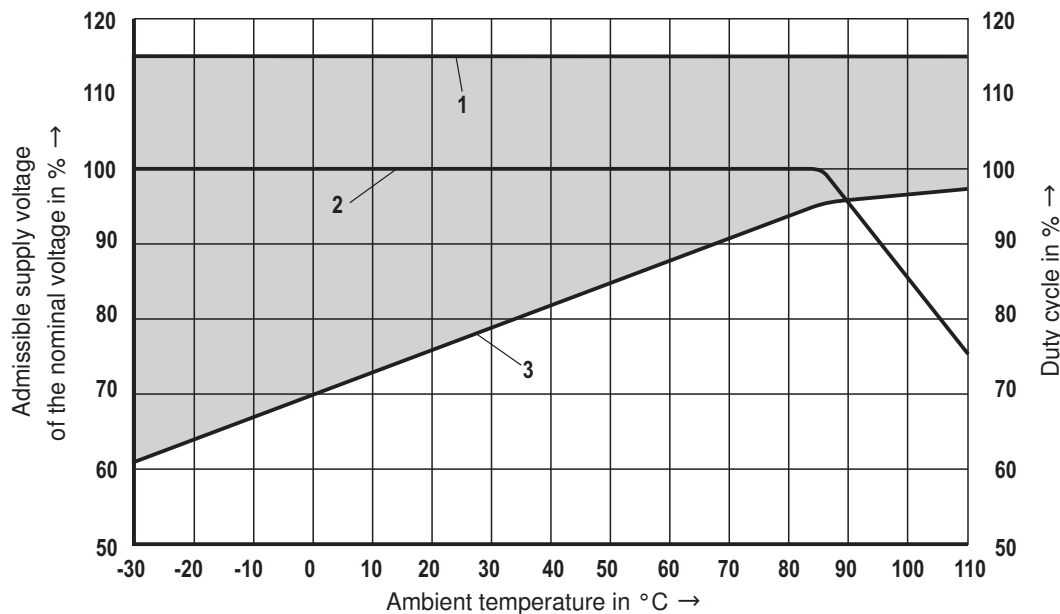
²⁾ Other voltages upon request

³⁾ Due to the surface temperatures 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.

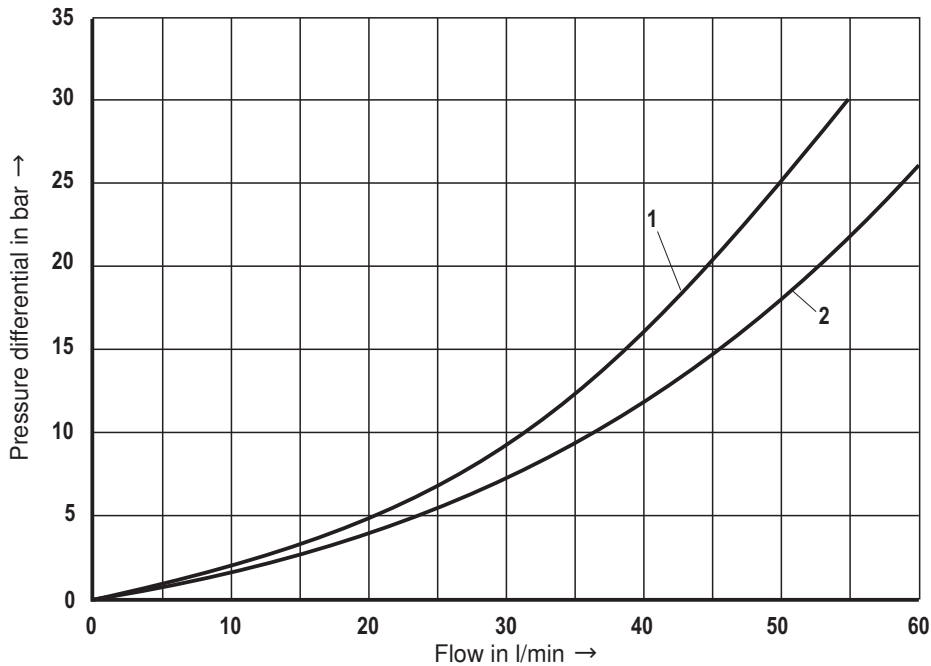
Voltage tolerance against ambient temperature; duty cycle

Voltage range and duty cycle depending on the ambient temperature

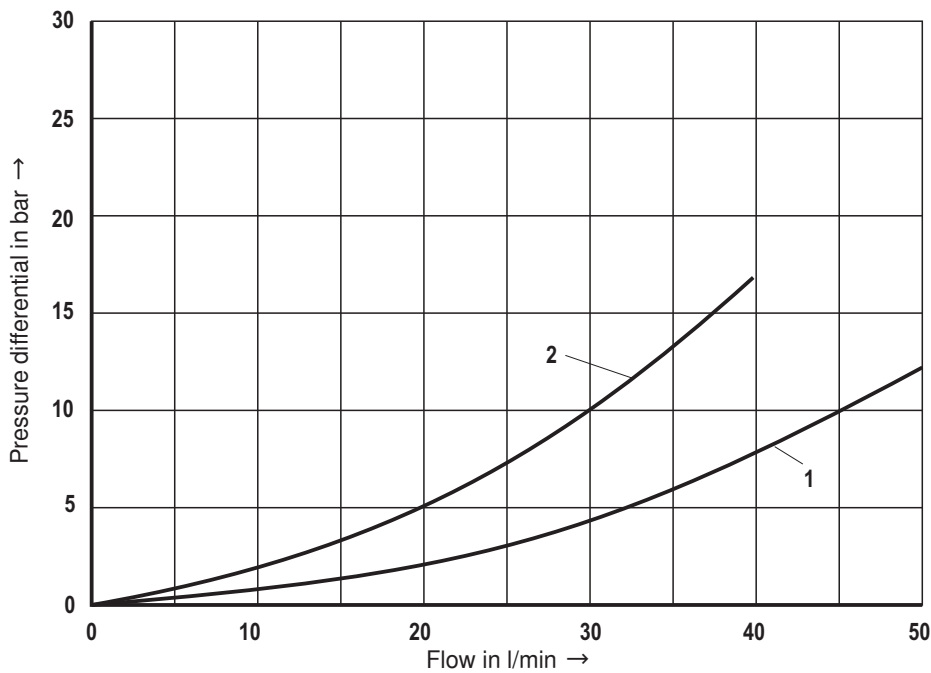


- 1 Maximum voltage
- 2 Duty cycle
- 3 Minimum response voltage
- Admissible supply voltage range

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

 Δp - q_v characteristic curves – symbol C


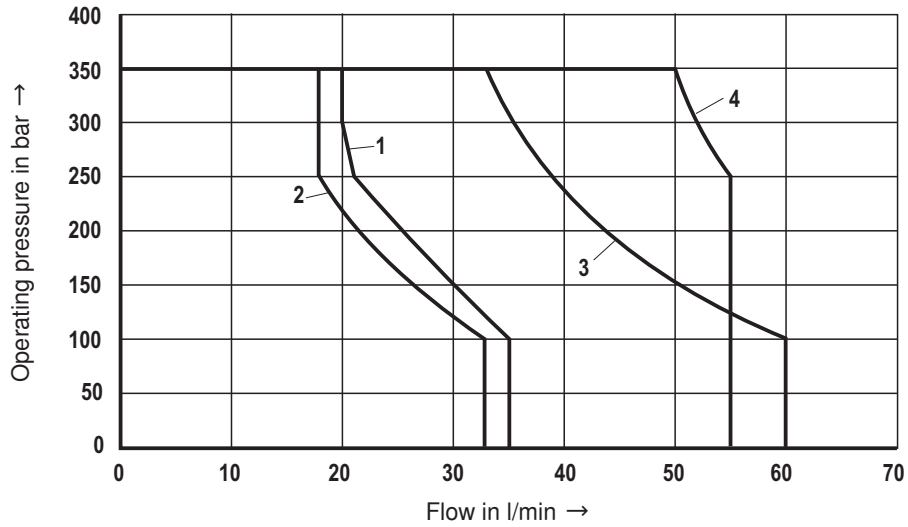
1	① → ②
	② → ①
2	③ → ②
	② → ③

 Δp - q_v characteristic curves – symbol U


1	① → ②
	② → ①
2	③ → ②
	② → ③

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

Symbol C

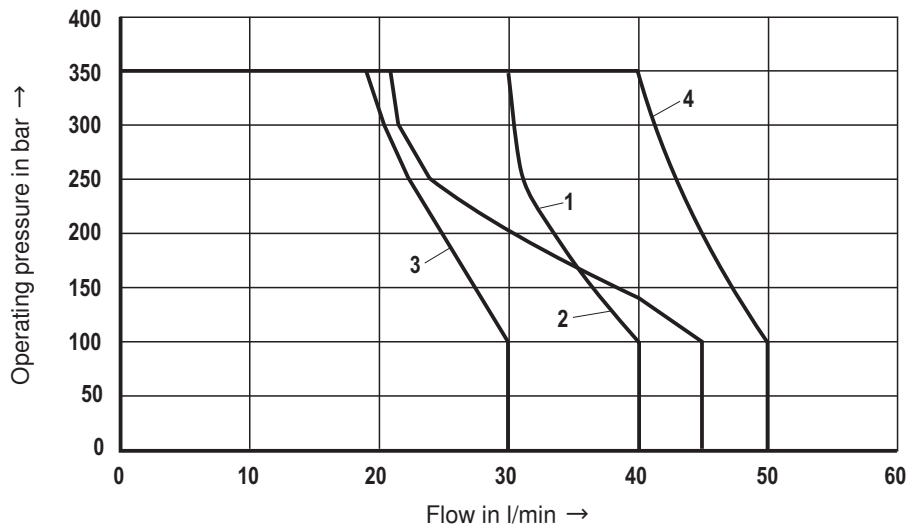


Attention!

The performance limits were determined when the solenoids were at operating temperature and at 10 % undervoltage.

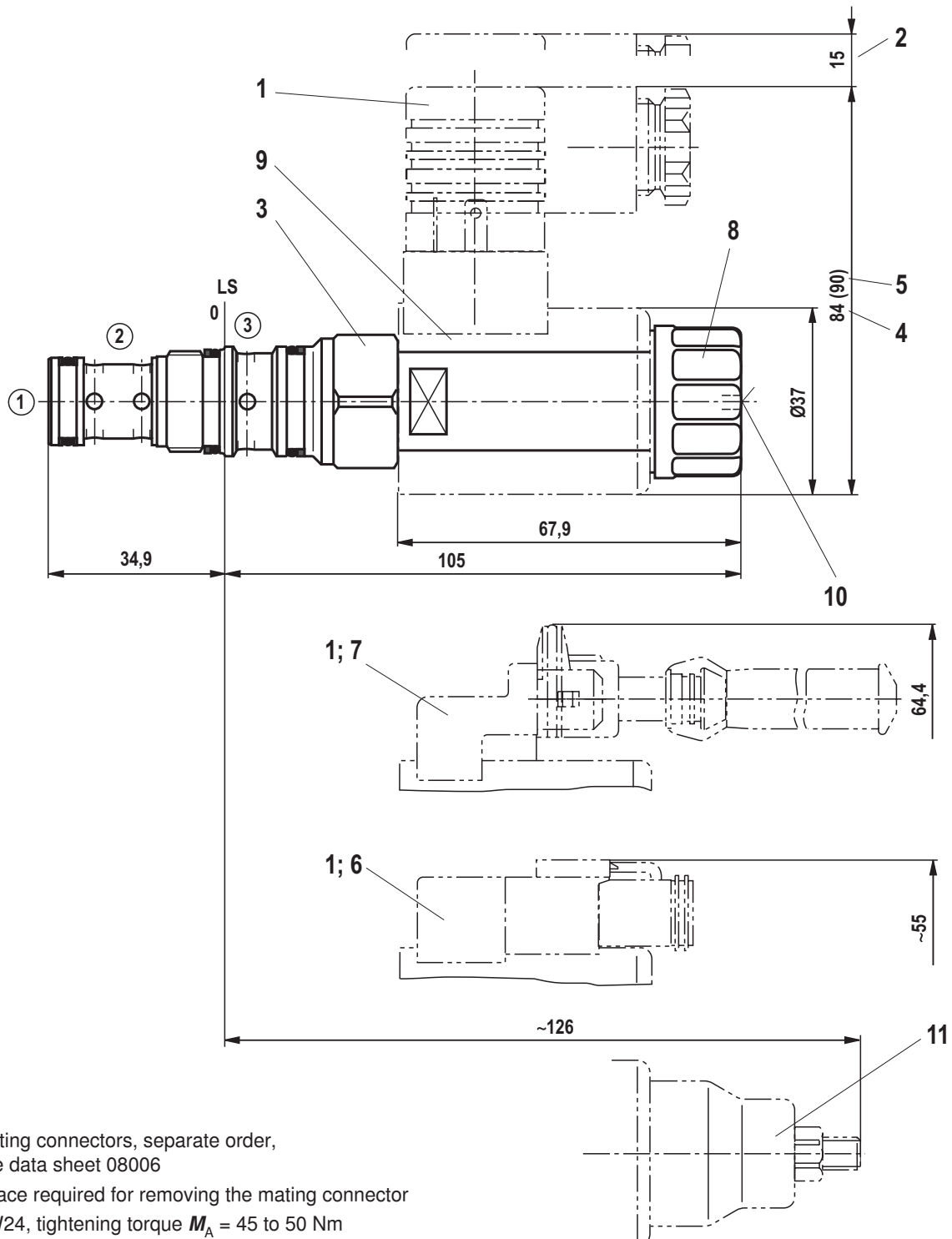
1	① → ②
2	② → ③
3	③ → ②
4	② → ①

Symbol U



1	① → ②
2	② → ③
3	③ → ②
4	② → ①

Unit dimensions (dimensions in mm)



- 1 Mating connectors, separate order, see data sheet 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)

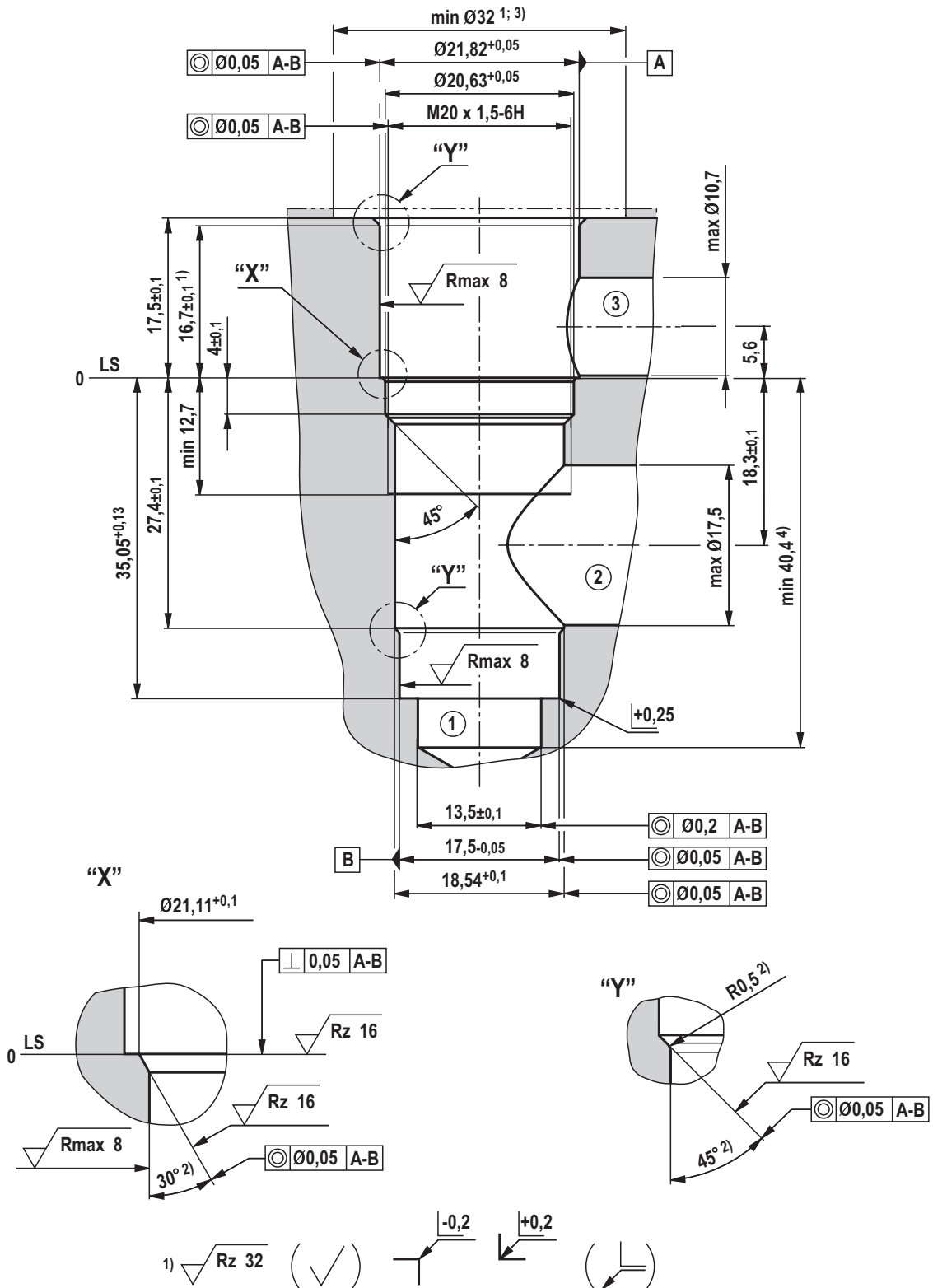
① = Main port 1

② = Main port 2

③ = Main port 3

LS = Location shoulder

Mounting cavity R/T-11A; 3 main ports; thread M20 x 1.5 (dimensions in mm)



1) Differing from T-11A

2) All seal ring insertion faces are rounded and free of burrs

3) With counterbore

4) Depth for moving parts

① = Main port 1

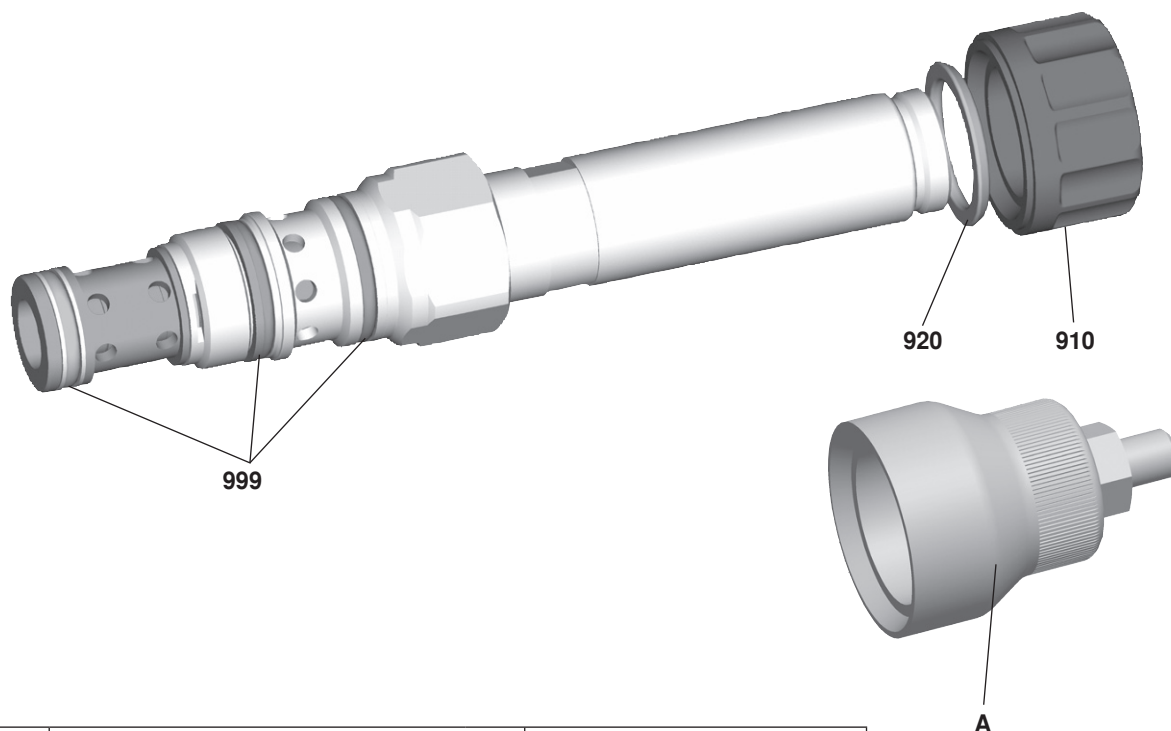
② = Main port 2

③ = Main port 3

LS = Location shoulder

Tolerance for all angles ±0.5°

Available individual components



Item	Denomination	Material no.
910	Nut	R900991453
920	O-ring for pole tube	R900007769
999	Seal kit of the valve	R961003235
A	Manual override "N10" ¹⁾	R901051231

Coils, separate order, see page 2

¹⁾ Only with ordering code "N9", see page 2

Notes

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Notes
