

# 2/2 directional seat valve, direct-operated, with solenoid actuation KSDE.1



- ▶ Size 1
- ▶ Series B
- ▶ Maximum working pressure 500 bar
- ▶ Maximum flow 20 l/min

## Features

- ▶ Direct operated directional seat valve with solenoid actuation, both sides tightly sealed
- ▶ Mounting cavity R/T-13A
- ▶ Blocked connection leak-free, tightly sealed
- ▶ Secure switching, even in the case of long service lives
- ▶ DC voltage solenoids switching in oil
- ▶ Rotatable solenoid coil

## Contents

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2 **KSDE.1** | 2/2 directional seat valve  
Type code (valve without coil)1)

**Type code** (valve without coil)<sup>1)</sup>

01	02	03	04	05	06	07	08	09	10
<b>KSDE</b>		<b>1</b>		<b>B</b>	<b>/</b>	<b>H</b>		<b>V</b>	<b>*</b>

**Valve type**

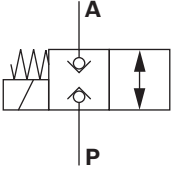
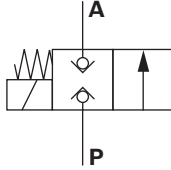
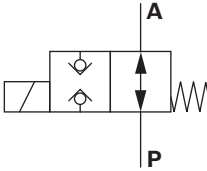
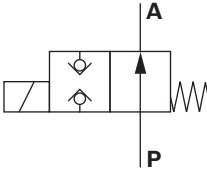
01	Directional seat valve, direct-operated, electrically actuated	<b>KSDE</b>
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**Maximum working pressure**

02	350 bar	<b>R</b>
	500 bar	<b>U</b>

03	Size 1	<b>1</b>
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**Symbol – 2 main ports**

04	<b>R</b> (350 bar)	<b>U</b> (500 bar), <b>R...-17</b> (350 bar)	<b>N</b>	
	Normally closed			
	Normally open			<b>P</b>

05	Series B	<b>B</b>
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06	Mounting cavity R/T-13A (see page 9)	<b>H</b>
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**Auxiliary actuation**

07	Without auxiliary actuation							<b>N0</b>
	With concealed auxiliary actuation							<b>N9</b>
	With screwable auxiliary actuation							<b>N11</b>
	<b>Version</b>	<b>Symbol N</b>			<b>Symbol P</b>			
	<b>N0</b>	<b>N9</b>	<b>N11</b>	<b>N0</b>	<b>N9</b>	<b>N11</b>		
<b>R</b> (350 bar)	●	–	●	●	● <sup>2)</sup>	–		
<b>U</b> (500 bar)	●	–	–	●	–	–		

**Sealing material**

08	FKM (fluorocarbon rubber), other seals on request	<b>V</b>
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**Special number**

09	Standard	<b>No code</b>
	Flow-optimized <sup>3)</sup>	<b>-17</b>

10	Further details in plain text	<b>*</b>
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See page 3 for footnotes

● = Available    – = Not available

## Preferred types (valve without coil)<sup>1)</sup>

### ▼ Working pressure 350 bar

Symbol	Type	Material no.
<b>N</b>	KSDER1NB/HN0V	R901083194
	KSDER1NB/HN0V-17	R901176259
	KSDER1NB/HN11V	R901151293
	KSDER1NB/HN11V-17	R901206914
<b>P</b>	KSDER1PB/HN0V	R901083196
	KSDER1PB/HN0V-17	R901176247
	KSDER1PB/HN9V	R901151294
	KSDER1PB/HN9V-17	R901206911

### ▼ Working pressure 500 bar

Symbol	Type	Material no.
<b>N</b>	KSDEU1NB/HN0V	R901083202
<b>P</b>	KSDEU1PB/HN0V	R901083203

## Available coils (order separately)

DC voltage <sup>5)</sup>	Material no. for coil with device connector <sup>4)</sup>		
	"K4"	"K40"	"C4"
	03pol (2+PE) DIN EN 175301-803	02pol K40 DT 04-2PA, Fa. DEUTSCH	02pol C4/Z30 AMP Junior Timer
12 V	R900991678	R900729189	R900315818
24 V	R900991121	R900729190	R900315819

1) Complete valves with mounted coil on request.  
 2) Screwable auxiliary actuation "N10" (actuation through hexagon socket with lock nut) possible as a separate order, material no. R901051231; ordering code "N9"  
 3) Only version "R" (flow-through on one side!)

4) Plug-in connectors are not included in the scope of delivery and must be ordered separately, see data sheet 08006.  
 5) Additional voltages available on request.

## Functional description

### General

The 2/2 directional seat valves are direct operated, pressure-compensated cartridge valves. They essentially consist of a screw-in part (4) with valve seat (1), solenoid (5), closing element (3) and compression spring (2).

### Function

The initial position of the valve (normally open "P" or normally closed "N") is determined by the position of the closing element (3) and the arrangement of the compression spring (2). Owing to the structural design, the 2/2 directional seat valves are always pressure-compensated with the actuating forces. The ports P and A can be loaded with 350 bar/500 bar working pressure (see technical data, page 5).

### Notice

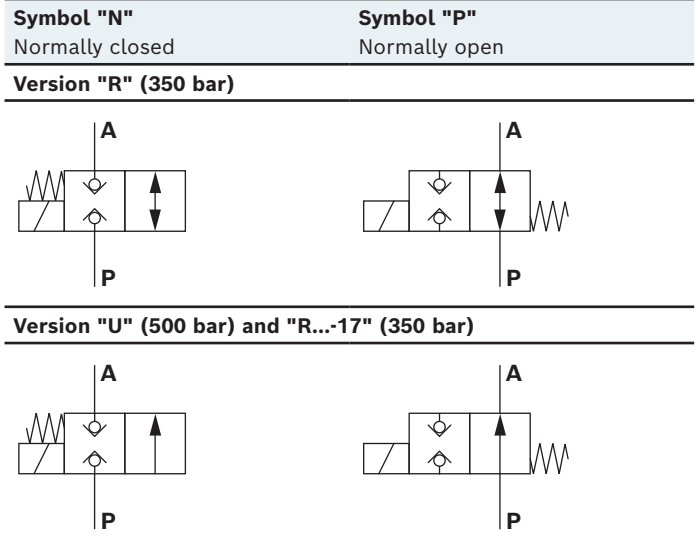
Flow is only permissible in the direction of the arrow (see symbols)! For version "U" (working pressure 500 bar) and version "R...-17", the port P must be connected with the pump! Valves with version "R...-17" are flow-optimized and thus reach a lower pressure differential.

In the case of symbol "P", the closing element (3) is pressed into the seat by the solenoids (5), in the case of

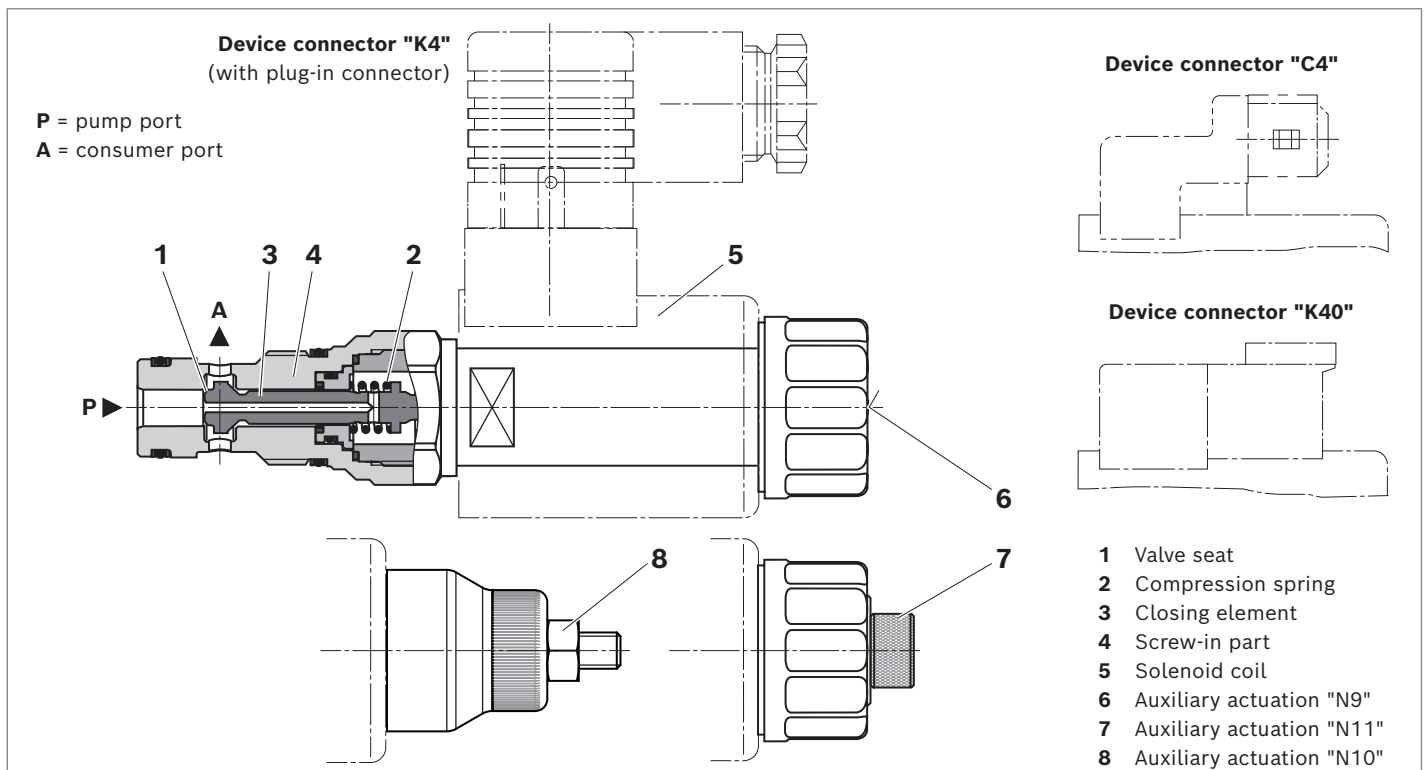
symbol "N", it is pressed by the compression spring (2). The flow is blocked and leak-free.

The auxiliary actuation enables the switching of the valve without solenoid excitation. It is also available as a concealed version "N9" (6) or as a screwable version "N11" (7).

The screwable auxiliary actuation (7) must be screwed back into the initial position after actuation.



### ▼ Sectional view KSDER1PB/HN9V



**Technical data**

General			
Weight (approx.)	Valve	kg	0.30
	Solenoid coil	kg	0.25
Installation position	Any		
Ambient temperature range	°C	-40 ... +110	

Hydraulic				
Maximum working pressure	Version <b>U</b>	$p$	bar	500 (at all ports if $P \geq A$ ; based on structure)
	Version <b>R</b>	$p$	bar	350 (at all ports)
	Version <b>R...-17</b>	$p$	bar	350 (at all ports if $P \geq A$ ; based on structure)
Maximum flow	Version <b>U</b>	$q_v$	l/min	12 (see performance limits on page 7)
	Version <b>R</b>	20 (see performance limits on page 7)		
Hydraulic fluid	See table on page 6			
Hydraulic fluid temperature range	$\vartheta$	°C	-40 ... +80	
Viscosity range	$\nu$	mm <sup>2</sup> /s	4 ... 500	
Maximum admissible degree of contamination of hydraulic fluid, cleanliness level as per ISO 4406 (c)				Level 20/18/15 <sup>1)</sup>
Load cycles	Version <b>U</b>	5 Mio.		
	Version <b>R</b>	10 Mio.		

Electric			
Voltage type	DC voltage		
Supply voltage <sup>2)</sup>	V	12 DC; 24 DC	
Voltage tolerance over ambient temperature	See characteristic curve on page 7		
Power consumption	W	22	
Duty cycle	%	See characteristic curve on page 7	
Maximum coil temperature <sup>3)</sup>	°C	150	
Switching time according to ISO 6403 (Horizontal solenoid)	ON ( <b>P</b> → <b>A</b> )	ms	≤60 (≤95 for version " <b>R...-17</b> ")
	OFF ( <b>A</b> → <b>P</b> )	ms	≤60 (≤95 for version " <b>R...-17</b> ")
Maximum switching frequency	Version <b>U</b>	1/h	3600
	Version <b>R</b>	1/h	9000
Type of protection according to ISO 20653	Connector version "K4"	IP6K5 <sup>4)</sup>	
	Connector version "C4"	IP6K6K <sup>4)</sup>	
	Connector version "K40"	IP6K9K <sup>4)</sup> (only with Rexroth type R901022127) IP6K7 and IP6K9K <sup>4)</sup>	

**Notice**

For applications outside these values, please consult us!

**Notice**

For the electrical connection, a protective earth (PE  $\perp$ ) connection is mandatory based on the specification.

1) Cleanliness levels specified for the components must be maintained in the hydraulic systems. Effective filtration prevents malfunctions and simultaneously extends the service life of the components.  
We recommend a filter with a minimum retention rate of  $\beta_{10} \geq 75$ .

2) Additional voltages available on request  
3) Due to the occurring surface temperatures of the solenoid coils, the standards ISO 13732-1 and ISO 4413 must be observed!  
4) With installed and locked plug-in connector. Plug-in connectors are not included in the scope of delivery and must be ordered separately, see data sheet 08006.

### Hydraulic fluid

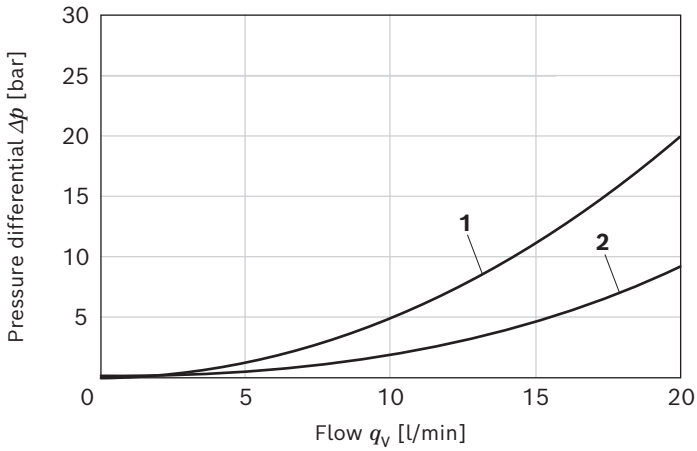
Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	FKM	DIN 51524	90220
Environmentally acceptable	Insoluble in water	HEES	FKM	ISO 15380	90221
	Soluble in water	HEPG	FKM	ISO 15380	90221

#### Notice

- ▶ Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- ▶ Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K above the maximum solenoid surface temperature.
- ▶ **Environmentally acceptable:** If environmentally acceptable hydraulic fluids are used that are also zinc-dissolving, there may be an accumulation of zinc.

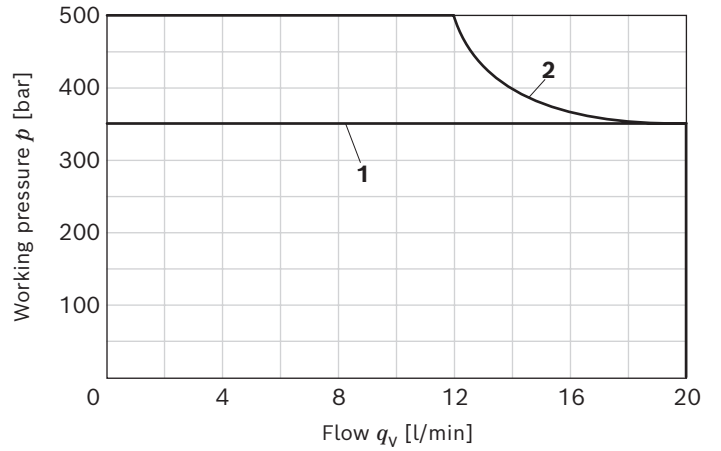
## Characteristic curves

### ▼ $\Delta p$ - $q_V$ characteristic curve



- 1 Version "R" (P → A; A → P)
- 1 Version "U" (P → A)
- 2 Version "R...-17" (P → A)

### ▼ Performance limit



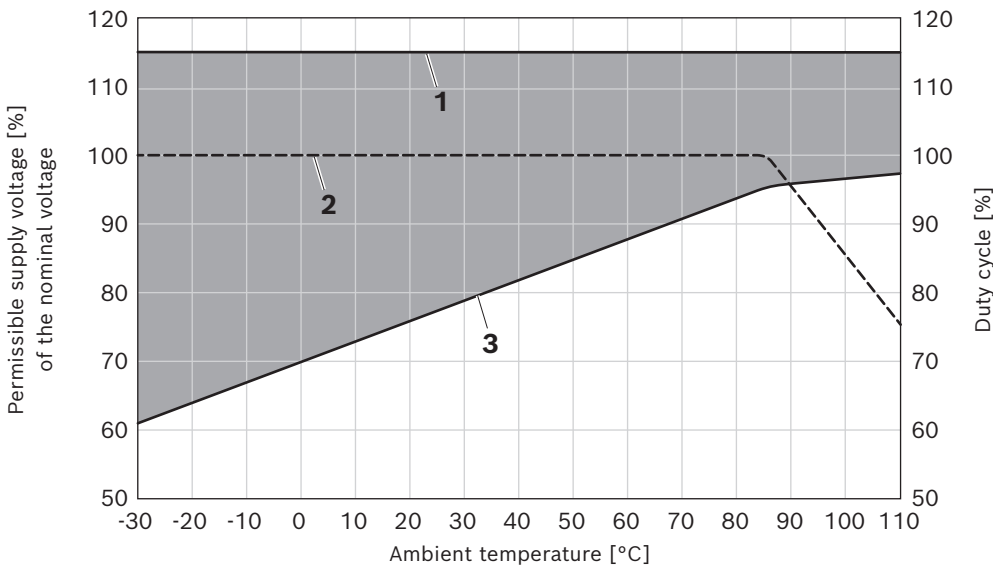
- 1 Version "R" (P → A; A → P)
- 2 Version "R...-17" (P → A)
- 3 Version "U" (P → A)

#### Notice

- ▶ The characteristic curves have been measured with HLP46,  $\vartheta_{oil} = 40 \pm 5$  °C and 24 V coil.
- ▶ The performance limit was determined with solenoids at operating temperature and 10 % undervoltage.

## Permissible working range

### ▼ Voltage tolerance and duty cycle depending on the ambient temperature

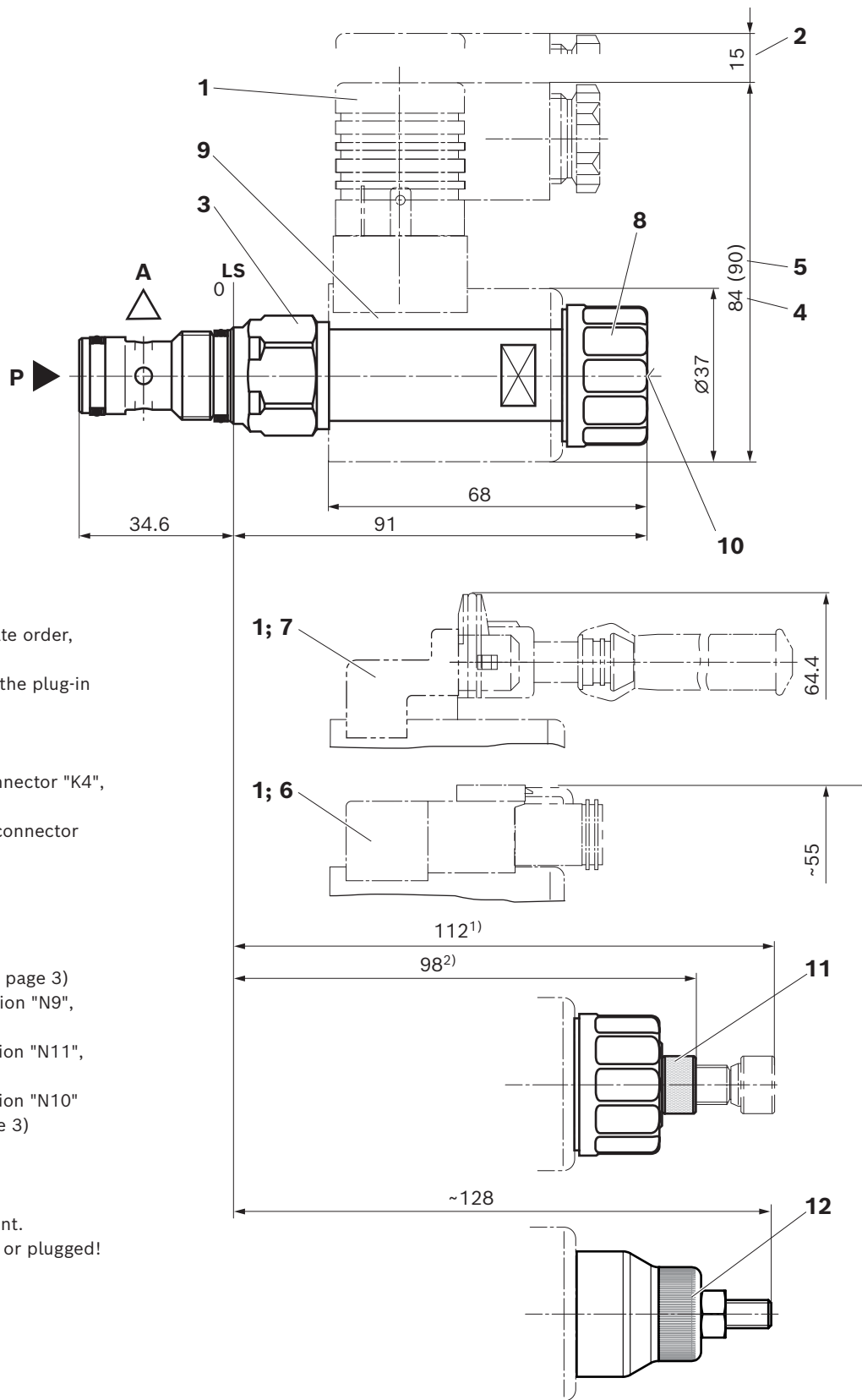


- 1 Maximum voltage
- 2 Duty cycle
- 3 Minimum response voltage

= Permissible supply voltage range

## Dimensions

### ▼ KSDE.1



- 1 Plug-in connectors, separate order, see data sheet 08006
- 2 Space required to remove the plug-in connector
- 3 SW24, tightening torque  
 $M_A = 25+5 \text{ Nm}$
- 4 Dimensions for plug-in connector "K4", without wiring
- 5 Dimensions ( ) for plug-in connector "K4", with wiring
- 6 Device connector "K40"
- 7 Device connector "C4"
- 8 Nut, tightening torque  
 $M_A = 5+1 \text{ Nm}$
- 9 Coil (order separately, see page 3)
- 10 Concealed auxiliary actuation "N9", optional
- 11 Screwable auxiliary actuation "N11", optional
- 12 Screwable auxiliary actuation "N10" (order separately, see page 3)

**P** = pump port

**A** = consumer port

**Attention!** Clear pin assignment.

**P** and **A** may not be swapped or plugged!

**LS** = location shoulder

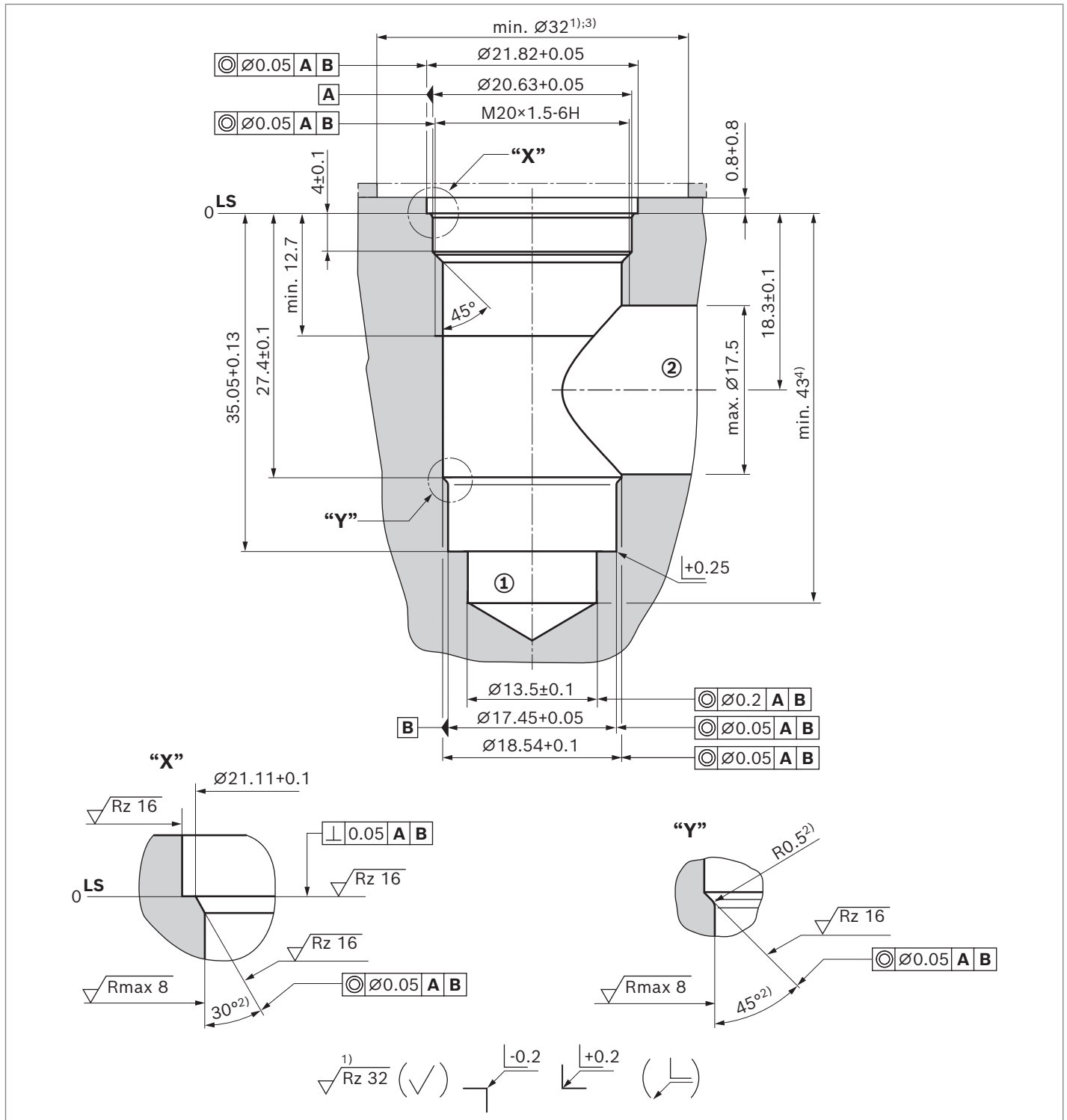
1) Actuated

2) Mounted



### Mounting cavity

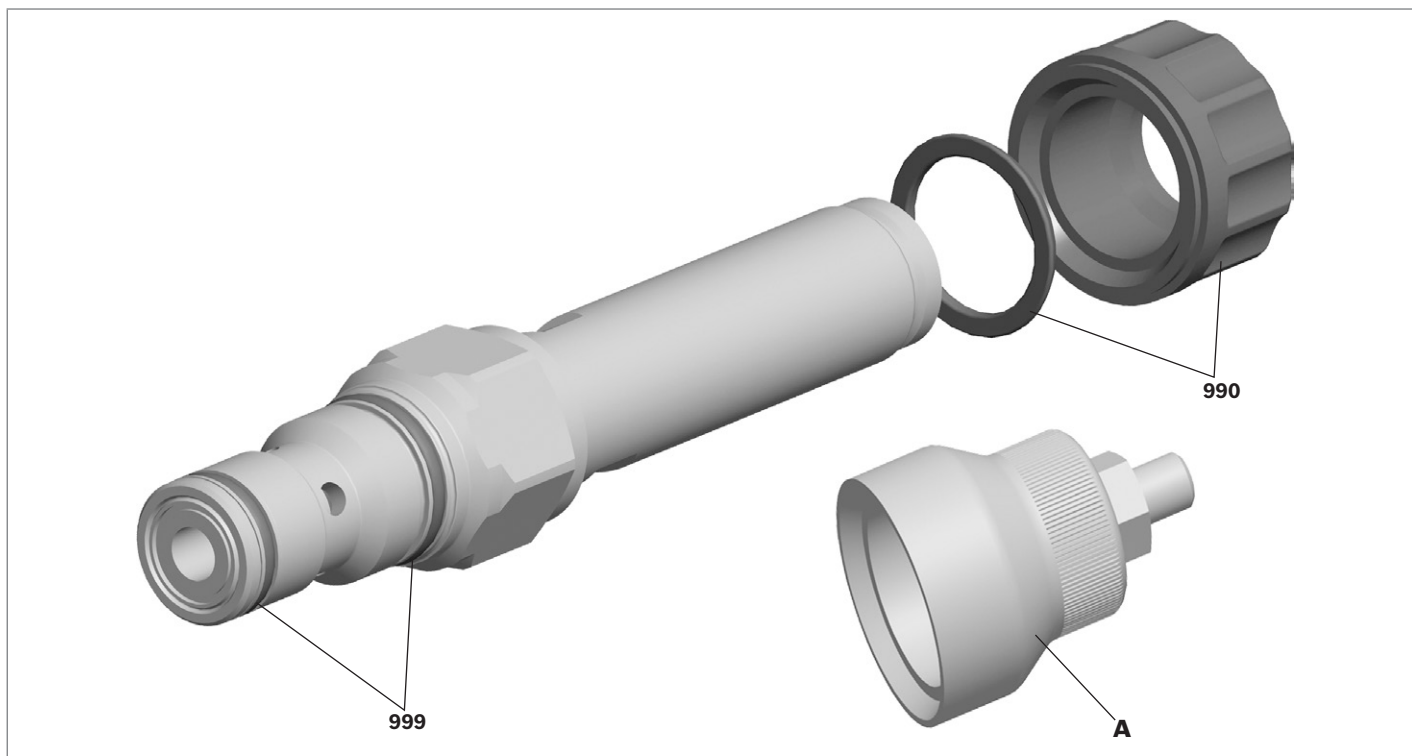
▼ **Version R/T-13A – 2 main ports; thread M20×1.5**



- 1) Deviating from T-13A
- 2) All seal ring insertion faces are rounded and free of burrs
- 3) At counterbore
- 4) Depth for movable parts

Tolerance for all angles  $\pm 0.5^\circ$   
**LS** = location shoulder  
**P** = pump port  
**A** = consumer port

## Available individual components



Item	Denomination		DC voltage	Material number
	Coil for single connection	K4	12 V	R900991678
			24 V	R900991121
		K40	12 V	R900729189
			24 V	R900729190
		C4	12 V	R900315818
			24 V	R900315819
A	Auxiliary actuation "N10" <sup>1)</sup>		R901051231	
990	Nut and O-ring for pole tube		R961012130	
999	Seal kit of the valve		R961003236	

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

## Related documentation

- ▶ Mineral oil-based hydraulic fluids
- ▶ Environmentally acceptable hydraulic fluids
- ▶ MTTF<sub>D</sub> values

Data sheet 90220

Data sheet 90221

Data sheet 90294

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