RE 29406
Edition: 2019-11
Replaces: 2018-03

rexroth
A Bosch Company

Directional high-response cartridge valve, pilot-operated, with integrated electronics (OBE) and analog or field bus interface

Type 2WRCE and 2WRCF



- Size 32 ... 50
- Component series 4X
- Maximum operating pressure 420 bar
- Rated flow 850 ... 2700 l/min (***Δp*** = 5 bar)

CE

Features

- 2-way cartridge valve
- Pilot control valve: Highly dynamic directional control valve with control spool and sleeve in servo quality
- Open
  - Integrated electronics (OBE)
  - Analog or field bus interface (IFB Multi-Ethernet) (EtherNet/IP, PROFINET RT, Sercos, EtherCAT, POWERLINK, VARAN)
- Robust
  - Pressure resistance up to 420 bar
  - High vibration resistance (acc. to DIN EN 60068-2)
  - Ambient temperature up to +60 °C
- Precise
  - High response sensitivity and low hysteresis
- Normalized
  - Installation dimensions according to ISO 7368
- Flexible
  - Suitable for position, pressure, force and velocity control

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Ordering code

01	02	03	04	05	06	07		08		09	10	11	12		13	14	15	16	17
2	**WRC**			**S**			**–**	**4X**	**/**	**H**				**/**	**24**				*****

01	2 main ports	**2**
02	Directional high-response cartridge valve, pilot-operated	**WRC**
03	With integrated electronics (OBE)	**E**
	With integrated field bus electronics (IFB)	**F**
04	Size 32	**32**
	Size 40	**40**
	Size 50	**50**
05	Seat control spool	**S**

Rated flow at 5 bar pressure differential

06	**– Size 32**	
	850 l/min (only version "R")	**850**
	1100 l/min (only version "L")	**1K1**
	– Size 40	
	1400 l/min (only version "R")	**1K4**
	1800 l/min (only version "L")	**1K8**
	– Size 50	
	2300 l/min (only version "R")	**2K3**
	2700 l/min (only version "L")	**2K7**

Flow characteristic

07	Linear	**L**
	Linear with progressive fine control range	**R**
	Other versions available on request	
08	Component series 40 ... 49 (40 ... 49: Unchanged installation and mounting dimensions)	**4X**

Pilot control valve

09	Highly dynamic directional control valve in servo quality	**H**

Seal material (observe compatibility of seals with hydraulic fluid used, see page 8)

10	NBR seals	**M**
	FKM seals	**V**

Sandwich plate shut-off valve

11	**Without** shut-off valve	
	De-energized pilot control valve actively **closes** "2WRC" with applied pilot pressure	**K**
	De-energized pilot control valve actively **opens** "2WRC" with applied pilot pressure	**L**
	With shut-off valve	
	De-energized shut-off valve actively **closes** "2WRC" with applied pilot pressure	**WK**
	De-energized shut-off valve actively **opens** "2WRC" with applied pilot pressure	**WL**

Spool position monitoring (at the sandwich plate shut-off valve)

12	**Without** position switch	**no code**
	With position switch	**E**
13	Supply voltage 24 V	**24**

Ordering code

01	02	03	04	05	06	07		08		09	10	11	12		13	14	15	16	17
2	**WRC**			**S**			**–**	**4X**	**/**	**H**				**/**	**24**				*****

Ethernet interface

14	**Without** (only with integrated electronics (OBE) "E")	**no code**
	EtherNET/IP	**E**
	PROFINET RT	**N**
	Sercos	**S**
	EtherCAT (CANopen profile)	**T**
	VARAN	**V**
	POWERLINK (CANopen profile)	**W**

Electrical interface

15	Command value 0 ... 10 V (only with integrated electronics (OBE) "E")	**A1**
	Command value 4 ... 20 mA (only with integrated electronics (OBE) "E")	**F1**
	Command value Ethernet interface (only with integrated field bus electronics (IFB) "F")	**D9**

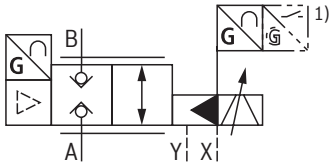
16	**Without** damping plate	**no code**
	With damping plate (only sizes 32 and 40)	**D**

17	Further details in the plain text	

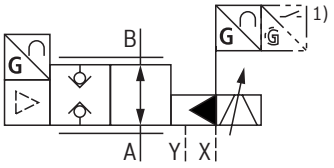
Symbols

Simplified

Version "K" and **"WK"**

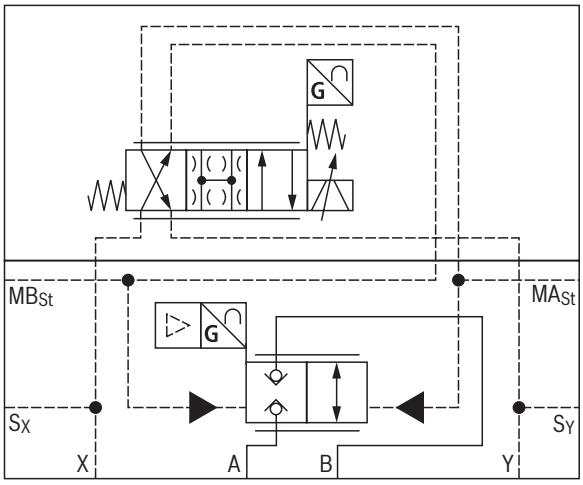


Version "L" and **"WL"**

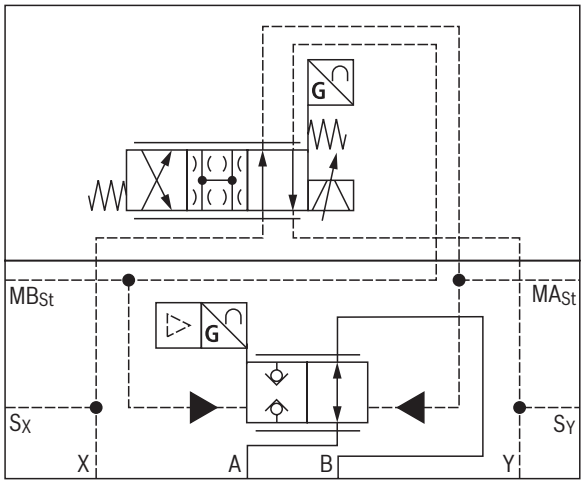


Detailed

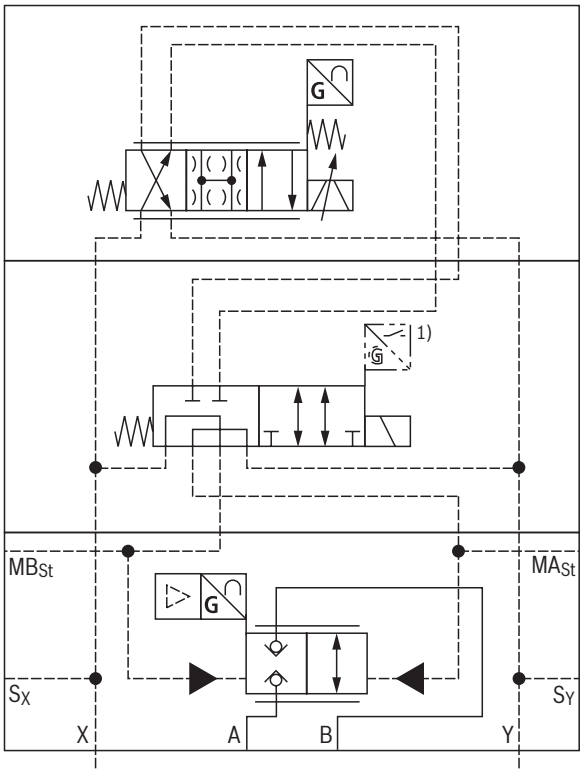
Version "K"



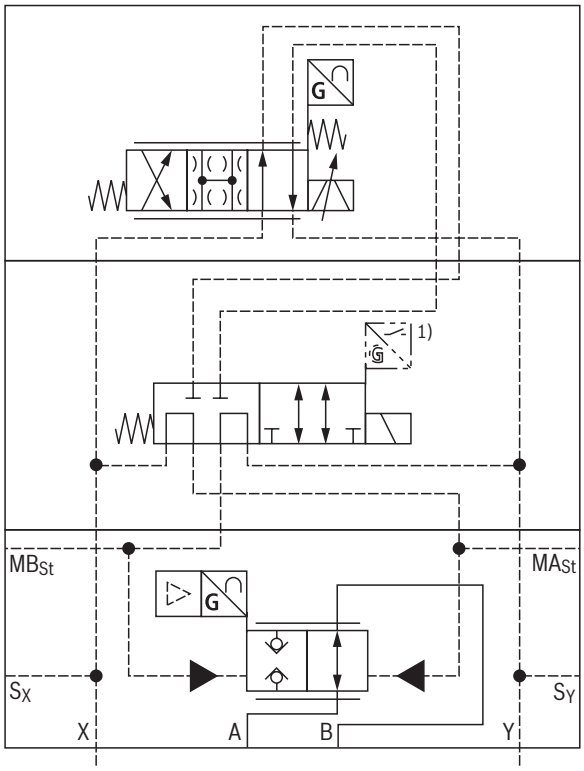
Version "L"



Version "WK"



Version "WL"



1) Version with position switch "E"

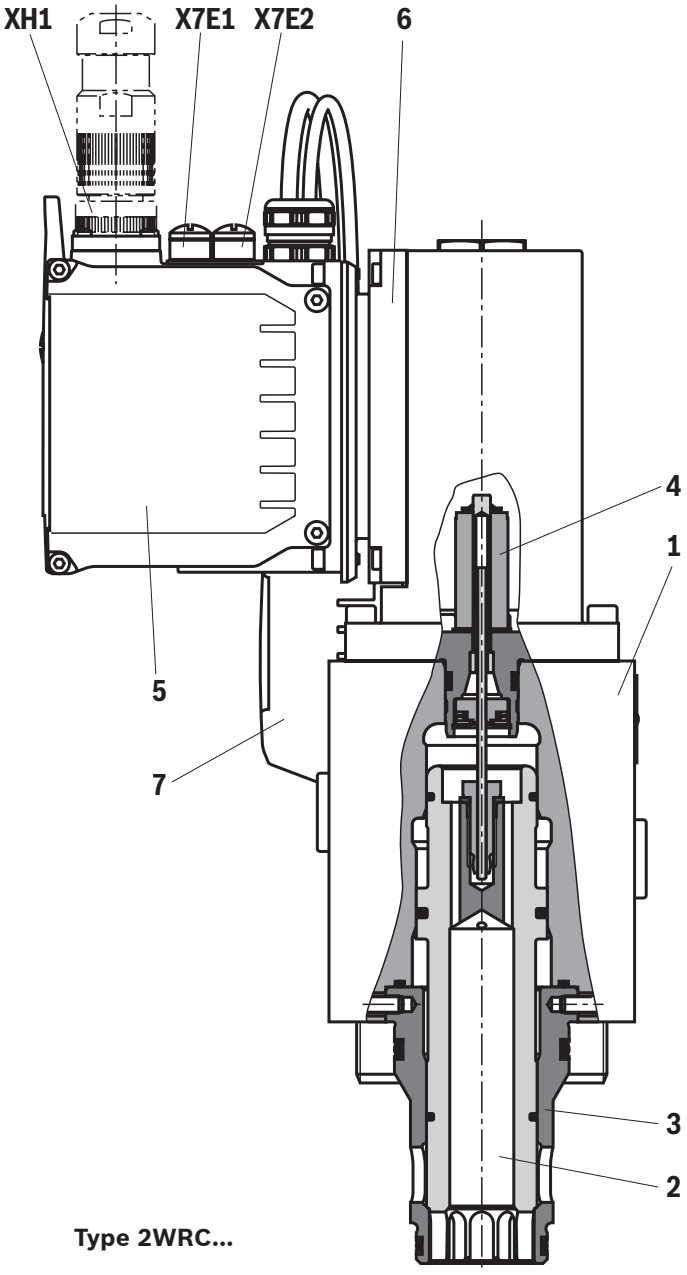
☞ **Notice:** Representation according to DIN ISO 1219-1.

Function, section, symbol

Set-up

The pilot-operated directional high-response cartridge valve type 2WRC. basically consists of:

- Cover (1)
- Control spool (2)
- Socket (3)
- Position transducer (4)
- Integrated electronics (5)
- Damping plate (6)
- Pilot control valve (7)
- Ethernet IN (X7E1); Ethernet OUT (X7E2)
- Connector, voltage supply (XH1)



Type 2WRC...

Function

The integrated electronics (5) compares command and actual values and actuates the solenoid of the pilot control valve with a proportional current according to the control deviation.

The pilot control valve (7) takes a proportionally controlled position and controls the flows that actuate the control spool (2) through the closed valve control loop up to zero control deviation.

This means that the stroke of the control spool (2) is regulated proportionally to the command value. It must be noted that the flow also depends on the valve pressure drop.

Valve features

The flow can pass through the valve from A to B or from B to A. The control spool (2) closes or opens at 5 % of the command value. At lower command values, the valve control loop attempts to guide the control spool (2), thus presses it onto the seat at full pilot pressure and blocks the connection in a leakage-free way. The specified valve dynamics only apply to the control area of the valve.

At command value steps from the seat to lower opening values, additional delay times occur. The opening point of 5 % (= 0.5 V or 4.8 mA) is set at the factory. The pilot control valve (7) is designed as bi-directionally controlled longitudinal spool valve with double stroke solenoid and control sleeve and has a mechanical trimming in case of power failure. The integrated electronics (5) regulates the position of the control spools of main and pilot control stage and offers either the analog interfaces "A1" and "F1" or the full bus functionality with interface "D9".

Damping plate "D"

The damping plate (6) reduces the acceleration amplitudes on the on-board electronics (frequencies >300 Hz).

☞ **Notice:**
Using the damping plate is not recommended for applications with mainly low-frequency excitation < 300 Hz.

IndraWorks DS PC program

To implement the project planning task and for the parameterization, the user may use the IndraWorks DS engineering tool (see page 22):

- Project planning
- Parameterization
- Commissioning
- Diagnosis
- Comfortable administration of all data on a PC
- PC operating systems: Windows 7 ... 10

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

General					
Size		NG	32	40	50
Weight	▶ Without shut-off valve ("K"; "L")	kg	15.6	21.2	32.3
	▶ With shut-off valve ("WK"; "WL")	kg	17.2	22.8	33.9
	▶ Position switch "E"	kg	1.1		
Installation position			any, preferably horizontal		
Ambient temperature range		°C	–20 ... +60		
Maximum storage time		Years	1 (if the storage conditions are observed, refer to the operating instructions 07600-B)		
Sine test according to DIN EN 60068-2-6	▶ Without damping plate		10 ... 2000 Hz / maximum of 10 g / 10 cycles / 3 axes		
	▶ With damping plate [1] (NG32 and 40)		10 ... 2000 Hz / maximum of 10 g / 10 cycles / 3 axes		
Noise test according to DIN EN 60068-2-64	▶ Without damping plate (NG32 and 40)		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 30 min / 3 axes		
	▶ Without damping plate (NG50)		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 24 h / 3 axes		
	▶ With damping plate [1] (NG32 and 40)		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 24 h / 3 axes		
Transport shock according to DIN EN 60068-2-27	▶ Without damping plate		15 g / 11 ms / 3 axes		
	▶ With damping plate [1] (NG32 and 40)		15 g / 11 ms / 3 axes		
Shock according to DIN EN 60068-2-27	▶ With damping plate [1] (NG32 and 40)		35 g / 6 ms / 3 axes		
Maximum relative humidity (no condensation)		%	95		
Load cycles			10 million		
Conformity			▶ CE according to EMC directive 2014/30/EU, tested according to EN 61000-6-2 and EN 61000-6-3 ▶ RoHS directive 2015/65/EU ▶ REACH ordinance (EC) no. 1907/2006		

[1] Not recommended for applications with mainly low-frequency excitation < 300 Hz

☞ **Notice:**
In the valves NG50, the purchased part "WEGAUFNEHMER DK 20/4 SPEZ." (material no. R900021287) is installed which contains the following substance from the REACH SVHC candidate list:
▶ N,N-dimethylacetamide, CAS no. 127-19-5

Use of the substance specified above is not forbidden, the information must, however, be provided according to REACH article 33. The contained residual amount is classified by the supplier to be neither dangerous to the human health nor to the environment. The manufacturer assumes that the load cannot reach critical levels.

Technical data

(For applications outside these values, please consult us!)

Hydraulic					
Maximum operating pressure	▶ Port A, B	bar	420		
Maximum pilot pressure	▶ Port X				
	– Version "K", "L"	bar	350		
	– Version "WK", "WL"	bar	315		
Maximum return flow pressure	▶ Port Y	bar	210		
Minimum pilot pressure (in % of the system pressure)	▶ A → B	%	70		
	▶ B → A	%	35		
Rated flow (***Δp*** = 5 bar [2; 3; 4])	▶ Version "L"	l/min	1100 (1500)	1800 (2200)	2700 (3900)
	▶ Version "R"	l/min	850 (1050)	1400 (1700)	2300 (3000)
Maximum flow [5]		l/min	2800	4200	6400
Pilot flow [6]		l/min	78	78	95
Zero flow (pre-stage at 100 bar)	▶ Maximum	cm^3/min	900		
	▶ Average value	cm^3/min	400		
Pilot oil volume		cm^3	5.9	8.5	15.3
Hydraulic fluid			see table page 8		
Hydraulic fluid temperature range	▶ Recommended	°C	+40 ... +60		
	▶ Maximum admissible	°C	–20 ... +70		
Viscosity range	▶ Recommended	mm^2/s	30 ... 45		
	▶ Maximum admissible	mm^2/s	20 ... 380		
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	▶ Pilot control valve		Class 18/16/13 [7]		
	▶ Main stage		Class 20/18/15 [7]		

[2] Flow for deviating ***Δp***:

$$q_x = q_{Vnom} \times \sqrt{\frac{\Delta p_x}{5}}$$

[3] Recommended direction of flow B → A (from A → B increased cavitation erosion)

[4] Values () for two opposite, radial bores B with maximum diameter (see page 21)

[5] Velocity 30 m/s in port A (otherwise increased cavitation erosion)

[6] Stepped input signal (seat position at 100 %, pilot pressure 350 bar)

[7] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.
Available filters can be found at www.boschrexroth.com/filter.

Technical data

(For applications outside these values, please consult us!)

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	90220
Bio-degradable	▶ Insoluble in water	HETG	FKM	ISO 15380	90221
		HEES	FKM		
	▶ Soluble in water	HEPG	FKM	ISO 15380	
Flame-resistant	▶ Water-free	HFDU (glycol base)	FKM	ISO 12922	90222
		HFDU (ester base)	FKM		
		HFDR	FKM		
	▶ Containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922	90223

☞ **Important notices on hydraulic fluids:**

- ▶ For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- ▶ The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.
- ▶ **Bio-degradable and flame-resistant – containing water:**
  If components with galvanic zinc coating (e.g. version "J3" or "J5") or parts containing zinc are used, small amounts of dissolved zinc may get into the hydraulic system and cause accelerated aging of the hydraulic fluid. Zinc soap may form as a chemical reaction product, which may clog filters, nozzles and solenoid valves – particularly in connection with local heat input.
- ▶ **Flame-resistant – containing water:**
  - – Due to increased cavitation tendency with HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30 % as compared to the use with mineral oil HLP. In order to reduce the cavitation effect, it is recommended – if possible specific to the installation – to back up the return flow pressure in ports T to approx. 20 % of the pressure differential at the component.
  - – Dependent on the hydraulic fluid used, the maximum ambient and hydraulic fluid temperature must not exceed 50 °C. In order to reduce the heat input into the component, the command value profile is to be adjusted for proportional and high-response valves.

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

Static/dynamic					
			32	40	50
Hysteresis		%	< 0.2		
Range of inversion		%	< 0.1		
Response sensitivity		%	< 0.1		
Step response according to ISO 10770-1 [8]		ms	11	14	24
Reaching of the preferred position [9]		ms	52 ... 38	62 ... 48	130 ... 85
Zero compensation			ex plant ±1 %		
Zero shift upon change of:	▶ Hydraulic fluid temperature	%/10 K	≤ 0.3		
	▶ Pilot pressure in X	%/100 bar	≤ 0.2		

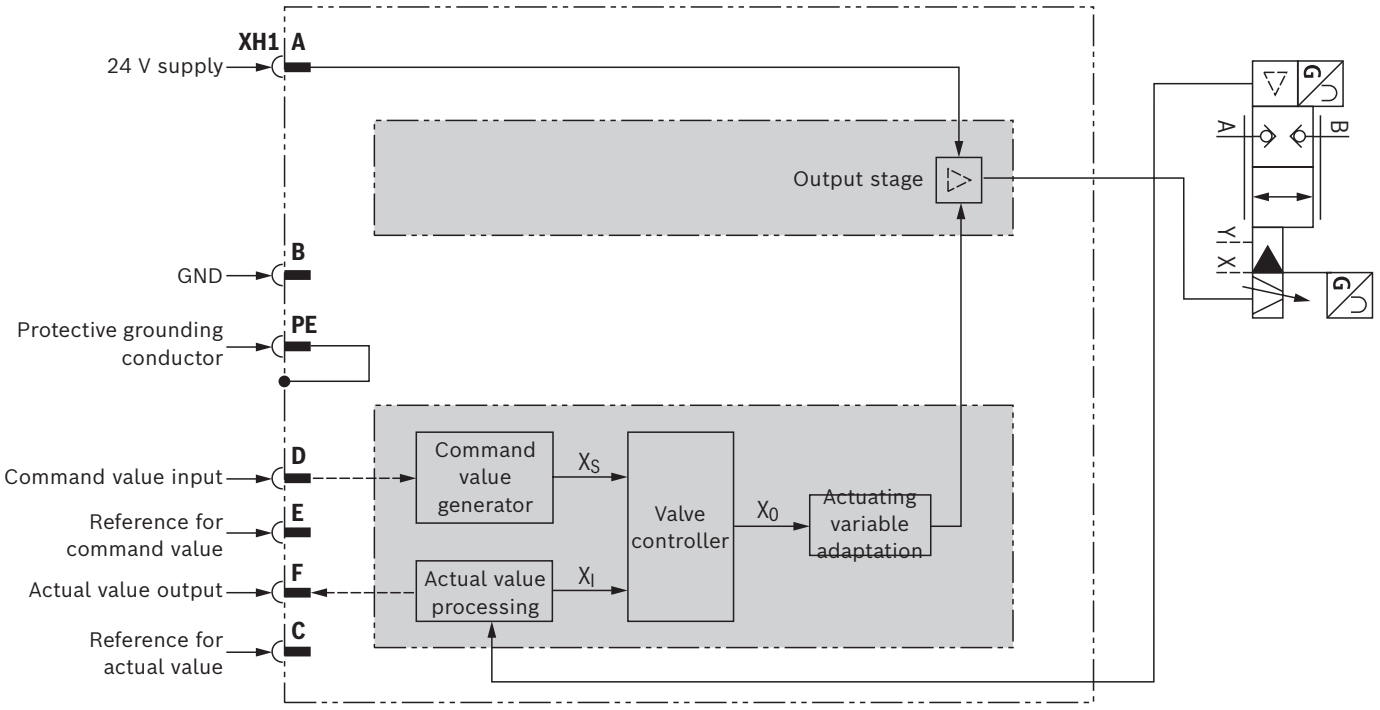
Electrical, integrated electronics			
Relative duty cycle		%	100 (continuous operation)
Protection class according to EN 60529			IP 65 with mating connector mounted and locked
Supply voltage	▶ Nominal voltage	VDC	24
	▶ Lower limit value	VDC	18
	▶ Upper limit value	VDC	36
Maximum admissible residual ripple		Vpp	2.5 (comply with absolute supply voltage limit values)
Current consumption	▶ Maximum	A	2.5
	▶ Impulse current	A	4
Maximum power consumption		W	40
Functional ground and screening			see connector pin assignment (CE-compliant installation) page 11
Required fuse protection, external		A	4 time-lag
Adjustment			calibrated in the plant, see characteristic curves page 13 ... 18

[8] Without shut-off valve; 10 % → 100 %, pilot pressure 150 bar

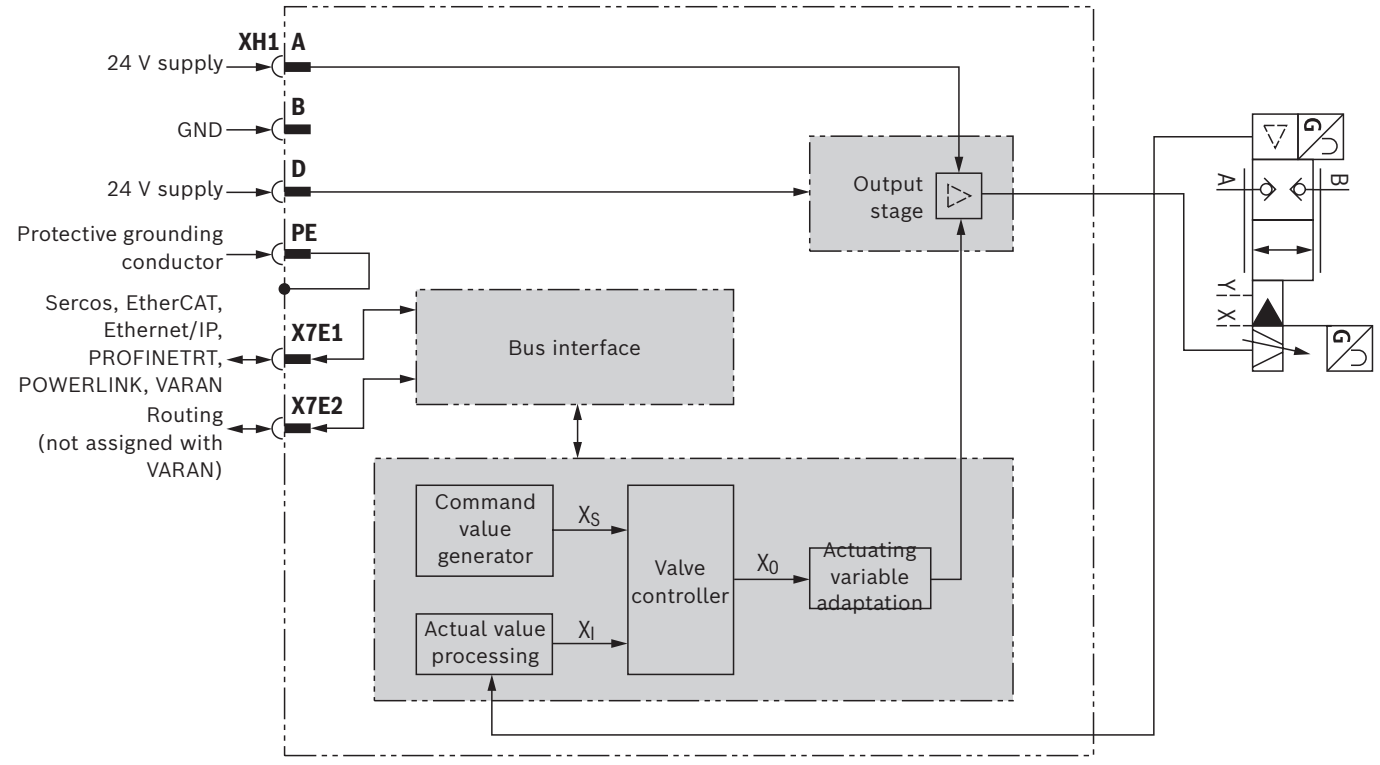
[9] With shut-off valve "WK" and "WL", pilot pressure 100 ... 315 bar

Block diagram/controller function block

▶ **With integrated electronics** (version "WRC**E**")



▶ **With integrated field bus electronics** (version "WRC**F**")



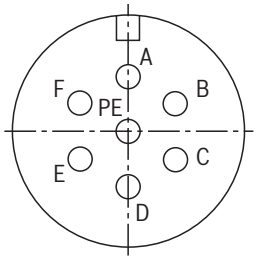
Electrical connections and assignment

Connector pin assignment: "A1", "F1" and "D9"

Pin 6 + PE	Signal	Interface assignment		
		Version "WRC**E**"		Version "WRC**F**"
		"A1" [1]	**"F1"** [2]	**"D9"**
A	Supply voltage	24 V DC		
B		GND		
C	Reference potential actual value	Reference potential actual value [3]	Reference potential actual value	–
D	Differential amplifier input	Command value 0 ... 10 V	Command value 4 ... 20 mA	24 V DC
E		Reference potential command value		–
F	Measuring output (actual value)	Actual value 0.5 ... 10 V	Actual value 4.8 ... 20 mA	–
PE		Functional ground (directly connected to the valve housing)		

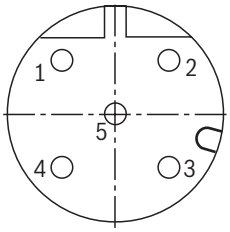
☞ **Notice:**
- Do not connect PE if the valve has already been grounded via the system.
- In case of cable break, valves of version "K" are - according to the factory setting - regulated and by default held in a closed position. Valves of version "L" are by default held in an open position. On the customer side, a so-called standstill value can be defined in IndraWorks DS by changing the parameters.

1) Pin D positive against E results in opening of the main control spool
2) Command value 4 ... 20 mA results in opening of the main control spool
3) With version "A1", pin C should be connected to GND (pin B) at the ground neutral point of the system.



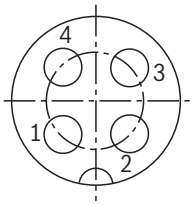
Connector pin assignment: M12 x 1, 4-pole, coding D
(for Ethernet interfaces "X7E1" and "X7E2")

Pin	Assignment
1	TxD +
2	RxD +
3	TxD –
4	RxD –
5	not used



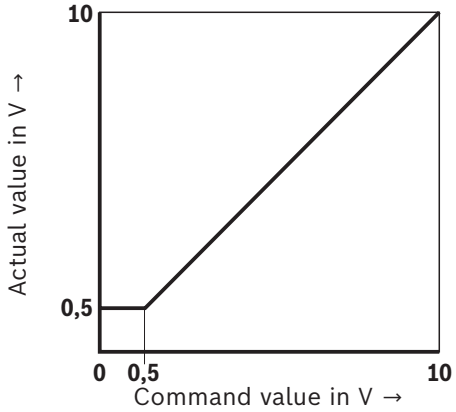
Connector pin assignment: M12 x 1, 4-pole
(position switch for sandwich plate shut-off valve)

Pin	Assignment
1	+24 V
2	Switching output: 200 mA
3	0 V, GND
4	Switching output: 200 mA

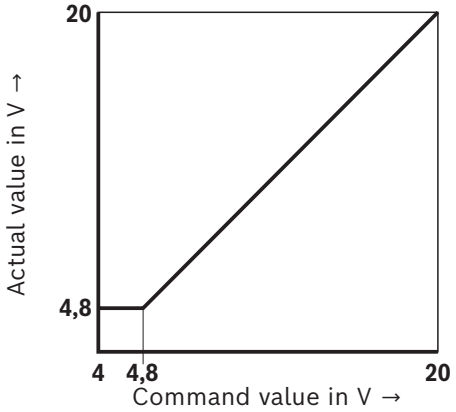


Nominal command value range

Command value 0 ... 10 V (0 ... 100 %)

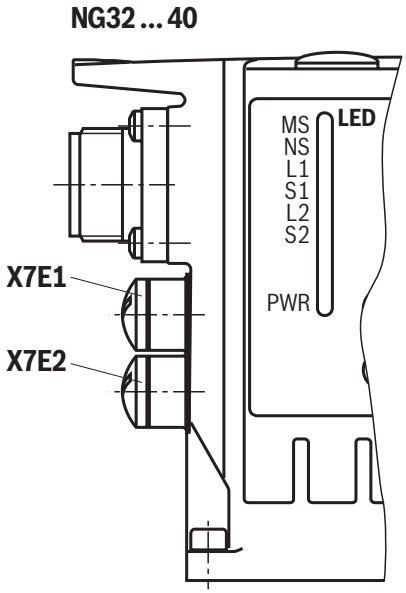


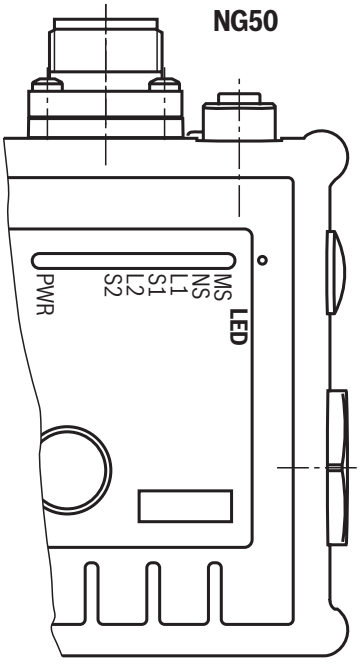
Command value 4 ... 20 mA (0 ... 100 %)



LED displays

LED	Interface	Analog	Sercos	EtherNET/IP	EtherCAT	PROFINET RT	POWERLINK	VARAN
MS	**Electronics module**	Module status	Module status	Module status	Module status	Module status	Module status	Module status
NS		–	S	Network status and others	Network status and others	Network status and others	Status/error	Network status and others
L1	**X7E1**	Link and others	Link and others	Link and others	Link/activity	Link and others	Link/data activity	Link and others
S1		Activity and others	Activity and others	Activity and others	Not used	Activity and others	Not used	Active and others
L2	**X7E2**	Link and others	Link and others	Link and others	Link/activity	Link and others	Link/data activity	Not used
S2		Activity and others	Activity and others	Activity and others	Not used	Activity and others	Not used	Not used
PWR	**XH1**	Power	Power	Power	Power	Power	Power	Power





Displays of the status LEDs

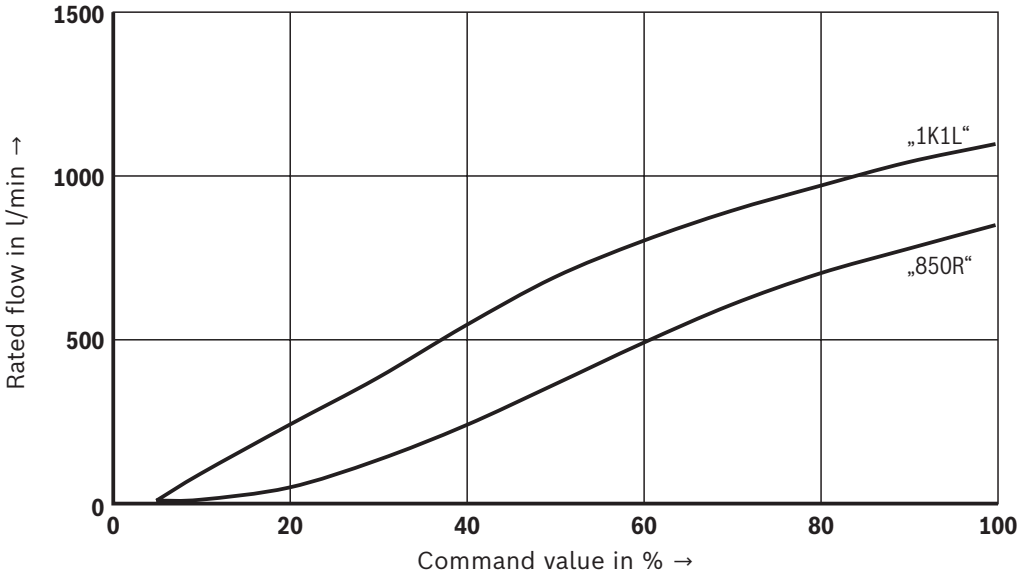
Power LED (LED PWR)	Display status
Off	No voltage supply
Green	Operation

Module status LED (LED MS)	Display status
Off	No voltage supply
Green-red, flashing	Initialization
Green, flashing	Drive Ready for operation
Green	Drive active
Orange, flashing	Warning
Red, flashing	Error
Green, rapidly flashing	Firmware must be loaded

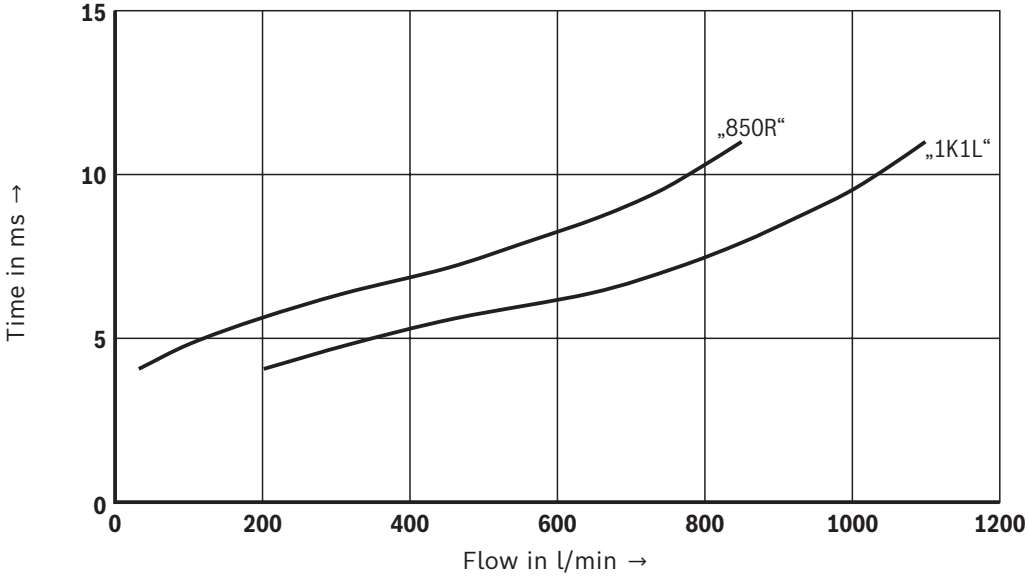
Notice:
- For the connection to the M12 sockets, we recommend using self-locking mating connectors
- Module status LED MS relates to the electronics module
- The network status LED NS indicates the status of the control communication, see application description 30338-FK
- LEDs L1, S1, L2 and S2 relate to interfaces "X7E1" and "X7E2"
  - Link: Cable plugged in, connection established (permanently lit)
  - Activity: Data sent/received (flashing)
- For a detailed description of the diagnosis LEDs, please refer to the functional description Rexroth HydraulicDrive HDx.

Characteristic curves: Size 32
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Rated flow (***Δp*** = 5 bar)

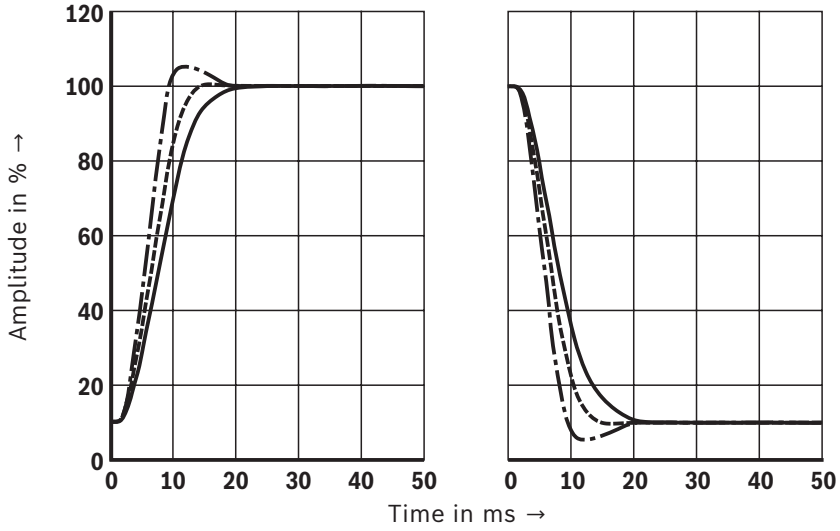


Step response time (pilot pressure 150 bar, ***Δp*** = 5 bar)



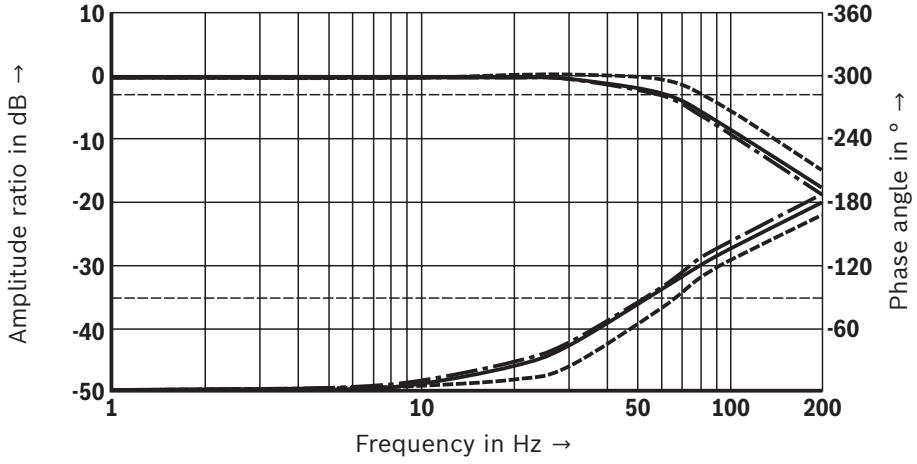
Characteristic curves: Size 32
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Transition function with stepped electric input signals



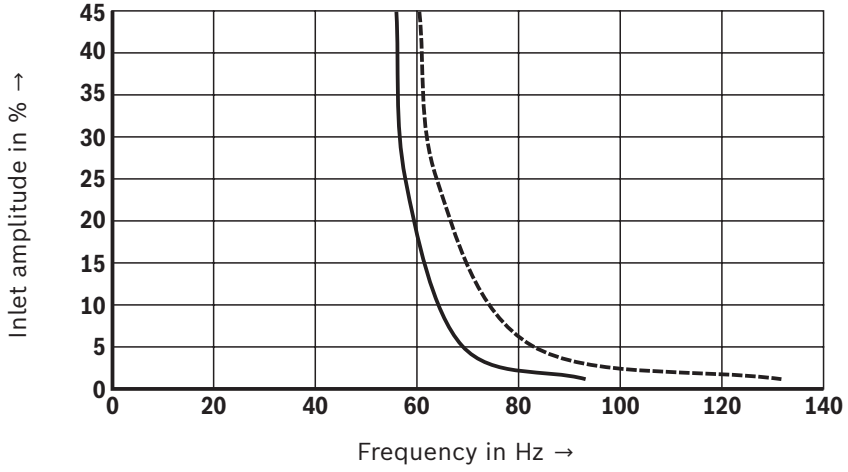
Pilot pressure p_{ST} 100 bar
Pilot pressure p_{ST} 150 bar
Pilot pressure p_{ST} 350 bar

Frequency response (p_{ST} = 210 bar)



50% ±25%
50% ±5%
50% ±45%

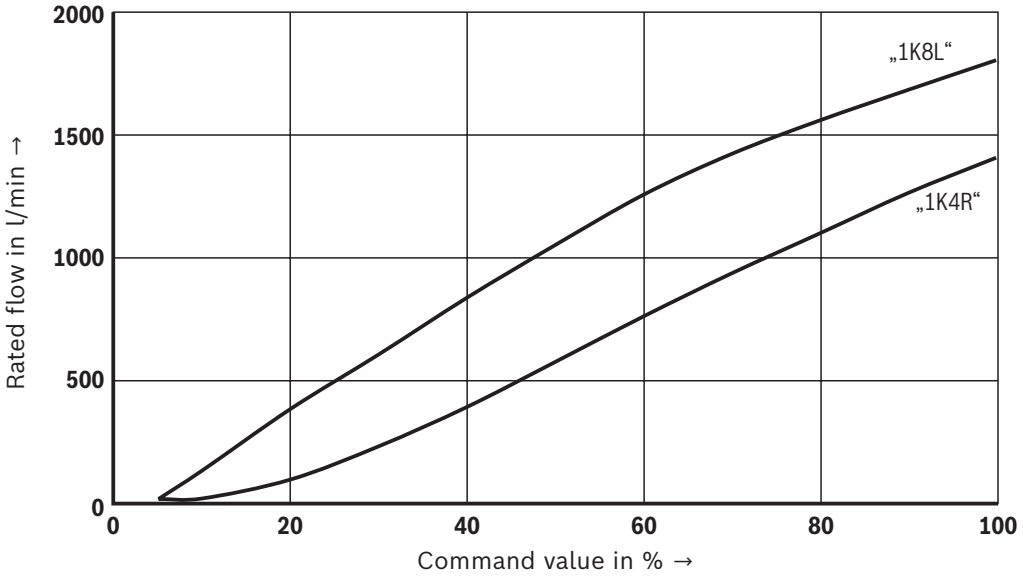
Information volume (p_{ST} = 210 bar)



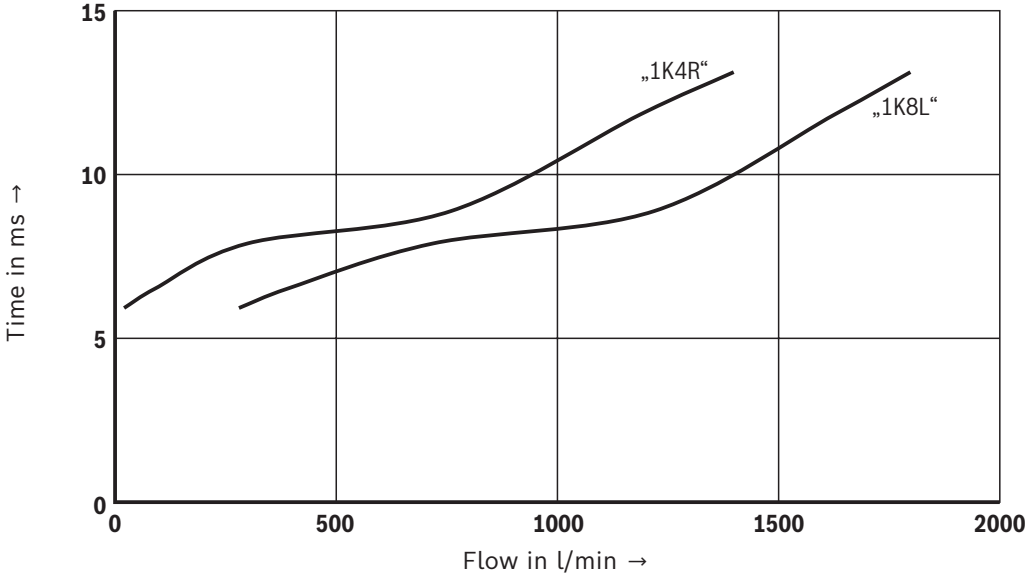
-90° phase
-3 dB amplitude

Characteristic curves: Size 40
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Rated flow (***Δp*** = 5 bar)

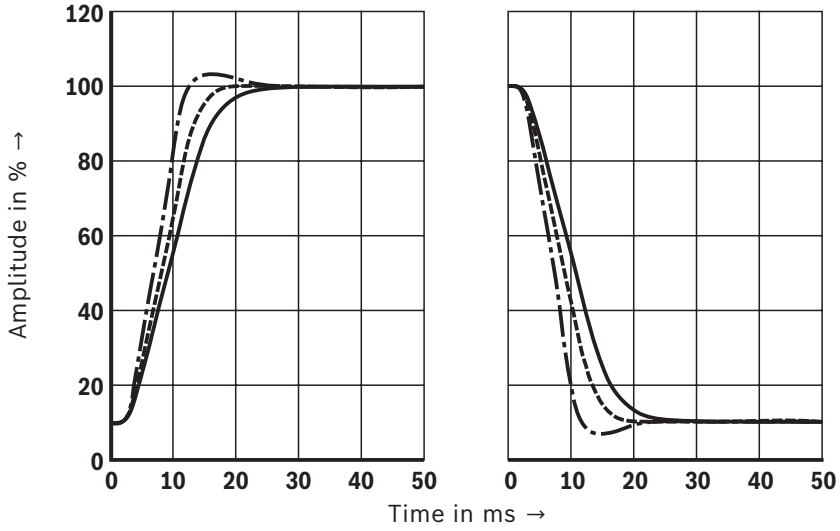


Step response time (pilot pressure 150 bar, ***Δp*** = 5 bar)



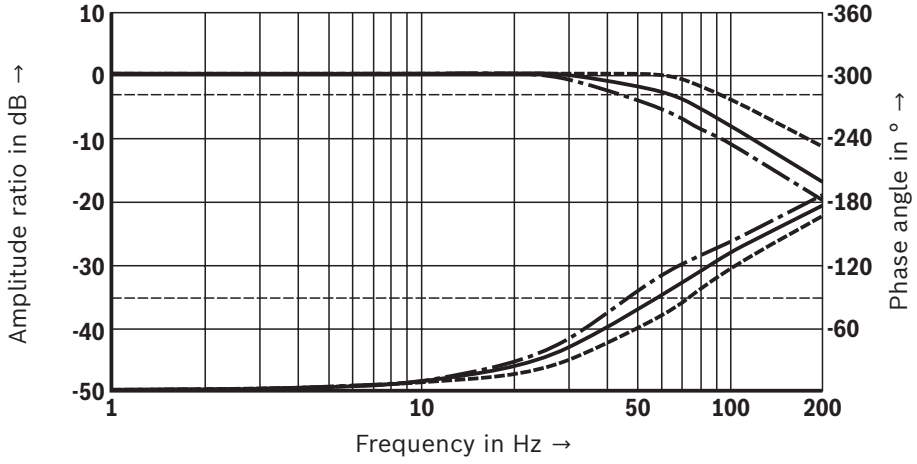
Characteristic curves: Size 40
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Transition function with stepped electric input signals



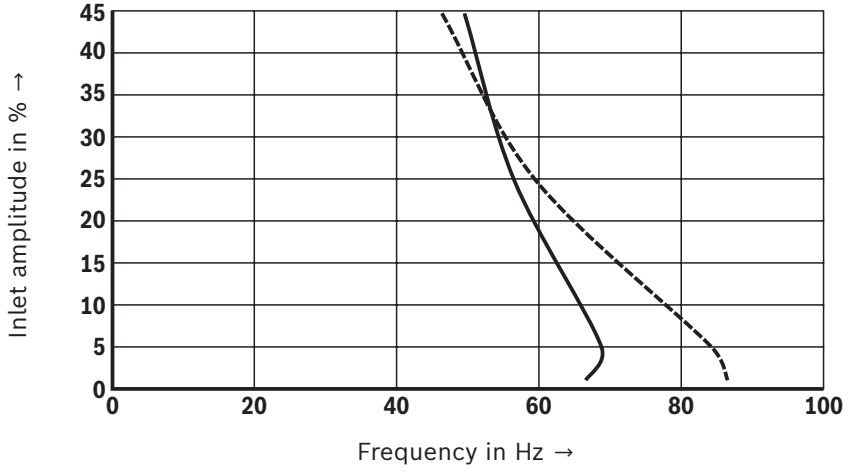
Pilot pressure p_{ST} 100 bar
Pilot pressure p_{ST} 150 bar
Pilot pressure p_{ST} 350 bar

Frequency response (p_{ST} = 210 bar)



50% ±25%
50% ±5%
50% ±45%

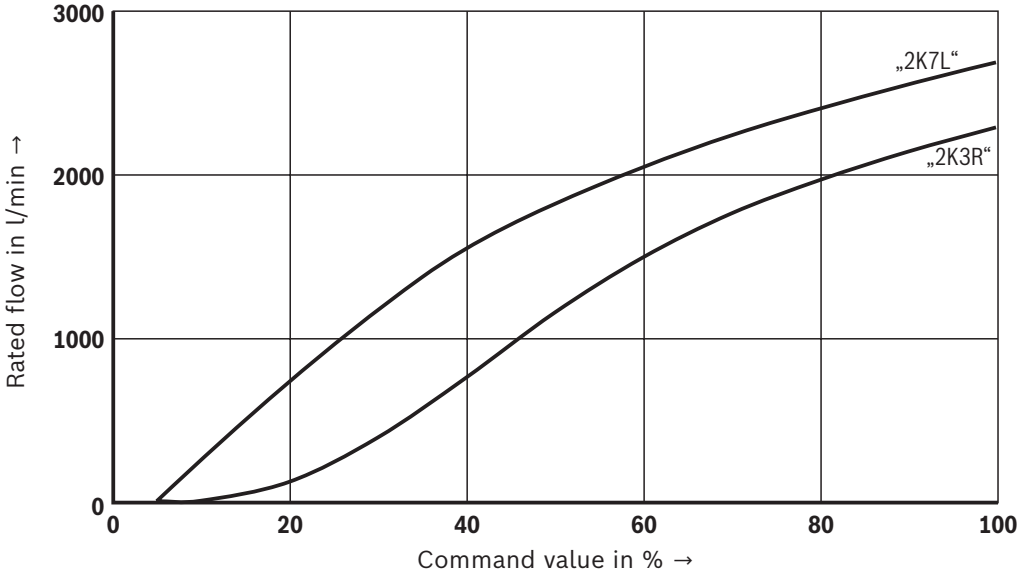
Information volume (p_{ST} = 210 bar)



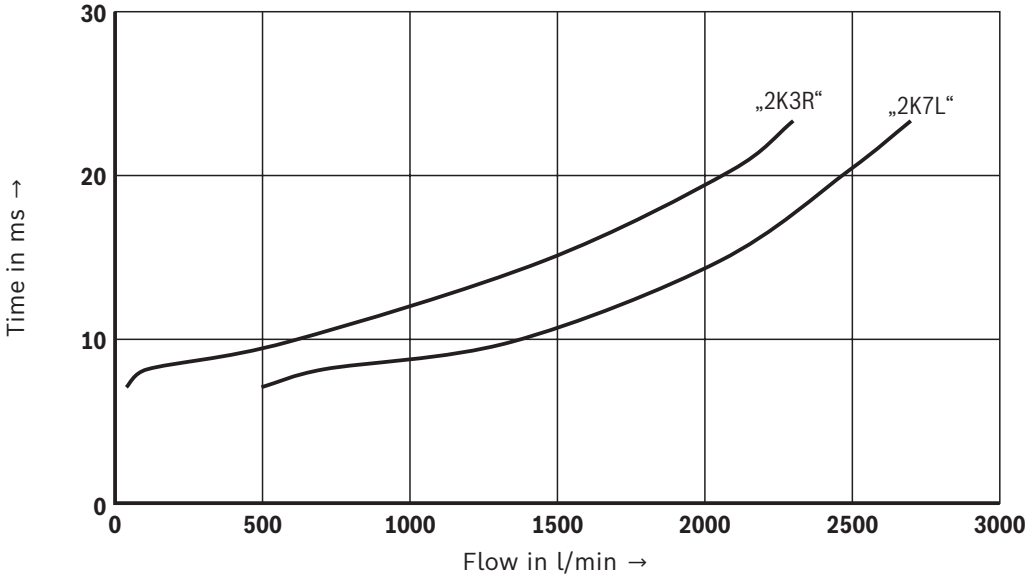
-90° phase
-3 dB amplitude

Characteristic curves: Size 50
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Rated flow (***Δp*** = 5 bar)

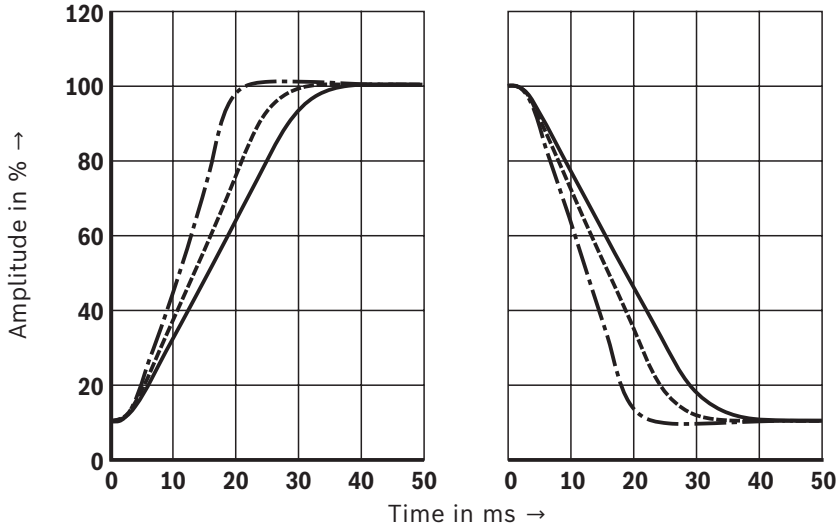


Step response time (pilot pressure 150 bar, ***Δp*** = 5 bar)



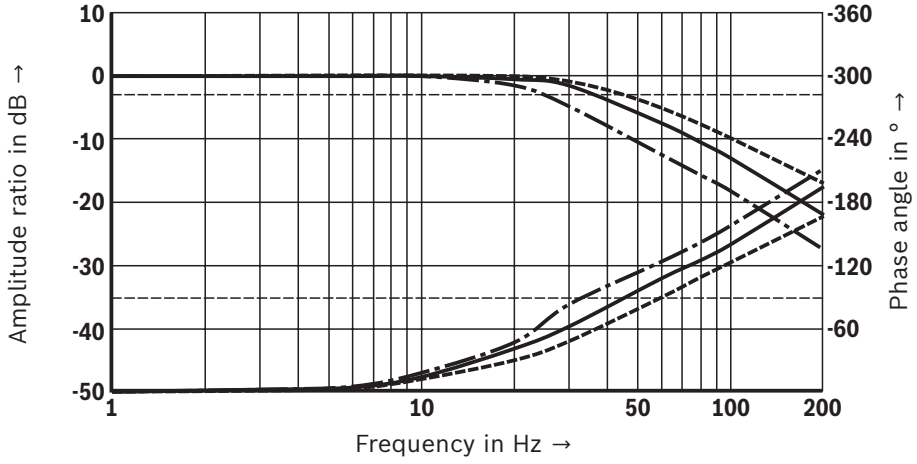
Characteristic curves: Size 50
(measured with HLP32, ϑ_{oil} = 40 ±5 °C)

Transition function with stepped electric input signals



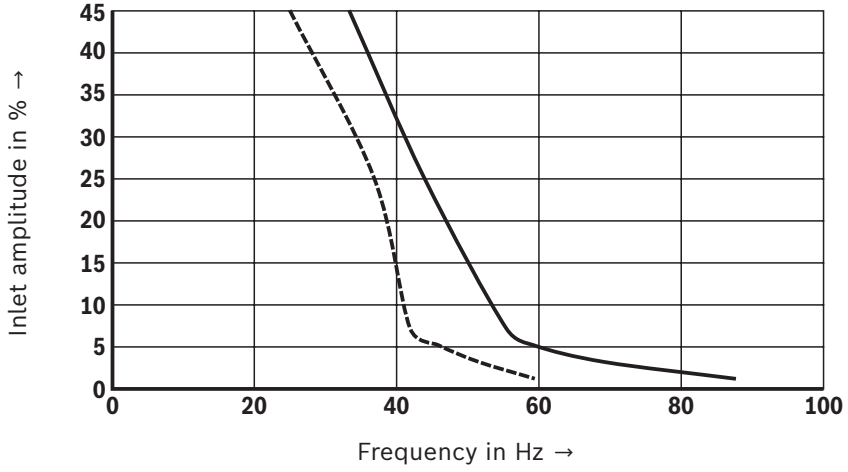
Pilot pressure p_{ST} 100 bar
Pilot pressure p_{ST} 150 bar
Pilot pressure p_{ST} 350 bar

Frequency response (p_{ST} = 210 bar)



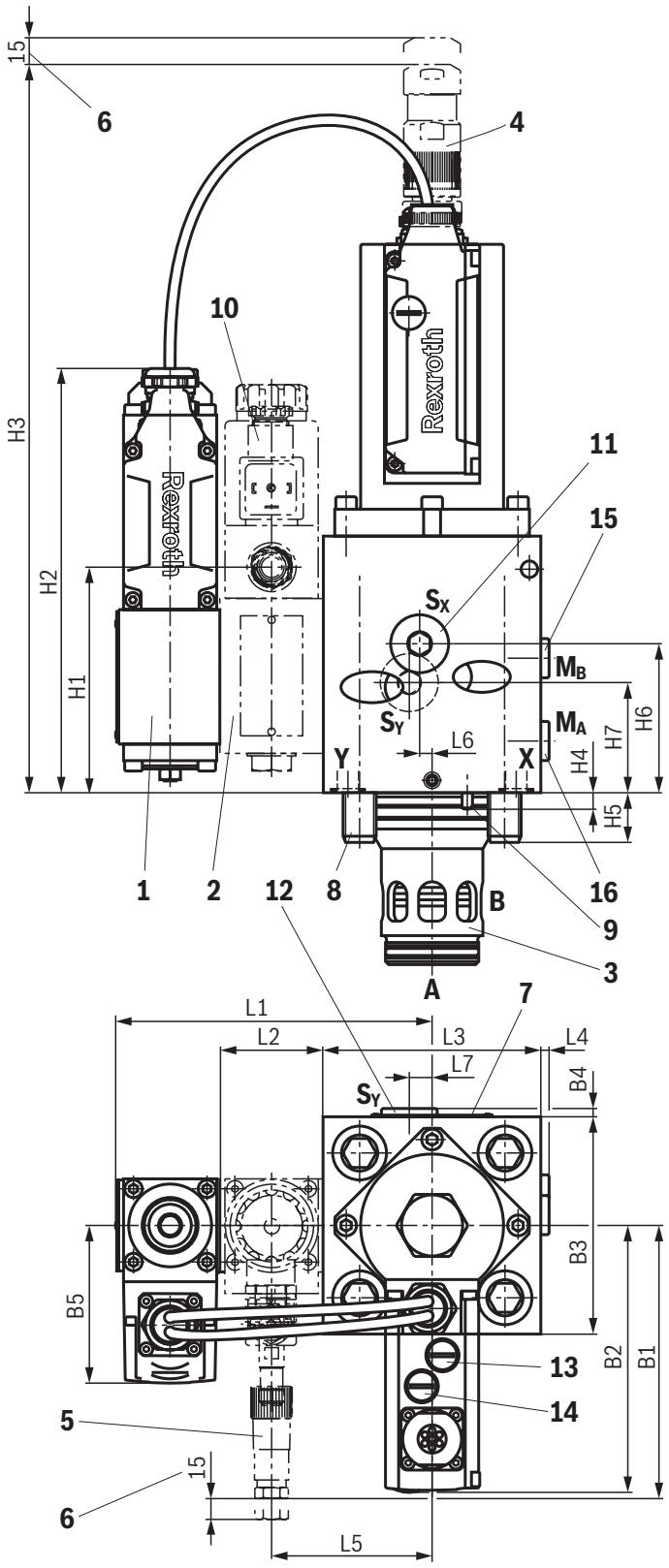
50% ±25%
50% ±5%
50% ±45%

Information volume (p_{ST} = 210 bar)



-90° phase
-3 dB amplitude

Dimensions: Sizes 32 and 40
(dimensions in mm)



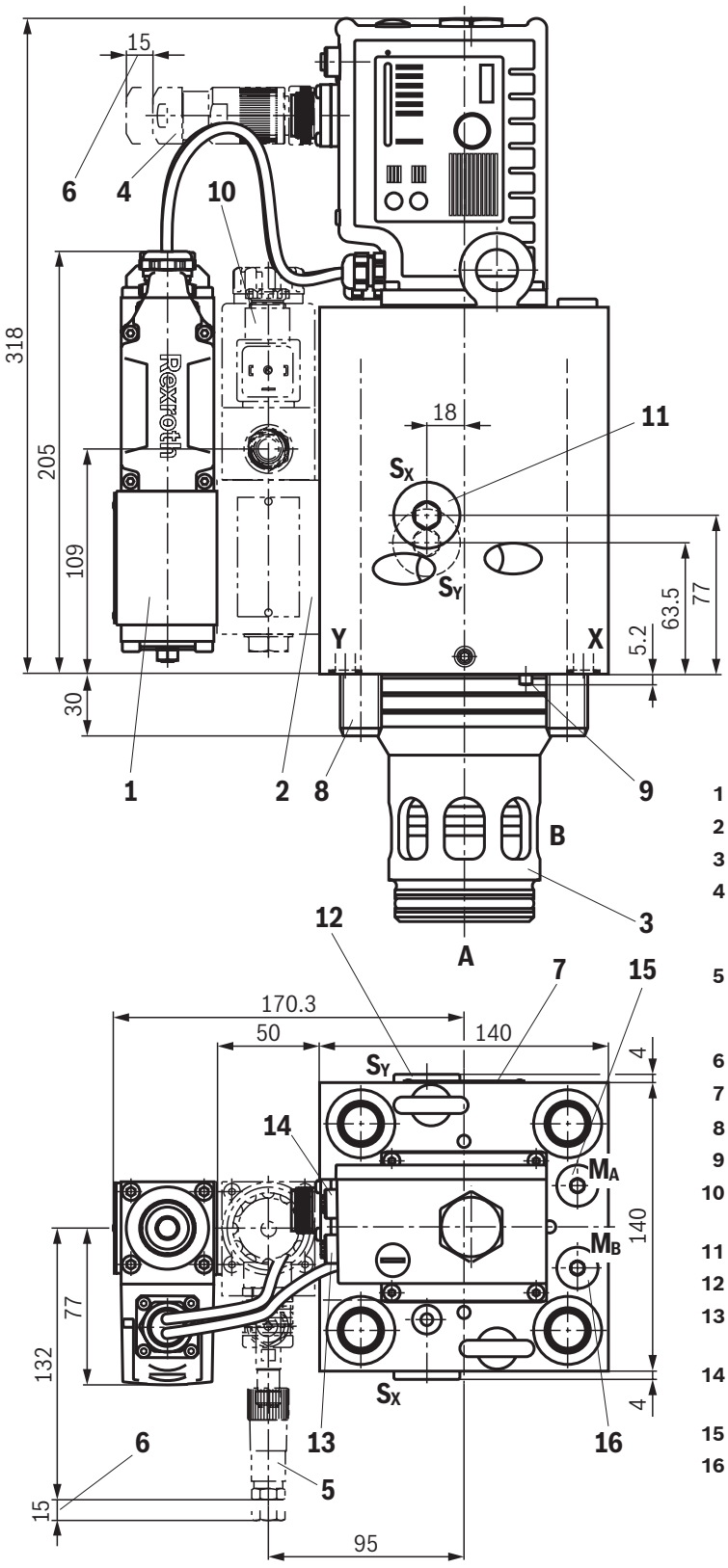
1 Pilot control valve (proportional directional valve NG6)
2 Sandwich plate shut-off valve (version "WK" and "WL")
3 Bushing
4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 22 and data sheet 08006)
5 Mating connector M12 x 1, 4-pole, for spool position monitoring (separate order, see page 22 and data sheet 08006)
6 Space required for removing the mating connector
7 Name plate
8 Valve mounting screws (separate order, see page 22)
9 Locking pin for fixing
10 Mating connectors for valves with connector "K4" (separate order, see page 22 and data sheet 08006)
11 Accumulator port for pilot pressure in channel X (G1/2)
12 Accumulator port for pilot pressure in channel Y (G1/2)
13 Field bus interface "Ethernet OUT" (X7E2); (cable sets, separate order, see page 22)
14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 22)
15 Measuring port for pilot pressure in channel A (G1/4)
16 Measuring port for pilot pressure in channel B (G1/4)

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

NG	H1	H2	H3	H4	H5	H6	H7	B1	B2 [1)]	B3	B4	B5	L1	L2	L3	L4	L5	L6	L7
32	109	205	352	8	24	81	56	132	129 (151.5)	105	4	77	153	50	105	4	77.5	6	11
40	109	205	355	8	30	89	56	132	129 (151.5)	125	4	77	163	50	125	4	87.5	0	10

[1)] Dimensions () for version with damping plate "D"

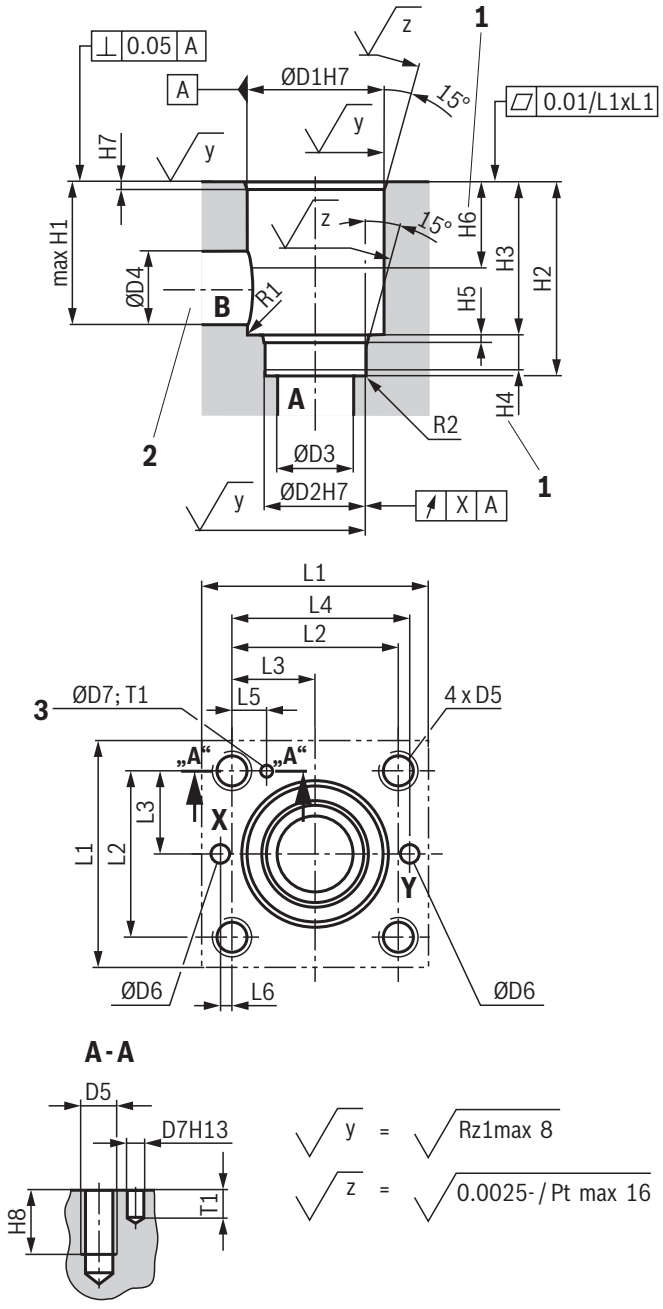
Dimensions: Size 50
(dimensions in mm)



1 Pilot control valve (proportional directional valve NG6)
2 Sandwich plate shut-off valve (version "WK" and "WL")
3 Bushing
4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 22 and data sheet 08006)
5 Mating connector M12 x 1, 4-pole, for spool position monitoring (separate order, see page 22 and data sheet 08006)
6 Space required for removing the mating connector
7 Name plate
8 Valve mounting screws (separate order, see page 22)
9 Locking pin for fixing
10 Mating connectors for valves with connector "K4" (separate order, see page 22 and data sheet 08006)
11 Accumulator port for pilot pressure in channel X (G3/4)
12 Accumulator port for pilot pressure in channel Y (G3/4)
13 Field bus interface "Ethernet OUT" (X7E2); (cable sets, separate order, see page 22)
14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 22)
15 Measuring port for pilot pressure in channel A (G1/4)
16 Measuring port for pilot pressure in channel B (G1/4)

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

Installation bore
(dimensions in mm)



1 Depth of fit, minimum dimension

2 Port B can be any size within the range between H6 min and H1 max. The durability of the block depends on its material and geometry.

3 Locating hole for locking pin

Installation dimensions according to DIN ISO 7368

NG	32	40	50
ØD1H7	60	75	90
ØD2H7	45	55	68
ØD3 max [1; 2]	44	54	67
ØD4 max [1; 2]	48	58	70
ØD5	M16	M20	M20
ØD6 max	8	10	10
ØD7H13	6	6	8
H1 max	68.5	84.5	97.5
H2+1	85	105	122
H3	70±0.2	87±0.3	100±0.3
H4 min	13	15	17
H5	2.5	3	3
H6 min [1]	20	20	27
H7	2.5	3	4
H8 [1]	26	33	33
L1	105 [1]	125	140
L2±0.2	70	85	100
L3±0.2	35	42.5	50
L4±0.2	76	92.5	108
L5±0.2	18	19.5	20
L6±0.2	6	7.5	8
X	0.03	0.05	0.05
R1 max	2	4	4
R2 max [1]	1	1	1
T1 min	8	8	8

[1] Deviating from DIN ISO 7368

[2] Smaller bore causes a reduction of the flow

NG	Installation dimensions according to DIN ISO 7368
32	7368-09-5-1-16
40	7368-10-7-1-16
50	7368-11-9-1-16

Tolerances according to: General tolerances ISO 2768-mK

Valve mounting screws see page 22.

Accessories (separate order)

Valve mounting screws (separate order)

Size	Hexagon socket head cap screws	Material number
32	**4 hexagon socket head cap screws ISO 4762 - M16 x 110 -10.9** Tightening torque M_A = 300 ±30 Nm	**R900003271**
40	**4 hexagon socket head cap screws ISO 4762 - M20 x 120 -10.9** Tightening torque M_A = 590 ±59 Nm	**R900003290**
50	**4 hexagon socket head cap screws ISO 4762 - M20 x 160 -10.9** Tightening torque M_A = 590 ±59 Nm	**R900001954**

Mating connectors and cable sets

Item [1]	Designation	Version	Short designation	Material number	Data sheet
4	Mating connector; for valves with round connector, 6-pole + PE	Straight, metal	7PZ31...M	**R900223890**	08006
		Straight, plastic	7PZ31...K	**R900021267**	
		Angled, plastic	–	**R900217845**	–
	Cable sets; for valves with round connector, 6-pole + PE	Plastic, 3.0 m	7P Z31 BF6	**R901420483**	08006
		Plastic, 5.0 m		**R901420491**	
		Plastic, 10.0 m		**R901420496**	
		Plastic, 20.0 m	–	**R901448068**	–
5	Mating connectors; for sensors and valves with connector, 4-pole	M12 x 1, straight, PG 7	4PZ24	**R900773042**	08006
		M12 x 1, straight, PG 9		**R900031155**	
		M12 x 1, angled, PG 7		**R900779509**	
		M12 x 1, angled, PG 9		**R900082899**	
10	Mating connector; for valves with "K4" connector, 2-pole + PE, design A	Without circuitry, 12 ... 240 V	Z4	**R901017010**	
		With indicator light, 12 ... 240 V	Z5L	**R901017022**	
		With rectifier, 12 ... 240 V	RZ5	**R901017025**	
		Z-diode-suppressor 24 V	Z5L1	**R901017026**	

[1] See dimensions on page 19 and 20.

Ethernet connections X7E1 and X7E2

Cable set (Ethernet interface)	**Length** in m	Material number
Cable set, shielded, 4-pole, D coding, straight connector M12, on straight connector M12, line cross-section 0.25 mm², CAT 5e	freely selectable (= xx.x)	**R911172111** (additionally indication of type designation RKB0040/xx.x)
Cable set, shielded, 4-pole, straight connector M12, on straight connector RJ45, line cross-section 0.25 mm², CAT 5e	freely selectable (= xx.x)	**R911172135** (additionally indication of type designation RKB0044/xx.x)

Protective cap

Protective cap M12	Version	Material number
		**R901075563**

Parameterization

The following is required for the parameterization with a PC		Material number/download
Commissioning software	IndraWorks, Indraworks D, Indraworks DS	www.boschrexroth.com/IAC
Connection cable, 3 m	Shielded, M12 on RJ45, length can be freely selected (= xx.x)	**R911172135** (additionally indication of type designation RKB0044/xx.x)

Project planning and maintenance instructions

- The supply voltage must be permanently connected; otherwise, bus communication is not possible.
- If electro-magnetic interference is to be expected, take appropriate measures to ensure the function (depending on the application, e.g. shielding, filtration).
- The devices have been tested in the plant and are supplied with default settings.
- Only complete devices can be repaired. Repaired devices are returned with default settings. User-specific settings will not be applied. The machine end-user will have to retransfer the corresponding user parameters.

Further information

▶ Hydraulic fluids on mineral oil basis	Data sheet 90220
▶ Environmentally compatible hydraulic fluids	Data sheet 90221
▶ Flame-resistant, water-free hydraulic fluids	Data sheet 90222
▶ Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC)	Data sheet 90223
▶ Hydraulic valves for industrial applications	Operating instructions 07600-B
▶ General product information on hydraulic products	Data sheet 07008
▶ Assembly, commissioning and maintenance of hydraulic systems	Data sheet 07900
▶ Operation fieldbus electronics (xx = software version):	
– Functional description Rexroth HydraulicDrive HDx-20	– 30338-FK
– Parameter description Rexroth HydraulicDrive HDS-16, HDx-17 ... HDx-20	– 30330-PA
– Description of diagnosis Rexroth HydraulicDrive HDS-16, HDx-17 ... HDx-20	– 30330-WA
▶ Commissioning software and documentation on the Internet	www.boschrexroth.com/IFB
▶ Selection of the filters	www.boschrexroth.com/filter
▶ Information on available spare parts	www.boschrexroth.com/spc

Notes

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