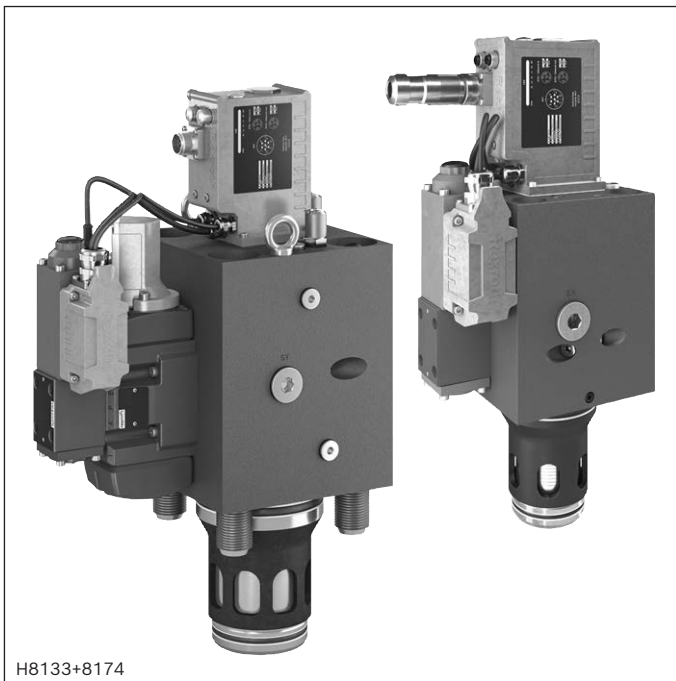


# High-response directional cartridge valve, pilot-operated with integrated electronics (OBE) and analog or field bus interface

## Type 2WRCE and 2WRCE



- Size 32 ... 100
- Component series 4X
- Maximum operating pressure 420 bar
- Nominal flow 1000 ... 12500 l/min ( $\Delta p = 5$  bar)



### 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, 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

### Contents

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**Ordering code**

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

01	2 main ports	<b>2</b>
02	High-response directional cartridge valve, pilot-operated	<b>WRC</b>
03	With integrated electronics (OBE)	<b>E</b>
	With integrated field bus electronics (IFB)	<b>F</b>
04	Size 32	<b>32</b>
	Size 40	<b>40</b>
	Size 50	<b>50</b>
	Size 63	<b>63</b>
	Size 80	<b>80</b>
	Size 100	<b>100</b>
05	Seat control spool	<b>S</b>

**Rated flow** at 5 bar pressure differential

06	<b>- Size 32</b>	
	1000 l/min (only version "R")	<b>1K0</b>
	1100 l/min (only version "L")	<b>1K1</b>
	<b>- Size 40</b>	
	1600 l/min (only version "R")	<b>1K6</b>
	1800 l/min (only version "L")	<b>1K8</b>
	<b>- Size 50</b>	
	2600 l/min (only version "R")	<b>2K6</b>
	2700 l/min (only version "L")	<b>2K7</b>
	<b>- Size 63</b>	
	4300 l/min (only version "R")	<b>4K3</b>
	4500 l/min (only version "L")	<b>4K5</b>
	<b>- Size 80</b>	
	6700 l/min (only version "R")	<b>6K7</b>
	7200 l/min (only version "L")	<b>7 K2</b>
	<b>Size 100</b>	
	12000 l/min (only version "R")	<b>12K0</b>
	12500 l/min (only version "L")	<b>12K5</b>

**Flow characteristic**

07	Linear	<b>L</b>
	Linear with progressive fine control range	<b>R</b>
	Other versions available on request	

08	Component series 40 ... 49 (40 ... 49: Unchanged installation and mounting dimensions)	<b>4X</b>
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**Pilot control valve**

09	Highly dynamic directional control valve in servo quality	<b>H</b>
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**Seal material** (observe compatibility of seals with hydraulic fluid used, see page 9)

10	NBR seals	<b>M</b>
	FKM seals	<b>V</b>

**Ordering code**

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

**Sandwich plate shut-off valve**

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

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

12	<b>Without</b> position switch														<b>without designation</b>
	<b>With</b> position switch														<b>E</b>
13	Supply voltage 24 V														<b>24</b>

**Ethernet interface**

14	<b>Without</b> (only with integrated electronics (OBE) "E")														<b>without designation</b>
	EtherNET/IP														<b>E</b>
	PROFINET RT														<b>N</b>
	Sercos														<b>S</b>
	EtherCAT (CANopen profile)														<b>T</b>
	VARAN														<b>V</b>

**Electrical interface**

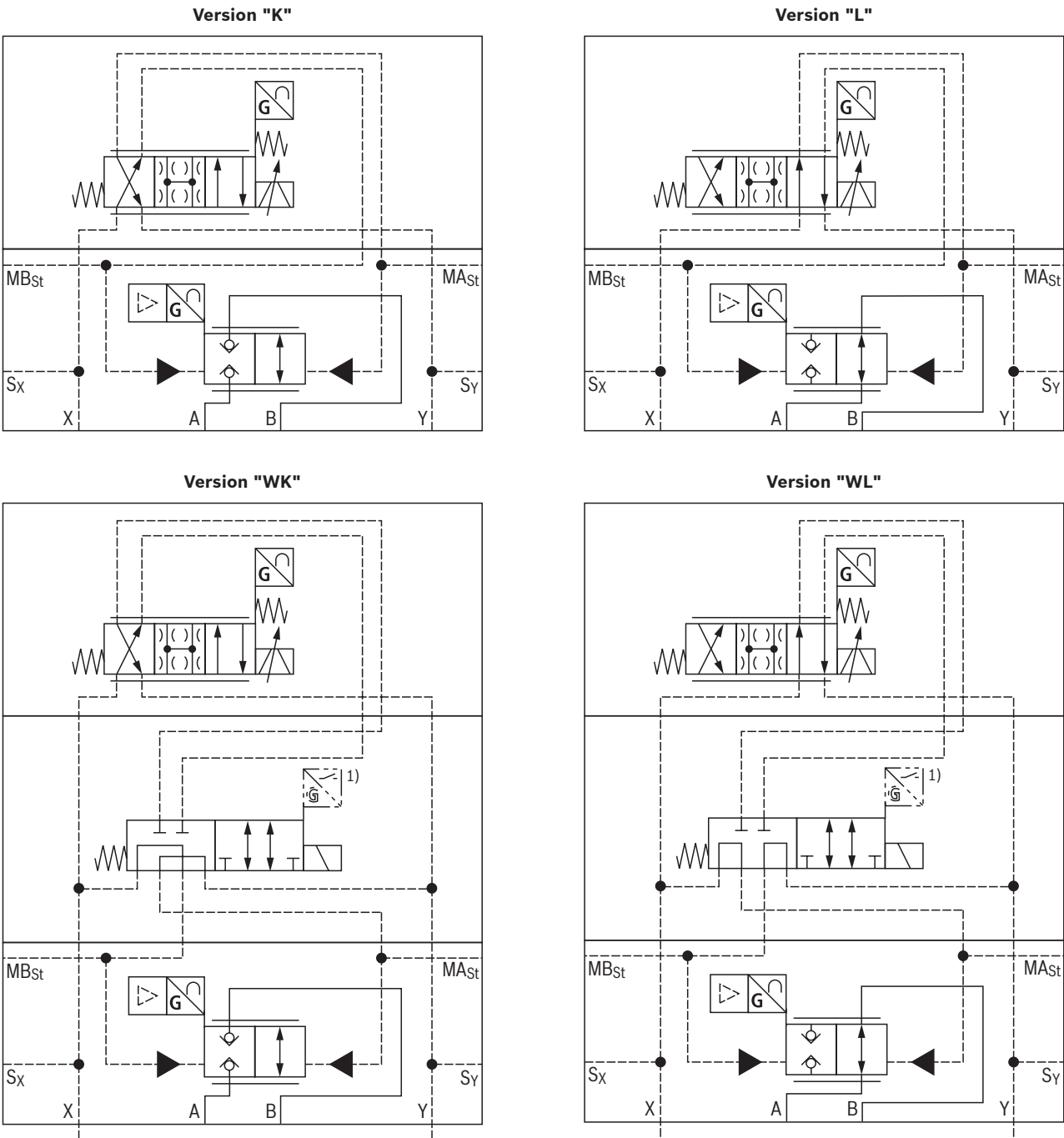
15	Command value 0 ... 10 V (only with integrated electronics (OBE) "E")														<b>A1</b>
	Command value 4 ... 20 mA (only with integrated electronics (OBE) "E")														<b>F1</b>
	Command value Ethernet interface (only with integrated field bus electronics (IFB) "F")														<b>D9</b>
16	<b>Without</b> damping plate														<b>without designation</b>
	<b>With</b> damping plate														<b>D</b>
17	Further details in the plain text														

**Symbols:** Size 32 ... 50

Simplified



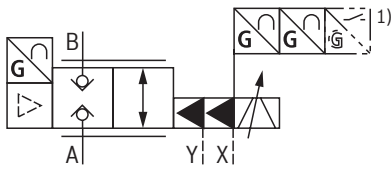
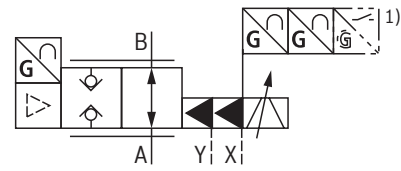
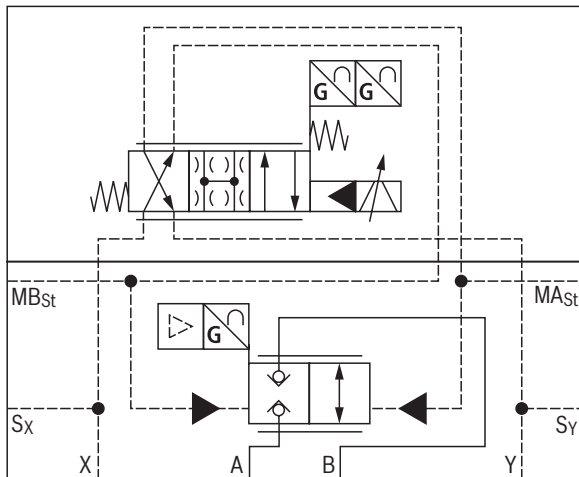
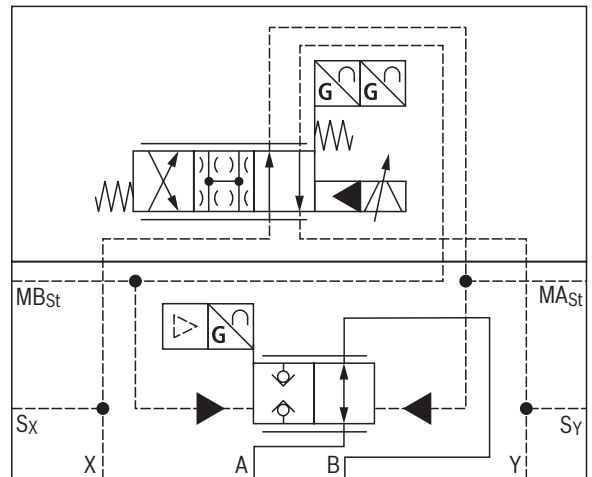
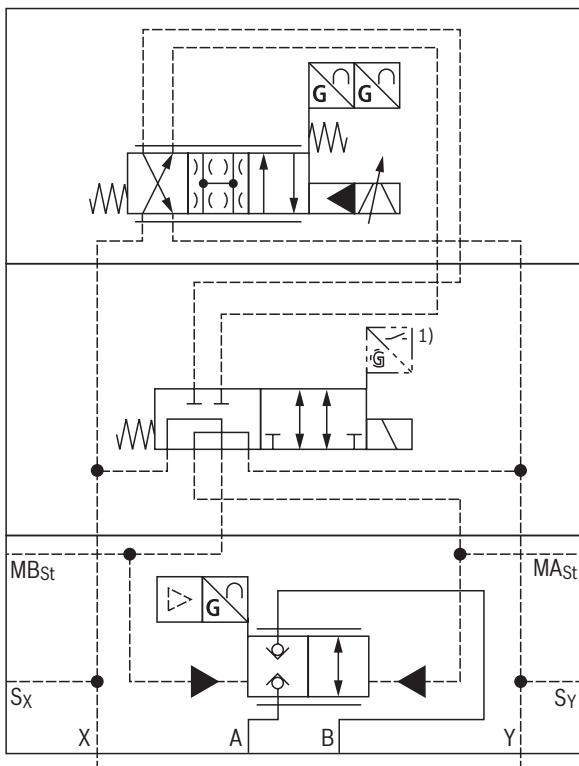
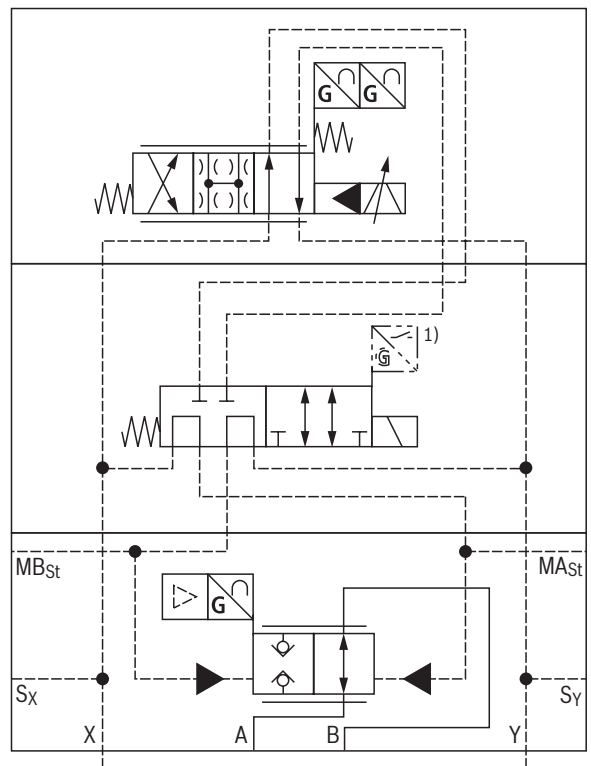
Detailed



Version "WK"

Version "WL"

1) Version with position switch "E"

**Symbols:** Size 63 ... 100**Simplified****Version "K" and "WK"****Version "L" and "WL"****Detailed****Version "K"****Version "L"****Version "WK"****Version "WL"**

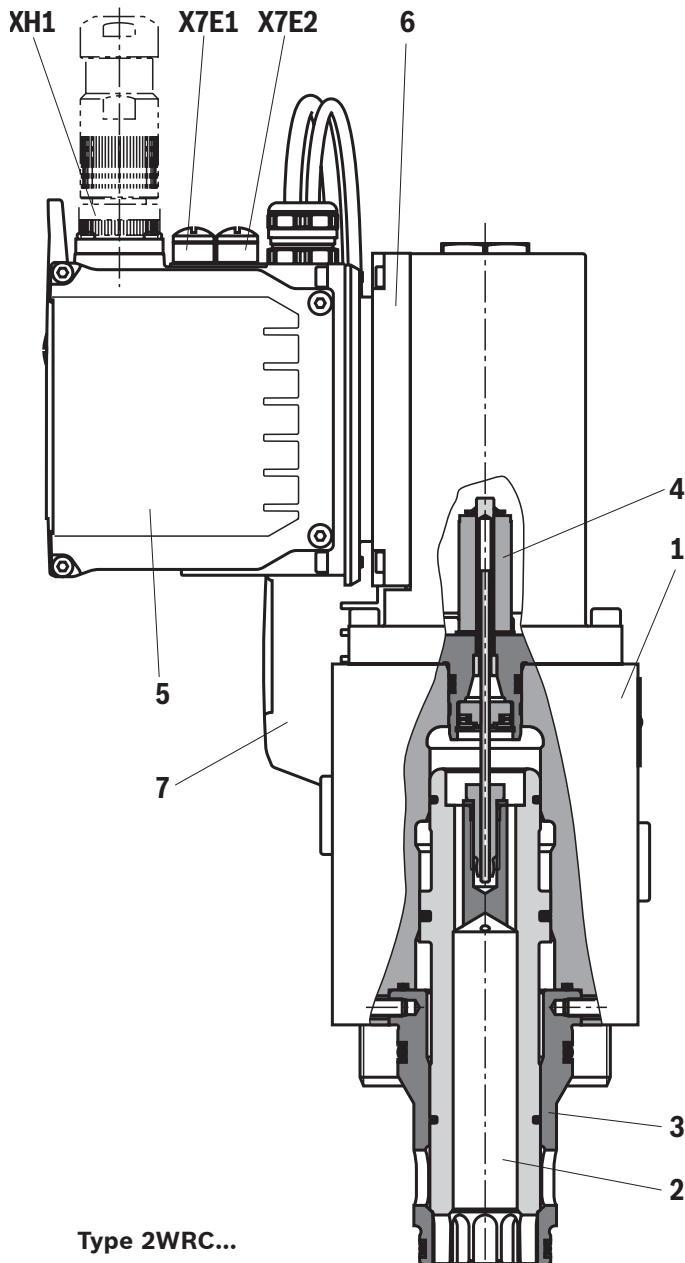
1) Version with position switch "E"

## Function, section

### Set-up

The pilot-operated high-response directional 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 the command and the 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 the main and the 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 33):

- ▶ 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	63	80	100
Weight	► Without shut-off valve ("K"; "L")	kg	15.6	21.2	32.3	56.8	115	164
	► With shut-off valve ("WK"; "WL")	kg	17.2	22.8	33.9	64.5	123	172
	► Position switch "E"	kg	1.1	1.1	1.1	0.9	0.9	0.9
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			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 <sub>RMS</sub> / 30 g peak / 30 min / 3 axes					
	► Without damping plate (NG50 and 63)		20 ... 2000 Hz / 10 g <sub>RMS</sub> / 30 g peak / 24 h / 3 axes					
	► With damping plate <sup>1)</sup>		20 ... 2000 Hz / 10 g <sub>RMS</sub> / 30 g peak / 24 h / 3 axes					
Transport shock according to DIN EN 60068-2-27			15 g / 11 ms / 3 axes					
Shock according to DIN EN 60068-2-27		► With damping plate <sup>1)</sup>	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		EN 61000-6-2 and EN 61000-6-4			
	► RoHS directive		2011/65/EU <sup>2)</sup>					

<sup>1)</sup> Not recommended for applications with mainly low-frequency excitation < 300 Hz

<sup>2)</sup> The product fulfills the substance requirements of the RoHS directive 2011/65/EU.

**Technical data**

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

Hydraulic								
Size	NG	32	40	50	63	80	100	
Maximum operating pressure	► Port A, B	bar	420 <sup>2)</sup>					
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 ( $\Delta p = 5$ bar <sup>3; 4; 5)</sup> )	► Version "L"	l/min	1100 (1500)	1800 (2200)	2700 (3900)	4500 (6200)	7200 (10200)	12500 (16500)
	► Version "R"	l/min	1000 (1300)	1600 (1950)	2600 (3600)	4300 (5800)	6700 (9700)	12000 (15500)
Maximum flow <sup>6)</sup>		l/min	2900	4300	6600	9100	17000	22000
Pilot flow <sup>7)</sup>		l/min	78	78	95	220	350	380
Zero flow (pre-stage at 100 bar)	► Maximum	cm <sup>3</sup> /min	900					
	► Average value	cm <sup>3</sup> /min	400					
Pilot oil volume		cm <sup>3</sup>	5.9	8.5	22.5	42.8	84.5	154
Hydraulic fluid			see table page 9					
Hydraulic fluid temperature range	► Recommended	°C	+40 ... +60					
	► Maximum admissible	°C	–20 ... +70					
Viscosity range	► Recommended	mm <sup>2</sup> /s	30 ... 45					
	► Maximum admissible	mm <sup>2</sup> /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 <sup>8)</sup>					
	► Main stage		Class 20/18/15 <sup>8)</sup>					

<sup>2)</sup> In port B, in a closed state 500 bar (valve must not be opened).  
If the valve is opened, a value of 420 bar applies.

<sup>3)</sup> Flow for deviating  $\Delta p$ :

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

<sup>4)</sup> Recommended direction of flow B → A (from A → B increased cavitation erosion)

<sup>5)</sup> Values ( ) for two opposite, radial bores B with maximum diameter (see page 32)

<sup>6)</sup> Flow velocity 30 m/s in port A (otherwise increased cavitation erosion)

<sup>7)</sup> Stepped input signal (seat position at 100%, pilot pressure 350 bar)

<sup>8)</sup> The cleanliness classes specified for the components must be adhered to in hydraulic systems. An effective filtration prevents faults and simultaneously increases the life cycle of the components.

For the selection of filters, see [www.boschrexroth.com/filter](http://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	► Anhydrous	HFDU (glycol base)	FKM	ISO 12922	90222
		HFDU (ester base)	FKM		
		HFDR	FKM		
	► Hydrous	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922	90223



### Important information 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 an 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:

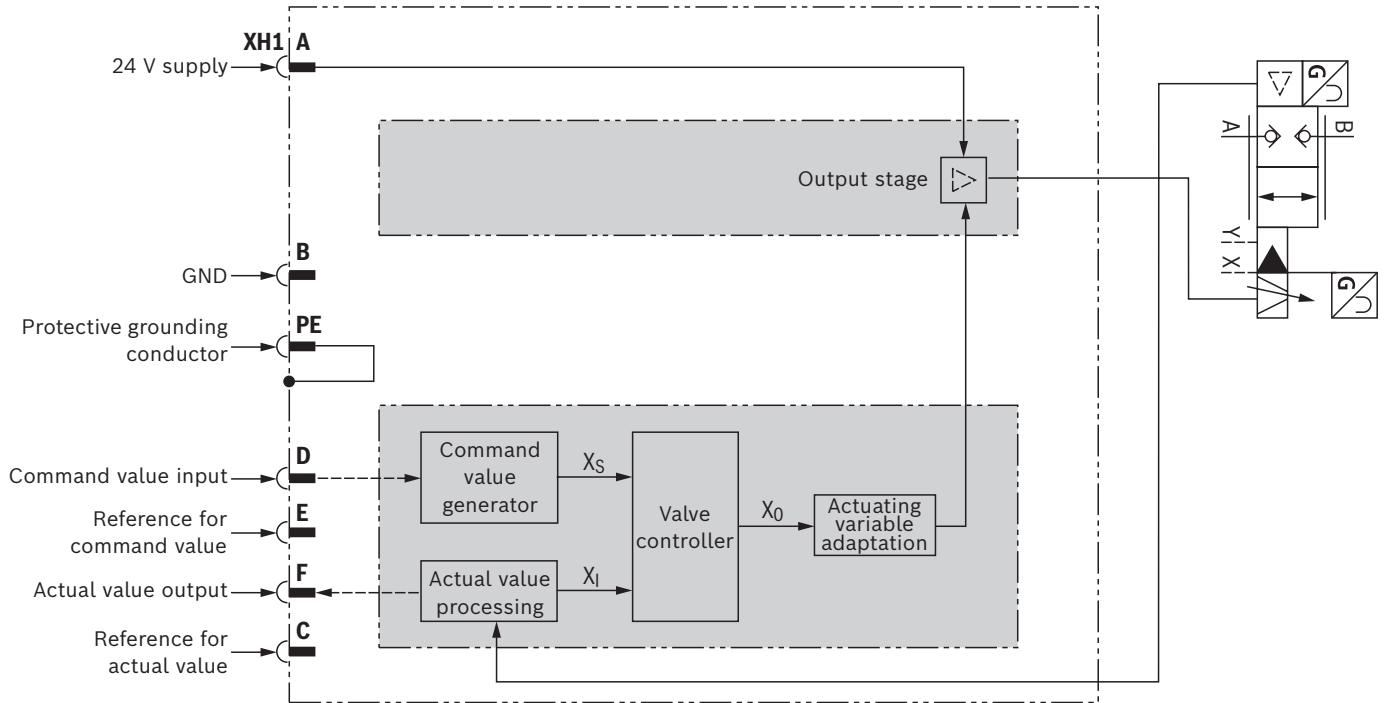
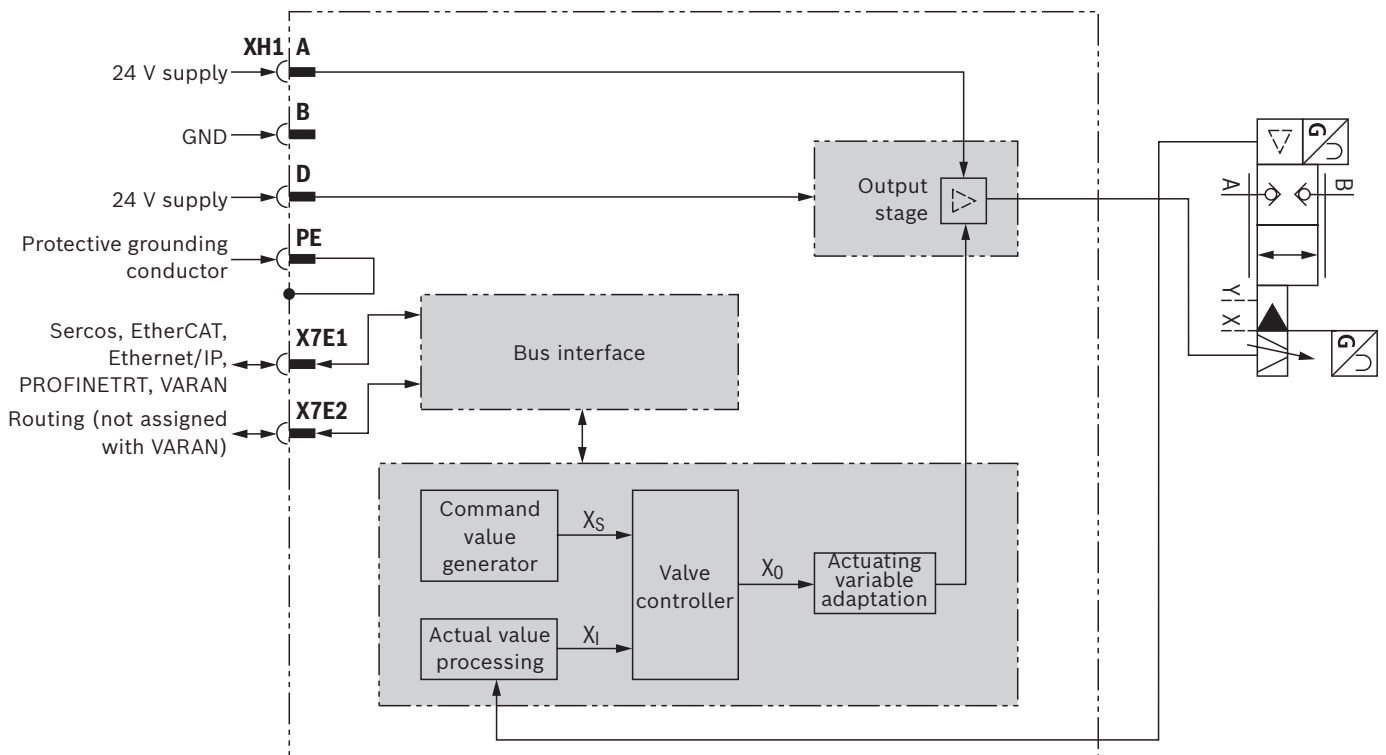
- Due to the increased cavitation tendency with HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to the use with mineral oil HLP. In order to reduce the cavitation effect, it is recommended – if possible specific to the installation – backing up the return 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								
Size		32	40	50	63	80	100	
Hysteresis		%	< 0.2					
Range of inversion		%	< 0.1					
Response sensitivity		%	< 0.1					
Step response time according to ISO 10770-1 <sup>9)</sup>		ms	12	14	24	25	27	34
Reaching of the preferred position <sup>10)</sup>		ms	52 ... 38	62 ... 48	130 ... 85	160 ... 90	335 ... 198	612 ... 356
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 the 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 12						
Required fuse protection, external		A	4 time-lag					
Adjustment		Calibrated in the plant, see characteristic curves page 14 ... 19						

<sup>9)</sup> Without shut-off valve; 10% → 100%, pilot pressure 150 bar<sup>10)</sup> With shut-off valve "WK" and "WL", pilot pressure 100 ... 315 bar

**Block diagram/controller function block****► With integrated electronics (version "WRCE")****► With integrated field bus electronics (version "WRCF")**

Electrical connections and assignment

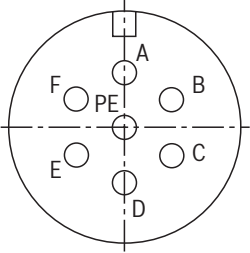
Connector pin assignment: "A1", "F1" and "D9"

Pin 6 + PE	Signal	Interface assignment		
		Version "A1" <sup>1)</sup>	Version "WRCE" "F1" <sup>2)</sup>	Version "WRCF" "D9"
A	Supply voltage	24 V DC		
B		GND		
C	Reference potential actual value	Reference potential actual value <sup>3)</sup>	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)		

Notices:

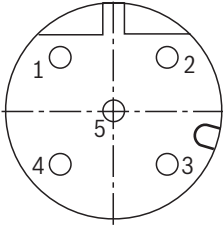
- Do not connect PE if the valve has already been grounded via the system.
- In case of a cable break, valves of version "K" are regulated according to the factory setting and by default held in a closed position. Valves of version "L" are by default held in an open position. The customer may define a standstill valued in IndraWorks DS by changing the parameters.

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



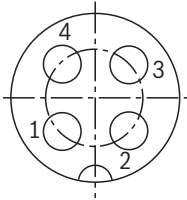
Connector pin assignment: M12 x 1, 4-pole, coding D (for Ethernet interfaces "X7E1" and "X7E2")

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

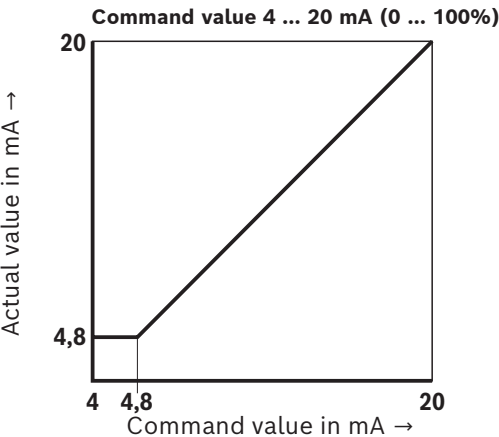
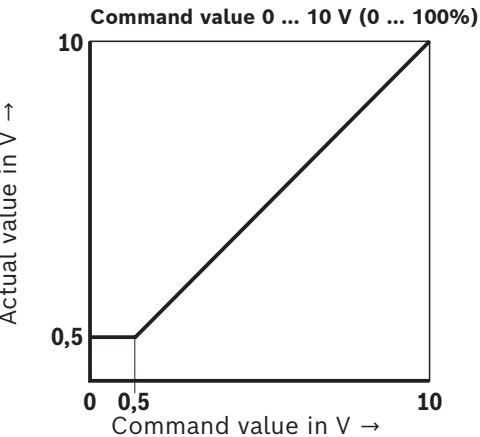


Connector pin assignment: M12 x 1, 4-pole (position switch for sandwich plate shut-off valve)

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



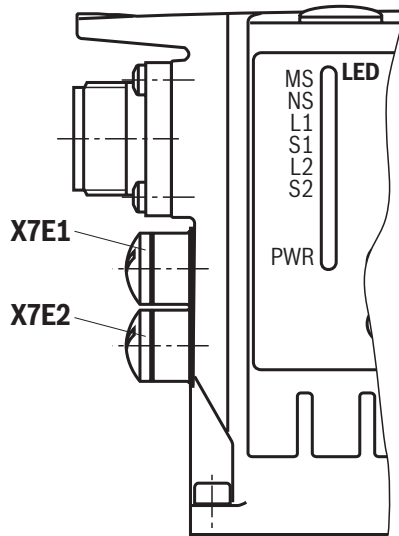
Nominal command value range



## LED displays

LED	Interface	Analog	Sercos	EtherNET/IP	EtherCAT	PROFINET RT	VARAN
MS	<b>Electronics module</b>	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	Network status and others
L1	<b>X7E1</b>	Link and others	Link and others	Link and others	Link/activity	Link and others	Link and others
S1		Activity and others	Activity and others	Activity and others	not used	Activity and others	Active and others
L2	<b>X7E2</b>	Link and others	Link and others	Link and others	Link/activity	Link and others	not used
S2		Activity and others	Activity and others	Activity and others	not used	Activity and others	not used
PWR	<b>XH1</b>	Power	Power	Power	Power	Power	Power

NG32 ... 40

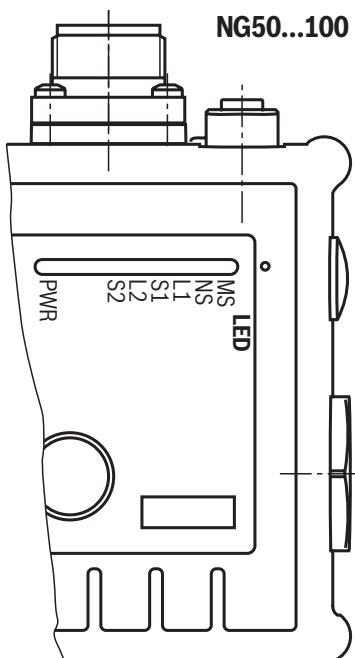


Displays of the status LEDs

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

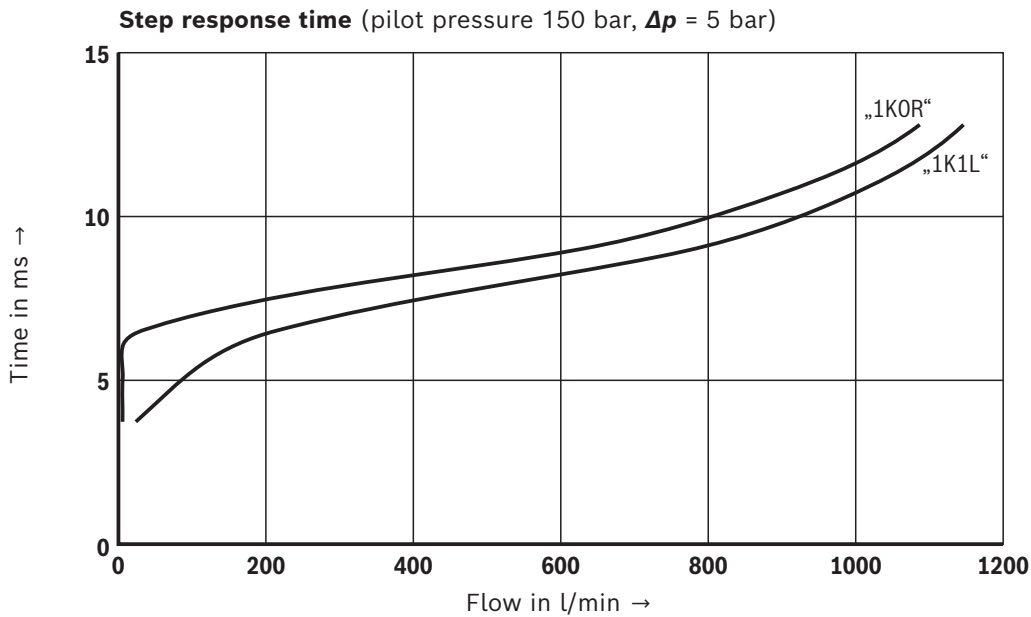
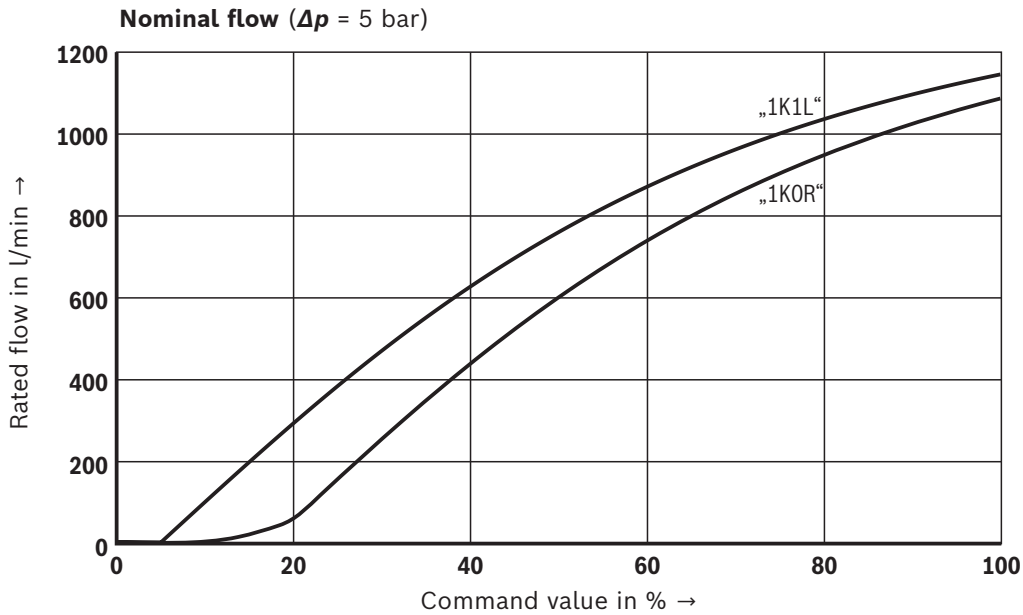
NG50...100



### Notices:

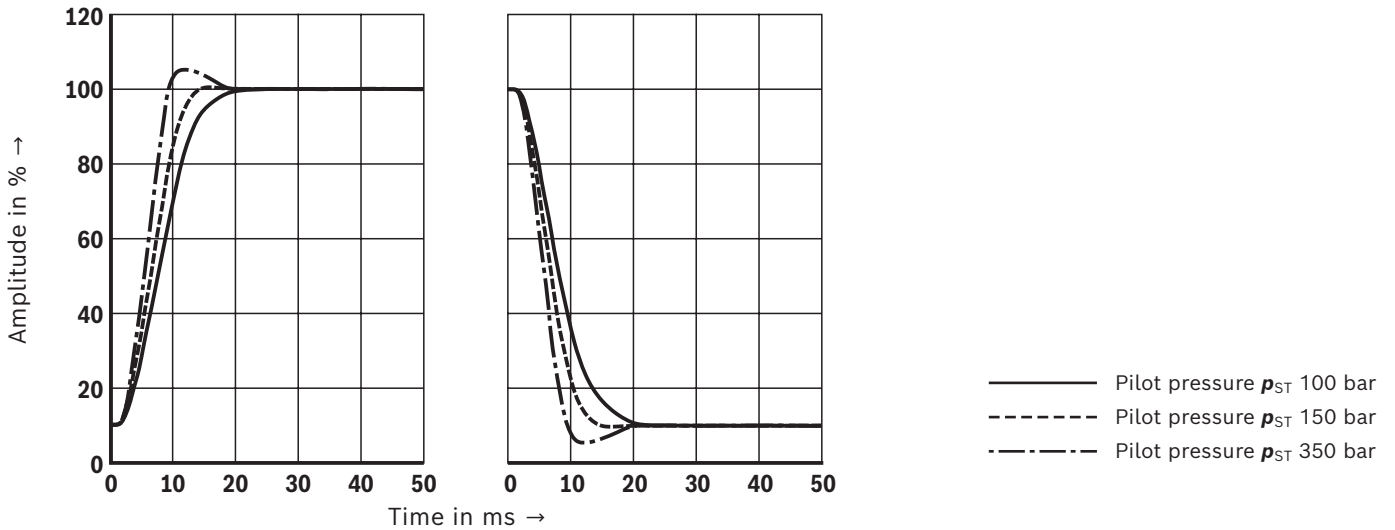
- For the connection to the M12 sockets, we recommend using self-locking mating connectors
- The MS module status LED relates to the electronics module
- The NS network status LED indicates the status of the control communication, see application description 30338-FK
- LEDs L1, S1, L2 and S2 relate to 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,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

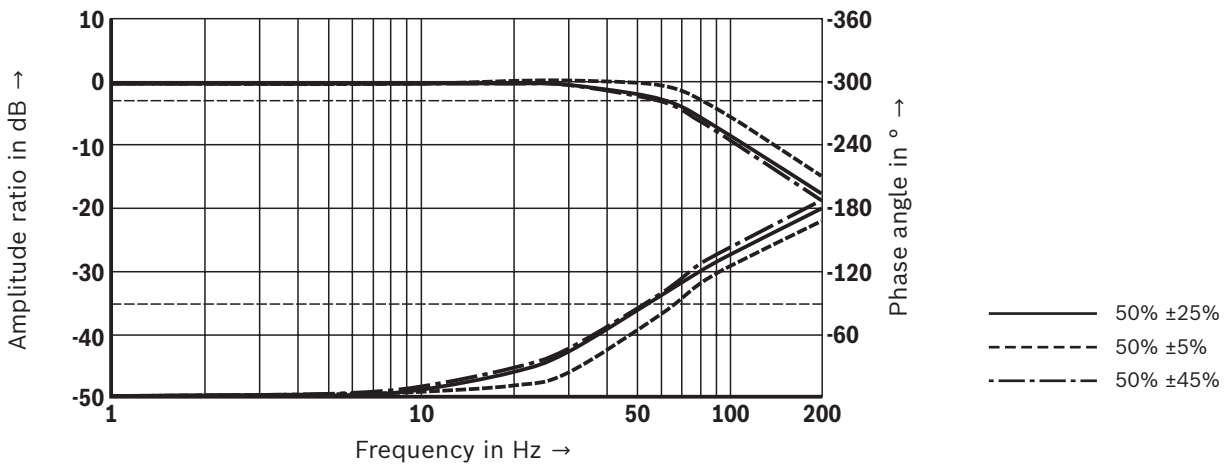


**Characteristic curves:** Size 32  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

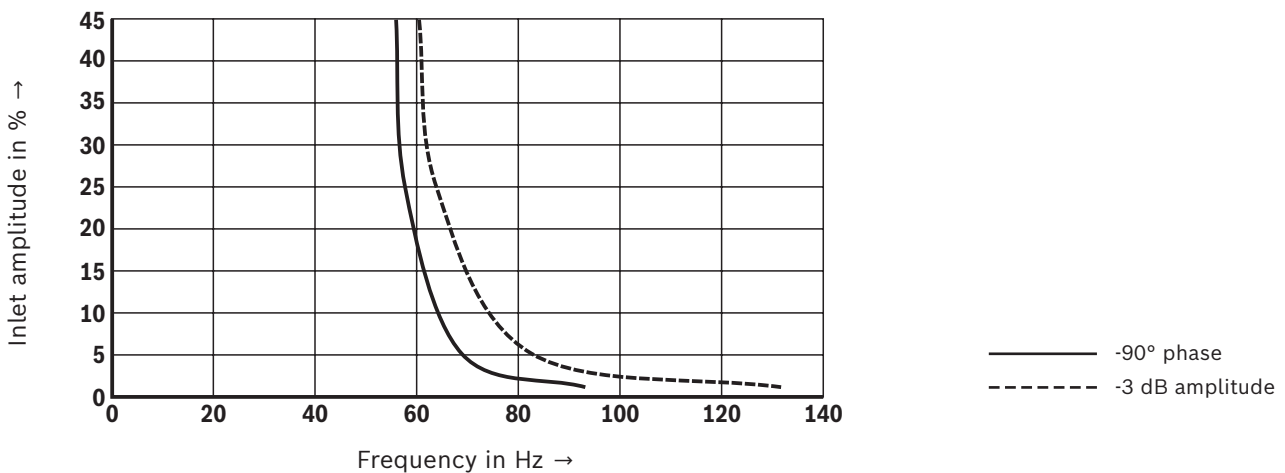
**Transition function with stepped electric input signals**



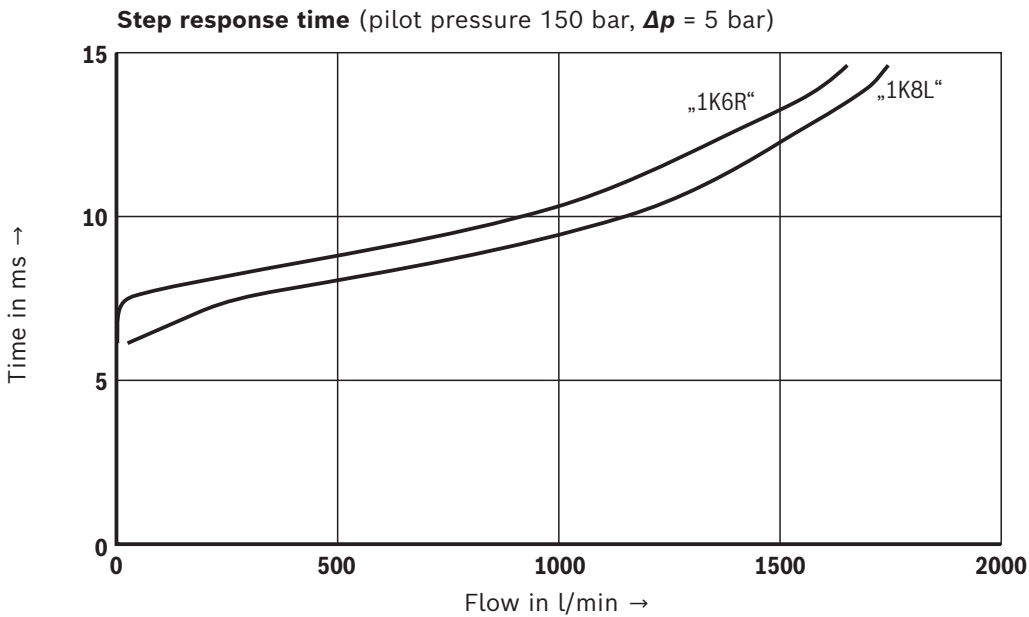
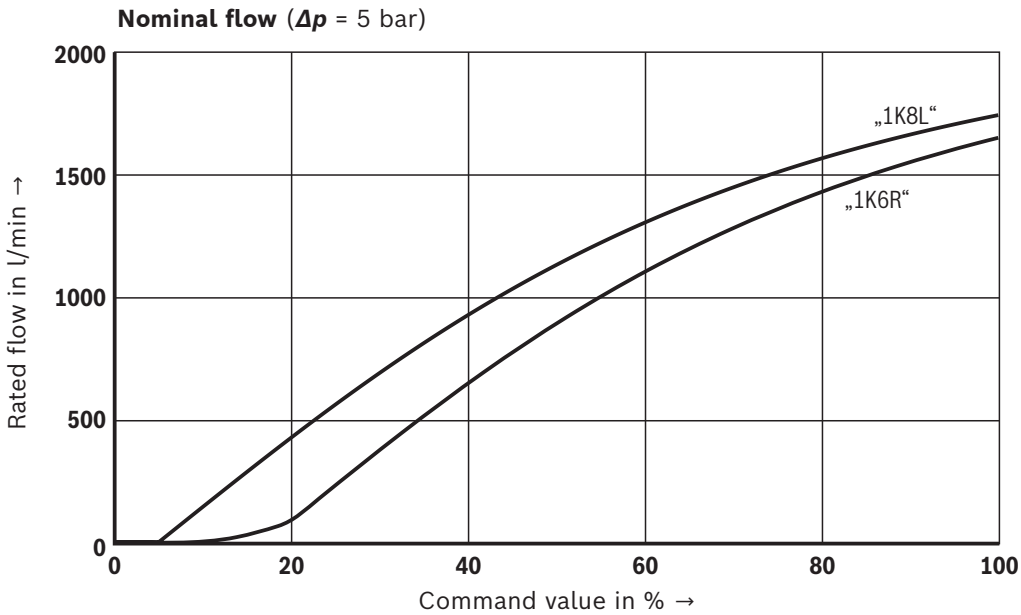
**Frequency response ( $p_{ST} = 210 \text{ bar}$ )**



**Information volume ( $p_{ST} = 210 \text{ bar}$ )**

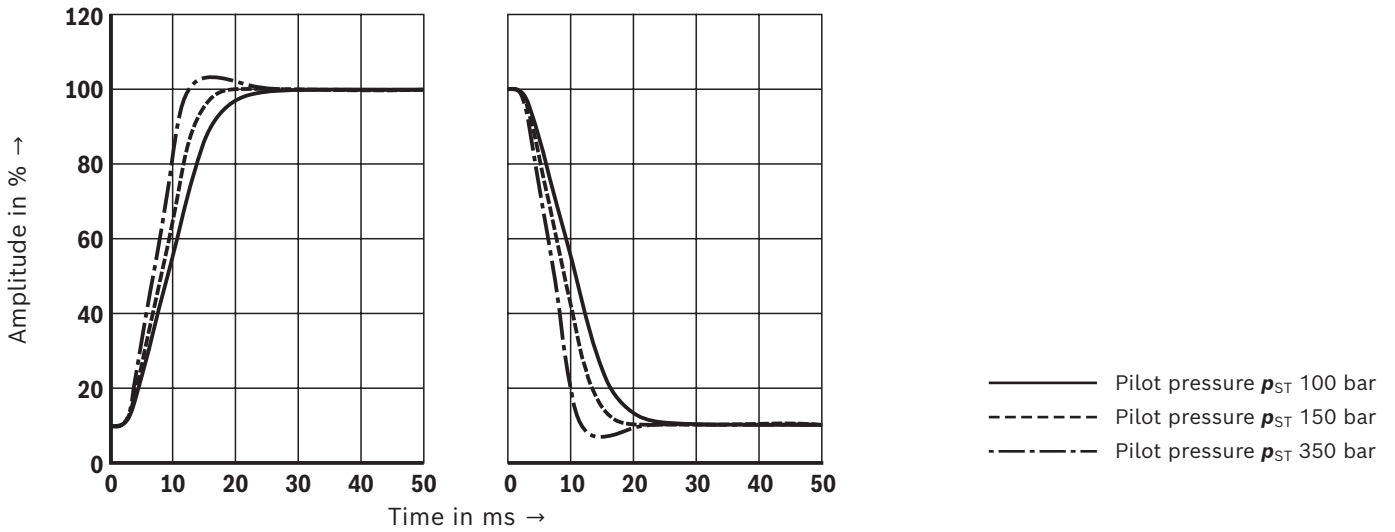


**Characteristic curves:** Size 40  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

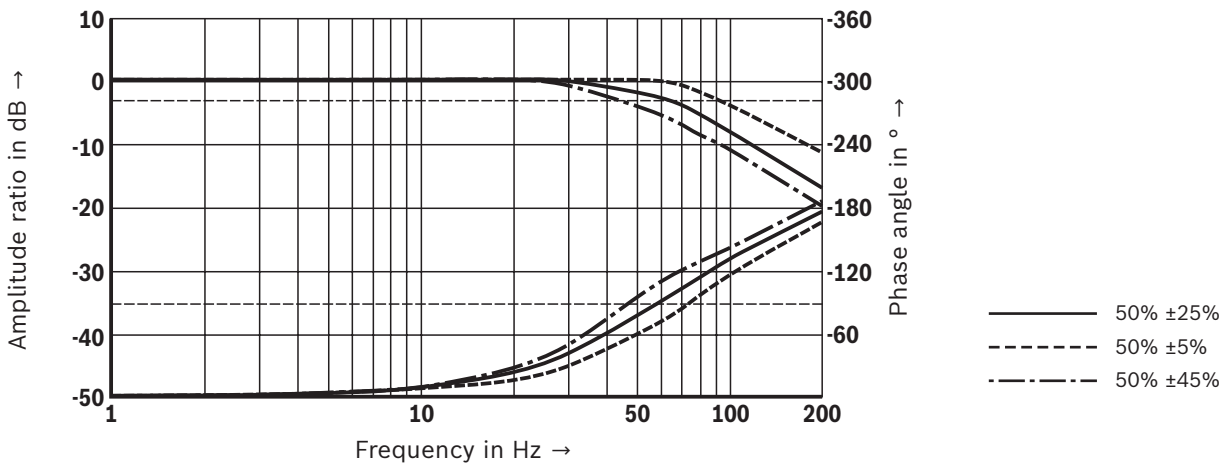


**Characteristic curves:** Size 40  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

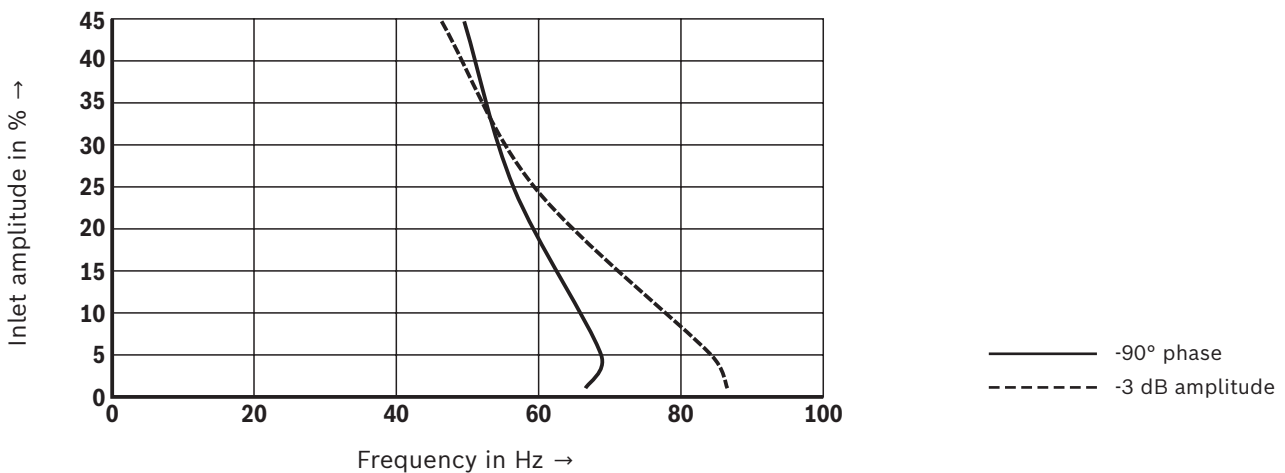
**Transition function with stepped electric input signals**



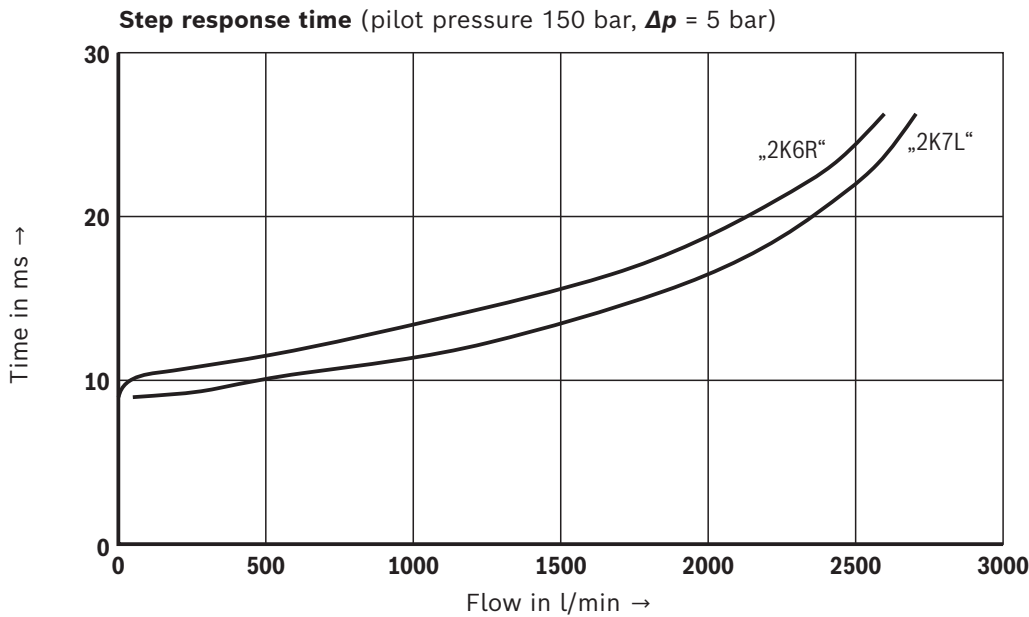
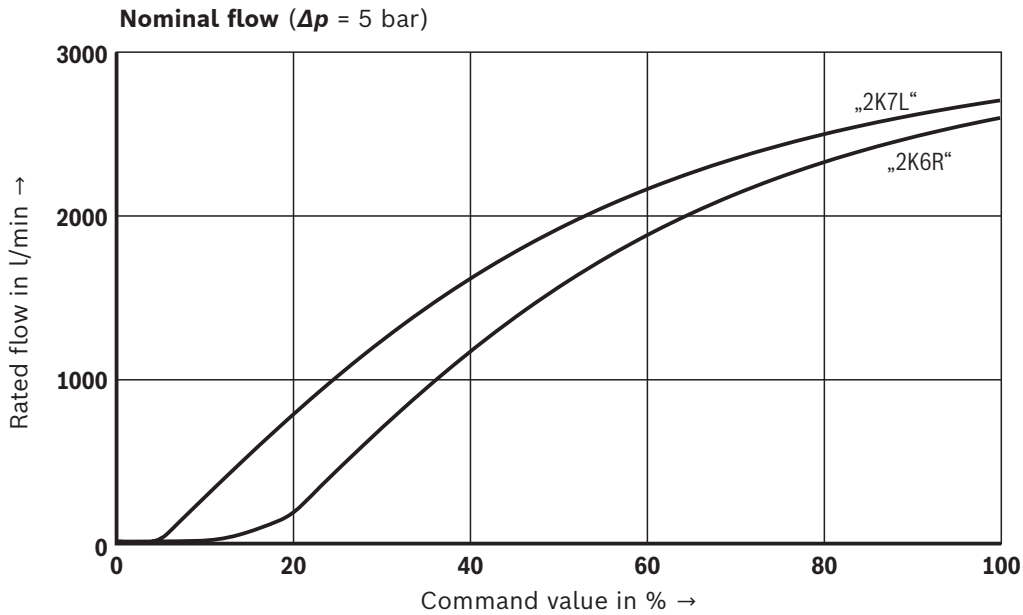
**Frequency response ( $p_{ST} = 210 \text{ bar}$ )**



**Information volume ( $p_{ST} = 210 \text{ bar}$ )**

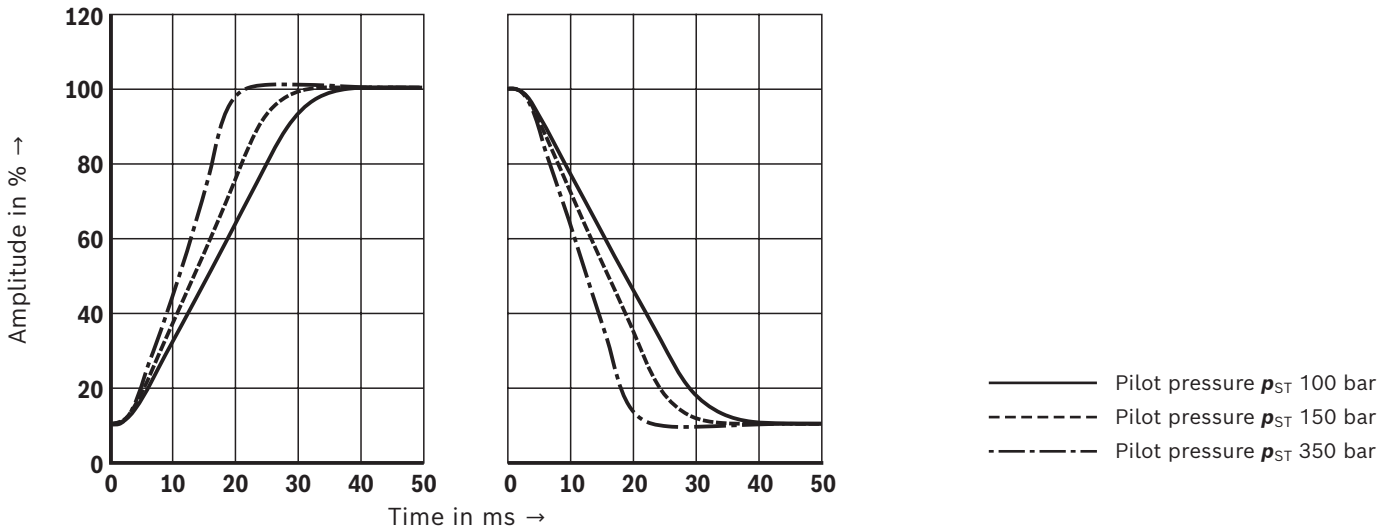


**Characteristic curves:** Size 50  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

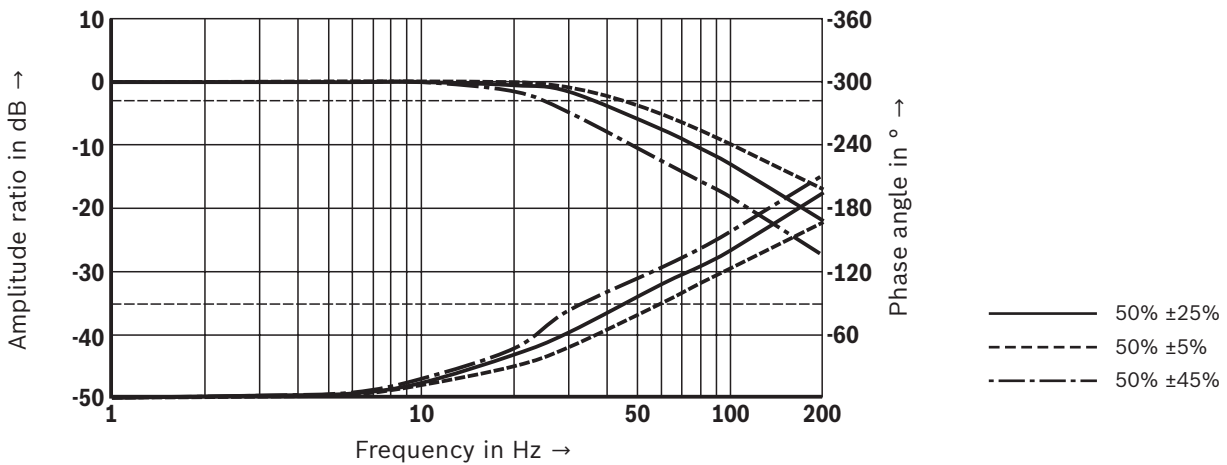


**Characteristic curves:** Size 50  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

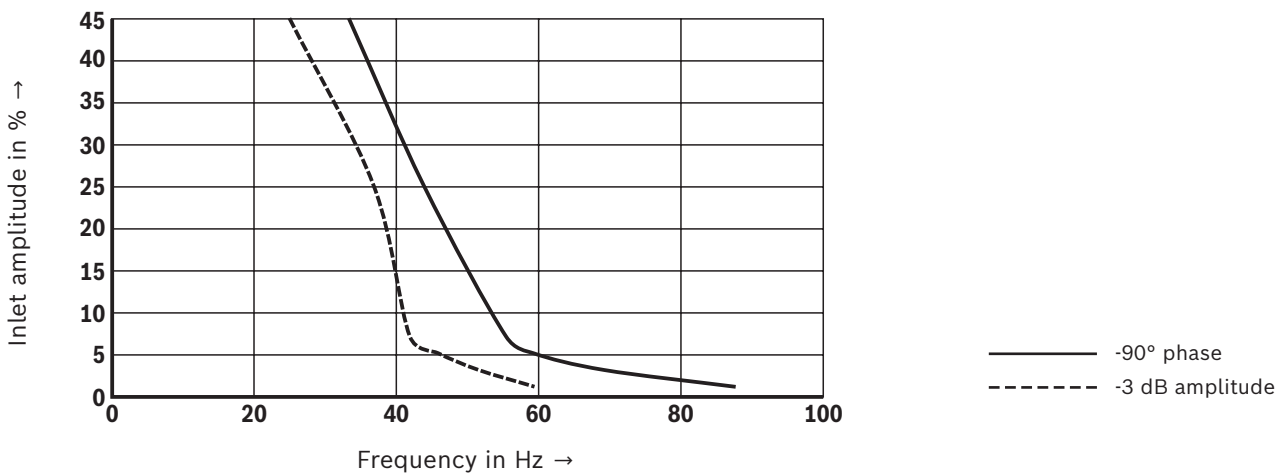
**Transition function with stepped electric input signals**



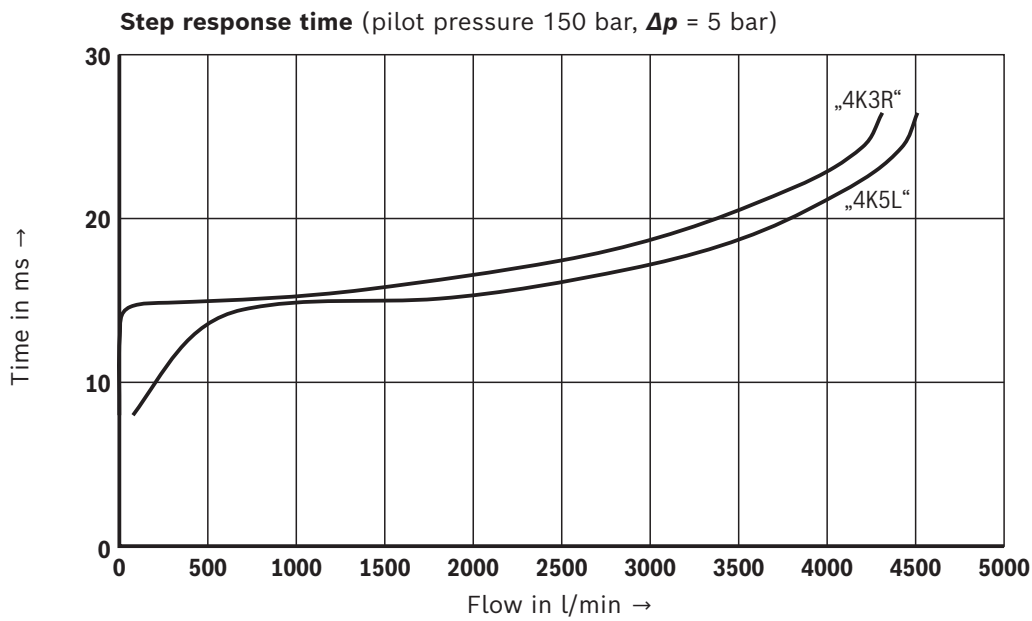
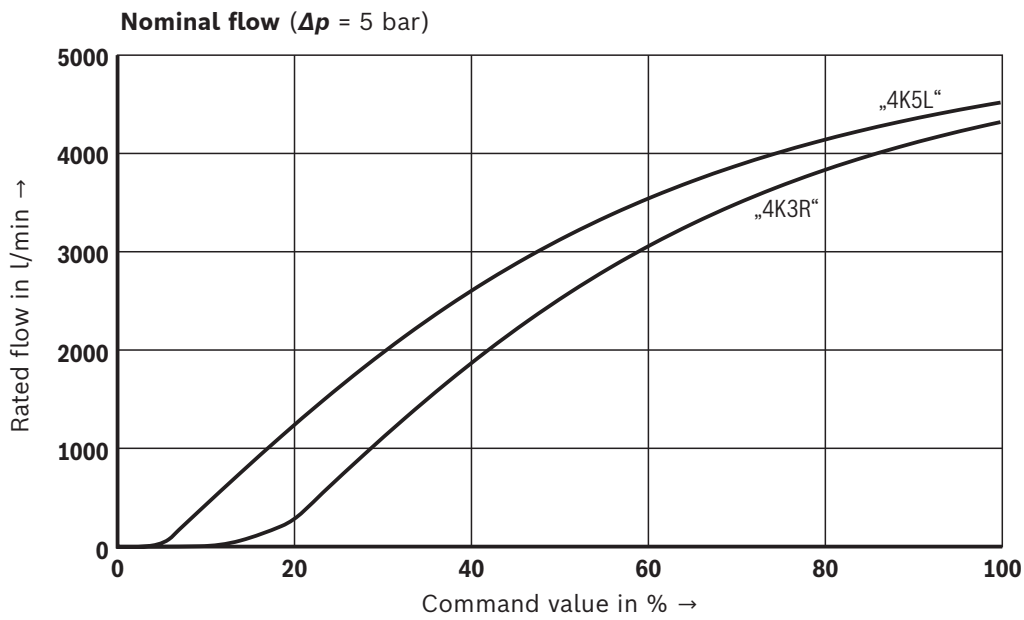
**Frequency response ( $p_{ST} = 210 \text{ bar}$ )**



**Information volume ( $p_{ST} = 210 \text{ bar}$ )**

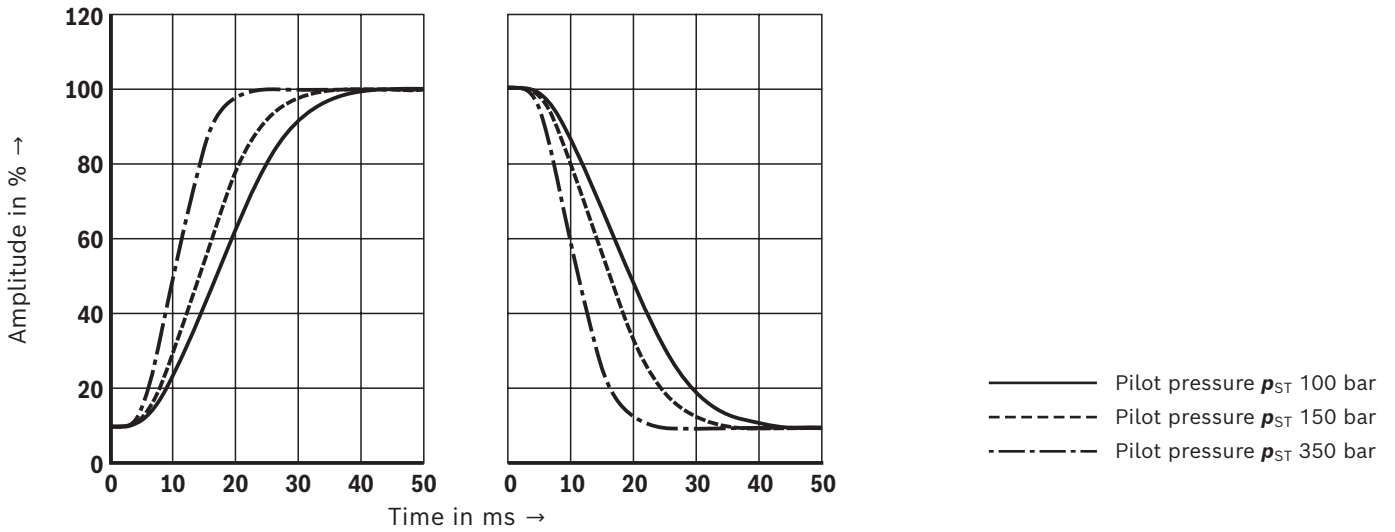


**Characteristic curves:** Size 63  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

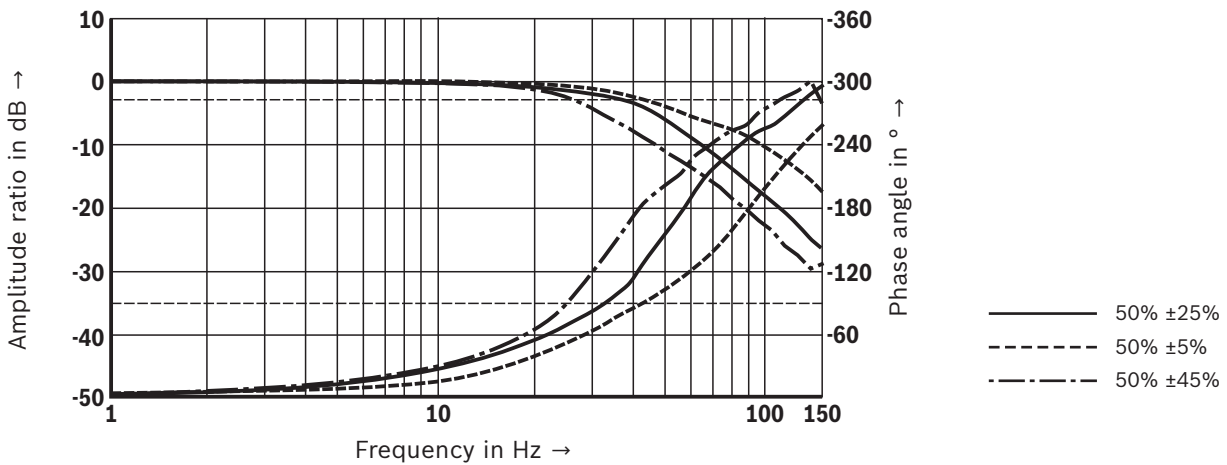


**Characteristic curves:** Size 63  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

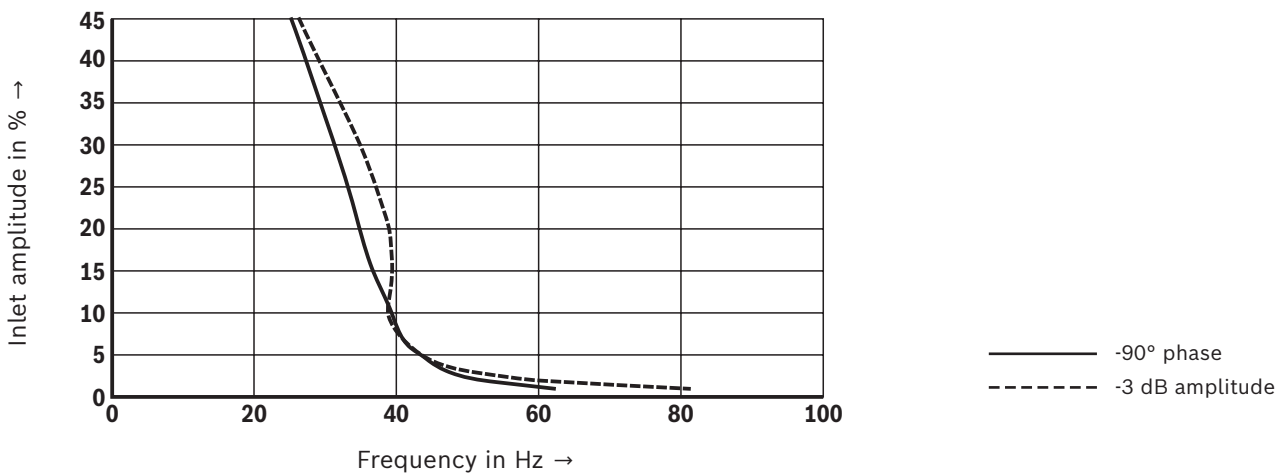
**Transition function with stepped electric input signals**



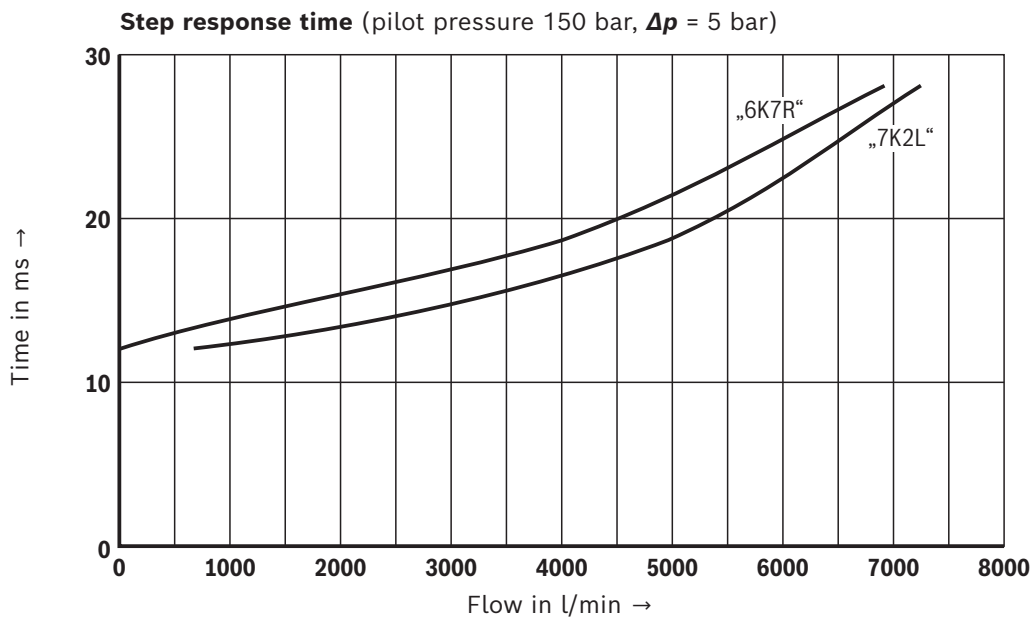
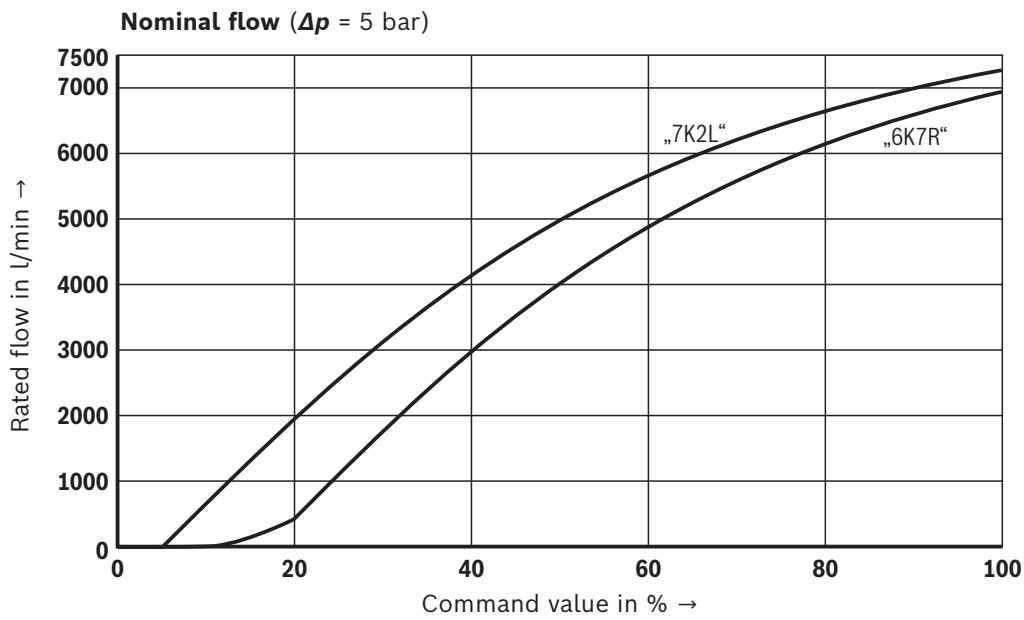
**Frequency response ( $p_{ST} = 210 \text{ bar}$ )**



**Information volume ( $p_{ST} = 210 \text{ bar}$ )**

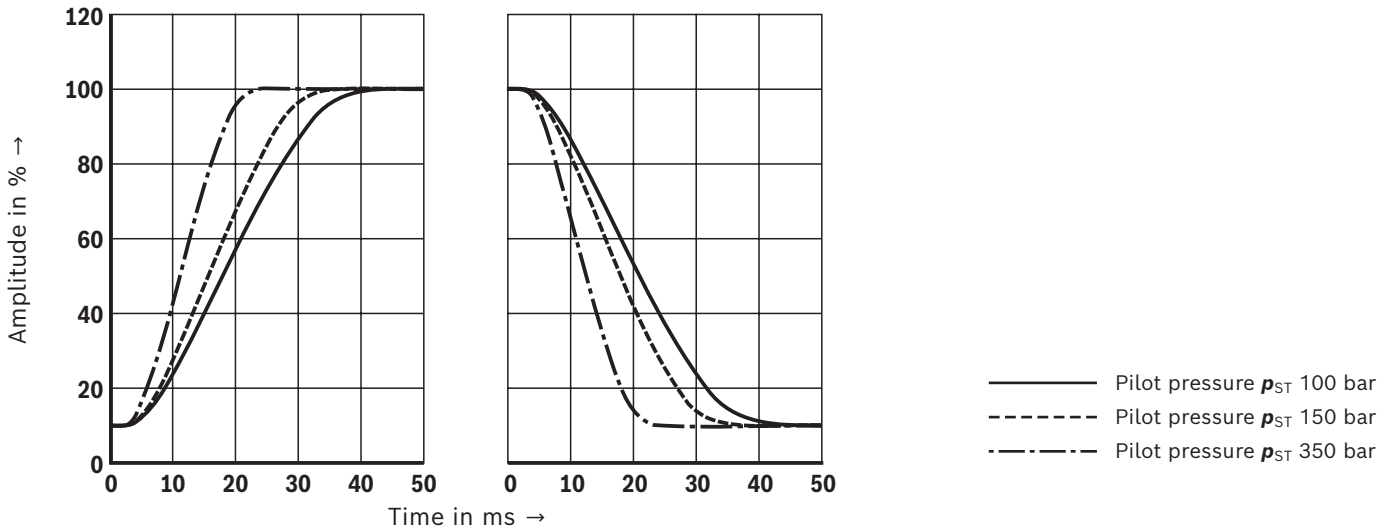


**Characteristic curves:** Size 80  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

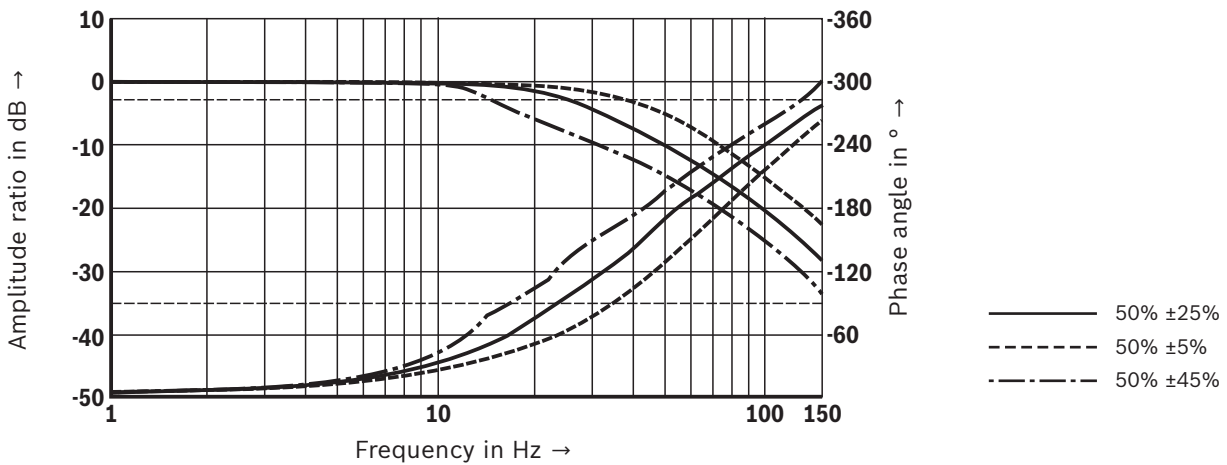


**Characteristic curves:** Size 80  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

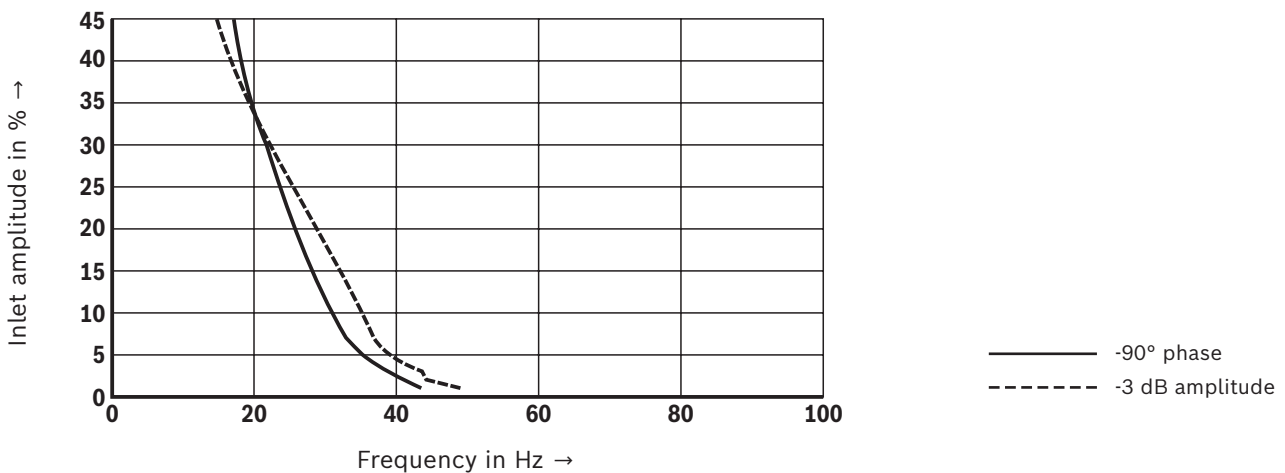
**Transition function with stepped electric input signals**



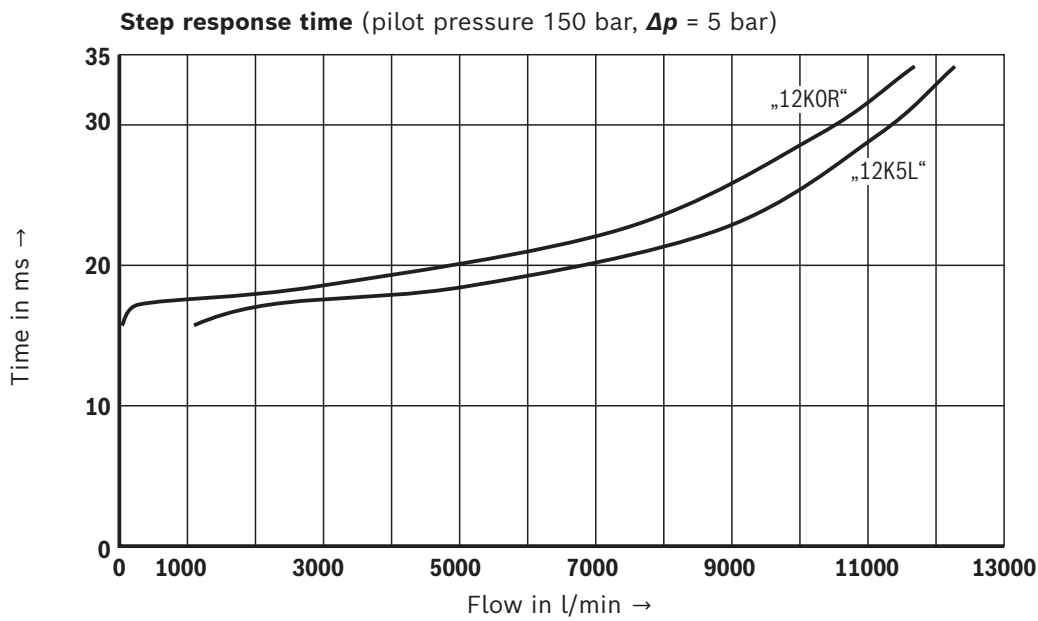
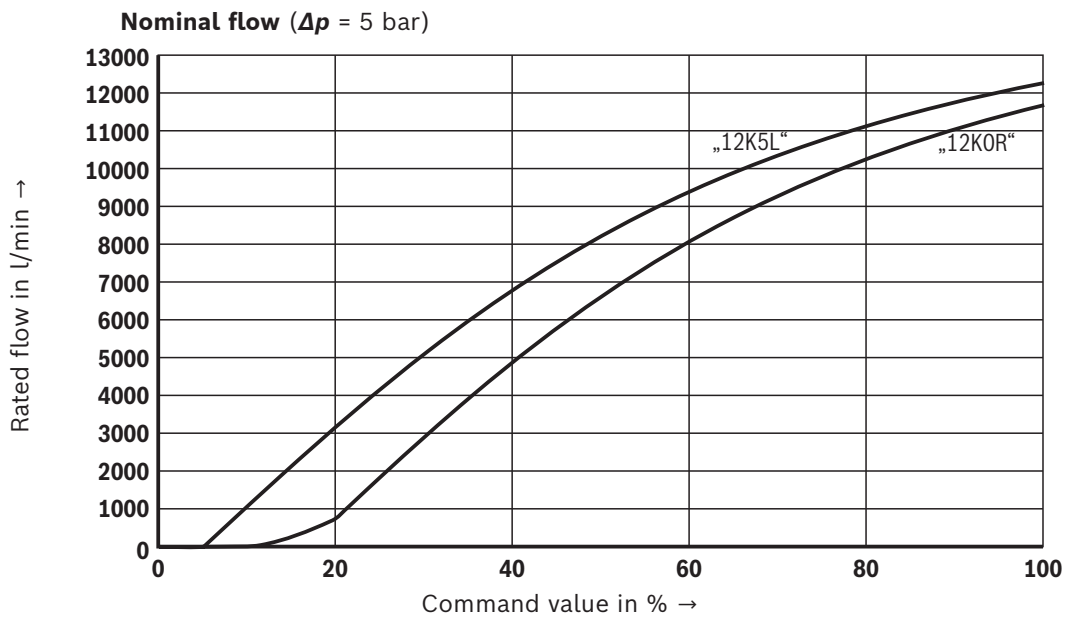
**Frequency response ( $p_{ST} = 150 \text{ bar}$ )**



**Information volume ( $p_{ST} = 150 \text{ bar}$ )**

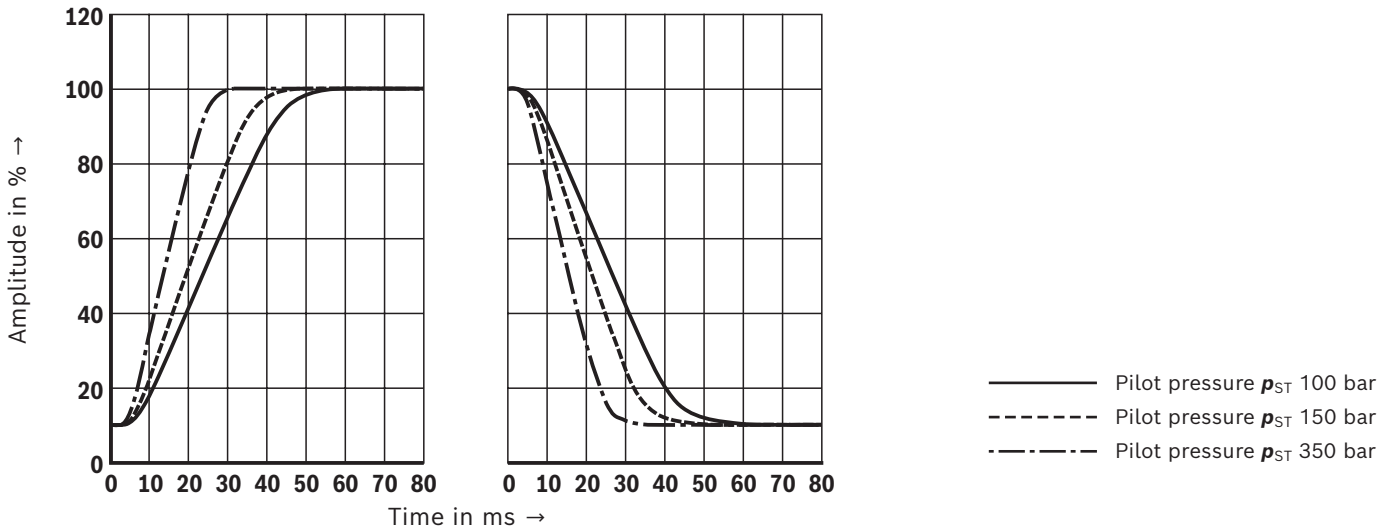


**Characteristic curves: Size 100**  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

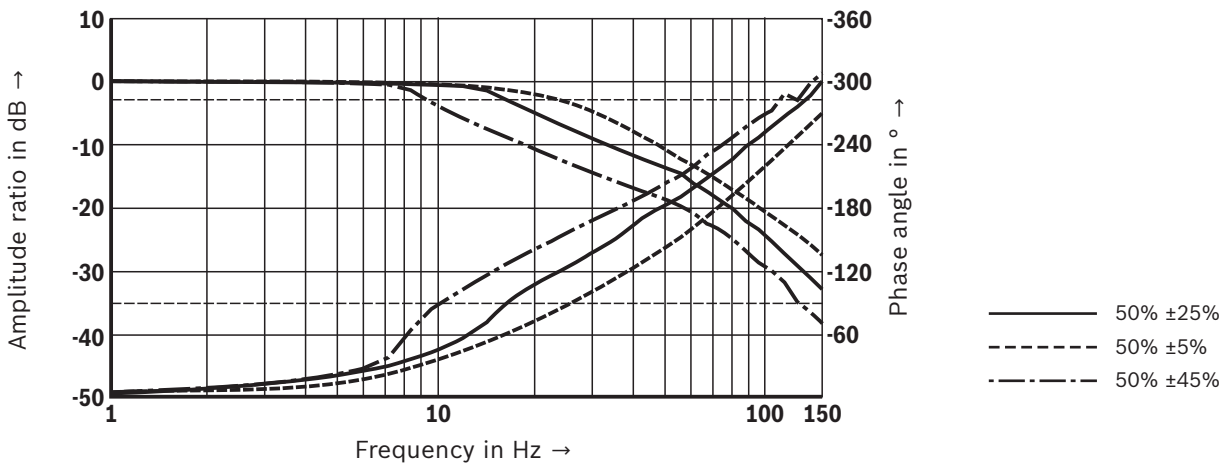


**Characteristic curves:** Size 100  
(measured with HLP32,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

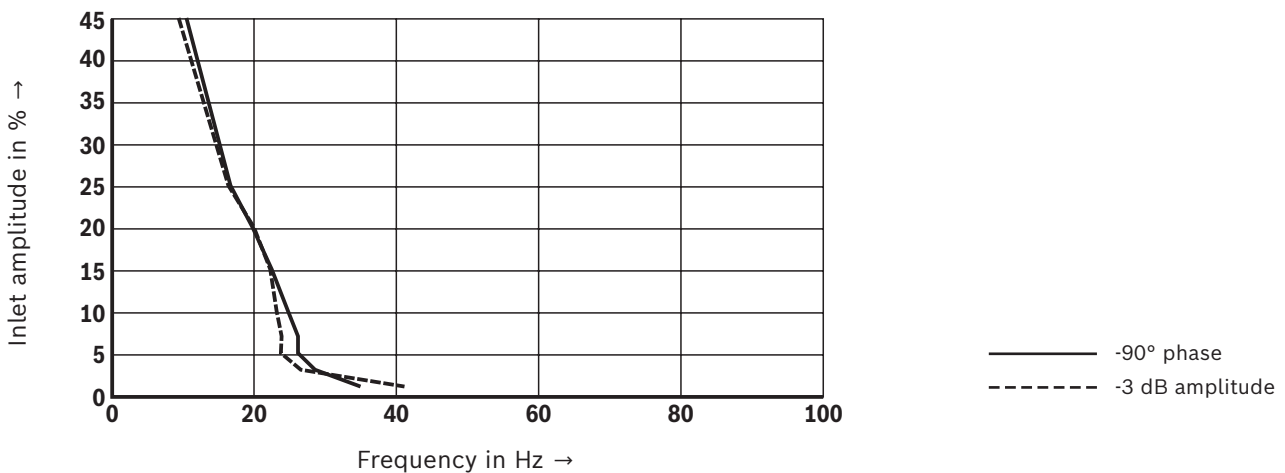
**Transition function with stepped electric input signals**

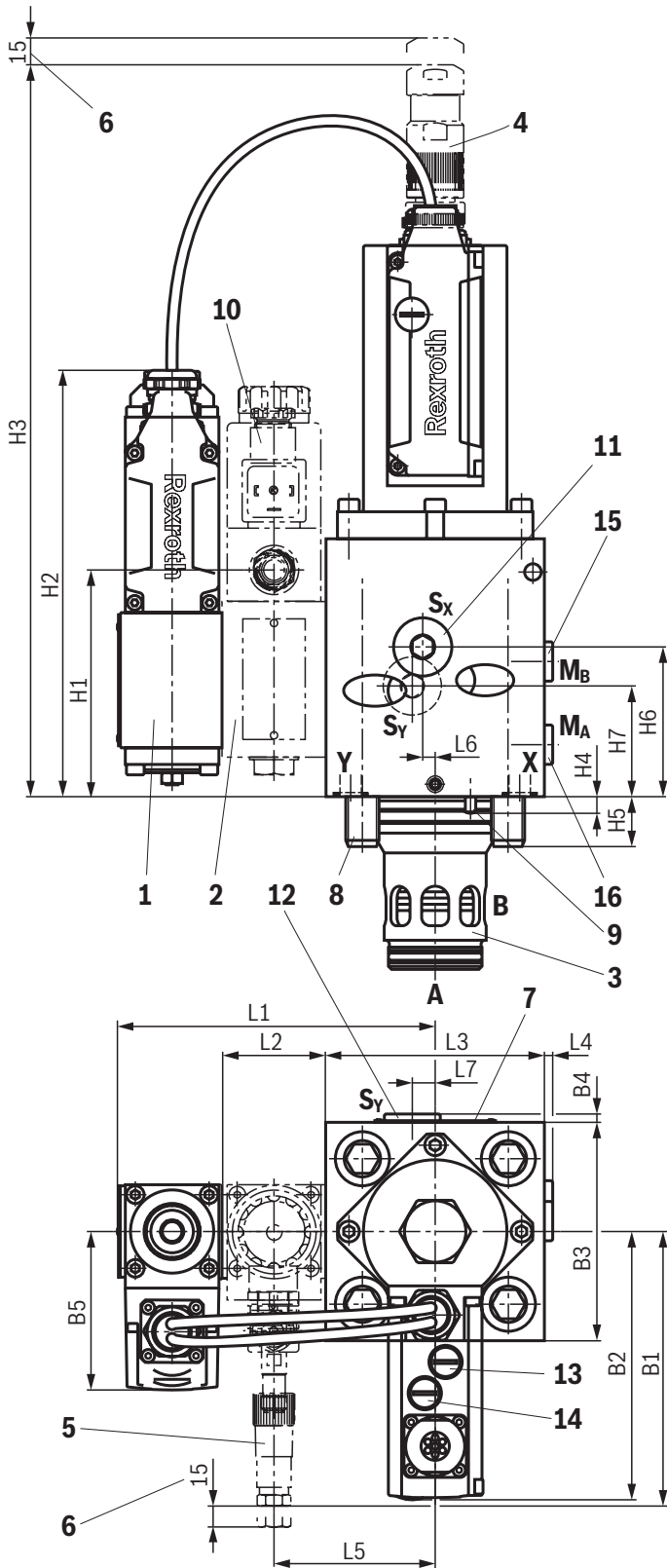


**Frequency response ( $p_{ST} = 150 \text{ bar}$ )**



**Information volume ( $p_{ST} = 150 \text{ bar}$ )**



**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 33 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, for spool position monitoring (separate order, see page 33 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 33)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 33 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 33)
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 33)
- 15 Measuring port for pilot pressure in channel A (G1/4)
- 16 Measuring port for pilot pressure in channel B (G1/4)


**Notice:**

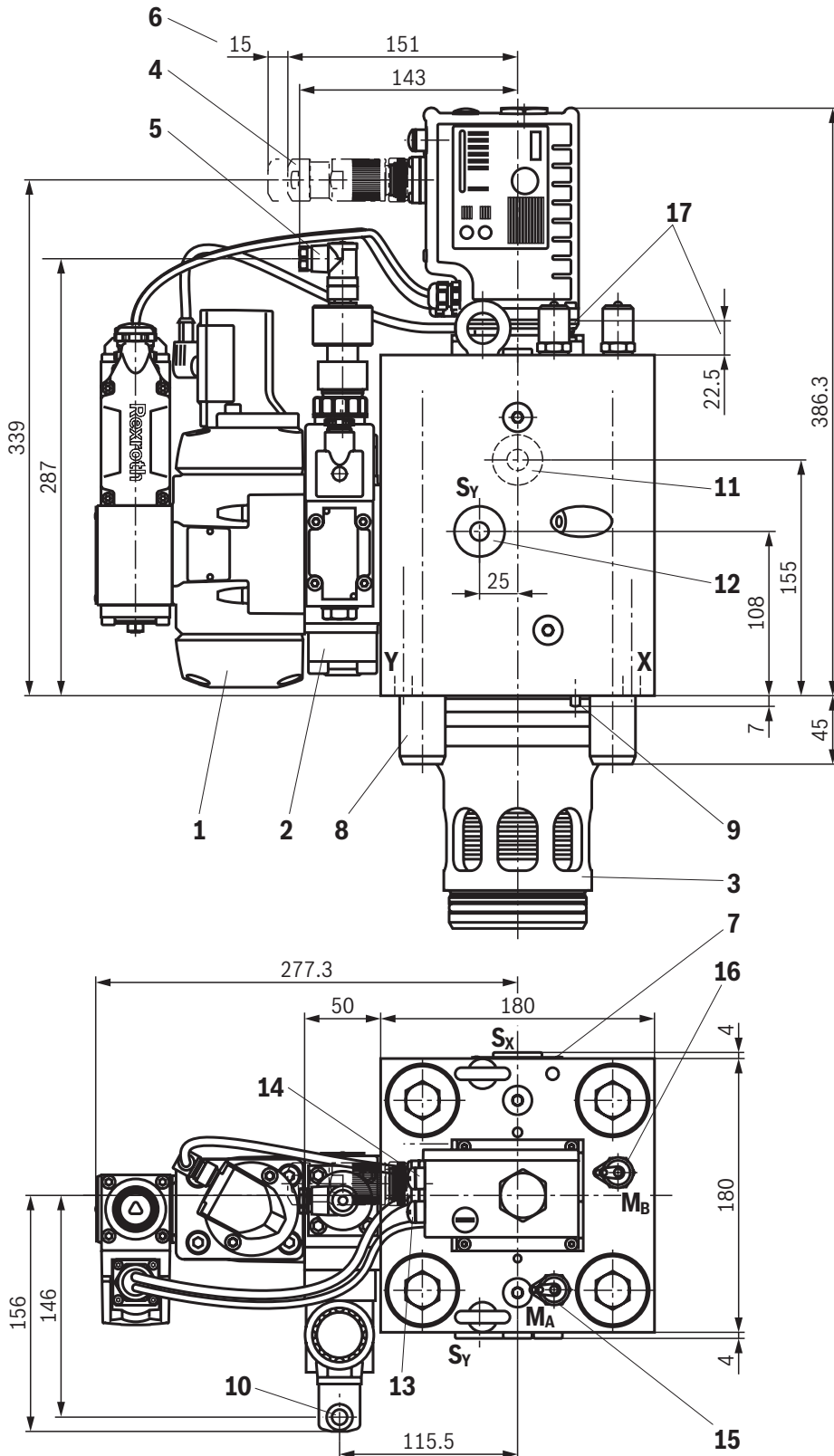
The dimensions are nominal dimensions which are subject to tolerances.

NG	H1	H2	H3	H4	H5	H6	H7	B1	B2 <sup>1)</sup>	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

<sup>1)</sup> Dimensions ( ) for version with damping plate "D"



# **Dimensions:** Size 63 (dimensions in mm)



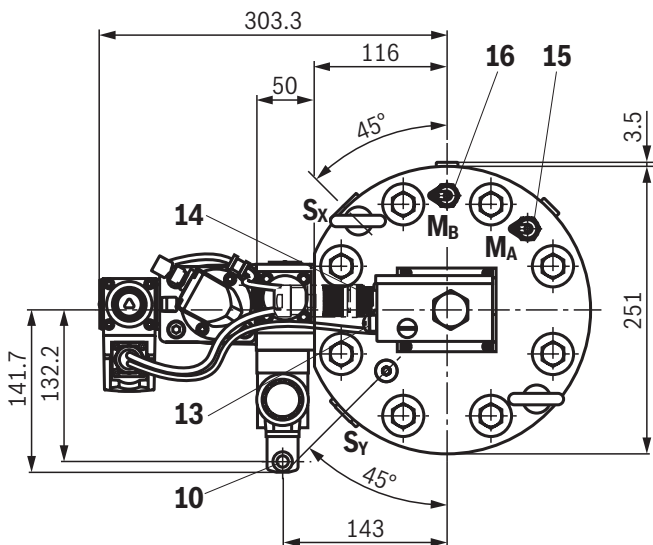
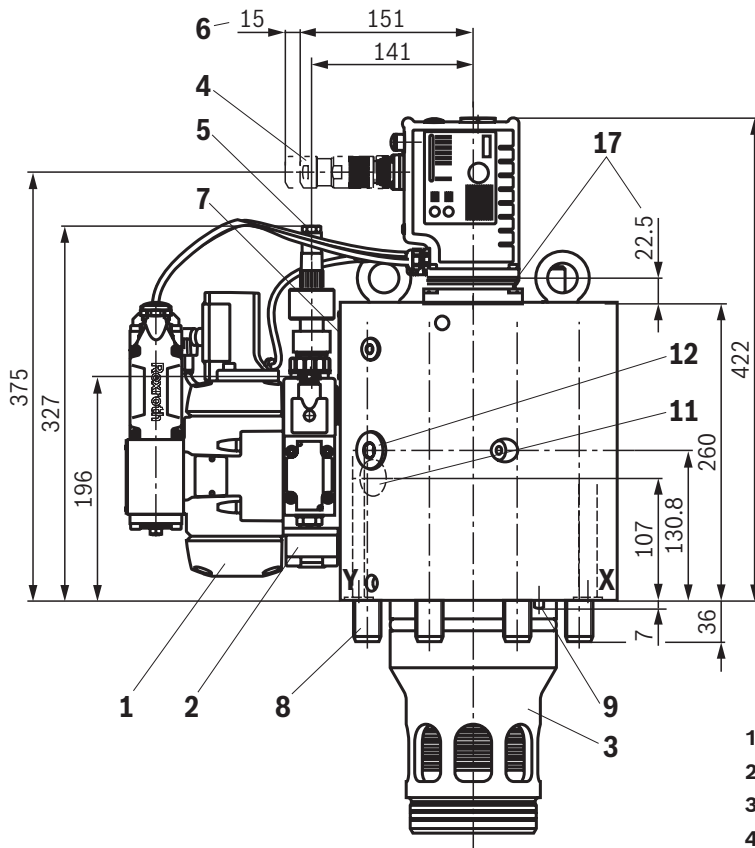
- 1 Pilot control valve (proportional directional valve NG10)
- 2 Sandwich plate shut-off valve (version "WK" and "WL")
- 3 Bushing
- 4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 33 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, angled, for spool position monitoring (separate order, see page 33 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 33)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 33 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 33)
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 33)
- 15 Measuring port for pilot pressure in channel A (G1/4)
- 16 Measuring port for pilot pressure in channel B (G1/4)
- 17 Damping plate



## **Notice:**

The dimensions are nominal dimensions which are subject to tolerances.

**Dimensions:** Size 80  
(dimensions in mm)



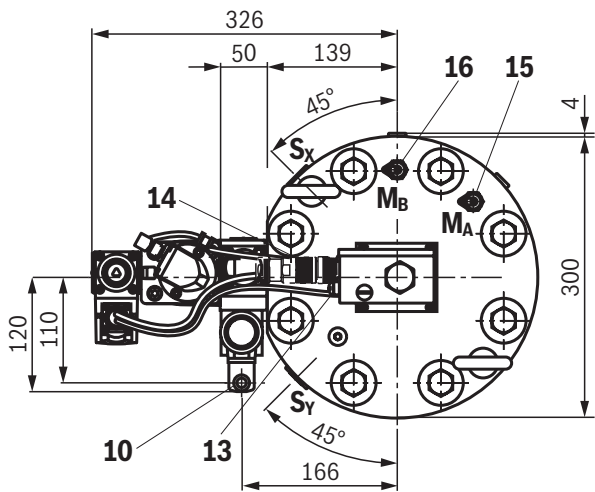
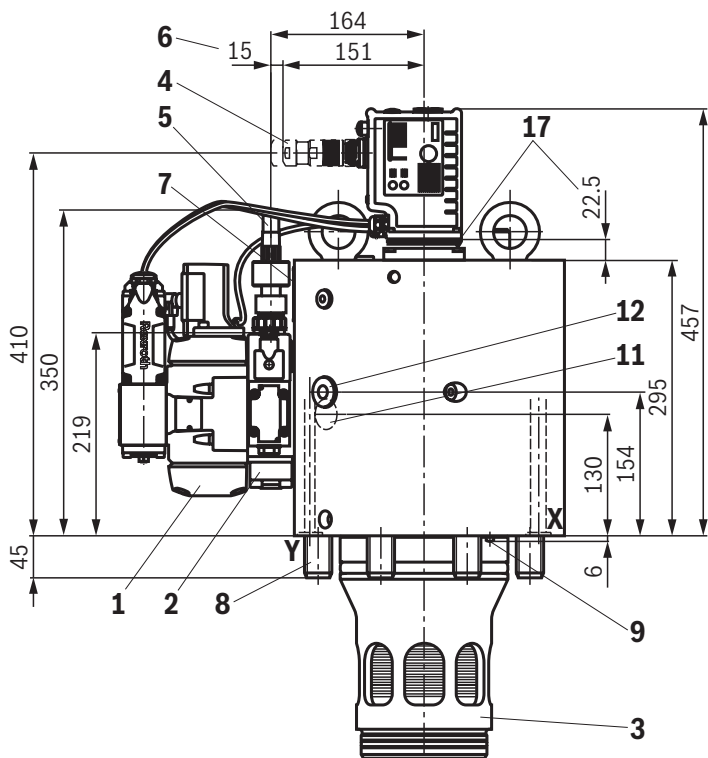
- 1 Pilot control valve (proportional directional valve NG10)
- 2 Sandwich plate shut-off valve (version "WK" and "WL")
- 3 Bushing
- 4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 33 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, angled, for spool position monitoring (separate order, see page 33 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 33)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 33 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 33)
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 33)
- 15 Measuring port for pilot pressure in channel A (G1/4)
- 16 Measuring port for pilot pressure in channel B (G1/4)
- 17 Damping plate



**Notice:**

The dimensions are nominal dimensions which are subject to tolerances.

**Dimensions:** Size 100  
(dimensions in mm)



- 1** Pilot control valve (proportional directional valve NG10)
- 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 33 and data sheet 08006)
- 5** Mating connector M12 x 1, 4-pole, angled, for spool position monitoring (separate order, see page 33 and data sheet 08006)
- 6** Space required for removing the mating connector
- 7** Name plate
- 8** Valve mounting screws (separate order, see page 33)
- 9** Locking pin for fixing
- 10** Mating connectors for valves with connector "K4" (separate order, see page 33 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 33)
- 14** Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 33)
- 15** Measuring port for pilot pressure in channel A (G1/4)
- 16** Measuring port for pilot pressure in channel B (G1/4)
- 17** Damping plate



**Notice:**

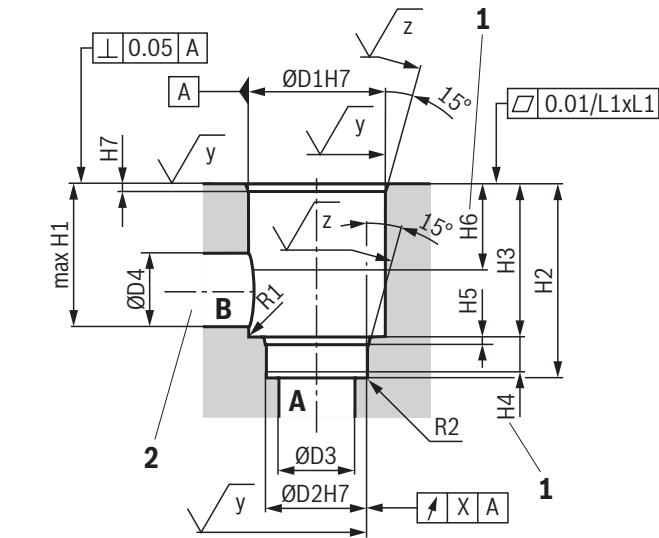
The dimensions are nominal dimensions which are subject to tolerances.

## Dimensions

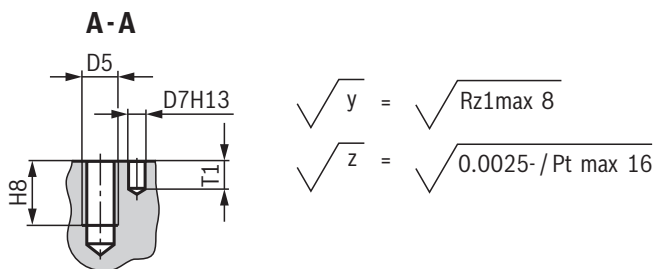
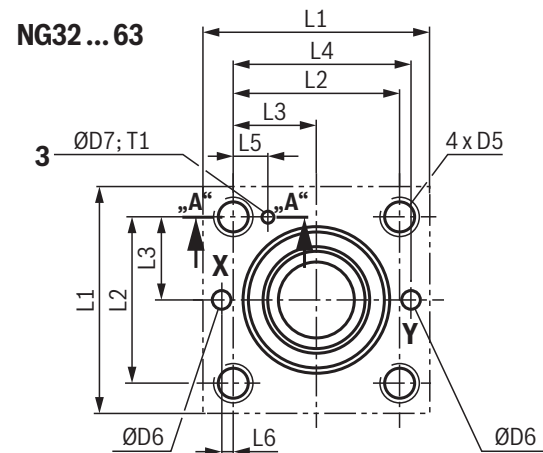
### Valve mounting screws (separate order)

Size	Quantity	Hexagon socket head cap screws	Material number
<b>32</b>	4	<b>ISO 4762 - M16 x 110 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 250 \text{ Nm} \pm 10 \%$	<b>R913015642</b>
	or		
	4	<b>ISO 4762 - M16 x 110 - 10.9</b> Tightening torque $M_A = 300 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range
<b>40</b>	4	<b>ISO 4762 - M20 x 120 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 480 \text{ Nm} \pm 10 \%$	<b>R913015672</b>
	or		
	4	<b>ISO 4762 - M20 x 120 - 10.9</b> Tightening torque $M_A = 590 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range
<b>50</b>	4	<b>ISO 4762 - M20 x 160 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 480 \text{ Nm} \pm 10 \%$	<b>R913015677</b>
	or		
	4	<b>ISO 4762 - M20 x 160 - 10.9</b> Tightening torque $M_A = 590 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range
<b>63</b>	4	<b>ISO 4762 - M30 x 220 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 1650 \text{ Nm} \pm 10 \%$	<b>R913015755</b>
	or		
	4	<b>ISO 4762 - M30 x 220 - 10.9</b> Tightening torque $M_A = 2000 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range
<b>80</b>	8	<b>ISO 4762 - M24 x 240 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 830 \text{ Nm} \pm 10 \%$	<b>R913015721</b>
	or		
	8	<b>ISO 4762 - M24 x 240 - 10.9</b> Tightening torque $M_A = 1000 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range
<b>100</b>	8	<b>ISO 4762 - M30 x 290 - 10.9-flZn/nc/480h/C</b> Tightening torque $M_A = 1650 \text{ Nm} \pm 10 \%$	<b>R913015761</b>
	or		
	8	<b>ISO 4762 - M30 x 290 - 10.9</b> Tightening torque $M_A = 2000 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range

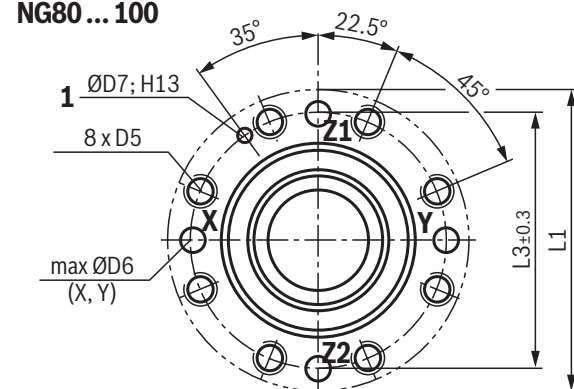
## Installation bore (dimensions in mm)



### NG32 ... 63



### NG80 ... 100



## Installation dimensions according to DIN ISO 7368

NG	32	40	50	63	80	100
ØD1H7	60	75	90	120	145	180
ØD2H7	45	55	68	90	110	135
ØD3 max <sup>1; 2)</sup>	45	55	68	90	110	135
ØD4 max <sup>1; 2)</sup>	48	58	70	80	110	125
ØD5	M16	M20	M20	M30	M24	M30
ØD6 max	8	10	10	12	16	20
ØD7H13	6	6	8	8	10	10
H1 max	68.5	84.5	97.5	127	170.5	205.5
H2 <sup>+1</sup>	85	105	122	155	205	245
H3	70±0.2	87±0.3	100±0.3	130±0.3	175±0.4	210±0.4
H4 min	13	15	17	20	25	29
H5	2.5	3	3	4	5	5
H6 min <sup>1)</sup>	20	20	27	40	40	50
H7	2.5	3	3	4	5	5
H8 <sup>1)</sup>	26	33	33	48	39	48
L1	105 <sup>1)</sup>	125	140	180	251 <sup>1)</sup>	300
L2±0.2	70	85	100	125	–	–
L3±0.2	35	42.5	50	62.5	200±0.3	245±0.3
L4±0.2	76	92.5	108	137.5	–	–
L5±0.2	18	19.5	20	24.5	–	–
L6±0.2	6	7.5	8	12.5	–	–
X	0.03	0.05	0.05	0.05	0.05	0.05
R1 max	2	4	4	4	4	4
R2 max <sup>1)</sup>	1	1	1	1	1	1
T1 min	8	8	8	8	8	8

1) Deviating from DIN ISO 7368

2) Smaller bore causes a reduction of the flow

- 1 Depth of fit, minimum dimension
- 2 Port B can be of 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

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
63	7368-12-11-1-16
80	7368-13-13-1-16
100	7368-14-14-1-16

**Tolerances according to:** General tolerances ISO 2768-mK

**Valve mounting screws** see page 33.

**Accessories** (separate order)**Mating connectors and cable sets**

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

<sup>1)</sup> See dimensions on page 26 and 27.

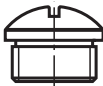
**Parameterization**

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

**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 mm <sup>2</sup> , CAT 5e	freely selectable (= xx.x)	<b>R911172111</b> (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 mm <sup>2</sup> , CAT 5e	freely selectable (= xx.x)	<b>R911172135</b> (additionally indication of type designation RKB0044/xx.x)

**Protective cap**

Protective cap M12	Version	Material number
		<b>R901075563</b>

## 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 for ensuring 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                   | <a href="http://www.boschrexroth.com/IFB">www.boschrexroth.com/IFB</a>       |
| ▶ Selection of filters   | <a href="http://www.boschrexroth.com/filter">www.boschrexroth.com/filter</a> |
| ▶ Information on available spare parts                                       | <a href="http://www.boschrexroth.com/spc">www.boschrexroth.com/spc</a>       |

## Notes

## Notes

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