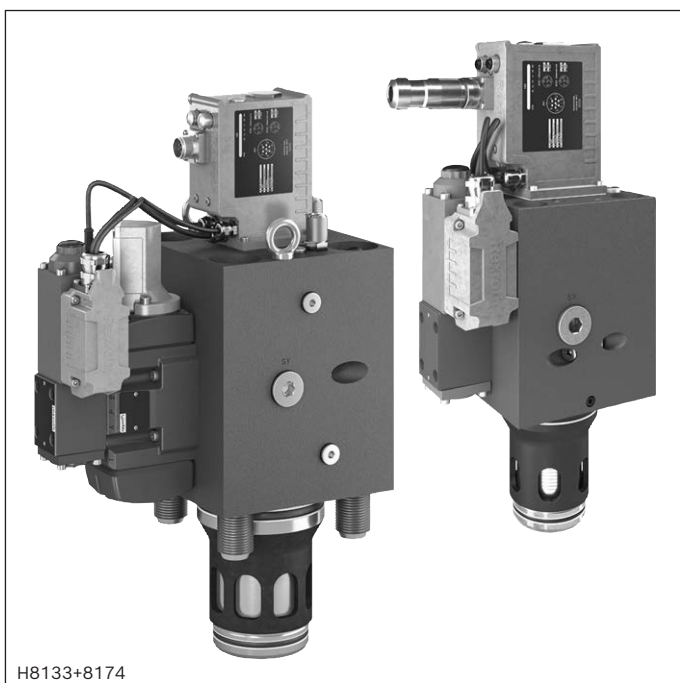


Directional high-response cartridge valve, pilot-operated, with integrated electronics (OBE) and analog or field bus interface

Type 2WRCE and 2WRCF



- ▶ Size 32 ... 63
- ▶ Component series 4X
- ▶ Maximum operating pressure 420 bar
- ▶ Nominal flow 1000 ... 4500 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, 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

Contents

Features	1
Ordering code	2, 3
Symbols	4, 5
Function, section, symbol	6
Technical data	7 ... 10
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Characteristic curves	14 ... 21
Dimensions	22 ... 24
Installation bore	25
Accessories	26
Project planning and maintenance instructions	27
Further information	27

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
	Size 63	63
05	Seat control spool	S

Rated flow at 5 bar pressure differential

06	- Size 32	
	1000 l/min (only version "R")	1K0
	1100 l/min (only version "L")	1K1
	- Size 40	
	1600 l/min (only version "R")	1K6
	1800 l/min (only version "L")	1K8
	- Size 50	
	2600 l/min (only version "R")	2K6
	2700 l/min (only version "L")	2K7
	- Size 63	
	4300 l/min (only version "R")	4K3
	4500 l/min (only version "L")	4K5

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 9)

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

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			*

13	Supply voltage 24 V	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

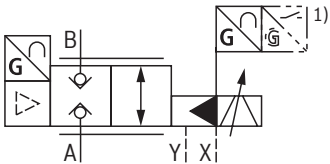
Electrical interface

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	D
17	Further details in the plain text	

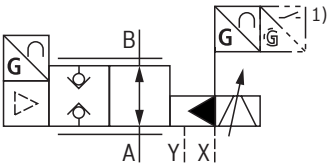
Symbols: Size 32 ... 50

Simplified

Version "K" and "WK"

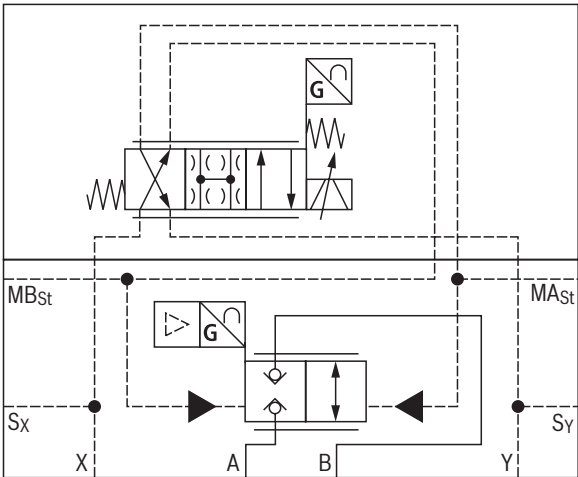


Version "L" and "WL"

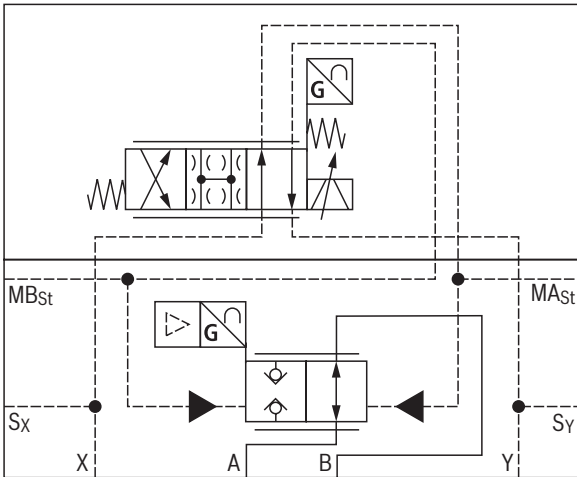


Detailed

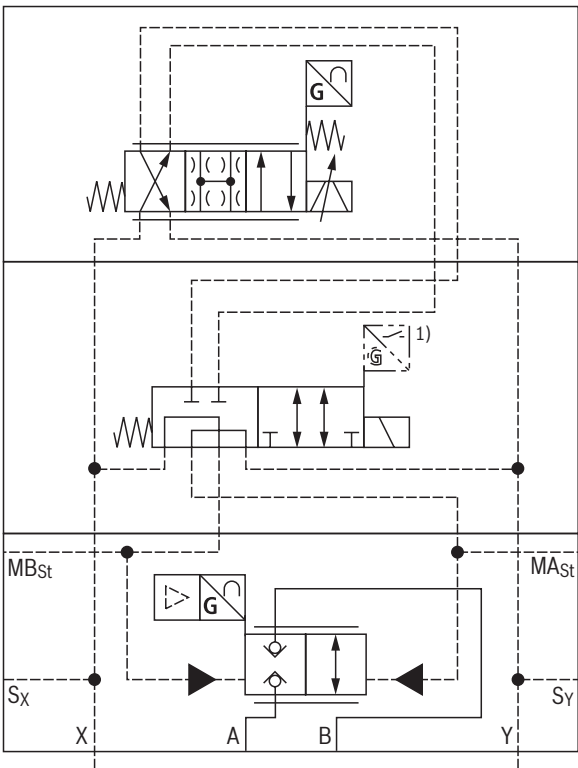
Version "K"



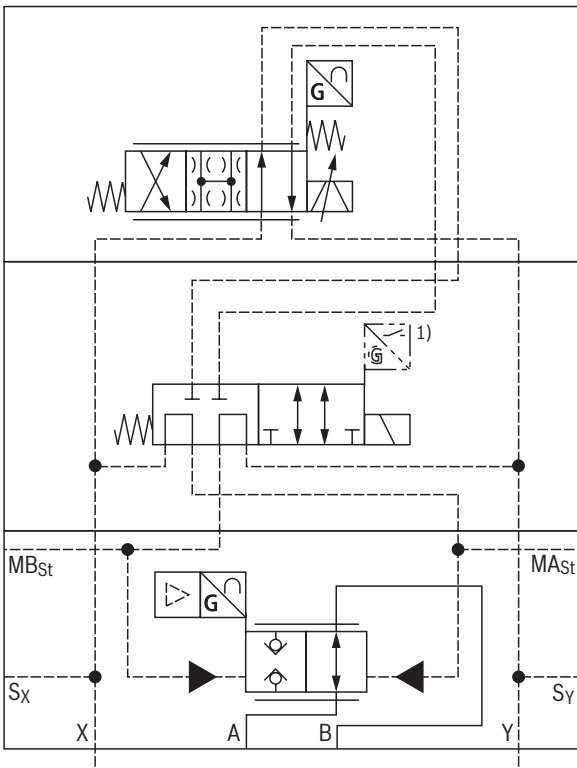
Version "L"



Version "WK"

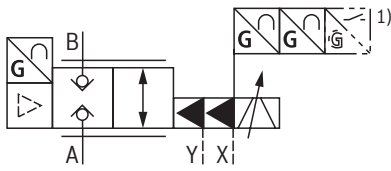
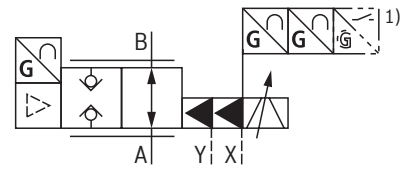
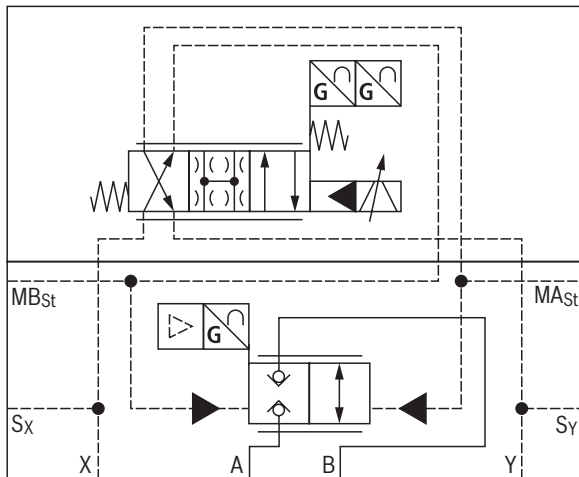
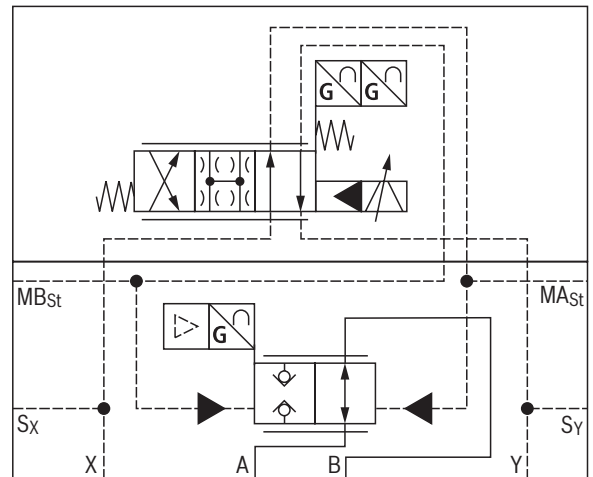
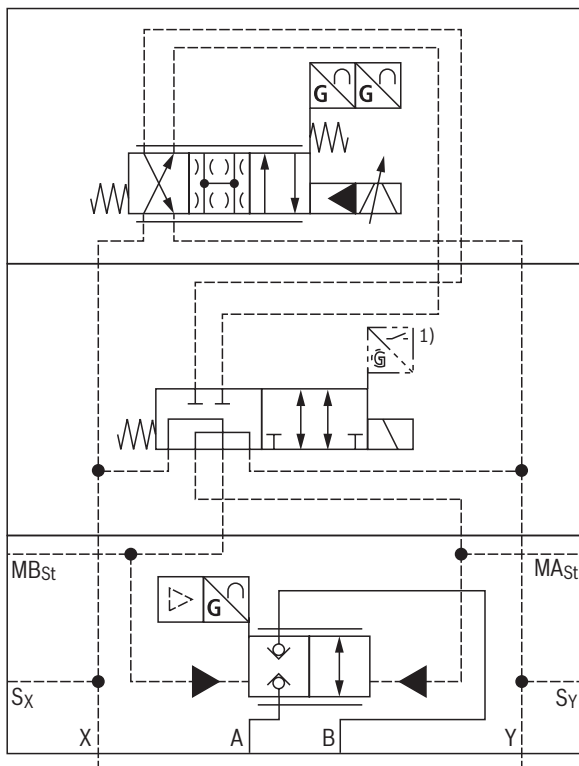
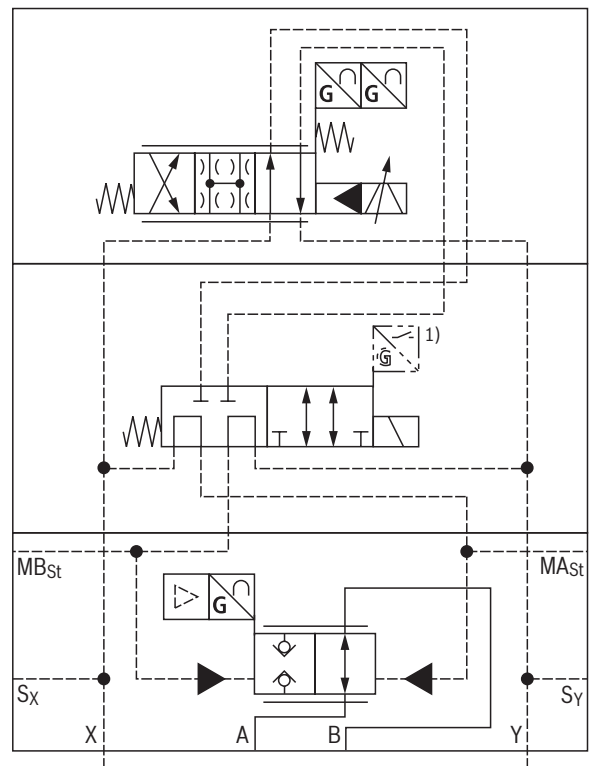


Version "WL"



1) Version with position switch "E"

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

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

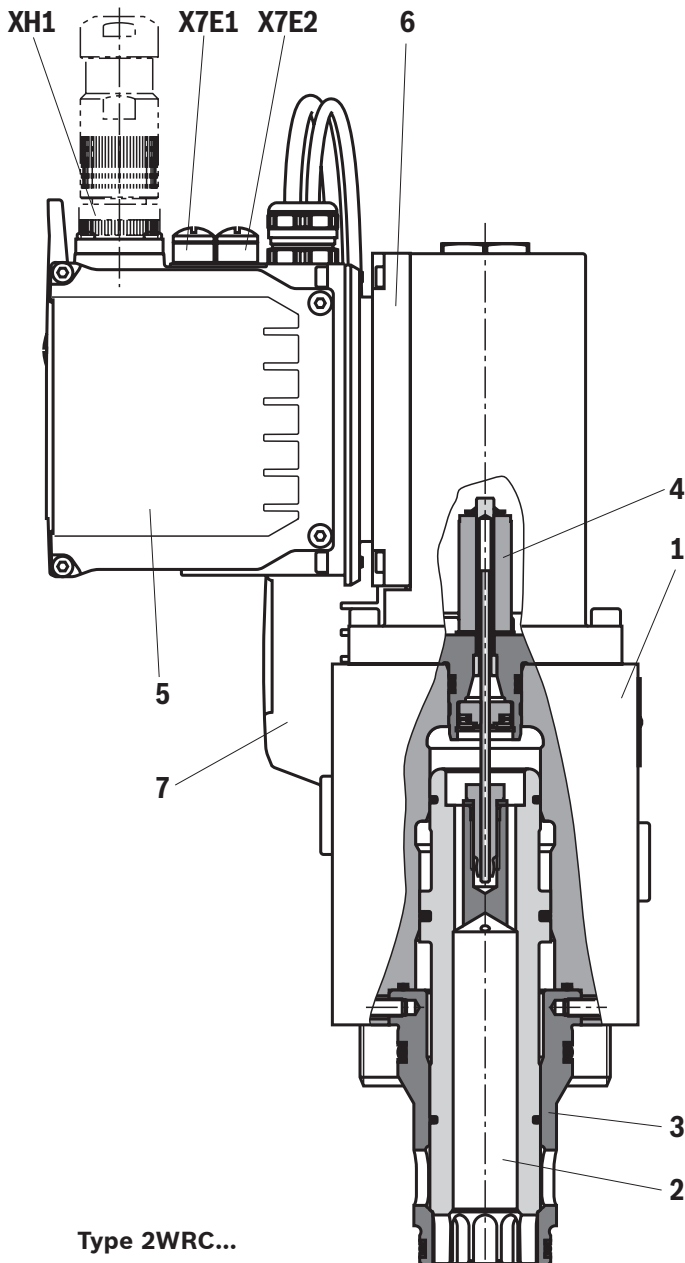
1) Version with position switch "E"

Function, section, 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 26):

- ▶ 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
Weight	▶ Without shut-off valve ("K"; "L")	kg	15.6	21.2	32.3	56.8
	▶ With shut-off valve ("WK"; "WL")	kg	17.2	22.8	33.9	64.5
	▶ Position switch "E"	kg	1.1			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 _{RMS} / 30 g peak / 30 min / 3 axes				
	▶ Without damping plate (NG50 and 63)	20 ... 2000 Hz / 10 g _{RMS} / 30 g peak / 24 h / 3 axes				
	▶ With damping plate ¹⁾	20 ... 2000 Hz / 10 g _{RMS} / 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 ¹⁾	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		2015/65/EU			
	▶ REACH ordinance		(EC) no. 1907/2006			

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



Notice:

The following purchased parts containing the substance "N,N-dimethylacetamide, CAS no. 127-19-5" of the REACH SVHC candidate list are installed in the valves:

► NG50: "WEGAUFNEHMER DK 20/4 SPEZ."

(material no. R900021287)

► NG63: "WEGAUFNEHMER DK 50/4S SPEZ."

(material no. R900065525)

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						
Size	NG	32	40	50	63	
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 ($\Delta p = 5 \text{ bar}^{2; 3; 4)}$	► Version "L"	l/min	1100 (1500)	1800 (2200)	2700 (3900)	4500 (6200)
	► Version "R"	l/min	1000 (1300)	1600 (1950)	2600 (3600)	4300 (5800)
Maximum flow ⁵⁾		l/min	2800	4200	6400	9100
Pilot flow ⁶⁾		l/min	78	78	95	220
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	22.4	42.7
Hydraulic fluid			see table page 9			
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 25)

5) Flow 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 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 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 environment 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.

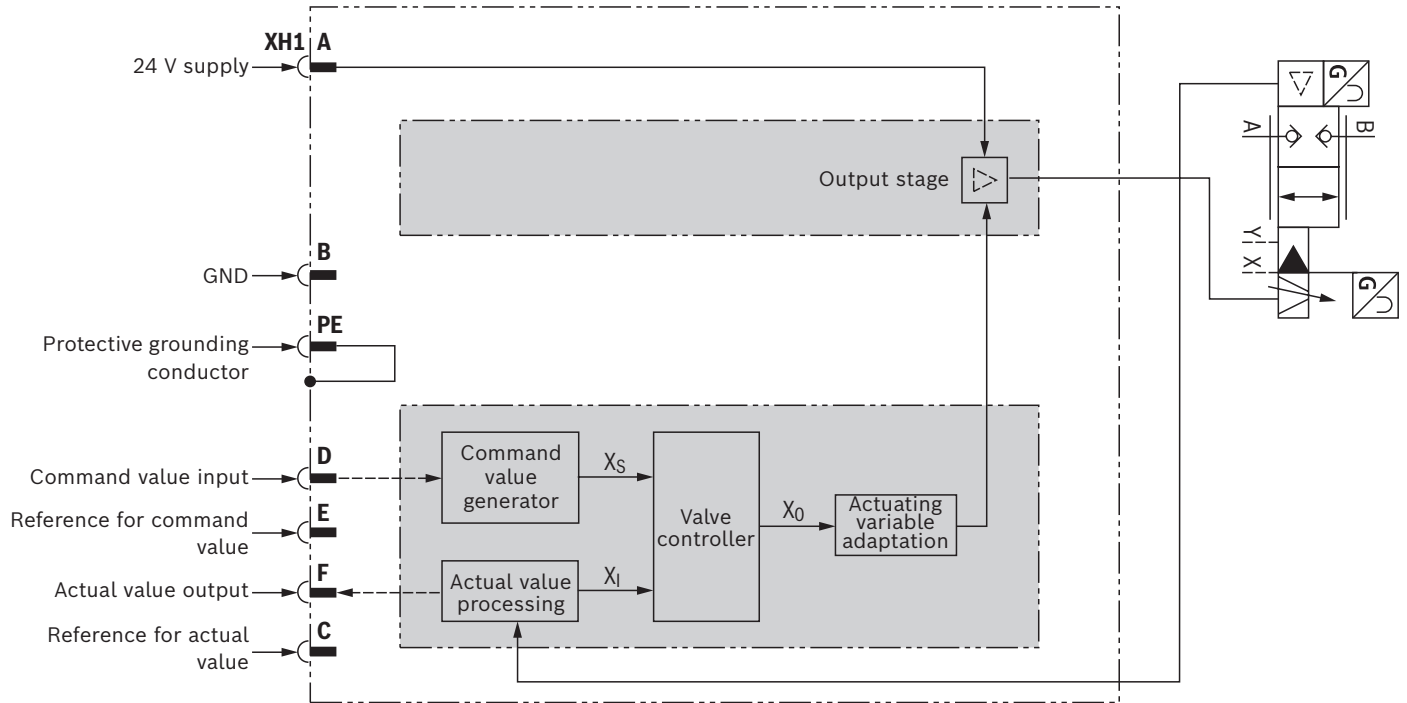
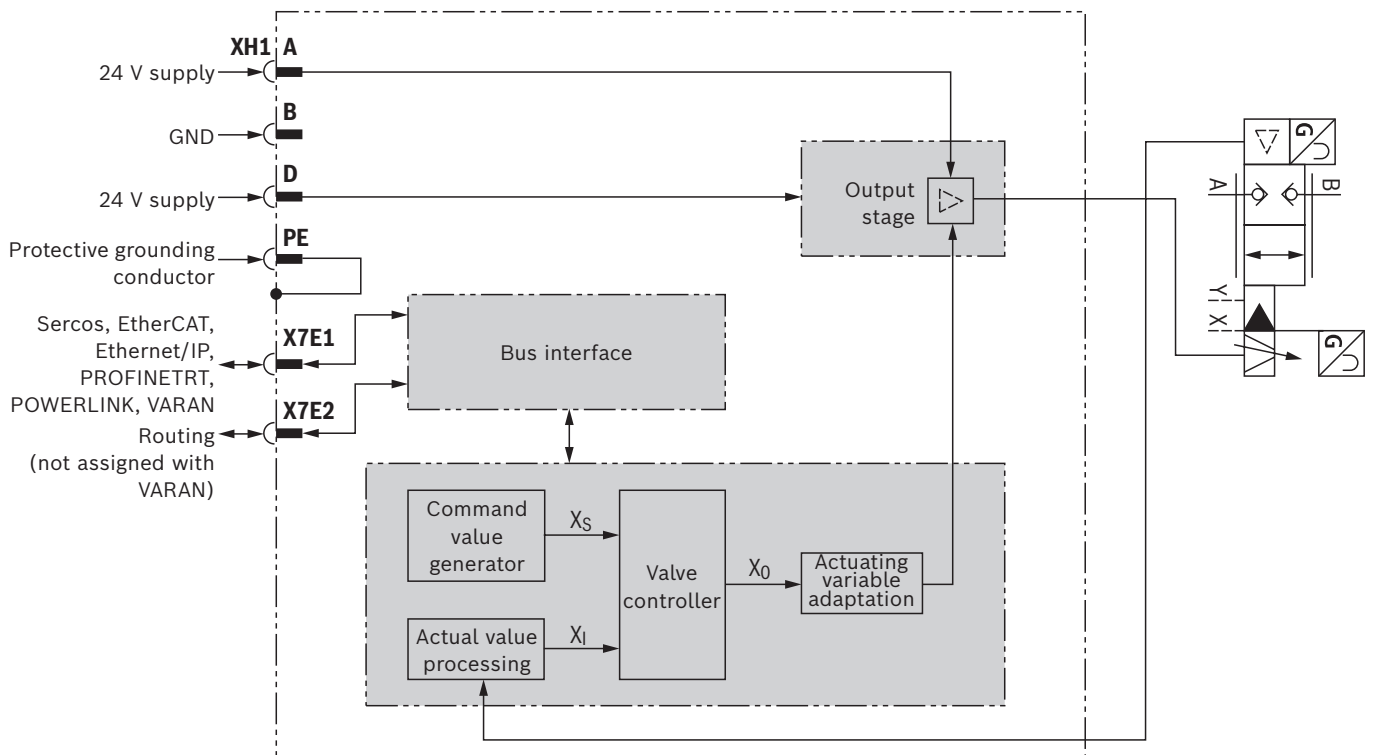
Technical data

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

Static/dynamic					
		32	40	50	63
Hysteresis	%	< 0.2			
Range of inversion	%	< 0.1			
Response sensitivity	%	< 0.1			
Step response according to ISO 10770-1 ⁸⁾	ms	12	14	24	25
Reaching of the preferred position ⁹⁾	ms	52 ... 38	62 ... 48	130 ... 85	160 ... 90
Zero compensation	ex plant ±1 %				
Zero shift upon	► Hydraulic fluid temperature	%/10 K	≤ 0.3		
change of:	► 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 12	
Required fuse protection, external	A	4 time-lag	
Adjustment		calibrated in the plant, see characteristic curves page 14 ... 19	

⁸⁾ Without shut-off valve; 10 % → 100 %, pilot pressure 150 bar⁹⁾ 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"

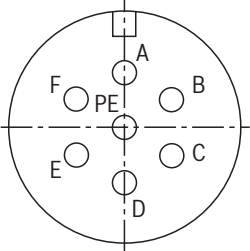
Pin 6 + PE	Signal	Interface assignment		
		Version "A1" ¹⁾	Version "WRCE" "F1" ²⁾	Version "WRCF" "D9"
A	Supply voltage	24 V DC		
B		GND		
C	Reference potential actual value	Reference potential actual value ³⁾	Reference potential actual value	–
D	Differential amplifier input	Command value 0 ... 10 V	Command 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)		



Notes:

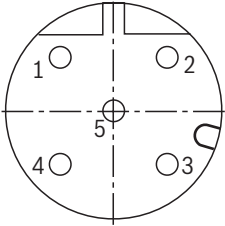
- Do not connect PE if the valve has already been grounded via the system.
- In case of cable break, valves of version "K" are - according to the factory setting - regulated and by default held in a closed position. Valves of version "L" are by default held in an open position. On the customer side,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

- 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.



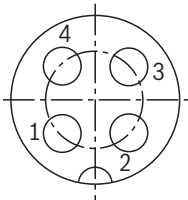
Connector pin assignment: M12 x 1, 4-pole, coding D (for Ethernet interfaces "X7E1" and "X7E2")

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

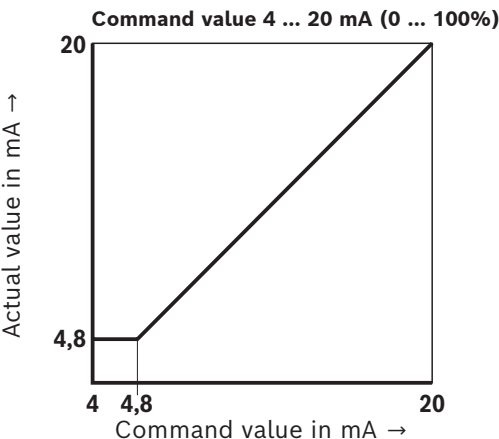
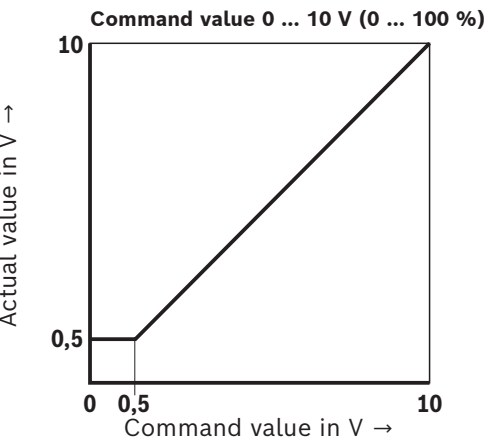


Connector pin assignment: M12 x 1, 4-pole (position switch for sandwich plate shut-off valve)

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



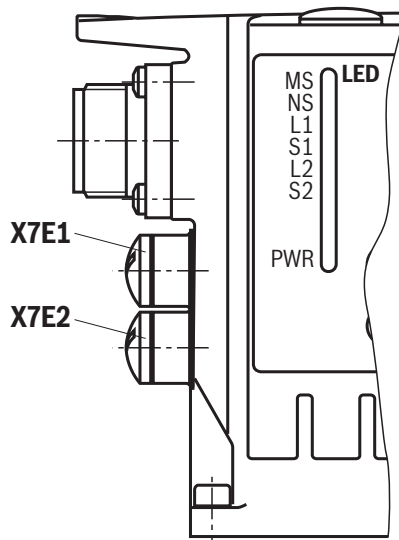
Nominal command value range



LED displays

LED	Interface	Analog	Sercos	EtherNET/IP	EtherCAT	PROFINET RT	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

NG32 ... 40

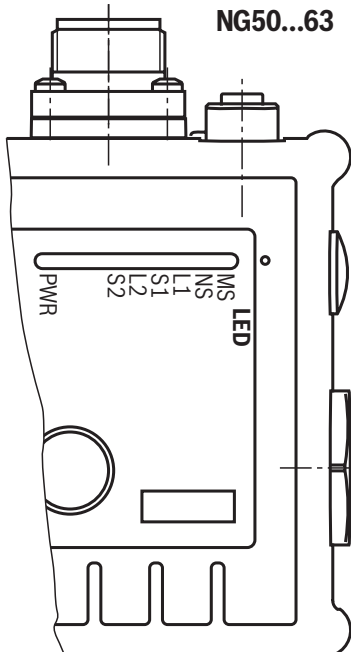


Displays of the status LEDs

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

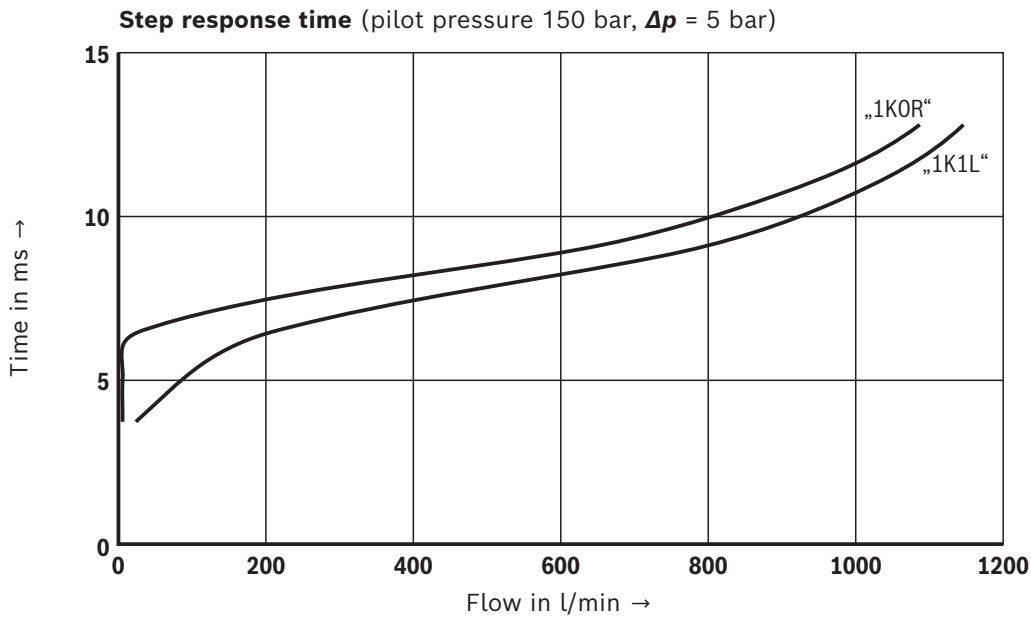
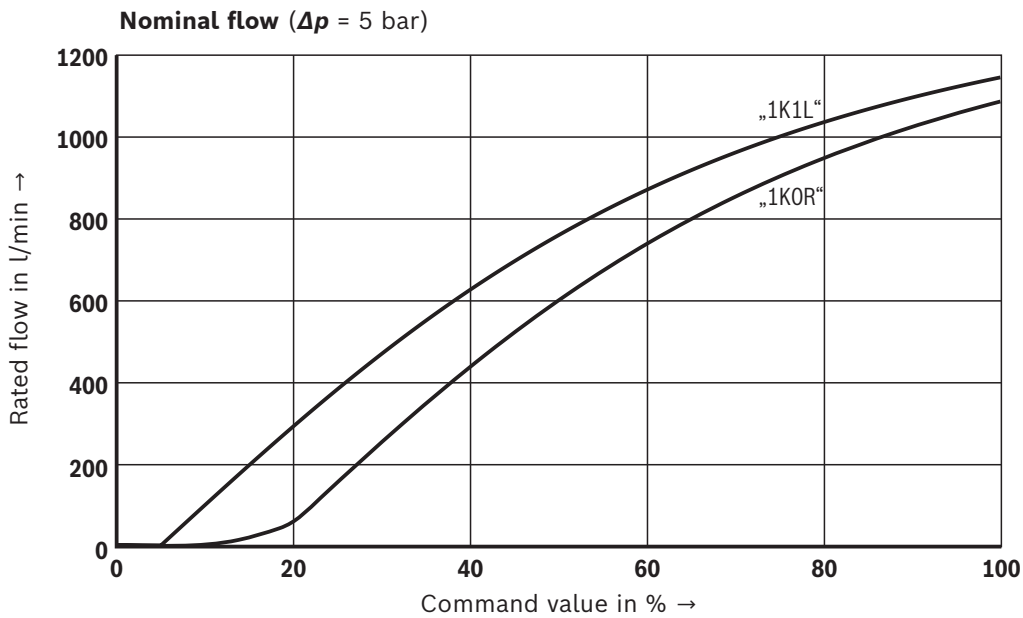
NG50...63



Notes:

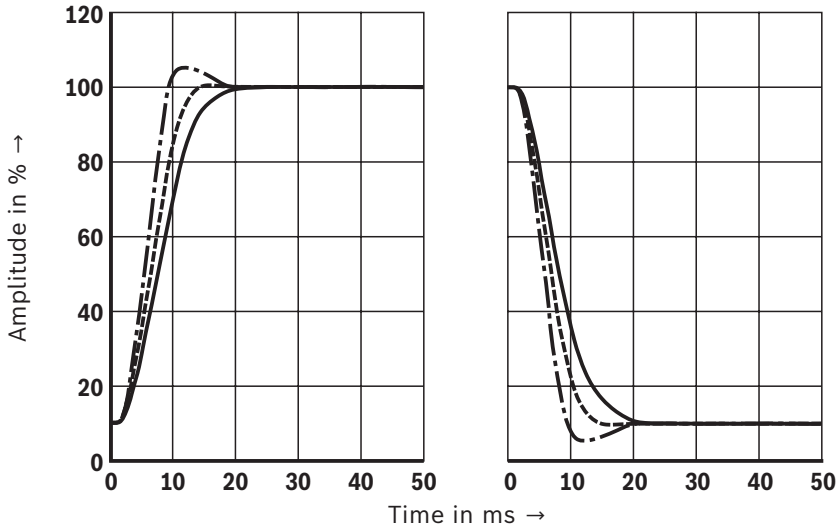
- For the connection to the M12 sockets, we recommend using self-locking mating connectors
- Module status LED MS relates to the electronics module
- The network status LED NS indicates the status of the control communication, see application description 30338-FK
- LEDs L1, S1, L2 and S2 relate to interfaces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

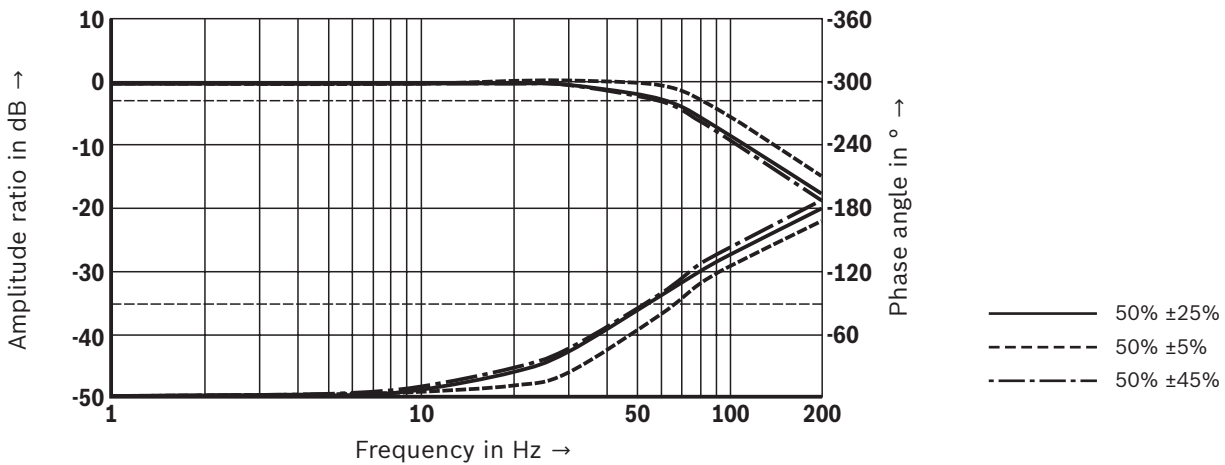


Characteristic curves: Size 32
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

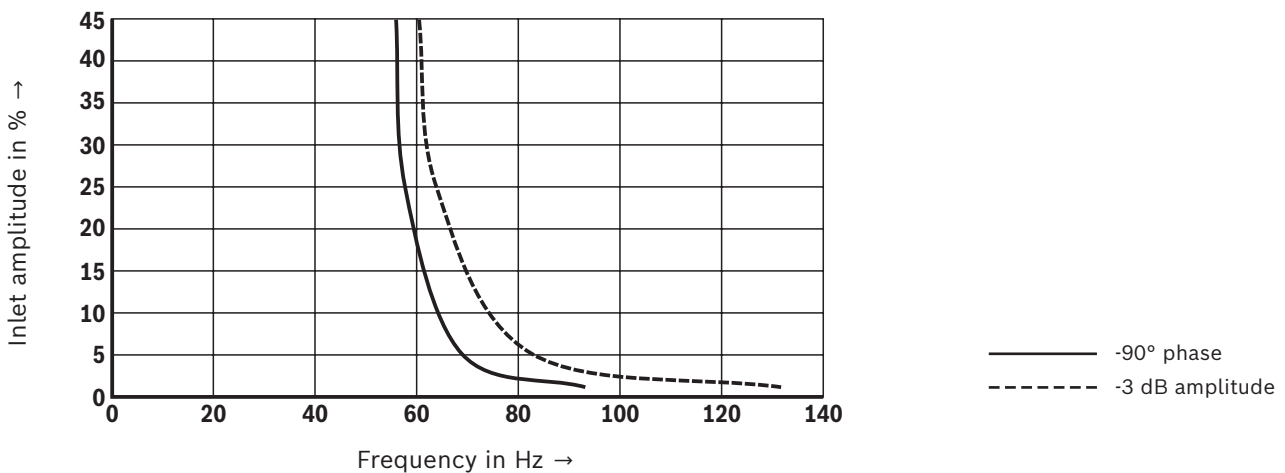
Transition function with stepped electric input signals



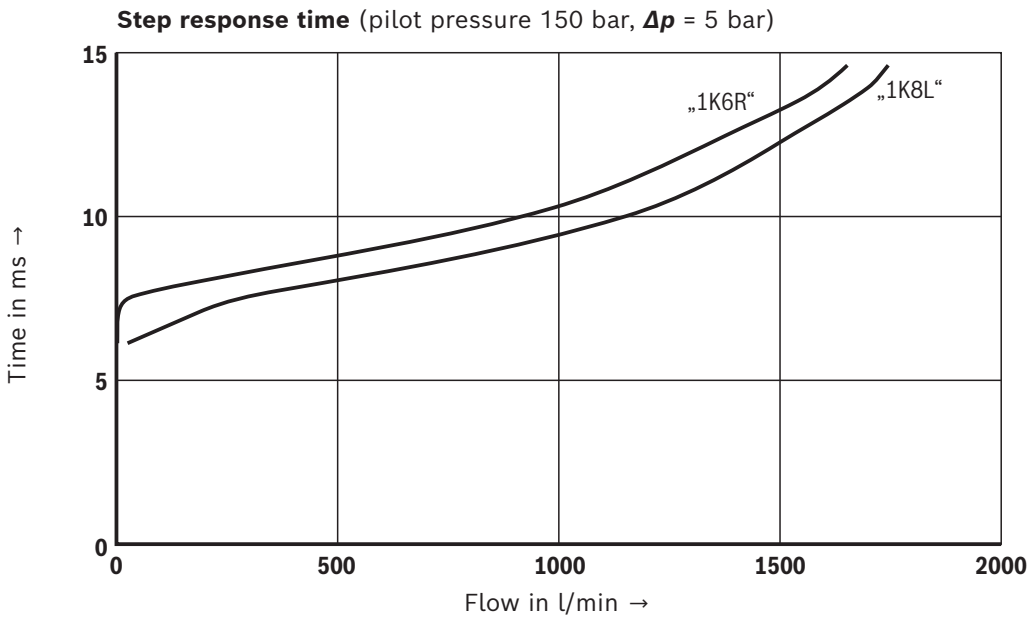
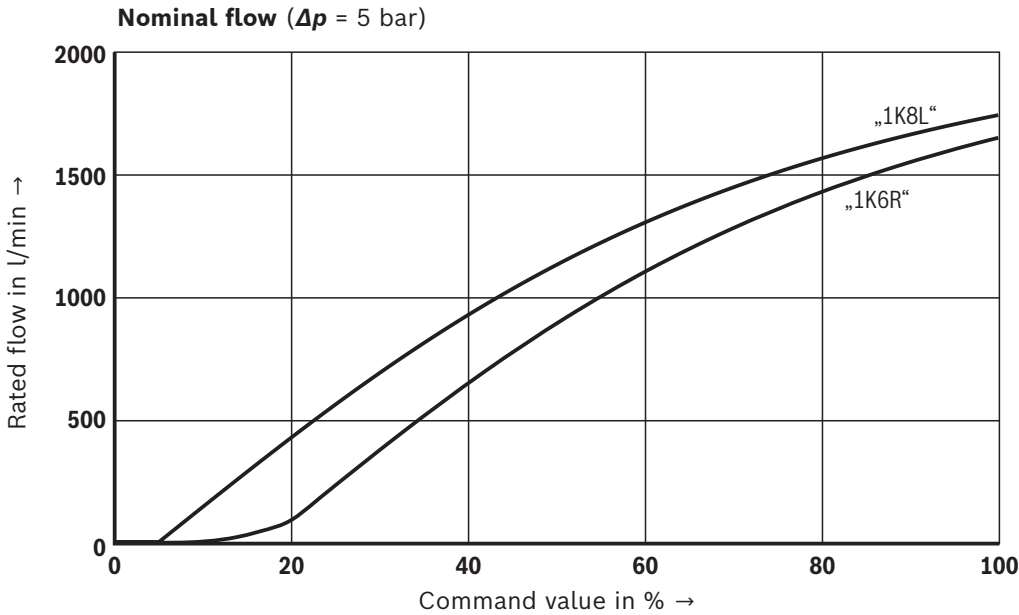
Frequency response ($p_{ST} = 210 \text{ bar}$)



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

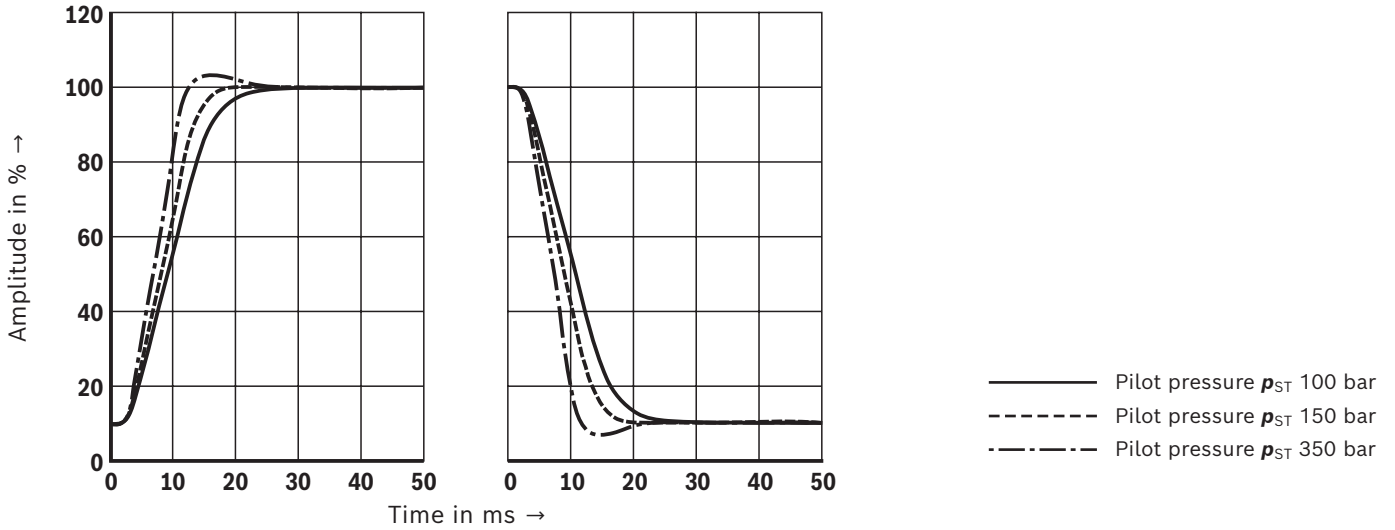


Characteristic curves: Size 40
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

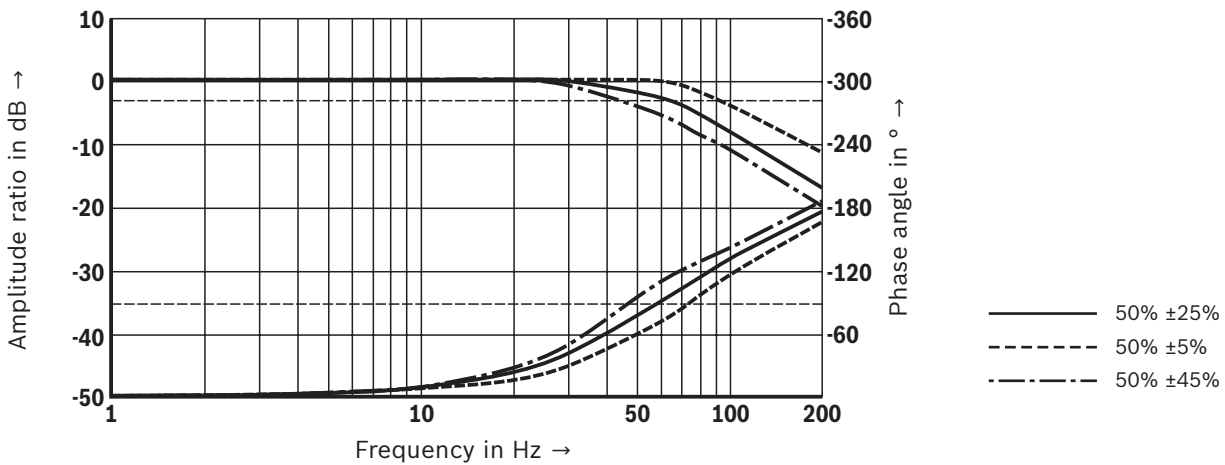


Characteristic curves: Size 40
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

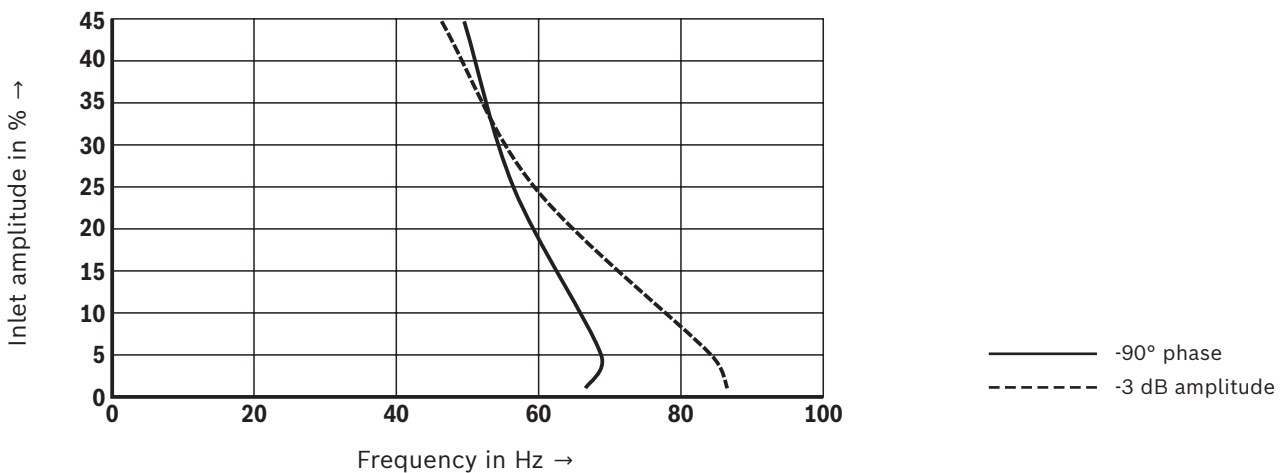
Transition function with stepped electric input signals



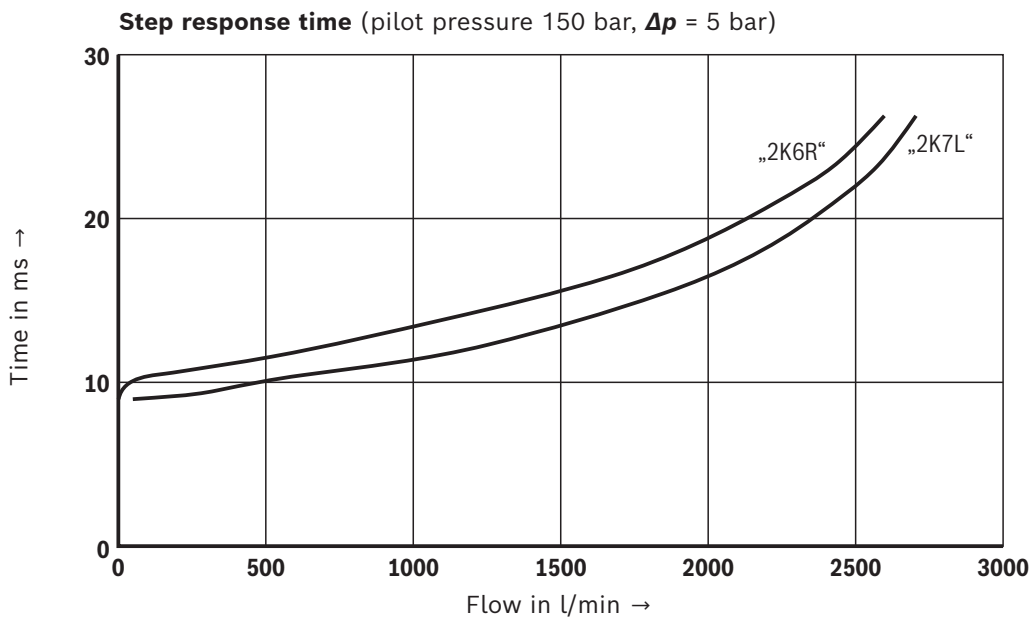
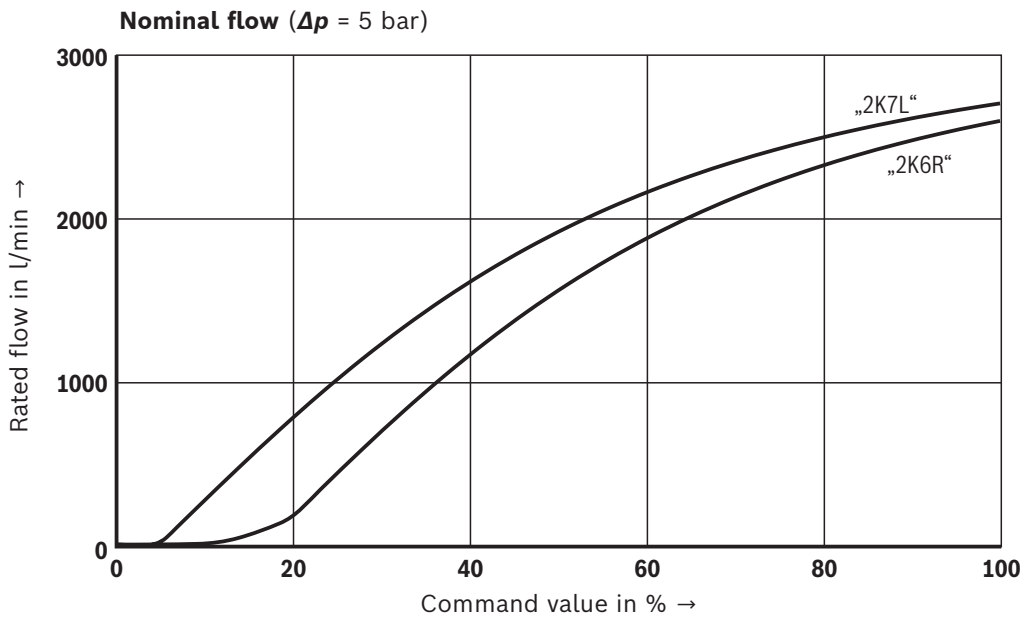
Frequency response ($p_{ST} = 210 \text{ bar}$)



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

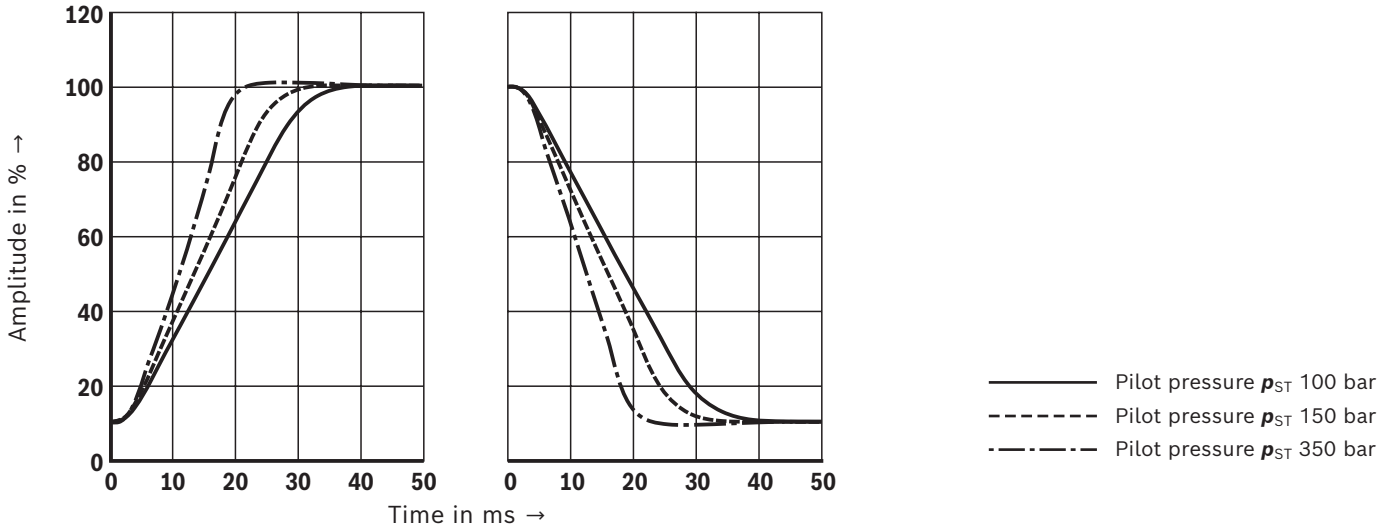


Characteristic curves: Size 50
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

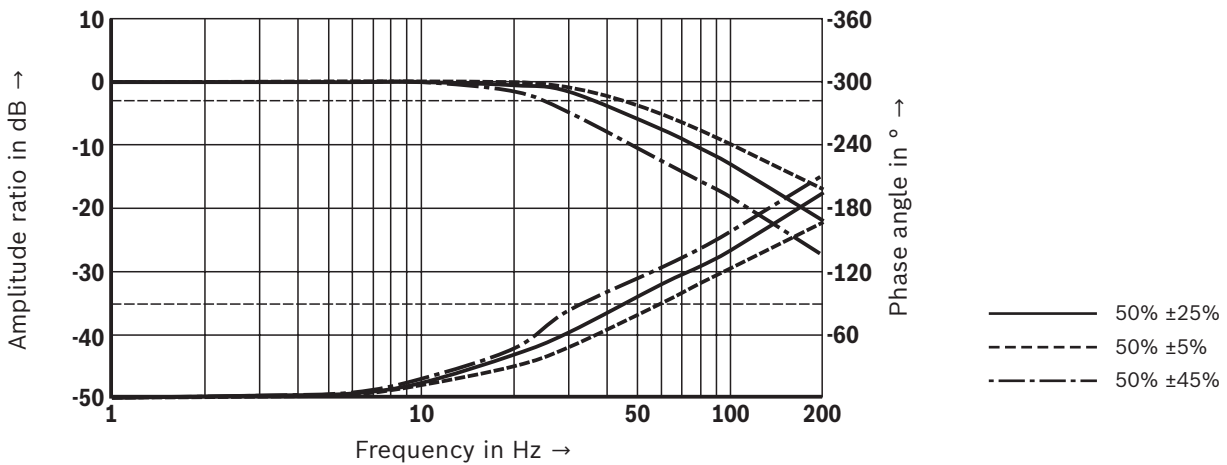


Characteristic curves: Size 50
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

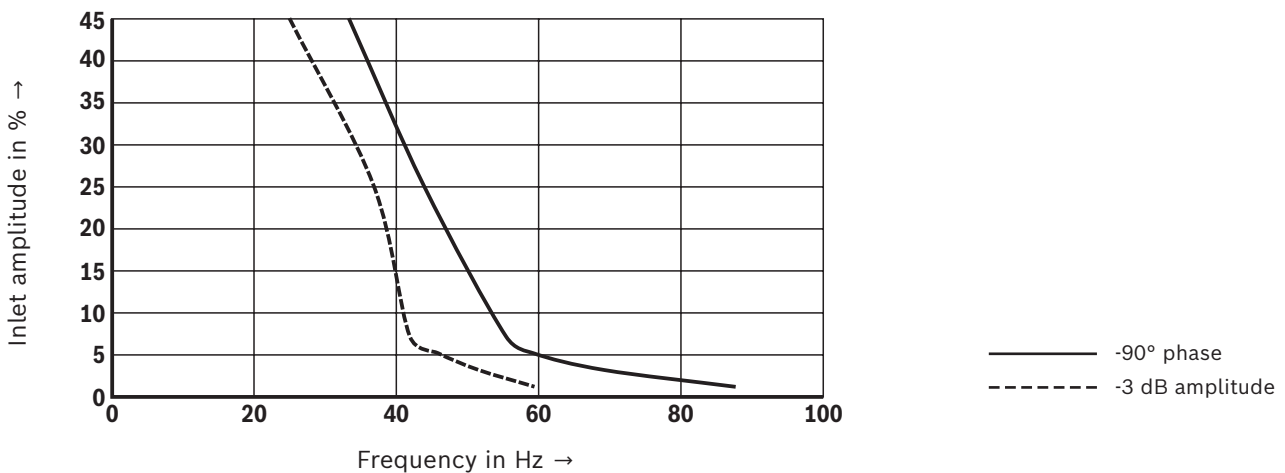
Transition function with stepped electric input signals



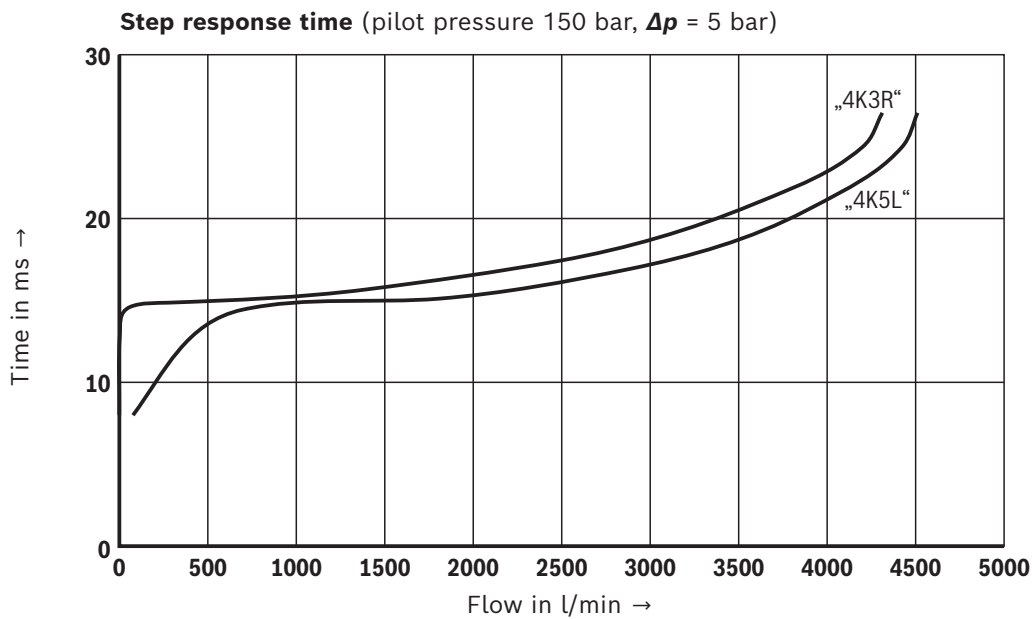
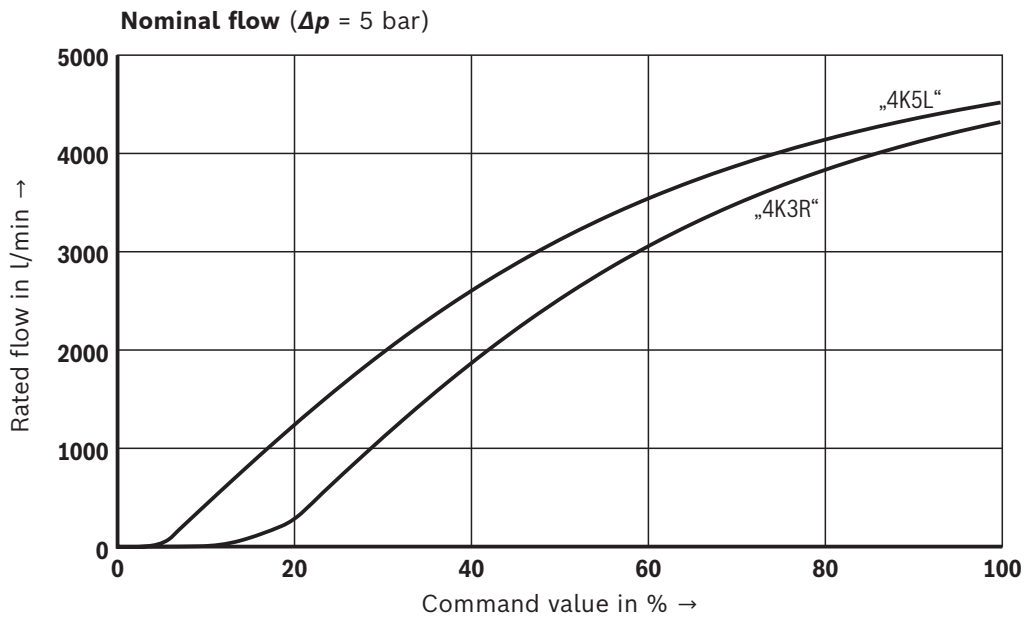
Frequency response ($p_{ST} = 210 \text{ bar}$)



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

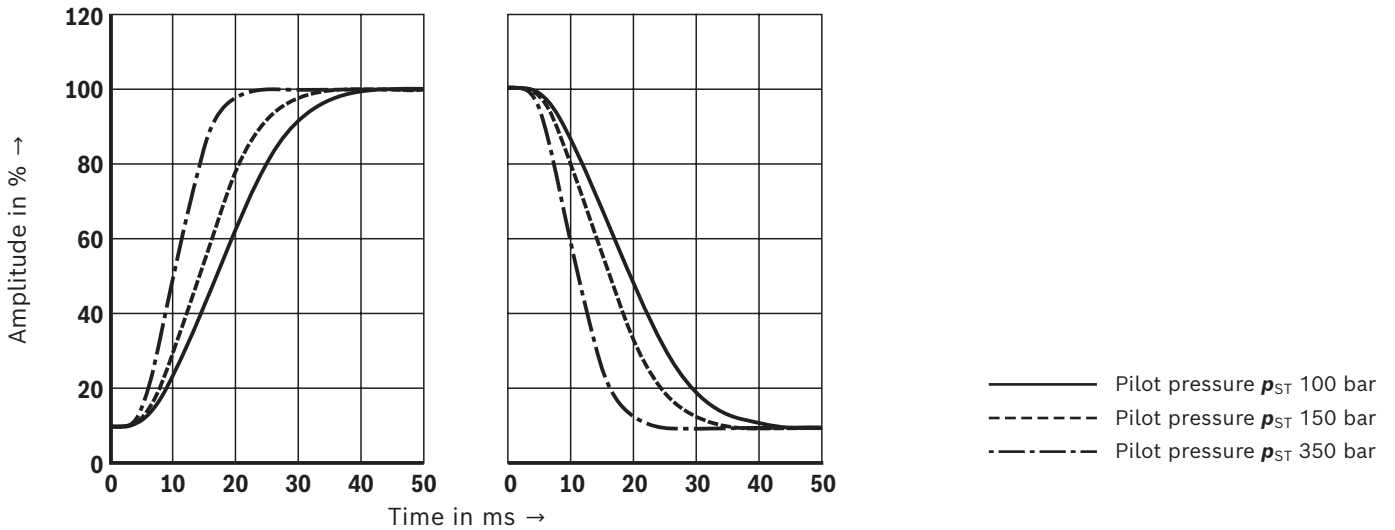


Characteristic curves: Size 63
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

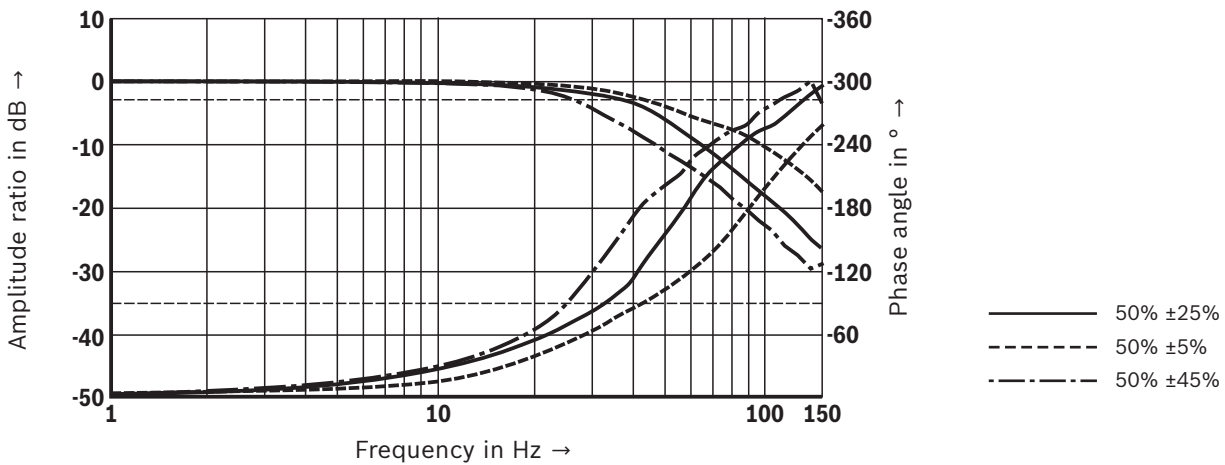


Characteristic curves: Size 63
(measured with HLP32, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

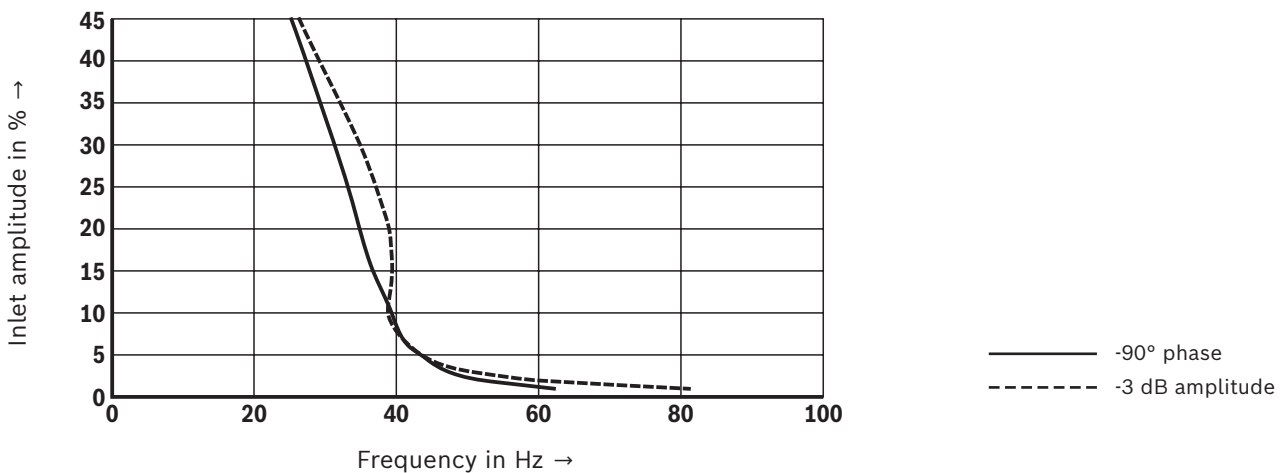
Transition function with stepped electric input signals

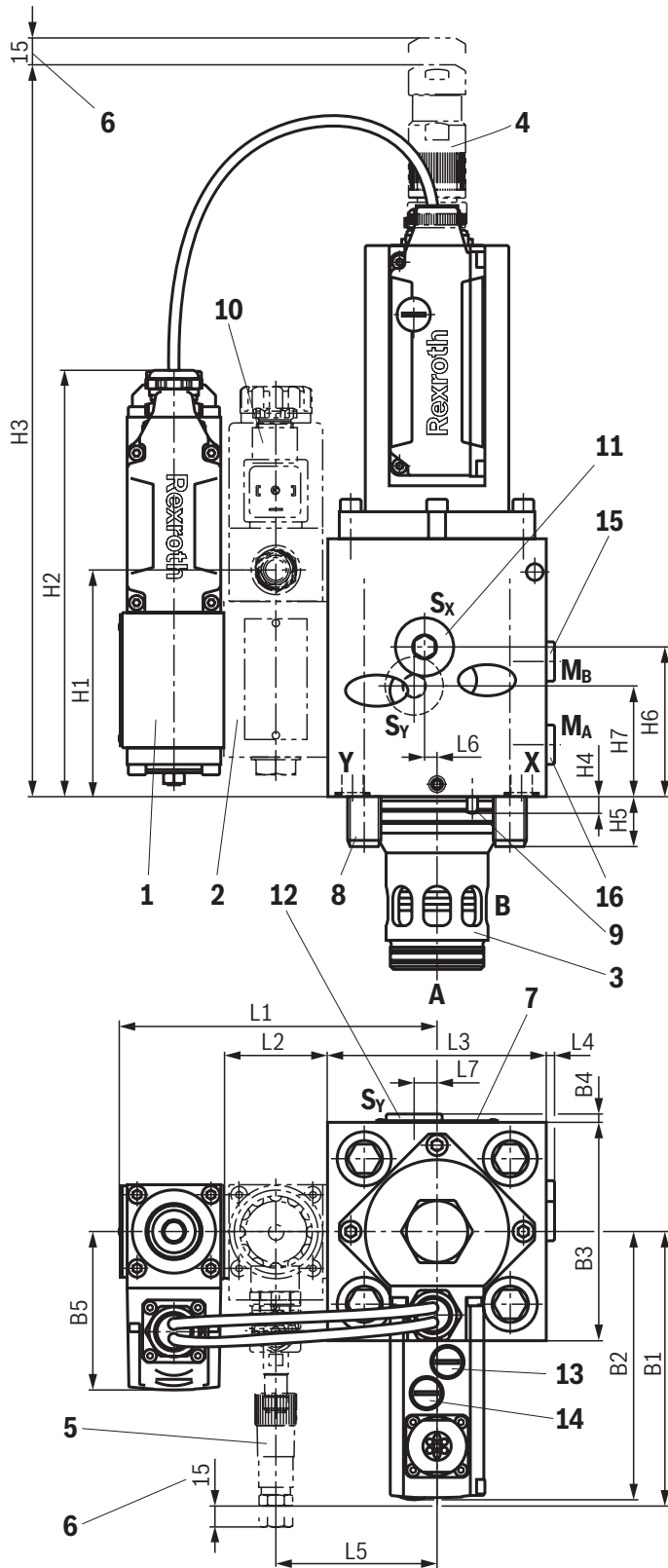


Frequency response ($p_{ST} = 210 \text{ bar}$)



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



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 26 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, for spool position monitoring (separate order, see page 26 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 26)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 26 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 26)s
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 26)
- 15 Measuring port for pilot pressure in channel A (G1/4)
- 16 Measuring port for pilot pressure in channel B (G1/4)

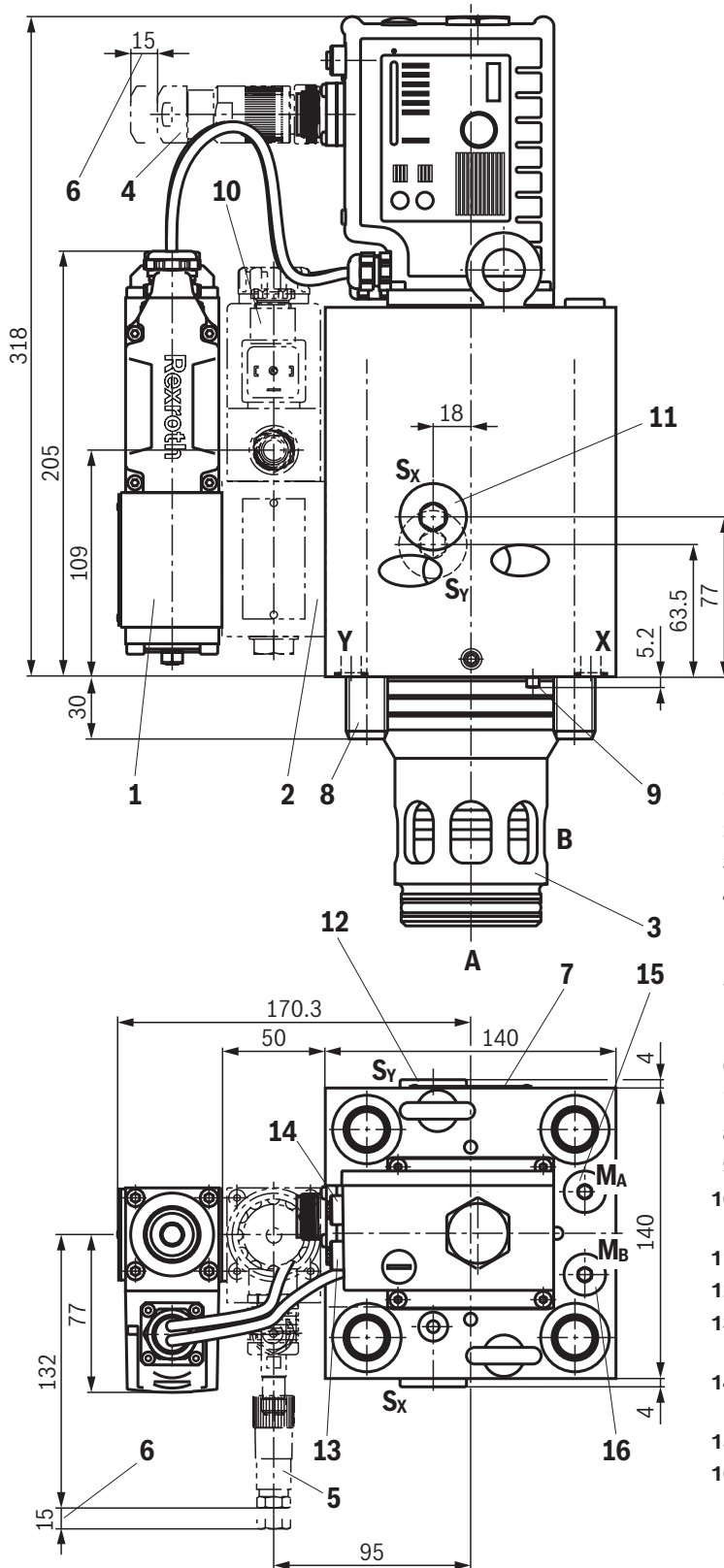
Notice:

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)



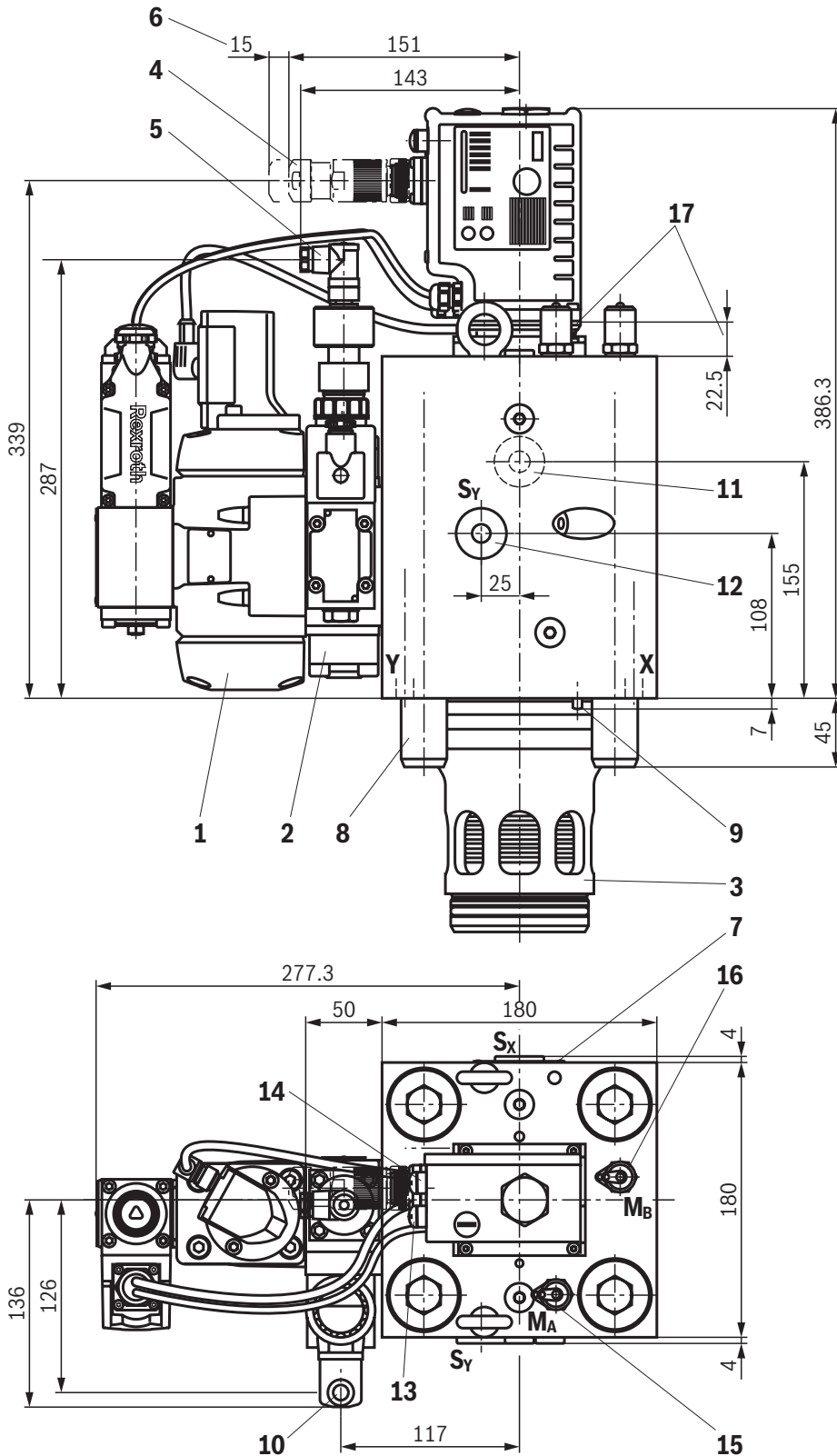
- 1 Pilot control valve (proportional directional valve NG6)
- 2 Sandwich plate shut-off valve (version "WK" and "WL")
- 3 Bushing
- 4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 26 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, for spool position monitoring (separate order, see page 26 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 26)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 26 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 26)
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 26)
- 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.

Dimensions: Size 63 (Dimensions in mm)

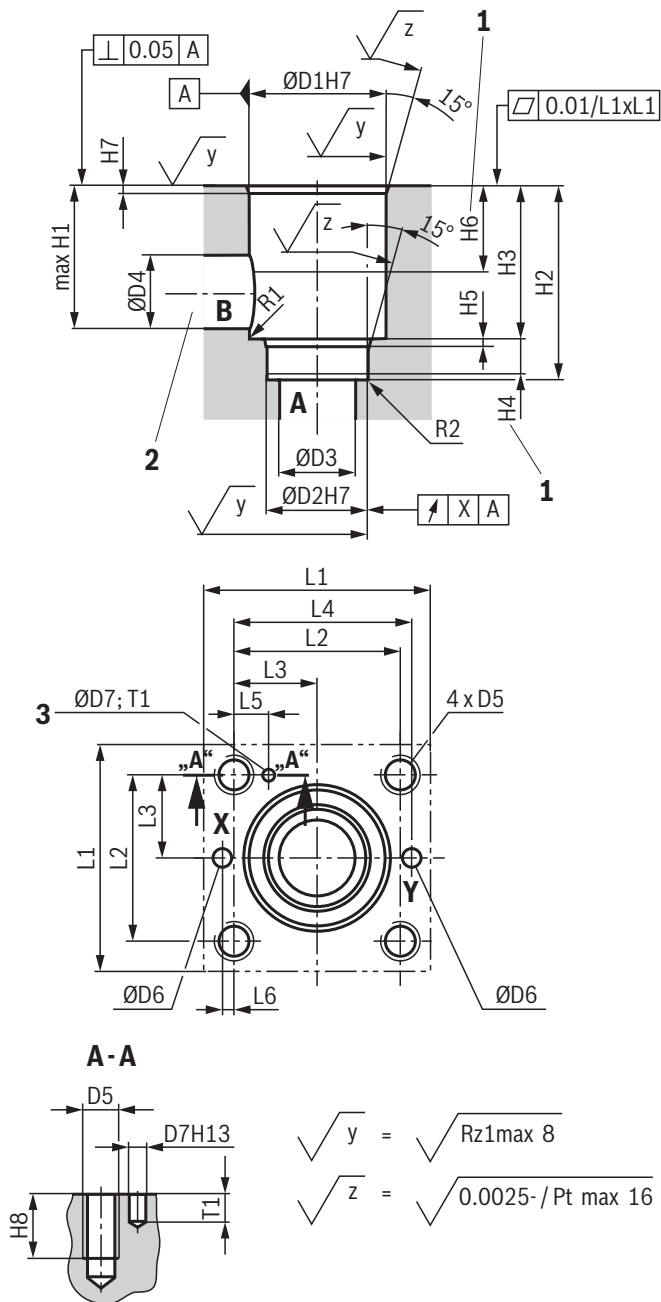


- 1 Pilot control valve (proportional directional valve NG10)
- 2 Sandwich plate shut-off valve (version "WK" and "WL")
- 3 Bushing
- 4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 26 and data sheet 08006)
- 5 Mating connector M12 x 1, 4-pole, angled, for spool position monitoring (separate order, see page 26 and data sheet 08006)
- 6 Space required for removing the mating connector
- 7 Name plate
- 8 Valve mounting screws (separate order, see page 26)
- 9 Locking pin for fixing
- 10 Mating connectors for valves with connector "K4" (separate order, see page 26 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 26)
- 14 Field bus interface "Ethernet IN" (X7E1); (cable sets, separate order, see page 26)
- 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.

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	63
ØD1H7	60	75	90	120
ØD2H7	45	55	68	90
ØD3 max ^{1; 2)}	45	55	68	90
ØD4 max ^{1; 2)}	48	58	70	80
ØD5	M16	M20	M20	M30
ØD6 max	8	10	10	12
ØD7H13	6	6	8	8
H1 max	68.5	84.5	97.5	127
H2 ⁺¹	85	105	122	155
H3	70±0.2	87±0.3	100±0.3	130±0.3
H4 min	13	15	17	20
H5	2.5	3	3	4
H6 min ¹⁾	20	20	27	40
H7	2.5	3	3	4
H8 ¹⁾	26	33	33	48
L1	105 ¹⁾	125	140	180
L2±0.2	70	85	100	125
L3±0.2	35	42.5	50	62.5
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
R1 max	2	4	4	4
R2 max ¹⁾	1	1	1	1
T1 min	8	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
63	7368-12-11-1-16

Tolerances according to: General tolerances ISO 2768-mK

Valve mounting screws see page 26.

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 $M_A = 300 \pm 10\%$	R900003271
40	4 hexagon socket head cap screws ISO 4762 - M20 x 120 -10.9 Tightening torque $M_A = 590 \pm 10\%$	R900003290
50	4 hexagon socket head cap screws ISO 4762 - M20 x 160 -10.9 Tightening torque $M_A = 590 \pm 10\%$	R900001954
63	4 hexagon socket head cap screws ISO 4762 - M30 x 220 -10.9 Tightening torque $M_A = 2000 \pm 10\%$	R900001828

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 22 and 23.

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 ² , CAT 5e	freely selectable (= xx.x)	R911172111 (additional 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 ² , CAT 5e	freely selectable (= xx.x)	R911172135 (additional 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 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 (additional 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 filters | www.boschrexroth.com/filter |
| ▶ Information on available spare parts | www.boschrexroth.com/spc |

Notes

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