RE 29404
Edition: 2025-04
Replaces: 2024-06

rexroth
A Bosch Company

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

Type 3WRCE and 3WRCF

- Size 32 ... 40
- Component series 4X
- Maximum operating pressure 420 bar
- Nominal flow 500 ... 810 l/min (***Δp*** = 5 bar)

CE

Features

- 3-way directional 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 resistant to 420 bar
  - High vibration resistance (according to EN 60068-2)
  - Ambient temperature up to +60 °C
- Precise
  - High response sensitivity and low hysteresis
- Flexible
  - Suitable for position, pressure, force and velocity control

Contents

Ordering code

01	02	03	04	05	06	07	08	09		10	11	12	13	14	15		16	17	18	19
3	**WRC**			**V**			**L**	**–**	**4X**	**/**	**H**	**420**				**/**	**24**				*****

01	3 main ports	**3**
02	High-response directional 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**
05	Control spool without overlap	**V**

Installation bore

06	Port P axial; A radial	**P**
	Port A axial; P radial	**A**

Nominal flow (***Δp*** = 5 bar)

07	**– Size 32**	
	500 l/min (Version "P")	**500**
	– Size 40	
	700 l/min (Version "A")	**700**
	810 l/min (Version "P")	**810**

Flow characteristic

08	Linear	**L**
09	Component series 40 ... 49 (40 ... 49: Unchanged installation and mounting dimensions)	**4X**

Pilot control valve

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

Maximum operating pressure

11	Port P and A 420 bar	**420**

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

12	NBR seals	**M**
	FKM seals	**V**

Sandwich plate shut-off valve

13	**Without shut-off valve**	
	De-energized pilot control valve actively opens A→T with applied pilot pressure	**K**
	De-energized pilot control valve actively opens P→A with applied pilot pressure	**L**
	With shut-off valve	
	De-energized shut-off valve actively opens A→T with applied pilot pressure	**WK**
	De-energized shut-off valve actively opens P→A with applied pilot pressure	**WL**

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

14	Without position switch	**no code**
	With position switch	**E**
15	Supply voltage 24 V	**24**

Ordering code

01	02	03	04	05	06	07	08	09		10	11	12	13	14		15	16	17	18	19
3	**WRC**			**V**			**L**	**–**	**4X**	**/**	**H**	**420**				**/**	**24**				*****

Ethernet interface

16	None (only with integrated electronics (OBE) "E")	**no code**
	EtherNET/IP	**E**
	PROFINET RT	**N**
	Sercos	**S**
	EtherCAT (CANopen profile)	**T**
	VARAN	**V**

Electrical interface

17	Command value –10 ... +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**

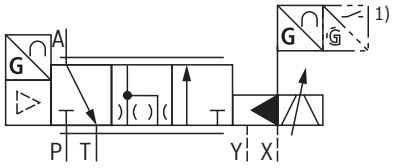
18	Without damping plate	**no code**
	With damping plate	**D**

19	Further details in the plain text	

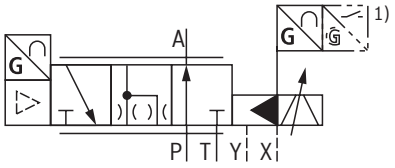
Symbols

Simplified

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

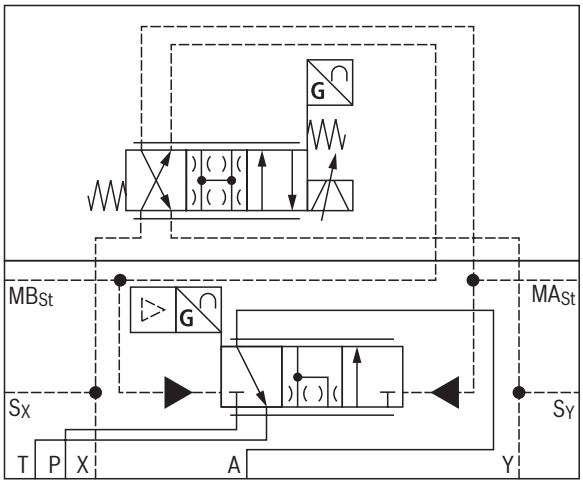


Version "L" and **"WL"**

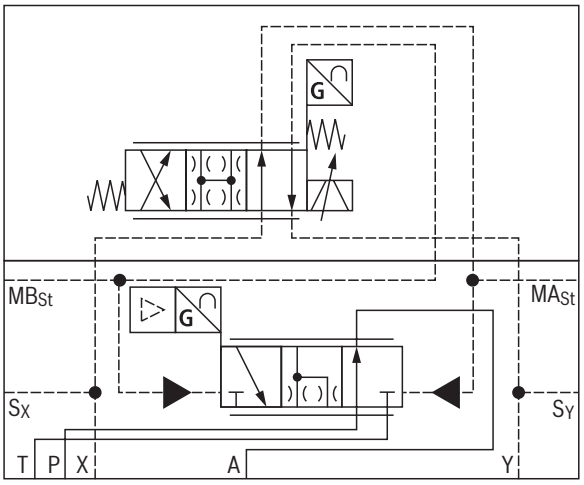


Detailed

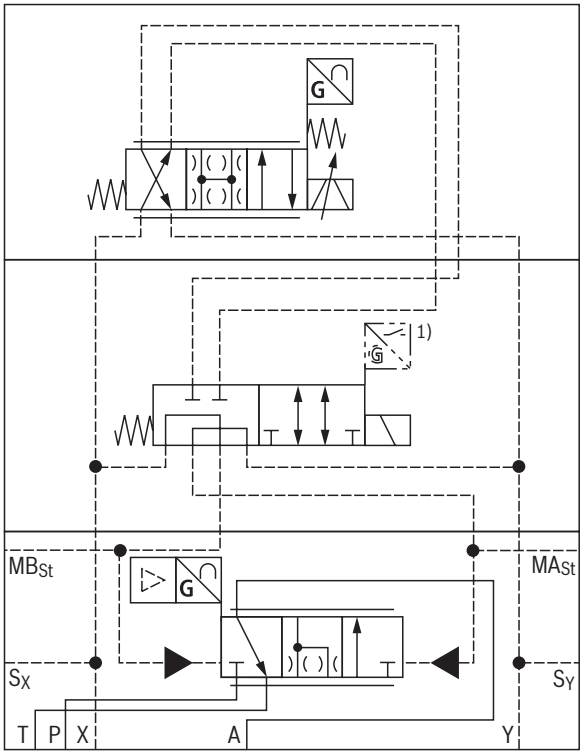
Version "K"



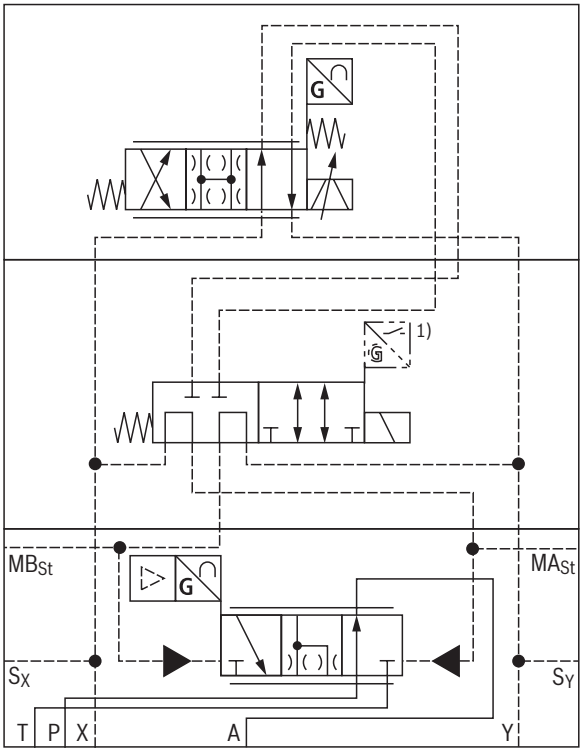
Version "L"



Version "WK"



Version "WL"



[1] Version with position switch "E"

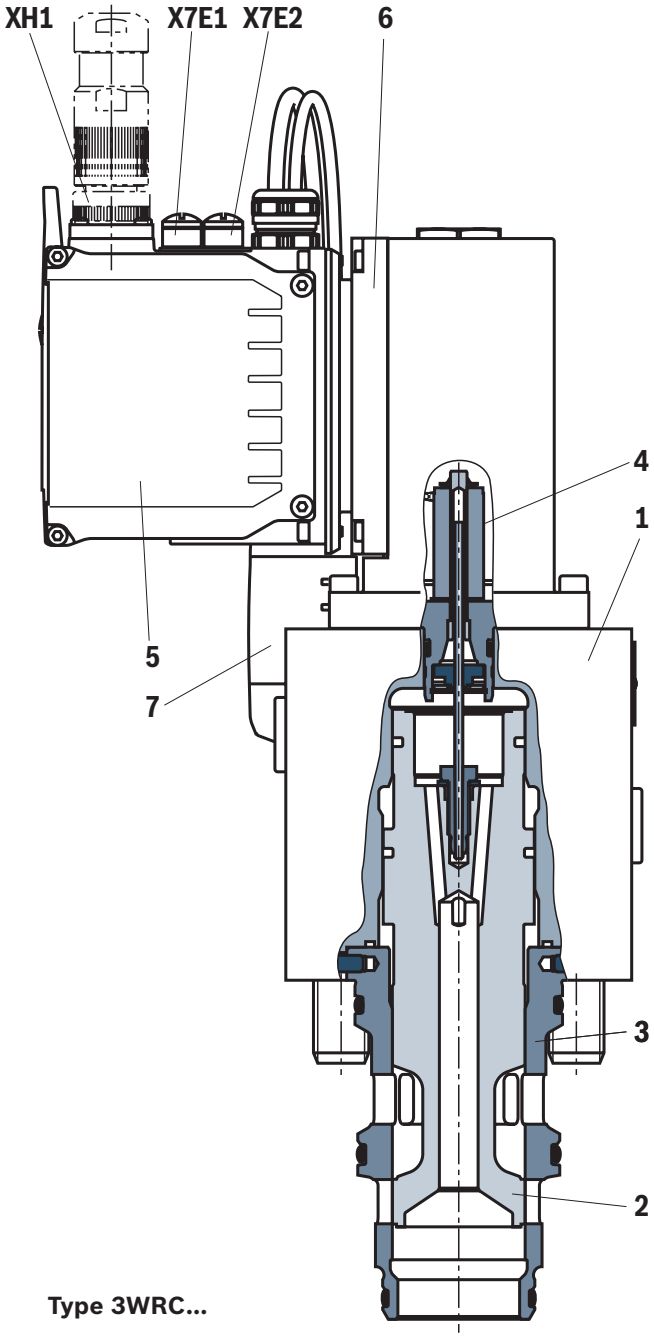
☞ **Notice:** Representation according to ISO 1219-1.

Function, section

Set-up

The pilot-operated high-response directional cartridge valve type 3WRC 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 3WRC...

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 hydraulic zero point is set at the factory.

The pilot control valve (7) is designed as a bi-directionally controlled spool valve with double stroke solenoid and control sleeve. It has a mechanical trimming. In case of power failure, the main stage is opened from A→T ("K") or from P→A ("L"), depending on the version. Moreover, the preferred position of the main stage can be optionally controlled via a sandwich plate shut-off valve. In this case, the main stage opens from A→T ("WK") or P→A ("WL").

The integrated electronics (5) regulate the position of the control spools of the main and the pilot control stage and offer 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 parameterization, the user may use the IndraWorks DS engineering tool (see page 22):

- Project planning
- Parameterization
- Commissioning
- Diagnosis
- Convenient management of all data on a PC
- PC operating systems: Windows 7 ... 11

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

General				
Size			32	40
Type of connection			Cartridge valve	
Mass	▶ Without shut-off valve ("K"; "L")	kg	16.5	21.2
	▶ With shut-off valve ("WK"; "WL")	kg	18.1	22.8
	▶ 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)	
Maximum relative humidity (no condensation)		%	95	
Protection class according to EN 60529			IP65 (if suitable and correctly mounted mating connectors are used)	
Sine test according to EN 60068-2-6			10 ... 2000 Hz / maximum of 10 g / 10 cycles / 3 axes	
Noise test according to EN 60068-2-64	▶ Without damping plate		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 30 min / 3 axes	
	▶ With damping plate [1]		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 24 h / 3 axes	
Transport shock according to EN 60068-2-27			15 g / 11 ms / 3 axes	
Shock according to EN 60068-2-27	▶ With damping plate [1]		35 g / 6 ms / 3 axes	
Conformity	▶ CE according to EMC Directive 2014/30/EU, tested according to		EN 61000-6-2 and EN 61000-6-3	
	▶ RoHS directive		2011/65/EU [2]	

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

[2] 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			32	40
Maximum operating pressure	▶ Port P, A	bar	420	
	▶ Port T	bar	315	
	▶ Port X	bar	350	
	▶ Port Y	bar	210	
Hydraulic fluid			See table on page 8	
Hydraulic fluid temperature range (flowing)		°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 [3]	
	▶ Main stage		Class 20/18/15 [3]	
Rated flow (***Δp*** = 5 bar [4])	▶ Version "P"			
	– P→A	l/min	500	810
	– A→T	l/min	430	710
	▶ Version "A"			
	– P→A	l/min	–	700
	– A→T	l/min	–	650
Maximum flow [5]		l/min	1100	1800
Zero flow	▶ Pilot control valve (100 bar)			
	– Maximum	l/min	0.9	
	– Average value	l/min	0.4	
	▶ Main stage (300 bar)			
	– Maximum version "P"	l/min	5	9
	– Maximum version "A"	l/min	–	7
Minimum pilot pressure (in % of system pressure)	▶ Version "P"	%	40	40
	▶ Version "A"	%	–	35
Maximum pilot pressure	▶ Port X			
	– Version "K", "L"	bar	350	
	– Version "WK", "WL"	bar	315	
Pilot flow [6]		l/min	28	40
Pilot volume		cm^3	±3	±4.2

[3] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

[4] Flow for deviating ***Δp***:

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

[5] Recommendation in order not to exceed an average flow velocity of 30 m/s with maximum diameters of channels A and/or T. However, the valve can also be reliably operated at higher volume flows.

[6] Input signal, stepped (0 to 100%, pilot pressure 350 bar)

☞ **Notice:**
Measured with HLP32, ϑ_{oil} = 40±5 °C)

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, Fuchs 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 an increased cavitation tendency with the use of HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to use with HLP mineral oil. 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.

Static / dynamic				
Size			32	40
Hysteresis		%	<0.2	<0.15
Range of inversion		%	<0.1	<0.15
Response sensitivity		%	<0.1	<0.15
Zero point calibration		%	±1 (ex works)	
Temperature drift when changing	▶ Hydraulic fluid temperature			
	– Version "P"	%/10 K	<0.5	≤0.35
	– Version "A"	%/10 K	≤0.25	
	▶ Pilot pressure in X	%/100 bar	≤0.05	
	▶ System pressure			
	– Version "P"	%/100 bar	≤0.15	
	– Version "A"	%/100 bar	≤0.1	
Step response time according to ISO 10770-1 [7; 8]		ms	12	
Reaching of the preferred position [9]		ms	37 ... 52	65 ... 43

[7] Without shut-off valve; 0 ... 100%, pilot pressure 140 bar

[8] For standard delivery. By activating the pilot pressure-dependent control parameters, dynamics are further increased, especially in the small signal range (see characteristic curves on pages 15 and 17). These require one-time activation in the "IndraWorks" commissioning software (on request).

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

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

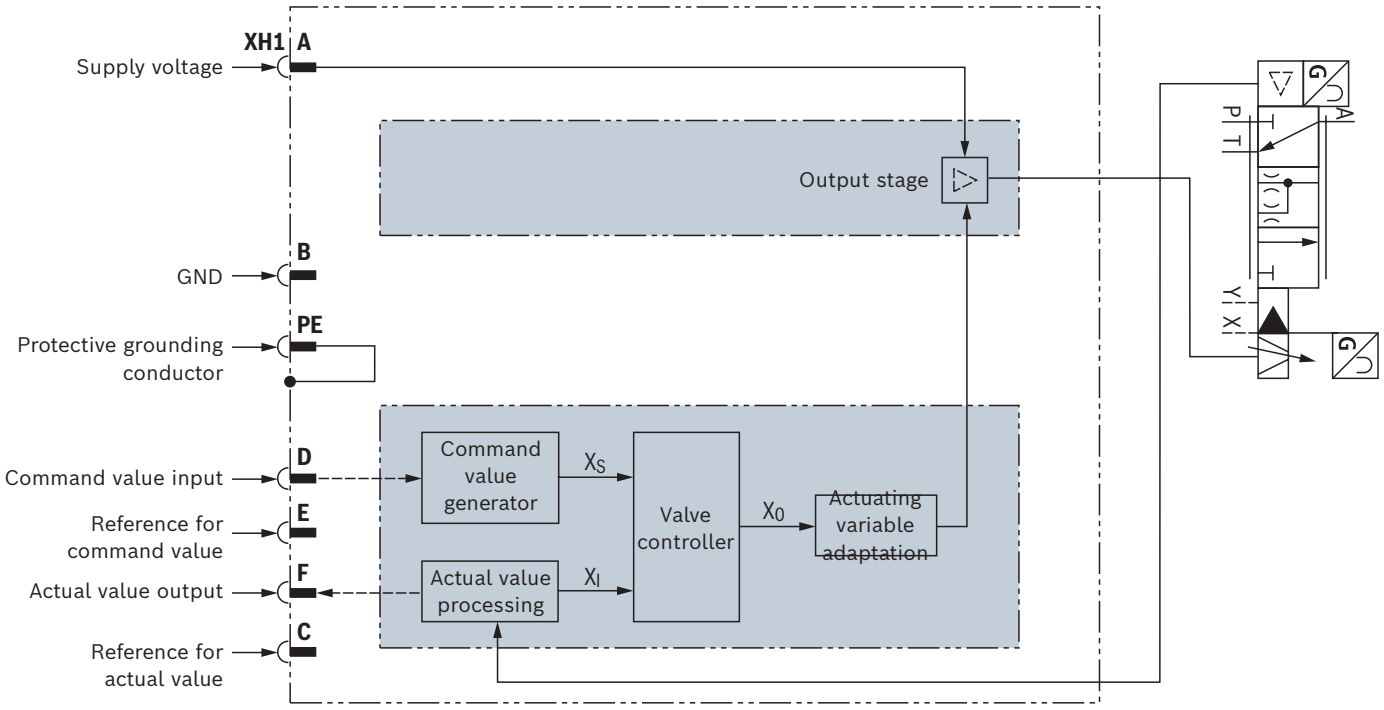
Electrical, integrated electronics (OBE) – interface "A1"				
Supply voltage	▶ Nominal value		VDC	24
	▶ Minimum		VDC	18
	▶ Maximum		VDC	36
	▶ Maximum residual ripple		Vpp	2.5
	▶ Maximum power consumption		VA	40
	▶ Current consumption during operation [1]	Rated current	A_{eff}	<2.5
		Impulse current	A	4
	▶ Fuse protection, external		A_T	4 (time-lag)
Charging capacity (externally effective)			µF	<1000
Relative duty cycle time according to VDE 0580				S1 (continuous operation)
Functional ground and screening				See pin assignment, page 11
Maximum voltage of the differential inputs against 0 V				D→B; E→B (max. 36 V)
Command value (differential amplifier)	▶ Measurement range		V	±10
	▶ Input resistance		Ω	$150^{+10\%}$
Actual value (test signal)	▶ Output range		V	±10
	▶ Minimum load impedance		kΩ	>10

Electrical, integrated electronics (OBE) – interface "F1"				
Supply voltage	▶ Nominal value		VDC	24
	▶ Minimum		VDC	18
	▶ Maximum		VDC	36
	▶ Maximum residual ripple		Vpp	2.5
	▶ Maximum power consumption		VA	40
	▶ Current consumption during operation [1]	Rated current	A_{eff}	<2.5
		Impulse current	A	4
	▶ Fuse protection, external		A_T	4 (time-lag)
Charging capacity (externally effective)			µF	<1000
Relative duty cycle time according to VDE 0580				S1 (continuous operation)
Functional ground and screening				See pin assignment, page 11
Maximum voltage of the differential inputs against 0 V				D→B; E→B (max. 36 V)
Command value	▶ Input current range		mA	4 ... 20
	▶ Input resistance		Ω	200
Actual value (test signal)	▶ Output range		mA	4 ... 20
	▶ Maximum load		Ω	200

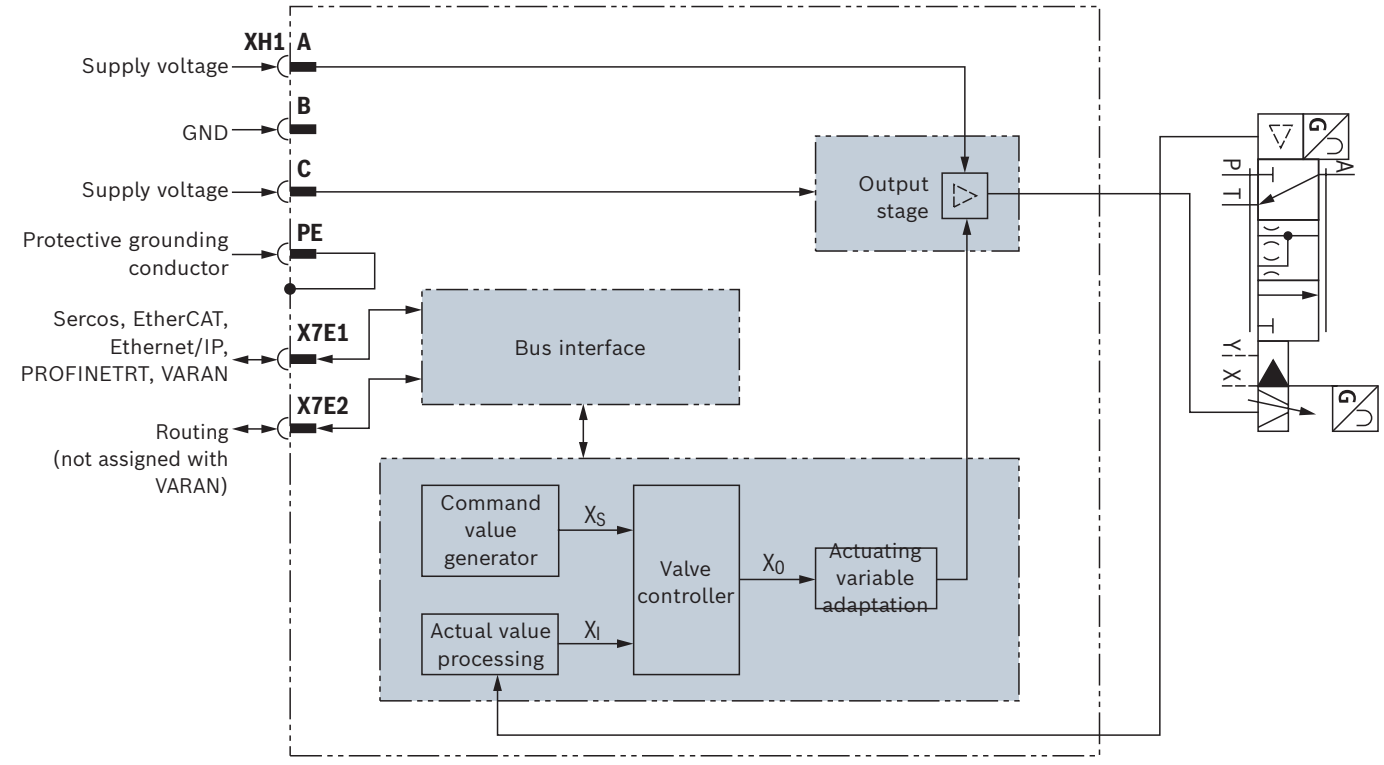
Electrical, integrated electronics (OBE) – interface "D9"				
Supply voltage	▶ Nominal value		VDC	24
	▶ Minimum		VDC	18
	▶ Maximum		VDC	36
	▶ Maximum residual ripple		Vpp	2.5
	▶ Maximum power consumption		VA	40
	▶ Current consumption during operation [1]	Rated current	A_{eff}	<2.5
		Impulse current	A	4
	▶ Fuse protection, external		A_T	4 (time-lag)
Charging capacity (externally effective)			µF	<1000
Relative duty cycle time according to VDE 0580				S1 (continuous operation)
Functional ground and screening				See pin assignment, page 11

Block diagram/controller function block

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



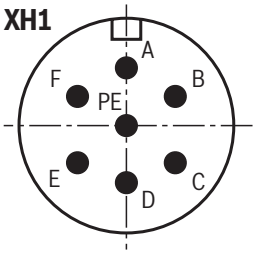
▶ **With integrated field bus electronics** (version "WRC**F**")



Electrical connections and assignment

Connector pin assignment XH1, 6-pole + PE according to DIN 43563

Pin	Interface assignment		
	"A1"	**"F1"**	**"D9"** [1]
A	Supply voltage	Supply voltage	Supply voltage
B	GND	GND	GND
C	Reference potential actual value [2]	Reference potential actual value	Not assigned
D	Command value	Command value	Not assigned
E	Reference potential command value	Reference potential command value	Not assigned
F	Actual value	Actual value	Not assigned
PE	Functional ground (directly connected to the valve housing)		



		Command value	Actual value	
Positive	"A1"	0 ... +10 V	0 ... +10 V	P→A
	"F1"	12 ... 20 mA	12 ... 20 mA	
	"D9"	–	–	
Negative	"A1"	0 ... –10 V	0 ... –10 V	A→T
	"F1"	12 ... 4 mA	12 ... 4 mA	
	"D9"	–	–	

[1] If required (commissioning, etc.), can be parameterized to "3WRCE;" assignment then as versions "A1" or "F1".

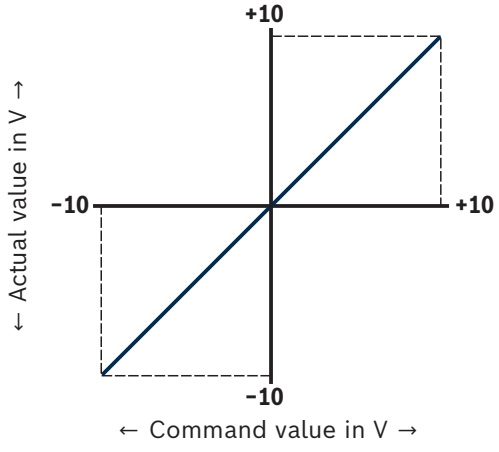
[2] Pin C should be connected to GND (pin B) at the ground neutral point of the system.

☞ **Notice:**
Mating connectors, separate order, see page 22) and data sheet 08006.

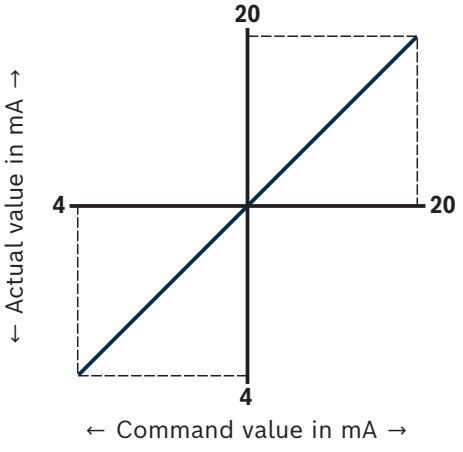
Connection cable:
- Up to 20 m cable length type LiYCY 7 x 0.75 mm²
- Up to 40 m cable length type LiYCY 7 x 1.0 mm²
- EMC-compliant installation:
  - Apply screening to both line ends
  - Use metal mating connector (see page 22)
- Alternatively up to 30 m cable length admissible
  - Apply screening on supply side
  - Plastic mating connector (see page 22) can be used

Nominal command value range

Interface "A1"
0 ... ±10 V (0 ... ±100 %)



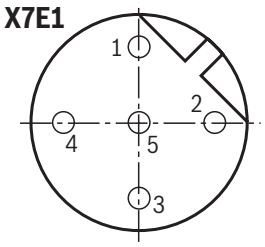
Interface "F1"
4 ... 20 mA (-100 ... +100 %)



Electrical connections and assignment

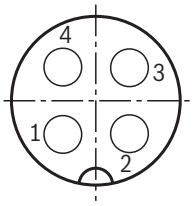
Connector pin assignment for Ethernet interface "X7E1" and "X7E2" (coding D), M12, 4-pole, socket

Pin	Assignment
1	TxD +
2	RxD +
3	TxD –
4	RxD –
5	Not assigned



Connector pin assignment for position switch for sandwich plate shut-off valve, M12, 4-pole, socket

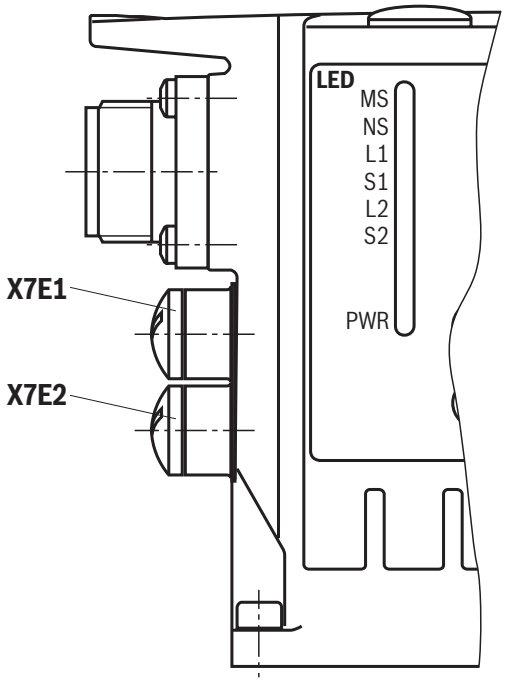
Pin	Assignment
1	+24 V
2	Switching output 200 mA
3	GND
4	Switching output 200 mA



☞ **Notice:**
Mating connectors, separate order, see page 22) and data sheet 08006.

LED displays

LED	Interface	Sercos	EtherNET/IP	EtherCAT	PROFINET RT	VARAN
MS	**Electronics module**	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	**X7E1**	Link and others	Link and others	Link/activity	Link and others	Link and others
S1		Activity and others	Activity and others	Not used	Activity and others	Active and others
L2	**X7E2**	Link and others	Link and others	Link/activity	Link and others	Not used
S2		Activity and others	Activity and others	Not used	Activity and others	Not used
PWR	**XH1**	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

Link LED (LED L1)	Display status
Permanently lit	Cable plugged in, connection established

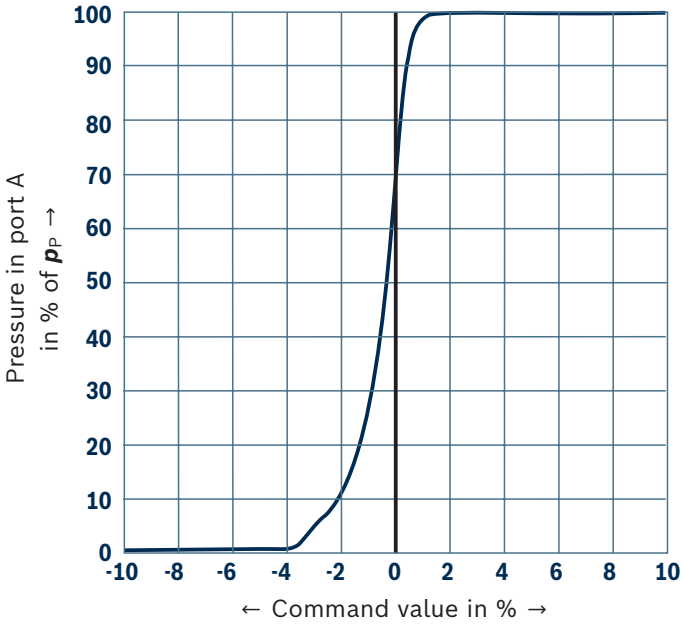
Activity LED (LED S1)	Display status
Flashing	Data sent/received

☞ **Notes:**
- 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"
- For a detailed description of the diagnosis LEDs, please refer to the functional description Rexroth HydraulicDrive HDx.
- Function is only available after start-up of the electronics.

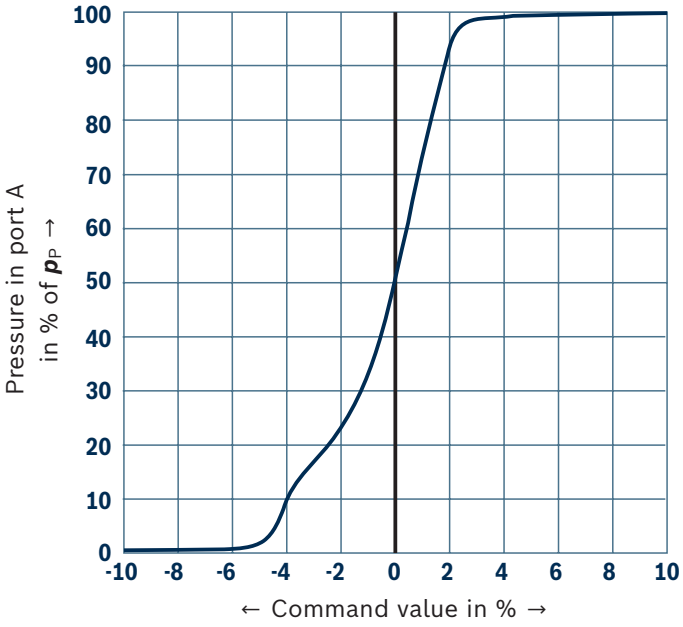
Characteristic curves
(measured with HLP32, ϑ_{oil} = 40±5 °C)

Pressure/signal characteristic curve

Size 32



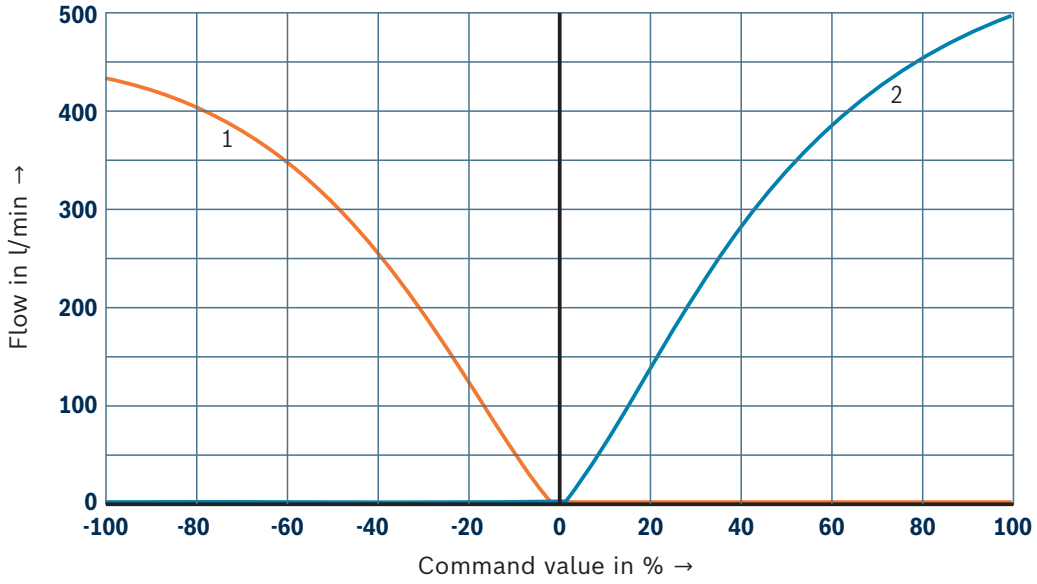
Size 40



☞ **Notice:**
Typical characteristic curves which are subject to tolerance variations.

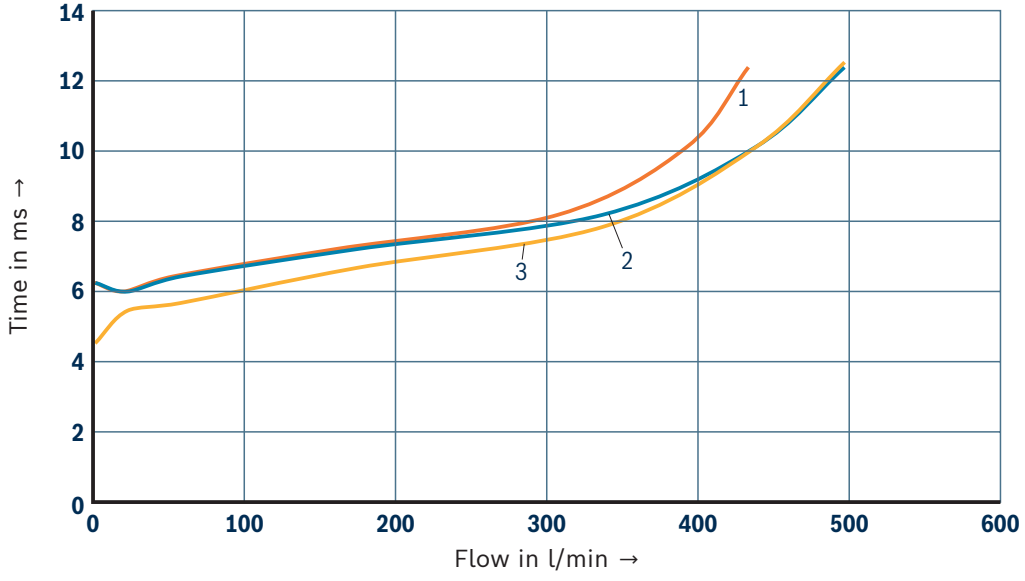
Characteristic curves: Size 32
(measured with HLP32, ϑ_{oil} = 40±5 °C)

Flow/signal function (***Δp*** = 5 bar)



1 A→T
2 P→A

Step response time (pilot pressure 140 bar, ***Δp*** = 5 bar)



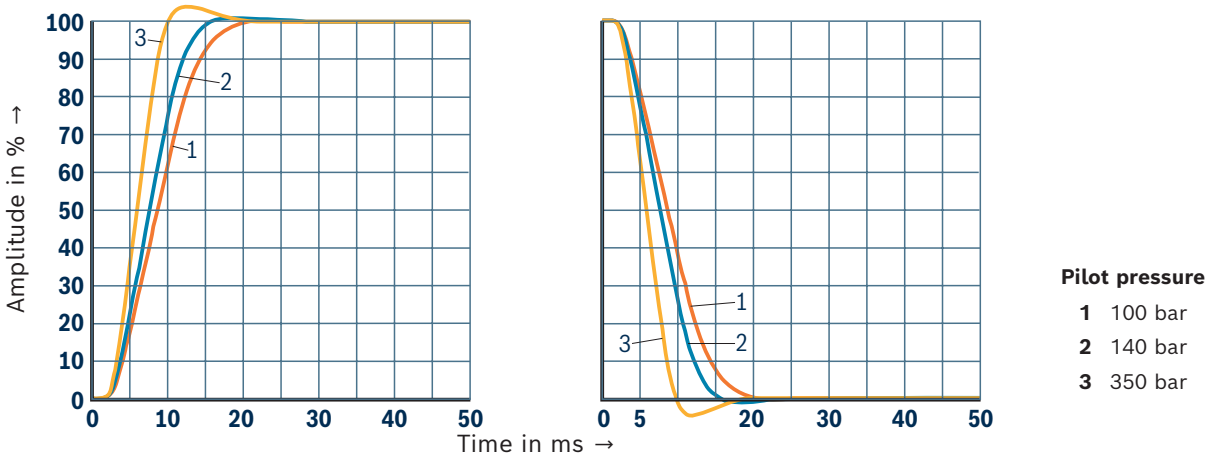
1 A→T
2 P→A
3 P→A [1)]

[1)] Pilot pressure-dependent control parameters enabled

☞ **Notice:**
Typical characteristic curves which are subject to tolerance variations.

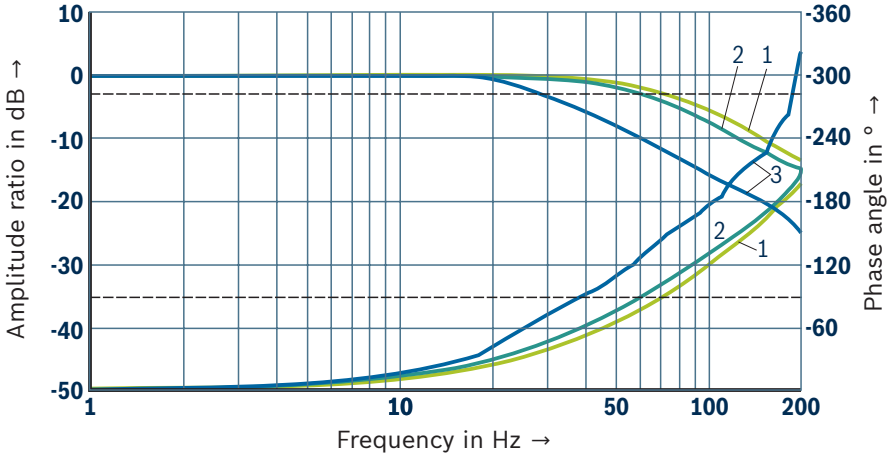
Characteristic curves: Size 32
(measured with HLP32, ϑ_{oil} = 40±5 °C)

Transition function with stepped electric input signals



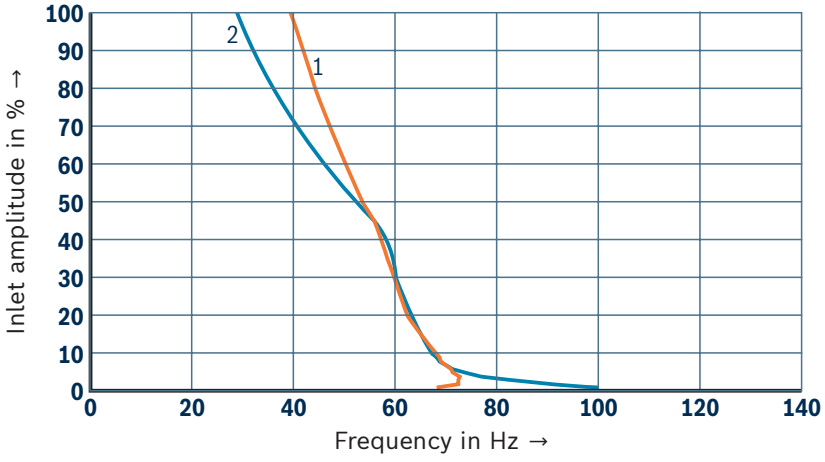
Pilot pressure
1 100 bar
2 140 bar
3 350 bar

Frequency response (p_{St} = 140 bar)



1 ±5 %
2 ±25 %
3 ±100 %

Information volume (p_{St} = 140 bar)

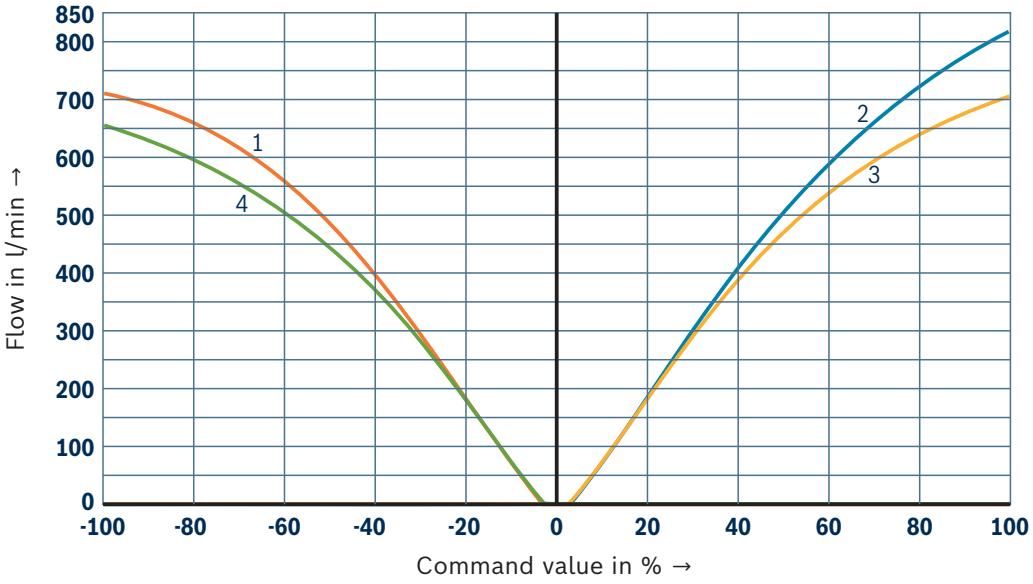


1 -90° phase
2 -3 dB amplitude

Notice:
Typical characteristic curves which are subject to tolerance variations.

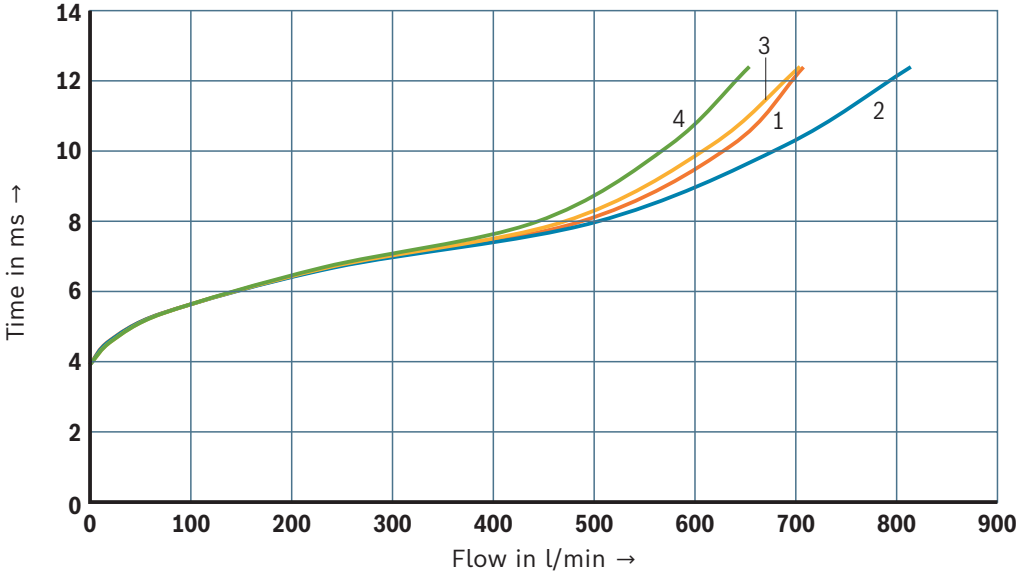
Characteristic curves: Size 40
(measured with HLP32, ϑ_{oil} = 40±5 °C)

Flow/signal function (***Δp*** = 5 bar)



1 „P“ – A→T
2 „P“ – P→A
3 „A“ – P→A
4 „A“ – A→T

Step response time (pilot pressure 140 bar, ***Δp*** = 5 bar)

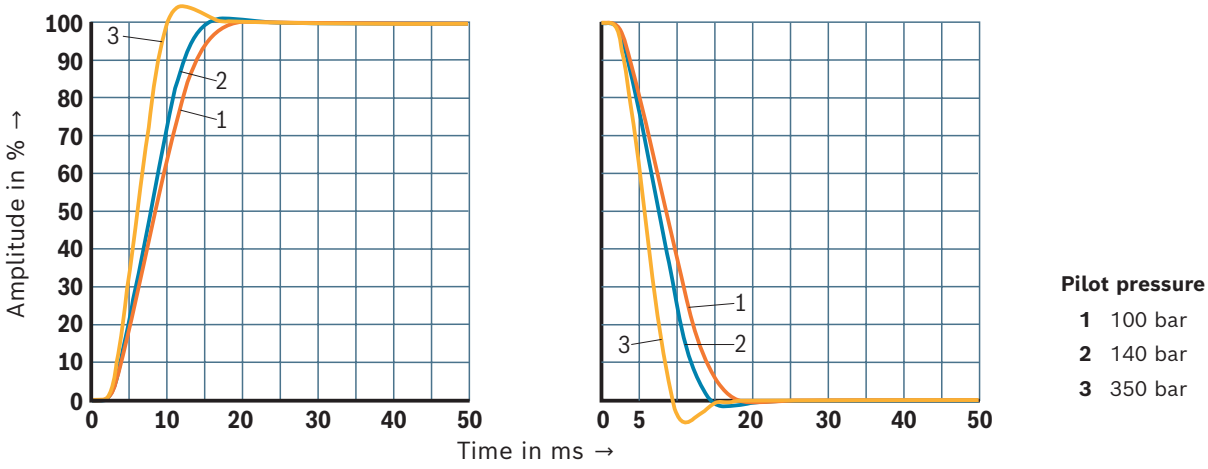


1 „P“ – A→T
2 „P“ – P→A
3 „A“ – P→A
4 „A“ – A→T

☞ **Notice:**
Typical characteristic curves which are subject to tolerance variations.

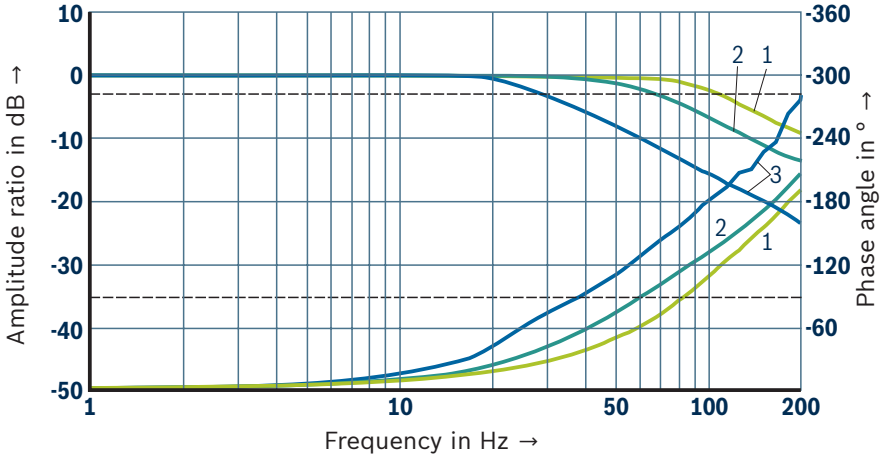
Characteristic curves: Size 40
(measured with HLP32, ϑ_{oil} = 40±5 °C)

Transition function with stepped electric input signals



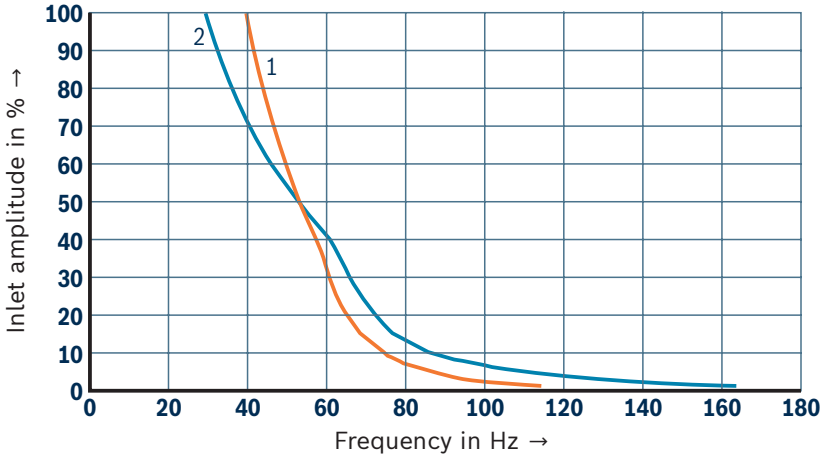
Pilot pressure
1 100 bar
2 140 bar
3 350 bar

Frequency response (p_{St} = 140 bar)



1 ±5 %
2 ±25 %
3 ±100 %

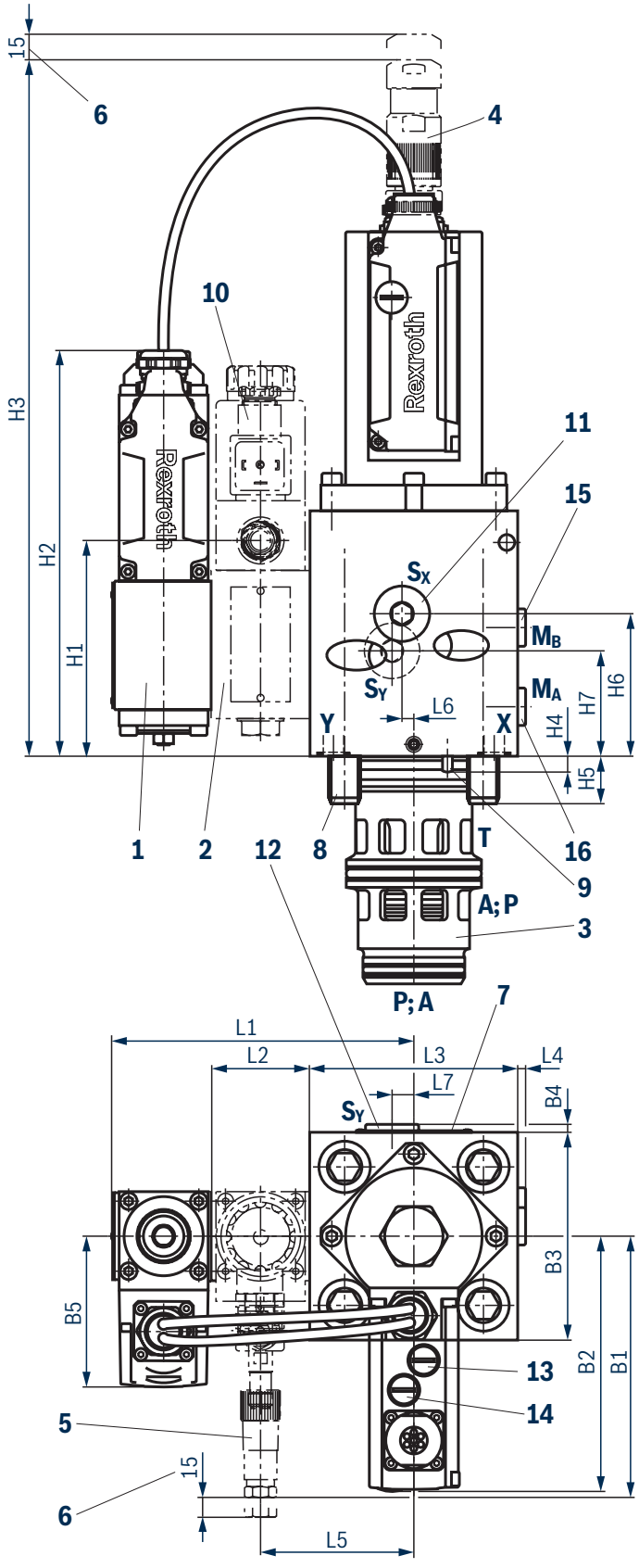
Information volume (p_{St} = 140 bar)



1 -90° phase
2 -3 dB amplitude

Notice:
Typical characteristic curves which are subject to tolerance variations.

Dimensions
(dimensions in mm)



NG	H1	H2	H3	H4	H5	H6	H7
32	109	205	352	8	24	81	56
40	109	205	355	8	30	89	56

NG	B1	B2 [1]	B3	B4	B5
32	132	129 (151.5)	105	4	77
40	132	129 (151.5)	125	4	77

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

NG	L1	L2	L3	L4	L5	L6	L7
32	153	50	105	4	77.5	6	11
40	163	50	125	4	87.5	0	10

For **item explanations** and **valve mounting screws** and subplates see page 20.

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

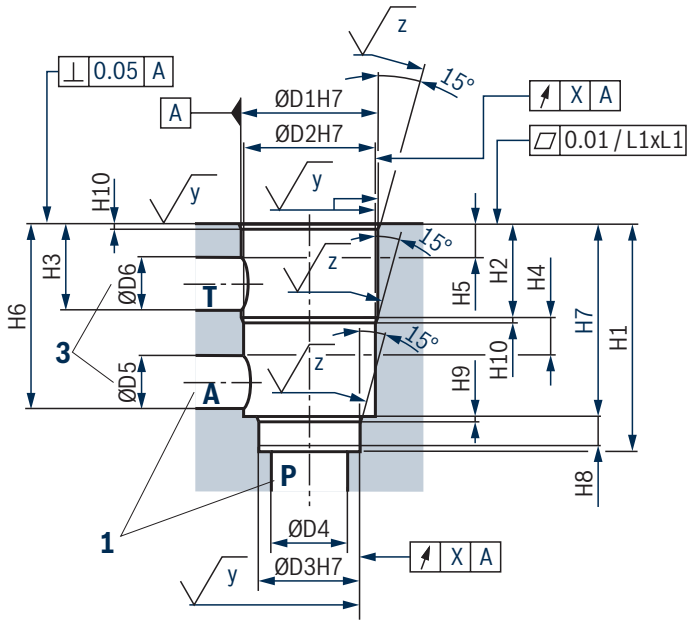
Dimensions

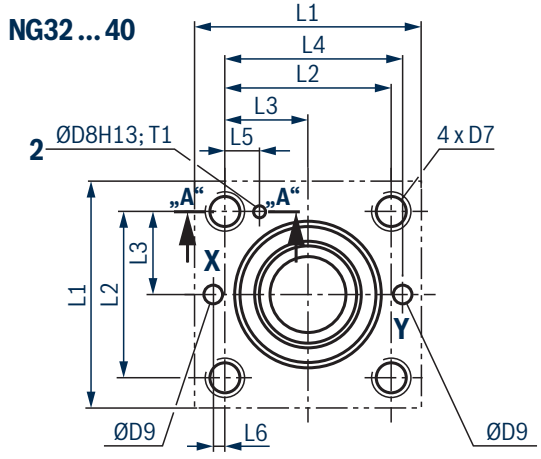
1 Pilot control valve (proportional directional valve NG6)
2 Sandwich plate shut-off valve (version "WK" and "WL")
3 Bushing
4 Mating connectors for valves with round connector, 6-pole + PE (separate order, see page 22 and data sheet 08006)
5 Mating connector M12 x 1, 4-pole, for spool position monitoring (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 "K4" connector (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)

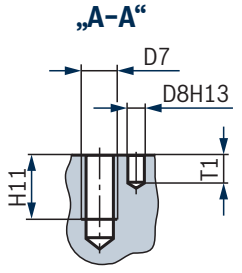
Valve mounting screws (separate order)

Size	Quantity	Hexagon socket head cap screws	Material number
32	4	**ISO 4762 - M16 x 110 - 10.9-flZn/nc/480h/C** Tightening torque M_A = 250 Nm ±10 %	**R913015642**
	or		
	4	**ISO 4762 - M16 x 110 - 10.9** Tightening torque M_A = 300 Nm ±10 %	Not included in the Rexroth delivery range
40	4	**ISO 4762 - M20 x 120 - 10.9-flZn/nc/480h/C** Tightening torque M_A = 480 Nm ±10 %	**R913015672**
	or		
	4	**ISO 4762 - M20 x 120 - 10.9** Tightening torque M_A = 590 Nm ±10 %	Not included in the Rexroth delivery range

Installation bore
(dimensions in mm)







Installation dimensions

NG	32	40
ØD1H7	60	75
ØD2H7	58	73
ØD3H7	55	55
ØD4 max [1]	55	55
ØD5 max [1]	28	35 [3]
ØD6 max [1]	29	35
ØD7	M16	M20
ØD8H13	6	6
ØD9 max	8	10
H1	100	125
H2	43.5	54
H3 max	43.5	54
H4 min [2]	15	18
H5 min [2]	18	21
H6 max	85±0.3	105 $^{+2.5}_{-0.3}$
H7	85±0.3	105 $^{+2.5}_{-0.3}$
H8 min [2]	13	15
H9	2.5	3.0
H10	2.5	3.0
H11	26	33
L1	105	125
L2±0.2	70	85
L3±0.2	35	42.5
L4±0.2	76	92.5
L5±0.2	18	19.5
L6±0.2	6	7.5
X	0.03	0.05
T1	8	8

[1] Smaller bore causes a reduction of the flow

[2] Depth of fit, minimum dimension

[3] For maximum channel diameter (Ø35), dimension H7 must also be manufactured to the maximum.

1 In version "A", the ports P and A are swapped (port A axial; P radial)

2 Bore for locating pin

3 ØD5 can take any size within the range between dimensions H2+H4$_{min}$ and H6$_{max}$, ØD6 between H5$_{min}$ and H3$_{max}$. The durability of the block depends on its material and geometry.

Tolerances according to: General tolerances ISO 2768-mK

Valve mounting screws see page 20.

Accessories (separate order)

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, PG11	7PZ31...M	**R900223890**	08006
		Straight, plastic, PG11	7PZ31...K	**R900021267**	
		Angled, plastic, PG11	7PZ31...K	**R900217845**	
	Cable sets; for valves with round connector, 6-pole + PE	Plastic, 3.0 m	7PZ31 BF6	**R901420483**	
		Plastic, 5.0 m		**R901420491**	
		Plastic, 10.0 m		**R901420496**	
		Plastic, 20.0 m		**R901448068**	
5	Mating connectors; for sensors and valves with "K24", "K35" and "K72" connectors, 4-pole	Straight, PG7	4PZ24	**R900773042**	08006
		Straight, PG9		**R900031155**	
		Angled, PG7		**R900779509**	
		Angled, PG9		**R900082899**	
10	Mating connector; for valves with "K4" connector, 2-pole + PE, design A	Without circuitry, M16 x 1.5, 0 ... 250 V, "a"	Z4	**R901017010**	08006
		With indicator light, M16 x 1.5, 12 ... 48 V	Z5L	**R901560501**	
		With rectifier, M16 x 1.5, 24 ... 240 V	RZ5	**R901563568**	
		With indicator light and Z-diode-suppressor, M16 x 1.5, 24 V	Z5L1	**R901017026**	

[1] See dimensions on page 19.

Parameterization

The following is required for 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)

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** (additional indication of type designation RKB0040/xx.x)
Cable set, shielded, 4-pole, straight connector M12 to straight connector RJ45, line cross-section 0.25 mm², CAT 5e	Freely selectable (= xx.x)	**R911172135** (additional indication of type designation RKB0044/xx.x)

☞ **Notice:**
For installation of connectors and cable routing, see operating instructions 29391-B.

Protective cap

Protective cap M12	Version	Material number
		**R901075563**

Project planning information

- 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 are not retained. The machine end-user will have to retransfer the corresponding user parameters.

Further information

▶ Hydraulic valves for industrial applications	Operating instructions 07600-B
▶ 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
▶ General product information on hydraulic products	Data sheet 07008
▶ Assembly, commissioning and maintenance of hydraulic systems	Data sheet 07900
▶ High-response/proportional valve with Multi-Ethernet interface	Operating instructions 29391-B
▶ 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
▶ Information on available spare parts	www.boschrexroth.com/spc

Notes

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