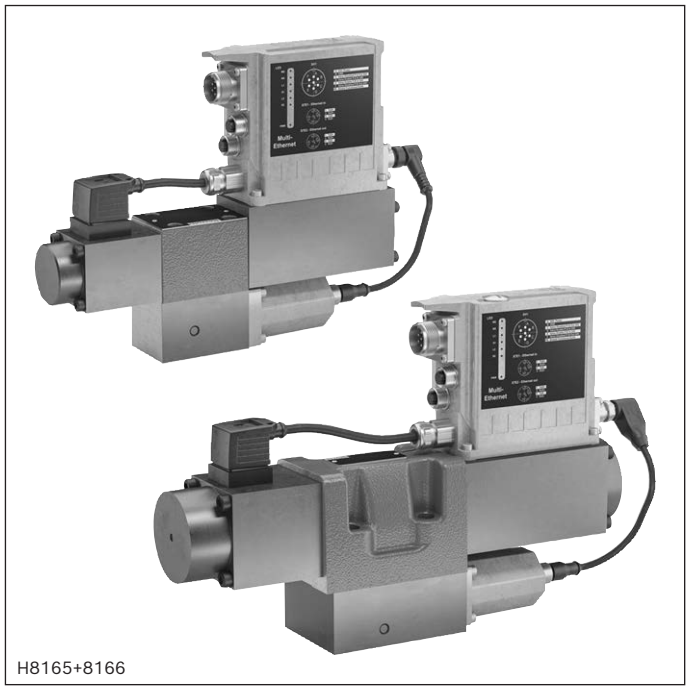
RE 29133
Edition: 2020-08

rexroth
A Bosch Company

Directional control valves, direct operated, with electrical position feedback and integrated flow control (IFB Multi-Ethernet)

Type 4WRPQ



H8165+8166

- Sizes 6 and 10
- Component series 3X
- Maximum operating pressure 280 bar
- Rated flow 32, 80 l/min

CE

Features

- Open
  - Integrated, digital flow controller (IFB Multi-Ethernet)
  - Bus connection/service interface (Sercos, Ether-CAT, EtherNet/IP, PROFINET RT, POWERLINK, VARAN)
- Safe
  - Internal safety function (can be used up to category 4/PL e according to EN 13849-1)
  - CE conformity according to EMC Directive 2014/30/EU

Contents

Ordering code

01	02	03	04	05	06	07	08		09		10	11	12		13	14	15	16
4	**WRP**	**Q**				**S**	**–**	**3X**	**/**		**/**	**G**	**F**	**24**	**/**		**D9**	**0**	*****

01	4 main ports	**4**
02	Directional control valve, direct operated	**WRP**
03	With integrated digital flow controller	**Q**
04	Size 6	**6**
	Size 10	**10**
05	Symbols; possible version see page 3	

Rated flow (***Δp*** = 5 bar/control edge)

06	32l/min (only NG6L)	**32**
	80l/min (only NG10)	**80**

Flow characteristic

07	Progressive	**S**
08	Component series 30 ... 39 (30 ... 39: unchanged installation and connection dimensions)	**3X**

Seal material(observe compatibility of seals with hydraulic fluid used, see page 7)

09	NBR seals	**M**
	FKM seals	**V**

Pressure sensor (pressure rating)

10	Pressure rating 280 bar	**G**

Internal pressure sensor (position)

11	In port A, B and P	**F**
12	Supply voltage 24 V	**24**

Ethernet interface

13	EtherNET/IP	**E**
	PROFINET RT	**N**
	Sercos	**S**
	EtherCAT (CANopen profile)	**T**
	POWERLINK (CANopen profile)	**W**
	VARAN	**V**

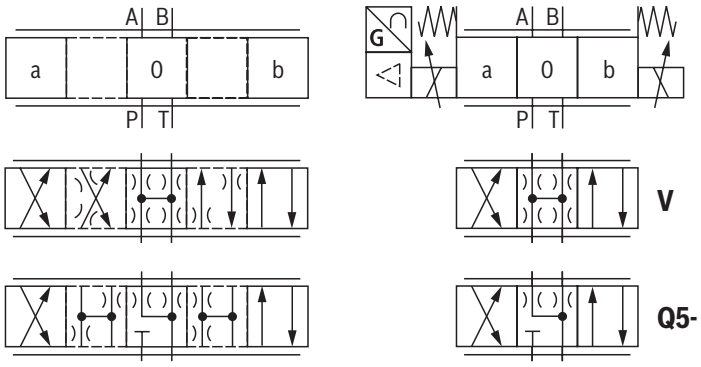
Connector

14	Voltage supply, enable acknowledgment	**D9**

Pressure sensor interface

15	Without interface	**0**
16	Further details in the plain text	*****

Symbols



☞ **Notice:**
Representation according to DIN ISO 1219-1.
Hydraulic interim positions are shown by dashes.

Function

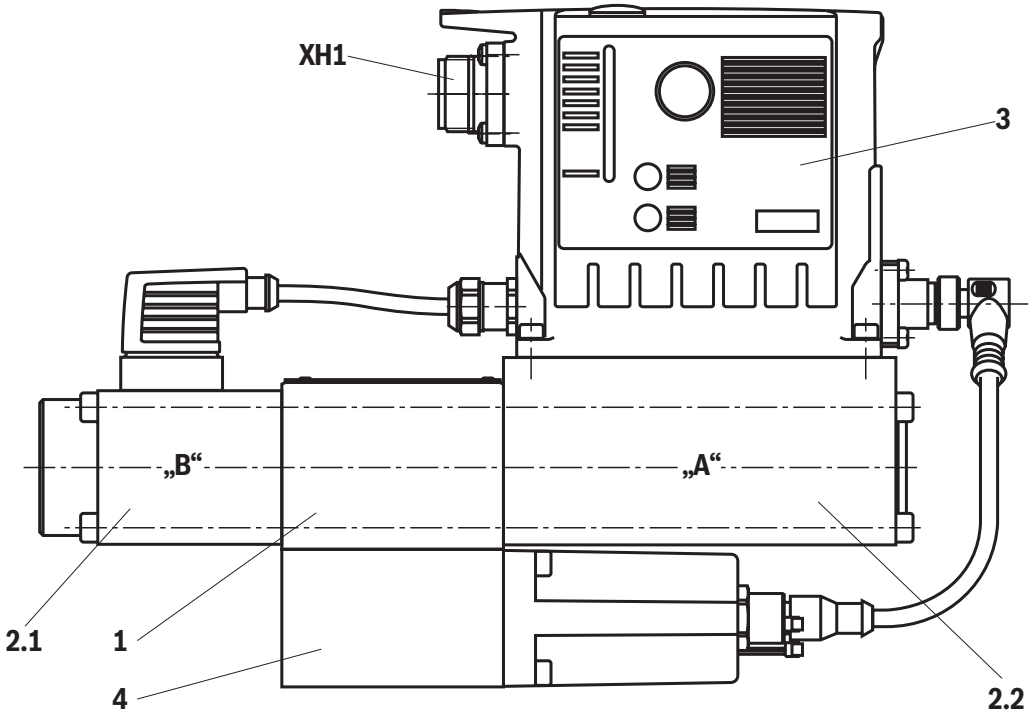
General information
The **IFB Multi-Ethernet** valve (**I**ntegrated **F**ield**b**us) is a digital directional control valve with integrated flow controller, load-independent.

The following operating modes are possible:
- Valve direct control
- Flow control
- Pressure/force control
- Pressure control/volume substitutional
- Torque/force control/flow
- Pressure control/valve direct control substitutional
- Substitutional control (flow – pressure/force); pQ function (flow-controlled)

Communication is done via the digital Multi-Ethernet interface (X7E1 or X7E2) only. The following data may be exchanged:
- Command values
- Actual values
- Configuration and setting of the system control parameters
- Status messages, faults or warnings

Set-up
The directional control valve with IFB Multi-Ethernet electronics mainly consists of:
- Main housing with control spool (1)
- Control electronics with integrated fieldbus (3)
  - Connector, voltage supply, safety shut-down (XH1)
  - Ethernet interfaces (X7E1, X7E2)
- Pressure sensor sandwich plate (4)
- Stroke solenoid (2.1)
- Control solenoid with electrical position feedback (2.2)

☞ **Notice:**
With version "V32", the control spool may rotate in case of single-sided flow through the supply flow edges (P–A or P–B) causing damage or failure of the valve. This can be solved by reduction of the pressure differential over the supply flow edge to a maximum of 80 bar or by simultaneous use of both control edges (P–A/B–T or P–B/A–T).



Function (flow control)

The integrated electronics (OBE) enables load-independent control of the flow at positive command value by means of the two integrated pressure sensors in ports P and A. At negative command value, the flow is controlled from P to B.

Safety function (only symbol Q5-)
The integrated electronics (OBE) of the valve enable additional shut-off of a channel according to EN 13849-1 in both directions (depending on the symbol, the valve can be considered as safely shut-off).
When using symbol V, the valve cannot be used in a safety-relevant manner according to EN 13849-1 while enable acknowledgment always remains 0.
Thanks to the two control solenoids (enable pin D and E, low signal) at the connector (XH1), direction-dependent shut-off is enabled. The control spool of the valve is in spring-centered central position for this purpose (fail-safe position).
Enable acknowledgment pin C for solenoid A and pin F for solenoid B are "high". By connecting both control solenoids (enable pin D and E, high signal), the valve can be controlled by a command value presetting (command value positive, solenoid B or command value negative, solenoid A).
Enable acknowledgment pin C for solenoid A and pin F for solenoid B are "low".
Separate shut-off of solenoid A or solenoid B will moreover allow for the direction-dependent activation or shut-off of the drive.

Notice for safe shut-off according to EN 13849-1
Enable acknowledgment
The enable acknowledgment is not set (pin C and F):
- Regular operation, enable active:
  Enable at pin D clears enable acknowledgment at pin C, enable at pin E clears enable acknowledgment at pin F.
- For failure of supply voltage.
- In case of a cable break (the integrated electronics (OBE) will de-energize both control solenoids and the control spool will move to the spring-centered central position).
- If the control spool is not in a hydraulically safe position (insufficient safety overlap of the control spool or safe position is not reached).

Monitoring
The digital control electronics enable comprehensive monitoring functions/error detection including:
- Undervoltage
- Communication error
- Cable break for analog sensor inputs
- Monitoring of the microcontroller (watchdog)
- Temperature of the integrated electronics

IndraWorks DS PC program
To implement the project planning task and to parameterize the valve, the user may use the IndraWorks DS engineering tool (see accessories):
- Project planning
- Parameterization
- Commissioning
- Diagnosis
- Comfortable administration of all data on a PC
- PC operating systems: Windows 10

☞ **Notices:**
- When using symbol V, the enable inputs (enable pin D and E) may only be activated and deactivated together.
- For all other symbols, a unilateral shut-off will cause reduced performance data.
- 4/3 directional control valves do not have a leakage-free basic locking when deactivated. Leakage must be considered when designing the drive.
- Valve type 4WRPQ (symbol Q5-) can be used as shut-off element cat. 3 or 4 (up to PL e according to EN 13849-1). For both categories, an additional shut-off element is required to achieve a two-channel shut-off. For further information on the safety application, see operating instructions 29391-B.
- At a flow command value of 0, the specified flow control tolerance also applies.

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

General				
Size		NG	6	10
Installation position			any	
Ambient temperature range		°C	–20 ... +60	
Storage temperature range (with UV protection)		°C	+10 ... +40	
Transport temperature		°C	–30 ... +80	
Maximum storage time		Years	1 (if the storage conditions are observed; refer to the operating instructions 07600-B)	
Vibration resistance	▶ 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		20 ... 2000 Hz / 10 g_{RMS} / 30 g peak / 30 min. / 3 axes	
	▶ Transport shock according to DIN EN 60068-2-27		15 g / 11 ms / 3 shocks / 3 axes	
Weight		kg	4.7	9.8
Maximum relative humidity (no condensation)		%	95	
Maximum solenoid surface temperature		°C	150 (individual operation)	
$MTTF_d$ value according to EN ISO 13849		Years	150 (for further details see data sheet 08012)	
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 ▶ REACH ordinance (EC) no. 1907/2006	

Hydraulic				
Maximum operating pressure	▶ Ports A, B, P	bar	280	
	▶ Port T	bar	200	
Rated flow (***Δp*** = 5 bar/control edge [1])		l/min	32	80
Hydraulic fluid			See table page 7	
Viscosity range	▶ Recommended	mm^2/s	20 ... 100	
	▶ Maximum admissible	mm^2/s	10 ... 800	
Hydraulic fluid temperature range (flown-through)		°C	–20 ... +70	
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 18/16/13 [2]	

[1] Flow for deviating ***Δp*** (control edge):

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

[2] 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.

Notice:
The specified technical data were measured with HLP46 and 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, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922	90223

☞ **Important notices on hydraulic fluids:**

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.
- **Bio-degradable and flame-resistant – containing water:**
  If components with galvanic zinc coating (e.g. version "J3" or "J5") or parts containing zinc are used, small amounts of dissolved zinc may get into the hydraulic system and cause accelerated aging of the hydraulic fluid. Zinc soap may form as a chemical reaction product, which may clog filters, nozzles and solenoid valves – particularly in connection with local heat input.
- **Flame-resistant – containing water:**
  - Due to 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.

Static /dynamic (valve direct control)		
Hysteresis	%	< 0.25
Range of inversion	%	< 0.05
Response sensitivity	%	< 0.05
Manufacturing tolerance q_{Vmax}	%	< 10
Temperature drift (temperature range 20 °C ... 80 °C)	%/10 K	Zero shift < 0.25
Pressure drift	%/100 bar	Zero shift < 0.2
Zero compensation		ex plant ±1%

Static /dynamic (flow control)			
Size	NG	6	10
Flow accuracy [3]	l/min	80±4	180±9

[3] Accuracy tolerance of controlled flow/recommended maximum flow

Technical data

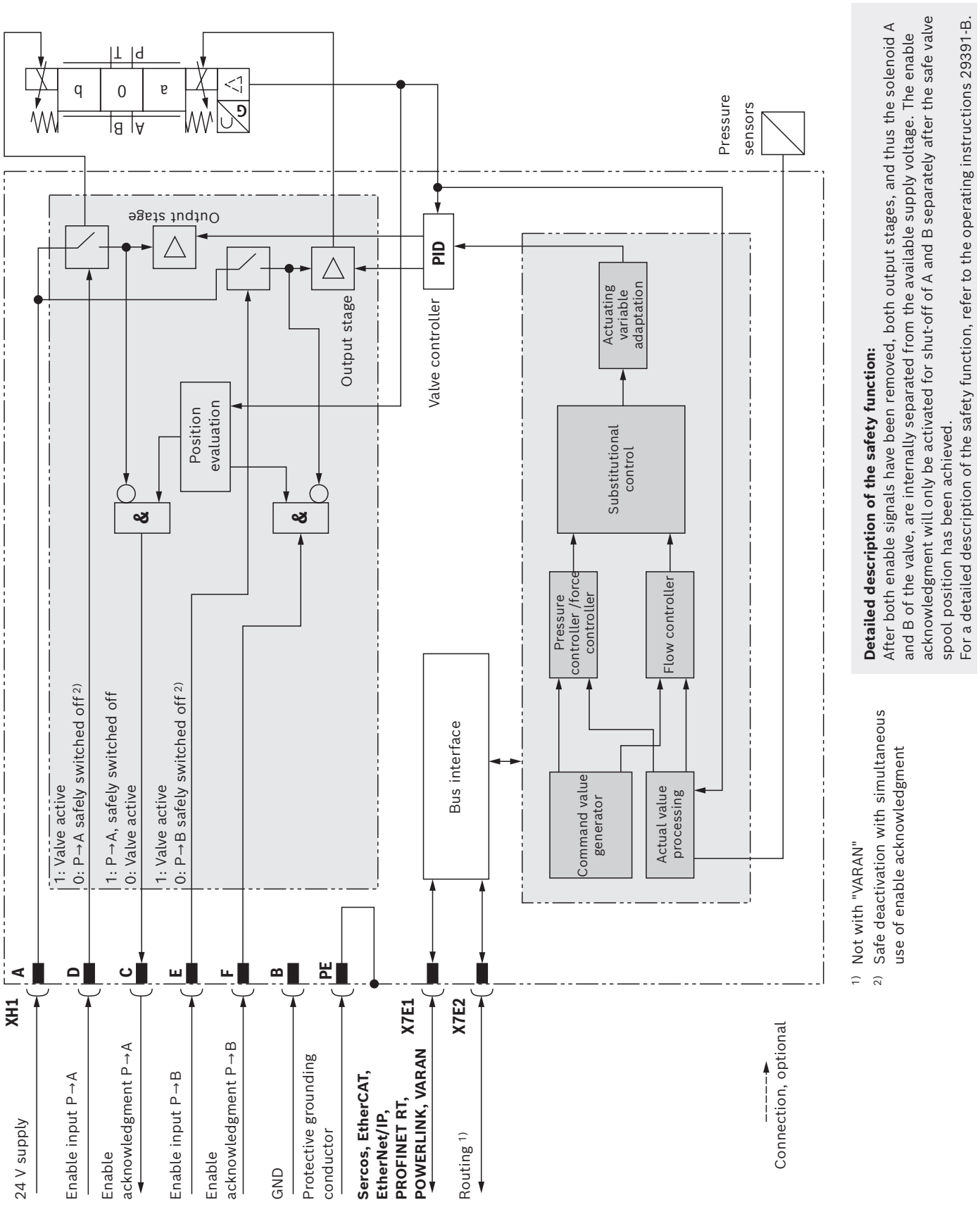
(For applications outside these values, please consult us!)

Electrical, integrated electronics (OBE)			
Relative duty cycle		%	100 (continuous operation)
Protection class according to EN 60529			IP65 (If suitable and correctly mounted mating connectors are used)
Supply voltage [4]	▶ 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 (at nominal voltage)	▶ Maximum [5]	A	2.8
	▶ Impulse current	A	4
Maximum power consumption		W	65
AD/DA resolution	▶ Analog inputs		12 bit
Protective grounding conductor and screening			See connector pin assignment (CE-compliant installation) page 10
Required fuse protection, external		A	4, time-lag
Adjustment			Calibrated in the plant
Conformity			CE according to EMC Directive 2014/30/EU tested according to EN 61000-6-2 and EN 61000-6-3
Parameterization interface			Ethernet
Scan time pressure and force controller (minimum)		ms	0.5
Booting time		s	< 15
Switching input Enable XH1	▶ Quantity		2
	▶ Low level	V	–3 ... 5
	▶ High level	V	15 ... $\boldsymbol{U}_B$
	▶ Current consumption at high level	mA	< 15
	▶ Reference potential GND		Pin B
Switching output Enable acknowledgment XH1	▶ Quantity		2
	▶ Low level	V	0 ... 3
	▶ High level	V	15 ... $\boldsymbol{U}_B$
	▶ Current carrying capacity	mA	50 (short-circuit-proof)
	▶ Signal delay time	ms	See operating instructions 29391-B
	▶ Reference potential GND		Pin B

[4] Voltage limit values must be observed directly at the connector of the valve (observe line length and cable cross-section!)

[5] When using the sensor inputs or the switching output, the maximum current consumption will increase according to the external load

Block diagram/controller function block



Detailed description of the safety function:
After both enable signals have been removed, both output stages, and thus the solenoid A and B of the valve, are internally separated from the available supply voltage. The enable acknowledgment will only be activated for shut-off of A and B separately after the safe valve spool position has been achieved.
For a detailed description of the safety function, refer to the operating instructions 29391-B.

1) Not with "VARAN"
2) Safe deactivation with simultaneous use of enable acknowledgment

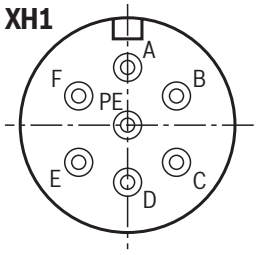
Electrical connections, assignment

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

Pin	Assignment of interface D9
A	24 VDC supply voltage [1]
B	GND (reference for pin A, C, D, E, F)
C	Enable acknowledgment 24 VDC (I_{max} = 50 mA) [2] (high ≥15 V; low <2 V); Flow from P→A
D	Enable input 24 VDC (high ≥15 V; low <2 V); Flow from P→A
E	Enable input 24 VDC (high ≥15 V; low <2 V); Flow from P→B
F	Enable acknowledgment 24 VDC (I_{max} = 50 mA) [2] (high >15 V; low <2 V); Flow from P→B
PE	Functional ground (connected directly to metal housing)

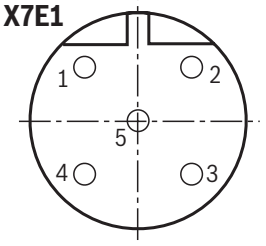
[1] A load increases the current consumption on pin A

[2] Enable acknowledgment is issued only if the valve has safely switched off according to EN 13849-1, see operating instructions 29391-B.



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

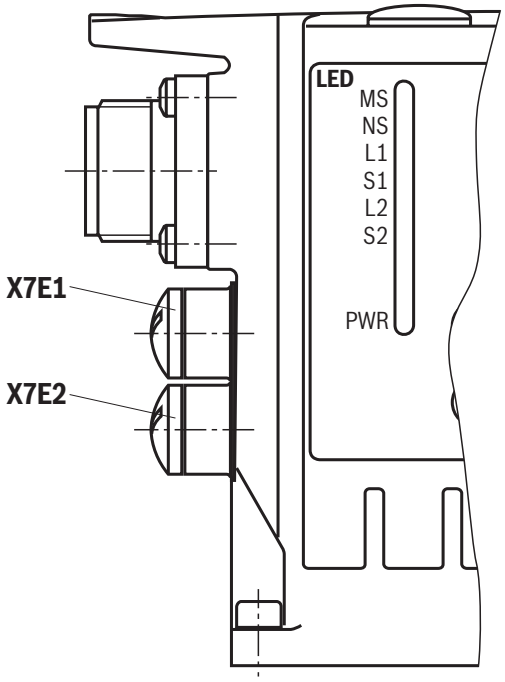
Pin	Assignment
1	TxD +
2	RxD +
3	TxD –
4	RxD –
5	not assigned



☞ **Notices:**
- ▶ Reference potential for all signals: GND
- ▶ We recommend connecting the shields on both sides via the metal housings of the plug-in connectors.

LED displays

LED	Interface	Sercos	EtherNET/IP	EtherCAT	PROFINET RT	POWERLINK	VARAN
MS	**Electronics module**	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/activity	Link and others	Link/data activity	Link and others
S1		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/activity	Link and others	Link/data activity	Not used
S2		Activity and others	Activity and others	Not used	Activity and others	Not used	Not used
PWR	**XH1**	Power	Power	Power	Power	Power	Power



Displays of the status LEDs

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

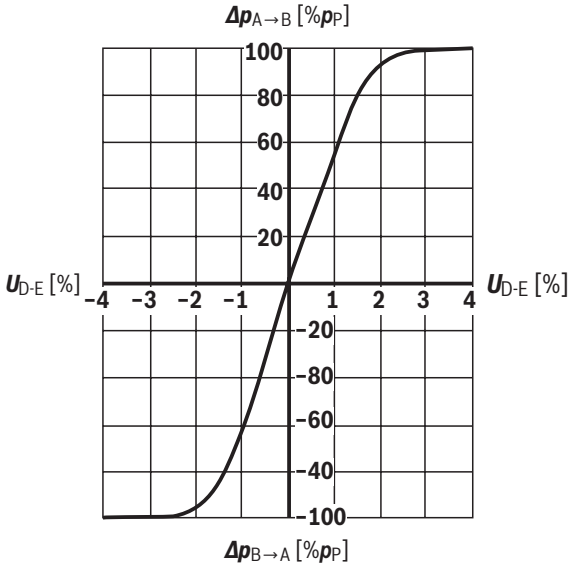
Module status LED (LED MS)	Display status
Off	No voltage supply
Green-red, flashing	Initialization
Green, flashing	Drive ready for operation
Green	Drive active
Orange, flashing	Warning
Red, flashing	Error
Green, rapidly flashing	Firmware must be loaded

☞ **Notices:**

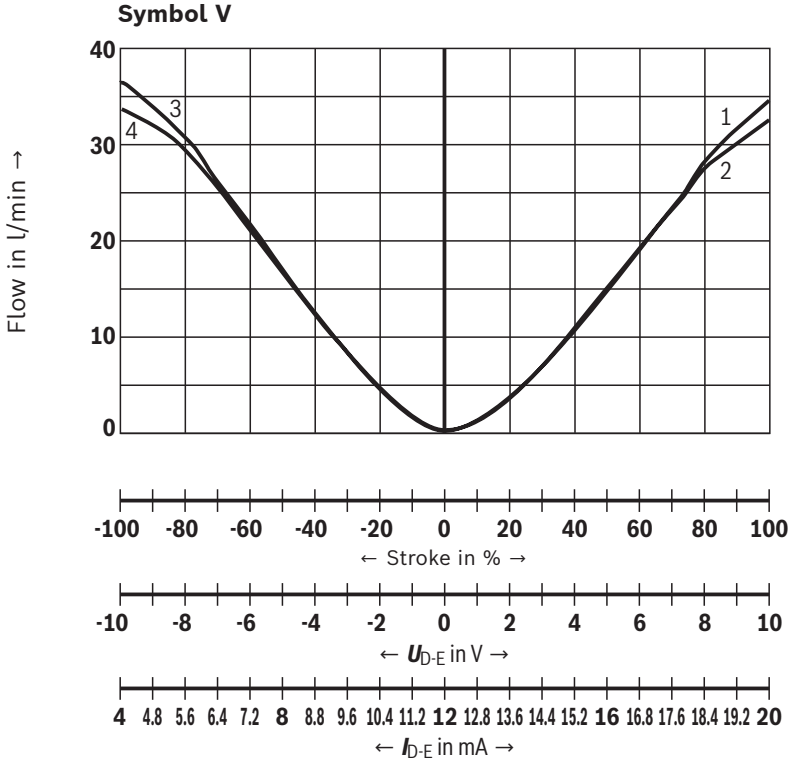
- For the connection to the M12 sockets, we recommend using self-locking mating connectors
- Module status LED MS relates to the electronics module
- The network status LED NS indicates the status of the control communication, see application description 30338-FK
- LEDs L1, S1, L2 and S2 relate to interfaces "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 6 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Pressure/signal characteristic curve (symbol V)



Flow/signal function (rated flow 32 l/min with Δp = 5 bar/control edge)



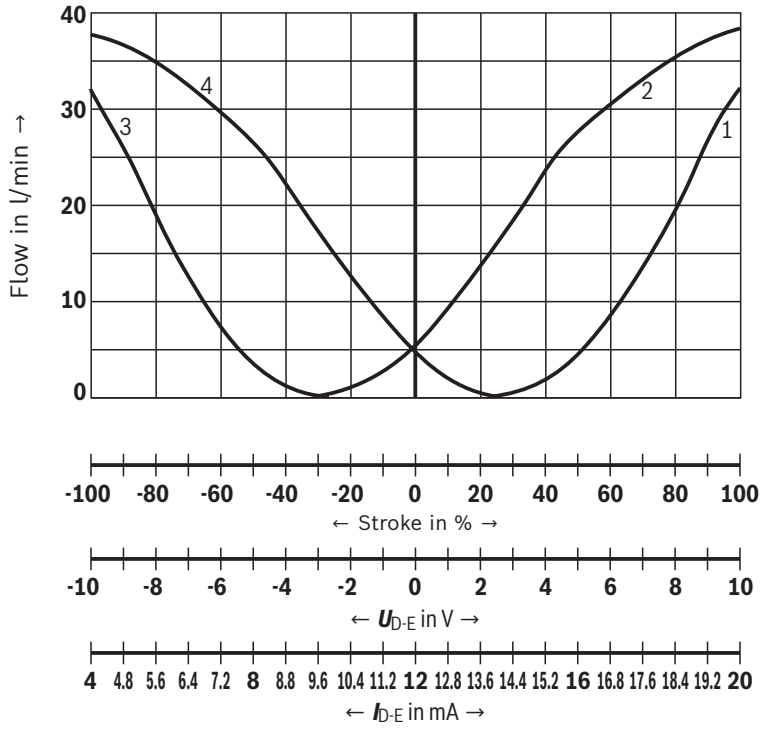
1 P–A
2 B–T
3 P–B
4 A–T

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

Characteristic curves: Size 6 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Flow/signal function (rated flow 32 l/min with Δp = 5 bar/control edge)

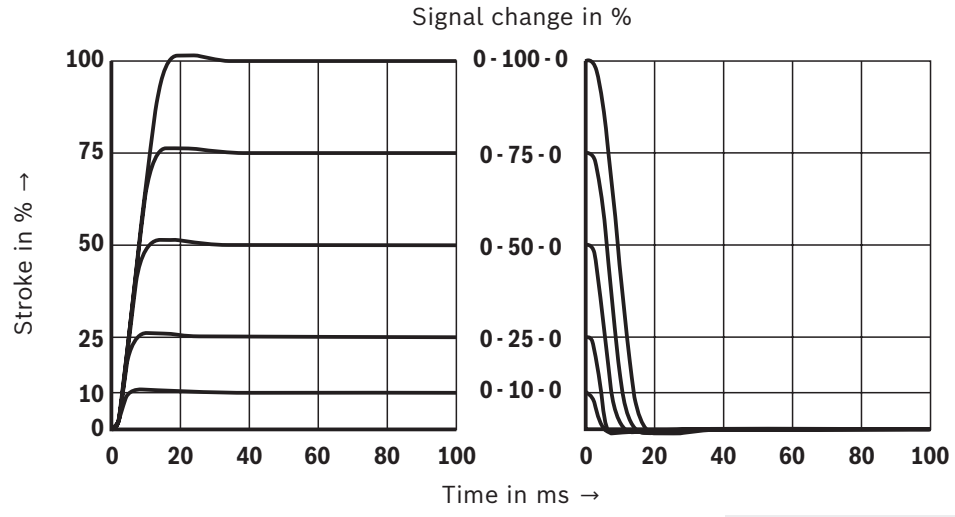
Symbol Q5-



1 P–A
2 B–T
3 P–B
4 A–T

Transition function with stepped electric input signals

Symbol V

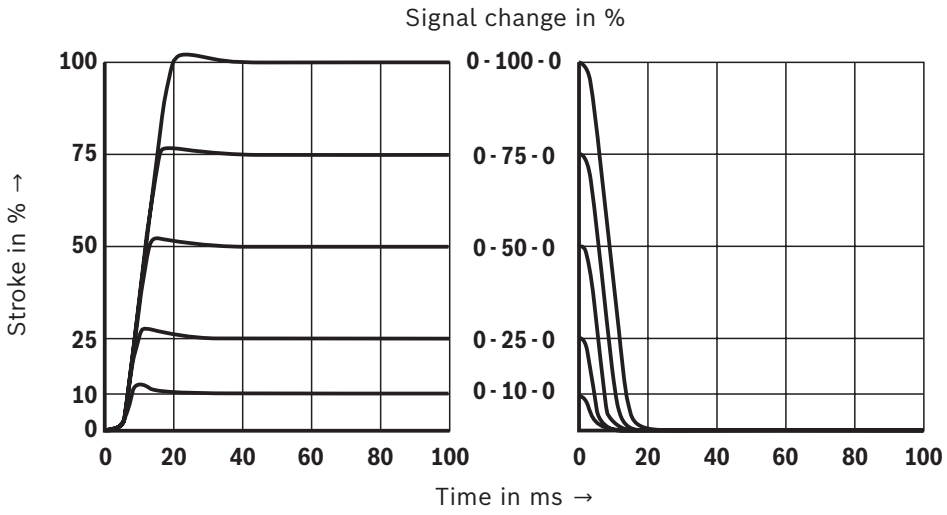


☞ **Notice:**
Typical characteristic curves which are subject to tolerance variation.

Characteristic curves: Size 6 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

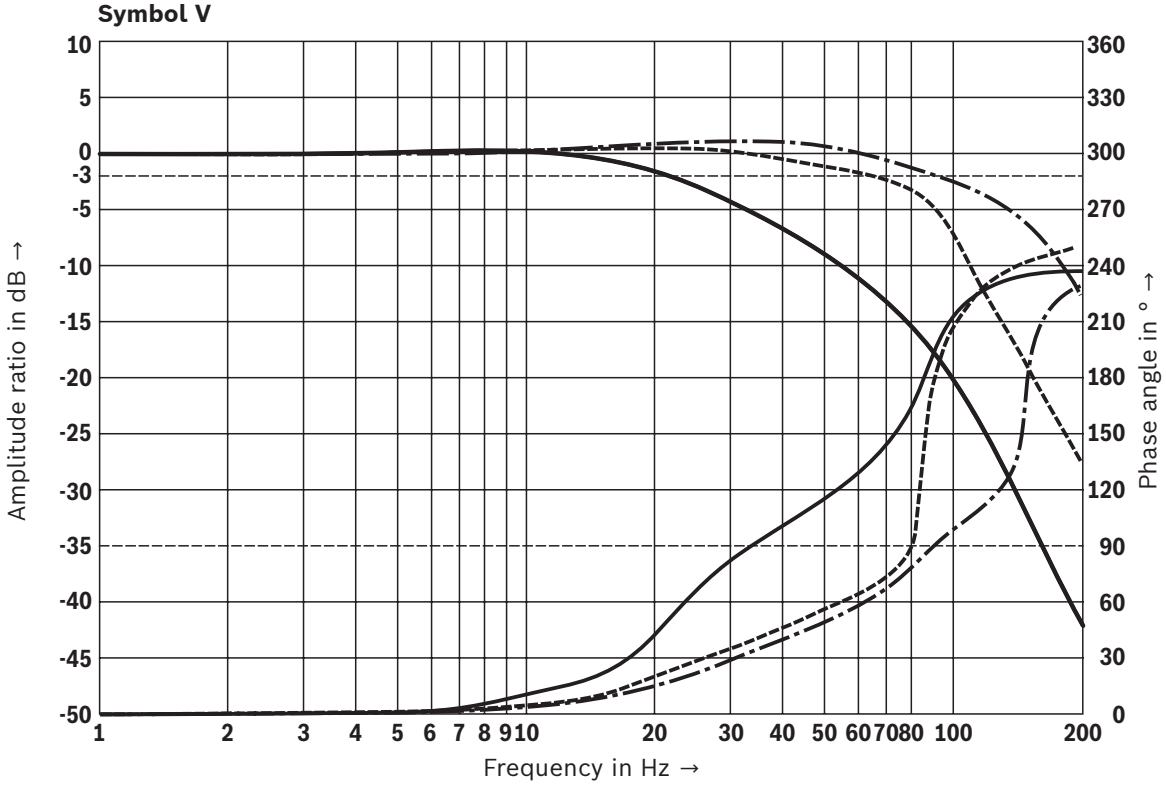
Transition function with stepped electric input signals

Symbol Q5-



Frequency response characteristic curves

Symbol V



Signal ±5%

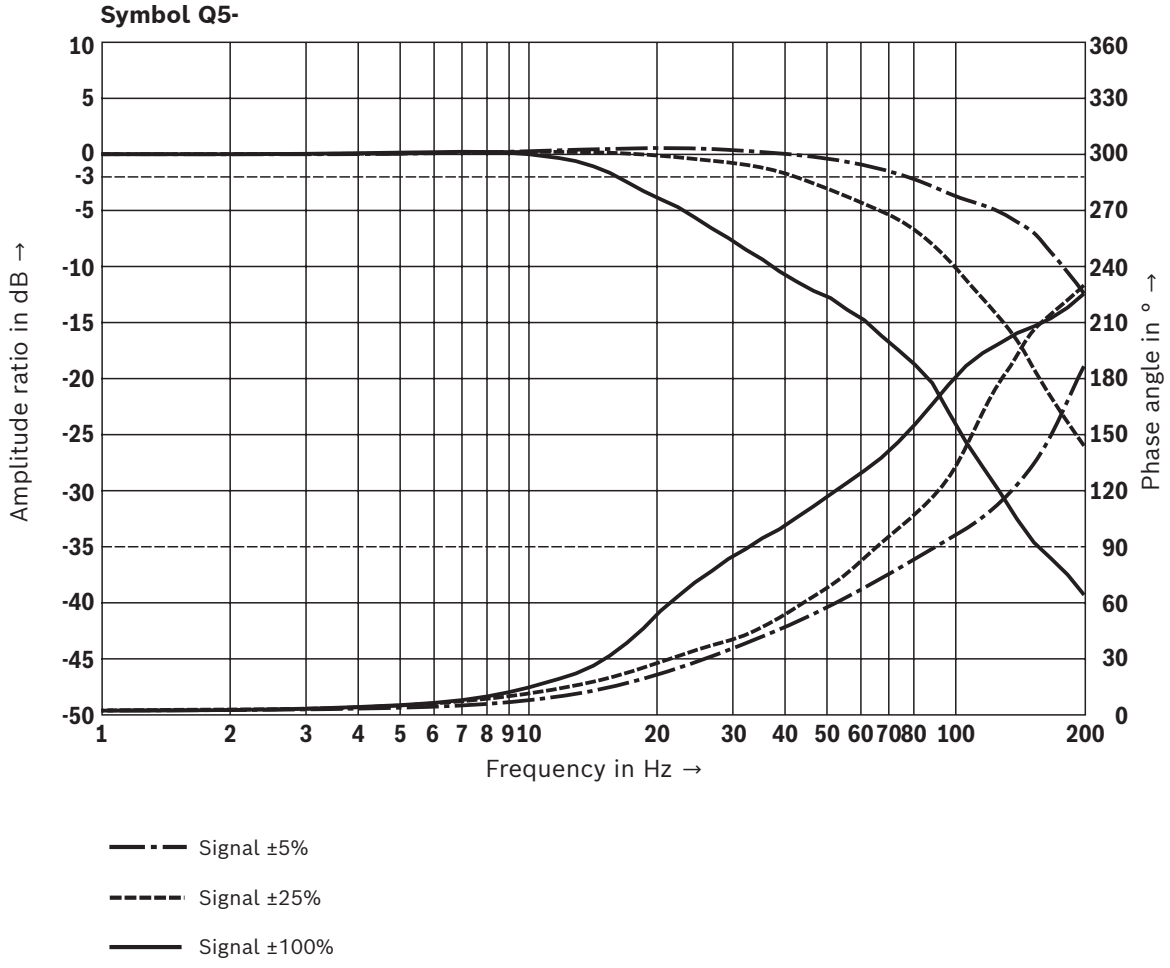
Signal ±25%

Signal ±100%

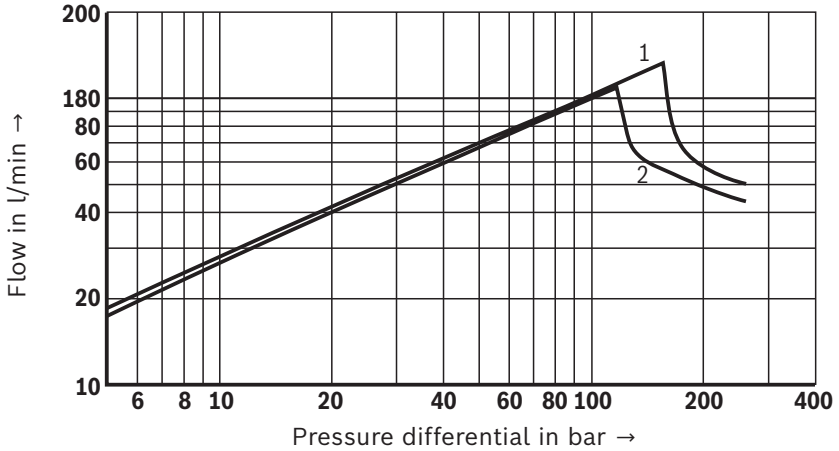
☞ **Notice:**
Typical characteristic curves which are subject to tolerance variation.

Characteristic curves: Size 6 – Valve direct control
(measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Frequency response characteristic curves



Flow/load function with maximum valve opening (tolerance ±10%)
Rated flow 32 l/min, summated edge

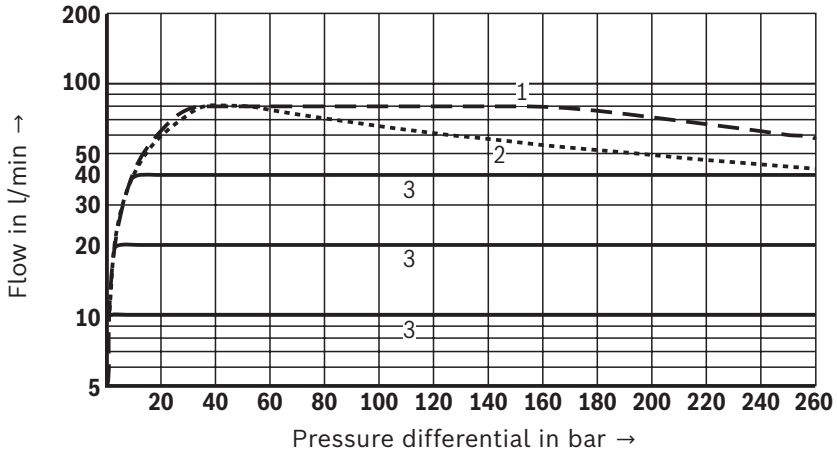


1 Symbol V
2 Symbol Q5-

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

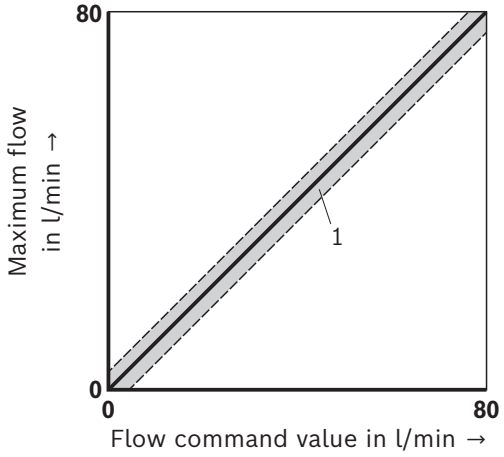
Characteristic curves: Size 6 – Flow control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Flow deviation (tolerance ±4 l/min)
Single edge (supply flow edge $q_{V\ command}$ = 80 l/min)



1 Symbol V
2 Symbol Q5-
3 Symbol V and Q5-

Tolerance of controlled flow / recommended maximum flow
(Default value 80 l/min)

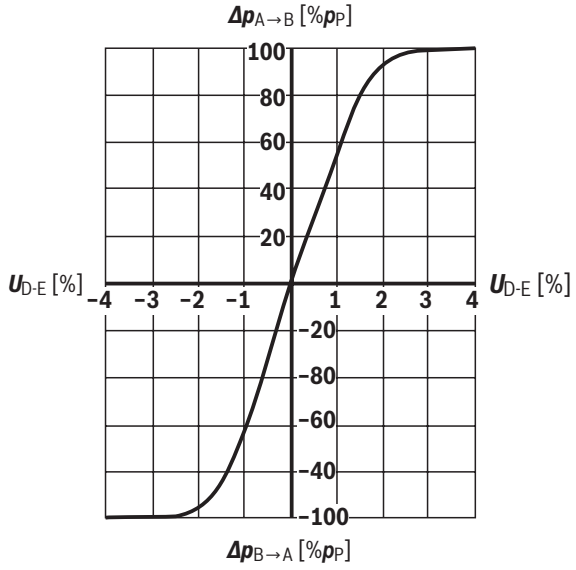


1 Tolerance ±4 l/min

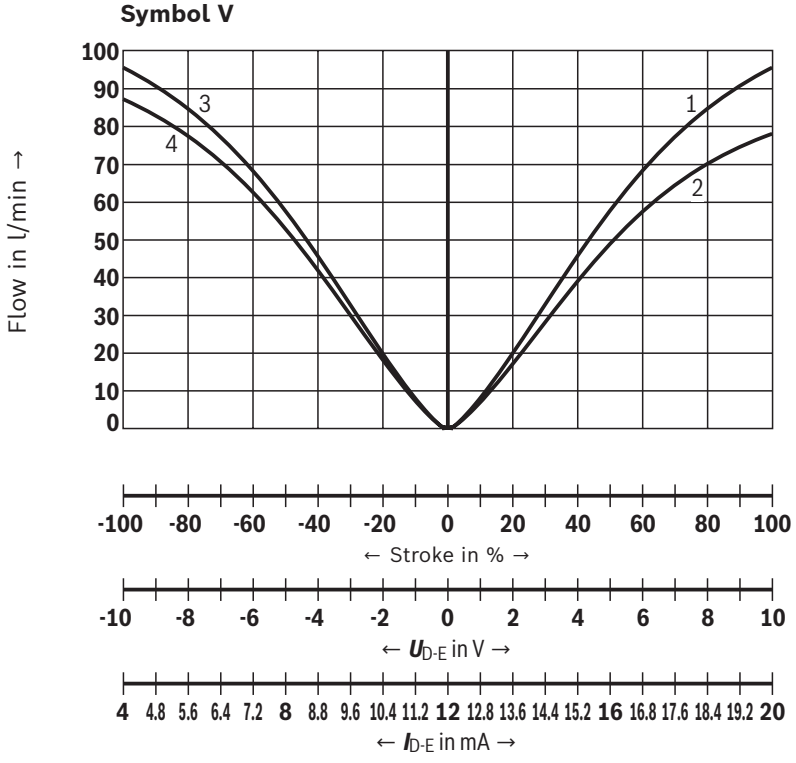
☞ **Notice:**
- The maximum possible flow is specified in parameter "maximum flow" (P-0-2875.0.3).
  The default value is defined by the performance data of the valve (see parameter description 30330-PA).
- Observe the limitations of use of the valve under "Flow/load function with maximum valve opening".

Characteristic curves: Size 10 – Valve direct control
(measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Pressure/signal characteristic curve (symbol V)



Flow/signal function (rated flow 80 l/min with Δp = 5 bar/control edge)



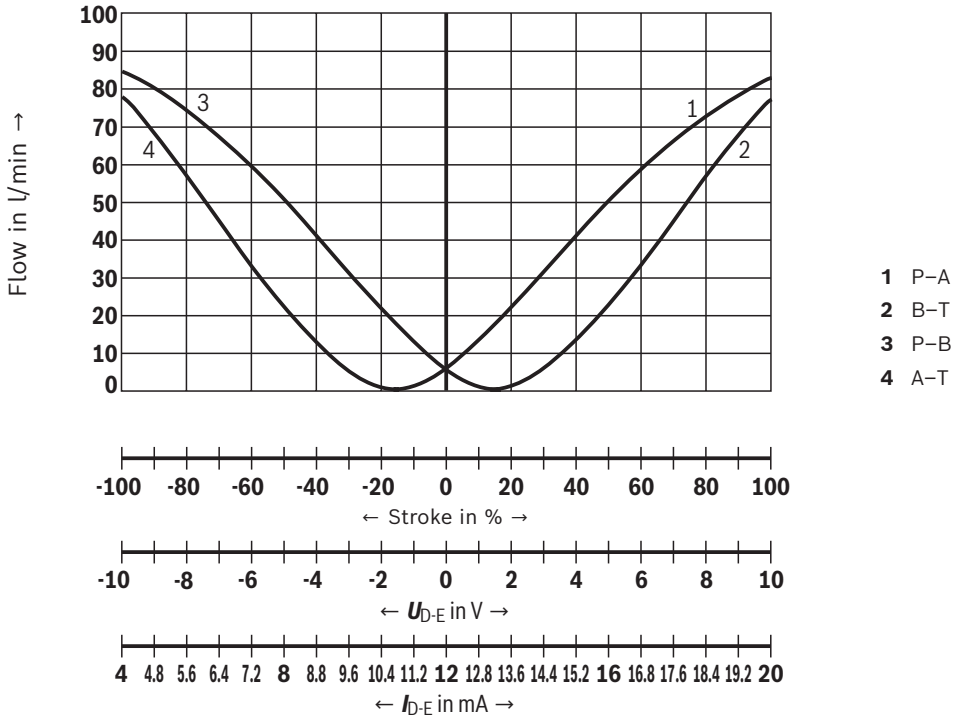
1 P–A
2 B–T
3 P–B
4 A–T

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

Characteristic curves: Size 10 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Flow/signal function (rated flow 80 l/min with Δp = 5 bar/control edge)

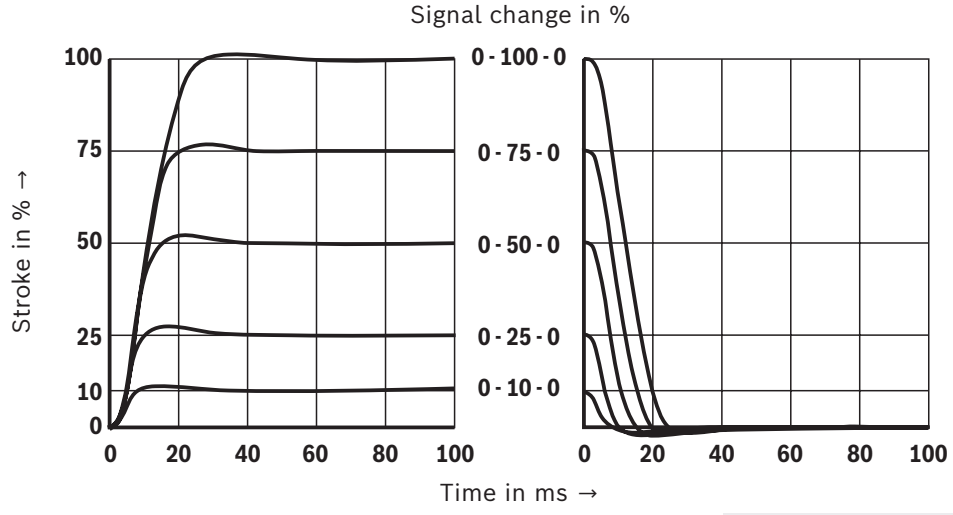
Symbol Q5-



1 P–A
2 B–T
3 P–B
4 A–T

Transition function with stepped electric input signals

Symbol V

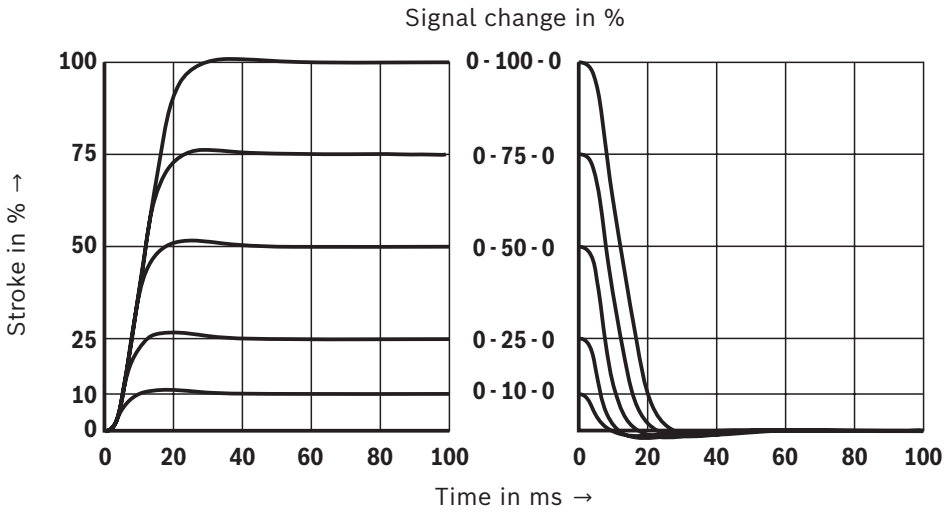


☞ **Notice:**
Typical characteristic curves which are subject to tolerance variation.

Characteristic curves: Size 10 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

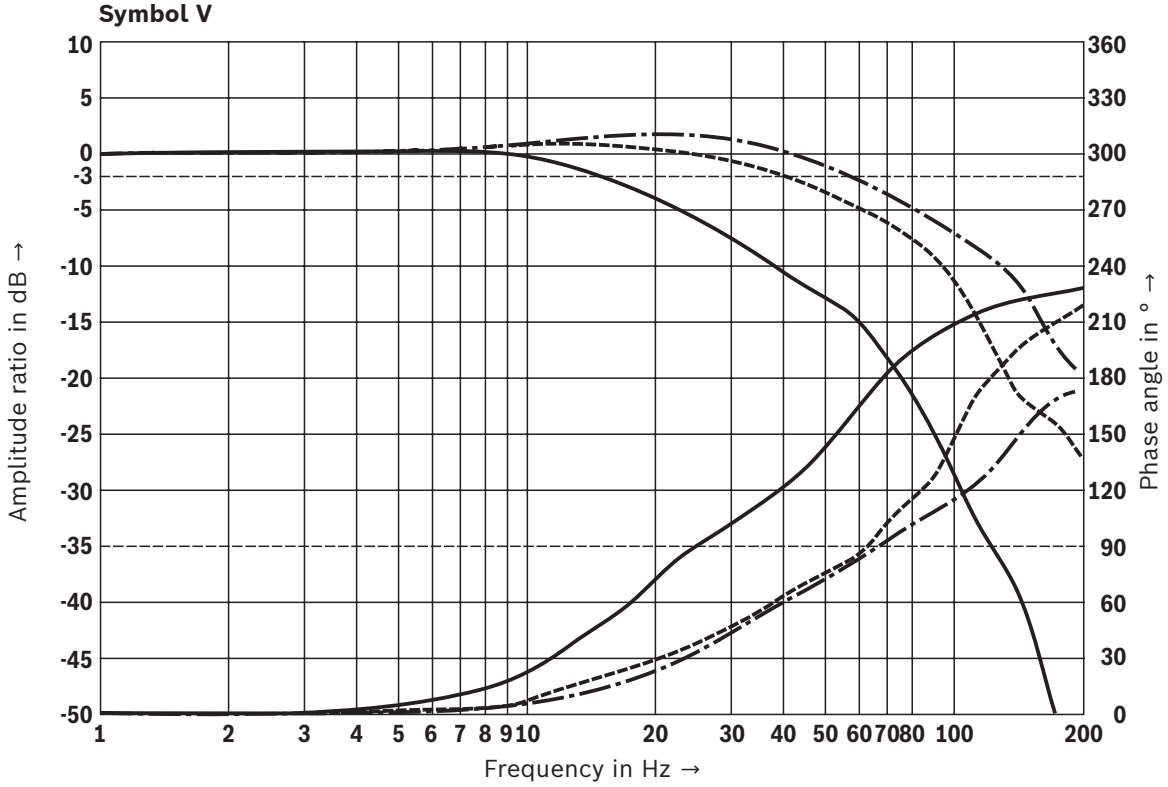
Transition function with stepped electric input signals

Symbol Q5-



Frequency response characteristic curves

Symbol V



Signal ±5%

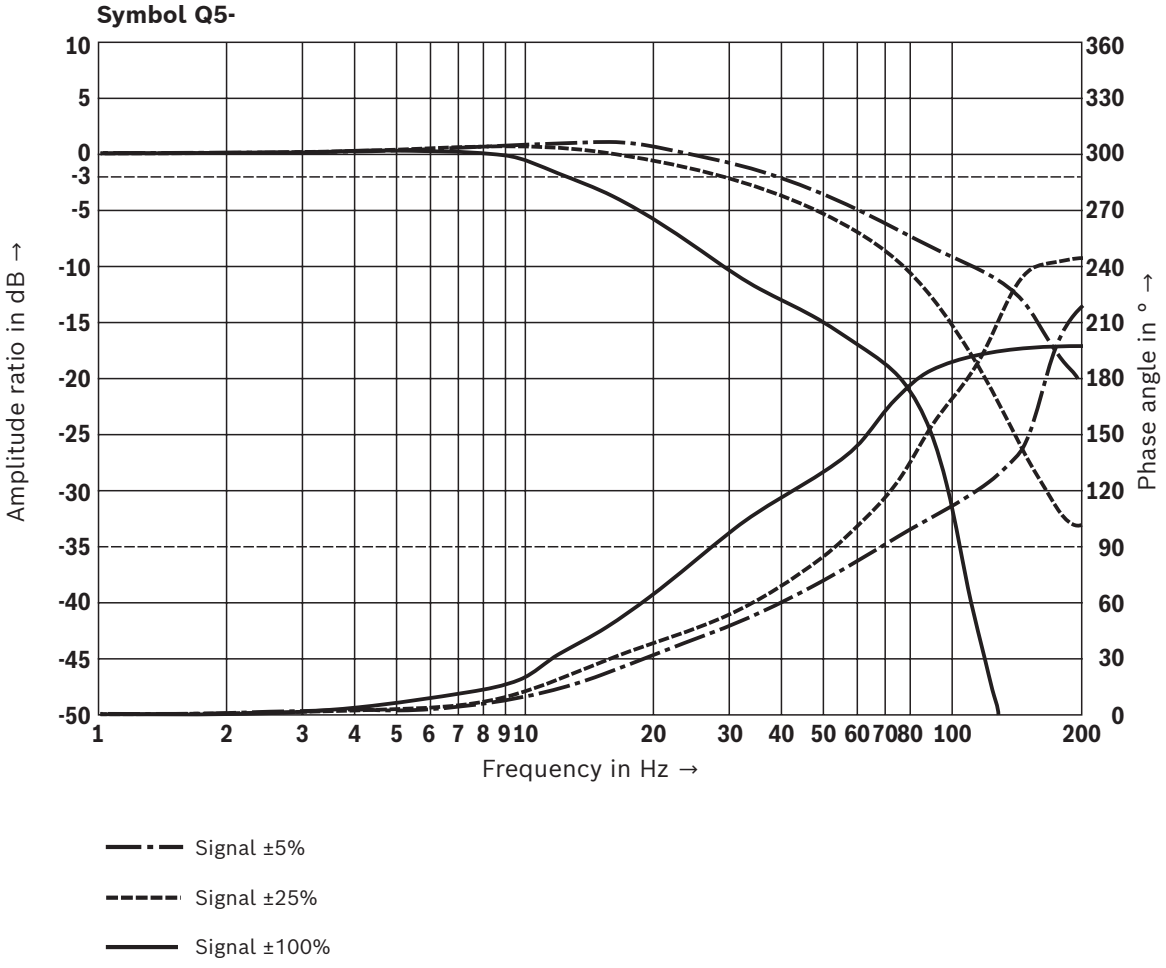
Signal ±25%

Signal ±100%

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

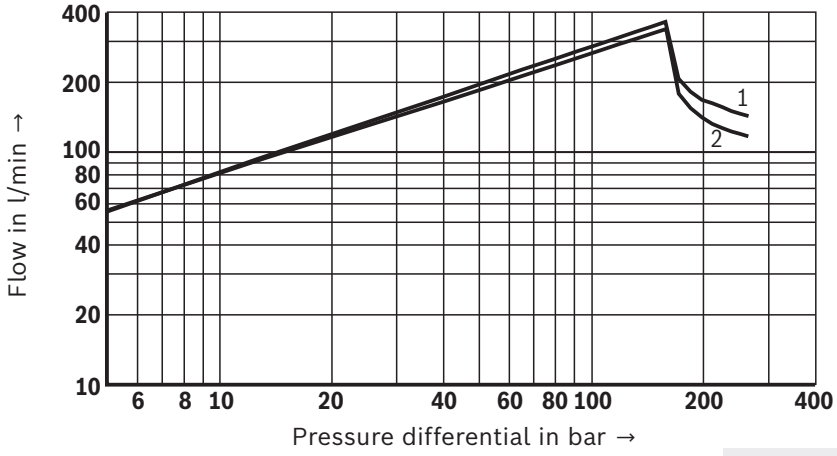
Characteristic curves: Size 10 – Valve direct control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Frequency response characteristic curves



Flow/load function with maximum valve opening (tolerance ±10%)

Rated flow 80 l/min, summated edge

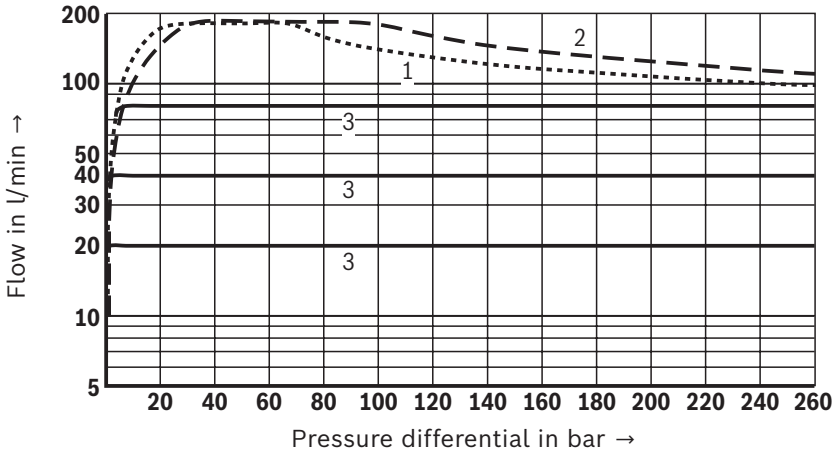


1 Symbol V
2 Symbol Q5-

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

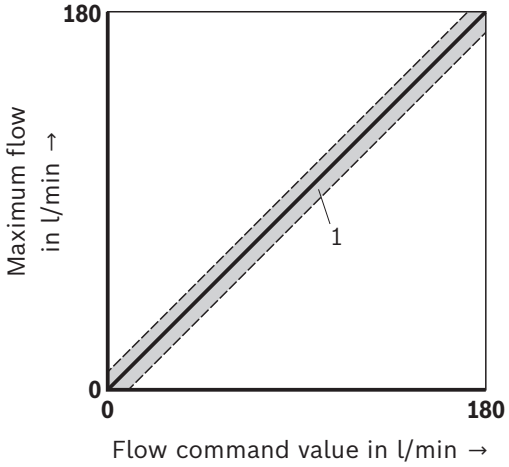
Characteristic curves: Size 10 – Flow control (measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Flow deviation (tolerance ±4 l/min)
Single edge (supply flow edge $q_{V\ command}$ = 180 l/min)



1 Symbol V
2 Symbol Q5-
3 Symbol V and Q5-

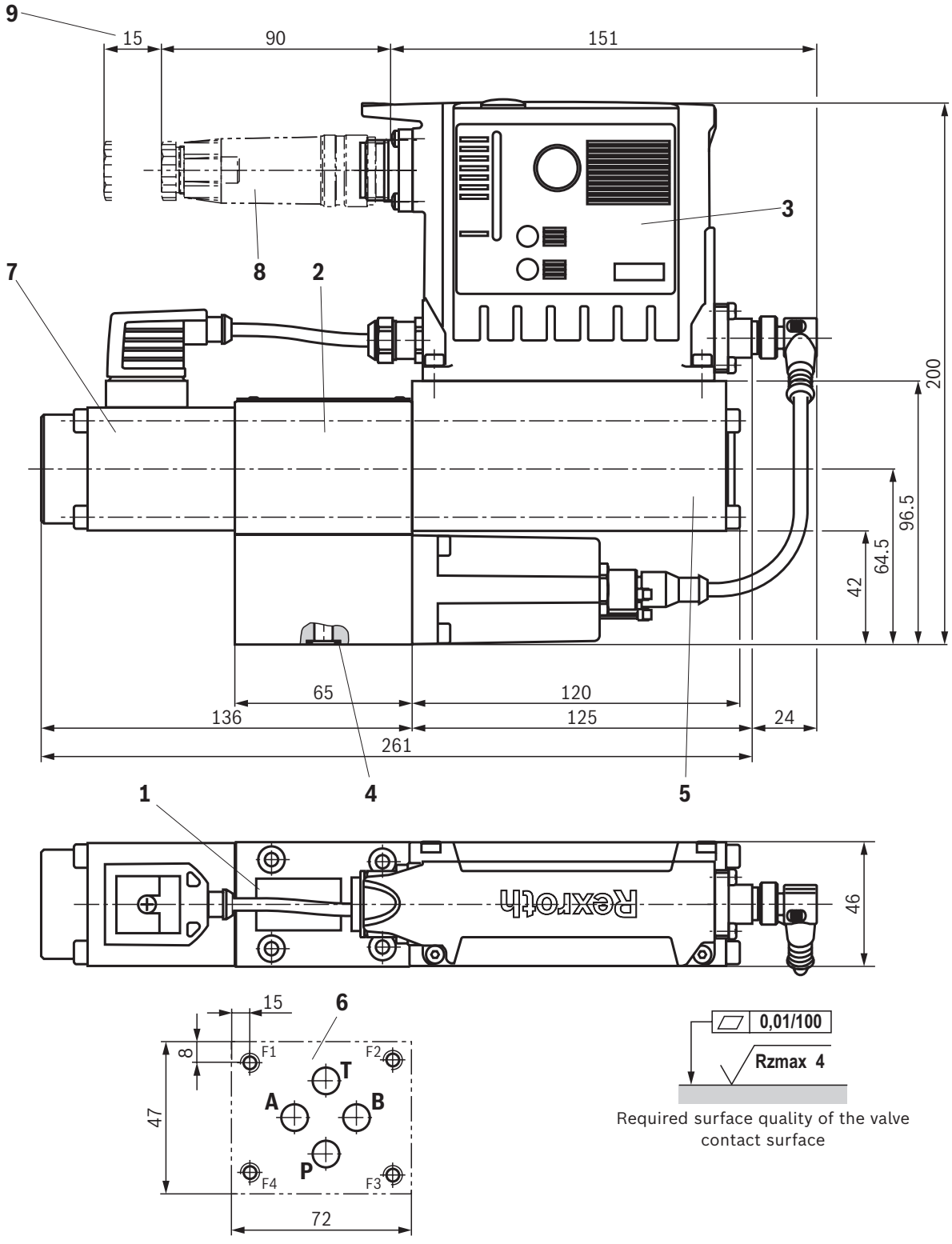
Tolerance of controlled flow / recommended maximum flow
(Default value 180 l/min)



1 Tolerance ±9 l/min

☞ **Notice:**
- The maximum possible flow is specified in parameter "maximum flow" (P-0-2875.0.3).
  The default value is defined by the performance data of the valve (see parameter description 30330-PA).
- Observe the limitations of use of the valve under "Flow/load function with maximum valve opening".

Dimensions: Size 6
(Dimensions in mm)

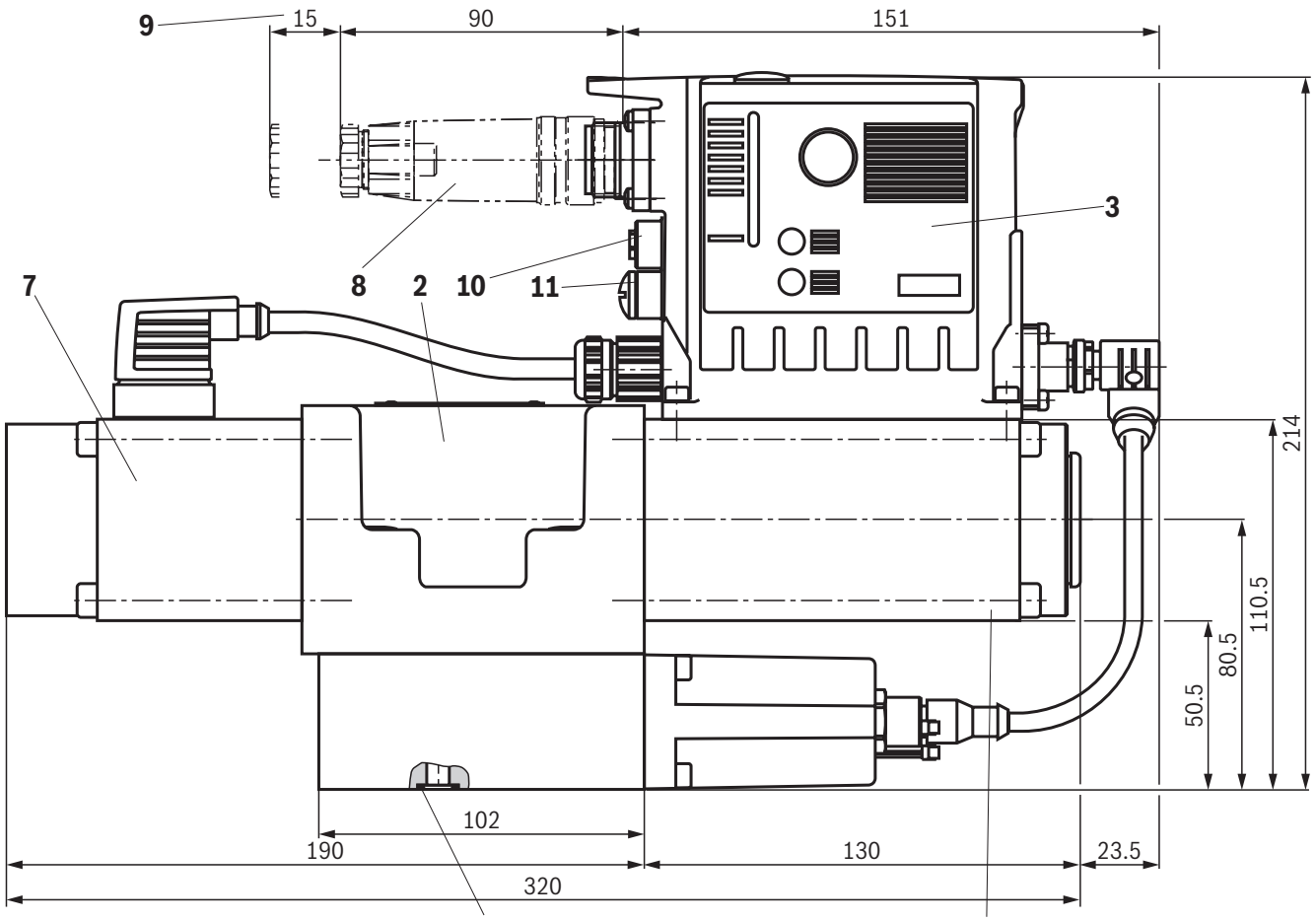


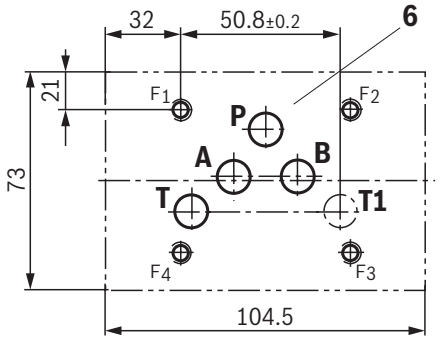
Required surface quality of the valve contact surface

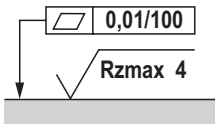
☞ **Notices:**
The dimensions are nominal dimensions which are subject to tolerances.

For item explanations, valve mounting screws and **subplates,** see page 24.

Dimensions: Size 10
(Dimensions in mm)







Required surface quality of the valve contact surface

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

For item explanations, valve mounting screws and **subplates,** see page 24.

Dimensions

1 Name plate
2 Valve housing
3 Integrated digital control electronics
4 Identical seal rings for ports A, B, P, T
5 Control solenoid with position transducer
6 Machined valve contact surface, porting pattern according to ISO 4401-03-02-0-05
7 Stroke solenoid
8 Mating connectors, separate order, see page 25 and data sheet 08006.
9 Space required for removing the mating connector
10 Multi Ethernet interface X7E1
11 Multi Ethernet interface X7E2

Valve mounting screws (separate order)

Size	Quantity	Hexagon socket head cap screws	Material number
6	4	**ISO 4762 - M5 x 70 - 10.9-CM-Fe-ZnNi-5-Cn-T0-H-B** Friction coefficient μ_{total} = 0.09 ... 0.14; tightening torque M_A = 8.9 Nm ±10%	**R913043762**
	or		
	4	**ISO 4762 - M5 x 70 - 10.9** Tightening torque M_A = 8.9 Nm ±10%	Not included in the Rexroth delivery range
10	4	**ISO 4762 - M6 x 80 - 10.9-CM-Fe-ZnNi-5-Cn-T0-H-B** Friction coefficient μ_{total} = 0.09 ... 0.14; tightening torque M_A = 13 Nm ±10%	**R913049927**
	or		
	4	**ISO 4762 - M6 x 80 - 10.9** Tightening torque M_A = 13 Nm ±10%	Not included in the Rexroth delivery range

☞ **Notice:**
The tightening torque of the hexagon socket head cap screws refers to the maximum operating pressure.

Subplates (separate order) with porting pattern according to ISO 4401, see data sheet 45100.

Accessories (separate order)

Mating connectors and cable sets

Port	Designation	Version	Short designation	Material number	Data sheet
XH1	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**	–
X7E1, X7E2	Cable set; shielded, 4-pole, D coding	Straight connector M12, on straight connector M12, line cross-section 0.25 mm², CAT 5e, length freely selectable (= xx.x)	–	**R911172111** [1]	–
	Cable set; shielded, 4-pole	Straight connector M12, on straight connector RJ45, line cross-section 0.25 mm², CAT 5e, length freely selectable (= xx.x)	–	**R911172135** [2]	–

[1] Additional indication of type designation RKB0040/xx.x

[2] 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
1 Commissioning software	IndraWorks, Indraworks D, Indraworks DS	www.boschrexroth.com/IFB
2 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

▶ Subplates	Data sheet 45100
▶ 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
▶ Reliability characteristics according to EN ISO 13849	Data sheet 08012
▶ Hexagon socket head cap screw, metric/UNC	Data sheet 08936
▶ Installation, commissioning and maintenance of servo valves and high-response valves	Data sheet 07700
▶ General product information on hydraulic products	Data sheet 07008
▶ High-response/proportional valve with Multi-Ethernet interface	Data sheet 29391-B
▶ Hydraulic valves for industrial applications	Data sheet 07600-B
▶ 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 ... 20	30330-PA
– Description of diagnosis Rexroth HydraulicDrive HDS-16, HDx-17 ... 20	30330-WA
▶ Selection of filters	www.boschrexroth.com/filter
▶ Information on available spare parts	www.boschrexroth.com/spc
▶ "IFB" hydraulic field bus valves	www.boschrexroth.com/ifb

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Notes

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Notes

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