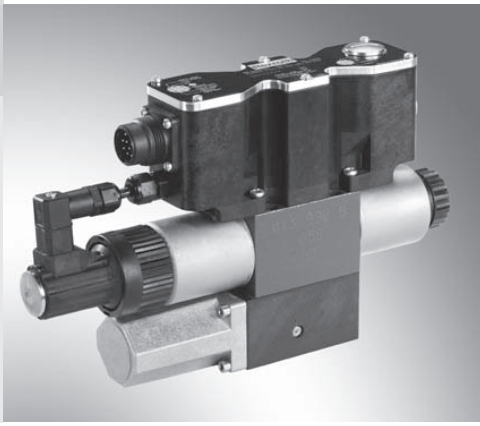
Rexroth
Bosch Group

4/3-proportional directional valve direct operated, with *pQ* functionality

RE 29050/03.13 1/26
Replaces: 12.12

Type 4WREQ



Size 6 and 10
Component series 2X
Maximum operating pressure 315 bar
Maximum flow 180 l/min

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Information on available spare parts:
www.boschrexroth.com/spc

Features

- Direct operated proportional directional valve with integrated digital control electronics for the pressure, force and flow control (Integrated Axis Controller IAC-P)
- Completely adjusted unit consisting of valve, pressure sensor(s) (optional), digital control electronics and field bus connection
- Operation by means of proportional solenoids with central thread and detachable coil
- Valve spool position-controlled
- Integrated pressure sensor plate (optional)
- For subplate mounting: Porting pattern according to ISO 4401
- Analog interfaces for command and actual values
- Design for CAN bus with CANopen protocol DS 408 or PROFIBUS-DP V0/V1
- Quick commissioning via PC and commissioning software WIN-PED 6

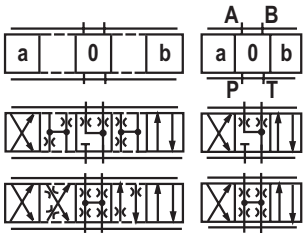
Ordering code

4WRE	Q			−2X/	V		−24				*

With integrated digital electronics and ***pQ*** functionality **= Q**

Size 6 **= 6**
Size 10 **= 10**

Control spool symbols



= Q5-
= V

Rated flow [1]

Size 6
8 l/min **= 08**
16 l/min **= 16**
32 l/min **= 32**

Size 10
25 l/min **= 25**
50 l/min **= 50**
75 l/min **= 75**

Component series 20 to 29 **= 2X**
(20 to 29: Unchanged installation and connection dimensions)

Seal material
FKM seals **= V**

Pressure rating with internal sensors
100 bar [2] **= 4**
160 bar [2] **= 5**
250 bar [2] **= 8**
400 bar [3] **= B**
External sensor **= 0**

Further details in the plain text

Sensor interface with external pressure sensor [4]
2 = 4 to 20 mA
3 = 0 to 10 V
4 = 0 to 5 V
9 = 0.5 to 5 V
0 = Without external sensor interface

Electronics interface [5]
A6 = ±10 VDC
F6 = 4 to 20 mA

Bus interface
C = CANBus DS 408
P = PROFIBUS-DP V0/V1

Supply voltage
24 = Direct voltage 24 V

Position of the pressure sensors
0 = External sensor
Internal sensor in the channel
A = A
B = B
C = A + B
F = P + A + B

Application	Ordering code
Q control	F
p control only in A	A
p control only in B	B
p control in A + B or ***Δp*** control	C

[1] See flow characteristic curves from page 12.

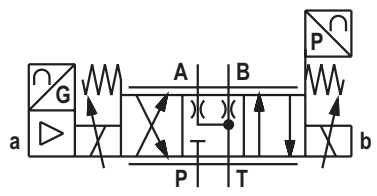
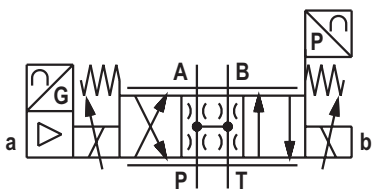
[2] The selected pressure rating limits the maximum valve pressure.

[3] Note: Maximum valve pressure is 315 bar.

[4] If internal pressure sensors are used, no external pressure sensor can be connected.

[5] With command value input "A6", only the sensor interfaces "3", "4" or "9" are possible.
With command value input "F6", only the sensor interface "2" is possible.

Symbols

Type 4WREQ.**Q5**-...	Type 4WREQ.**V**...
	

Set-up, function, section (valve with integrated sensors)

Set-up

The valve basically consists of:

- Housing (1) and pressure sensor plate (12) with connection surface
- Control spool (2) with compression springs (3 and 4) and spring plate (8 and 9)
- Coils (5 and 6) and pole tubes (14 and 15) with central thread
- Position transducer (7)
- Integrated pressure sensors (10)
- Integrated digital control electronics IAC-P (11)

Functional description

- With de-energized solenoids (5 and 6), the control spool (2) is brought into the central position by compression springs (3 and 4) between the spring plates (8 and 9) (with V spool valve without spring plate). With V spool valves, the mechanical zero position does not correspond to the hydraulic one.
- Depending on the valve type, the following functions result (some of them can be combined):
  - Flow control (***Q***)
  - Flow control (***Q***)
  - Pressure control in A and/or B (***p***)
  - Force control (***p***)
  - Substitutional control ***p/Q***
- The command value can alternatively be specified via an analog interface (X1) or via the field bus interface (X2, X3).
- The actual value signals are provided via an analog interface (X1) and can additionally be read out via the field bus (X2, X3).
- The controller parameters are set via the field bus
- Separate supply voltage for bus/controller and power part (output stage) for safety reasons

The digital integrated control electronics enables the following fault detection:

- Cable break pressure sensor (10)
- Undervoltage
- Cable break position transducer (7)
- Communication errors
- Watchdog
- Cable break command value inputs (only with current interface)

The following additional functions are available:

- Ramp generator
- Internal command value profile
- Enable function analog/digital
- Error output 24 V

PC program WIN-PED 6

To implement the project planning task and to parameterize the IAC-P valves, the user may use the commissioning software WIN-PED 6.

- Parameterization
- Diagnosis
- Comfortable data administration on the PC

System requirements

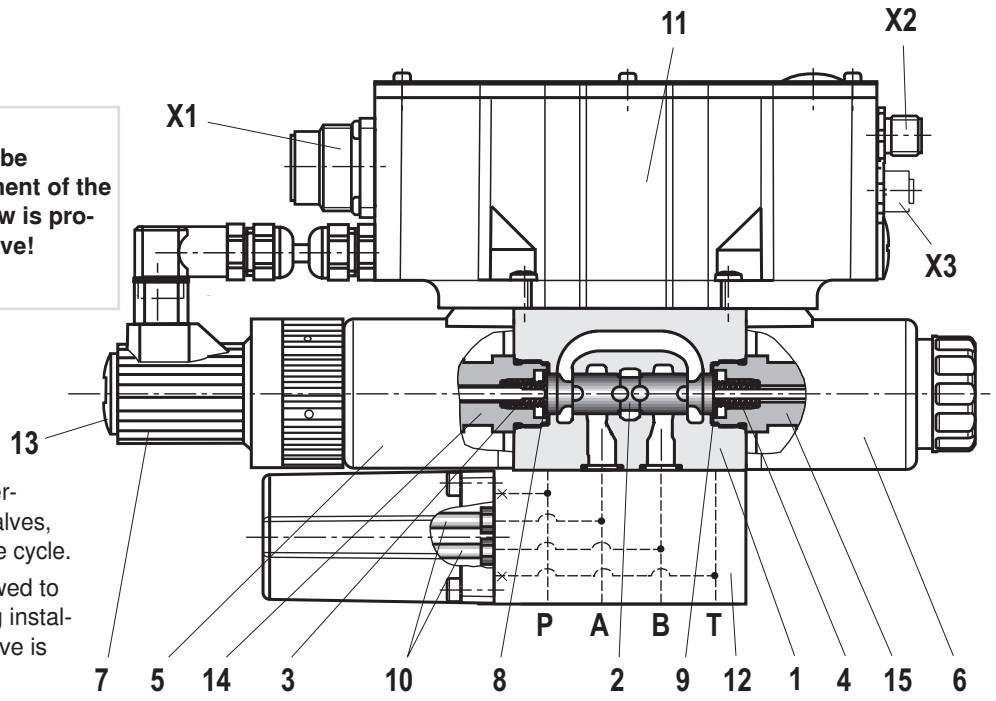
- IBM PC or compatible system
- Windows 2000 or Windows XP
- RAM (recommendation 256 MB)
- 150 MB of available hard disk capacity

Notice

- The "WIN-PED 6" PC program is not included in the scope of delivery. It can be downloaded on the Internet free of charge! (see page 26)

☞ **Important notice!**

The PG fitting (13) must not be opened. Mechanical adjustment of the adjustment nut located below is prohibited and damages the valve!



☞ **Notice!**

Due to the design principle, internal leakage is inherent to the valves, which may increase over the life cycle.

The tank line must not be allowed to run empty. With corresponding installation conditions, a preload valve is to be installed.

Set-up, function, section (valve for external sensor)

Set-up

The valve basically consists of:

- Housing (1) with connection surface
- Control spool (2) with compression springs (3 and 4) and spring plate (8 and 9)
- Coils (5 and 6) and pole tubes (14 and 15) with central thread
- Position transducer (7)
- Integrated digital control electronics IAC-P (11)
- Port (X4) for an external pressure sensor (12)

Functional description

- With de-energized solenoids (5 and 6), the control spool (2) is brought into the central position by compression springs (3 and 4) between the spring plates (8 and 9) (with V spool valve without spring plate). With V spool valves, the mechanical zero position does not correspond to the hydraulic one.
- Functions:
  - Flow control (***Q***)
  - Pressure control (***p***)
  - Substitutional control ***p/Q***
- The command value can alternatively be specified via an analog interface (X1) or via the field bus interface (X2, X3).
- The actual value signals are provided via an analog interface (X1) and can additionally be read out via the field bus (X2, X3).
- The controller parameters are set via the field bus
- Separate supply voltage for bus/controller and power part (output stage) for safety reasons

The digital integrated control electronics enables the following fault detection:

- Cable break pressure sensor (depending on sensor interface)
- Undervoltage
- Cable break position transducer (7)
- Communication errors
- Watchdog
- Cable break command value inputs (only with current interface)

The following additional functions are available:

- Ramp generator
- Internal command value profile
- Enable function analog / digital
- Error output 24 V

PC program WIN-PED 6

To implement the project planning task and to parameterize the IAC-P valves, the user may use the commissioning software WIN-PED 6.

- Parameterization
- Diagnosis
- Comfortable data administration on the PC

System requirements

- IBM PC or compatible system
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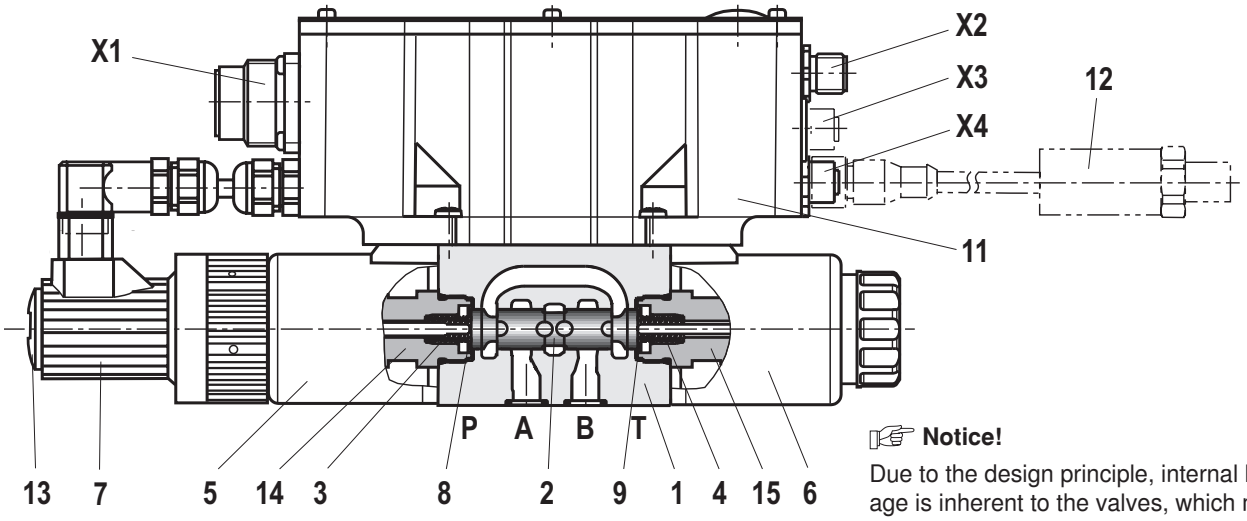

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The tank line must not be allowed to run empty. With corresponding installation conditions, a preload valve is to be installed.

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

general

Sizes			6	10
Weight with sandwich plate (3 sensors)		kg	3.6	8.5
Weight without sandwich plate		kg	2.4	6.5
Installation position			Any, preferably horizontal	
Ambient temperature range		°C	–20 to +50	
Storage temperature range		°C	–20 to +80	

hydraulic (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Operating pressure [1]		100 bar	bar	Up to 100
Ports P, A, B	with sensor	160 bar	bar	Up to 160
		250 bar	bar	Up to 250
		400 bar	bar	Up to 315
Port T	with sensor	100 bar	bar	Up to 100
		160 bar	bar	Up to 160
		250 bar	bar	Up to 210
		400 bar	bar	Up to 210
Rated flow $q_{V\,nom}$ with Δp = 10 bar			l/min	8, 16, 32 | 25, 50, 75
Maximum admissible flow			l/min	80 | 180
Hydraulic fluid				See table below
Hydraulic fluid temperature range			°C	–20 to +70, preferably +40 to +50
Viscosity range			mm^2/s	20 to 380, preferably 30 to 46
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)				Class 20/18/15 [2]
Hysteresis			%	≤ 0.1
Range of inversion			%	≤ 0.05
Response sensitivity			%	≤ 0.05
Zero shift upon change of hydraulic fluid temperature and operating pressure			%/10 K	< 0.15
			%/100 bar	< 0.1

[1] Operating pressure, determined by valve and sensor

[2] 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.
For the selection of the filters see www.boschrexroth.com/filter

Hydraulic fluid		Classification	Suitable sealing materials	Standards
Mineral oils and related hydrocarbons		HL, HLP	NBR, FKM	DIN 51524
Flame-resistant	– containing water	HFC (Fuchs HYDROTHERM 46M, Petrofer Ultra Safe 620)	NBR	ISO 12922

☞ **Important information on hydraulic fluids!**

- For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- The flash point of the process and operating medium used must be 40 K higher than the maximum solenoid surface temperature.
- **Flame-resistant – containing water**: Maximum pressure differential per control edge 175 bar. Pressure pre-loading at the tank port > 20 % of the pressure differential; otherwise, increased cavitation.

  Life cycle as compared to operation with mineral oil HL, HLP 50 % to 100 %.

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

electric

Supply voltage	Nominal voltage		VDC	24
	Lower limit value		VDC	19.4
	Upper limit value		VDC	35
	Maximum admissible residual ripple		Vss	2
Current consumption	I_{max}		A	2
	Impulse current		A	3
Command and actual value signals	Voltage "A6"	U_Q	V	±10
		U_p	V	0 to 10
	Current "F6"	I_Q and I_p	mA	4 to 20
Converter resolution (command/actual value signals)			Bit	10
Duty cycle [1]			%	100
Maximum coil temperature [2]			°C	Up to 150
Protection class of the valve according to EN 60529:1991+A1:2000				IP 65 with mounted and locked plug-in connectors

[1] Connect the valve to the supply voltage only when this is required for the functional sequence of the machine.

[2] Due to the temperatures occurring at the surfaces of the solenoid coils, the European standards ISO 13732-1 and EN ISO 4413 need to be adhered to.

Sensor technology

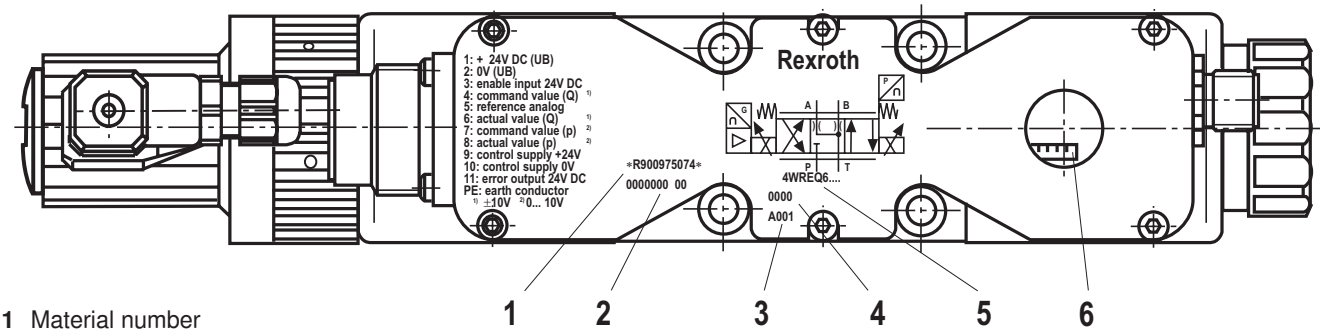
Measurement range	p_N	bar	**100**	**160**	**250**	**400**
Overload protection	p_{max}	bar	200	320	500	800
Bursting pressure	p	bar	400	640	1000	1600
Compensation error						
Zero point			< 0.25 % of the end value			
End value			< 0.5 %			
Temperature coefficients in the nominal temperature range						
Largest TK of the zero point			< 0.2 % / 10 K			
Largest TK of the range			< 0.2 % / 10 K			
Characteristic curve deviation			< 0.2 %			
Hysteresis			< 0.1 %			
Repeatability			< 0.05 %			
Long-term drift (1 year) with reference conditions			< 0.2 %			

With external pressure sensors, the accuracy of the pressure control depends on the accuracy class of the sensor used.

☞ **Notice!**

Information on the environment simulation testing for the areas EMC (Electromagnetic compatibility), climate and mechanical load see RE 29050-U (declaration on environmental compatibility).

Control electronics (IAC-P), marking and adjustment elements



1 Material number
2 Production order number
3 Date of production
4 Serial number
5 Type designation, e.g. 4WREQ…-2X/…
6 DIL switch for address and baud rate setting (position B0 right), see page 10

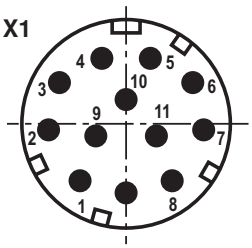
Control electronics (IAC-P), Electrical connections and allocation

Connector pin assignment X1, 11-pin + PE according to DIN EN 175201-804

Pin	No. and/or litz wire color [1]	Allocation interface A6	Allocation interface F6
1	1	24 VDC (u(t) = 19.4 V to 35 V), I_{max} = 1.7 A (for output stage)	
2	2	0 V ≙ load zero, reference for pins 1 and 9	
3	White	Enable input 9 to 35 V ≙ enable on	
4	Yellow	±10 V command value ***Q*** R_e > 50 kΩ	4 to 20 mA command value ***Q*** R_e = 100 Ω
5	Green	Reference for command values ***Q*** and ***p***	
6	Purple	±10 V actual value ***Q*** (limit load 5 mA)	4 to 20 mA actual value ***Q*** (load resistance max. 300 Ω)
7	Pink	0 to 10 V command value ***p*** R_e > 50 kΩ	4 to 20 mA command value ***p*** R_e = 100 Ω
8	Red	0 to 10 V actual value ***p*** (limit load 5 mA)	4 to 20 mA actual value ***p*** (load resistance max. 300 Ω)
9	Brown	Control voltage, level as pin 1, I_{max} = 0.3 A (for signal part and bus)	
10	Black	0 V reference potential for pins 3, 6, 8 and 11 (in the valve connected to pin 2)	
11	Blue	Error output 24 V (19.4 V to 35 V), 200 mA max. load	
PE	Green-yellow	Connected to cooling element and valve housing	

Connect shield to PE only on the supply side!

[1] Litz wire colors of the connection lines for mating connector with cable set (see accessories)

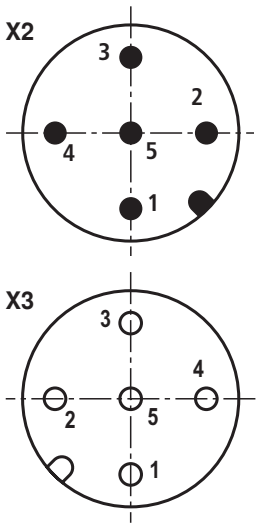


Control electronics (IAC-P), electrical connections and allocation

Connector pin assignment for CAN bus "X2"/"X3" (coding A), M12, 5-pin, pins/sockets

Pin	Allocation
1	n. c.
2	n. c.
3	CAN_GND
4	CAN_H
5	CAN_L

Transmission rate kbit/s 20 to 1000
Bus address 1 to 127
CAN-specific settings:
Baud rate and identifier can be set via the bus system and/or the DIL switches.

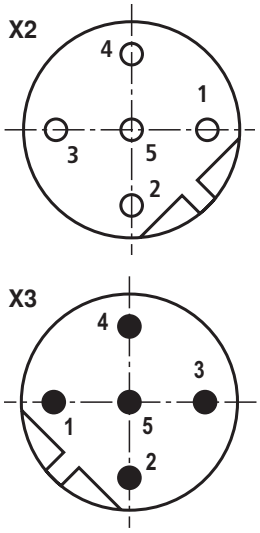


Connector pin assignment for PROFIBUS-DP, "X2"/"X3" (coding B), M12, 5-pin, socket/pins

Pin	Allocation
1	+5 V
2	RxD/TxD-N (A line)
3	D GND
4	RxD/TxD-P (B line)
5	Shield

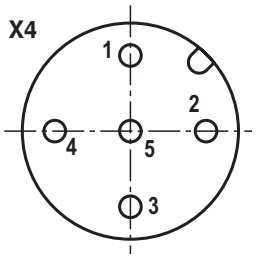
Transmission rate up to 12 MBaud
Bus address 1 to 126
Setting via DIL switches

The +5 V voltage of the IAC-P is available for an external terminating resistor.



External pressure sensor port "X4" (coding A), M12, 5-pin, socket

Pin	Allocation of voltage interface	Allocation of current interface
1	Supply 24 VDC	Supply 24 VDC
2	Signal (0...+5 V)	Signal (4...20 mA)
3	Zero 0 V (GND)	Zero 0 V (GND)
4	n. c.	n. c.
5	n. c.	n. c.



Notice:

We recommend connecting the shields on both sides over the metallic housings of the plug-in connectors.
Using connector pins will affect the shielding effect!
Internal screens are not required.

Control electronics (IAC-P), settings for CANopen and PROFIBUS-DP

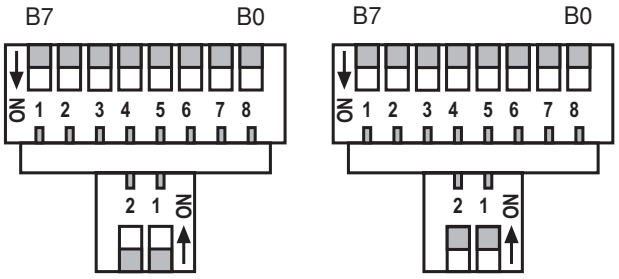
CANopen

B7	B6	B5	B4	B3	B2	B1	B0	HEX	Baud rate: B7, B6	Address range: B5 to B0
0	0	0	0	0	0	0	0	00 [1]	Standard 20 kBaud or re-programmed	1 = standard or re-programmed
0	0	0	0	0	0	0	1	01	20 kBaud	1 to 63
					to			to		
0	0	1	1	1	1	1	1	3F		
0	1	0	0	0	0	0	0	40	125 kBaud	1 = standard or re-programmed
0	1	0	0	0	0	0	1	41	125 kBaud	1 to 63
					to			to		
0	1	1	1	1	1	1	1	7F		
1	0	0	0	0	0	0	0	80	250 kBaud	1 = standard or re-programmed
1	0	0	0	0	0	0	1	81	250 kBaud	1 to 63
					to			to		
1	0	1	1	1	1	1	1	BF		
1	1	0	0	0	0	0	0	C0	500 kBaud	1 = standard or re-programmed
1	1	0	0	0	0	0	1	C1	500 kBaud	1 to 62
					to			to		
1	1	1	1	1	1	1	0	FE		
1	1	1	1	1	1	1	1	FF	250 kBaud	Monitor modus/ programming mode 1 = fixed

PROFIBUS-DP

B7	B6	B5	B4	B3	B2	B1	B0	HEX	Address range
0	0	0	0	0	0	0	0	00 [1]	125 = standard or re-programmed
0	0	0	0	0	0	0	1	01	1 to 126 with parameter channel
					to			to	
0	1	1	1	1	1	1	0	7E	
1	0	0	0	0	0	0	0	80	1 to 126 without parameter channel
					to			to	
1	1	1	1	1	1	1	0	FE	
1	1	1	1	1	1	1	1	FF	Monitor operation address 125

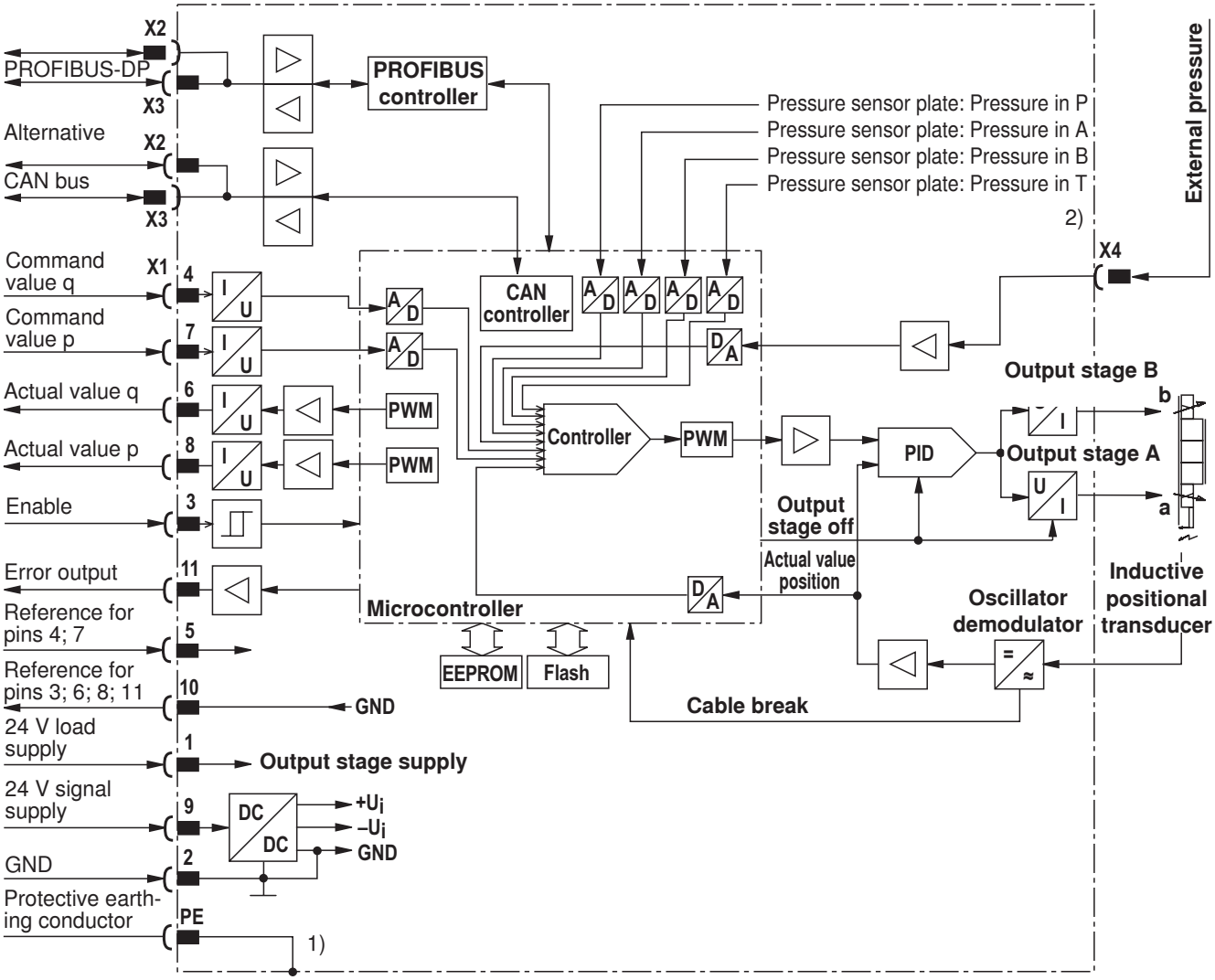
[1] Factory setting



Connection of the bus terminator with the two lower switches (only with PROFIBUS-DP):

Left figure: Bus terminator not connected
Right figure: Bus terminator connected (both switches to "ON")

Control electronics (IAC-P), block diagram



Command value: Positive command value 0 to +10 V (or 12 to 20 mA) at pin 4 and reference potential at pin 5 result in flow from P → A and B → T.

Negative command value 0 to –10 V (or 12 to 4 mA) at pin 4 and reference potential at pin 5 result in flow from P → B and A → T.

Actual value: Positive actual value 0 to +10 V (or 12 to 20 mA) at pin 6 and reference potential at pin 10 result in flow from P → A and B → T.

Negative actual value 0 to –10 V (or 12 to 4 mA) at pin 6 and reference potential at pin 10 result in flow from P → B and A → T.

Connection line: Recommendation: – Up to 25 m line length for pins 1; 2 and PE: 0.75 mm^2, otherwise 0.25 mm^2
– Up to 50 m line length for pins 1; 2 and PE: 1.00 mm^2

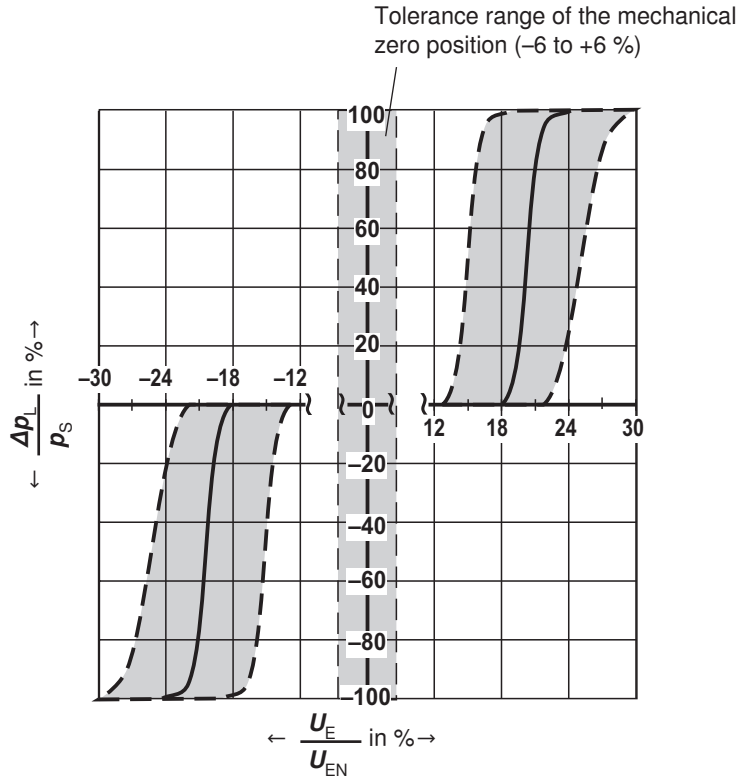
External diameter see sketch of mating connector

[1] The protective earthing conductor (PE) is connected to cooling element and valve housing

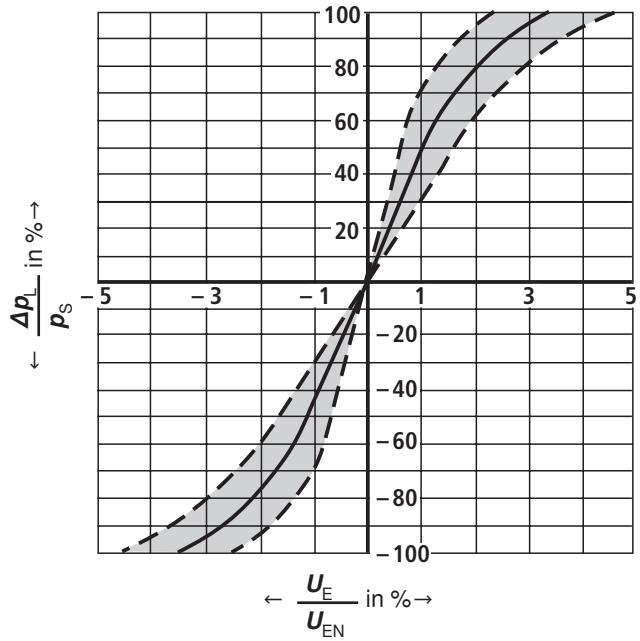
[2] Pressure transducer in P, A, B and T depending on ordering code or an external pressure sensor via the 5-pin M12 mating connector X4

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

Pressure signal characteristic curve (Q5 control spool), p_s = 100 bar

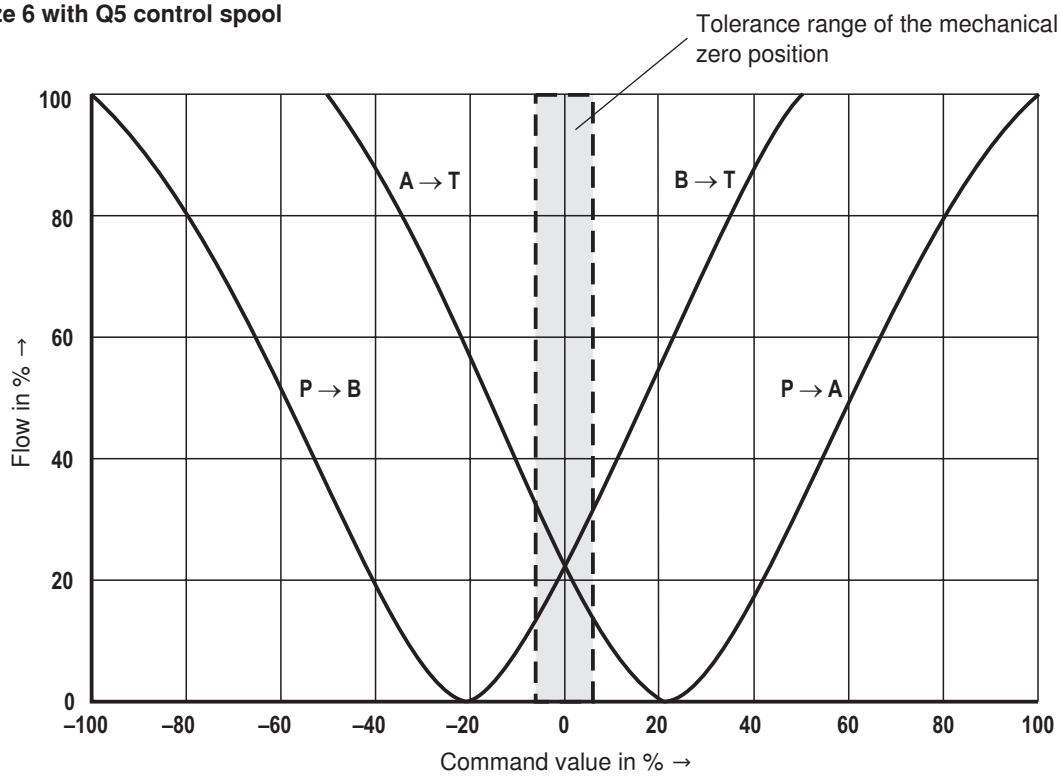


Pressure signal characteristic curve (V control spool), p_s = 100 bar

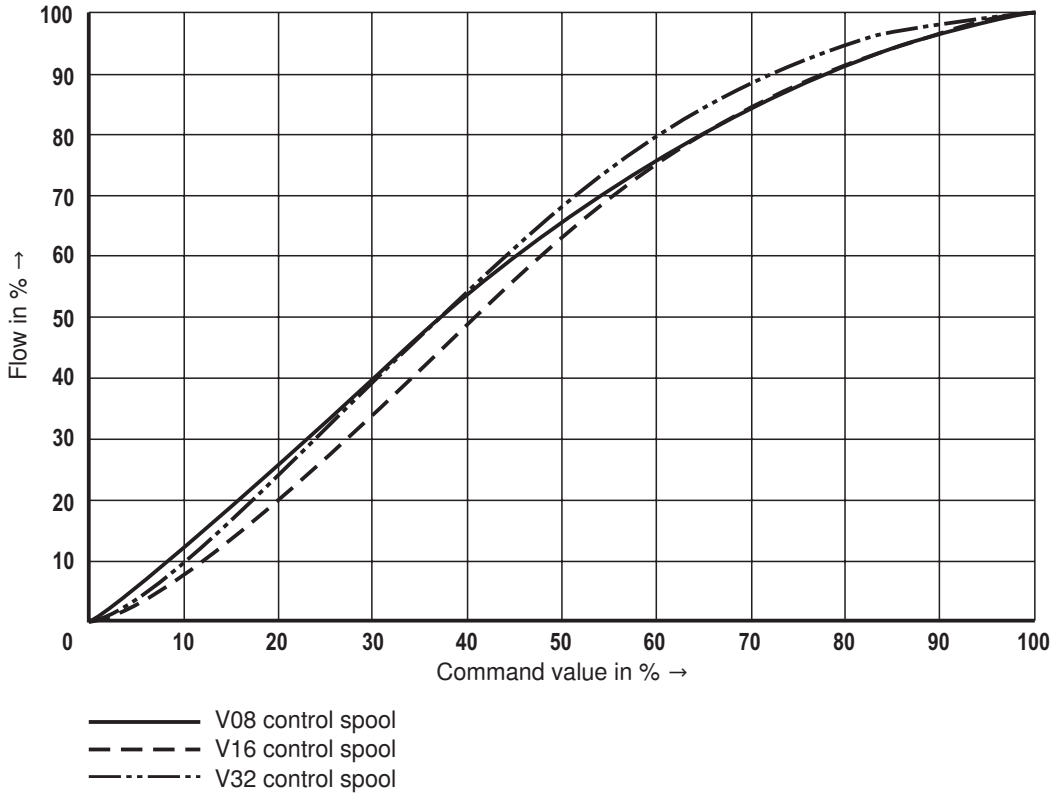


Characteristic curves: Size 6 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Flow, size 6 with Q5 control spool

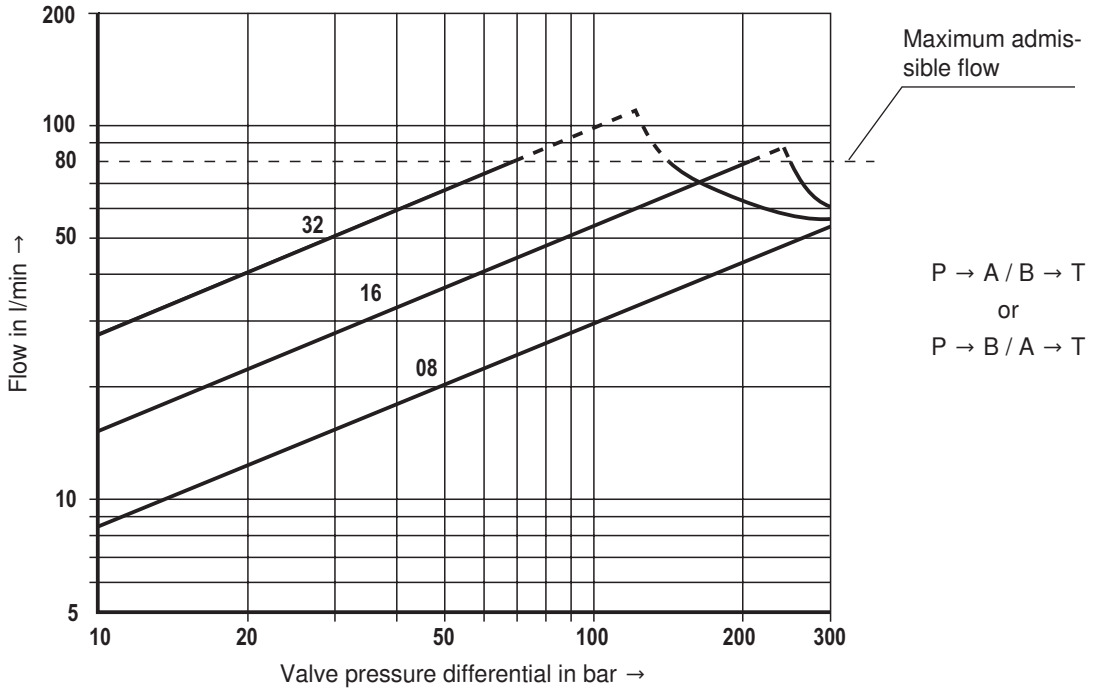


Flow, size 6 with V control spool

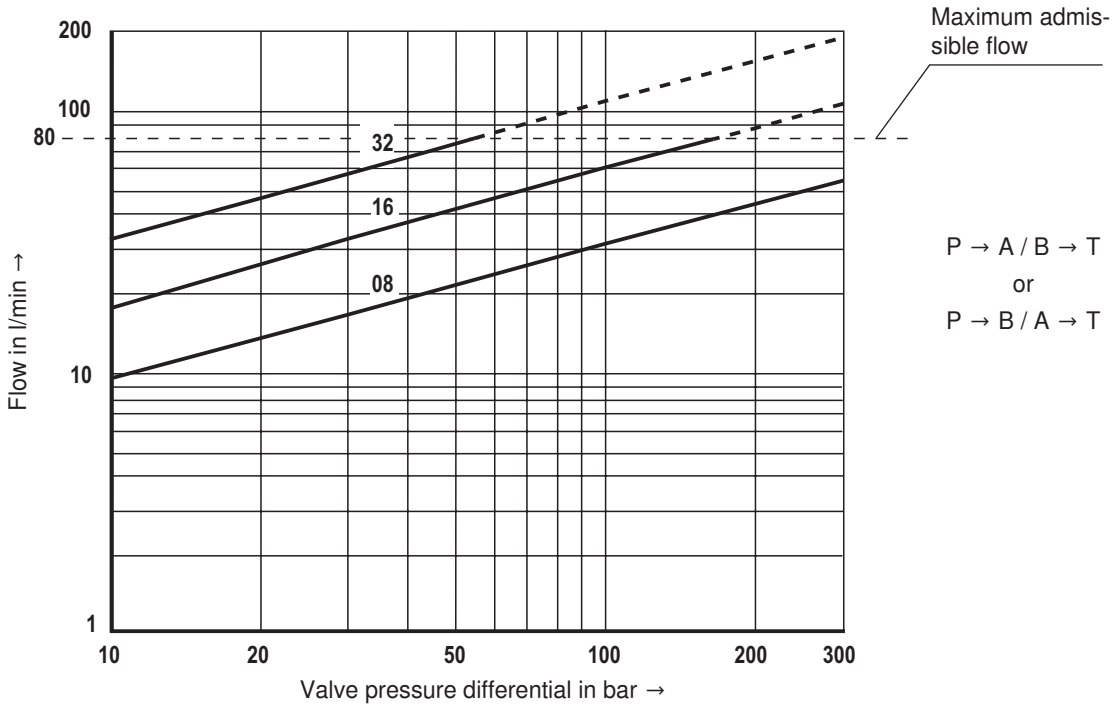


Characteristic curves: Size 6 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Flow/load function size 6 with Q5 control spool with maximum valve opening

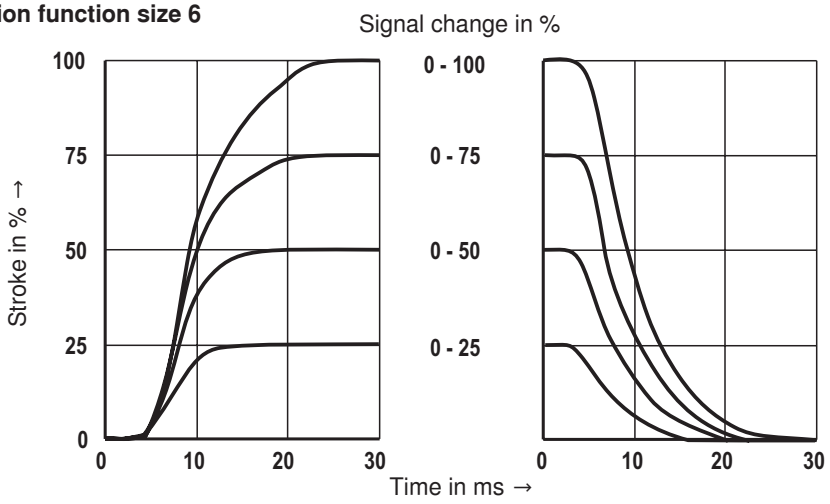


Flow/load function size 6 with V control spool with maximum valve opening

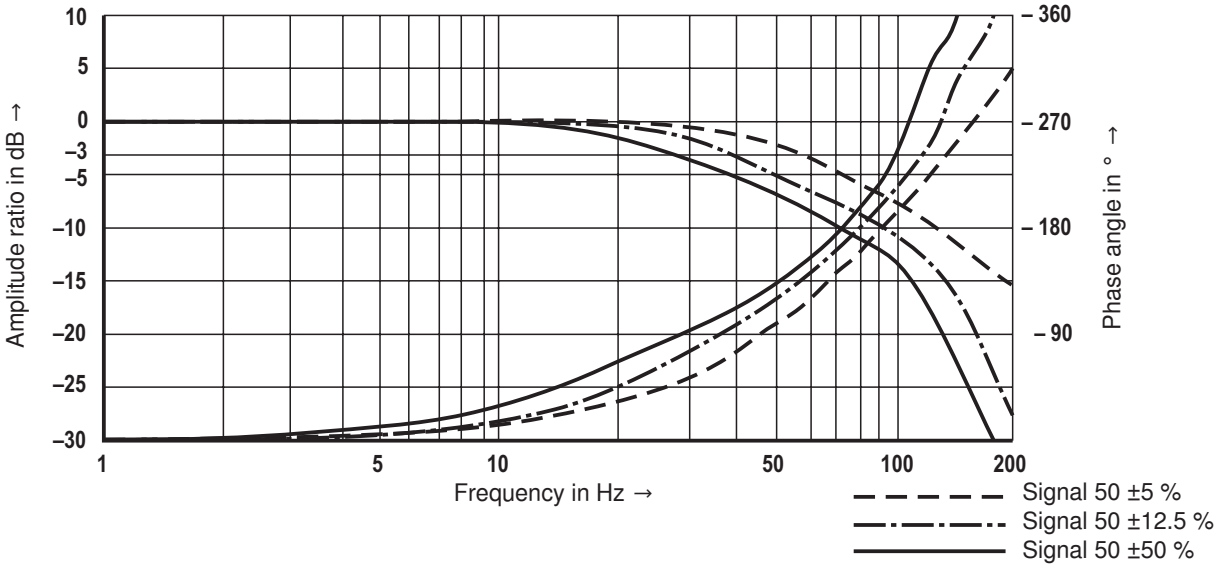


Characteristic curves: Size 6 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

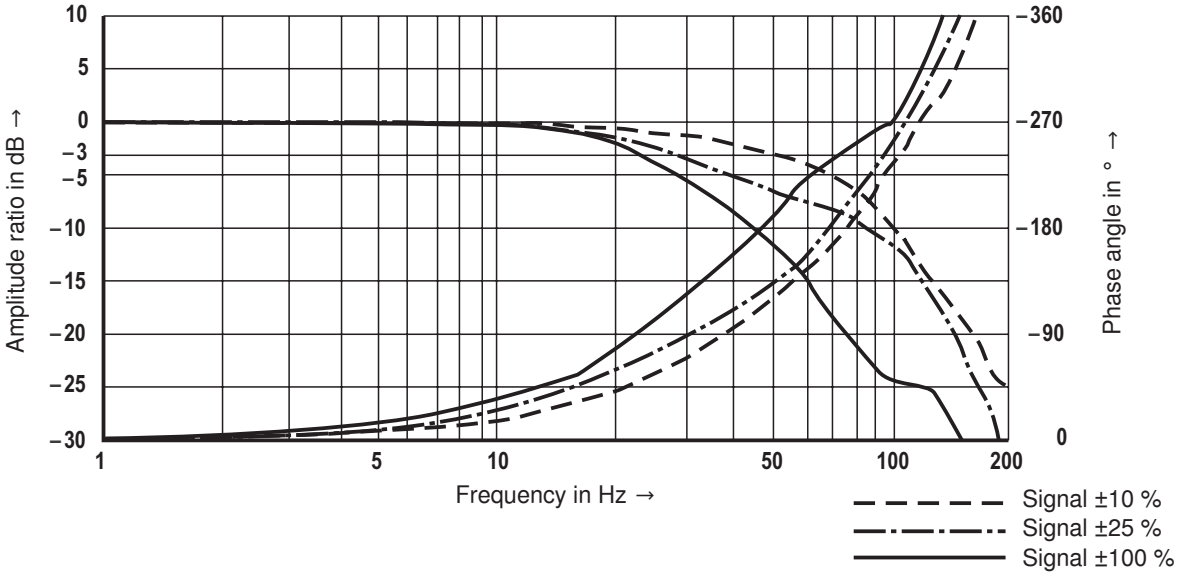
Transition function size 6



Frequency response size 6 with Q5 control spool, p_s = 10 bar

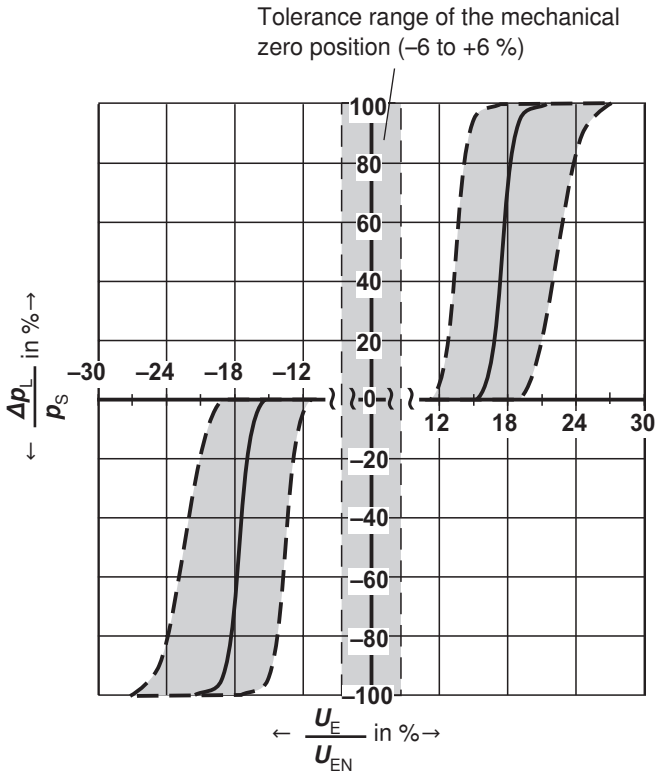


Frequency response size 6 with V control spool, p_s = 10 bar

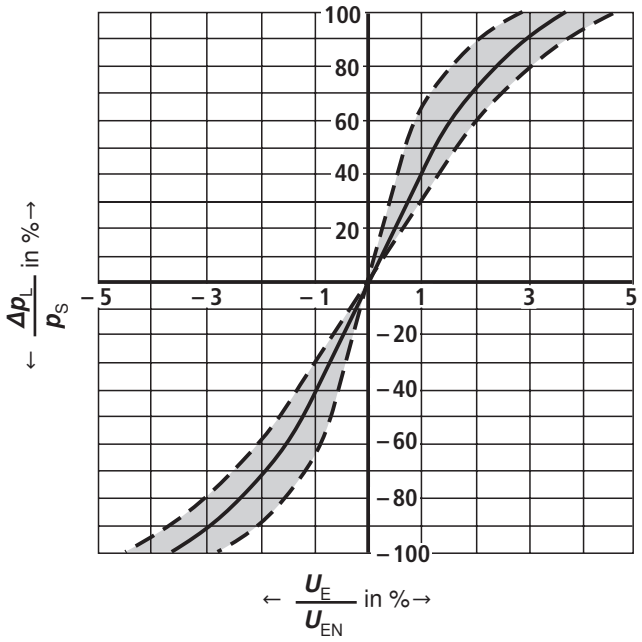


Characteristic curves: Size 10 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Pressure signal characteristic curve (Q5 control spool), p_s = 100 bar

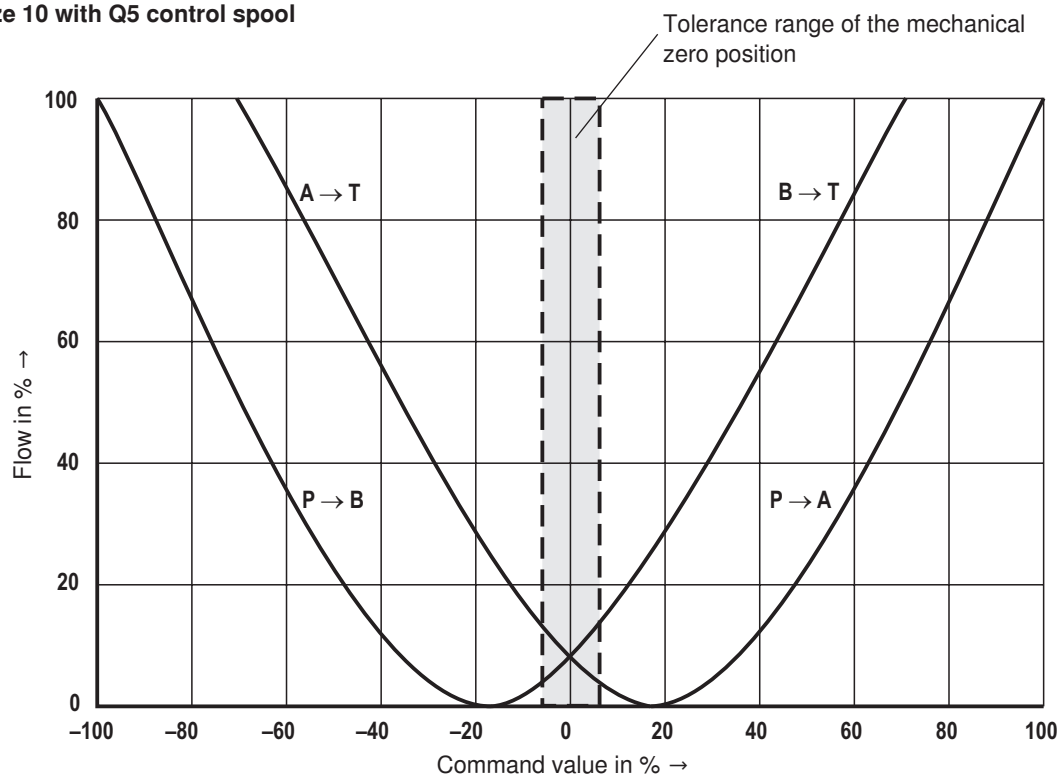


Pressure signal characteristic curve (V control spool), p_s = 100 bar

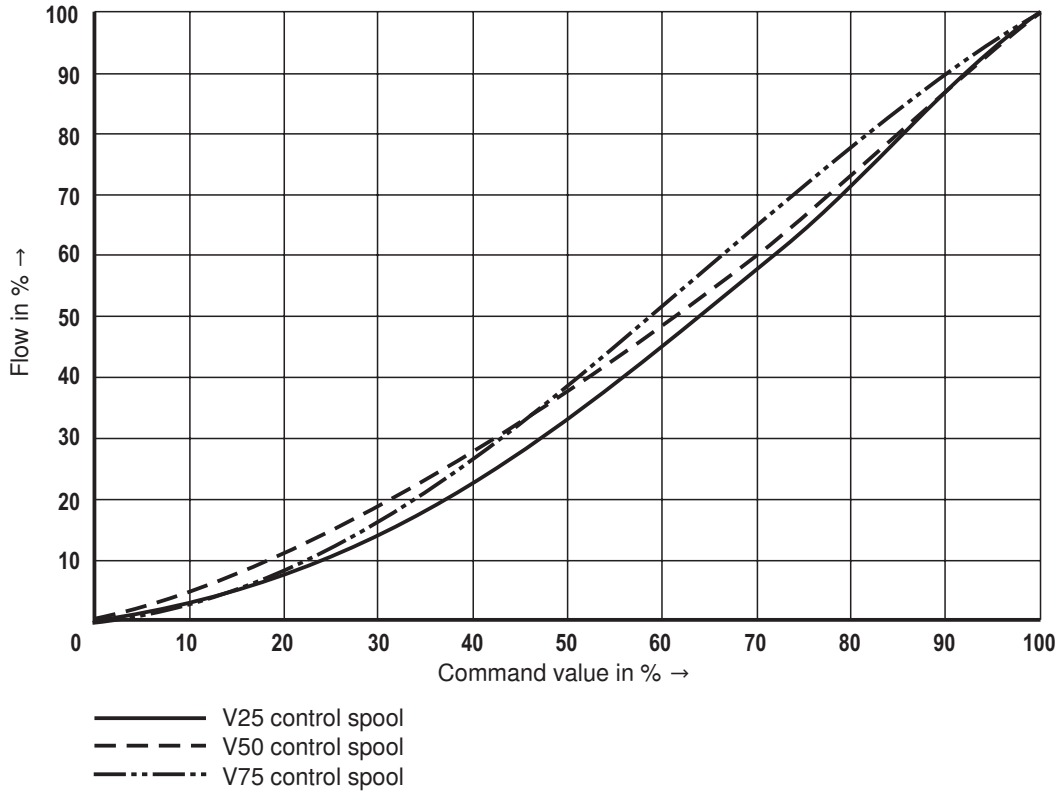


Characteristic curves: Size 10 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Flow, size 10 with Q5 control spool

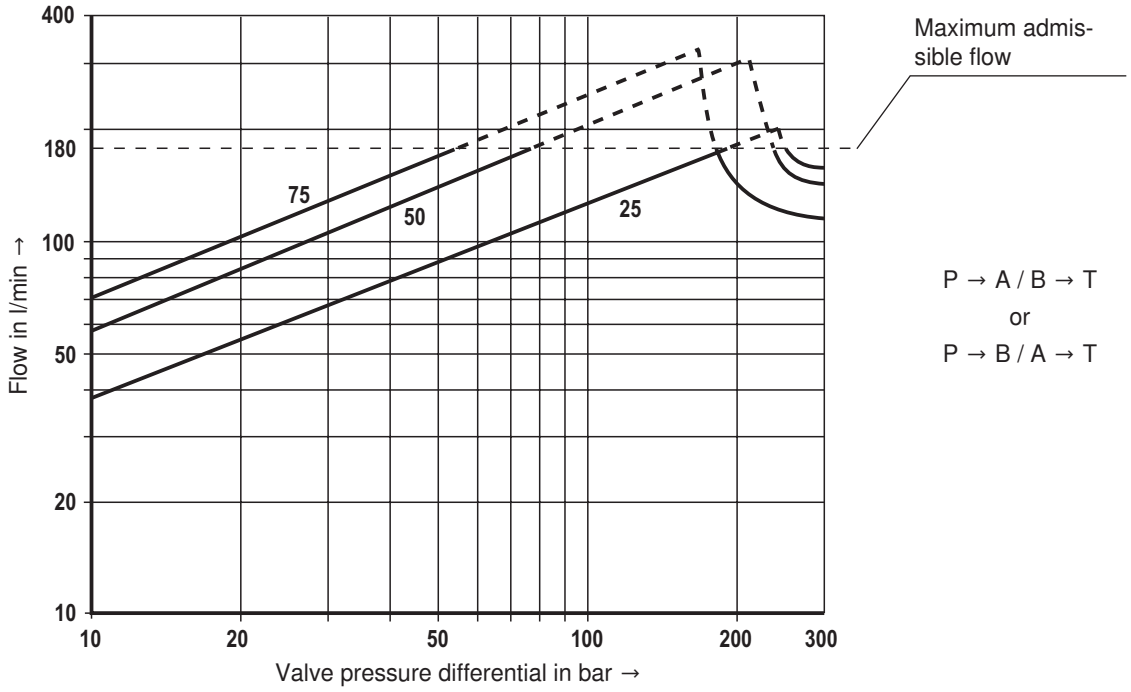


Flow, size 10 with V control spool

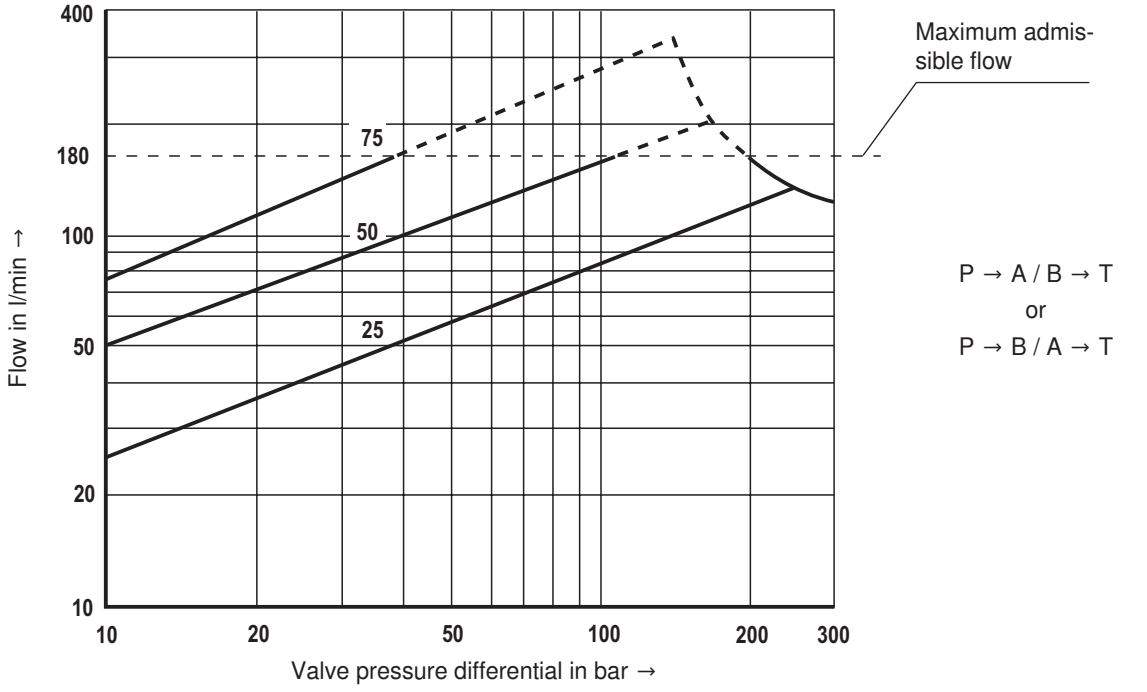


Characteristic curves: Size 10 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Flow/load function size 10 with Q5 control spool with maximum valve opening

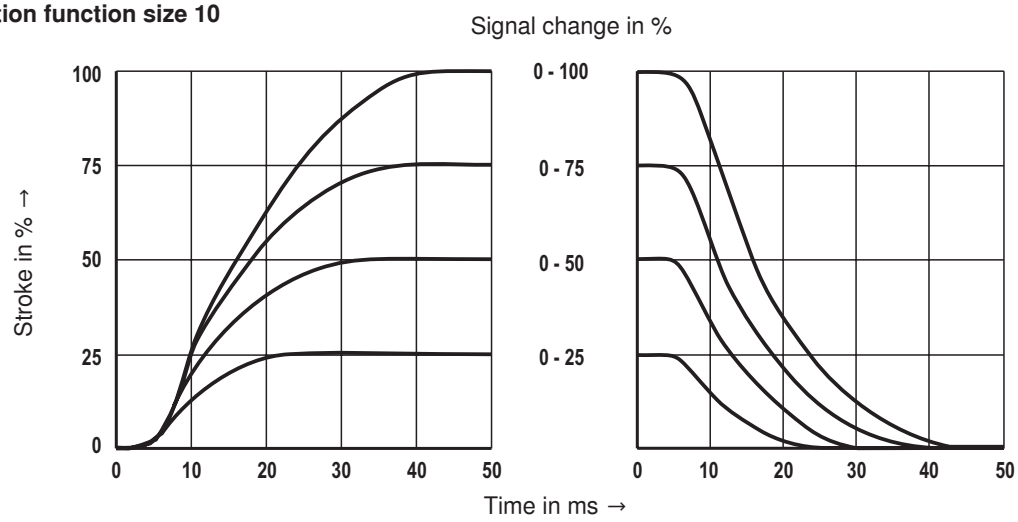


Flow/load function size 10 with V control spool with maximum valve opening

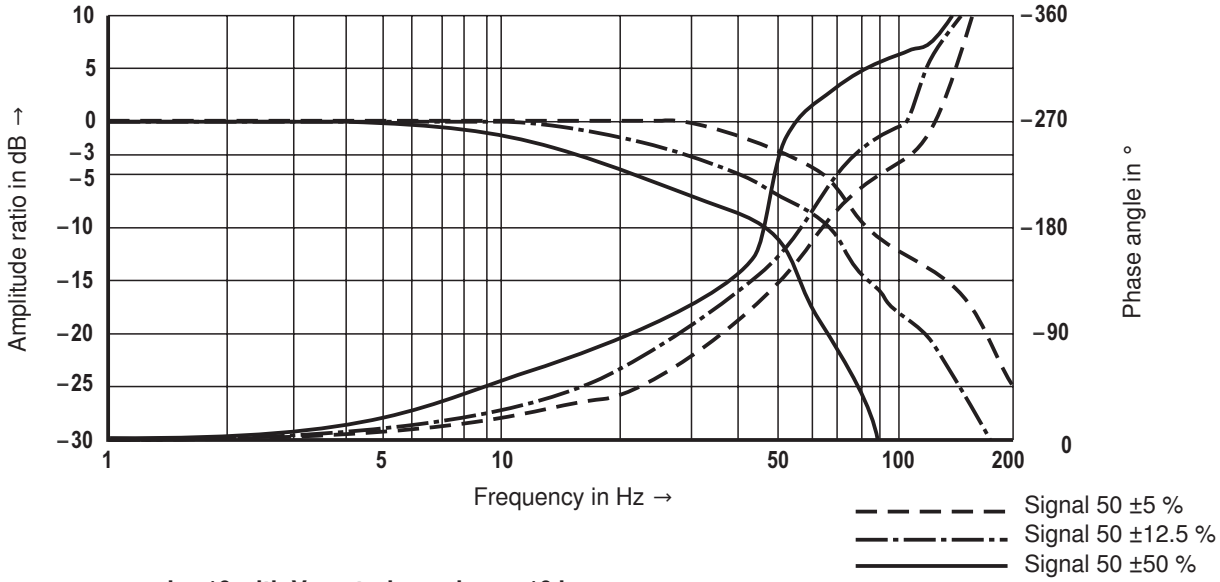


Characteristic curves: Size 10 (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

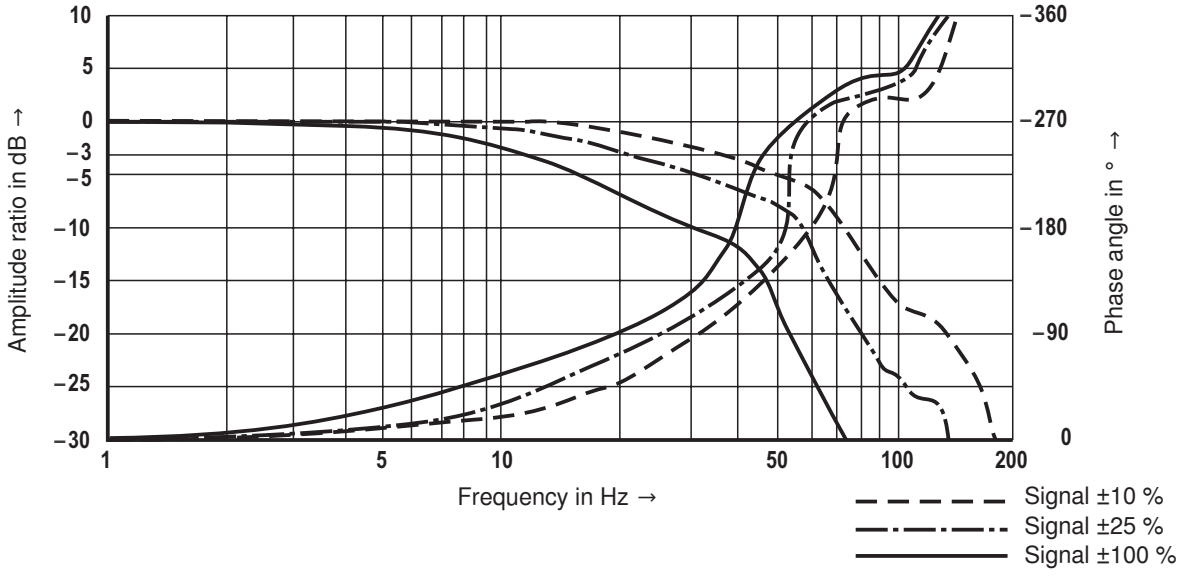
Transition function size 10



Frequency response size 10 with Q5 control spool, p_s = 10 bar

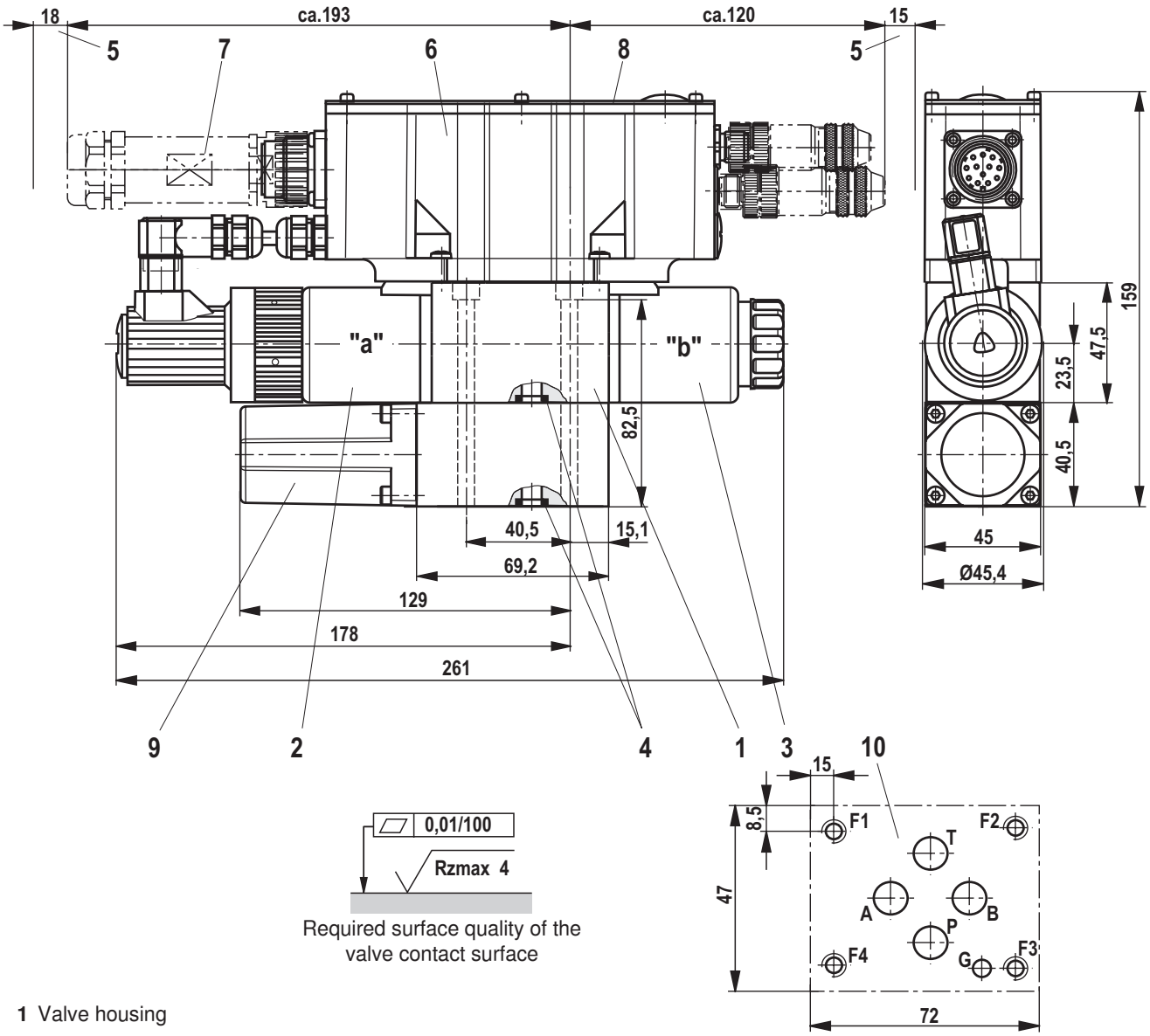


Frequency response size 10 with V control spool, p_s = 10 bar



Dimensions: Size 6 (dimensions in mm)

Type 4WREQ with integrated pressure sensors



Required surface quality of the valve contact surface

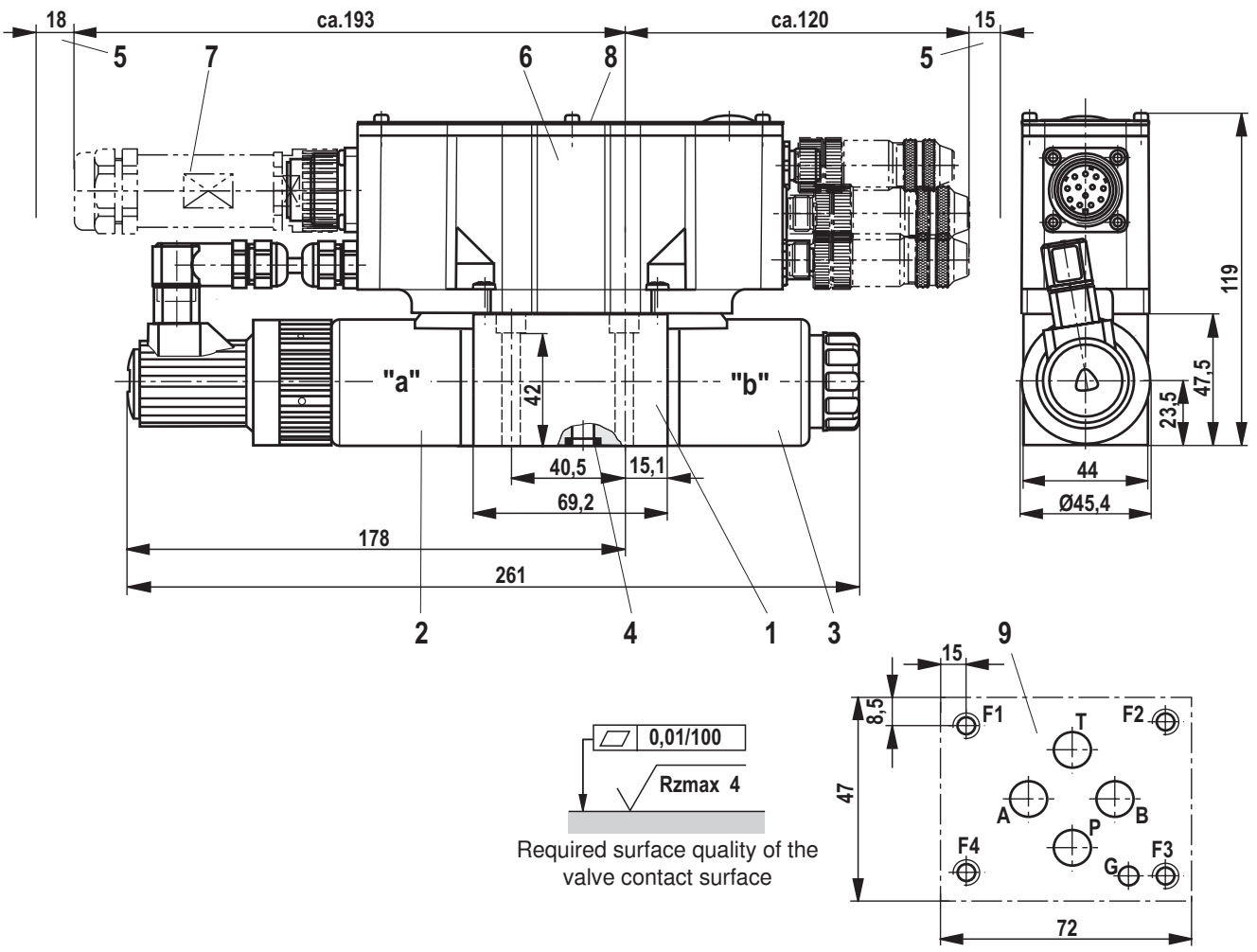
1 Valve housing
2 Proportional solenoid "a" with inductive position transducer
3 Proportional solenoid "b"
4 R-ring 9.81 x 1.5 x 1.78 (ports P, A, B, T)
5 Space required to remove the mating connector
6 Integrated digital control electronics
7 Mating connector according to DIN EN 175201-804; separate order, see page 25
8 Name plate
9 Integrated pressure transducer
10 Processed valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Deviating from the standard:
– Ports P, A, B, T Ø 8 mm
– Bore G can be omitted as the valve does not have a pin.

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

Subplates and valve mounting screws see page 23

Dimensions: Size 6 (dimensions in mm)

Type 4WREQ for external pressure sensor



Required surface quality of the valve contact surface

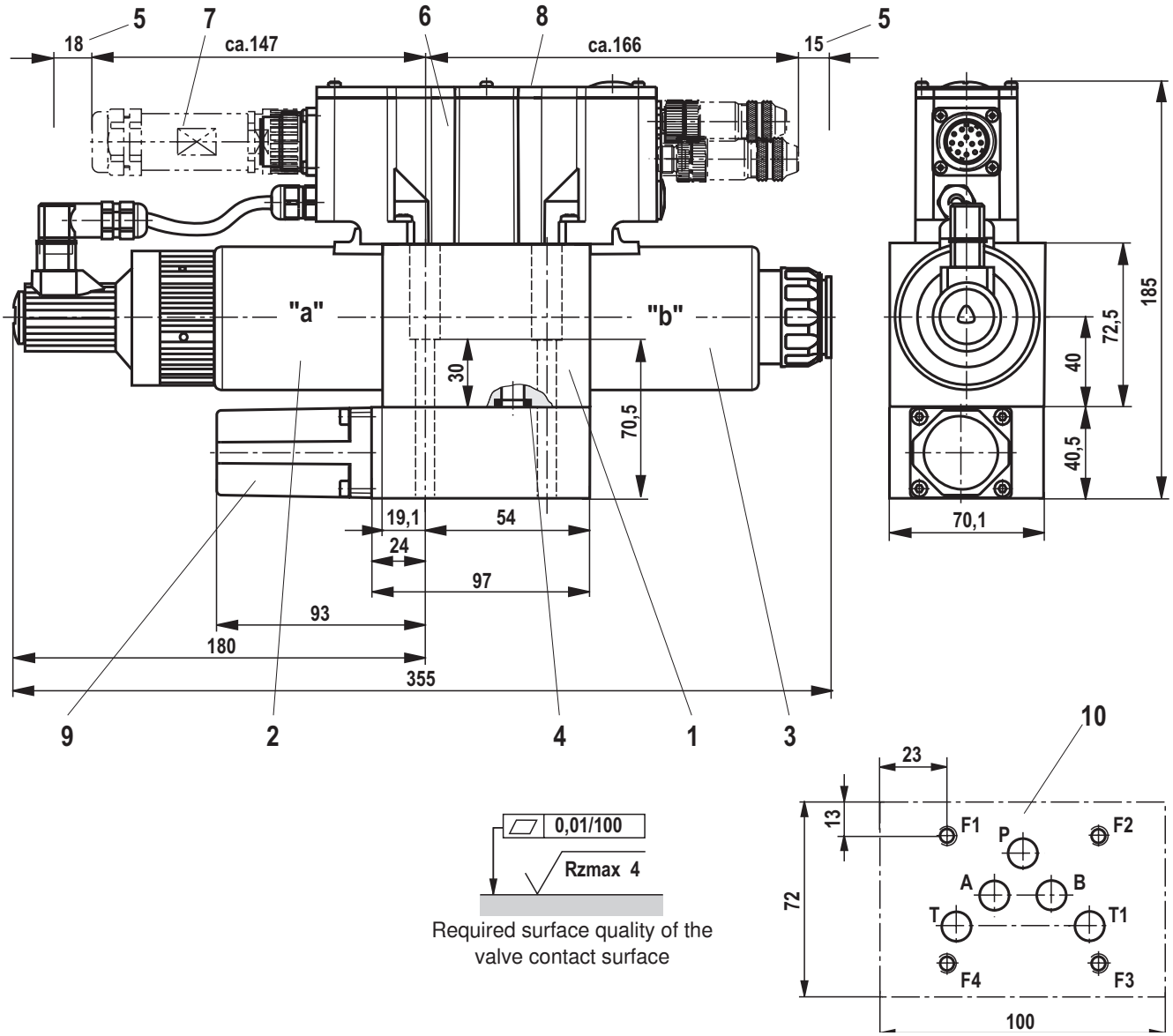
1 Valve housing
2 Proportional solenoid "a" with inductive position transducer
3 Proportional solenoid "b"
4 R-ring 9.81 x 1.5 x 1.78 (ports P, A, B, T)
5 Space required to remove the mating connector
6 Integrated digital control electronics
7 Mating connector according to DIN EN 175201-804; separate order, see page 25
8 Name plate
9 Processed valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Deviating from the standard:
– Ports P, A, B, T Ø 8 mm
– Bore G can be omitted as the valve does not have a pin.

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

Subplates and valve mounting screws see page 23

Dimensions: Size 10 (dimensions in mm)

Type 4WREQ with integrated pressure sensors



Required surface quality of the valve contact surface

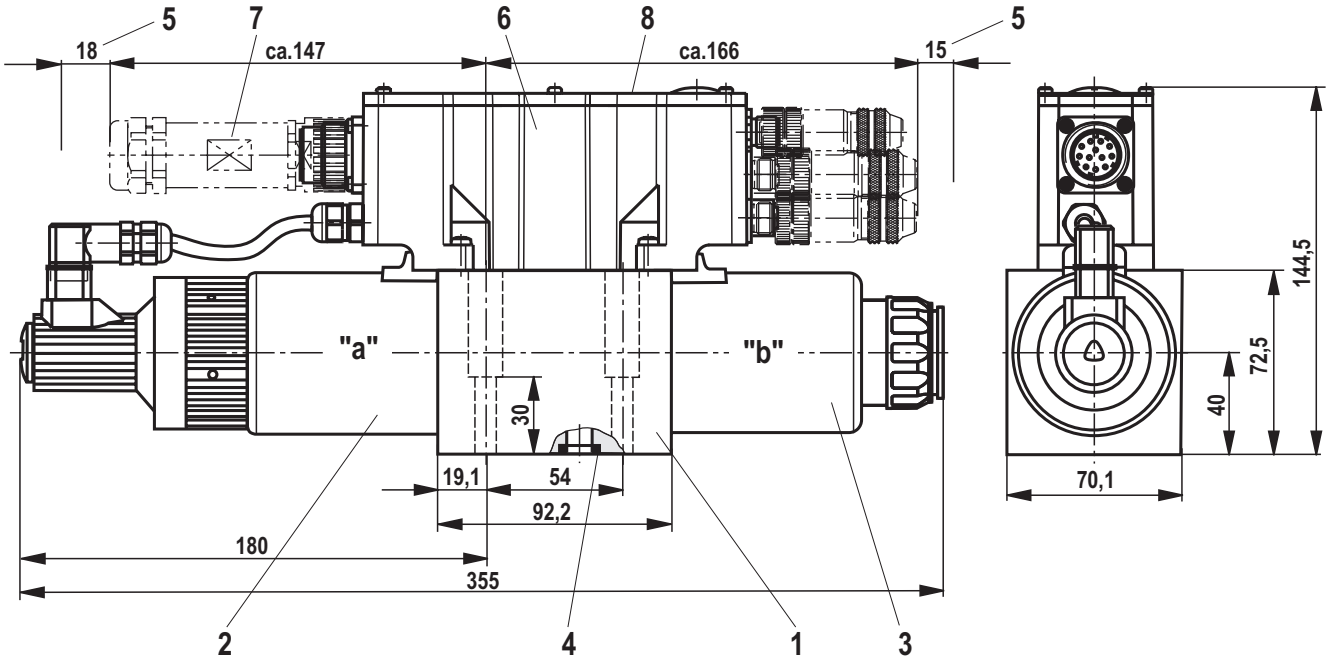
1 Valve housing
2 Proportional solenoid "a" with inductive position transducer
3 Proportional solenoid "b"
4 R-ring 13.0 x 1.6 x 2.0 (ports P, A, B, T1, T2)
5 Space required to remove the mating connector
6 Integrated digital control electronics
7 Mating connector according to DIN EN 175201-804; separate order, see page 25
8 Name plate
9 Integrated pressure transducer
10 Processed valve contact surface, porting pattern according to ISO 4401-05-04-0-05

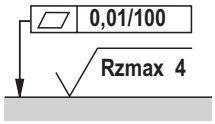
Notice!
The dimensions are nominal dimensions which are subject to tolerances.

Subplates and valve mounting screws see page 23

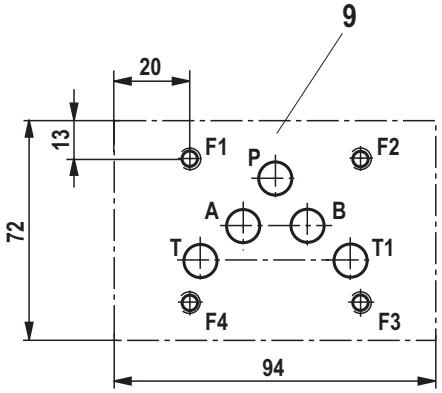
Dimensions: Size 10 (dimensions in mm)

Type 4WREQ for external pressure sensor





Required surface quality of the valve contact surface



1 Valve housing
2 Proportional solenoid "a" with inductive position transducer
3 Proportional solenoid "b"
4 R-ring 13.0 x 1.6 x 2.0 (ports A, B, P, T, T1)
5 Space required to remove the mating connector
6 Integrated digital control electronics
7 Mating connector according to DIN EN 175201-804; separate order, see page 25
8 Name plate
9 Processed valve contact surface, porting pattern according to ISO 4401-05-04-0-05

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

Subplates and valve mounting screws see page 23

Dimensions

Hexagon socket head cap screws		Material number
Size 6 with integrated pressure sensors	4x ISO 4762 - M5 x 90 - 10.9-flZn-240h-L Tightening torque M_A = 7 Nm ±10 %	R913000222
Size 6 with external pressure sensor	4x ISO 4762 - M5 x 50 - 10.9-flZn-240h-L Tightening torque M_A = 7 Nm ±10 % or 4x ISO 4762 - M5 x 50 - 10.9 Tightening torque M_A = 8.9 Nm ±10 %	R913000064
Size 10 with integrated pressure sensors	4x ISO 4762 - M6 x 80 - 10.9-flZn-240h-L Tightening torque M_A = 12.5 Nm ±10 % or 4x ISO 4762 - M6 x 80 - 10.9 Tightening torque M_A = 15.5 Nm ±10 %	R913000512
Size 10 with external pressure sensor	4x ISO 4762 - M6 x 40 - 10.9-flZn-240h-L Tightening torque M_A = 12.5 Nm ±10 % or 4x ISO 4762 - M6 x 40 - 10.9 Tightening torque M_A = 15.5 Nm ±10 %	R913000058

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

Subplates	Data sheet
Size 6	45052
Size 10	45054

Accessories (not included in the scope of delivery)

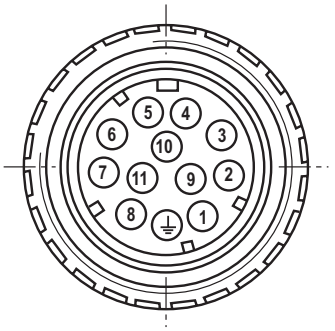
The following is required for the parameterization with PC:		CANopen	PROFIBUS-DP
1	Interface converter (USB)	VT-ZKO-USB/CA-1-1X/V0/0 Mat.no. **R901071963**	VT-ZKO-USB/P-1-1X/V0/0 Mat.no. **R901071962**
2	Commissioning software	WIN-PED 6 Download from www.boschrexroth.de\IAC	
3	Connection cable, 3 m	D-Sub / M12, coding A Mat.no. **R900751271**	D-Sub / M12, coding B Mat.no. **R901078053**

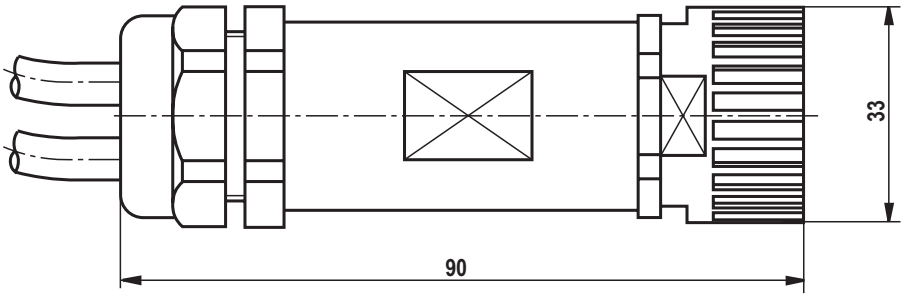
Accessories, port X1 (not included in the scope of delivery)

Mating connector for X1

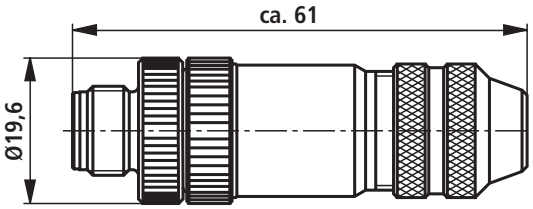
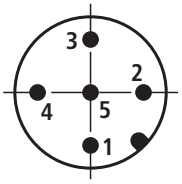
Mating connector according to DIN EN 175201 - 804 (11-pin + PE), plastic variant

- Mating connector without cable (assembly kit) Material no. **R900884671**
- Mating connector with cable set 2 x 5 m 12-pin Material no. **R900032356**
- Mating connector with cable set 2 x 20 m 12-pin Material no. **R900860399**

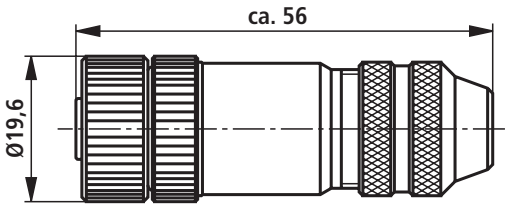
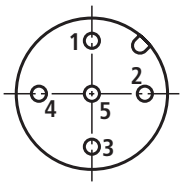
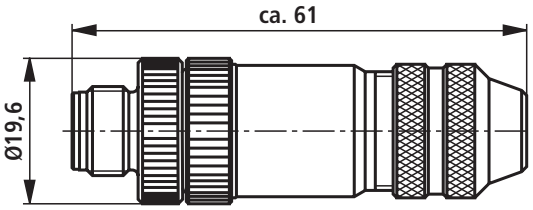
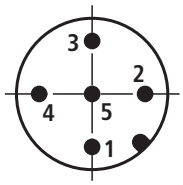
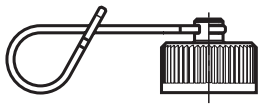




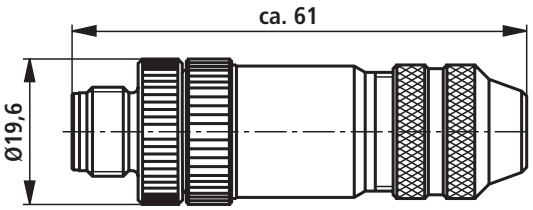
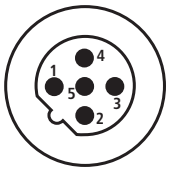
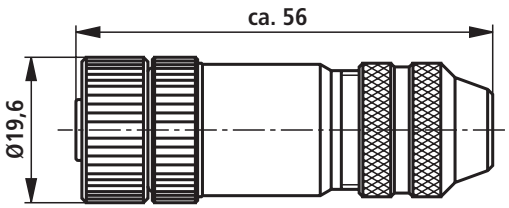
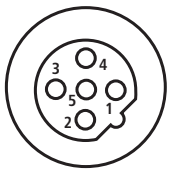
Accessories, sensor connection (not included in the scope of delivery)

Description	View, dimensions	Pole pattern, order details
X4 (analog sensor) Plug-in connector, 5-pin, M12, pin, A coding, straight line connector in metal design		 Mat no.: **R901075542** (cable diameter 4 to 6 mm)

Accessories, CAN bus (A coding) (not included in the scope of delivery)

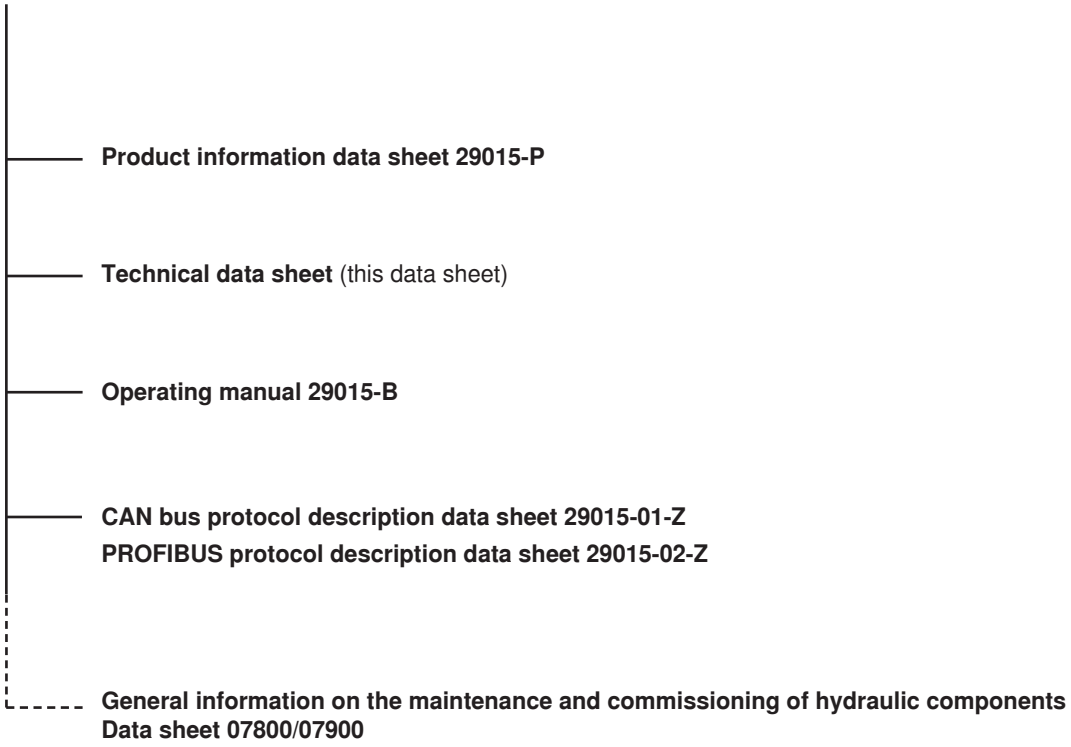
Description	View, dimensions	Pole pattern, order details
X2 Round plug-in connector, can be assembled, 5-pin, M12 Straight mating connector in metal design.		 Mat no.: **R901076910** (line diameter 6 to 8 mm)
X3 Round plug-in connector, can be assembled, 5-pin, M12 Straight line connector in metal design.		 Mat no.: **R901076906** (line diameter 6 to 8 mm)
M12 cap Dust protection only for line connector.		Mat no.: **R901075564**

Accessories, PROFIBUS (B coding) (not included in the scope of delivery)

Description	View, dimensions	Pole pattern, order details
X2 Round plug-in connector, can be assembled, 5-pin, M12 Straight line connector in metal design.		 Mat no.: **R901075545** (line diameter 6 to 8 mm)
X3 Round plug-in connector, can be assembled, 5-pin, M12 Straight mating connector in metal design.		 Mat no.: **R901075550** (line diameter 6 to 8 mm)
M12 protective cap (only for mating connector)		Mat no.: **R901075563**

Project planning/maintenance instructions/additional information

Product documentation for IAC-P



Commissioning software WIN-PED 6 and documentation on the Internet: www.boschrexroth.com/IAC

Maintenance instructions:

- The devices have been tested in the factory and are supplied with default settings.
- Only complete devices can be repaired. Repaired devices are returned with default settings. User-specific settings are not accepted. The machine end-user will have to retransfer the corresponding user parameters.

Notices:

- Connect the valve to the supply voltage only when this is required for the functional sequence of the machine.
- Do not use electrical signals led out via control electronics (e.g. "No error" signal) for switching safety-relevant machine functions (In this connection also refer to EN ISO 13849 "Safety of machinery - Safety-related parts of control systems").
- If electro-magnetic interference must be expected, take appropriate measures to ensure the function (depending on the application, e.g. shielding, filtering)!

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Notes

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