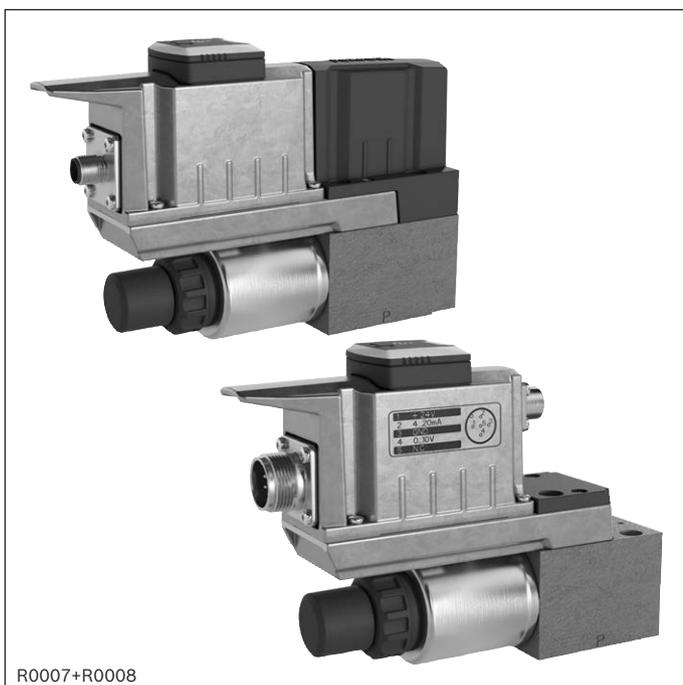


Proportional pressure relief valve, direct operated, with or without integrated digital electronics (OBED)

Type DBET, DBETE and DBETA



R0007+R0008

- ▶ Size 6
- ▶ Component series 7X
- ▶ Maximum operating pressure 500 bar
- ▶ Maximum flow 5 l/min



Features

- ▶ For subplate mounting
- ▶ Porting pattern according to ISO 4401-03-02-0-05
- ▶ Pressure-controlled, optional
- ▶ With integrated digital electronics (OBED), optional
- ▶ CE conformity according to EMC Directive 2014/30/EU
- ▶ Linear command value pressure characteristic curve
- ▶ With integrated and external pressure sensor, optional
- ▶ Pressure sensor adjustable for various applications
- ▶ Digital (IO-Link, Bluetooth®) and analog interface, optional
- ▶ Optional via Bluetooth, fast and easy analysis and structural adjustment by means of app function

Contents

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
DBET		- 7X	/			Y		G24						*

01	Proportional pressure relief valve	DBET
02	For external control electronics	no code
	With integrated electronics (OBED)	E
	With integrated electronics (OBED), pressure-controlled	A
03	Component series 70 ... 79 (70 ... 79: unchanged installation and mounting dimensions)	7X

Pressure measurement

04	Without	no code
	In channel P (only with integrated electronics "A", pressure-controlled)	P

Connection

05	Without	no code
	To channel A	A

Pressure rating

06	50 bar	50
	100 bar	100
	200 bar	200
	250 bar	250
	315 bar	315
	350 bar	350
	420 bar	420
	500 bar (only "without ref." for pos. 5)	500
07	Pilot oil return external ¹⁾	Y

Pressure sensor (only with integrated electronics "A", pressure-controlled)

08	Internal	no code
	External	A ²⁾

Supply voltage

09	Direct voltage 24 V	G24
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Coil

10	1600 mA	no code
	800 mA (only with external control electronics)	-8

Electrical connection

11	- Type DBET	
	Without mating connector; connector DIN EN 175301-803	K4 ³⁾
	- Type DBETE and DBETA – Version "A1", "F1"	
	Without mating connector; connector DIN EN 175201-804	K31 ³⁾
	- Type DBETE and DBETA – Version "L1"	
	Without mating connector; connector cable sets M12, 4-pole	K24 ³⁾

Electronics interface

12	External control electronics	no code
	Command value input and actual value output 0 ... 10 V ⁴⁾	A1
	Command value input and actual value output 4 ... 20 mA ⁴⁾	F1
	IO-Link interface (only with integrated electronics "E" and "A"; for class B) ⁵⁾	L1

Accessories, service interface

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
DBET		-	7X	/				Y		G24				*

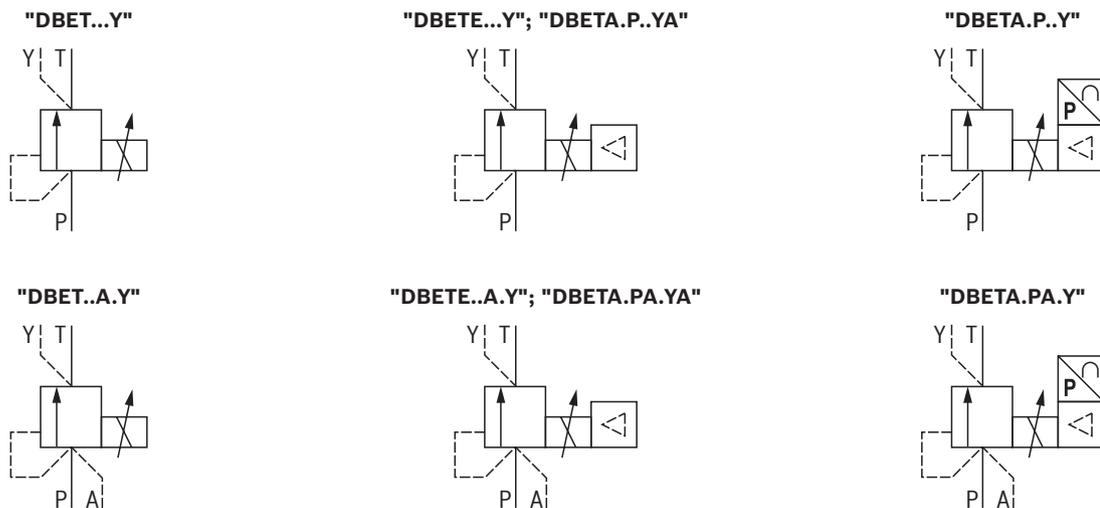
13	Without Bluetooth® interface	no code
	With Bluetooth® interface (only with integrated electronics "E" and "A")	B

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

14	NBR seals	M
	FKM seals	V
15	Further details in the plain text	

- By default, port Y is closed with a G1/4 plug screw. It can be connected to provide external pilot oil return if required. In this case, port T should be closed in the block to prevent internal pilot oil return to port T.
- Pressure sensor adjustment via "easy2connect app" (for electrical connections and assignment, see page 12; pressure sensor, separate order, see page 21)
- Mating connectors and cable sets, separate order, see page 21 and data sheet 08006.
- Command value input switchable via Bluetooth® interface "B" ("A1" ↔ "F1")
- Only for use in the industrial area according to IO-Link specification and EN 61131-9. When used in the household / small business area, additional EMC measures are required for the I/O-Link system.

Symbols



Function, section: Type DBET**General**

Proportional pressure relief valves of type DBET are remote control valves with seat design and are used for system pressure limitation. Operation by means of a proportional solenoid with detachable coil.

The interior of the pole tube is connected to port T or Y and is filled with the hydraulic fluid. Dependent on the electric command value, these valves can be used to steplessly set the system pressure to be limited.

The valves mainly consist of the housing (1), a proportional solenoid (2), the valve seat (3) and the valve poppet (4).

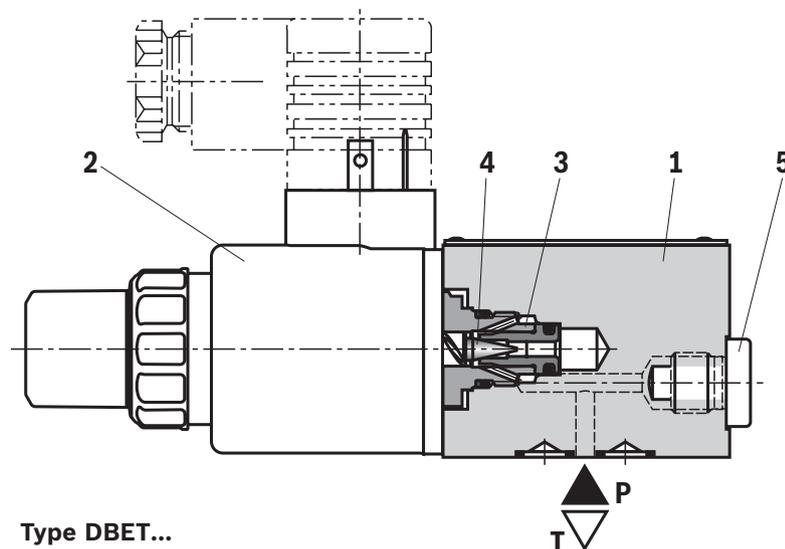
Basic principle

For the setting of the system pressure, a command value is specified at the control electronics. Dependent on the command value, the electronics actuate the solenoid coil with electric current. The proportional solenoid converts the electric current into mechanical force that acts on the valve poppet (4) via the armature plunger. The valve poppet (4) pushes onto the valve seat (3) and blocks the connection between port P and T or Y. If the hydraulic force which acts on the valve poppet (4) is equal to the solenoid force, the valve regulates the set pressure by lifting the valve poppet (4) from the valve seat (3) and thereby letting hydraulic fluid flow from port P to T or Y. By default, port Y is closed with a G1/4 plug screw (5). It can be connected to provide external pilot oil return if required. In this case, port T should be closed in the block to prevent internal pilot oil return to port T.

If the command value is zero, the control electronics only applies the minimum control current to the proportional solenoid (2) and the minimum set pressure is applied.

When used as pilot control valve of 2-way cartridge valves:

- ▶ Set-up also on directional control valve cover "LFA_WE.." with the suitable pressure clamp P-A.
- ▶ Simplifies use and set-up in existing systems when the previous pilot control valve uses the internal connection P-A.



Function, section: Type DBETE and DBETA

Type DBETE – with integrated digital electronics (OBED)
With regard to function and set-up, they correspond to valve type DBET.

On the proportional solenoid, there is the digital on-board electronics (OBED). It may be equipped with different electric interfaces.

- ▶ Analog interface (XH1)
 - Interface "A1" (command value 0 ... 10 V)
 - Interface "F1" (command value 4 ... 20 mA)
- ▶ Digital interface (XH5)
 - IO-Link "L1"

Type DBETA – with integrated digital electronics (OBED) and pressure control

With regard to function and set-up, they correspond to valve type DBETE.

This valve version moreover has a pressure transducer (11). The latter is either directly attached on the valve (12) or may be externally integrated in the system via the interface (X2N).

The pressure in channel P is captured by means of the pressure transducer (11) and regulated independently of the flow via the integrated electronics (10).

The pressure in channel A is made available via the connector (XH1, XH5) as analog or digital actual value (0 ... 10 V or 4 ... 20 mA or in the unit [bar]).

If the command value is zero, the integrated electronics only applies the minimum control current to the proportional solenoid and the minimum set pressure is applied.

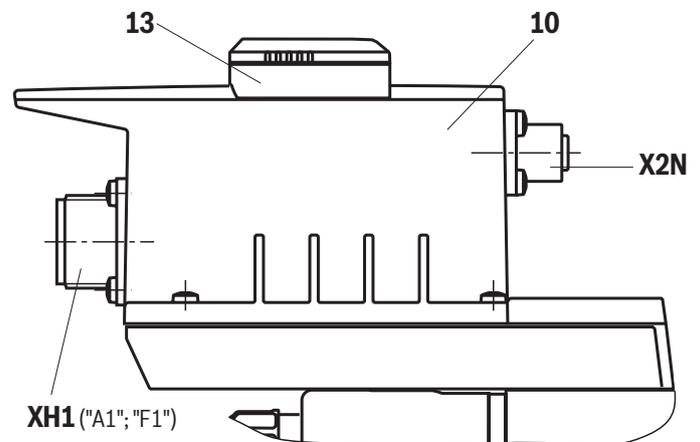
Bluetooth® function

The digital on-board electronics (OBED) provides the user with a digital diagnosis interface via a Bluetooth® dongle (Bluetooth® Low Energy). It may also be ordered as accessory and retrofitted. The Bluetooth® dongle may only be attached when the valve is de-energized.

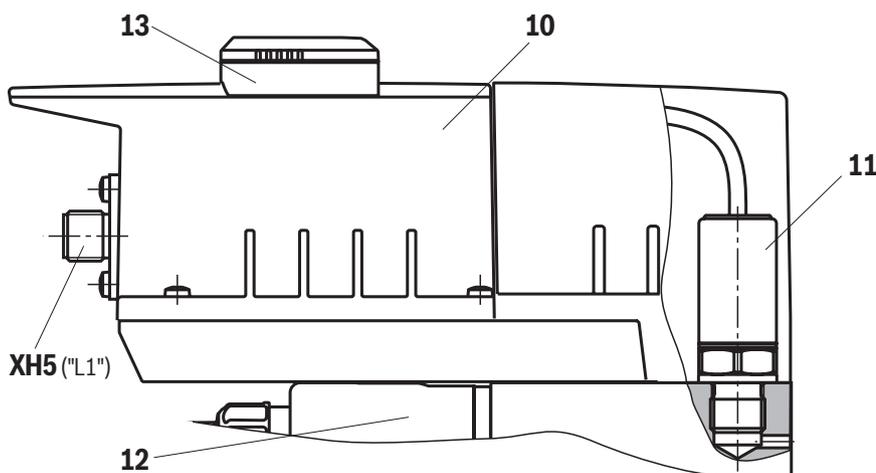
By means of the "easy2connect app", the valve status can be displayed and configurations at the valve can be carried out via the Bluetooth® dongle (13).

Notice:

- ▶ The "easy2connect app" can be downloaded in the App Store (iOS) or Google Play Store (Android).
- ▶ Further information on the Bluetooth® dongle VT-ZBT-1-1X (R901505294) as well as set-up and installation of the app is available in data sheet 30581 and operating instructions 30581-B.



Type DBETA.P..YA...



Type DBETA ...

Function: "easy2connect app"

Automatic controller shut-off (reduction of pressure overshoots after command value modification)

→ Can be found in the app under "Controller under expert mode".

The customer is required to provide a flow presetting, which must be entered in the app under "Controller".

By activating this function, an automatic switch-over from closed-loop to open-loop operation is performed in the event of rapid command value changes in order to reduce overshooting of the controller.

After the closed-loop error, automatic switch-over to closed-loop operation takes place again.

For further information, see functional description 29263-FK.

Adjustment of pressure command value characteristic curve

→ Can be found in the app under "Controller".

For applications with non-linear relationship between the actual pressure value and the pressure command value, an individual pressure command value characteristic curve can be stored. By entering a maximum of 10 increasing support points, the pressure command value characteristic curve can be defined.

Among other things, the function can be used for replacement of the following valve families:

- ▶ DBETRE, series 2X (data sheet 29168)
- ▶ DBETR, series 1X (data sheet 29166)
- ▶ DBETBEX, series 1X (data sheet 29151)
- ▶ DBETBX, series 1X (data sheet 29150)

For further information, see functional description 29263-FK.

Technical data

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

General	
Type of connection	Subplate mounting
Porting pattern	ISO 4401-03-02-0-05
Weight	<ul style="list-style-type: none"> ▶ "DBET" kg 1.4 ▶ "DBETE"; "DBETA.P..YA" kg 2.0 ▶ "DBETA" kg 2.2
Installation position	Any (preferably horizontal)
Ambient temperature range	<ul style="list-style-type: none"> ▶ Without "OBED" °C -20 ... +80 ▶ With "OBED" °C -20 ... +60
Storage temperature range	°C -20 ... +80
Maximum storage time	Years 1 (if the storage conditions are observed, refer to the operating instructions 07600-B)
Maximum relative humidity (no condensation)	% 97
Protection class according to EN 60529	IP65 (if suitable and correctly mounted mating connectors are used)
MTTF _D value according to EN ISO 13849	Years 150 (for further details see data sheet 08012) ¹⁾
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 / 24 h / 3 axes
Transport shock according to DIN EN 60068-2-27	15 g / 11 ms / 3 shocks / 3 axes
Conformity	<ul style="list-style-type: none"> ▶ CE according to EMC directive 2014/30/EU, tested according to EN 61000-6-2 and EN 61000-6-3 ²⁾ ▶ RoHS directive 2011/65/EU ³⁾

¹⁾ "OBED" voltage supply switched off.

²⁾ Only valves with "OBED".

³⁾ The product fulfills the substance requirements of the RoHS directive 2011/65/EU.

Technical data

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

Hydraulic			
Maximum operating pressure ⁴⁾	▶ Port P, A, B		
	– "DBET"; "DBETE"	bar	500
	– "DBETA" (pressure ratings 50, 100)	bar	250
	– "DBETA" (pressure ratings 200, 250, 315, 350, 420, 500)	bar	500
	– "DBET..A.Y", "DBETE..A.Y", "DBETA.PA.Y"	bar	450
	▶ Port T	bar	Separate and depressurized to the tank ⁵⁾
Hydraulic fluid			See table page 3
Hydraulic fluid temperature range		°C	–20 ... +80
Viscosity range	▶ Recommended	mm ² /s	30 ... 46
	▶ Maximum admissible	mm ² /s	15 ... 380
Maximum admissible degree of contamination of the hydraulic fluid; cleanliness class according to ISO 4406 (c)			Class 20/18/15 ⁶⁾
Maximum flow ⁷⁾	▶ Recommended ⁸⁾	l/min	2.5
	▶ Maximum admissible	l/min	5
Maximum set pressure ⁹⁾		bar	50; 100; 200; 250; 315; 350; 420; 500
Minimum set pressure with command value 0	▶ Port P, A	bar	See characteristic curves page 13
Minimum line volume		ml	20

⁴⁾ The summated pressure of all ports must not exceed 1030 bar (e.g. port P 500 bar + port A 500 bar + port T 30 bar + port B 0 bar = 1030 bar). To prevent damage to the pressure sensors used at the individual pressure ratings, the specified maximum operating pressure must not be exceeded.

⁵⁾ Admissible tank preloading 30 bar. Tank preloading is added to the set pressure for "DBET(E)", and to the minimum set pressure for "DBETA".

⁶⁾ 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.

⁷⁾ Recommended operating range >0.5 l/min

⁸⁾ At higher flows, irregularities in pressure signal and pressure flow characteristics may occur in valves that are not regulated (see page 14).

⁹⁾ Pressure ratings 50 ... 420 bar can be adjusted by the customer by ±10 % via IO-Link and app.

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	ISO 15380	90221
		HEES		
	▶ Soluble in water	HEPG	ISO 15380	
Flame-resistant	▶ Water-free	HFDU (glycol base)	ISO 12922	90222
		HFDU (ester base)		
		HFDR		
	▶ Containing water	HFC (Fuchs: Hydrotherm 46M, Fuchs Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	ISO 12922	90223

**Important information on hydraulic fluids:**

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

▶ Flame-resistant – containing water:

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

Type		"DBET" ¹⁰⁾	"DBETE"	"DBETA"
Hysteresis ¹¹⁾	%	<5.5	<5.5	<1
Range of inversion ¹¹⁾	%	<0.5	<0.5	<0.2
Response sensitivity ¹¹⁾	%	<0.5	<0.5	<0.2
Manufacturing tolerance ¹¹⁾	%	±5	±4	±1
Temperature drift	▶ Electronics	%/10 K	–	–
	▶ Complete valve	%/10 K	–	0.2
Repetition accuracy ¹¹⁾	%	±1	±1	±0.5
Linearity ¹¹⁾	%	±3	±2	±1

Static/dynamic

Pressure rating		50	100	200	250	315	350	420	500	
Step response $T_u + T_g$ ¹²⁾	▶ 10 % → 90 %	ms	50	50	60	70	80	85	100	140
	▶ 90 % → 10 %	ms	65							

¹⁰⁾ Technical data determined with external control electronics VT-MSPA1-2X (see data sheet 30232) and 800 mA coil (see "Characteristic curves" on page 13)

¹¹⁾ From nominal pressure

¹²⁾ Line volume <20 cm³, $q_v = 0$ l/min

Technical data

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

Electrical			
Version		"G24"	"G24-8"
Supply voltage	▶ Nominal value	VDC	24
Minimum solenoid current		mA	<100
Maximum solenoid current		mA	1600 ±10 %
Solenoid coil resistance	▶ Cold value at 20 °C	Ω	5.5
	▶ Maximum hot value	Ω	8.05
Relative duty cycle time according to VDE 0580		%	S1 (continuous operation)

Electrical, integrated electronics (OBE) – Interface "A1"

Supply voltage	▶ Nominal value	VDC	24
	▶ Minimum	VDC	18
	▶ Maximum	VDC	30
	▶ Maximum residual ripple	V _{pp}	2.5
	▶ Maximum power consumption	VA	30
	▶ Peak current	A	3.2
	▶ Fuse protection, external	A _T	2.5 (time-lag)
Relative duty cycle time according to VDE 0580		%	S1 (continuous operation)
Functional ground and screening			See pin assignment on page 11 (CE-compliant installation)
Command value (differential amplifier)	▶ Measurement range	V	0 ... 10
	▶ Input resistance	kΩ	>100
Actual value (test signal)	▶ Output range	V	0 ... 10
	▶ Minimum load impedance	kΩ	>2

Electrical, integrated electronics (OBE) – Interface "F1"

Supply voltage	▶ Nominal value	VDC	24
	▶ Minimum	VDC	18
	▶ Maximum	VDC	30
	▶ Maximum residual ripple	V _{pp}	2.5
	▶ Maximum power consumption	VA	30
	▶ Peak current	A	3.2
	▶ Fuse protection, external	A _T	2.5 (time-lag)
Relative duty cycle time according to VDE 0580		%	S1 (continuous operation)
Functional ground and screening			See pin assignment on page 11 (CE-compliant installation)
Command value	▶ Input current range	mA	4 ... 20
	▶ Input resistance	Ω	100 (+2 V diode path)
Actual value (test signal)	▶ Output range	mA	4 ... 20
	▶ Maximum load	Ω	475

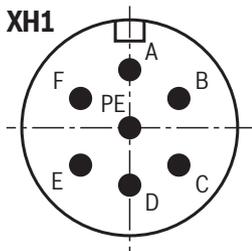
Technical data

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

Electrical, integrated electronics (OBE) - Interface "L1"		
Supply voltage	▶ Valve amplifiers	
	- Nominal value	VDC 24
	- Minimum	VDC 18
	- Maximum	VDC 30
	- Maximum residual ripple	Vpp 2.5
	- Maximum power consumption	VA 30
	- Peak current	A 3.2
	▶ IO-Link interface	
	- Nominal value	VDC 24
	- Minimum	VDC 18
	- Maximum	VDC 30
	- Maximum residual ripple	Vpp 1.3
	- Maximum power consumption	VA 1.2
	- Minimum process cycle time	ms 1
Relative duty cycle time according to VDE 0580	%	S1 (continuous operation)
Functional ground and screening		Provide via valve block
Bit rate COM3	kBaud (kbit/s)	230.4
Required master port class		Class B
Directive		IO-Link Interface and System Specification Version 1.1.2

Electrical connections and assignment

Contact	Interface assignment	
	"A1" (6 + PE)	"F1" (6 + PE)
A	Supply voltage	Supply voltage
B	GND	GND
C	Reference potential actual value to F (connect to ground on the control side)	Reference potential actual value to F (connect to ground on the control side; current loop I_{F-C} feedback)
D	Command value	Command value
E	Reference potential command value (connect to ground on the control side)	Reference potential command value (connect to ground on the control side, current loop I_{D-E} feedback)
F	Actual value	Actual value
FE	Functional ground (directly connected to the valve housing)	

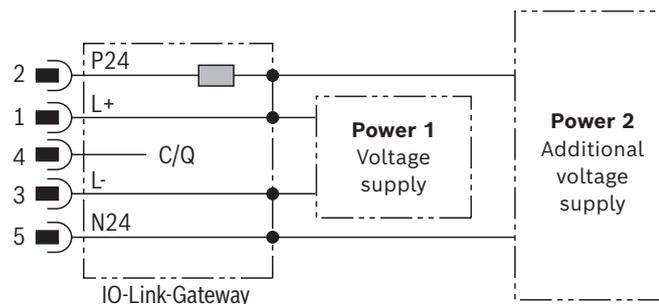
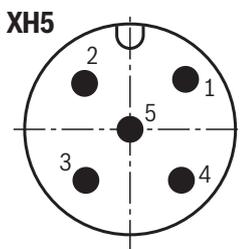


Command value	► Positive command value (0 ... 10 V or 4 ... 20 mA) at D and reference potential at E
Connection cable	► Up to 20 m cable length type LiYCY 7 x 0.75 mm ² ► Up to 40 m cable length type LiYCY 7 x 1.0 mm ² ► EMC-compliant installation: - Apply screening to both line ends - Use metal mating connector (see page 21) ► Alternatively up to 30 m cable length admissible - Apply screening on supply side - Plastic mating connector (see page 21) can be used

Notice:

Mating connectors, separate order, see page 21 and data sheet 08006.

Connector pin assignment "L1" (M12-5, A-coded, class B)



Notice:

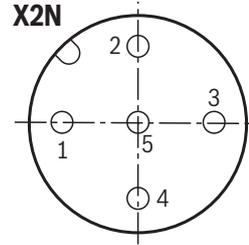
- M12 sensor/actuator connection line, 5-pole; M12 connector/bush, A-coded, without shield, maximum cable length 20m. Observe the voltage drop over the cable. Wire cross-section at least 0.34 mm².
- Mating connectors, separate order, see page 21 and data sheet 08006.
- For communication and parameter description, see functional description 29263-FK

Pin	Signal	Allocation interface "L1"
1	L+	Voltage supply IO-Link
2	P24	Voltage supply for valve electronics, pressure sensor, Bluetooth® dongle (incl. LEDs etc.) and power section of max. 1.6 A continuous current and up to 2 A as making current. Potential is galvanically separated from supply L+ and L-.
3	L-	Reference potential pin 1
4	C/Q	Data line IO-Link (SDCI)
5	N24	Reference potential pin 2 (galvanically separated from supply L+ and L-)

Electrical connections and assignment

Connector pin assignment for analog configurable pressure sensor interface "X2N" (coding A), M12, 5-pole, socket

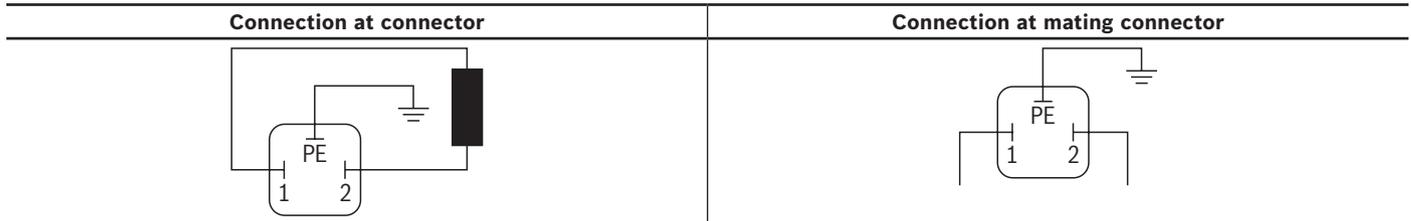
Pin	Signal	Interface
1	U_S	Voltage supply for pressure sensor from the valve supply $+U_B$ or P24, max. 50 mA (short-circuit-proof). Observe the voltage range of the pressure sensor.
2	I_{Meas}	Current input 4 ... 20 mA, connected to GND via 100 Ω load resistance +2 V diode path. Measuring input configurable via Bluetooth® or IO-Link.
3	GND	Reference potential; do not connect with two-wire system (current input).
4	U_{Meas}	Voltage input 0 ... 10 V ($R_{e_{min}} = 50 \text{ k}\Omega$)
5	n.c.	No connection; insulated bore in the socket.
Thread	Shield (functional ground)	Connected to the housing via the thread.



Notice:

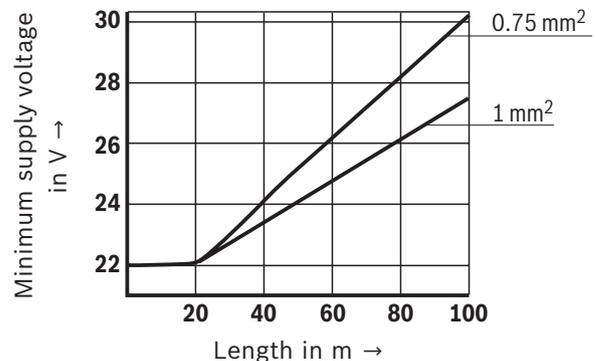
- ▶ In the condition as supplied, the actual value input PIN 4 0.1 ... 10 V of the pressure sensor interface is configured.
- ▶ Connection cable up to 10 m cable length with screening connected to both line ends.
- ▶ The pressure sensor signal interface is always configured to voltage signal.
- ▶ The pressure sensor signal can be independently changed via IO-Link or via the Bluetooth® interface by means of "easy2connect app".

Type DBET



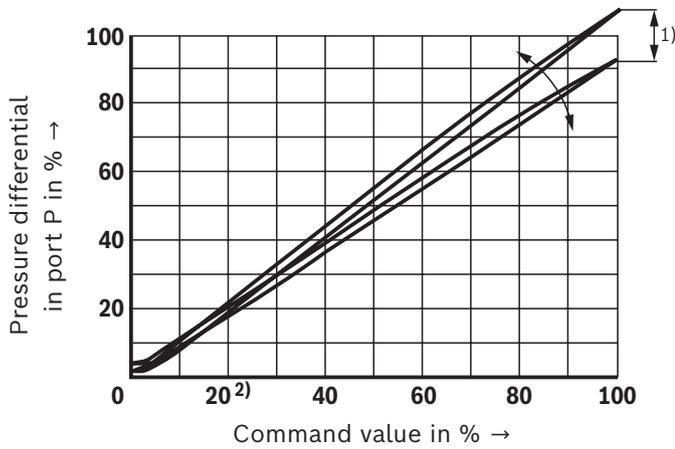
Connection cable (recommendation):

- ▶ 2-wire, 0.75 or 1 mm² plus protective grounding conductor and screening
 - ▶ Only connect the screening to PE on the supply side
 - ▶ Maximum admissible length = 100 m
- The minimum supply voltage at the power supply unit depends on the length of the supply line (see diagram).



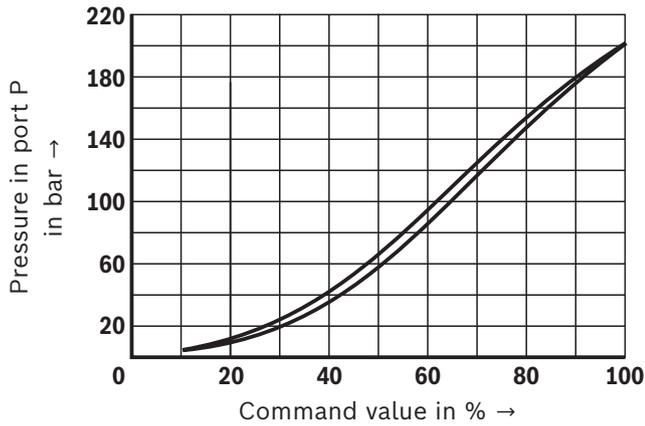
Characteristic curves: Type DBET
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Pressure in port P depending on the command value
(Flow = 0.8 l/min)

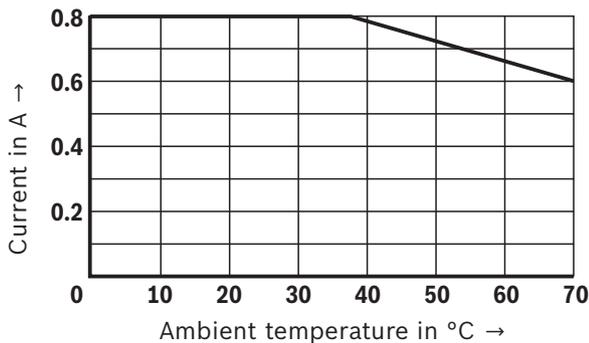


- 1) In order to be able to adjust several valves to the same characteristic curve, the manufacturing tolerance can - with version "DBET" - be changed at the external amplifier (see page 21) using the command value attenuator "G". In this connection, do not set the pressure higher than the maximum set pressure of the pressure rating with command value 100 %.
- 2) At 20 % zero point calibration at the factory

Pressure in port P depending on the command value
800 mA coil; amplifier VT-MSPA1-2X; pressure rating 200 bar (exemplary of all pressure ratings)

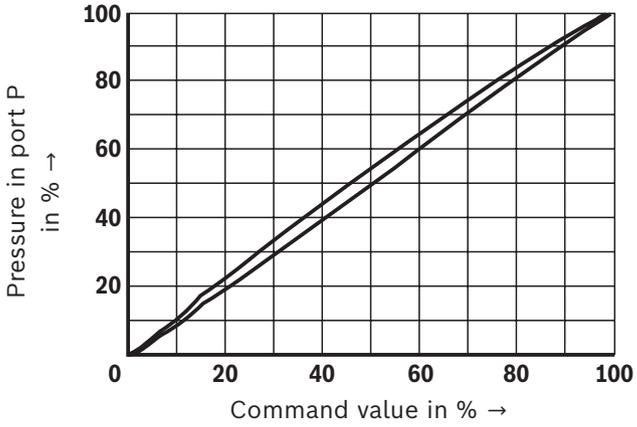


Current drop with increasing ambient temperature, 24 V and 100 % duty cycle

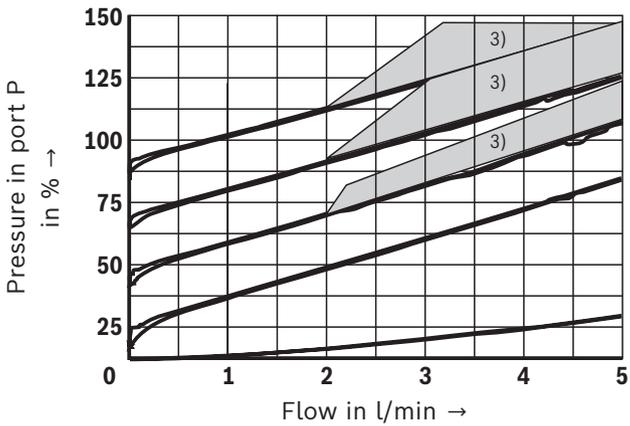


Characteristic curves: Type DBETE
 (measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Pressure in port P depending on the command value
 (Flow = 0.8 l/min)



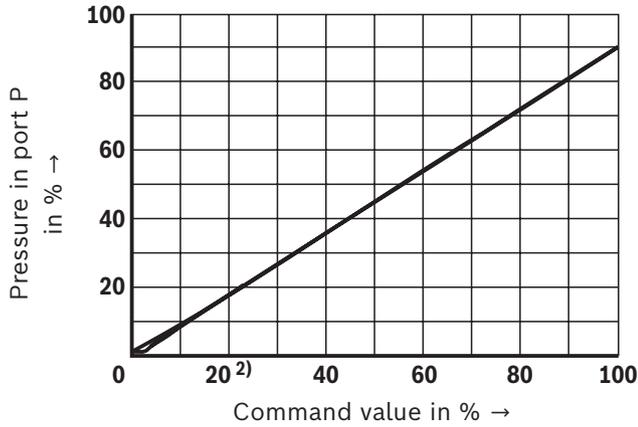
Pressure in port P dependent on the flow



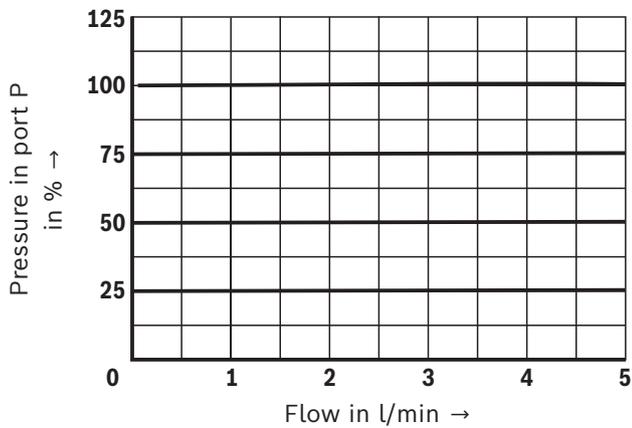
3) At higher flows, irregularities in pressure signal and pressure flow characteristics may occur in valves that are not regulated.

Characteristic curves: Type DBETA
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

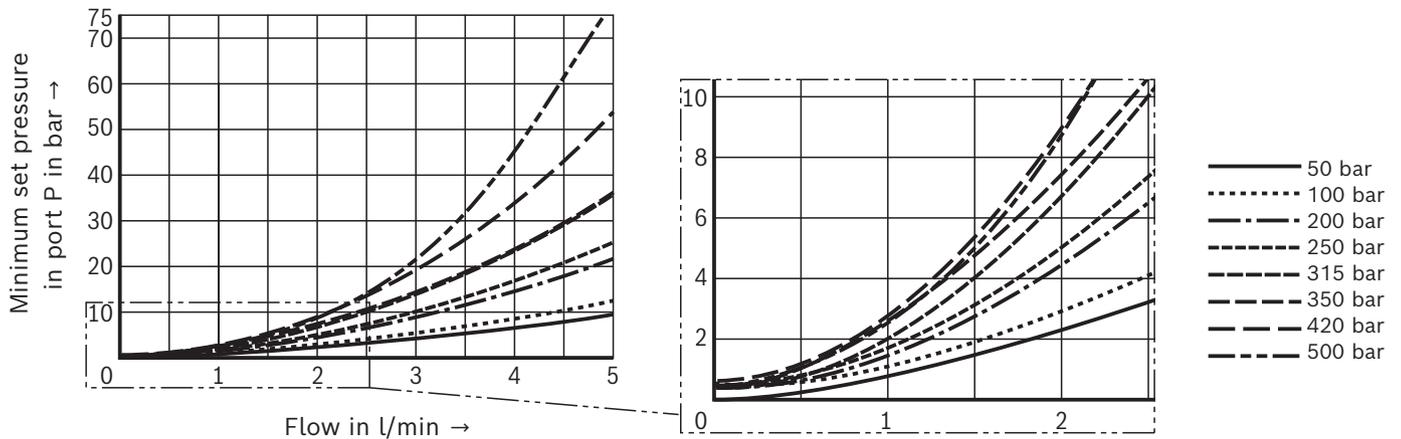
Pressure in port P depending on the command value
(Flow = 0.8 l/min)



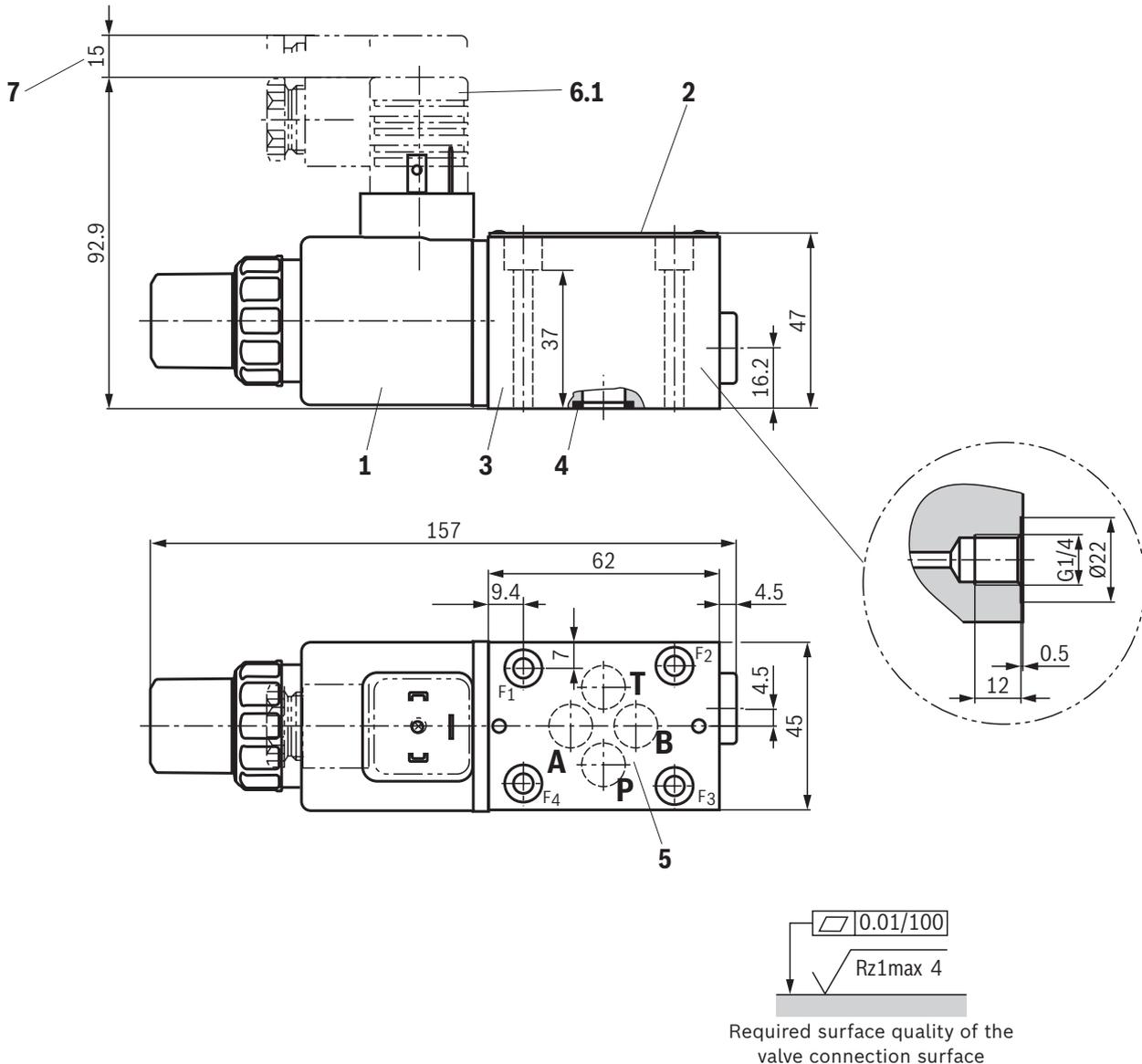
Pressure in port P dependent on the flow



Minimum set pressure in port P dependent on the flow
(command value 0 V or 4 mA)



Dimensions: "DBET"
(dimensions in mm)



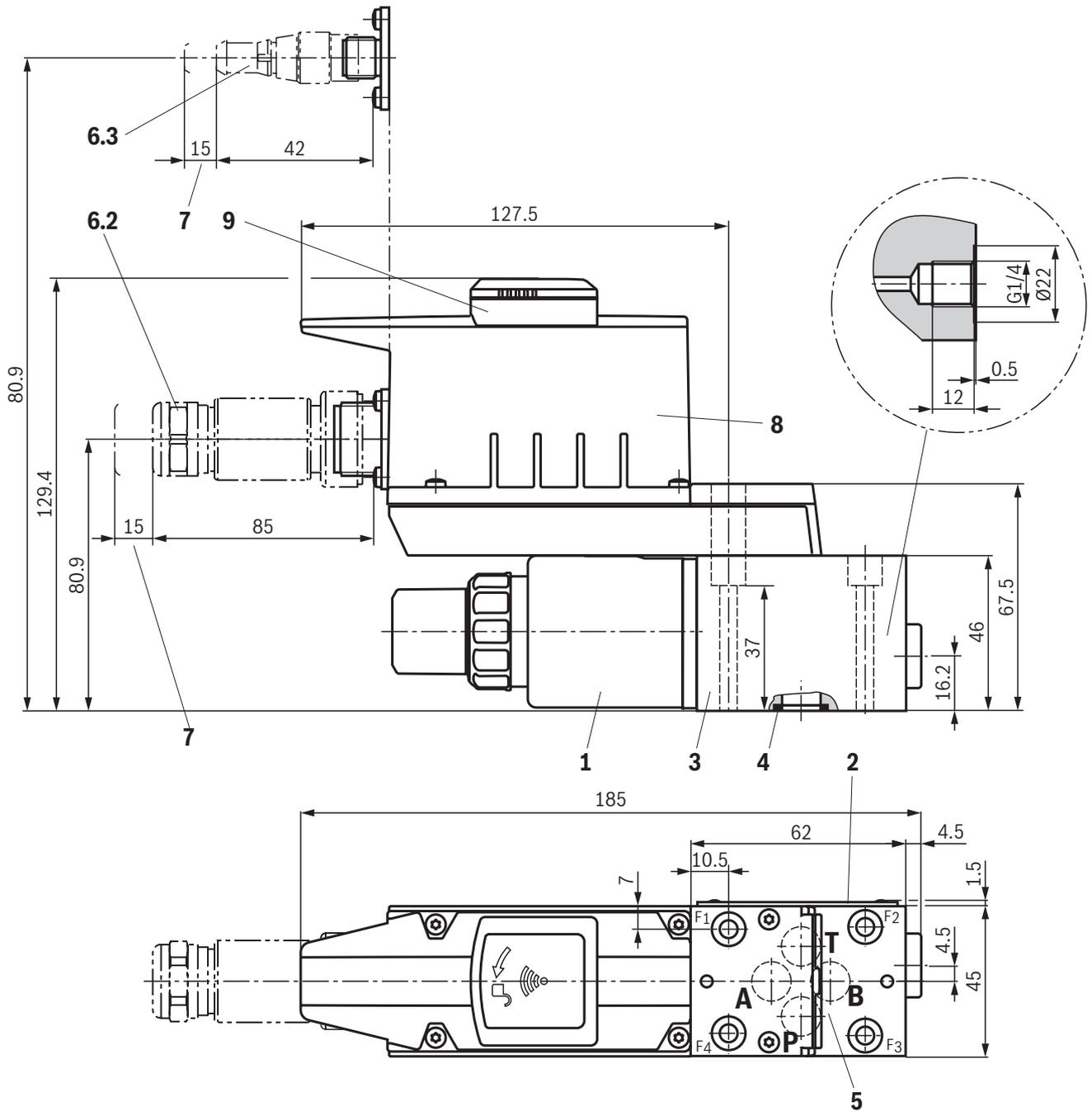
- 1 Proportional solenoid
- 2 Name plate
- 3 Valve housing
- 4 Identical seal rings for ports A, B, P and T
- 5 Machined valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Deviating from the standard:
 - ▶ Channel A not drilled, blind counterbore with sealing
 - ▶ Channel B not drilled, blind counterbore with sealing
 - ▶ Connection established from channel P to A, channel B not drilled
- 6.1 Mating connector **without** circuitry for connector "K4" (separate order, see page 21 and data sheet 08006)
- 7 Space required for removing the mating connector

Notice:

The dimensions are nominal dimensions which are subject to tolerances.

Valve mounting screws and subplates, see page 20.

Dimensions: "DBETE"
(dimensions in mm)

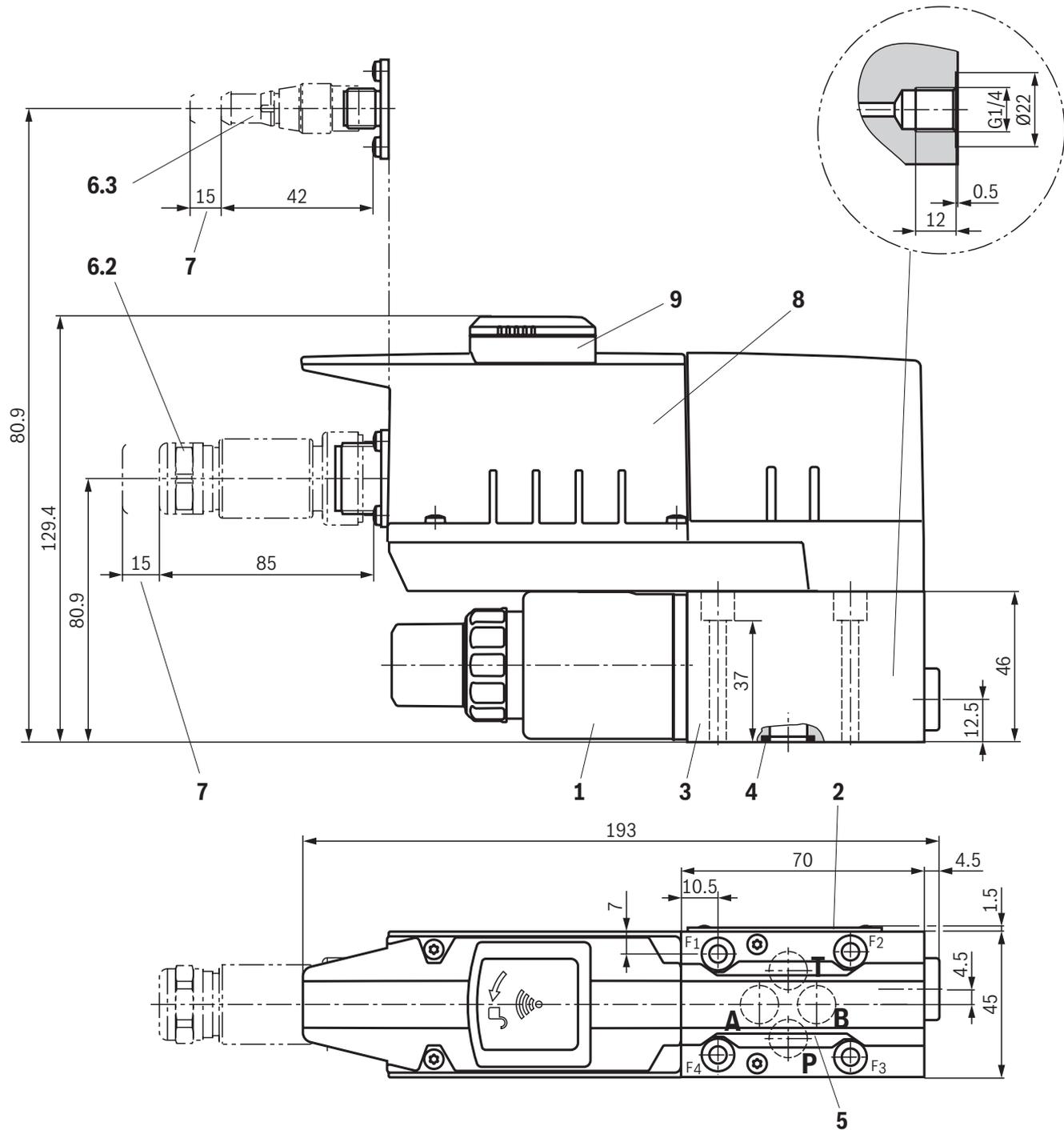


Required surface quality of the valve connection surface

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

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

Dimensions: "DBETA"
(dimensions in mm)



Required surface quality of the valve connection surface

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

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

Dimensions

- 1 Proportional solenoid
- 2 Name plate
- 3 Valve housing
- 4 Identical seal rings for ports A, B, P and T
- 5 Machined valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Deviating from the standard:
 - ▶ Channel A not drilled, blind counterbore with sealing
 - ▶ Channel B not drilled, blind counterbore with sealing
 - ▶ Connection established from channel P to A, channel B not drilled
- 6.1 Mating connector **without** circuitry for connector "K4"
(separate order, see page 21 and data sheet 08006)
- 6.2 Mating connectors with version "A1" and "F1"
(separate order, see page 21 data sheet 08006)
- 6.3 Mating connectors with version "L1"
(separate order, see page 21 data sheet 08006)
- 7 Space required for removing the mating connector
- 8 Digital on-board electronics (OBED)
- 9 Bluetooth® dongle (separate order, see page 21)
- 10 External connection for pressure sensor
(pressure sensor, separate order, see page 21)

Valve mounting screws (separate order)

Quantity	Hexagon socket head cap screws	Material number
4	ISO 4762 - M5 x 45 - 10.9-ISO4042/ZNNI5/CN/T0 Tightening torque $M_A = 7 \text{ Nm} \pm 10 \%$	R913048087

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 4401-03-02-0-05 see data sheet 45100.

Accessories (separate order)**Pressure sensor for external connection of pressure sensor** (without connection line)

Type	Material number	Data sheet
HM 20-2X/160-H-K35-N (pressure ratings 50, 100)	R901381347	30272
HM 20-2X/400-H-K35-N (pressure ratings 200, 250, 315, 350)	R901466598	
HM 20-2X/630-H-K35-N (pressure ratings 420, 500)	R901342036	

Bluetooth® dongle

	Material number	Data sheet
Bluetooth® dongle	R901505294	30581-B
Empty cover (for valves without Bluetooth® dongle)	R961013819	–

Valves with integrated electronics

Mating connectors 6-pole + PE	Design	Version	Material number	Data sheet
For the connection of valves with integrated electronics, round connector 6+PE, line cross-section 0.5 ... 1.5 mm ²	Straight	Metal	R900223890	08006
	Straight	Metal with mechanical locking	R901044595	–
	Straight	Plastic	R900021267	08006
	Angled	Plastic	R900217845	–

Cable set 6-pole + PE	Length in m	Material number	Data sheet
For the connection of valves with integrated electronics, round connector 6+PE, straight connector, lubricated, potted-in mating connector, line cross-section 0.75 mm ²	3.0	R901420483	08006
	5.0	R901420491	
	10.0	R901420496	
	20.0	R901448068	–

Cable set (analog sensors)	Length in m	Material number	Data sheet
For connection of the Rexroth pressure sensors type HM20, shielded, 5-pole, A-coding, PUR/PVC, straight connector M12, on straight socket M12, line cross-section 0.34 mm ²	0.6	R901111709	–
	1.0	R901111712	–
	2.0	R901111713	–

External control electronics

	Type	Data sheet
Modular design	VT-MSPA1-2X	30232

Test and service devices

	Material number	Data sheet
Service case with test device for proportional servo valves with integrated electronics (OBE)	R901049737	29685

IO-Link gateways

Designation	Description	Material number
S67E-PN-IOL8-DI4-M12-6P	IndraControl S67E PROFINET device in the plastic housing 8 IO-Link ports (4 x class A and 4 x class B), 4 digital inputs, 24 VDC, M12 quick connection technology	R911174436
S67E-S3-IOL8-DI4-M12-6P	IndraControl S67E Sercos device in the plastic housing 8 IO-Link ports (4 x class A and 4 x class B), 4 digital inputs, 24 VDC, M12 quick connection technology	R911174437

Safety instructions

IT security

The operation of installations, systems and machines basically requires the implementation of a holistic IT security concept which is state-of-the-art in terms of technology.

Accordingly, Bosch Rexroth products and their properties must be considered as components of installations, systems and machines for their holistic IT security concept.

Unless otherwise documented, Rexroth products are designed for operation in local, physically and logically secured networks with access restrictions for authorized persons, and they are not classified according to IEC 62443-4-2.

Certification

Title	Document number
EU declaration of conformity	DCTC-31000-175
China certificate	DCTC-31000-181
India certificate	DCTC-31000-182
South Korea certificate	DCTC-31000-183
US certificate	DCTC-31000-184



Notice:

The Bluetooth® dongle is certified for the regions and/or economic areas included in the table.

Project planning information

- ▶ The valves are delivered ex works with standard parameter set 2 (logic, low dead volume).
For predefined parameter sets, see functional description 29263-FK.
- ▶ The parameter set can be selected and changed using the "easy2connect app" or via IO-Link.
- ▶ For configuration, the pressure controller can be deactivated using the "easy2connect app" or via IO-Link.
- ▶ For valves with Bluetooth interface, the password should be changed using the "easy2connect app" during commissioning. For further information, see functional description 29263-FK.

Further information

▶ Hydraulic valves for industrial applications	Operating instructions 07600-B
▶ 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
▶ Bluetooth® dongle	Data sheet 30581
▶ Reliability characteristics according to EN ISO 13849	Data sheet 08012
▶ Hexagon socket head cap screw, metric/UNC	Data sheet 08936
▶ Assembly, commissioning and maintenance of hydraulic systems	Data sheet 07900
▶ Proportional pressure relief valve	Functional description 29263-FK
▶ Bluetooth® dongle	Operating instructions 30581-B
▶ Information on available spare parts	www.boschrexroth.com/spc

Notes

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