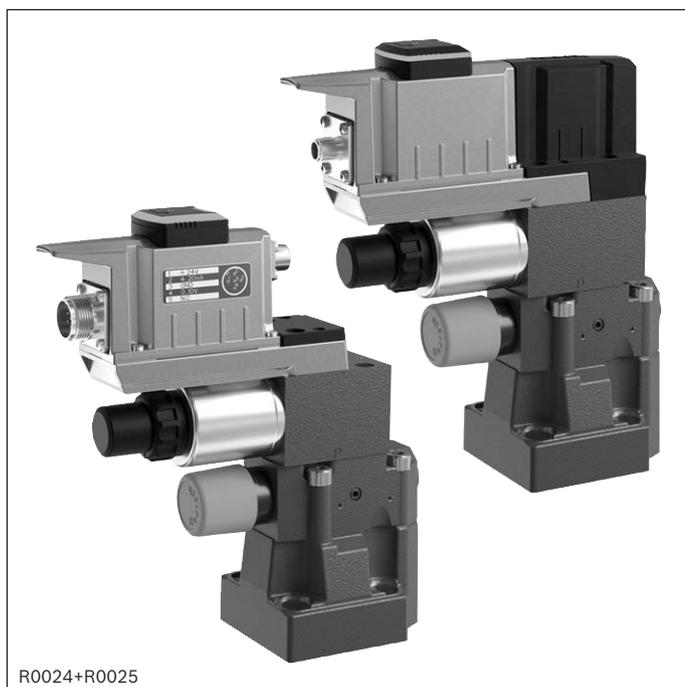


Pilot-operated proportional pressure relief valves with or without digital on-board electronics (OBED)

Type DBEM, DBEME, and DBEMA



- ▶ Size 10, 25, and 32
- ▶ Component series 8X
- ▶ Maximum operating pressure 350 bar
- ▶ Maximum flow 700 l/min



Features

- ▶ For the limitation of system pressure
- ▶ For subplate mounting
- ▶ Porting pattern according to ISO 6264
- ▶ For threaded connection
- ▶ Pressure-controlled, optional
- ▶ With digital on-board 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 (easy2connect app)
- ▶ Maximum pressure limitation

Contents

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
DBE	M				- 8X	/			G24						*

01	Proportional pressure relief valve	DBE
02	With maximum pressure relief	M ¹⁾
03	For external control electronics	No code
	With on-board electronics (OBED)	E ◇
	With on-board electronics (OBED), pressure-controlled	A ◇
04	Size 10	10 ◇
	Size 25	20 ◇
	Size 32	30 ◇

Type of connection

05	Subplate mounting	No code ◇
	Threaded connection	G
06	Component series 80 ... 89 (80 ... 89: unchanged installation and connection dimensions)	8X

Pressure rating²⁾

07	50 bar	50
	100 bar	100
	200 bar	200 ◇
	315 bar	315 ◇
	350 bar	350 ◇
08	External pilot oil return	Y ◇
	External pilot oil return (bleed port X)	XY

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

09	Internal	no code ◇
	External	A ³⁾

Supply voltage

10	Direct voltage 24 V	G24
----	---------------------	------------

Coil

11	1600 mA	no code ◇
	800 mA (only with external control electronics)	-8

Electrical connection

12	- Type DBEM	
	Connector 3-pole (2 + PE) according to EN 175301-803	K4 ⁴⁾
	- Type DBEME and DBEMA – version "A1", "F1"	
	Connector, 7-pole (6 + PE) according to EN 175201-804	K31 ⁴⁾ ◇
	- Type DBEME and DBEMA – version "L1"	
	Connector 5-pole, M12 x 1	K24 ⁴⁾ ◇

Electronics interface

13	External control electronics	no code
	Command value input 0 ... 10 V; actual value output 0 ... 10 V	A1 ⁵⁾ ◇
	Command value input 4 ... 20 mA; actual value output 4 ... 20 mA	F1 ⁵⁾
	IO-Link interface (only with on-board electronics "E" and "A"; for class B)	L1 ⁶⁾ ◇

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
DBE	M				- 8X	/			G24						*

Accessories, service interface

14	Without Bluetooth® interface	no code
	With Bluetooth® interface (dongle; only with on-board electronics "E" and "A")	B

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

15	NBR seals	M
	FKM seals	V

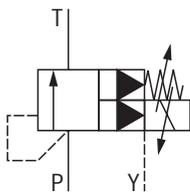
16	Further details in the plain text	
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- 1) Only for overpressure relief due to a pilot control valve error (for example, in case of contamination or over-current).
- 2) Pressure rating 500 bar (special version "DBEM(E)...699", size 10, 25, and 32, component series 3X) on request.
- 3) Pressure sensor adjustment via "easy2connect app" (for electrical connections and assignment, see page 12; pressure sensor, separate order, see page 27)
- 4) Mating connectors and cable sets, separate order, see page 27 and data sheet 08006.
- 5) Command value input switchable via Bluetooth® interface "B" ("A1" ↔ "F1")
- 6) Only for use in the industrial sector 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.

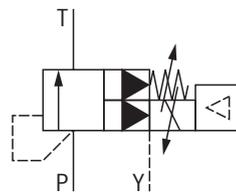
 **Notice:** ◇ = Preferred type

Symbols

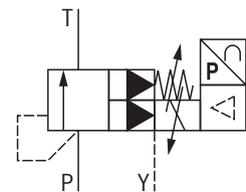
"DBEM...Y"



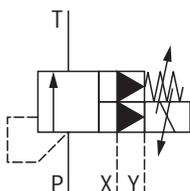
"DBEME...Y"; "DBEMA...YA"



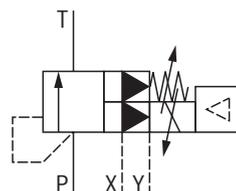
"DBEMA...Y"



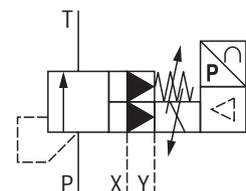
"DBEM...XY"



"DBEME...XY"; "DBEMA...XYA"



"DBEMA...XY"



Function, section: Type DBEM**General information**

Valves of type DBEM are pilot-operated proportional pressure relief valves. They are used to limit the operating pressure in hydraulic systems. Dependent on the electric command value, these valves can be used to steplessly set the system pressure to be limited.

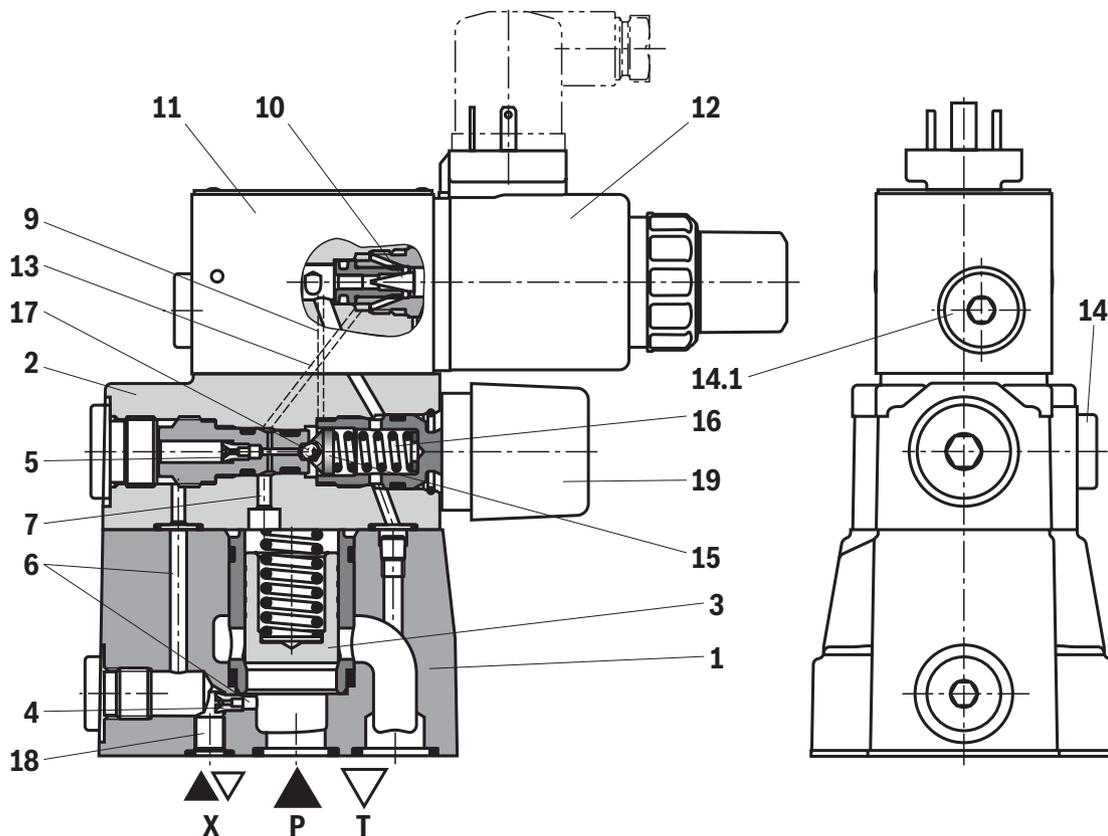
The valves basically consist of the housing (1) with main spool insert (3), the sandwich plate valve with maximum pressure relief (2) and the proportional pilot control valve (11).

Basic principle

The pressure applied to channel P acts on the main spool (3). Simultaneously, the pressure at port P is applied to the spring-loaded side of the main spool (3) via the control lines (6, 7) provided with nozzles (4, 5). Via the connecting bore (9), the pressure is simultaneously applied to the poppet (10) of the proportional pilot control valve (11). The hydraulic force at the pilot poppet (10) acts against the command value-dependent force of the proportional solenoid (12). If the hydraulic force exceeds the solenoid force, the pilot poppet is opened (10). The pilot oil can now flow via the control line (13) into port Y (14) and to the tank; thus, a pressure drop results at the main spool (3)

over the control lines (6, 7). The connection from port P to T is released. The main spool (3) controls the set operating pressure at port P.

As hydraulic protection against inadmissibly high pressures, a spring-loaded pressure relief valve (2) has been integrated. This maximum pressure relief is pre-set to the relevant pressure rating (see table on page 7). In the operating range of the valve, the poppet (15) is held on the valve seat (17) by the spring (16) and is thus closed. If the pressure in the spring chamber of the main spool (3) exceeds the maximum admissible set pressure of the valve, the poppet (15) is pressed against the compression spring (16) and the connection into the spring chamber is opened. The pilot oil drains via port Y (14) into the reservoir. A pressure drop is produced on the main spool (3) due to the control lines (6, 7). The connection from port P to T is released. The main spool (3) controls the set maximum operating pressure in port P. Via the adjustment element (19), the pre-set pressure can be reduced, if necessary. Port Y (14) must be externally piped to the tank. Port Y (14.1) may be used as an alternative to port Y (14). This is closed with a plug screw G 1/4 as standard and can be connected if required to allow for an external pilot oil return. The connection to the tank should be depressurized. Via port X (18), the valve may be unloaded or the maximum pressure may be limited.



Type DBEM 10 ...

Function, section: Type DBEME and DBEMA

Type DBEME – with digital on-board electronics (OBED)

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

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 DBEMA – with digital on-board electronics (OBED) and pressure control

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

This valve version also has a pressure transducer (21). The latter is either directly attached on the valve (22) or may be externally integrated in the system via the interface (X2N).

The pressure transducer (21) records the pressure in channel P of the pilot control valve and regulates it via the on-board electronics (20). The pressure in channel P is calculated via the actual pressure value on the pilot control valve at the opening point of the main spool and made available via the connector (XH1, XH5) as an 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 apply the minimum control current to the proportional solenoid and the minimum set pressure is applied.

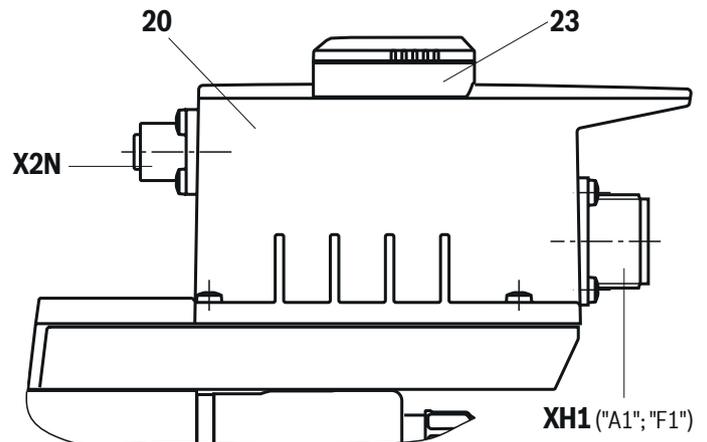
Bluetooth® function

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

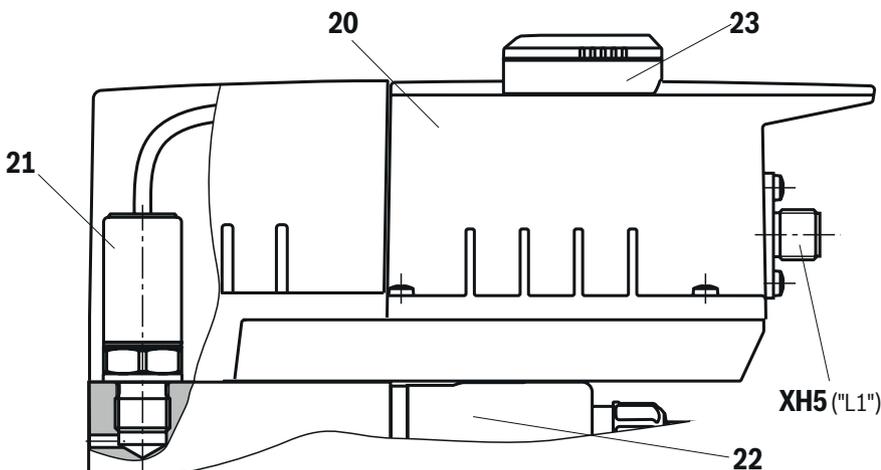
By means of the "easy2connect app", the valve status can be displayed and configurations at the valve can be carried out via the Bluetooth® dongle (23).

Notice:

- ▶ The "easy2connect app" can be downloaded in the App Store (iOS) or Google Play Store (Android). For further information, see "Project planning information" on page 28.
- ▶ 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 DBEMA...A...



Type DBEMA...

Technical data

(Please consult us for applications outside these values!)

General						
Size	NG		10	25	32	
Type of connection	Subplate mounting; threaded connection					
Porting pattern (subplate mounting)			ISO 6264-06-09-* ⁹⁷	ISO 6264-08-13-* ⁹⁷	ISO 6264-10-17-* ⁹⁷	
Weight	▶ "DBEM"	- Subplate mounting	kg	4.4	5.2	6.3
		- Threaded connection	kg	6.8	7.3	7.3
	▶ "DBEME"	- Subplate mounting	kg	5.0	5.8	6.9
		- Threaded connection	kg	7.4	7.9	7.9
	▶ "DBEMA"	- Subplate mounting	kg	5.2	6.0	7.1
		- Threaded connection	kg	7.6	8.1	8.1
	▶ "DBEMA...A"	- Subplate mounting	kg	5.0	5.8	6.9
		- Threaded connection	kg	7.4	7.9	7.9
Installation position	Any					
Ambient temperature range	▶ 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 values according to EN ISO 13849	Years	75 (for further details see data sheet 08012) ¹⁾				
Sine test according to EN 60068-2-6	10 ... 2000 Hz / maximum of 10 g / 10 cycles / 3 axes					
Noise test according to EN 60068-2-64	20 ... 2000 Hz / 10 g _{RMS} / 30 g peak / 30 min. / 3 axes					
Transport shock according to EN 60068-2-27	15 g / 11 ms / 3 shocks / 3 axes					
Conformity	▶ CE according to EMC Directive 2014/30/EU, tested according to		EN 61000-6-2 and EN 61000-6-3 ²⁾			
	▶ UKCA according to Electromagnetic Compatibility Regulations SI 2016/1091, tested according to		EN 61000-6-2 and EN 61000-6-3			
	▶ 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

(Please consult us for applications outside these values!)

Hydraulic					
Size	NG	10	25	32	
Maximum operating pressure	▶ Port P, X				
	– "DBEM"; "DBEME"	bar	350		
	– "DBEMA" (pressure rating 50, 100)	bar	250		
	– "DBEMA" (pressure rating 200, 315, 350)	bar	350		
	▶ Port T	bar	315		
	▶ Port Y	bar	Separate and depressurized to the tank		
Hydraulic fluid		See table, page 8			
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 18/16/13 ⁴⁾			
Maximum flow	▶ Subplate mounting	l/min	275	550	700
	▶ Threaded connection "G"	l/min	200	550	700
Maximum set pressure ⁵⁾		bar	50; 100; 200; 315; 350		
Minimum set pressure (command value 0)		bar	See characteristic curves page 13		
Maximum pressure relief ⁶⁾	▶ Pressure rating 50 bar	bar	75		
	▶ Pressure rating 100 bar	bar	135		
	▶ Pressure rating 200 bar	bar	240		
	▶ Pressure rating 315 bar	bar	350		
	▶ Pressure rating 350 bar	bar	380		
Pilot flow		l/min	0.5 ... 0.7	0.4 ... 0.6	0.4 ... 0.6

⁴⁾ 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.

⁵⁾ Pressure ratings 50 ... 315 bar can be adjusted by the customer by ±10% via IO-Link and app.

⁶⁾ Set on delivery (value can be reduced if required).

Technical data

(Please consult us for applications outside these values!)

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, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922

**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 an 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 considering conditions specific to the installation – to back up the return flow pressure in ports T to approx. 20% of the pressure differential at the component.

Static / dynamic					
Type			"DBEM" ⁷⁾	"DBEME"	"DBEMA"
Hysteresis ⁸⁾	%		<5.5	<5.5	<1
Range of inversion ⁸⁾	%		<0.5	<0.5	<0.2
Response sensitivity ⁸⁾	%		<0.5	<0.5	<0.2
Manufacturing tolerance ⁸⁾	%		±5	±2	±1
Temperature drift	▶ Electronics	%/10 K	–	0.3	–
	▶ Complete valve	%/10 K	–	–	0.2
Linearity ⁸⁾	%		±3.5	±2	±1
Repetition accuracy ⁸⁾	%		±1	±1	±0.5

Static / dynamic									
Pressure rating				50	100	200	315	350	
Step response $T_u + T_g$ ⁹⁾	▶ Dead volume 400 ml	10%→90%	NG10 ... 32	ms	90	80	80	80	80
		90%→10%		ms	60				
$(q_v = 24 \text{ l/min})$	▶ Dead volume 8.5 l	10%→90%	NG10	ms	160	190	250	390	410
			NG25	ms	290	200	290	400	460
			NG32	ms	230	200	290	410	450
		90%→10%	NG10 ... 32	ms	100				

⁷⁾ Technical data determined with external control electronics VT-MSPA1-2X (data sheet 30232) and 800 mA coil (see "Characteristic curves" on page 13)

⁸⁾ From nominal pressure

⁹⁾ Adaptation via "easy2connect app" is supported.

Technical data

(Please consult us for applications outside these values!)

Electrical			
Version		"G24"	"G24-8"
Minimum solenoid current	mA	<100	
Maximum solenoid current	mA	1600 ±10%	800 ± 5%
Solenoid coil resistance	▶ Cold value at 20 °C	Ω	5.5
	▶ Maximum hot value	Ω	8.05
			20.6
			33

Electrical, on-board electronics (OBE) – interface "A1"				
Supply voltage	▶ Nominal value	VDC	24	
	▶ Minimum	VDC	18	
	▶ Maximum	VDC	30	
	▶ Maximum residual ripple	Vpp	2.5	
	▶ Maximum power consumption	VA	30	
	▶ Current consumption	Maximum	A	<2
		Impulse 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, page 11		
Command value (differential amplifier)	▶ Measurement range	V	0 ... 10	
	▶ Input resistance	kΩ	>100	
Actual value (test signal)	▶ Output range	V	0 ... 10 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	Vpp	2.5	
	▶ Maximum power consumption	VA	30	
	▶ Current consumption	Maximum	A	<2
		Impulse 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 page 11		
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 ¹¹⁾	
	▶ Maximum load	Ω	475	

¹⁰⁾ Equivalent to 0 ... 100% of the pressure rating for type DBEMA (see functional description 29362-FK)

¹¹⁾ Equivalent to 0 ... 2000 mA for type DBEME (see functional description 29362-FK)

Technical data

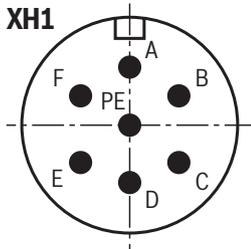
(Please consult us for applications outside these values!)

Electrical, on-board 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
	- Current consumption	Maximum	A <2
		Impulse 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

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

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



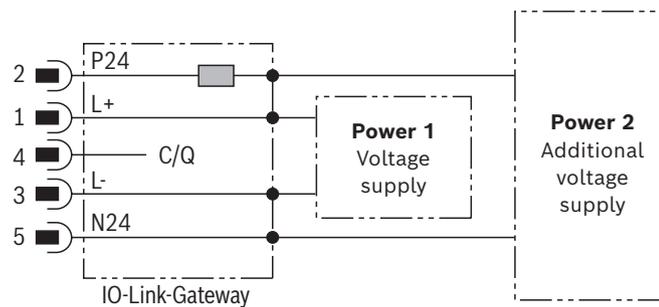
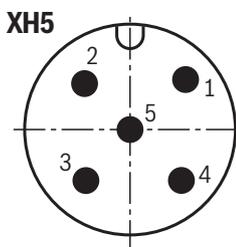
Command value	0 ... +10 V; 4 ... 20 mA
Connection cable	<ul style="list-style-type: none"> ▶ Up to 20 m cable length type LiYCY 7 x 0.75 mm² ▶ Up to 40 m cable length type LiYCY 7 x 1.0 mm² ▶ EMC-compliant installation: <ul style="list-style-type: none"> - Apply screening to both line ends - Use metal mating connector (see page 27) ▶ Alternatively up to 30 m cable length admissible <ul style="list-style-type: none"> - Apply screening on supply side - Plastic mating connector (see page 27) can be used



Notice:

Mating connectors, separate order, see page 27 and data sheet 08006.

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



Notice:

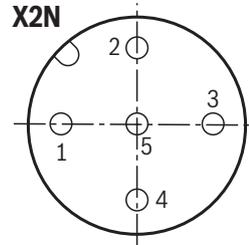
- ▶ M12 sensor/actuator connection line, 5-pole; M12 connector/bush, A-coded, without shield, maximum cable length 20 m. Observe the voltage drop over the cable. Wire cross-section at least 0.34 mm².
- ▶ Mating connectors, separate order, see page 27 and data sheet 08006.
- ▶ For communication and parameter description, see functional description 29362-FK

Pin	Signal	Assignment 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

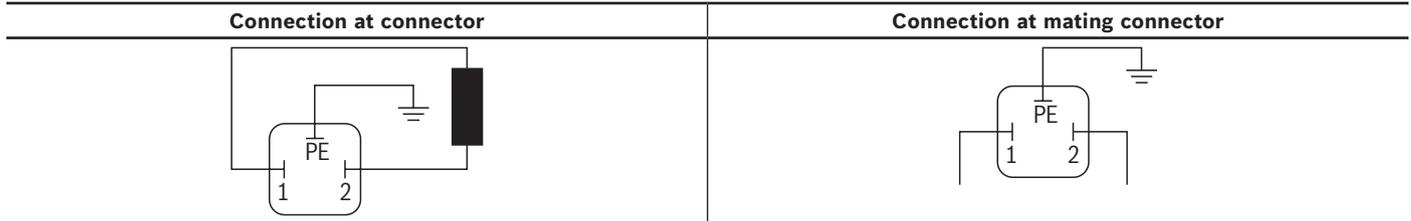
Pin	Signal	Interface
1	U_S	Voltage supply for pressure sensor from the valve supply $+U_B$ or P24, max. 50 mA (short-circuit-proof). Observe the voltage range of the pressure sensor.
2	I_{Meas}	Current input 4 ... 20 mA, connected to GND via 100 Ω load resistance +2 V diode path. Measuring input configurable via Bluetooth® or IO-Link.
3	GND	Reference potential; do not connect in the case of 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".

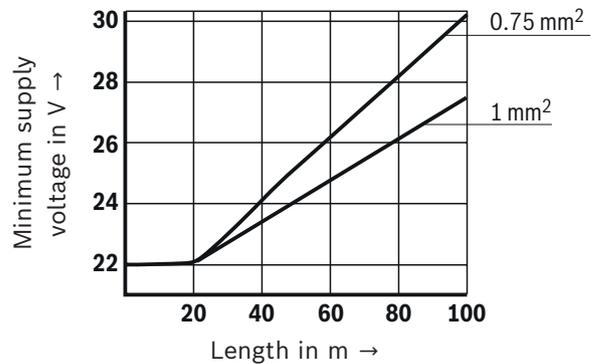
Type DBEM



Connection cable (recommendation):

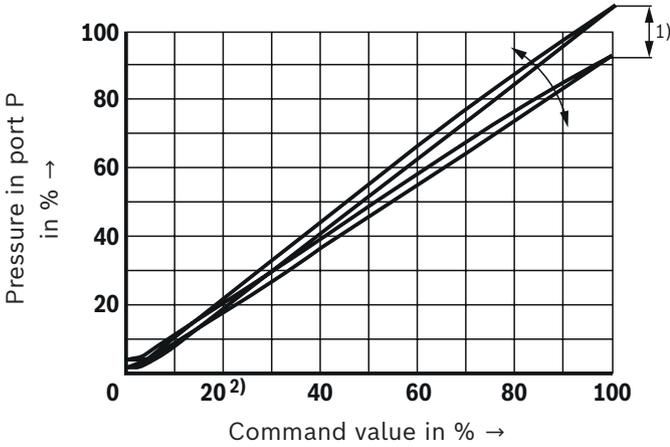
- ▶ 2-wire, 0.75 or 1 mm² plus protective grounding conductor and screening
- ▶ Only connect the screening to PE on the supply side
- ▶ Maximum admissible length = 100 m

The minimum supply voltage at the power supply unit depends on the length of the supply line (see diagram).



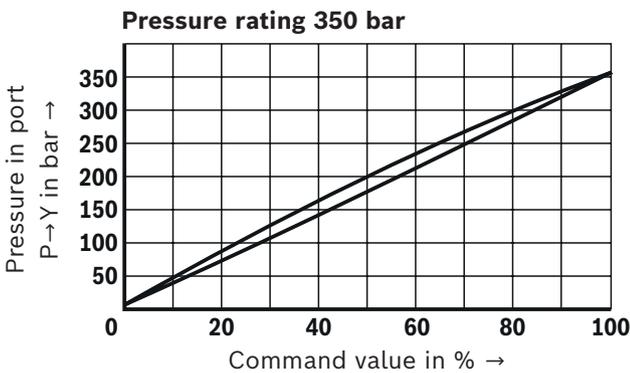
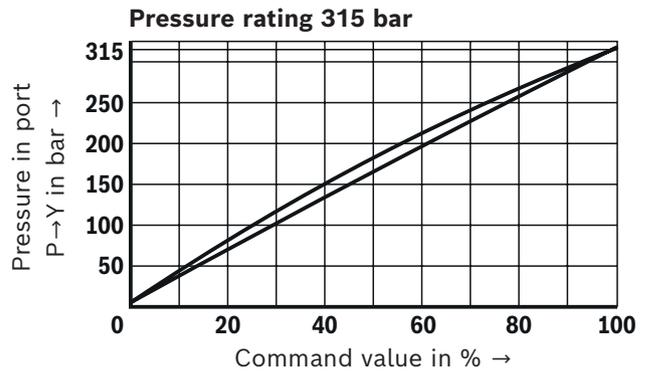
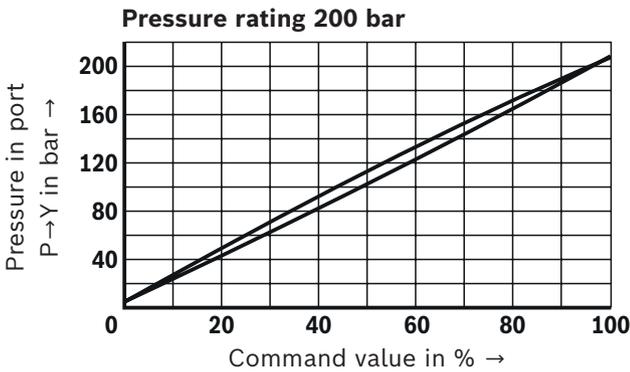
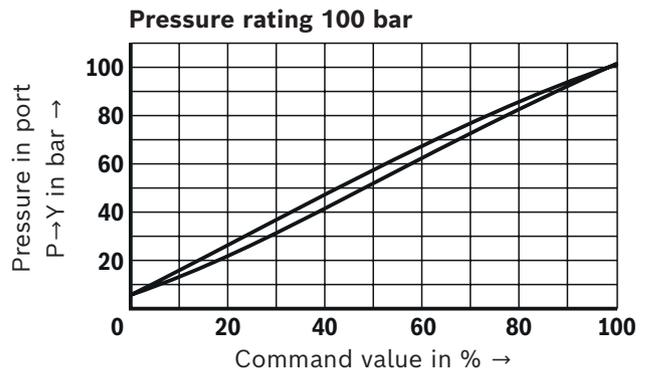
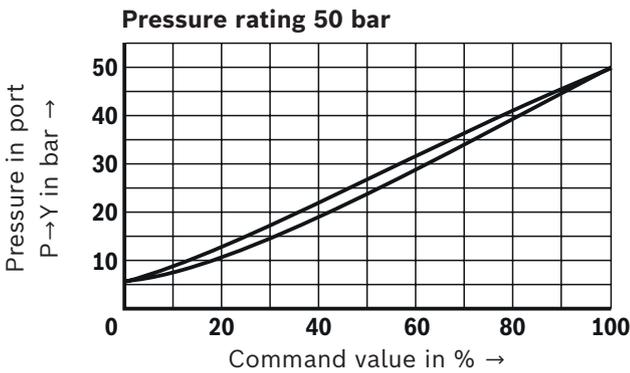
Characteristic curves: Type DBEM
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ } ^\circ\text{C}$)

Pressure in port P dependent on the command value (flow = 24 l/min)



- 1) In order to be able to adjust several valves to the same characteristic curve, the manufacturing tolerance – with version "DBEM" – can be changed at the external amplifier (see page 27) 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

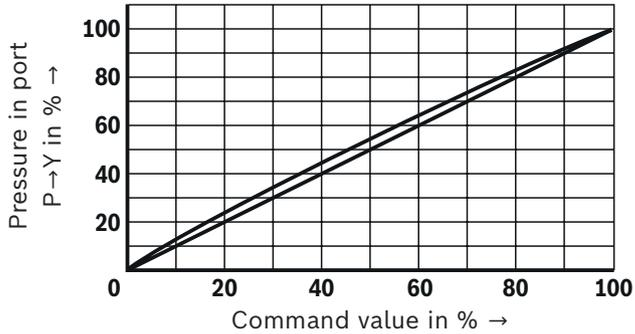
Pressure in port P→Y dependent on the command value (flow = 24 l/min; amplifier VT-MSPA1-2X)



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

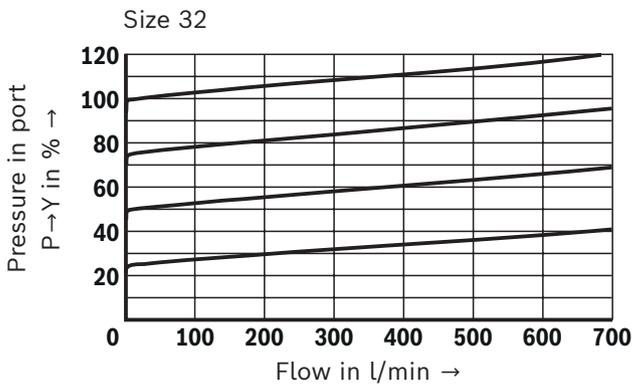
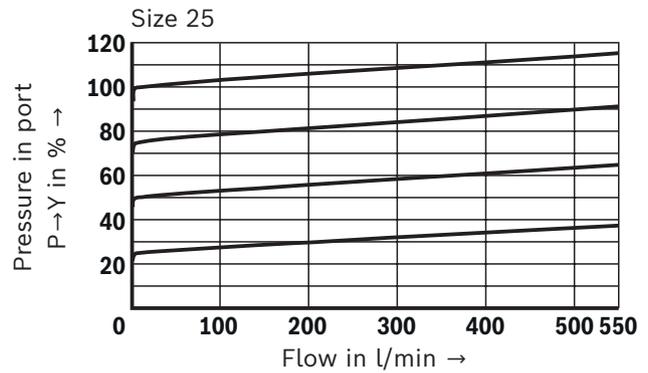
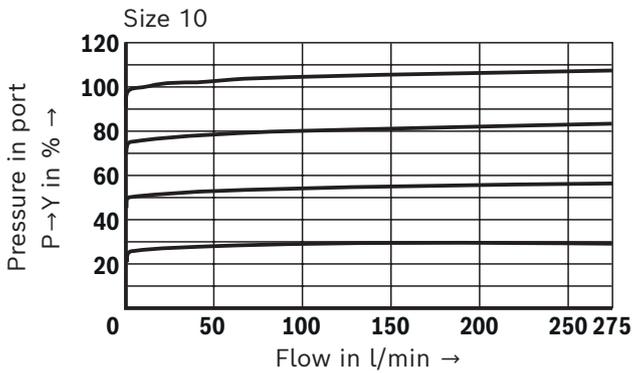
Characteristic curves: Type DBEME
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Pressure in port P→Y dependent on the command value (flow = 24 l/min)



Pressure in port P→Y dependent on the flow

Version "subplate mounting"



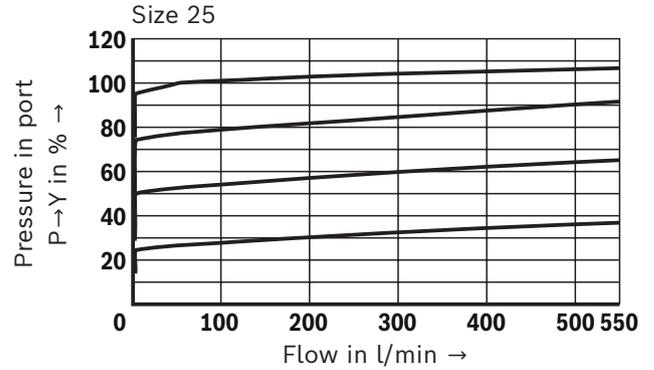
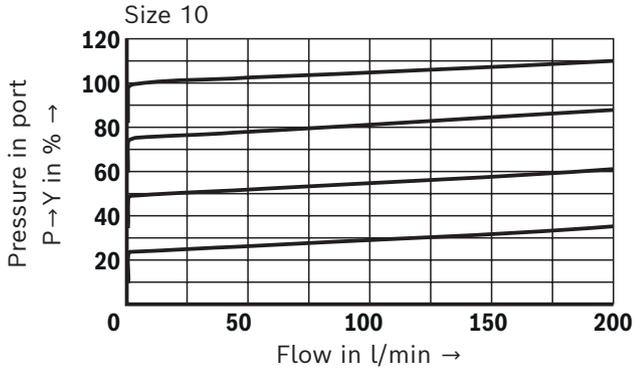
Notice:

Typical characteristic curves which are subject to tolerance variations.

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

Pressure in port P→Y dependent on the flow

Version "threaded connection"

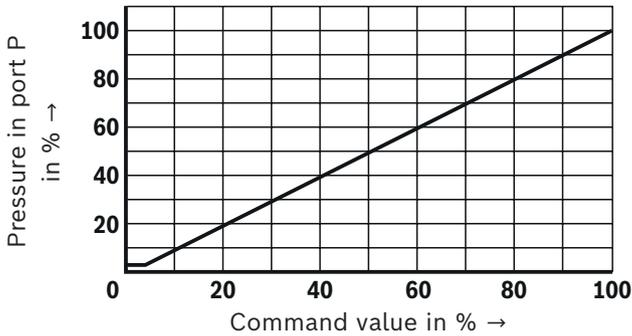


Notice:

Typical characteristic curves which are subject to tolerance variations.

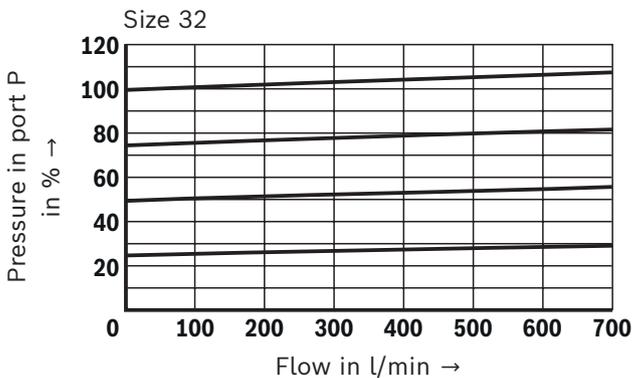
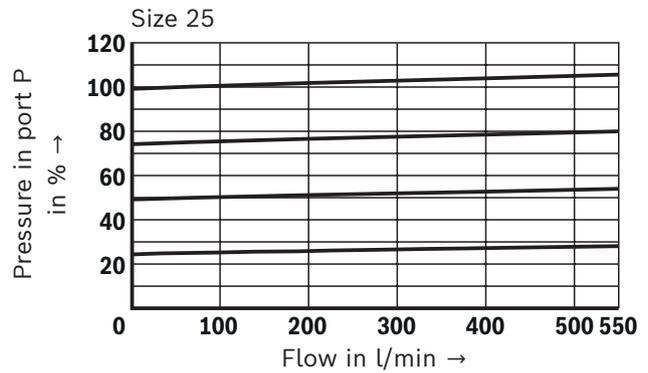
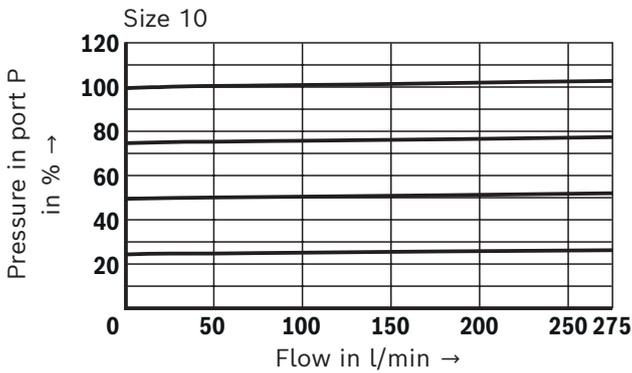
Characteristic curves: Type DBEMA
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Pressure in port P dependent on the command value (flow = 24 l/min)



Pressure in port P dependent on the flow

Version "subplate mounting"



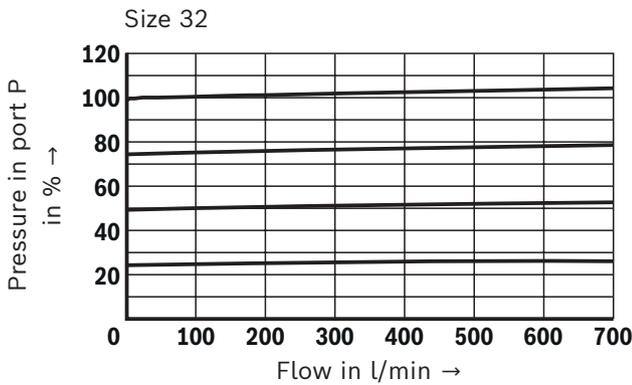
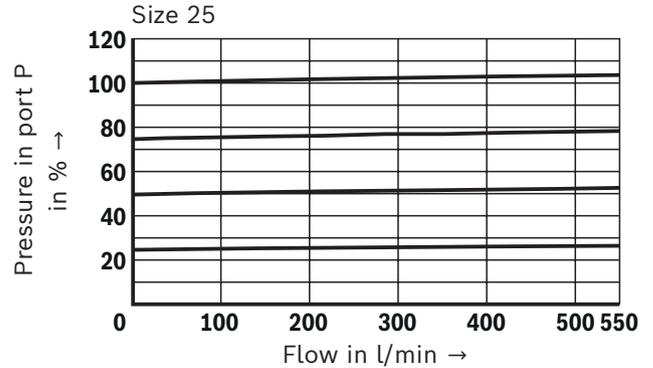
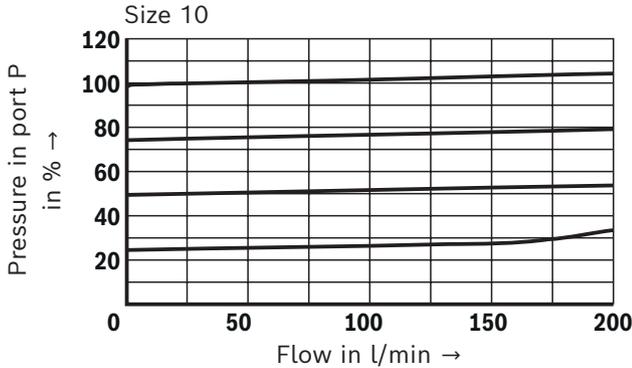
Notice:

Typical characteristic curves which are subject to tolerance variations.

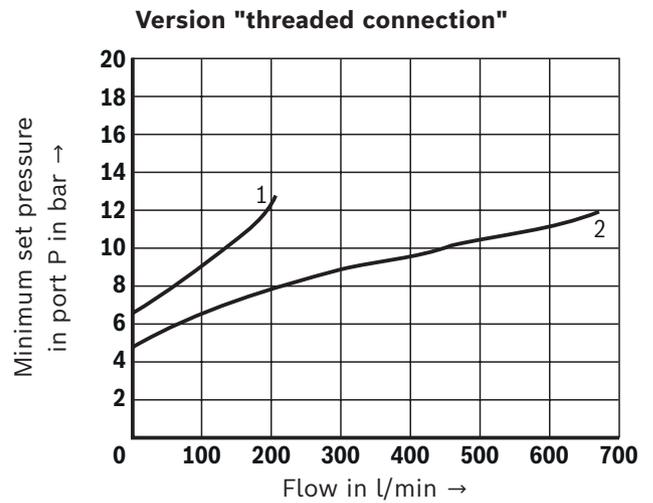
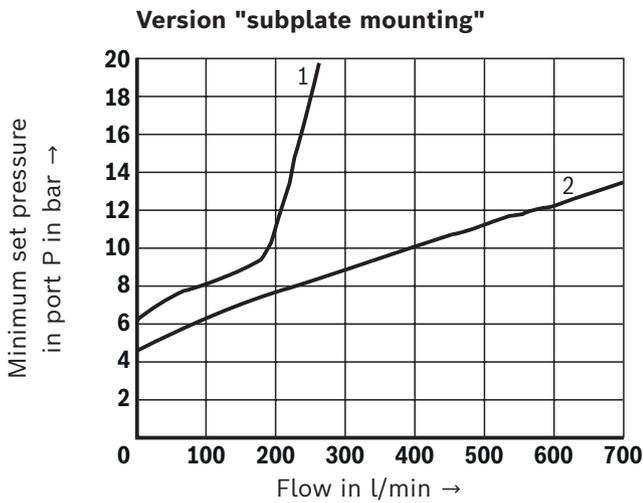
Characteristic curves: Type DBEMA
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Pressure in port P dependent on the flow

Version "threaded connection"



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



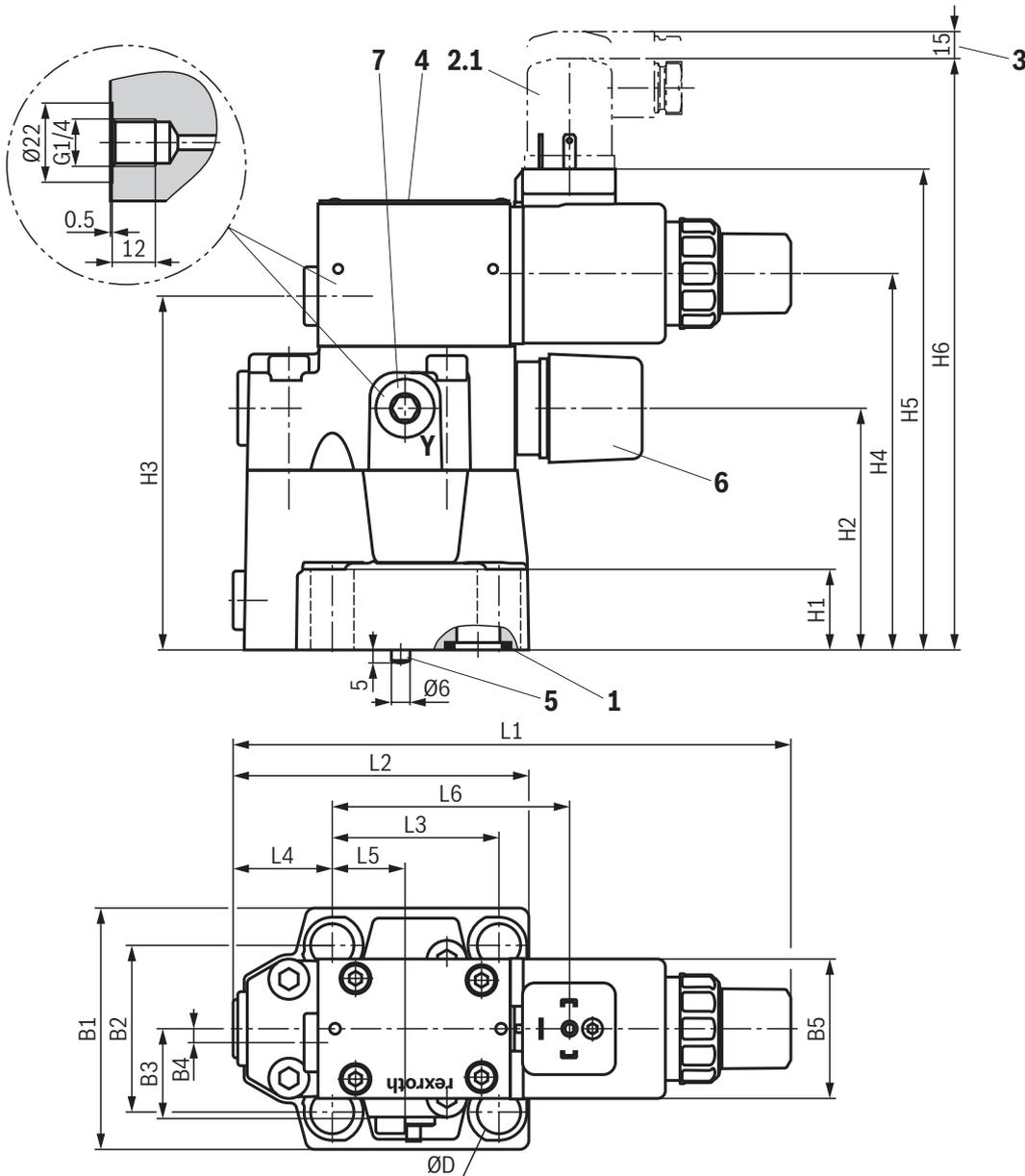
- 1 NG10
- 2 NG25 and 32



Notice:

Typical characteristic curves which are subject to tolerance variations.

Dimensions: Type DBEM; subplate mounting
(dimensions in mm)



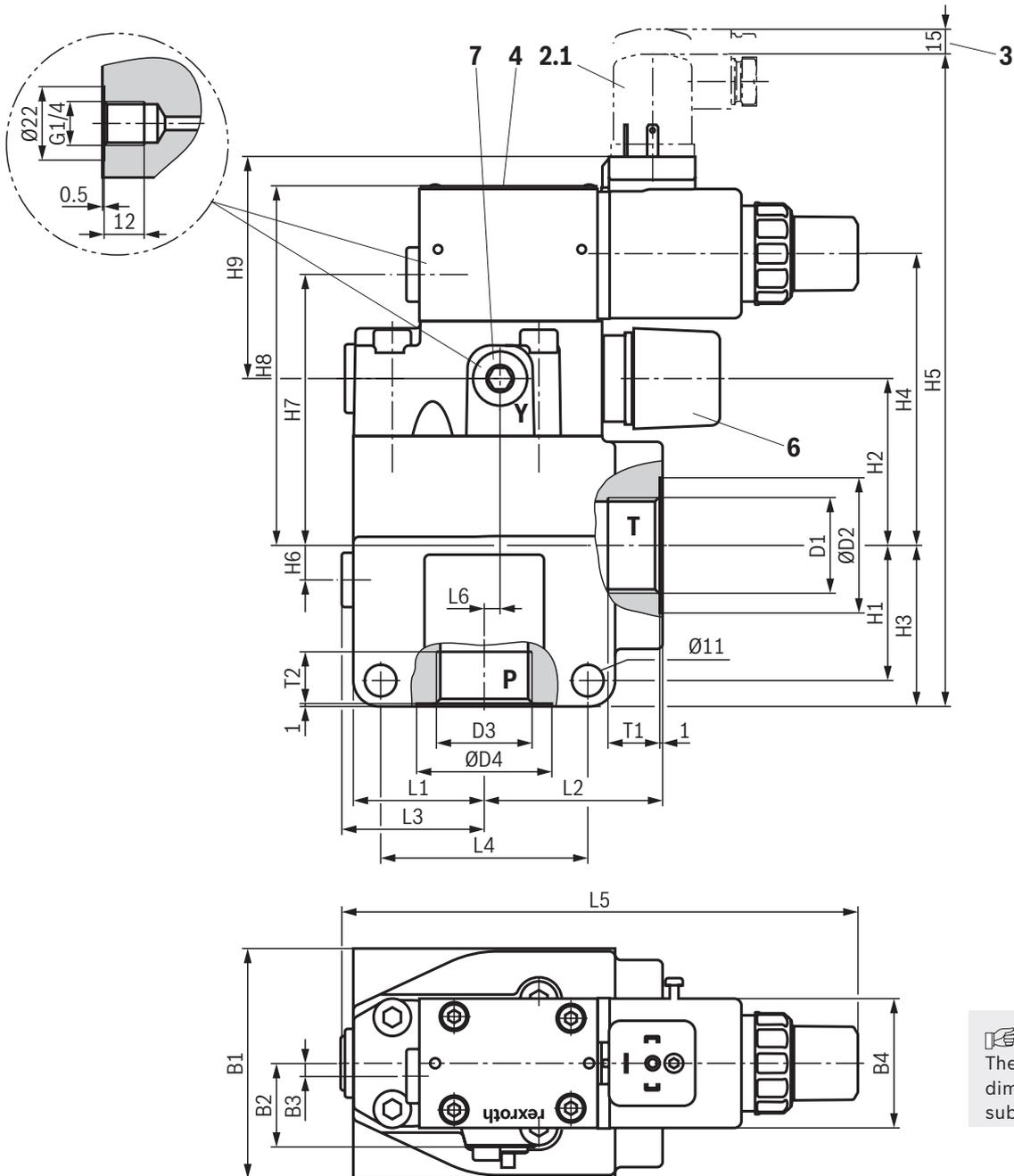
Required surface quality of the valve connection surface

NG	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	B1	B2	B3	B4	B5	ØD
10	26	78	114.2	121.5	155.2	191	179.9	95.5	53.8	32	23.5	76.6	77.9	53.8	29	4.5	45	14
25	26	78	114.2	121.5	155.2	191	190.2	122	66.7	39.8	26	79.2	99.9	70	29	4.5	45	18
32	26	78	114.2	121.5	155.2	191	200.9	154	88.9	47.6	28.9	81.9	114.9	82.6	30	4.5	45	20

For item explanations, valve mounting screws and subplates, see page 26.

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

Dimensions: Type DBEM; threaded connection
(dimensions in mm)



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

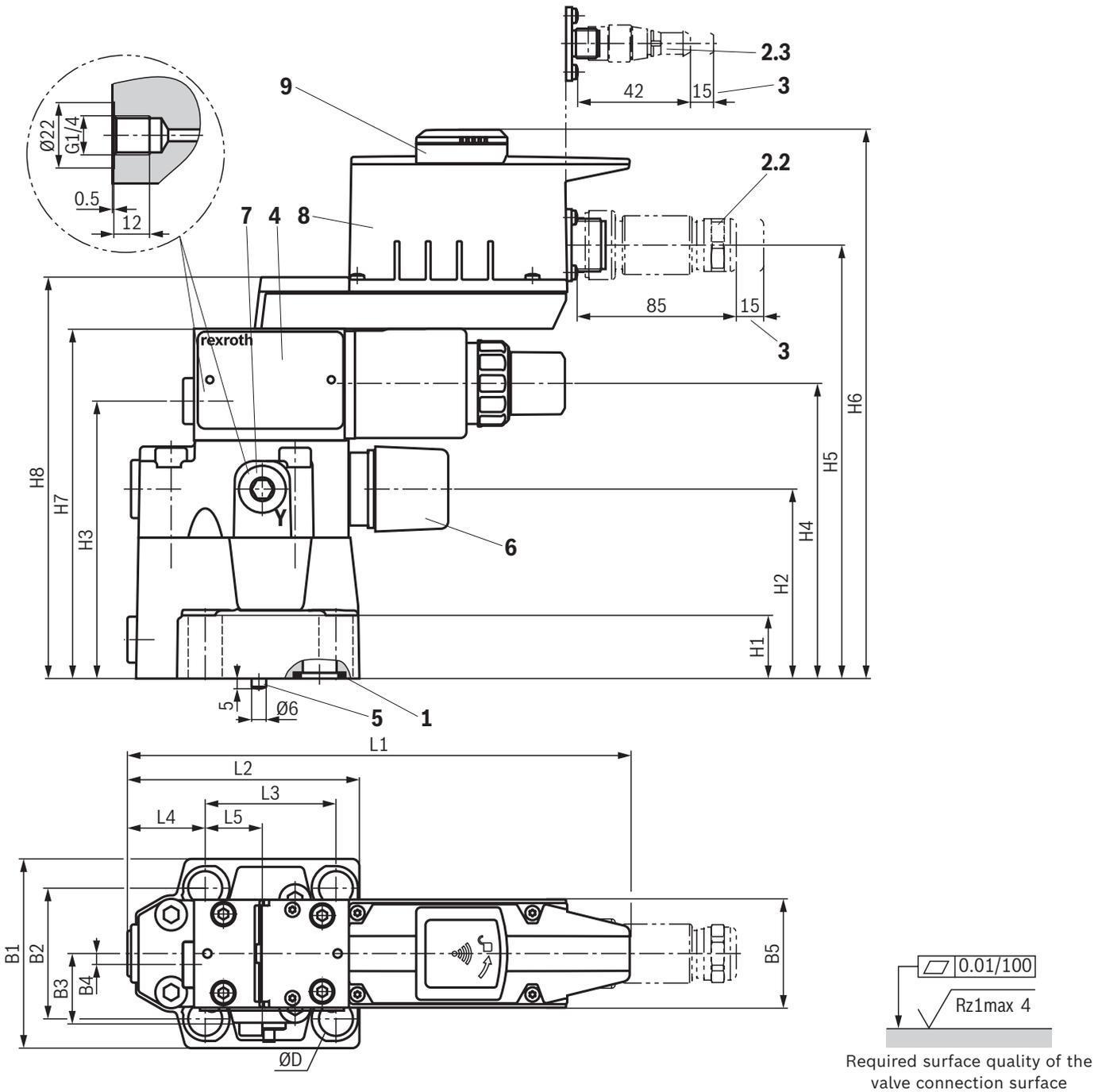
NG	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	L6
10	47	58	56	101.5	226.9	12	94.2	125	77.2	45.5	62	49.5	72	179.4	5.5
25	47	58	56	101.5	226.9	12	94.2	125	77.2	45.5	62	49.5	72	179.4	5.5
32	47	58	56	101.5	226.9	12	94.2	125	77.2	45.5	62	49.5	72	179.4	5.5

NG	B1	B2	B3	B4	D1	ØD2	D3	ØD4	T1	T2
10	80	29	4.5	45	G1/2	34	G 1/2	34	14	14
25	80	29	4.5	45	G 1	47	G 1	47	18	18
32	80	29	4.5	45	G 1 1/2	65	G 1 1/2	65	22	22

Item explanations and valve mounting screws

see page 26.

Dimensions: Type DBEME; subplate mounting
(dimensions in mm)

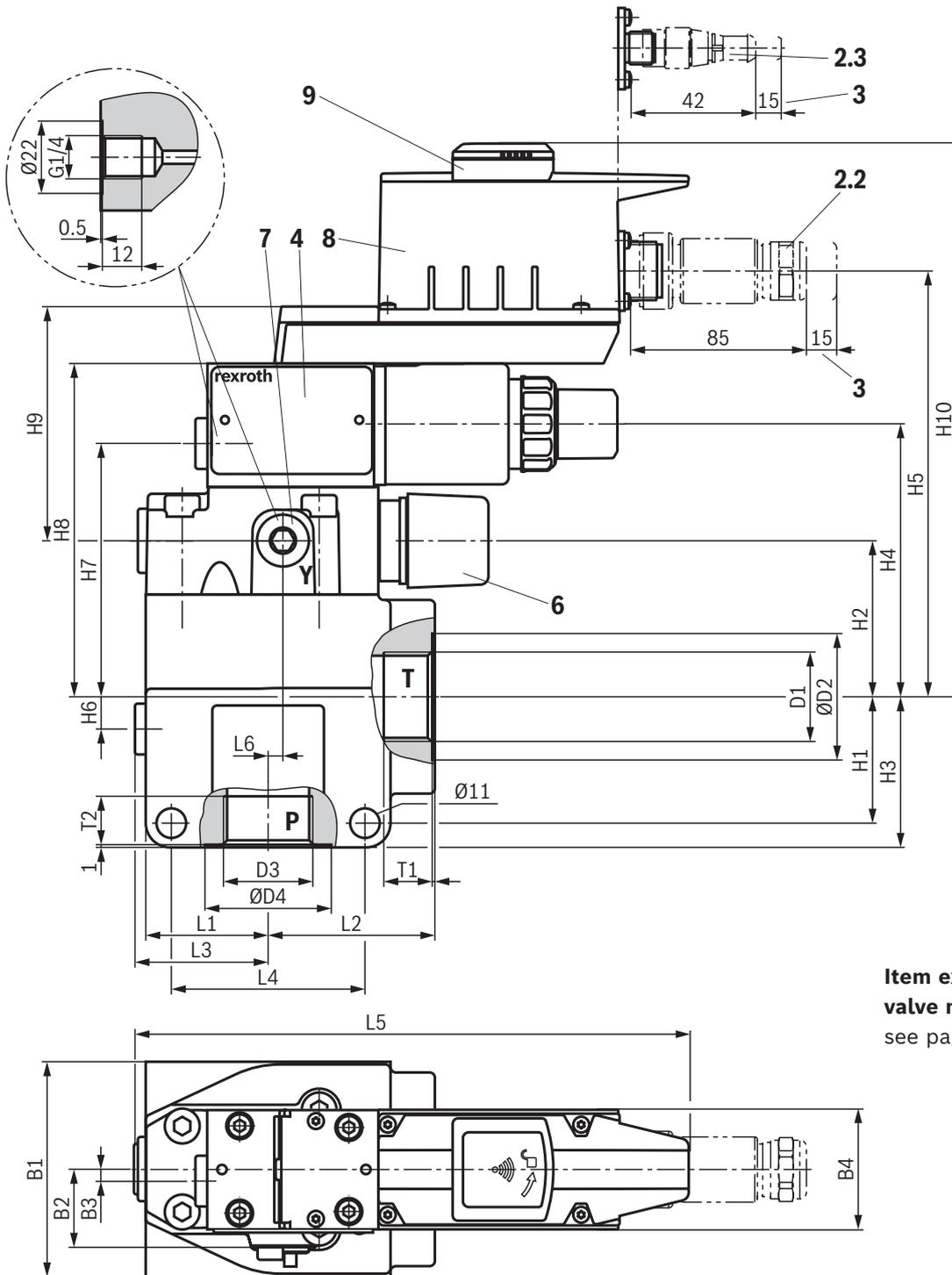


NG	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5	B1	B2	B3	B4	B5	ØD
10	26	78	114.2	121.5	178.9	227.3	144	165.5	207.5	95.5	53.8	32	23.5	77.9	53.8	29	4.5	45	14
25	26	78	114.2	121.5	178.9	227.3	144	165.5	217.8	122	66.7	39.8	26	99.9	70	29	4.5	45	18
32	26	78	114.2	121.5	178.9	227.3	144	165.5	228.5	154	88.9	47.6	28.9	114.9	82.6	30	4.5	45	20

For item explanations, valve mounting screws and subplates, see page 26.

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

Dimensions: Type DBEME; threaded connection
(dimensions in mm)



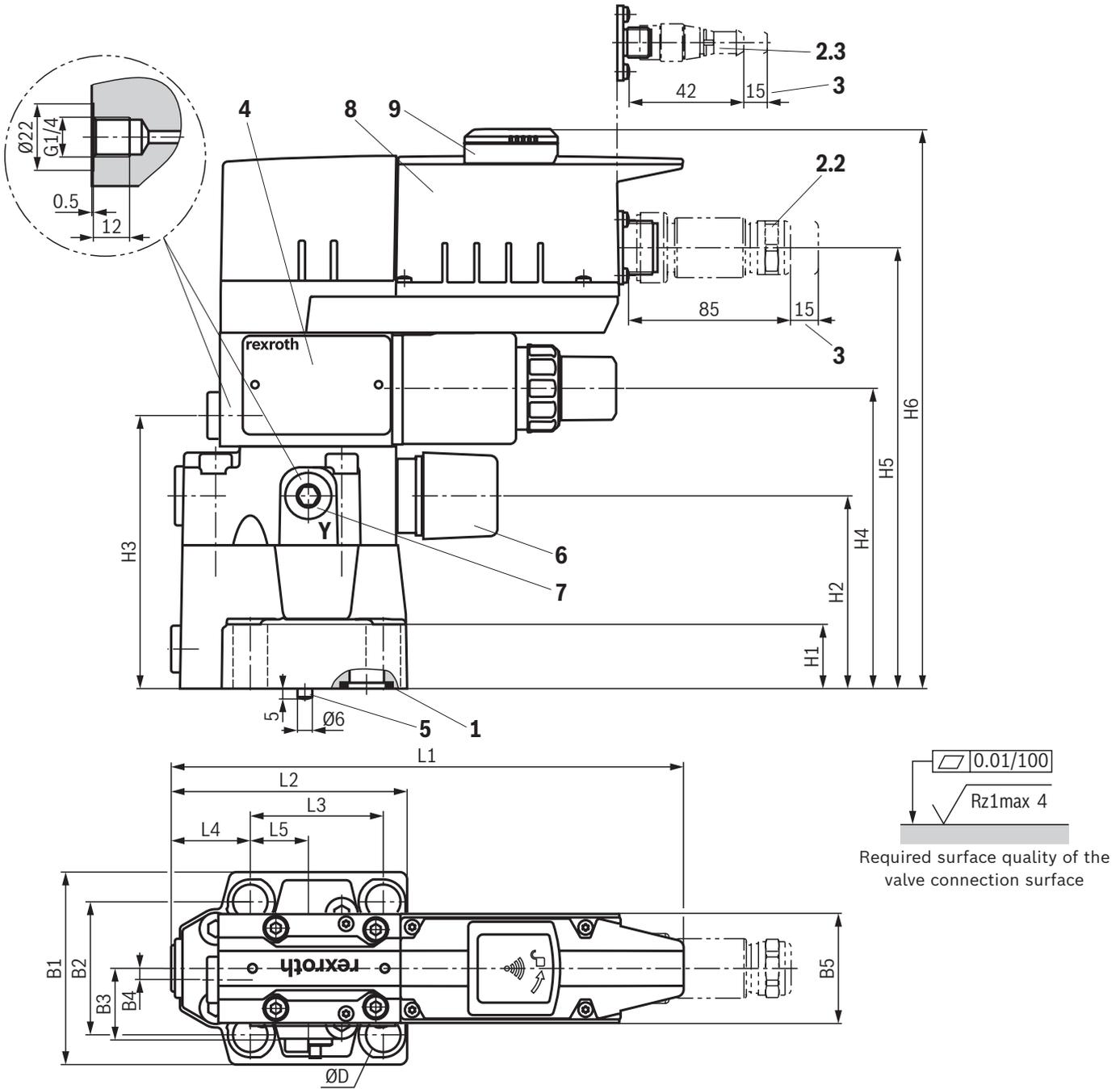
Item explanations and valve mounting screws see page 26.

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

NG	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	L1	L2	L3	L4	L5	L6
10	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	45.5	62	49.5	72	207	5.5
25	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	45.5	62	49.5	72	207	5.5
32	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	45.5	62	49.5	72	207	5.5

NG	B1	B2	B3	B4	D1	ØD2	D3	ØD4	T1	T2
10	80	29	4.5	45	G 1/2	34	G 1/2	34	14	14
25	80	29	4.5	45	G 1	47	G 1	47	18	18
32	80	29	4.5	45	G 1 1/2	65	G 1 1/2	65	22	22

Dimensions: Type DBEMA; subplate mounting
(dimensions in mm)

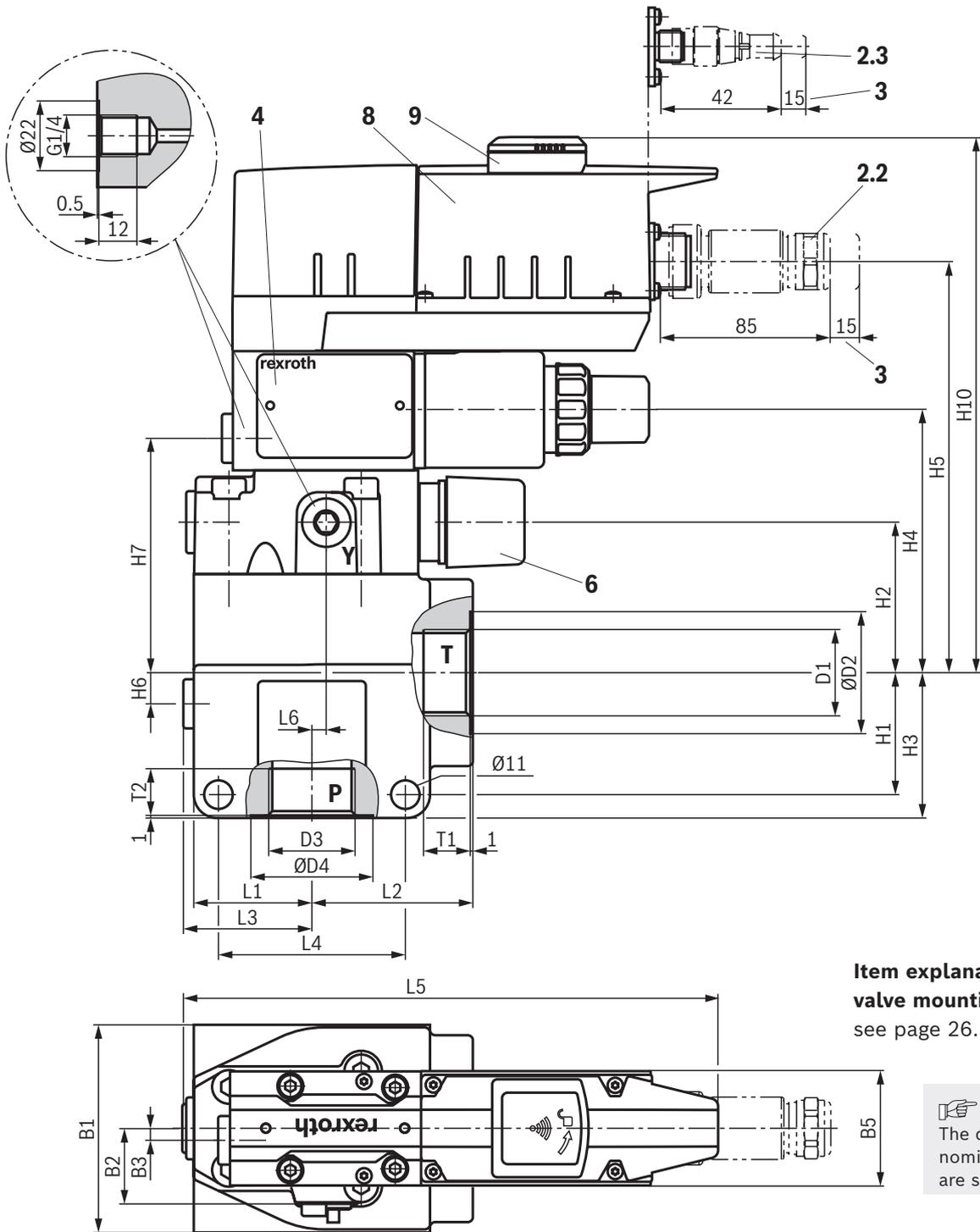


NG	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5	B1	B2	B3	B4	B5	ØD
10	26	78	114.2	114.2	178.9	227.3	144	165.5	207.5	95.5	53.8	32	23.5	77.9	53.8	29	4.5	45	14
25	26	78	114.2	114.2	178.9	227.3	144	165.5	217.8	122	66.7	39.8	26	99.9	70	29	4.5	45	18
32	26	78	114.2	114.2	178.9	227.3	144	165.5	228.5	154	88.9	47.6	28.9	114.9	82.6	30	4.5	45	20

For item explanations, valve mounting screws and subplates, see page 26.

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

Dimensions: Type DBEMA; threaded connection
(dimensions in mm)



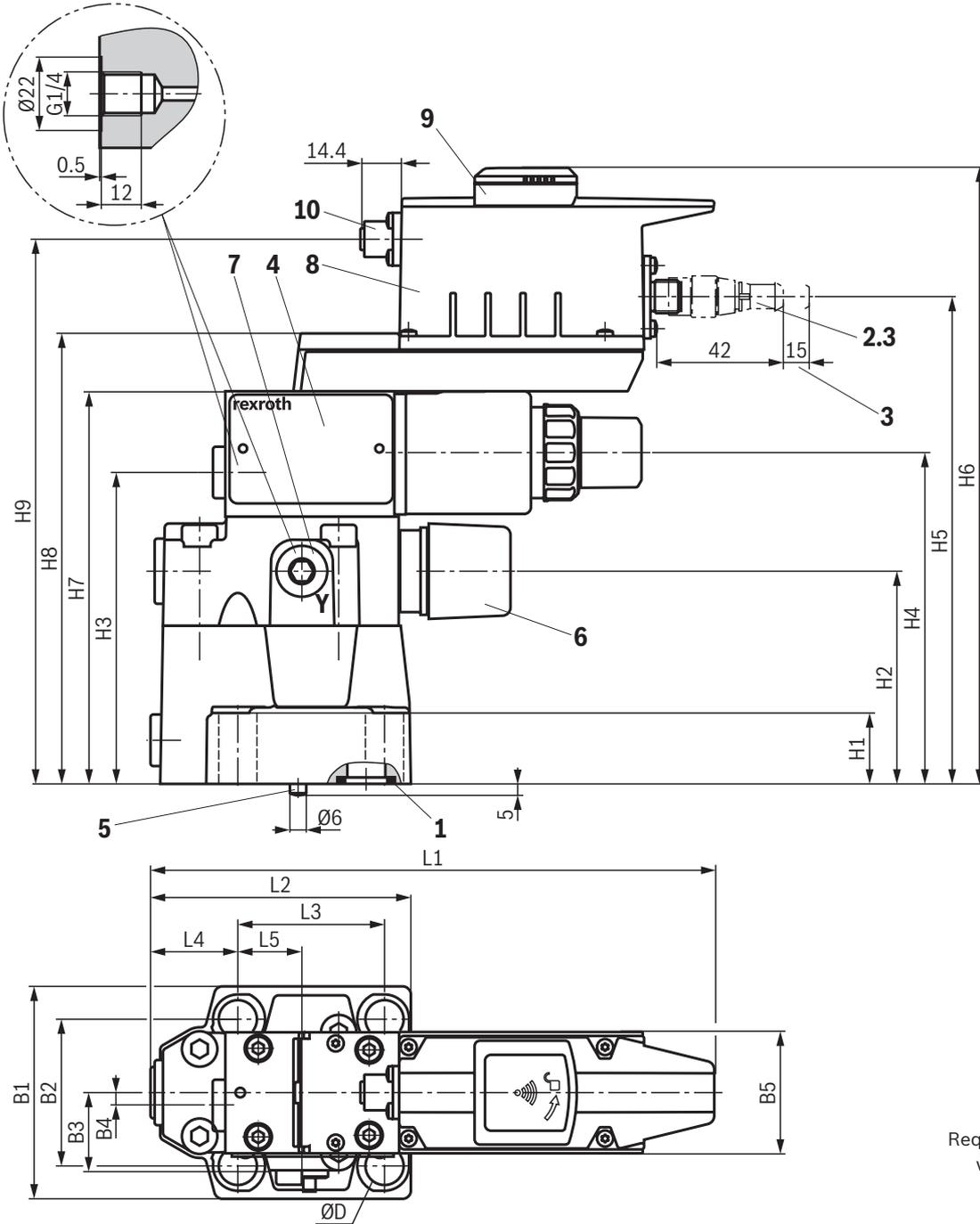
Item explanations and valve mounting screws see page 26.

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

NG	H1	H2	H3	H4	H5	H6	H7	H10	L1	L2	L3	L4	L5	L6
10	47	58	56	101.5	158.9	12	94.2	207.3	45.5	62	49.5	72	207	5.5
25	47	58	56	101.5	158.9	12	94.2	207.3	45.5	62	49.5	72	207	5.5
32	47	58	56	101.5	158.9	12	94.2	207.3	45.5	62	49.5	72	207	5.5

NG	B1	B2	B3	B4	D1	ØD2	D3	ØD4	T1	T2
10	80	29	6.5	45	G 1/2	34	G 1/2	34	14	14
25	80	29	6.5	45	G 1	47	G 1	47	18	18
32	80	29	6.5	45	G 1 1/2	65	G 1 1/2	65	22	22

Dimensions: Type DBEMA...A; subplate mounting
(dimensions in mm)

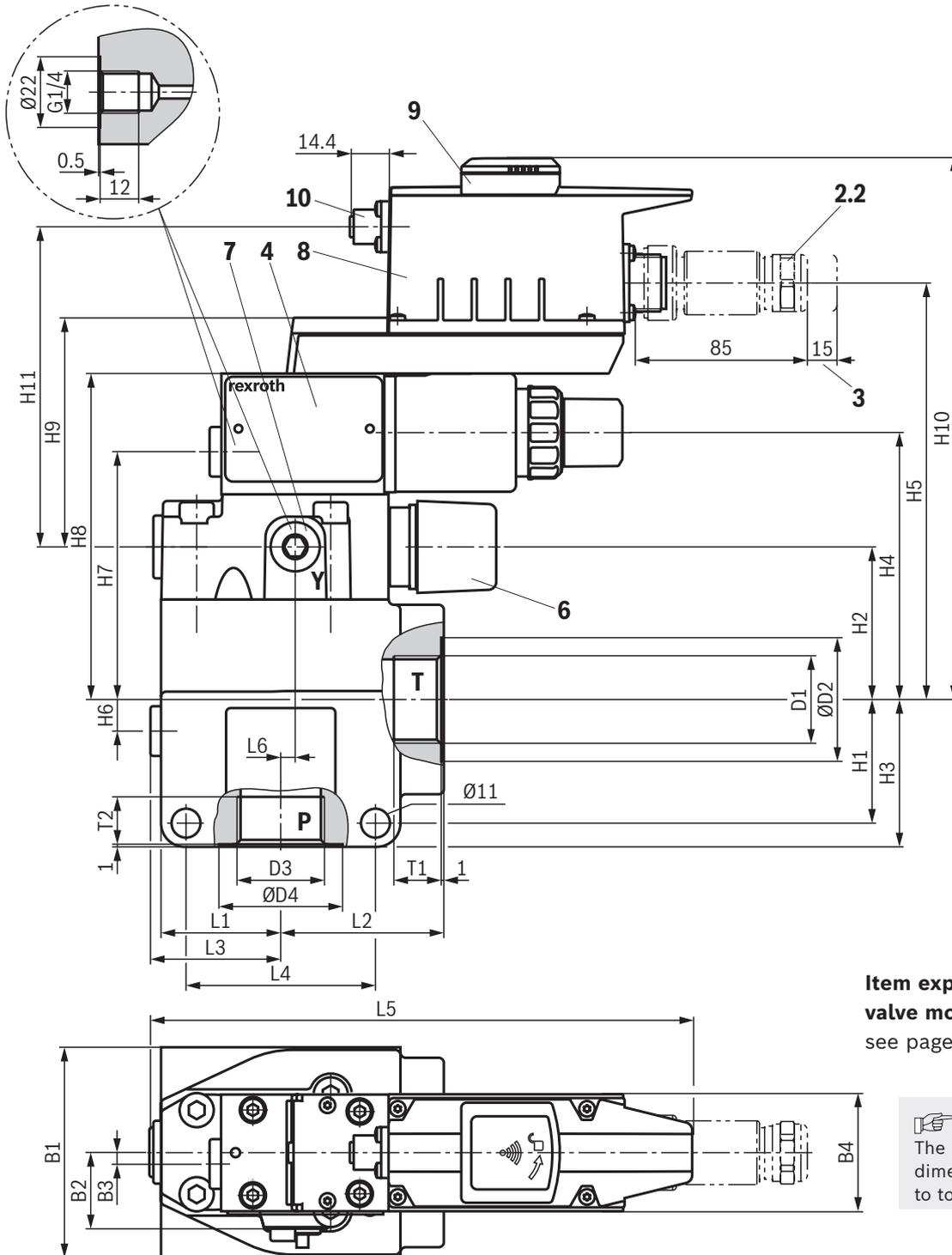


NG	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	B1	B2	B3	B4	B5	ØD
10	26	78	114.2	114.2	178.9	227.3	144	165.5	200	207.5	95.5	53.8	32	23.5	77.9	53.8	29	4.5	45	14
25	26	78	114.2	114.2	178.9	227.3	144	165.5	200	217.8	122	66.7	39.8	26	99.9	70	29	4.5	45	18
32	26	78	114.2	114.2	178.9	227.3	144	165.5	200	228.5	154	88.9	47.6	28.9	114.9	82.6	30	4.5	45	20

For item explanations, valve mounting screws and subplates, see page 26.

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

Dimensions: Type DBEMA...A; threaded connection
(dimensions in mm)



Item explanations and valve mounting screws see page 26.

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

NG	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	L1	L2	L3	L4	L5	L6
10	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	180	45.5	62	49.5	72	207	5.5
25	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	180	45.5	62	49.5	72	207	5.5
32	47	58	56	101.5	158.9	12	94.2	124	145.5	207.3	180	45.5	62	49.5	72	207	5.5

NG	B1	B2	B3	B4	D1	ØD2	D3	ØD4	T1	T2
10	80	29	4.5	45	G 1/2	34	G 1/2	34	14	14
25	80	29	4.5	45	G 1	47	G 1	47	18	18
32	80	29	4.5	45	G 1 1/2	65	G 1 1/2	65	22	22

Dimensions

- 1 Seal rings for ports P and T;
seal ring for ports X
- 2.1 Mating connector without circuitry for connector "K4"
(separate order, see page 27 and data sheet 08006)
- 2.2 Mating connectors with version "A1" and "F1"
(separate order, see page 27 data sheet 08006)
- 2.3 Mating connectors with version "L1"
(separate order, see page 27 data sheet 08006)
- 3 Space required for removing the mating connector
- 4 Name plate
- 5 Locating pin
- 6 Maximum pressure relief
- 7 External pilot oil return, separately and to the tank at zero pressure
- 8 Digital on-board electronics (OBED)
- 9 Bluetooth® dongle (separate order, see page 27)
- 10 External connection for pressure sensor (pressure sensor, separate order, see page 27)

Valve mounting screws (separate order)

Size	Quantity	Hexagon socket head cap screws	Material number
10	4	ISO4762 – M12 x 50-10.9 – flZn/nc/480h/C Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 75 \text{ Nm} \pm 10\%$	R913015611
	or		
25	4	ISO 4762 – M12 x 50 – 10.9 Friction coefficient $\mu_{\text{total}} = 0.12 \dots 0.17$; tightening torque $M_A = 75 \text{ Nm} \pm 10\%$	R900003245
	or		
25	6	ISO 4762 – M16 x 50 – 10.9 – flZn/nc/480h/C Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 185 \text{ Nm} \pm 10\%$	R913015664
	or		
32	6	ISO 4762 – M16 x 50 – 10.9 Friction coefficient $\mu_{\text{total}} = 0.12 \dots 0.17$; tightening torque $M_A = 185 \text{ Nm} \pm 10\%$	R900003264
	or		
32	6	DIN 912 – M18 x 50 – 10.9 – flZn/nc/480h/C Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 248 \text{ Nm} \pm 10\%$	R913015903
	or		
32	6	DIN 912 – M18 x 50 – 10.9 Friction coefficient $\mu_{\text{total}} = 0.12 \dots 0.17$; tightening torque $M_A = 248 \text{ Nm} \pm 10\%$	R900002245
	or		



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 6264 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 rating 200, 315, 350)	R901466598	

Bluetooth® dongle

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

With on-board electronics

Mating connectors 6-pole + PE	Design	Version	Material number	Data sheet
For connection of valves with on-board 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 connection of valves with on-board electronics, round connector 6+PE, connector straight, screened, 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 continuous control 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 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 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

Project planning information

► 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, Rexroth products and their properties have to 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.

- Compliance with the maximum operating pressure (350 bar) is mandatory.
- Type DBEME is delivered from the plant with standard parameter set 1 (small dead volume), type DBEMA with standard parameter set 2 (large dead volume). For predefined parameter sets, see functional description 29362-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.

► "easy2connect app"

- For valves with Bluetooth interface, the password should be changed using the "easy2connect app" during commissioning. For further information, see functional description 29362-FK.
- Pressure command value characteristic curve adjustment (found in the app under "Controller"): For applications with non-linear relationships 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 previous valve families.
- The system behavior of the pressure controller can be influenced via the switching integrator. Two options are available to the customer; the I share can be frozen (default value) or deleted.
- For further information, see functional description 29362-FK.

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.

Further information

- ▶ Hydraulic valves for industrial applications
 - ▶ Subplates
 - ▶ Hydraulic fluids on mineral oil basis
 - ▶ Environmentally compatible hydraulic fluids
 - ▶ Flame-resistant, water-free hydraulic fluids
 - ▶ Flame-resistant hydraulic fluids – containing water (HFAE, HFAS, HFB, HFC)
 - ▶ Bluetooth® dongle
 - ▶ Reliability characteristics according to EN ISO 13849
 - ▶ Hexagon socket head cap screw, metric/UNC
 - ▶ Assembly, commissioning and maintenance of hydraulic systems
 - ▶ Proportional pressure relief valve
 - ▶ Bluetooth® dongle
 - ▶ Information on available spare parts
- Operating instructions 07600-B
 - Data sheet 45100
 - Data sheet 90220
 - Data sheet 90221
 - Data sheet 90222
 - Data sheet 90223
 - Data sheet 30581
 - Data sheet 08012
 - Data sheet 08936
 - Data sheet 07900
 - Functional description 29362-FK
 - Operating instructions 30581-B
 - www.boschrexroth.com/spc

Notes

Notes

Notes

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