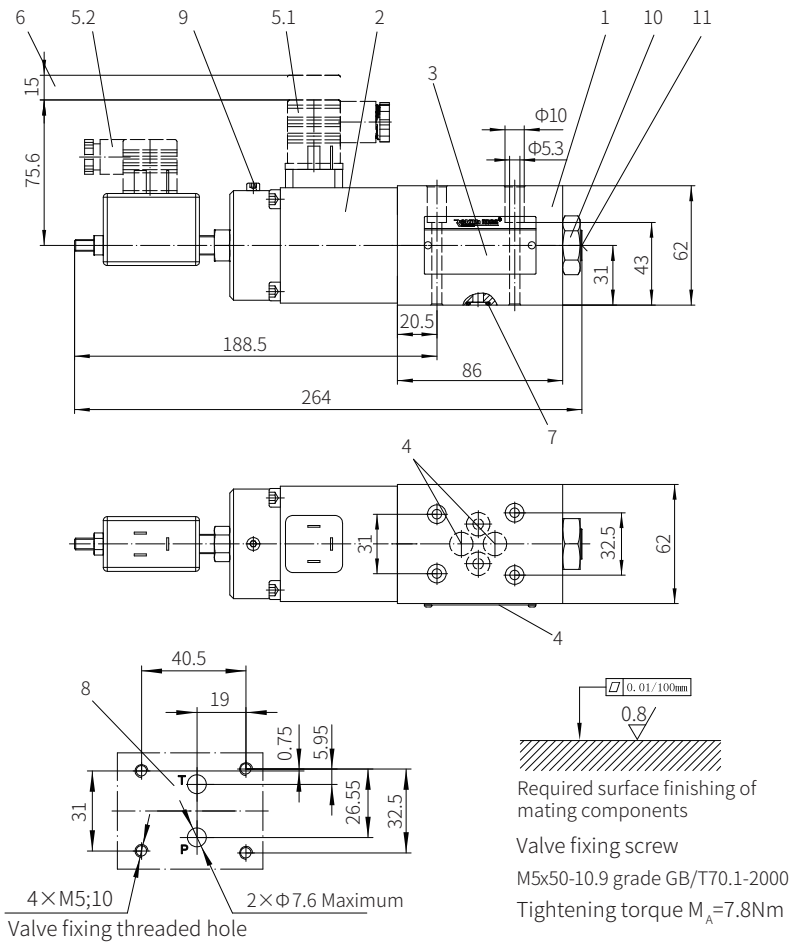


Component size

Size unit: mm



- 1 Valve body
- 2 Proportional solenoid with inductive position transducer
- 3 Name plate
- 4 Blind hole
- 5 Plug-in connector
- 6 Space required to remove the plug-in connector
- 7 Identical seal rings for P, T and blind hole

- 8 Machined valve mounting surface
- Differences from the standard:
- Locating pin not present
 - A and B ports not drilled
 - 9 Bleed screw
 - 10 Lock nut SW27
 - 11 Internal hexagon SW8

Pilot Operated Proportional Relief Valve

Model: DBEM/DBEME...7XJ



- ◆ Size 10/25/32
- ◆ Maximum working pressure 350 bar
- ◆ Maximum working flow 700 L/min

Contents

Function description, sectional drawing	02-03
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Models and specifications	04
Characteristic curve	05
Technical parameters	06
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Features

- For subplate mounting
- For installation in manifolds
- Maximum pressure limitation
- Both valves and proportional amplifiers from the same supplier

Function description, sectional drawing

The DBEM and DBEME valves are pilot operated proportional relief valves and used to limit the hydraulic system pressure. The pressure in hydraulic system can be adjusted according to the electric command value by these valves.

They basically consist of the main valve body (1) with main valve spool (3), pilot control valve (2) and the solenoid pilot valve (11).

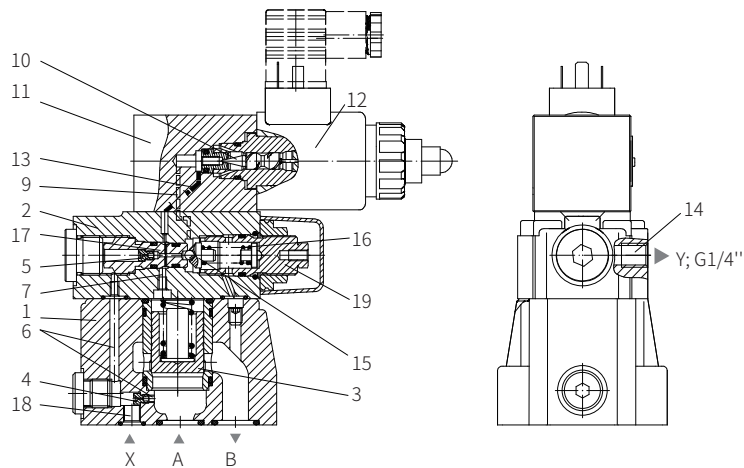
Model DBEM

The pressure at the P port acts on the bottom of the main valve spool (3), and also acts on the spring loaded side of the main valve spool (3) by orifices (6,7) and plug-in damping (4,5). The pressure is applied to the needle valve (10) of the solenoid pilot valve (11) through the control hole (9) to counteract the output force of the proportional solenoid (12) according to the set value. If the hydraulic pressure exceeds the output force of the proportional solenoid, the needle valve (10) opens. The pilot oil flows into port Y through orifice (13) and returns to the oil tank. Subsequently, The pressure drop is formed from orifices (6,7) and against the force of the return spring to lift the main valve spool (3). The port P is connected to port T. The main valve spool (3) controls the pressure at the P port.

An additional spring loaded pilot control valve (2) is required to limit the maximum pressure (pressure protection function). The conical valve (15) and pilot valve seat (17) are closed due to the force of the spring (16).

If the pressure in the spring chamber of the main valve spool (3) exceeds the maximum allowable setting pressure of the valve, the conical valve (15) overcomes the force of the return spring to open and connect the oil circuit to the spring chamber. The pressure oil returns to the oil tank via port Y. The pressure drop is formed from orifices (6, 7) and overcome the force of the return spring to lift the main valve spool (3). The connection from port P to port T is opened. The main valve spool (3) controls the pressure at the port P.

The pre-set pressure can be reduced by the adjusting sleeve (19) if necessary. Port Y must return to the oil tank from the external pipeline, and there is no pressure in the return pipeline layer. The valve unloads and limits the maximum pressure through port X (18).



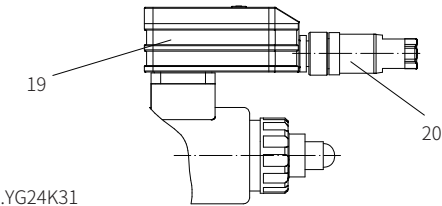
Model DBEME10-7XJ/...XYG24K4

Function description, sectional drawing

Model DBEME

The function and design of this valve is basically the same as model DBE/DBEM except electronic controller.

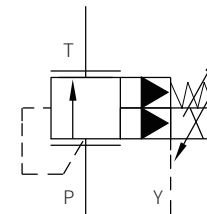
The electronic control position and integrated plug amplifier (19) receive power and command values by the plug-in plug (20).



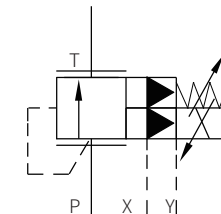
Model DBEME10-7XJ/...YG24K31

Functional symbols

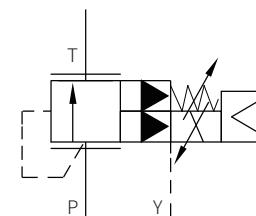
Model DBEM...7XJ/...Y...



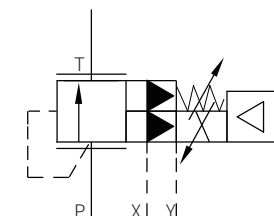
Model DBEM...7XJ/...XY...



Model DBEME...7XJ/...Y...



Model DBEME...7XJ/...XY...



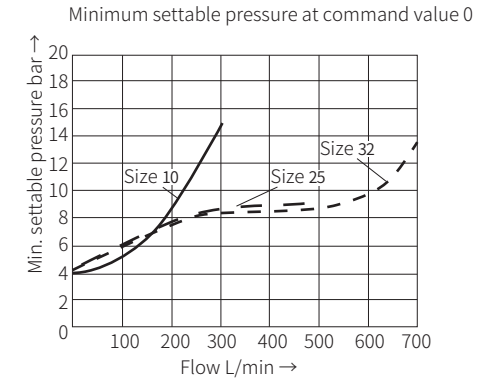
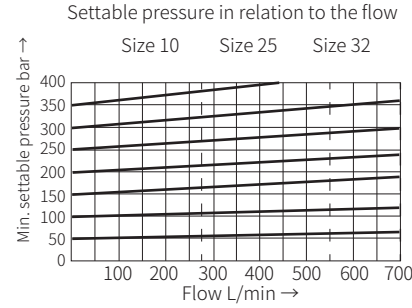
Models and specifications

DBE	M		7X	J		G24		*
with maximum pressure Limitation =M		more information in text						
external amplifier =No code		sealing material						
with integrated amplifier =E		No code= NBR seals						
		V= FKM seals						
		(consult for other seals)						
size		for model DBE(M)E						
NG10 =10		A1= command value 0 to 10 V						
NG25 =20		F1= command value 4 to 20 mA						
NG32 =30		DBEM electrical connection:						
subplate mounting =No code		K4= square socket without plug						
threaded connection =G		DBEME electrical connection:						
		K31S= with 1.5 meter cable and tin on the end						
		K31C= with M12x1 aviation plug, 5-pin						
70 to 79 series =7X		No code= 1600mA coil						
(70 to 79 series installation and connection size unchanged)		-8= 800mA coil						
Rekith =J		G24= supply voltage 24 VDC						
maximum pressure stage		Y= pilot oil supply internal and drain external						
to 50bar =50		XY= pilot oil supply external and drain external						
to 100bar =100								
to 200bar =200								
to 315bar =315								
to 350bar =350								

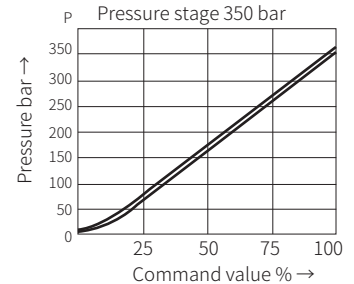
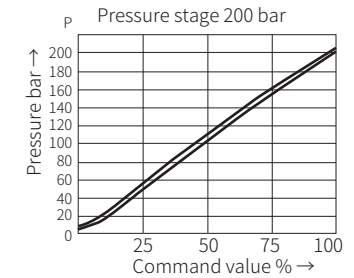
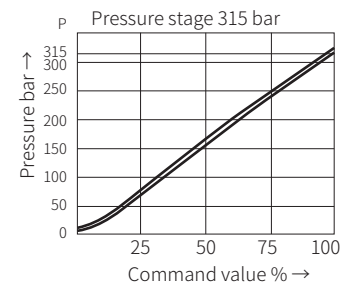
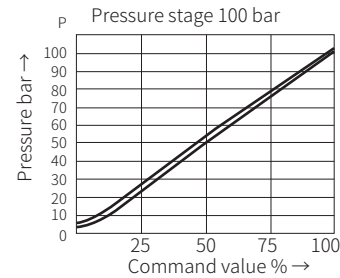
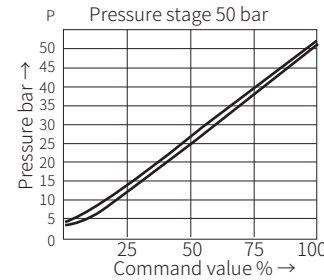
04

Characteristic curve

(Measured when using HLP46, $\vartheta_{oil}=40^{\circ}C \pm 5^{\circ}C$)



Command value pressure characteristic curve (measured at a flow rate of 24L/min)



04

Technical parameters

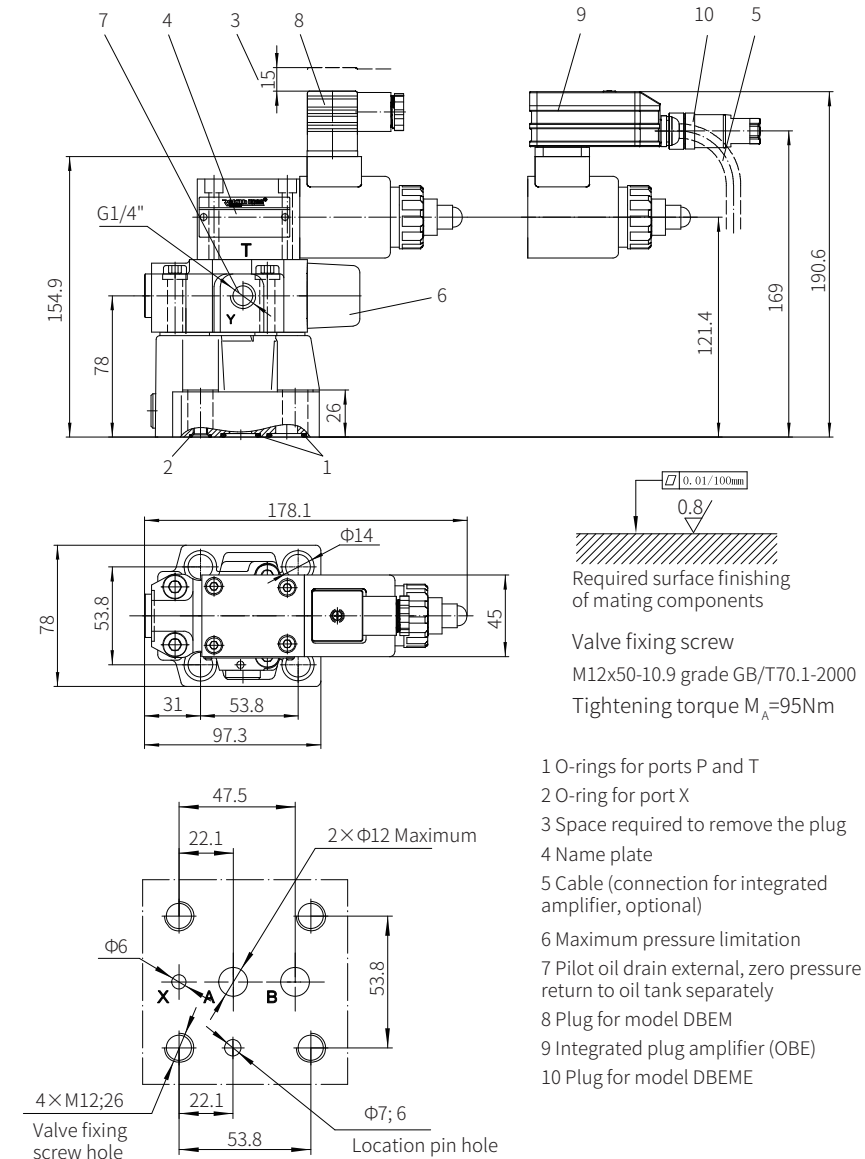
(Test conditions: measured at $v=40\text{mm}^2/\text{s}$, $t=50^\circ\text{C}$)

Size	Size 10	Size 25	Size 32
Maximum working pressure Oil ports P and X	bar 350		
Oil port T	bar 315		
Oil port Y	zero pressure return oil tank Separately		
Maximum setting pressure Pressure stage 50	bar 50		
Pressure stage 100	bar 100		
Pressure stage 200	bar 200		
Pressure stage 315	bar 315		
Pressure stage 350	bar 350		
Minimum setting pressure at command value zero	bar See characteristic curve		
Maximum flow rate	L/min 275	550	700
Pilot flow rate	L/min 0.4 to 1	0.4 to 1.5	0.4 to 1.5
Fluid	Mineral hydraulic oil, phosphate ester hydraulic oil		
Oil temperature range	$^\circ\text{C}$ -20 to +80		
Viscosity range	mm^2/s 15 to 380		
Hysteresis (see command value pressure characteristic curve)	% $\leq 5\%$ of the maximum setting pressure		
Linearity	% ± 3.5 of the maximum setting pressure		
Manufacturing tolerance of the command value pressure characteristic curve, according to the hysteresis characteristic curve when pressure increasing	Model DBEM	%	
	Model DBEME	%	
Step response Tu+Tg	10% \rightarrow 90%	ms ~100	Measured with 0.2L of oil at port A
	90% \rightarrow 10%	ms ~100	
Step response Tu+Tg	10% \rightarrow 90%	ms ~200	Measured with 5L of oil at port A
	90% \rightarrow 10%	ms ~200	
Electrical	G24		G24-8
Minimum control current	mA ≤ 100		≤ 100
Maximum control current	mA $1600 \pm 10\%$		$800 \pm 5\%$
Coil resistance Cold value 20°C	Ω 5.5		20.6
Maximum hot value	Ω 8.05		33
Duty	%		100
Electronic control unit (OBE)			
Voltage type	Nominal voltage	VDC 24	
	Upper limit	VDC 35	
	Lower limit	VDC 21	
Current consumption	A	1.5	
Demand power	A	2	Time interval
input	Voltage	V	0 to 10
	Current	mA	4 to 20
output	Measuring current	mV	$1\text{ mV} \triangleq 1\text{ mA}$
Valve protection to EN60529	IP65		

Component size

Size unit: mm

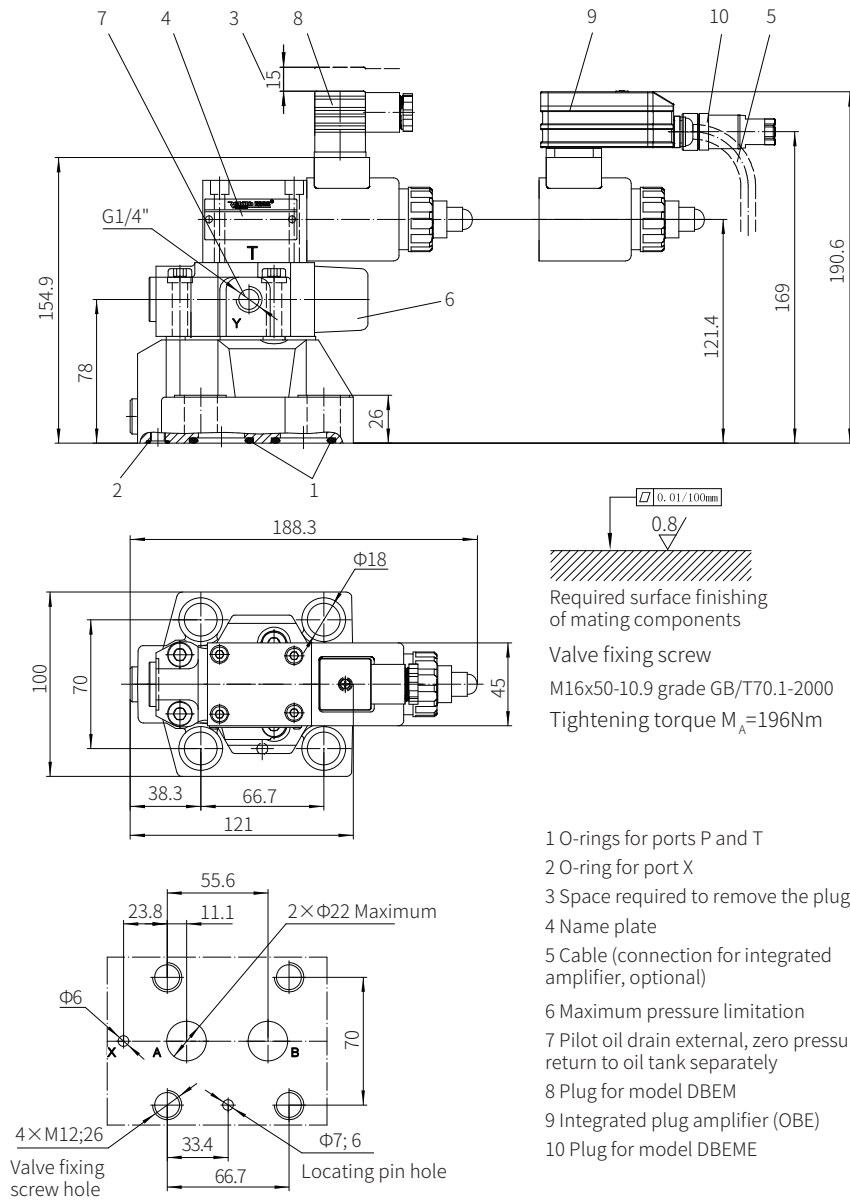
Model DBEM(E)10...-7XJ/...



Component size

Size unit: mm

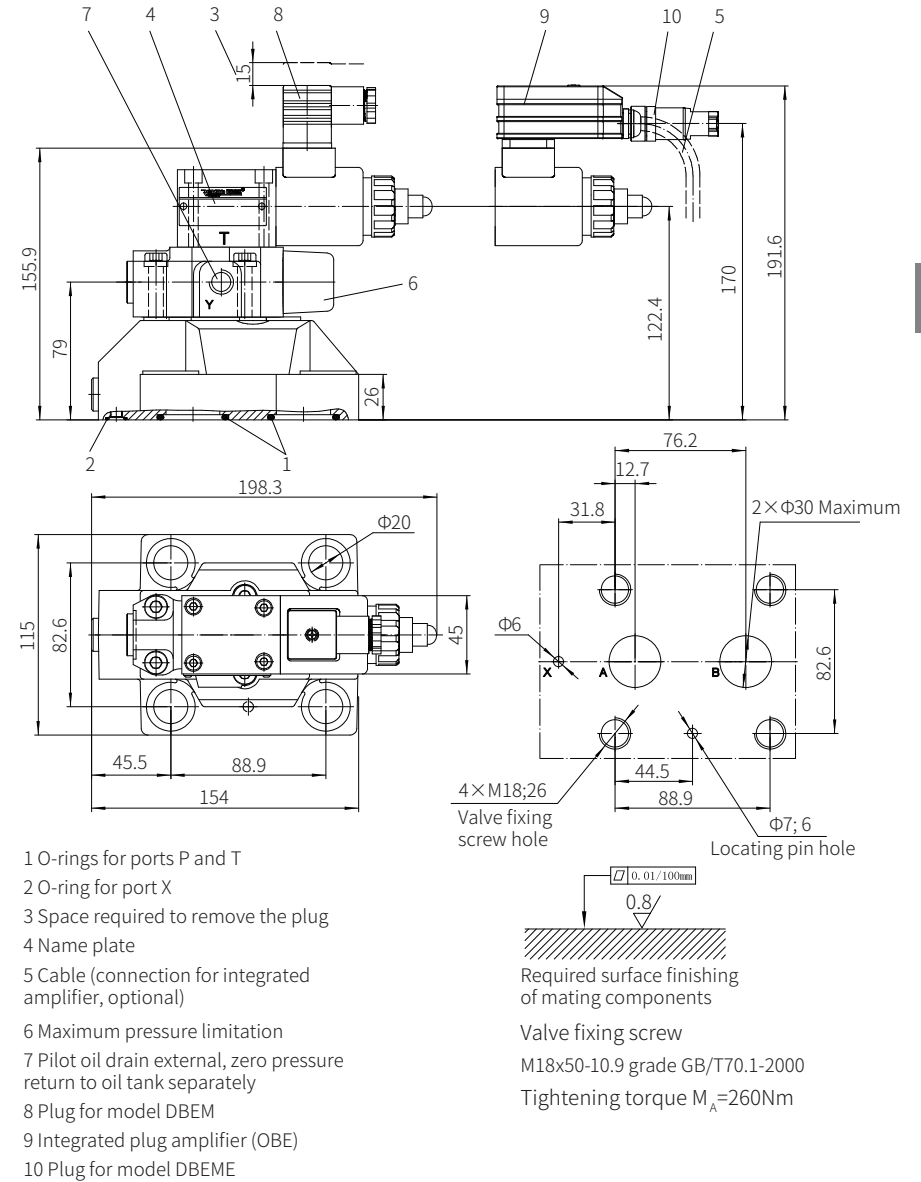
Model DBEM(E)20...-7XJ/...



Component size

Size unit: mm

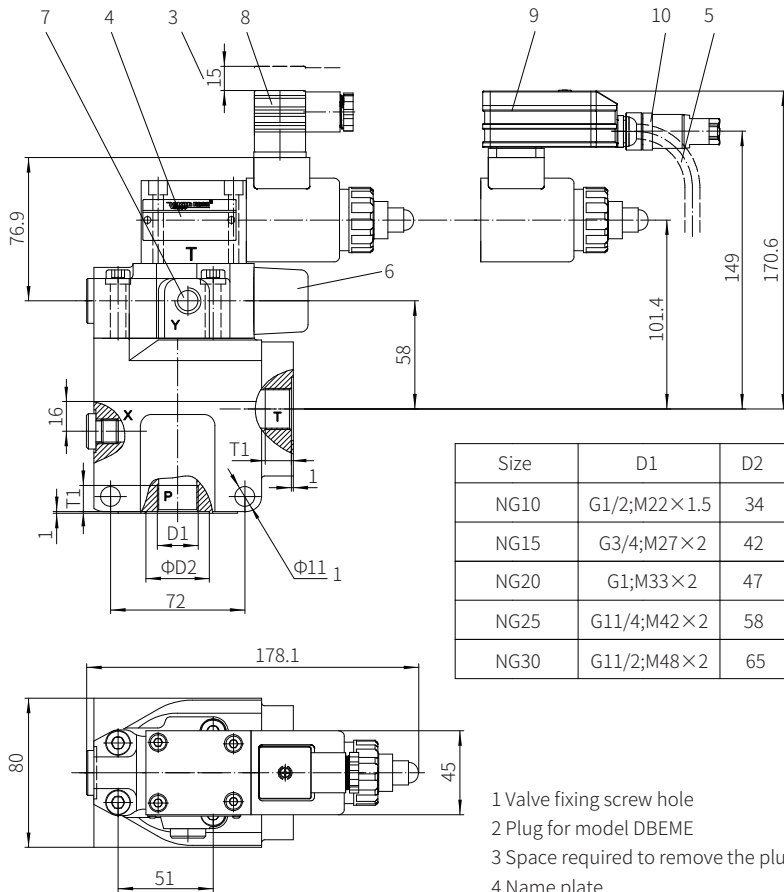
Model DBEM(E)30...-7XJ/...



Component size

Size unit: mm

Model DBEM (E)G



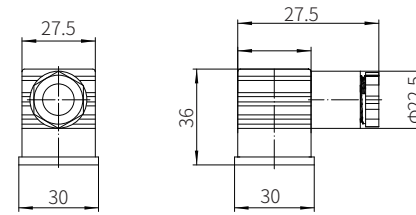
Size	D1	D2	T1
NG10	G1/2;M22×1.5	34	14
NG15	G3/4;M27×2	42	16
NG20	G1;M33×2	47	18
NG25	G1 1/4;M42×2	58	20
NG30	G1 1/2;M48×2	65	22

- 1 Valve fixing screw hole
- 2 Plug for model DBEME
- 3 Space required to remove the plug
- 4 Name plate
- 5 Cable (connection for integrated amplifier, optional)
- 6 Maximum pressure limitation
- 7 Pilot oil drain external, zero pressure return to oil tank separately
- 8 Plug for model DBEM
- 9 Integrated plug amplifier (OBE)

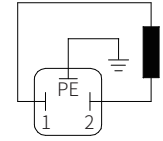
Component size

Size unit: mm

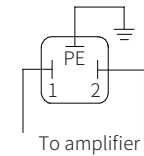
Model DBEM...7XJ/...K4
Plug-in connector to DIN 175301-803



Connection at component plug

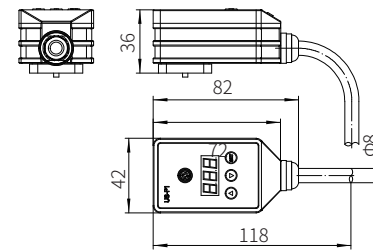


Connection at plug-in connector

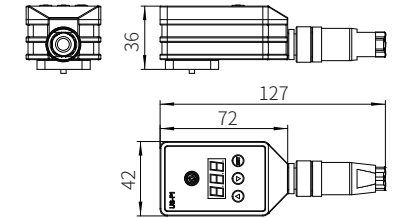


To amplifier

Model DBEM...7XJ/...K31S



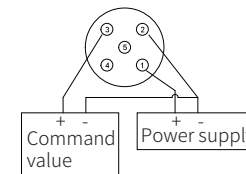
Model DBEME...7XJ/...K31C



Terminal identification

M12 plug terminal number (K31C type)	Cable color (K31S type)	Terminal identification
1	Red	Power supply +
2	Black	Power supply -/command value -
3	Yellow	Command value +
4	Blue	Reference voltage 5V
5	Green	-

Connection example:
PLC example input command



Connection example:
Potentiometer input command

