

Pilot Operated Proportional Relief Valve

Model: DBEM/DBEME...7X



04

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

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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).

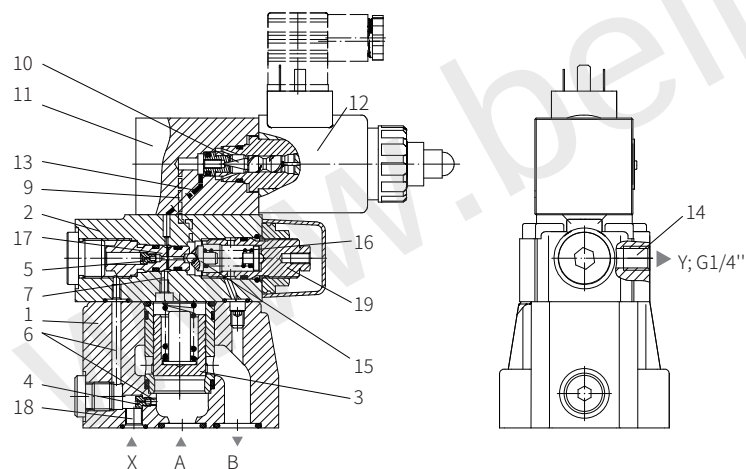
Model DBEM

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).



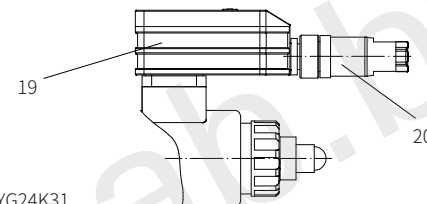
Model DBEME10-7XJ/...XYG24K4

Function description, sectional drawing

Model DBEME

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

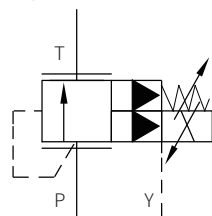
The electronic control position and integrated plug amplifier (19) receive power and command values by the plug-in plug (20).



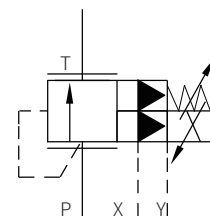
Model DBEME10-7XJ/...YG24K31

Functional symbols

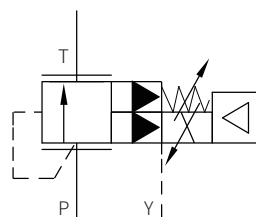
Model DBEM...7XJ/...Y...



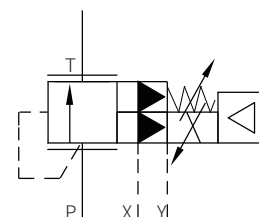
Model DBEM...7XJ/...XY...



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



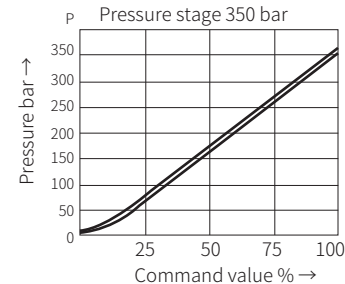
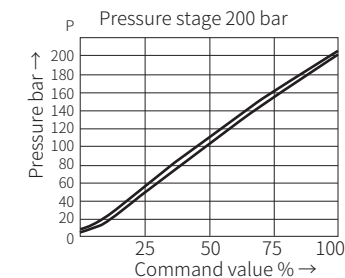
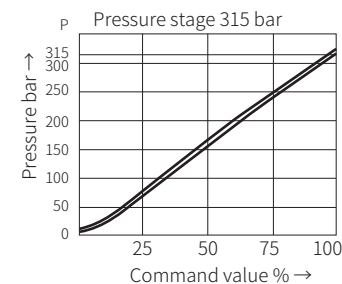
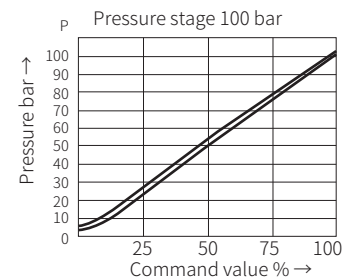
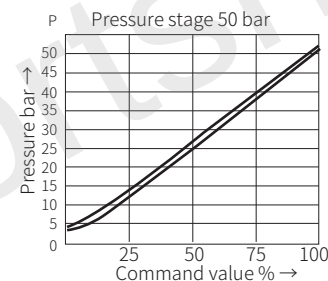
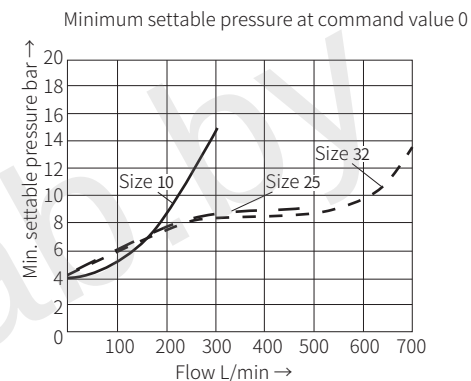
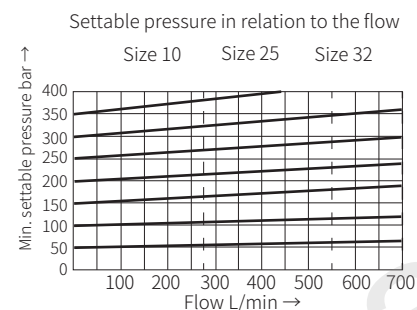
Model DBEME...7XJ/...XY...



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

Characteristic curve

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



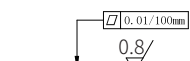
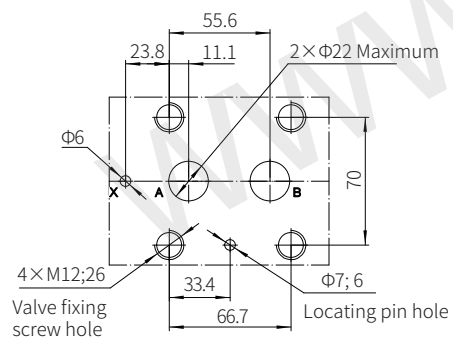
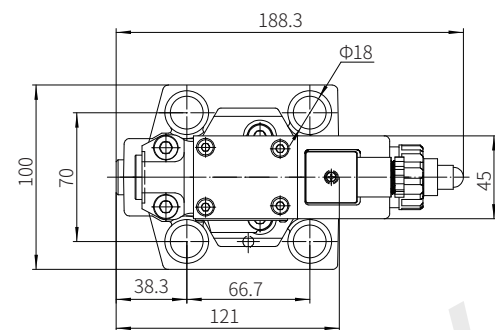
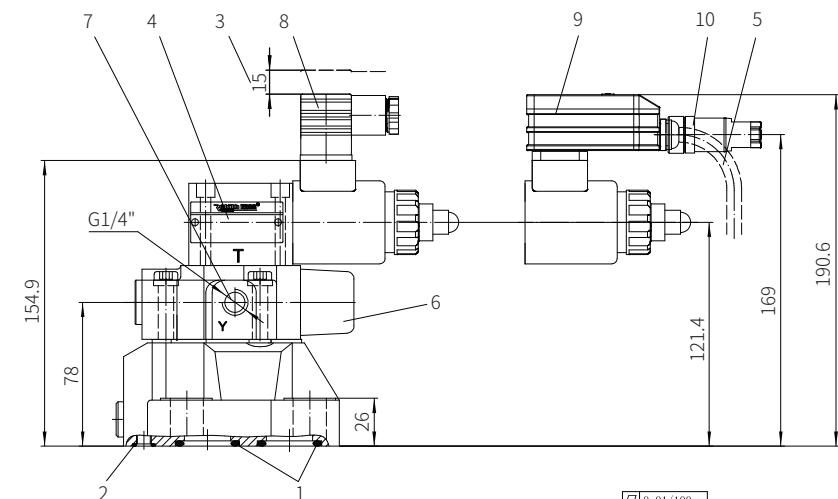
Command value pressure characteristic curve
(measured at a flow rate of 24L/min)

Size unit: mm

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

1 O-rings for ports P and T
 2 O-ring for port X
 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)
 10 Plug for model DBEME

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



Required surface finishing
of mating components

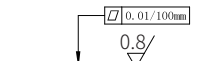
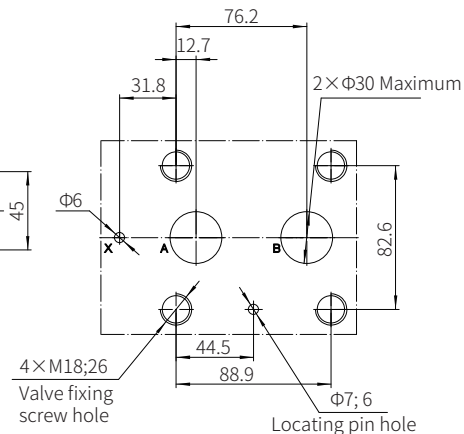
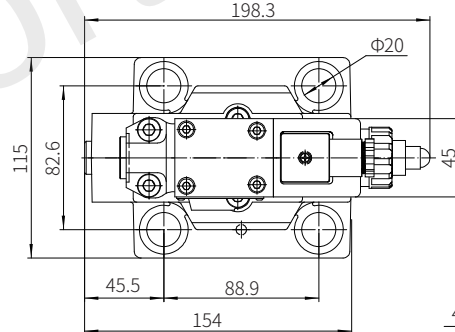
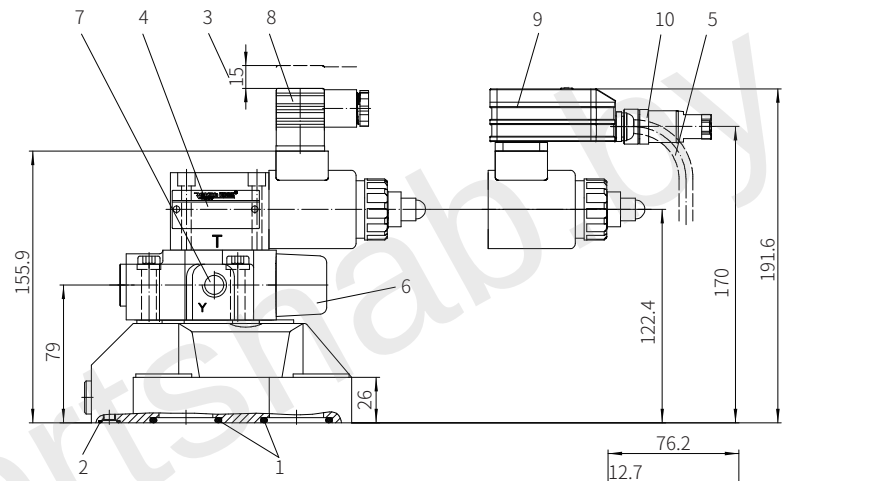
Valve fixing screw

M16x50-10.9 grade GB/T70.1-2000

Tightening torque $M_A = 196\text{Nm}$

- 1 O-rings for ports P and T
- 2 O-ring for port X
- 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)
- 10 Plug for model DBEME

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



Required surface finishing
of mating components

Valve fixing screw

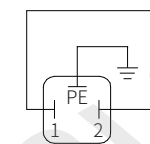
M18x50-10.9 grade GB/T70.1-2000

Tightening torque $M_A = 260\text{Nm}$

- 1 O-rings for ports P and T
- 2 O-ring for port X
- 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)
- 10 Plug for model DBEME

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

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To amplifier

[illegible][illegible]

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:
Potentiometer
input command

