

Proportional Relief Valve

Model: DBET and DBETE



- ◆ Size 6
- ◆ Maximum working pressure 350 bar
- ◆ Maximum working flow 2 L/min

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Features

- Direct actuated valve
- Operation by proportional solenoids with central thread and detachable coil
- For subplate mounting
- Model DBETE: internal integrated amplifier
- Model DBET: external control amplifier

Function description, sectional drawing

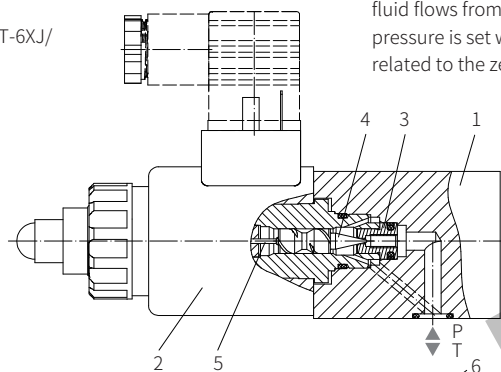
Overview

Model DBETE (Integrated Electronic Control)

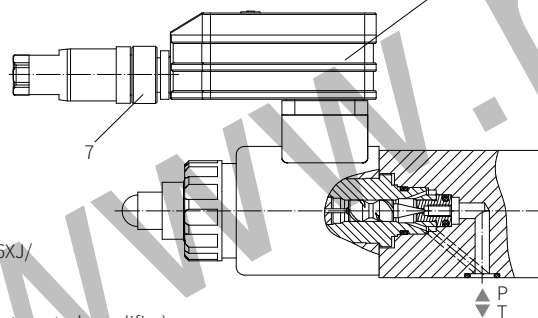
The function and design of this valve are the same as the DBET type. There is an additional plug type proportional amplifier (6) on the proportional solenoid, which is included in the electronic control.

The plug (7) receives power and command value. The command value pressure characteristic curve is pre-set by the manufacturer based on the principle of minimum manufacturing tolerance. For more detailed instructions on integrated electronic controllers, please refer to the instructions.

Model DBET-6XJ/



Model DBETE-6XJ/



Model DBETE (Integrated amplifier)

The function and design of this valve is same as model DBET.

There is an additional plug type proportional amplifier (6) with electric controller on the proportional solenoid. The connector (7) receives power and command value. The command value pressure characteristic curve is pre-set based on the minimum manufacturing tolerance principle by the manufacturer. For more detailed information on the integrated amplifier, please refer to the instructions.

Operating Principle:

The system pressure is regulated by the command value of the electronic controller which supplies a current to the solenoid based on the command value. The proportional solenoid converts the current into mechanical force and acts on the poppet valve (4) through the armature pin (5). The poppet valve (4) presses on the valve seat (3) directly, thereby closing the connection from port P to T.

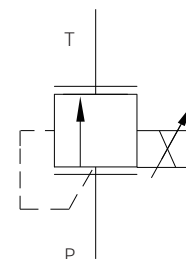
If the hydraulic force on the poppet valve (4) is equal to the solenoid force, then the valve controls the set pressure by lifting the poppet valve (4) off the valve seat (3), and thus allowing the pressure fluid flows from port P to T. The minimum setting pressure is set with minimum control current related to the zero command value.

Models and specifications

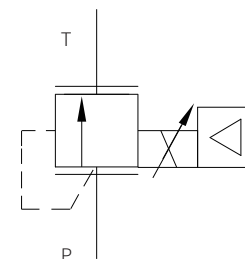
DBET	6X	G24	*
proportional relief valve			more information in text
external amplifier	=No code		sealing material
integrated amplifier	=E		No code= NBR seals
			V= FKM seals
			(consult for other seals)
60 to 69 series	=6X		for model DBETE
(60 to 69 series installation and connection size unchanged)			A1= command value 0 to 10 V
			F1= command value 4 to 20 mA
maximum pressure stage			DBET electrical connection:
up to 50bar	=50		K4= Square socket without plug
up to 100bar	=100		Z4= Square socket with plug
up to 200bar	=200		DBETE electrical connection:
up to 315bar	=315		K31S= With 1.5 meter cable and tin on the end
up to 350bar	=350		K31C= With M12 × 1 aviation plug, 5-pin
supply voltage			No code= 1600mA coil
24VDC		=G24	-8 800mA coil

Functional symbols

external amplifier (model DBET)



integrated amplifier (model DBETE)



Technical parameters

Overview		DBET	DBETE
Installation position		Optional	
Storage temperature range	°C	-20 to +80	
Environment temperature range	°C	-20 to +70	-20 to +50
Weight	kg	2.0	2.15

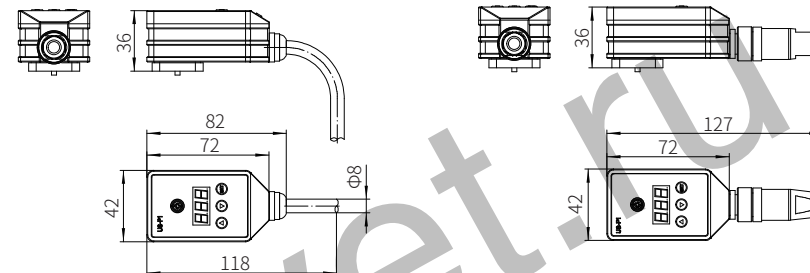
Hydraulic (measured when using HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)		DBET	DBETE
Maximum working pressure Port P	bar	350	
Maximum adjustable pressure Pressure stage 50	bar	50	
Pressure stage 100	bar	100	
Pressure stage 200	bar	200	
Pressure stage 315	bar	315	
Pressure stage 350	bar	350	
Minimum setting pressure (at command value 0V or 40 mA)	bar	See characteristic curves	
Return flow pressure Port T	bar	Separate and at zero pressure to tank	
Maximum flow	L/min	2	
Linearity	%	± 3.5 of maximum setting pressure	
Hysteresis	%	± 2 of maximum setting pressure	
Repeatability	%	$< \pm 2$ of maximum setting pressure	
Switching time	ms	30 to 150 (depending on system)	

Electrical parameters	
Voltage type	24VDC
Minimum control current	mA 100
Maximum control current	mA 800 or 1600
Coil resistance	Ω Cold value at 20°C 5.5 Ω , Maximum warm value: 8.05 Ω
Duty	Continuous
Electrical connections	Plug-in connector to DIN EN175301-803
Class of protection	IP65
Amplifier	RT-PQDA-1 (2) (external) US-P1 (plug type proportional amplifier)

Electrical connections

Model DBETE-6XJ/...K31S

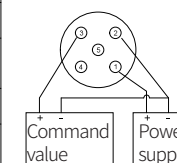
Model DBETE-6XJ/...K31C



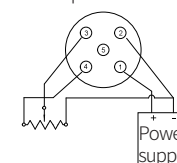
Terminal Definition

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

Connection example: PLC input command



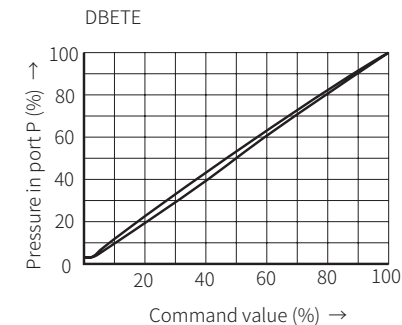
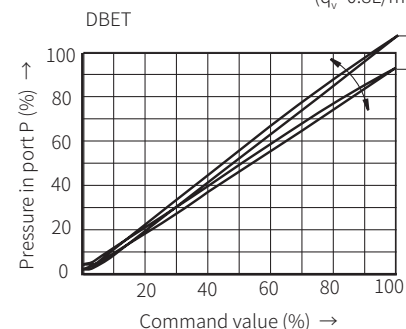
Connection example: Potentiometer input command



Characteristic curve

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

Pressure in port P in relation to the command value
($q_v = 0.8 \text{ L/min}$)

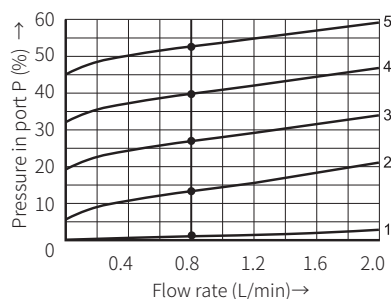


Characteristic curve

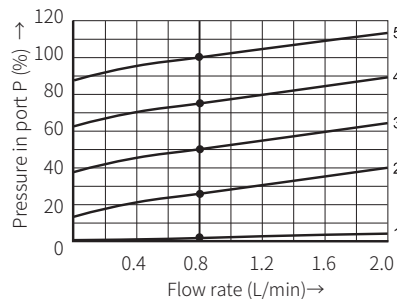
(measured when using HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)

Pressure in port P in relation to the flow rate

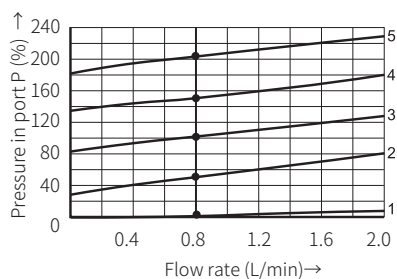
Pressure stage 50bar



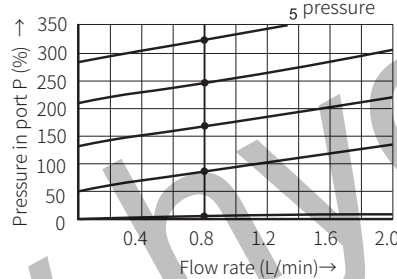
Pressure stage 100bar



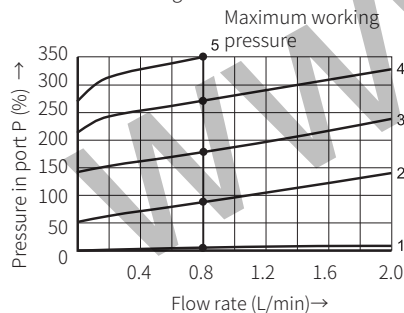
Pressure stage 200bar



Pressure stage 315¹⁾ bar



Pressure stage 350bar



¹⁾ For characteristic curve 5, the command value should not exceed the flow rate of 1.4L/min.

Valid for all pressure stage:

Curve 1=0% command value

Curve 2=25% command value

Curve 3=50% command value

Curve 4=75% command value

Curve 5=100% command value²⁾

The characteristic curve is measured without any back pressure in port T ($P_T=0$ bar).

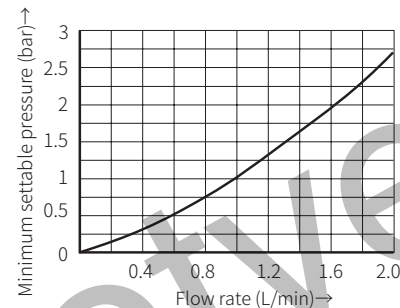
²⁾ For pressure stage 350 bar and characteristic curve 5, the command value should not exceed the flow rate of 0.8L/min

Characteristic curve

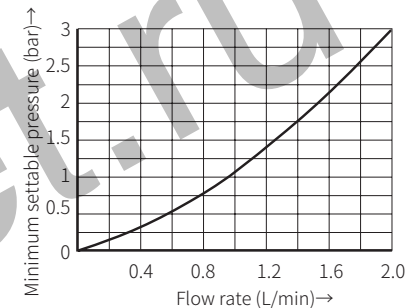
(measured when using HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)

Minimum settable pressure in port P with command value 0

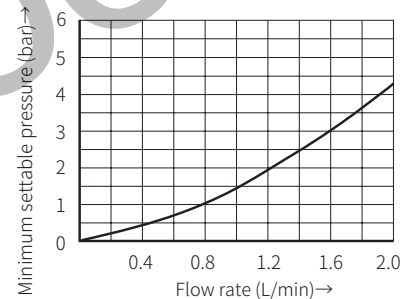
Pressure stage 50bar



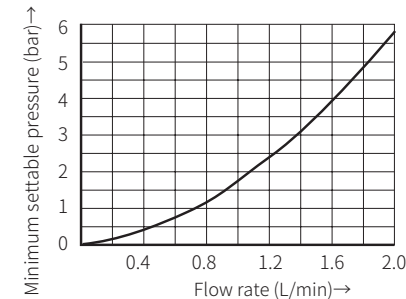
Pressure stage 100bar



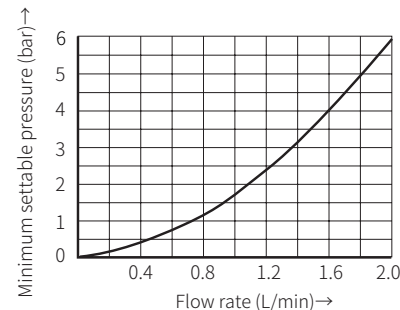
Pressure stage 200bar



Pressure stage 315bar



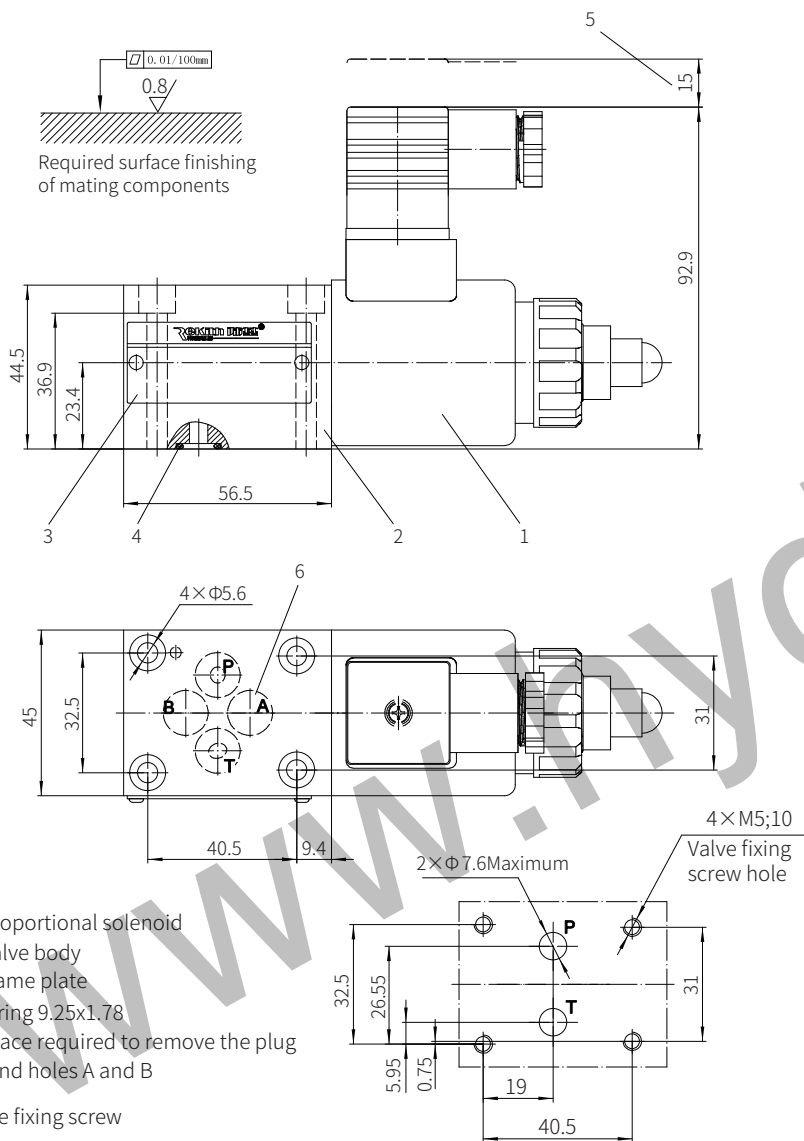
Pressure stage 350bar



Component size

Size unit: mm

Model DBET-6XJ/...



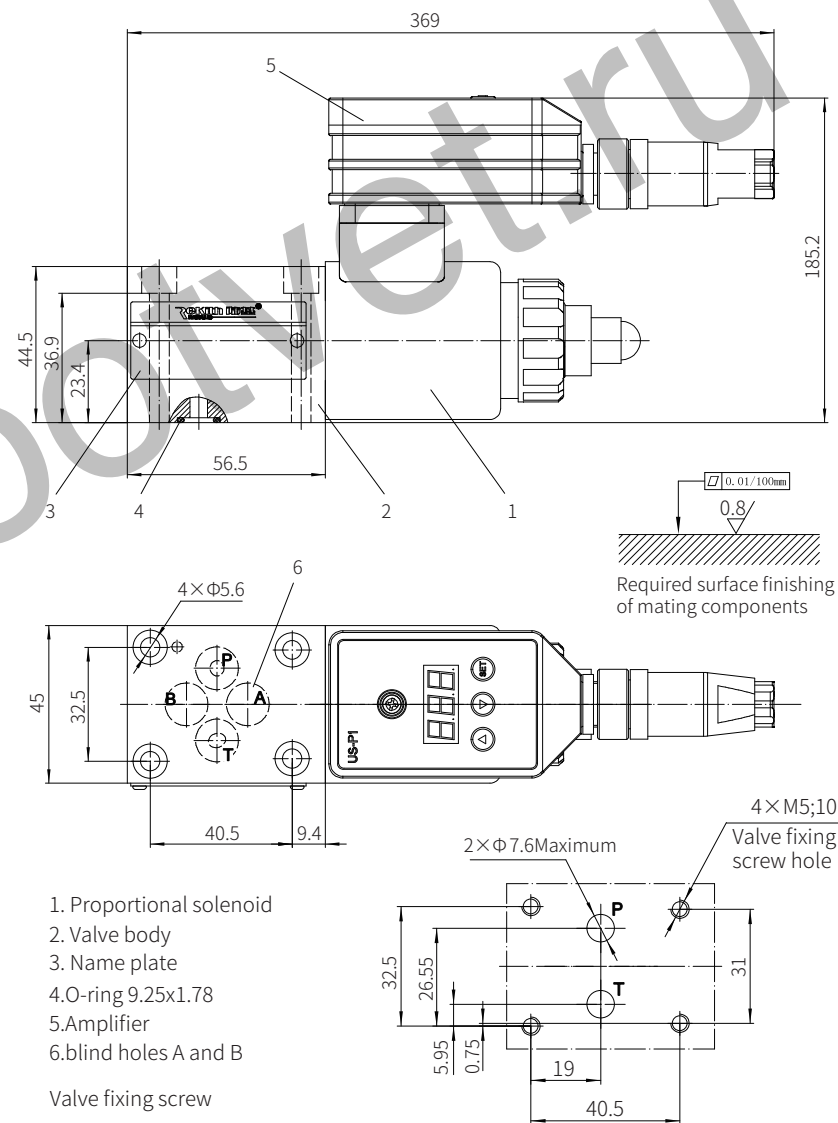
Valve fixing screw
M5x45-10.9 grade GB/T70.1-2000
Tightening torque $M_A=7.8\text{Nm}$

0740

Component size

Size unit: mm

Model DBETE-6XJ/...



Valve fixing screw
M5x45-10.9 grade GB/T70.1-2000
Tightening torque $M_A=7.8\text{Nm}$

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