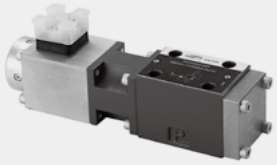
6.3

Proportional pressure relief valve, pilot operated

Type DBE6X...L1X

Size 6
Up to P 315bar，T 250bar
Up to 40 L/min



Contents

Features

—Pilot operated valves (pilot valves) for limiting system pressure (pilot oil internal only).
—Adjustable by means of the solenoid current, see Characteristic curve, technical data and selected valve electronics.
—Solenoid versions Imax =0.8A or Imax=2.5A
—Pressure limitation to a safe level even with faulty electronics (solenoid current I > Imax).
—For subplate attachment, mounting hole configuration to ISO 441-03-02-0-94.
—Plug-in connector to DIN 43650-AM2 included in scope of delivery.
—External trigger electronics with ramps and valve calibration in the following versions/ designs VT-SSPA1-508/516/525-L2X/V0/*

Function and configuration

General

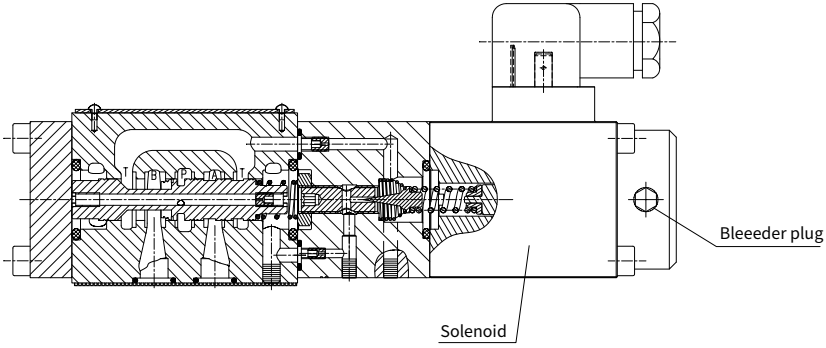
Type DBE6X proportional pressure relief valves are pilot operated pressure relief valves.
The internal pilot stage in the conical seat version and the main stage in the spool version are located in the valve body. The valves are actuated by means of a proportional solenoid.
The solenoid is cushioned by restrictors in the armature to aid dynamic stability. The interior of the solenoid is connected to port T and is filled with pressure fluid. Bleeding is achieved by means of a screw plug. With these valves, the system pressure that needs to be limited can be infinitely adjusted in relation to the solenoid current.

Basic principle

To adjust the system pressure, a setpoint is set in the trigger electronics. Based on this setpoint, the electronics control the solenoid coil with regulated PWM (pulse-width-modulated) current.
The regulated current is additionally modulated with a dither, ensuring low hysteresis. The proportional solenoid converts the current to a mechanical force, which acts on a main spring in the pilot stage by means of the armature plunger. The pilot stage is supplied with pilot oil via a bore at < 0.6 l/min. The "Pmax" pressure stage is determined by the cone and seating bore configuration.

Pressure limitation for maximum safety

If a fault occurs in the electronics, so that the solenoid current (Imax) would exceed its specified level in an uncontrolled manner, the pressure cannot rise above the level determined by the maximum spring force.



Ordering code

DBE6X – L1X / G24 – 8 N9 / V *

Proportional pressure relief valve NG6 pilot operated

With integrated electronics(OBE) =E
For external control electronics =No code

Series L10~L19 =L1X

Max. pressure stage
up to 80 bar = 80
up to 180 bar = 180
up to 250 bar = 250
up to 315 bar = 315

Voltage supply of trigger electronics
24V DC =G24

Solenoid type (current)
Solenoid current 0.8A max. =8
Solenoid current 2.5A max. =25

Further details in the plain text

V = FKM
No code = NBR

For type DBE6XE
A1= Command/actual value 0 to 10V
F1= Command/actual value 4 to 20mA

For type DBE6XE:
K31= Without plug-in connector
Z31= With plug-in connector
For type DBE6X :
K4= Without plug-in connector
Z4= With plug-in connector

N9 = Manual auxiliary override

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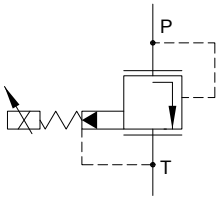
Symbols



Technical data

General			
Construction	Pilot stage		Poppet valve
	Main stage		Spool valve
Construction			Proportional solenoid without position control, external amplifier
Connection type			Subplate, mounting hole configuration NG6 (SIO 4401-03-02-094)
Mounting position			Optional
Ambient temperature range		℃	-20 to +50
Weight		Kg	2.2
Vibration resistance, test condition			Max. 25 g, shaken in 3 dimensions (24 h)

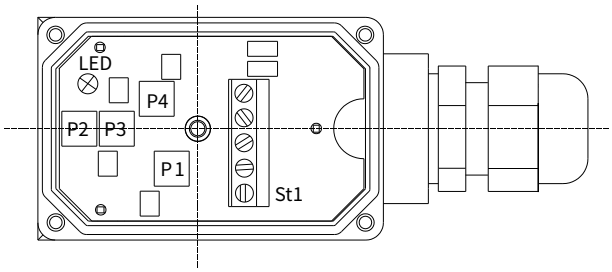
Hydraulic (measured with HLP 46, ϑ_{oil} = 40℃ ±5℃)						
Pressure fluid			Hydraulic oil to DIN 51524...535, other fluids after prior consultation			
Viscosity range	recommended	mm^2/s	20...100			
	max. permitted	mm^2/s	10...800			
Pressure fluid temperature range		℃	-20...+80			
Maximum permitted degree of contamination of pressure fluid Purity class to ISO 4406 (c)			Class 18/16/13			
Direction of flow			See symbol			
Max. set pressure (at Qmax=1 L/min)		bar	80	180	250	315
Min. pressure (at Qmin=1 L/min)		bar	7	8	9	10
Max. working pressure		bar	Port P: 315			
			Port T: 250			
Max. mechanical pressure limitation level, e.g. when solenoid current I>I_{max}		bar	< 90	< 190	< 260	< 325
Pilot oil flow		L/min	Approx. 0.6			
Max. flow		L/min	40			

Electrical			
Cyclic duration factor	%	100 ED	
Degree of protection		IP 65 to DIN 40050 and IEC 14434/5	
Solenoid connection		Plug-in connector to DIN 43650/ISO 4400, M16X1.5(2P+PE)	
Valve with solenoid type		0.8A	2.5A
Max. solenoid current	Imax	0.8A	2.5A
Coil resistance R20	Ω	22	3
Max. power consumption at 100% load and operating temperature	VA	25	30

Static/Dynamic		
Hysteresis	%	⩽ 4
Range of inversion	%	⩽ 3
Manufacturing tolerance for Pmax	%	⩽ 10
Response time 100% signal change	ms	On 200 / Off <250

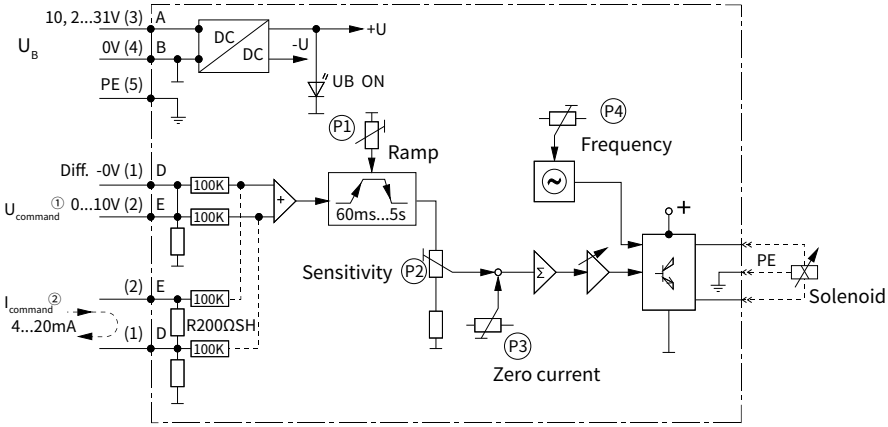
Valve with external trigger electronics

Connections and adjustment



P1 – Ramp time
P2 – Sensitivity
P3 – Zero point
P4 – Dither frequency
St 1 – Connection terminal
LED – Display U_B

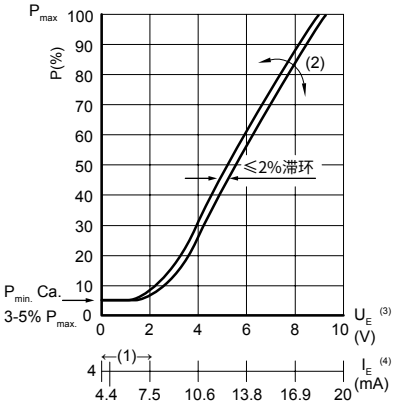
Block diagram and pin assignment



① Version with 0...+10 V signal
② Version with 4...20 mA signal

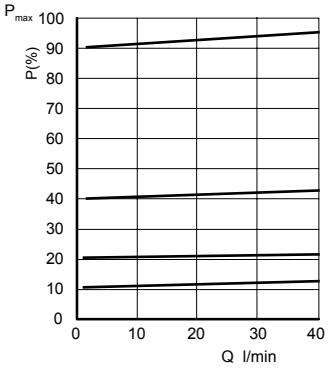
Characteristic curves (measured with HLP46, ϑ_{oil}=40°C ±5°C)

Pressure in port P as a function of the setpoint



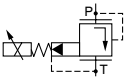
(1) Zero adjustment
(2) Sensitivity adjustment
(3) Version: U_E=0...10V
(4) Version: I_E=4...20mA

Pressure in port P proportionate to the maximum flow of the main stage



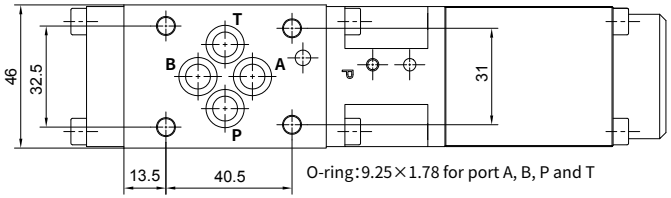
Set pressure

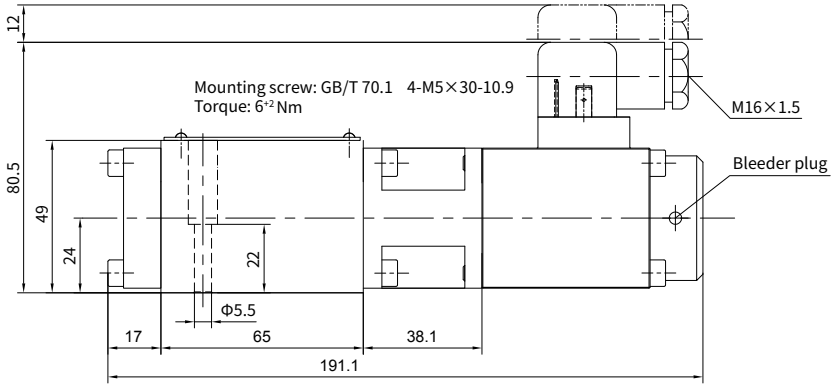
p' = f (Q_{P-T})



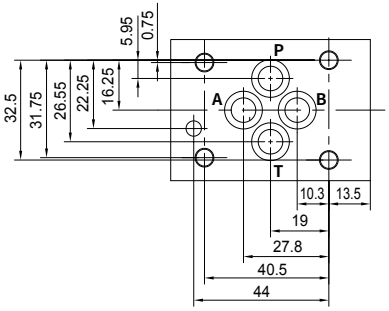
Unit dimensions

(nominal dimensions in mm)

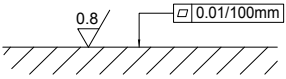




Mouting hole configuration:
NG6(ISO 4401-03-02-0-94)



Installation Dimensions
Mounting surface



Required surfacefinishof the
valve mounting surface

China
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America
+01 630 995 3674

Germany
+49 172 3683463

Japan
+81 03 6809 1696