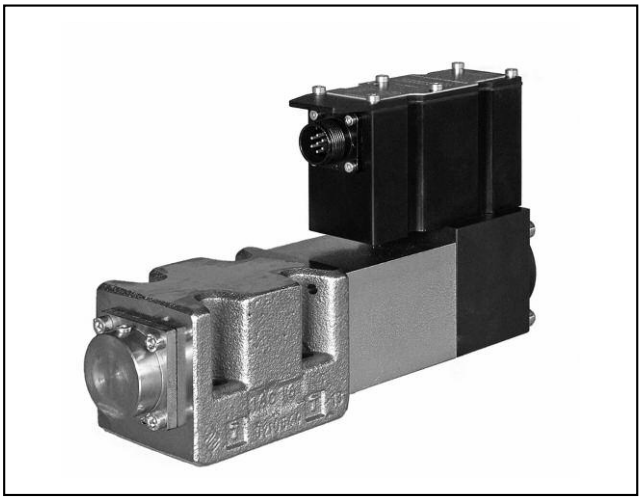


DXE5J

HIGH RESPONSE SERVO-PROPORTIONAL VALVE WITH FEEDBACK AND INTEGRATED ELECTRONICS

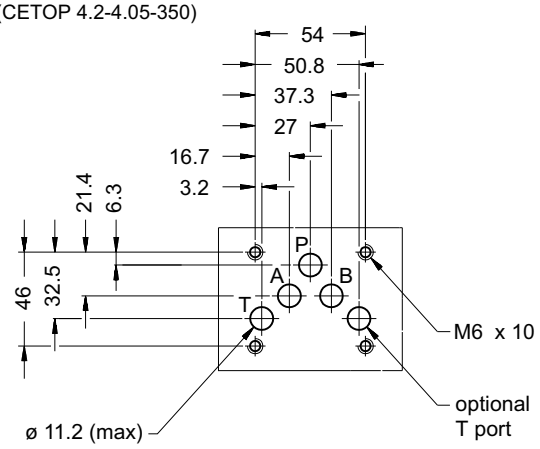
SERIES 31

SUBPLATE MOUNTING ISO 4401-05

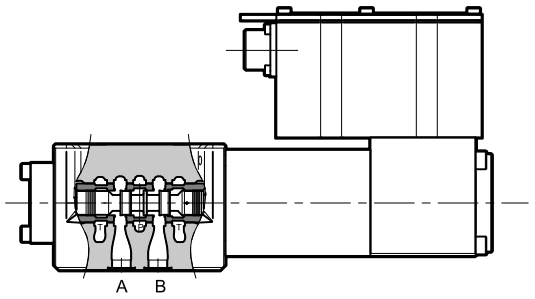
p max **350** bar
Q max **100** l/min

MOUNTING INTERFACE

ISO 4401-05-04-0-05
(CETOP 4.2-4.05-350)



OPERATING PRINCIPLE



— The DXE5J valve is a four-way (3 + fail-safe position) servo-proportional valve where the spool moves inside a sleeve. It is operated by a proportional solenoid highly dynamic, which achieves high performance and not requires pilot pressure. The spool position is controlled by a linear transducer (LVDT) in closed loop, which ensures high precision and repeatability.

— It is available with two flow ranges up to 100 l/min with spools with zero overlap.

— The valve is featured by integral electronic based on SMD technology which ensures standard regulations and simplifies the electric wiring. The unit does not require any adjustment other than the possible electronic regulation of the zero.

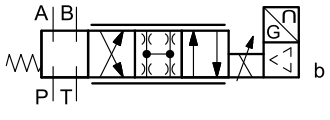
— Suitable for control applications with closed loop of position, velocity and pressure. if the valve is not powered or is without the enable input (Version A only), the spool moves automatically at fail-safe position.

PERFORMANCES

(with mineral oil of viscosity 36 cSt at 50°C)

Maximum operating pressure Ports P - A - B Port T	bar	 350 250
Rated flow Q nom (with Δp 70 bar P - T)	l/min	60 - 100
Hysteresis	% In	< 0,2
Threshold	% In	< 0,1
Thermal drift (with ΔT= 40 °C)	% In	< 1,0
Response time (0-100%)	ms	≤ 20
Vibration on the three axes	g	30
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	5 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 17/15/12 (16/14/11 for longer life)	
Recommended viscosity	cSt	25
Mass	kg	6

HYDRAULIC SYMBOL



1 - IDENTIFICATION CODE

D	X	E	5	J	-	LZ			/	31		-		K11	

Servo-proportional valve with spool in sleeve

Electric proportional control

Size ISO 4401-05

On-board electronic and position feedback

Spools with linear flowrate curve
LZ = zero overlap for low leakage

Rated flow (with Δp = 70 bar P - T)
60 = 60 l/min
100 = 100 l/min

Fail safe type
F1 = closed centre
F3 = float
FC = cross centre

Series No.
(from 30 to 39 sizes and mounting dimensions remain unchanged)

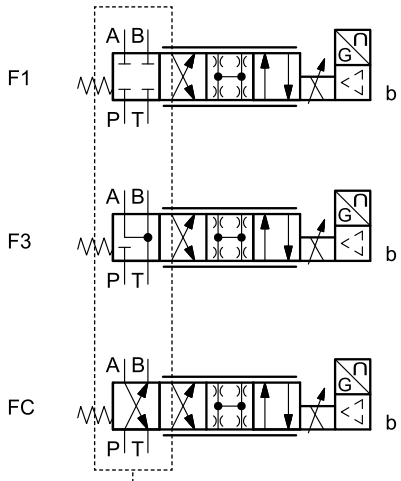
Seals:
N = NBR seals for mineral oil (**standard**)
V = FPM seals for special fluids

Command value:
E0 = voltage ±10 V
E1 = current 4 ÷ 20 mA

6 + PE pole connector

Pin C function:
A = external enable
B = internal enable
C = 0V monitor

2 - SPOOLS



flow rate	fail safe type		
	F1	F3	FC
60	■	■	□
100	■	■	□

■ available □ on request

FAIL SAFE POSITION

When a power failure occurs, the electronics de/energize the solenoid and the spool will take the fail safe position by means of the centering springs.

3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

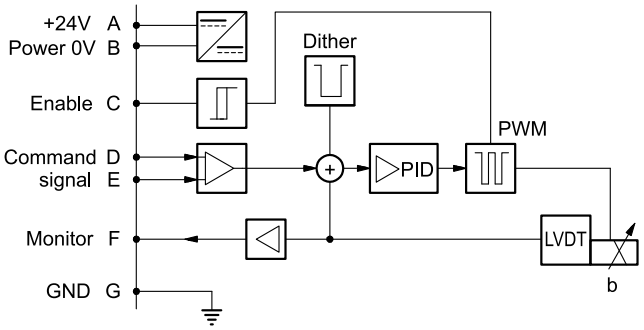
4 - ELECTRICAL CHARACTERISTICS

4.1 - Electrical on board electronics

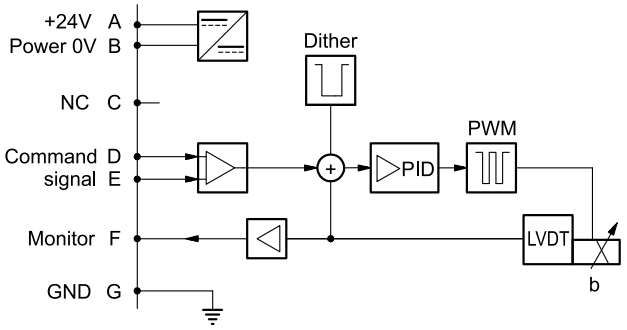
Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 35 VDC), ripple max 3 Vpp
Power consumption	VA	60
Maximum solenoid current	A	3.7
Fuse protection, external		(fast), max current 6A
Command signals: voltage (E0) current (E1)	V DC mA	±10 (Impedance Ri > 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signals: voltage (E0) current (E1)	V DC mA	±10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Managed breakdowns		Overload and electronics overheating, LVDT sensor error, cable breakdown, supply voltage failure
Communication		LIN-bus Interface (with the optional kit)
Connection		**K11** = 7 - pin MIL-C-5015-G (DIN-EN 175201-804)
Electromagnetic compatibility (EMC) emissions EN 61000-6-4 immunity EN 61000-6-2		According to 2014/30/EU standards

4.2 - On-board electronics diagrams

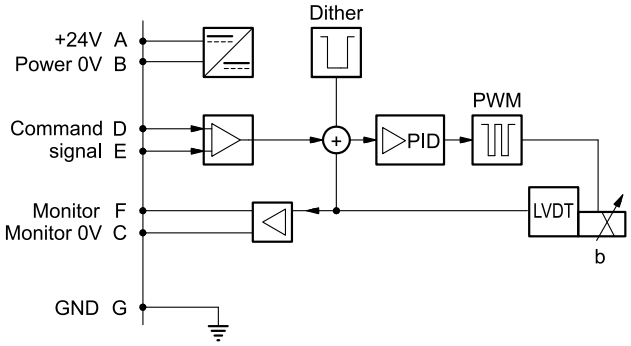
VERSION A - External Enable



VERSION B - Internal Enable

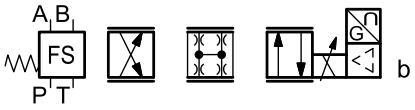


VERSION C - 0V Monitor

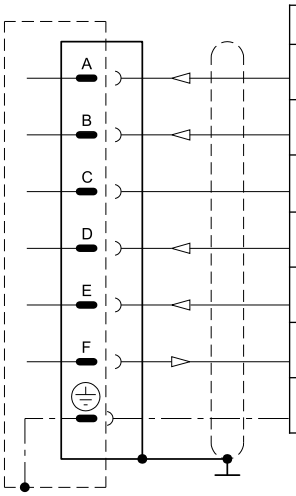


5 - VERSIONS WITH VOLTAGE COMMAND (E0)

The reference signal must be between -10V and +10V. The monitor feature of versions B anc C becomes available with a delay of 0,5 sec from the power-on of the card.



COMMAND	**-10V**	**0V**	**+10V**
MONITOR	**-10V**	**0V**	**+10V**

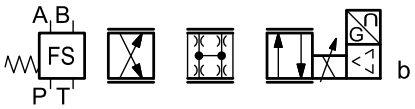


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	PIN D reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

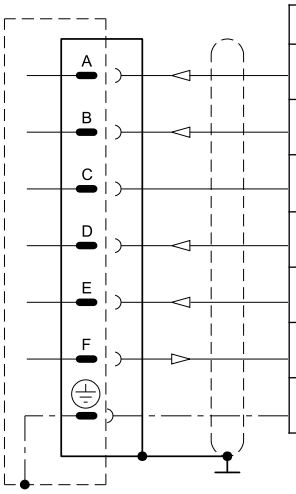
6 - VERSIONS WITH CURRENT COMMAND (E1)

The reference signal is supplied in current 4 ÷ 20 mA. If the current for command is lower, the card shows a breakdown cable error. To reset the error is sufficient to restore the signal.

The monitor feature of versions B anc C becomes available with a delay of 0,5 sec from the power-on of the card.



COMMAND	**4 mA**	**12 mA**	**20 mA**
MONITOR	**4 mA**	**12 mA**	**20 mA**

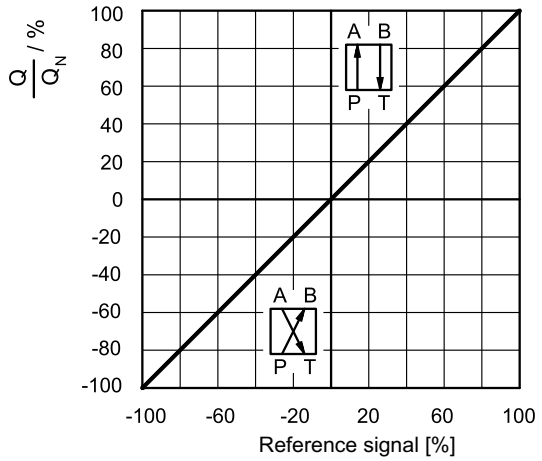


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	PIN D reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

7 - CHARACTERISTIC CURVES

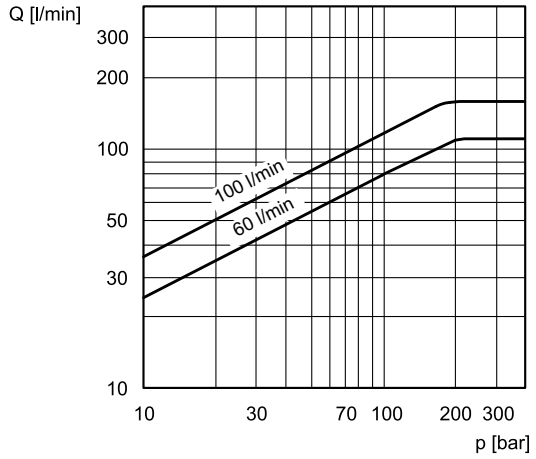
(measured with viscosity of 36 cSt at 50°C)

REFERENCE / FLOW RATE CURVE



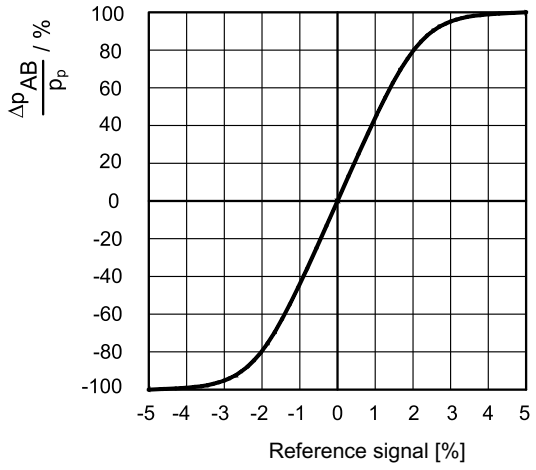
Typical flow rate curves at constant Δp = 70 bar P-T according to the reference signal.
NOTE: with positive reference signal connected to pin D the valve regulates P - A / B - T.

FLOW RATE CURVE ACCORDING TO Δp



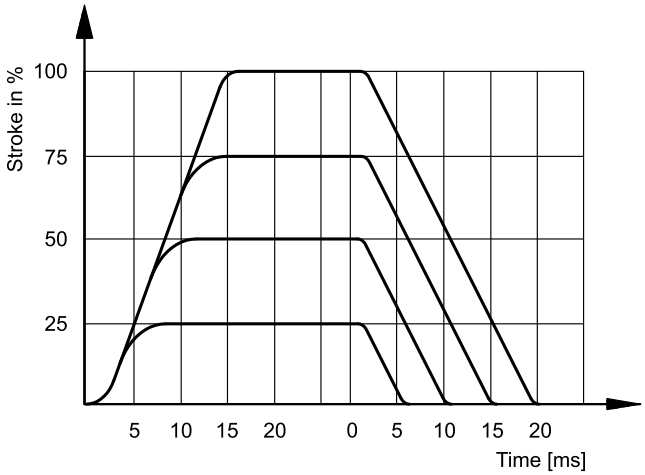
The diagram states the maximum valve controlled flow rate according to the pressure drop between the P and T ports.

PRESSURE GAIN (SPOOL LZ)

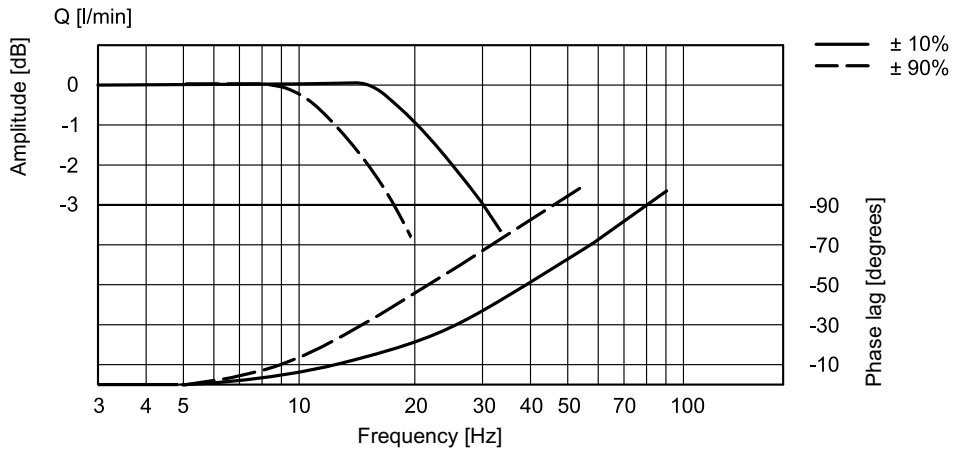


The diagram shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal. In practice, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

RESPONSE TIME

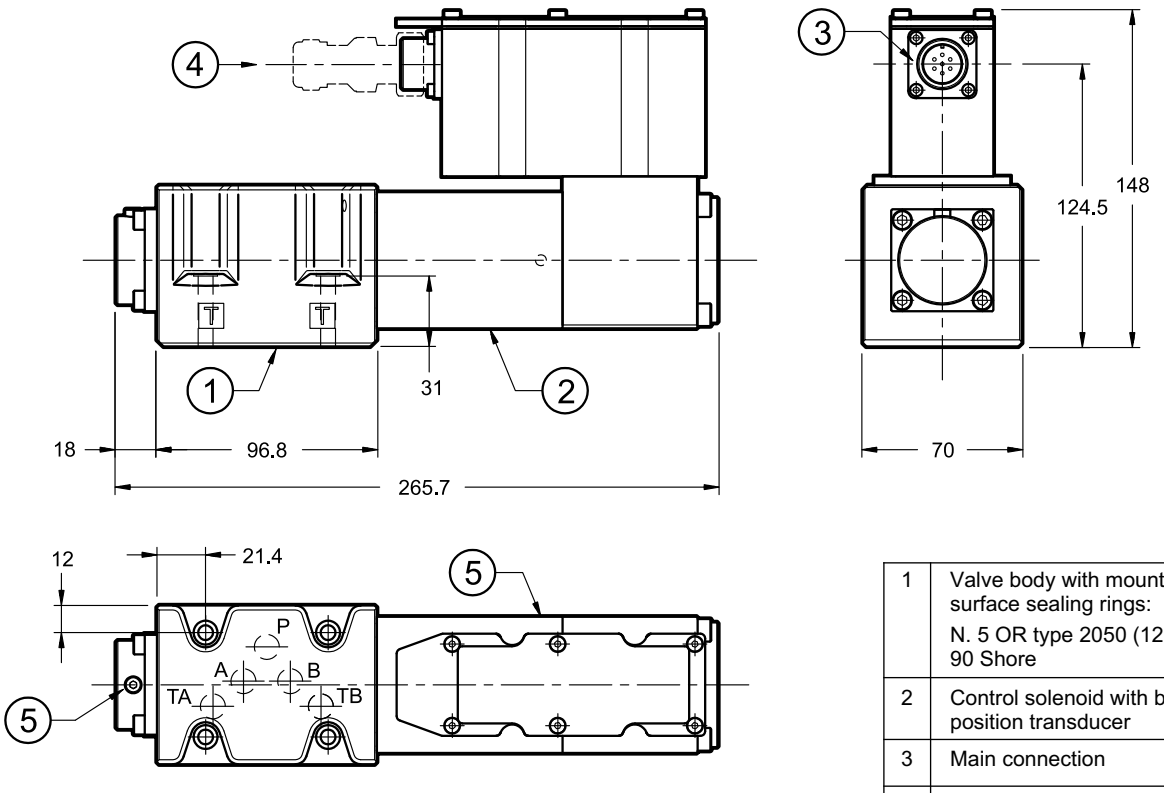


FREQUENCY RESPONSE



8 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



1	Valve body with mounting surface sealing rings: N. 5 OR type 2050 (12.42x1.78) 90 Shore
2	Control solenoid with built-in position transducer
3	Main connection
4	Mating connector. **To be ordered separately.** See paragraph 9
5	Air breather. Allen key: 3 Tightening torque 2.5 Nm

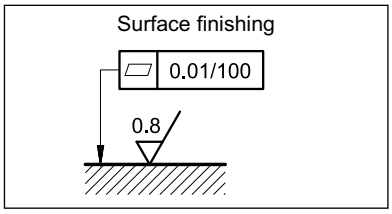
Fastening bolts: 4 SHC screws M6x40
Torque: 8 Nm ± 10% (A8.8)
Threading holes: M6x10

9 - INSTALLATION

The valves can be installed in any position without impairing correct operation. Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols.

If minimum values are not observed, fluid can easily leaks between the valve and support surface.

Take care to the cleanliness of the mounting surfaces and surrounding environment upon installation.

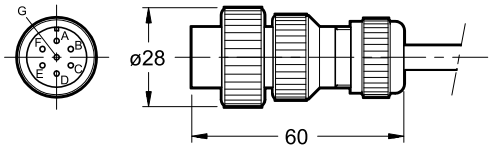


10 - ACCESSORIES

(to be ordered separately)

10.1 - Mating connector

These valves have a plug for 7-pin mating connector, that is placed on the box of the integral motion control.



So as to avoid electromagnetic troubles and comply with the electromagnetic compatibility regulation EMC, it is recommended the use of a metal connector.

If a plastic connector is used, make sure that the protection characteristics IP and EMC of the valve are guaranteed.

Duplomatic can provide a metal cable connector type MIL-C-5015-G (EN 175201-804).

name: **EX7S/L/10** code **3890000003**

10.2 - Connection cables size

Power supply:
- up to 40 m cable length : 1,5 mm^2

Signal: 0,50 mm^2

A suitable cable would have 7 isolated conductors, a separate screen for the signal wires and an overall screen.

10.3 - Kit for start-up LINPC-USB

Device for service start-up and diagnostic, see catalogue 89850.

11 - SUBPLATES

(see catalogue 51 000)

PMD4-AI4G rear ports 3/4” BSP
PMD4-AL4G side ports 1/2” BSP

DUPLOMATIC MOTION SOLUTIONS

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