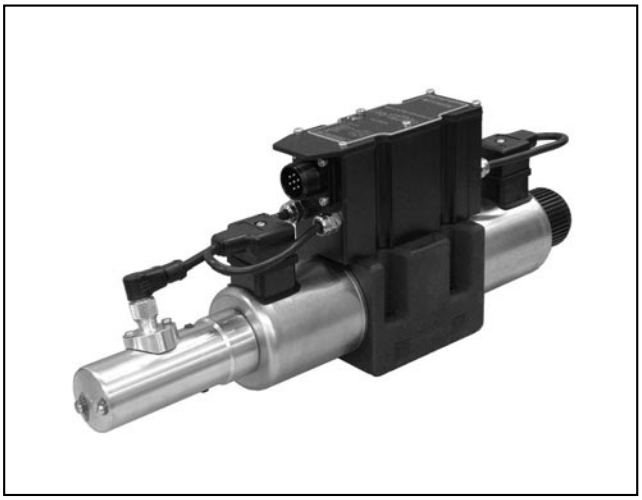


DSE5J

DIRECTIONAL VALVE WITH PROPORTIONAL CONTROL FEEDBACK AND INTEGRATED ELECTRONICS

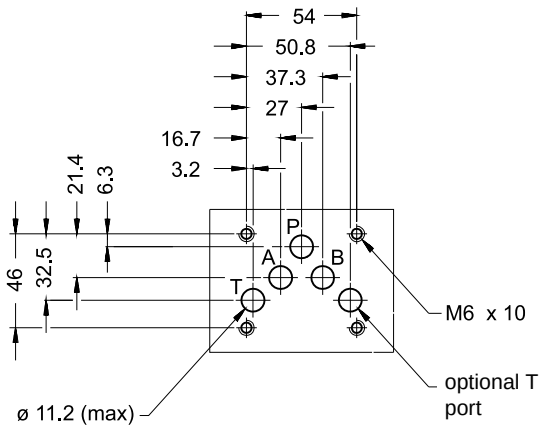
SERIES 31

SUBPLATE MOUNTING ISO 4401-05

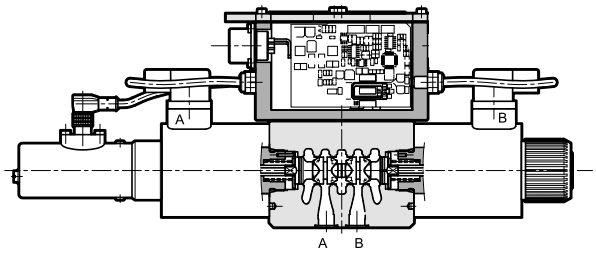
p max **320** bar
Q max **180** l/min

MOUNTING INTERFACE

ISO 4401-05-04-0-05
(CETOP 4.2-4-05-320)



OPERATING PRINCIPLE



— The DSE5J is a direct operated directional valve with electric proportional control, on-board electronics and feedback, with mounting interface in compliance with ISO 4401 standards.

— It is used to control the direction and the speed of hydraulic actuators.

— Transducer and digital card allow a fine control of the positioning of the cursor, reducing hysteresis and response time and optimizing the performance of the valve.

— The valves are available with command signal in voltage or current and on board electronics with internal enable, external enable or 0V monitor on pin C.

— The monitoring of the spool position is available on pin F.

— The valve is easy to install. The driver directly manages digital settings (see p. 6). In the event of special applications, you can customize the settings using the optional kit (see p. 11).

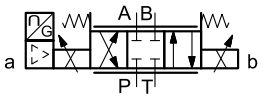
PERFORMANCES

(Obtained with mineral oil with viscosity of 36 cSt at 50°C and p = 140 bar)

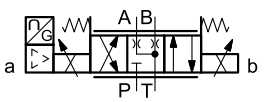
Max operating pressure: - P - A - B ports - T port	bar	320 210
Nominal flow with Δp 10 bar P-T	l/min	50 - 75
Response times	see point 7	
Hysteresis	% of Q max	< 0,2%
Repeatability	% of Q max	< ± 0,1%
Threshold		< 0,1%
Valve reproducibility		≤ 5%
Electrical characteristics, IP	see point 3	
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	according to ISO 4406:1999 class 18/16/13	
Recommended viscosity	cSt	25
Mass: single solenoid valve double solenoid valve	kg	5,6 7,1

HYDRAULIC SYMBOLS (typical)

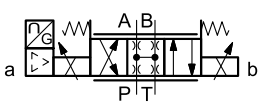
DSE5J-C*



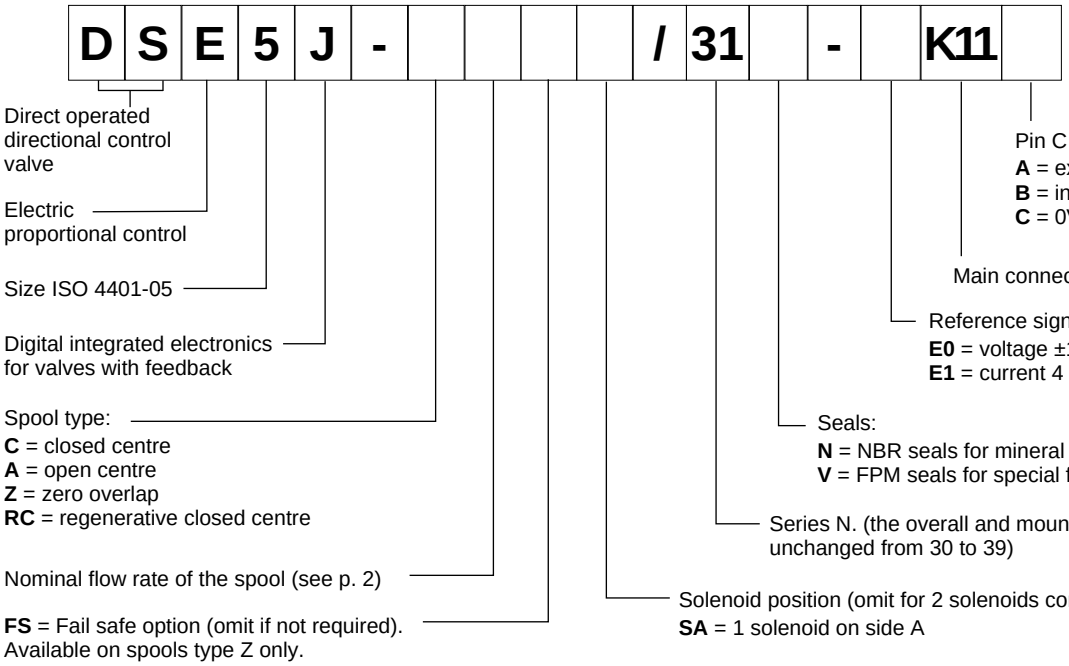
DSE5J-A*



DSE5J-Z*



1 - IDENTIFICATION CODE

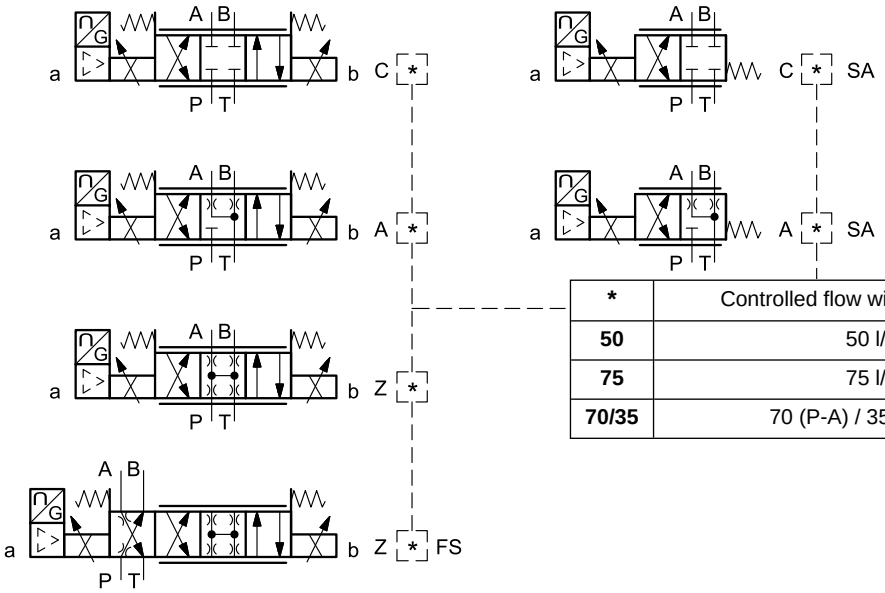


2 - CONFIGURATIONS

The valve configuration depends on the combination of the following elements:
number of proportional solenoids, spool type, rated flow.

Configuration 2 solenoids :
3 positions with spring centering

Configuration 1 solenoid on side A "**SA**":
2 positions (central + external) with spring centering



*	Controlled flow with Δp 10 bar P-T
50	50 l/min
75	75 l/min
70/35	70 (P-A) / 35 (P-B) l/min

*	Controlled flow with Δp 5 bar
75/45	75 (P-A, A-T) / 45 (B-P) l/min

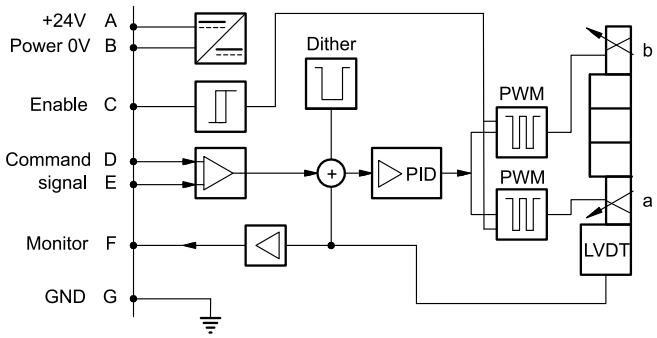
3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

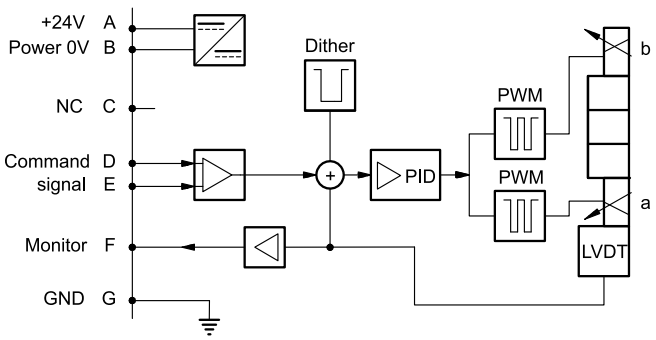
Duty cycle			100% (continuous operation)
Protection class according to EN 60529			IP65/IP67
Supply voltage		V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption		VA	40
Maximum solenoid current		A	2.8
Fuse protection, external			3A
Command signals:	voltage (E0) current (E1)	V DC mA	±10 (Impedance 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			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

3.2 - On-board electronics diagrams

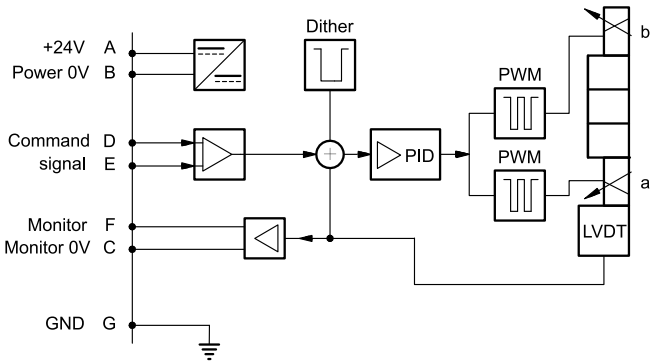
VERSION A - External Enable



VERSION B - Internal Enable

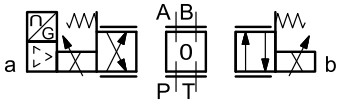


VERSION C - 0V Monitor

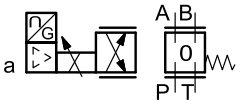


4 - VERSIONS WITH VOLTAGE COMMAND (E0)

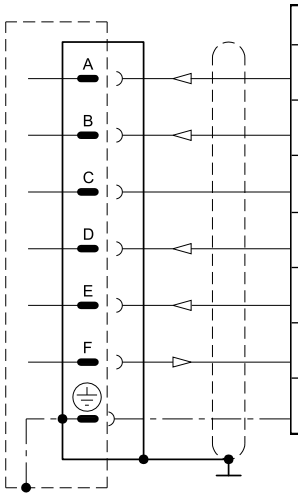
The reference signal is between -10V and +10V on double solenoid valves, and 0 ÷ 10V on single solenoid valves SA. The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



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



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

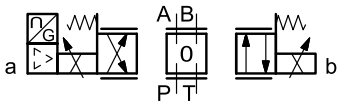


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	PIN D reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

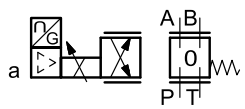
5 - VERSIONS WITH CURRENT COMMAND (E1)

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.

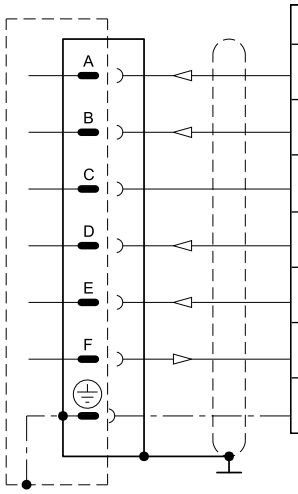
The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



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



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

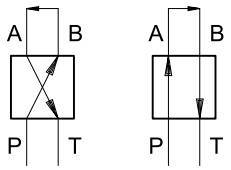


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	4 ÷ 20 mA	Command		
E	0 V	PIN D reference		
F	4 ÷ 20 mA	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

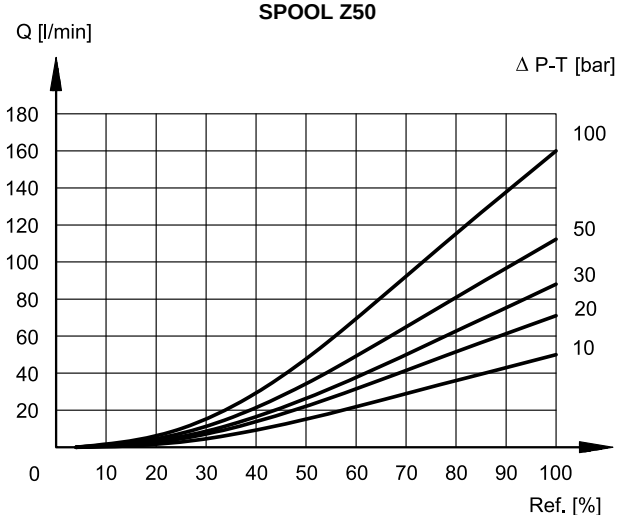
6 - CHARACTERISTIC CURVES

(obtained with mineral oil with viscosity of 36 cSt at 50°C and p = 140 bar)

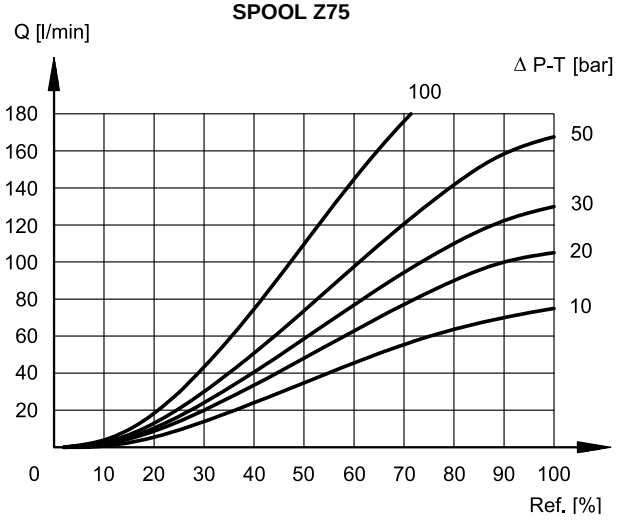
Typical flow rate curves related to the reference signal and measured for the available spools.
The Δp values are measured between P and T valve ports.



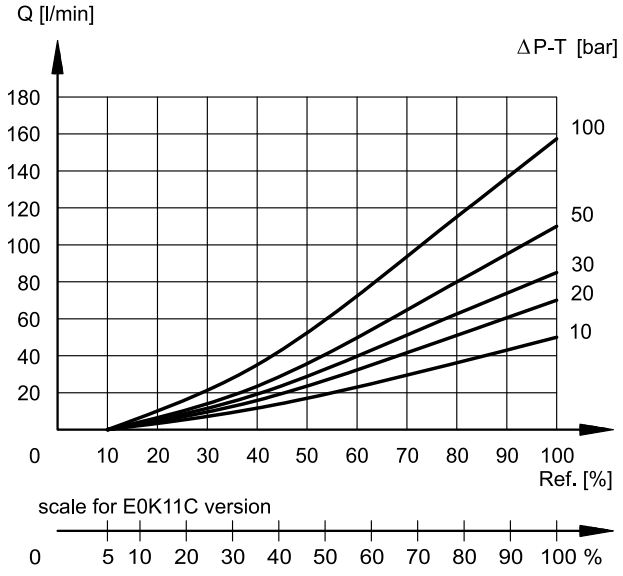
SPOOL Z50



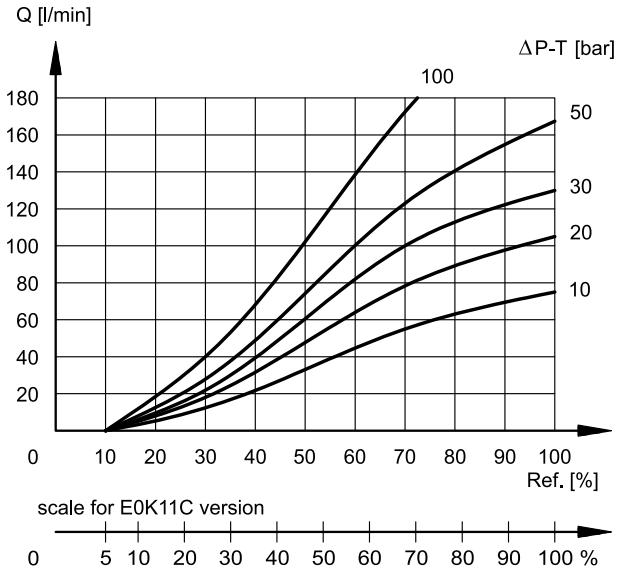
SPOOL Z75



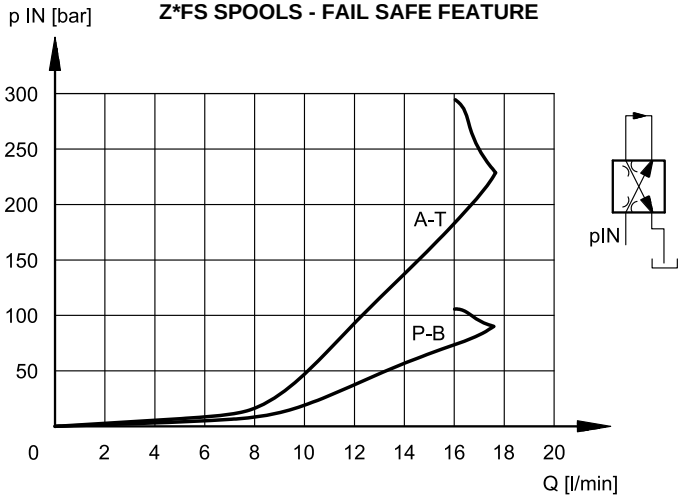
SPOOLS A50 - C50



SPOOLS A75 - C75



Z*FS SPOOLS - FAIL SAFE FEATURE

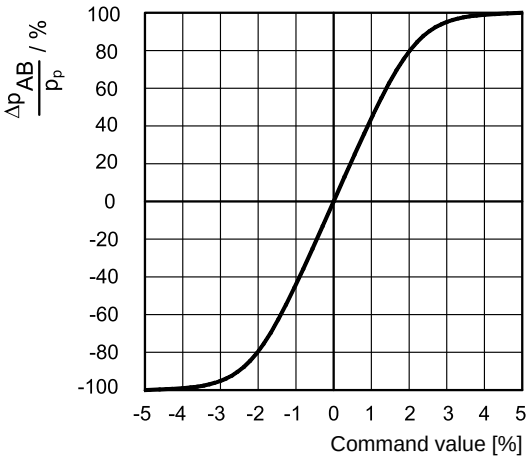


Flow P→B / A→T with valve in fail safe position, depending on the incoming pressure.

When a power failure (enabling OFF) occurs, the valve moves in 'fail safe' position by maintaining a minimum flow that allows the actuator to return slowly to a safety position.

During the black-out the centering springs retain the spool in fail safe-position.

Z SPOOLS - PRESSURE GAIN



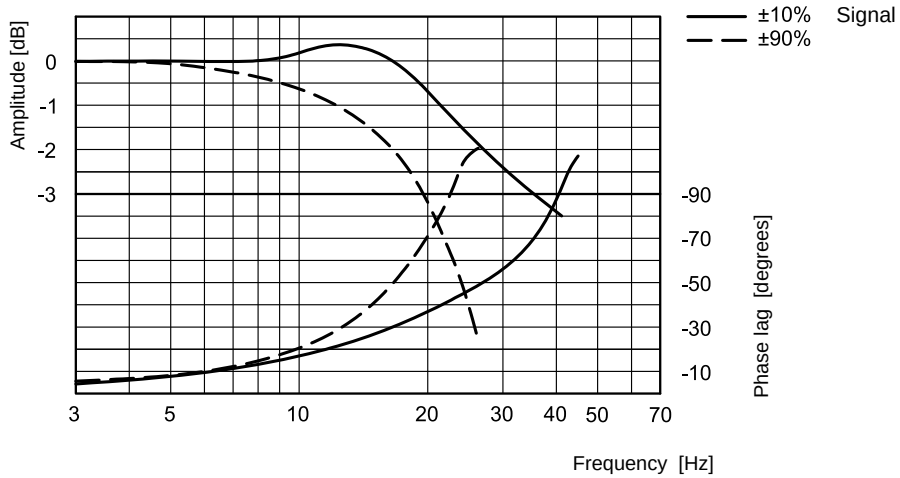
The diagram shows the valve pressure gain, expressed as % of the ratio between the port pressure variation in A or B (Δp AB) and the P system pressure, according to the reference signal.

In practice, the pressure gain states the valve reaction towards external disturbances aimed at changing the actuator position.

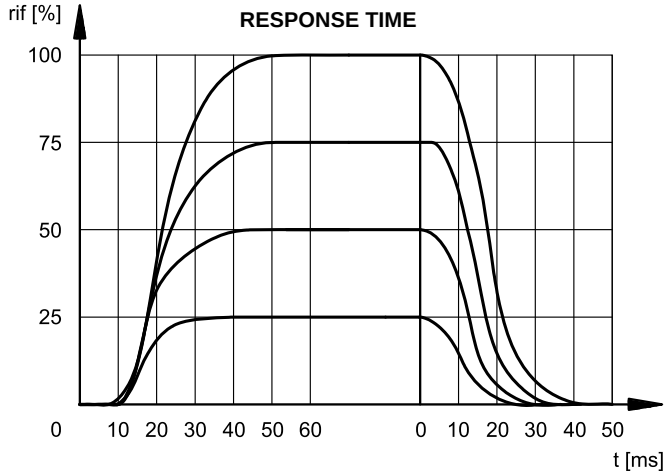
7 - RESPONSE TIMES

(obtained with mineral oil with viscosity of 36 cSt at 50°C 140 bar Δp P→T)

FREQUENCY RESPONSE (SPOOL Z - 4/3 valve)



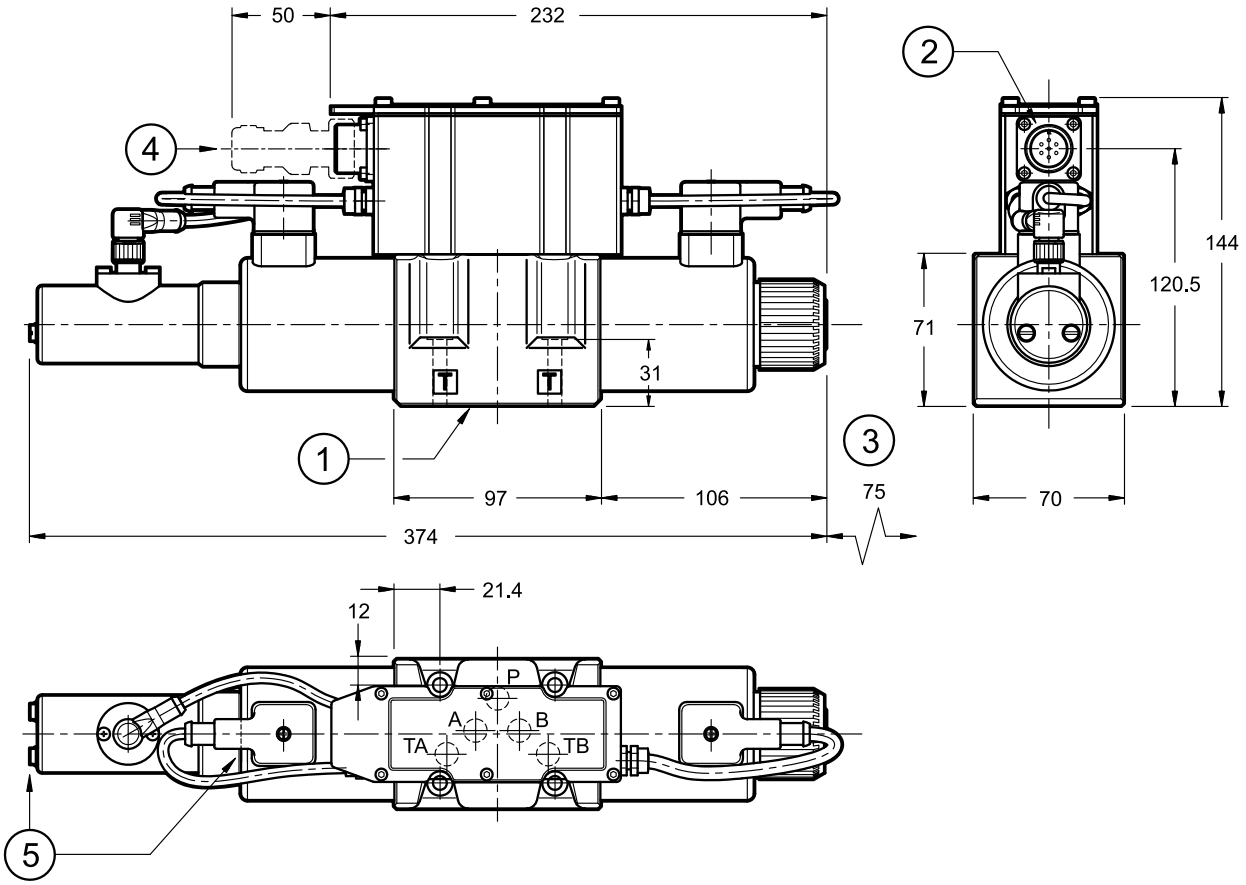
RESPONSE TIME



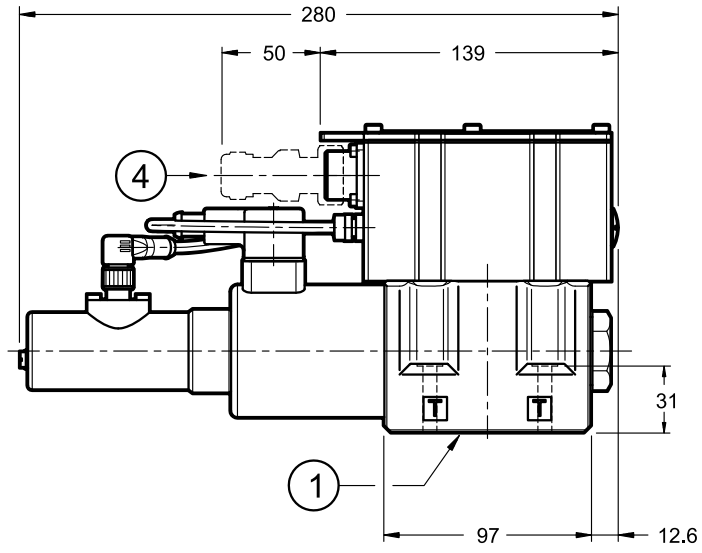
8 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm

DSE5J-A*
DSE5J-C*, DSE5J-RC*
DSE5J-Z*



DSE5J-A* SA
DSE5J-C* SA



1	Mounting surface with sealing rings: 5 OR type 2050 (12.42x1.78) 90 Shore
2	Main connection
3	Coil removal space (solenoid B only)
4	Mating connector. **To be ordered separately.** See point 11
5	Adjustment sealing performed at factory. Do not disassemble the transducer.

Fastening bolts: 4 SHC bolts M6x40 - ISO 4762
Torque: 8 Nm (A8.8)
Threads of mounting holes: M6x10

9 - 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.

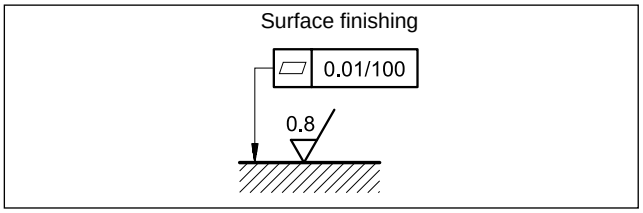
The fluid must be preserved in its physical and chemical characteristics.

10 - INSTALLATION

DSE5J valves can be installed in any position without impairing correct operation.

Ensure that there is no air in the hydraulic circuit.

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 leak between the valve and support surface.

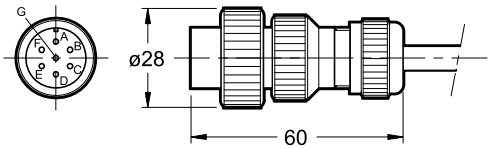


11 - ACCESSORIES

(to be ordered separately)

11.1 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**

11.2 - Connection cables size

Power supply:
- up to 20 m cable length : 1,0 mm²
- up to 40 m cable length : 1,5 mm²

Signal: 0,50 mm²

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

11.3 - Kit for start-up LINPC-USB

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

12 - SUBPLATES

(see catalogue 51 000)

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

DUPLOMATIC MOTION SOLUTIONS
a member of DAIKIN group

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