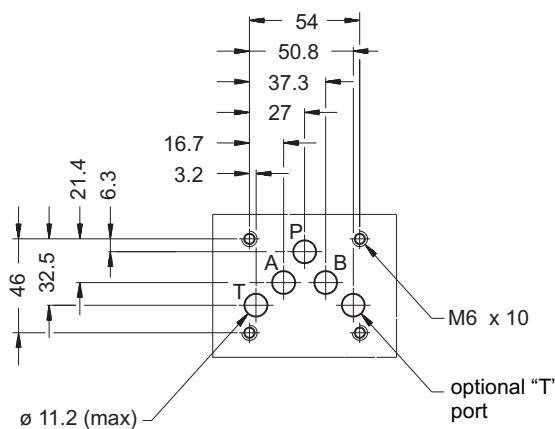


MOUNTING SURFACE

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



PERFORMANCES

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

Maximum operating pressure: - P - A - B ports - T port	bar	320 140
Maximum flow with Δp 10 bar P-T	l/min	30 - 60
Response times	see paragraph 7	
Hysteresis	% of Q max	< 3%
Repeatability	% of Q max	< $\pm 1\%$
Electrical characteristics	see paragraph 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	5,1 6,6

DSE5G

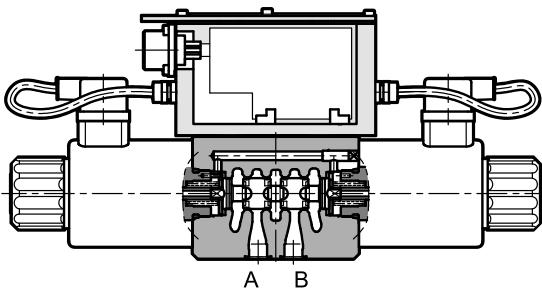
DIRECTIONAL VALVE WITH PROPORTIONAL CONTROL AND INTEGRATED ELECTRONICS

SUBPLATE MOUNTING

ISO 4401-05

p max 320 bar
Q max 90 l/min

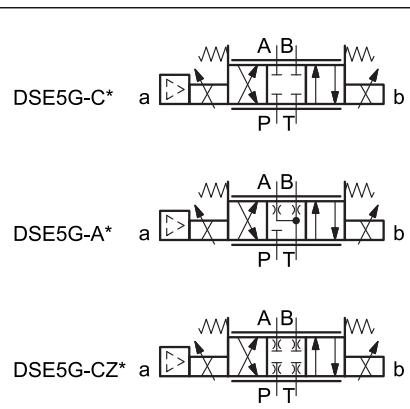
OPERATING PRINCIPLE



- The DSE5G is a direct operated directional valve with integrated electric proportional control and mounting interface in compliance with ISO 4401 standards.
 - It is used for control the positioning and the speed of hydraulic actuators.
 - Valves are available with command signal in voltage or current, and on-board electronics with internal enable, external enable or OV monitor on pin C.
 - A solenoid current monitoring signal is available.

— The valve is easy to install. The driver directly manages digital settings. In the event of special applications, you can customize settings using the optional kit (see par. 11.3).

HYDRAULIC SYMBOLS (typical)



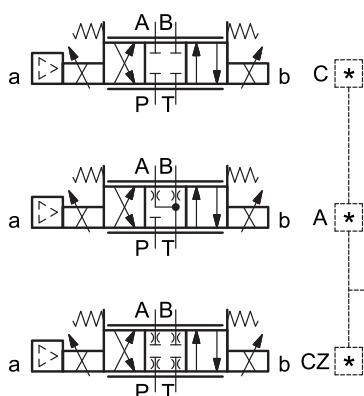
1 - IDENTIFICATION CODE

D	S	E	5	G	-			/	31	-	K11	
Direct operated directional control valve												Pin C function: A = external enable B = internal enable C = 0V monitor
Electric proportional control												Main connector 6 pin + PE
Size ISO 4401-05												Reference signal: E0 = voltage $\pm 10\text{ V}$ E1 = current $4 \div 20\text{ mA}$
Digital integrated electronics for open loop												Seals: N = NBR seals for mineral oil (standard) V = FPM seals for special fluids
Spool type: C = closed centres A = open centers CZ = closed centres with overlap jump												Series No. (the overall and mounting dimensions remain unchanged from 30 to 39)
Nominal flow rate of the spool (see chart par. 2)												Solenoid position (omit for 2 solenoids configuration): SA = 1 solenoid on side A

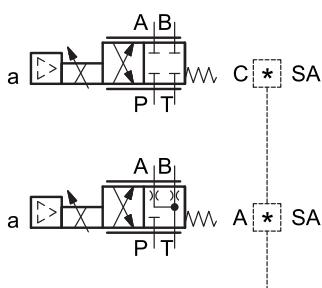
2 - CONFIGURATION

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

*	Controlled flow with Δp 10 bar P-T
30	30 l/min
60	60 l/min
60/30	60 (P-A) / 30 (P-B) l/min

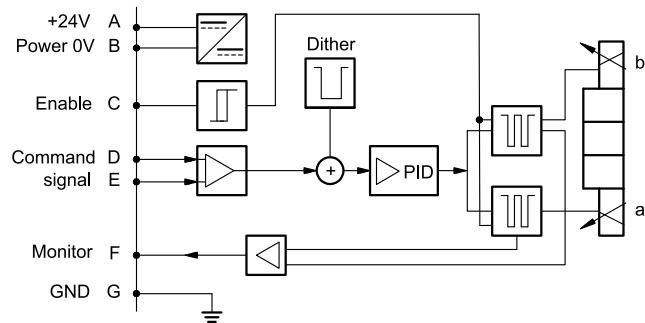
3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

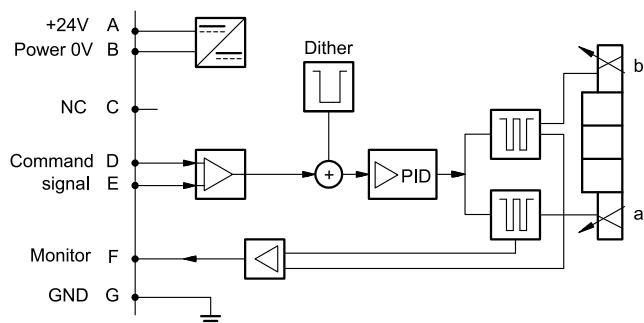
Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 35 VDC), ripple max 3 Vpp
Power consumption	VA	40
Maximum solenoid current	A	2.8
Fuse protection, external		3A
Command signals:	voltage (E0) current (E1)	V DC mA
		±10 (Impedance $R_i > 11 \text{ kOhm}$) 4 ÷ 20 (Impedance $R_i = 58 \text{ Ohm}$)
Monitor signals (current to solenoid):	voltage (E0) current (E1)	V DC mA
		±10 (Impedance $R_o > 1 \text{ kOhm}$) 4 ÷ 20 (Impedance $R_o = 500 \text{ Ohm}$)
Managed breakdowns		Overload and electronics overheating, 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

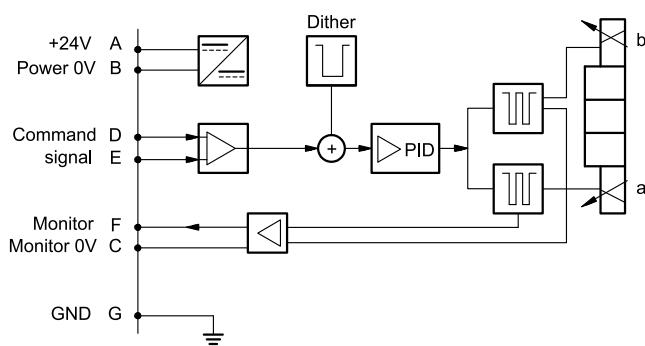
VERSION A - External Enable



VERSION B - Internal Enable

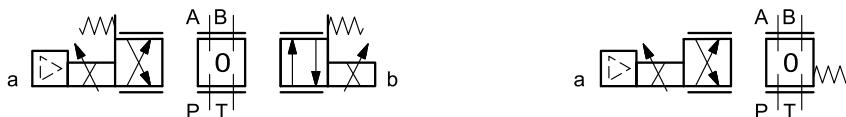


VERSION C - 0V Monitor



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.

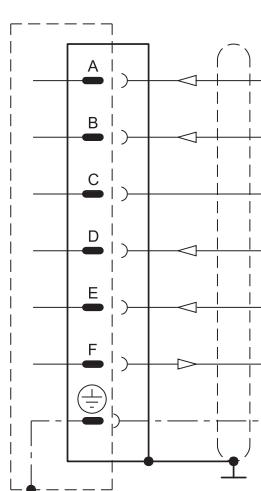


COMMAND MONITOR

-10V	0V	+10V
-10V	0V	+10V

COMMAND MONITOR

+10V	0V
+10V	0V

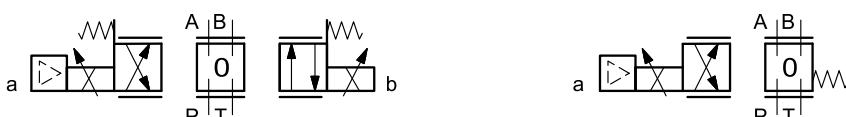


Pin	Values	version A	version B	version C
A	24 V DC	Supply Voltage		
B	0 V			
C		Enable 24 V DC	not used -	PIN F reference 0 V
D	± 10 V	Command (differential input)		
E	0 V	PIN D reference		
F	± 10 V	Monitor (0V reference: pin B)		Monitor
PE	GND	Ground (Earth)		

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.

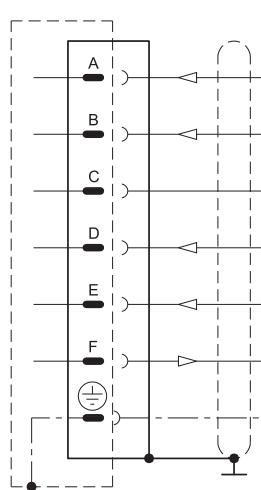


COMMAND MONITOR

4 mA	12 mA	20 mA
4 mA	12 mA	20 mA

COMMAND MONITOR

20 mA	4 mA
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)		

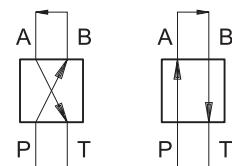
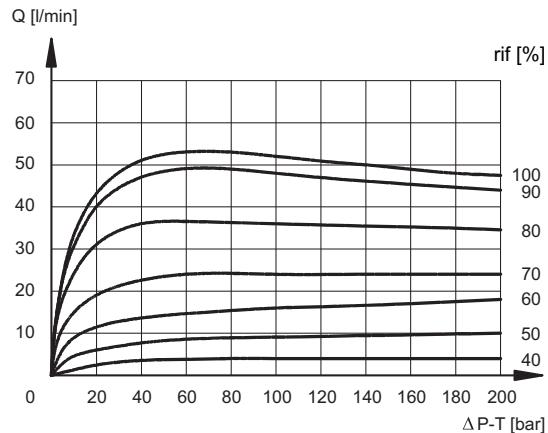
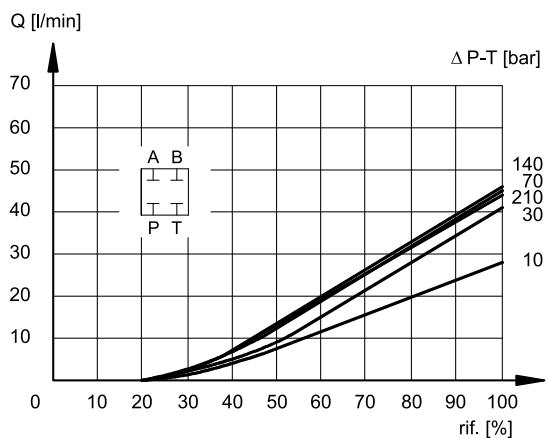
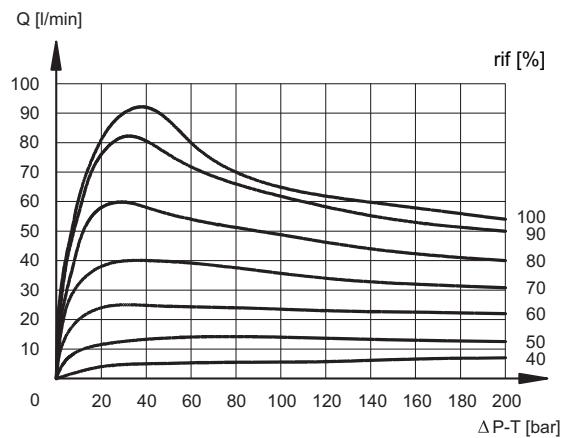
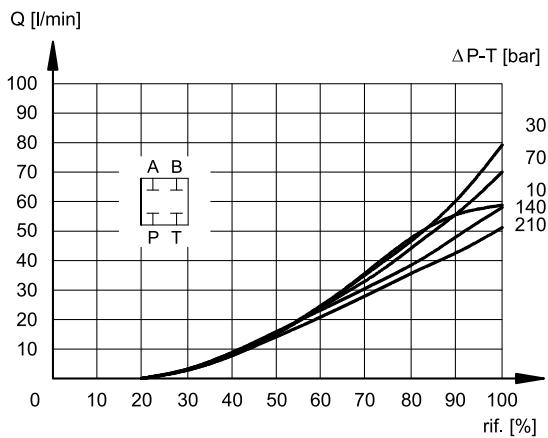
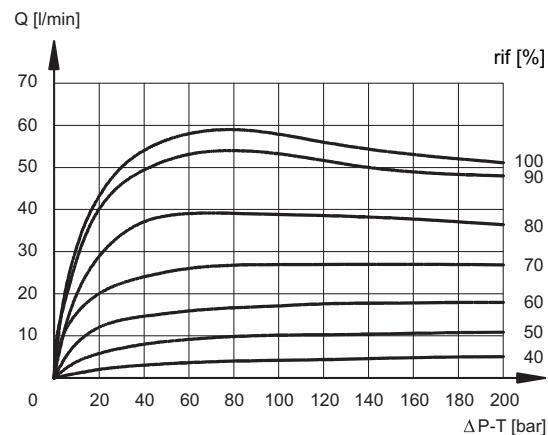
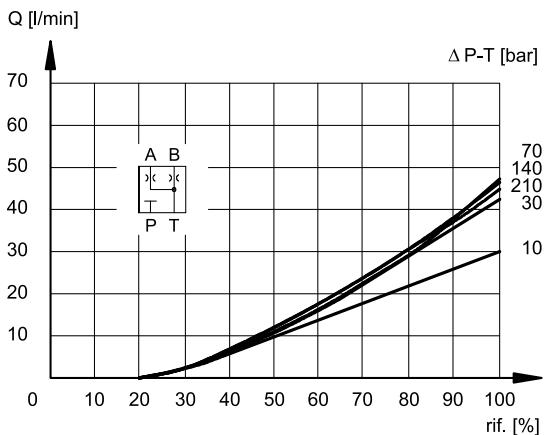
6 - CHARACTERISTIC CURVES

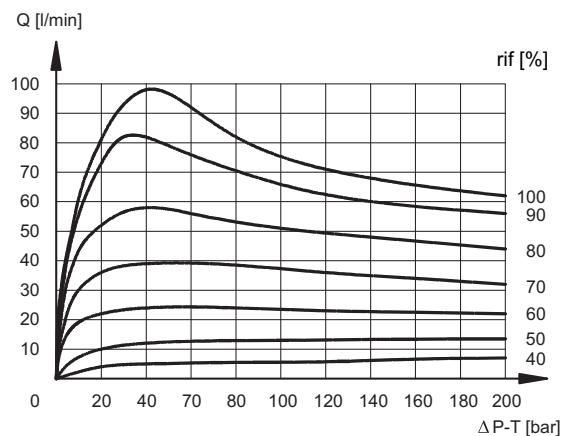
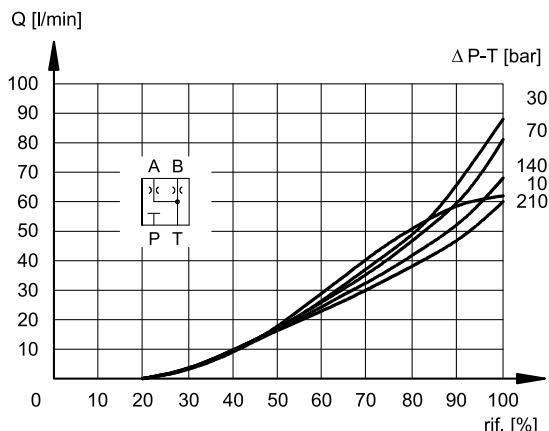
(obtained with mineral oil with viscosity of 36 cSt at 50°C and p = 140 bar)

Typical flow rate curves at constant Δp related to the reference signal and measured for the available spools.

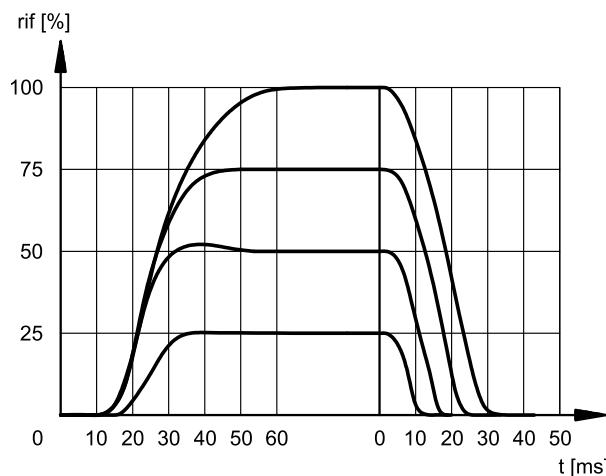
The curves are obtained with a constant meter-in with Δp of 5 bar and by setting the value of flow start at 20% of the reference signal.

NOTE: for spools with overlap jump (Z), please refer to the characteristic curves of spools C type, considering that the starting flow rate value is approx. 150 mV.

**SPOOL TYPE C30****SPOOL TYPE C60****SPOOL TYPE A30**

SPOOL TYPE A60

7 - RESPONSE TIMES

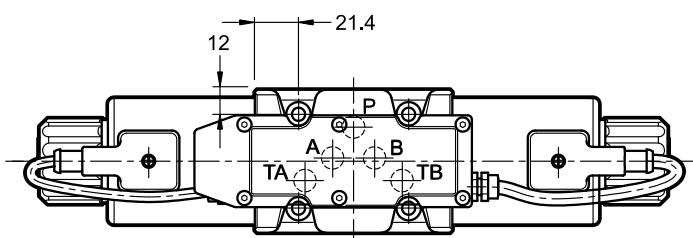
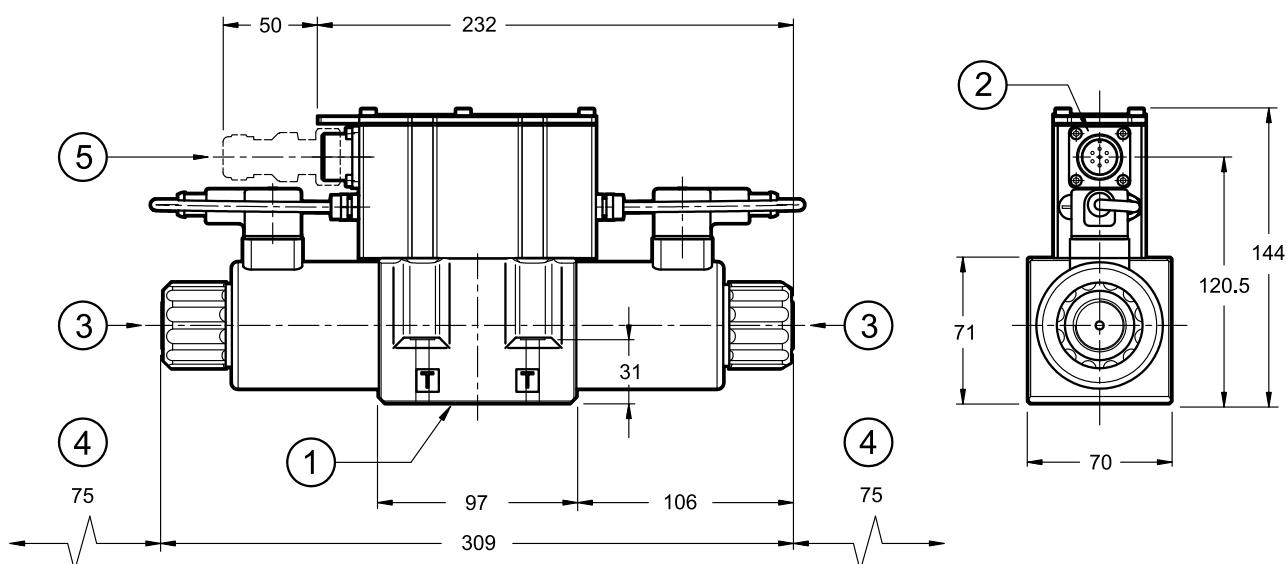
(obtained with mineral oil with viscosity of 36 cSt at 50°C and $p = 140$ bar)



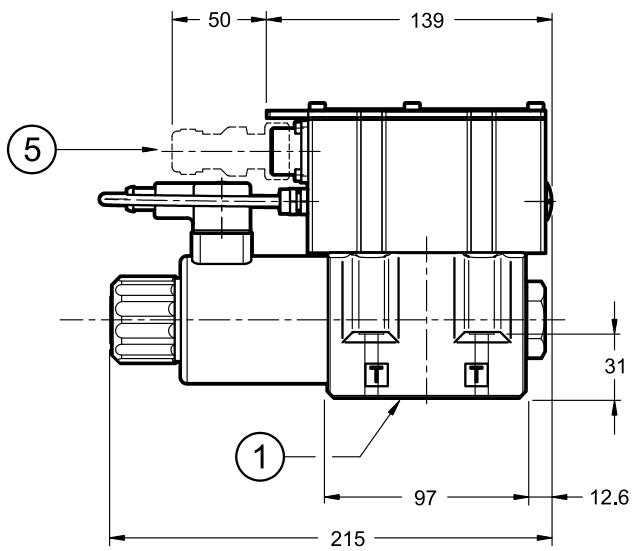
8 - OVERALL AND MOUNTING DIMENSIONS

DSE5G-A*
DSE5G-C*
DSE5G-CZ*

dimensions in mm



DSE5G-A* SA
DSE5G-C* SA



Fastening bolts: 4 SHC bolts M6x40 - ISO 4762

Torque: 8 Nm (A8.8)

Threads of mounting holes: M6x10

1	Mounting surface with sealing rings: 5 OR type 2050 (12.42x1.78) 90 Shore
---	--

2	Main connection
---	-----------------

3	Standard manual override embedded in the solenoid tube
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4	Coil removal space
---	--------------------

5	Mating connector. To be ordered separately. See paragraph 11
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DSE5G
SERIES 31

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.

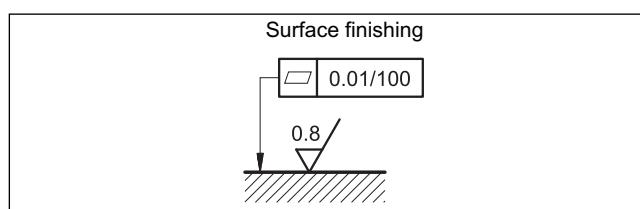
The fluid must be preserved in its physical and chemical characteristics.

10 - INSTALLATION

DSE5G 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.

Diplomatic offers 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