

DSE5G

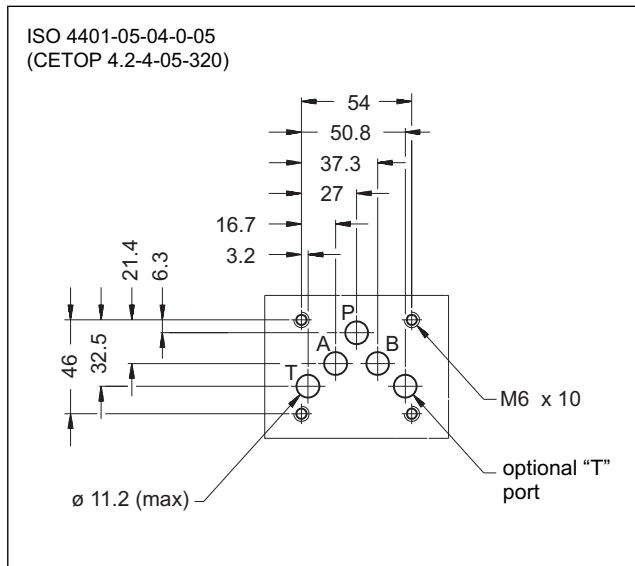
DIRECTIONAL VALVE WITH PROPORTIONAL CONTROL AND INTEGRATED ELECTRONICS

SERIES 31

**SUBPLATE MOUNTING
ISO 4401-05**

p max 320 bar
Q max 90 l/min

MOUNTING SURFACE

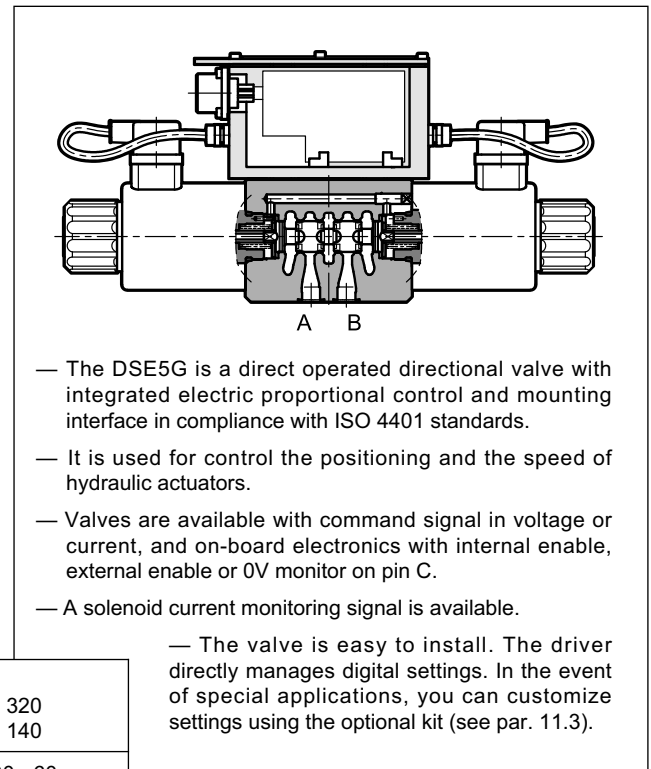


PERFORMANCES

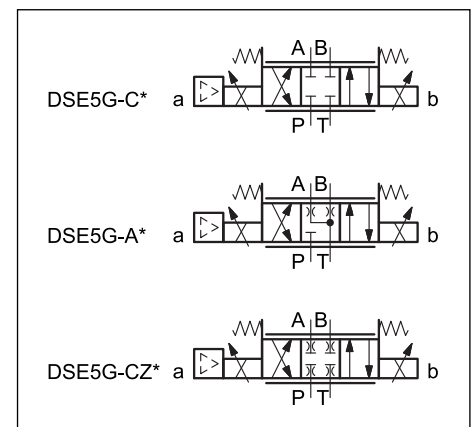
(obtained with mineral oil with viscosity of 36 cSt at 50°C and p = 140 bar)

| | | |
|--|--|------------|
| 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 | < ±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 |

OPERATING PRINCIPLE



HYDRAULIC SYMBOLS (typical)



1 - IDENTIFICATION CODE

| | | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|--|--|--|--|--|-------------|----------|--|--|------------|--|
| D | S | E | 5 | G | - | | | | | | / 31 | - | | | K11 | |
|----------|----------|----------|----------|----------|----------|--|--|--|--|--|-------------|----------|--|--|------------|--|

Direct operated directional control valve

Electric proportional control

Size ISO 4401-05

Digital integrated electronics for open loop

Spool type:
C = closed centres
A = open centers
CZ = closed centres with overlap jump

Nominal flow rate of the spool (see chart par. 2)

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

Main connector 6 pin + PE

Reference signal:
E0 = voltage ±10 V
E1 = current 4 + 20 mA

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

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

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 |
|--------------|--|
| 30 | 30 l/min |
| 60 | 60 l/min |
| 60/30 | 60 (P-A) / 30 (P-B) l/min |

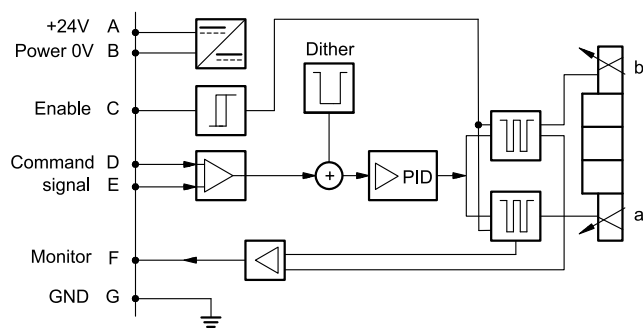
3 - ELECTRICAL CHARACTERISTICS

3.1 - Electrical on board electronics

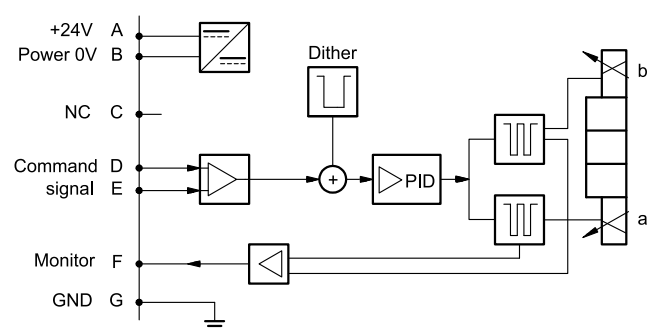
| | | |
|--|------------|--|
| Duty cycle | | 100% (continuous operation) |
| Protection class according to EN 60529 | | IP65 / IP67 |
| Supply voltage | V DC | 24 (from 19 to 35 VDC), ripple max 3 Vpp |
| Power consumption | VA | 40 |
| Maximum solenoid current | A | 2.8 |
| Fuse protection, external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

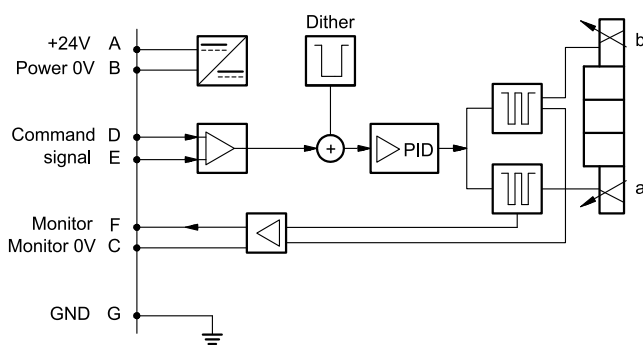
VERSION A - External Enable



VERSION B - Internal Enable

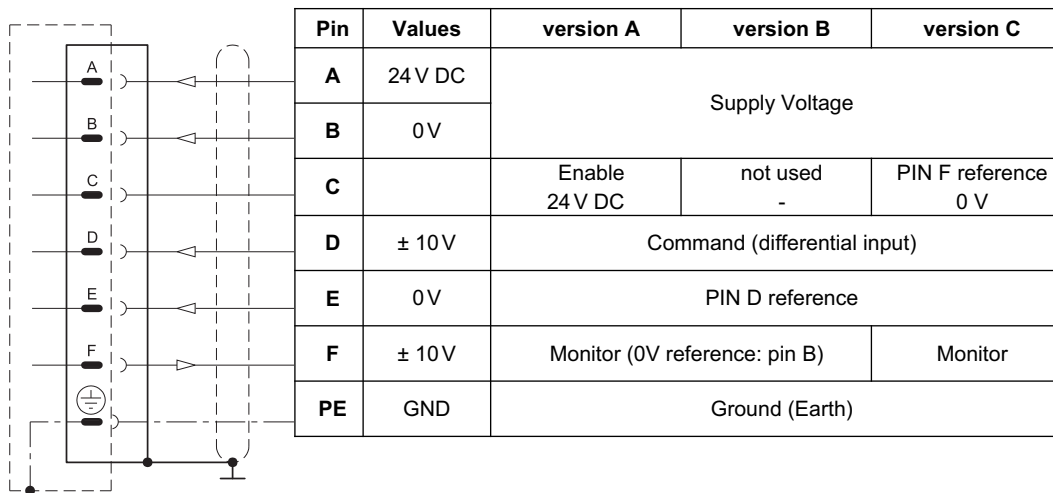
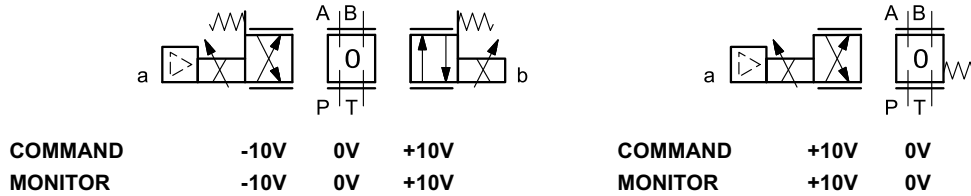


VERSION C - 0V Monitor



4 - VERSIONS WITH VOLTAGE COMMAND (E0)

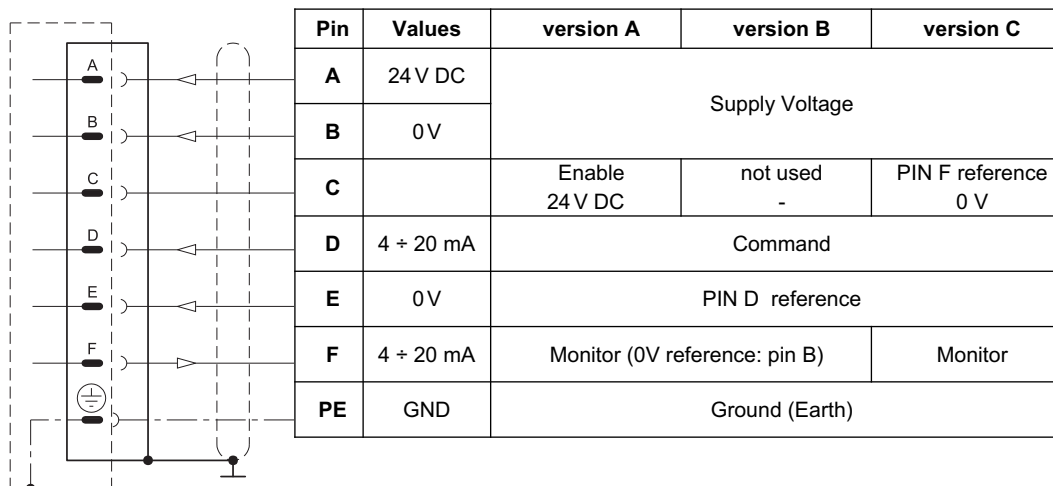
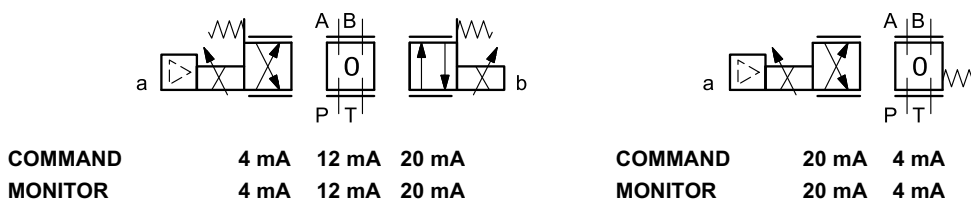
The reference signal is between -10V and +10V on double solenoid valves, and 0 + 10V on single solenoid valves SA. The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



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.



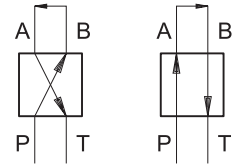
6 - CHARACTERISTIC CURVES

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

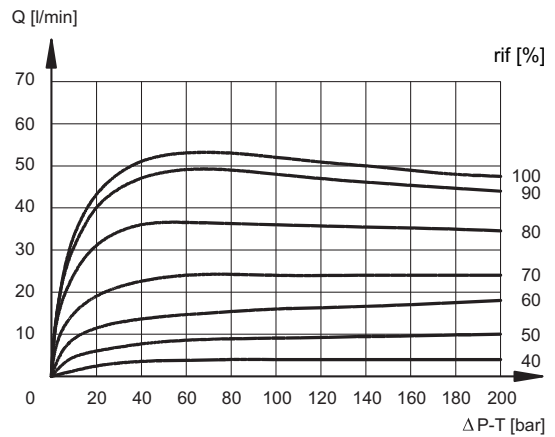
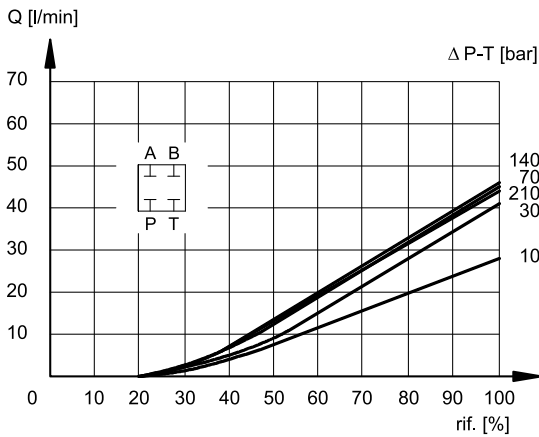
Typical flow rate curves at constant Δp related to the reference signal and measured for the available spools.

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.

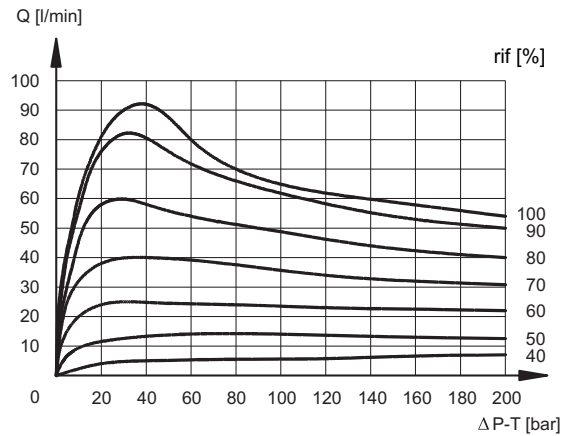
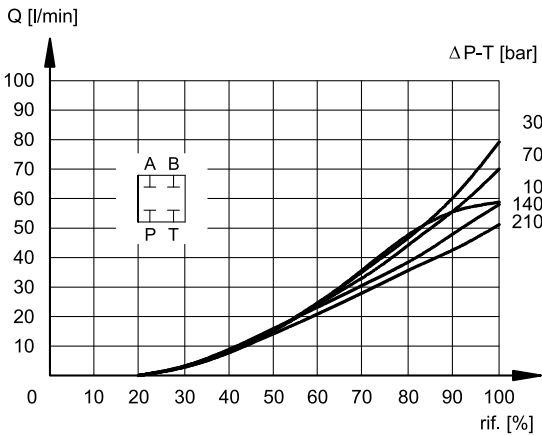
NOTE: for spools with overlap jump (Z), please refer to the characteristic curves of spools C type, considering that the starting flow rate value is approx. 150 mV.



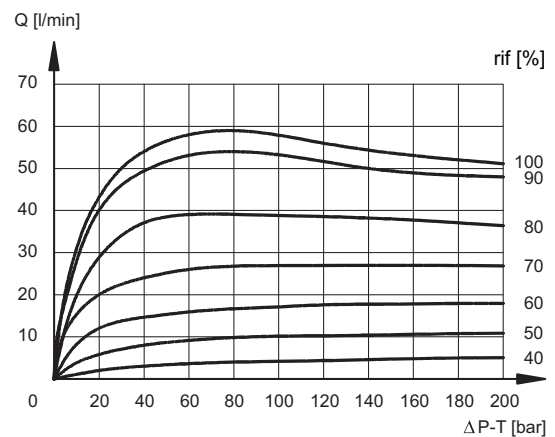
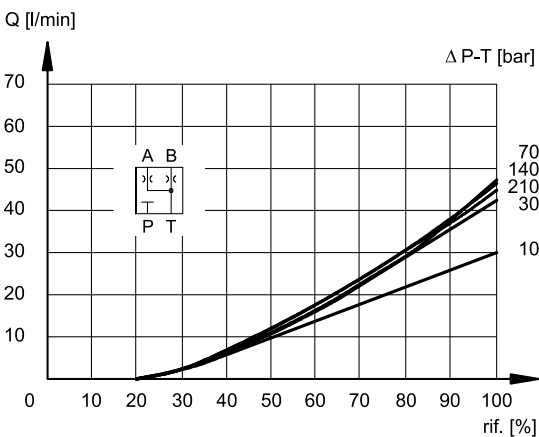
SPOOL TYPE C30



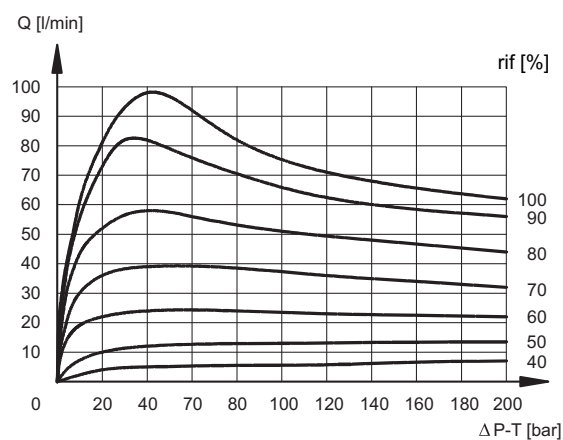
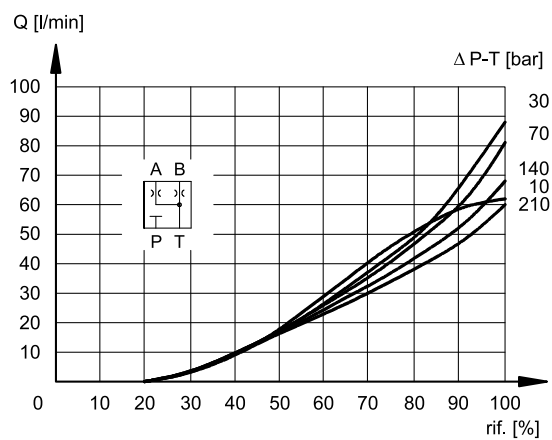
SPOOL TYPE C60



SPOOL TYPE A30

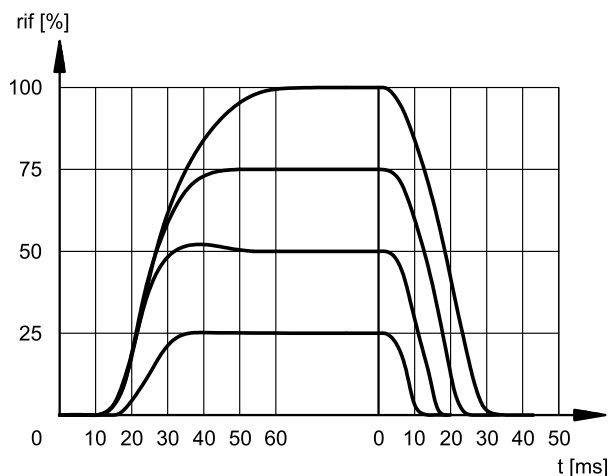


SPOOL TYPE A60

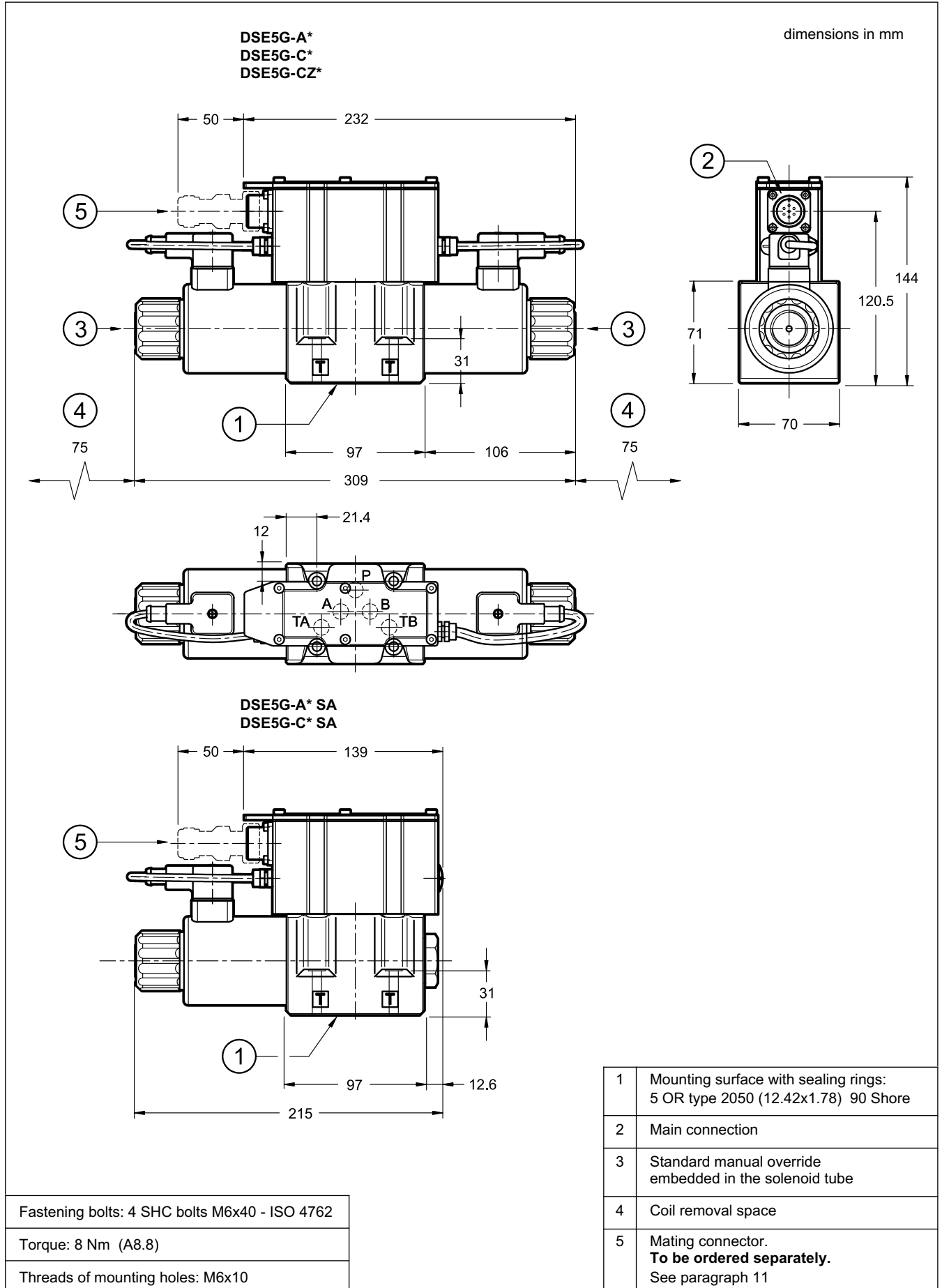


7 - RESPONSE TIMES

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



8 - OVERALL AND MOUNTING DIMENSIONS





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.

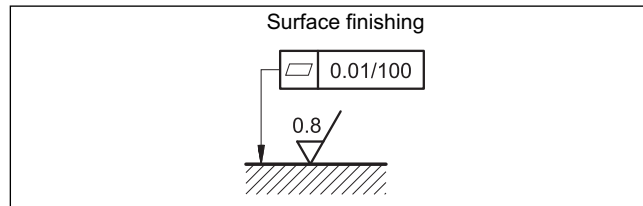
The fluid must be preserved in its physical and chemical characteristics.

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.

Duplomatic 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:

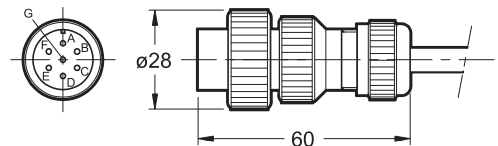
- up to 20 m cable length : 1,0 mm²
- up to 40 m cable length : 1,5 mm²

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 |