



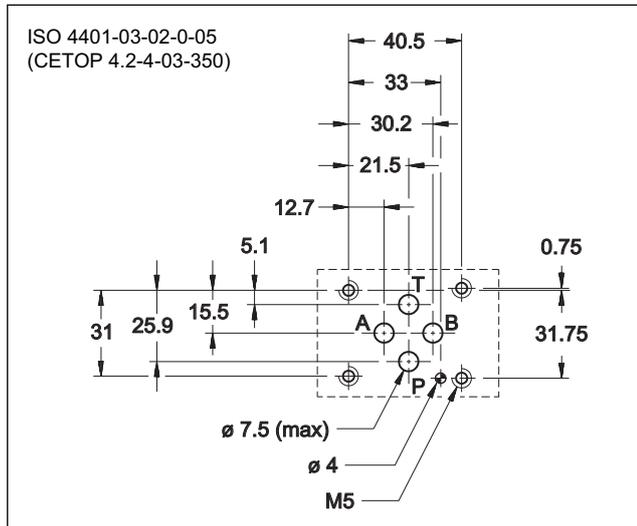
PRED3G

PRESSURE CONTROL VALVE WITH PROPORTIONAL CONTROL AND INTEGRAL ELECTRONICS SERIES 31

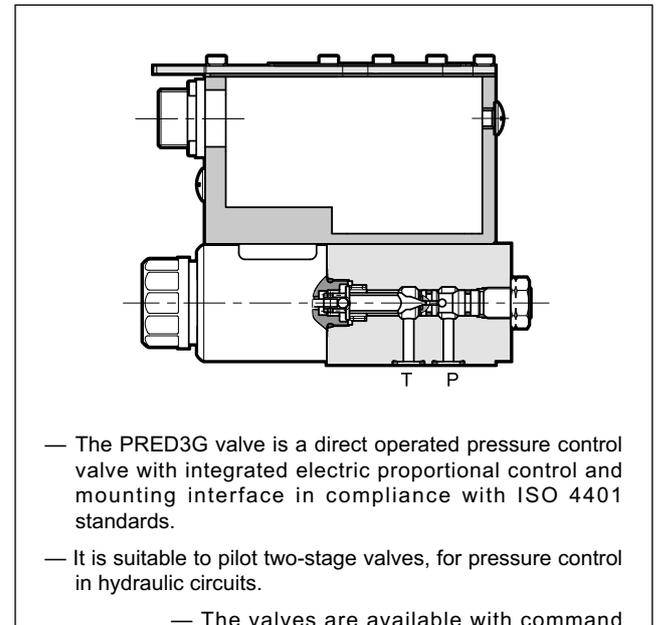
SUBPLATE MOUNTING ISO 4401-03

p max 350 bar
Q max 3 l/min

MOUNTING INTERFACE



OPERATING PRINCIPLE



PERFORMANCES

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

Maximum operating pressure: - P port - T port	bar	350 2
Nominal flow Maximum flow (see diagram p min = f(Q))	l/min	1 3
Step response	see paragraph 6	
Hysteresis	% of p nom	< 3%
Repeatability	% of p nom	< ±1%
Electrical characteristic	see paragraph 2	
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	kg	2

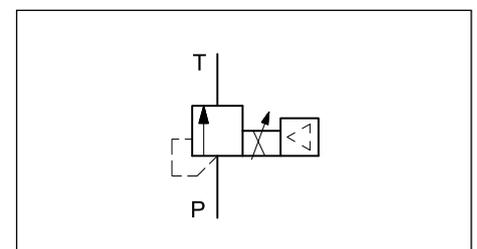
- The valves are available with command signal in voltage or current and on board electronics with internal enable, external enable or 0V monitor on pin C.

- A solenoid current monitoring signal is available.

- They are available in four pressure control ranges, up to 350 bar.

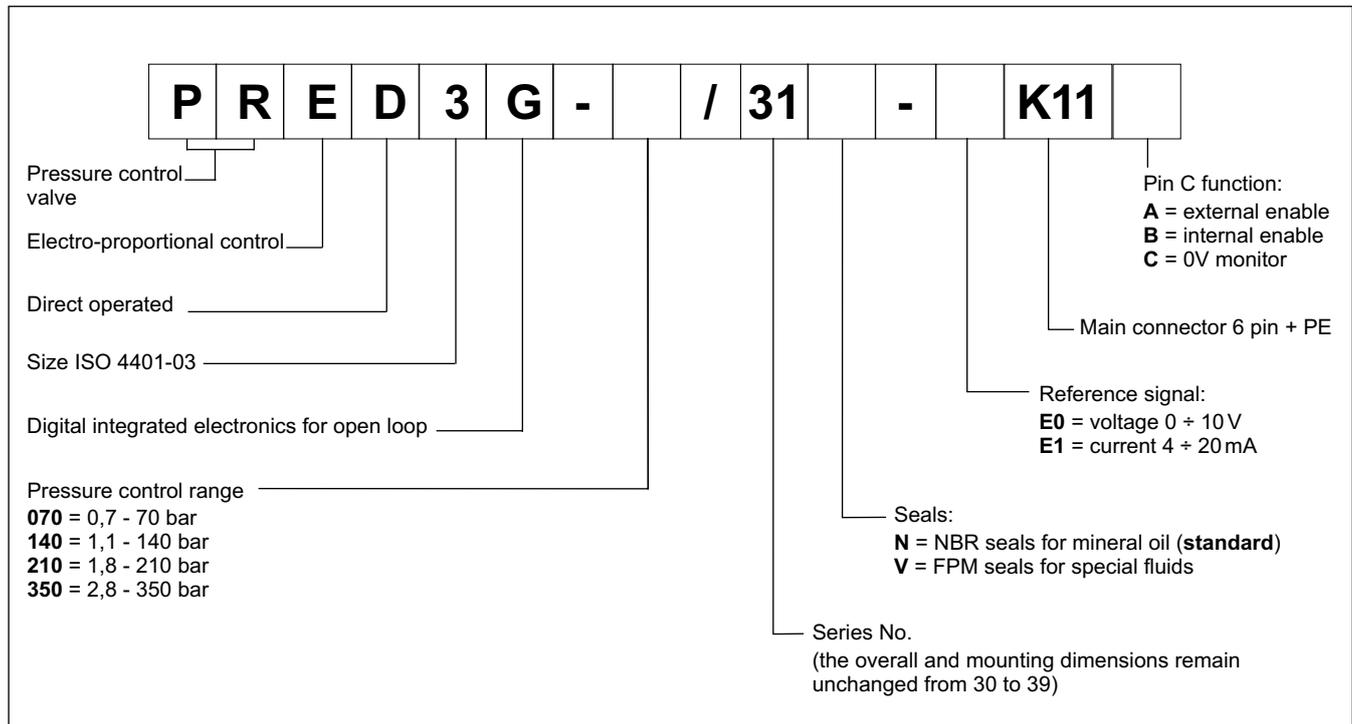
- Some parameters are customizable using the appropriate kit for start-up.

HYDRAULIC SYMBOL





1 - IDENTIFICATION CODE



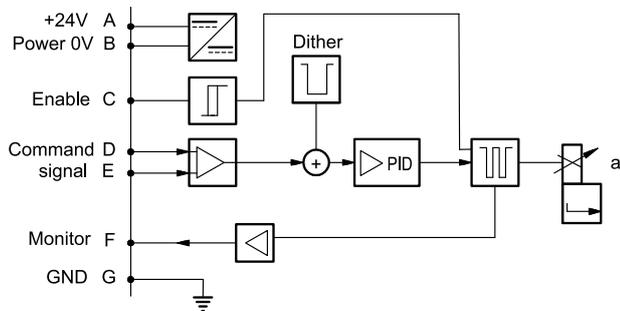
2 - ELECTRICAL CHARACTERISTICS

2.1 - Electrical on board electronics

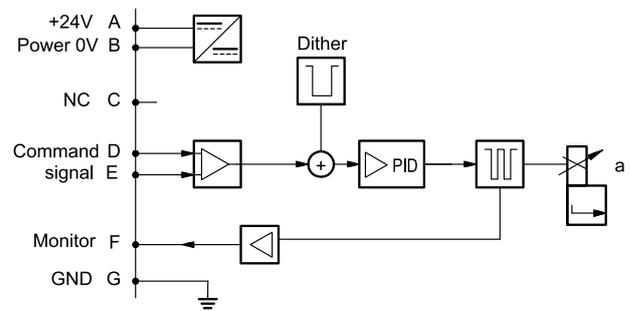
Duty cycle		100% (continuous operation)
Protection class according to IEC 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	25
Maximum solenoid current	A	1.88
Fuse protection, external		2A time lag
Command signals: voltage (E0) current (E1)	V DC mA	0 ÷ 10 (Impedance Ri > 11 kOhm) 4 ÷ 20 (Impedance Ri = 58 Ohm)
Monitor signal (current to solenoid): voltage (E0) current (E1)	V DC mA	0 ÷ 10 (Impedance Ro > 1 kOhm) 4 ÷ 20 (Impedance Ro = 500 Ohm)
Managed breakdowns		Overload and electronics overheating, cable breakdown, supply voltage failures
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

2.2 - On-board electronics diagrams

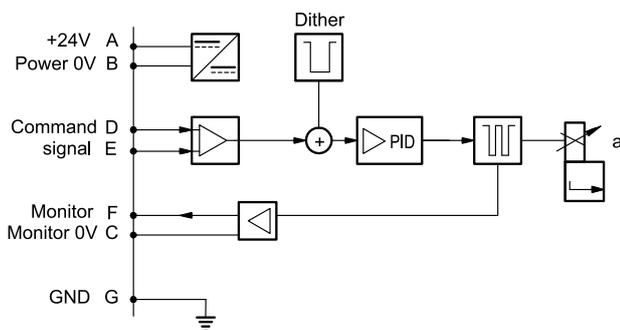
VERSION A - External Enable



VERSION B - Internal Enable

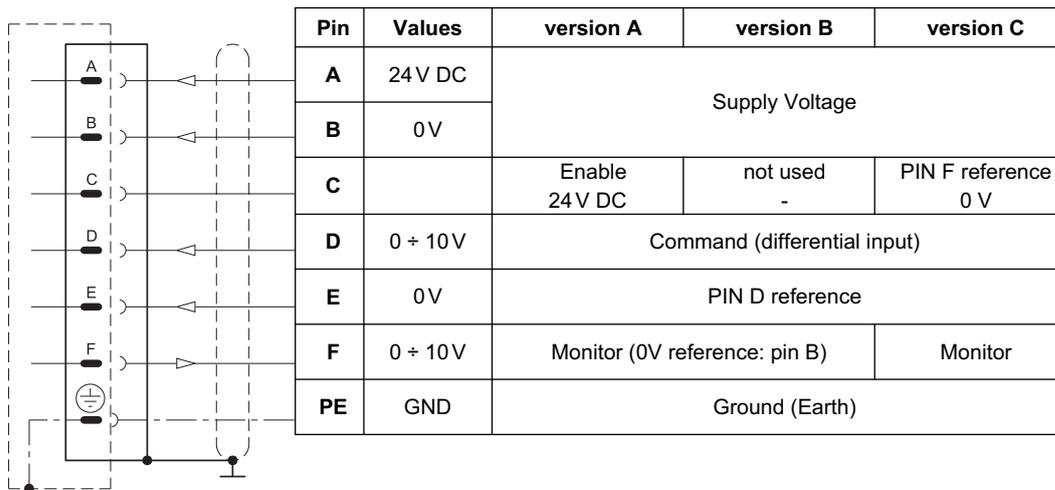
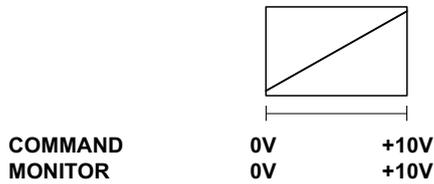


VERSION C - 0V Monitor



3 - VERSIONS WITH VOLTAGE COMMAND (E0)

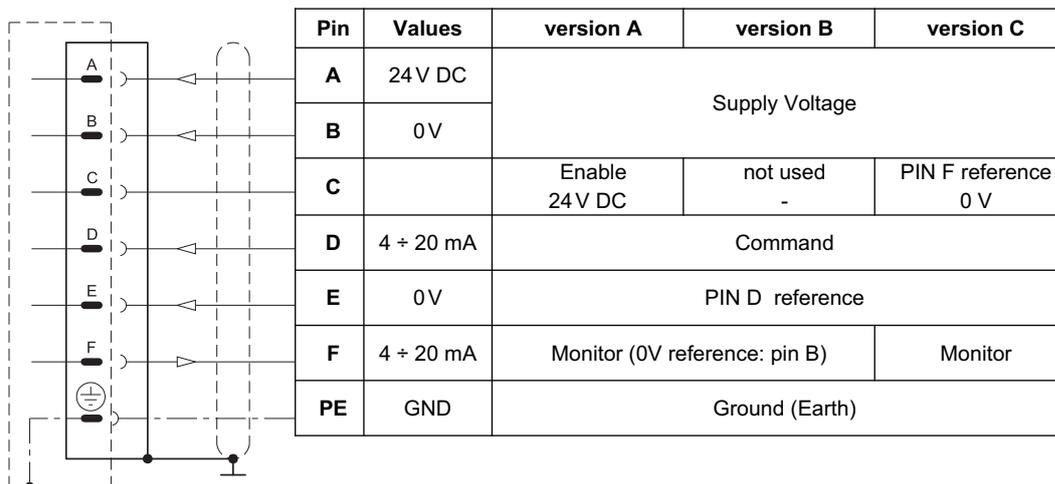
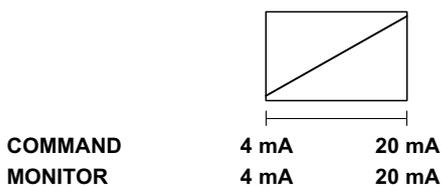
The reference signal is between 0 + 10V. The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



4 - 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.





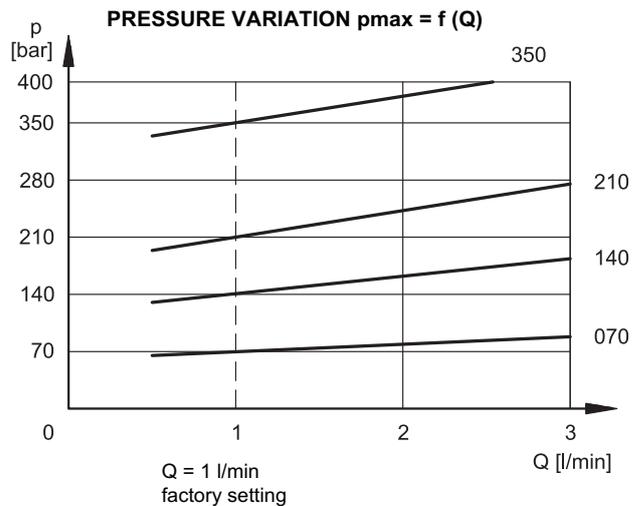
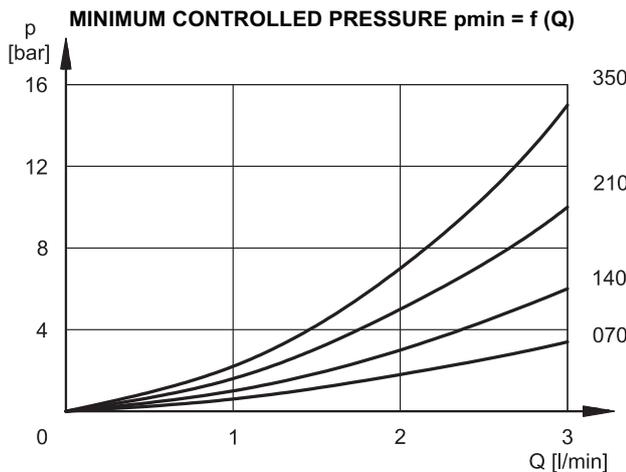
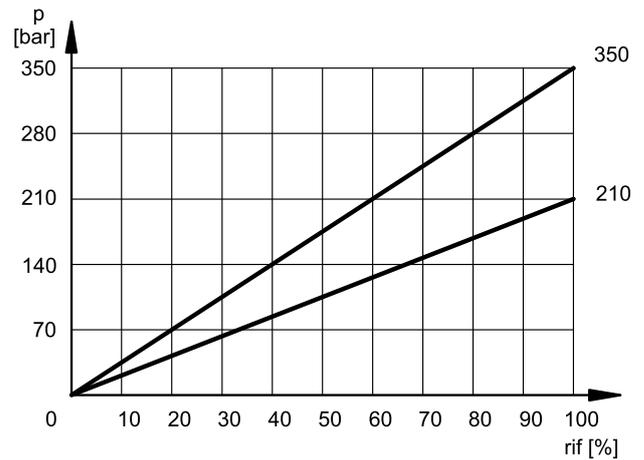
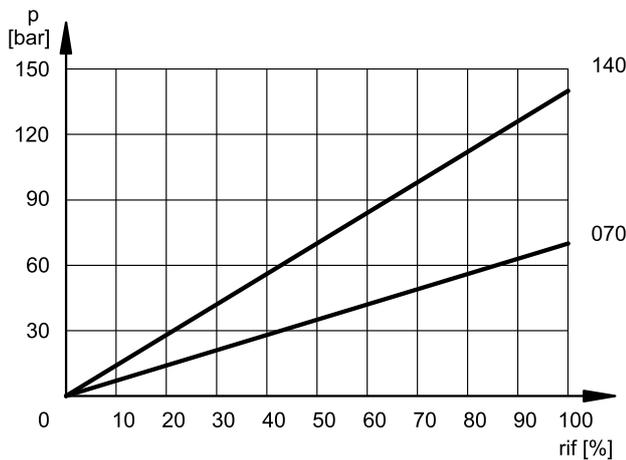
5 - CHARACTERISTIC CURVES

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

Typical control curves according to the current supplied to the solenoid for pressure control ranges: 070, 140, 210, 350, measured with input flow rate $Q = 1$ l/min. The curves are obtained after linearization in factory of the characteristic curve through the digital amplifier, and they are measured without any backpressure in T.

The full scale pressure is set in factory with a flow rate of 1 l/min. In case of higher flow rate, the full scale pressure will increase considerably. See diagram $p_{max} = f(Q)$.

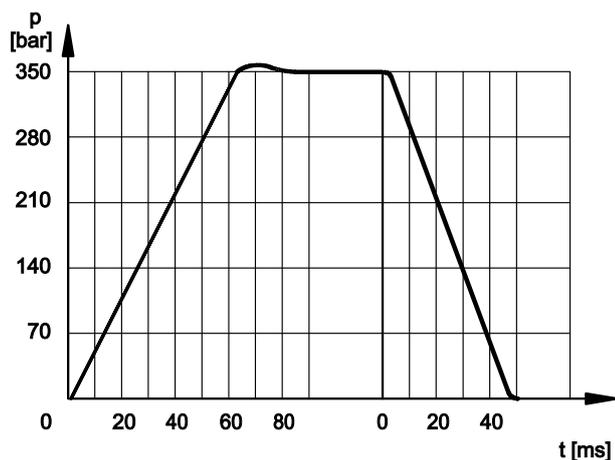
PRESSURE CONTROL $p=f(I)$



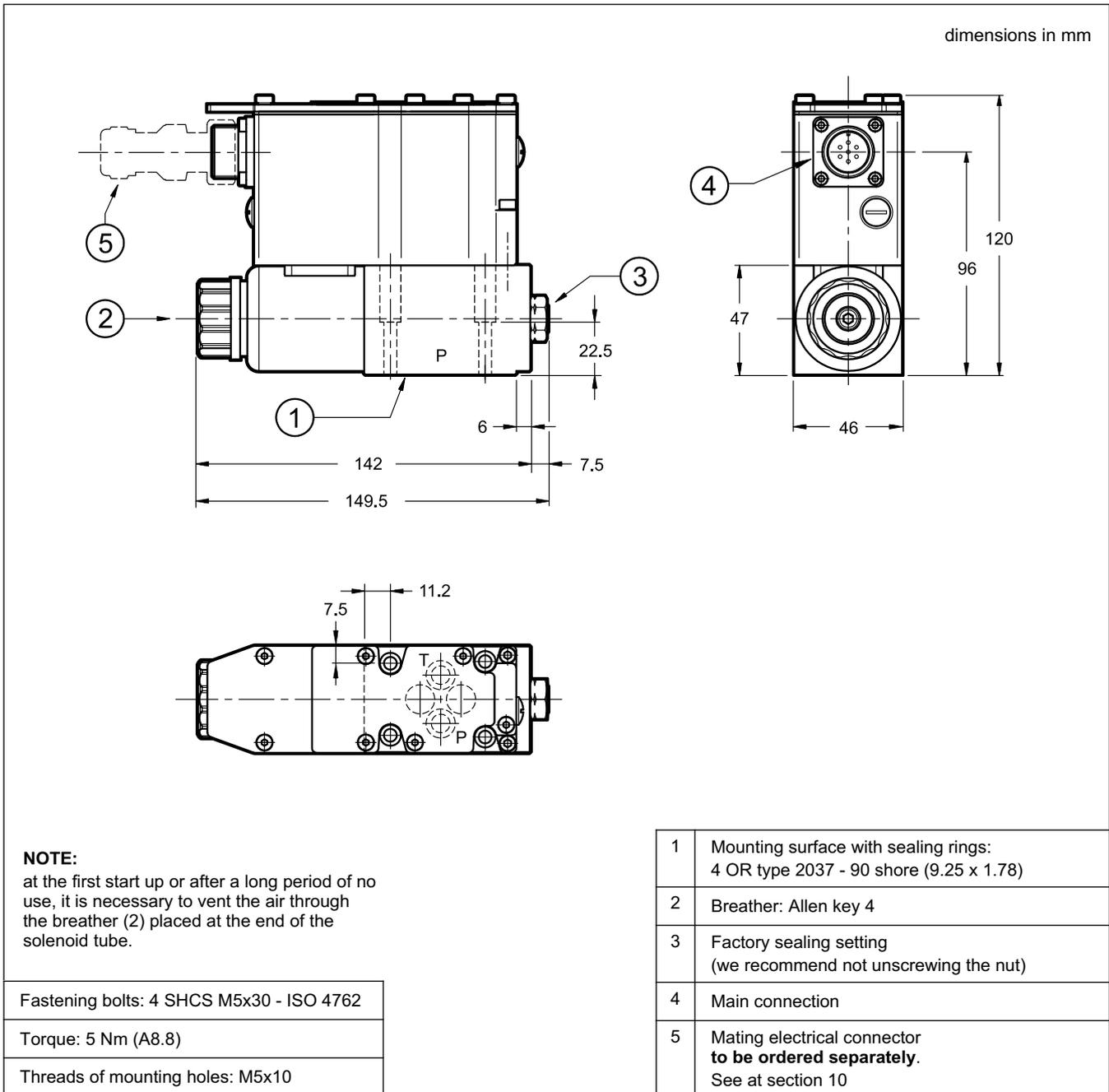
6 - RESPONSE TIMES

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

Response times are obtained by using valves with a full scale of 350 bar, with an input flow rate of 2 l/min and a pressure oil volume of 0,5 lt. The response time is affected both by the flow rate and the oil volume in the pipework.



7 - OVERALL AND MOUNTING DIMENSIONS



8 - 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.

9 - INSTALLATION

We recommend installing these valves with the solenoid downward, either in horizontal or vertical position. If the valve is installed on vertical axis with the solenoid upward, you should consider possible variations of the minimum controlled pressure from those indicated in paragraph 5.

Ensure that there is no air in the hydraulic circuit. In certain applications it might be necessary to vent the air entrapped in the solenoid tube by unfastening the drain screw placed in the solenoid tube.

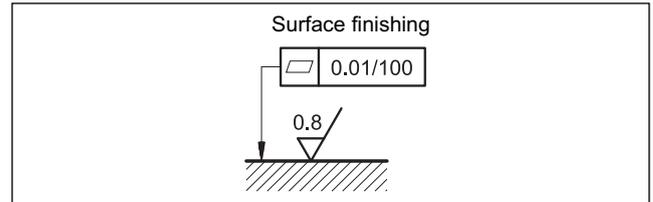
Ensure the solenoid tube is always filled with oil. Make sure the drain screw has been put back correctly at the end of the task.

Connect the valve T port directly to the tank. **Add any backpressure value detected in the T line to the controlled pressure value.**

Maximum admissible backpressure in the T line, under operational conditions, is 2 bar.

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.



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.

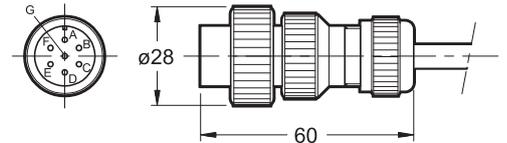


So as to avoid electromagnetic troubles and comply with the electromagnetic compatibility regulation EMC, it is recommended the use of a metal connector.

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

Duplomatic offers 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 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.

10.3 - Kit for start-up LINPC-USB

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

11 - SUBPLATES

(see catalogue 51 000)

PMMD-AI3G rear ports
PMMD-AL3G side ports
Ports dimensions: P, T, A, B: 3/8" BSP



PRED3G

SERIES 31



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