



PZE3G

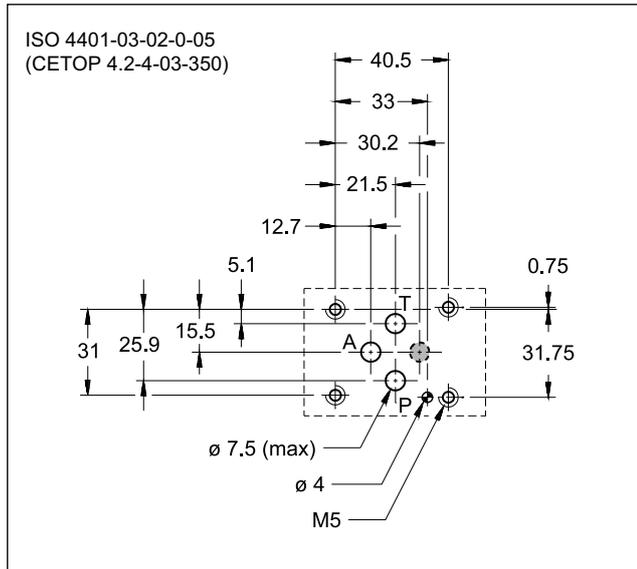
PROPORTIONAL 3-WAY PRESSURE REDUCING VALVE, PILOT OPERATED, WITH INTEGRATED ELECTRONICS

SERIES 31

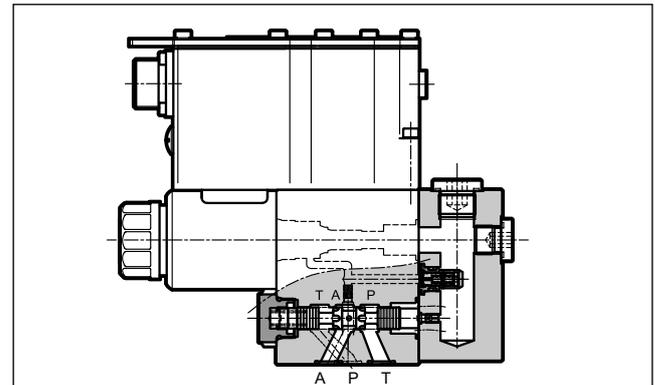
SUBPLATE MOUNTING
ISO 4401-03

p max 350 bar
Q max 40 l/min

MOUNTING SURFACE



OPERATING PRINCIPLE



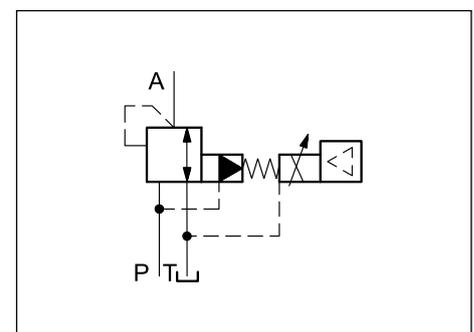
- PZE3G valve is a proportional 3-way pressure reducing valve, pilot operated, with on-board electronics with mounting surface according to ISO 4401-03 standards.
- This valve controls the outlet pressure on port A, reducing the inlet pressure from line P or relieving the overpressure from line A into T keeping it at the set value. (typically: hydraulic counter-weight or load balancing)
- The valve is available with command signal in voltage or current and on-board electronics with internal enable, external enable or 0V monitor on pin C. A monitor signal for solenoid current is available.
- The valves are easy to install. The driver manages the digital setting directly. In the event of special applications, setting can be customized using the optional kit (see par. 10.3)

PERFORMANCES

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

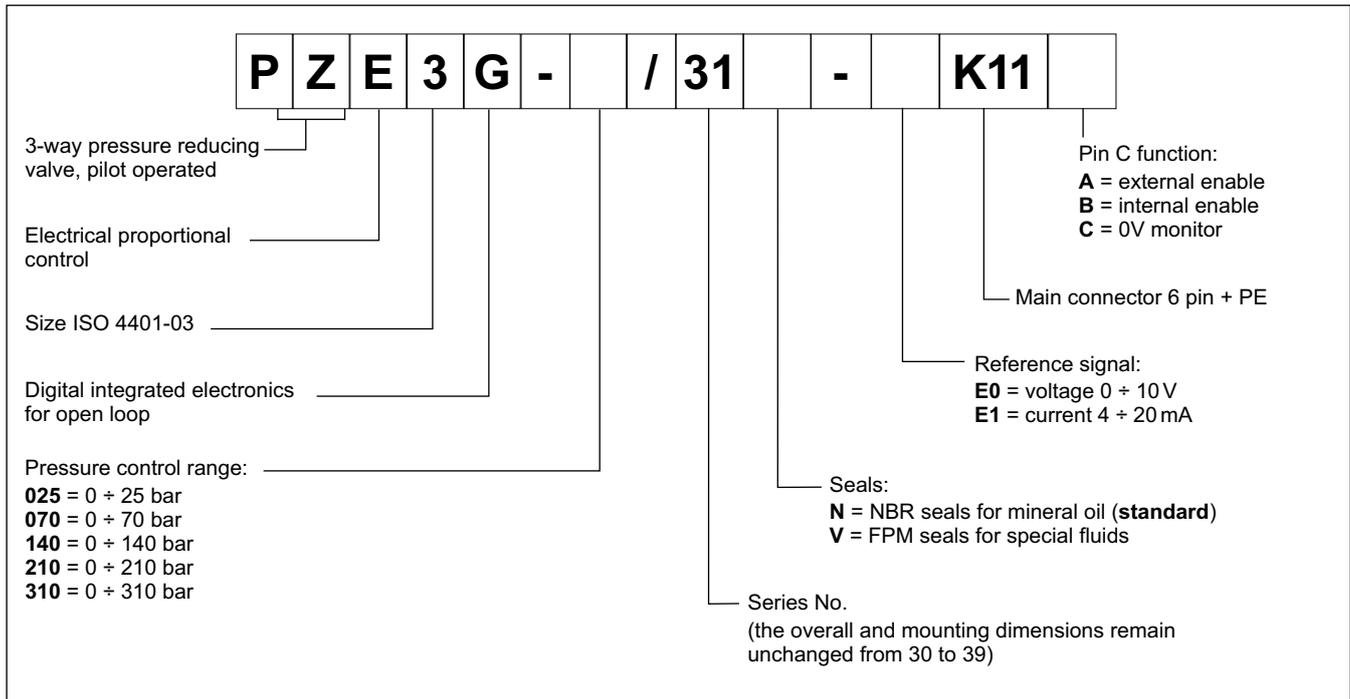
Maximum operating pressure: - P port - T port	bar	350 2
Maximum flow (see p max = f(Q) diagram)	l/min	40
Step response	see paragraph 6	
Hysteresis	% of p nom	< 3%
Repeatability	% of p nom	< ±1%
Electrical characteristic	see paragraph 2	
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-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	2,7

HYDRAULIC SYMBOL





1 - IDENTIFICATION CODE



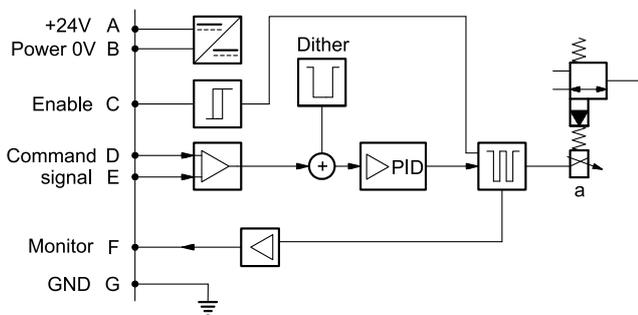
2 - ELECTRICAL CHARACTERISTICS

2.1 - Electrical on board electronics

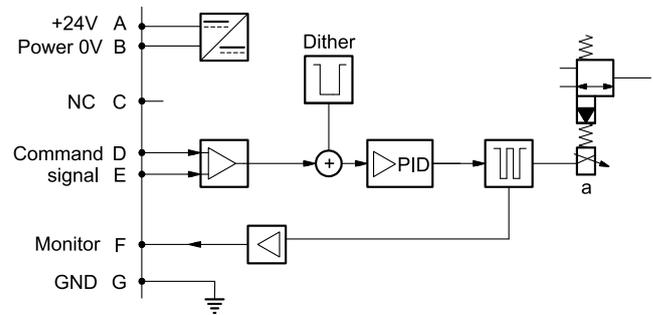
Duty cycle		100% (continuous operation)
Protection class according to EN 60529		IP65 / IP67
Supply voltage	V DC	24 (from 19 to 30 VDC), ripple max 3 Vpp
Power consumption	VA	25
Maximum solenoid current	A	1.88
Fuse protection, external		2A time lag
Command signals: voltage (E0) current (E1)	V DC mA	0 ÷ 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

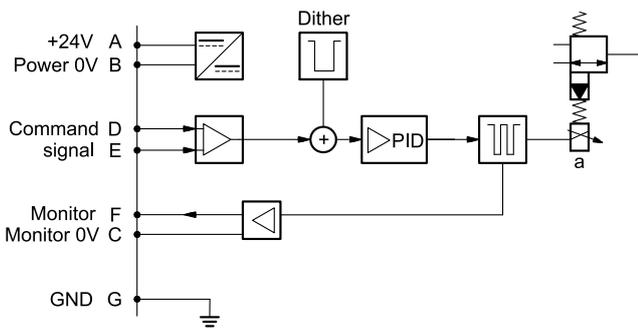
VERSION A - External Enable



VERSION B - Internal Enable

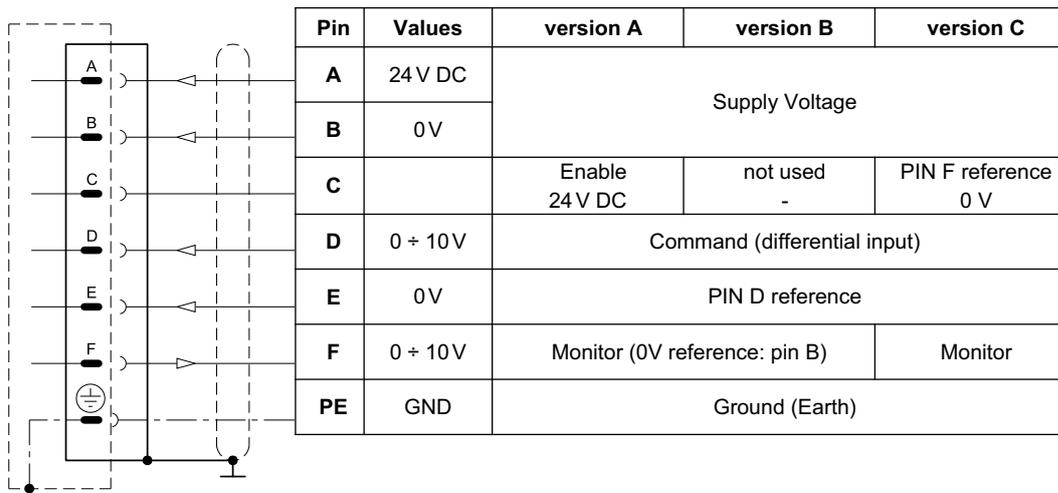
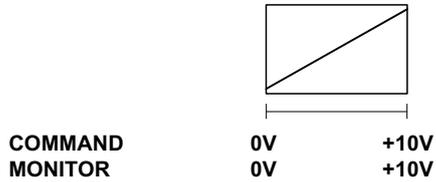


VERSION C - 0V Monitor



3 - VERSIONS WITH VOLTAGE COMMAND (E0)

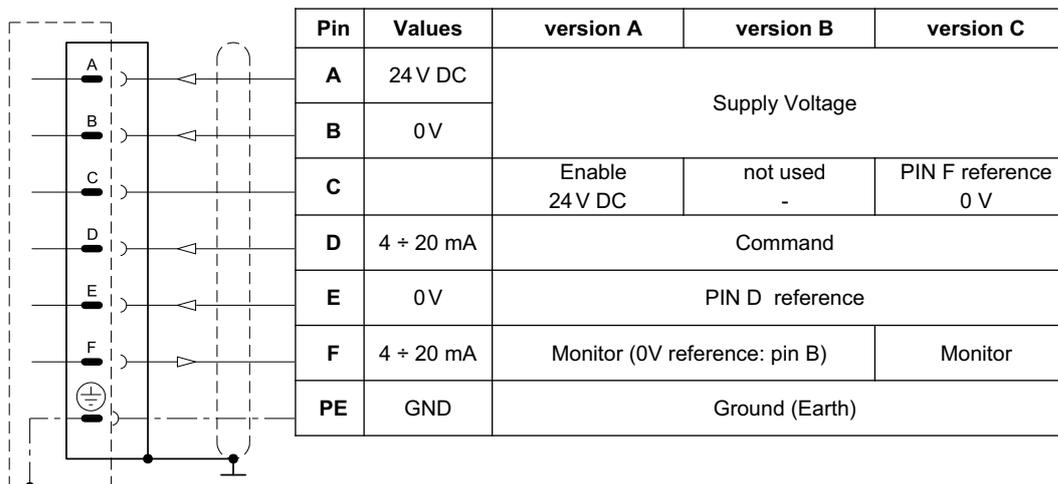
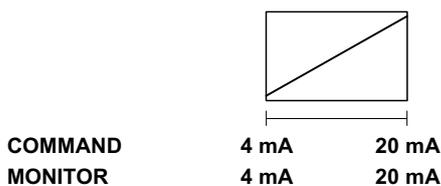
The reference signal is between 0 + 10V. The monitor feature of versions B and C becomes available with a delay of 0,5 sec from the power-on of the card.



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.

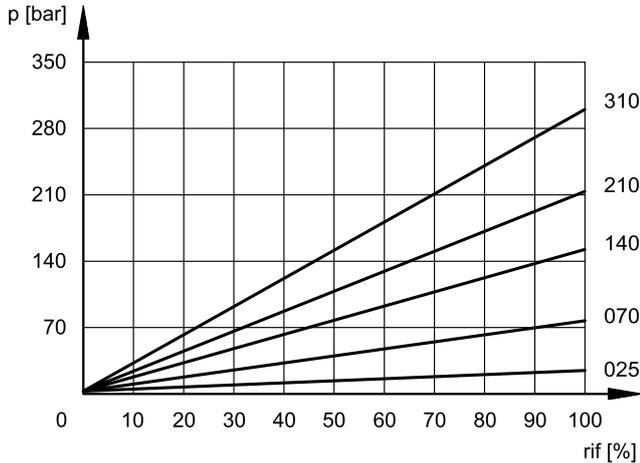


5 - CHARACTERISTIC CURVES

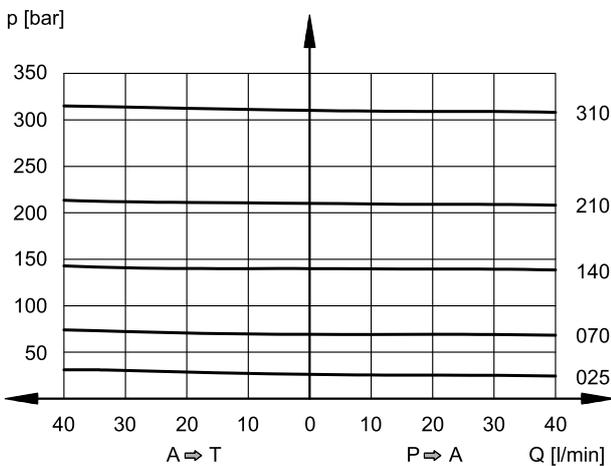
(measured with viscosity of 36 cSt at 50°C)

Typical control characteristics, according to the reference signal for available pressure control ranges. Characteristic curves measured without backpressure in T, with linearity compensation set by the onboard electronics.

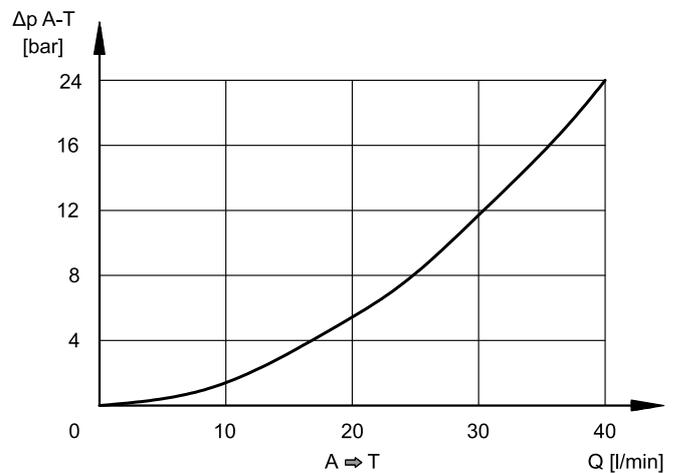
PRESSURE CONTROL $p = f(I)$



SET PRESSURE $p_{max} = f(Q)$



MIN. CONTROLLED PRESSURE $p_{min} = f(Q)$



Pressure drops A → T vs. flow, without backpressure in T port and reference signal = 0 %

6 - RESPONSE TIMES

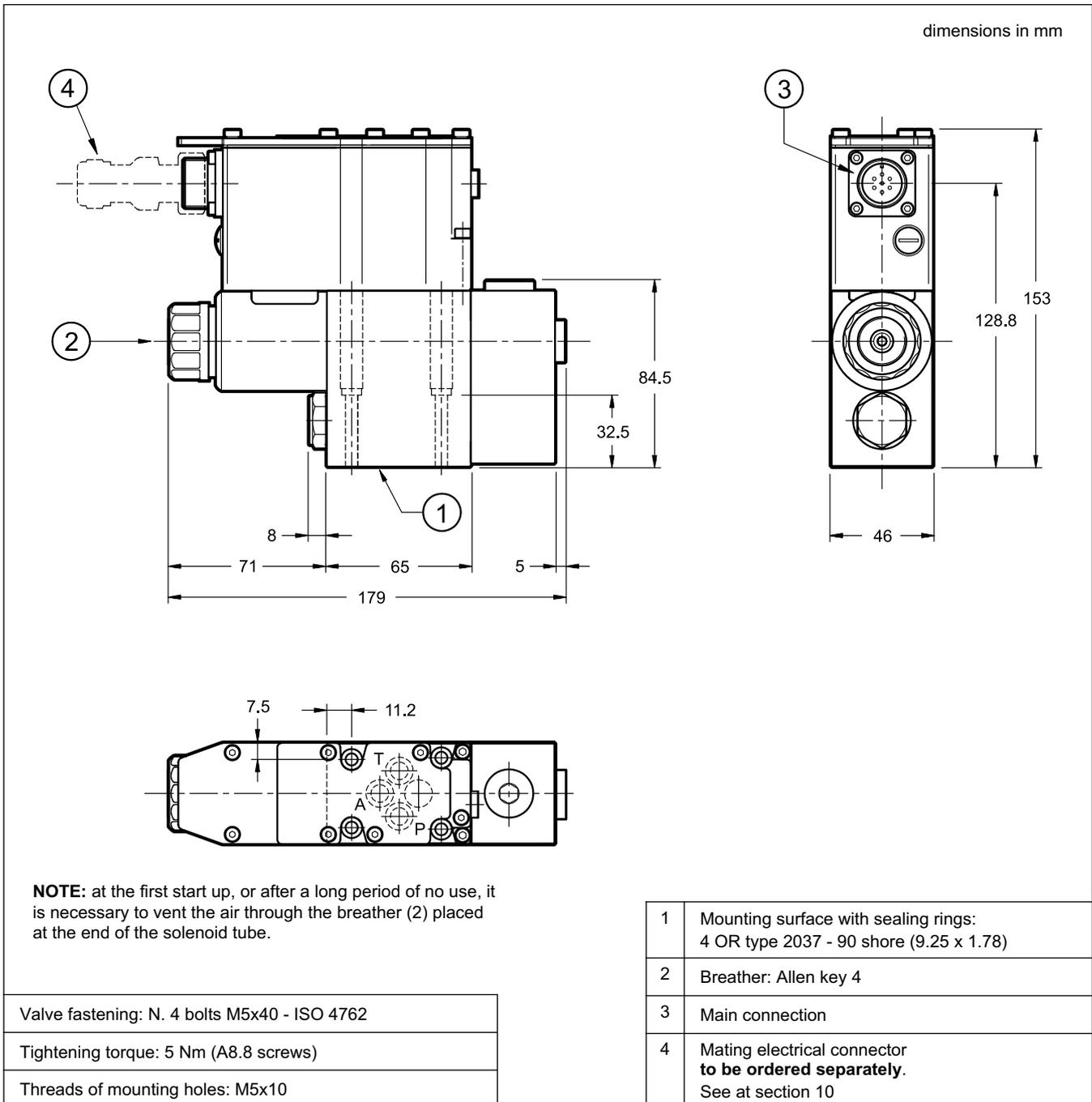
(obtained with mineral oil with viscosity of 36 cSt at 50°C)

Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal.

The response time is affected both by the flow rate and the oil volume in the pipework.

REFERENCE SIGNAL STEP	0 → 100%	100 → 0%
Step response [ms]	80	80

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 to install the valves either in horizontal position, or vertical position with the solenoid downward. If the valve is installed in vertical position and with the solenoid upward, you must consider possible variations of the minimum controlled pressure, if compared to what is indicated in paragraph 5.

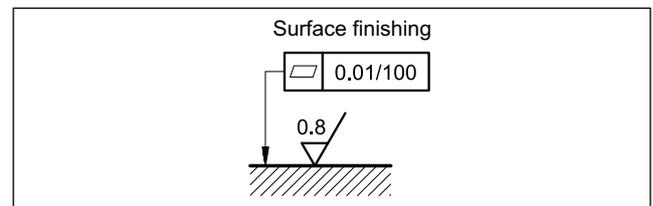
Ensure that there is no air in the hydraulic circuit. In particular applications, can be necessary to vent the air entrapped in the solenoid tube, by using the appropriate drain screw in the solenoid tube.

Ensure the solenoid tube is always filled with oil. At the end of the operation, make sure of having correctly replaced the drain screw.

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 leak 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.

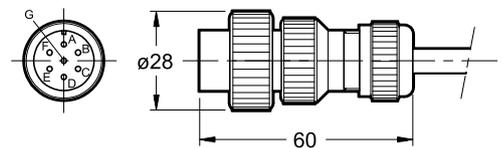


So as to avoid electromagnetic troubles and comply with the electromagnetic compatibility regulation EMC, it is recommended the use of a metal connector.

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



PZE3G

SERIES 31



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