

# PRED3

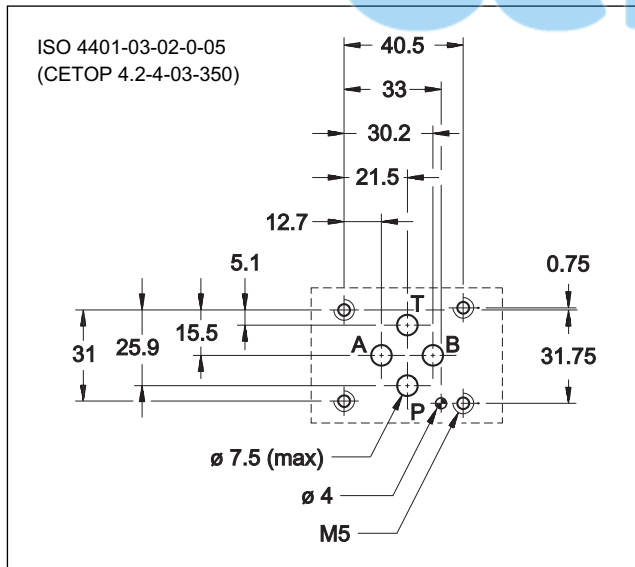
## DIRECT OPERATED PRESSURE CONTROL VALVE WITH ELECTRIC PROPORTIONAL CONTROL

### SERIES 10

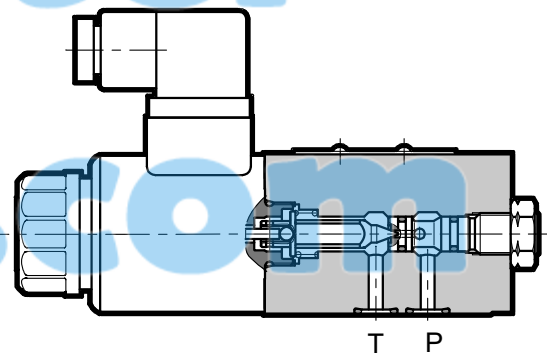
**SUBPLATE MOUNTING**  
**ISO 4401-03 (CETOP 03)**

**p max 350 bar**  
**Q max 5 l/min**

#### MOUNTING INTERFACE



#### OPERATING PRINCIPLE



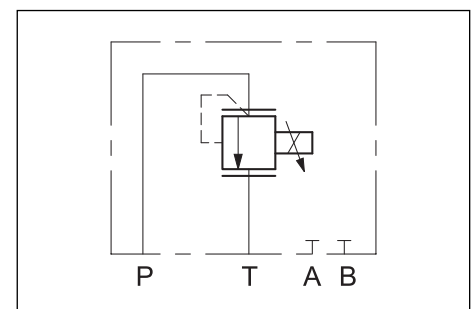
- The PRED3 valve is a direct operated pressure control valve with electric proportional control and mounting interface in compliance with ISO 4401 (CETOP RP 121H) standards.
- It is suitable to pilot two-stage valves, or for pressure control in hydraulic circuits.
- Pressure can be modulated continuously in proportion to the current supplied to the solenoid.
- The valve can be controlled directly by a current control supply unit or by means of the relative electronic control units to exploit valve performance to the full (see par. 8).
- The valve is available in four pressure control ranges up to 350 bar.

#### PERFORMANCES

(obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control cards)

Maximum operating pressure: - P port - T port	bar	350 2
Minimum controlled pressure	see p min = f(Q) diagram	
Nominal flow	l/min	1
Maximum flow (see p min = f(Q) diagram)		5
Step response	see paragraph 5	
Hysteresis (with PWM 200 Hz)	% of p nom	< 5%
Repeatability	% of p nom	< ±1,5%
Electrical characteristic	see paragraph 4	
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	1,4

#### HYDRAULIC SYMBOL





# PRED3

## SERIES 10

### 1 - IDENTIFICATION CODE

<b>P</b>	<b>R</b>	<b>E</b>	<b>D</b>	<b>3</b>	<b>-</b>	<b>/</b>	<b>10</b>	<b>-</b>	<b>K1</b>
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Pressure control valve

Electrical proportional control

direct operated

Size ISO 4401-03 ( CETOP 03)

Pressure control range  
**070** = 0,7 - 70 bar    **210** = 1,8 - 210 bar  
**140** = 1,1 - 140 bar    **350** = 2,8 - 350 bar

Coil electrical connection:  
plug for connector type  
DIN 43650 (**standard**)

**D12** = Nominal solenoid voltage 12V DC  
**D24** = Nominal solenoid voltage 24V DC

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

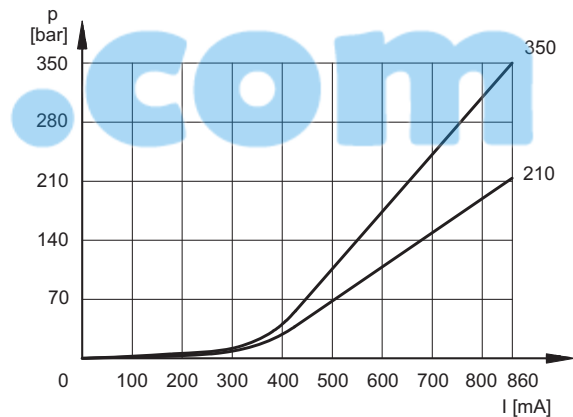
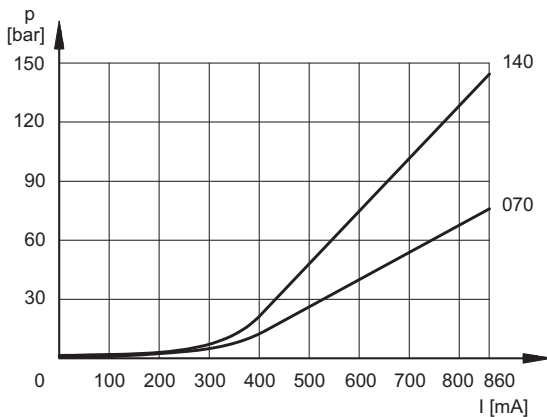
Series No. (the overall and mounting dimensions remain unchanged from 10 to 19)

### 2 - CHARACTERISTIC CURVES (measured with viscosity of 36 cSt at 50°C)

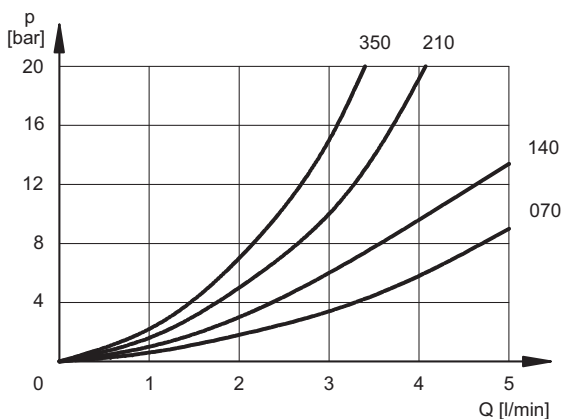
Typical control curves according to the current supplied to the solenoid for pressure control ranges: 070, 140, 210, 350, measured with input flow rate Q = 1 l/min.

The curves are obtained without any hysteresis and linearity compensation 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  $p_{max} = f(Q)$ ).

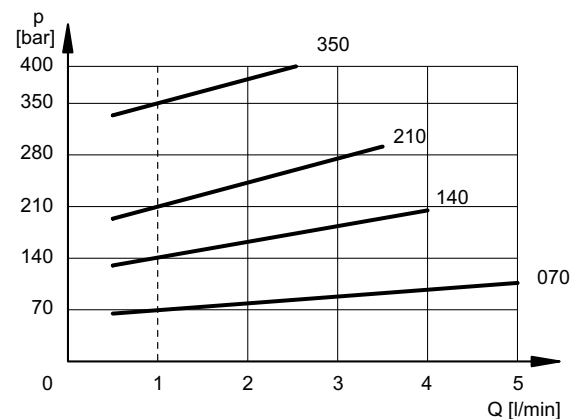
**PRESSURE CONTROL  $p = f(I)$**



**MINIMUM CONTROLLED PRESSURE  $p_{min} = f(Q)$**



**PRESSURE VARIATION  $p_{max} = f(Q)$**



Q = 1 lt/min  
factory setting



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### 3 - 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.

### 4 - ELECTRICAL CHARACTERISTICS

#### Proportional solenoid

The proportional solenoid comprises two parts: tube and coil.

The tube, screwed to the valve body, contains the armature which is designed to maintain friction to a minimum thereby reducing hysteresis.

The coil is mounted on the tube secured by means of a lock nut and can be rotated through 360° depending on installation clearances.

<b>NOMINAL VOLTAGE</b>	V DC	<b>12</b>	<b>24</b>
<b>RESISTANCE (at 20°C)</b>	Ω	3.66	17.6
<b>NOMINAL CURRENT</b>	A	1.88	0.86
<b>DUTY CYCLE</b>	100%		
<b>ELECTROMAGNETIC COMPATIBILITY (EMC)</b>	According to 2004/108/CE		
<b>CLASS OF PROTECTION:</b> atmospheric agents (CEI EN 60529) coil insulation (VDE 0580) Impregnation	IP 65 class H class F		

### 5 - STEP RESPONSE (obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control cards)

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 table illustrates typical step response times measured with a valve of pressure range up to 140 bar and with an input flow rate of Q = 2 l/min.

<b>REFERENCE SIGNAL STEP</b>	0 → 100%	100 → 0%
Step response [ms]	80	40

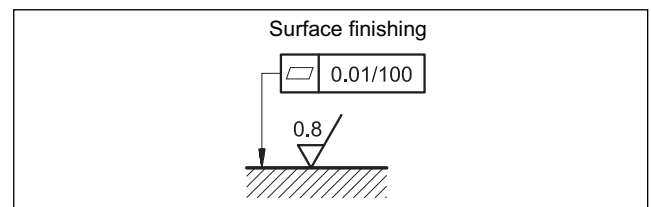
### 6 - INSTALLATION

We recommend to install the PRED3 valve 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 2.

Ensure that there is no air in the hydraulic circuit. In particular applications, it can be necessary to vent the air entrapped in the solenoid tube, by using the apposite drain screw in the solenoid tube. Ensure that the solenoid tube is always filled with oil (see par. 7). At the end of the operation, make sure of having screwed correctly 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.

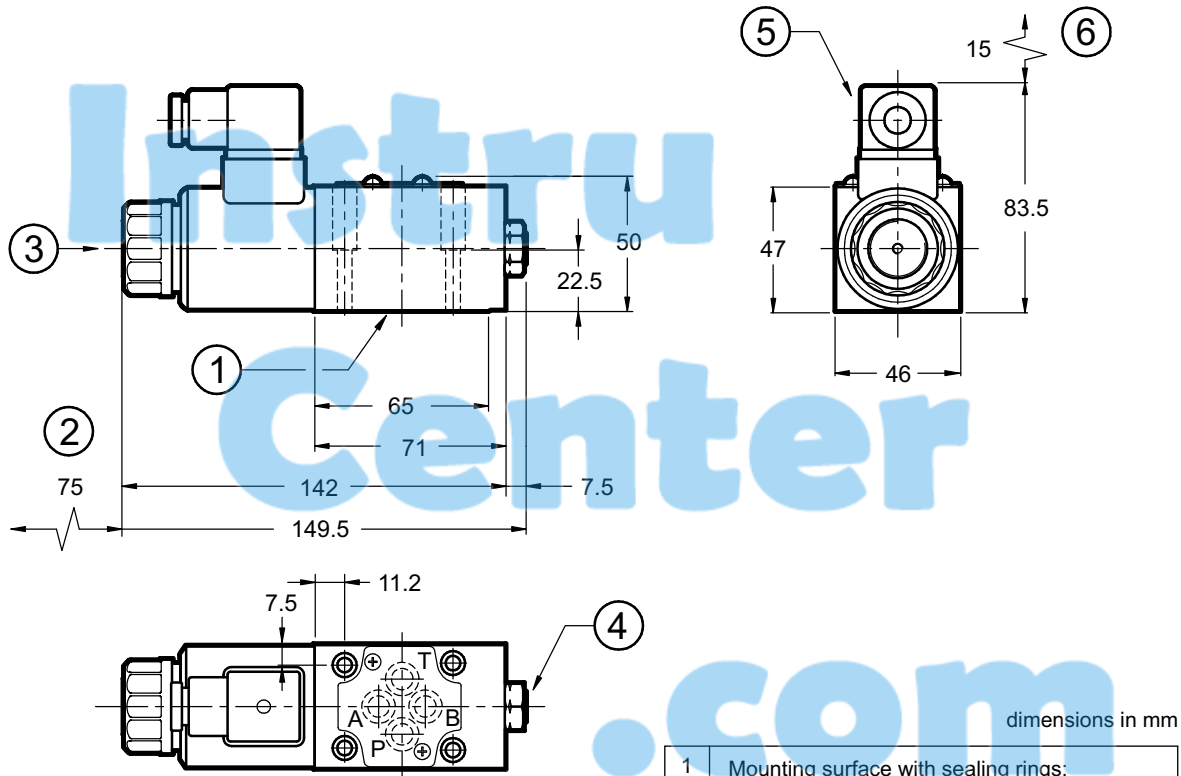




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### 7 - OVERALL AND MOUNTING DIMENSIONS



dimensions in mm

Fastening bolts: 4 bolts SHC M5x30 - ISO 4762

Torque: 5 Nm

**NOTE:** at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (3) placed at the end of the solenoid tube.

1	Mounting surface with sealing rings: 4 OR type 2037 - 90 shore (9.25 x 1.78)
2	Coil removal space
3	Breather (male hexagonal spanner 4)
4	Factory setting sealing (we recommend not unscrewing the nut)
5	DIN 43650 electric connector (included in the delivery)
6	Connector removal space

### 8 - ELECTRONIC CONTROL UNITS

<b>EDC-112</b>	for solenoid 24V DC	plug version	see cat. 89 120
<b>EDC-142</b>	for solenoid 12V DC		
<b>EDM-M112</b>	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
<b>EDM-M142</b>	for solenoid 12V DC		
<b>UEIK-11</b>	for solenoid 24V DC	Eurocard type	see cat. 89 300

### 9 - 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



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