



# PRE\*

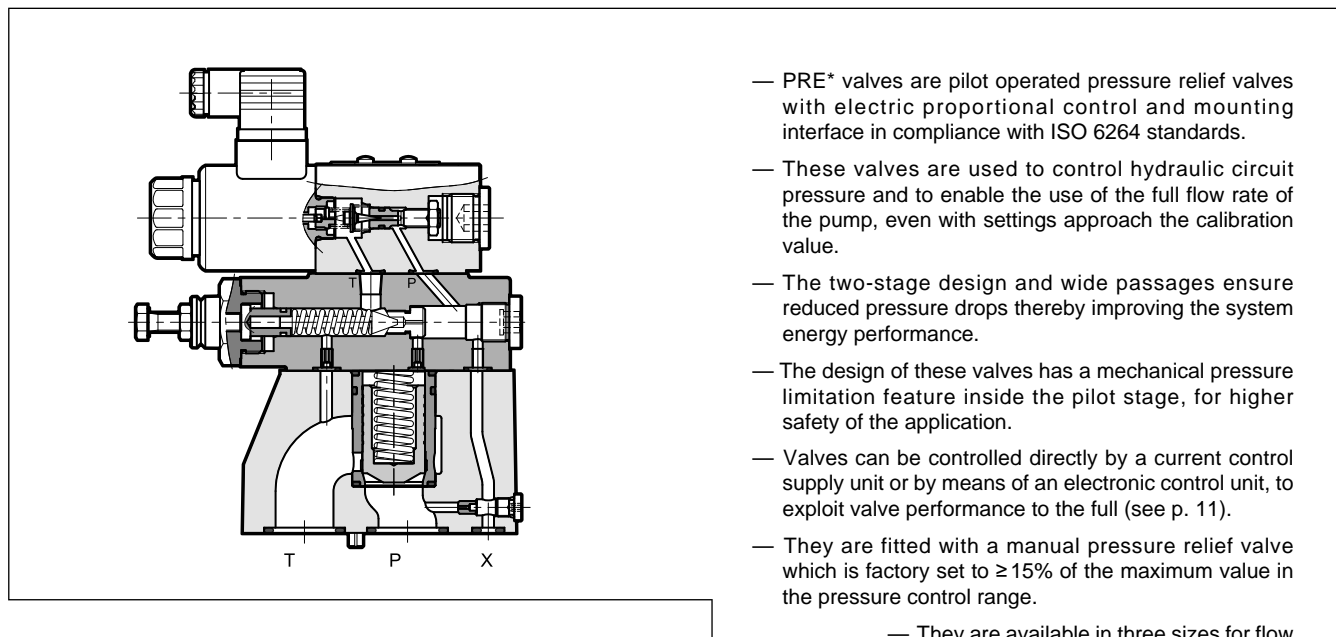
## PROPORTIONAL PRESSURE RELIEF VALVES, PILOT OPERATED

### SERIES 20

#### SUBPLATE MOUNTING ISO 6264

**p** max **350** bar  
**Q** max (see table of performances)

#### OPERATING PRINCIPLE

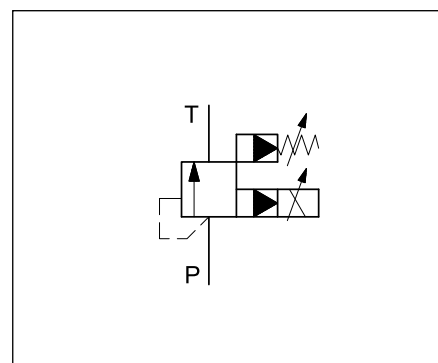


- PRE\* valves are pilot operated pressure relief valves with electric proportional control and mounting interface in compliance with ISO 6264 standards.
- These valves are used to control hydraulic circuit pressure and to enable the use of the full flow rate of the pump, even with settings approach the calibration value.
- The two-stage design and wide passages ensure reduced pressure drops thereby improving the system energy performance.
- The design of these valves has a mechanical pressure limitation feature inside the pilot stage, for higher safety of the application.
- Valves can be controlled directly by a current control supply unit or by means of an electronic control unit, to exploit valve performance to the full (see p. 11).
- They are fitted with a manual pressure relief valve which is factory set to  $\geq 15\%$  of the maximum value in the pressure control range.

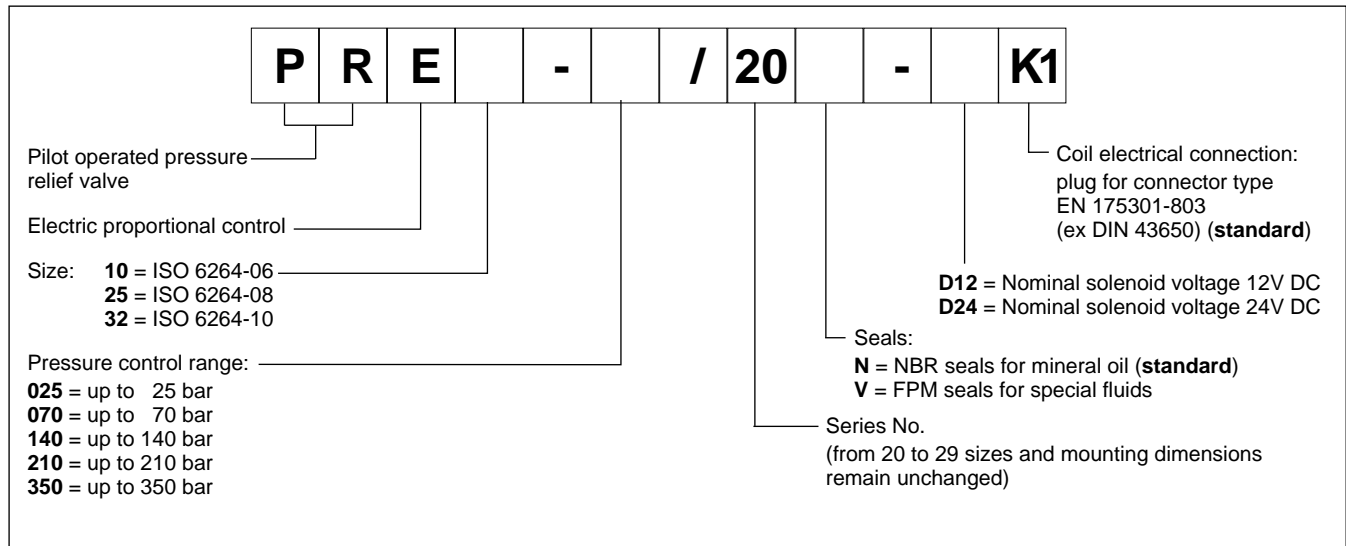
— They are available in three sizes for flow rates up to 500 l/min and in five pressure control ranges up to 350 bar.

PERFORMANCES (obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control card)		PRE10	PRE25	PRE32
Maximum operating pressure:	bar	350		
Minimum controlled pressure		see Δp-Q diagram		
Maximum flow	l/min	200	400	500
Step response		see point 6		
Hysteresis (PWM 200 Hz)	% of p nom	< 5%		
Repeatability	% of p nom	< ±1,5%		
Electrical characteristic		see point 5		
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	5	5,8	8

#### HYDRAULIC SYMBOL



### 1 - IDENTIFICATION CODE

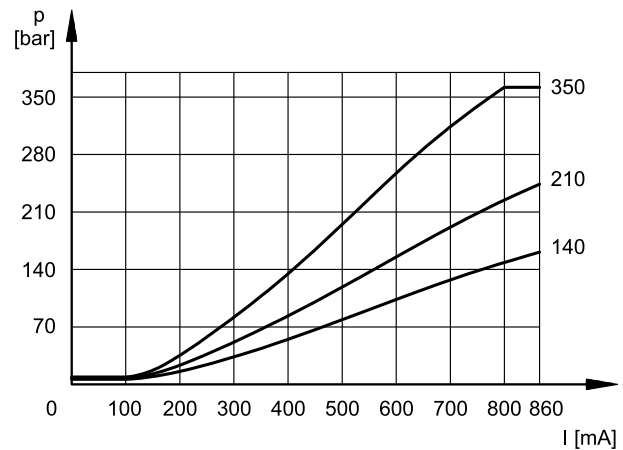
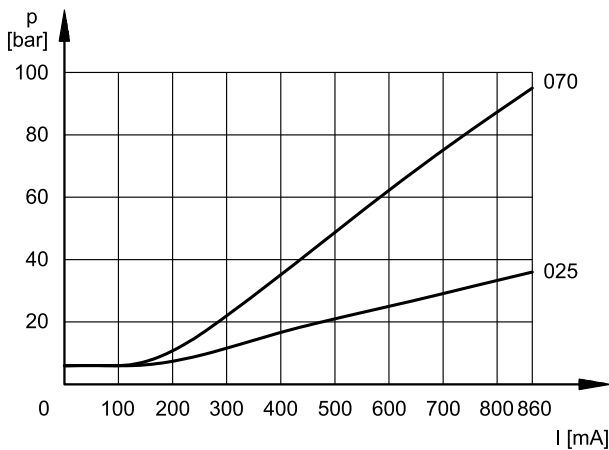


### 2 - CHARACTERISTIC CURVES

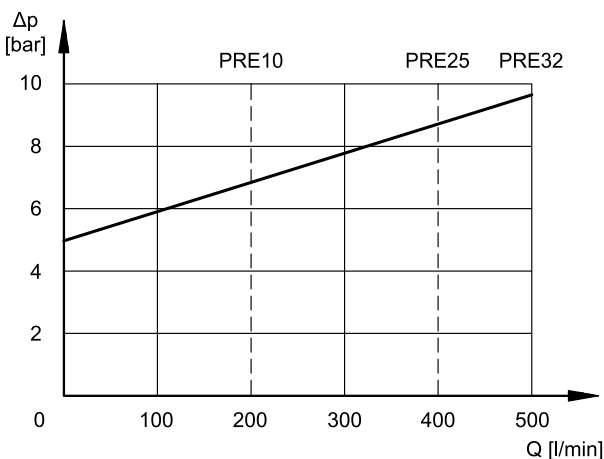
(measured with viscosity of 36 cSt at 50°C)

Typical control curves according to the current supplied to the solenoid (D24 version with maximum current 860 mA) for the available pressure control ranges, measured with input flow rate  $Q = 50$  l/min. Curves have been obtained without any hysteresis and linearity compensation and they have been measured without any backpressure in T.

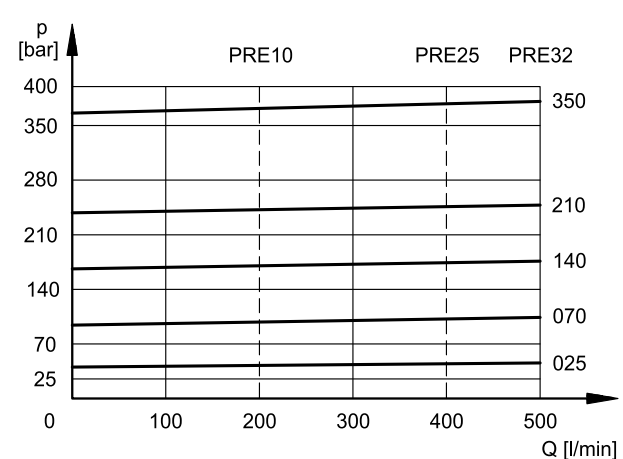
**PRESSURE CONTROL  $p = f(I)$**



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



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



### 3 - MAX PRESSURE VALUES

This valve incorporates a mechanical limit of the maximum pressure, that operates independently of the applied current. This kind of design ensures the pressure cannot rise over even if the solenoid current exceeds the maximum current ( $I > I_{\max}$ ).

Values obtained with oil viscosity of 36 cSt at 50°C, Q = 50 l/min

	PRE*-025	PRE*-070	PRE*-140	PRE*-210	PRE*-350
pressure value at 800 mA (bar)	27	85	147	220	365
max pressure value when $I > I_{\max}$ (bar)	35	95	165	255	370

### 4 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals (code N). 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.

### 5 - 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.

NOMINAL VOLTAGE	V DC	12	24
RESISTANCE (at 20°C)	Ω	3.66	17.6
NOMINAL CURRENT	A	1.88	0.86
DUTY CYCLE	100%		
ELECTROMAGNETIC COMPATIBILITY (EMC)	According to 2014/30/EU		
CLASS OF PROTECTION atmospheric agents (IEC 60529) coil insulation (VDE 0580) impregnation	IP 65 class H class F		

### 6 - STEP RESPONSE

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

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 PRE32-210 and with input flow rate Q = 50 l/min, and a pressure oil volume of 2 litres. The response time is affected by both the flow rate and the oil volume inside the piping.

REFERENCE SIGNAL STEP	0 → 100%	100 → 0%
Step response [ms]	120	90

### 7 - INSTALLATION

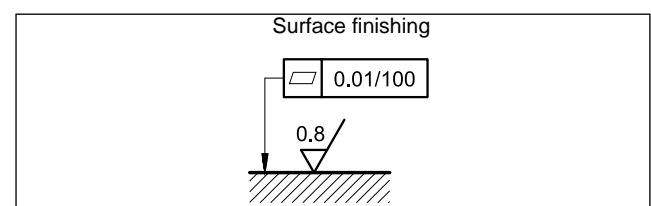
We recommend installing the PRE\* valve either in horizontal position, or vertical position with the solenoid downward. If the valve is installed in vertical position and with the solenoid upward, you must consider possible variations of the minimum controlled pressure, if compared to what is indicated in point 2.

Ensure there is no air in the hydraulic circuit. In particular applications, it can be necessary to vent the air entrapped inside the solenoid tube, by using the apposite drain screw (see p. 8 - 9 - 10). At the end of the operation, make sure of having correctly screwed the drain screw.

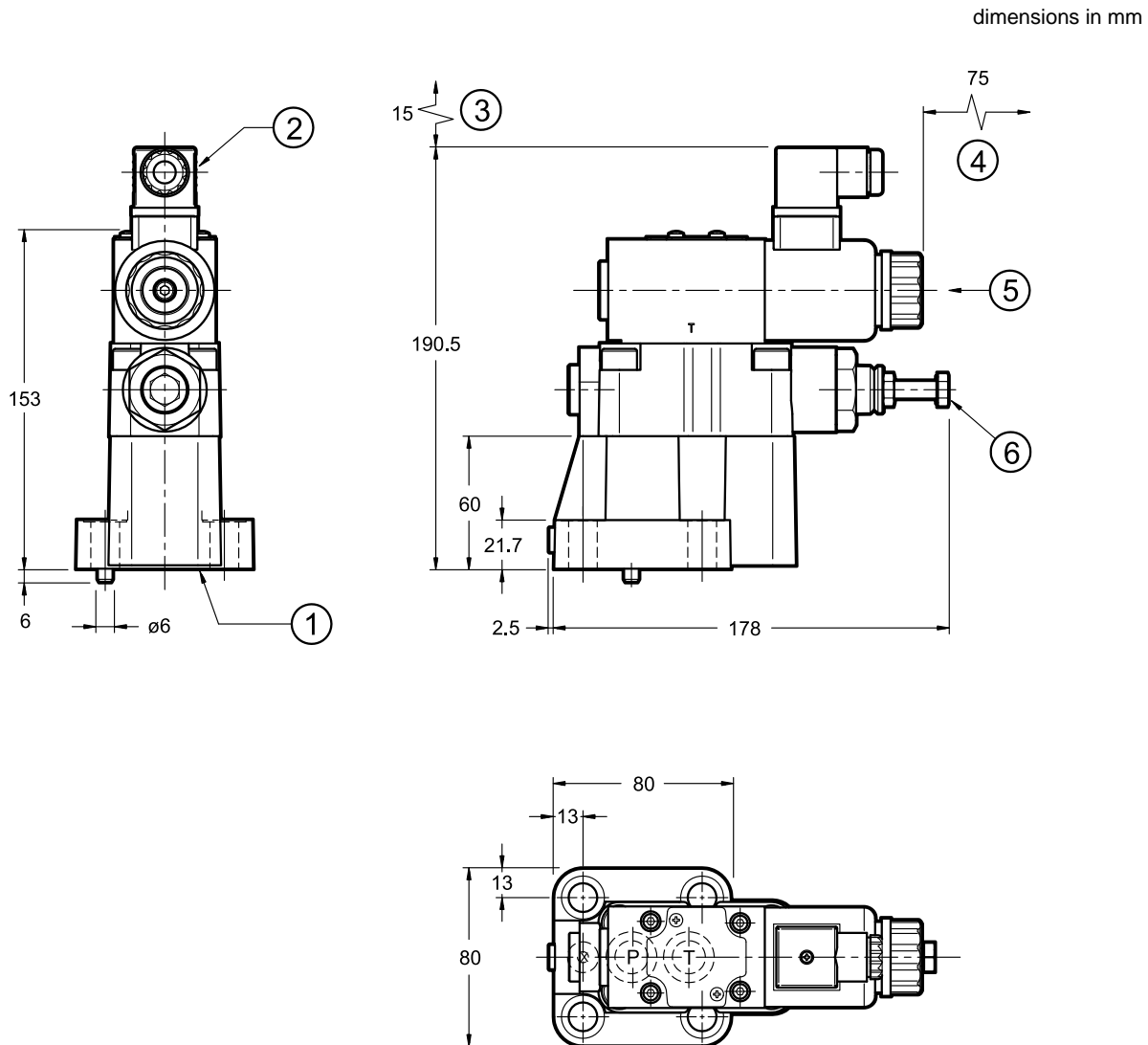
Connect the T port on the valve directly to the tank. Add any backpressure value detected in the T line to the controlled pressure value.

**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.



### 8 - PRE10 OVERALL AND MOUNTING DIMENSIONS



#### NOTE:

at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (5) placed at the end of the solenoid tube.

Fastening bolts: 4 SHCS M12x40 - ISO 4762

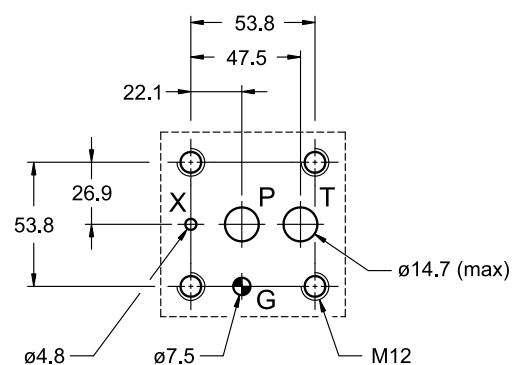
Torque: 69 Nm (A8.8 screws)

Thread of mounting holes: M12x20

#### MOUNTING INTERFACE:

ISO 6264-06-09-\*97

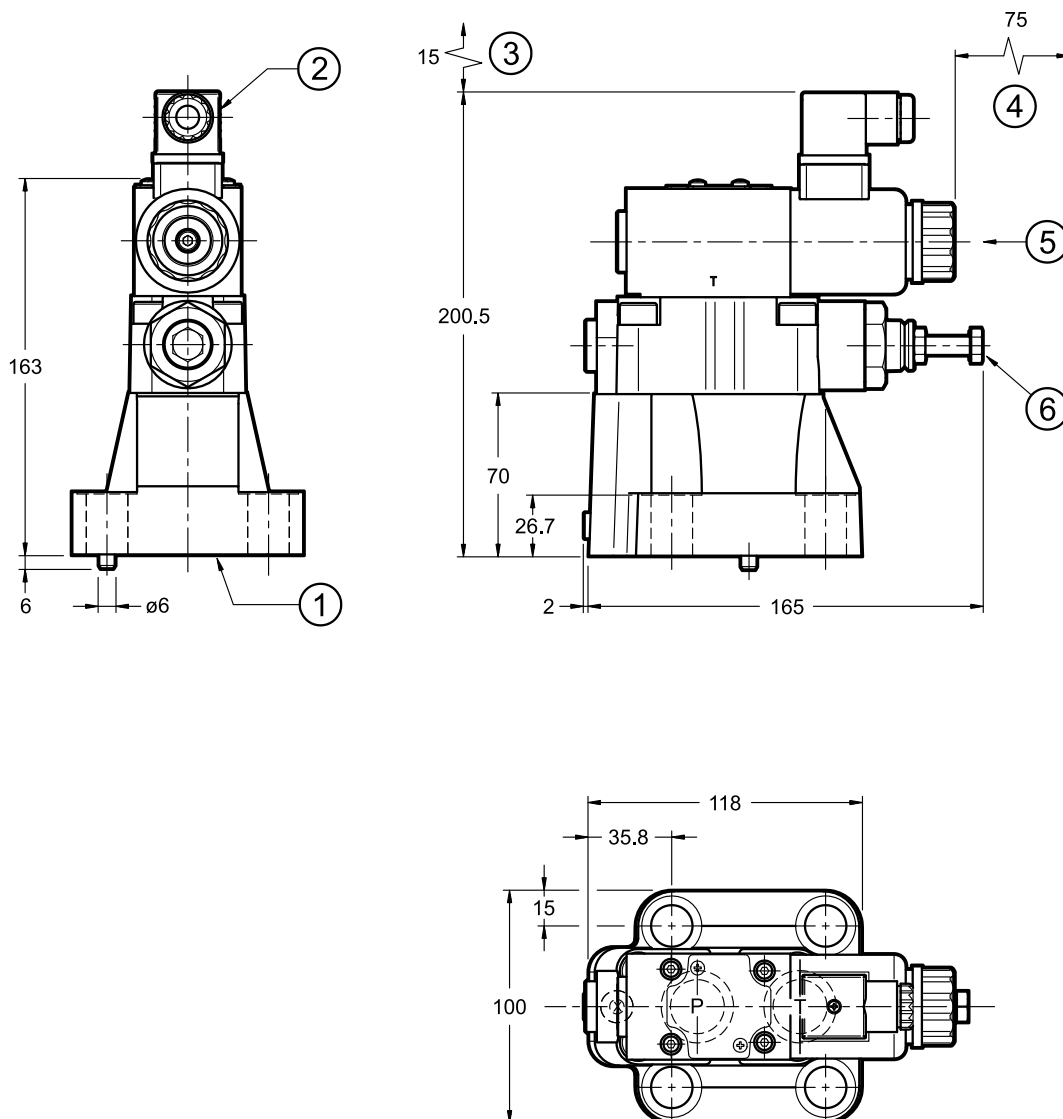
(CETOP 4.4.2-2-R06-350)



1	Mounting surface with sealing rings: 2 OR type 123 (17.86x2.62) - 90 Shore 1 OR type 109 (9.13x2.62) - 90 Shore
2	EN 175301-803 (ex DIN 43650) electric connector
3	Connector removal space
4	Coil removal space
5	Breather (male hexagonal spanner 4)
6	Pressure relief valve (factory set)

### 9 - PRE25 OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



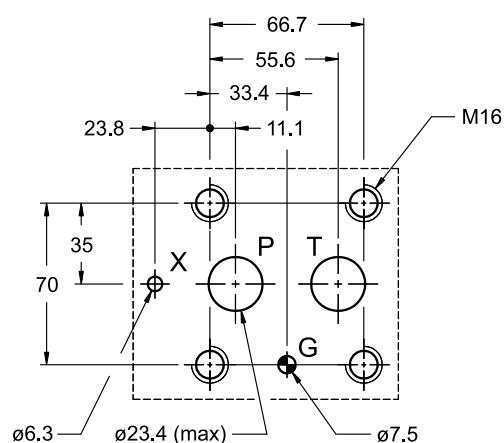
#### NOTE:

at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (5) placed at the end of the solenoid tube.

Fastening bolts: 4 SHCS M16x60 - ISO 4762  
Torque: 170 Nm (A8.8 screws)  
Thread of mounting holes: M16x25

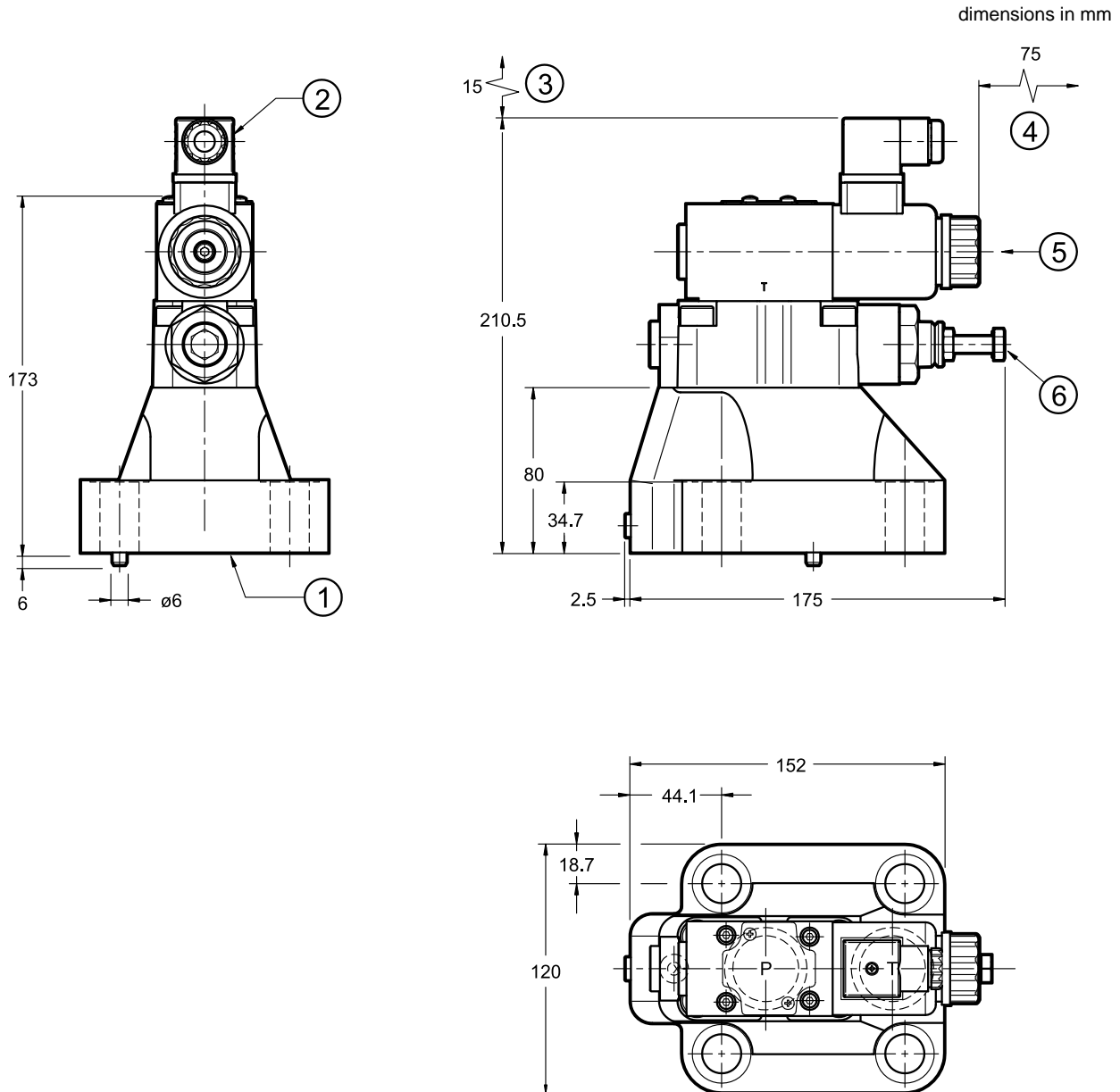
#### MOUNTING INTERFACE:

ISO 6264-08-13-\*97  
(CETOP 4.4.2-2-R08-350)



1	Mounting surface with sealing rings: 2 OR type 3118 (29.82x2.62) - 90 Shore 1 OR type 109 (9.13x2.62) - 90 Shore
2	EN 175301-803 (ex DIN 43650) electric connector
3	Connector removal space
4	Coil removal space
5	Breather (male hexagonal spanner 4)
6	Pressure relief valve (factory set)

### 10 - PRE32 OVERALL AND MOUNTING DIMENSIONS



#### NOTE:

at the first start up, or after a long period of no use, it is necessary to vent the air through the breather (5) placed at the end of the solenoid tube.

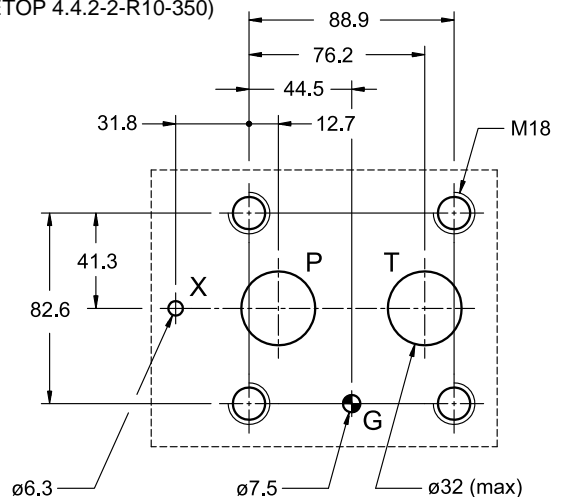
Fastening bolts: 4 SHCS M18x60 - ISO 4762

Torque: 235 Nm (A8.8 screws)

Thread of mounting holes: M18x27

#### MOUNTING INTERFACE

ISO 6264-10-17-\*97  
(CETOP 4.4.2-2-R10-350)



1	Mounting surface with sealing rings: 2 OR type 4137 (34.52x3.53) - 90 Shore 1 OR type 109 (9.13x2.62) - 90 Shore)
2	EN 175301-803 (ex DIN 43650) electric connector
3	Connector removal space
4	Coil removal space
5	Breather (male hexagonal spanner 4)
6	Pressure relief valve (factory set)



## 11 - 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. 89 251
<b>EDM-M142</b>	for solenoid 12V DC		

## 12 - SUBPLATES

(see catalogue 51 000)

	<b>PRE10</b>	<b>PRE25</b>	<b>PRE32</b>
Type	PMRQ3-AI4G rear ports	PMRQ5-AI5G rear ports	PMRQ7-AI7G rear ports
P, T ports dimensions	P: 1/2" BSP T: 3/4" BSP	1" BSP	1" ¼ BSP
X port dimensions	1/4" BSP	1/4" BSP	1/4" BSP



**PRE\***  
**SERIES 20**

**DUPLOMATIC**  
**MOTION SOLUTIONS**  
*a member of **DAIKIN** group*

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