

These instruments are designed to check the level of liquids within vessels, to show its height on a dial and to self-regulate it by means of external regulation pneumatic valve. They operate in this way : the level increase delivers an hydrostatic lift to displacer, that causes a  $0\div 8^\circ$  rotation to a small calibrated *torque bar*; this bar acts into a special device placed in the *box* and generates 2 different types of outputs.

- The first output, mechanical type, is sent to a linear dial to show the excursion made by displacer. The dial is placed on the front of the instrument box, is graduated  $0\div 100\%$  and shows the portion of the excursion (*measure field*) being covered by the displacer.
- The second output is composed by a pneumatic signal that is sent by the instrument to an external regulation valve, in order to *regulate* loading and unloading of vessel. This pneumatic signal can be as follows :

**REGULATOR ON-OFF 851** : when level reaches the preset height in the box, air signal is sent or is not sent to external valve.

**PROPORTIONAL REGULATOR 852** : when level reaches the preset height, air is sent to external valve with a pressure being proportional to the difference between the level reached by the float and the level preset by user in the box : higher is the difference, higher is the output pressure and quicker is the corrective action (*direct action*).

The same instrument performs the contrary action too : higher is the difference, lower is the output pressure (*inverse action*).

The proportional dial can be preset in the range of  $0\div 200\%$ , both in direct and in inverse action, and is graduated so that it shows at which % level the external valve will be completely closed or opened.

**PROPORTIONAL+INTEGRAL REGULATOR 853** : air signal is sent to external valve with a pressure being proportional to the difference as above written, and also to the integral of such a difference; in this way user obtains a still quicker corrective action.

The integral dial is expressed in “repetitions of operations per minute”, within values of  $0,05\div 15$  rep/min.

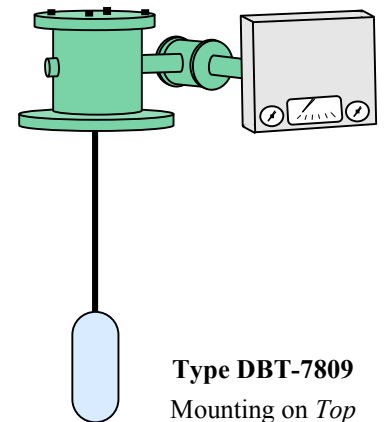
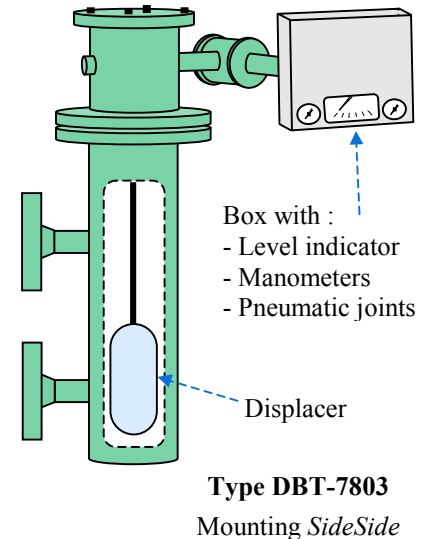
**TRANSMITTER 855** : as level rises, the pneumatic signal is sent out with an increasing pressure within  $3\div 15$ psi values; the pressure changes only on the basis of float position, and is not subjected to any presetting or regulation.

The instruments realize very interesting performances :

- Pneumatic device is high precision grade, high repeatability, high linearity and high response speed.
- *Proportional* and *Integral* dials are graduated so that, after a quick calibration, pressure hunting on the valve is reduced to zero.
  - Measure fields are very wide :  $14''$  (356mm) to  $120''$  (3.050mm).
  - Specific gravity of liquid can be preset on the instrument, 500 to  $1200\text{kg/m}^3$ .
  - Pressure shown on 2 manometers : inlet (feed) and outlet (to valve).
- The instrument box can be placed on the Right of vessel (as in the sketches), or on the Left of vessel.
- Mechanical connections can be made by Flanges or Sleeves, mounting on Top or on Side-Side, as the below tables.
- A special device assure mechanical connection between float and torsion bar, even in prsence of strongly agitated liquids; the float is connected to the bar in very easy way, so that the operator can first assemble the main chamber to vessel, and then connect the float to the bar, without any risk of damaging the lever system or the pneumatic unit.

Technical performances of pneumatic unit :

- *Type* . . . . Forces balance between the value preset by user and the value checked by displacer.
- *Air feed* . . . . Pressure :  $20 \pm 1,5$ psi ( $1,4 \pm 0,1$ bar). Flow :  $3,5 \text{ Nm}^3/\text{h}$  max at 20 psi (1,4bar). Stand-by :  $0,05 \text{ Nm}^3/\text{h}$ .
- *Air outlet* . . . . Pressure :  $3\div 15$ psi ( $0,2\div 1$ bar), at action : *ON-OFF*, *Proportional*, *Proportional+Integral*.  
Repeatability :  $\leq 0,5\%$ . Linearity :  $\leq 0,5\%$ . Histeresys :  $\leq 0,5\%$ . Accuracy :  $\leq 1\%$ .
- *Air connection* . . .  $\frac{1}{4}''$  NPT-F for inlet and outlet
- *Temperature* . . .  $-20^\circ\text{C}$  to  $+80^\circ\text{C}$ .

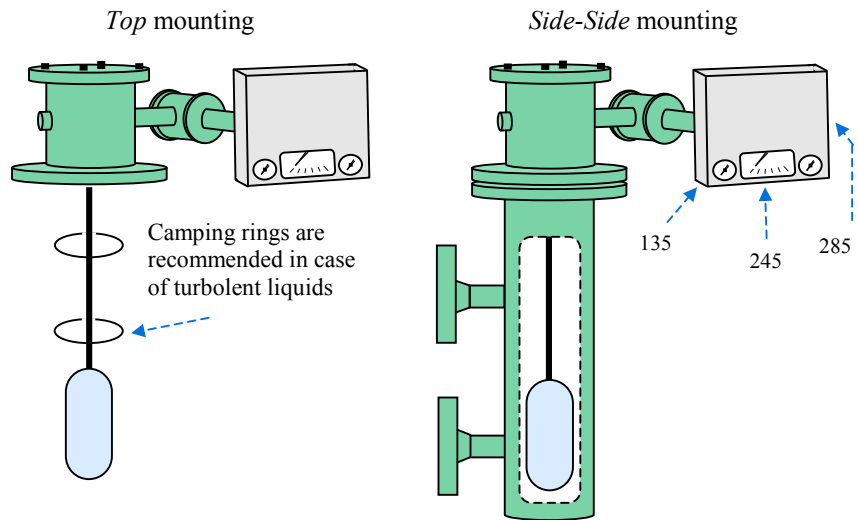


Instruments are PED certified.

## Regulators DBT : Technical notes

Informative WEIGHTS of ANSI 150 psi

Campo di misura		Montaggio di testa	Altri montaggi
Inch	mm		
14 "	356	27 kg	41 kg
16 "	406	27 kg	42 kg
24 "	610	27 kg	44 kg
32 "	813	27 kg	46 kg
48 "	1.219	27 kg	49 kg
60 "	1.524	27 kg	52 kg
72 "	1.829	30 kg	54 kg
84 "	2.134	30 kg	56 kg
96 "	2.438	30 kg	58 kg
120"	3.048	30 kg	65 kg



Informative dimensions of various types (dimensions of L and S are defined upon request).

**7809**  
Top mounting

**7803** Side-Side    **7807** Side-Bottom    **7805** Top-Side    **7801** Top-Bottom

Connections by sleeves too.

NB • The T line shall correspond to the mean level of vessel.  
 • The standard drain hole, when exists, is 3/4" NPT-F.  
 • The sketches are informative and are not in scale.

Measure field (Inches) (mm)	7803		7807		7805		7801	
	M	B	M	B	M	B	M	B
14 "	14 "	7 "	18 "	7 "	22 "	7 "	26 "	11 "
356	356	178	457	178	559	178	660	279
16 "	16 "	8 "	20 "	8 "	24 "	8 "	28 "	12 "
406	406	203	508	203	610	203	711	305
24 "	24 "	12 "	28 "	12 "	32 "	12 "	36 "	16 "
610	610	305	711	305	813	305	914	406
32 "	32 "	16 "	36 "	16 "	40 "	16 "	44 "	20 "
813	813	406	914	406	1.016	406	1.118	508
48 "	48 "	24 "	52 "	24 "	56 "	24 "	60 "	28 "
1.219	1.219	610	1.321	610	1.422	610	1.524	711
60 "	60 "	30 "	64 "	30 "	68 "	30 "	72 "	34 "
1.524	1.524	762	1.626	762	1.727	762	1.829	867
72 "	72 "	36 "	76 "	36 "	80 "	36 "	84 "	40 "
1.829	1.829	914	1.930	914	2.032	914	2.134	1.016
84 "	84 "	42 "	88 "	42 "	92 "	42 "	96 "	46 "
2.134	2.134	1.067	2.235	1.067	2.337	1.067	2.438	1.168
96 "	96 "	48 "	100 "	48 "	104 "	48 "	108 "	52 "
2.438	2.438	1.219	2.540	1.219	2.642	1.219	2.743	1.321
120 "	120 "	60 "	124 "	60 "	128 "	60 "	132 "	64 "
3.048	3.048	1.524	3.150	1.524	3.251	1.524	3.353	1.626

**CONNECTIONS to vessel of DBT :**

<b>Mounting :</b>	<b>By means of :</b>	<b>Rating :</b>	<b>Diameter :</b>
<b>7803</b> Side-Side	<b>F</b> Flange ANSI with RF face (1)	<b>15</b> ANSI 150 psi	<b>Flanges or Sleeves :</b>
<b>7807</b> Side-Bottom	<b>J</b> " " RJ (Ring Joint)	<b>30</b> ANSI 300	<b>C</b> 1"
<b>7805</b> Top-Side	<b>N</b> Sleeves, female treaded NPT-F (2)	<b>60</b> ANSI 600	<b>D</b> 1½"
<b>7801</b> Top-Bottom	<b>P</b> " " male threaded NPT-M (2)	<b>M5</b> ANSI 1500	<b>E</b> 2"
<b>7809</b> Top		<b>D5</b> ANSI 2500	
<b>7810</b> Lateral top			

**MEASURE FIELD covered by displacer :**

<b>CM1</b> 14" (356mm)	<b>CM6</b> 60" (1.524mm)
<b>CM2</b> 16" (406mm)	<b>CM7</b> 72" (1.829mm)
<b>CM3</b> 24" (610mm)	<b>CM8</b> 84" (2.134mm)
<b>CM4</b> 32" (813mm)	<b>CM9</b> 96" (2.438mm)
<b>CM5</b> 48" (1.219mm)	<b>CMD</b> 120" (3.048mm)

Flanges are available in UNI/DIN standards too, as per page 33.

Upon request, body can be made in Hastelloy, Teflon, PVC, etc.

**BODY and CONNECTIONS in :**

<b>AC</b> Carbon steel : ASTM A106B (body), ASTM A105N (flanges) (1)
<b>A4</b> Stainless steel AISI 304
<b>A6</b> " " AISI 316

**OPTIONS :**

- A •** Mounting 7803 *Side-Side*, and 7805 *Top-Side* : with drain hole ½" NPT-F
- B •** " " " " " " " ¾" NPT-F (1)
- C •** " " " " " " " 1" NPT-F
- N** " " " " " " " with threaded hole, no accessory
- T** " " " " " " " with plug (1)
- R** " " " " " " " with valve
- S** " " " " " " " with valve+plug
- NS** Mounting 7807 *Side-Bottom*, and 7801 *Top-Bottom* : no accessory is possible
- Mounting 7809 *Top*, and 7810 *Lateral top* : length L expressed in inches (")

**BOX with output device :**

- 851 ••** Regulator with : Indicator + ON-OFF output (1)
- 852 ••** " " " Indicator + PROPORTIONAL output
- 853 ••** " " " Indicator + PROPOR. + INTEGRAL output
- 855 ••** Transmitter with Indicator + not regulated output
- DX** Box placed at the right of vessel (like in the sketches)
- SX** " " " left of vessel.

**DBT -** [ ] - [ ] - [ ] - [ ] - [ ] - [ ] Short description

In addition to the above Short description, *Domizi Snc* need also the following information, absolutely necessary.

Fluid : upper : ..... Specific gravity of fluid : upper : ..... kg/m<sup>3</sup>  
 " lower : ..... " " " " lower : ..... kg/m<sup>3</sup>  
 Temperature : Minimum ..... °C Operating ..... °C Maximum ..... °C  
 Pressure : Minimum ..... bar (\*) Operating ..... bar (\*) Maximum ..... bar (\*)  
 Instrument function : ..... Other : .....

(\*) Simplify : 15bar ~ 15atm ~ 15kg/cm<sup>2</sup> ~ 15KPa ~ 1,5Mpa

(1) – It is the standard option.

(2) – Sleeves are 3" distant from body axis (instead of 4½", like in the case of flanges, as per Fig. 7803).