Differential Pressure Controller
TA Series 7PR

08.46

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 ½ – 8"/65 – 200 mm
- End types are according to ASME/ANSI B16.42 Class 150 flanges

Pressure Class

- Class 150 pressure rating

Application

- Hydronic heating and cooling systems using water and water/glycol mixtures

Function

- Differential pressure control to a maximum of 116 psi/800 kPa/8 bar
  - Factory preset range
    - 1 – 7 psi/10 – 50 kPa/0.1 – 0.5 bar = Blue
    - 4 – 21 psi/30 – 150 kPa/0.3 – 1.5 bar = Orange
    - 12 – 58 psi/80 – 400 kPa/0.8 – 4 bar = Grey
- Measuring (ΔpL)

Temperature

- -4°F to +248°F/-20°C to +120°C

2.0 CERTIFICATION/LISTINGS

Not applicable – contact Victaulic with any questions.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

3.0 SPECIFICATIONS - MATERIAL

Valve Body: Ductile iron EN-GJS-400.

Pilot Body: Non-ferrous AMETAL® DZR brass copper alloy.

O-Rings: EPDM rubber.

Seat Seal: EPDM/Stainless steel.

Plug Mechanism: Stainless steel and brass.

Membrane: EPDM rubber.

Springs: Stainless steel.

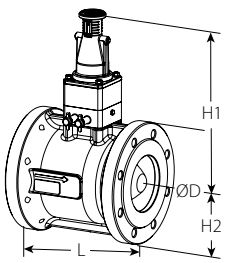
Screws and Nuts: Stainless steel.

NOTE

- AMETAL® is the dezincification resistant alloy of IMI TA.

4.0 DIMENSIONS

TA Series 7PR

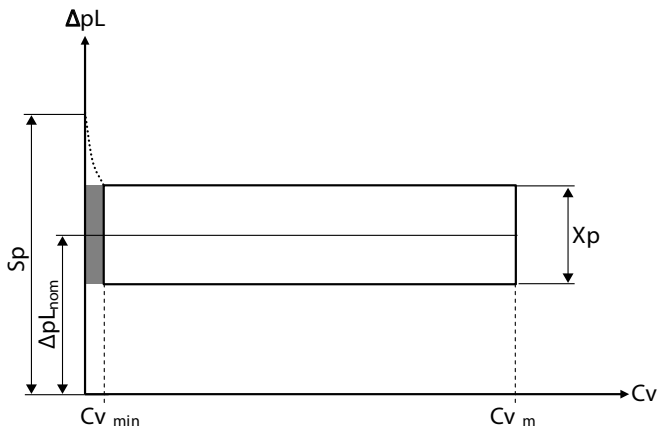


Size		Dimensions				Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**D** inches mm	**L** inches mm	**H1** inches mm	**H2** inches mm	**Approximate (Each)** lb kg
2½	2.875 73.0	7.09 185	7.48 190	10.70 274	3.54 93	39.7 18
3 DN80	3.500 88.9	7.52 200	7.99 203	11.10 281	3.78 100	46.3 21
4 DN100	4.500 114.3	9.02 220	9.02 229	11.90 303	4.53 110	70.5 32
5	5.563 141.3	10.00 250	10.00 254	12.30 313	5.00 125	92.6 42
6 DN150	6.625 168.3	11.00 285	10.50 267	13.00 331	5.51 143	123.5 56
8 DN200	8.625 219.1	13.50 340	11.50 292	14.20 361	6.77 170	183 83

5.0 PERFORMANCE

Size		Performance	
Nominal inches DN	**Actual Outside Diameter** inches mm	C_{vm} K_{vm}	q_{max} gpm m^3/hr
2½	2.875 73.0	87 75	233 53
3 DN80	3.500 88.9	127 110	343 78
4 DN100	4.500 114.3	208 180	559 127
5	5.563 141.3	312 270	841 191
6 DN150	6.625 168.3	462 400	1246 283
8 DN200	8.625 219.1	694 600	1867 424

Working Range



Sp = Sealing pressure, the increase of ΔpL in psi when a Δp controller controls ΔpL from C_{vmin} down to zero flow.

C_{vmin} = gpm at a pressue drop of 1 psi and minimum opening corresponding to the p-band.

C_{vm} = gpm at a pressue drop of 1 psi and maximum opening corresponding to the p-band.

q_{max} = The maximum recommended flow through a Δp controller.

ΔpL_{nom} = Middle value of ΔpL in the p-band.

Xp = The p-band in psi for ΔpL.

ΔH = Available differential pressure.

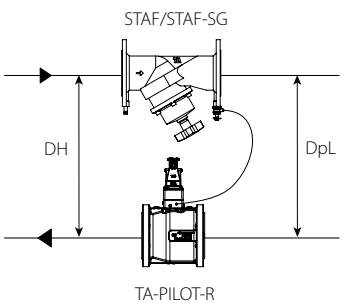
Δp = Pressure drop across the valve.

q = Actual measured flow.

Size		2½"	3" DN80	4" DN100	5"	6" DN150	8" DN200
Sp [psi]	ΔH = 0-58 psi	6.5					
	ΔH = 58-116 psi	9.4					
Cv_{min}		5					
Cv_m		87	127	208	312	462	694
q_{max} [gpm]		233	343	559	841	1246	1867

NOTE

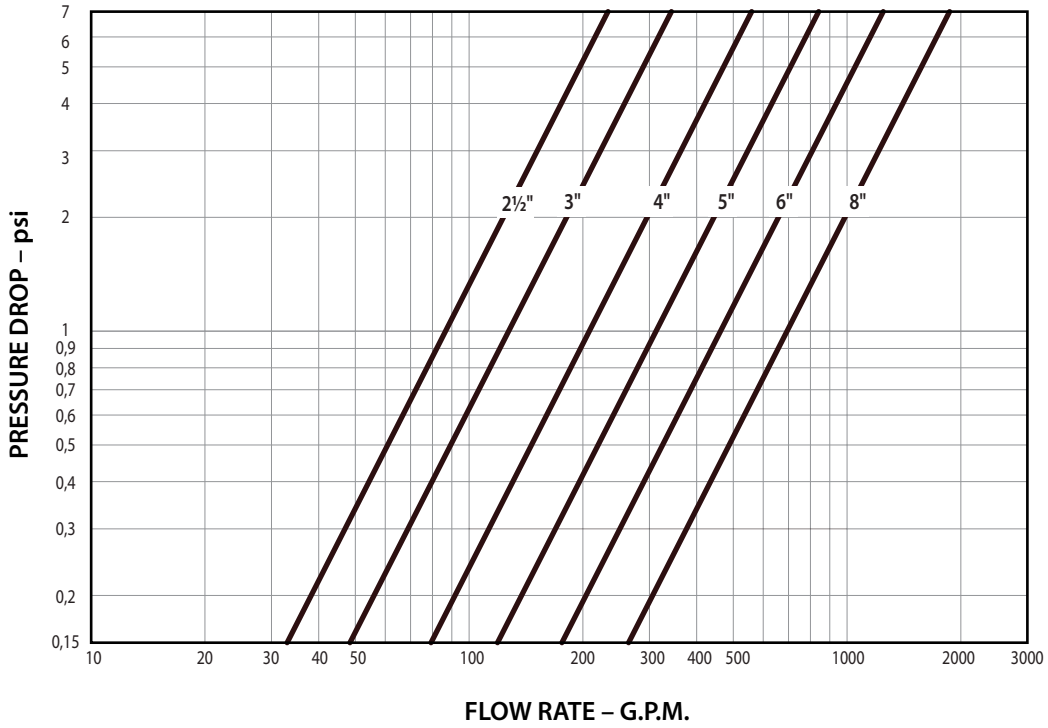
- Below C_{vmin} use expansion vessel for stable control. If Sp is within the p-band, the p-band is valid down to Cv = 0.



5.0 PERFORMANCE (Continued)

Sizing

The diagram shows the lowest pressure drop required for the TA Series 7PR valve to be within its working range at different flows.



5.0 PERFORMANCE (Continued)

Calculate the minimum needed available differential pressure ΔH_{min}.
Calculations based on various sizes may be needed.

$\Delta H_{min} = \Delta pV_{STAF} + \Delta pL + \Delta pV_{min}$

Where: ΔpV_{STAF} is the pressure drop across the fully open upstream system valve;
ΔpL is the pressure drop across the load; and
ΔpV_{min} is the TA Series 7PR pressure drop (as per the Sizing Δp vs Flow chart on page 4 of this publication).

Verify available differential pressure is greater than the sum of ΔpV_{STAF} + ΔpL + ΔpV_{min}.

Reference publication 08.16: Balancing Valves if using TA Series 788 or 789 for ΔpV_{STAF}.

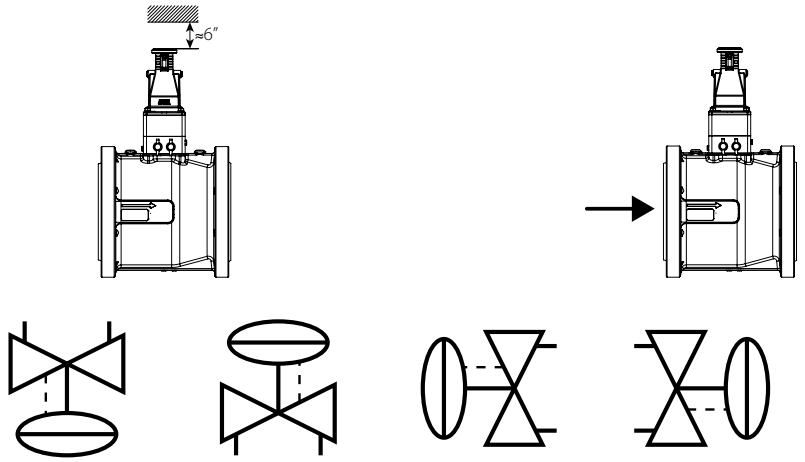
In order to optimize the control function of the TA Series 7PR, select the smallest possible valve from the above calculations.

Victaulic/IMI TA recommends the software HySelect for calculating the valve size. HySelect can be downloaded from www.imi-hydronic.com.

Installation of Valve | Flow Direction

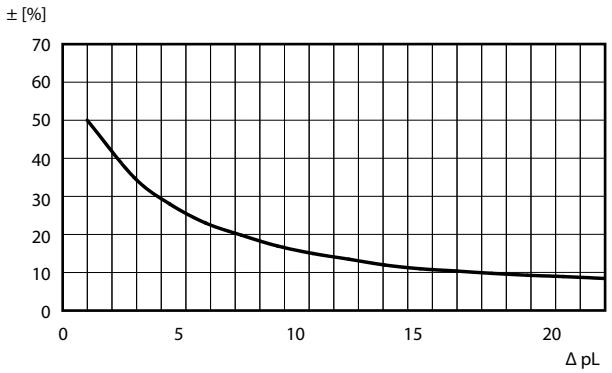
Installation of valve
Approx. 6 in. free space is required above the pilot.

Flow direction

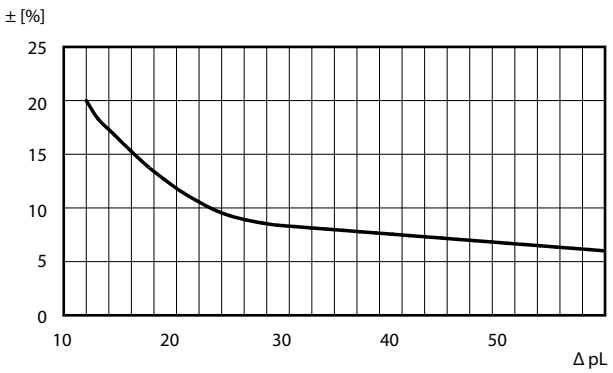


Maximum p-band in ±% ΔpL_{nom}
Setting Range

1 – 7 psi/4 – 21 psi



12 – 58 psi



5.0 PERFORMANCE (Continued)

Setting Table

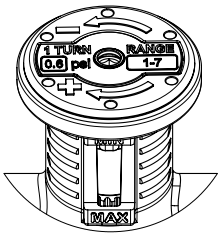
Turns		psi		
		1-7	4-21	12-58
Min	0	1[1]	4[1]	12[1]
–	2.5	2.5	8.3	23.5
–	5	4	12.5	35
–	7.5	5.5	16.8	46.5
Max	10	7	21	58

[1] Delivery setting.

psi/turn

1-7 psi	4-21 psi	12-58 psi
0.6 psi	1.7 psi	4.6 psi

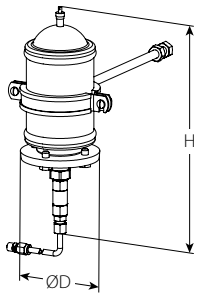
psi/turn is also marked on the top of the pilot.



Accessories

Expansion Vessel

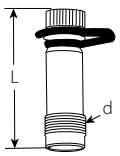
For working area less than Cv = 5.
3.3 ft capillary pipe (Ø6 mm) and capillary pipe connection Ø6xR1/4 are included.
Factory set at 43.5 psi (3 bar).



H (in)	D (in)	Part Code
10.8	3.5	P0007PR0EV

Measuring Point

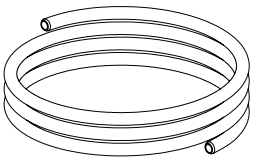
Max +248°F/+120°C



d	L (in)	Part Code
M14x1	1.7	P0007PR044
M14x1	4.1	P0007PR103

Capillary Pipe

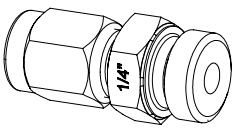
Ø0.25 in
1 piece included in TA Series 7PR.



L (ft)	Part Code
3.3	P0007PR0CP

Capillary Pipe Connection

For capillary pipe 0.25 in with R1/4 connection.
1 piece included in TA Series 7PR.



	Part Code
0.25" x R¼"	P0007PRCPC

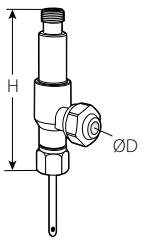
5.0 PERFORMANCE (Continued)

Measuring Point, Two-Way

For connection of capillary pipe while permitting simultaneous use of IMI TA balancing instrument.

For connection to existing measuring point on Victaulic Series 788 and 789 Manual Balancing Valves.

Can be installed during operation.

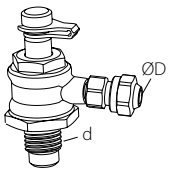


D (in)	H (in)	Part Code
0.25	2.7	P000DA160

Capillary Pipe Connection with Shut-Off

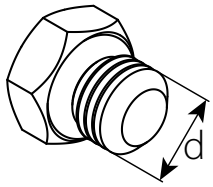
For replacement of existing measuring point on Victaulic Series 788 and 789 Manual Balancing Valves.

1 piece included in TA Series 7PR.



d	D (in)	For Size (in)	Part Code
G3/8	0.25	2½ - 8	P0007PRG38

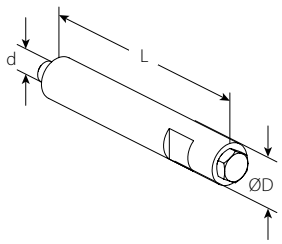
Venting Screw



d	Part Code
M6	P0007PR0VS

Venting Extension

Suitable when insulation is used.



d	D (in)	L (in)	Part Code
M6	0.5	2.8	P0007PR0VE

6.0 NOTIFICATIONS

Not applicable – contact Victaulic with any questions.

7.0 REFERENCE MATERIALS

08.16: Victaulic Balancing Valves TA Series 786/787/788/789 and Series 78K

