

Differential Pressure Controller

TA Series 793/794



TA Series 793



TA Series 794

1.0 PRODUCT DESCRIPTION

Available Sizes

- TA Series 793: ½ – 2"/DN15 – DN50
- TA Series 794: 2 ½ – 4"/73.0 mm – DN100

Maximum Working Pressure

- 230 psi/1586 kPa
- Maximum differential pressure:
 - TA Series 793: 37 psi/250kPa
 - TA Series 794: 51 psi/350 kPa

Operating Temperature

- -4°F to +248°F/-20°C to +120°C

Application

- Hydronic heating and cooling systems

Function

- Used in conjunction with a Victaulic balancing valve to ensure the correct differential pressure is maintained between the supply and return of a coil or system zone

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

Body:

TA Series 793: Non-ferrous AMETAL® DZR brass copper alloy

TA Series 794: Ductile iron EN-GJS-400-15 (ASTM A536 Grade 60-40-18, ISO Grade 400-15)

Body Coating: Epoxy coated (TA Series 794 only)

Cone & Spindles: AMETAL®

Bonnet: AMETAL®

Seat Seal: Plug with EPDM O-ring

Seal: EPDM O-ring

Spring: Stainless steel

Hand Wheel: Red polyamide plastic

Membrane:

TA Series 793: HNBR rubber

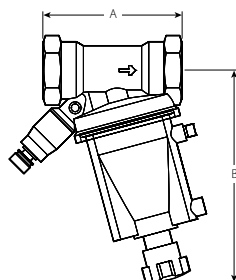
TA Series 794: Reinforced EPDM rubber

NOTE

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

4.0 DIMENSIONS

TA Series 793 Threaded End



Size				
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	B Center to Top inches mm	Approx. Weight Each lb kg
½ DN15	0.840 21.3	3.3 84	5.4 137	2.4 1.1
¾ DN20	1.050 26.7	3.6 91	5.5 140	2.6 1.2
1 DN25	1.315 33.7	3.7 94	5.6 142	2.9 1.3
1 ¼ DN32	1.660 42.4	5.2 132	7.0 178	5.7 2.6
1 ½ DN40	1.900 48.3	5.3 135	7.1 180	6.4 2.9
2 DN50	2.375 60.3	5.4 137	7.4 188	7.7 3.5

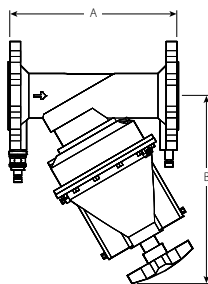
NOTES

- The TA Series 793 comes standard with a drain kit, a measuring port, a transition nipple, and a 1 m long capillary tube.
- The end connection on sizes ½ – 2"/DN15 – DN50 is female IPS thread only. Sweat ends are not available.

4.1 DIMENSIONS

Series 794 Flanged End

(Class 150, ASME/ANSI B16.42)



Size				
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	B Center to Top inches mm	Approx. Weight Each lb kg
2½ 65	2.875 73.0	11.4 290	12.6 320	47.4 21.5
3 80	3.500 88.9	12.2 310	13.3 338	52.9 24.0
4 100	4.500 114.3	13.8 351	13.8 351	63.9 29.0

NOTES

- The TA Series 794 comes standard with a drain kit, a measuring port, a transition nipple, and a 1 m long capillary tube.
- The end connection on sizes 2 ½ – 4"/73.0 mm – DN100 is ANSI Class 150 flange only. Grooved ends are not available.

5.0 PERFORMANCE

TA Series 793

Differential Pressure Range

Size		Differential Pressure Range psi kPa
Nominal inches DN	Actual Outside Diameter inches mm	
½ DN15	0.840 21.3	1.45 – 8.70 10 – 60
¾ DN20	1.050 26.7	1.45 – 8.70 10 – 60
1 DN25	1.315 33.7	1.45 – 8.70 10 – 60
1 ¼ DN32	1.660 42.4	2.90 – 11.6 20 – 80
1 ½ DN40	1.900 48.3	2.90 – 11.6 20 – 80
2 DN50	2.375 60.3	2.90 – 11.6 20 – 80

5.1 PERFORMANCE

TA Series 793

Valve Selection Guide

Size	Dp _L (psi)																	
Nominal inches	1.5 gpm			2.9 gpm			4.4 gpm			5.8 gpm			7.3 gpm			8.7 gpm		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
½	0.1	1.4	2.0	0.1	2.0	2.7	0.2	2.4	3.4	0.2	2.8	3.9	0.2	3.1	4.3	0.2	3.4	4.7
¾	0.2	3.1	4.3	0.3	4.3	6.0	0.4	5.3	7.4	0.4	6.1	8.6	0.5	6.8	9.6	0.5	7.4	10.5
1	0.4	5.3	7.7	0.5	7.4	10.7	0.7	9.1	13.2	0.8	10.5	15.2	0.9	11.8	17.0	0.9	12.8	18.6

Size	Dp _L (psi)																				
Nominal inches	2.9 gpm			4.4 gpm			5.8 gpm			7.3 gpm			8.7 gpm			10.2 gpm			11.6 gpm		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
1 ¼	0.8	11.7	16.6	1.0	14.4	20.4	1.2	16.6	23.5	1.3	18.6	26.3	1.4	20.3	28.7	1.5	22.0	31.1	1.6	23.4	33.2
1 ½	1.2	17.6	25.0	1.5	21.6	30.8	1.8	24.8	35.3	2.0	27.9	39.6	2.2	30.4	43.3	2.3	32.9	46.8	2.5	35.1	49.9
2	2.3	33.2	47.6	2.9	40.9	58.6	3.3	46.9	67.3	3.7	52.6	75.5	4.1	57.4	82.4	4.4	62.2	89.3	4.7	66.3	95.2

Size	Dp _L (kPa)																	
Nominal DN	10.0 lph			20.0 lph			30.0 lph			40.0 lph			50.0 lph			60.0 lph		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
DN15	22	316	443	31	447	626	38	548	767	44	632	885	49	707	990	54	775	1084
DN20	51	696	980	72	984	1386	88	1205	1698	101	1391	1961	113	1556	2192	124	1704	2401
DN25	89	1202	1739	125	1699	2460	153	2081	3012	177	2403	3479	198	2687	3889	217	2943	4260

Size	Dp _L (kPa)																				
Nominal DN	20.0 lph			30.0 lph			40.0 lph			50.0 lph			60.0 lph			70.0 lph			80.0 lph		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
DN32	188	2683	3801	230	3286	4656	266	3795	5376	297	4243	6010	325	4648	6584	351	5020	7112	376	5367	7603
DN40	286	4025	5724	351	4930	7011	405	5692	8095	453	6364	9051	496	6971	9915	535	7530	10709	572	8050	11449
DN50	537	7603	10912	657	9311	13364	759	10752	15432	849	12021	17253	930	13168	18900	1004	14223	20415	1073	15205	21824

5.2 PERFORMANCE

TA Series 794

Differential Pressure Range

Size		Differential Pressure Range psi kPa
Nominal inches DN	Actual Outside Diameter inches mm	
2 ½ 65	2.875 73.0	2.90 – 11.6 20 – 80
3 80	3.500 88.9	2.90 – 11.6 20 – 80
4 100	4.500 114.3	2.90 – 11.6 20 – 80

5.3 PERFORMANCE

TA Series 794

Valve Selection Guide

Spring Option #1

2.9 – 11.6 psi/20 – 80 kPa

Size	DpL (psi)																				
Nominal inches	2.9 gpm			4.4 gpm			5.8 gpm			7.3 gpm			8.7 gpm			10.2 gpm			11.6 gpm		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
2 ½	2.7	48.8	70.2	3.4	60.1	86.5	3.9	69.0	99.3	4.3	77.4	111.4	4.7	84.5	121.6	5.1	91.5	131.7	5.5	97.5	140.5
3	4.3	74.1	107.3	5.3	91.3	132.2	6.1	104.8	151.7	6.8	117.6	170.2	7.4	128.4	185.9	8.0	139.0	201.2	8.6	148.3	214.6
4	8.6	150.2	214.6	10.6	185.0	264.3	12.1	212.4	303.5	13.6	238.3	340.5	14.9	260.2	371.7	16.1	281.7	402.5	17.2	300.4	429.2

Spring Option #2

5.8 – 23.3 psi/40 – 161 kPa

Size	DpL (psi)																				
Nominal inches	5.8 gpm			7.3 gpm			8.7 gpm			10.2 gpm			11.6 gpm			13.1 gpm			14.5 gpm		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
2 ½	3.9	69.0	99.3	4.3	77.4	111.4	4.7	84.5	121.6	5.1	91.5	131.7	5.5	97.5	140.5	5.8	103.7	149.3	6.1	109.1	157.0
3	6.1	104.8	151.7	6.8	117.6	170.2	7.4	128.4	185.9	8.0	139.0	201.2	8.6	148.3	214.6	9.1	157.6	228.1	9.6	165.8	239.9
4	12.1	212.4	303.5	13.6	238.3	340.5	14.9	260.2	371.7	16.1	281.7	402.5	17.2	300.4	429.2	18.2	319.3	456.1	19.2	335.9	479.9

Size	DpL (psi)																				
Nominal inches	16.0 gpm			17.4 gpm			18.9 gpm			20.3 gpm			21.8 gpm			23.3 gpm					
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
2 ½	6.4	114.6	165.0	6.7	119.5	172.0	7.0	124.5	179.3	7.2	129.0	185.8	7.5	133.7	192.6	7.7	138.0	198.6			
3	10.1	174.1	252.0	10.5	181.6	262.8	11.0	189.3	273.9	11.4	196.1	283.9	11.8	203.3	294.2	12.1	209.7	303.5			
4	20.2	352.9	504.1	21.0	368.0	525.7	21.9	383.5	547.9	22.7	397.4	567.8	23.5	411.9	588.4	24.3	424.9	607.0			

5.3 PERFORMANCE

TA Series 794

Valve Selection Guide

Spring Option #1

2.9 – 11.6 psi/20 – 80 kPa

Size	DpL (kPa)																				
Nominal DN	20.0 lph			30.0 lph			40.0 lph			50.0 lph			60.0 lph			70.0 lph			80.0 lph		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
73.0 mm	626	11180	16100	767	13693	19718	885	15811	22768	990	17678	25456	1084	19365	27885	1171	20917	30120	1252	22361	32199
DN80	984	16994	24597	1205	20813	30125	1391	24033	34785	1556	26870	38891	1704	29435	42603	1841	31793	46016	1968	33988	49193
DN100	1968	34435	49193	2410	42175	60249	2783	48699	69570	3111	54447	77782	3408	59644	85206	3681	64423	92033	3935	68871	98387

Spring Option #2

5.8 – 23.3 psi/40 – 161 kPa

Size	DpL (kPa)																				
Nominal DN	40.0 lph			50.0 lph			60.0 lph			70.0 lph			80.0 lph			90.0 lph			100.0 lph		
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
73.0 mm	885	15811	22768	990	17678	25456	1084	19365	27885	1171	20917	30120	1252	22361	32199	1328	23717	34153	1400	25000	36000
DN80	1391	24033	34785	1556	26870	38891	1704	29435	42603	1841	31793	46016	1968	33988	49193	2087	36050	52178	2200	38000	55000
DN100	2783	48699	69570	3111	54447	77782	3408	59644	85206	3681	64423	92033	3935	68871	98387	4174	73049	104355	4400	77000	110000

Size	DpL (kPa)																				
Nominal DN	110.0 lph			120.0 lph			130.0 lph			140.0 lph			150.0 lph			160.0 lph					
	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}	Q _{min}	Q _{nom}	Q _{max}
73.0 mm	1468	26220	37757	1534	27386	39436	1596	28504	41046	1657	29580	42596	1715	30619	44091	1771	31623	45537			
DN80	2307	39855	57684	2410	41627	60249	2508	43327	62710	2603	44962	65077	2694	46540	67361	2783	48067	69570			
DN100	4615	80758	115369	4820	84349	120499	5017	87794	125419	5206	91108	130154	5389	94305	134722	5566	97398	139140			

5.4 PERFORMANCE

Cv/Kv Values for TA Series 793/794

Cv/Kv values for flow of water at +60°F/-16°C are shown in the table below.

Formulas for Cv and Kv values

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

Where:

Q = Flow (GPM)

ΔP = Pressure Drop (psi)

C_v = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

Where:

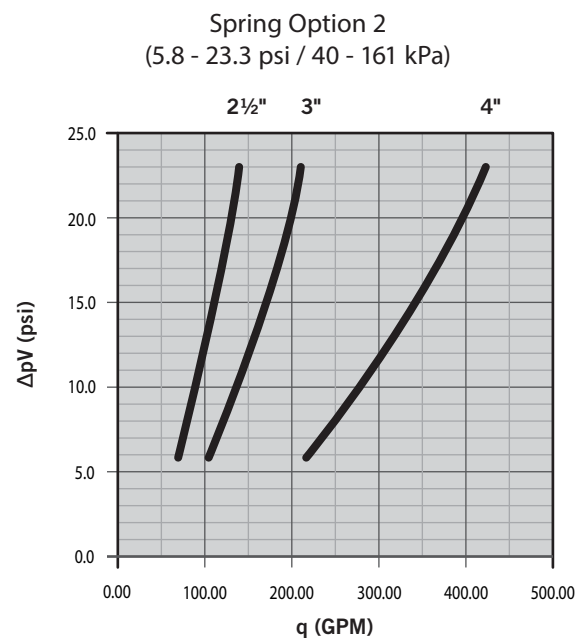
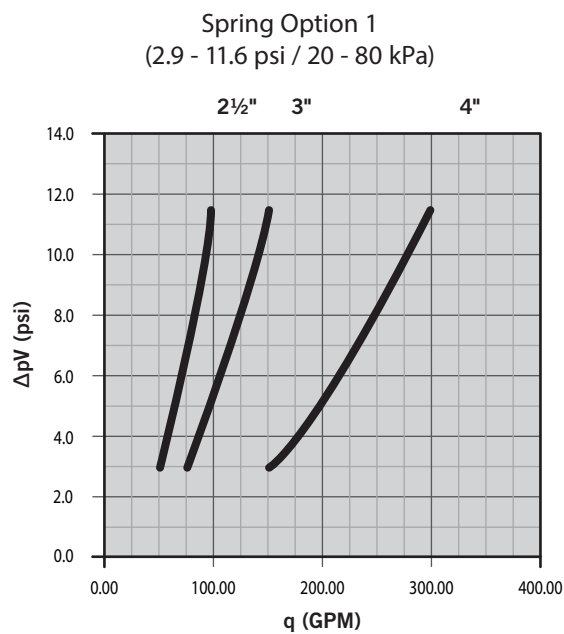
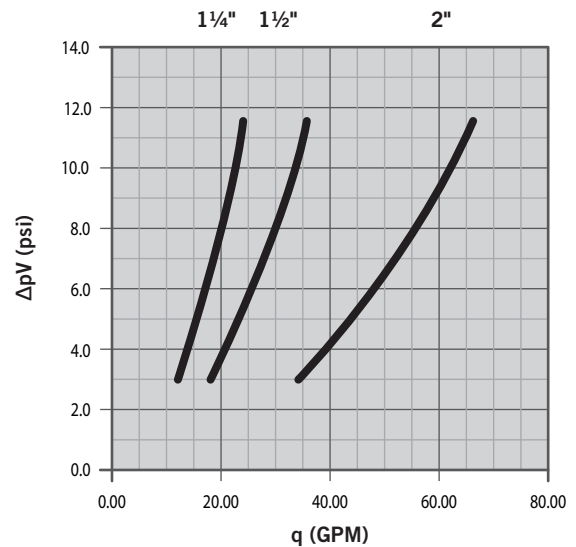
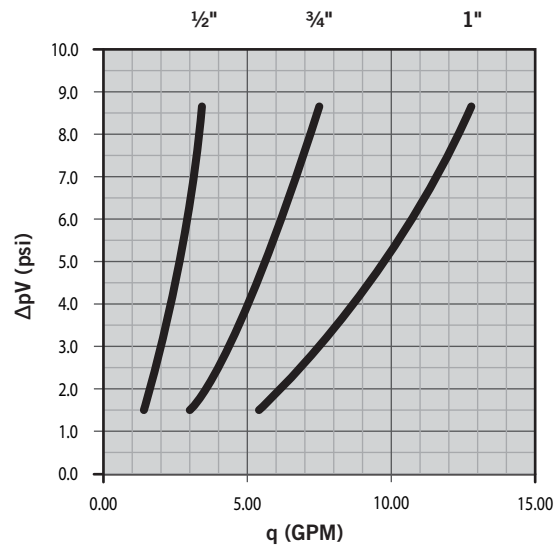
Q = Flow (m³/hr)

ΔP = Pressure Drop (Bar)

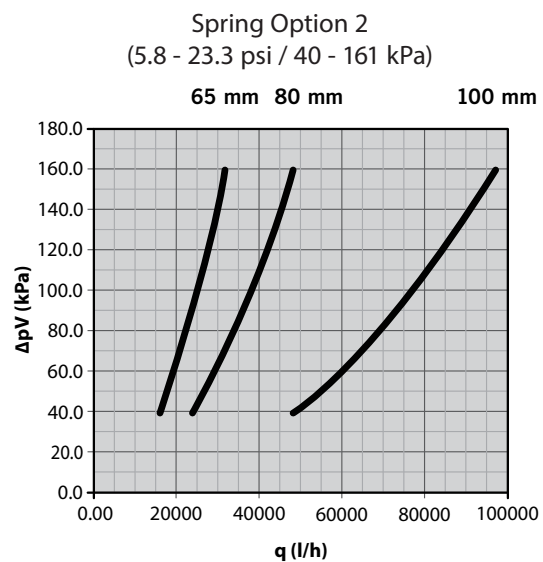
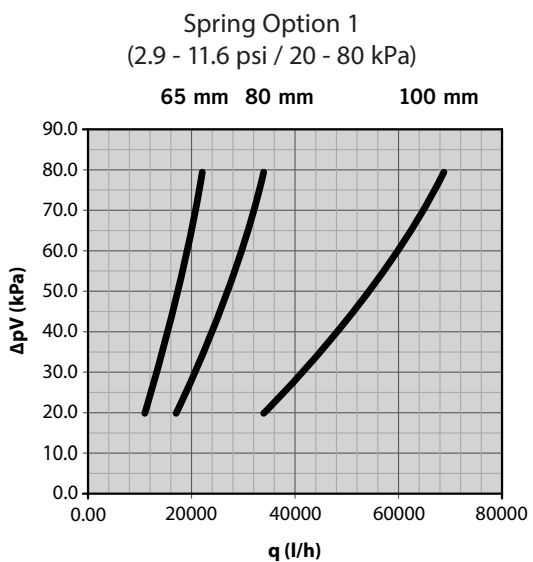
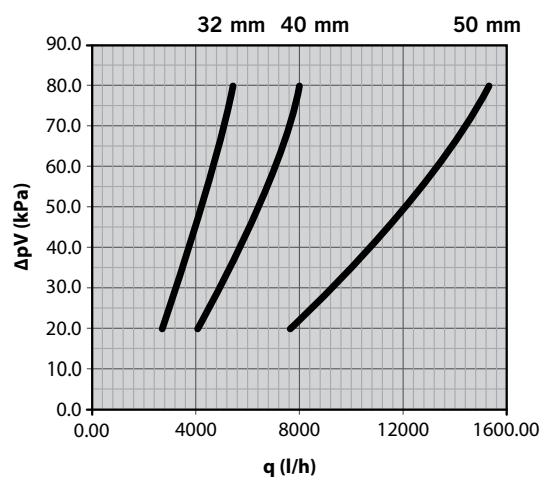
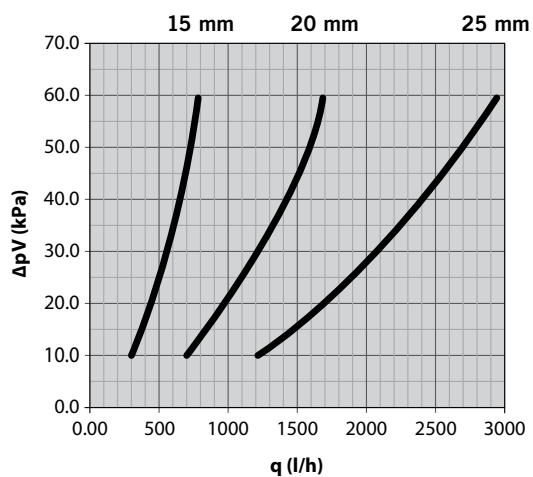
K_v = Flow Coefficient

Size			
Nominal	Minimum	Nominal	Maximum
inches	C _v	C _v	C _v
DN	K _v	K _v	K _v
½	0.1	1.1	1.6
DN15	0.07	1.00	1.40
¾	0.2	2.5	3.6
DN20	0.16	2.20	3.10
1	0.3	4.4	6.3
DN25	0.28	3.80	5.50
1 ¼	0.5	6.9	9.7
DN32	0.42	6.00	8.50
1 ½	0.7	10.3	14.7
DN40	0.64	9.00	12.80
2	1.4	19.5	28.0
DN50	1.20	17.00	24.40
2 ½	1.6	28.6	41.2
DN65	1.40	25.00	36.00
3	2.5	43.5	63.0
DN80	2.20	38.00	55.00
4	5.0	88.2	126.0
DN100	4.40	77.00	110.00

5.4 PERFORMANCE (CONTINUED)



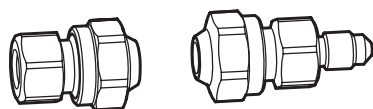
5.4 PERFORMANCE (CONTINUED)



5.5 PERFORMANCE

Accessories

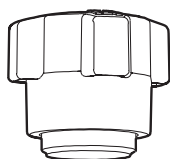
Extension Kit



- Capillary Extension Kit for 1/4" Tubing
Part Code = K002793001

Handwheel

For TA Series 793 only

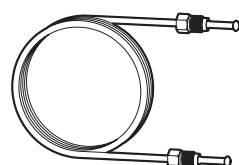
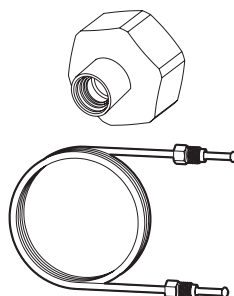
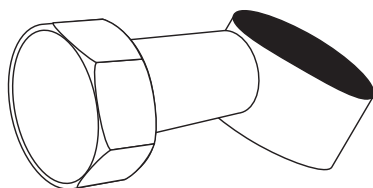


TA Series 793

Size	Part Code
1/2 - 1"	P004793HDW
1 1/4 - 2"	P012793HDW

Capillary Pipe, Transition Nipple & Drain

The capillary pipe, transition nipple and drain are included with the TA Series 793/794 valves when purchased.



Brass Sizes (1/2 - 2" / 15 - 50 mm)	
Part	Part Code
Drain Kit Vic	K000786CBV
Transition Nipple	P010793000
Capillary Pipe	P000793001

NOTE

- If using a Series 787H or Series 78KH balancing valve, make sure the valve with the drain option is included. Victaulic will also kit the partner Series 787H valve with the drain kit.

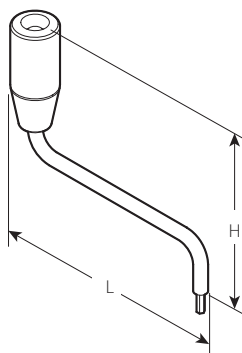
Ductile Iron Sizes (2 1/2 - 4" / 65 - 100 mm)	
Part	Part Code
Capillary Pipe Connection	P000793002
Capillary Pipe	P000793001

NOTE

- If using a Series 787H or Series 78KH balancing valve, make sure the valve with the drain option is included. Victaulic will also kit the partner Series 787H valve with the drain kit.

5.5 PERFORMANCE (CONTINUED)

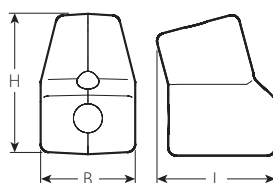
Setting Tool



Differential Pressure Controller	Setting Tool Size mm	Dimensions		Part Code
		L inches mm	H inches mm	
TA Series 793	3	4.2 107	3.3 85	P004793KEY
TA Series 794	5	8.2 207	2.8 72	P030794KEY

Prefab Insulation

For TA Series 793 only



Size Nominal inches DN	Dimensions			Part Code
	H inches mm	B inches mm	L inches mm	
1/2 DN15	6.8 172	4.6 116	5.7 145	P006793INS
3/4 20				
1 DN25				
1 1/4 DN32	9.2 234	6.1 154	7.5 191	P012793INS
1 1/2 DN40				
2 DN50				

6.0 NOTIFICATIONS

⚠ WARNING



- Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

[08.16: Victaulic Balancing Valves TA Series 786H/787H/788/789 and Series 78KH](#)

[08.46: Victaulic Differential Pressure Controller TA Series 7PR](#)

[08.47: Victaulic Compact Differential Pressure Controller TA Series 7DA](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be constructed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. Victaulic recommends all products to be installed in accordance with current IMI TA installation/assembly instructions. Victaulic and IMI TA reserve the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the current IMI TA installation/assembly instructions for the product you are installing. For coupling and strainer installation, reference should always be made to the I-100 Victaulic Filed Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.