

Automatic Balancing Valves

Series 76T, 76B, 76K, 76V, 76G

Series 76T, 76B, 76K, 76V (1/2 – 2" / 15 – 50mm Sizes)
Series 76G (2 1/2 – 6" / 65 – 150mm Sizes)



Victaulic KOIL-KIT Coil Packs provide a simplified, quality coil installation while ensuring optimal hydronic systems design requirements are met.

For information on Victaulic KOIL-KIT Coil Packs in 1/2 – 2"/15 – 50 mm sizes, refer to publication [08.30](#).

For information on Victaulic KOIL-KIT Coil Packs in 2 1/2 - 6"/65-150 mm sizes, refer to publication [08.35](#).

The Victaulic Automatic Balancing Valves are particularly designed and manufactured for balancing heating and cooling circuits.

The Victaulic Automatic Cartridges are an integral part of the Victaulic Automatic Balancing Valves, limiting the flow at a specified level even under fluctuating pressure conditions. The flow cartridge is selected from the Cartridge Selection Guide starting on page 8.

The patented design of these cartridges introduces an integral flow isolating diaphragm for higher accuracy.

Victaulic Automatic Balancing Valves can be provided individually or as a component of the Victaulic KOIL-KIT™ Coil Pack.

Job/Owner

System No.	
Location	

Contractor

Submitted By	
Date	

Engineer

Spec Section	
Paragraph	
Approved	
Date	

Material Specifications:

Automatic Balancing Valves

Series: 76T/76B/76K/76V

Body: DZR Brass, CW602N

O-Ring: EPDM

Seal: PTFE (if applicable)

Pressure Class: 365psi/PN25

Temperature: -4°F (-20°C) to +250°F (+120°C)

Differential Pressure Range: 1-87psi/7-600 kPa

Thread: NPT

Series: 76G

Body: Ductile iron conforming to ASTM A-536, grade 65-45-12.

O-Ring: EPDM

Fasteners: AISI 304

Pressure Class: 365 psi/PN25

Temperature: -4°F (-20°C) to +230°F (+110°C)

Differential Pressure Range: 1.9-87psi/13-600 kPa

NOTE: Glycolic mixtures (both ethylene and propylene) up to 50% are applicable with this valve. Strainer is recommended. The pipe system should be properly ventilated to avoid the risk of air-pockets.

Ball Valves Kits

Series 722: Refer to publication, [08.15](#).

Automatic Cartridges

Housing:

DZR Brass CW602N (½ – 2"/15 – 50 mm sizes)

ANSI 304 (2 ½ – 6"/65 – 150 mm sizes)

O-Ring: EPDM

Diaphragm:

Low Pressure-HNBR

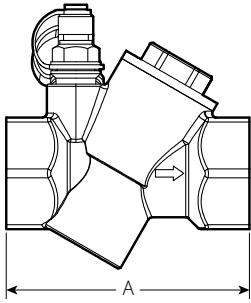
High Pressure-HNBR Reinforced

Accuracy: +/- 5%

Dimensions:

Series 76T

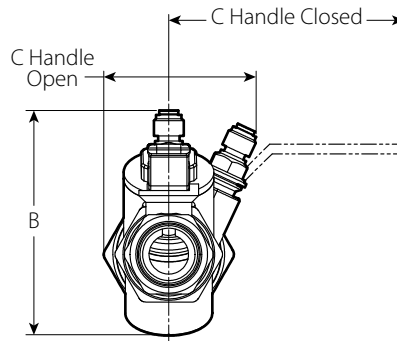
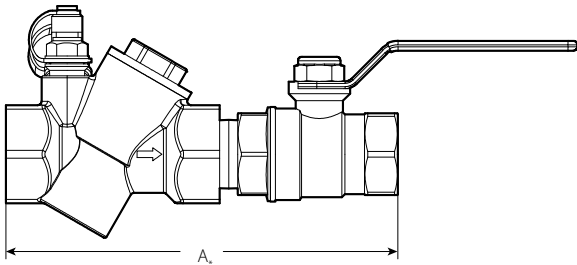
Female x Female Threaded



Series 76B

(With a Ball Valve Kit)

Refer to publication [08.15](#), for details on the Series 722 Brass Ball Valve.



Nominal Size inches mm	Actual Outside Diameter inches mm	Dimensions					Approx. Weight Each	
		A End to End inches mm	A* End to End inches mm	B inches mm	C (Handle) Open inches mm	C (Handle) Closed inches mm	76T lbs. kg	76B lbs. kg
1/2 15	0.840 21.3	3.0 77	5.4 137	5.2 133	2.8 71	3.1 78	1.3 0.6	1.7 0.8
3/4 20	1.050 26.7	3.0 77	6.0 152	5.2 133	2.8 71	3.8 96	1.3 0.6	2.1 1.0
1 25	1.315 33.7	3.3 83	6.5 165	5.2 133	2.8 71	3.8 96	1.5 0.7	2.6 1.6
1 ¹ / ₂ 25	1.315 33.7	4.8 123	6.5 165	6.5 164	3.6 91	3.8 96	3.4 1.5	4.6 2.1
1 ¹ / ₄ 32	1.660 42.4	4.8 123	8.4 213	6.5 164	3.6 91	3.8 96	3.4 1.5	5.1 2.3
1 ¹ / ₂ 40	1.900 48.3	4.8 123	9.6 243	6.5 164	3.6 91	5.4 138	3.4 1.5	5.8 2.6
2 50	2.375 60.3	4.8 123	10.3 261	6.5 164	3.6 91	5.4 138	3.7 1.7	6.6 3.0

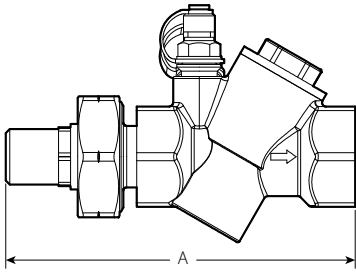
¹ High Flow

NOTE: The Series 76T is available with sweat adapters (Series 76S). Please specify when ordering.

Dimensions:

Series 76K

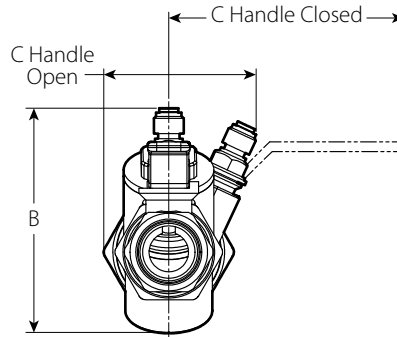
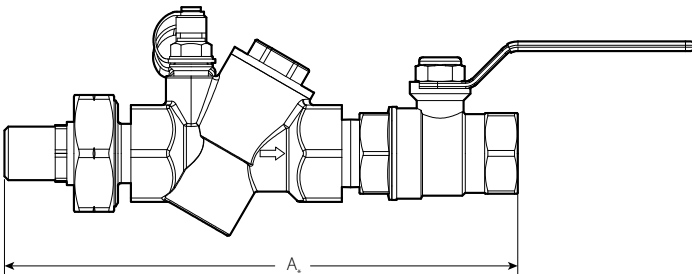
Male x Female Threaded



Series 76V

(With a Ball Valve Kit)

Refer to publication [08.15](#), for details on the Series 722 Brass Ball Valve.



Nominal Size inches mm	Actual Outside Diameter inches mm	Dimensions					Approx. Weight Each	
		A End to End inches mm	A* End to End inches mm	B inches mm	C (Handle) Open inches mm	C (Handle) Closed inches mm	76K lbs. kg	76V lbs. kg
1/2 15	0.840 21.3	5.1 130	7.5 191	5.2 133	2.8 71	3.1 78	1.5 0.7	1.9 0.9
3/4 20	1.050 26.7	5.2 132	8.0 203	5.2 133	2.8 71	3.8 96	2 0.9	2.8 1.3
1 25	1.315 33.7	5.7 145	8.9 226	5.2 133	2.8 71	3.8 96	3.5 1.6	4.7 2.1
1 ¹ / ₂ 25	1.315 33.7	5.7 145	8.9 226	6.5 164	3.6 91	3.8 96	5.4 2.4	6.6 3.0
1 1/4 32	1.660 42.4	7.4 188	11.0 279	6.5 164	3.6 91	3.8 96	5.4 2.4	7.2 3.3
1 1/2 40	1.900 48.3	7.4 188	12.2 310	6.5 164	3.6 91	5.4 138	5.5 2.5	7.9 3.6
2 50	2.375 60.3	7.7 196	13.2 355	6.5 164	3.6 91	5.4 138	5.9 2.7	8.8 4.0

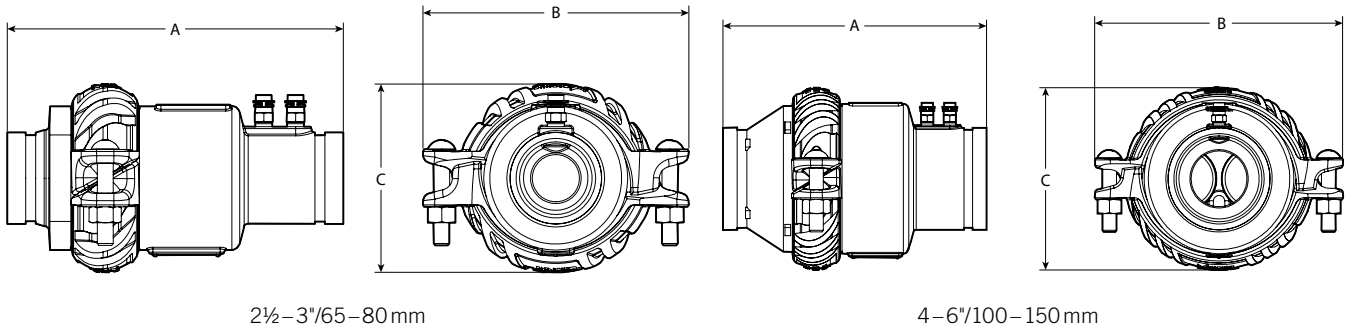
¹ High Flow

NOTE: The Series 76K is available with a union and sweat adapter (Series 76S). Please specify when ordering.

Dimensions:

Series 76G

Grooved



Nominal Size inches mm	Actual Outside Diameter inches mm	Dimensions			Approx. Weight Each
		A End to End inches mm	B End to End inches mm	C End to End inches mm	76G lbs. kg
2 1/2 65	2.875 73.0	10.6 268	8.4 213	5.9 150	17.0 7.7
3 80	3.500 88.9	10.7 271	8.4 213	5.9 150	18.0 8.2
4 100	4.500 114.3	11.7 297	11.0 279	8.2 208	33.0 15.0
6 150	6.625 168.3	12.7 323	13.0 330	9.9 252	52.0 23.6

Accessories:

PT Ports 1/2 – 2" / 15 – 50mm sizes



Length inches mm	Part Code
1/2 15	P-000-76T-4XR
1 25	P-000-76T-4XR
2 50	P-000-76T-4XR

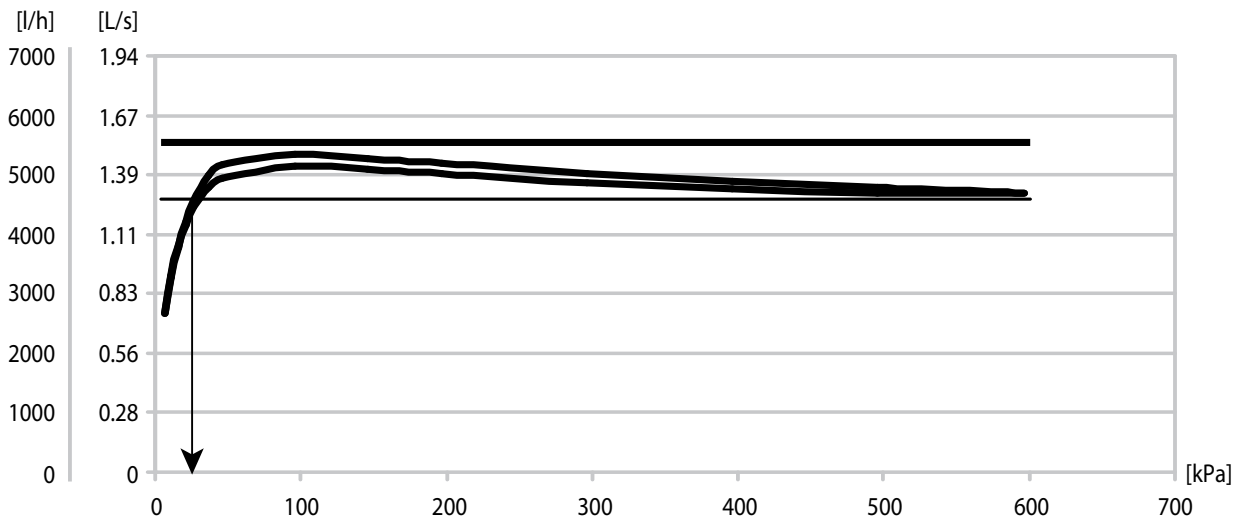
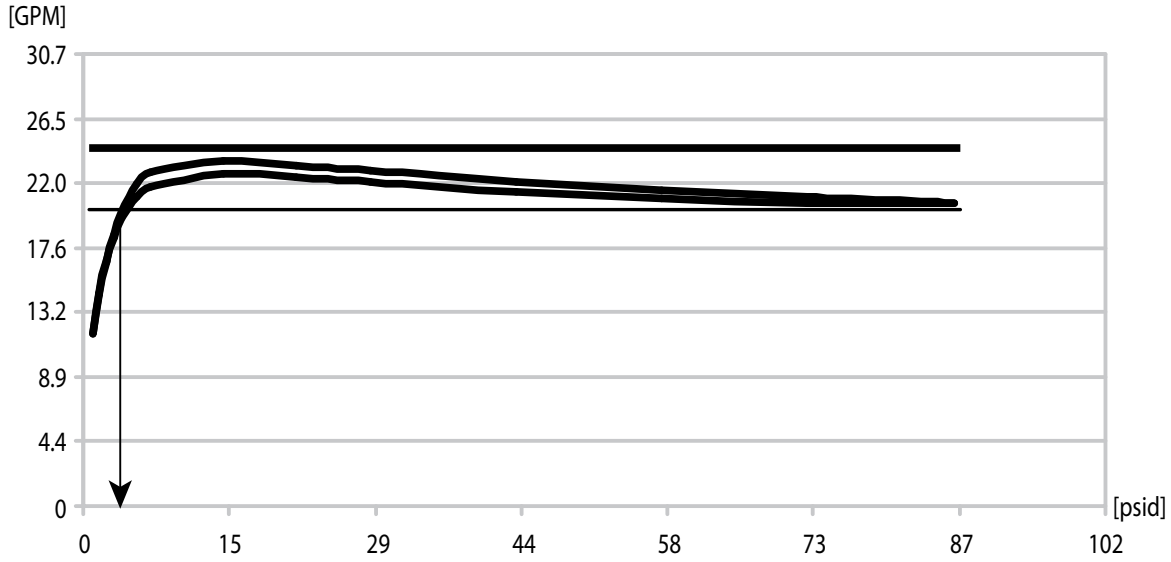
Replacement O-rings for 1/2 – 2" / 12 – 50mm cap sizes.

Length inches	Part Code
1/2 – 1"	P-004-76T-R0R
1HF – 2"	P-010-76T-R0R

Flow Data:

This graph displays the flow for a cartridge with a nominal flow of 22 gpm/83.27 lpm (1.38 lps).

The cartridge enters the pressure range at 3.34 psi/23 kPa and maintains the flow at a constant level all the way until 87psi/600 kPa. This curve is for cartridge DG.



Correction Factors:

For liquids other than water, calculate the valve cartridge flow rate as follows:

Valve Cartridge Flow Rate = CFR

System Design Flow Rate = DFR

Specific Gravity of System Liquid = SG

$$CFR = DFR \sqrt{SG}$$

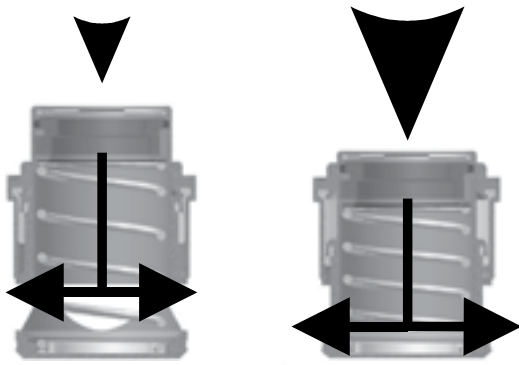
This applies to liquids having, on the whole, the same viscosity as water, i.e. most water/glycol mixtures and water/brine solutions at room temperature. At low temperatures, the viscosity increases and laminar flow may occur in certain valves. The risk increases with small valves, low settings and low differential pressures.

Flow Calculation:

For flow calculations refer to Victaulic publication I-76G.

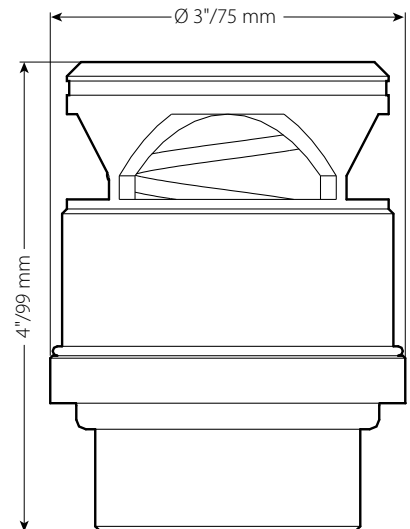
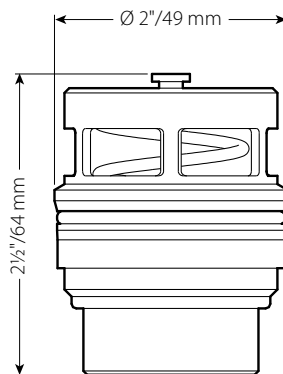
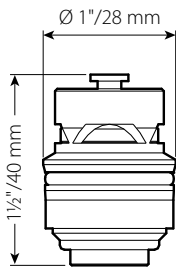
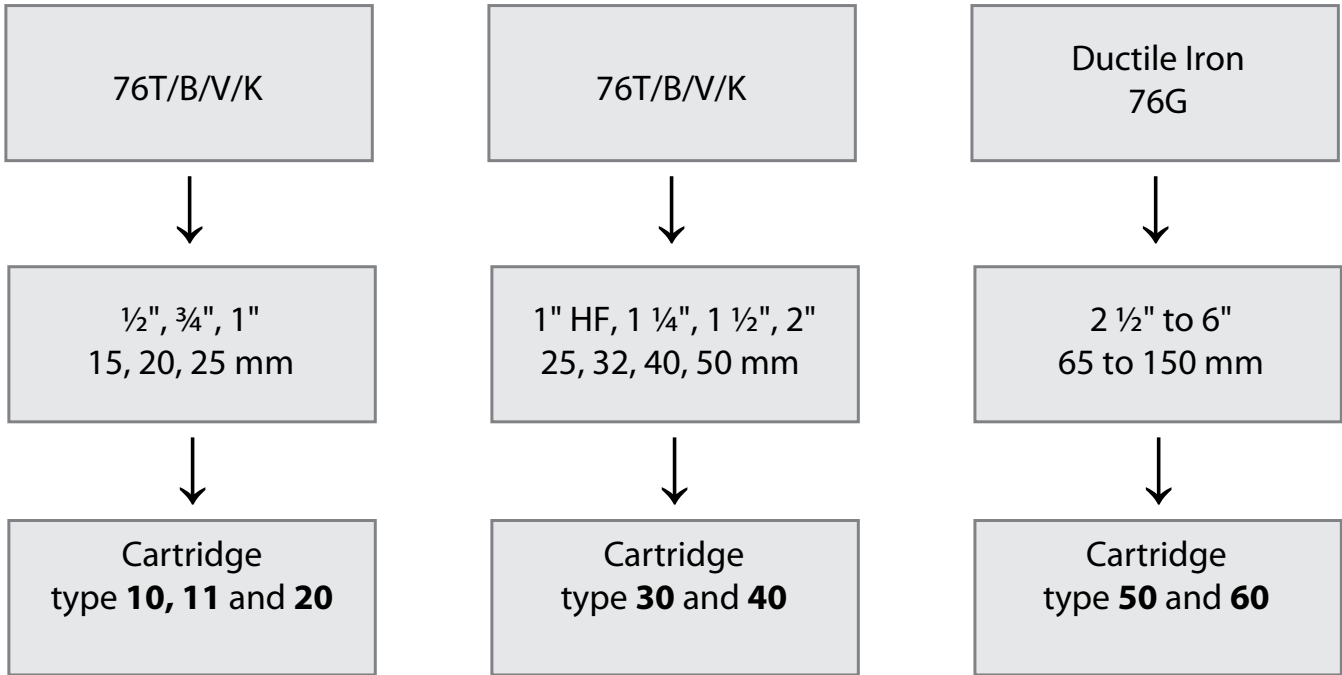
Cartridge Operation:

When the pressure increases the spring will be compressed and thereby the piston will reduce the outlet area and vice versa. The result is a constant flow rate through the valve, independent of pressure fluctuations.



Cartridge maintains a flow rate of +/- 5% of nominal flow across the entire differential pressure range.

Cartridge Selection Guide:



Cartridge Selection Guide:

Victaulic Code		Flow gpm/ lpm	min ΔP psi/ kPa	Cv/ Kv
High Pressure No. Max Δp 87 psi/ 600 kPa	Low Pressure No. Max Δp 43.5 psi/ 300 kPa			
Cartridge Type 10, 76T/B/V/K (½ – 1" / 15 – 25mm)				
-	1A	0.11 0.42	1.02 7	0.10 0.09
-	1B	0.15 0.60	1.02 7	0.16 0.14
-	1C	0.20 0.72	1.02 7	0.19 0.16
AD	1D	0.24 0.92	1.02 7	0.24 0.21
AE	1E	0.33 1.25	1.16 8	0.31 0.27
AF	1F	0.39 1.40	1.31 9	0.32 0.28
AG	1G	0.46 1.74	1.45 10	0.38 0.33
AH	1H	0.50 1.90	1.45 10	0.42 0.36
AI	1I	0.57 2.15	1.60 11	0.45 0.39
AJ	1J	0.68 2.57	1.60 11	0.53 0.46
AK	1K	0.77 2.92	1.74 12	0.59 0.51
AL	1L	0.90 3.40	1.74 12	0.68 0.59
AM	1M	1.06 4.02	1.74 12	0.81 0.7
AN	1N	1.23 4.65	1.74 12	0.94 0.81
AO	1O	1.41 5.33	1.89 13	1.03 0.89
AP	1P	1.54 5.83	1.89 13	1.13 0.97
AQ	1Q	1.76 6.67	1.89 13	1.29 1.11
AR	1R	2.10 7.95	2.03 14	1.47 1.27
AS	1S	2.40 9.08	2.03 14	1.69 1.46
Cartridge Type 11, 76T/B/V/K (½ – 1" / 15 – 25mm)				
AT	1T	2.71 10.25	2.03 14	1.90 1.64
AU	1U	2.95 11.17	2.03 14	2.08 1.79
AV	1V	3.24 12.27	2.03 14	2.29 1.97
AW	1W	3.52 13.32	2.32 16	2.32 2.00
AX	1X	3.83 14.50	2.76 19	2.32 2.00
AY	1Y	4.12 15.60	3.05 21	2.37 2.04

Cartridge Selection Guide:

Victaulic Code		Flow gpm/ lpm	min ΔP psi/ kPa	Cv/ Kv
High Pressure No. Max Δp 87 psi/ 600 kPa	Low Pressure No. Max Δp 43.5 psi/ 300 kPa			
Cartridge Type 20, 76T/B/V/K (½ – 1" / 15 – 25mm)				
BA	2A	4.49 17.00	3.19 22	2.52 2.17
BB	2B	4.76 18.18	3.19 22	2.67 2.3
BC	2C	5.26 19.92	3.19 22	2.96 2.55
BD	2D	5.88 22.25	3.34 23	3.22 2.78
BE	2E	6.53 24.72	3.34 23	3.58 3.09
BF	2F	6.96 26.35	3.34 23	3.83 3.3
BG	2G	7.81 29.57	3.48 24	4.20 3.62
BH	2H	8.07 30.55	3.48 24	4.34 3.74
BI	2I	9.16 34.67	3.63 25	4.83 4.16
BJ	2J	9.91 37.52	3.77 26	5.12 4.41
BK	2K	10.21 38.65	3.92 27	5.17 4.46
BL	2L	10.78 40.80	4.06 28	5.37 4.63
Cartridge Type 30, 76T/B/V/K (1" HF and 1¼ – 2" / 25 – 50mm)				
CA	3A	2.97 11.23	1.74 12	2.26 1.95
CB	3B	3.79 14.35	1.74 12	2.89 2.49
CC	3C	4.49 17.00	1.74 12	3.41 2.94
CD	3D	5.00 18.93	1.74 12	3.80 3.28
CE	3E	5.24 19.83	1.74 12	3.99 3.44
CF	3F	5.60 21.20	1.89 13	4.09 3.53
CG	3G	5.94 22.48	1.89 13	4.34 3.74
CH	3H	6.54 24.75	1.89 13	4.78 4.12
CI	3I	6.90 26.12	2.03 14	4.86 4.19
CJ	3J	7.18 27.18	2.03 14	5.06 4.36
CK	3K	7.99 30.25	2.03 14	5.63 4.85
CL	3L	8.81 33.35	2.18 15	6.00 5.17
CM	3M	9.00 34.07	2.32 16	5.93 5.11
CN	3N	9.56 36.18	2.32 16	6.33 5.46
CO	3O	10.00 37.85	2.47 17	6.39 5.51
CP	3P	10.48 39.67	2.47 17	6.69 5.77

Cartridge Selection Guide:

Victaulic Code		Flow gpm/ lpm	min ΔP psi/ kPa	Cv/ Kv
High Pressure No. Max Δp 87 psi/ 600 kPa	Low Pressure No. Max Δp 43.5 psi/ 300 kPa			
Cartridge Type 30, 76T/B/V/K (1" HF and 1¼ – 2" / 25 – 50mm) cont.				
CQ	3Q	11.00 41.63	2.61 18	6.83 5.89
CR	3R	11.62 43.98	2.61 18	7.22 6.22
CS	3S	12.64 47.85	2.76 19	7.64 6.59
CT	3T	14.05 53.18	3.05 21	8.07 6.96
CU	3U	15.00 56.78	3.19 22	8.42 7.26
CV	3V	15.35 58.10	3.19 22	8.62 7.43
Cartridge Type 40, 76T/B/V/K (1" HF and 1¼ – 2" / 25 – 50mm)				
DA	4A	16.00 60.57	2.90 20	9.43 8.13
DB	4B	16.20 61.358	3.05 21	9.31 8.03
DC	4C	18.00 68.13	3.05 21	10.35 8.92
DD	4D	19.00 71.92	3.05 21	10.93 9.42
DE	4E	20.00 75.70	3.19 22	11.23 9.678
DF	4F	21.00 79.48	3.19 22	11.80 10.17
DG	4G	22.00 83.27	3.34 23	12.09 10.42
DH	4H	24.00 90.83	3.48 24	12.90 11.12
DI	4I	26.00 98.42	3.63 25	13.70 11.81
DJ	4J	28.00 106.00	3.77 26	14.47 12.47
DK	4K	30.00 113.55	3.92 27	15.21 13.11
DL	4L	32.00 121.12	4.06 28	15.93 13.73
DM	4M	34.00 128.68	4.35 30	16.36 14.1
DN	4N	36.00 136.27	4.50 31	17.03 14.68
DO	4O	38.00 143.83	4.79 33	17.42 15.02
DP	4P	40.00 151.40	4.93 34	18.07 15.58
DQ	4Q	41.00 158.97	5.11 36	18.44 15.9
DR	4R	44.00 166.50	5.51 38	18.80 16.21
DS	4S	46.00 174.08	5.80 40	19.15 16.51
DT	4T	48.00 181.67	6.09 42	19.51 16.82
DU	4U	50.00 189.25	6.38 44	19.86 17.12

Cartridge Selection Guide:

Victaulic Code		Flow gpm/ lpm	min ΔP psi/ kPa	Cv/ Kv
High Pressure No. Max Δp 87 psi/ 600 kPa	Low Pressure No. Max Δp 43.5 psi/ 300 kPa			
Cartridge Type 50, Ductile Iron 76G (2 ½ – 6" / 65 – 150mm)				
5A	–	16.82 63.67	1.89 13	12.30 10.6
5B	–	17.31 65.52	1.89 13	12.64 10.9
5C	–	17.83 67.48	1.89 13	12.99 11.2
5D	–	18.49 69.98	1.89 13	13.57 11.7
5E	–	19.37 73.32	1.89 13	14.15 12.2
5F	–	20.43 77.33	2.03 14	14.38 12.4
5G	–	21.80 82.52	2.03 14	15.31 13.2
5H	–	23.38 88.50	2.03 14	16.47 14.2
5I	–	25.10 95.00	2.03 14	17.63 15.2
5J	–	27.34 105.15	2.03 14	19.26 16.6
5K	–	28.67 108.52	2.03 14	20.18 17.4
5L	–	31.13 118.02	2.03 14	21.92 18.9
5M	–	34.79 131.68	2.18 15	23.66 20.4
5N	–	39.19 148.33	2.32 16	25.87 22.3
5O	–	45.79 173.32	2.76 19	27.72 23.9
5P	–	50.00 189.25	3.19 22	28.07 24.2
5Q	–	55.00 208.18	3.34 23	30.28 26.1
5R	–	59.00 223.32	3.48 24	31.78 27.4
5S	–	65.00 246.03	3.92 27	32.94 28.4
5T	–	70.45 266.65	4.21 29	34.45 29.7

Cartridge Selection Guide:

Victaulic Code		Flow gpm/ lpm	min ΔP psi/ kPa	Cv/ Kv
High Pressure No. Max Δp 87 psi/ 600 kPa	Low Pressure No. Max Δp 43.5 psi/ 300 kPa			
Cartridge Type 60, Ductile Iron 76G (2 ½ – 6" / 65 – 150mm)				
6A	-	75.02 283.95	4.93 34	33.87 29.2
6B	-	79.97 302.47	4.93 34	36.08 31.1
6C	-	82.77 313.28	5.08 35	36.89 31.8
6D	-	85.72 324.45	5.08 35	38.16 32.9
6E	-	90.11 341.07	5.08 35	40.14 34.6
6F	-	94.76 358.78	5.22 36	41.64 35.9
6G	-	98.85 374.15	5.22 36	43.38 37.4
6H	-	103.40 391.37	5.22 36	45.36 39.1
6I	-	108.02 408.85	5.37 37	46.75 40.3
6J	-	112.82 427.02	5.51 38	48.26 41.6
6K	-	116.81 442.13	5.51 38	49.88 43
6L	-	121.91 461.43	5.51 38	52.08 44.9
6M	-	128.39 485.95	5.51 38	54.87 47.3
6N	-	131.90 499.23	5.66 39	55.68 48
6O	-	136.40 516.27	5.37 37	57.54 49.6
6P	-	142.05 537.67	5.80 40	59.16 51
6Q	-	147.80 559.42	5.80 40	61.48 53
6R	-	153.91 582.55	5.80 40	64.15 55.3
6S	-	160.00 605.60	6.09 42	65.08 56.1
6T	-	165.94 628.08	6.24 43	66.70 57.5
6U	-	170.00 643.45	6.38 44	67.51 58.2
6V	-	180.41 682.85	6.67 46	70.06 60.4
6W	-	198.19 750.00	7.11 49	74.59 64.3

Typical Specifications:

Automatic Balancing Valves

Series 76T ½ – 2"/15 – 50mm: The valve shall operate by means of an automatic balancing cartridge with replaceable orifice plate and internal diaphragm. The pressure class of the valve shall be 365 psi/PN25. The valve housing shall be made of DZR brass. Available with sweat adapters upon request (Series 76S).

Series 76B with Ball Valve Kit (Series 722) ½ – 2"/15 – 50mm: The valve shall operate by means of an automatic balancing cartridge with replaceable orifice plate and internal diaphragm. The pressure class of the valve shall be 365 psi/PN25. The valve housing shall be made of DZR brass. The valve includes a factory-installed and leak tested ball valve with handle. Available with sweat adapters upon request (Series 76S).

Series 76K ½ – 2"/15 – 50mm: The valve shall operate by means of an automatic balancing cartridge with replaceable orifice plate and internal diaphragm. The pressure class of the valve shall be 365 psi/PN25. The valve housing shall be made of DZR brass. The housing shall have one fixed threaded end and one union end. Available with sweat adapters upon request (Series 76S).

Series 76V with Ball Valve Kit (Series 722) ½ – 2"/15 – 50mm: The valve shall operate by means of an automatic balancing cartridge with replaceable orifice plate and internal diaphragm. The pressure class of the valve shall be 365 psi/PN25. The valve housing shall be made of DZR brass. The housing shall have one fixed threaded end and one union end. The valve includes a factory-installed and leak tested ball valve with handle. Available with sweat adapters upon request (Series 76S).

Series 76G 2½ – 6"/65 – 150mm: The valve shall be suitable for working pressure to 365 psi/25 bar and operate by means of automatic balancing stainless steel cartridges with replaceable orifice plate and internal EPDM diaphragm. The valve housings shall be made of ductile iron ASTM A536 (65-45-12). Features a ductile iron body, with integrated orifice plate for verifying flow through the valve. Valve assembly includes Victaulic #50 concentric reducers and Style 107H/107N couplings to facilitate access to the cartridge.

Automatic Cartridges:

Low Pressure Cartridges

½ – 2"/15 – 50mm: The cartridge (for automatic balancing valve) should be made of brass. There should be only one differential pressure control range up to 50psi/350kPa. The flow rate should be defined by replaceable orifice plate. The diaphragm should be made of HNBR. The O-rings should be made of EPDM. The cartridge can be identified by means of this number and the corresponding flow rate can be read from the above flow rate tables.

High Pressure Cartridges

½ – 2"/15 – 50mm: The cartridge (for automatic balancing valve) should be made of tin/nickel plated brass. There should be only one differential pressure control range up to 87psi/600kPa. The flow rate should be defined by replaceable orifice plate. The diaphragm should be made of reinforced HNBR, the O-rings should be made of EPDM.

2½ – 6"/65 – 150mm: The cartridge for automatic balancing valve (flanged housing) should be made of stainless steel. There should be only one differential pressure control range up to 87psi/600kPa. The flow rate should be defined by replaceable orifice plate. The diaphragm should be made of reinforced HNBR, the O-rings should be made of EPDM.

Installation

Reference should always be made to the I-100 Victaulic Field 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.

Note

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

Trademarks

Victaulic is a registered trademarks of Victaulic Company.