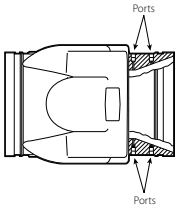
Victaulic® Venturi Check Valve and Flow Measuring Kit Series 779

08.10



1.0 PRODUCT DESCRIPTION

Available Sizes

- 4 – 12"/DN100 – DN300
- Grooved end connections

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) to full rated pressure. See section 5.0 Performance for more information.
- Working pressure dependent on size of pipe, and valve size

Operating Temperature Range

- Dependent on seat selection from section 3.0

Function

- Check valve with hydrodynamic inlet profile that provides a natural venturi
- Drilled, tapped and plugged inlets, ready to receive the flow measuring kit
- Single-disc mechanism incorporates a spring-assisted feature for non-slamming operation

Application

- Can be installed horizontally or vertically (with flow in the upward direction)
- Allows direct connection to Victaulic Vic-300™ MasterSeal™ butterfly valves or Series 377 *Vic-Plug* valves

2.0 CERTIFICATION/LISTINGS

UK CA CE

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

08.10 1537 Rev K Updated 08/2022

3.0 SPECIFICATIONS – MATERIAL

Series 779 Venturi Check Valve and Flow Measuring Kit

Valve Body: Ductile iron conforming to ASTM A536, Grade 65-45-12, painted black enamel. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Disc Coating: (specify choice)

☐ **Victaulic EPDM**
EPDM (Green color code). Temperature range –30°F to +230°F/–34°C to + 110°C. NOT RECOMMENDED FOR PETROLEUM SERVICES OR STEAM SERVICES.

☐ **Victaulic Nitrile**
Nitrile (Orange color code). Temperature range -20°F to +180°F/-29°C to +82°C. Not compatible for hot water services over +150°F/+66°C or for hot dry air over +140°F/60°C. NOT RECOMMENDED FOR HOT WATER SERVICES OR STEAM SERVICES.

☐ **Victaulic Fluoroelastomer**
Fluoroelastomer (Blue color code). Temperature range +20°F to +300°F/–7°C to +149°C. NOT RECOMMENDED FOR HOT WATER SERVICES OR STEAM SERVICES

Disc: Ductile iron conforming to ASTM A536, Grade 65-45-12, fully encapsulated in EPDM, Nitrile or Fluoroelastomer. (Reference Disc Coating listed above.)

Shaft: Type 316 stainless steel.

Spring: Type 302/304 stainless steel.

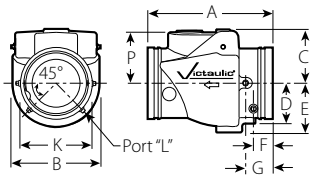
Shaft Plug: Carbon steel zinc plated to ASTM B633.

Flow Measuring Kit (Hardware is same for all sizes):

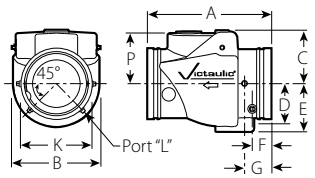
- Extension nipples
- Bronze access valves
- Quick disconnect for meter connection (per ISO 7241-1 Series B)

4.0 DIMENSIONS

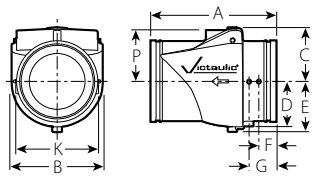
Series 779 Venturi Check Valve and Flow Measuring Kit



Typical 4"/DN100



Typical 5 – 6"/139.7 mm – DN150



Typical 8 – 12"/DN200 – DN300

Size		Dimensions									Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**E-E** **A** inches mm	**B** inches mm	**C** inches mm	**D** inches mm	**E** inches mm	**F** inches mm	**G** inches mm	**K** inches mm	**P** inches mm	**Approximate (Each)** lb kg
4[1] DN100	4.500 114.3	9.63 245	5.88 149	3.88 99	2.75 70	3.50 89	1.50 38	2.38 60	4.50 114	3.50 89	16.0 7.3
5[1]	5.563 141.3	10.50 267	6.75 171	4.50 114	4.25 108	4.25 108	1.65 42	2.38 60	5.88 149	4.08 104	20.0 9.1
DN125[1]	5.500 139.7	10.50 267	6.75 171	4.50 114	4.25 108	4.25 108	1.65 42	2.38 60	5.88 149	4.08 104	20.0 9.1
6[1] DN150	6.625 168.3	11.50 292	8.00 203	5.00 127	4.50 114	4.50 114	1.58 40	2.68 68	6.68 170	4.75 121	28.0 12.7
	6.500* 165.1	11.50 292	8.00 203	5.00 127	4.50 114	4.50 114	1.58 40	2.68 68	6.68 170	4.75 121	28.0 12.7
8[2] DN200	8.625 219.1	14.00 356	9.88 251	6.06 154	5.06 129	5.68 144	1.75 44	3.25 83	8.88 226	5.75 146	40.0 18.1
10[2] DN250	10.750 273.0	17.00 432	12.00 305	7.12 181	6.00 152	6.68 170	1.82 46	3.94 100	10.94 278	6.94 176	100.0 45.4
12[2] DN300	12.750 323.9	19.50 495	14.00 356	8.06 205	6.91 176	7.68 195	1.82 46	3.32 84	12.82 326	7.93 201	140.0 63.5

[1] Port "L" located 45° off centerline of valve body. Port sizes are ⅛" NPT.

[2] Both ports on centerline of valve body. Port sizes are ⅛" NPT.

5.0 PERFORMANCE

Series 779 Venturi Check Valve and Flow Measuring Kit

Size		Maximum Working Pressure
Nominal inches DN	**Actual Outside Diameter** inches mm	psi kPa
4 DN100	4.500 114.3	365 2500
5	5.563 141.3	365 2500
DN125	5.500 139.7	365 2500
6 DN150	6.625 168.3	365 2500
	6.500 165.1	365 2500
8 DN200	8.625 219.1	365 2500
10 DN250	10.750 273.3	300 2100
12 DN300	12.750 323.9	300 2100

NOTE

- WARNING: FOR ONE-TIME FIELD TEST ONLY, the Maximum Working Pressure may be increasted to 1 ½ times the figures shown

5.1 PERFORMANCE

Series 779 Venturi Check Valve and Flow Measuring Kit

Formulas for C_v/K_v Values:

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

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

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

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 (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

Size		(Full Open) **Cv** **Kv**
Nominal inches DN	**Actual Outside Diameter** inches mm	
4 DN100	4.500 114.3	390 337
5	5.563 141.3	700 606
DN125	5.500 139.7	707 606
6 DN150	6.625 168.3	1000 865
	6.500 165.1	1000 865
8 DN200	8.625 219.1	1800 1557
10 DN250	10.750 273.0	3000 2595
12 DN300	12.750 323.9	4200 3633

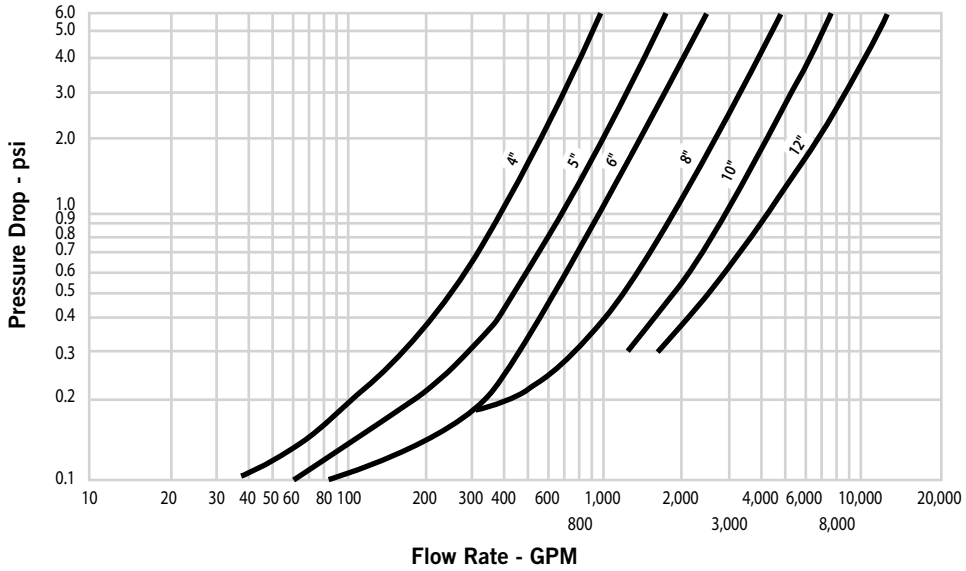
NOTES

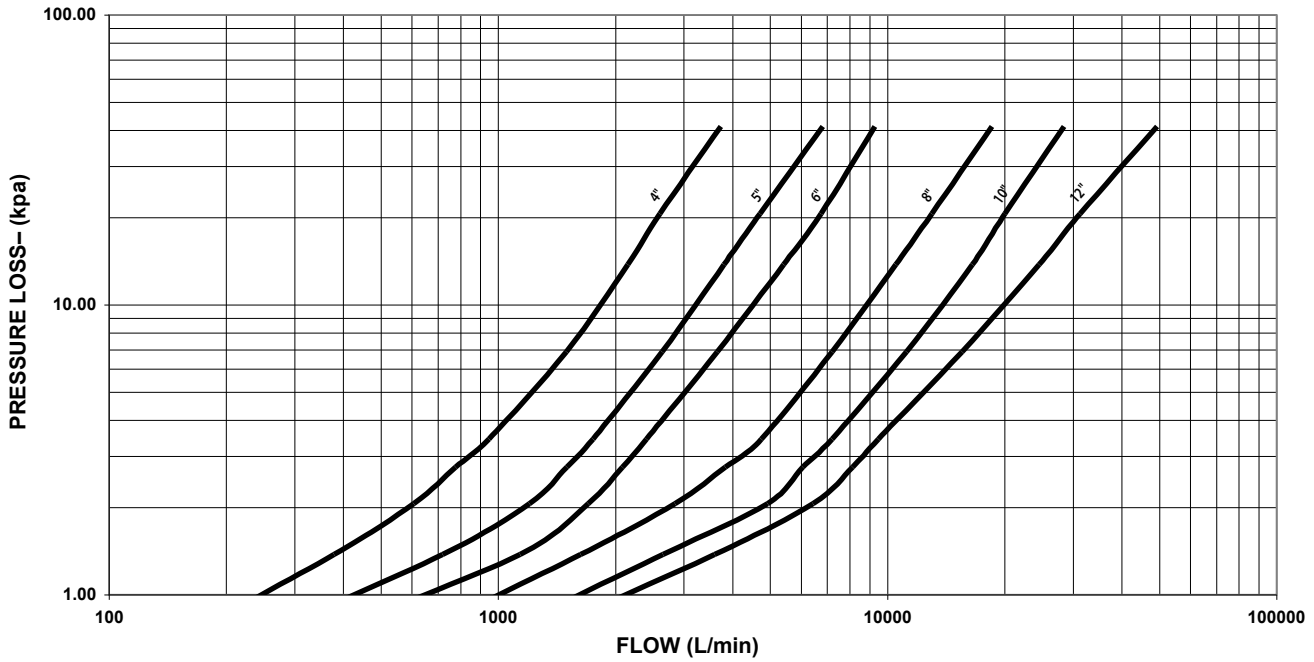
- Placement of check valves too close to sources of unstable flow will shorten the life of the valve and potentially may damage the system. To extend valve life, valves should be installed a reasonable distance downstream from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than eight (8) feet per second. Distances less than three (3) diameters are not recommended and will violate the Victaulic product warranty
- Use this method for determining the overall pressure drop due to frictional losses through the valve. These are not to be used for flow measurement at the venturi. Values used for flow measurement can be found on page 6.

5.1 PERFORMANCE (CONTINUED)

Series 779 Venturi Check Valve and Flow Measuring Kit

Flow Characteristics





NOTE

- Use this method for determining the overall pressure drop due to frictional losses through the valve. These are not to be used for flow measurement at the venturi. Values used for flow measurement can be found on page 6.

5.2 PERFORMANCE

Series 779 Venturi Check Valve and Flow Measuring Kit

Tables for calculating flow rates based on venturi differential pressure measurements.

4"/100 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.16	4.4	3	119	1.65	45.8	10	397
1.1	1.1	0.91	450	11.4	11.4	3.0	1502.8
0.28	7.7	4	159	2.38	66.0	12	476
1.9	1.9	1.22	602	16.4	16.4	3.7	1801.9
0.61	16.9	6	238	3.28	90.9	14	556
4.2	4.2	1.83	901	22.6	22.6	4.3	2104.7
1.11	30.8	8	320	4.28	118.7	16	635
7.6	7.6	2.44	1211	29.6	29.5	4.9	2403.7

5"/125 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.20	5.5	3	186	2.23	61.8	10	624
1.4	1.4	0.91	704	15.4	15.4	3.05	2362
0.35	9.7	4	249	3.13	86.8	12	744
2.4	2.4	1.22	942	21.6	21.6	3.66	2816
0.76	21.0	6	372	4.25	117.8	14	868
5.2	5.2	1.83	1408	29.3	29.3	4.27	3285
1.40	38.8	8	499				
9.7	9.7	2.4	1889				

6"/150 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.12	3.3	3	270	1.39	38.5	10	901
0.8	0.8	0.91	1022	9.6	9.6	3.05	3410
0.27	7.5	4	360	2.0	55.5	12	1081
1.9	1.9	1.22	1363	13.8	13.8	3.66	4092
0.51	14.1	6	540	2.78	77.1	14	1261
3.5	3.5	1.83	2044	19.2	19.2	4.27	4773
0.88	24.4	8	720	3.6	99.8	16	1441
6.1	6.1	2.44	2725	24.8	24.8	4.88	5454

8"/200 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.10	2.7	3	471	1.05	29.1	10	1559
0.7	0.7	0.91	1783	7.2	7.2	3.05	5901
0.17	4.7	4	623	1.55	43.0	12	1871
1.2	1.2	1.22	2358	10.7	10.7	3.66	7082
0.38	10.5	6	936	2.08	57.7	14	2182
2.6	2.6	1.83	3543	14.3	14.3	4.27	8259
0.68	18.8	8	1247	3.45	95.6	18	2800
4.7	4.7	2.44	47	23.8	23.8	5.49	10598

10"/250 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.13	3.6	3	741	1.36	37.7	10	2457
0.9	0.9	0.91	2805	9.4	9.4	3.05	9300
0.23	6.4	4	983	1.96	54.4	12	2948
1.6	1.6	1.22	3721	13.5	13.5	3.66	11158
0.49	13.6	6	1474	2.70	74.8	14	3440
3.4	3.4	1.83	5579	18.6	18.6	4.27	13020
0.88	24.4	8	1966	3.50	97.1	16	4000
6.1	6.1	2.44	7441	24.1	24.1	4.88	15140

12"/300 mm

ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.	ΔP PSI kPa	ΔP In. H_2O kPa	Velocity Ft./Sec m/s	Flow GPM L/min.
0.08	2.2	2	697	1.12	30.9	8	3438
0.6	0.6	0.61	2638	2.7	7.7	2.44	13013
0.18	5.0	3	1046	1.80	50.0	10	4298
1.2	1.2	0.91	3959	12.4	12.4	3.05	16266
0.33	9.1	4	1396	2.67	74.1	12	5157
2.3	2.3	1.22	5284	18.4	18.4	3.66	19519
0.71	19.7	6	2092				
4.9	4.9	1.83	7918				

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic 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 REFERENCES

I-100: Victaulic Field Installation Handbook

