Victaulic® Stainless Steel Check Valves
Series 416 and Series E416

17.41

2 – 3"/DN50 – DN80

4 – 12"/DN100 – DN300

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 12"/DN50 – DN300

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 300 psi/2100 kPa/21 bar

Operating Temperature

- Dependent on seat selection from section 3.0

Function

- Resilient-seat spring return swing check valve for horizontal or vertical (upward flow) applications
- For sizes 2 – 3"/DN50 – DN80, one (1) ½" NPT drain hole on the downstream side of the seat is available as an option
- For sizes 4 – 12"/DN100 – DN300, two (2) ½" NPT drain holes, one hole on each side of the seat, are available as options

NOTE

- Applications that require NSF-61 approved products should specify the Victaulic Stainless Steel Check Valve Series 816 (publication 17.46).

End Preparation (specify choice)

☐ Original Groove System (OGS) (Series 416)

☐ StrengThin™ 100 Groove Profile (Series E416)

Minimum Backpressure to Seal

- 5 feet/1.5 meters of water (2.2 psi/14.9 kPa)

2.0 CERTIFICATION/LISTINGS

CE WRAS

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

Series 416/E416 Stainless Steel Check Valve

Body: Stainless steel conforming to ASTM A351 Grade CF8M.

Seat: (specify choice)

- ☐ **Victaulic EPDM**
  (Green and silver color code). Temperature range -30°F to +230°F/-34°C to +110°C. WRAS approved to BS 6920 for cold and hot potable water service up to +149°F/+65°C. NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.
- ☐ **Victaulic 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 COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.
- ☐ **Victaulic Fluoroelastomer**
  (Blue color code). Temperature range +20°F to +300°F/–7°C to +149°C. NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.

Disc: Stainless steel conforming to ASTM A351 Grade CF8M.

Shaft: 17-4PH stainless steel conforming to ASTM A564.

Spring: 17-7PH stainless steel conforming to ASTM A564 or 316 stainless steel.

Shaft Plug and Optional Drain Plug: 316 stainless steel.

Seat Plate: 316 stainless steel.

Ball: Ball material will match the seat material chosen above.

Spacer Bushing: Polytetrafluoroethylene (PTFE).

Washer: Polytetrafluoroethylene (PTFE).

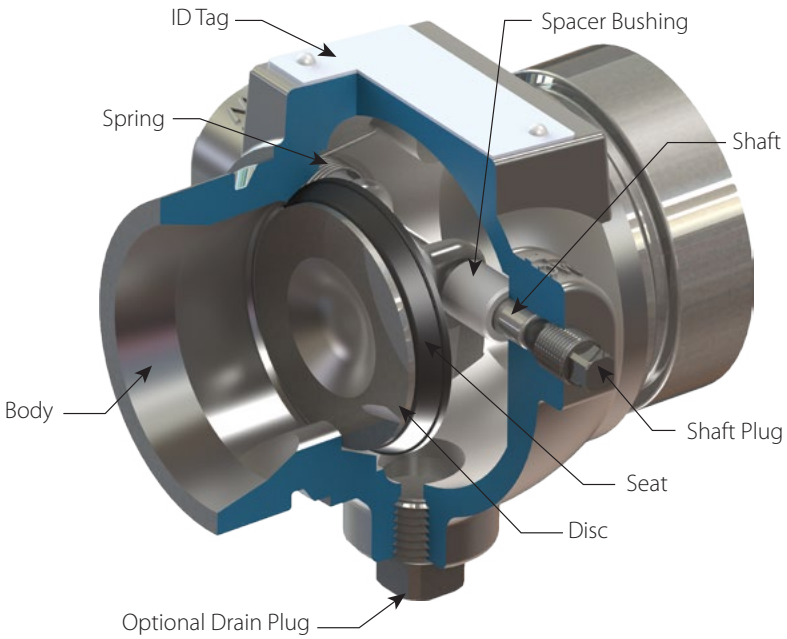
Split Lock Washer: 316/18-8 stainless steel.

Hex Head Cap Screw: 316 stainless steel.

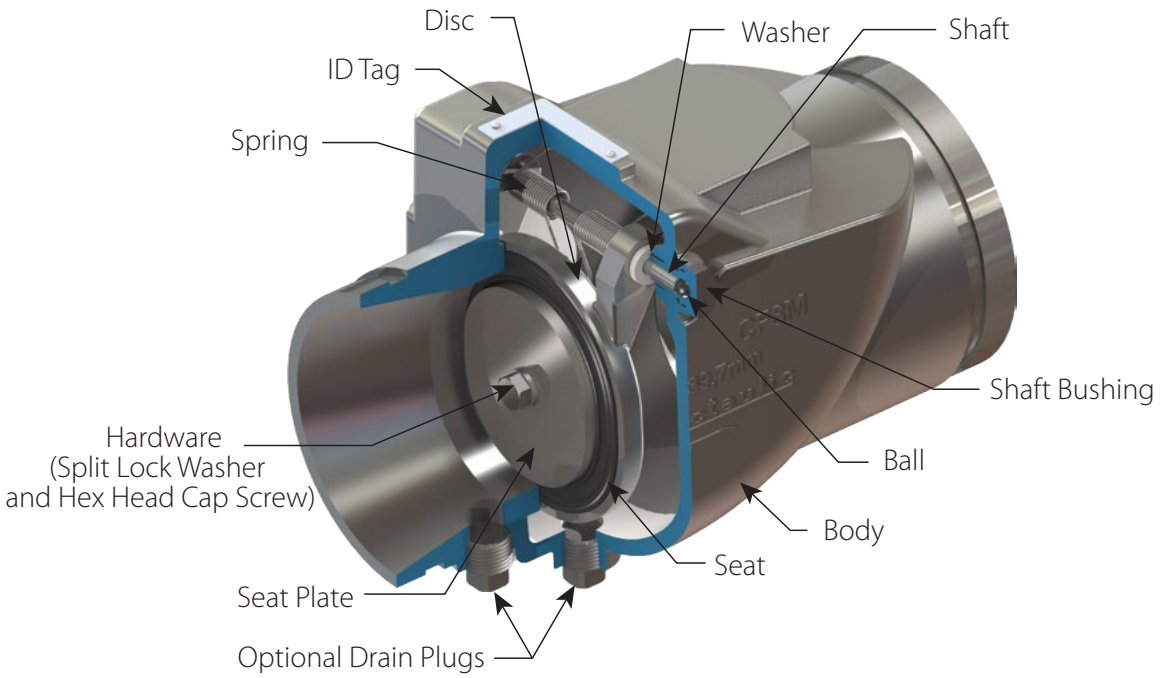
Shaft Bushing: 316 stainless steel.

3.0 SPECIFICATIONS - MATERIAL (CONTINUED)

Series 416/E416 Stainless Steel Check Valve



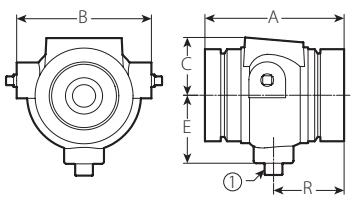
2 – 3"/DN50 – DN80
(StrengThin™ 100 Groove Profile shown)



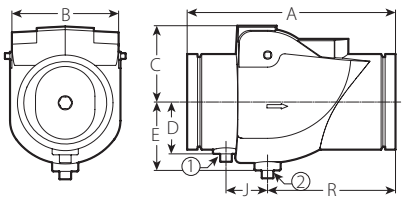
4 – 12"/DN100 – DN300
(Orginal Groove System profile shown)

4.0 DIMENSIONS

Series 416/E416 Stainless Steel Check Valve



2 – 3"/DN50 – DN80
① NPT or BSPT Downstream Drain (Optional)



4 – 12"/DN100 – DN300
① NPT or BSPT Upstream Drain (Optional)
② NPT or BSPT Downstream Drain (Optional)

Size		Dimensions							Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**End to End A** inches mm	**B** inches mm	**C** inches mm	**D** inches mm	**E** inches mm	**J** inches mm	**R** inches mm	**Approximate (Each)** lb kg
2 DN50	2.375 60.3	4.50 114	4.00 102	1.75 44	–	2.25 57	–	2.25 57	3.8 1.7
2 ½	2.875 73.0	4.50 114	4.38 111	1.88 48	–	2.25 57	–	2.25 57	4.6 2.1
DN65	3.000 76.1	4.50 114	4.38 111	2.25 57	–	2.25 57	–	2.25 57	4.9 2.2
3 DN80	3.500 88.9	4.75 121	5.13 130	3.75 95	–	2.50 64	–	2.50 64	6.2 2.8
4 DN100	4.500 114.3	10.13 257	5.38 137	4.50 114	2.50 64	3.38 86	2.00 51	6.25 159	20.1 9.1
DN125	5.500 139.7	11.00 279	6.25 159	5.13 130	3.00 76	3.88 98	2.00 51	7.13 181	30.1 13.6
	6.500 165.1	12.00 305	7.25 184	5.13 130	4.25 108	4.25 108	2.00 51	8.13 206	42.0 19.0
6 DN150	6.625 168.3	12.00 305	7.25 184	6.13 156	4.25 108	4.25 108	2.00 51	8.13 206	42.0 19.0
8 DN200	8.625 219.1	14.63 371	9.75 248	7.25 184	4.63 117	5.00 127	2.38 60	10.00 254	85.0 38.6
10 DN250	10.750 273.0	16.75 425	11.63 295	8.50 216	5.75 146	6.25 159	2.25 57	12.13 308	130.0 59.0
12 DN300	12.750 323.9	19.50 495	13.38 340	8.50 216	6.63 168	7.13 181	2.63 67	14.00 356	206.0 93.4

NOTES

- Only Series 416 is available in the 2 ½"/ 73.0 mm and 165.1 mm sizes.
- Only Series E416 is available in the 76.1 mm size.

5.0 PERFORMANCE

Series 416/E416 Stainless Steel Check Valve

Flow Data

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

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

Size		
Nominal inches DN	**Actual Outside Diameter** inches mm	**(Full Open)** C_v K_v
2 DN50	2.375 60.3	34 29
2½	2.875 73.0	140 121
 DN65	3.000 76.1	140 121
3 DN80	3.500 88.9	250 216
4 DN100	4.500 114.3	500 433
 DN125	5.500 139.7	875 758
	6.500 165.1	1300 1125
6 DN150	6.625 168.3	1300 1125
8 DN200	8.625 219.1	1800 1557
10 DN250	10.750 273.0	3000 2575
12 DN300	12.750 323.9	4200 3653

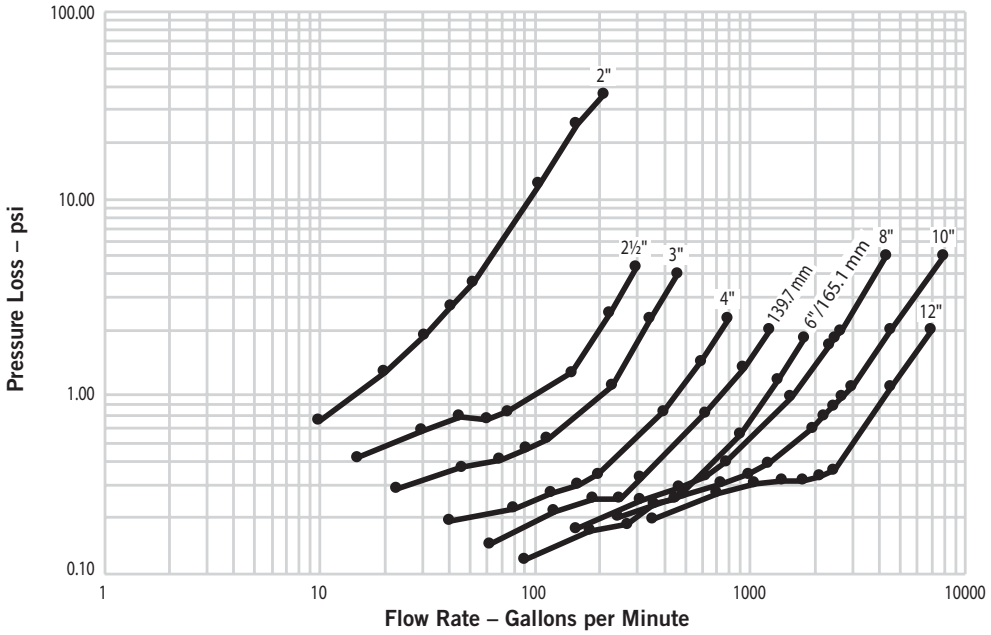
5.1 PERFORMANCE

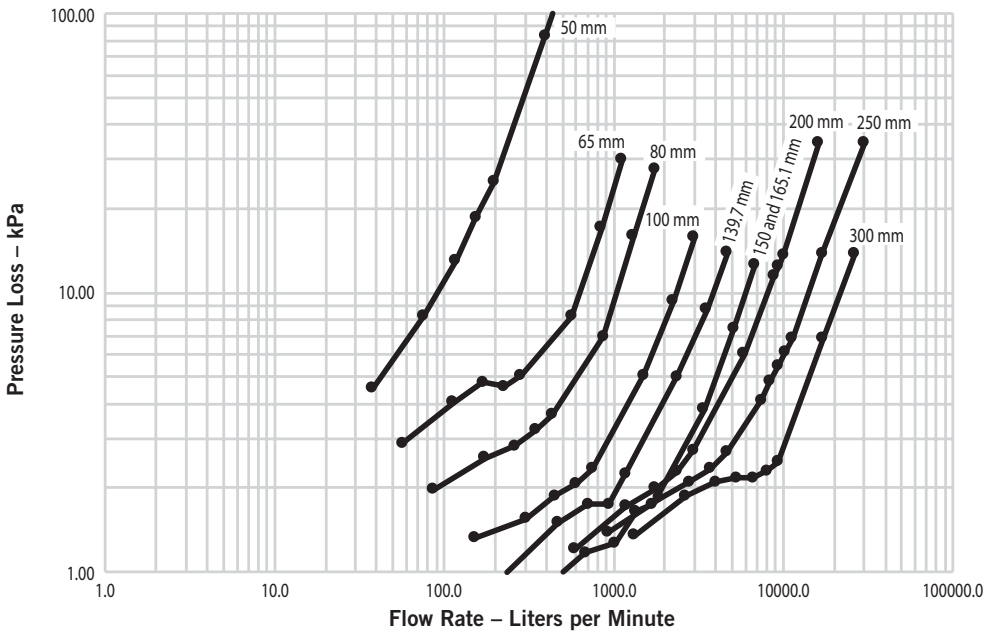
Series 416/E416 Stainless Steel Check Valve

Flow Characteristics

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 (2.4 meters per second). Distances less than three (3) diameters are not recommended and will violate the Victaulic product warranty.

The charts below expresses the flow of water at 60°F/16°C through the valve.





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

17.01: Victaulic Pipe Preparation for Use on Stainless Steel Pipe with Victaulic Products
17.03: Victaulic Stainless Steel Flexible Coupling - Style 77S
17.14: Victaulic Lightweight Flexible Stainless Steel Coupling - Style 475
17.24: Victaulic Rigid Coupling for Stainless Steel Pipe - Style 89
17.25: Victaulic Stainless Steel Rigid Coupling - Style 489
17.46: Victaulic Stainless Steel Check Valve for Potable Water Applications Series 816
24.01: Victaulic Pipe Preparation Tools
25.01: Victaulic Standard Groove Specifications
25.13: Victaulic StrengThin™ 100 Groove Specifications
31.02: Victaulic StrengThin™ 100 Rigid Coupling for Stainless Steel Pipe - Style E497
I-100: Victaulic Field Installation Handbook
I-ENDCAP: Victaulic End Cap Installation Safety Instructions

