Victaulic® Vic-300 MasterSeal™ Shouldered Butterfly Valve Series 761SC

08.31

Series 761SC
with Lever Lock Handle

Series 761SC
with 10-Position Handle

Series 761SC
with Gear Operator

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8"/DN50 – DN200

Maximum Working Pressure

- 300 psi/2100 kPa/21 bar – Bidirectional service
- Full working pressure for dead end services

Operating Temperature

- Dependent on seat selection from section 3.0

Application

- Typically used in water and air services

End Preparation

- Shouldered end pipe

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	

1.0 PRODUCT DESCRIPTION (Continued)

Actuation Options

- Standard ISO 5211 mounting flange
- 10-position handle (2 – 6"/DN50 – 165.1 mm)
  - Infinitely variable service with memory stop; Padlockable
- Lever lock handle (2 – 8"/DN50 – DN200)
  - Infinitely variable service with memory stop; Padlockable
- Gear operator (2 – 8"/DN50 – DN200)
  - Three-way assemblies

Accommodates 2"/50 mm of insulation

- 2 – 8"/DN50 – DN200: 2"/50 mm neck extension available when more than 2"/50 mm of insulation is needed
- 2 – 8"/DN50 – DN200: 4 ½"/120 mm-long handle wheel input shaft extension

NOTES

- A padlockable valve refers to those valves which can be padlocked to lockout equipment for preventing inadvertent valve operation. When used in conjunction with an appropriate lockout/tagout system, multiple padlocks may be used. The valve may be padlocked either fully open or fully closed.
- A tamper-resistant option is also available, which is meant to deter theft, vandalism or other malicious activity. The handles and associated components are assembled with tamper-resistant fasteners which are designed for one-time assembly. Attempts to defeat the padlock by partial disassembly of the valve will likely result in evidence of such activity. The valve may be padlocked either fully open or fully closed.
- Hand wheel input shaft extensions are not for use with chain wheels.

2.0 CERTIFICATION/LISTINGS

Product designed and manufactured under Victaulic's Quality Management System, as certified by LPCB in accordance with ISO -9001:2008. Valve construction and performance meet or exceed MSS-SP-67 requirements.

3.0 SPECIFICATIONS - MATERIAL

Body: Ductile iron conforming to ASTM A536, Grade 65-45-12.

End Face, 2 – 6"/DN50 – 165.1 mm: Ductile iron conforming to ASTM A536, Grade 65-45-12.

Seal Retainer, 8"/DN200: Ductile iron conforming to ASTM A536, Grade 65-45-12.

Coating: Black alkyd enamel.

Disc: (specify choice)

☐ For sizes 2 – 8"/DN50 – DN200: Ductile iron conforming to ASTM A536, Grade 65-45-12, with electroless nickel coating conforming to ASTM B733.

☐ For sizes 2 – 6"/DN50 – 165.1 mm: Aluminum bronze, Grade C95500

☐ For sizes 2 – 8"/DN50 – DN200: Stainless steel conforming to ASTM A-351, Grade CF8

Seat: (specify choice[1])

☐ **Victaulic EPDM**
(Green color code). Temperature range –30°F to +230°F/–34°C to +110°C. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT RECOMMENDED FOR PETROLEUM AND STEAM SERVICES.

☐ **Victaulic Nitrile**
(Orange color code). Temperature range +10°F to +150°F/–12°C to +65°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.

☐ **Victaulic Fluoroelastomer**
(Blue color code). Temperature range +20°F to +250°F/–7°C to +121°C. Recommended for many oxidizing acids, petroleum oils, halogenated hydrocarbons, lubricants, hydraulic fluids, and organic liquids. NOT REOMMENDED FOR HOT WATER SERVICES.

[1] Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Seal Selection Guide for specific gasket service guideline and for a listing of services which are not compatible.

3.0 SPECIFICATIONS - MATERIAL

Stems:

- ☐ Standard: 416 stainless steel conforming to ASTM A582.
- ☐ Optional: 17-4PH stainless steel conforming to ASTM A564.

Stem Seal Cartridge:

- ☐ Standard: C36000 brass.
- ☐ Optional: 17-4PH stainless steel conforming to ASTM A564.

Bearings: Fiberglass and 316 stainless steel with TFE lining.

Stem Seals: Furnished in same materials as seat.

Stem Retaining Ring: Carbon steel.

Handle: 10 Position.

- ☐ For sizes 2 – 6"/DN50 – 165.1 mm: Zinc-plated carbon steel handle with zinc-plated carbon steel latch plate and zinc-plated carbon steel fasteners, infinitely variable and padlockable and includes memory stop. Optionally available with tamper-resistant hardware.

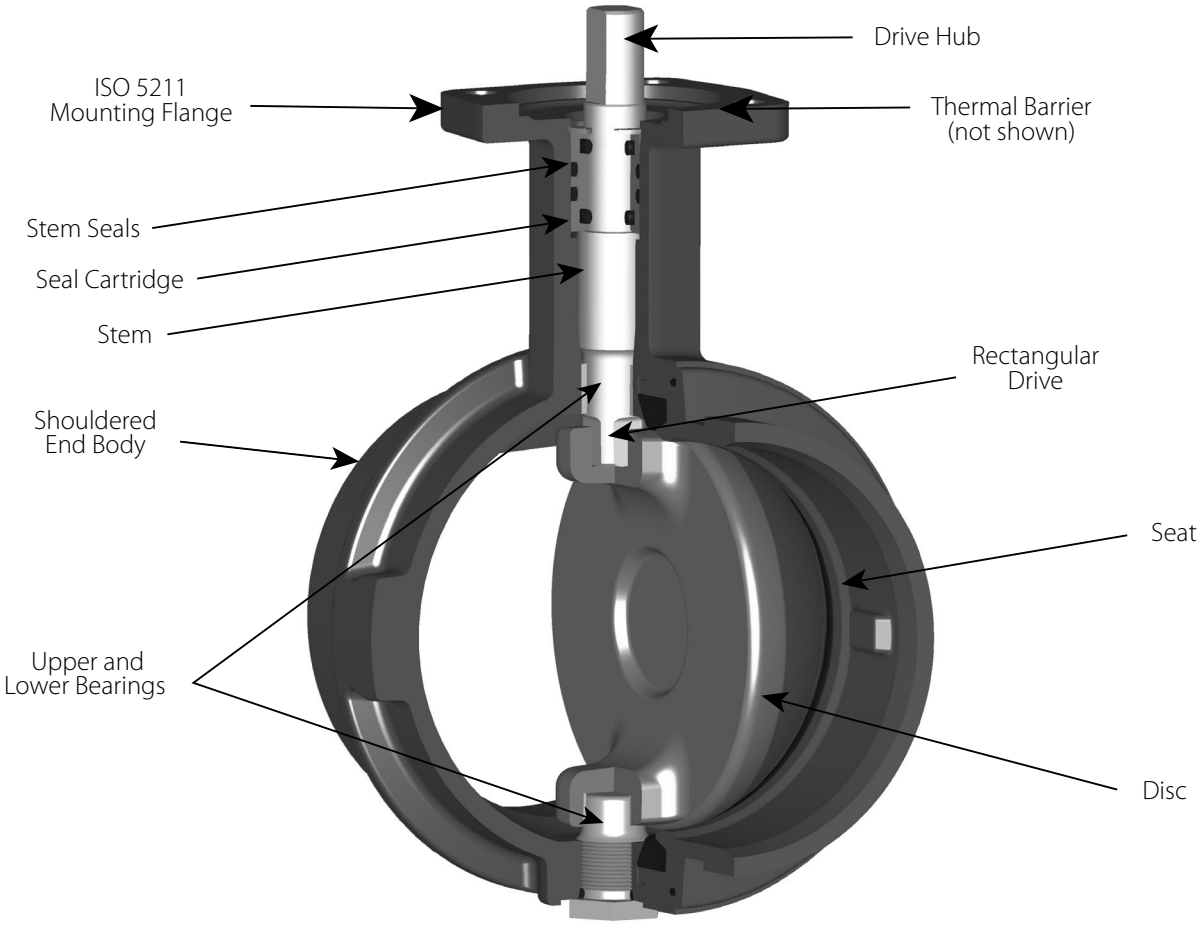
Handle: Lever Lock.

- ☐ For sizes 2 – 8"/DN50 – DN200: Painted ductile iron handle conforming to ASTM A536, Grade 65-45-12, with zinc-plated carbon steel latch plate and zinc-plated carbon steel fasteners, infinitely variable and padlockable and includes memory stop. Optionally available with tamper-resistant hardware.

Gear Operator with options below:

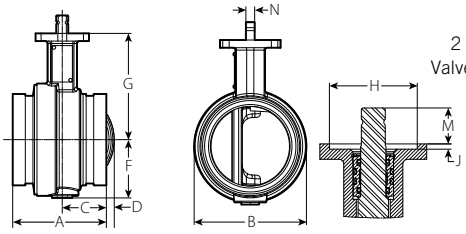
- ☐ Hand wheel with memory stop
- ☐ Hand wheel with chainwheel
- ☐ 2" square nut
- ☐ Thermal barrier

3.0 SPECIFICATIONS - MATERIAL (Continued)

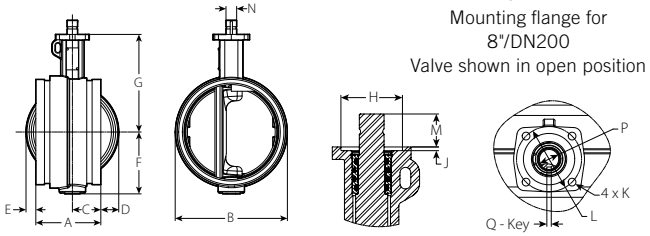


4.0 DIMENSIONS

Series 761SC



Butterfly Valve – Bare
2 – 6"/DN50 – 165.1 mm



Butterfly Valve – Bare
8"/DN200

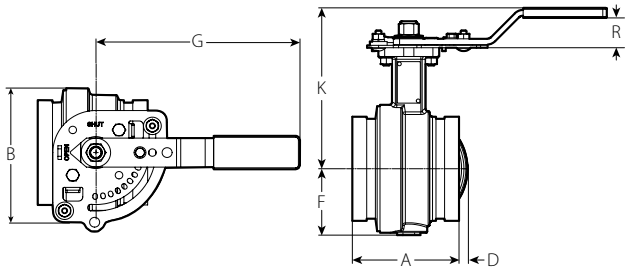
Size		Dimensions															Weight
Nominal inches DN	Actual Outside Diameter inches mm	A End to End inches mm	B inches mm	C inches mm	D inches mm	E inches mm	F inches mm	G inches mm	H inches mm	J inches mm	K inches mm	L inches mm	M inches mm	N inches mm	P inches mm	Q-Key inches mm	Approx. (Each) lb kg
2 DN50	2.375 60.3	3.38 85	3.25 83	1.50 37	– –	– –	1.88 46	3.88 97	2.25 55	0.13 3	0.38 9	2.88 70	0.88 22	0.38 8	0.43 11	– –	3.5 1.6
3 DN80	3.500 88.9	3.88 97	4.50 114	1.88 45	– –	– –	2.38 60	4.50 114	2.25 55	0.13 3	0.38 9	2.88 70	0.88 22	0.38 8	0.50 11	– –	6.0 2.7
4 DN100	4.500 114.3	4.75 119	5.50 139	2.25 55	– –	– –	2.88 73	5.25 133	2.25 55	0.13 3	0.38 9	2.88 70	0.88 23	0.43 11	0.63 15	– –	9.3 4.2
	6.500 165.1	6.00 151	7.38 185	2.63 66	0.50 11	– –	3.88 97	6.75 172	2.25 55	0.13 3	0.38 9	2.88 70	1.13 29	0.50 13	0.75 19	– –	20.0 9.1
8 DN200	8.625 219.1	5.63 140	10.00 254	2.38 59	1.50 37	0.88 20	5.00 127	8.00 203	2.25 55	0.13 3	0.38 9	2.88 70	1.38 33	– –	0.88 22	0.188 x .88 5	34.3 15.6

NOTE

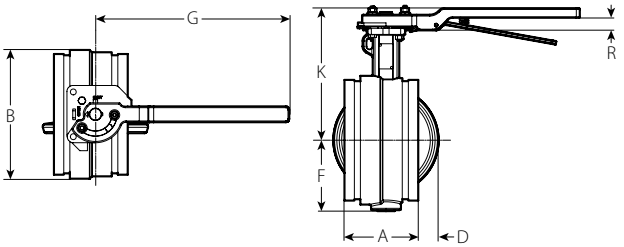
- 2 – 8"/DN50 – DN200 sizes are ISO 5211 Flange Designation F07.

4.1 DIMENSIONS

Series 761SC



Butterfly Valve - 10 Position Lever Handle
2 – 6"/DN50 – 165.1 mm



Butterfly Valve - Lever Lock Handle
2 – 8"/DN50– DN200

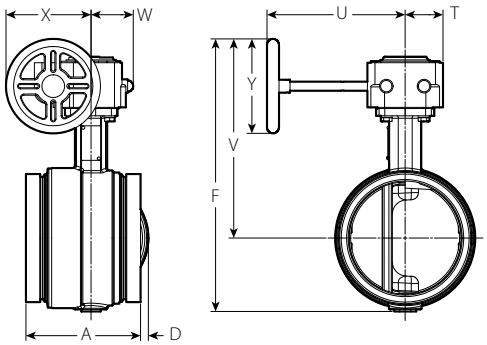
Size		Dimensions			Weight - Approx (Each)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**A End to End** inches mm	**G** inches mm	**R** inches mm	**Valve with 10-Position Handle** inches mm	**Valve with Lever Handle** lb kg
2 DN50	2.375 60.3	3.38 85	7.00 178	1.63 40	4.4 2.0	6.0 2.7
3 DN80	3.500 88.9	3.88 97	7.00 178	1.63 40	6.9 3.1	8.5 3.9
4 DN100	4.500 114.3	4.75 119	8.50 216	1.63 40	10.8 4.9	11.8 5.4
	6.500 165.1	6.00 151	12.00 305	1.63 40	22.0 10.0	23.2 10.5
8 DN200	8.625 219.1	5.63 140	14.00 356	0.75 38	– –	37.5 17.0

NOTE

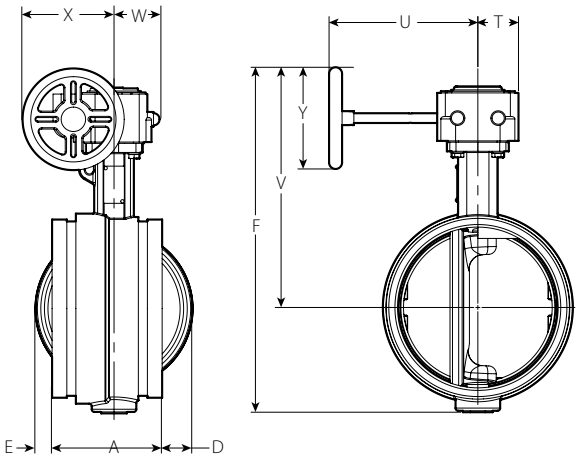
- 2 – 8"/DN50 – DN200 sizes are ISO 5211 Flange Designation F07.

4.2 DIMENSIONS

Series 761SC



Butterfly Valve – Gear Operator
2 – 6"/DN50 – 165.1 mm



Butterfly Valve – Gear Operator
8"/DN200

Size		Dimensions										Weight
Nominal inches mm	**Actual Outside Diameter** inches mm	**A End to End** inches mm	**D** inches mm	**E** inches mm	**F** inches mm	**T** inches mm	**U** inches mm	**V** inches mm	**W** inches mm	**X** inches mm	**Y** inches mm	**Approx. (Each)** lb kg
2 DN50	2.375 60.3	3.38 85	– –	– –	8.63 220	1.63 40	4.75 121	6.88 174	1.88 48	3.63 93	4.00 100	6.0 2.7
3 DN80	3.500 88.9	3.88 97	– –	– –	9.88 251	1.63 40	4.75 121	7.25 191	1.88 48	3.63 93	4.00 100	8.5 3.9
4 DN100	4.500 114.3	4.75 119	– –	– –	11.25 284	1.63 40	4.75 121	8.25 210	1.88 48	3.63 93	4.00 100	11.8 5.4
	6.500 165.1	6.00 151	0.50 11	– –	14.13 359	2.00 50	7.25 183	10.25 262	2.25 56	4.38 113	4.88 125	24.0 10.9
8 DN200	8.625 219.1	5.63 140	1.50 37	0.88 20	16.63 423	2.00 50	7.25 183	11.50 294	2.25 56	4.38 113	4.88 125	38.3 17.4

NOTE

- 2 – 8"/DN50 – DN200 sizes are ISO 5211 Flange Designation F07.

4.3 DIMENSIONS

Series 761SC

Accessories

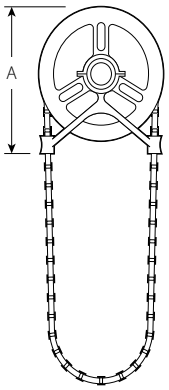
Chain Wheels

Chain wheels are mounted to the gear operator hand wheels. Sprocket rim and guide arms are made of cast aluminum. Chain is galvanized steel.

HOW TO ORDER:

Always specify length of chain required.

For insulation and locking device, contact Victaulic for details. Hand wheel input shaft extensions are not for use with chain wheels.



Chain Wheel and Guide
with Safety Cable Kit

Size	Dimensions			Weight
Nominal inches mm	**Sprocket Size** inches mm	**Chain Wheel Size (Dia.)** inches mm	**A** inches mm	**Approximate (Each)** lb kg
2 – 4 50 – 100	0	4.00 102	4.63 118	2.0 0.9
6 – 8 150 – 200	1	5.75 146	6.38 162	4.0 1.8

5.0 PERFORMANCE

C_v/K_v values for flow of water at +60°F/+16°C with various disc positions 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

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

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

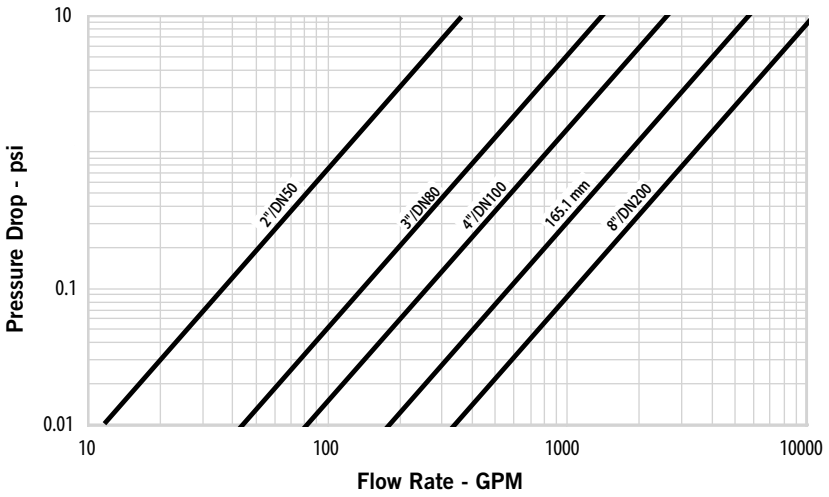
Where:
Q = Flow (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

Size		C_v	K_v
Nominal inches DN	**Actual Outside Diameter** inches mm	**(Full Open)**	**(Full Open)**
2 DN50	2.375 60.3	115	99
3 DN80	3.500 88.9	440	379
4 DN100	4.500 114.3	820	707
	6.500 165.1	1800	1552
8 DN200	8.625 219.1	3400	2931

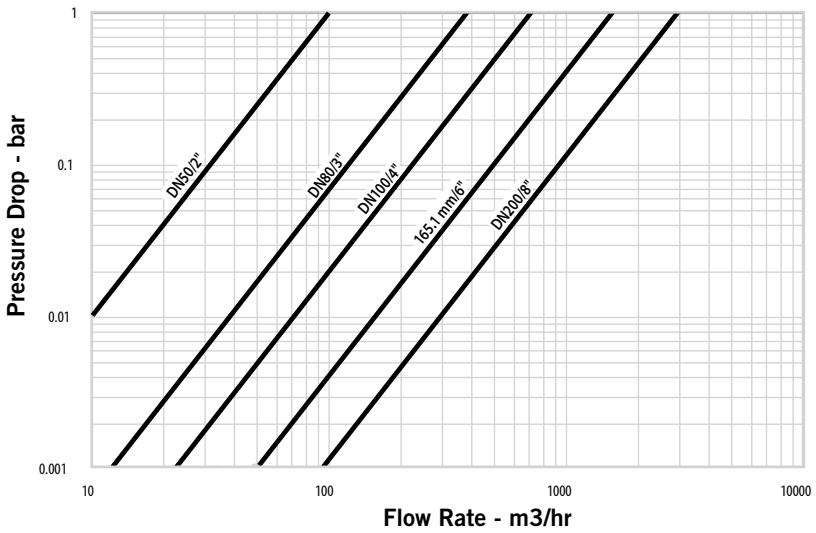
5.1 PERFORMANCE

Flow Characteristics

Flowchart – C_V



Flowchart – K_V



5.1 PERFORMANCE (Continued)

Size		Flow Coefficients – C_v/K_v											
		Disc Position (Degrees Open)											
		90		70		60		50		40		30	
Nominal inches DN	Actual Outside Diameter inches mm	C_v	K_v	C_v	K_v	C_v	K_v	C_v	K_v	C_v	K_v	C_v	K_v
2 DN50	2.375 60.3	115	99	60	52	36	31	23	20	14	12	7	6
3 DN80	3.500 88.9	440	379	230	198	140	121	90	78	50	43	26	22
4 DN100	4.500 114.3	820	707	430	321	250	216	160	138	100	86	50	43
	6.500 165.1	1800	1552	940	810	560	483	360	310	220	190	110	95
8 DN200	8.625 219.1	3400	2931	1770	1526	1050	905	670	578	410	353	200	172

Valve Torque Requirements

Size		Torque – Inch Pounds/Newton Meters					
Nominal inches DN	Actual Outside Diameter inches mm	Differential Pressure – psi/bar					
		50/3	100/7	150/10	200/14	232/16	300/21
2 DN50	2.375 60.3	53 6	65 7	78 9	90 10	100 11	115 13
3 DN80	3.500 88.9	150 17	170 19	190 22	210 24	230 26	260 29
4 DN100	4.500 114.3	220 25	250 28	280 32	310 35	330 37	370 42
	6.500 165.1	410 46	470 53	540 61	600 68	640 72	730 83
8 DN200	8.625 219.1	540 61	680 77	820 93	950 107	1040 118	1230 139

Source:

These torque values were derived from test data with non-lubricated valves in water at ambient temperatures with EPDM seals. For other material and service conditions, apply a suitable service factor.

Torque Factors:

All torque values are for normal conditions (i.e., the valve is operated at least once a quarter, disc corrosion is expected to be minor, the media is clean and nonabrasive, and the chemical effects upon the elastomer are minor).

Typical Fluid Torque Factors Commonly Used in the Industry:

Water: 1.0; Lubricated service: 0.8; Dry gases: Lubricated nitrile “T” seat seals may be specified for dry gases wherever chemically appropriate. See material torque factor below.

Material Torque Factors:

“E” = 1.0; “O” = 1.2; “T” = 0.8

Cycling Factor:

Torque will typically increase as the valve is cycled. A factor of 1.5 should be applied for the first 5,000 cycles and another 1.5 applied for all additional cycles. The higher number should be used if there is more than one cycle per hour.

5.1 PERFORMANCE (Continued)

Actuation Factor:

There are no actuation safety factors applied. A factor consistent with the consequences of not actuating should be applied. A minimum factor of 1.2 is recommended for directly actuated valves and 1.5 for 3-way assemblies.

Combining Torque Factors:

When multiple torque factors apply, they are combined by multiplying them. Example: For an EPDM seal and a 5,000 cycle factor the combined factor would be 1.0 X (1.5) = 1.5.

NOTE

- Under certain high flow conditions, the hydrodynamic torque can exceed the seating torque. Large butterfly valves are not recommended for use in a free discharge condition, such as filling an empty line with fluid at the full rated pressure.
- Contact Victaulic for other services.

5.2 PERFORMANCE

Typical Specifications

Butterfly Valves 2 – 8"/DN50 – DN200 suitable for bi-directional and dead-end service to 300 psi/2100 kPa/21 bar.

Shouldered end ductile iron body, electroless nickel coated ductile iron disc with blow-out proof 416 stainless steel stems to ASTM A582. Disc shall be connected to the stem without the use of fasteners or pins, and be offset from the disc centerline to provide a full 360° continuous contact with the seating surface when closed. Seat shall be pressure responsive, EPDM, lubricated nitrile or fluoroelastomer. Stem seals shall be of the same material as the seats. Valve shall have standard ISO flange mounting for ease of actuation. Valve provided with 10-position handle, lever lock handle or gear operator as required. Lever lock handle shall be painted ductile iron, latch lock type with infinitely variable and memory stop features. 10 position handle shall be zinc-plated carbon steel, latch lock type with infinitely variable and memory stop features. Manufacturer - Victaulic Series 761SC Valve.

Important Installation Considerations

When installing a Victaulic butterfly valve into a piping system, follow the instructions supplied with the coupling. Refer to the notes below for applications/limitations.

When using butterfly valves for throttling service, Victaulic recommends the disc be positioned no less than 30 degrees open. For best results, the disc should be between 30 and 70 degrees open. High pipeline velocities and/or throttling with the disc less than 30 degrees open may result in noise, vibration, cavitation, severe line erosion, and/or loss of control. For details regarding throttling services, contact Victaulic.

Victaulic recommends that flow velocities for water service are limited to 10 ft per sec/3.0 m per sec./6.1 m per sec. When higher flow velocities are necessary, contact Victaulic. When dealing with flow media other than water, contact Victaulic.

Victaulic recommends good piping practices and installing the valve five pipe diameters away from other components.

DO NOT INSTALL BUTTERFLY VALVES INTO THE SYSTEM
WITH THE DISC IN THE FULLY OPEN POSITION.

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

I-100: Victaulic Field Installation Handbook

I-SC77: Victaulic Style SC77 Installation-Ready™ Coupling for Shouldered Pipe Installation Instructions

I-SC85: Victaulic Style SC85 Coupling for Shouldered Pipe Installation Instructions

I-VIC300MS: Victaulic Vic-300 MasterSeal™ Butterfly Valve Series 761/461 Installation and Maintenance Manual

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