FireLock™ Butterfly Valve
Series 705 with Weatherproof Actuator – Supervised Open

10.81

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 12"/DN50 – DN300

Pipe Material

- Carbon Steel, Schedule 10 and Schedule 40. For use with alternative materials, contact Victaulic.

Maximum Working Pressure

- Up to 300 psi/2068 kPa/21 Bar

Application

- Butterfly valve with an approved weatherproof actuator housing for indoor and outdoor use.
- Designed for fire protection services only.
- Designed to be supervised open.
- Exclusively for use with pipe and Victaulic products that feature ends formed with the Victaulic Original Groove System (OGS) groove profile (see Section 7.1 Reference Materials).

Actuation Options

- Handwheel (2 – 12"/DN50 – DN300)

Available End Connections

- Victaulic Original Groove System (OGS)

2.0 CERTIFICATION/LISTINGS

c UL us LISTED

FM APPROVED

VdS G410001

LPCB LPS 1185: Issue 3.1 Cert/LPCB Ref. 104j/01 846a/01

CE

CNBOP-PIB

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

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2.1 CERTIFICATIONS/LISTINGS

Size		Approval/Listing Service Pressures			
		Series 705 Butterfly Valve			
Nominal inches DN	Actual Outside Diameter inches mm	cULus psi kPa	FM psi kPa	VdS psi kPa	LPCB psi kPa
2 DN50	2.375 60.3	300 2068	300 2068	300 2068	300 2068
2½	2.875 73.0	300 2068	300 2068	–	300 2068
DN65	3.000 76.1	300 2068	300 2068	300 2068	300 2068
3 DN80	3.500 88.9	300 2068	300 2068	300 2068	300 2068
4 DN100	4.500 114.3	300 2068	300 2068	300 2068	300 2068
DN125	5.500 139.7	300 2068	300 2068	–	300 2068
5	5.563 141.3	300 2068	300 2068	–	300 2068
	6.500 165.1	300 2068	300 2068	–	300 2068
6 DN150	6.625 168.3	300 2068	300 2068	300 2068	300 2068
8 DN200	8.625 219.1	300 2068	300 2068	300 2068	300 2068
10 DN250	10.750 273.0	300 2068	300 2068	–	300 2068
12 DN300	12.750 323.9	300 2068	300 2068	–	300 2068

3.0 SPECIFICATIONS – MATERIAL

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

End Face, 2 – 6"/DN50 – DN150: Ductile iron conforming to ASTM A536, Grade 65-45-12

Seal Retainer, 8 – 12"/DN200 – DN300: Ductile iron conforming to ASTM A536, Grade 65-45-12

Body Coating: Black alkyd enamel

Disc: Ductile iron conforming to ASTM A536, Grade 65-45-12, with electroless nickel coating conforming to ASTM B733

Seat: EPDM

Stems: 416 stainless steel conforming to ASTM A582

Stem Seal Cartridge: C36000 brass

Bearings: Stainless steel with TFE lining

Stem Seals: EPDM

Stem Retaining Ring: Carbon steel

Actuator:

- 2 – 8"/DN50 – DN200: Bronze traveling nut on a steel lead screw, in a ductile iron housing
- 10 – 12"/DN250 – DN300: Steel worm and cast iron quadrant gear, in a cast iron housing

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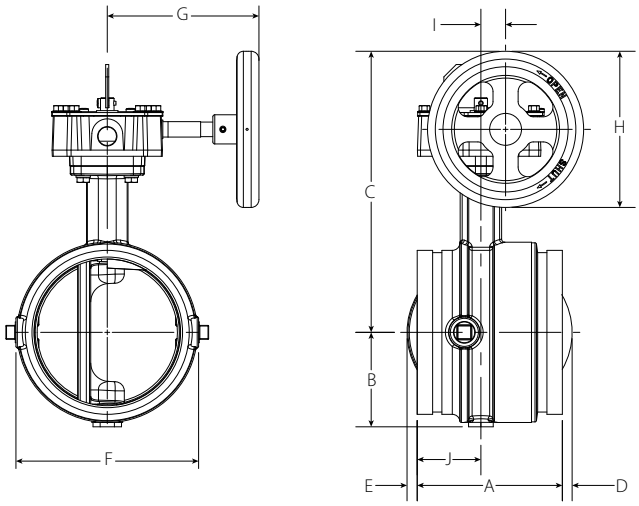
4.0 DIMENSIONS

Series 705



Size		Dimensions										Approx. Weight (Each)
Nominal inches DN	Actual Outside Diameter inches mm	A inches mm	B inches mm	C inches mm	D inches mm	E inches mm	F inches mm	G inches mm	H inches mm	I inches mm	J inches mm	lb kg
2 DN50	2.375 60.3	4.25 108	2.28 58	6.41 163	–	–	4.00 102	4.22 107	4.50 114	0.68 17	2.12 54	8.2 3.7
2 ½	2.875 73.0	3.77 96	2.28 58	7.54 192	–	–	4.00 102	4.22 107	4.50 114	0.68 17	1.77 45	9.7 4.4
	3.000 76.1	3.77 96	2.28 58	7.54 192	–	–	4.00 102	4.22 107	4.50 114	0.68 17	1.77 45	9.7 4.4
3 DN80	3.500 88.9	3.77 96	2.53 64	7.79 198	–	–	4.50 114	4.22 107	4.50 114	0.68 17	1.77 45	10.7 4.9
	4.250 108.0	4.63 118	2.88 73	8.81 224	–	–	5.50 140	4.22 107	4.50 114	0.68 17	2.20 56	14.0 6.4
4 DN100	4.500 114.3	4.63 118	2.88 73	8.81 224	–	–	5.50 140	4.22 107	4.50 114	0.68 17	2.20 56	14.0 6.4
	5.250 133.0	5.88 149	3.35 85	10.88 276	–	–	6.56 167	6.19 157	6.30 160	1.00 25	2.58 66	25.4 11.5
DN125	5.500 139.7	5.88 149	3.35 85	10.88 276	–	–	6.56 167	6.19 157	6.30 160	1.00 25	2.58 66	25.4 11.5
5	5.563 141.3	5.88 149	3.35 85	10.88 276	–	–	6.56 167	6.19 157	6.30 160	1.00 25	2.58 66	25.4 11.5
	6.250 159.0	5.88 149	3.84 98	11.38 289	–	0.41 10	7.52 191	6.19 157	6.30 160	1.00 25	2.58 66	28.7 13.0
	6.500 165.1	5.88 149	3.84 98	11.38 289	–	0.41 10	7.52 191	6.19 157	6.30 160	1.00 25	2.58 66	28.7 13.0
6 DN150	6.625 168.3	5.88 149	3.84 98	11.38 289	–	0.41 10	7.52 191	6.19 157	6.30 160	1.00 25	2.58 66	28.7 13.0
8 DN200	8.625 219.1	5.33 135	5.07 129	13.53 344	0.80 20	1.47 37	10.00 254	6.19 157	8.10 206	1.00 25	2.33 59	43.0 19.5
10 DN250	10.750 273.0	6.40 163	6.37 162	15.64 397	1.41 36	1.81 46	12.25 311	8.10 206	11.81 300	2.71 69	3.00 76	80.6 36.6
12 DN300	12.750 323.9	6.50 165	7.36 187	16.64 423	2.30 58	2.80 71	14.25 362	8.10 206	11.81 300	2.71 69	3.00 76	94.6 42.9

NOTE

- Optional ½"/15mm tap available for all sizes. Contact Victaulic for details.

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5.0 PERFORMANCE

Series 705

This table expresses the frictional resistance of a Series 705 Butterfly Valve in equivalent feet/meters of straight pipe.

Size		Equivalent
Nominal inches DN	**Actual Outside Diameter** inches mm	Feet/m of pipe
2 DN50	2.375 60.3	6 1.8
2½	2.875 73.0	6 1.8
	3.000 76.1	6 1.8
DN65		
3 DN80	3.500 88.9	7 2.1
	4.250 108.0	8 2.4
4 DN100	4.500 114.3	8 2.4
	5.250 133.0	12 3.7
DN125	5.500 139.7	12 3.7
5	5.563 141.3	12 3.7
	6.250 159.0	14 4.3
	6.500 165.1	14 4.3
6 DN150	6.625 168.3	14 4.3
8 DN200	8.625 219.1	16 4.9
10 DN250	10.750 273.0	18 5.5
12 DN300	12.750 323.9	19 5.8

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5.1 PERFORMANCE

Series 705

C_V values for flow of water at +60°F/+16°C through a fully open valve are shown in the table below. For additional details, contact Victaulic.

Formulas for C_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

Formulas for K_v values

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

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

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

Size		Flow Coefficient
Nominal inches DN	**Actual Outside Diameter** inches mm	**Full Open** C_v K_v
2 DN50	2.375 60.3	170 147
2½	2.875 73.0	260 225
DN65	3.000 76.1	260 225
3 DN80	3.500 88.9	440 380
	4.250 108.0	820 710
4 DN100	4.500 114.3	820 710
	5.250 133.0	1200 1040
DN125	5.500 139.7	1200 1040
5	5.563 141.3	1200 1040
	6.250 159.0	1800 1560
	6.500 165.1	1800 1560
6 DN150	6.625 168.3	1800 1560
8 DN200	8.625 219.1	3400 2940
10 DN250	10.750 273.0	5800 5020
12 DN300	12.750 323.9	9000 7790

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6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic 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.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, 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.

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Switch and Wiring

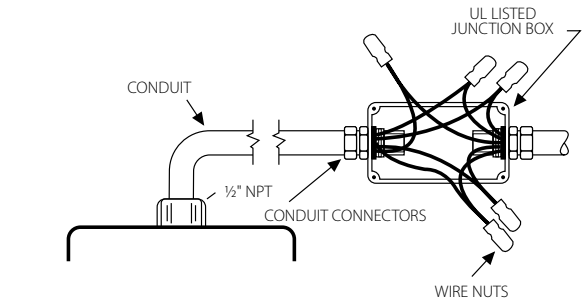
- The supervisory switch contains two single-pole, double-throw, pre-wired switches.
- Switches are rated:
  10 amps @ 125 or 250 VAC/60 Hz
  0.50 amps @ 125 VDC
  0.25 amps @ 250 VDC
- **Switches only supervise the valve in the "fully opened" position. The valve cannot be supervised in the "closed" position.**
- One switch has two #18 insulated wires per terminal, which permit complete supervision of leads (refer to diagrams and notes on this page). The second switch has one #18 insulated wire per terminal. This double circuit provides flexibility to operate two electrical devices at separate locations, such as an indicating light and an audible alarm, in the area that the valve is installed.
- A #14 insulated ground lead (green with yellow stripe) is provided. **NOTE:** The ground lead for older valve configurations may be solid green.

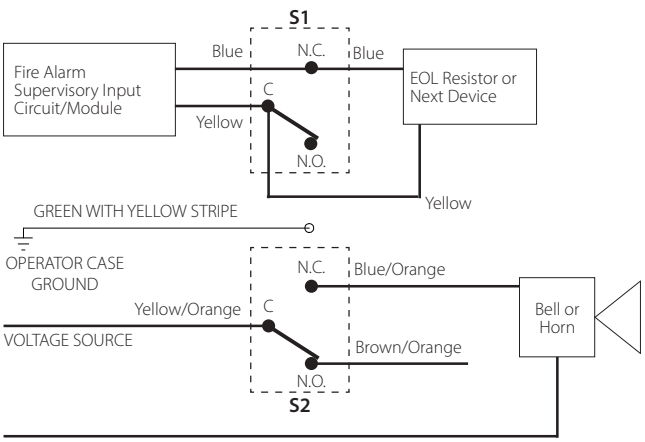
  Switch #1 = S1 For connection to the supervisory circuit of a UL Listed alarm control panel – The switch is open when the valve is in the "fully opened" position

  Switch #2 = S2 Auxiliary switch that may be connected to auxiliary devices, per the authority having jurisdiction

S1
- Normally Closed Contact: (2) Blue
- Common Contact: (2) Yellow

S2
- Normally Closed Contact: Blue with Orange Stripe
- Normally Open Contact: Brown with Orange Stripe
- Common Contact: Yellow with Orange Stripe





Switch contacts shown with the valve in the "FULLY OPENED" position

Only S1 (two leads per terminal) may be connected to the fire alarm control panel.

Connection of supervisory and auxiliary switches shall be in accordance with applicable sections of NFPA 72 and NFPA 70 (NEC).

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7.1 REFERENCE MATERIALS

10.01: Regulatory Approval Reference Guide
10.75: FireLock™ Butterfly Valve Series 707C with Weatherproof Actuator – Supervised Closed
10.80: FireLock™ High Pressure Butterfly Valve Series 765 with Weatherproof Actuator – Supervised Open
10.83: FireLock™ High-Pressure Butterfly Valve Series 766 with Weatherproof Actuator – Supervised Closed
25.01: Original Groove System (OGS) Groove Specifications
29.01: Terms and Conditions/Warranty
I-100: Field Installation Handbook
I-765/705: Series 765 and 705 Installation, Wiring, and Gear Operator Replacement Instructions
I-766/707C: Series 766 and 707C Installation, Wiring, and Gear Operator Replacement Instructions

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for determining the suitability of Victaulic products for their end-use application, in accordance with industry standards, project specifications, and Victaulic's published performance, maintenance, and safety data, as well as all warnings and installation 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, warranty, installation instructions, or this disclaimer.

Installation
Always refer to and follow the Victaulic Installation Handbook or installation instructions for the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at victaulic.com.

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

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