

Victaulic® Pressure Valves

Series 867-42T-20, 867-43T, 867-43T-PS



867-42T-20



867-43T



867-43T-PS

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ½ – 16"/DN40 – DN400

Function

- **867-42T-20:** Pilot Operated, Pressure Reducing Valve
- **867-43T:** Pilot Operated, Safety Pressure Relief Valve
- **867-43T-PS:** Pump Suction, Pressure Control Valve

Maximum Operating Temperature by Material

- **Standard:** NR - Fabric Reinforced Polyisoprene 122°F/50°C
- **Optional:** Fabric Reinforced Nitrile (Buna-N) 176°F/80°C

End Connections

- Grooved (OGS)
- Flanged^{1,2}
- Threaded²

Application

- For hydraulic control applications in fire protection systems designed to NFPA 13 and NFPA 14
- Series 867-43T Safety Pressure Relief Valves are not designed to be used as circulation relief valves. For circulation relief valves, use the Series 867-3HC [submittal 30.98](#)

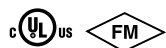
¹ Valves 10"/DN250 – 16"/DN400 are only available with flanged end connections.

² By special order only.

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



2.0 CERTIFICATION/LISTINGS

Available Sizes, Pressure Ratings and Agency Approvals³

Product Configuration	Nominal Size Range inches DN	FM Approval						UL Listed					
		Grooved		Class 300		Class 150		Grooved		Class 300 Flange		Class 150 Flange	
		Rating psi bar	Pilot Range psi bar	Rating psi bar	Pilot Range psi bar	Rating psi bar	Pilot Range psi bar	Rating psi bar	Pilot Range psi bar	Rating psi bar	Pilot Range psi bar	Rating psi bar	Pilot Range psi bar
867-42T-20	1½ – 2 DN40 – DN50	365 25	30 – 235 2 – 16	365 25	30 – 235 2 – 16	235 16	30 – 235 2 – 16	400 27.6	60 – 200 4 – 14	400 27.6	60 – 200 4 – 14	250 17	60 – 175 4 – 12
	2½	365 25	30 – 235 2 – 16	–	–	–	–	400 27.6	60 – 200 4 – 14	–	–	–	–
	3 – 8 DN80 – DN200	365 25	30 – 235 2 – 16	365 25	30 – 235 2 – 16	235 16	30 – 235 2 – 16	365 25	60 – 175 4 – 12	365 25	60 – 175 4 – 12	250 17	60 – 175 4 – 12
	10 ⁴ DN250	–	–	365 25	30 – 235 2 – 16	250 17	30 – 235 2 – 16	–	–	365 25	60 – 175 4 – 12	250 17	60 – 175 4 – 12
	12 – 16 ⁴ DN300 – DN400	–	–	300 21	30 – 235 2 – 16	300 21	–	–	–	300 21	60 – 175 4 – 12	250 17	60 – 175 4 – 12
867-43T	1½ – 2 DN40 – DN50	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	–	–
	2½	365 25	125 – 365 9 – 25	–	–	–	–	365 25	125 – 365 9 – 25	–	–	–	–
	3 – 8 DN80 – DN200	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	365 25	365 25
	10 ⁴ DN250	–	–	300 21	125 – 300 9 – 21	235 16	60 – 235 4 – 16	–	–	365 25	125 – 365 9 – 25	365 25	365 25
867-43T-PS	1½ – 2 DN40 – DN50	365 25	30 – 175 2 – 12	365 25	5 – 30 0.3 – 2	235 16	5 – 30 0.3 – 2	–	–	–	–	–	–
	2½	365 25	30 – 175 2 – 12	–	–	–	–	–	–	–	–	–	–
	3 – 8 DN80 – DN200	365 25	30 – 175 2 – 12	365 25	5 – 30 0.3 – 2	235 16	5 – 30 0.3 – 2	–	–	–	–	–	–
	10 ⁴ DN250	–	–	300 21	5 – 30 0.3 – 2	235 16	5 – 30 0.3 – 2	–	–	–	–	–	–

³ Selecting optional valve body materials may change listing or approval. Contact Victaulic for details.

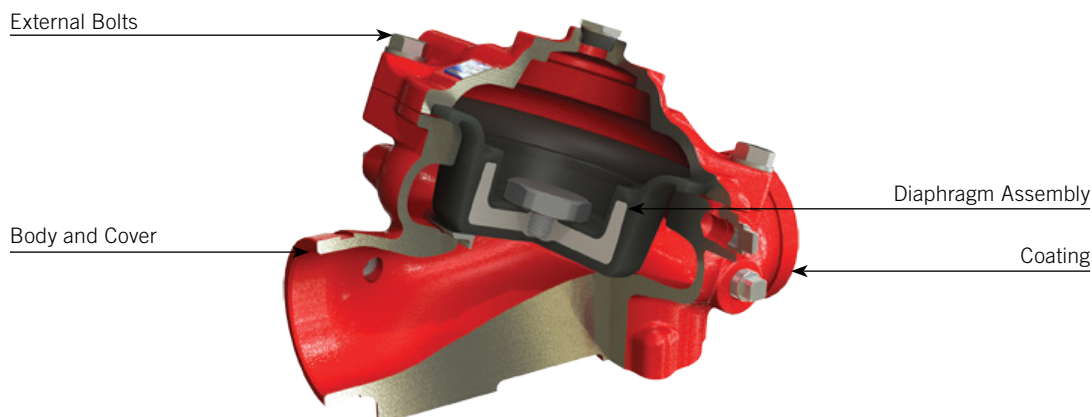
⁴ Valves 10"/DN250 are only available with flanged end connections.

NOTES

- Max recommended pressure differential: 175 psi/12 Bar when normal inlet operation pressure is below 330 psi/23 Bar
- Max recommended pressure differential: 200 psi/14 Bar when normal inlet operation pressure is above 330 psi/23 Bar

3.0 SPECIFICATIONS - MATERIAL

Series 867-42T-20, 867-43T, 867-43T-PS Body Style



Body and Cover: (specify choice)^{5,6}

- ☐ Standard: Ductile Iron ASTM A536 Grade 65-45-12
- ☐ Optional: Cast Steel ASTM A216 Grade WCB
- ☐ Optional: Stainless Steel 316 ASTM A351 Grade CF8M
- ☐ Optional: Nickel Aluminum Bronze ASTM B148, Grade C95800
- ☐ Optional: Super Duplex ASTM A890 Grade 5A
- ☐ Optional: Hastelloy⁷ ASTM B336 Grade C276
- ☐ Optional: Titanium ASTM B367 Grade C2/C3

External Bolts: (specify choice)

- ☐ Standard: Stainless steel 316 ASTM A276

⁵ Selecting optional valve body materials may change listing or approval. Contact Victaulic for details.

⁶ Flanged end connection available in all materials, grooved and threaded available in ductile iron only.

⁷ Hastelloy is a registered trademark of Haynes International.

Diaphragm Assembly: (specify choice)

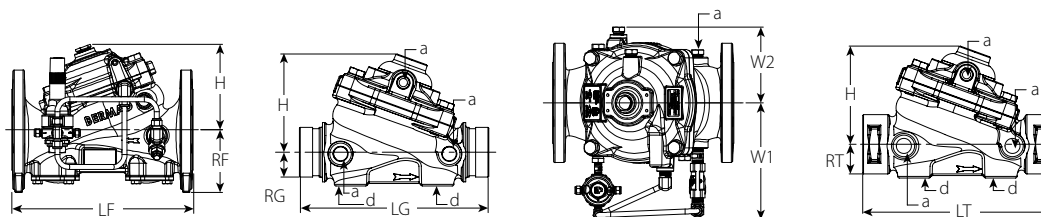
- ☐ Standard: NR - Fabric Reinforced Polyisoprene
- ☐ Optional: Fabric Reinforced Nitrile (Buna-N)

Coating: (specify choice)

- ☐ Standard: Electrostatic Powder Coating Polyester
- ☐ Optional: High Build Epoxy Fusion-Bonded with UV Protection, Anti-Corrosion

4.0 DIMENSIONS

Series 867-42T-20, 867-43T, 867-43T-PS



Size		Flanged Class 150						Flange Class 300					
Nominal	Actual Outside Diameter	LF	RF	H	W1	W2	Weight	LF	RF	H	W1	W2	Weight
inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	lb
DN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
1 1/2	1.900	9.06	2.56	4.93	6.10	3.05	25.3	9.06	2.56	4.93	6.10	3.05	30.5
DN40	48.3	230	65	125	155	77	11.5	230	65	125	155	77	13.8
2	2.375	9.06	3.03	4.93	6.10	3.05	28.2	9.25	3.03	4.93	6.10	3.05	32.9
DN50	60.3	230	77	125	155	77	12.8	235	77	125	155	77	14.9
2 1/2	2.875	—	—	—	—	—	—	—	—	—	—	—	—
3	3.500	12.21	4.18	6.03	9.88	3.94	60.5	12.84	4.18	6.03	9.88	3.94	71.0
DN80	88.9	310	106	153	251	100	27.4	326	106	153	251	100	32.2
4	4.500	13.79	4.77	6.42	10.47	4.53	82.5	14.50	4.77	6.42	10.47	4.53	104.0
DN100	114.3	350	121	163	266	115	37.4	368	121	163	266	115	47.2
6	6.625	18.91	5.79	9.14	14.65	5.51	178.2	19.94	5.79	9.14	14.65	5.51	222.8
DN150	168.3	480	147	232	372	140	80.8	506	147	232	372	140	101.1
8	8.625	23.64	7.09	11.82	19.29	6.77	321.2	24.66	7.09	11.82	19.29	6.77	382.0
DN200	219.1	600	180	300	490	172	145.7	626	180	300	490	172	173.3
10	10.750	28.76	8.04	11.82	19.29	8.03	379.0	28.76	8.04	11.82	19.29	8.03	459.0
DN250	273.0	731	204	300	490	204	171.9	731	204	300	490	204	208.2
12	12.750	33.46	9.72	17.36	25.83	9.53	712.0	28.76	9.72	17.36	25.83	9.53	712.0
DN300	323.9	850	247	441	656	242	323.0	731	247	441	656	242	323.0
14	14.000	38.58	10.71	17.36	25.83	9.53	784.0	38.58	10.71	17.36	25.83	9.53	784.0
DN350	355.6	980	272	441	656	242	355.6	980	272	441	656	242	355.6
16	16.000	43.31	12.44	17.76	25.83	9.53	886.0	43.31	12.44	17.76	25.83	9.53	886.0
DN400	406.4	1100	316	451	656	242	401.9	1100	316	451	656	242	401.9

Size		Grooved						Threaded						All	
Nominal	Actual Outside Diameter	LG	RG	H	W1	W2	Weight	LT	RT	H	W1	W2	Weight	a	d
inches	inches	inches	inches	inches	inches	inches	lb	inches	inches	inches	inches	inches	lb	inches	inches
DN	mm	mm	mm	mm	mm	mm	kg	mm	mm	mm	mm	mm	kg	DN	DN
1 1/2	1.900	9.06	0.95	4.93	6.10	3.05	20.2	9.06	0.95	4.93	6.10	3.05	20.2	1/2	3/4
DN40	48.3	230	24	125	155	77	9.2	230	24	125	155	77	9.2	DN15	DN20
2	2.375	9.06	1.19	4.93	6.10	3.05	18.7	9.06	1.19	4.93	6.10	3.05	20.3	1/2	3/4
DN50	60.3	230	30	125	155	77	8.5	230	30	125	155	77	9.2	DN15	DN20
2 1/2	2.875	9.25	1.44	4.93	6.10	3.05	28.2	—	—	—	—	—	—	1/2	3/4
	73.0	235	37	125	155	77	12.8	—	—	—	—	—	—	DN15	DN20
3	3.500	12.21	1.75	6.03	9.88	3.94	36.8	—	—	—	—	—	—	1/2	1 1/2
DN80	88.9	310	44	153	251	100	16.7	—	—	—	—	—	—	DN15	DN40
4	4.500	13.79	2.25	6.42	10.47	4.53	50.3	—	—	—	—	—	—	1/2	2
DN100	114.3	350	57	163	266	115	22.8	—	—	—	—	—	—	DN15	DN50
6	6.625	18.91	3.31	9.14	14.65	5.51	99.0	—	—	—	—	—	—	1/2	2
DN150	168.3	480	84	232	372	140	44.9	—	—	—	—	—	—	DN15	DN50
8	8.625	23.64	4.33	11.82	19.29	6.77	262.0	—	—	—	—	—	—	1/2	2
DN200	219.1	600	110	300	490	172	118.8	—	—	—	—	—	—	DN15	DN50
10	10.750	—	—	—	—	—	—	—	—	—	—	—	—	1/2	2
DN250	273.0	—	—	—	—	—	—	—	—	—	—	—	—	DN15	DN50
12	12.750	—	—	—	—	—	—	—	—	—	—	—	—	1/2	2
DN300	323.9	—	—	—	—	—	—	—	—	—	—	—	—	DN15	DN50
14	14.000	—	—	—	—	—	—	—	—	—	—	—	—	1/2	2
DN350	355.6	—	—	—	—	—	—	—	—	—	—	—	—	DN15	DN50
16	16.000	—	—	—	—	—	—	—	—	—	—	—	—	1/2	2
DN400	406.4	—	—	—	—	—	—	—	—	—	—	—	—	DN15	DN50

5.0 PERFORMANCE

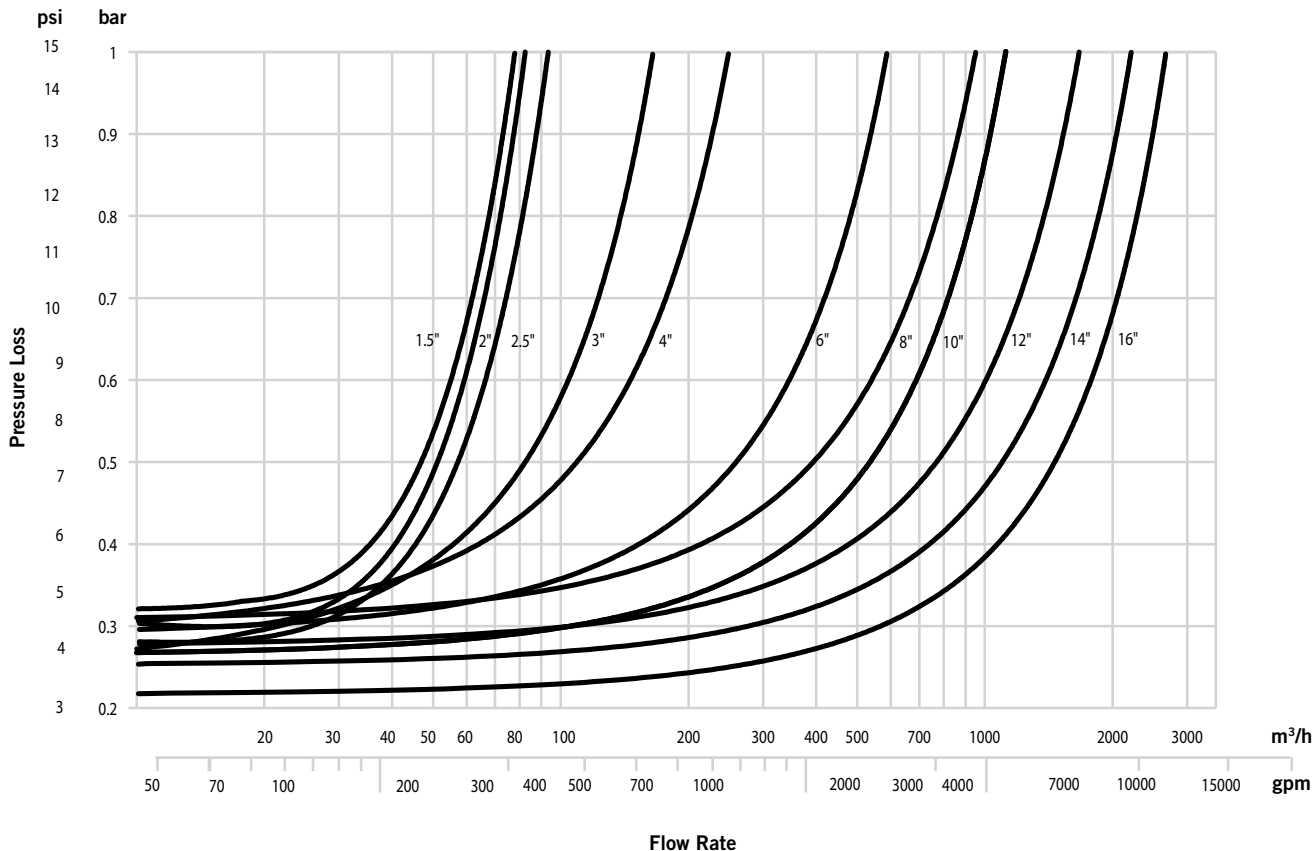
Relief Valve Sizing for a Series 867-42T-20 and 867-43T

Systems must be designed with adequate downstream pressure relief valves to protect components from over-pressurization during normal system operation.

To maintain FM Approvals and/or meet NFPA 13 and 14 design requirements, a listed pressure relief valve shall be installed on the downstream side of all pressure reducing valves. The size of the pressure relief valve shall be adequately sized as to not exceed the rated working pressures of the downstream system components. Please contact Victaulic, for additional questions on relief valve sizing.

5.1 PERFORMANCE

Series 867-42T-20 Pressure Reducing Valve Pressure Drop

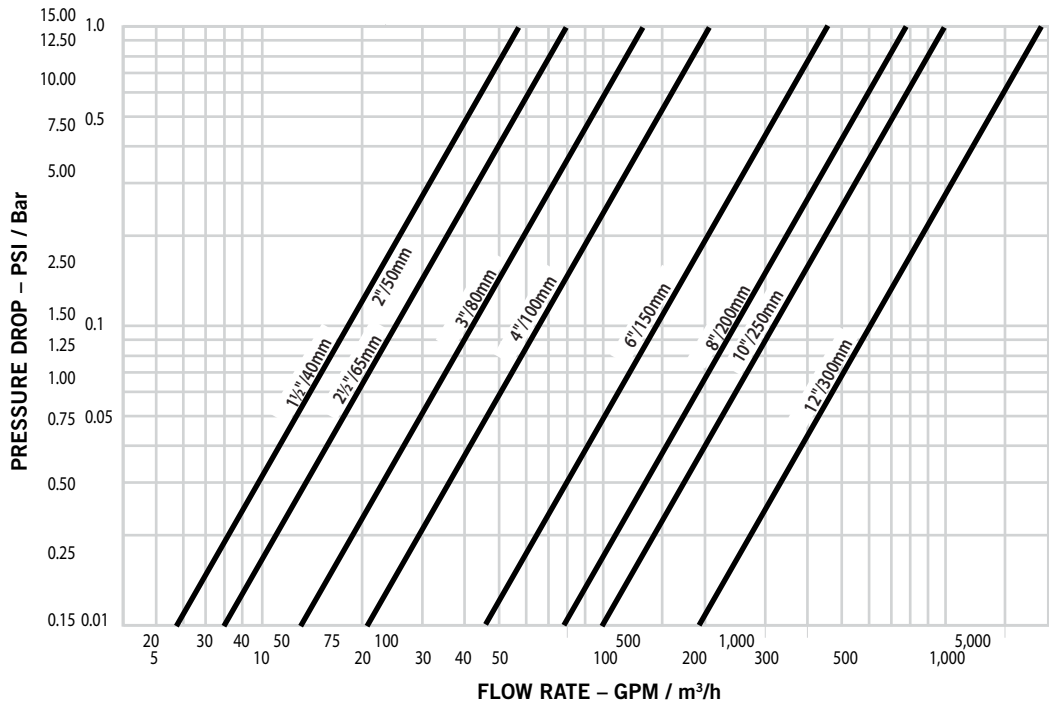


NOTE

- Use this graph to determine the pressure loss when the water supply pressure is equal to or less than the downstream valve set pressure.

5.1 PERFORMANCE (CONTINUED)

Flow Chart: Series 867-42T-20 and 867-43T-PS

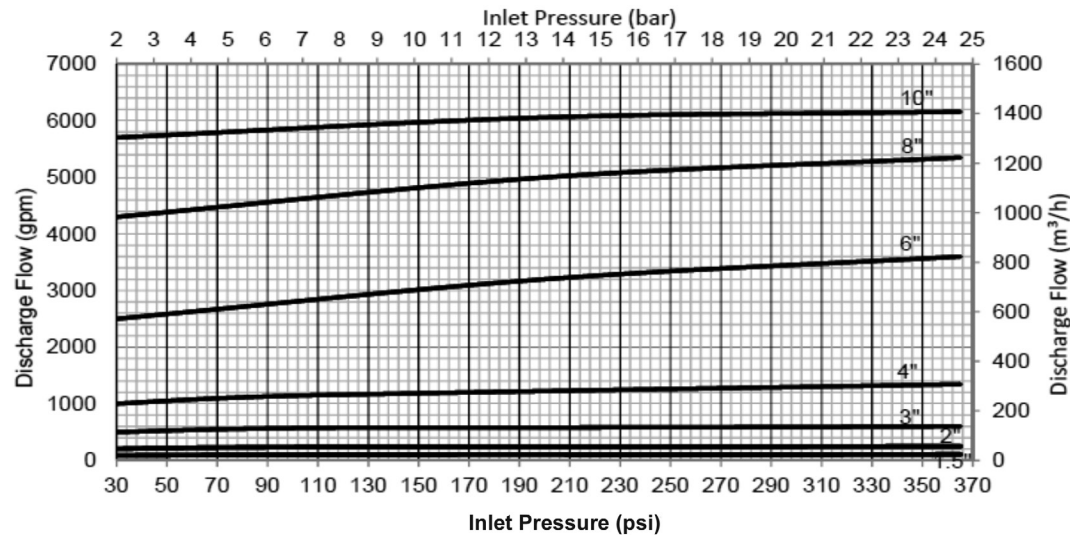


NOTE

- Use this chart to determine friction loss through the second valve in a redundant pressure reducing setup. The first valve is reducing pressure the second valve is not reducing pressure. That is the reason for the bypass, you have to set the second valve at a higher pressure than the first valve.

5.2 PERFORMANCE

Discharge Flow Chart for Series 867-43T Pressure Relief Valves



NOTE

- For sizes greater than 10" please use information in Section 5.4.
- 867-43T pressure relief valves need to be installed as safety relief valves only. In systems using 867-43T where the pressure delta is greater than 175psi/12bar, please consult Victaulic engineering for guidance.

5.3 PERFORMANCE

Flow Coefficients and Frictional Resistance for Series 867-42T-20 Pressure Reducing Valves

Cv Values:

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

Formulas for Cv and Kv values

Where:

$$\Delta P = \frac{Q^2}{C_v^2} \quad \text{or} \quad \Delta P = \frac{Q^2}{K_v^2}$$

$$Q = C_v \times \sqrt{\Delta P} \quad \text{or} \quad Q = K_v \times \sqrt{\Delta P}$$

Flow Coefficient	Cv	Kv
Q (Flow)	GPM	m³/hr
ΔP (Pressure Drop)	psi	Bar

Frictional Resistance

The chart below expresses the flow coefficients and the frictional resistance in equivalent length of pipe for Series 867-42T-20 Pressure Reducing Valves.

Valve Size		Full Open	Equivalent Length of Pipe feet meters
Nominal inches DN	Actual Outside Diameter inches mm	Flow Coefficient Cv Kv	
1 ½ DN40	1.900 48.3	79 68	7 2
2 DN50	2.375 60.3	92 80	16 5
2 ½	2.875 73.0	116 100	28 9
3 DN80	3.500 88.9	219 189	23 7
4 DN100	4.500 114.3	398 344	30 9
6 DN150	6.625 168.3	912 789	49 15
8 DN200	8.625 219.1	1340 1159	89 27
10 DN250	10.750 273.0	1565 1354	203 62
12 DN300	12.750 323.9	2737 2368	171 52
14 DN350	14.000 355.6	3292 2848	194 59
16 DN400	16.000 406.4	3758 3251	289 88

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.
- 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 13, 13D, 13R, etc.) 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

[06.33 Victaulic QuickVic™ Rigid Coupling Style 107V](#)

[10.02 FireLock® Rigid Coupling Style 005H with Vic-Plus™ Gasket System](#)

[10.64: Victaulic® FireLock™ Installation-Ready™ Rigid Couplings Style 009N and Style 109](#)

[29.01: Victaulic Terms and Conditions](#)

[30.98: Victaulic® Direct Acting Pressure Relief Valve/Fire Pump Casing Relief Valve Series 867-3HC](#)

[I-100: Field Installation Handbook](#)

[I-009N: Field Installation and Maintenance Style 009N](#)

[I-867-42T IOM: Installation, Operation and Maintenance Manual Series 867-42T-20 IOM](#)

[I-867-43T: Installation, Operation and Maintenance Manual Series 867-43T](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning 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, installation guide, or this disclaimer.

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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.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of 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 www.victaulic.com.

Warranty

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

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