

Pressure Control Valves

Series 867-42T-20, 867-43T and 867-43T-HP



30.93



867-42T-20



867-43T



867-43T-HP

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ½ – 16"/DN40 – DN400

Function

- **867-42T-20:** Pilot Operated, Pressure Reducing Check Valve
- **867-43T:** Pilot Operated, Safety Pressure Relief Valve
- **867-43T-HP:** Pilot Operated, Safety High Pressure Relief Valve

Maximum Operating Temperature by Material

- **Optional:** Fabric-Reinforced Nitrile (Buna-N) 176°F/80°C
- **Standard:** High-Temperature Natural Rubber (HTNR) 122°F/50°C

End Connections

- Original Groove System (OGS)
- Flanged^{1,2}
- Threaded²

¹ 10"/DN250 and larger sizes are available only with flanged end connections.

² By special order only.

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.
- Series 867-42T-20 can be installed in both horizontal and vertical discharge up applications.
- Pressure reducing valves are not designed or listed for installation on the supply side of fire pumps.

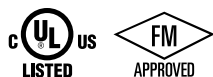
NOTE

- If exposing the valve internals to chemical agents, please contact Victaulic for compatibility guidance.

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



2.0 CERTIFICATIONS/LISTINGS

Available Sizes, Pressure Ratings and Agency Approvals³

Product Config.	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 – 220 4 – 15	400 27.6	60 – 220 4 – 15	250 17	60 – 220 4 – 15
	2½	365 25	30 – 235 2 – 16	365 25	30 – 235 2 – 16	235 16	30 – 235 2 – 16	400 27.6	60 – 220 4 – 15	400 27.6	60 – 220 4 – 15	250 17	60 – 220 4 – 15
	3 – 8 DN80 – DN200	365 25	30 – 235 2 – 16	365 25	30 – 235 2 – 16	250 17	30 – 235 2 – 16	365 25	60 – 175 4 – 12	365 25	60 – 175 4 – 12	250 17	60 – 175 4 – 12
	10 DN250	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
	12 – 16 DN300 – DN400	–	–	300 20	30 – 235 2 – 16	235 16	30 – 235 2 – 16	–	–	300 20	60 – 175 4 – 12	250 17	60 – 175 4 – 12
867-43T	1½ – 2 DN40 – DN50	365 25	60 – 235 4 – 16	365 25	60 – 235 4 – 16	235 16	60 – 235 4 – 16	365 25	60 – 235 4 – 16	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16
	2½	365 25	60 – 235 4 – 16	365 25	60 – 235 4 – 16	235 16	60 – 235 4 – 16	365 25	60 – 235 4 – 16	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16
	3 – 8 DN80 – DN200	365 25	60 – 235 4 – 16	365 25	60 – 235 4 – 16	235 16	60 – 235 4 – 16	365 25	60 – 235 4 – 16	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16
	10 ⁴ DN250	365 25	60 – 235 4 – 16	365 25	60 – 235 4 – 16	235 16	60 – 235 4 – 16	365 25	60 – 235 4 – 16	365 25	125 – 365 9 – 25	235 16	60 – 235 4 – 16
867-43T-HP	1½ – 2 DN40 – DN50	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	–	–	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	–	–	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 – 300 9 – 20	–	–	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	–	–
	10 ⁴ DN250	365 25	125 – 365 9 – 25	365 25	125 – 300 9 – 20	–	–	365 25	125 – 365 9 – 25	365 25	125 – 365 9 – 25	–	–

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

⁴ 10"/DN250 and larger sizes are available only 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

2.1 CERTIFICATIONS/LISTINGS

Relief Valve Sizing

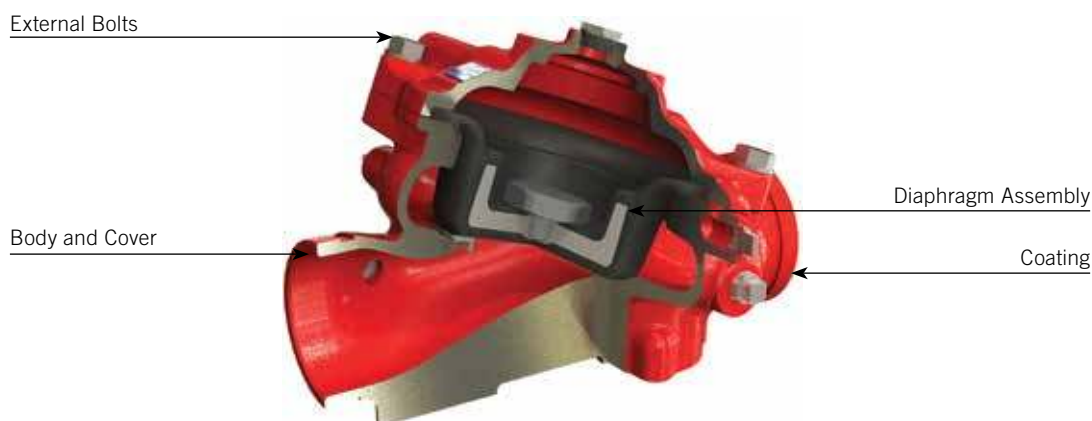
Product Config.	Nominal Size Range inches DN	Pilot Valve Model	Pressure Relief Valve	
			Quantity	Size inches mm
867-42T-20	1½ DN40	2PBL	1	¾ 20
	2 DN50	2PBL	1	¾ 20
	2½	2PBL	1	¾ 20
	3 DN80	2PBL	1	1 ½ 40
	4 DN100	2PBL	1	2 50
	6 DN150	2PBL	1	3 80
	8 DN200	2PBL	1	3 80
	10 DN250	2PBL	1	4 100
	12 DN300	2HC	2	4 100
	14 DN350	2HC	2	4 100
	16 DN400	2HC	2	4 100
867-43T	1½ DN40	3PB	1	¾ 20
	2 DN50	3PB	1	¾ 20
	2½	3PB	1	¾ 20
	3 DN80	3PB	1	1 ½ 40
	4 DN100	3PB	1	2 50
	6 DN150	3PB	1	3 80
	8 DN200	3UL	1	3 80
	10 DN250	3UL	1	4 100
867-43T-HP	1½ DN40	3PB HP	1	¾ 20
	2 DN50	3PB HP	1	¾ 20
	2½	3PB HP	1	¾ 20
	3 DN80	3PB HP	1	1 ½ 40
	4 DN100	3PB HP	1	2 50
	6 DN150	3PB HP	1	3 80
	8 DN200	3PB HP	1	3 80
	10 DN250	3PB HP	1	4 100

NOTES

- To maintain FM approvals, a 1/2-inch/15-mm minimum size pressure relief shall be provided downstream. Per NFPA 14, the relief valve shall be sized per the manufacturer's specifications.

3.0 SPECIFICATIONS - MATERIAL

Series 867-42T-20 and 867-43T Body Style



Body and Cover: (specify choice)^{6,7}

- ☐ 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: Hastelloy⁸ ASTM B336 Grade C276
- ☐ Optional: Titanium ASTM B367 Grade C2/C3

External Bolts: (specify choice)

- ☐ Standard: Stainless Steel 316 ASTM A276

⁶ Selecting optional valve body materials may change listing or approval. Contact Victaulic for details.

⁷ Flanged end connection available in all materials, grooved and threaded available in ductile iron only.

⁸ Hastelloy is a registered trademark of Haynes International.

⁹ If exposing valve internals to chemical agents, contact Victaulic for compatibility guidance.

Diaphragm Assembly: (specify choice)⁹

- ☐ Standard: Fabric-Reinforced Nitrile (Buna-N)
- ☐ Standard: High-Temperature Natural Rubber (HTNR)

Coating: (specify choice)

- ☐ Standard: High-Build Epoxy Fusion-Bonded with UV Protection, Anti-Corrosion

4.0 DIMENSIONS

Series 867-42T-20 and 867-43T

Grooved Version Shown Above

Size		Flanged Class 150						Flange Class 300					
Nominal	Actual Outside Diameter	LF	RF	H	W1	W2	Weight	LF	RF	H	W1	W2	Weight
inches DN	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	lb kg	inches mm	inches mm	inches mm	inches mm	inches mm	lb kg
1½	1.900	9.1	2.5	5.8	6.1	5.2	39.4	9.1	3.1	5.8	6.1	5.2	44.8
DN40	48.3	230	64	146	155	132	17.9	230	78	146	155	132	20.3
2	2.375	9.1	3.0	5.8	6.1	5.3	42.5	9.4	3.4	5.8	6.1	5.3	46.7
DN50	60.3	230	77	146	155	135	19.3	238	86	146	155	135	21.2
2½	2.875	9.3	3.6	5.8	7.4	5.4	50.0	9.5	3.8	5.8	7.4	5.4	54.7
	73.0	235	92	146	187	137	22.7	241	97	146	187	137	24.8
3	3.500	12.2	4.2	5.8	9.9	6.1	74.8	12.8	4.2	5.8	9.9	6.1	85.3
DN80	88.9	310	106	146	251	155	33.9	326	1.6	146	251	155	38.7
4	4.500	13.8	4.8	6.2	10.5	6.7	95.8	14.5	5.1	6.2	10.5	6.7	113.3
DN100	114.3	350	121	158	266	170	43.5	368	129	158	266	170	51.4
6	6.625	18.9	5.5	9.0	14.7	7.1	192.0	19.9	6.4	9.0	14.7	7.1	236.1
DN150	168.3	480	140	228	372	180	87.1	506	162	228	372	180	107.1
8	8.625	23.6	6.8	11.6	19.3	7.5	331.0	24.6	7.6	11.6	19.3	7.5	374.8
DN200	219.1	600	172	295	490	190	150.1	626	193	295	490	190	170.0
10	10.750	28.7	8.0	11.6	19.3	8.0	397.0	28.7	8.9	11.6	19.3	8.0	476.2
DN250	273.0	730	204	296	490	204	180.1	730	226	296	490	204	216.0
12	12.750	33.5	9.7	17.4	25.8	9.5	712.0	35.0	10.3	17.4	25.8	9.5	822.3
DN300	323.9	850	247	441	656	242	323.0	888	262	441	656	242	373.0
14	14.000	38.6	10.7	17.4	25.8	9.5	784.0	38.6	11.7	17.4	25.8	9.5	943.6
DN350	355.6	980	272	441	656	242	355.6	980	296	441	656	242	428.0
16	16.000	43.3	12.4	16.3	25.8	9.5	886.0	43.3	13.0	16.3	25.8	9.5	1153.0
DN400	406.4	1100	316	415	656	242	401.9	1100	329	415	656	242	523.0

4.0 DIMENSIONS (CONTINUED)

Series 867-42T-20 and 867-43T

Size		Grooved						Threaded						All	
Nominal	Actual Outside Diameter	LG	RG	H	W1	W2	Weight	LT	RT	H	W1	W2	Weight	a	d
inches DN	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	lb kg	inches mm	inches mm	inches mm	inches mm	inches mm	lb kg	inches DN	inches DN
1 ½ DN40	1.900 48.3	9.1 230	1.6 41	5.8 146	6.1 155	5.2 132	33.4 15.2	9.1 230	1.6 41	5.8 146	6.1 155	5.2 132	33.4 15.2	½ DN15	¾ DN20
2 DN50	2.375 60.3	9.1 230	1.6 41	5.8 146	6.1 155	5.3 135	34.5 15.6	9.1 230	1.6 41	5.8 146	6.1 155	5.3 135	34.5 15.6	½ DN15	¾ DN20
2 ½ DN65	2.875 73.0	9.3 235	1.8 46	5.8 146	7.4 187	5.4 137	41.0 18.6	—	—	—	—	—	—	½ DN15	¾ DN20
3 DN80	3.500 88.9	12.2 310	3.4 86	5.8 146	9.9 251	6.1 155	59.0 26.8	—	—	—	—	—	—	½ DN15	1 ½ DN40
4 DN100	4.500 114.3	13.8 350	3.7 95	6.2 158	10.5 266	6.7 170	71.0 32.2	—	—	—	—	—	—	½ DN15	2 DN50
6 DN150	6.625 168.3	18.9 480	4.5 115	9.0 228	14.7 372	7.1 180	171.0 77.6	—	—	—	—	—	—	½ DN15	2 DN50
8 DN200	8.625 219.1	23.6 600	4.7 119	11.6 295	19.3 490	7.5 190	293.0 132.9	—	—	—	—	—	—	½ DN15	2 DN50
10 DN250	10.750 273.0	—	—	—	—	—	—	—	—	—	—	—	—	½ DN15	2 DN50
12 DN300	12.750 323.9	—	—	—	—	—	—	—	—	—	—	—	—	½ DN15	2 DN50
14 DN350	14.000 355.6	—	—	—	—	—	—	—	—	—	—	—	—	½ DN15	2 DN50
16 DN400	16.000 406.4	—	—	—	—	—	—	—	—	—	—	—	—	½ DN15	2 DN50

- NOTE: Contact Victaulic with questions concerning sizes not listed in this table.

5.0 PERFORMANCE

Relief Valve Sizing for Series 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. Refer to Victaulic I-867-42T-20 manual for sizing requirements.

Relief Valve Sizing for Series 867-42T-20

Nominal Valve Size inches/DN	1 ½ DN40	2 DN50	2 ½	3 DN80	4 DN100	6 DN150	8 DN200	10 DN250
Pilot Valve Model	2-PB	2-PB	2-PB	2-PB	2-PB	2-PB	2-UL/ 2-PBL	2-UL/ 2-PBL
Reference for Pressure Relief Valve Size inches/mm	¾ 20	¾ 20	¾ 20	1 ½ 40	2 50	3 80	3 80	4 100

5.1 PERFORMANCE

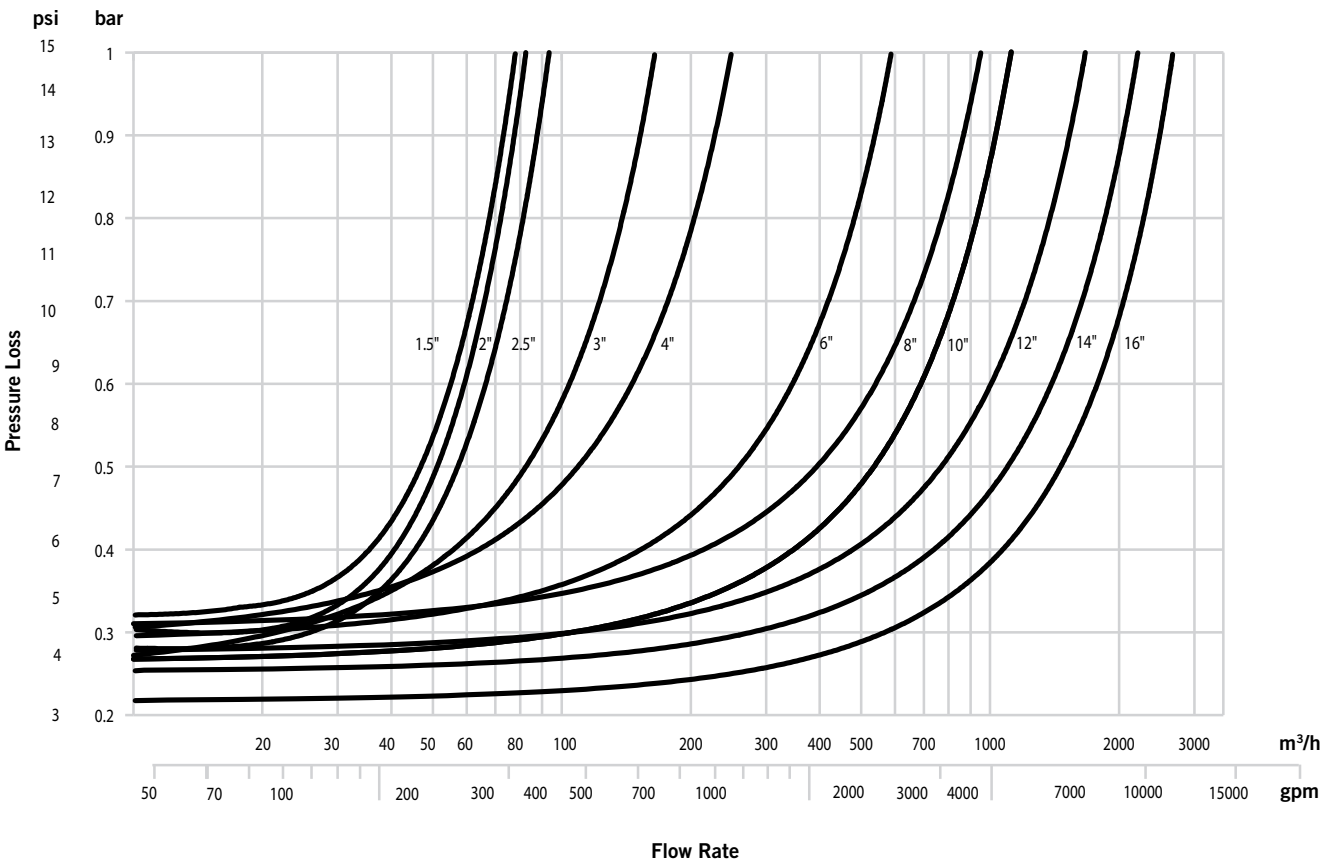
Series 867-42T-20 Pressure Reducing Valve Pressure Drop

Pressure and Flow Ratings

The Series 867-42T-20 is rated for the following pressure and flow capacities detailed in the table below.

NOTE:

- Contact Victaulic if the system has differential greater than 175 psi/12 Bar.



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.
- Use this chart to determine friction loss through the second valve in a redundant pressure reducing setup. The first valve is intended to reduce pressure while the second valve is setup for bypass requiring a higher pressure setting than the first valve.

5.2 PERFORMANCE

Formulas for Cv/Kv 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 (m³/hr)

ΔP = Pressure Drop (Bar)

K_v = Flow Coefficient

Valve Size		Flow Coefficient	Frictional Resistance
Nominal inches DN	Actual O.D. inches mm	Full Open Cv Kv	Equivalent Length of Pipe feet m
1½ DN40	1.900 48.3	79 68	7 2
2 DN50	2.375 60.3	92 80	14 4
2½	2.875 73.0	121 105	31 9
3 DN80	3.500 88.9	219 190	23 7
4 DN100	4.500 114.3	398 345	30 9
6 DN150	6.625 168.3	912 789	49 15
8 DN200	8.625 219.1	1340 1160	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) 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

- [29.01: Victaulic Terms and Conditions](#)
- [I-100: Field Installation Handbook](#)
- [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](#)
- [Bermad FP/FS 400Y Torrent Valve Engineering Data](#)

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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