



Grooved Piping System for Fire Protection Services

1.01 General:

A. Section Includes:

1. General
2. Materials:
 - a. Pipe
 - b. Victaulic Couplings
 - c. Victaulic Fittings
 - d. Hole and Branch Outlets
 - e. Victaulic Valves
 - f. Sprinkler Heads
 - g. Victaulic Specialties.
3. Execution

B. Submittals:

1. Fire Protection products shall be shown on drawings and product submittals and shall be specifically identified with the applicable Victaulic series or designation.
2. Sprinklers shall be referred to on drawings, submittals, and other documentation, by the sprinkler identification or model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

C. References:

1. American Society for Testing Materials (ASTM)
 - a. ASTM A53 – Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded, and Seamless.
 - b. ASTM A126-B – Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - c. ASTM A153 – Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - d. ASTM A183 – Carbon Steel Track Bolts and Nuts
 - e. ASTM A449 – Quenched and Tempered Steel Bolts and Nuts
 - f. ASTM A536 – Ductile Iron Castings

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- g. ASTM B16 – Free-Cutting brass rod , Bar and Shapes for Use in Screw Machines
 - h. ASTM B62 – Composition Bronze or Ounce Metal Castings.
 - i. ASTM B124 – Copper and Copper Alloy Forging Rod, Bar, and Shapes.
 - j. ASTM B584 – Copper Alloy Sand Castings for General Applications
 - k. ASTM D-2000 – Standard Specification System for Rubber Products in Automotive Applications.
- 2. American Water Works Association:
 - a. AWWA C606 – Grooved and Shouldered Joints
 - 3. National Fire Protection Association:
 - a. NFPA-13 – Installation of Sprinkler Systems

D. Quality Assurance

- 1. All Fire Protection components (including couplings, fittings, valves and accessories) to be supplied by one manufacturer and shall be cULus, UL, and/or ULC listed and/or FM Global approved. Grooving tools shall be of the manufacturer as the grooved components.

2.01 Materials

- A. Under Ground Ductile Iron Pipe: Pipe:** AWWA ductile iron pipe, minimum Class 53, grooved in accordance with AWWA C606. Rigid radius groove dimensions shall be utilized where flexibility is neither required nor desired. Pipe ends shall be factory grooved. .
 - 1. **Victaulic Couplings: [UL, ULC, FM]** Manufactured in two or more segments of cast ductile iron, conforming to A-536, Grade 65-45-12. Gaskets shall be pressure-responsive synthetic rubber, FlushSeal® type. Mechanical coupling bolts shall be stainless steel conforming to physical properties of ASTM A-193, minimum tensile strength 110,000 psi (758450 kPa). Victaulic Style 31.
 - 2. **Transition Couplings: [UL, ULC, FM]** For transition between IPS steel and AWWA ductile iron sized pipe. Housings cast with offsetting, angle-pattern, bolt pads. Victaulic Style 307.

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3. **Coupling Gaskets:** Synthetic rubber, FlushSeal® configuration, conforming to AWWA pipe outside diameter and coupling housing, manufactured of elastomers as designated in ASTM D-2000.
 - a. Reference shall always be made to the latest published Selection Guide for Victaulic Gaskets for proper gasket selection for the intended service.
 4. **Flange Adapters:** [UL, FM] For use with AWWA grooved end pipe and fittings, for mating to ANSI Class 125 flanged components. Victaulic Style 341.
 5. **Victaulic Grooved End Fittings for AWWA Ductile Iron Pipe:** [UL, ULC] Fittings shall be cast of ductile iron conforming to A-536, Grade 65-45-12. Fittings conform to ANSI A21.10/AWWA C-110 for center-to-end dimensions and wall thickness, and AWWA C-153 for wall thickness. Grooved ends shall conform to AWWA C606.
- B. Above Ground Steel Pipe: (Standard/Lightwall):** Carbon Steel, A-53B/A-106B - Roll or cut grooved-ends as appropriate to pipe material, wall thickness, pressures, size and method of joining. Pipe ends to be grooved in accordance with Victaulic current listed standards conforming to ANSI/AWWA C-606.
- C. Victaulic Mechanical Couplings for Joining Carbon Steel Pipe**
1. **Victaulic Mechanical Couplings:** Manufactured in two segments of cast ductile iron, conforming to ASTM A-536, Grade 65-45-12. Gaskets shall be pressure-responsive synthetic rubber, grade to suit the intended service, conforming to ASTM D-2000. Mechanical Coupling bolts shall be zinc plated (ASTM B-633) heat treated carbon steel track head conforming to ASTM A-449 and A-183, minimum tensile strength 110,000 psi (758450 kPa) as provided standard Victaulic.
 - a. **Rigid Type:**
 - 1) “Installation Ready” rigid joints shall be Victaulic FireLock® EZ Style 009H [cULus, FM] and 107N [cULus], in sizes 1-1/4”(DN32) through 12” (DN300) sizes. Designed for direct “stab” installation onto grooved pipe without prior disassembly of the coupling.
 - 2) Housings shall be cast with offsetting, angle-pattern bolt pads to provide system rigidity and support and hanging in accordance with NFPA 13.

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- 3) Rigid couplings shall require visual pad-to-pad verification of complete installation. Tongue and recess type couplings which require the use of a torque wrench to achieve the exact required gap between housings are not permitted.
- b. **Flexible Type:** Use in seismic areas where required by NFPA 13.
 - 1) “Installation Ready” flexible joints shall be Victaulic Style 177N QuickVic™ [cULus, FM], in sizes 2”(DN50) through 8”(DN200), which shall be designed for direct “stab” installation onto grooved pipe without prior disassembly of the coupling. .
 - 2) Standard flexible couplings shall be Victaulic Style 77 [UL, ULC, FM].
2. **Mechanical Coupling Gaskets:** Pressure-responsive, synthetic rubber listed for use with the housings.
3. **Flange Adapters:** For use with grooved end pipe and fittings, for mating to ANSI Class 125 / 150 flanges. Victaulic Style 741 or 744 [UL, ULC, FM]. For mating to ANSI Class 300 flanges use Victaulic Style 743 [UL, ULC, FM].

D. Installation-Ready™ Fittings for Fire Protection Systems

1. Installation-Ready™ fittings for grooved end steel piping in fire protection applications sizes NPS 1-¼ thru 2½ (DN 32 thru DN 65). Fittings shall consist of a ductile iron housing conforming to ASTM A-536, Grade 65-45-12, with Installation-Ready™ ends, [orange enamel coated] [red enamel coated] [galvanized]. Fittings complete with prelubricated Grade “E” EPDM Type ‘A’ gasket; and ASTM A449 electroplated steel bolts and nuts. System shall be UL listed for a working pressure of 300 psi (2065 kPa) and FM approved for working pressure 365 psi (2517kPa).
 - a. Fittings shall have a shorter center-to-end dimensions for installation in tight spaces.
 - b. Fittings are rigid, for direct stab installation without field disassembly.
 - c. Installation-Ready™ Fittings shall be Victaulic FireLock® Style 101, Style 102, and style 103, which shall be designed for direct “stab” installation onto grooved pipe without prior disassembly of the fitting.
 - d. Fittings shall require visual pad-to-pad verification of complete installation.
 - e. Fitting Gaskets: Pressure-responsive, synthetic rubber listed for use with the housings.

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2. In lieu of threaded steel piping systems, the Victaulic FireLock IGS System with “Installation-Ready™” fittings and couplings may be used for NPS 1 (DN 25) Schedule 10 and Schedule 40 carbon steel pipe in fire protection applications. System rated for a working pressure to 365 psi (2517 kPa).
 - a. Groove: IGS “Innovative Groove System” groove with shortened “A” dimension and tapered groove backside for ease of installation.
 - b. Grooving Tool: Victaulic RG2100, with IGS Confirmation Gauge.
 - c. Fittings: Ductile iron housing conforming to ASTM A-536, Grade 65-45-12. Orange enamel coated or galvanized.
 1. Victaulic Style 101 (90-degree elbow), Style 102 (tee), and Style 108 (coupling) with Installation-Ready™ ends.
 2. Style 108 single-bolt coupling provided with EPDM Type A pressure responsive gasket with Vic-Plus lubricant, and ASTM A449 compliant electroplated steel bolt and nut. CrMo alloy steel coupling linkage.
3. UL listed and FM approved rigid coupling to join sprinklers with IGS profile grooved ends to matching 1” IGS outlets; Coupling consists of two cast copper-alloy housing segments for connection of ½”, ¾”, and 1” sprinklers. Coupling includes an EPDM Type A gasket, with zinc-plated cap screws conforming to ASTM F835, and nylon insert locknut. Installation-ready, for direct push installation without field disassembly. Rated for a working pressure to 175 psi (1205 kPa).
 - a. Fully installed at visual pad-to-pad contact with no required torque rating.

E. Victaulic Grooved End Fittings: Fittings shall be cast of ductile iron conforming to ASTM A-536, Grade 65-45-12 (FireLock®), forged steel conforming to ASTM A-234, Grade WPB 0.375" wall (9,53 mm wall), or fabricated from Std. Wt. Carbon Steel pipe conforming to ASTM A-53, Type F, E or S, Grade B. Fittings provided with an alkyd enamel finish or hot dip galvanized to ASTM A-153. Zinc electroplated fittings and couplings conform to ASTM B633. [\[UL, ULC, FM\]](#)

1. Victaulic Hole-Cut Branch Outlets:

- b. **Bolted Branch Outlet:**
 1. Branch reductions on 2"(DN50) through 8"(DN200) header piping. Bolted branch outlets shall be manufactured from ductile iron conforming to ASTM A-536, Grade 65-45-12, with synthetic rubber gasket, and heat treated carbon steel zinc plated bolts and nuts

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conforming to physical properties of ASTM A-183. Victaulic Style 920 / 920N. [UL, ULC, FM]

4. Header connections for sprinklers, drop nipples, sprigs, gauges, and drains on 1-1/4" through 2-1/2" header piping. Outlets shall be manufactured from ductile iron conforming to ASTM A-536, Grade 65-45-12, with synthetic rubber gasket, and heat treated carbon steel zinc plated bolts and nuts conforming to physical properties of ASTM A-183. Victaulic FireLock Outlet Tee Style 922. [UL, ULC, FM]

- b. **Strapless Outlet:** 1/2"(DN15) or 3/4"(DN20) NPT outlet on 4" (DN100) and larger header sizes rated for 300 PSI (2065 kPa). Victaulic Style 923. [UL, ULC]

F. Victaulic Grooved End Valves

1. **Ball Valves:** [cULus, FM] 350 psi (2410 kPa), grooved or threaded ends, bronze body (ASTM B-584 Alloy 844), standard port, chrome-plated brass ball, stainless steel stem, TFE seats, brass gearbox, with pre-wired supervisory switches. Victaulic Series 728 FireLock®.
2. **Butterfly Valves:** [cULus, FM] 300 psi (2065 kPa), grooved ends, black enamel coated ductile iron body (ASTM A-536, Grade 65-45-12). Electroless-nickel coated ductile iron disc, with pressure-responsive elastomer seat and stainless steel stem. (Stem shall be offset from the disc centerline to provide complete 360-degree circumferential seating.). Complete with weatherproof actuator and pre-wired supervisory switches. Victaulic Series 705 FireLock® or Series 707C FireLock®. Victaulic FireLock® Series 765 shall be used for high pressure systems up to 365 psi CWP.

Victaulic Series 705 FireLock® or Series 707C FireLock® may also be used for fire pump metering test lines per NFPA 20 and rooftop test units, as well as pressure reducing valve by-pass lines per NFPA 14.

Note: Refer to latest published Victaulic literature, Butterfly Valve Material Selection section, for liner/seat and disc material recommendations for chemical service.

3. **Gate Valves:** [cULus, FM].

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- a. **2-1/2”(DN65) through 12”(DN300) Sizes OS&Y Gate Valves:** 250 psi (1725 kPa), grooved ends. Ductile iron body conforming to ASTM A-536, cast iron yoke and handwheel conforming to ASTM A-126-B; EPDM coated ASTM A-126-B cast iron disc; ASTM B16 brass rising stem; flanged and epoxy coated cast iron bonnet; EPDM o-ring stem seals and body gasket. Victaulic Series 771.
- b. **2-1/2”(DN65) through 12”(DN300) Sizes NRS Gate Valves:** 250 psi (1375 kPa), grooved ends. Ductile iron body conforming to ATSM A-536, bronze mounted; EPDM coated ASTM A-126-B cast iron disc; ASTM B-16 brass non-rising stem; flanged and epoxy coated cast iron bonnet; EPDM o-ring stem steals and body gasket. Victaulic Series 772.
- c. **Wall Type Indicator Post:** ASTM A-126-B cast iron wall type indicator post, with ASTM B-62 bronze operating stem and carbon steel operating rod. Victaulic Series 773.
- d. **Adjustable Indicator Post Vertical Type:** ASTM A-126-B cast iron adjustable indicator post vertical type with ASTM A-126-B cast iron extension sleeve, ASTM B-62 bronze operating stem and carbon steel extension rod. Victaulic Series 774.

4. **Check Valves: [cULus, FM]**

- a. **2”(DN50) through 3”(DN75) Sizes Spring Assisted:** Black enamel coated ductile iron body, ASTM A-536, Grade 65-45-12, non-slam tilting disc, stainless steel disc and spring, brass shaft, 365 psi (2517 kPa). Victaulic Series 717H.
- b. **4”(DN100) through 12”(DN300) Sizes Spring Assisted:** Black enamel coated ductile iron body, ASTM A-536, Grade 65-45-12, elastomer encapsulated ductile iron disc suitable for intended service, stainless steel spring and shaft, welded-in nickel seat, 250 psi (1725 kPa). Victaulic Series 717. Designed to accept a riser check kit. Victaulic Series 717R.

5. **Alarm Check Valve: [UL, ULC, FM]** Black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, EPDM seal, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Water working pressure is 300 psi. Suitable for constant and variable pressure systems with optional Series 752 retard chamber. Victaulic FireLock® Series 751.

a. Optional Accessories:

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- **Series 752 Retard Chamber:** High strength ductile iron body with corrosion resistant exterior and interior coating, suitable for operating pressures to 300 psi (2065 kPa).
 - **Series 752V Retard Vent Kit:** For use with Series 752 retard chamber when an electric alarm pressure switch is installed without a water motor alarm.
 - **Series 760 Water Motor Alarm:** Red enamel finished gong shell, with internal components of non-corrosive stainless-steel or aluminum, with upstream strainer.
 - **Alarm Pressure Switch:** System Sensor Model “EPS” or Potter Electric Signal “PS”.
 - **Waterflow Detectors:** System Sensor Model “WFD” or Potter Electric Signal “VSR”.
6. **Dry System Check Valve: [cULus, FM]** Single setpoint, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Valve shall be externally resettable. Required air pressure is 13 psi. Water working pressure is 300 psi. Valve is available bare, pre-trimmed, as a Vic®-Quick Riser, or in a Fire-Pac cabinet. Victaulic FireLock® NXT Series 768N.
- a. Optional Accessories:
- **Series 746-LPA Dry Accelerator:** Bronze body, stainless steel spring, restrictor, and bolts, with EPDM diaphragm, seal, and O-ring, for use with system air pressures ranging from 13 psi (90kPa) to 18 psi (124 kPa).
 - **Series 760 Water Motor Alarm:** Red enamel finished gong shell, with internal components of non-corrosive stainless-steel, aluminum, etc., with upstream strainer.
 - **Series 75B Supplemental Alarm Device:** For use with systems using a water motor gong as the alarm device. 304 stainless steel flexible braided hose, with brass pilot valve and galvanized steel trim and nipples, rated to 300 psi (2065 kPa).
 - **Series 75D Water Column Kit:** Ductile iron body with stainless steel internal components and Nitrile seal, rated to 300 psi (2065 kPa), designed to minimize residual water in the riser.

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- **Series 757 / 757P Air Maintenance Trim Assembly:** Consisting of a pressure-reducing air regulator, strainer, brass restrictor, spring-loaded in-line check valve, and associated piping components.
- **Series 7C7 Compressor Package:** Consisting of a riser-mounted compressor, Series 757P air maintenance device and flexible hoses for installation. Available with 1/3 HP compressor for an up to 500 gallon system.
- **Alarm Pressure Switch:** System Sensor Model “EPS” or Potter Electric Signal “PS”.

7. **Actuated Deluge Valve:** [cULus, FM] [Pneumatic] [Hydraulic] [Electric] Actuation, low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Valve shall be externally resettable. Required air pressure is 13 psi. Water working pressure is 300 psi. Valve is available bare, pre-trimmed, as a Vic®-Quick Riser, or in a Fire-Pac cabinet. Victaulic FireLock® NXT Series 769.

a. Optional Accessories:

- **Series 776 Low-Pressure Actuator:** Cast bronze lower chamber with brass middle and upper chambers and brass internal components and strainer, with stainless steel springs, and EPDM seals. Rated for water supply to 300 psi (2065 kPa) and air supply pressure of 13 psi (90kPa).
- **Series 753-E or Asco Model 8210G227 Solenoid Valve:** Forged brass body, stainless steel spring, fluoroelastomer seal and diaphragm, 24 VDC wiring and voltage, with 8.7 watts power rating, 66 ohms resistance, and current at .364 amps. Valve shall be rated to 300 psi (2065 kPa).
- **Series 760 Water Motor Alarm:** Red enamel finished gong shell, with internal components of non-corrosive stainless-steel, aluminum, etc., with upstream strainer.
- **Series 757 / 757P Air Maintenance Trim Assembly:** Consisting of a pressure-reducing air regulator, strainer, brass restrictor, spring-loaded in-line check valve, and associated piping components.
- **Series 7C7 Compressor Package:** Consisting of a riser-mounted compressor, Series 757P air maintenance device and flexible hoses for installation. Available with 1/3 HP compressor for an up to 500 gallon system.

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- **Alarm Pressure Switch:** System Sensor Model “EPS” or Potter Electric Signal “PS”.
- a. UL listed electric pressure control, on-off deluge valve suitable for systems that include electric fire detection and a piping system with a wide variety of open nozzles. Valve shall consist of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating carbon steel body to ASTM A216. Valve internal components shall be reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have a straight-through Y-type-body with unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel and shall consist of a 2-Way adjustable, pressure reducing pilot valve. The deluge valve shall include a 3-Way solenoid valve approved for 25 bar/365 psi, a Y-type strainer, a ball drain valve, an automatic drip-check with manual override, pressure gauges, and a manual emergency release. Valve shall be suitable for working pressure to 365 psi [2517-kPa], and water operating temperatures to 122°F [50°C]. All internal components shall be replaceable without removing the valve from the installed position. Basis of Design: Victaulic Series 869Y-3DC.
- b. UL listed and FM Approved electrically controlled, on-off deluge valve suitable for systems that include electric fire detection and a piping system with a wide variety of open nozzles. Valve shall consist of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating [carbon steel body to ASTM A216. Valve internal components shall be stainless steel, with polyamide fabric reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have an unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel. The deluge valve shall include a 3-Way solenoid valve approved for 25 bar/365 psi working pressure, a Y-type strainer, a ball drain valve, an automatic drip-check with manual override, pressure gauges, and a manual emergency release. Valve shall be suitable for working pressure to 365 psi [2517-kPa], and water operating temperatures to 122°F [50°C]. All internal components shall be replaceable without removing the valve from the installed position. Basis of Design: Victaulic Series 869Y-3D.

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8. **Preaction Valve:** [cULus, FM] Low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Valve shall be externally resettable. Water working pressure is 300 psi. Does not require a separate check valve downstream of preaction valve. Valve is available bare, pre-trimmed, as a Vic®-Quick Riser, or in a Fire-Pac cabinet. Victaulic FireLock® NXT Series 769N.

a. Optional Accessories:

- **Series 746-LPA Dry Accelerator:** Bronze body, stainless steel spring, restrictor, and bolts, with EPDM diaphragm, seal, and O-ring, for use with system air pressures ranging from 13 psi (90kPa) to 18 psi (124 kPa).
- **Series 760 Water Motor Alarm:** Red enamel finished gong shell, with internal components of non-corrosive stainless-steel, aluminum, etc., with upstream strainer.
- **Series 75B Supplemental Alarm Device:** For use with systems using a water motor gong as the alarm device. 304 stainless steel flexible braided hose, with brass pilot valve and galvanized steel trim and nipples, rated to 300 psi (2065 kPa).
- **Series 75D Water Column Kit:** Ductile iron body with stainless steel internal components and Nitrile seal, rated to 300 psi (2065 kPa), designed to minimize residual water in the riser.
- **Series 757 / 757P Air Maintenance Trim Assembly:** Consisting of a pressure-reducing air regulator, strainer, brass restrictor, spring-loaded in-line check valve, and associated piping components.
- **Series 7C7 Compressor Package:** Consisting of a riser-mounted compressor, Series 757P air maintenance device and flexible hoses for installation. Available with either a 1/6 HP compressor for an up to 400 gallon system using only a solenoid valve and no Auto-Vent, or a 1/3 HP compressor for an up to 750 gallon system using only a solenoid valve and no Auto-Vent.
- **Alarm Pressure Switch:** System Sensor Model “EPS” or Potter Electric Signal “PS”..

- G. **Victaulic Sprinkler Heads:** [UL, ULC, and/or FM] Die-cast brass frame to 65-30, bronze [upright] [pendant] deflector, beryllium nickel spring, with stainless steel lodgement spring and teflon tape seal. Glycerin filled glass bulb, rated for working
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pressure to 175 psi [1200-kPa]. Body shall be coated [with UL listed and FM approved anti-corrosion VC-250 coating (silver coloring)]. The sprinkler body shall be cast with hex shaped wrench boss to reduce the risk of damage during installation. Sprinklers can be ordered with NPT, BSPT or IGS grooved connections. (Sprinklers shall not contain rubber O-rings.) Quick or standard response type.

1. **Guards and Escutcheons:** Guards and escutcheons shall be listed, supplied, and approved for use with the sprinkler by the sprinkler manufacturer.
 2. Model V38 adjustable concealed pendant sprinkler for clean room applications provided with cover plate and white nitrile sealing gasket to prevent debris from entering the protected area.
- I. In lieu of rigid pipe offsets or return bends for sprinkler drops, the Victaulic VicFlex™ Multiple-Use Flexible Stainless Steel Sprinkler Drop System [with captured coupling Style 108] may be used to locate sprinklers as required by final finished ceiling tiles and walls. The drop system shall consist of a braided type 304 stainless steel flexible tube, zinc plated steel Male threaded nipple or Victaulic FireLock IGS Groove Style 108 coupling for connection to branch-line piping, and a zinc plated steel reducer with a female thread for connection to the sprinkler head.
1. Captured Coupling IGS Groove Style 108: Single-bolt, consisting of two ductile iron housings, Grade E “EPDM” gasket, and a zinc electroplated steel bolt and nut conforming to ASTM A449.
 2. The drop shall include a UL approved Series AH1 with 3” bend radius; AH2 or AH2-CC braided hose with a bend radius to 2” to allow for proper installation in confined spaces. The hose shall be listed for [(4) bends at 31” length] [(5) bends at 36” length] [(8) bends at 48” length] [(10) bends at 60” length] [(12) bends at 72” length].
 3. Union joints shall be provided for ease of installation. The flexible drop shall attach to the ceiling grid using a one-piece open gate Series AB1 or AB2 bracket. The bracket shall allow installation before the ceiling tile is in place. The braided drop system is UL listed for sprinkler services to 175 psi (1206 kPa) and FM Approved to 200 psi (1380 kPa).
 - a. All hoses shall be factory-pressure tested to 400 psi. (2760 kPa).
 - b. AB6 Bracket Assembly, for use in cold storage applications with Victaulic Model V36 dry sprinklers.
 - c. Approvals:

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- 1) FM-1637
- 2) UL 2443

Refer to the Victaulic I-VICFLEX installation manual and the Victaulic VicFlex™ Design Guide, as shown in product submittal 10.85 to ensure proper installation.

J. Victaulic Fire Protection Specialties:

1. **Fire Pump Test Meters:** [FM] Grooved end calibrated venturi meter manufactured of carbon steel (ASTM A-53) zinc electroplated body, brass needle valve conforming to ASTM B-124, with attached GPM meter. Minimum straight pipe installation of five diameters upstream and two diameters downstream. Victaulic Style 735.
2. **Alarm Test Module:** [UL, ULC, FM] Grooved or threaded ends, bronze body and bonnet, bronze and copper alloy internals with stainless steel spring, dual polycarbonate sight glasses, and malleable iron handwheel. UL listed and FM Approved for services to 300 psi (2065 kPa). Victaulic Series 720 TestMaster™ II.
3. **Zone Control Riser Module:** [UL, ULC, FM] Grooved end riser control module consisting of an orange enamel coated ductile iron body, System Sensor model WFDN / WFDNTH or Potter Electric Signal Model VSR, vane type waterflow detector, integral drain and test, pressure gauge and optional pressure relief valve.
 - c. **Victaulic Series 747M:** Designed for NFPA-13 commercial requirements, and working pressures to 365 psi (2517 kPa).
 - i. **Series 747MP** for pressure relief option.
 - ii. Available with test orifice from K4.2 – K16.8.
 - d. **Victaulic Series 247:** Designed for NFPA-13, 13D, and 13R commercial and residential requirements, and working pressures to 300 psi (2065 kPa).
 - e. Pressure relief valve kit is UL and ULC listed and FM approved for working pressures to 175 psi (1200 kPa).
4. **Pressure Reducing Valve:**
 - a. UL Listed and FM Approved, consisting of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating carbon steel body to ASTM A216. Valve

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internal components shall be reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have a straight-through Y-type-body with unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel. The control system shall consist of a 2-Way adjustable, pressure reducing pilot valve. The valve shall be UL listed and FM approved, 365 psi [2517-kPa] rated, and water operating temperatures to 122°F [50°C]. Basis of design: Victaulic Series 867-42T.

- b. UL Listed pressure reducing valve, center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design with an unobstructed flow path. Valve body shall be ductile iron, with all external bolts, nuts, and studs shall be Duplex[®] coated. Valve shaft shall be stainless steel. The resilient seal shall be capable of accepting a V-Port Throttling Plug. The actuator assembly shall be double chambered. All fittings shall be nickel-plated brass or stainless steel. 2-Way adjustable, pressure reducing pilot valve. Maximum working pressure to 300 psi [2065-kPa] and water operating temperatures to 122°F [50°C]. All internal components shall be replaceable without removing the valve from the installed position. Basis of design: Victaulic Series 867-7UL.

5. Level Control Valve: Level control valve to maintain constant water level in tank or cistern. Valve shall consist of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating carbon steel body to ASTM A216. Valve internal components shall be polyamide fabric reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have an unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel.

- a. Control Options:
 - i. Series 866-460 – Modulating Horizontal Float.
 - ii. Series 866-465 – Bi-level Electric Float
 - iii. Series 866-466 – Bi-level Vertical Float
 - iv. Series 866-467 – 2-Way Vertical Float
 - v. Series 866-482 – Modulating Altitude Pilot
- b. Valve shall be suitable for working pressure to 250 psi [1725-kPa] and water operating temperatures to 122°F [50°C]. All internal components Victaulic[®] is an ISO 9001 certified company



shall be replaceable without removing the valve from the installed position.
Basis of Design: Victaulic Series 866-4XX.

6. Pressure Relief Valve:

- a. UL Listed and FM Approved pressure relief valve to prevent over pressure. Valve shall consist of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating carbon steel body to ASTM A216. Valve internal components shall be reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have a straight-through Y-type-body with unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel, with a 2-Way adjustable, pressure relief pilot valve. The valve shall be UL listed and FM approved, 365 psi [2517-kPa] rated, line pressure driven and pilot operated and water operating temperatures to 122°F [50°C]. Basis of design: 867-43T.
- b. UL Listed and FM Approved pressure relief valve to prevent over pressure. Valve shall consist of a grooved, flanged, or threaded end ductile iron body conforming to ASTM A536 with electrostatic powder coated polyester red coating carbon steel body to ASTM A216. Valve internal components shall be stainless steel, with polyamide fabric reinforced polyisoprene [NBR] [EPDM] elastomer seals. The valve shall have an unobstructed flow path. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm. The diaphragm assembly shall be the only moving part. Control trim system shall be 316 stainless steel and shall consist of a 2-Way adjustable, pressure relief pilot valve. Valve shall be suitable for working pressure to 175 psi [1200-kPa] and water operating temperatures to 122°F [50°C]. All internal components shall be replaceable without removing the valve from the installed position. Basis of Design: Victaulic Series 867-4UF.
- c. UL Listed and FM Approved pressure relief valve to reduce higher upstream pressure to lower preset downstream pressure. The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design with an unobstructed flow path. Valve body shall be ductile iron, with all external bolts, nuts, and studs shall be Duplex[®] coated. Valve shaft shall be stainless steel. All fittings shall be nickel-plated brass or stainless steel. The control system shall consist of a 2-Way adjustable, pressure relief pilot valve. Valve shall be suitable for
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working pressure to 350 psi [2413-kPa] and water operating temperatures to 122°F [50°C]. All internal components shall be replaceable without removing the valve from the installed position. Basis of Design: Victaulic Series 867-7UF.

K. Victaulic FireLock® Fire-Pac:

1. Provide a pre-assembled [Dry] [Preaction] [Deluge] fire protection valve mounted completely within a steel cabinet for sizes 1½” [DN 40] through 8” [DN 200]. Cabinet shall be coated with red ASA-61 electrostatically applied polyester powder coating. Cabinet shall have field removable access panels on three sides to allow for ease of valve maintenance, servicing, and installation. Unit shall be [cULus, FM] with all materials and wiring conforming to NFPA requirements. Unit shall be provided with Series 728 ball valve or Series 705 butterfly shutoff valve with pre-wired supervisory switches, the sprinkler system fire protection valve, alarm line pressure switches, air supervisory pressure switches, alarm pressure switch and pressure gauges for proper operation and shall be pre-wired to Model RP-2001 control panel. All external electrical connections shall be able to be connected through a factory provided conduit connection to an enclosure inside of the cabinet. Water inlet, system supply, and drain connections shall be grooved for ease of installation. Victaulic FireLock® Series 745 Fire-Pac.
2. [Dry] [Preaction] [or] [Deluge] valve [with specified configuration], valve shall be single setpoint, latched clapper design with a black enamel coated ductile iron body conforming to ASTM A536, aluminum bronze clapper, stainless steel spring and shaft, EPDM diaphragm and seal, brass seat with nitrile seat o-rings. Valve internal parts shall be replaceable without removing the valve from the installed position and shall be externally resettable. 300 psi pressure rating in sizes 1½” [DN 40] through 8” [DN 200] and shall be grooved ends for vertical installation only. Victaulic FireLock® NXT [Series 768N] [and] [or] [Series 769N].
3. Trim configurations:
 - a. Dry Valve: Pneumatic operation.
 - b. Preaction Valve:
 - 1) Non-interlock; [Pneumatic] [and] [or] [Electric].
 - 2) Single interlock; [Pneumatic] [or] [Electric].
 - 3) Double interlock; [Pneumatic] [and] [Electric].
 - c. Deluge Valve:

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- 1) Electric release.
- 2) Wet pilot.
- 3) Dry pilot.

4. Electric Release Panel: Notifier Model RP-2001 is a compact single enclosure unit containing power supply, two 12Amp-hr batteries and availability to have factory installed all accessory options.

5. Options: Preassembled cabinet shall have factory options to have pipe penetrations sealed to meet NEMA 4 protection of equipment inside of the enclosure with respect to the ingress of water, whether rain, sleet, snow, splashing water or hose directed water.

6. Options: Preassembled cabinet shall have nitrogen fill options as well as a factory installed low nitrogen pressure alarm to augment low air alarms as needed in certain trim applications.

7. Options: Preassembled cabinet shall have option to be insulated and have a heater installed to provide for further low temperature protection as well as have a low temperature alarm to signal conditions below 40 degrees Fahrenheit.

3.01 Execution:

A. Installation:

1. Pipe ends shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove.

2. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified.

3. See the latest copy of Victaulic's Field Assembly and Installation Instruction Pocket Handbook (I-100) for grooved fittings. Supplemental handbooks for specific product installations (I-009/009V, I-40, I-705W, etc.) shall be provided by Victaulic and used by the contractor.

4. Do not install sprinklers that have been dropped, damaged, or show a visible loss of fluid. Never install sprinklers with cracked bulbs. Sprinkler bulb protector shall be removed by hand after installation. Do not use tools or any other device(s) to remove the protector that could damage the bulb in any way.

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B. Training:

1. Victaulic's factory trained field representative shall provide on-site training for contractor's field personnel in the use of grooving tools, application of groove, and product installation.

C. Application:

1. Victaulic's representative shall periodically visit the job site and review installation. Contractor shall remove and replace any improperly installed products.
2. Victaulic grooved mechanical pipe couplings, fittings, valves and other grooved components may be used as an option to welding, threading or flanged methods.
3. All grooved components shall conform to local code approval and/or as listed by UL/ULC, cULus, FM, or NFPA.
4. Grooved end product manufacturer to be ISO-9001 certified.

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4901 Kesslersville Road
Easton, PA 18040

Tel: 610/559-3300 • Fax: 610/250-8817
Customer Service: 1-800-742-5842
www.victaulic.com

P.O. Box 31
Easton, PA 18044-0031