



Model F1FR Series Quick Response Glass Bulb Sprinklers

Model F1FR56 Sprinkler Types

- Standard Spray Upright
- Standard Spray Pendent
- Conventional Upright/Pendent
- Vertical Sidewall
- Horizontal Sidewall

Model F1FR56 Recessed Sprinkler Types

- Standard Spray Pendent
- Horizontal Sidewall

Model F1FR56 Concealed Sprinkler Types

- Standard Spray Pendent

Model F1FR42, F1FRXLH & F1FR28 Sprinkler Types

- Standard Spray Upright
- Standard Spray Pendent

Model F1FR40 Sprinkler Types

- Standard Spray Pendent

Model F1FR42, F1FR40, F1FRXLH & F1FR28 Recessed Sprinkler Types

- Standard Spray Pendent

Model F1FR56LL & F1FR42LL NSF Certified Low Lead Sprinkler Types

- Standard Spray Pendent with less than 0.25% Lead Content

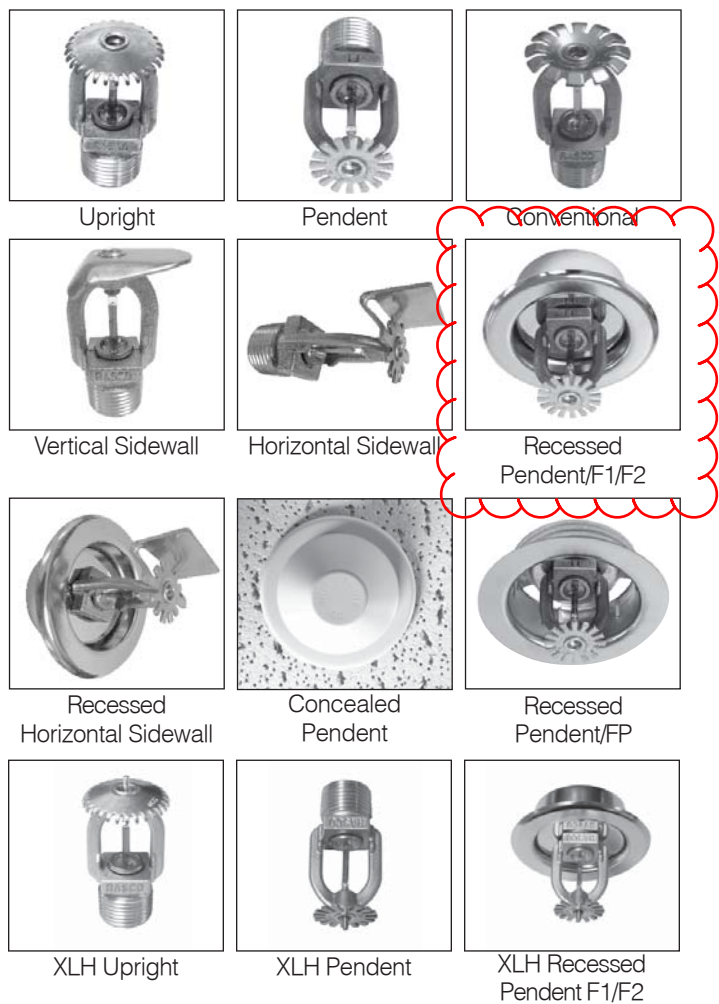
Listing & Approvals

The following organizations provide Listings or Approvals for various Model F1FR series sprinklers. See the Design and Installation table in this Bulletin for information on specific listings and approvals applicable to each sprinkler.

1. Underwriters Laboratories Inc. and Certified for Canada (cULus).
2. FM Approvals (FM)
3. Loss Prevention Certification Board (LPCB)
4. VdS Schadenverhütung GmbH (VdS)
5. NSF Certified to NSF/ANSi Standard 61 Annex G (NSF)
6. EC Certificate: 0786-CPD-40239 (RA1414), 0786-CPD-40251 (RA1425), 0786-CPD-40252 (RA1475) (EC)

UL Listing Category

- Sprinklers, Automatic & Open (VNIV)
- Quick Response Sprinkler



Product Description

Reliable Model F1FR series sprinklers are quick-response automatic sprinklers with a glass bulb thermal element. Model F1FR series sprinklers are Standard Spray sprinklers, with the exception of the Model F1FR56 Conventional sprinkler which is an Old-style/Conventional sprinkler.



XLH Recessed Pendent FP

The Model F1FR Series automatic sprinklers utilize a 3.0 mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five to ten times faster than standard response sprinklers. This quick response enables the Model F1FR Series sprinklers to apply water to a fire faster than standard-response sprinklers of the same temperature rating.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response.

At normal temperatures, the glass bulb contains the fluid in both the liquid and vapor phases. The vapor phase can be seen as a small bubble. As heat is applied, the liquid expands, forcing the bubble smaller and smaller as the liquid pressure increases. Continued heating forces the liquid to push out against the bulb, causing the glass to shatter, opening the waterway and allowing the deflector to distribute the discharging water.

Model F1FR Series sprinklers provide a wide range of options where quick-response, glass bulb sprinklers are used:

- **Pendent, recessed pendent, upright, horizontal sidewall, and vertical sidewall deflectors**
- **K-factors of 2.8 (40 metric), 4.0 (57 metric), 4.2 (60 metric), and 5.6 (80 metric)**
- **Flush, recessed, and concealed installations**

See the Design and Installation Information table in this Bulletin for information on the approvals and availability of specific Model F1FR series sprinkler configurations.

Model F1FR Recessed Pendent and Recessed Horizontal Sidewall sprinklers are required to be used with Reliable Model F1, F2, or FP recessed escutcheons. See the Recessed Escutcheon Data table in this Bulletin for listing and approval information with each specific Model F1FR series sprinkler. Model F1 and F2 recessed escutcheons, shown in Fig. 1 and 3, are a friction fit assembly allowing for 3/4-inch (19mm) and 1/2-inch (12.7mm) of adjustment, respectively. Model FP recessed escutcheons, shown in Fig. 2, provide a 1/2-inch (12.7mm) threaded adjustment.

Model F1FR56 Concealed Pendent and Model F1FR56LL Concealed Pendent sprinklers are required to be used with Model CCP cover plates. A standard profile Model CCP cover plate is available that provides up to 1/2-inch (12.7mm) of cover plate adjustment. In addition, a low profile Model CCP cover plate is also available that provides up to 5/16-inch (8.0mm) of cover plate adjustment. See the Design and Installation Information and Listed and Approved Temperature Ratings tables in this Bulletin for further information on approved cover plate options.

Application

Model F1FR Series sprinklers are intended for use in accordance with NFPA 13, FM Property Loss Prevention Data Sheets, and the requirements of the Authority Having Jurisdiction. Care must be exercised that the k-factor, temperature rating, deflector style, and sprinkler type are in accordance with the requirements of the applicable design and installation standards. In addition, Model F1FR Series sprinklers must be used in accordance with their listings and approvals, as well as the information provided in this Bulletin.

Installation

Glass bulb sprinklers have orange bulb protectors or protective caps to minimize bulb damage during shipping, handling and installation. Reliable sprinkler installation wrenches are designed to install sprinklers with bulb protectors in place. Remove the bulb protector at the time when the sprinkler system is placed in service for fire protection. Removal of the bulb protector before this time may leave the bulb vulnerable to damage. Remove bulb protectors by undoing the clasp by hand. Do not use tools to remove bulb protectors.

Model F1FR Series sprinklers must be installed with the Reliable sprinkler installation wrench identified in the Design and Installation Information table in this Bulletin. Any other wrench may damage the sprinkler. A leak tight sprinkler joint can be obtained with a torque of 8 to 18 lb-ft (11 to 24 N-m). Do not tighten sprinklers over the maximum recommended installation torque. Exceeding the maximum recommended installation torque may cause leakage or impairment of the sprinkler.

Recessed Sprinklers

Model F1FR Series Recessed sprinklers are to be installed as shown in Fig. 1, Fig. 2, or Fig. 3, as applicable to the specific model being installed. The Recessed Escutcheon Data table in the Bulletin identifies the only recessed escutcheons that are permitted to be used with each Model F1FR Series Recessed sprinkler. The use of any other recessed escutcheon will void all approvals and negate all warranties.

Concealed Sprinklers

Model F1FR Series Concealed Pendent sprinklers are to be installed as shown in Fig. 4 or Fig. 5, as applicable to the selected cover plate. Model F1FR56 Concealed Pendent and Model F1FR56LL Concealed Pendent sprinklers have a factory-installed Model CCP cup. A protective cap is installed at the factory that should remain on the sprinkler until the sprinkler is installed and should then be reinstalled on the sprinkler until the cover plate is installed. The concealed sprinkler assemblies are completed by the installation of a Model CCP push-on/thread-off cover plate assembly. The cover plate and sprinkler cup assemblies are joined using a cover plate skirt with flexible tabs for threaded engagement. A choice of two Model CCP cover plate assemblies provides either 1/2-inch (13mm) or 5/8-inch (8mm) of cover adjustment. Do not install Model F1FR Series Concealed Pendent sprinklers in ceilings which have positive pressure in the space above.

Model F1FR Series Concealed Pendent sprinklers require a 2-5/8-inch (67mm) diameter hole to be cut in the ceiling. The Model RC1 wrench is used to engage the sprinkler wrenching surfaces and to install the sprinkler in the fitting. Remove the protective cap to install the sprinkler, then reinstall the protective cap until the cover plate is installed. When inserting or removing the wrench from the sprinkler/cup assembly, care should be taken to prevent damage to the sprinkler. Do not wrench any other part of the sprinkler/cup assembly. Installation is completed by removing the protective cap from the sprinkler and pushing the cover plate onto the cup. Final adjustment is made by hand turning the cover plate until the skirt flange makes full contact with the ceiling. Cover plate removal requires turning the cover plate in the counter clockwise direction. After installation, inspect all sprinklers to ensure that there is a gap between the cover plate and ceiling and that the four cup slots are open and free from any air flow impediment to the space above.

Concealed cover plate/cup assemblies are listed only for use with specific sprinklers. The use of any concealed cover plate/cup assembly other than the Reliable Model CCP with Model F1FR56 Concealed Pendent and Model F1FR56LL Concealed Pendent sprinklers or the use of the Model CCP Concealed cover plate assembly on any sprinkler with which it is not specifically listed may prevent good fire protection and will void all guarantees, warranties, listings and approvals.

Technical Data:

Sensitivity: Quick-response

Thread Size: 1/2-inch NPT standard; ISO 7-R1/2 optional

Maximum Working Pressure: 175 psi (12 bar) - 100% Factory tested hydrostatically to 500 psi (34.5 bar)

SIN RA1425, RA1414 & RA1435 cULus listed for 250 psi (17 bar)

| Design and Installation Information | | | | | | | | | | | |
|-------------------------------------|------------------|--------|--------------------------|----|---|--------------------------|----|---------------------|--------|-----------------------------|----------------|
| Model | Nominal K-factor | | Nominal Orifice Diameter | | Deflector/ Orientation | Nominal Sprinkler Height | | Installation Wrench | SIN | Listings and Approvals | Approval Notes |
| | US | Metric | inches | mm | | inches | mm | | | | |
| F1FR28 | 2.8 | 40 | 3/8 | 10 | Pendent | 2.25 | 57 | D | RA1411 | cULus | 2 |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1411 | cULus | 2 |
| | | | | | Upright | 2.25 | 57 | D | RA1421 | cULus | 1,2 |
| F1FR40 | 4.0 | 57 | 3/8 | 10 | Pendent | 2.25 | 57 | D | RA1418 | VdS | |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1418 | VdS | |
| F1FR42 | 4.2 | 60 | 7/16 | 10 | Pendent | 2.25 | 57 | D | RA1413 | cULus | 2 |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1413 | cULus | 2 |
| | | | | | Upright | 2.25 | 57 | D | RA1423 | cULus | 1,2 |
| F1FR42LL | 4.2 | 60 | 7/16 | 10 | Pendent | 2.25 | 57 | D | RA1410 | cULus, NSF | |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1410 | cULus, NSF | |
| F1FRXLH (F1FR42 with Pintle) | 4.2 | 60 | 7/16 | 10 | Pendent | 2.25 | 57 | D | RA1413 | cULus | 2 |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1413 | cULus | 2 |
| | | | | | Upright | 2.25 | 57 | D | RA1423 | cULus | 1,2 |
| F1FR56 | 5.6 | 80 | 1/2 | 15 | Pendent | 2.25 | 57 | D | RA1414 | cULus, FM, LPCB, VdS, EC | 1,2,3,4 |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1414 | cULus, FM, LPCB, VdS, EC | 1,2,3,4 |
| | | | | | Concealed Pendent | 2.25 | 57 | RC1 | RA1414 | cULus, VdS, EC | 5,6 |
| | | | | | Upright | 2.25 | 57 | D | RA1425 | cULus, FM, LPCB, VdS, EC | 1,2,3,4 |
| | | | | | "Conventional (Pendent or Upright)" | 2.25 | 57 | D | RA1475 | LPCB, VdS, EC | 4 |
| F1FR56LL | 5.6 | 80 | 1/2 | 15 | Pendent | 2.25 | 57 | D | RA1415 | cULus, NSF | 1 |
| | | | | | Recessed Pendent | 2.25 | 57 | GFR2 | RA1415 | cULus, NSF | |
| | | | | | Concealed Pendent | 2.25 | 57 | RC1 | RA1414 | cULus, NSF | 6 |
| F1FR56 | 5.6 | 80 | 1/2 | 15 | Horizontal Sidewall | 2.63 | 67 | D | RA1435 | cULus, FM | 1,2,3,7 |
| | | | | | Recessed Horizontal Sidewall | 2.63 | 67 | GFR2 | RA1435 | cULus, FM | 8 |
| F1FR56 | 5.6 | 80 | 1/2 | 15 | Vertical Sidewall (Pendent or Upright) | 2.25 | 57 | D | RA1485 | cULus, FM, LPCB | 1,2,3,9 |

⁽¹⁾ cULus Listed Corrosion Resistant sprinkler when ordered with available Polyester coating.

⁽²⁾ cULus Listed Corrosion Resistant sprinkler when ordered with available Electroless Nickel PTFE plating.

⁽³⁾ Available with FM approved Polyester coating in black or white.

⁽⁴⁾ Available with LPCB and VdS approved Polyester coating.

⁽⁵⁾ VdS and EC approvals of the F1FR56 Concealed Pendent sprinkler are for 155°F (68°C) temperature rated sprinklers only. VdS approved sprinklers must use Norbulb brand glass bulbs with the 1/2-inch (12.7mm) adjustment Model CCP cover plate only.

⁽⁶⁾ Model F1FR56 Concealed Pendent and Model F1FR56LL Concealed Pendent sprinklers must be used with Reliable Model CCP cover plates, available as either standard depth with 1/2-inch (12.7mm) of adjustment or low profile with 5/16-inch (8.0 mm) of adjustment.

⁽⁷⁾ cULus Listing of the F1FR56 Horizontal Sidewall sprinkler is for Light and Ordinary Hazard occupancies only. FM Approval of the F1FR56 Horizontal Sidewall sprinkler is for Light Hazard occupancies only.

⁽⁸⁾ cULus Listing and FM Approval of the F1FR56 Recessed Horizontal Sidewall sprinkler is for Light Hazard occupancies only.

⁽⁹⁾ The F1FR56 Vertical Sidewall sprinkler is listed and approved for use only in Light Hazard occupancies. Minimum to maximum deflector to ceiling distance shall be 4 inches to 12 inches (102mm to 305mm). LPCB approval of the F1FR56 Vertical Sidewall sprinkler is for installation in the Pendent position only.

Listed and Approved Temperature Ratings

| Model | Deflector/ Orientation | Ordinary Temp. Classification 100°F (38°C) Max. Ambient Temp. | | Intermediate Temp. Classification 150°F (65°C) Max. Ambient Temp. | | High Temp. Classification 225°F (107°C) Max. Ambient Temp. |
|----------|---|--|------------------------------|--|------------------------------|---|
| | | 135°F (57°C) Temp. Rating | 155°F (68°C) Temp. Rating | 175°F (79°C) Temp. Rating | 200°F (93°C) Temp. Rating | 286°F (141°C) Temp. Rating |
| | | Orange Bulb | Red Bulb | Yellow Bulb | Green Bulb | Blue Bulb |
| F1FR28 | Pendent | cULus | | | | |
| | Recessed Pendent | cULus | | | | -- |
| F1FR40 | Upright | cULus | | | | |
| | Pendent | VdS | | | | |
| F1FR42 | Recessed Pendent | VdS | | | | -- |
| | Pendent | cULus | | | | |
| F1FR42LL | Recessed Pendent | cULus | | | | -- |
| | Upright | cULus | | | | |
| F1FR42LL | Pendent | -- | | cULus, NSF | | -- |
| | Recessed Pendent | -- | | cULus, NSF | | -- |
| F1FRXLH | Pendent | cULus | | | | |
| | Recessed Pendent | cULus | | | | -- |
| | Upright | cULus | | | | |
| F1FR56 | Pendent | cULus, FM, LPCB, VdS, EC | | | | |
| | Recessed Pendent | cULus, FM, LPCB, VdS, EC | | | | -- |
| | Concealed Pendent* | cULus | cULus, VdS, EC | cULus | | -- |
| | Upright | cULus, FM, LPCB, VdS, EC | | | | |
| | "Conventional (Pendent or Upright)" | LPCB, VdS, EC | | | | |
| F1FR56LL | Pendent | -- | | cULus, NSF | | -- |
| | Recessed Pendent | -- | | cULus, NSF | | -- |
| | Concealed Pendent* | -- | | cULus, NSF | | -- |
| F1FR56 | Horizontal Sidewall | cULus, FM | | | | |
| | Recessed Horizontal Sidewall | cULus, FM | | | | -- |
| F1FR56 | Vertical Sidewall (Pen- dent or Upright) | cULus, FM, LPCB | | | | |

* Model F1FR56 Concealed Pendent and F1FR56LL Concealed Pendent sprinklers must be used with Reliable Model CCP cover plates. For Ordinary Temperature Classification sprinklers use a 135°F (57°C) temperature rated cover plate. For Intermediate Temperature Classification sprinklers use a 165°F (74°C) temperature rated cover plate.

Recessed Escutcheon Data

| Model | Deflector/ Orientation | Listed and Approved Recessed Escutcheons | | | SIN |
|-----------|------------------------------|---|---|---|--------|
| | | Model F1 (Fig. 1 & 3) 3/4-inch (19mm) adjustment | Model F2 (Fig. 1 & 3) 1/2-inch (12.7mm) adjustment | Model FP (Fig. 2) 1/2-inch (12.7mm) adjustment | |
| F1FR28 | Recessed Pendent | cULus | cULus | cULus | RA1411 |
| F1FR40 | Recessed Pendent | VdS | VdS | VdS | RA1418 |
| F1FR42 | Recessed Pendent | cULus | cULus | cULus | RA1413 |
| F1FR42LL | Recessed Pendent | cULus, NSF | cULus, NSF | cULus, NSF | RA1410 |
| F1FR42XLH | Recessed Pendent | cULus | cULus | cULus | RA1413 |
| F1FR56 | Recessed Pendent | cULus, LPCB, VdS, EC | cULus, FM, LPCB, VdS, EC | cULus, VdS, EC | RA1414 |
| F1FR56LL | Recessed Pendent | cULus, NSF | cULus, NSF | cULus, NSF | RA1415 |
| F1FR56 | Recessed Horizontal Sidewall | cULus | cULus, FM | cULus | RA1435 |

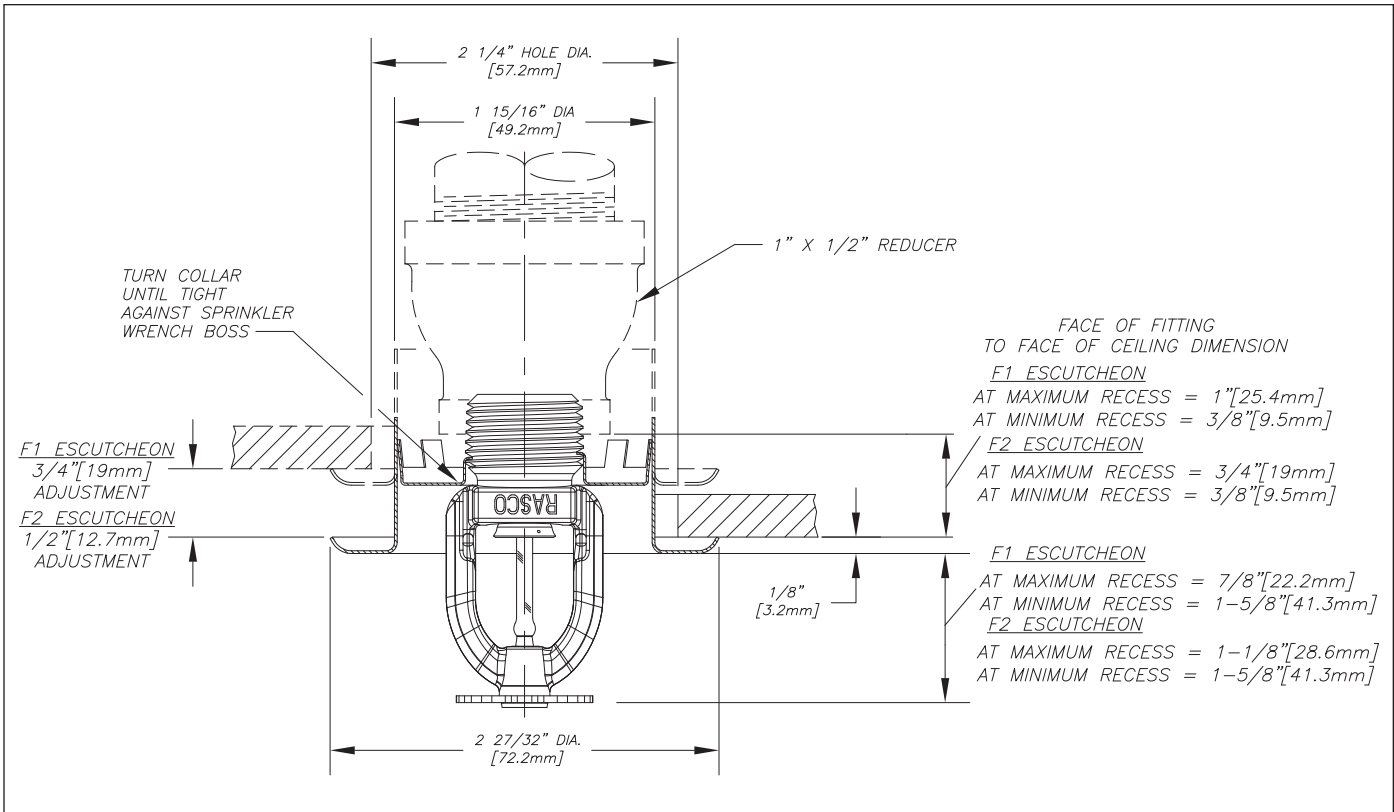


Fig. 1
Model F1FR56, F1FR56LL, F1FR42, F1FR40, F1FR42LL, F1FRXLH & F1FR28
Recessed Pendant sprinkler with Model F1 or F2 escutcheon

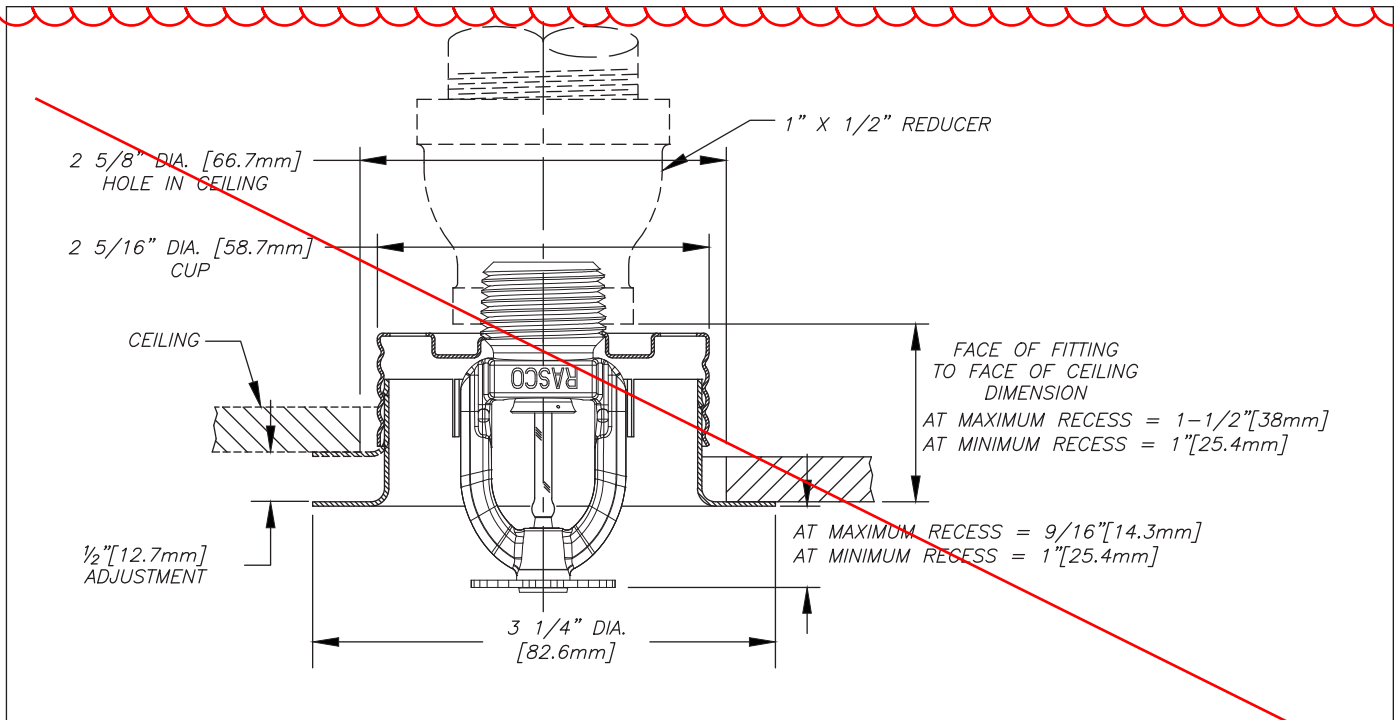


Fig. 2
Model F1FR56, F1FR56LL, F1FR42, F1FR40, F1FR42LL, F1FRXLH & F1FR28
Recessed Pendant sprinkler with Model FP escutcheon

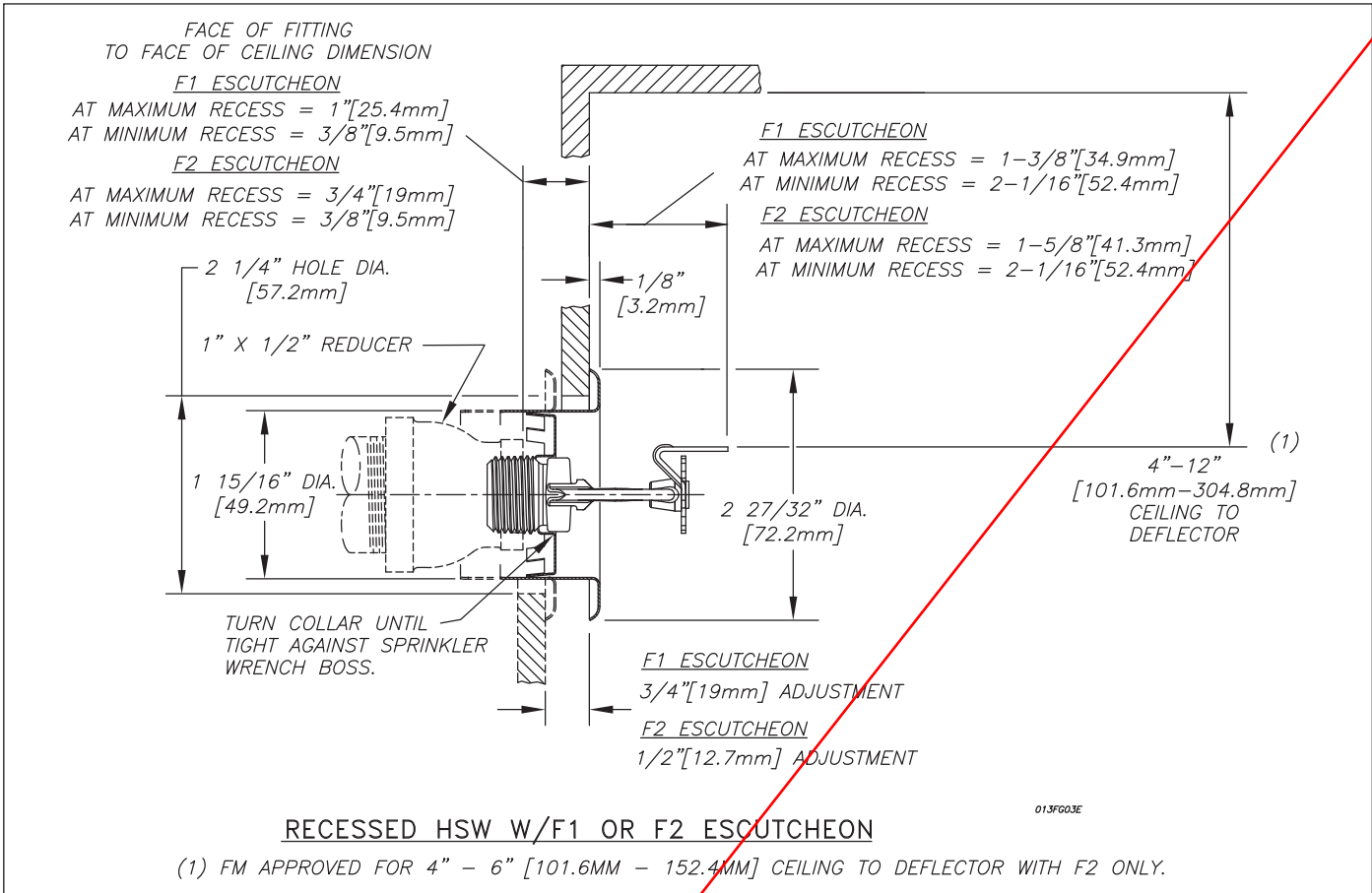


Fig. 3

Model F1FR56 Recessed Horizontal Sidewall sprinkler with Model F1 or F2 escutcheon

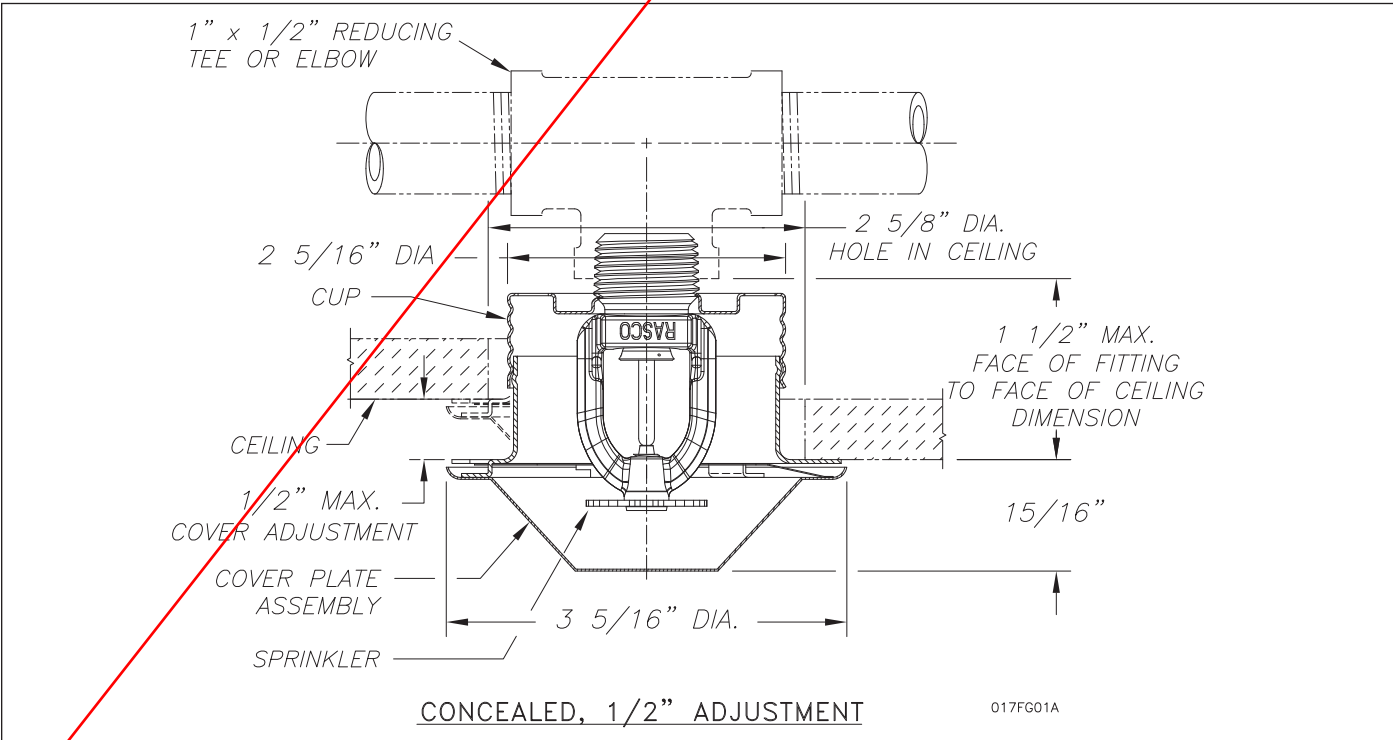


Fig. 4

Model F1FR56/F1FR56LL Concealed Pendant sprinkler with standard depth 1/2-inch (12.7mm) adjustment - Model CCP cover plate

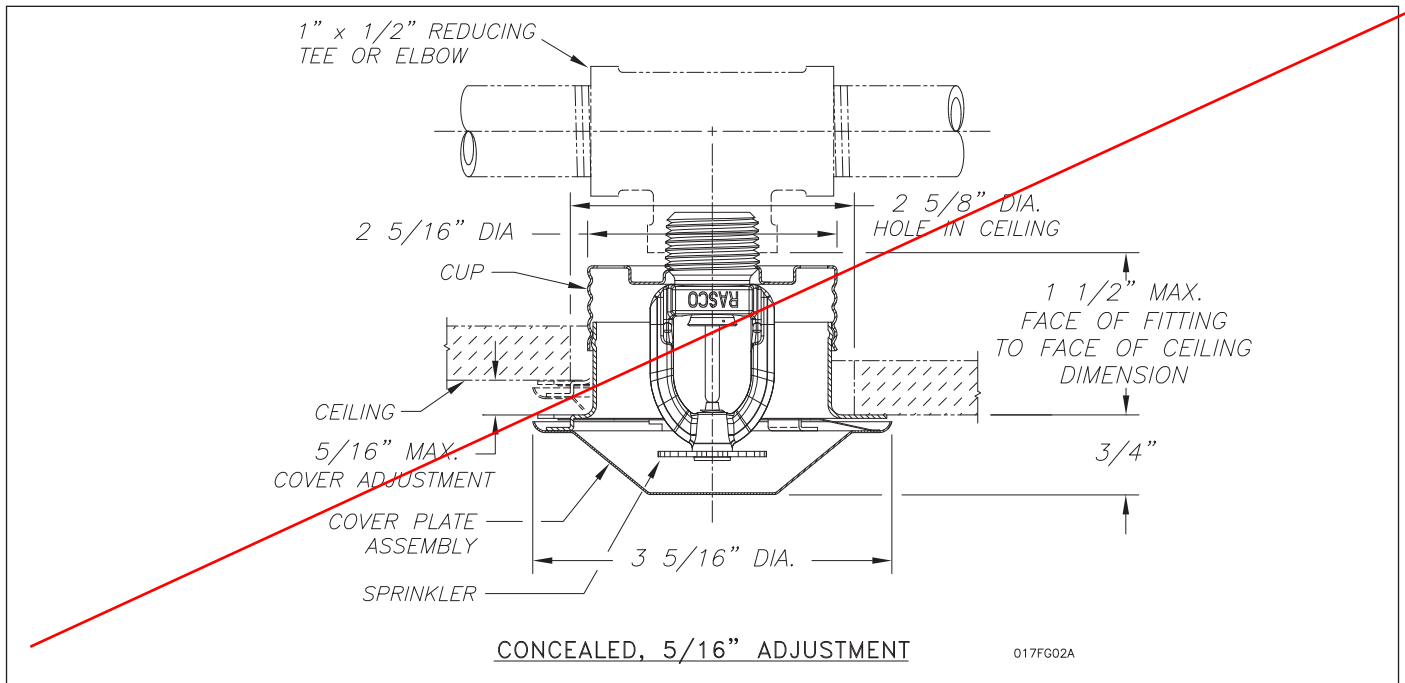


Fig. 5 - Model F1FR56/F1FR56LL Concealed Pendent sprinkler with low profile 5/16-inch (8.0mm) adjustment - Model CCP cover plate

Maintenance

The Model F1FR Series sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gentle vacuuming. Replace any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers.

Finishes ⁽¹⁾

| Standard Finishes | | |
|--|-------------------------|----------------------------|
| Sprinkler | Escutcheon | Cover plate ⁽¹⁾ |
| Bronze | Brass | Chrome |
| Chrome Plated | Chrome | White |
| Polyester | Plated | |
| Coated ⁽⁴⁾⁽⁵⁾⁽⁶⁾ | White Painted | |
| Special Application Finishes | | |
| Sprinkler | Escutcheon | Cover plate ⁽¹⁾ |
| Electroless Nickel PTFE ⁽⁷⁾ | Electroless Nickel PTFE | Bright Brass |
| Bright Brass ⁽³⁾ | Bright Brass | Black Plating |
| Black Plated | Black Plated | Black Paint |
| Black Paint ⁽²⁾⁽⁶⁾ | Black Paint | Off White |
| Off White ⁽²⁾⁽⁶⁾ | Off White | Satin Chrome |
| Chrome Dull | Chrome Dull | |

⁽¹⁾ Other finishes and colors are available on special order. Consult the factory for details. Custom color painted sprinklers may not retain their UL Corrosion resistance listing. Coverplate custom paint is semi-gloss, unless specified otherwise.

⁽²⁾ cULus Listed only.

⁽³⁾ 200°F (93°C) maximum.

⁽⁴⁾ cULus listed "corrosion resistance" applies to SIN Numbers RA1435 (HSW), RA1485(VSW), RA1425 (Upright), RA1414 (Pendent) and RA1415 (Pendent) in standard black or white. Corrosion resistance in other polyester colors is available upon request.

⁽⁵⁾ FM Approvals finish as "Polyester coated" applies to SIN Number RA1414, RA1435 and RA1425 in standard black or white.

⁽⁶⁾ LPCB and VdS Approved finish applies only to RA1425, RA1414, RA1418 (VdS) and RA1475.

⁽⁷⁾ cULus listed Corrosion Resistant

| Material Data | |
|---------------------------|---|
| Frame: | DZR Brass, QM Brass, or Low Lead Brass |
| Deflector: | CDA Alloy 220, 260, or 510 |
| Load Screw/Pintle: | CDA Alloy 360 or 544 |
| Cup: | CDA Alloy 651 or 693 |
| Washer: | Nickel Alloy 440 or 360, coated with PTFE Adhesive Tape |
| Bulb: | Glass |

Ordering Information

Specify:

- Sprinkler Model: [F1FR28][F1FR40][F1FR42][F1FR42LL][F1FRXLH][F1FR56][F1FR56LL]
- Sprinkler Deflector/Orientation: [Pendent][Recessed Pendent][Upright][Conventional][Horizontal Sidewall][Recessed Horizontal Sidewall][Vertical Sidewall]
- Sprinkler threads: [1/2-inch NPT][ISO 7-R1/2]
- Sprinkler Temperature Rating: [135°F (57°C)][155°F (68°C)][175°F (79°C)][200°F (93°C)][286°F (141°C)]
- Sprinkler Finish
- Escutcheon Model: [F1][F2][FP]
- Escutcheon Finish (where applicable)
- Cover plate Model: [standard profile CCP 1/2-inch (12.7mm) adjustment][low profile CCP 5/16-inch (8.0mm) adjustment]
- Cover plate Temperature Rating: [135°F (57°C) for use with Ordinary Temperature sprinklers][165°F (74°C) for use with Intermediate Temperature sprinklers]
- Cover plate Finish

Note: When Model F1FR Series Recessed sprinklers are ordered, the sprinklers and escutcheons are packaged separately.

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable. Products manufactured and distributed by Reliable have been protecting life and property for over 90 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

Manufactured by



Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588

(800) 848-6051

(914) 829-2042

www.reliablesprinkler.com

Sales Offices

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STANDARD TALL SERIES HOSE



STANDARD TALL HOSE: available in 24", 36", 48", 60", 72" hose lengths. Rated working pressure 175psi, Straight model, Standard 1" I.D.



STANDARD ELBOW TALL HOSE: 24", 36", 48", 60", 72" hose lengths. Rated working pressure 175psi, Elbow model.



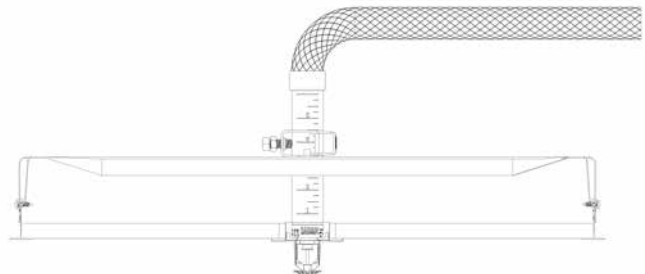
The benefits of installing FlexHead Commercial Connections include:

- Uniform bids / construction schedules
- Reduced man power and labor costs
- Retrofit existing buildings within confined spaces quickly and easily
- Increased efficiency
- Quick and easy installation
- Simple friction loss / water pressure calculations
- Relocate and reconfigure without draining and disassembling
- Flexible design provides versatility for changes in floor plan or occupancy
- Reduced service calls
- No call-backs due to quality manufacturing
- Rapid construction schedules allowing fast-track building occupancy

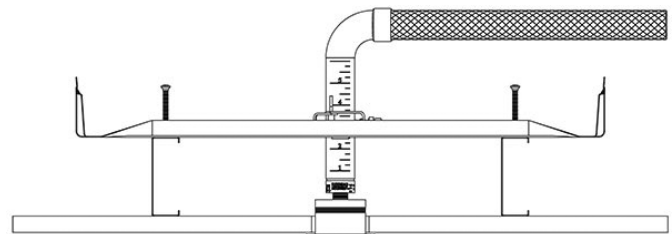
Unlike traditional hard-piped fire protection systems, FlexHead® sprinkler connections allow engineers, architects, contractors and building owners a degree of versatility previously unavailable, featuring:

- Industrial grade material
- Acceptable for use in a return-air plenum
- Perfect center-of-tile and aesthetic uniformity
- Approved for use with medium and heavy load grids (ASTM C635, 636)
- 100% leak-tested connections
- All welded, no o-rings
- Adjustable height and sprinkler alignment
- Proven technology
- Ceiling system compatibility
- Compatible with FM / UL sprinklers
- Meets 2013 NFPA 13 guidelines
- UL Approved for installation in dry wall ceiling grids

FLEXHEAD SUSPENDED CEILING DETAIL

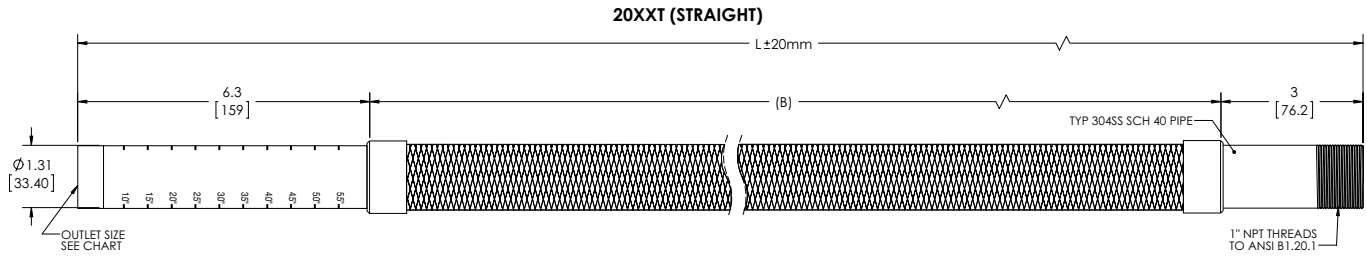


FLEXHEAD SHEETROCK CEILING DETAIL



| PROJECT INFORMATION | | APPROVAL STAMP | |
|---------------------|--|--|--|
| Project: | | <input type="checkbox"/> Approved | |
| Address: | | <input type="checkbox"/> Approved as noted | |
| Contractor: | | <input type="checkbox"/> Not approved | |
| Engineer: | | Remarks: | |
| Submittal Date: | | | |
| Notes 1: | | | |
| Notes 2: | | | |

STANDARD TALL SERIES HOSE



MODEL NUMBER:
 20XXT-XX
 — = 50 (1/2" NPT OUTLET SIZE) OR 75 (3/4" NPT OUTLET SIZE)
 — = TALL SERIES HOSE
 — = HOSE LENGTH (24", 36", 48", 60", OR 72")

All dimensions are in inches

FLEXHEAD STANDARD TALL HOSE SERIES – 1" INTERNAL DIAMETER (I.D.) HOSE SERIES

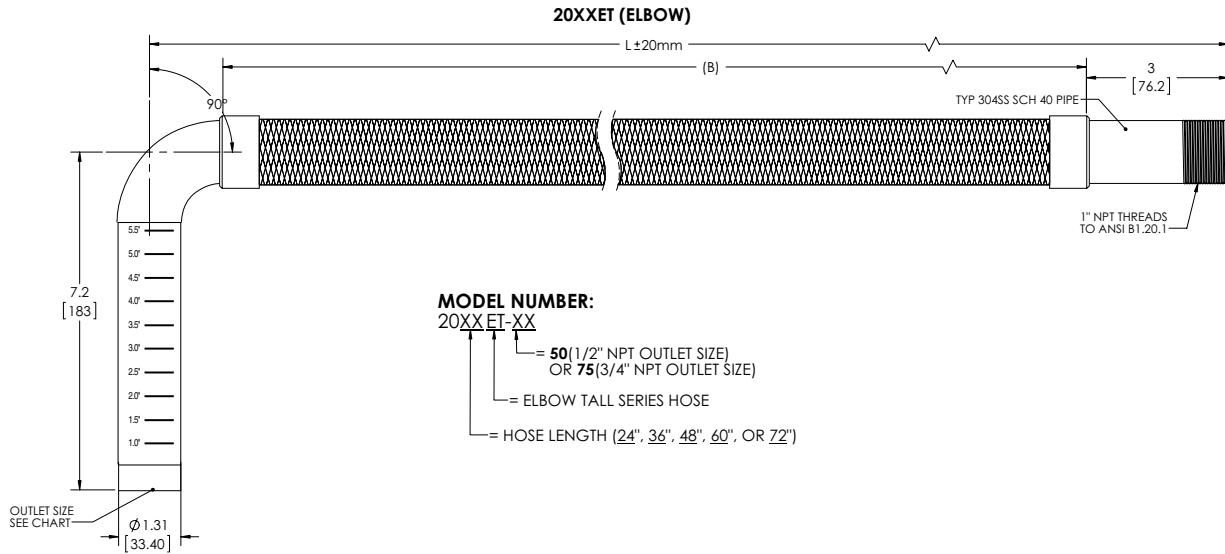
| Model Number | Outlet Orifice Size | Hose Assembly Length (L) | Braid Length (B) | Minimum Bend Radius | | Max. Number of 90° Bends | | Equivalent Length of 1 in. Schedule 40 Pipe (Ft.) | | | | | | Max. Rated Working Pressure | |
|--------------|---------------------|--------------------------|------------------|---------------------|-----------|--------------------------|---------|---|--------------|--------------|---------------|---------------|---------------|-----------------------------|-------------|
| | | | | FM | UL | FM | UL | UL | FM | | | | | FM | UL |
| | | | | | | | | | 5.6 k-Factor | 8.0 k-Factor | 11.2 k-Factor | 14.0 k-Factor | 16.8 k-Factor | | |
| | In./cm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | PSI/Kpa | PSI/Kpa |
| 2024T-50 | 1/2 1.27 | 24 610 | 14.7 373.4 | 8 200 | 3 76.2 | 1 | 3 | 11 3.4 | 18.4 5.6 | 7.7 2.3 | 7.6 2.3 | — | — | 175 1205 | 175 1205 |
| 2036T-50 | | 36 914 | 26.7 678.2 | | | 2 | 3 | 16 4.9 | 26.6 8.1 | 11.5 3.5 | 11.5 3.5 | — | — | | |
| 2048T-50 | | 48 1219 | 38.7 983.0 | | | 3 | 4 | 24 7.3 | 30.3 9.2 | 15.3 4.6 | 15.3 4.7 | — | — | | |
| 2060T-50 | | 60 1524 | 50.7 1287.8 | | | 4 | 4 | 29 8.8 | 35.8 10.9 | 19.1 5.8 | 19.3 5.8 | — | — | | |
| 2072T-50 | | 72 1828 | 62.7 1592.6 | | | 4 | 4 | 35 10.7 | 45.6 13.9 | 23 7 | 23.2 7 | — | — | | |
| 2024T-75 | 3/4 1.90 | 24 610 | 14.7 373.4 | 8 200 | 3 76.2 | 1 | 3 | 12 3.7 | N/A | | | 14.7 4.5 | 7.1 2.1 | 175 1205 | 175 1205 |
| 2036T-75 | | 36 914 | 26.7 678.2 | | | 2 | 3 | 18 5.5 | N/A | 21.5 6.5 | 21.6 6.6 | 21.8 6.6 | 10.9 3.3 | | |
| 2048T-75 | | 48 1219 | 38.7 983.0 | | | 3 | 4 | 23 7.0 | N/A | 30.5 9.3 | 30.6 9.3 | 29 8.8 | 14.8 4.5 | | |
| 2060T-75 | | 60 1524 | 50.7 1287.8 | | | 4 | 4 | 29 8.8 | N/A | 39.5 12 | 39.6 12 | 36.1 11 | 18.7 5.6 | | |
| 2072T-75 | | 72 1828 | 62.7 1592.6 | | | 4 | 4 | 32 9.8 | N/A | 48.5 14.7 | 48.8 14.9 | 43.2 13.1 | 22.6 6.8 | | |

Model Numbers: The "T" designates Tall Series Hose. The "50" designates 1/2" Outlet Hose Series. The "75" designates 3/4" Outlet Hose Series.

Equivalent Lengths are shown with maximum number of 90° bends at the minimum bend radius per agency. 2- 45° or 3-30° bends equal 1-90° bend. Different values were obtained by FM and UL due to the difference in minimum bend radius, testing protocol and calculation methods. Please see individual standards for more information relative to Friction Loss (equivalent length of pipe).

See listing(s) approval agency for the latest approval details.

STANDARD TALL SERIES HOSE



FLEXHEAD ELBOW TALL HOSE SERIES – 1" INTERNAL DIAMETER (I.D.) HOSE SERIES

| Model Number | Outlet Orifice Size | Hose Assembly Length (L) | Braid Length (B) | Minimum Bend Radius | | Max. Number of 90° Bends | | Equivalent Length of 1 in. Schedule 40 Pipe (Ft.) | | | | | Max. Rated Working Pressure | | |
|--------------|---------------------|--------------------------|------------------|---------------------|-----------|--------------------------|--------|---|--------------|--------------|---------------|---------------|-----------------------------|-------------|-------------|
| | | | | FM | UL | FM | UL | UL | FM | | | | | FM | UL |
| | | | | | | | | | 5.6 k-Factor | 8.0 k-Factor | 11.2 k-Factor | 14.0 k-Factor | 16.8 k-Factor | | |
| In./cm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | PSI/Kpa | PSI/Kpa | | |
| 2024ET-50 | 1/2 1.27 | 24 610 | 19.5 495.3 | 8 200 | 3 76.2 | 1 | 3 | 19 5.8 | 26.4 8.0 | 6.8 2 | 7.4 2.2 | — | — | 175 1205 | 175 1205 |
| 2036ET-50 | | 36 914 | 31.5 800.1 | | | 2 | 3 | 23 7.0 | 30.1 9.1 | 11.8 3.6 | 12.5 3.8 | — | — | | |
| 2048ET-50 | | 48 1219 | 43.5 1104.9 | | | 3 | 4 | 27 8.2 | 33.8 10.3 | 16.9 5.1 | 17.6 5.3 | — | — | | |
| 2060ET-50 | | 60 1524 | 55.5 1409.7 | | | 4 | 4 | 32 9.8 | 37.5 11.4 | 21.9 6.6 | 22.7 6.9 | — | — | | |
| 2072ET-50 | | 72 1828 | 67.5 1714.5 | | | 4 | 4 | 35 10.7 | 41.2 12.5 | 27 8.2 | 27.8 8.4 | — | — | | |
| 2024ET-75 | 3/4 1.90 | 24 610 | 19.5 495.3 | 8 200 | 3 76.2 | 1 | 3 | 18 5.5 | N/A | | | 14.7 4.5 | 8.2 2.5 | 175 1205 | 175 1205 |
| 2036ET-75 | | 36 914 | 31.5 800.1 | | | 2 | 3 | 23 7.0 | N/A | 25.2 7.7 | 26 7.9 | 21.8 6.6 | 13 3.9 | | |
| 2048ET-75 | | 48 1219 | 43.5 1104.9 | | | 3 | 4 | 23 7.0 | N/A | 32.9 10 | 33 10 | 29 8.8 | 17.8 5.4 | | |
| 2060ET-75 | | 60 1524 | 55.5 1409.7 | | | 4 | 4 | 29 8.8 | N/A | 40.6 12.3 | 40 12.1 | 36.1 11 | 22.6 6.8 | | |
| 2072ET-75 | | 72 1828 | 67.5 1714.5 | | | 4 | 4 | 32 9.8 | N/A | 48.5 14.7 | 47 14.3 | 43.2 13.1 | 27.5 8.3 | | |

Model Numbers: The "ET" designates Elbow Tall Series Hose. The "50" designates 1/2" Outlet Hose Series. The "75" designates 3/4" Outlet Hose Series.

Equivalent Lengths are shown with maximum number of 90° bends at the minimum bend radius per agency. 2- 45° or 3-30° bends equal 1-90° bend. Different values were obtained by FM and UL due to the difference in minimum bend radius, testing protocol and calculation methods. Please see individual standards for more information relative to Friction Loss (equivalent length of pipe).

See listing(s) approval agency for the latest approval details.

INSTALLATION INSTRUCTIONS

MPO24BKT2 Multi-Position Open Hub Bracket (MPO) Installation of FlexHead Commercial Ceiling Flexible Sprinkler Drop System

Recommend the use of proper PPE for installation. MPO24BKT2 is approved for use with the standard FlexHead® Flexible Sprinkler Hose in accordance to NFPA 13, 13D, & 13R for use in wet and dry sprinkler system. The Standard Flexible sprinkler hoses are UL approved for Limited flexibility and are intended for direct sprinkler connection.

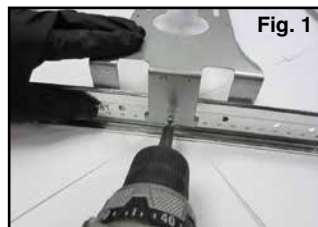
The MPO24BKT2 is pre-assembled at center tile position. (See below for additional installation configurations)



1 T Bar Ceiling Grid Installation

The MPO bracket is designed for use on ceiling grids conforming to ASTM C 635*.

Locate the center of the ceiling tile marking, align the offset screw with that marking for true center of tile installation. Insert one bracket leg at a time, applying a downward pressure on the bracket leg and T-Bar. Place the second leg on the T-Bar and repeat process. (Fig. 1)



2 FlexHead Flexible Hose Installation

Apply Teflon® tape or pipe sealant to the 1" NPT thread. Install into branch outlet. Any direction is acceptable, ensure the hose is allowed at least one bend per installation to allow for seismic movement. (See Friction Loss Chart on page 8 for details.)

Tighten hose using the pipe drop section, never apply a wrench to the braided hose for installation. (Fig. 2)



Do not wrench on braided hose

3 MPO Bracket Installation

Maneuver the flexible sprinkler drop from the branch to the MPO bracket. Review that the hose length, number of bends, and bend radius are applicable for the installation per NFPA guidelines. (See corresponding hose submittal for installation information.)

The MPO bracket has an open hub for ease of installation. Open the hinge apparatus by turning the locking shaft ¼ turn. Slide the flexible hose drop into the hub. Ensure the drop is vertical, and the SS Flexible® hose is not applying a substantial moment on the bracket causing sprinkler misalignment. Latch the hinge door closed and adjust the sprinkler drop for desired ceiling height. Tighten the set screw till hand tight plus 1" turn, (100 in-lbs).

Install desired sprinkler head, per the manufacturer's installation instructions.



Installation Configurations



24" Tile – 24/4 - Quarter Mark Position



14½" Wood Stud - Center Position♦

Installation Complete



U.S and International Patent Pending: #6,123,154, #6,119,784, #6,752,218, #7,032,680, #6,488,097
20XXHE, 20XXSF, 20XXE & 20XXI, 20XXET with MPO24BKT2 Bracket has not been evaluated by UL.

*Intended for use on ASTM C 635 intermediate or heavy duty ceilings systems installed in accordance to ASTM C 636.

♦FM Approved, Installation has not been evaluated by UL.

INSTALLATION INSTRUCTIONS

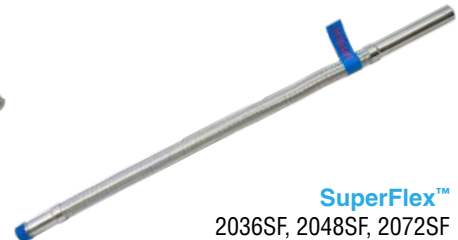
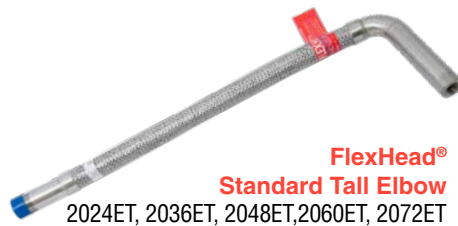
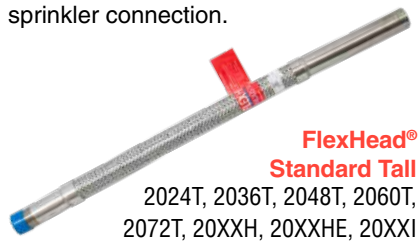
ADOXXBKT3 Adjustable Open Hub Bracket (ADO) Installation of FlexHead Commercial Ceiling Flexible Sprinkler Drop System

Recommend the use of proper PPE for installation. ADOXX-BKT3 is approved for use with the standard FlexHead® and SuperFlex™ Flexible Sprinkler Hose in accordance to NFPA 13, 13D, & 13R for use in wet and dry sprinkler system. The Standard & SuperFlex™ Flexible sprinkler hoses are UL approved for limited flexibility and are intended for direct sprinkler connection.

The ADOXXBKT3 is pre-assembled at center tile position. (See below for additional installation configurations)



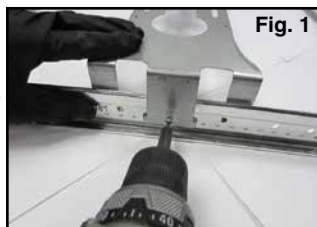
ADO16BKT3 & ADO24BKT3 UL Listed and FM Approved.
ADO30BKT3 & ADO48BKT3 FM Approved.



1 T Bar Ceiling Grid Installation

The ADO bracket is designed for use on ceiling grids conforming to ASTM C 635*.

Locate the center of the ceiling tile marking, align the offset screw with that marking for true center of tile installation. Insert one bracket leg at a time, applying a downward pressure on the bracket leg and T-Bar. Place the second leg on the T-Bar and repeat process. (Fig. 1)



3 ADO Bracket Installation

Maneuver the flexible sprinkler drop from the branch to the ADO bracket. Review that the hose length, number of bends, and bend radius are applicable for the installation per NFPA guidelines. (See corresponding hose submittal for installation information.)



2 FlexHead Flexible Hose Installation

A. For threaded fitting branch connection: Apply Teflon® tape or pipe sealant to the 1" NPT thread. Install into branch outlet. Tighten the hose using the pipe section, never apply a wrench to the braided hose when installing.



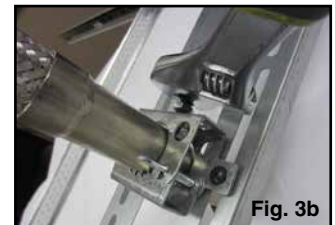
Do not wrench on braided hose

B. For groove connection follow the grooved coupling manufacturer's installation instructions.

C. For SLT connection follow Gruvlok® installation instructions, "Fig 7074SLT SlideLOK® Ready for Installation Cap & Fitting Instructions".

The FlexHead connection can be installed in any direction from the branch. Ensure the hose is allowed at least one bend per installation to allow for seismic movement. (See fiction Loss Chart on Page 3 for details)

The ADO bracket has an open hub for ease of installation. Open the hinge apparatus by turning the locking shaft ¼ turn. Slide the flexible hose drop into the hub. Ensure the drop is vertical, and the SS Flexible® hose is not applying a substantial moment on the bracket causing sprinkler misalignment. Latch the hinge door closed and adjust the sprinkler drop for desired ceiling height. Tighten the set screw till hand tight plus ¾" turn, (130 in-lbs). (Fig. 3a and 3b)



Install desired sprinkler head, per the manufacturer's installation instructions.

Installation Configurations



24" Tile – 24/4 - Quarter Mark Position



14½" Wood Stud - Center Position♦

Installation Complete



U.S and International Patent Pending: #6,123,154, #6,119,784, #6,752,218, #7,032,680, #6,488,097
20XXT, 220XXET, 20XXH, 20XXHE, 20XXI, with ADOXXBKT3 Bracket has not been evaluated by UL.

*Intended for use on ASTM C 635 intermediate or heavy duty ceilings systems installed in accordance to ASTM C 636.

♦FM Approved, Installation has not been evaluated by UL.

INSTALLATION INSTRUCTIONS

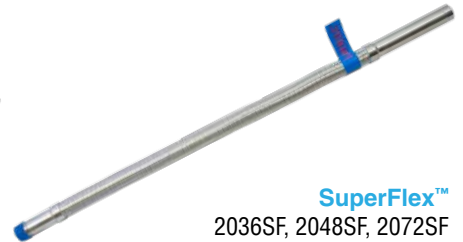
MPT24BKT1 Multi-Position Tall Bracket (MPT) Installation of FlexHead Commercial Ceiling Flexible Sprinkler Drop System

Recommend the use of proper PPE for installation. MPT-24-BKT1 is approved for use with the standard FlexHead® and SuperFlex™ Flexible Sprinkler Hose in accordance to NFPA 13, 13D, & 13R for use in wet and dry sprinkler system. The Standard & SuperFlex™ Flexible sprinkler hoses are UL

approved for limited flexibility and are intended for direct sprinkler connection.



The MPT bracket is set for 24" center of tile installation. (See back side for additional installation configurations)



1 T Bar Ceiling Grid Installation

The MPT bracket is designed for use on ceiling grids conforming to ASTM C 635*.

Locate the center of the ceiling tile marking, align the offset screw with that marking for true center of tile installation. Insert one bracket leg at a time, applying a downward pressure on the bracket leg and T-Bar. Screw the self tapping screw using a #2 square head driver. Place the second leg on the T-Bar and repeat process. (Fig. 1)



2 FlexHead Flexible Hose Installation

A. For threaded fitting branch connection: Apply Teflon® tape or pipe sealant to the 1" NPT thread. Install into branch outlet. Tighten the hose using the pipe section, never apply a wrench to the braided hose when installing.

B. For groove connection follow the grooved coupling manufacturer's installation instructions.

C. For SLT connection follow Gruvlok® installation instructions, "Fig 7074SLT SlideLOK® Ready for Installation Cap & Fitting Instructions".

The FlexHead connection can be installed in any direction from the branch. Ensure the hose is allowed at least one bend per installation to allow for seismic movement. (See fiction Loss Chart on Page 3 for details)



Do not wrench on braided hose

*Intended for use on ASTM C 635 intermediate or heavy duty ceilings systems installed in accordance to ASTM C 636.

3 Secure the Flexhead Sprinkler Drop to MPT Bracket – Maneuver the flexible sprinkler drop from the branch to the MPT bracket. Review that the hose length, number of bends, and bend radius are applicable for the installation per NFPA guidelines. (See corresponding hose submittal for installation information.)

The MPT bracket has an open hub for ease of installation. Open the hinge apparatus by turning the locking shaft ¼ turn. Slide the flexible hose drop into the hub. Ensure the drop is vertical, and the SS Flexible® hose is not applying a substantial moment on the bracket causing sprinkler misalignment. Latch the hinge door close and adjust the sprinkler drop for desired ceiling height. Tightening the set screw till hand tight plus two full revolutions, (130 in-lbs). (Fig. 3a and 3b)

Install desired sprinkler head, per the manufacturer's installation instructions.

4 Ceiling Tile Installation – The flexible sprinkler drop system with MPT Bracket is able to be installed prior to the ceiling tile installation, preventing the need for sprinkler contractor tile adjustment.

For ease of tile installation, cut the largest sprinkler hole recommended by the manufacturer. The largest hole that is still covered by the sprinkler escutcheon allows for an easier install.

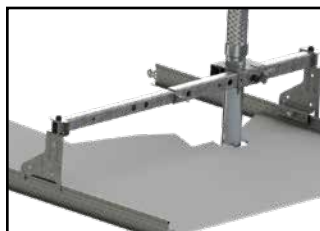
Angle the tile at 45 degrees and push the tile through the hole and up above the ceiling T-bar, maneuver the tile and allow it to drop in the proper location. (Fig. 4)



Installation Complete



Installation Configurations



24" Tile – 24/4
Quarter Mark Position



16" Tile – 16/2
Center Position



16" Metal Stud
Center Position*



14½" Wood Stud
Center Position*

U.S. and International Patent Pending: #6,123,154, #6,119,784, #6,752,218, #7,032,680, #6,488,097
20XXET with MPT-24BKT1 Bracket has not been evaluated by UL.
*FM Approved, Installation has not been evaluated by UL.

| FRICTION LOSS DATA & SPECIFICATIONS | | | | | | | | | | | | | | | |
|--|---------------------|----------------------|---------------------|-----------|--------------------------|---------|------------|---|--------------|---------------|---------------|---------------|---------------|-----------------------------|-------------|
| Model Number | Outlet Orifice Size | Hose Assembly Length | Minimum Bend Radius | | Max. Number of 90° Bends | | | Equivalent Length of 1 in. Schedule 40 Pipe (Ft.) | | | | | | Max. Rated Working Pressure | |
| | | | FM | UL | UL | FM | UL | FM | | | | | | FM | UL |
| | | | | | | | | 5.6 k-Factor | 8.0 k-Factor | 11.2 k-Factor | 14.0 k-Factor | 16.8 k-Factor | 22.4 k-Factor | | |
| In./cm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | PSI/Kpa | PSI/Kpa | |
| SuperFlex 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2036SF-50 | ½ 1.27 | 36 914 | 7 178 | 2 50.8 | 5 | 2 | 30 9.1 | 16.2 4.9 | 16.9 5.1 | 11.5 3.5 | — | — | — | | |
| 2048SF-50 | | 48 1219 | | | 8 | 3 | 47 14.3 | 28.7 8.7 | 29.3 8.9 | 15.4 4.7 | — | — | — | | |
| 2072SF-50 | | 72 1828 | | | 12 | 4 | 71 21.6 | 53.9 16.4 | 54.3 16.5 | 23.2 7 | — | — | — | | |
| 2036SF-75 | ¾ 1.90 | 36 914 | 7 178 | 2 50.8 | 5 | 2 | 29 8.8 | — | 21.5 6.5 | 21.6 6.5 | 21.8 6.6 | 22 6.7 | — | | |
| 2048SF-75 | | 48 1219 | | | 8 | 3 | 44 13.4 | — | 30.5 9.2 | 30.6 9.3 | 31.1 9.4 | 30.8 9.3 | — | | |
| 2072SF-75 | | 72 1828 | | | 12 | 4 | 70 21.3 | — | 48.5 14.7 | 48.8 14.8 | 49.9 15.2 | 48.6 14.8 | — | | |
| SuperFlex Elbow 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2036ESF-50 | ½ 1.27 | 36 914 | 7 178 | N/A | — | 2 | — | 25.8 7.8 | 26.1 7.9 | 12.5 3.8 | — | — | — | 175 1205 | 175 1205 |
| 2048ESF-50 | | 48 1219 | | | — | 3 | — | 36.1 11 | 36.3 11 | 17.6 5.3 | — | — | — | | |
| 2072ESF-50 | | 72 1828 | | | — | 4 | — | 57.3 17.4 | 56.9 17.3 | 27.8 8.4 | — | — | — | | |
| 2036ESF-75 | ¾ 1.90 | 36 914 | 7 178 | N/A | — | 2 | — | — | 25.2 7.6 | 26 7.9 | 25.9 7.9 | 25.7 7.8 | — | 175 1205 | 175 1205 |
| 2048ESF-75 | | 48 1219 | | | — | 3 | — | — | 32.9 10 | 33 10 | 33 10 | 33 10 | — | | |
| 2072ESF-75 | | 72 1828 | | | — | 4 | — | — | 48.5 14.8 | 47 14.3 | 47.3 14.4 | 47.6 14.5 | — | | |
| Flexhead Standard Tall 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2024T-50 | ½ 1.27 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 11 3.4 | 18.4 5.6 | 7.7 2.3 | 7.6 2.3 | — | — | — | 175 1205 | 175 1205 |
| 2036T-50 | | 36 914 | | | 3 | 2 | 16 4.9 | 26.6 8.1 | 11.5 3.5 | 11.5 3.5 | — | — | — | | |
| 2048T-50 | | 48 1219 | | | 4 | 3 | 24 7.3 | 30.3 9.2 | 15.3 4.6 | 15.4 4.7 | — | — | — | | |
| 2060T-50 | | 60 1524 | | | 4 | 4 | 29 8.8 | 35.8 10.9 | 19.1 5.8 | 19.3 5.8 | — | — | — | | |
| 2072T-50 | | 72 1828 | | | 4 | 4 | 35 10.7 | 45.6 13.9 | 23.0 7 | 23.2 7 | — | — | — | | |
| 2024T-75 | ¾ 1.90 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 12 3.7 | — | 7.3 2.2 | 5.9 1.8 | 14.7 4.5 | 7.1 2.1 | — | 175 1205 | 175 1205 |
| 2036T-75 | | 36 914 | | | 3 | 2 | 18 5.5 | — | 21.5 6.5 | 10.4 3.1 | 21.8 6.6 | 10.9 3.3 | — | | |
| 2048T-75 | | 48 1219 | | | 4 | 3 | 23 7.0 | — | 30.5 9.3 | 14.9 4.5 | 29 8.8 | 14.8 4.5 | — | | |
| 2060T-75 | | 60 1524 | | | 4 | 4 | 29 8.8 | — | 39.5 12 | 19.4 5.9 | 36.1 11 | 18.7 5.6 | — | | |
| 2072T-75 | | 72 1828 | | | 4 | 4 | 32 9.8 | — | 48.5 14.7 | 24.0 7.3 | 43.2 13.1 | 22.6 6.8 | — | | |
| Flexhead Standard Tall Elbow 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2024ET-50 | ½ 1.27 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 19 5.8 | 26.4 8.0 | 6.8 2 | 7.4 2.2 | — | — | — | 175 1205 | 175 1205 |
| 2036ET-50 | | 36 914 | | | 3 | 2 | 23 7.0 | 30.1 9.1 | 11.8 3.6 | 12.5 3.8 | — | — | — | | |
| 2048ET-50 | | 48 1219 | | | 4 | 3 | 27 8.2 | 33.8 10.3 | 16.9 5.1 | 17.6 5.3 | — | — | — | | |
| 2060ET-50 | | 60 1524 | | | 4 | 4 | 32 9.8 | 37.5 11.4 | 21.9 6.6 | 22.7 6.9 | — | — | — | | |
| 2072ET-50 | | 72 1828 | | | 4 | 4 | 35 10.7 | 41.2 12.5 | 27.0 8.2 | 27.8 8.4 | — | — | — | | |

See Table Notes on Page 8.

| FRICTION LOSS DATA & SPECIFICATIONS | | | | | | | | | | | | | | | | | |
|--|---------------------|----------------------|---------------------|-----------|--------------------------|---------|-----------|---|--------------|---------------|---------------|---------------|---------------|-------------|-----------------------------|-------------|-------------|
| Model Number | Outlet Orifice Size | Hose Assembly Length | Minimum Bend Radius | | Max. Number of 90° Bends | | | Equivalent Length of 1 in. Schedule 40 Pipe (Ft.) | | | | | | | Max. Rated Working Pressure | | |
| | | | FM | UL | UL | FM | UL | FM | | | | | | FM | UL | | |
| | | | | | | | | 5.6 k-Factor | 8.0 k-Factor | 11.2 k-Factor | 14.0 k-Factor | 16.8 k-Factor | 22.4 k-Factor | | | | |
| | In./cm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | PSI/Kpa | PSI/Kpa | | | |
| 2024ET-75 | ¾ 1.90 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 18 5.5 | — | 8.8 2.6 | 8.7 2.6 | 14.7 4.5 | 8.2 2.5 | — | 175 1205 | 175 1205 | | |
| 2036ET-75 | | 36 914 | | | | | 3 | 2 | 23 7.0 | — | 25.5 7.7 | 14.2 4.2 | 21.8 6.6 | | | 13 3.9 | — |
| 2048ET-75 | | 48 1219 | | | | | 4 | 3 | 23 7.0 | — | 32.9 10 | 18.4 5.6 | 29 8.8 | | | 17.8 5.4 | — |
| 2060ET-75 | | 60 1524 | | | | | 4 | 4 | 29 8.8 | — | 40.6 12.3 | 22.7 6.9 | 36.1 11.0 | | | 22.6 6.8 | — |
| 2072ET-75 | | 72 1828 | | | | | 4 | 4 | 32 9.8 | — | 48.5 14.7 | 27.0 8.2 | 43.2 13.1 | | | 27.5 8.3 | — |
| Flexhead High Pressure 1" Internal Diameter (I.D.) Hose Series | | | | | | | | | | | | | | | | | |
| 2024H-50 | ½ 1.27 | 24 610 | 8 200 | 3 76.2 | 3 | 2 | 11 3.4 | 18.4 5.6 | 7.7 2.3 | 7.6 2.3 | — | — | — | 300 2068 | 300 2068 | | |
| 2036H-50 | | 36 914 | | | | | 3 | 3 | 16 4.9 | 26.6 8.1 | 11.5 3.5 | 11.5 3.5 | — | | | — | — |
| 2048H-50 | | 48 1219 | | | | | 4 | 4 | 24 7.3 | 30.3 9.2 | 15.3 4.6 | 15.4 4.7 | — | | | — | — |
| 2060H-50 | | 60 1524 | | | | | 4 | 4 | 29 8.8 | 35.8 10.9 | 19.1 5.8 | 19.3 5.8 | — | | | — | — |
| 2072H-50 | | 72 1828 | | | | | 4 | 4 | 35 10.7 | 45.6 13.9 | 23.0 7 | 23.2 7 | — | | | — | — |
| 2024H-75 | ¾ 1.90 | 24 610 | 8 200 | 3 76.2 | 3 | 2 | 12 3.7 | — | 14.7 4.5 | 6.8 2.0 | 14.7 4.5 | 7.1 2.1 | — | 300 2068 | 300 2068 | | |
| 2036H-75 | | 36 914 | | | | | 3 | 3 | 18 5.5 | — | 21.5 6.5 | 11.4 3.4 | 21.8 6.6 | | | 10.9 3.3 | — |
| 2048H-75 | | 48 1219 | | | | | 4 | 4 | 23 7.0 | — | 30.5 9.2 | 16.0 5.1 | 29 8.8 | | | 14.8 4.5 | — |
| 2060H-75 | | 60 1524 | | | | | 4 | 4 | 29 8.8 | — | 39.5 12 | 20.6 6.2 | 36.1 11.0 | | | 18.7 5.7 | — |
| 2072H-75 | | 72 1828 | | | | | 4 | 4 | 32 9.8 | — | 48.5 14.7 | 25.3 7.7 | 43.2 13.1 | | | 22.6 6.8 | — |
| Flexhead High Pressure Elbow 1" Internal Diameter (I.D.) Hose Series | | | | | | | | | | | | | | | | | |
| 2024HE-50 | ½ 1.27 | 24 610 | 8 200 | 3 76.2 | 3 | 2 | 19 5.8 | 14.7 4.5 | 6.8 2 | 7.4 2.2 | — | — | — | 300 2068 | 300 2068 | | |
| 2036HE-50 | | 36 914 | | | | | 3 | 3 | 23 7.0 | 21.8 6.6 | 11.8 3.6 | 12.5 3.8 | — | | | — | — |
| 2048HE-50 | | 48 1219 | | | | | 4 | 4 | 27 8.2 | 29.0 8.8 | 16.9 5.1 | 17.6 5.3 | — | | | — | — |
| 2060HE-50 | | 60 1524 | | | | | 4 | 4 | 32 9.8 | 36.1 11 | 21.9 6.6 | 22.7 6.9 | — | | | — | — |
| 2072HE-50 | | 72 1828 | | | | | 4 | 4 | 35 10.7 | 43.2 13.1 | 27.0 8.2 | 27.8 8.4 | — | | | — | — |
| 2024HE-75 | ¾ 1.90 | 24 610 | 8 200 | 3 76.2 | 3 | 2 | 18 5.5 | — | 14.7 4.5 | — | 14.7 4.5 | 8.2 2.5 | — | 300 2068 | 300 2068 | | |
| 2036HE-75 | | 36 914 | | | | | 3 | 3 | 23 7.0 | — | 25.2 7.7 | 26 7.9 | 21.8 6.6 | | | 13 3.9 | — |
| 2048HE-75 | | 48 1219 | | | | | 4 | 4 | 23 7.0 | — | 32.9 10 | 33 10 | 29 8.8 | | | 17.8 5.4 | — |
| 2060HE-75 | | 60 1524 | | | | | 4 | 4 | 29 8.8 | — | 40.5 12.3 | 40 12.2 | 36.1 11.0 | | | 22.6 6.8 | — |
| 2072HE-75 | | 72 1828 | | | | | 4 | 4 | 32 9.8 | — | 48.5 14.8 | 47 14.3 | 43.2 13.1 | | | 27.5 8.3 | — |
| Flexhead Dry Pendent System 1" Internal Diameter (I.D.) Hose Series | | | | | | | | | | | | | | | | | |
| 2024-DPS | 1 2.54 | 24 610 | 7 180 | — | — | 1 | — | 18.4 5.6 | 7.7 2.3 | 7.6 2.3 | — | 7.1 2.1 | 10.7 3.3 | — | 175 1205 | | |
| 2036-DPS | | 36 914 | | | | | — | 2 | — | 26.6 8.1 | 11.5 3.5 | 11.5 3.5 | — | | | 10.9 3.3 | 15.1 4.6 |
| 2048-DPS | | 48 1219 | | | | | — | 3 | — | 30.3 9.2 | 15.3 4.7 | 15.4 4.7 | — | | | 14.8 4.5 | 21.5 6.5 |
| 2060-DPS | | 60 1524 | | | | | — | 4 | — | 35.8 10.9 | 19.1 5.8 | 19.3 5.9 | — | | | 18.7 5.7 | 25.3 7.7 |
| 2072-DPS | | 72 1828 | | | | | — | 4 | — | 45.6 13.9 | 23 7 | 23.2 7 | — | | | 22.6 6.9 | 26.9 8.1 |

See Table Notes on Page 8.

| FRICTION LOSS DATA & SPECIFICATIONS | | | | | | | | | | | | | | | |
|--|---------------------|----------------------|---------------------|-----------|--------------------------|--------|------------|---|--------------|---------------|---------------|---------------|---------------|-----------------------------|-------------|
| Model Number | Outlet Orifice Size | Hose Assembly Length | Minimum Bend Radius | | Max. Number of 90° Bends | | | Equivalent Length of 1 in. Schedule 40 Pipe (Ft.) | | | | | | Max. Rated Working Pressure | |
| | | | FM | UL | UL | FM | UL | FM | | | | | | FM | UL |
| | | | | | | | | 5.6 k-Factor | 8.0 k-Factor | 11.2 k-Factor | 14.0 k-Factor | 16.8 k-Factor | 22.4 k-Factor | | |
| In./cm. | In./mm. | In./mm. | In./mm. | In./mm. | In./mm. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | Ft./m. | PSI/Kpa | PSI/Kpa | | |
| Flexhead Institutional 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2024I | ½ 1.27 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 11 3.4 | 18.4 5.6 | — | — | — | — | — | 175 1205 | 175 1205 |
| 2036I | | 36 914 | | | 3 | 3 | 16 4.9 | 26.6 8.1 | — | — | — | — | | | |
| 2048I | | 48 1219 | | | 4 | 4 | 24 7.3 | 30.3 9.2 | — | — | — | — | | | |
| 2060I | | 60 1524 | | | 4 | 4 | 29 8.8 | 35.8 10.9 | — | — | — | — | | | |
| 2072I | | 72 1828 | | | 4 | 4 | 35 10.7 | 45.6 13.9 | — | — | — | — | | | |
| 2024I | ¾ 1.90 | 24 610 | 8 200 | 3 76.2 | 3 | 1 | 12 3.7 | — | — | — | 11.6 3.5 | — | — | 175 1205 | 175 1205 |
| 2036I | | 36 914 | | | 3 | 2 | 18 5.5 | — | — | — | 16 4.9 | — | — | | |
| 2048I | | 48 1219 | | | 4 | 3 | 23 7.0 | — | — | — | 17.9 5.4 | — | — | | |
| 2060I | | 60 1524 | | | 4 | 4 | 29 8.8 | — | — | — | 24.7 7.5 | — | — | | |
| 2072I | | 72 1828 | | | 4 | 4 | 32 9.8 | — | — | — | 28.9 8.8 | — | — | | |
| Flexhead Institutional for use with Amerlux Ceiling System - 1" Internal Diameter (I.D) Hose Series | | | | | | | | | | | | | | | |
| 2024IA | ½ 1.27 | 24 610 | 8 200 | — | — | 1 | 11 3.4 | — | 18.4 5.6 | — | — | — | — | 175 1205 | 175 1205 |
| 2036IA | | 36 914 | | | — | 2 | 16 4.9 | — | 26.6 8.1 | — | — | — | — | | |
| 2048IA | | 48 1219 | | | — | 3 | 24 7.3 | — | 30.3 9.2 | — | — | — | — | | |
| 2060IA | | 60 1524 | | | — | 4 | 29 8.8 | — | 35.8 10.9 | — | — | — | — | | |
| 2072IA | | 72 1828 | | | — | 4 | 35 10.7 | — | 45.6 13.9 | — | — | — | — | | |

NOTES:

Model Numbers:

- "SF" designates SuperFlex™ Hose series.
- "ESF" designates SuperFlex™ Elbow Hose series.
- "E" designates elbow drop hose series
- "T" designates straight tall style hose
- "ET" designates elbow tall style hose series.
- "H" designates high pressure 300psi working pressure hose series.
- "HE" designates high pressure 300psi elbow hose series.
- "DPS" designates dry pendant system.
- "DT" designates drain tee hose series used in dry pendent/freezer application.
- "DPS" and "DT" models are approved for use in cold storage application (Freezer, Cold Chamber) and combine an approved flexible sprinkler hose and an approved dry pendent sprinkler. UHO-1 or UHO-3 is required to connect the flexible sprinkler hose to the dry sprinkler.
- "I" indicates institutional flexible hose.
- "A" indicates models for use with Amerlux Ceiling System.
- "50" designates ½" Outlet Hose series. The "75" designates ¾" Outlet Hose series. Inlet size 1".
- Max Ambient Temperature Rating on all model numbers are 300° F (148° C).
- Equivalent lengths are shown with maximum number of 90° bends at the minimum bend radius per agency. 2-45° or 3-30° bend equal 1-90° bend. Different values were obtained by FM and UL due to the difference in minimum bend radius, testing protocol and calculation methods. Please see individual standards for more information relative to Friction Loss (equivalent length of pipe).
- All hoses require a minimum of one bend for installation. Bend radius tool available for 3" bend "T" hose, "SF" hose does not require bend radius tool.
- FM equivalent length calculation includes Sprinkler Head Friction Loss.
- See listing(s) approval agency for the latest approval details.