Model F1FR Series Quick Response Glass Bulb Sprinklers

Bulletin 014 Rev. N

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


Upright


Pendent


Conventional


Vertical Sidewall


Horizontal Sidewall


Recessed Pendent/F1/F2


Recessed Horizontal Sidewall


Concealed Pendent


Recessed Pendent/FP


XLH Upright


XLH Pendent


XLH Recessed Pendent F1/F2


XLH Recessed Pendent FP

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.

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 my 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				--
	Upright	cULus				
F1FR40	Pendent	VdS				
	Recessed Pendent	VdS				--
F1FR42	Pendent	cULus				
	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 (Pendent 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

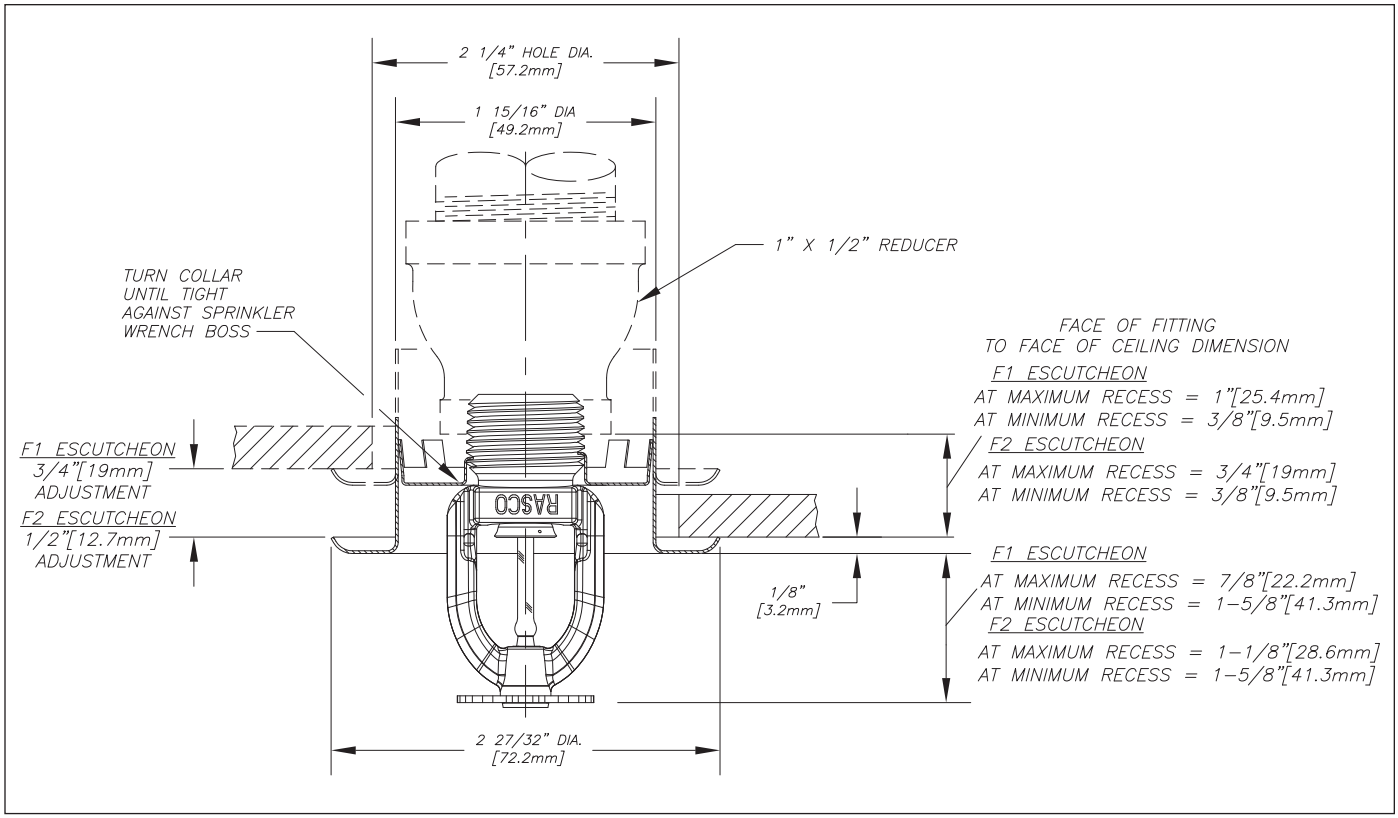

Fig. 1
Model F1FR56, F1FR56LL, F1FR42, F1FR40, F1FR42LL, F1FRXLH & F1FR28
Recessed Pendent sprinkler with Model F1 or F2 escutcheon

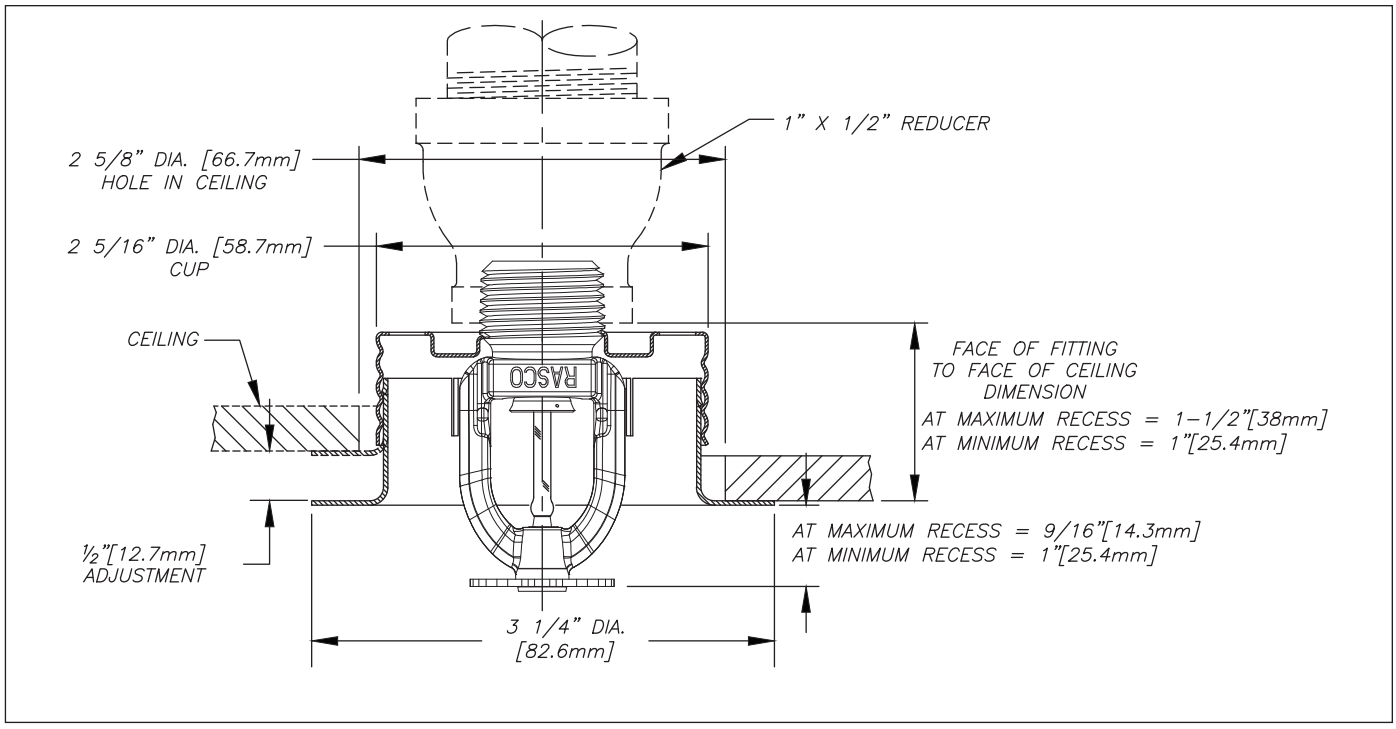

Fig. 2
Model F1FR56, F1FR56LL, F1FR42, F1FR40, F1FR42LL, F1FRXLH & F1FR28
Recessed Pendent sprinkler with Model FP escutcheon

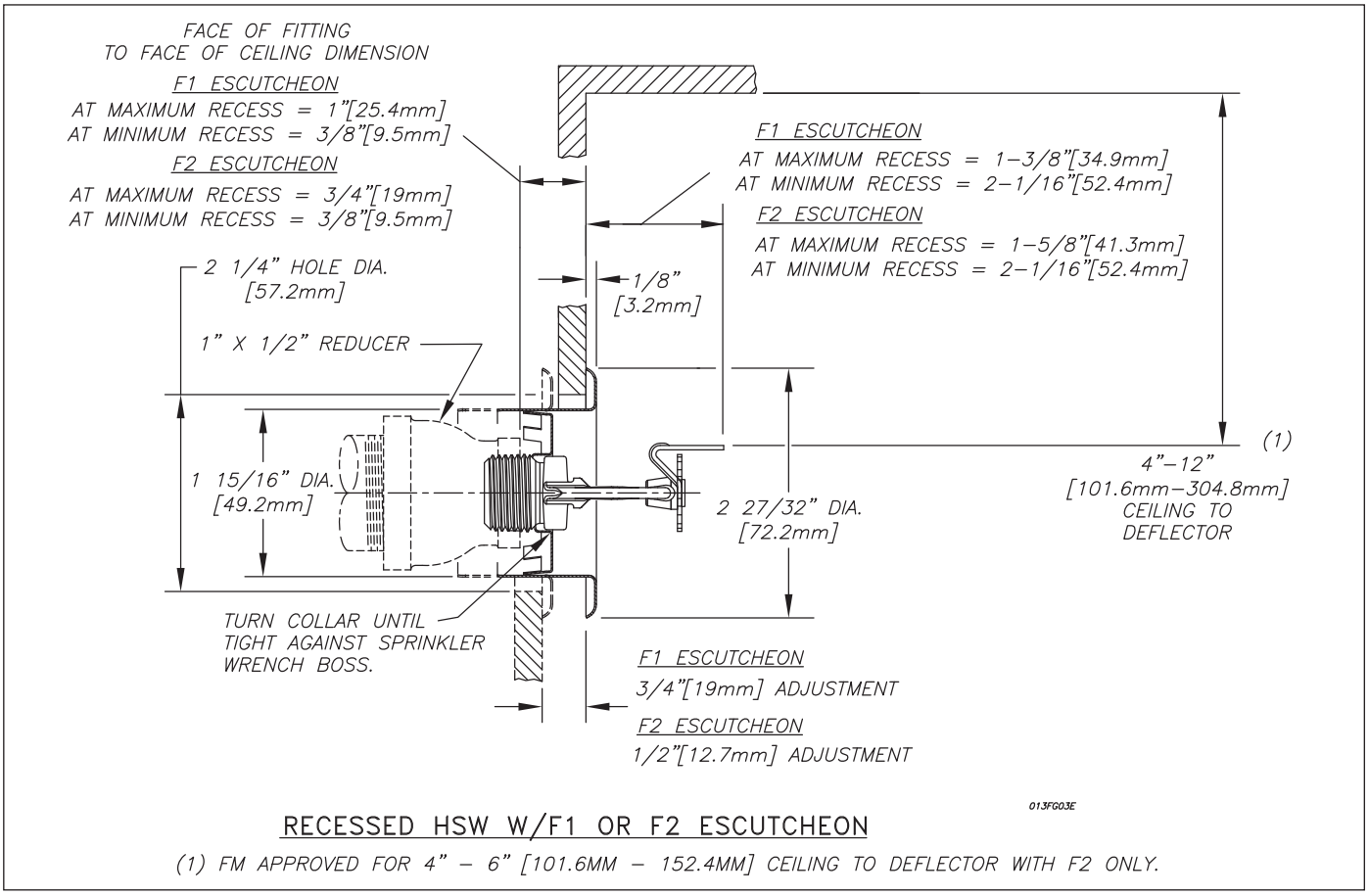

Fig. 3
Model F1FR56 Recessed Horizontal Sidewall sprinkler with Model F1 or F2 escutcheon

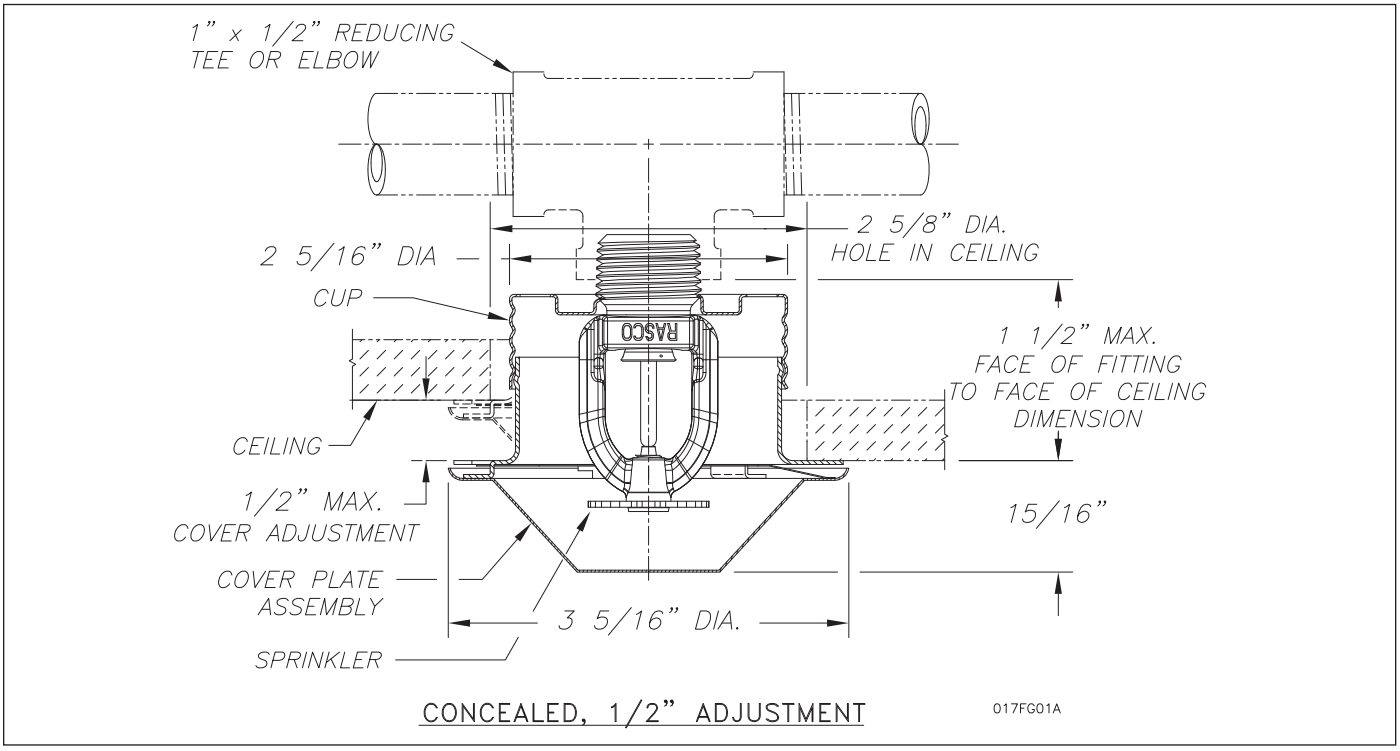

Fig. 4
Model F1FR56/F1FR56LL Concealed Pendent sprinkler with standard depth
1/2-inch (12.7mm) adjustment - Model CCP cover plate

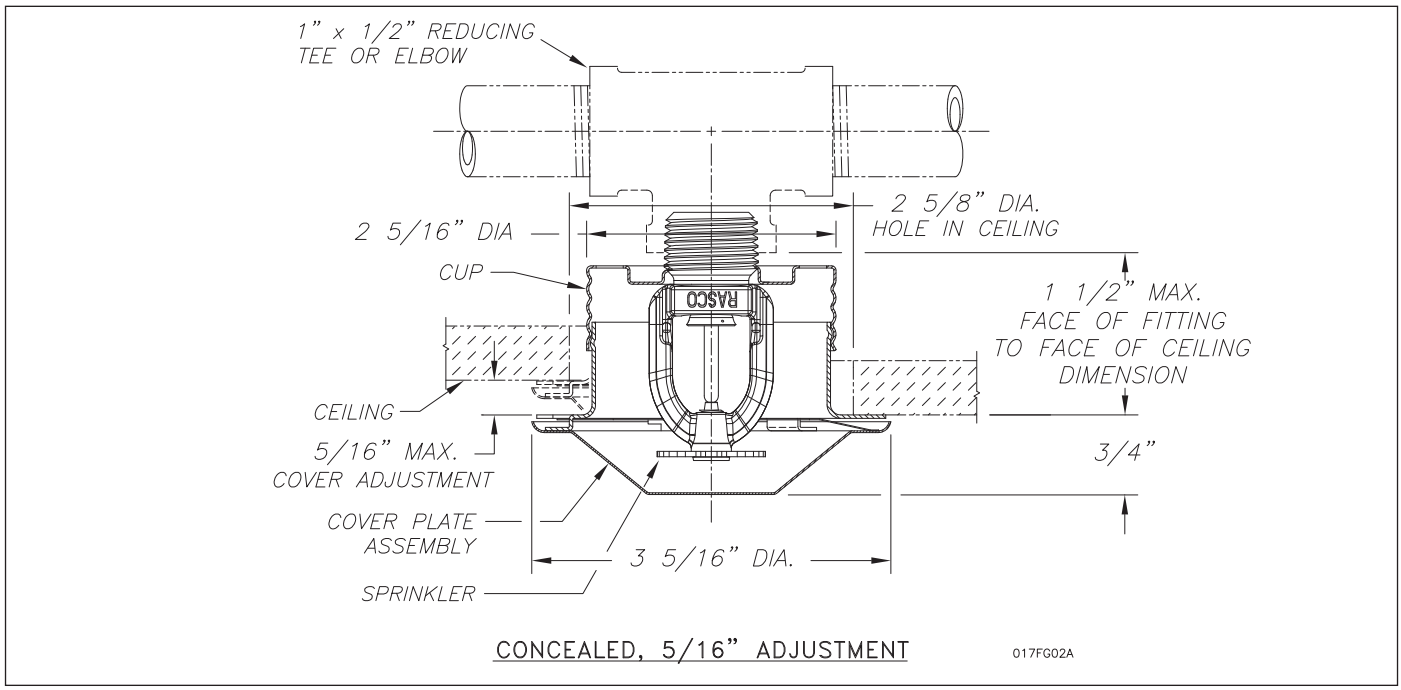

Fig. 5 - Model F1FR56/F1FR56LL Concealed Pendent sprinkler with low profile 5/16-inch (8.0mm) adjustment - Model CCP cover plate

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:

1. Sprinkler Model: [F1FR28][F1FR40][F1FR42] [F1FR42LL][F1FRXLH][F1FR56][F1FR56LL]
2. Sprinkler Deflector/Orientation: [Pendent][Recessed Pendent][Upright][Conventional][Horizontal Sidewall] [Recessed Horizontal Sidewall][Vertical Sidewall]
3. Sprinkler threads: [1/2-inch NPT][ISO 7-R1/2]
4. Sprinkler Temperature Rating: [135°F (57°C)][155°F (68°C)][175°F (79°C)][200°F (93°C)][286°F (141°C)]
5. Sprinkler Finish
6. Escutcheon Model: [F1][F2][FP]
7. Escutcheon Finish (where applicable)
8. Cover plate Model: [standard profile CCP 1/2-inch (12.7mm) adjustment][low profile CCP 5/16-inch (8.0mm) adjustment]
9. Cover plate Temperature Rating: [135°F (57°C) for use with Ordinary Temperature sprinklers][165°F (74°C) for use with Intermediate Temperature sprinklers]
10. 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®

Reliable Automatic Sprinkler Co., Inc.
(800) 431-1588 Sales Offices
(800) 848-6051 Sales Fax
(914) 829-2042 Corporate Offices
www.reliablesprinkler.com Internet Address

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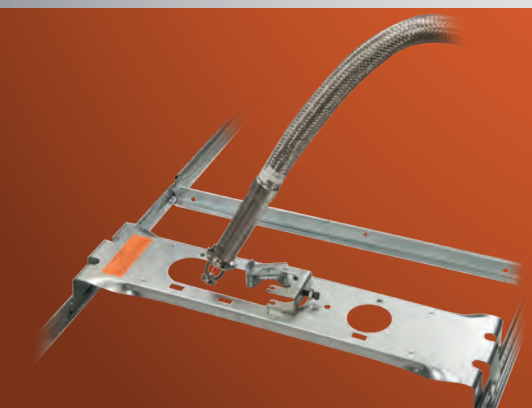

FBC SYSTEM COMPATIBLE

FM APPROVED

FLEXHEAD®
INDUSTRIES

A PART OF atkore INTERNATIONAL

We invented the concept of flexible fire protection™

The FlexHead® Advantage

FLEXHEAD® QUALITY

- **Best corrosion resistance**
  Made from 100% 304 stainless steel
- **Excellent friction loss values**
  One-inch true-bore ID reducing the need to upsize mains and branch lines, 1¼" available
- **Pressure surge protection**
  Fully braided connection improves pressure capability and prevents hose damage
- **Highest maximum working pressure**
  Rated up to 300 psig
- **No o-rings or gaskets**
  Welded connections reduce potential leak points at the inlet and outlet fitting
- **Tightest thread tolerances**
  Outlet fitting threads are machined from solid bar stock reducing potential leaks at the sprinkler head fit-up
- **Extra stability**
  Bracket has a full 6-inch base to stabilize the sprinkler head during installation, pressurization or activation

FLEXHEAD® FEATURES

- Is **seismically qualified** for use, eliminating the need for an oversized ring around the sprinkler head in seismic areas
- Has the same product design that is **dual listed** by both UL and FM
- Can be **produced domestically** to meet all your project requirements
- Has **serial identification** with complete audit tracking of finished goods
- Has a **comprehensive limited warranty** backed by an A++ insurance company
- Offers a variety of flexible fire sprinkler connections, suspended ceilings, gypsum board ceilings, institutional applications, cleanroom and duct applications
- Offers 1.25" FlexHead® hose for superior friction loss numbers

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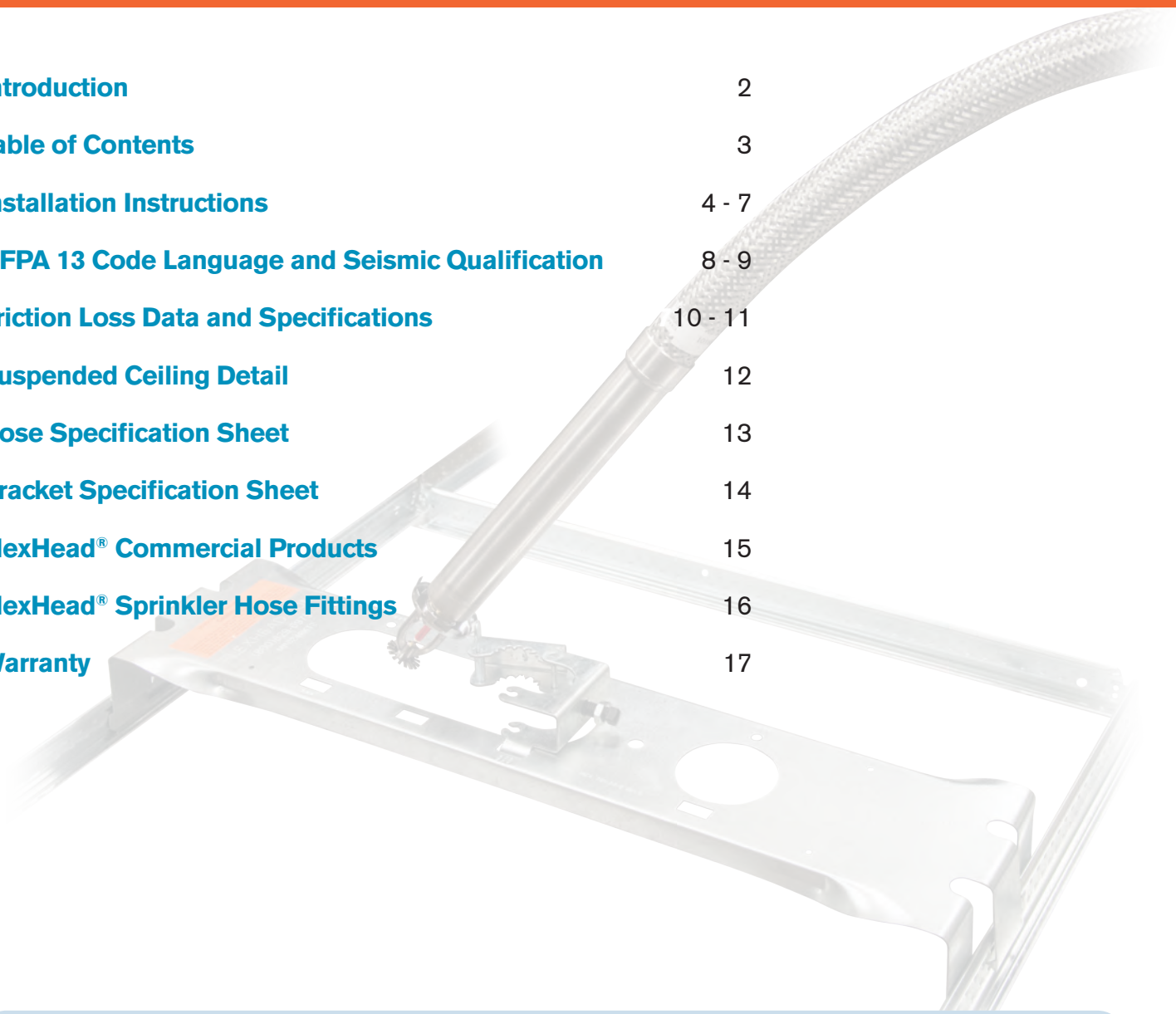


Whether your application is commercial, industrial, clean room, or institutional, FlexHead® flexible sprinkler systems can save you time and money by offering reliable, highly efficient, seismically qualified, and environmentally responsible products.

INSTALLATION INSTRUCTIONS – MPT-24-BKT1

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.

FlexHead® Standard Tall
2024T, 2036T, 2048T, 2060T, 2072T

FlexHead® Standard Tall Elbow
2024ET, 2036ET, 2048ET, 2060ET, 2072ET

SuperFlex™
2036SF, 2048SF, 2072SF

The MPT bracket is set for 24" center of tile installation.

(See back side for additional installation configurations)

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

FM APPROVED

T Bar Ceiling Grid Installation

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

A. 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)**

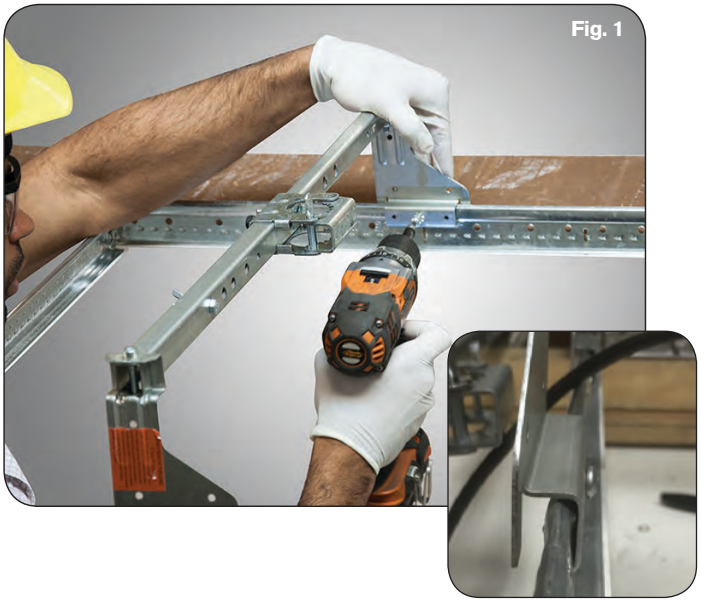


Fig. 1

FlexHead Flexible Hose Installation

A. Apply Teflon® tape and 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 3 for details.)

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

Fig. 2

Do not wrench on braided hose

Secure the FlexHead Sprinkler Drop to MPT Bracket

A. 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 technical data sheet for installation information.)

B. 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)**

C. Install desire sprinkler head, per the manufacturers installation instructions.


Fig. 3a

Fig. 3b

Ceiling Tile Installation

A. 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.

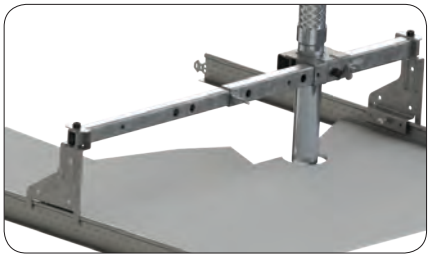
B. For ease of tile installation, cut the largest sprinkler hole recommended by the manufacture. The largest hole that is still covered by the sprinkler escutcheon allows for an easier install.

C. 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)**

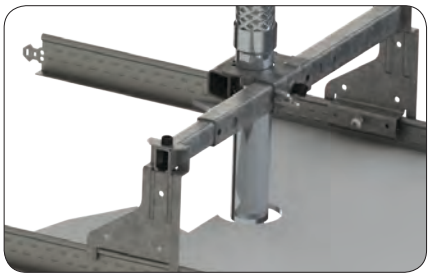

Fig. 4

Installation Complete

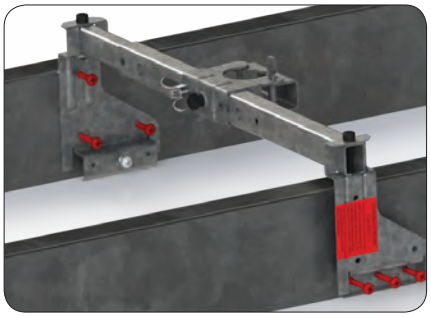
Installation Configuration



24" Tile – 24/4 Quarter Mark Position



16" Tile – 16/2 Center Position



16" Metal Stud (Web Size > 5") Center Position*

14 ½" 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

*FM Approved, Installation has not been evaluated by UL

20XXET with MPT-24BKT1 bracket has not been evaluated by UL.

INSTALLATION INSTRUCTIONS – MPO & ADO BRACKET

Installation of FlexHead® Commercial Ceiling Flexible Sprinkler Drop System

For use with FlexHead® hoses; 2024T, 2036T, 2048T, 2060T, 2072T 2024ET, 2036ET, 2048ET, 2060ET, 2072ET

T-Bar Ceiling Grid Installation

The bracket is designed for use on ceiling grids conforming to ASTM C635.

1. Locate the center of the ceiling tile marking, then align the screw hole for true center of tile installation.
2. Clip the bracket on the T-Bar Ceiling Grid.
3. Center of the leg section must be on the outside of the T-Bar **(Fig. 1)**.
4. Secure each bracket leg to the T-Bar with #2 Head self tapping screw.

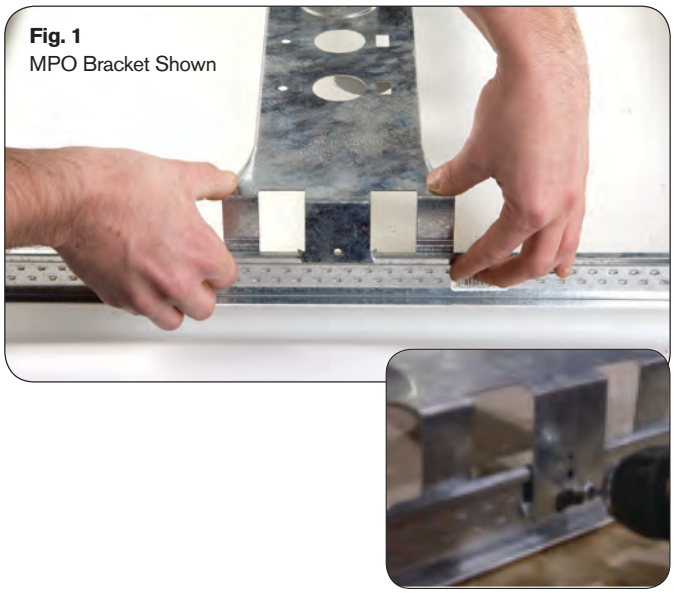


Fig. 1
MPO Bracket Shown

FlexHead® Flexible Hose Installation

1. Apply Teflon® tape and 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.
2. 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

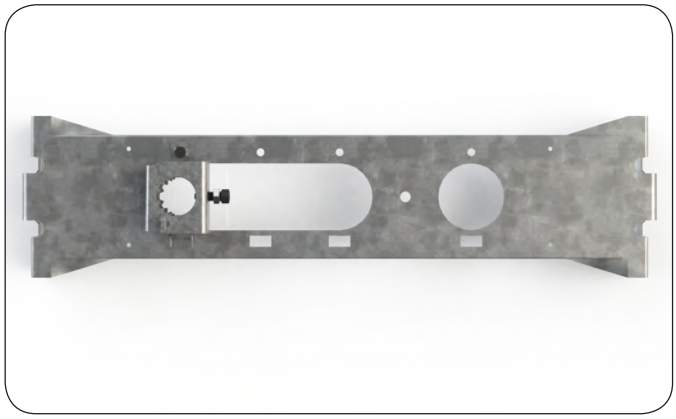
Secure the FlexHead® Sprinkler Drop to the Bracket

1. Maneuver the flexible sprinkler drop from the branch to the bracket. Review that the hose length, number of bends, and bend radius are applicable for the installation per NFPA guidelines. (See corresponding hose technical data sheet for installation information on pages 10-11.)
2. The bracket has an open hub for ease of installation. Open the hinge apparatus by turning the locking shaft ¼ turn. Slide the flexible hose 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 1 full revolution, (100 in-lbs).
3. Install desired sprinkler head per the manufacturer's installation instructions.

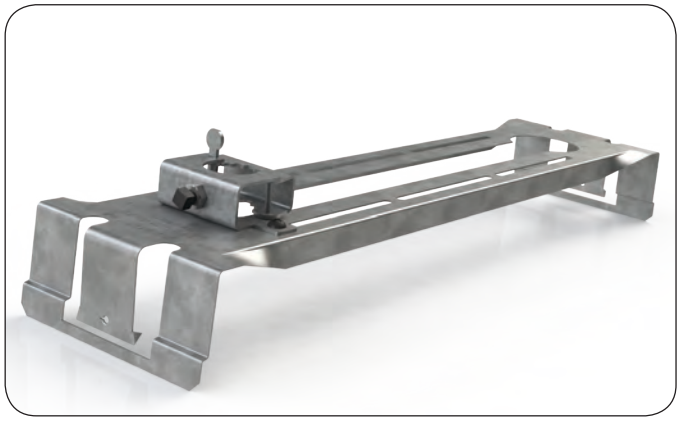
Fig. 3
MPO Bracket Shown

Bracket Adjustment for Multiple Positions

1. **MPO Hub Adjustment** - Remove the nut and screw on the hub assembly. Slide out the tab and move to desired position. Insert tab into square opening at desired position and install screw from below. Install nut and tighten to hand tight plus one turn.



2. **ADO Hub Adjustment** - Loosen screw and nut on each side of the hub, do not remove. Slide the hub to the desired position and tighten screw on each side. Tighten the nut to hand tight plus one turn.



U.S. and International Patent Pending: #6,123,154, #6,119,784, #6,752,218, #7,032,680, #6,488,097

NFPA 13 CODE LANGUAGE & SEISMIC QUALIFICATION

NFPA 13 STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS 2016 EDITION

9.2.1.3.3 Flexible® Sprinkler Hose Fittings.

9.2.1.3.3.1 Listed flexible sprinkler hose fittings and their anchoring components intended for use in installations connecting the sprinkler system piping to sprinklers shall be installed in accordance with the requirements of the listing, including any installation instructions.

9.2.1.3.3.2 When installed and supported by suspended ceilings, the ceiling shall meet ASTM C 635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings,* and shall be installed in accordance with ASTM C 636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.*

9.2.1.3.3.3 When flexible sprinkler hose fittings exceed 6 ft (1.83 m) in length and are supported by a suspended ceiling in accordance with 9.2.1.3.3.2, a hanger(s) attached to the structure shall be required to ensure that the maximum unsupported length does not exceed 6 ft. (1.83 m).

9.2.1.3.3.4 Where flexible sprinkler hose fittings are used to connect sprinklers to branch lines in suspended ceilings, a label limiting relocation of the sprinkler shall be provided on the anchoring component.

A. 9.2.1.3.3.3 The committee evaluation of flexible sprinkler hose fittings supported by suspended ceilings was based on a comparison of the weight of a 6 ft, 1 in (1.8 m) diameter Schedule 40 water-filled unsupported armover weighing approximately 13 lb (5.9 kg) to the weight of a 6 ft, 1 in. (1.8 m) diameter water-filled flexible hose fitting weighing approximately 9 lb (4.1 kg). The information provided to the committee showed that the maximum load shed to the suspended ceiling by the flexible hose fitting was approximately 6 lb (2.7 kg) and that a suspended ceiling meeting ASTM C 635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems of Acoustical Tile and Lay-In Panel Ceilings,* and installed in accordance with ASTM C 636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels,* can substantially support that load. In addition, the supporting material showed that the flexible hose connection can be attached to the suspended ceilings because it allow the necessary deflections under seismic conditions.

A.9.2.1.3.3.4 An example of language for the label is as follows:

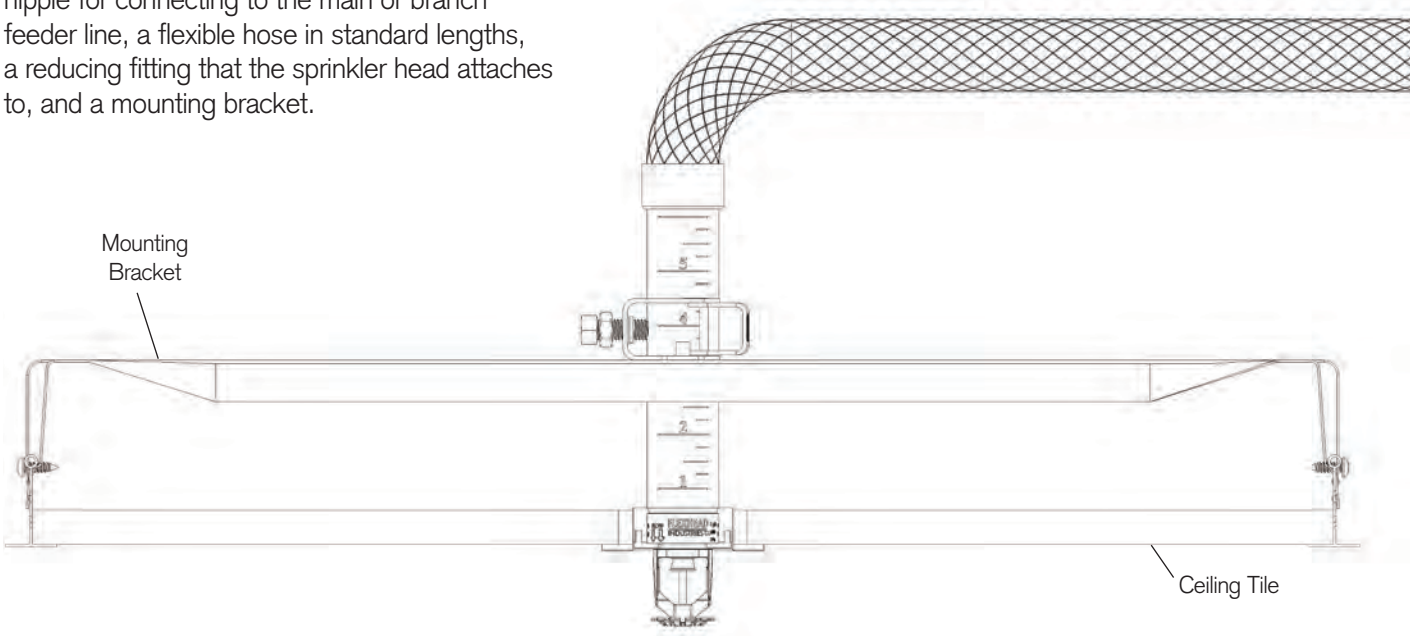
CAUTION: DO NOT REMOVE THIS LABEL.

Relocation of this device should only be performed by qualified and/or licensed individuals that are aware of the original system design criteria, hydraulic criteria, sprinkler head listing parameters, and knowledge of the state and local codes including NFPA 13 installation standards. Relocation of the device without this knowledge could adversely affect the performance of this fire protection and life safety system.

FLEXHEAD® SATISFIES SEISMIC CODE REQUIREMENTS

Typically, each unit consists of a threaded pipe nipple for connecting to the main or branch feeder line, a flexible hose in standard lengths, a reducing fitting that the sprinkler head attaches to, and a mounting bracket.

The FlexHead® hose allows the head to move in any direction during a seismic event without causing damage to the sprinkler system.



FlexHead® Industries recently satisfactorily completed full-scale seismic qualification testing at the Structural Engineering Earthquake Simulation Laboratory located at the State University of New York at Buffalo. Tests were conducted using the International Code Council (ICC) acceptance criteria "ICC-ES AC-156 Seismic Qualification Testing of Nonstructural Components".

- More than 90% of the states in the U.S. are adopting the International Building Code (IBC) that address, among other things, the installation of fire sprinkler systems in seismic zones.
- The latest version of the IBC defers to ASCE 7 for the sprinkler/ceiling design in Seismic Design Categories 9SDC) C and D, E & F.
- In Seismic Design Category C, suspended ceilings are to be designed and installed in accordance with Ceilings & Interior Systems Construction Association (CISCA) recommendations for Zones 0-2; and sprinkler heads and other penetrations shall have a minimum of ¼ inch clearance on all sides.
- In Seismic Design Categories D, E & F, suspended ceilings are to be designed and installed in accordance with CISCA recommendations for seismic Zones 3 and 4 with some additional requirements. Except where rigid braces are used to limit lateral deflections, sprinkler heads and other penetrations shall have a 2-inch oversized ring, sleeve, or adapter through the ceiling to allow for free movement of at least 1 inch of ceiling movement in all horizontal directions.
- Flexible sprinkler connection provide characteristics that exceed the most stringent seismic code requirements. The flexibility of the hose allows the head to move with the ceiling in any direction during a seismic event without causing damage to the sprinkler system.

FRICTION LOSS DATA & SPECIFICATIONS

Model Number	Outlet Orifice Size *in (cm)*	Hose Assembly Length *in (mm)*	Minimum Bend Radius		Maximum Number of 90° Bends		Equivalent Length of 1in. Diameter Schedule 40 Pipe (Ft)							Max Rated Pressure *PSI (Kpa)*	
			FM *in (mm)*	UL *in (mm)*	UL	FM	(UL) *Ft (m)*	(FM) 5.6k-factor *Ft (m)*	(FM) 8.0k-factor *Ft (m)*	(FM) 11.2k-factor *Ft (m)*	(FM) 14.0k-factor *Ft (m)*	(FM) 16.8k-factor *Ft (m)*	(FM) 22.4k-factor *Ft (m)*	UL *PSI (Kpa)*	FM *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)	–	–	–	175 (1205)	175 (1205)
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)	–	175 (1205)	175 (1205)
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)	–		
FLEXHEAD® STANDARD/ TALL COMMERCIAL 1" INTERNAL DIAMETER (I.D.) HOSE SERIES															
2024T-50	½ (1.27)	24 (610)	8 (200)	3 (76.2)	3	1	11	18.4 (5.6)	7.7 (2.3)	7.6 (2.3)	–	–	–	175 (1205)	175 (1205)
2036T-50		36 (914)			3	2	16	26.6 (8.1)	11.5 (3.5)	11.5 (3.5)	–	–	–		
2048T-50		48 (1219)			4	3	24	30.3 (9.2)	15.3 (4.6)	15.4 (4.7)	–	–	–		
2060T-50		60 (1524)			4	4	29	35.8 (10.9)	19.1 (5.8)	19.3 (5.8)	–	–	–		
2072T-50		72 (1828)			4	4	35	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	–	–	–	14.7 (4.5)	7.1 (2.1)	–	175 (1205)	175 (1205)
2036T-75		36 (914)			3	2	18	–	21.5 (6.5)	21.6 (6.6)	21.8 (6.6)	10.9 (3.3)	–		
2048T-75		48 (1219)			4	3	23	–	30.5 (9.3)	30.6 (9.3)	29 (8.8)	14.8 (4.5)	–		
2060T-75		60 (1524)			4	4	29	–	39.5 (12)	39.6 (12)	36.1 (11)	18.7 (5.6)	–		
2072T-75		72 (1828)			4	4	32	–	48.5 (14.7)	48.8 (14.9)	43.2 (13.1)	22.6 (6.8)	–		
FLEXHEAD® TALL ELBOW SERIES															
2024ET-50	½ (1.27)	24 (610)	8 (200)	3 (76.2)	3	1	19	26.4 (8.0)	6.8 (2)	7.4 (2.2)	–	–	–	175 (1205)	175 (1205)
2036ET-50		36 (914)			3	2	23	30.1 (9.1)	11.8 (3.6)	12.5 (3.8)	–	–	–		
2048ET-50		48 (1219)			4	3	27	33.8 (10.3)	16.9 (5.1)	17.6 (5.3)	–	–	–		
2060ET-50		60 (1524)			4	4	32	37.5 (11.4)	21.9 (6.6)	22.7 (6.9)	–	–	–		
2072ET-50		72 (1828)			4	4	35	41.2 (12.5)	27.0 (8.2)	27.8 (8.4)	–	–	–		
2024ET-75	¾ (1.90)	24 (610)	8 (200)	3 (76.2)	3	1	18	–	–	–	14.7 (4.5)	8.2 (2.5)	–	175 (1205)	175 (1205)
2036ET-75		36 (914)			3	2	23	–	25.2 (7.7)	26 (7.9)	21.8 (6.6)	13 (3.9)	–		
2048ET-75		48 (1219)			4	3	23	–	32.9 (10)	33 (10)	29 (8.8)	17.8 (5.4)	–		
2060ET-75		60 (1524)			4	4	29	–	40.6 (12.3)	40 (12.1)	36.1 (11.0)	22.6 (6.8)	–		
2072ET-75		72 (1828)			4	4	32	–	48.5 (14.7)	47 (14.3)	43.2 (13.1)	27.5 (8.3)	–		
FLEXHEAD® STANDARD ELBOW															
2024E-50	½ (1.27)	24 (610)	8 (200)	3 (76.2)	3	1	19	26.4 (8.0)	–	–	–	–	–	175 (1205)	175 (1205)
2036E-50		36 (914)			3	2	23	30.1 (9.2)	–	–	–	–	–		
2048E-50		48 (1219)			4	3	27	33.8 (10.3)	–	–	–	–	–		
2060E-50		60 (1524)			4	4	32	37.5 (11.4)	–	–	–	–	–		
2072E-50		72 (1828)			4	4	35	41.2 (12.6)	–	–	–	–	–		
2024E-75	¾ (1.90)	24 (610)	8 (200)	3 (76.2)	3	1	18	–	14.7 (4.5)	–	–	–	–	175 (1205)	175 (1205)
2036E-75		36 (914)			3	2	23	–	21.8 (6.6)	–	–	–	–		
2048E-75		48 (1219)			4	3	23	–	29.0 (8.8)	–	–	–	–		
2060E-75		60 (1524)			4	4	29	–	36.1 (11.0)	–	–	–	–		
2072E-75		72 (1828)			4	4	32	–	43.2 (13.2)	–	–	–	–		

Chart continued on the next page

Notes:
- Model Numbers: The "SF" designates SuperFlex™ Hose series. The "50" designates ½" Outlet Hose series. The "75" designates ¾" Outlet Hose series. Inlet size 1".
- Model Numbers: The "T" designates tall drops length hose series. The "ET" designates tall elbow drop hose series. The "E" designates elbow drop hose series. The "H" designates high pressure 300PSI working pressure hose series. THE "HE" designates high pressure 300PSI elbow hose series. The "F" designates high flow rate using 1 ¼ I.D. hose series. The "DPS" designates dry pendent system hose series.
- 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° 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)
- All hoses require a minimum of one bend for installation. Bend radius tool available for "T" hose, "SF" hose does not require bend radius tool.
- 20XX, SuperFlex™ Hose, is UL Listed with MPT-24-BKT1 Bracket with largest k-factor of 16.8.
- FM Equivalent length calculation includes Sprinkler Head friction loss. UL equivalent length calculation include the hose only.
- FlexHead products are intended for use in hydraulically designed wet, pre-action, deluge or dry pendent sprinkler connections per NFPA 13, 13R and 13D guidelines.
- See listing(s) approval agency for latest approval details.

FRICTION LOSS DATA & SPECIFICATIONS (cont'd)

Model Number	Outlet Orifice Size *in (cm)*	Hose Assembly Length *in (mm)*	Minimum Bend Radius		Maximum Number of 90° Bends		Equivalent Length of 1in. Diameter Schedule 40 Pipe (Ft)							Max Rated Pressure *PSI (Kpa)*	
			FM *in (mm)*	UL *in (mm)*	UL	FM	(UL) *Ft (m)*	(FM) 5.6k-factor *Ft (m)*	(FM) 8.0k-factor *Ft (m)*	(FM) 11.2k-factor *Ft (m)*	(FM) 14.0k-factor *Ft (m)*	(FM) 16.8k-factor *Ft (m)*	(FM) 22.4k-factor *Ft (m)*	UL *PSI (Kpa)*	FM *PSI (Kpa)*
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	18.4 (5.6)	7.7 (2.3)	7.6 (2.3)	-	-	-	300 PSI (2068Kpa)	300 PSI (2068Kpa)
2036H-50		36 (914)			3	3	16	26.6 (8.1)	11.5 (3.5)	11.5 (3.5)	-	-	-		
2048H-50		48 (1219)			4	4	24	30.3 (9.2)	15.3 (4.6)	15.4 (4.7)	-	-	-		
2060H-50		60 (1524)			4	4	29	35.8 (10.9)	19.1 (5.8)	19.3 (5.8)	-	-	-		
2072H-50		72 (1828)			4	4	35	45.6 (13.9)	23 (7)	23.2 (7)	-	-	-		
2024H-75	¾ (1.90)	24 (610)	8 (200)	3 (76.2)	3	2	12	-	14.7 (4.5)	14.7 (4.5)	14.7 (4.5)	7.1 (2.1)	-	300 PSI (2068Kpa)	300 PSI (2068Kpa)
2036H-75		36 (914)			3	3	18	-	21.8 (6.6)	21.6 (6.6)	21.8 (6.6)	10.9 (3.3)	-		
2048H-75		48 (1219)			4	4	23	-	29 (8.8)	30.6 (9.3)	29 (8.8)	14.8 (4.5)	-		
2060H-75		60 (1524)			4	4	29	-	36.1 (11.0)	39.6 (12)	36.1 (11.0)	18.7 (5.7)	-		
2072H-75		72 (1828)			4	4	32	-	43.2 (13.1)	48.8 (14.8)	43.2 (13.1)	22.6 (6.8)	-		
FLEXHEAD® HIGH PRESSURE ELBOW															
2024HE-50	½ (1.27)	24 (610)	8 (200)	3 (76.2)	3	2	19	14.7 (4.5)	6.8 (2)	7.4 (2.2)	-	-	-	300 PSI (2068Kpa)	300 PSI (2068Kpa)
2036HE-50		36 (914)			3	3	23	21.8 (6.6)	11.8 (3.6)	12.5 (3.8)	-	-	-		
2048HE-50		48 (1219)			4	4	27	29.0 (8.8)	16.9 (5.1)	17.6 (5.3)	-	-	-		
2060HE-50		60 (1524)			4	4	32	36.1 (11)	21.9 (6.6)	22.8 (6.9)	-	-	-		
2072HE-50		72 (1828)			4	4	35	43.2 (13.1	27 (8.2)	27.8 (8.4)	-	-	-		
2024HE-75	¾ (1.90)	24 (610)	8 (200)	3 (76.2)	3	2	18	-	14.7 (4.5)	-	14.7 (4.5)	8.2 (2.5)	-	300 PSI (2068Kpa)	300 PSI (2068Kpa)
2036HE-75		36 (914)			3	3	23	-	21.8 (6.6)	26 (7.9)	21.8 (6.6)	13 (3.9)	-		
2048HE-75		48 (1219)			4	4	23	-	29 (8.8)	33 (10)	29 (8.8)	17.8 (5.4)	-		
2060HE-75		60 (1524)			4	4	29	-	36.1 (11.0)	40 (12.2)	36.1 (11.0)	22.6 (6.8)	-		
2072HE-75		72 (1828)			4	4	32	-	43.2 (13.1)	47 (14.3)	43.2 (13.1)	27.5 (8.3)	-		
FLEXHEAD® DRY PENDENT SYSTEM															
2024-DPS	½ (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 (2.3)	11.5 (3.5)	-	10.9 (3.3)	15.1 (4.6)		
2048-DPS		48 (1219)			-	3	-	30.3 (9.2)	15.3 (3.5)	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)		
1.25" INTERNAL DIAMETER (I.D.) HOSE SERIES															
2036F-50	½ (1.27)	36 (914)	7 (180)	-	-	1	-	4.1 (1.2)	4.1 (1.2)	4.1 (1.2)	-	-	-	-	175 (1205)
2048F-50		48 (1219)			-	2	-	5.4 (1.6)	5.6 (1.7)	5.7 (1.7)	-	-	-		
2072F-50		72 (1828)			-	4	-	8.0 (2.4)	8.6 (2.6)	9.1 (2.7)	-	-	-		
2036F-75	¾ (1.90)	36 (914)	7 (180)	-	-	1	-	-	-	-	3.4 (1.0)	3.4 (1.0)	-	-	175 (1205)
2048F-75		48 (1219)			-	2	-	-	-	-	4.8 (1.5)	4.8 (1.4)	-		
2072F-75		72 (1828)			-	4	-	-	-	-	7.6 (2.3)	7.6 (2.3)	-		
2036F-100	1 (2.54)	36 (914)	7 (180)	-	-	2	-	-	-	-	-	-	3.4 (1.0)	-	175 (1205)
2048F-100		48 (1219)			-	3	-	-	-	-	-	-	4.8 (1.4)		
2072F-100		72 (1828)			-	4	-	-	-	-	-	-	7.6 (2.3)		

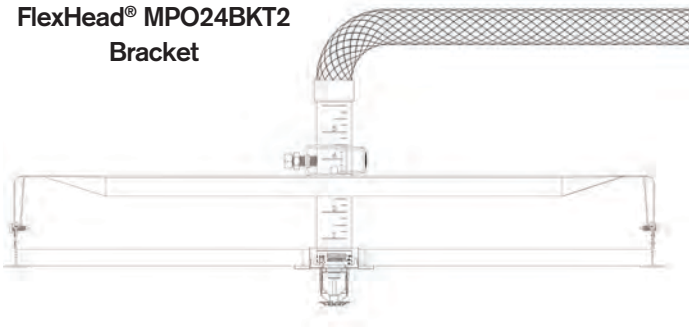
Notes:

- Model Numbers: The "SF" designates SuperFlex™ Hose series. The "50" designates ½" Outlet Hose series. The "75" designates ¾" Outlet Hose series. Inlet size 1".
- Model Numbers: The "T" designates tall drops length hose series. The "ET" designates tall elbow drop hose series. The "E" designates elbow drop hose series. The "H" designates high pressure 300PSI working pressure hose series. THE "HE" designates high pressure 300PSI elbow hose series. The "F" designates high flow rate using 1-¼ I.D. hose series. The "DPS" designates dry pendent system hose series.
- 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° 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)
- All hoses require a minimum of one bend for installation. Bend radius tool available for "T" hose, "SF" hose does not require bend radius tool.
- 20XX, SuperFlex™ Hose, is UL Listed with MPT-24-BKT1 Bracket with largest k-factor of 16.8.
- FM Equivalent length calculation includes Sprinkler Head friction loss. UL equivalent length calculation include the hose only.
- FlexHead products are intended for use in hydraulically designed wet, pre-action, deluge or dry pendent sprinkler connections per NFPA 13, 13R and 13D guidelines.
- See listing(s) approval agency for latest approval details.

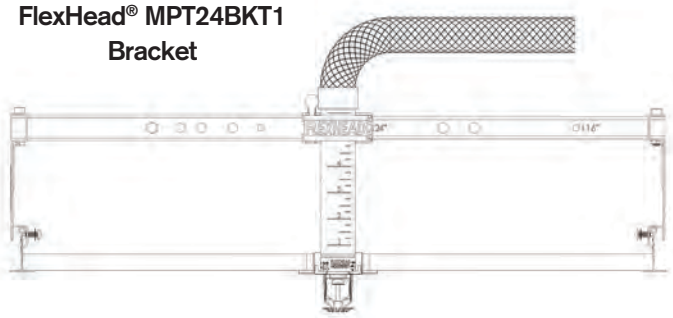
FLEXHEAD® CEILING DETAIL

FlexHead® Suspended Ceiling Detail

FlexHead® MPO24BKT2 Bracket



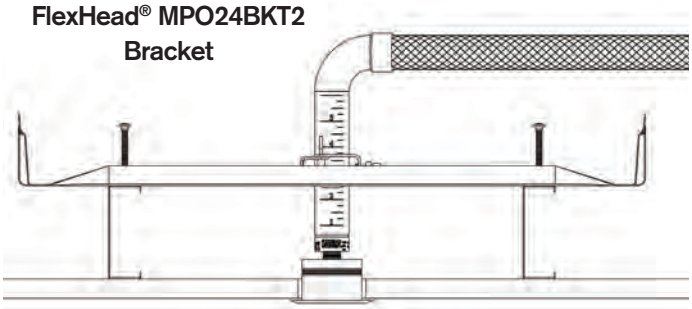
FlexHead® MPT24BKT1 Bracket



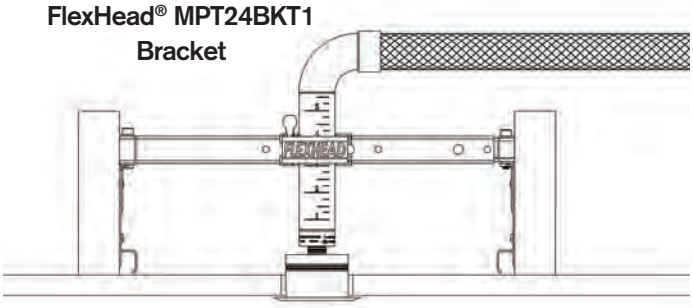
*Allows for bracket installation without pre-installing the ceiling tile

FlexHead® Sheetrock Ceiling Detail

FlexHead® MPO24BKT2 Bracket



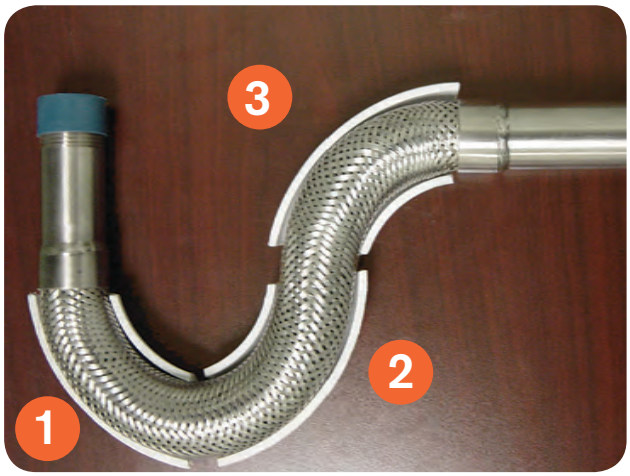
FlexHead® MPT24BKT1 Bracket



Each FM approved and UL listed unit is ready to install, pressure- and leak-tested, and comes complete with a flexible stainless steel hose and mounting bracket with adjustable hub.

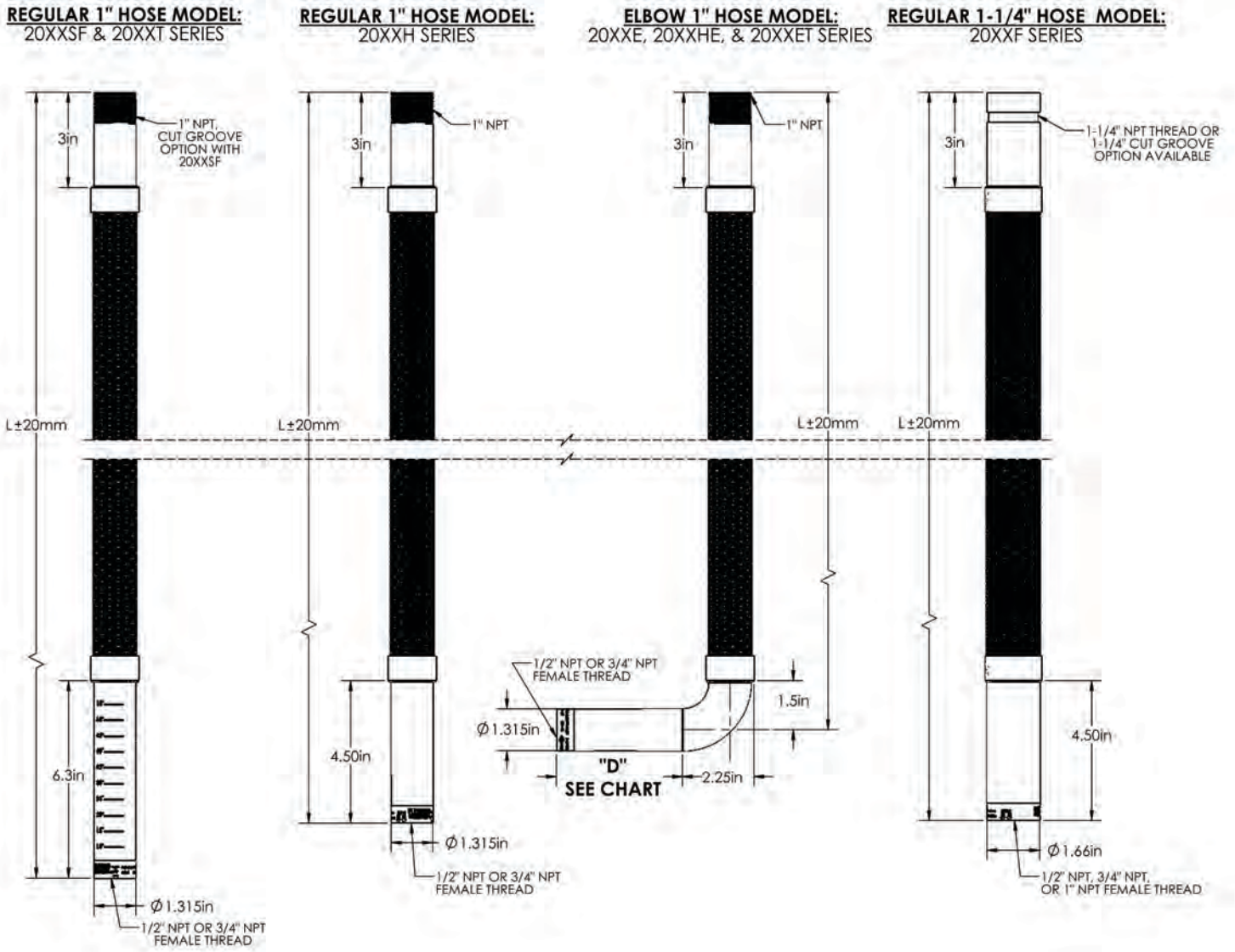
FlexHead® Standard Hose 3" Bend Radius per UL Guidelines (2 Bends Shown)

FlexHead® Standard Hose Shown with 3 Bends



Notes:
See SuperFlex™ bend radius information on page 9. SuperFlex™ 2" bend radius eliminates the need to count or measure the bends.

FLEXHEAD® CEILING DETAIL

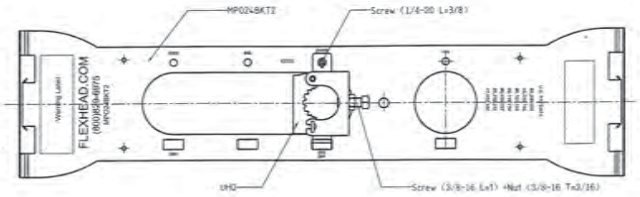


MODEL #	"Hose Assembly (L) Length Inches (mm)"	"Drop ""D"" Size (Inches)"
2024E/2024HE	24 (610)	1.5, 3.0, & 4.0
2036E/2036HE	36 (914)	
2048E/2048HE	48 (1219)	
2060E/2060HE	60 (1524)	
2072E/2072HE	72 (1828)	
2024ET	24 (610)	5.71
2036ET	36 (914)	
2048ET	48 (1219)	
2060ET	60 (1524)	
2072ET	72 (1828)	

BRACKET SPECIFICATION SHEET

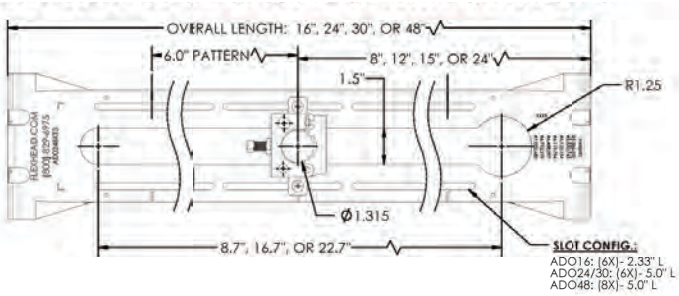
Multiport Design (For use with T-bar and Metal Stud Applications)

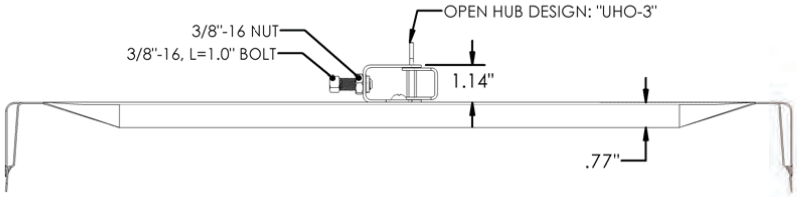
Model # MP024BKT2



Adjustable Design (For use with T-bar, Metal Stud and Chicago Grid Applications): standard sizes are 16", 24", 30" and 48" long

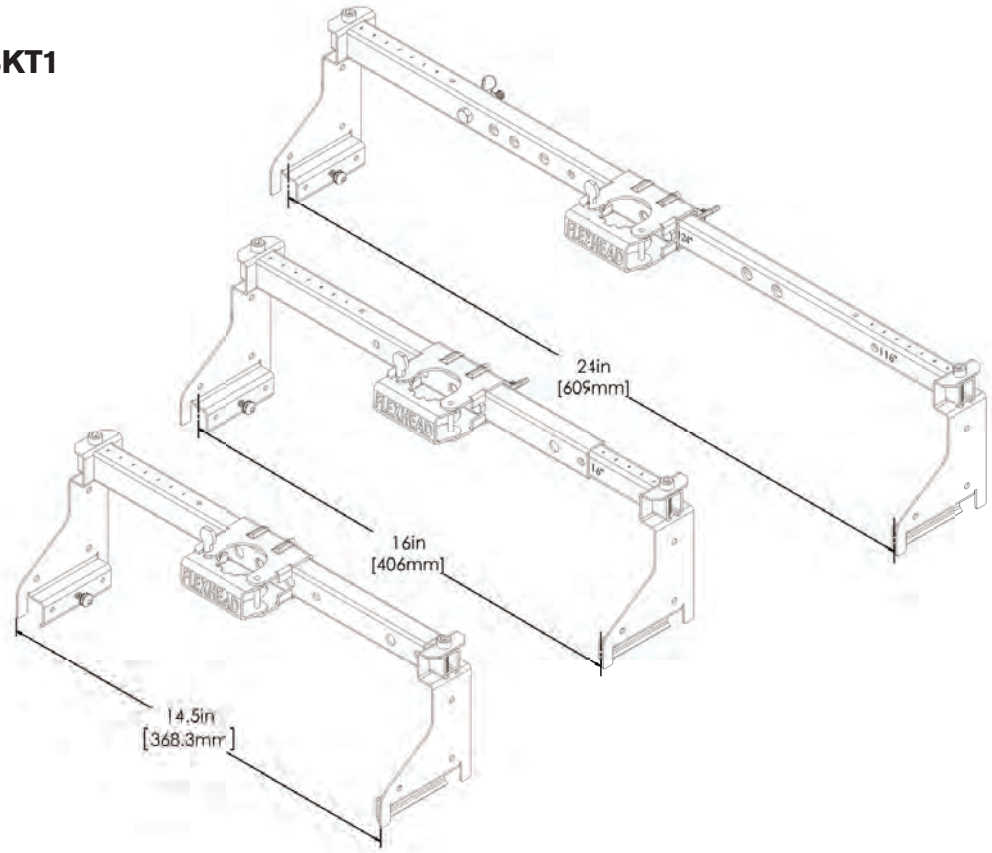
Model # AD016BKT3, AD024BKT3, AD030BKT3, AD048BKT3





Multi-Position Tall Bracket (For use with T-bar, Wood and Metal Studs): 24" standard size collapsible to 14.5" and 16" long.

Model # MPT24BKT1

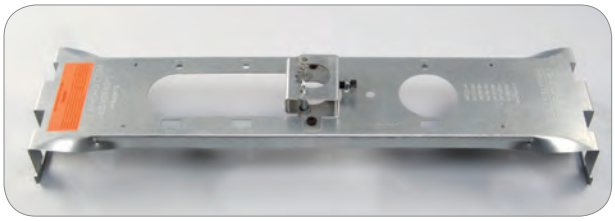


FLEXHEAD® COMMERCIAL PRODUCTS

24", 36", 48", 60", 72" hose lengths,
Rated working pressure 175psi, optional 300psi.
Straight model,
Standard 1" I.D., optional 1¼" I.D.

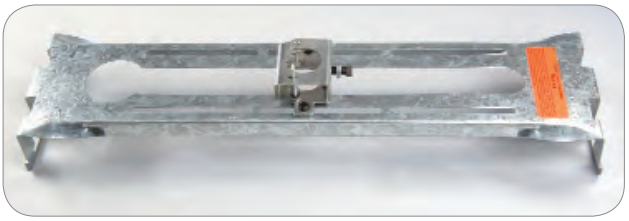
SuperFlex™ Hose Lengths: 36", 48" and 72"

24", 36", 48", 60", 72" hose lengths.
Rated working pressure 175psi, optional 300psi.
Elbow model.



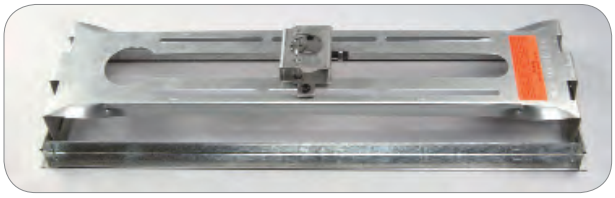
24" Multiport Bracket for T-bar Grid or Metal Stud applications.

Model #: MP024BKT2



16"/24"/30"/48" Adjustable Bracket for T-bar Grid, Chicago Grid or Metal Stud applications.

Model #s: AD016BKT3/AD024BKT3/AD030BKT3/ ADO48BKT3

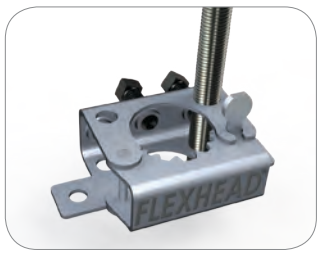


Hat Channel Bracket System for Metal Stud or Hat Channel applications.

Model #: ADO24BKT3 with BKT-HTA

24" Multi-Position Tall Bracket

Model #: MPT24BKT1

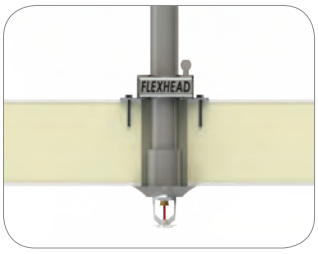


Bracket for Confined Space applications having a concrete deck above the ceiling.

Model #: UHO-3

Armstrong® TechZone Ceiling Bracket for use with Armstrong TechZone Ceiling systems.
Available in 6" long.

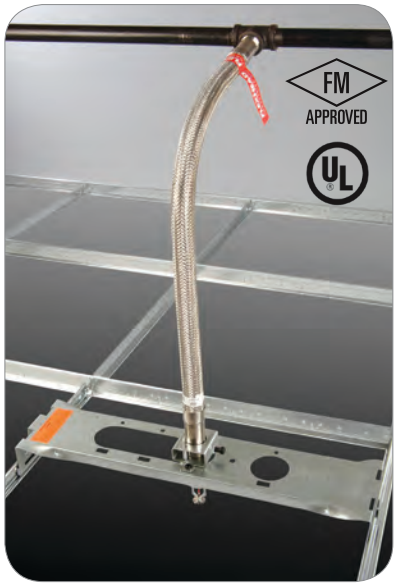
Model #: SP06TZBKT2



Dry Pendent System for Freezer and Cold Storage applications

Model #: 20XX-DPS-UH03

FLEXIBLE SPRINKLER HOSE FITTINGS USE EXAMPLES

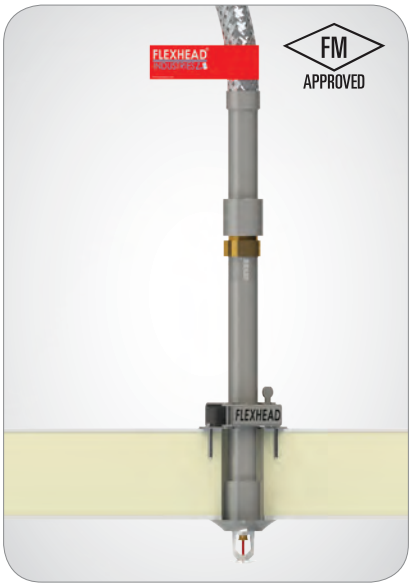


Suspended Ceilings

SuperFlex™

Exhaust Ducts

Institutional



Cold Storage and Freezer Applications

Cleanroom Ceilings

Flexible Sprinkler Hose Fittings were developed to satisfy specific needs of the industry, save the industry millions in losses, provide superior seismic protection and promote the installation of sprinklers. They have been evaluated for use by both Underwriters Laboratory and FM approvals and are tested to approval standards that were independently developed by the testing laboratories. The first listing for a Flexible Sprinkler Hose Fitting was in 1990.

WARRANTY

FLEXHEAD® PRODUCTS LIMITED WARRANTY

Flexhead Industries, Inc. warrants that its products will be free from defects in materials and workmanship under normal conditions of use and service when properly installed for a period of one year from date of sale. Our obligation under this warranty is limited to repairing or replacing any product that is returned to us with transportation charges prepaid within one year after the date of original sale and that our examination shows to our satisfaction to have been defective in materials or workmanship under normal conditions of use and service. The decision as to whether to repair or to replace any product shall be made by us, and any repair shall be made at our facility. Notwithstanding the foregoing, the following are specifically excluded from the coverage of this warranty:

(a) Any product not manufactured by Flexhead Industries, Inc., including any sprinkler head(s) installed with or attached to a Flexhead Industries, Inc. product, provided, however, Flexhead Industries Inc. hereby assigns the right to enforce any original manufacturer's warranty of such product to the original purchaser of the Flexhead Industries, Inc. product(s). For the avoidance of doubt, Flexhead Industries, Inc. does not manufacture sprinkler heads and, therefore, does not warrant any such products.

(b) defects resulting from ordinary wear and tear, including, without limitation, the replacement of the so-called poly bag components of any Flexhead Industries, Inc. product

(c) products that have been altered in any manner by the buyer or by anyone other than Flexhead Industries, Inc.

(d) products that have been subjected to misuse, abusive use, or damage by accident or casualty

(e) products that have been installed or used in a manner contrary to our specifications, instructions or recommendation

(f) products that have been installed or used in a manner that is not in compliance with all applicable requirements of any code, law, regulation or rule of any federal, state or local governmental or industry authority; and

(g) products that have not been inspected and maintained in accordance with our specifications, instructions or recommendations, including, without limitation, our recommendations as to following the inspection and maintenance standards published by Factory Mutual Research Corporation (FMRC) and the National Fire Protection Association (NFPA); and

(h) products that have been affected by Microbiologically Influenced Corrosion (MIC).

This warranty is not assignable and shall benefit only the original purchaser of a Flexhead Industries, Inc. product. If any provision hereof or any portion of any provision shall be held invalid, the remainder of this Limited Warranty shall not be affected thereby, and all provisions of this Limited Warranty shall remain valid and in full force and effect to the fullest extent permitted by law. THIS WARRANTY IS IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY HEREIN OR ANY APPLICABLE LAW TO THE CONTRARY, IN NO EVENT SHALL FLEXHEAD INDUSTRIES, INC. BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY CIRCUMSTANCES WHATSOEVER, WHETHER ARISING FROM ANY BREACH OF THIS LIMITED WARRANTY OR OTHERWISE ARISING FROM OR IN CONNECTION WITH THE USE OR OPERATION OF, OR ANY DEFECT IN, ANY FLEXHEAD INDUSTRIES, INC. PRODUCT, OR OTHERWISE. The risk of damages from any breach of warranty with respect to injury to any person will be born by the purchaser of Flexhead Industries, Inc. product.

NOTES

NOTES

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