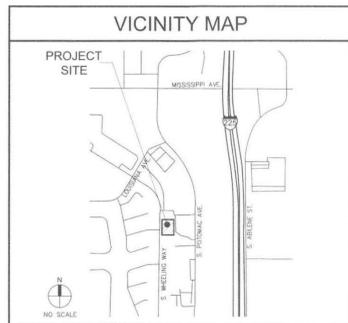
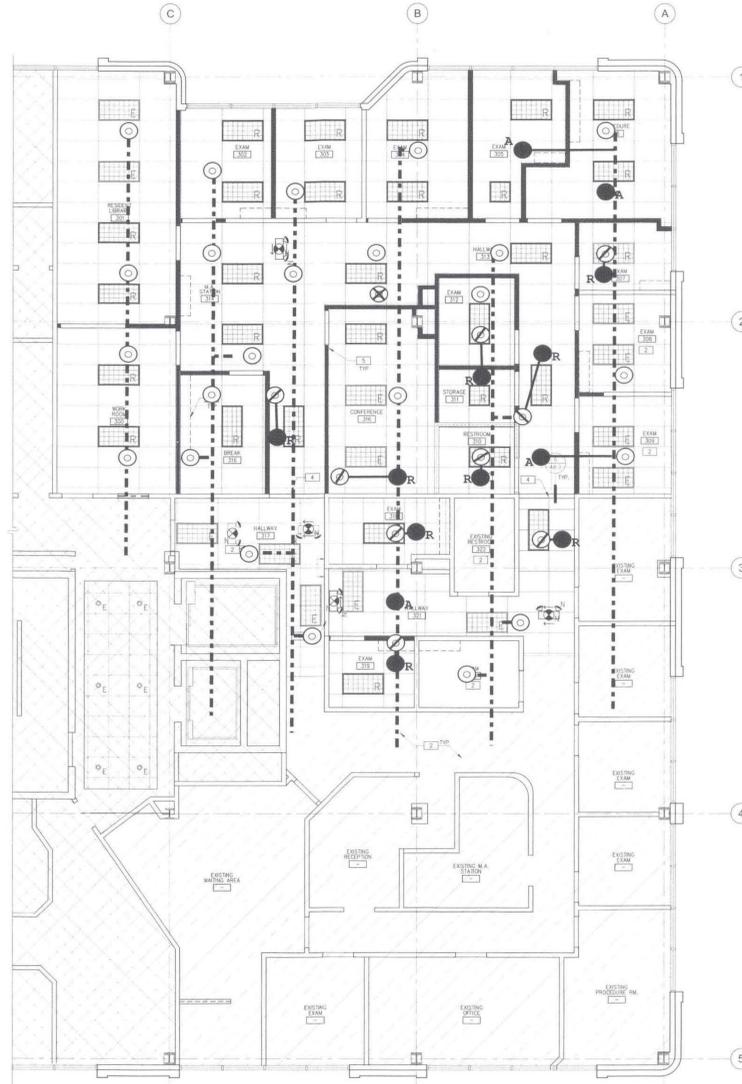


PROJECT DATA

BUILDING DEPARTMENT: CITY OF AURORA, COLORADO
 BUILDING CODES: 2015 INTERNATIONAL BUILDING CODE
 2014 NATIONAL ELECTRIC CODE
 2015 INTERNATIONAL MECHANICAL CODES
 2015 INTERNATIONAL PLUMBING CODE
 2015 INTERNATIONAL FIRE CODE
 OCCUPANCY CLASSIFICATION: PER IBC CHAPTER 3 (SECTION 302) - B
 TYPE OF CONSTRUCTION: PER IBC CHAPTER 6 (SECTION 602) - II-B
 SPRINKLERED: YES
 NUMBER OF STORIES: 04
 PROJECT SCOPE: THE SCOPE OF THIS PROJECT IS A SECOND GENERATION TENANT IMPROVEMENT INCLUDING PARTITIONS, FINISHES, MILLWORK, PLUMBING, ELECTRICAL AND MECHANICAL WORK.
 TENANT OCCUPANCY: OFFICE (B) 3,015 S.F.

TENANT FINISH NOTES:

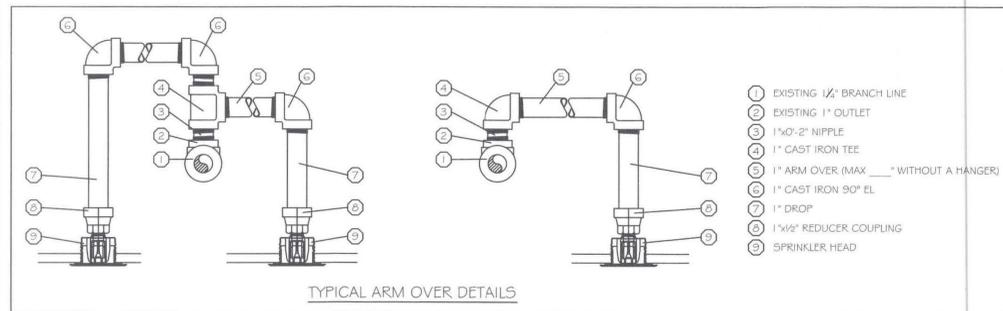
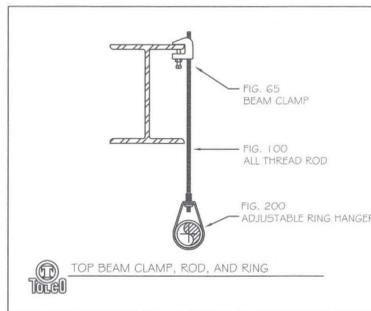
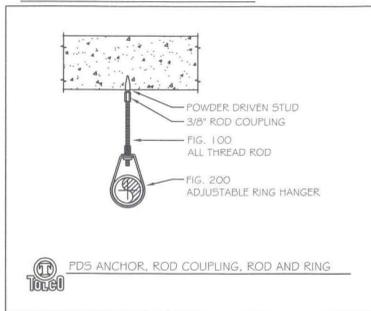
- SYSTEM DESIGN - TENANT FINISH PER NFPA 13, 2013. SUPPLY FROM EXISTING WET PIPE SYSTEM. NEW OCCUPANCY IS OFFICE (LIGHT HAZARD) UNLESS NOTED OTHERWISE.
- BUILDING CONSTRUCTION IS NON-COMBUSTIBLE
- ALL MATERIALS, DEVICES, AND HANGERS INSTALLED UNDER THIS CONTRACT SHALL BE UL LISTED AND/OR FACTORY MUTUAL APPROVED AND INSTALLED IN ACCORDANCE WITH THEIR LISTINGS AND APPLICABLE NFPA STANDARDS.
- ANY AND ALL ELECTRICAL AND/OR ALARM WIRING, CONNECTIONS, AND TERMINATION SHALL BE BY OTHERS.
- PIPE NOTE:
 - ALL PIPING SHALL BE IN ACCORDANCE WITH NFPA 13 (2013).
 - UNLESS SPECIFICALLY NOTED OTHERWISE ALL THREADED PIPE SHALL BE BLACK STEEL SHC 40 ASTM A135/A799 OR EQUAL.
 - ALL SCREWED FITTINGS SHALL BE CAST IRON AND MEET ANSI B.16.4 REQUIREMENTS.
 - ALL METHODS OF JOINING PIPE SHALL BE IN ACCORDANCE WITH NFPA 13 (2013).
- SEE THE FIRE PROTECTION EQUIPMENT DATA FOR ALL APPLICABLE MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT.
- PIPE DIMENSIONS SHOWN ARE CENTER TO CENTER.
- SPRINKLER HEADS ARE NOT REQUIRED TO BE CENTERED IN CEILING GRID.
- EXISTING SPRINKLERS THAT ARE NOT IN VIOLATION OF CODE SHALL REMAIN IN PLACE EVEN THOUGH THEY MAY NOT LINE UP WITH OTHER SPRINKLER IN THE AREA
- EXISTING SPRINKLER PIPE IS SHOWN FOR REFERENCE ONLY AND IS NOT PART OF THIS CONTRACT.
- IN ROOMS OF 800 sq ft OR LESS HEADS MAY BE UP TO 9'-0" FROM ONE WALL.
- HYDRAULIC CALCULATIONS HAVE NOT BEEN PERFORMED FOR THIS DESIGN. SPRINKLER HEADS ARE SUFFICIENTLY DISPERSED THROUGHOUT THE SPACE AS TO HAVE NO EFFECT ON THE SYSTEM DESIGN. NO OUTLET SHALL SUPPLY MORE THAN 2 SPRINKLER HEADS.



**TENANT FINISH
 SPRINKLER LAYOUT**
 SCALE: 1/8" = 1'-0"

SYMBOL	QTY	MANUFACTURER	SIN No.	FINISH	ORIFICE	K-FAC	TEMP	ESCUTCHEON	ADD/RELOC.
○		EXISTING PENDENT SPRK	Q.R.	WHITE	1/2"	5.6	155		
●R	9	RELOCATE EXISTING PENDENT	Q.R.	WHITE	1/2"	5.6	155		
●A	4	ADD NEW PENDENT SPRINKLER	Q.R.	WHITE	1/2"	5.6	155		
CONCEALED HEADS									

**PIPE SIZING SHALL MEET OR EXCEED
 EXISTING CONDITIONS**



JEREMY B. ROOT
 PROJECT ENGINEER
 101905
 7/25/17

ABC Fire Protection Inc.
 1660 Chambers Road
 Aurora, Colorado 80011
 720-262-4530 CELL
 720-262-4531 FAX
 COLORADO STATE REGISTRATION NUMBER: 15-219



**CORNERSTONE
 FAMILY PRACTICE**
 1411 SOUTH POTOMAC STREET, SUITE 360
 AURORA, COLORADO 80012

FP-1
 SHEET



Worldwide
Contacts

www.tyco-fire.com

Series TY-FRB – 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmo-

spheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

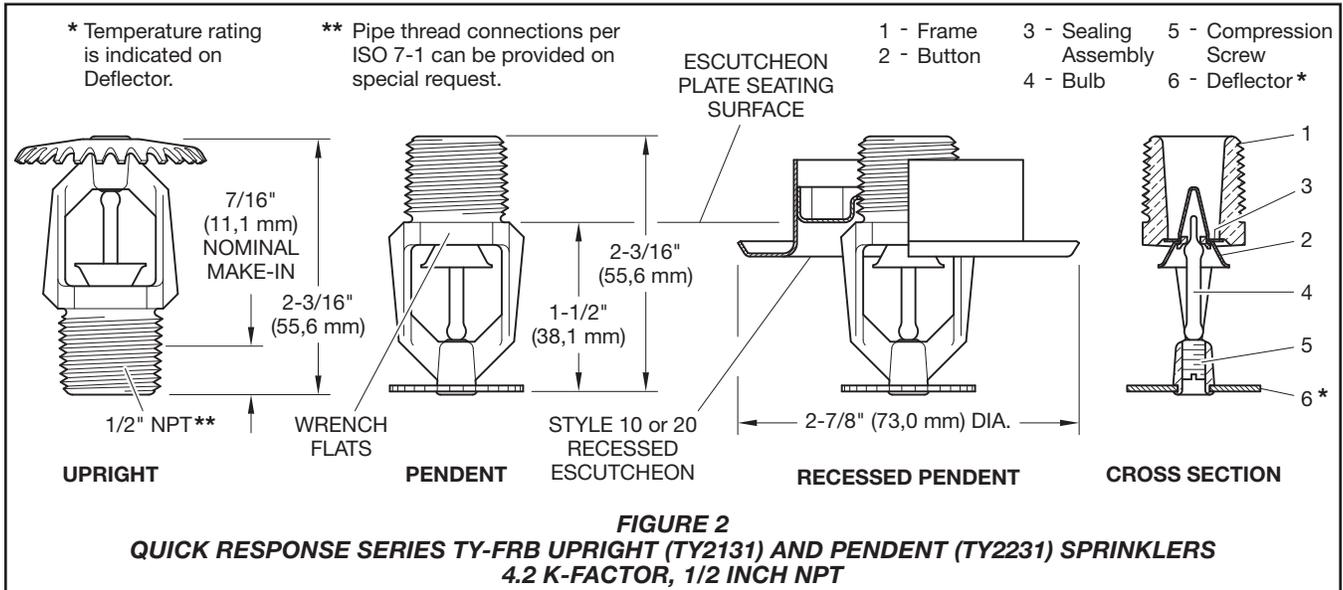
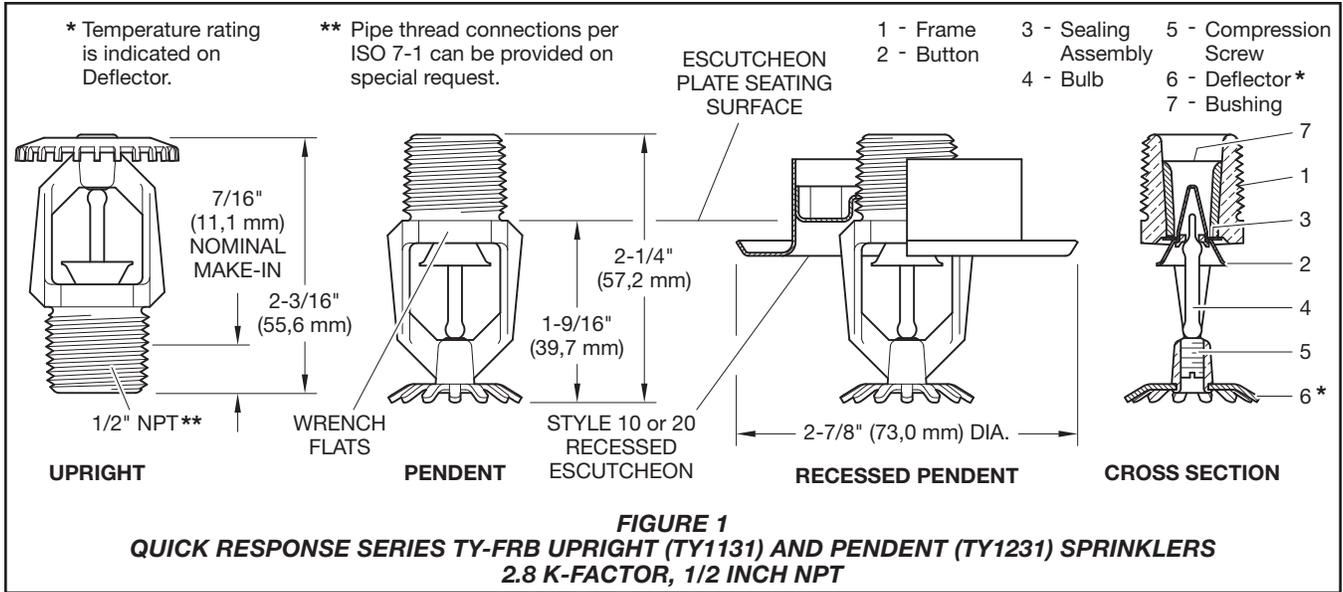


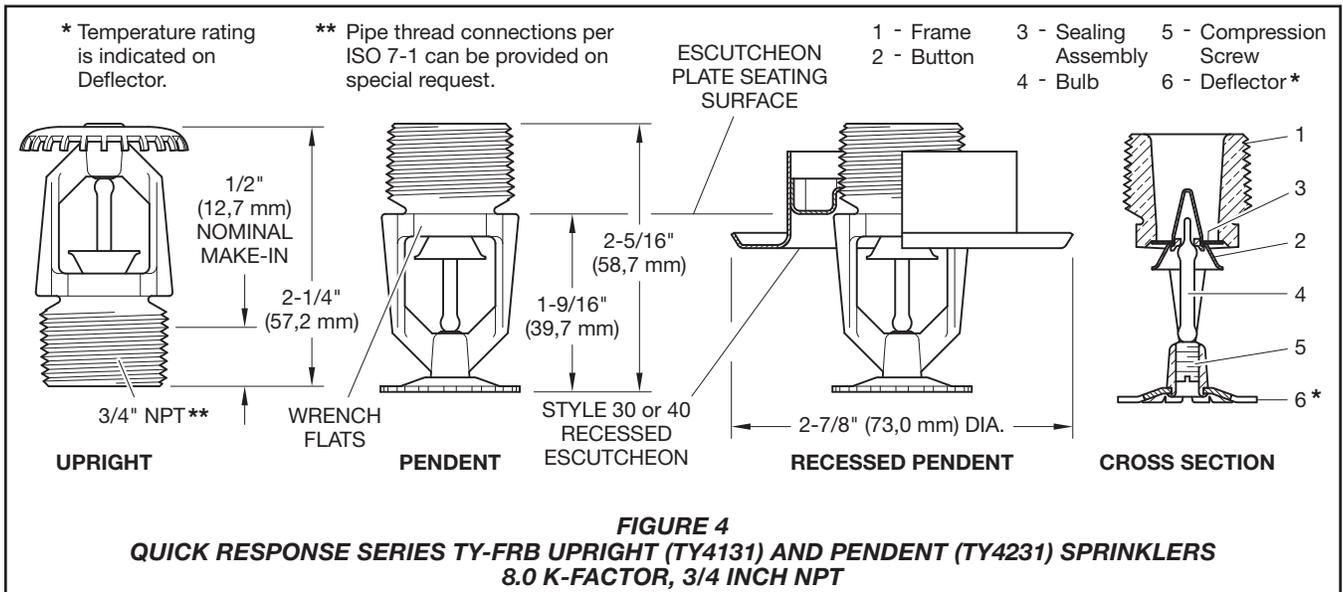
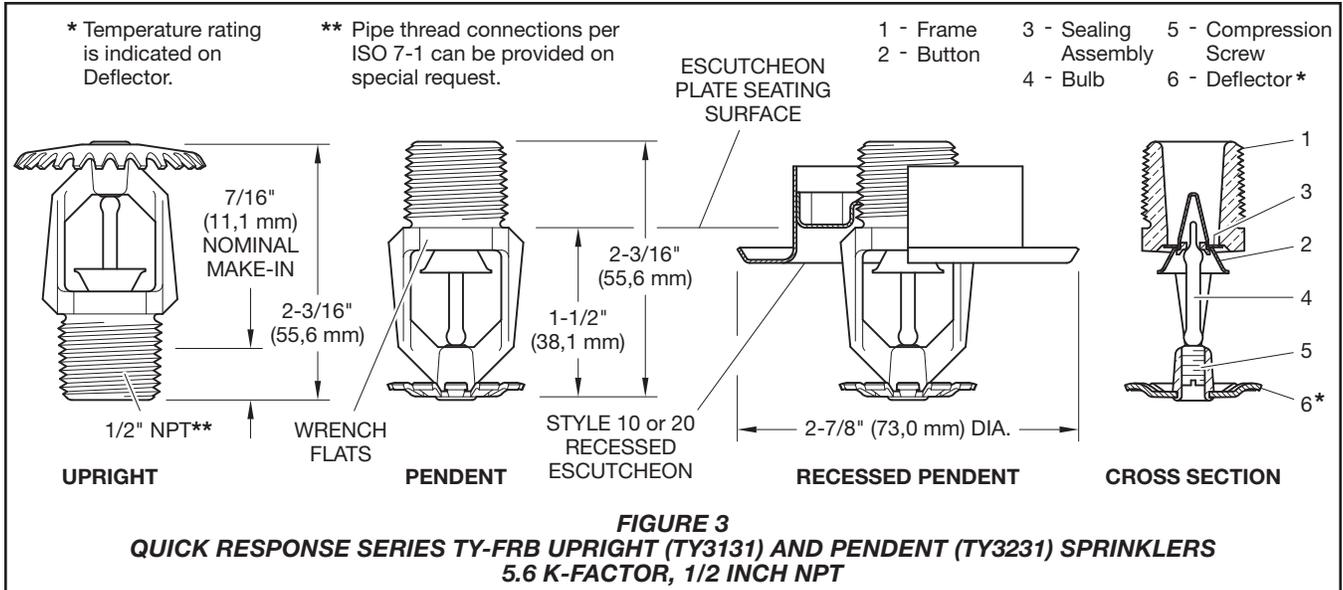
Sprinkler Identification Number (SIN)

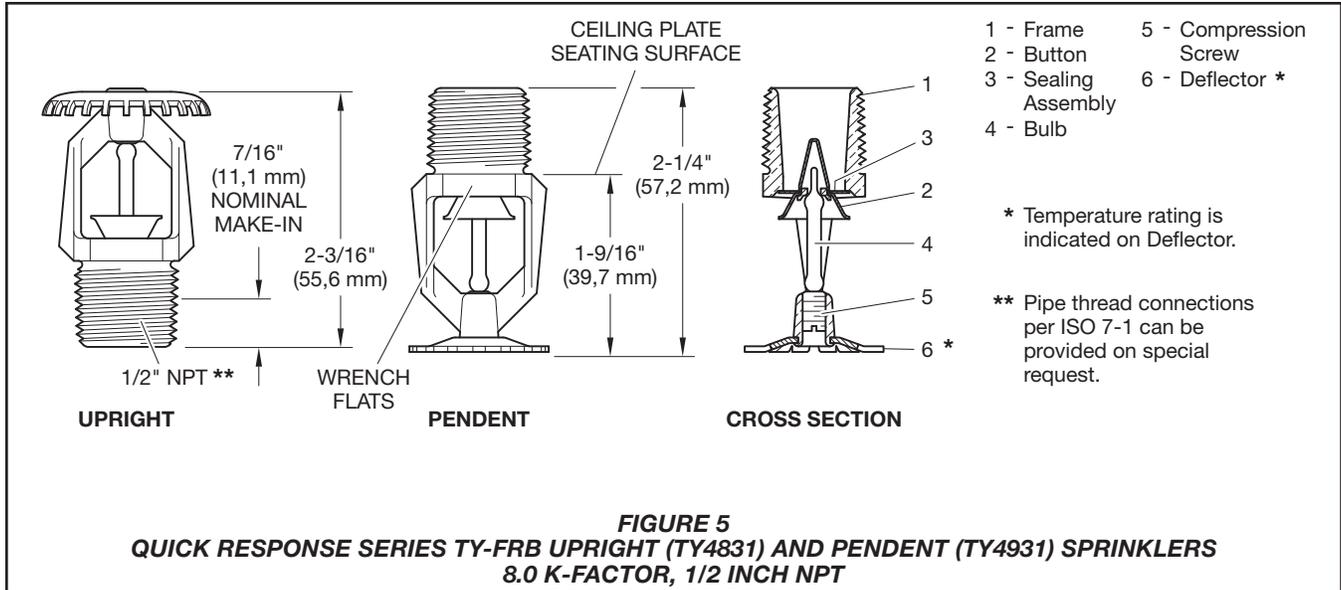
TY1131:	Upright	2.8K, 1/2" NPT
TY1231:	Pendent	2.8K, 1/2" NPT
TY2131:	Upright	4.2K, 1/2" NPT
TY2231:	Pendent	4.2K, 1/2" NPT
TY3131:	Upright	5.6K, 1/2" NPT
TY3231:	Pendent	5.6K, 1/2" NPT
TY4131:	Upright	8.0K, 3/4" NPT
TY4231:	Pendent	8.0K, 3/4" NPT
TY4831:	Upright	8.0K, 1/2" NPT
TY4931:	Pendent	8.0K, 1/2" NPT

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.







Technical Data

Approvals

UL and C-UL Listed
 FM, LPCB, and NYC Approved
 Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure

Refer to Table C.

Discharge Coefficient

K=2.8 GPM/psi^{1/2} (40,3 LPM/bar^{1/2})
 K=4.2 GPM/psi^{1/2} (60,5 LPM/bar^{1/2})
 K=5.6 GPM/psi^{1/2} (80,6 LPM/bar^{1/2})
 K=8.0 GPM/psi^{1/2} (115,2 LPM/bar^{1/2})

Temperature Rating

Refer to Table A and B.

Finishes

Sprinkler: Refer to Table D. Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated.

Physical Characteristics

Frame Bronze
 Button Brass/Copper
 Sealing Assembly Beryllium Nickel w/TEFLON
 Bulb Glass
 Compression Screw Bronze
 Deflector Copper/Bronze
 Bushing (K=2.8) Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of

torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers

The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 14). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers

The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	SIGNAL*** WHITE	
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange		1, 2, 3, 4		
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY1231)* Figure 6	135°F (57°C)	Orange				
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		RECESSED PENDENT (TY1231)** Figure 7	135°F (57°C)				Orange
			155°F (68°C)				Red
			175°F (79°C)				Yellow
			200°F (93°C)				Green
	4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)				Orange
155°F (68°C)			Red				
175°F (79°C)			Yellow				
200°F (93°C)			Green				
286°F (141°C)			Blue				
RECESSED PENDENT (TY2231)* Figure 8		135°F (57°C)	Orange				
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
RECESSED PENDENT (TY2231)** Figure 9		135°F (57°C)	Orange				
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				

NOTES:

- Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
- Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
- Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
- Approved by the City of New York under MEA 354-01-E.
- Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.

** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.

*** Frame and Deflector only. Listings and approvals apply to color (Special Order).

N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

15). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	SIGNAL*** WHITE	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 10	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
	RECESSED PENDENT (TY3231)** Figure 11	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
200°F (93°C)		Green					
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 12	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
	RECESSED PENDENT (TY4231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
200°F (93°C)		Green					
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:

- Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
 - Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
 - Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
 - Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
 - Approved by the City of New York under MEA 354-01-E.
 - VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
 - Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
 - Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.
- * Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
 ** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
 *** Frame and Deflector only. Listings and approvals apply to color (Special Order).

N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	SIGNAL WHITE	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY3231)				N/A
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
 1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

**TABLE C
 MAXIMUM WORKING PRESSURE**

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to

corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspec-

tion Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

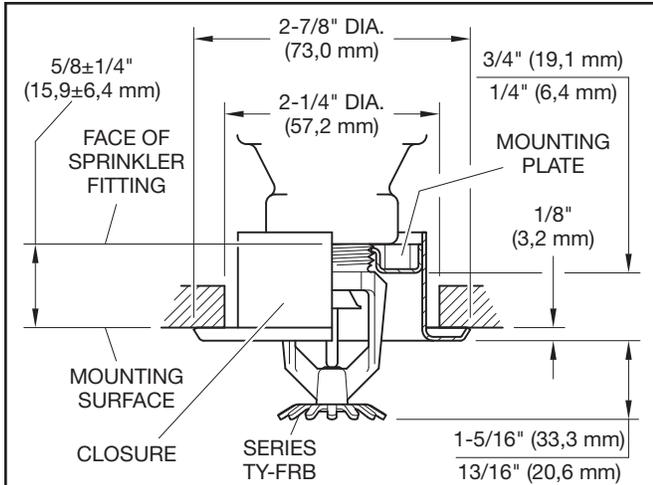


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

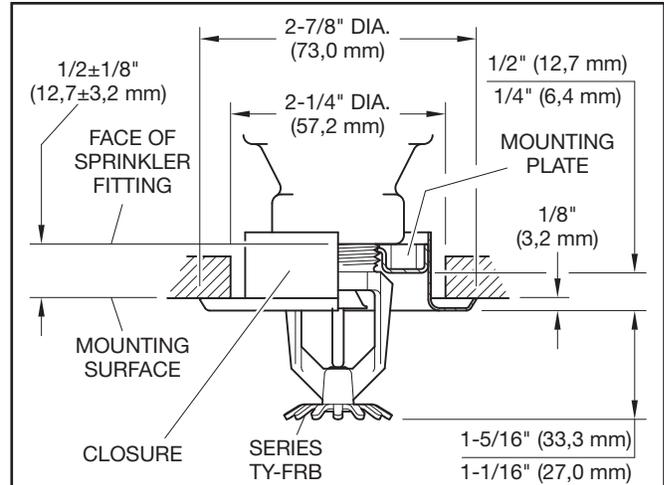


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

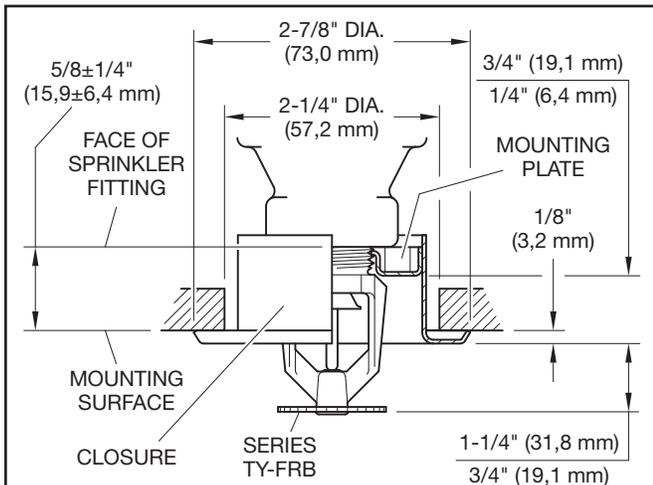


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

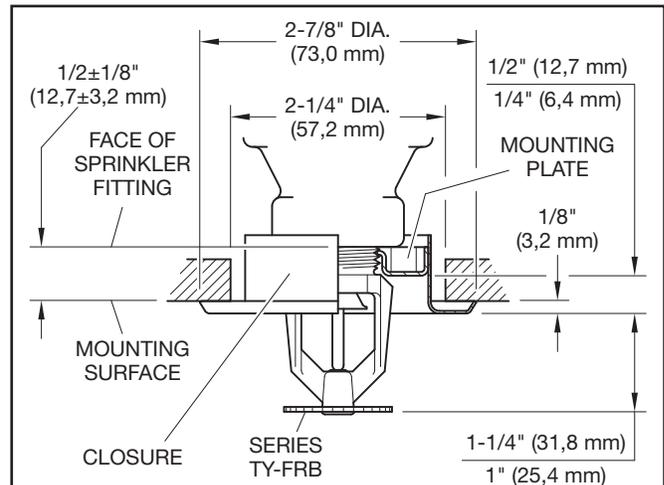


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

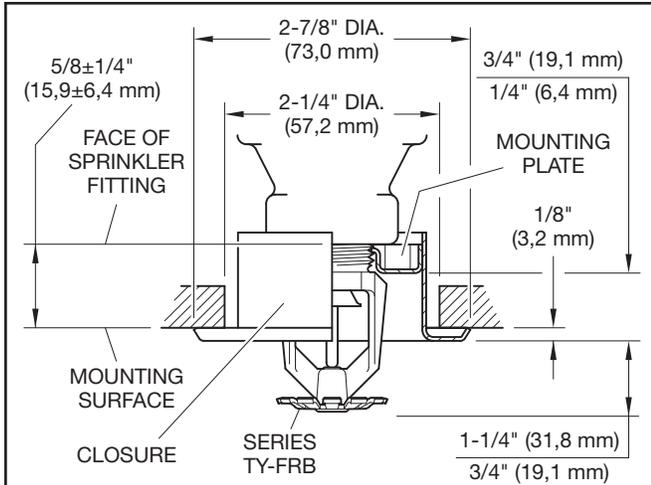


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

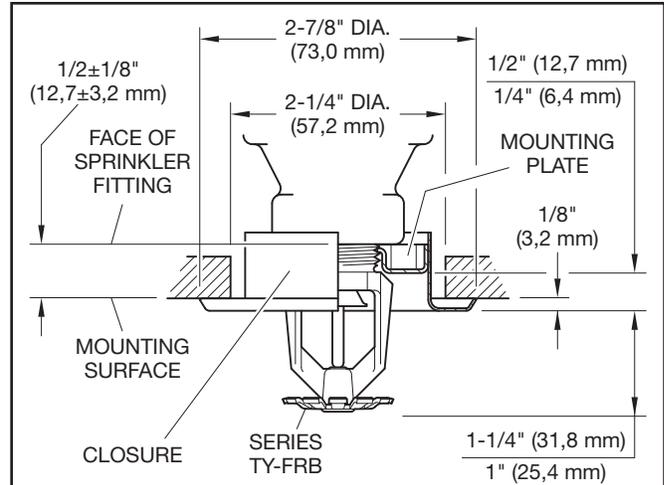


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

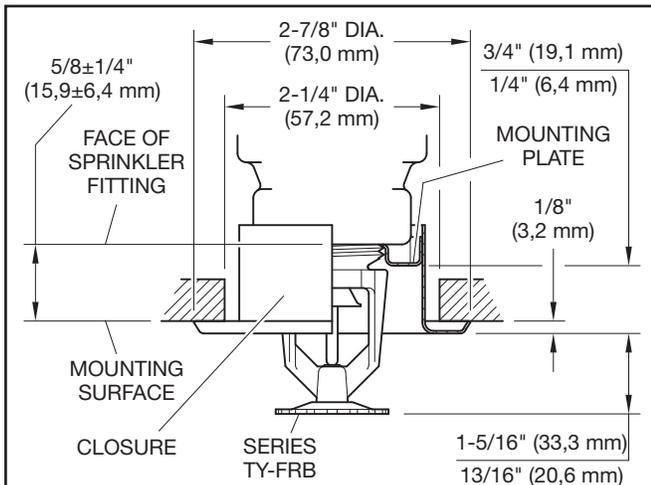


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

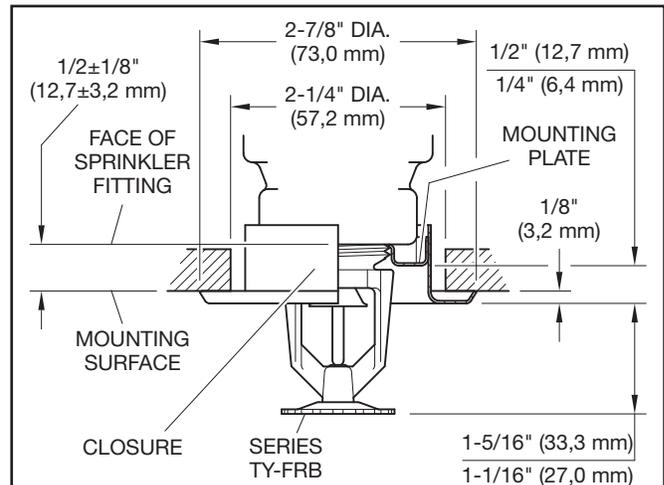


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

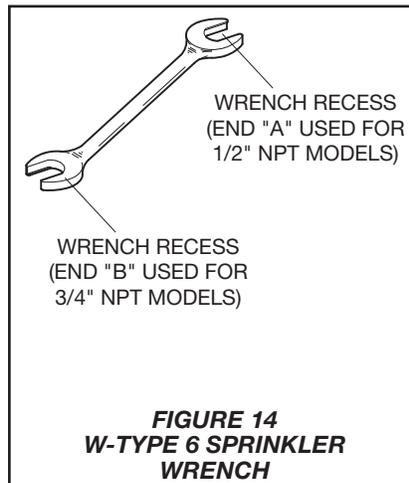


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

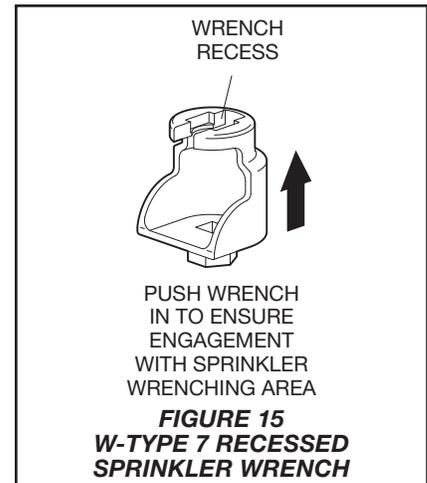


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

P/N 57 - XXX - X - XXX

		SIN	SPRINKLER FINISH		TEMPERATURE RATINGS	
330	2.8K UPRIGHT (1/2"NPT)	TY1131	1	NATURAL BRASS	135	135°F (57°C)
331	2.8K PENDENT (1/2"NPT)	TY1231	3	PURE WHITE (RAL9010)*	155	155°F (68°C)
340	4.2K UPRIGHT (1/2"NPT)	TY2131	4	SIGNAL WHITE (RAL9003)	175	175°F (79°C)
341	4.2K PENDENT (1/2"NPT)	TY2231	5	JET BLACK (RAL9005)**	200	200°F (93°C)
370	5.6K UPRIGHT (1/2"NPT)	TY3131	7	LEAD COATED	286	286°F (141°C)
371	5.6K PENDENT (1/2"NPT)	TY3231	9	CHROME PLATED		
390	8.0K UPRIGHT (3/4"NPT)	TY4131				
391	8.0K PENDENT (3/4"NPT)	TY4231				
360	8.0K UPRIGHT (1/2"NPT)	TY4831*				
361	8.0K PENDENT (1/2"NPT)	TY4931*				

* Eastern Hemisphere sales only.
 ** Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections

Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon:

Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench

Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770



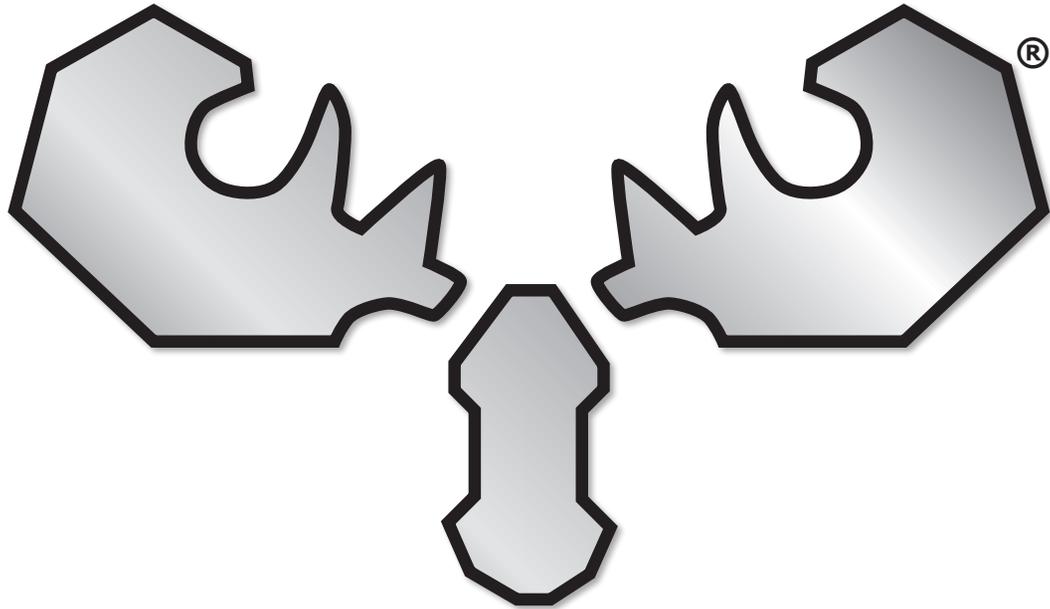
The best sprinkler pipe
in the industry!

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RSN: 1226342

Permit #: 2017-1333732-CT



BULL MOOSE TUBE COMPANY

SPRINKLER PIPE CATALOG



RSN: 1226342

Permit #: 2017-1333732-CT

BULL MOOSE TUBE COMPANY

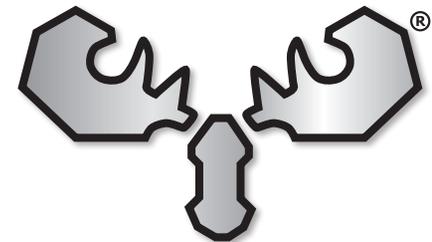


Bull Moose Tube® is a customer focused, growth oriented manufacturer and marketer of tubular products, where success is based on a commitment to meeting the customer's perception of quality.

Our strength resides in our people working together to satisfy customers and to promote business growth by achieving superior financial performance.

www.BullMooseTube.com
sales@bullmoosetube.com
800.325.4467

SCHEDULE 10
SCHEDULE 40
EDDYTHREAD 40®
EDDYLITE®
EDDY FLOW®
ULTRA EDDY®



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EDDY PIPE®

THE SUPERIOR SPRINKLER PIPE

Bull Moose Tube's® "Eddy Pipe®" brand sprinkler pipe is produced to meet sprinkler pipe standards and applications.

ADVANTAGES OF BULL MOOSE TUBE® EDDY PIPE® FAMILY

- All pipe products are UL Listed (for U.S. and Canada), and have been approved by Factory Mutual.
- Excellent production and coating capabilities, tighter tolerances, and our unique steel properties make our pipe excellent for roll grooving, welding, threading, and plain end fittings.
- All products are certified to ASTM A135 and A795 Type E, Grade A.
- Available in specific cut to order lengths from regular mill rollings.
- More popular sizes available with coating or bare.
- Ultra Eddy®, Eddy Flow®, Eddylite®, and Eddythread 40® offer cost savings along with superior hydraulics without compromising service life.
- Sprinkler pipe inventory stocked in Masury, Ohio; Gerald, Missouri; Casa Grande, Arizona; Kent, Washington; and Dallas, Texas.
- All Bull Moose (black) sprinkler pipe includes our exclusive EDDY GUARD II® MIC preventative coating.
- Bull Moose Tube® sprinkler pipe is FBC™ compatible.

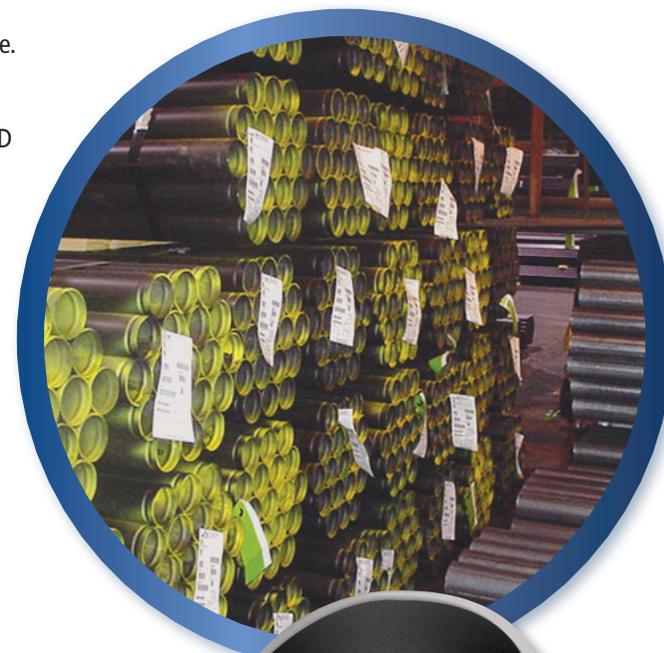
PRODUCTS

- **Schedule 10 and Schedule 40:** FM approved and UL listed sprinkler pipe.
- **Eddythread 40®:** Light threadable Schedule 40 replacement with corrosion resistance ratio of 1.0.
- **Eddylite®:** Lightwall threadable with standard outside diameter.
- **Eddy Flow®:** Cost effective replacement for Schedule 10.
- **Ultra Eddy®:** Lightwall roll groovable pipe.
- **Bull Moose galvanized steel sprinkler pipe is hot dipped galvanized to meet ASTM A123 standards. All products are stencilled to meet FM & UL specifications.**

PROTECTION

- **Eddy Guard II®:** Bull Moose Tube® is producing product that can resist bacteriological growth even after multiple rinse-outs. You know MIC corrosion can impact your installation and your property. Specify Bull Moose Tube® "Eddy Guard II®" and feel comfortable knowing that you are getting Eddy Pipe® product you trust with the bacteria resistance you need. Eddy Guard II® is NFPA 13 and NFPA 13R system compatible for use in hybrid systems as well as FM approved.

All information contained herein is accurate as known at the time of publication. Bull Moose Tube® reserves the right to change product specifications without notice and without incurring obligation.



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SCHEDULE 10 & SCHEDULE 40

FM APPROVED AND UL LISTED SPRINKLER PIPE

Bull Moose Tube's® Schedule 10 and Schedule 40 are FM Approved and UL Listed (for U.S. and Canada), even though these products do not require separate approvals and listings. Bull Moose Tube® made the decision to have them approved and listed. Our Schedule 10 and Schedule 40 have a pressure rating of 300 PSI and have been through the same rigorous testing as our other fine pipe products. Schedule 10 can be supplied roll grooved or plain end.

Bull Moose Tube's® Schedule 10 and Schedule 40 pipes are hot dipped galvanized to meet ASTM A123 standards. All products are stencilled to meet FM & UL specifications.

SCHEDULE 10 PIPE SPECIFICATIONS

NOMINAL PIPE SIZE (IN)	O.D. (IN)	I.D. (IN)	CRR**	WEIGHT/FT	WATER FILLED WEIGHT	BUNDLE SIZE
1	1.315	1.097	15.27	1.41 lbs/ft	1.820	91
1-1/4	1.660	1.442	9.91	1.81 lbs/ft	2.518	61
1-1/2	1.900	1.682	7.76	2.09 lbs/ft	3.053	61
2	2.375	2.157	6.27	2.64 lbs/ft	4.223	37
2-1/2	2.875	2.635	4.92	3.53 lbs/ft	5.893	30
3	3.500	3.260	3.54	4.34 lbs/ft	7.957	19
4	4.500	4.260	2.50	5.62 lbs/ft	11.796	19

SCHEDULE 40 PIPE SPECIFICATIONS

NOMINAL PIPE SIZE (IN)	O.D. (IN)	I.D. (IN)	CRR**	WEIGHT/FT	WATER FILLED WEIGHT	BUNDLE SIZE
1	1.315	1.049	1.00	1.68 lbs/ft	2.055	70
1-1/4	1.660	1.380	1.00	2.27 lbs/ft	2.918	51
1-1/2	1.900	1.610	1.00	2.72 lbs/ft	3.602	44
2	2.375	2.067	1.00	3.66 lbs/ft	5.114	30
2-1/2*	2.875	2.468	1.00	5.80 lbs/ft	7.875	30
3*	3.500	3.068	1.00	7.58 lbs/ft	10.783	19
4*	4.500	4.026	1.00	10.80 lbs/ft	16.316	19

*Only available in Casa Grande, AZ

**Corrosion Resistance Ratio per latest UL Directory Listing

PIPE PREPARATION

For proper operation, all pipe surfaces should be cleaned prior to installation. In order to provide a leak-tight seat for the gasket, pipe surfaces should be free from indentations and projections from the end of the pipe to the groove. All loose paint, scale, dirt, chips, grease, and rust must be removed prior to installation. Failure to take these important steps may result in improper coupling assembly, causing leakage. Also, check the manufacturer's instructions for the specific fitting used.

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Kent, WA

Casa Grande, AZ

Dallas, TX

Masury, OH



EDDYTHREAD 40[®]

A LIGHTWEIGHT SCHEDULE 40 REPLACEMENT PIPE

Bull Moose Tube's[®] Eddythread 40[®] is a lightweight replacement for Schedule 40 that has a Corrosion Resistance Ratio of 1.

ADVANTAGES OF BULL MOOSE TUBE[®] EDDYTHREAD 40[®]

- Has a Corrosion Resistance Ratio of 1.0.
- Has a pressure rating of 300 psi.
- Is lighter weight than Schedule 40.
- Is approved by Factory Mutual and listed by Underwriters Laboratories.
- Is produced in accordance to ASTM A135 and A795 Type E, Grade A.
- Can be used with standard Schedule 40 threaded fittings, couplings, and valves.
- Is produced from steel with excellent properties of strength and threadability.
- Can be used in wet, preaction, and deluge type sprinkler systems.
- Can be hot dipped galvanized to meet FM's requirement for dry systems.
- Offers lower freight costs.
- Supplied with EDDY GUARD II[®] MIC preventative coating.

EDDYTHREAD 40[®] SPECIFICATIONS

NOMINAL PIPE SIZE (IN)	O.D. (IN)	I.D. (IN)	CRR*	WEIGHT LB./FT	WATER FILLED WEIGHT	BUNDLE SIZE
1	1.295	1.083	1.00	1.461	1.860	70
1-1/4	1.650	1.418	1.00	2.070	2.754	51
1-1/2	1.900	1.654	1.00	2.547	3.468	44
2	2.375	2.123	1.00	3.308	4.842	30

*Corrosion Resistance Ratio per latest UL Directory Listing

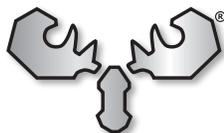
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EDDYLITE®

THE SUPERIOR LIGHTWALL THREADABLE

Bull Moose Tube's® Eddylite® is a lightwall threadable pipe manufactured in NPS 1" through 2". Eddylite® is a truly unique product within the fire protection industry.

This product has been engineered to provide lower cost fire protection systems without compromising service life, adequate wall thickness, or standard outside diameter.

Eddylite® is manufactured to meet the requirements of ASTM A135 and A795 specifications. This pipe product has been fully approved by Factory Mutual, and listed by Underwriters Laboratories (for U.S. and Canada) for use in fire protection systems with a working pressure of 300 psi or less.

ADVANTAGES OF BULL MOOSE TUBE® EDDYLITE®

- Standard outside diameter, unlike some other lightwall threadable pipe products.
- Lighter in weight than Schedule 40.
- Superior burst strength and corrosion resistance ratio compared to other lightwall threadable pipe products.
- Exceptionally strong, meets or exceeds ASTM A135 minimum yield requirements.
- Can be used with standard couplings, fittings, and valves.
- Freight savings.
- Lower sprinkler system costs without compromising service life.
- Better hydraulics than Schedule 40.
- Wall thickness and weight close to Schedule 30; compare to other lightwall threadable water filled products with wall thickness less than Schedule 10!

CORROSION RESISTANCE RATIO (CRR)

NOMINAL PIPE SIZE (IN)	STANDARD O.D. (IN)	INSIDE DIAMETER (IN)	UL THREADED	UL UNTHREADED	WEIGHT PER FT.	WATER FILLED	BUNDLE SIZE
1	1.315	1.137	0.13	7.47	1.260	1.700	91
1-1/4	1.660	1.482	0.08	4.79	1.617	2.364	61
1-1/2	1.900	1.712	0.12	4.53	1.967	2.965	61
2	2.375	2.177	0.16	4.31	2.617	4.230	37

*Corrosion Resistance Ratio per latest UL Directory Listing

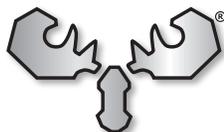
PIPE PREPARATION

For proper operation, all pipe surfaces should be cleaned prior to installation. In order to provide a leak-tight seat for the gasket, pipe surfaces should be free from indentations and projections from the end of the pipe to the groove. All loose paint, scale, dirt, chips, grease, and rust must be removed prior to installation. Failure to take these important steps may result in improper coupling assembly, causing leakage. Also, check the manufacturer's instructions for the specific fitting used.

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EDDY FLOW®

THE COST EFFECTIVE REPLACEMENT FOR SCHEDULE 10

Bull Moose Tube's® Eddy Flow® is a specially engineered replacement for Schedule 10, offering better flow characteristics while providing design flexibility. This product is FM approved, as well as UL Listed (for U.S. and Canada) for roll grooving and welding.

As an added benefit, it is more economical to use than Schedule 10 due to reduced delivery costs and ease of handling. Furthermore, Eddy Flow's® larger ID provides an opportunity for downsizing and further cost savings.

ADVANTAGES OF BULL MOOSE TUBE® EDDY FLOW®

- Certified to ASTM A135 and A795 Type E, Grade A.
- FM approved for roll grooving and welding for use in wet systems.
- UL Listed (for U.S. and Canada) for joining by welding or by listed rubber gasketed fittings for use in wet, dry, preaction, and deluge type sprinkler systems.
- Lightweight – saves shipping costs and offers easier handling.
- Can be used with roll grooved couplings or welded outlets for pressures up to 300 psi.
- Can be supplied roll grooved or plain end.
- Can be hot dipped galvanized to meet FM's & UL requirement for dry systems.
- Supplied with EDDY GUARD II® MIC preventative coating.

NPS SIZE (IN)	O.D. (IN)	EDDY FLOW® (ID)	EDDY FLOW® CRR*	WEIGHT PER FT.	WATER FILLED WT.	BUNDLE SIZE
1-1/4	1.660	1.530	1.98	1.222	2.019	61
1-1/2	1.900	1.728	3.44	1.844	2.860	61
2	2.375	2.203	2.78	2.330	3.982	37
2-1/2	2.875	2.705	1.66	2.809	5.299	30
3	3.500	3.334	1.00	3.361	7.144	19
4	4.500	4.310	1.00	4.968	11.290	19

*Corrosion Resistance Ratio per latest UL Directory Listing

PIPE PREPARATION

For proper operation, all pipe surfaces should be cleaned prior to installation. In order to provide a leak-tight seat for the gasket, pipe surfaces should be free from indentations and projections from the end of the pipe to the groove. All loose paint, scale, dirt, chips, grease, and rust must be removed prior to installation. Failure to take these important steps may result in improper coupling assembly, causing leakage. Also, check the manufacturer's instructions for the specific fitting used.



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ULTRA EDDY®

THE SUPERIOR SPRINKLER PIPE

Bull Moose Tube's® Ultra Eddy® is a versatile product that can be roll grooved, welded, and used with Pressfit* Products.

ADVANTAGES OF BULL MOOSE TUBE® ULTRA EDDY®

- Certified to ASTM A135 and A795 Type E, Grade A.
- FM approved for roll grooving and welding for use in wet systems.
- UL listed (for U.S. and Canada) for joining by welding or by listed rubber gasketed fittings for use in wet, dry, preaction, and deluge type sprinkler systems.
- Lightweight – saves shipping costs, offers easier handling.
- Multidimensional: Can be used with all Schedule 5 approved roll grooved, welding and Pressfit* Products for pressures up to 175 psi.
- Designed to generic Schedule 5 tolerances for easy interchangeability with all approved or listed fittings.
- Can be supplied roll grooved or plain end.
- With a larger ID than other products on the market today, Ultra Eddy® offers substantial improvements in hydraulics. This improvement allows for downsizing within the system which offers the opportunity for additional cost savings.
- Can be hot dipped galvanized to meet FM's requirement for dry systems.

NPS (IN)	O.D. (IN)	ULTRA EDDY® (ID)	ULTRA EDDY® CRR**	WEIGHT PER FT.	WATER FILLED WT.	BUNDLE SIZE
1	1.315	1.201	2.17	.868	1.359	91
1-1/4	1.660	1.546	1.40	1.107	1.920	61
1-1/2	1.900	1.786	1.11	1.274	2.360	61
2	2.375	2.261	1.00	1.604	3.344	37

* Pressfit is a Registered Trademark of Victaulic Company of America

** Corrosion Resistance Ratio per latest UL Directory Listing

PIPE PREPARATION

For proper operation, all pipe surfaces should be cleaned prior to installation. In order to provide a leak-tight seat for the gasket, pipe surfaces should be free from indentations and projections from the end of the pipe to the groove. All loose paint, scale, dirt, chips, grease, and rust must be removed prior to installation. Failure to take these important steps may result in improper coupling assembly, causing leakage. Also, check the manufacturer's instructions for the specific fitting used.



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BMT - EDDY PIPE®

SIZES AVAILABLE

	NPS (IN)	1	1-1/4	1-1/2	2	2-1/2	3	4
ULTRA EDDY®	O.D. (in)	1.315	1.660	1.900	2.375			
	I.D. (in)	1.201	1.546	1.786	2.261			
	Empty Weight (lb/ft)	0.868	1.107	1.274	1.604			
	Water-Filled Weight (lb/ft)	1.359	1.920	2.360	3.344			
	C.R.R.	2.17	1.40	1.11	1.00			
EDDY FLOW®	O.D. (in)		1.660	1.900	2.375	2.875	3.500	4.500
	I.D. (in)		1.530	1.728	2.203	2.705	3.334	4.310
	Empty Weight (lb/ft)		1.222	1.844	2.330	2.809	3.361	4.968
	Water-Filled Weight (lb/ft)		2.019	2.860	3.982	5.299	7.144	11.290
	C.R.R.		1.98	3.44	2.78	1.66	1.00	1.00
SCHEDULE 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620
	Water-Filled Weight (lb/ft)	1.820	2.518	3.053	4.223	5.893	7.957	11.796
	C.R.R.	15.27	9.91	7.76	6.27	4.92	3.54	2.50
EDDYLITE®	O.D. (in)	1.315	1.660	1.900	2.375			
	I.D. (in)	1.137	1.482	1.712	2.177			
	Empty Weight (lb/ft)	1.260	1.617	1.967	2.617			
	Water-Filled Weight (lb/ft)	1.700	2.364	2.965	4.230			
	C.R.R.	0.13	0.08	0.12	0.16			
EDDYTHREAD 40®	O.D. (in)	1.295	1.650	1.900	2.375			
	I.D. (in)	1.083	1.418	1.645	2.123			
	Empty Weight (lb/ft)	1.461	2.070	2.547	3.308			
	Water-Filled Weight (lb/ft)	1.860	2.754	3.468	4.842			
	C.R.R.	1.00	1.00	1.00	1.00			
SCHEDULE 40	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026
	Empty Weight (lb/ft)	1.680	2.270	2.720	3.660	5.800	7.580	10.800
	Water-Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316
	C.R.R.	1.00	1.00	1.00	1.00	1.00	1.00	1.00

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 Casa Grande, AZ
 Dallas, TX
 Masury, OH



EDDY PIPE® BUNDLING CHART

NPS	PIPE TYPE	WEIGHT PER FOOT	PIECES PER BUNDLE	PIPE LENGTH (FT.)		
				21	24	25
1	ULTRA EDDY®	0.868	91	1,659	1,896	1,975
	SCHEDULE 10	1.410	91	2,695	3,079	3,208
	EDDYRITE®	1.260	91	2,408	2,752	2,867
	EDDYTHREAD 40®	1.461	70	2,148	2,454	2,557
	SCHEDULE 40	1.680	70	2,470	2,822	2,940
1-1/4	ULTRA EDDY®	1.107	61	1,418	1,621	1,688
	EDDY FLOW®	1.222	61	1,565	1,789	1,864
	SCHEDULE 10	1.810	61	2,319	2,650	2,760
	EDDYRITE®	1.617	61	2,071	2,367	2,466
	EDDYTHREAD 40®	2.070	51	2,217	2,534	2,639
1-1/2	SCHEDULE 40	2.270	51	2,431	2,778	2,894
	ULTRA EDDY®	1.274	61	1,632	1,865	1,943
	EDDY FLOW®	1.844	61	2,362	2,700	2,812
	SCHEDULE 10	2.090	61	2,677	3,060	3,187
	EDDYRITE®	1.967	61	2,520	2,880	3,000
1-1/2	EDDYTHREAD 40®	2.547	44	2,353	2,690	2,802
	SCHEDULE 40	2.720	44	2,513	2,872	2,992
	ULTRA EDDY®	1.604	37	1,246	1,424	1,484
	EDDY FLOW®	2.330	37	1,810	2,069	2,155
	SCHEDULE 10	2.640	37	2,051	2,344	2,442
2	EDDYRITE®	2.617	37	2,033	2,324	2,421
	EDDYTHREAD 40®	3.308	30	2,084	2,382	2,481
	SCHEDULE 40	3.660	30	2,306	2,635	2,745
	EDDY FLOW®	2.809	30	1,770	2,022	2,107
	SCHEDULE 10	3.530	30	2,224	2,542	2,648
2-1/2	SCHEDULE 40*	5.800	30	3,654	4,176	4,350
	EDDY FLOW®	3.361	19	1,341	1,533	1,596
3	SCHEDULE 10	4.340	19	1,732	1,979	2,062
	SCHEDULE 40*	7.580	19	3,024	3,456	3,601
	EDDY FLOW®	4.968	19	1,982	2,265	2,360
4	SCHEDULE 10	5.620	19	2,242	2,563	2,670
	SCHEDULE 40*	10.800	19	4,309	4,925	5,130
	EDDY FLOW®	9.289	10	1,951	2,229	2,322
6	SCHEDULE 10	9.289	10	1,951	2,229	2,322
8	SCHEDULE 10	16.940	7	2,490	2,846	2,965

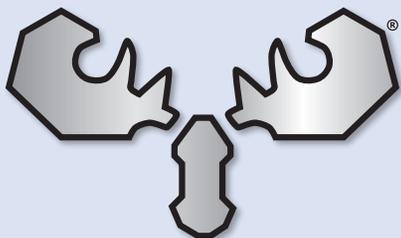
* Only Available in Casa Grande, AZ.





BULL MOOSE TUBE

ENGINEERED SPRINKLER PIPE SWAY BRACE CHARTS



BULL MOOSE TUBE COMPANY

1819 Clarkson Road
 Chesterfield, MO 63017
 PHONE: (800) 325-4467
 FAX: (636) 537-2645
 www.bullmoosetube.com
 sales@bullmoosetube.com

Bull Moose Tube EDDY FLOW Steel Pipe Joined by Threading, Bonding or Compression/Grooved Couplings																	
Max Zone of Influence Load (F_{pw}) lbs.						Max. Transverse and 4-way Brace Spacing (ft.) *** According to HLF for the 2006 & 2009 IBC (ASCE 7-05) & C_p for NFPA-13 shown in BOLD TYPE											
Pipe Size	Transverse Brace Spacing*					0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
	20 ft.	25 ft.	30 ft.	35 ft.	40 ft.												
1 1/4	136	109	89	76	64	40	40	37	32	29	26	24	23	21	20	19	18
1 1/2	232	185	152	130	109	40	40	40	35	31	29	27	25	23	22	21	20
2	372	297	244	209	175	40	40	40	38	34	31	28	27	25	24	23	22
2 1/2	549	440	360	309	258	40	40	40	40	36	32	30	28	26	25	24	23
3	809	648	531	455	381	40	40	40	40	37	34	31	29	28	26	25	24
4	1544	1235	1012	867	726	40	40	40	40	40	37	34	32	30	29	28	26

Bull Moose Tube EDDYTHREAD 40 Steel Pipe Joined by Threading, Bonding or Compression/Grooved Couplings																	
Max Zone of Influence Load (F_{pw}) lbs.						Max. Transverse and 4-way Brace Spacing (ft.) *** According to HLF for the 2006 & 2009 IBC (ASCE 7-05) & C_p for NFPA-13 shown in BOLD TYPE											
Pipe Size	Transverse Brace Spacing*					0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
	20 ft.	25 ft.	30 ft.	35 ft.	40 ft.												
1	119	95	78	67	56	40	40	36	31	28	25	24	22	21	20	19	18
1 1/4	218	175	143	123	103	40	40	40	35	31	28	26	25	23	22	21	20
1 1/2	312	250	205	175	147	40	40	40	37	33	30	28	26	25	23	22	21
2	518	414	339	291	243	40	40	40	40	36	33	30	29	27	26	24	23



BULL MOOSE TUBE COMPANY

For Additional Information Contact (800) 325-4467
 Or From Canada Call: (800) 882-4666

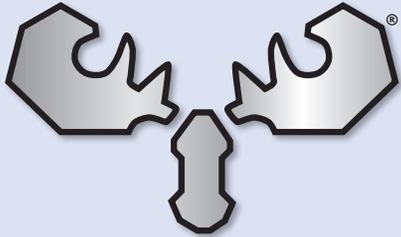
www.bullmoosetube.com
 sales@bullmoosetube.com

1819 Clarkson Road
 Chesterfield, MO 63017
 Gerald, MO
 Kent, WA
 Casa Grande, AZ
 Dallas, TX
 Masury, OH

RSN: 1226342
Permit #: 2017-1333732-CT



CONTACT YOUR SALES REP TODAY!



BULL MOOSE TUBE COMPANY

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Chesterfield, MO 63017
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FAX: (636) 537-2645
www.bullmoosetube.com
sales@bullmoosetube.com

BMT EDDY PIPE® BRAND SPRINKLER PIPE IS PRODUCED AT OUR GERALD, MO., CASA GRANDE, AZ. AND MASURY, OH. PLANTS WITH ADDITIONAL STOCKING LOCATIONS IN DALLAS, TX. AND KENT, WA.

FOR ADDITIONAL INFORMATION CONTACT YOUR SALESPERSON TODAY AT:

(800) 325-4467

OR FROM CANADA CALL:

(800) 882-4666



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The Voice of the Fire Sprinkler Industry

● STOCKING LOCATION

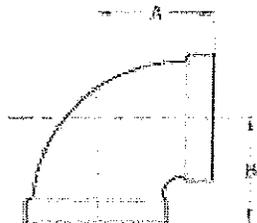
★ MANUFACTURING PLANT/
STOCKING LOCATION

D.I. THREADED FITTINGS



LISTED LISTED APPROVED

For fire protection services request submittal GRS 1.3

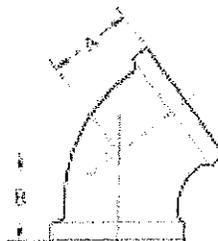


DUCTILE IRON THREADED FITTINGS ARE UL, ULC LISTED AND FACTORY MUTUAL APPROVED FOR 500 PSI SERVICE. DUCTILE IRON PER ASTM A 536 GRADE 65-45-12. DIMENSIONS CONFORM TO ANSI B16.3 CLASS 150. THREADS ARE NPT PER ANSI/ASME B1.20.1

NOTICE: DUCTILE IRON FITTINGS HAVE HIGHER TENSILE STRENGTH THEN THAT OF STEEL PIPE. THEREFORE, OVER TIGHTENING CAN CAUSE DAMAGE TO PIPE THREADS WHICH MAY CAUSE LEAKAGE. DUCTILE IRON FITTINGS SHOULD BE TIGHTENED THREE TURNS BEYOND HAND TIGHT, BUT NO MORE THAN FOUR TURNS.

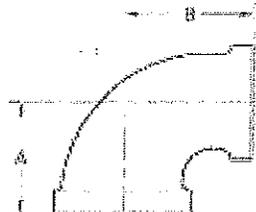
DUCTILE IRON 90 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DB90033	500	1.50	1.50	0.62
1 1/4	DB90044	500	1.75	1.75	0.90
1 1/2	DB90055	500	1.94	1.94	1.20
2	DB90066	500	2.25	2.25	1.85



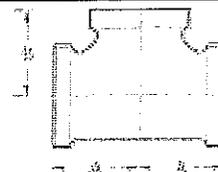
DUCTILE IRON 45 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DB45033	500	1.12	1.12	0.46
1 1/4	DB45044	500	1.29	1.29	0.73
1 1/2	DB45055	500	1.43	1.43	0.92
2	DB45066	500	1.68	1.68	1.50



DUCTILE IRON RED 90 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1X1/2	DB90031	500	1.26	1.36	0.44
1X3/4	DB90032	500	1.37	1.45	0.52
1 1/4X1/2	DB90041	500	1.34	1.53	0.64
1 1/4X3/4	DB90042	500	1.45	1.62	0.72
1 1/4X1	DB90043	500	1.58	1.67	0.75
1 1/2X1	DB90053	500	1.65	1.80	0.92
1 1/2X1 1/4	DB90054	500	1.82	1.88	1.08
2X1/2	DB90061	500	1.49	1.88	1.08
2X3/4	DB90062	500	1.60	1.97	1.24
2X1	DB90063	500	1.73	2.02	1.40
2X1 1/4	DB90064	500	1.90	2.10	1.52
2X1 1/2	DB90065	500	2.02	2.16	1.65



DUCTILE IRON STRAIGHT TEE

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DT333	500	1.50	1.50	0.85
1 1/4	DT444	500	1.75	1.75	1.22
1 1/2	DT555	500	1.94	1.94	1.55
2	DT666	500	2.25	2.25	2.45



DUCTILE IRON COUPLING

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION	WEIGHT EACH PIECE
			A	
1	DCL033	500	1.67	0.40
1 1/4	DCL044	500	1.93	0.57
1 1/2	DCL055	500	2.15	0.75
2	DCL066	500	2.53	1.15



DUCTILE IRON RED COUPLING

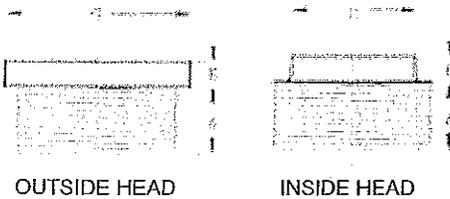
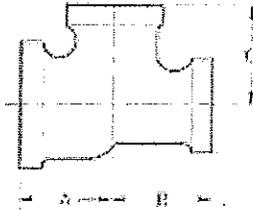
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION	WEIGHT EACH PIECE
			A	
1X1/2	DRC031	500	1.69	0.39
1X3/4	DRC032	500	1.69	0.53

D.I. THREADED FITTINGS



LISTED LISTED APPROVED

For fire protection services request submittal GRS 1.3

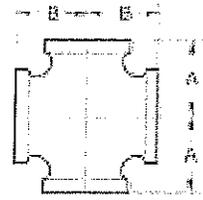


DUCTILE IRON REDUCING TEE

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS			WEIGHT EACH PIECE
			A	B	C	
1X1X1/2	DT331	500	1.26	1.26	1.36	0.64
1X1X3/4	DT332	500	1.37	1.37	1.45	0.73
1X1/2X1	DT313	500	1.50	1.36	1.50	0.71
1X3/4X1	DT323	500	1.50	1.45	1.50	0.76
1X1X1 1/4	DT334	500	1.67	1.67	1.58	0.98
1X1X1 1/2	DT335	500	1.80	1.80	1.65	1.16
1 1/4X1X1/2	DT431	500	1.34	1.26	1.53	0.82
1 1/4X1X3/4	DT432	500	1.45	1.37	1.62	0.90
1 1/4X1X1	DT433	500	1.58	1.50	1.67	1.00
1 1/4X1X1 1/4	DT434	500	1.75	1.67	1.75	1.08
1 1/4X1X1 1/2	DT435	500	1.88	1.80	1.82	1.42
1 1/4X1 1/4X1/2	DT441	500	1.34	1.34	1.53	0.86
1 1/4X1 1/4X3/4	DT442	500	1.45	1.45	1.62	0.92
1 1/4X1 1/4X1	DT443	500	1.58	1.58	1.67	0.95
1 1/4X1 1/4X1 1/2	DT445	500	1.88	1.88	1.82	1.45
1 1/4X1 1/4X2	DT446	500	2.10	2.10	1.90	1.75
1 1/2X1X1/2	DT531	500	1.41	1.34	1.66	0.95
1 1/2X1X3/4	DT532	500	1.52	1.37	1.75	1.14
1 1/2X1X1	DT533	500	1.65	1.50	1.80	1.17
1 1/2X1X1 1/4	DT534	500	1.82	1.67	1.88	1.34
1 1/2X1X1 1/2	DT535	500	1.94	1.80	1.94	1.45
1 1/2X1 1/4X1/2	DT541	500	1.41	1.34	1.66	1.05
1 1/2X1 1/4X3/4	DT542	500	1.52	1.45	1.75	1.15
1 1/2X1 1/4X1	DT543	500	1.65	1.58	1.80	1.25
1 1/2X1 1/4X2	DT546	500	2.16	2.10	2.02	1.90
1 1/2X1 1/2X1/2	DT551	500	1.41	1.41	1.16	1.15
1 1/2X1 1/2X3/4	DT552	500	1.52	1.52	1.75	1.24
1 1/2X1 1/2X1	DT553	500	1.65	1.65	1.80	1.30
1 1/2X1 1/2X1 1/4	DT554	500	1.82	1.82	1.88	1.48
1 1/2X1 1/2X2	DT556	500	2.16	2.16	2.02	1.98
2X1X2	DT636	500	2.25	2.02	2.25	2.15
2X1 1/4X2	DT646	500	2.25	2.10	2.25	2.30
2X1 1/2X1/2	DT651	500	1.49	1.41	1.88	1.50
2X1 1/2X3/4	DT652	500	1.60	1.52	1.97	1.62
2X1 1/2X1	DT653	500	1.73	1.65	2.02	1.64
2X1 1/2X1 1/4	DT654	500	1.90	1.82	2.10	1.80
2X1 1/2X1 1/2	DT655	500	2.02	1.94	2.16	2.00
2X1 1/2X2	DT656	500	2.25	2.16	2.25	2.35
2X2X1/2	DT661	500	1.49	1.49	1.88	1.60
2X2X3/4	DT662	500	1.60	1.60	1.97	1.68
2X2X1	DT663	500	1.73	1.73	2.02	1.85
2X2X1 1/4	DT664	500	1.90	1.90	2.10	2.04
2X2X1 1/2	DT665	500	2.02	2.02	2.16	2.18
2X2X2 1/2	DT667	500	2.60	2.60	2.39	3.61
2 1/2X2X3/4	DT762	500	1.74	1.60	2.32	2.28

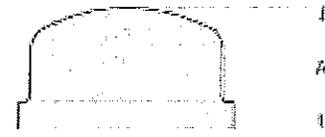
DUCTILE IRON BUSHINGS

NOMINAL SIZE (INCH)	ITEM CODE #	DIMENSIONS			STYLE	WT. EACH
		A	B	C		
1x1/2	DBUSH31	0.75	0.25	1.42	OUT	0.22
1x3/4	DBUSH32	0.75	0.25	1.42	OUT	0.17
1 1/4x1	DBUSH43	0.80	0.28	1.76	OUT	0.28
1 1/2x1	DBUSH53	0.83	0.31	2.00	OUT	0.44
1 1/2x1 1/4	DBUSH54	0.83	0.31	2.00	OUT	0.30
2x1	DBUSH63	0.88	0.41	1.95	IN	0.66
2x1 1/4	DBUSH64	0.88	0.34	2.48	OUT	0.72
2x1 1/2	DBUSH65	0.88	0.34	2.48	OUT	0.61



DUCTILE IRON CROSS

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DX033	500	1.50	1.50	0.98
1 1/4	DX044	500	1.75	1.75	1.50
1 1/2	DX055	500	1.94	1.94	1.90
2	DX066	500	2.25	2.25	2.95
1 1/4X1	DX043	500	1.58	1.67	1.27
1 1/2X1	DX053	500	1.65	1.80	1.48
2X1	DX063	500	1.73	2.02	2.10



DUCTILE IRON CAP

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION	WEIGHT EACH PIECE
			A	
1	DCP003	500	1.16	0.32
1 1/4	DCP004	500	1.28	0.43
1 1/2	DCP005	500	1.33	0.60
2	DCP006	500	1.45	0.91

FireLock® Outlet-T

STYLE 922

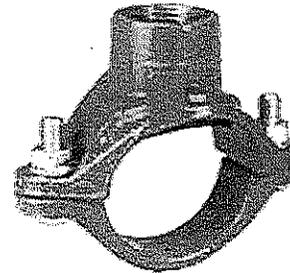


The Style 922 Outlet-T provides a convenient method of incorporating ½, ¾, and 1" / 15, 20 and 25 mm outlets for directly connecting sprinklers, drop nipples, sprigs, gauges, drains and other outlet products. Available for 1¼ through 76.1 mm / 32 to 76.1 mm piping systems, Style 922 outlets are UL/ULC Listed, LPCB and FM Approved for branch connections and VdS Approved for direct sprinkler connection only on wet and dry systems.

The locating collar engages into the hole prepared in the pipe. When tightened, the assembly compresses the gasket onto the OD of the pipe. The Style 922 Outlet-T is UL/FM rated up to 300 psi / 2068 kPa and VdS rated up to 16 bar at the ambient temperatures typical for fire protection systems.

Style 922 is suitable for use on standard, lightwall, Schedule 5 and other specialty pipes.* Contact Victaulic for other optional coatings.

*Consult Section 10.01 for specific listings/approvals.



MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Gasket:

- **Grade "E" EPDM - Type A**
(Violet color code). FireLock products have been Listed by Underwriters Laboratories Inc. and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services up to the rated working pressure using the Grade "E" Type A Gasket System.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

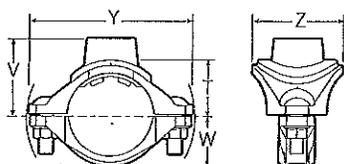
Housing Coating:

- Orange enamel (North America, Latin America, Asia Pacific)
- Red enamel (Europe)

FireLock® Outlet-T

STYLE 922

DIMENSIONS



Nominal Size Inches/mm			Hole Diameter	Dimensions – Inches/millimeters					Approx. Weight Each
Run X Branch FPT†			10.08/41.5 -0.00/0.0	T	V	W	V	Z	lbs/kg
1 1/4 32	X	1/2	1 3/16	1.30	1.83	1.10	3.87	2.56	1.0
		15	30.2	33.0	46.5	27.9	98.3	65.0	0.45
		3/4	1 3/8	1.28	1.83	1.10	3.87	2.56	1.1
		20	30.2	32.5	46.5	27.9	98.3	65.0	0.50
1 1/2 40	X	1	1 3/8	1.52	2.18	1.10	3.87	2.56	1.2
		25	30.2	38.6	55.4	27.9	98.3	65.0	0.54
		1/2	1 3/8	1.42	1.95	1.22	4.08	2.56	1.2
		15	30.2	36.1	49.5	31.0	103.6	65.0	0.54
2 50	X	3/4	1 3/8	1.40	1.95	1.22	4.08	2.56	1.2
		20	30.2	35.6	49.5	31.0	103.6	65.0	0.54
		1	1 3/8	1.64	2.30	1.22	4.08	2.56	1.3
		25	30.2	41.7	58.4	31.0	103.6	65.0	0.59
2 1/2 65	X	1/2	1 3/8	1.66	2.19	1.46	4.60	2.56	1.3
		15	30.2	42.2	55.6	37.1	116.8	65.0	0.59
		3/4	1 3/8	1.64	2.19	1.46	4.60	2.56	1.4
		20	30.2	41.7	55.6	37.1	116.8	65.0	0.64
76.1 mm	X	1	1 3/8	1.88	2.54	1.46	4.60	2.56	1.5
		25	30.2	47.8	64.5	37.1	116.8	65.0	0.68
		1/2	1 3/8	1.91	2.44	1.71	5.40	2.56	1.6
		15	30.2	48.5	62.0	43.4	137.2	65.0	0.73
76.1 mm	X	3/4	1 3/8	1.89	2.44	1.71	5.40	2.56	1.6
		20	30.2	48.0	62.0	43.4	137.2	65.0	0.73
		1	1 3/8	2.13	2.79	1.71	5.40	2.56	1.6
		25	30.2	54.1	70.9	43.4	137.2	65.0	0.73
76.1 mm	X	1/2	1 3/8	1.91	2.44	1.71	5.50	2.56	1.6
		15	30.2	48.5	62.0	43.4	139.7	65.0	0.73
		3/4	1 3/8	1.89	2.44	1.71	5.50	2.56	1.6
		20	30.2	48.0	62.0	43.4	139.7	65.0	0.73
76.1 mm	X	1	1 3/8	2.13	2.79	1.71	5.50	2.56	1.7
		25	30.2	54.1	70.9	43.4	139.7	65.0	0.80

† Victaulic female threaded products are designed to accommodate standard NPT or BSPT (optional) male pipe threads only. Use of male threaded products with special features, such as probes, dry pendent sprinklers, etc., should be verified as suitable for use with this Victaulic product. Failure to verify suitability in advance may result in assembly problems or leakage.

*Center of run to engaged pipe end for NPT threads (dimensions are approximate).

FireLock® Outlet-T

STYLE 922

PERFORMANCE

Run Size x Outlet Size			Equivalent Length of 1 inch Schedule 40 Steel Pipe (per UL 213, Section 16) (C=120)*, FT
Inches/mm			Feet/meters
1 ¼ 32	X	1 25	8.5 2.6
1 ½ 40	X	1 25	8.5 2.6
2 50	X	1 25	8.5 2.6
2 ½ 65	X	1 25	8.5 2.6
76.1 mm	X	1 25	8.5 2.6

* Hazen-Williams coefficient of friction is 120

FireLock® Outlet-T

STYLE 922

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

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

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Mechanical Anchoring Systems

4.3.8 HDI & HDI-L Drop-In Anchor

4.3.8.1	Product Description
4.3.8.2	Material Specifications
4.3.8.3	Technical Data
4.3.8.4	Installation Instructions
4.3.8.5	Ordering Information

4.3.8.1 Product Description

The Hilti HDI/HDI-L Drop-In anchor is an internally threaded, flush mounted expansion anchor for use in concrete.

- Intelligent expansion section adapts to the base material and reduces number of hammer blows up to 50% (HDI-L)

Product Features

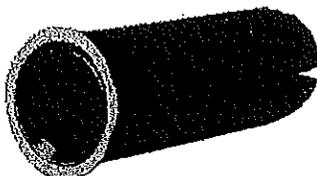
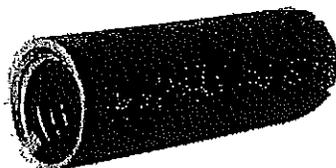
HDI

- Anchor, setting tool and Hilti drill bit form a matched tolerance system to provide reliable fastenings
- Allows shallow embedment without sacrificing performance
- Lip provides flush installation, consistent anchor depth, and easy rod alignment (HDI-L)
- Lip allows accurate flush surface setting, independent of hole depth (HDI-L)
- Ideal for repetitive fastenings with threaded rods of equal length

Guide Specifications

Expansion Anchor Expansion anchors shall be flush or shell type and zinc plated in accordance with ASTM B 633, SC 1, Type III. Anchors shall be Hilti HDI/HDI-L anchors as supplied by Hilti.

Installation Install shell or flush type anchors in holes drilled with Hilti carbide tipped drill bits. Install anchors as per manufacturer's recommendations.



4.3.8.2 Material Specifications

HDI/HDI-L, 1/4", 3/8", 1/2", and HDI 5/8" and 3/4" are manufactured from mild carbon steel which is plated with a zinc finish for corrosion protection in accordance with ASTM B 633, SC 1, Type III

HDI Stainless Steel material meets the requirements of AISI 303

Listings/Approvals

City of Los Angeles
 Research Report No. 23709 (HDI Only)
 FM (Factory Mutual)
 Pipe Hanger Components for Automatic
 Sprinkler Systems (3/8" - 3/4")
 (HDI and HDI-L)
 UL (Underwriters Laboratories)
 UL 203 Pipe Hanger Equipment for Fire
 Protection Services (3/8" - 3/4")



4.3.8.3 Technical Data

HDI/HDI-L Specification Table

Details	Anchor Size	in. (mm)	HDI/HDI-L			HDI	
			1/4 (6.4)	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)
d_{bit}	Nominal Bit diameter	in.	3/8	1/2	5/8	27/32	1
h_{nom}	Std. depth of embed.	in.	1	1-9/16	2	2-9/16	3-3/16
l	Anchor length	(mm)	(25)	(40)	(51)	(65)	(81)
h_1	Hole depth						
c_{th}	Useable thread length	in. (mm)	7/16 (11)	5/8 (15)	11/16 (17)	7/8 (22)	1-3/8 (34)
	Threads per inch		20	16	13	11	10
h	min. base material thickness	in. (mm)	3 (76)	3-1/8 (79)	4 (102)	5-1/8 (130)	6-3/8 (162)
T_{max}	max. tightening torque	ft-lb (Nm)	4 (5.4)	11 (14.9)	22 (29.8)	37 (50.2)	80 (108.5)

Combined Shear and Tension Loading

$$\left(\frac{N_d}{N_{rec}}\right)^{5/3} + \left(\frac{V_d}{V_{rec}}\right)^{5/3} \leq 1.0 \text{ (Ref. Section 4.1.2.7)}$$

HDI & HDI-L Drop-In Anchor 4.3.8

Carbon Steel HDI Allowable Loads in Concrete

Anchor size in. (mm)	2000 psi (13.8 MPa)				4000 psi (27.6 MPa)				6000 psi (41.4 MPa)			
	Tension		Shear		Tension		Shear		Tension		Shear	
	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)
	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L
1/4 (6.4)	600 (2.2)	800 (2.2)	450 (8.0)	450 (8.0)	570 (2.5)	570 (2.5)	625 (2.8)	625 (2.8)	790 (3.5)	790 (3.5)	700 (3.1)	700 (3.1)
3/8 (9.5)	890 (4.0)	890 (4.0)	965 (4.3)	965 (4.3)	1115 (5.0)	1115 (5.0)	1250 (5.6)	1250 (5.6)	1360 (6.0)	1360 (6.0)	1500 (6.7)	1500 (6.7)
1/2 (12.7)	1120 (5.0)	1120 (5.0)	1500 (6.7)	1500 (6.7)	1785 (7.9)	1785 (7.0)	2125 (9.5)	1940 (8.6)	2345 (10.4)	2345 (10.4)	2500 (11.1)	2500 (11.1)
5/8 (15.9)	1875 (8.3)	-	2500 (11.1)	-	2920 (13.0)	-	3250 (14.5)	-	3715 (16.5)	-	3750 (16.7)	-
3/4 (19.1)	2500 (11.1)	-	3875 (17.2)	-	4065 (18.1)	-	5000 (22.2)	-	5565 (24.8)	-	5500 (24.5)	-

Note: The ultimate shear and allowable shear values are based on the use of SAE Grade 5 bolts. ($f_y = 85$ ksi, $F_{ut} = 120$ ksi) with the exception of the 1/4" HDI/HDI-L in $f'_c = 6000$ psi concrete which is based upon the use of a SAE Grade 8 bolt ($f_y = 120$ ksi, $F_{ut} = 150$ ksi).

Carbon Steel HDI Ultimate Loads in Concrete

Anchor size in. (mm)	2000 psi (13.8 MPa)				4000 psi (27.6 MPa)				6000 psi (41.4 MPa)			
	Tension		Shear		Tension		Shear		Tension		Shear	
	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)	lb (kN)
	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L
1/4 (6.4)	1995 (8.9)	1995 (8.9)	1800 (8.0)	1800 (8.0)	2270 (10.1)	2270 (10.1)	2500 (11.1)	2500 (11.1)	3150 (14.0)	3150 (14.0)	2800 (12.5)	2800 (12.5)
3/8 (9.5)	3555 (15.8)	3555 (15.8)	3850 (17.1)	3850 (17.1)	4460 (19.8)	4460 (19.8)	5000 (22.2)	5000 (22.2)	6430 (24.2)	6430 (24.2)	6000 (26.7)	6000 (26.7)
1/2 (12.7)	4470 (19.9)	4470 (19.9)	6000 (26.7)	6000 (26.7)	7140 (31.0)	7140 (31.8)	8500 (37.8)	7750 (34.4)	9375 (41.7)	9375 (41.7)	10000 (44.5)	10000 (44.5)
5/8 (15.9)	7500 (33.4)	-	10000 (44.5)	-	11685 (52.0)	-	13000 (57.9)	-	14865 (66.1)	-	15000 (66.7)	-
3/4 (19.1)	10000 (44.5)	-	15500 (69.0)	-	16260 (72.3)	-	20000 (89.0)	-	22250 (99.0)	-	22000 (97.9)	-

Carbon Steel HDI Allowable Loads in Lightweight Concrete and Lightweight Concrete over Metal Deck^{1,2}

Anchor Size in. (mm)	Anchor Installed in 3000 psi (20.7 MPa) Lt. Wt. Concrete ³		Anchor Installed Through Steel Deck Upper Flute Into 3000 psi (20.7 MPa) Lt. Wt. Concrete ⁴		Anchor Installed Through Steel Deck Lower Flute Into 3000 psi (20.7 MPa) Lt. Wt. Concrete ⁴	
	Tension, lb (kN)	Shear, lb (kN)	Tension, lb (kN)	Shear, lb (kN)	Tension, lb (kN)	Shear, lb (kN)
1/4 (6.4)	465 (2.1)	340 (1.5)	530 (2.4)	335 (1.5)	375 (1.7)	250 (1.1)
3/8 (9.5)	755 (3.4)	940 (4.2)	880 (3.9)	1010 (4.5)	500 (2.2)	500 (2.2)
1/2 (12.7)	1135 (5.0)	1700 (7.6)	1105 (4.9)	1755 (7.8)	625 (2.8)	750 (3.3)
5/8 (15.9)	1465 (6.5)	2835 (12.6)	-	-	875 (3.9)	875 (3.9)
3/4 (19.1)	2075 (9.2)	3880 (16.4)	-	-	1250 (5.5)	1000 (4.4)

1 The allowable values are based on the use of SAE Grade 2 bolts installed in the anchors.

2 Based on using a safety factor of 4.0.

3 The tabulated shear and tensile values are for anchors installed in structural lightweight concrete having the designated ultimate compressive strength at the time of installation. The concrete must comply with ASTM C 330-77

4 The tabulated shear and tensile values are for anchors installed through 20 gauge intermediate decking into structural lightweight concrete having the designated ultimate strength at the time of installation. The concrete must comply with ASTM C 330-77

Stainless Steel HDI Allowable Loads in Concrete

Anchor size in. (mm)	4000 psi (27.6 MPa)		6000 psi (41.4 MPa)	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
SS HDI - 1/4 (6.4)	480 (2.1)	600 (2.7)	740 (3.3)	600 (2.7)
SS HDI - 3/8 (9.5)	1040 (4.6)	1230 (5.5)	1460 (6.5)	1230 (5.5)
SS HDI - 1/2 (12.7)	1840 (8.2)	2760 (12.4)	2410 (10.7)	2760 (12.3)
SS HDI - 5/8 (15.9)	2630 (11.7)	4510 (20.1)	3770 (16.8)	4510 (20.1)
SS HDI - 3/4 (19.1)	3830 (17.0)	5580 (24.8)	5030 (22.4)	5580 (24.8)

Note: The ultimate and allowable shear values are based on the use of Type 18-8 bolts.

Stainless Steel HDI Ultimate Loads in Concrete

Anchor size in. (mm)	4000 psi (27.6 MPa)		6000 psi (41.4 MPa)	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
SS HDI - 1/4 (6.4)	1930 (8.6)	2400 (10.7)	2950 (13.1)	2400 (10.7)
SS HDI - 3/8 (9.5)	4170 (18.5)	4920 (21.9)	5850 (26.0)	4920 (21.9)
SS HDI - 1/2 (12.7)	7350 (32.7)	11040 (49.1)	9630 (42.8)	11040 (49.1)
SS HDI - 5/8 (15.9)	10540 (46.9)	18040 (80.2)	15100 (67.2)	18040 (80.2)
SS HDI - 3/4 (19.1)	15340 (68.2)	22320 (99.3)	20130 (89.5)	22320 (99.3)

Mechanical Anchoring Systems

4.3.8 HDI & HDI-L Drop-In Anchor

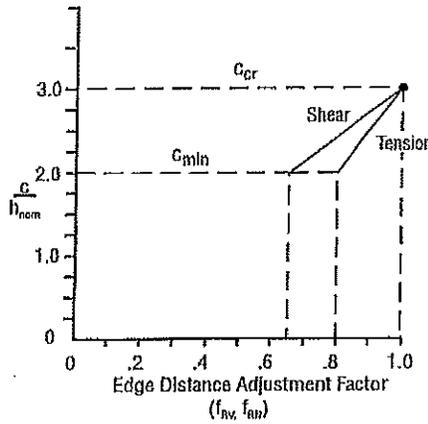
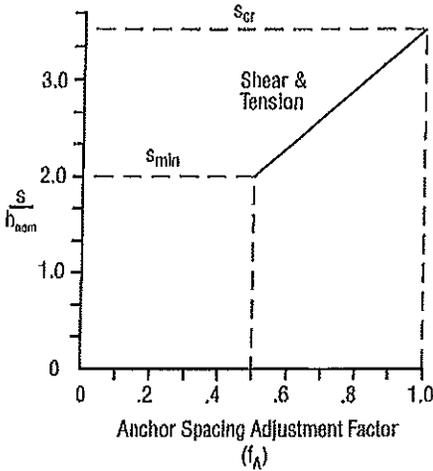
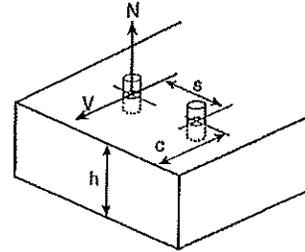
Anchor Spacing and Edge Distance Guidelines (See Anchoring Technology Section 4.1.3)

Anchor Spacing Adjustment Factors

s = Actual Spacing
 $s_{min} = 2.0 h_{nom}$
 $s_{cr} = 3.5 h_{nom}$

Edge Distance Adjustment Factors

c = Actual edge distance
 $c_{min} = 2.0 h_{nom}$
 $c_{cr} = 3.0 h_{nom}$



Influence of Anchor Spacing & Edge Distance f_A, f_R

Anchor Size in. (mm)	h_{nom} in. (mm)
1/4 (6.4)	1 (25)
3/8 (9.5)	1-9/16 (40)
1/2 (12.7)	2 (51)
5/8 (15.8)	2-9/16 (65)
3/4 (19.1)	3-3/16 (81)

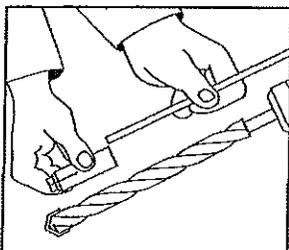
h_{nom} = standard embedment depth

Load Adjustment Factors (Anchor Spacing) f_A						Load Adjustment Factors (Edge Distance) f_R										
Tension/Shear Loads						Tension, f_{RT}					Shear, f_{RV}					
Spacing s in. (mm)	Anchor Diameter					Edge Distance c in. (mm)	Anchor Diameter					Anchor Diameter				
	1/4	3/8	1/2	5/8	3/4		1/4	3/8	1/2	5/8	3/4	1/4	3/8	1/2	5/8	3/4
2 (51)	.50					2 (51)	.80					.65				
2-1/2 (64)	.67					2-1/2 (64)	.90					.83				
3 (76)	.83	.50				3 (76)	1.0	.80				1.0	.65			
3-1/2 (89)	1.0	.58				3-1/2 (89)		.85				.73				
4 (102)		.69	.50			4 (102)		.91	.80			.85	.65			
4-1/2 (114)		.79	.58			4-1/2 (114)		.98	.85			.96	.74			
5 (127)		.90	.67	.50		5 (127)		1.0	.90	.80		1.0	.83	.65		
5-1/2 (140)		1.0	.75	.55		5-1/2 (140)			.95	.83			.91	.70		
6 (152)			.83	.61	.50	6 (152)			1.0	.87			1.0	.77		
7 (178)			1.0	.74	.57	6-1/2 (165)				.91	.80			.84	.65	
8 (203)				.87	.67	7 (178)				.95	.84			.91	.72	
9 (229)				1.0	.77	8 (203)				1.0	.90			1.0	.83	
10 (254)					.88	9 (229)					.96				.94	
11 (279)					.98	10 (254)					1.0				1.0	
12 (305)					1.0											

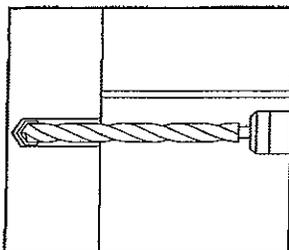
$s_{min} = 2.0 h_{nom}, s_{cr} = 3.5 h_{nom}$ $f_A = 0.33 s - 0.17$ h_{nom} for $s_{cr} > s > s_{min}$	$c_{min} = 2.0 h_{nom}, c_{cr} = 3.0 h_{nom}$ $f_{RT} = 0.2 c + 0.4$ h_{nom} for $c_{cr} > c > c_{min}$	$c_{min} = 2.0 h_{nom}, c_{cr} = 3.0 h_{nom}$ $f_{RV} = 0.35 c - 0.05$ h_{nom} for $c_{cr} > c > c_{min}$
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HDI & HDI-L Drop-In Anchor 4.3.8

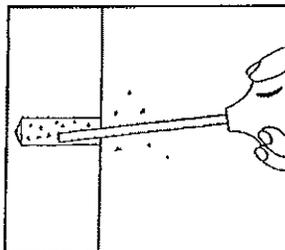
4.3.8.4 Installation Instructions



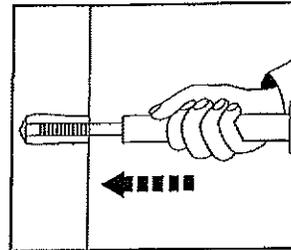
1 Adjust depth gauge so that anchor will be flush with the concrete surface when installed.



2 Hammer drill hole.



3 Clean hole.



4. Install anchor using proper setting tool. Setting tool to be driven into anchor until setting tool shoulder meets top of anchor.

4.3.8.5 Ordering Information

HDI Anchors

Anchor Thread Size	Carbon Steel				Stainless Steel		Box Qty
	Description	Item No.	Description	Item No.	Description	Item No.	
1/4"	HDI 1/4	336425	HDI-L 1/4	283608	HDI 1/4 (SS 303)	336430	100
3/8"	HDI 3/8	336426	HDI-L 3/8	283609	HDI 3/8 (SS 303)	336431	50
1/2"	HDI 1/2	336427	HDI-L 1/2	283610	HDI 1/2 (SS 303)	336432	50
5/8"	HDI 5/8	336428	—	—	HDI 5/8 (SS 303)	336433	25
3/4"	HDI 3/4	336429	—	—	HDI 3/4 (SS 303)	336434	25

Setting Tools for HDI & HDI-L Anchors

Anchor Thread Size	Description – Manual Setting Tools	Item No.
1/4"	HST 1/4 Setting Tool	00032978
3/8"	HST 3/8 Setting Tool	00032979
1/2"	HST 1/2 Setting Tool	00032980
5/8"	HST 5/8 Setting Tool	00032981
3/4"	HST 3/4 Setting Tool	00032982
Anchor Thread Size	Description – Automatic Setting Tools ¹	Item No.
3/8"	HSD-MM 3/8" (TE-C-24SD10 3/8" Setting tool)	00243751
1/2"	HSD-MM 1/2" (TE C 24SD12 1/2" Setting tool)	00243752

¹ Use automatic setting tools with TE-5A, TE-6, TE-15, TE-16, TE-16C, TE-18 and TE-25 rotary hammer drills.





In The United States

PAYMENT TERMS: Net 30 days from date of invoice. Customer agrees to pay all costs incurred by Hilti in collecting any delinquent amounts, including attorney's fees.

FREIGHT: All sales are F.O.B. Destination with transportation allowed via Hilti designated mode. Delivery dates are estimates only. Additional charges for expedited shipments, special handling requirements, and orders below certain dollar amounts shall be the responsibility of Customer. Fuel surcharges may apply depending on market conditions.

CREDIT: All orders sold on credit are subject to Credit Department approval.

RETURN POLICY: Products must be in saleable condition to qualify for return. Saleable condition is defined as unused items in original undamaged packaging and unbroken quantities and in as-new condition. All returns are subject to Hilti inspection and acceptance, and a \$125 restocking charge if returned more than 90 days after invoice date. Proof of purchase is required for all returned materials. Special orders products and discontinued items are not eligible for return credit. Dated materials are only returnable in case quantity, and within 30 days after invoice date.

WARRANTY: Hilti warrants that for a period of 12 months from the date it sells a product it will, at its sole option and discretion, refund the purchase price, repair, or replace such product if it contains a defect in material or workmanship. Absence of Hilti's receipt of notification of any such defect within this 12-month period shall constitute a waiver of all claims with regard to such product.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hilti shall in no event be liable for, and Customer hereby agrees to indemnify Hilti against all claims related to special, direct, indirect, incidental, consequential, or any other damages arising out of or related to the sale, use, or inability to use the product.

ACCEPTANCE OF ORDER: Acceptance is limited to the express terms contained herein, and terms are subject to change by Hilti without notice. Additional or different terms proposed by Customer are deemed material and are objected to and rejected, but such rejection shall not operate as a rejection of the offer unless it contains variances in the terms of the description, quantity, price or delivery schedule of the goods. Orders are not deemed "accepted" by Hilti unless and until it ships the associated items.

DOMESTIC ORIGIN: Any non-domestic Hilti product will be so identified on shipping documents and invoices for customers who properly identify themselves as a federal government entity. All other customers may obtain such information by written request to Hilti, Inc., Contract Compliance, P.O. Box 21148, Tulsa, Oklahoma 74121. Hilti's Quality Department personnel are the only individuals authorized to warrant the country of origin of Hilti products.

BUSINESS SIZE: Hilti is a large business.

PRICES: Prices are those stated on the order, and unless otherwise noted are based on purchasing all items on the order — pricing for individual products may vary for purchases of different quantities or item combinations. Hilti does not maintain most favored customer records, makes no representation with respect to same, and rejects any price warranty terms proposed by Customer. Hilti's published net price list is subject to change without notice.

CONSENT TO JURISDICTION: All transactions made pursuant hereto shall be deemed to have been made and entered into in Tulsa, Oklahoma. Any and all disputes arising directly or indirectly from such transactions shall be resolved in the courts of the County of Tulsa, State of Oklahoma, to the exclusion of any other court, and any resulting judgment may be enforced by any court having jurisdiction of such an action. All transactions shall be governed by and construed in accordance with the laws of the State of Oklahoma.

INDEMNIFICATION: Customer hereby agrees to indemnify Hilti for any costs, including attorney's fees, incurred by Hilti as a result, in whole or in part, of any violation by Customer of any Federal, State or Local statute or regulation, or of any nationally accepted standard. It shall be Customer's sole responsibility to comply with all applicable laws and regulations regarding the handling, use, transportation, or disposal of products upon taking possession of same.

AUTHORIZATION: HILTI LEGAL DEPARTMENT PERSONNEL ARE THE ONLY INDIVIDUALS AUTHORIZED TO MODIFY THESE TERMS AND CONDITIONS, WARRANT PRODUCT SUITABILITY FOR SPECIFIC APPLICATIONS, OR EXECUTE CUSTOMER DOCUMENTS, AND ANY SUCH ACTION IS NULL AND VOID UNLESS IN WRITTEN FORM SIGNED BY SUCH INDIVIDUAL.

In Canada

PAYMENT TERMS: Net 30 days from date of invoice. Customer agrees to pay all costs incurred by Hilti in collecting delinquent amounts, if any, including reasonable attorney's fees.

FREIGHT: Sales are F.O.B. Destination Point with transportation allowed via Hilti designated mode. Additional charges may apply for expedited delivery, special handling requirements, and order under certain limits. A fuel surcharge may apply depending on market conditions.

CREDIT: All orders sold on credit are subject to Credit Department approval.

RETURN POLICY: Product may be returned prepaid (unless otherwise authorized) to Hilti provided:

- i) it is returned by the original purchaser
- ii) it is not dated product returned more than 30 days after the original delivery date
- iii) it is not discontinued, clearance or special order product
- iv) it is unused, in original packaging and in unbroken quantities.

Hilti will inspect product and, if the above requirements are satisfied, will credit to customer the original purchase price. A 15% restocking fee may apply.

WARRANTY: Other than the manufacturer's published warranty, no warranties or conditions, express or implied, written or oral, statutory or otherwise are implied. Any and all conditions and warranties implied by law or by the Sale of Goods Act or any similar statutes of any Province are hereby expressly waived.

TITLE TO PRODUCT: Title to product remains with Hilti until the total purchase price of product is paid.

PRICES: Customer agrees to pay Hilti prices set out on invoice. Customer agrees to pay taxes as indicated on invoice unless Hilti receives acceptable exemption certificates.

INDEMNIFICATION: Customer agrees to use product at own risk and to indemnify Hilti against all liabilities, including legal fees, to third parties arising out of the use or possession thereof. Hilti shall in no event be liable for special, incidental or consequential damages.

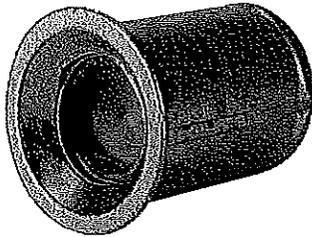
CHANGES: Hilti sales personnel are not authorized to modify these Terms and Conditions or modify Customer's credit terms. Terms are subject to change by Hilti with reasonable notice to Customer.

CASH SALES: Payment in full is due prior to goods being released.

QUOTATIONS: All terms and conditions apply once customer agrees to purchase product. Quotations on special promotion products are only valid until end of promotion period.

4.3.9 HDI-P Drop-In Anchor

4.3.9.1	Product Description
4.3.9.2	Material Specifications
4.3.9.3	Technical Data
4.3.9.4	Installation Instructions
4.3.9.5	Ordering Information



Listings/Approvals

ICC-ES (International Code Council)
 ESR-1291
COLA (City of Los Angeles)
 Research Report No. 25350
Factory Mutual (FM)
 Pipe Hanger Components for Automatic
 Sprinkler Systems

4.3.9.1 Product Description

The Hilti HDI-P Drop-In anchor is an internally threaded, flush mounted expansion anchor for solid and hollow concrete.

Product Features

- Optimized 3/4" anchor length to allow reliable fastenings in hollow core panels, precast plank & post tensioned slabs
- Shallow drilling enables fast installation
- Lip provides flush installation, consistent anchor depth and easy rod alignment
- Setting tool leaves mark on flange when anchor is set properly to enable inspection & verification of proper expansion

Guide Specifications

Expansion Anchor Expansion anchors shall be flush or shell type and zinc plated in accordance with ASTM B 633, SC 1, Type III. Anchors shall be Hilti HDI-P anchors as supplied by Hilti.

Installation Install shell or flush type anchors in holes drilled with Hilti carbide tipped drill bits. Install anchors in accordance with manufacturer's recommendations.

4.3.9.2 Material Specifications

The HDI-P is manufactured from mild carbon steel, which is zinc plated for corrosion protection in accordance with ASTM B 633, SC 1, Type III

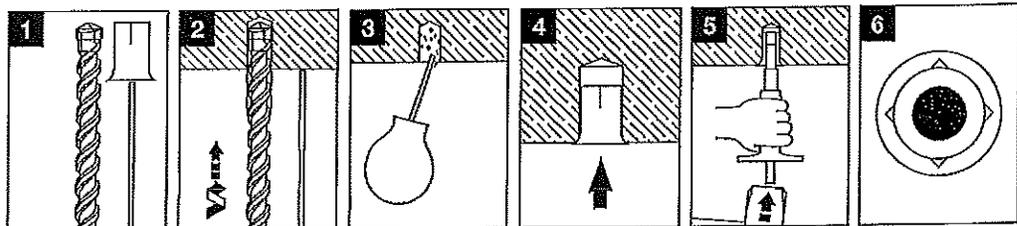
4.3.9.3 Technical Data

HDI-P Specification Table

Desc.	Length In. (mm)	Bit Size ¹ In.	Average Ultimate Loads, lb (kN)				Allowable Loads, lb (kN)			
			4000 psi Concrete (27.6 MPa)		Hollow Core (Spancrete)		4000 psi Concrete (27.6 MPa)		Hollow Core (Spancrete)	
			Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear
HDI-P 3/8	3/4 (19.1)	1/2	1900 (8.5)	3000 (13.3)	2100 (9.3)	4000 (17.8)	380 (1.7)	600 (2.7)	420 (1.9)	800 (3.6)

¹ For Hilti matched tolerance carbide tipped drill bits, see section 8.4.1.

4.3.7.4 Installation Instructions



1. Set depth gauge on drill.
2. Hammer-drill hole.
3. Clean hole.
4. Insert anchor.
5. Insert setting tool with hammer until anchor is fully set.
6. Collar of setting tool will leave an indentation on flange of anchor when properly expanded.

4.3.9.5 Ordering Information

HDI-P Anchor

Item No.	Description	Bit Dia	Box Qty
283611	HDI-P 3/8	1/2"	100

Setting Tools for HDI-P Anchors

Item No.	Description
283611	HSD-G 3/8" - 3/4" Setting Tool w/ hand guard
253784	HST-P 3/8" - 3/4" Setting Tool

Fig. 200 - "Trimline" Adjustable Band Hanger

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

Function — For fire sprinkler and other general piping purposes. Knurled swivel nut design permits hanger adjustment after installation.

Features —

- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2 1/2" thru 8") Spring tension on nut holds it securely in hanger before installation. Adjusting nut is easily removed.

Approvals — Underwriters' Laboratories listed (1/2" thru 8") in the USA (UL) and Canada (cUL) for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (3/4" thru 8"). Conforms to Federal Specifications WW-H-171E, Type 10 and Manufacturers Standardization Society SP-69, Type 10.

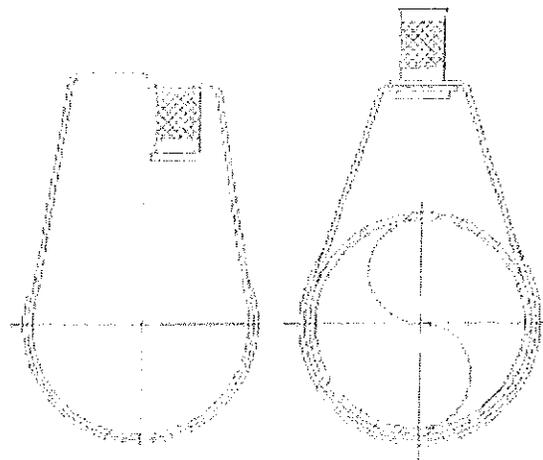
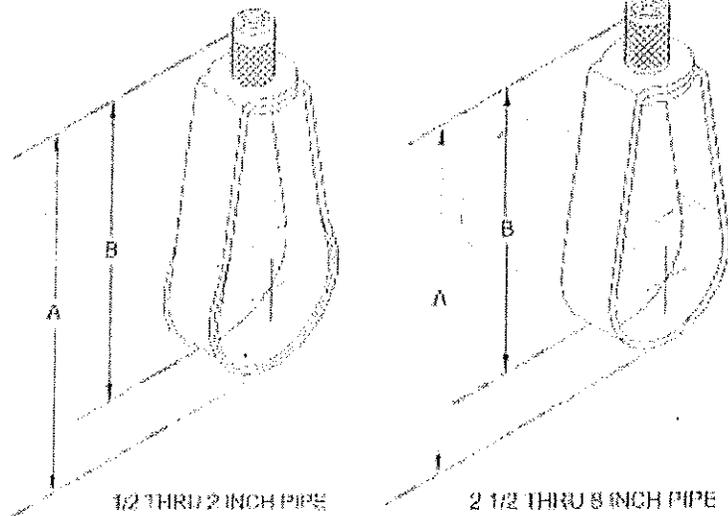
Maximum Temperature — 650°F

Finish — Mil. Galvanized. For Stainless Steel materials, order TOLCO™ Fig. 200WON.

Order By — Figure number and pipe size

RSN: **1226342**

Permit #: **2017-1333732-CT**



Dimensions • Weights

Pipe Size	Rod Size		A	B	Max. Rec. Load Lbs.	Approx. Length
	Inch	Metric				
1/2	3/8	8mm or 10mm	3 1/8	2 5/8	400	11
3/4	3/8	8mm or 10mm	3 1/8	2 1/2	400	11
1	3/8	8mm or 10mm	3 3/8	2 5/8	400	12
1 1/4	3/8	8mm or 10mm	3 3/4	2 7/8	400	13
1 1/2	3/8	8mm or 10mm	3 7/8	2 7/8	400	14
2	3/8	8mm or 10mm	4 1/2	3	400	15
2 1/2	3/8	10mm	5 5/8	4 1/8	600	27
3	3/8	10mm	5 7/8	4	600	29
3 1/2	3/8	10mm	7 3/8	5 1/4	600	34
4	3/8	10mm	7 3/8	5	1000	35
5	1/2	12mm	9 1/8	6 1/4	1250	66
6	1/2	12mm	10 1/8	6 3/4	1250	73
8	1/2	12mm	13 3/8	8 3/4	1250	136

RSN: 1226342
Permit #: 2017-1333732-CT

Fig. 65 and Fig. 66 Reversible C-Type Beam Clamps 3/4" and 1 1/4" Throat Openings



Size Range — (Fig. 65 and Fig. 66) 3/8", 1/2" and 5/8" rod
Material — Carbon Steel with hardened cup point set screw and jam nut

Function — Recommended for hanging from steel beam where flange thickness does not exceed 3/4" (Fig. 65) or 1 1/4" (Fig. 66).

Features — All steel construction eliminates structural deficiencies associated with casting type beam clamps. May be used on top or bottom flange of the beam. (Beveled lip allows hanging from top flange where clearance is limited.) May be installed with set screw in up or down position. Offset design permits unlimited rod adjustment by allowing the rod to be threaded completely through the clamp. Open design permits inspection of thread engagement.

Approvals — Underwriters' Laboratories Listed in the USA (UL) and Canada (cUL). Factory Mutual Engineering approved. Conforms to Federal Specification WW-H-171E, Type 23 and Manufacturers Standardization Society SP-69, Type 19. Exceeds requirements of the National Fire Protection Association (NFPA), Pamphlet 13, 3/8" rod will support 1/2" thru 4" pipe, 1/2" rod will support 1/2" thru 8" pipe.

Finish — Plain

Note — Available in Electro-Galvanized and HDG finish.

Order By — Figure number, rod size and finish

Fig. 65 Patent #4,570,885

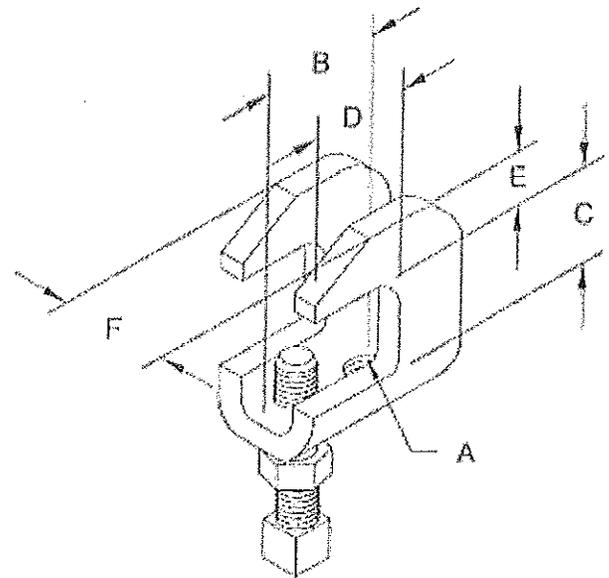


Fig. 65

Dimensions • Weights

Rod Size A	B	C	D	E	F	Max. Rec. Load Lbs.*	Approx. Wt./100
3/8	1 3/16	3/4	1	7/16	1	610	28
1/2	1 1/2	3/4	1	9/16	1 1/4	1130	55
5/8	1 1/2	3/4	1	9/16	1 1/4	1130	55

* Max. loads for clamp with set screw in up or down position.

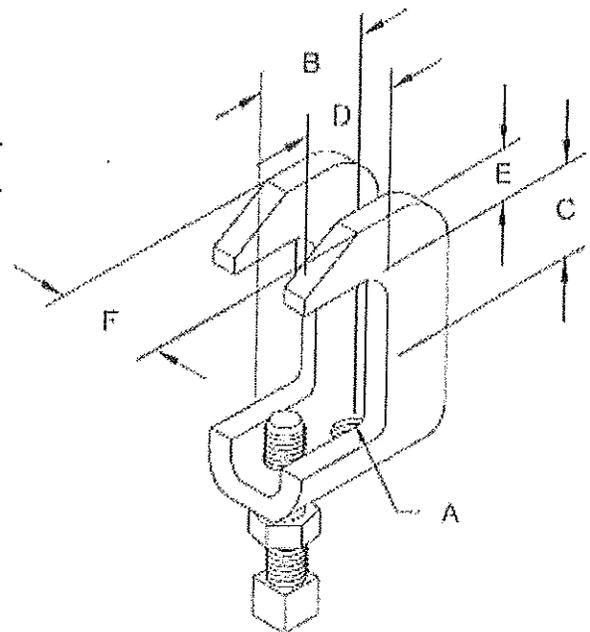


Fig. 66

Dimensions • Weights

Rod Size A	B	C	D	E	F	Max. Rec. Load Lbs.*	Approx. Wt./100
3/8	1 3/16	1 1/4	1	7/16	1	610	28
1/2	1 1/2	1 1/4	1	9/16	1 1/4	1130	55
5/8	1 1/2	1 1/4	1	9/16	1 1/4	1130	55

* Max. loads for clamp with set screw in up or down position.

Fig. 98 - Rod Stiffener

RSN: 1226342
Permit #: 2017-1333732-CT

- Size Range** — Secures 3/8" thru 7/8" hanger rod
- Material** — Carbon Steel
- Function** — Secures channel to hanger rod for vertical seismic bracing.
- Finish** — Electro Galvanized
- Note** — Available in HDG finish or Stainless Steel materials.
- Order By** — Figure number

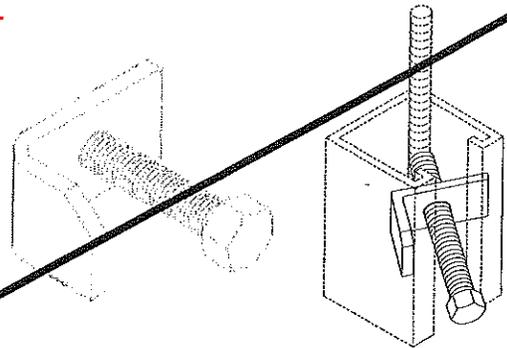
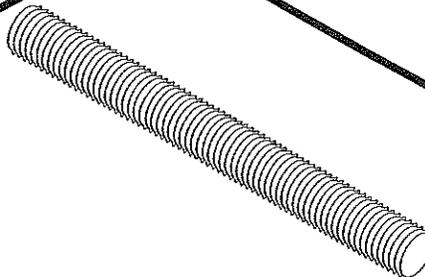


Fig. 99 - All Thread Rod Cut to Length

- Size Range** — Secures 3/8" thru 7/8" rod in 1" increments
- Material** — Carbon Steel
- Maximum Temperature** — 750°F
- Finish** — Plain
- Note** — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
- Order By** — Figure number, rod diameter, rod length and finish

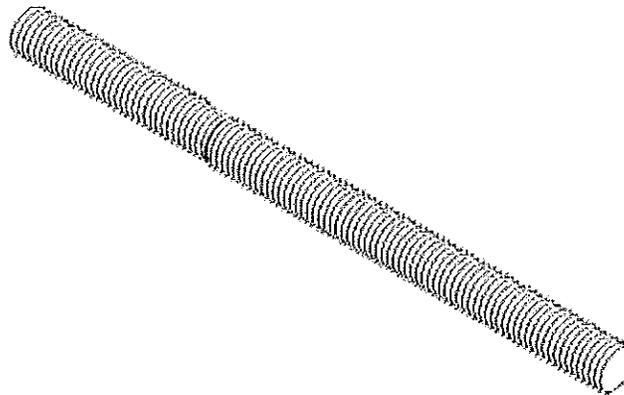


Dimensions • Weights

Rod Size	Max. Rec. Load Lbs. For Service Temps	
	650°F	750°F
3/8	610	540
1/2	1130	1010
5/8	1810	1610
3/4	2710	2420
7/8	3770	3360

Fig. 100 - All Thread Rod Full Lengths

- Size Range** — Secures 3/8" thru 7/8" rod in 10' lengths
- Material** — Carbon Steel
- Maximum Temperature** — 750°F
- Finish** — Plain
- Note** — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
- Order By** — Figure number, rod diameter and finish



Dimensions • Weights

Rod Size	Max Rec. Load Lbs. For Service Temps		Approx. Wt./100
	650°F	750°F	
1/4	240	215	12
3/8	610	540	29
1/2	1130	1010	53
5/8	1810	1610	84
3/4	2710	2420	123
7/8	3770	3360	169
1	4960	4420	222
1 1/4	8000	7140	360
1 1/2	11630	10370	510