PROJECT DATA

GENERAL PROJECT DATA

BUILDING ADDRESS: 1501 S. POTOMAC ST.
AURORA, CO 80012

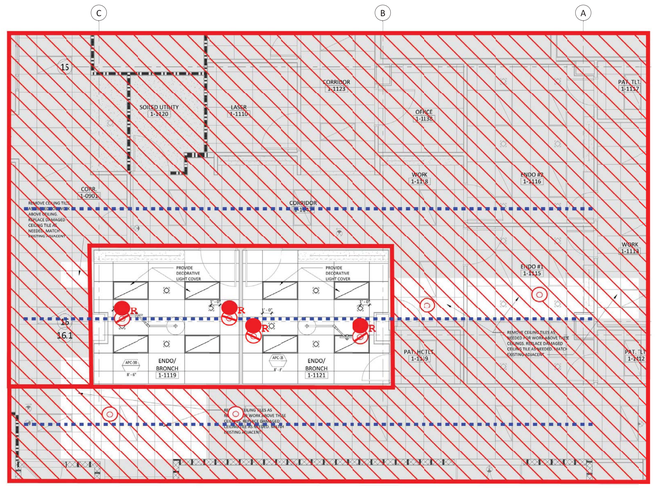
PROJECT TYPE: HOSPITAL,
FIVE STORIES ABOVE GRADE

GROSS BUILDING AREA:

	Scope of Work
FIRST FLOOR	500 SF

APPLICABLE CODES:
2015 International Building Code
2015 International Plumbing Code
2015 International Mechanical Code
2015 International Fuel Gas Code
2015 International Fire Code
2015 International Energy Conservation Code
2017 National Electrical Code
2009 ICC/ANSI A117.1 Accessibility Code
2012 NFPA 101, CH. 19 (CDPHE)

DEFERRED SUBMITTALS: FIRE SUPPRESSION SYSTEM
FIRE ALARM SYSTEM



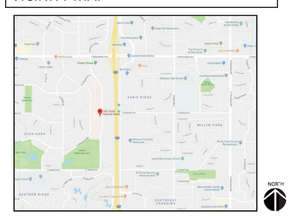
FIRST FLOOR REFLECTED CEILING PLAN

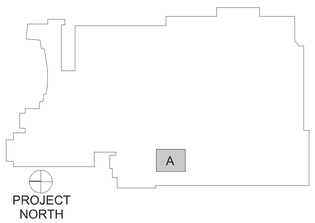
TENANT FINISH NOTES:

1. SYSTEM DESIGN – TENANT FINISH, PER NFPA 13, ~~2016~~. SUPPLY FROM EXISTING WET PIPE SYSTEM. NEW OCCUPANCY IS OFFICE (LIGHT HAZARD) UNLESS NOTED OTHERWISE.
2. BUILDING CONSTRUCTION IS NON–COMBUSTIBLE
3. 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.
4. ANY AND ALL ELECTRICAL AND/OR ALARM WIRING, CONNECTIONS, AND TERMINATION SHALL BE BY OTHERS.
5. PIPE NOTE:
   - ALL PIPING SHALL BE IN ACCORDANCE WITH NFPA 13 (~~2016~~).
   - UNLESS SPECIFICALLY NOTED OTHERWISE ALL THREADED PIPE SHALL BE BLACK STEEL SHC 40 ASTM A135/A795 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 (~~2016~~).
6. SEE THE FIRE PROTECTION EQUIPMENT DATA FOR ALL APPLICABLE MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT.
7. PIPE DIMENSIONS SHOWN ARE CENTER TO CENTER.
8. SPRINKLER HEADS ARE NOT REQUIRED TO BE CENTERED IN CEILING GRID.
9. 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
10. EXISTING SPRINKLER PIPE IS SHOWN FOR REFERENCE ONLY AND IS NOT PART OF THIS CONTRACT.
11. IN ROOMS OF 800 sq ft OR LESS HEADS MAY BE UP TO 9'–0" FROM ONE WALL.
12. 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.

JOB#: 309835
Stu Wininger

VICINITY MAP





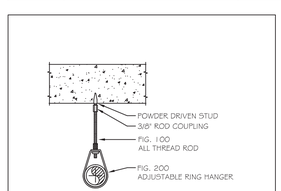
TENANT FINISH
SPRINKLER LAYOUT
1/8"= 1'-0" SQ.FT.=_____S.F.
0 4 8

PIPE SIZING SHALL MEET OR EXCEED EXISTING CONDITIONS

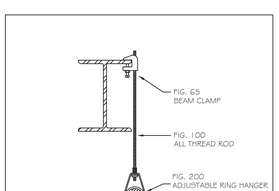
SYMBOL	QTY	MANUFACTURER	SIN No.	FINISH	ORIFICE	K-FAC	TEMP	SYMBOL	QTY	MANUFACTURER	SIN No.	FINISH	ORIFICE	K-FAC	TEMP
○		EXISTING PENDENT SPRK Q.R.		CHROME	1/2"	5.6	155								
●R	4	RELOCATE EXISTING PENDENT Q.R.		CHROME	1/2"	5.6	200								

CEILING TYPES

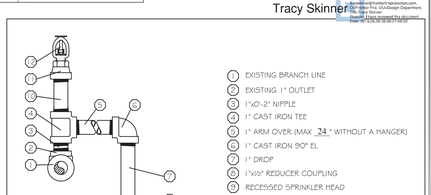
TYPE	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
(E)				
APC-3B	2'x4' CLEANROOM ACOUSTIC PANEL CEILING	ARMSTRONG	870 CLEAN ROOM VL UNPERFORATED, 15/16" CLEAN ROOM GRID, COLOR: WHITE, PROVIDE HOLD-DOWN CLIPS	
GYP-1	GYP. BOARD CEILING			SEE MATERIALS LIST ON ID1.1 FOR PAINT INFORMATION.



PDS ANCHOR, ROD COUPLING, ROD AND RING



TOP BEAM CLAMP, ROD, AND RING



TYPICAL ARM OVER DETAILS

Tracy Skinner
Certified Engineering Technician
Water-Based Fire Protection Engineering Technology
NICET #97029 - Level III - Expires 8.1.22

Tracy Skinner
Digitally signed by Tracy Skinner
DN: cn=Tracy Skinner, o=Frontier Fire Protection Inc., ou=Design Department, email=tskinner@frontierfireprotection.com, c=US
Date: 2019.06.20 09:57:29 -06'00'

Frontier Fire
9430 E. 40th Ave. Denver, CO 80238 | Phn 303-629-0221
www.frontierfireprotection.com
COLORADO STATE REGISTRATION NUMBER: 19-S-05201

THE MEDICAL CENTER OF AURORA
ENDO/ BRONCH RENOVATION
1501 S. POTOMAC ST.
AURORA, CO 80012

FP-1 SHEET

City of Aurora Building Division
Counter Permit intake by: MLA
Date: Jun 21, 2019
RSN: 1378607
Permit: 2019-164902-CT
2015 INTERNATIONAL CODES & 2017 NEC Scope of permit to be field verified.

tyco Fire Protection Products

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 atmospheres. 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.

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.





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

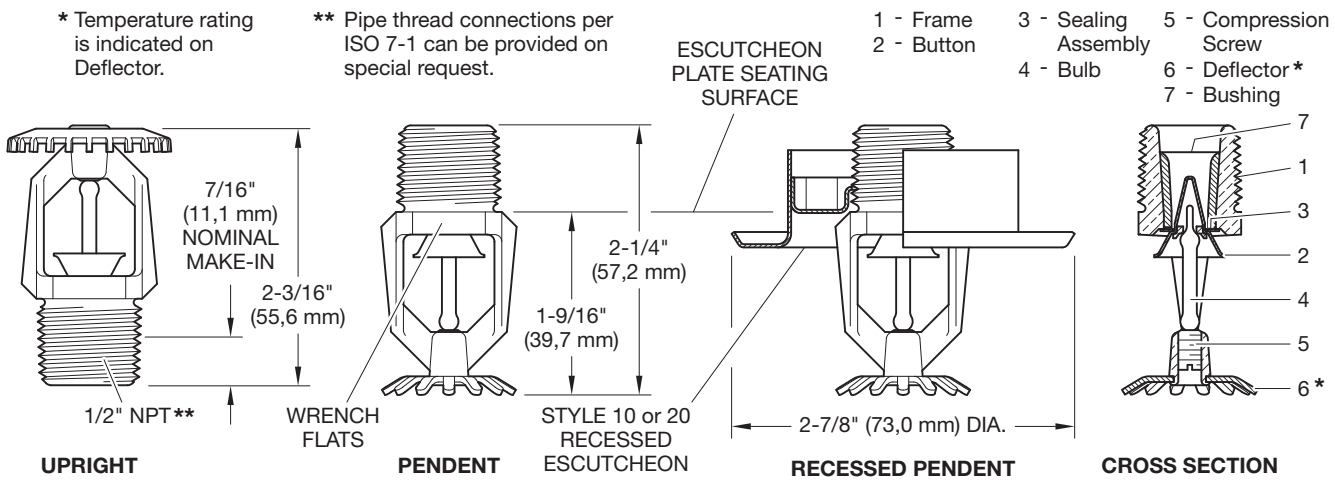


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

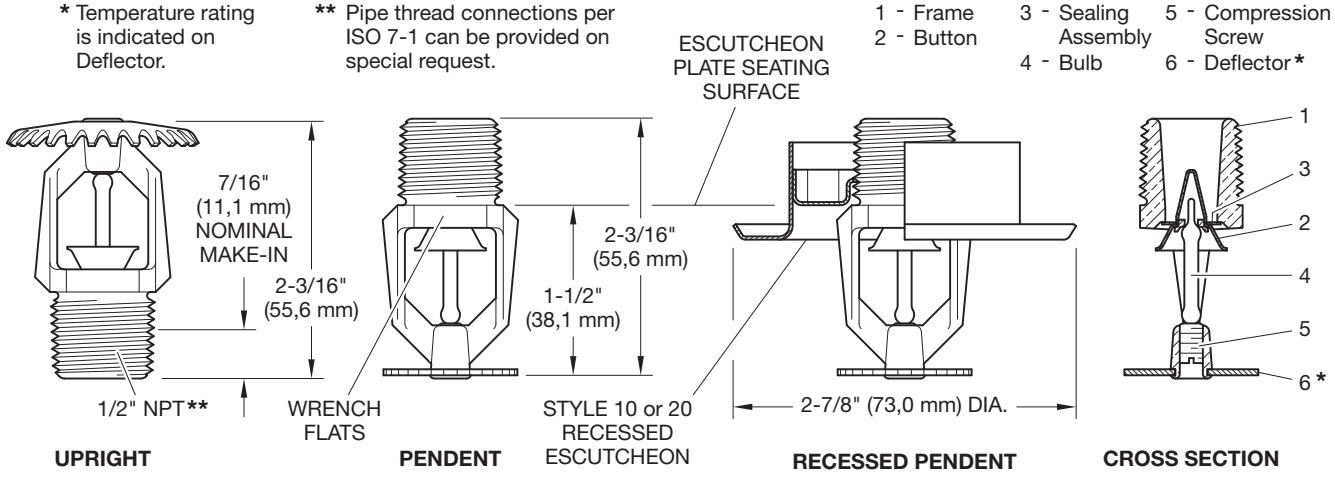


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

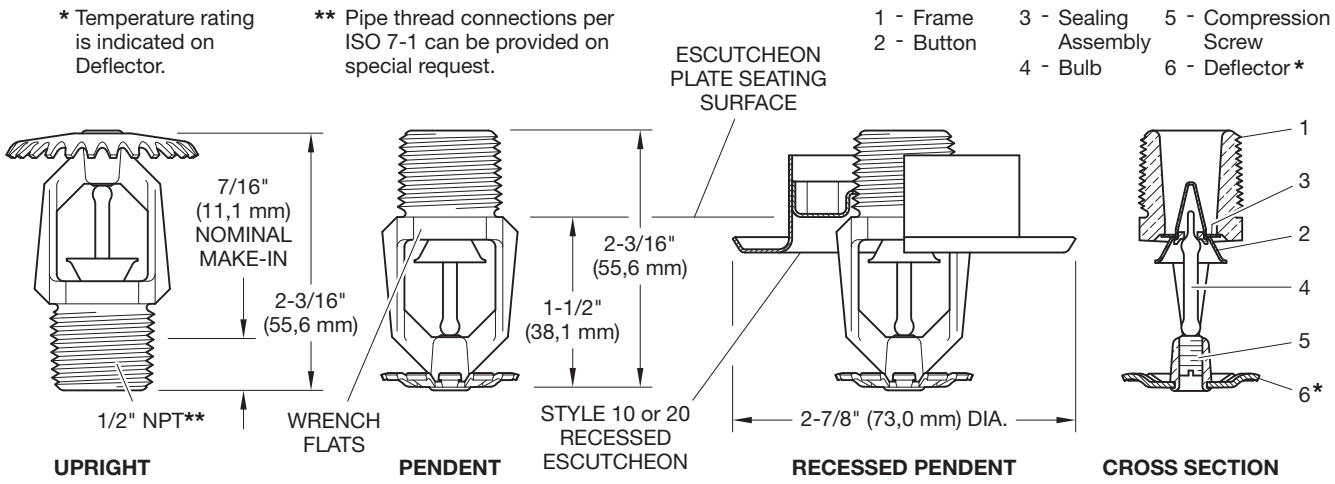


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

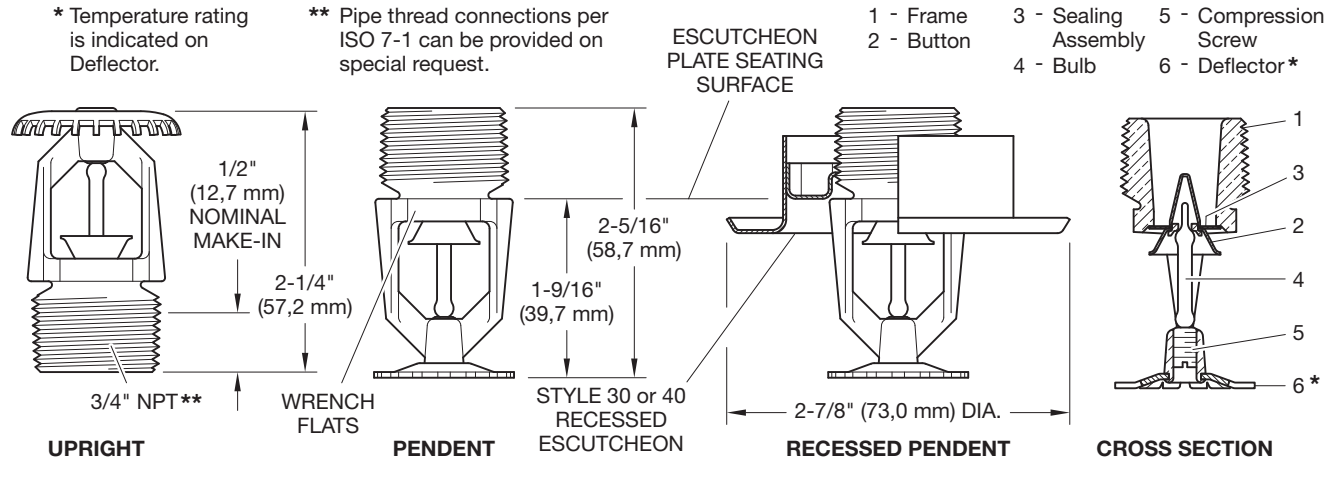


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

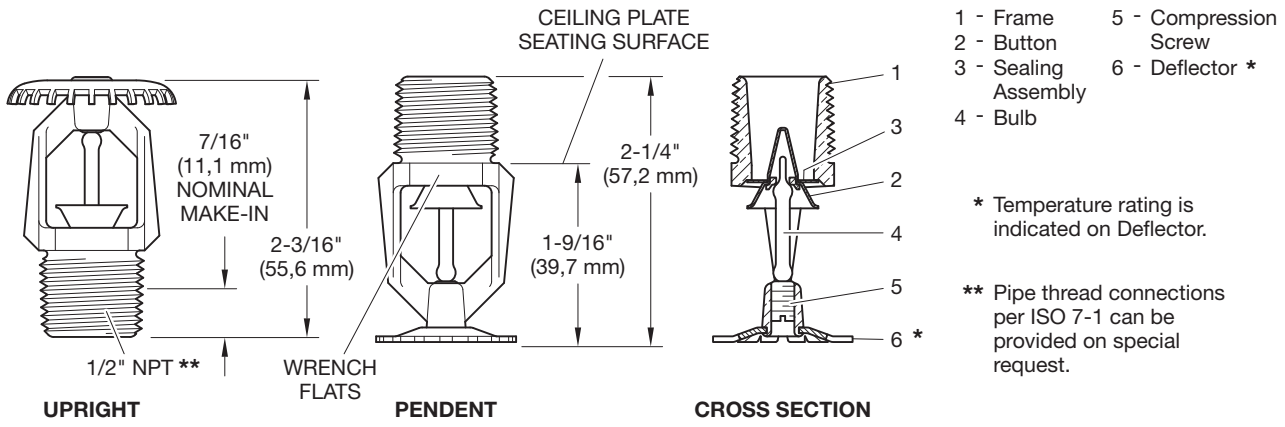


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

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 Sprinklersmust 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 shold 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	1, 2, 4		
		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	1, 2		
		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:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. 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				
		286°F (141°C)	Blue				
	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				
		286°F (141°C)	Blue				
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				
		286°F (141°C)	Blue				
	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				
		286°F (141°C)	Blue				
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:

1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. 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.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. 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

Permit: 2019-164902-CT
RSN: 13786[illegible]
Page 8 of 40

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 Inspection 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.

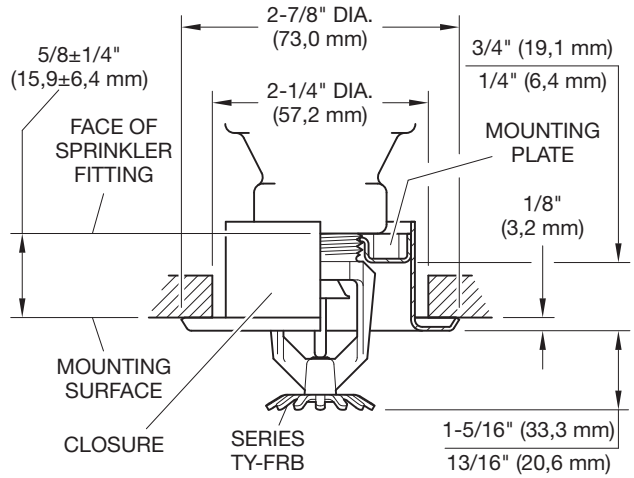


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

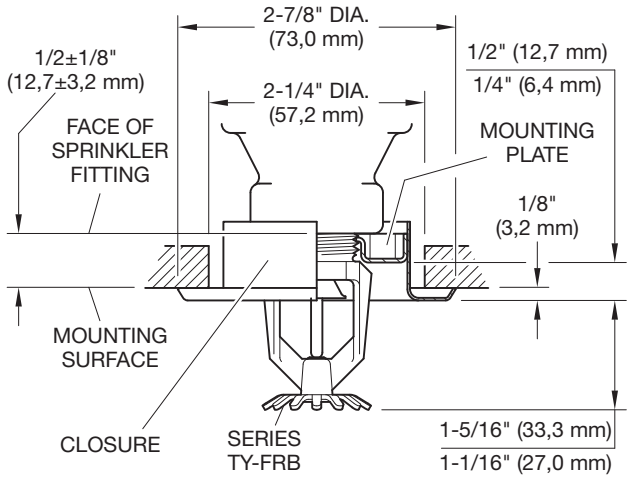


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

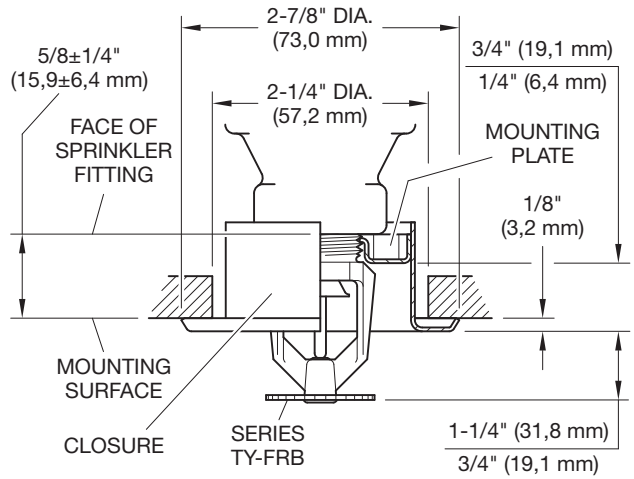


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

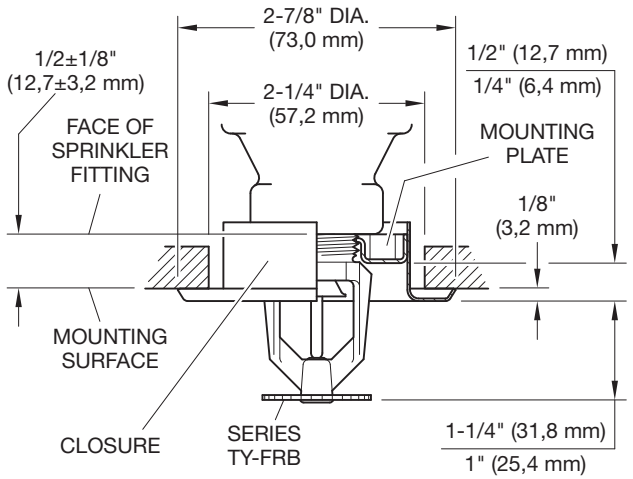


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

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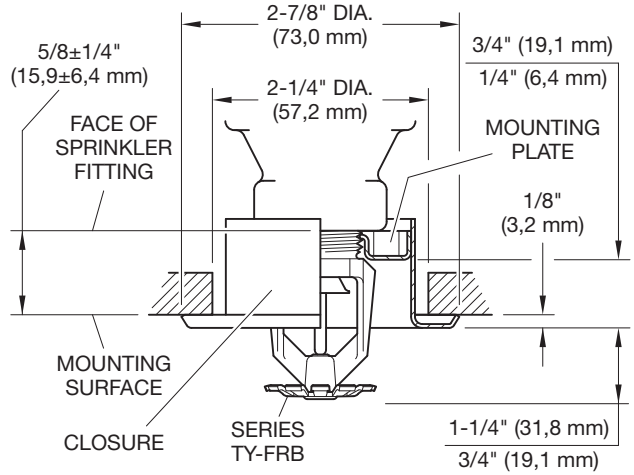


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

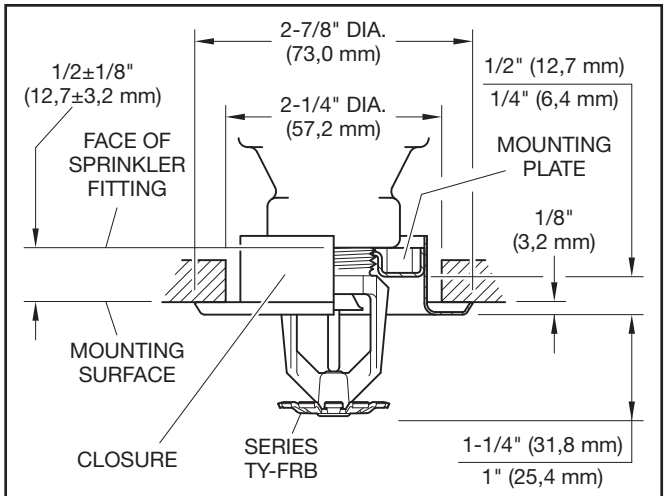


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

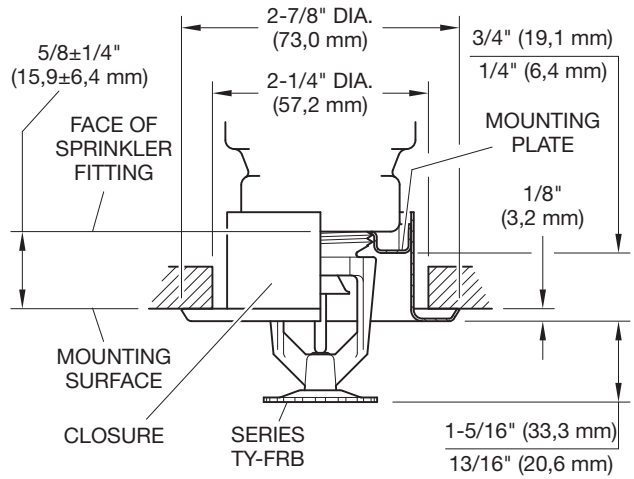


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

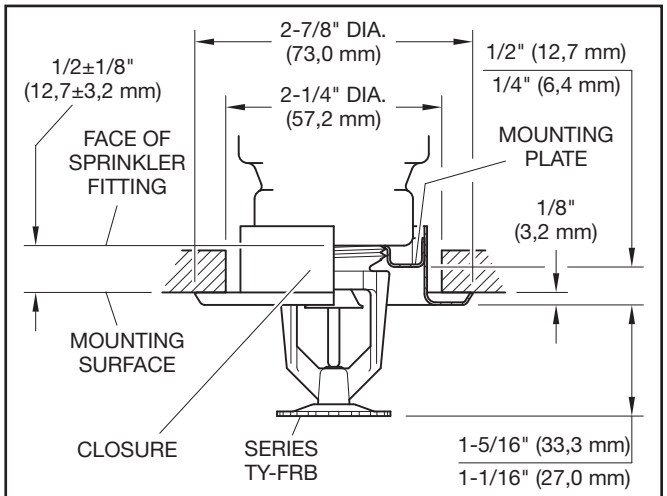


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

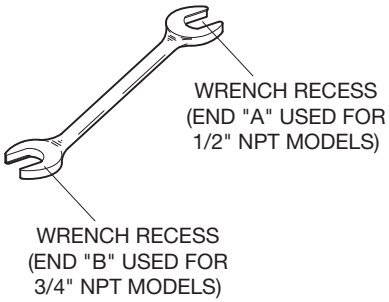


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

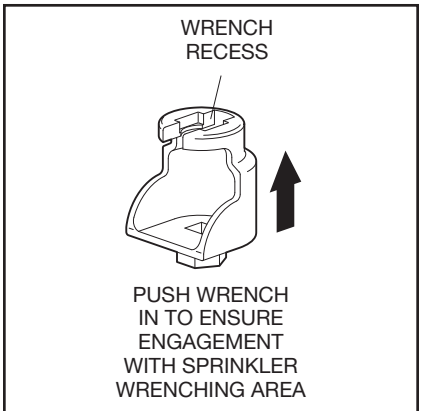


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
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*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE (RAL9010)*
4	SIGNAL WHITE (RAL9003)
5	JET BLACK (RAL9005)**
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

* 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

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tyco Fire Protection Products

COAST TO COAST

The best sprinkler pipe in the industry!

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BULL MOOSE TUBE COMPANY®

SPRINKLER PIPE CATALOG

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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

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

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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 stenciled to meet FM & UL specifications.

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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.

BULL MOOSE TUBE COMPANY

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

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sales@bullmoosetube.com

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Chesterfield, MO
63017

Gerald, MO | 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.

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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

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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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.

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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.

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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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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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sales@bullmoosetube.com

1819 Clarkson Road
Chesterfield, MO
63017

Gerald, MO | Kent, WA | Casa Grande, AZ | Dallas, TX | Masury, OH

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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BULL MOOSE TUBE COMPANY

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EDDY PIPE® BUNDLING CHART

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				PIPE LENGTH (FT.)		
				21	24	25
NPS	PIPE TYPE	WEIGHT PER FOOT	PIECES PER BUNDLE	WEIGHT PER BUNDLE	WEIGHT PER BUNDLE	WEIGHT PER BUNDLE
1	ULTRA EDDY®	0.868	91	1,659	1,896	1,975
	SCHEDULE 10	1.410	91	2,695	3,079	3,208
	EDDYLITE®	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
	EDDYLITE®	1.617	61	2,071	2,367	2,466
	EDDYTHREAD 40®	2.070	51	2,217	2,534	2,639
	SCHEDULE 40	2.270	51	2,431	2,778	2,894
1-1/2	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
	EDDYLITE®	1.967	61	2,520	2,880	3,000
	EDDYTHREAD 40®	2.547	44	2,353	2,690	2,802
	SCHEDULE 40	2.720	44	2,513	2,872	2,992
2	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
	EDDYLITE®	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
2-1/2	EDDY FLOW®	2.809	30	1,770	2,022	2,107
	SCHEDULE 10	3.530		2,224	2,542	2,648
	SCHEDULE 40*	5.800		3,654	4,176	4,350
3	EDDY FLOW®	3.361	19	1,341	1,533	1,596
	SCHEDULE 10	4.340		1,732	1,979	2,062
	SCHEDULE 40*	7.580		3,024	3,456	3,601
4	EDDY FLOW®	4.968	19	1,982	2,265	2,360
	SCHEDULE 10	5.620		2,242	2,563	2,670
	SCHEDULE 40*	10.800		4,309	4,925	5,130
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.

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Bull Moose Tube EDDY FLOW Steel Pipe Joined by Threading, Bonding or Compression/Grooved Couplings																	
Max Zone of Influence Load (*Fpw*) lbs.						Max. Transverse and 4-way Brace Spacing (ft.) *** According to HLF for the 2006 & 2009 IBC (ASCE 7-05) & *Cp* for NFPA-13 shown in BOLD TYPE											
Pipe	Transverse Brace Spacing*																
Size	20 ft.	25 ft.	30 ft.	35 ft.	40 ft.	**0.25**	**0.50**	**0.75**	**1.00**	**1.25**	**1.50**	**1.75**	**2.00**	**2.25**	**2.50**	**2.75**	**3.00**
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 (*Fpw*) lbs.						Max. Transverse and 4-way Brace Spacing (ft.) *** According to HLF for the 2006 & 2009 IBC (ASCE 7-05) & *Cp* for NFPA-13 shown in BOLD TYPE											
Pipe	Transverse Brace Spacing*																
Size	20 ft.	25 ft.	30 ft.	35 ft.	40 ft.	**0.25**	**0.50**	**0.75**	**1.00**	**1.25**	**1.50**	**1.75**	**2.00**	**2.25**	**2.50**	**2.75**	**3.00**
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

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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.

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STOCKING LOCATION
MANUFACTURING PLANT/ STOCKING LOCATION

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The iron from which Class 125 cast iron fittings are made is held to strict formula by careful chemical analysis and control.

Tapping is done on the most modern machines. All tappings are to USA Standards for iron pipe threads. Straightness and correct depth of threads is assured through continuous capable inspection, by careful trained inspectors.

Every fitting is hand sorted and inspected to eliminate defective castings.

WARD fittings are made to specifications published as American National Standards for pipe fittings.

A chamfer is cut or cast in all openings, permitting easy entrance of pipe and preventing damage to the first thread in handling and threading.

Because of the close attention paid to formula control and the use of modern precision equipment we are able to produce castings of rugged strength and the ability to make a water tight seal.

NPS	O.D. of Band (min)	Thread Length (min)	Metal Thickness (min)
1/4	0.97	0.36	0.11
3/8	1.16	0.40	0.12
1/2	1.38	0.47	0.13
3/4	1.67	0.54	0.15
1	1.99	0.62	0.17
1 1/4	2.43	0.71	0.18
1 1/2	2.72	0.74	0.20
2	3.32	0.79	0.22
2 1/2	3.90	0.96	0.24
3	4.66	1.02	0.26
3 1/2	5.24	1.07	0.28
4	5.83	1.12	0.31

TEMPERATURE-PRESSURE RATING

	PSI	
Temp F°	CLASS 125	CLASS 250
-20 TO 150	175	400
200	165	370
250	150	340
300	140	310
350	125 (Note1)	300
400	—	250 (Note 2)

Notes:
1) Permissible for service temperature up to 360° F reflecting temperature of saturated steam at 125 psi.

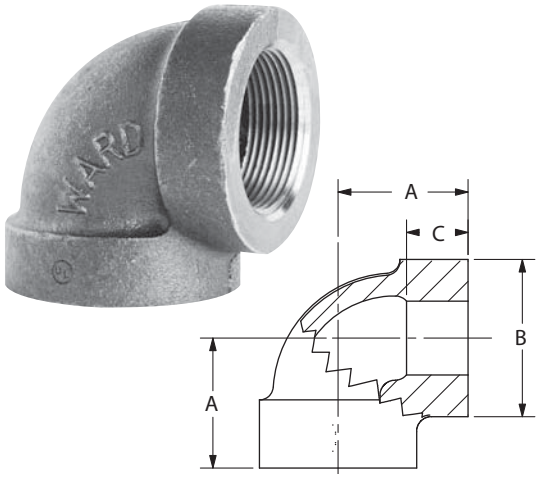
2) Permissible for service temperature up to 406° F reflecting temperature of saturated steam at 250 psig.

Material:	**ASTM A126 Class A Minimum**
Dimensions:	**ANSI/ASME B16.4** **ANSI/ASME B1.20.1**
Pressure Ratings:	**ANSI/ASME B16.4**
Coatings:	**ASTM A153** **ASTM B633**
Additional Specifications:	**UL, ULC, FM, NSF 61 and NSF 61 Annex G where applicable**

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CAST IRON 90° STRAIGHT ELL CLASS 125

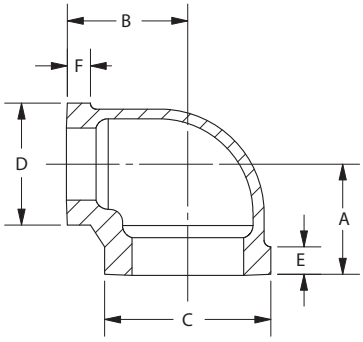
NPS	Center to End A	Outside Dia.of Band B (min)	Thread Length C (min)	Take Out
1/4	0.81	0.93	0.32	0.408
3/8	0.95	1.12	0.36	0.5
1/2	1.12	1.34	0.43	0.58
3/4	1.31	1.63	0.50	0.76
1	1.50	1.95	0.58	0.81
1 1/4	1.75	2.39	0.67	1.04
1 1/2	1.94	2.68	0.70	1.21
2	2.25	3.28	0.75	1.49
2 1/2	2.70	3.86	0.92	1.56
3	3.08	4.62	0.98	1.88
3 1/2	3.42	5.20	1.03	2.17
4	3.79	5.79	1.08	2.49
5	—	—	—	—
6	—	—	—	—
8	—	—	—	—



CAST IRON 90° REDUCING ELL CLASS 125

NPS	Center to End A	Center to End B	Outside Dia. of Band C (min)	Outside Dia. of Band D (min)	Length of Threads E (min)	Length of Threads F (min)	Take Out	Take Out
1/2 x 3/8	—	—	—	—	—	—	—	—
1/2 x 1/4	—	—	—	—	—	—	—	—
3/4 x 1/2	1.20	1.22	1.63	1.34	0.50	0.43	0.6	0.68
*3/4 x 3/8	1.20	1.22	1.63	1.12	0.50	0.36	0.6	0.81
1 x 3/4	1.37	1.45	1.95	1.63	0.58	0.50	0.6	0.90
1 x 1/2	1.26	1.36	1.95	1.34	0.58	0.43	0.5	0.82
1 1/4 x 1	1.58	1.67	2.39	1.95	0.67	0.58	0.8	0.98
1 1/4 x 3/4	1.45	1.62	2.39	1.63	0.67	0.50	0.7	1.07
1 1/4 x 1/2	1.34	1.53	2.39	1.34	0.67	0.43	0.6	0.99
1 1/2 x1 1/4	1.82	1.88	2.68	2.39	0.70	0.67	1.09	1.17
1 1/2 x 1	1.65	1.80	2.68	1.95	0.70	0.58	0.92	1.11
1 1/2 x 3/4	1.52	1.75	2.68	1.63	0.70	0.50	0.79	1.20
1 1/2 x 1/2	1.41	1.66	2.68	1.34	0.70	0.43	0.79	1.21
2 x 1 1/2	2.02	2.16	3.28	2.68	0.75	0.70	1.26	1.43
2 x 1 1/4	1.90	2.10	3.28	2.39	0.75	0.67	1.14	1.39
2 x 1	1.73	2.02	3.28	1.95	0.75	0.58	0.97	1.33
2 x 3/4	1.60	1.97	3.28	1.63	0.75	0.50	0.84	1.42
2 x 1/2	1.60	1.97	3.28	1.34	0.75	0.43	0.84	1.43
2 1/2 x 2	2.39	2.60	3.86	3.28	0.92	0.75	1.25	1.84
2 1/2 x 1 1/2	2.16	2.51	3.86	2.68	0.92	0.70	1.02	1.78
2 1/2 x 1 1/4	2.04	2.45	3.86	2.39	0.92	0.67	0.90	1.74
2 1/2 x 1	1.87	2.37	3.86	1.95	0.92	0.58	0.73	1.68
*2 1/2 x 3/4	1.87	2.37	3.86	1.63	0.92	0.50	0.73	1.82
3 x 2 1/2	2.83	2.99	4.62	3.86	0.98	0.92	1.63	1.85
3 x 2	2.52	2.89	4.62	3.28	0.98	0.75	1.32	2.13
3 x 1 1/2	2.29	2.80	4.62	2.68	0.98	0.70	1.32	2.16
3 x 1 1/4	2.17	2.74	4.62	2.39	0.98	0.67	0.97	2.03
*3 x 1	2.17	2.74	4.62	1.95	0.98	0.58	0.97	2.05
3 1/2 x 3	—	—	—	—	—	—	—	—
4 x 3 1/2	3.54	3.69	5.79	5.20	1.08	1.03	2.24	2.44
4 x 3	3.30	3.60	5.79	4.62	1.08	0.98	2.00	2.40
4 x 2 1/2	3.05	3.51	5.79	3.86	1.08	0.92	2.00	2.46
4 x 2	2.74	3.41	5.79	3.28	1.08	0.75	1.44	2.65
*4 x 1 1/2	2.74	3.41	5.79	2.68	1.08	0.70	1.44	2.68
5 x 4	—	—	—	—	—	—	—	—
6 x 4	—	—	—	—	—	—	—	—
6 x 3	—	—	—	—	—	—	—	—





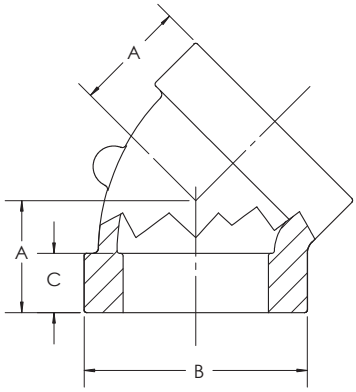
*Manufactured to WARD specifications

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CAST IRON 45° ELL CLASS 125

NPS	Center to End A	Outside Dia. of Band B (min)	Length of Threads C (min)	Take Out
1/4	—	—	—	—
3/8	—	—	—	—
1/2	0.88	1.34	0.43	0.34
3/4	0.98	1.63	0.50	0.43
1	1.12	1.95	0.58	0.43
1 1/4	1.29	2.39	0.67	0.58
1 1/2	1.43	2.68	0.70	0.70
2	1.68	3.28	0.75	0.92
2 1/2	1.95	3.86	0.92	0.81
3	2.17	4.62	0.98	0.97
3 1/2	—	—	—	—
4	2.61	5.79	1.08	1.31
5	—	—	—	—
6	—	—	—	—

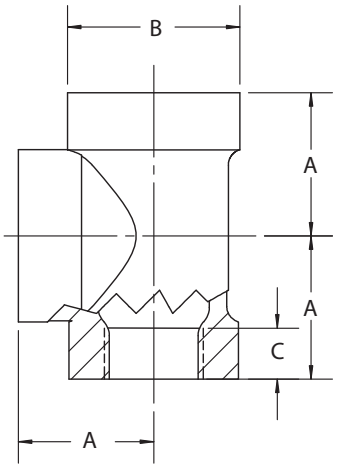




CAST IRON STRAIGHT TEE CLASS 125

NPS	Center to End A	Outside Dia. of Band B (min)	Length of Threads C (min)	Take Out
1/4	—	—	—	—
3/8	0.95	1.12	0.36	0.54
1/2	1.12	1.34	0.43	0.58
3/4	1.31	1.63	0.50	0.76
1	1.50	1.95	0.58	0.81
1 1/4	1.75	2.39	0.67	1.04
1 1/2	1.94	2.68	0.70	1.21
2	2.25	3.28	0.75	1.49
2 1/2	2.70	3.86	0.92	1.56
3	3.08	4.62	0.98	1.88
3 1/2	3.42	5.20	1.03	2.17
4	3.79	5.79	1.08	2.49
5	—	—	—	—
6	—	—	—	—

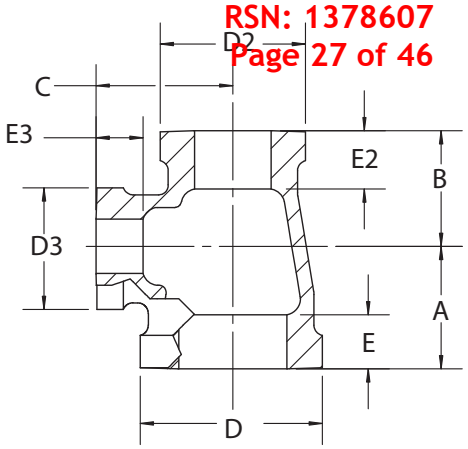




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CAST IRON REDUCING TEES CLASS 125





NPS	Center to End A	Center to End B	Center to End C	Outside Dia. of Band D (min)	Outside Dia. of Band D2 (min)	Outside Dia. of Band D3 (min)	Length of Threads E (min)	Length of Threads E2 (min))	Length of Threads E3 (min)	Take Out	Take Out	Take Out
1/2 x 1/2 x 3/8	1.04	1.04	1.03	1.34	1.34	1.12	0.43	0.43	0.36	0.50	0.50	0.62
1/2 x 1/2 x 1/4	—	—	—	—	—	—	—	—	—	—	—	—
*1/2 x 3/8 x 1/2	1.12	1.12	1.12	1.34	1.12	1.34	0.43	0.36	0.43	0.58	0.71	0.58
*1/2 x 3/8 x 3/8	1.12	1.12	1.12	1.34	1.12	1.12	0.43	0.36	0.36	0.58	0.71	0.71
*3/8 x 3/8 x 1/2	1.12	1.12	1.12	1.12	1.12	1.34	0.36	0.36	0.43	0.71	0.71	0.58
3/4 x 3/4 x 1/2	1.20	1.20	1.22	1.63	1.63	1.34	0.50	0.50	0.43	0.65	0.65	0.68
3/4 x 3/4 x 3/8	1.12	1.12	1.13	1.63	1.63	1.12	0.50	0.50	0.36	0.57	0.57	0.72
3/4 x 3/4 x 1/4	—	—	—	—	—	—	—	—	—	—	—	—
3/4 x 1/2 x 3/4	1.31	1.22	1.31	1.63	1.34	1.63	0.50	0.43	0.50	0.76	0.68	0.76
3/4 x 1/2 x 1/2	1.20	1.12	1.22	1.63	1.34	1.34	0.50	0.43	0.43	0.65	0.58	0.68
1/2 x 1/2 x 3/4	1.22	1.22	1.20	1.340	1.340	1.630	0.430	0.430	0.500	0.68	0.68	0.65
1 x 1 x 3/4	1.37	1.37	1.45	1.95	1.95	1.63	0.58	0.58	0.50	0.68	0.68	0.90
1 x 1 x 1/2	1.26	1.26	1.36	1.95	1.95	1.34	0.58	0.58	0.43	0.57	0.57	0.82
1 x 1 x 3/8	1.18	1.18	1.27	1.95	1.95	1.12	0.58	0.58	0.36	0.49	0.49	0.86
1 x 1 x 1/4	—	—	—	—	—	—	—	—	—	—	—	—
1 x 3/4 x 1	1.50	1.45	1.50	1.95	1.63	1.95	0.58	0.50	0.58	0.81	0.90	0.81
1 x 3/4 x 3/4	1.37	1.31	1.45	1.95	1.63	1.63	0.58	0.50	0.50	0.68	0.76	0.90
1 x 3/4 x 1/2	1.26	1.20	1.36	1.95	1.63	1.34	0.58	0.50	0.43	0.57	0.65	0.82
1 x 1/2 x 1	1.50	1.36	1.50	1.95	1.34	1.95	0.58	0.43	0.58	0.81	0.82	0.81
1 x 1/2 x 3/4	1.37	1.22	1.45	1.95	1.34	1.63	0.58	0.43	0.50	0.68	0.68	0.90
1 x 1/2 x 1/2	—	—	—	—	—	—	—	—	—	—	—	—
1 x 3/8 x 1	1.50	1.27	1.50	1.95	1.12	1.95	0.58	0.36	0.58	0.81	0.86	0.81
*1 x 1/4 x 1	1.50	1.20	1.50	1.95	0.93	1.95	0.58	0.32	0.58	0.81	0.79	0.81
3/4 x 3/4 x 1	1.45	1.45	1.37	1.63	1.63	1.95	0.50	0.50	0.58	0.90	0.90	0.68
*3/4 x 1/2 x 1	1.45	1.45	1.37	1.63	1.34	1.95	0.50	0.43	0.58	0.90	0.91	0.68
1/2 x 1/2 x 1	—	—	—	—	—	—	—	—	—	—	—	—
1 1/4 x 1 1/4 x 1	1.58	1.58	1.67	2.39	2.39	1.95	0.67	0.67	0.58	0.87	0.87	0.98
1 1/4 x 1 1/4 x 3/4	1.45	1.45	1.62	2.39	2.39	1.63	0.67	0.67	0.50	0.74	0.74	1.07
1 1/4 x 1 1/4 x 1/2	1.34	1.34	1.53	2.39	2.39	1.34	0.67	0.67	0.43	0.63	0.63	0.99
1 1/4 x 1 1/4 x 1/8	---	---	---	---	---	---	---	---	---	---	---	---
1 1/4 x 1 x 1 1/4	1.75	1.67	1.75	2.39	1.95	2.39	0.67	0.58	0.67	1.04	0.98	1.04
1 1/4 x 1 x 1	1.58	1.50	1.67	2.39	1.95	1.95	0.67	0.58	0.58	0.87	0.81	0.98
1 1/4 x 1 x 3/4	1.45	1.37	1.62	2.39	1.95	1.63	0.67	0.58	0.50	0.74	0.68	1.07

* Manufactured to WARD specifications

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CAST IRON REDUCING TEE CLASS 125

NPS	Center to End A	Center to End B	Center to End C	Outside Dia. of Band D (min)	Outside Dia. of Band D2 (min)	Outside Dia. of Band D3 (min)	Length of Threads E (min)	Length of Threads E2 (min))	Length of Threads E3 (min)	Take Out	Take Out	Take Out
1 1/4 x 1 x 1/2	1.34	1.26	1.53	2.39	1.95	1.34	0.67	0.58	0.43	0.63	0.57	0.99
1 1/4 x 3/4 x 1 1/4	1.75	1.62	1.75	2.39	1.63	2.39	0.67	0.50	0.67	1.04	1.07	1.04
1 1/4 x 3/4 x 1	1.58	1.45	1.67	2.39	1.63	1.95	0.67	0.50	0.58	0.87	0.90	0.98
1 1/4 x 3/4 x 3/4	1.45	1.31	1.62	2.39	1.63	1.63	0.67	0.50	0.50	0.74	0.76	1.07
*1 1/4 x 3/4 x 1/2	1.45	1.31	1.62	2.39	1.63	1.34	0.67	0.50	0.43	0.74	0.76	1.08
1 1/4 x 1/2 x 1 1/4	1.75	1.53	1.75	2.39	1.34	2.39	0.67	0.43	0.67	1.04	0.99	1.04
1 1/4 x 1/2 x 1	1.58	1.36	1.67	2.39	1.34	1.95	0.67	0.43	0.58	0.87	0.82	0.98
*1 1/4 x 1/2 x 3/4	1.45	1.31	1.62	2.39	1.34	1.63	0.67	0.43	0.50	0.74	0.77	1.07
*1 1/4 x 1/2 x 1/2	1.34	1.12	1.53	2.39	1.34	1.34	0.67	0.43	0.43	0.63	0.58	0.99
*1 1/4 x 1/2 x 3/8	1.58	1.45	1.45	2.39	1.34	1.12	0.67	0.43	0.36	0.87	0.91	1.04
*1 1/4 x 1/4 x 1 1/4	1.75	1.53	1.75	2.39	0.93	2.39	0.67	0.32	0.67	1.04	1.12	1.04
*1 1/4 x 1/8 x 1 1/4	1.75	1.53	1.75	2.39	0.81	2.39	0.67	0.32	0.67	1.04	1.26	1.04
1 x 1 x 1 1/4	1.67	1.67	1.58	1.95	1.95	2.39	0.58	0.58	0.67	0.98	0.98	0.87
*1 x 3/4 x 1 1/4	1.75	1.62	1.75	1.95	1.63	2.39	0.58	0.50	0.67	1.06	1.07	1.04
*1 x 1/2 x 1 1/4	1.75	1.53	1.75	1.95	1.34	2.39	0.58	0.43	0.67	1.06	0.99	1.04
1 1/2 x 1 1/2 x 1 1/4	1.82	1.82	1.88	2.68	2.68	2.39	0.70	0.70	0.67	1.09	1.09	1.17
1 1/2 x 1 1/2 x 1	1.65	1.65	1.80	2.68	2.68	1.95	0.70	0.70	0.58	0.92	0.92	1.11
1 1/2 x 1 1/2 x 3/4	1.52	1.52	1.75	2.68	2.68	1.63	0.70	0.70	0.50	0.79	0.79	1.20
1 1/2 x 1 1/2 x 1/2	1.41	1.41	1.66	2.68	2.68	1.34	0.70	0.70	0.43	0.68	0.68	1.12
1 1/2 x 1 1/2 x 3/8	1.41	1.41	1.66	2.68	2.68	1.12	0.70	0.70	0.36	0.68	0.68	1.25
1 1/2 x 1 1/4 x 1 1/2	1.94	1.88	1.94	2.68	2.39	2.68	0.70	0.67	0.70	1.21	1.17	1.21
1 1/2 x 1 1/4 x 1 1/4	1.82	1.75	1.88	2.68	2.39	2.39	0.70	0.67	0.67	1.09	1.04	1.17
1 1/2 x 1 1/4 x 1	1.65	1.58	1.80	2.68	2.39	1.95	0.70	0.67	0.58	0.92	0.87	1.11
1 1/2 x 1 1/4 x 3/4	1.52	1.45	1.75	2.68	2.39	1.63	0.70	0.67	0.50	0.79	0.74	1.20
1 1/2 x 1 1/4 x 1/2	1.41	1.34	1.66	2.68	2.39	1.34	0.70	0.67	0.43	0.68	0.63	1.12
1 1/2 x 1 x 1 1/2	1.94	1.80	1.94	2.68	1.95	2.68	0.70	0.58	0.70	1.21	1.11	1.21
1 1/2 x 1 x 1 1/4	1.94	1.80	1.94	2.68	1.95	2.39	0.70	0.58	0.67	1.21	1.11	1.23
1 1/2 x 1 x 1	1.65	1.50	1.80	2.68	1.95	1.95	0.70	0.58	0.58	0.92	0.81	1.11
*1 1/2 x 1 x 3/4	1.65	1.50	1.80	2.68	1.95	1.63	0.70	0.58	0.50	0.92	0.81	1.25
*1 1/2 x 1 x 1/2	1.41	1.34	1.66	2.68	1.95	1.34	0.70	0.58	0.43	0.68	0.65	1.12
1 1/2 x 3/4 x 1 1/2	1.94	1.75	1.94	2.68	1.63	2.68	0.70	0.50	0.70	1.21	1.20	1.21
1 1/2 x 3/4 x 1 1/4	1.82	1.62	1.88	2.68	1.63	2.39	0.70	0.50	1.09	1.21	1.07	1.17
*1 1/2 x 3/4 x 1	1.65	1.50	1.80	2.68	1.63	1.95	0.70	0.50	0.58	0.92	0.95	1.11
*1 1/2 x 3/4 x 3/4	1.65	1.50	1.80	2.68	1.63	1.63	0.70	0.50	0.50	0.92	0.95	1.25
*1 1/2 x 3/4 x 1/2	1.52	1.37	1.80	2.68	1.63	1.34	0.70	0.50	0.43	0.80	0.82	1.26
1 1/2 x 1/2 x 1 1/2	1.94	1.66	1.94	2.68	1.34	2.68	0.70	0.43	0.70	1.21	1.12	1.21
*1 1/2 x 1/2 x 1 1/4	1.94	1.66	1.94	2.68	1.34	2.39	0.70	0.43	0.67	1.21	1.12	1.23
*1 1/2 x 1/2 x 3/4	1.52	1.37	1.80	2.68	1.34	1.63	0.70	0.43	0.50	0.80	0.84	1.25
*1 1/2 x 1/2 x 1/2	1.52	1.37	1.80	2.68	1.34	1.34	0.70	0.43	0.43	0.80	0.84	1.26
1 1/4 x 1 1/4 x 1 1/2	1.88	1.88	1.82	2.39	2.39	2.68	0.67	0.67	0.70	1.17	1.17	1.09
1 1/4 x 1 x 1 1/2	1.88	1.80	1.82	2.39	1.95	2.68	0.67	0.58	0.70	1.17	1.11	1.09
*1 1/4 x 3/4 x 1 1/2	1.94	1.75	1.94	2.39	1.63	2.68	0.67	0.50	0.70	1.23	1.20	1.21
*1 1/4 x 1/2 x 1 1/2	1.94	1.66	1.94	2.39	1.34	2.68	0.67	0.43	0.70	1.23	1.12	1.21

* Manufactured to WARD specifications

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NPS	Center to End A	Center to End B	Center to End C	Outside Dia. of Band D (min)	Outside Dia. of Band D2 (Min)	Outside Dia. of Band D3 (min)	Length of Threads E (min)	Length of Threads E2 (min)	Length of Threads E3 (min)	Take Out	Take Out	Take Out
1 x 1 x 1 1/2	1.80	1.80	1.65	1.95	1.95	2.68	0.58	0.58	0.70	1.11	1.11	0.92
2 x 2 x 1 1/2	2.02	2.02	2.16	3.28	3.28	2.68	0.75	0.75	0.70	1.26	1.26	1.43
2 x 2 x 1 1/4	1.90	1.90	2.10	3.28	3.28	2.39	0.75	0.75	0.67	1.14	1.14	1.39
2 x 2 x 1	1.73	1.73	2.02	3.28	3.28	1.95	0.75	0.75	0.58	0.97	0.97	1.33
2 x 2 x 3/4	1.60	1.60	1.97	3.28	3.28	1.63	0.75	0.75	0.50	0.84	0.84	1.42
2 x 2 x 1/2	1.49	1.49	1.88	3.28	3.28	1.34	0.75	0.75	0.43	0.73	0.73	1.34
2 x 1 1/2 x 2	2.25	2.16	2.25	3.28	2.68	3.28	0.75	0.70	0.75	1.49	1.43	1.49
2 x 1 1/2 x 1 1/2	2.02	1.94	2.16	3.28	2.68	2.68	0.75	0.70	0.70	1.26	1.21	1.43
2 x 1 1/2 x 1 1/4	2.02	1.94	2.16	3.28	2.68	2.39	0.75	0.70	0.67	1.26	1.21	1.45
2 x 1 1/2 x 1	1.73	1.65	2.02	3.28	2.68	1.95	0.75	0.70	0.58	0.97	0.92	1.33
2 x 1 1/2 x 3/4	1.60	1.52	1.97	3.28	2.68	1.63	0.75	0.70	0.50	0.84	0.79	1.42
2 x 1 1/2 x 1/2	1.49	1.41	1.88	3.28	2.68	1.34	0.75	0.70	0.43	0.73	0.68	1.34
2 x 1 1/4 x 2	2.25	2.10	2.25	3.28	2.39	3.28	0.75	0.67	0.75	1.49	1.39	1.49
2 x 1 1/4 x 1 1/2	1.02	1.88	2.16	3.28	2.39	2.68	0.75	0.67	0.70	0.26	1.17	1.43
2 x 1 1/4 x 1 1/4	1.90	1.75	2.10	3.28	2.39	2.39	0.75	0.67	0.67	1.14	1.04	1.39
2 x 1 1/4 x 1	1.73	1.58	2.02	3.28	2.39	1.95	0.75	0.67	0.58	0.97	0.87	1.33
2 x 1 1/4 x 3/4	—	—	—	—	—	—	—	—	—	—	—	—
*2 x 1 1/4 x 1/2	1.49	1.41	1.88	3.28	2.39	1.34	0.75	0.67	0.43	0.73	0.70	1.34
2 x 1 x 2	2.25	2.02	2.25	3.28	1.95	3.28	0.75	0.58	0.75	1.49	1.33	1.49
2 x 1 x 1 1/2	2.02	1.80	2.16	3.28	1.95	2.68	0.75	0.58	0.70	1.26	1.11	1.43
2 x 1 x 1 1/4	1.90	1.67	2.10	3.28	1.95	2.39	0.75	0.58	0.67	1.14	0.98	1.39
*2 x 1 x 1	1.73	1.94	2.02	3.28	1.95	1.95	0.75	0.58	0.58	0.97	1.25	1.33
*2 x 1 x 3/4	1.73	1.94	2.02	3.28	1.95	1.63	0.75	0.58	0.50	0.97	1.25	1.47
2 x 3/4 x 2	2.25	1.97	2.25	3.28	1.63	3.28	0.75	0.50	0.75	1.49	1.42	1.49
*2 x 3/4 x 1 1/2	2.25	1.97	2.25	3.28	1.63	2.68	0.75	0.50	0.70	1.49	1.42	1.52
*2 x 3/4 x 1 1/4	2.25	1.97	2.25	3.28	1.63	2.39	0.75	0.50	0.67	1.49	1.42	1.54
*2 x 3/4 x 1	1.73	1.94	2.02	3.28	1.63	1.95	0.75	0.50	0.58	0.97	1.39	1.33
*2 x 3/4 x 3/4	1.60	1.60	1.97	3.28	1.63	1.63	0.75	0.50	0.50	0.84	1.05	1.42
*2 x 3/4 x 1/2	1.60	1.60	1.97	3.28	1.63	1.34	0.75	0.50	0.43	0.84	1.05	1.43
2 x 1/2 x 2	2.25	1.88	2.25	3.28	1.34	3.280	0.75	0.43	0.75	1.49	1.34	1.49
*2 x 1/2 x 1 1/2	2.02	1.66	2.16	3.28	1.34	2.68	0.75	0.43	0.70	1.26	1.12	1.43
*2 x 1/2 x 1 1/4	2.02	1.66	2.16	3.28	1.34	2.39	0.75	0.43	0.67	1.26	1.12	1.45
*2 x 1/2 x 3/4	1.60	1.60	1.97	3.28	1.34	1.63	0.75	0.43	0.50	0.84	1.06	1.42
*2 x 1/2 x 1/2	1.60	1.60	1.97	3.28	1.34	1.34	0.75	0.43	0.43	0.84	1.06	1.43
1 1/2 x 1 1/2 x 2	2.16	2.16	2.02	2.68	2.68	3.28	0.70	0.70	0.75	1.43	1.43	1.26
1 1/2 x 1 1/4 x 2	2.16	2.10	2.02	2.68	2.39	3.28	0.70	0.67	0.75	1.43	1.39	1.26
1 1/2 x 1 x 2	2.16	2.02	2.02	2.68	1.95	3.28	0.70	0.58	0.75	1.43	1.33	1.26
1 1/4 x 1 1/4 x 2	—	—	—	—	—	—	—	—	—	—	—	—
1 1/4 x 1 x 2	—	—	—	—	—	—	—	—	—	—	—	—
1 x 1 x 2	—	—	—	—	—	—	—	—	—	—	—	—
2 1/2 x 2 1/2 x 2	2.39	2.39	2.60	3.86	3.86	3.28	0.92	0.92	0.75	1.25	1.25	1.84
2 1/2 x 2 1/2 x 1 1/2	2.16	2.16	2.51	3.86	3.86	2.68	0.92	0.92	0.70	1.02	1.02	1.78

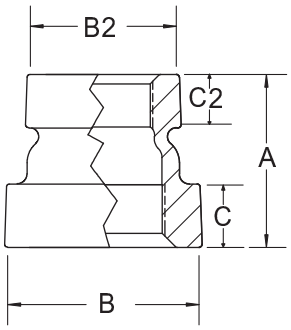
* Manufactured to WARD specifications

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CAST IRON CONCENTRIC REDUCING COUPLING CLASS 125

NPS	Length of Coupling A	Outside Dia. of Band Small End B (min)	Outside Dia. of LargeEnd B2 (min)	Length of Threads Small End C (min)	Length of Threads Large End C2 (min)	Take Out	Take Out
3/4 x 1/2	1.50	1.31	1.62	0.43	0.50	0.20	0.22
1 x 1/2	1.70	1.31	1.99	0.43	0.58	0.85	0.85
1 x 3/4	1.70	1.63	1.99	0.50	0.58	0.85	0.85
1 1/4 x 1	2.130	1.95	2.39	0.58	0.67	0.17	0.30
1 1/4 x 3/4	2.13	1.95	2.39	0.50	0.67	0.17	0.32
1 1/4 x 1/2	—	—	—	—	—	—	—
1 1/2 x 1 1/4	2.25	2.39	2.68	0.67	0.70	0.36	0.52
1 1/2 x 1	2.25	2.39	2.68	0.58	0.70		
1 1/2 x 3/4	—	—	—	—	—	—	—
1 1/2 x 1/2	—	—	—	—	—	—	—
2 x 1 1/2	2.32	2.68	3.28	0.70	0.75	0.40	0.44
2 x 1 1/4	2.32	2.39	3.28	0.67	0.75	0.40	0.45
2 x 1	2.32	1.95	3.28	0.58	0.75	0.40	0.44
2 x 3/4	2.32	1.63	3.28	0.50	0.75	0.40	0.45
2 x 1/2	2.32	1.63	3.28	0.43	0.75	0.40	0.48
2 1/2 x 2	2.63	3.28	3.86	0.75	0.92	0.18	0.56
2 1/2 x 1 1/2	2.63	3.28	3.86	0.70	0.92	0.18	0.59
3 x 2 1/2	—	—	—	—	—	—	—
3 x 2	2.88	3.28	4.62	0.75	0.98	0.29	0.68
3 x 1 1/2	2.88	3.28	4.62	0.70	0.98	0.24	0.72
4 x 3	—	—	—	—	—	—	—
4 x 2 1/2	—	—	—	—	—	—	—
4 x 2	—	—	—	—	—	—	—
6 x 4	—	—	—	—	—	—	—

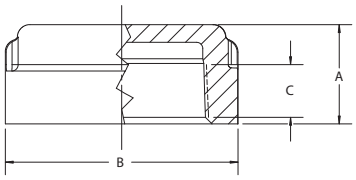




CAST IRON PIPE CAP CLASS 125

NPS	Overall Height A	Outside Dia. of Band B (min)	Length of Threads C (min)
2 1/2	1.810	3.860	0.920
3	1.910	4.620	0.980
3 1/2	2.030	5.200	1.030
4	2.220	5.790	1.080
5	2.380	7.050	1.180
6	2.630	8.280	1.280
8	2.880	10.630	1.470





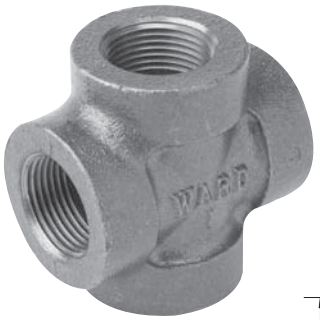
CAST IRON HEXAGON COUPLING

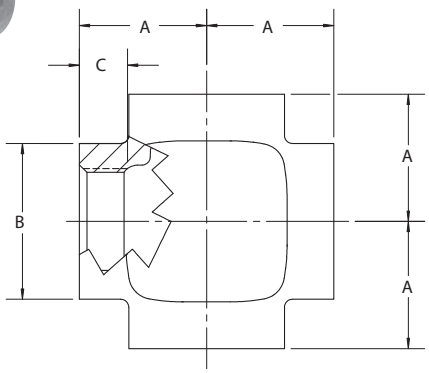
NPS	Width Across Flats A HEX.	Overall Length B	Thread Length C	Take Out	Take Out
1	1.94	1.69	0.58	0.16	0.16

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CAST IRON STRAIGHT CROSS CLASS 125

NPS	Center to End A	Outside Dia. Band B (min)	Length of Threads C (min)	Take Out
1/2	1.25	1.34	0.43	0.71
3/4	1.44	1.63	0.50	0.89
1	1.63	1.95	0.58	0.94
1 1/4	1.94	2.39	0.67	1.23
1 1/2	2.13	2.68	0.70	1.40
2	—	—	—	—
4	—	—	—	—

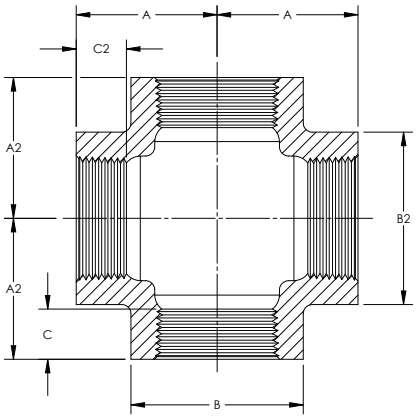




CAST IRON REDUCING CROSS CLASS 125

NPS	Center to End A	Center to End A2	Outside Dia. Band B (min)	Outside Dia. Band B2 (min)	Length of Threads C (min)	Length of Threads C2 (min)	Take Out	Take Out
1 1/4 x 1	1.67	1.58	2.39	1.95	0.67	0.58	0.96	0.89
1 1/2 x 1 1/4	—	—	—	—	—	—	—	—
1 1/2 x 1 1/4 x 1	—	—	—	—	—	—	—	—
1 1/2 x 1 1/4 x 1 x 1	—	—	—	—	—	—	—	—
1 1/2 x 1	1.80	1.65	2.68	1.95	0.70	0.58	1.07	0.96
1 1/2 x 1 x 1 x 1	—	—	—	—	—	—	—	—
2 x 1 1/2	—	—	—	—	—	—	—	—
2 x 1 1/4	—	—	—	—	—	—	—	—
2 x 1 1/2 x 1 x 1	—	—	—	—	—	—	—	—
2 x 1	2.02	1.73	3.28	1.95	0.75	0.58	1.26	1.04





Victaulic® FireLock™ Outlet-T Style 922



1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 2 ½"/DN32 – DN65
- **Threaded Outlet Sizes:** ½"/DN15, ¾"/DN20, and 1"/DN25

NOTE

- IGS Grooved 1"/DN25 Outlets available for this product. See publication 10.54.

Maximum Working Pressure

- 300 psi/2068 kPa/21 Bar

Application

- Provides a convenient method of incorporating outlets for directly connecting sprinklers, drop nipples, sprigs, gauges, drains and other outlet products

Pipe Material

- Carbon steel
- Contact Victaulic for use on additional pipe types and wall thicknesses

2.0 CERTIFICATION/LISTINGS

NOTES

- See Section 7.2 REFERENCE MATERIALS for additional certification information.

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

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3.0 SPECIFICATIONS - MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

☐ Orange enamel (North America, Latin America, Asia Pacific).

☐ Red enamel (Europe).

☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket[1]:

☐ **Grade "E" EPDM (Type A)**

EPDM (Violet color code) Applicable for wet and dry (oil-free air) sprinkler services only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at -40˚F/-40˚C and above. NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.

[1] Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Seal Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

Bolts/Nuts:

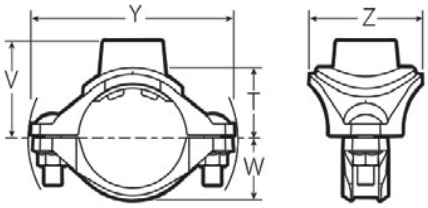
☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). Carbon steel hex flange nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial – hex nuts) and ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex flange nuts are zinc electroplated per ASTM B633 Fe/Zn 5, finish Type III (imperial) or Type II (metric).

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4.0 DIMENSIONS

Style 922



Style 922

Size						Bolt/Nut		Dimensions					Weight
Nominal Run x Branch FPT[2] inches DN			Actual Outside Diameter inches mm			Qty.	Size inches mm	T[3] inches mm	V inches mm	W inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
1 ¼ DN32	x	½ DN15	1.660 42.4	x	0.840 21.3	2	⅜ x 1 ⅜	1.30 33	1.83 47	1.10 28	3.87 98	2.56 65	1 0.5
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.28 33	1.83 47	1.10 28	3.87 98	2.56 65	1 0.5
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.52 39	2.18 55	1.10 28	3.87 98	2.56 65	1 0.5
1 ½ 40	x	½ DN15	1.900 48.3	x	0.840 21.3	2	⅜ x 1 ⅜	1.42 36	1.95 50	1.22 31	4.08 104	2.56 65	1 0.5
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.40 36	1.95 50	1.22 31	4.08 104	2.56 65	1 0.5
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.64 42	2.30 58	1.22 31	4.08 104	2.56 65	1 0.6
2 50	x	½ DN15	2.375 60.3	x	0.840 21.3	2	⅜ x 1 ⅜	1.66 42	2.19 56	1.46 37	4.60 117	2.56 65	1 0.6
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.64 42	2.19 56	1.46 37	4.60 117	2.56 65	1 0.6
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.88 48	2.54 65	1.46 37	4.60 117	2.56 65	2 0.7
2 ½	x	½ DN15	2.875 73.0	x	0.840 21.3	2	⅜ x 1 ⅜	1.91 49	2.44 62	1.71 43	5.40 137	2.56 65	2 0.7
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.89 48	2.44 62	1.71 43	5.40 137	2.56 65	2 0.7
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	2.13 54	2.79 71	1.71 43	5.40 137	2.56 65	2 0.7
DN65	x	½ DN15	3.000 76.1	x	0.840 21.3	2	⅜ x 1 ⅜	1.91 49	2.44 62	1.71 43	5.50 140	2.56 65	2 0.7
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.89 48	2.44 62	1.71 43	5.50 140	2.56 65	2 0.7
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	2.13 54	2.79 71	1.71 43	5.50 140	2.56 65	2 0.8

[2] Victaulic female threaded products are designed to accommodate standard NPT or BSPT (optional) male pipe threads only. Refer to the specific literature for these types of special male-threaded products for guidance and possible limitations for use. Failure to verify suitability in advance may result in assembly problems or leakage.

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

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5.0 PERFORMANCE

Style 922

Run Size x Outlet Size inches DN			Equivalent Length of 1 inch Schedule 40 Steel Pipe (per UL 213, Section 16) (C=120)[4]	
			Threaded feet meters	Grooved[5] feet meters
1 ¼ DN32	x	1 DN25	8.5 2.6	12.5 3.8
1 ½ DN40	x	1 DN25	8.5 2.6	12.5 3.8
2 DN50	x	1 DN25	8.5 2.6	12.5 3.8
2 ½	x	1 DN25	8.5 2.6	12.5 3.8
DN65	x	1 DN25	8.5 2.6	12.5 3.8

[4] Hazen-Williams coefficient of friction is 120.
[5] 1" FireLock™ Innovative Groove System (IGS) outlet

6.0 NOTIFICATIONS

WARNING



- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

	Dimensions	
	Minimum Hole Diameter/ Hole Saw Size inches mm	Maximum Hole Diameter/ Hole Saw Size inches mm
All Outlet Sizes	1 3⁄16	1 ¼
	30	32

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7.1 REFERENCE MATERIALS

Size	Services Pressures per Regulatory Approvals and Listings[6]					
Nominal inches DN	**UL** psi kPa	**ULC** psi kPa	**FM** psi kPa	**VdS** psi kPa	**LPCB** psi kPa	**CNBOP** psi kPa
1 ¼ x ½ DN32 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ¼ x ¾ DN32 X DN20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ¼ x 1 DN32 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x ½ DN40 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x ¾ DN40 X DN20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x 1 DN40 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x ½ DN50 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x ¾ DN50 X 20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x 1 DN50 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x ½	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x ¾	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x 1	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
DN65 X DN15	–	–	300 2068	232 1600	232 1600	232 1600
DN65 X DN20	–	–	300 2068	232 1600	232 1600	232 1600
DN65 X DN25	–	–	300 2068	232 1600	232 1600	232 1600

[6] Pressures listed in this chart are based upon standard wall pipe. Approved and Listed pressures may vary by pipe schedule.

NOTE

- Consult regulatory agency websites for details and the most recent regulatory information.

7.2 REFERENCE MATERIALS

05.01: Victaulic Seal Selection Guide

29.01: Victaulic Terms and Conditions of Sale

I-100: Installation Instructions

I-922: Installation Instructions FireLock™ Outlet-T

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights
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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.

Installation
Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on WeChat.

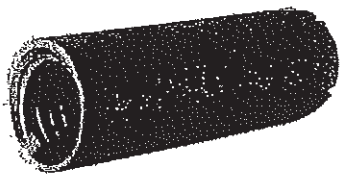
Warranty
Refer to the Warranty section of the current Price List or contact Victaulic for details.

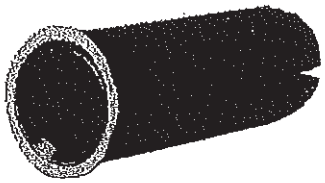
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4.3.8 HDI & HDI-L Drop-In Anchor

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





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")

4.3.8.1 Product Description

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

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

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

4.3.8.3 Technical Data

HDI/HDI-L Specification Table

Details		Anchor Size	in. (mm)	HDI/HDI-L 1/4 (6.4)	HDI/HDI-L 3/8 (9.5)	HDI/HDI-L 1/2 (12.7)	HDI 5/8 (15.9)	HDI 3/4 (19.1)
d_{bit}	Nominal Bit diameter		in.	3/8	1/2	5/8	27/32	1
h_{nom} ℓ h_1	Std. depth of embed. Anchor length Hole depth		in. (mm)	1 (25)	1-9/16 (40)	2 (51)	2-9/16 (65)	3-3/16 (81)
ℓ_{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 lb (kN)		Shear lb (kN)		Tension lb (kN)		Shear lb (kN)		Tension lb (kN)		Shear lb (kN)	
	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L
1/4 (6.4)	500 (2.2)	500 (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 (7.9)	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)	–	5590 (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 lb (kN)		Shear lb (kN)		Tension lb (kN)		Shear lb (kN)		Tension lb (kN)		Shear 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)	5430 (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 (31.8)	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 (57.8)	–	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)	3680 (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)

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

$s_{min} = 2.0\ h_{nom}$

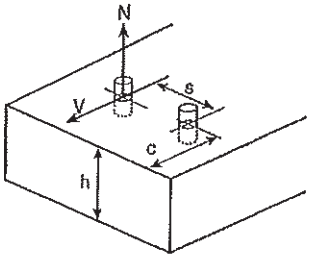
$s_{cr} = 3.5\ h_{nom}$

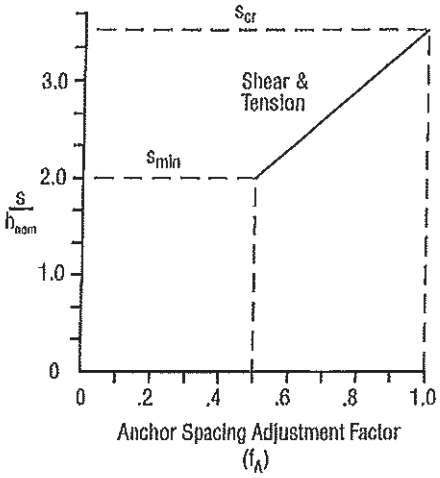
Edge Distance Adjustment Factors

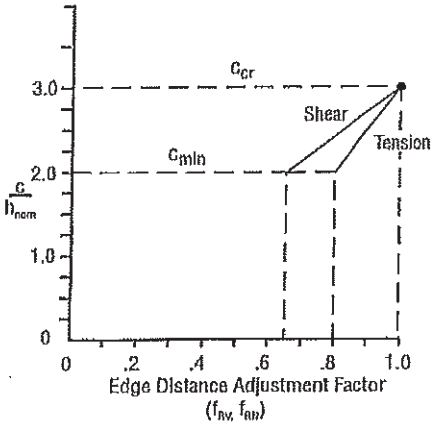
c = Actual edge distance

$c_{min} = 2.0\ h_{nom}$

$c_{cr} = 3.0\ h_{nom}$







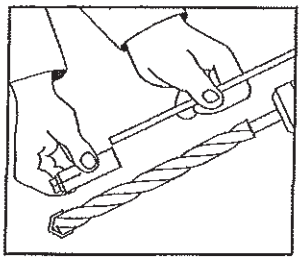
Influence of Anchor Spacing & Edge Distance f_A, f_R

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)

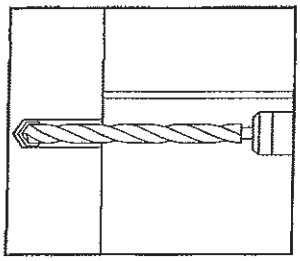
h_{nom} = standard embedment depth

Load Adjustment Factors (Anchor Spacing) f_A						Load Adjustment Factors (Edge Distance) f_R										
Tension/Shear Loads						Tension, f_{RN}						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											
$s_{min} = 2.0\ h_{nom}$, $s_{cr} = 3.5\ h_{nom}$ $f_A = 0.33 \frac{s}{h_{nom}} - 0.17$ for $s_{cr} > s > s_{min}$						$c_{min} = 2.0\ h_{nom}$, $c_{cr} = 3.0\ h_{nom}$ $f_{RN} = 0.2 \frac{c}{h_{nom}} + 0.4$ for $c_{cr} > c > c_{min}$						$c_{min} = 2.0\ h_{nom}$, $c_{cr} = 3.0\ h_{nom}$ $f_{RV} = 0.35 \frac{c}{h_{nom}} - 0.05$ for $c_{cr} > c > c_{min}$				

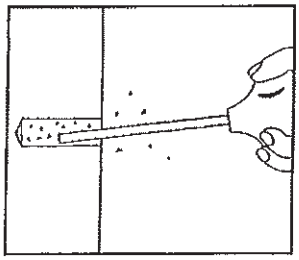
4.3.8.4 Installation Instructions



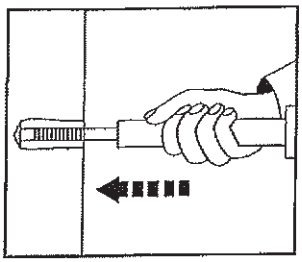
1 Adjust depth gauge so that anchor will be flush with the concrete surface when installed.



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 Sates

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.

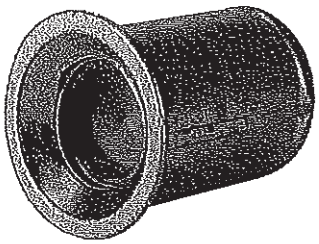
CHANGES: Hilti sales personnel are not authorized to modify these Terms and Conditions or modify Customer's credit terms. Terms are subject to change by Hilti with reasonable notice to Customer.

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

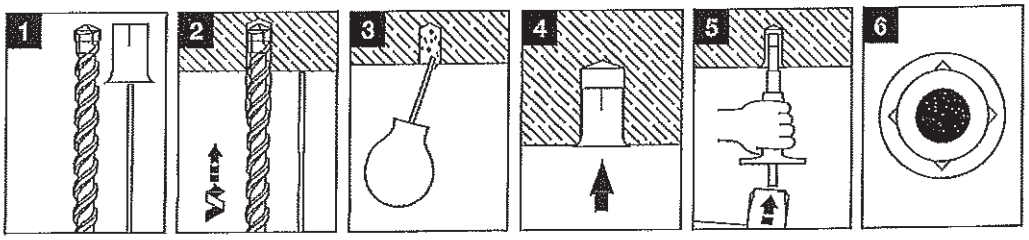
4.3.9.3 Technical Data

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 and strike 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 —

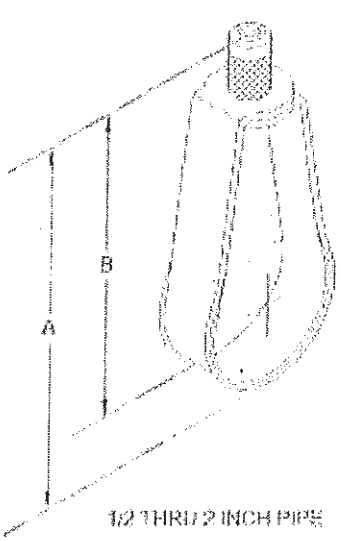
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2½" thru 8" Spring tension on nut holds it securely in hanger before installation.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

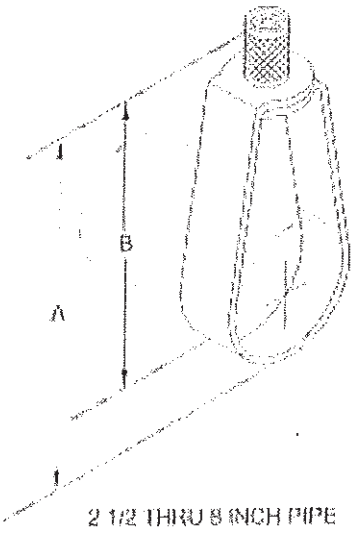
Maximum Temperature — 650°F

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

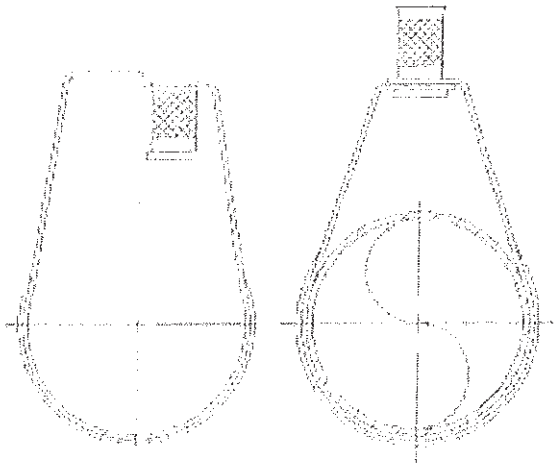
Order By — Figure number and pipe size



1/2 THRU 2 INCH PIPE



2 1/2 THRU 8 INCH PIPE



Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Length
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 1/8	8 3/4	1250	136

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Customer Service • 800.786.5266
www.tolco.com

Fig. 65 and Fig. 66
Reversible C-Type Beam Clamps 3/4" and 1¼" 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 1¼" (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

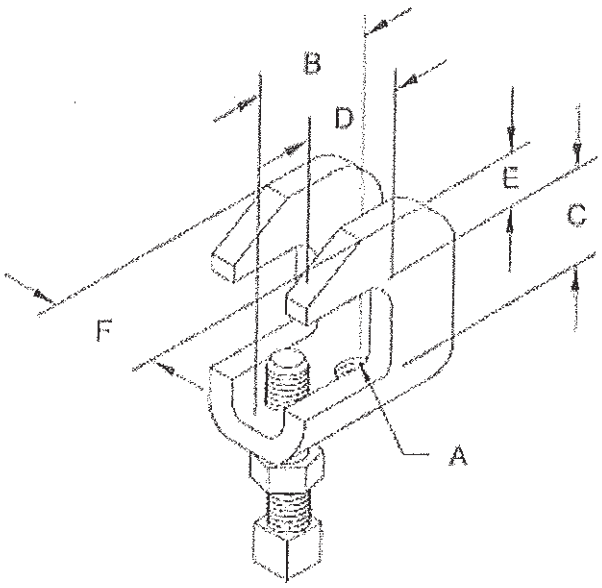


Fig. 65

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.

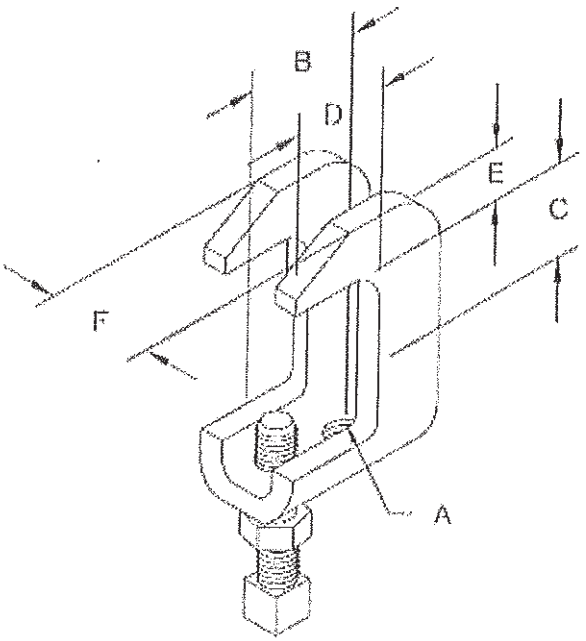


Fig. 65

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.

Permit: 2019-164902-CT
RSN: 1378607
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Fig. 98 - Rod Stiffener

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

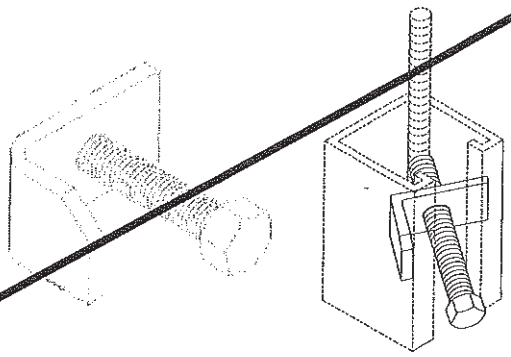
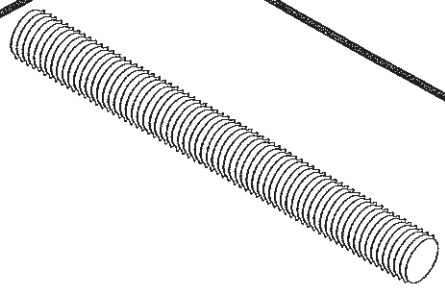


Fig. 99 - All Thread Rod Cut to Length

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

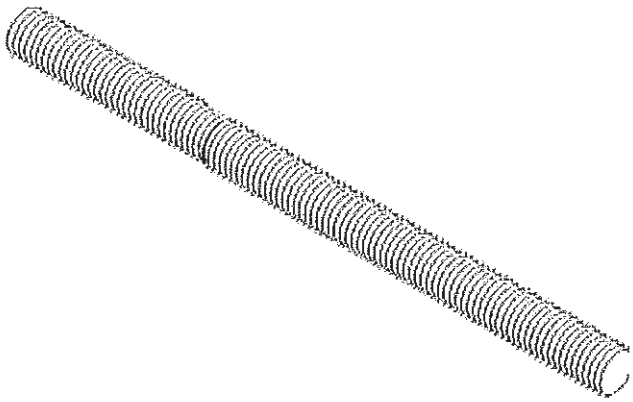


Dimensions • Weights

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 650°F	750°F	Approx. Wt./100
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
1¼	8000	7140	360
1½	11630	10370	510

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