* THIS PROJECT CONSISTS OF THE REMODEL OF AN EXISTING FIRE SPRINKLER SYSTEM IN AN EXISTING BUILDING.
* TYPE OF CONSTRUCTION: VB
* BUILDING OCCUPANCY CLASSIFICATION PER THE 2015 IBC: B
* EXISTING SYSTEM IS A WET PIPE, DESIGNED PER NFPA 13
* ALL BRANCH LINE PIPING TO BE BLACK STEEL
* ALL THREADED FITTINGS ARE DUCTILE AND OR BLACK CAST IRON
* ALL GROOVE FITTINGS ARE DUCTILE IRON
* ALL HANGERS TO BE IN ACCORDANCE WITH NFPA 13, 2013 EDITION.
* ALL ROOMS INCLUDING CLOSETS SHALL BE SPRINKLERED.
* LOW POINTS IN SYSTEM SHALL HAVE PROVISIONS FOR DRAINAGE.
* ALL MATERIAL TO MEET NFPA 13, 2013 EDITION.
* ALL UNDERGROUND FIRE PROTECTION LEAD IN PIPING IS NEW, AND INSTALLED AND TESTED BY OTHERS
* MAXIMUM SQUARE FOOTAGE PER HEAD VARIES SEE MATERIAL DATA SHEETS.
* THE AUTHORITY HAVING JURISDICTION IS THE AURORA BUILDING CODES DIVISION/LIFE SAFETY.
*FIRE SPRINKLER SYSTEM IS TO BE HYDROSTATICALLY TESTED @ 200 PSI FOR A (2) HOUR MINIMUM PERIOD OF @ 50 PSI ABOVE CITY PRESSURE, WHICHEVER IS GREATER.
*HYDRAULIC ELEVATIONS ARE PROGRESSIVE FROM THE FIRST FLOOR FIN FLOOR TO THE ATTIC LEVEL.
*HEAD CABINET WITH SPARE SPRINKLERS, ESCUTCHEONS AND WRENCHES TO BE PROVIDED.
*HYDRAULIC DATA PLATES (1 EACH AREA CALCULATED) TO BE PROVIDED ADJACENT TO RISER.
*ALL ELECTRICAL WIRING AND ALARM SYSTEM INSTALLATION BY OTHERS.
*PIPE INSTALLED IN THE ATTIC SHALL HAVE ADEQUATE INSULATION COVERING TO PREVENT FREEZING.
*THE CITY OF AURORA BUILDING CODES DIVISION DOES NOT GRANT APPROVAL FOR ANY VIOLATIONS OF ADOPTED FIRE CODE. CODE VIOLATIONS UNCOVERED DURING FIELD INSPECTIONS MUST BE CORRECTED.
*OWNER IS RESPONSIBLE FOR PROVIDING HEAT, ABOVE 40 DEGREES FAHRENHEIT, ADEQUATE ENOUGH TO PREVENT FREEZING OF THE SPRINKLER PIPING.
*ALL VALVES CONTROLLING THE WATER SUPPLY TO 20 OR MORE SPRINKLER HEADS MUST BE SUPERVISED. AT THE TIME OF FINAL INSPECTION, FIRE SAFETY SYSTEMS MUST BE SUPERVISED BY AN APPROVED UL-LISTED MONITORING AGENCY.
*THE CONTRACTOR (OR DESIGNEE) MUST PROVIDE ALL NECESSARY TESTING EQUIPMENT AND PERFORM ALL TESTING REQUIRED BY THE LIFE SAFETY INSPECTOR.
*ALL NEW OR EXISTING FIRE ALARM SYSTEMS MUST BE INTERCONNECTED WITH THE FLOW SWITCH OF THE FIRE SPRINKLER SYSTEMS OUTSIDE HORN AND STROBE.
*INSTALLATION OF INTERIOR ALARMS ACTIVATED BY THE FIRE SPRINKLER WATER FLOW WILL BE REQUIRED PER 2015 IFC, 903.4.2. APPROVED AUDIBLE DEVICES SHALL BE CONNECTED TO EVERY AUTOMATIC FIRE SPRINKLER SYSTEM.
*IMPORTANT: IN THE EVENT THAT A CONCEALED SPACE IS NOT SHOWN ON THE PLAN SUBMITTAL AND IS DISCOVERED IN THE FIELD, THE INSTALLING CONTRACTOR MUST COMPLY WITH NFPA 13, 2013 SECTION 8.15
*ALL WATER SUPPLY VALVES AND WATER FLOW SWITCHES SHALL BE ELECTRICALLY SUPERVISED, IFC 2015, 903.4.
*ELECTRICAL EXTERIOR HORN AND STROBE SHALL BE LISTED FOR OUTDOOR USE, IFC 903.4.2. OUTSIDE HORN AND STROBE WILL ACTIVATE UPON BOTH GENERAL ALARM AND FLOW SWITCH ACTIVATION. WHEN FIRE ALARM PANEL IS SILENCED, THE INTERIOR AND EXTERIOR STROBES WILL CONTINUE UNTIL FIRE ALARM PANEL IS RESET.
*ALL CONTROL VALVE(S) WITHIN THE RISER ROOM MUST BE ACCESSIBLE, NFPA 13 2013 SECTION 8.15.1.1.7.
*PRESSURE GAUGES ARE REQUIRED ON THE SYSTEM SIDE OF THE MAIN VALVE AND ON THE SUPPLY SIDE OF THE BACKFLOW PREVENTOR.
*BOTH NEW AND EXISTING FIRE SPRINKLER SYSTEMS MUST EQUIPPED WITH APPROVED KNOX CAPS.
*THE FIRE DEPARTMENT CONNECTION MUST BE LOCATED NOT LESS THAN 18 IN. AND NOT MORE THAN 4 FT ABOVE THE LEVEL OF THE ADJACENT GRADE OR ACCESS LEVEL. 2015 NFPA 24, SECTION A.5.9.
*FIELD INSPECTION CONSULTATION IS AVAILABLE UPON REQUEST. CALL 303-739-7420 TO REQUEST CONSULTATION.
*CORE AND SHELL BUILDING ARE REQUIRED TO BE PROVIDED WITH HEAT SUFFICIENT TO PROTECT THE SPRINKLER SYSTEM.

* 2015 INTERNATIONAL FIRE CODE (IFC)
* 2017 NATIONAL ELECTRICAL CODE (NEC)
* 2015 INTERNATIONAL BUILDING CODE (IBC)
* 2015 INTERNATIONAL MECHANICAL CODE (IMC)
* 2013 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARD 13
* OCCUPANCY GROUP:B
* NUMBER OF STORIES: N/A
* THIS BUILDING FIRE SPRINKLED:YES
* THIS IS AN EXISTING SYSTEM:
* CONSTRUCTION TYPE: VB
* SQUARE FOOTAGE PROJECT AREA AND TOTAL SQUARE FOOTAGE OF THE REMODEL AREA: 2404.5 SQ. FT.
* FIRE SPRINKLER CONTRACTOR: MERIDIAN FIRE AND SECURITY:
  SEE TITLE BLOCK FOR CONTACT INFORMATION

* AUTHORITY HAVING JURISDICTION:
  AURORA BUILDING CODES DIVISION
  15151 E. ALAMEDA PARKWAY, 2ND FLOOR PERMIT CENTER
  AURORA CO 80012
  (P) 303-739-7420 (F) 303-739-7551

* ENGINEERS INFORMATION:
  Veritas Fire Engineering, Inc.
  12364 W. Alameda Parkway Suite 135 Lakewood, Colorado 80228
  Kerry L Madigan Cert# 29596 Fire Protection Engineer
  303-985-3300 /303-985-5594

TENANT FINISH GENERAL NOTES

THIS CONTRACT INCLUDES THE MODIFICATION OF THE EXISTING HYDRAULIC CALCULATED FIRE SPRINKLER SYSTEM TO ACCOMMODATE NEW TENANT FINISH OF THE AREAS IDENTIFIED ON THE PLAN.
THE EXISTING SYSTEM WAS DESIGNED AND INSTALLED BY OTHERS.

THIS FIRE PROTECTION CONTRACTOR SHALL NOT BE HELD RESPONSIBLE FOR ANY LEAKS IN AREAS OUTSIDE OF THIS CONTRACT SPACE, NOTICED WHILE CONDUCTING HYDROSTATIC TESTING, UNLESS BASE SYSTEM WAS INSTALLED BY THIS FIRE PROTECTION CONTRACTOR AND THE BASE SYSTEM IS STILL UNDER WARRANTY.

ALL MATERIALS, DEVICES AND HANGERS USED ON THIS PROJECT SHALL BE UL LISTED AND/OR FACTORY MUTUAL APPROVED.

ALL NEW INSTALLED PIPING SHALL BE EDDYTHREAD 40 OR EQUAL WITH CLASS 150 DUCTILE IRON FITTINGS UNLESS NOTED OTHERWISE.

PIPE HANGERS TO BE INSTALLED AND SPACED IN ACCORDANCE WITH NFPA 13, **2013** EDITION, AND PER LOCAL AUTHORITIES HAVING JURISDICTION (AHJ).

SPRINKLERS TO BE INSTALLED IN ACCORDANCE WITH NFPA 13, **2013** EDITION, AND PER LOCAL AHJ.

SEMI-RECESSED PENDENT SPRINKLERS TO BE INSTALLED WITH DEFLECTOR INSTALLED 1" BELOW BOTTOM OF CEILING.

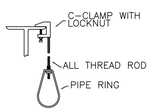
THE OWNER SHALL MAINTAIN A CLEARANCE OF 18" BETWEEN THE CEILING AND THE TOP OF ANY STORAGE OR OTHER OBSTRUCTION.

EXISTING OUTLETS IN THIS CONTRACT AREA SHALL HAVE THE EXISTING HEADS REMOVED AND PLUGS SHALL BE INSTALLED IN THEIR PLACE WHERE NOTED.

THIS IS NOT A CENTER OF TILE JOB.

FOR LIGHT HAZARD AREAS, USE 225 SQ FT MAX. FOR ORDINARY HAZARD AREAS, USE 130 SQ FT MAX.

EXISTING SPRINKLERS AND LOCATIONS ARE TO REMAIN AS IS UNLESS NOTED OTHERWISE.



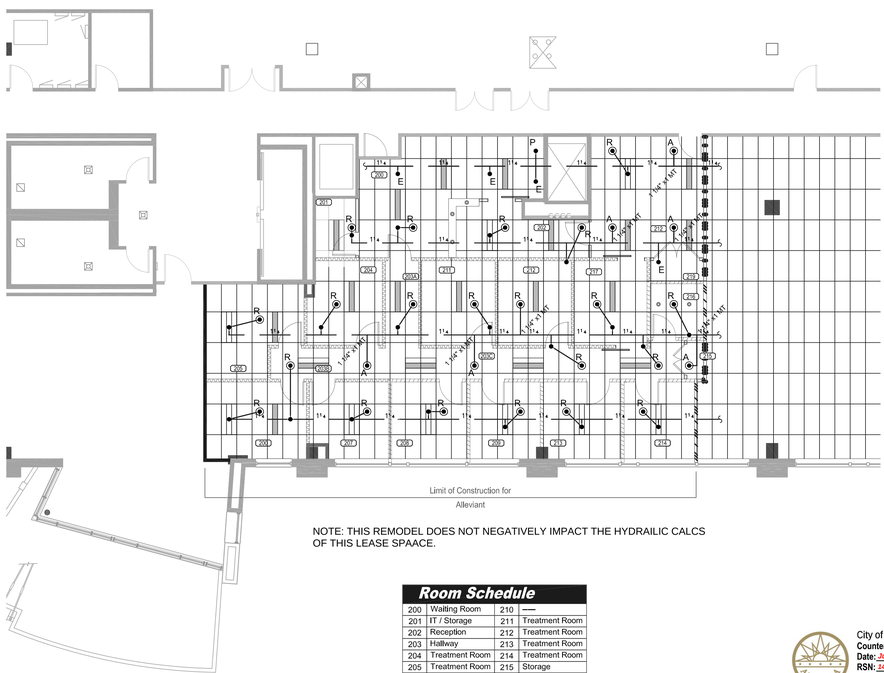
C-CLAMP HANGER

HANGER SPACING LEGEND	PER NFPA 13 TABLE 9.2.2.1(a)								
NOMINAL PIPE SIZE (IN.)	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	4"	6"	8"
STEEL PIPE SCH 40, SCH 10, DF, EF	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADED LIGHTWALL	N/A	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A
COPPER	8-0	8-0	10-0	10-0	12-0	12-0	12-0	12-0	12-0
CPVC	5-6	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A

WHERE STATIC OR OPERATING PRESSURES EXCEED 100 PSI HANGERS SHALL BE PER NFPA 13, 2016 ed.

HANGER DETAILS

PIPE SPECIFICATIONS	PER NFPA 13									
NOMINAL PIPE SIZE (IN.)	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
INSIDE DIAMETER	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.
EDDYTHREAD	N/A	1.083	1.418	1.645	2.123						
EDDYFLOW	N/A	N/A	1.515	1.734	2.209	2.729	3.342	4.316	N/A	N/A	N/A
SCH 40	.0824	1.049	1.380	1.610	2.067	2.469	N/A	N/A	N/A	N/A	N/A
SCH 10	N/A	1.097	1.442	1.682	2.157	2.635	3.260	4.260	5.295	6.357	8.249

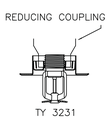


NOTE: THIS REMODEL DOES NOT NEGATIVELY IMPACT THE HYDRAILIC CALCS OF THIS LEASE SPAACE.

Room Schedule			
200	Waiting Room	210	—
201	IT / Storage	211	Treatment Room
202	Reception	212	Treatment Room
203	Hallway	213	Treatment Room
204	Treatment Room	214	Treatment Room
205	Treatment Room	215	Storage
206	Treatment Room	216	Existing Restroom
207	Treatment Room	217	Nurse Station
208	Treatment Room	218	Break Room
209	Treatment Room	219	Storage

City of Aurora Building Division
Counter Permit intake by: JLG
Date: *Jul 31, 2020*
RSN: *1474602*
Permit: *2020-1839486-CT*
2015 INTERNATIONAL CODES & 2017 NEC Scope of permit to be field verified.

SPRINKLER SYMBOL DESCRIPTION											
SYMBOL	SIZE	MAKE	S.I.N.	COVERAGE	RESPONSE	MODEL	FINISH	STYLE	TEMP	K-FACTOR	TOTAL
◉ ●	½"	TYCO	TY3231	STANDARD	QUICK	TY-FRB	CR	PENDENT	155 °	5.6	31
TOTAL SPRINKLERS SHOWN ON THIS SHEET											31
TOTAL SPRINKLERS REQUIRED ON THIS CONTRACT											31



◉ TYCO TY-FRB 1/2" 5.6K 155° RECESSED PENDENT WHITE

SPRINKLER HEAD DETAILS

PLAN NORTH

FIRE PROTECTION REMODEL

1/8" = 1'-0"

2404.5 SQFT

PLAN NOTES

1. OUR WORK CONSISTS OF THE REMODEL OF AN EXISTING HYDRAULICALLY CALCULATED AUTOMATIC FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 REQUIREMENTS.
2. THE EXISTING SPACE IS A LIGHT HAZARD OFFICE AREA. THE EXISTING SYSTEM IS HYDRAULICALLY DESIGNED FOR LIGHT HAZARD OCCUPANCY .10 / 1500 SQFT
3. THE REMODELED SPACE IS A LIGHT HAZARD OFFICE AREA.

1 21JUL2020 AHJ COMMENTS

REMODEL LEGEND

✦	EXISTING 1" BRANCHLINE OUTLET	
•	EXISTING 1" SPRINKLER OUTLET	25
◉A	ADDED SPRINKLER	6
◉R	RELOCATED SPRINKLER	21
•E	EXISTING TO REMAIN	4
•P	PLUGGED OUTLET	1
	EXISTING SPRINKLER PIPE	
	NEW SPRINKLER PIPE	

FIRE PROTECTION CONTRACTOR
Meridian Fire and Security, LLC
7173 S. HAVANA STREET
Suite 400
CENTENNIAL, CO 80112
Ph: 303.790.2520
Fx: 303.790.2528

VERITAS FIRE ENGINEERING, INC.
12364 W. Alameda Pkwy Ste. 135
Lakewood, Colorado 80228
303-985-3300 Office
303-985-5594 Fax
www.veritasfire.com

PROFESSIONAL SEAL
KERRY L MADIGAN 29596 PROFESSIONAL ENGINEER

ALLEVIANT #220

1444 S POTOMAC
AURORA CO 80012

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PROJECT NUMBER: 20-0968
DATE: 11JUN2020
DRAWN BY: VFE jld
CHECKED BY:

ISSUE:

11JUN2020	SUBMITTAL
21JUL2020	AHJ COMMENTS

REVISIONS:

fp20-0968

FIRE SPRINKLER REMODEL PLAN AND DETAILS

FP1

tyco®

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 herein are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers. They are designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

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

- A two-piece Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) Recessed Escutcheon with 1/2 in. (12,7 mm) of recessed adjustment or up to 3/4 in. (19,1 mm) of total adjustment from the flush pendent position.
- A two-piece Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) Recessed Escutcheon with 1/4 in. (6,4 mm) of recessed adjustment or up to 1/2 in. (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 what would 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 version of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356. Sprinkler Guards are detailed in Technical Data Sheet TFP780.

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

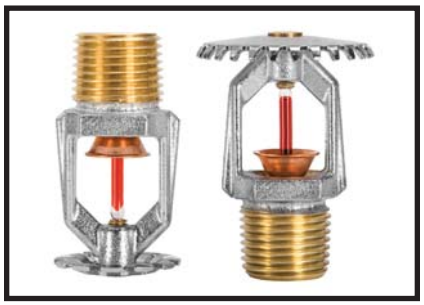
Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail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

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 (NFPA), 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.

NFPA 13 prohibits installation of 1/2 in. NPT sprinklers with K-factors greater than 5.6 in new construction. They are intended for retrofit in existing sprinkler systems only.





Sprinkler Identification Number (SIN)

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

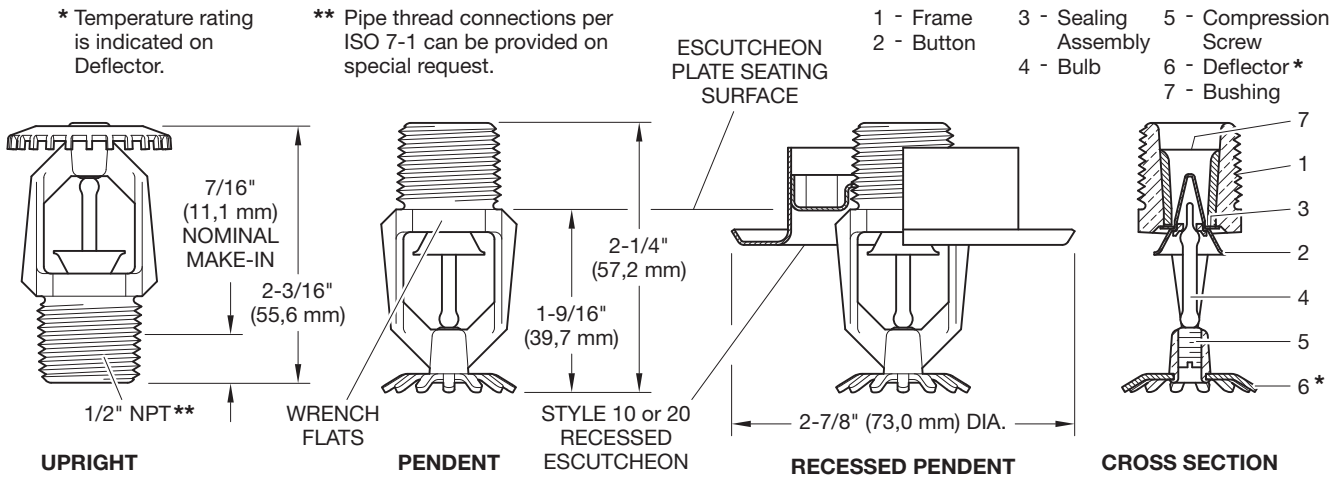


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 IN. NPT

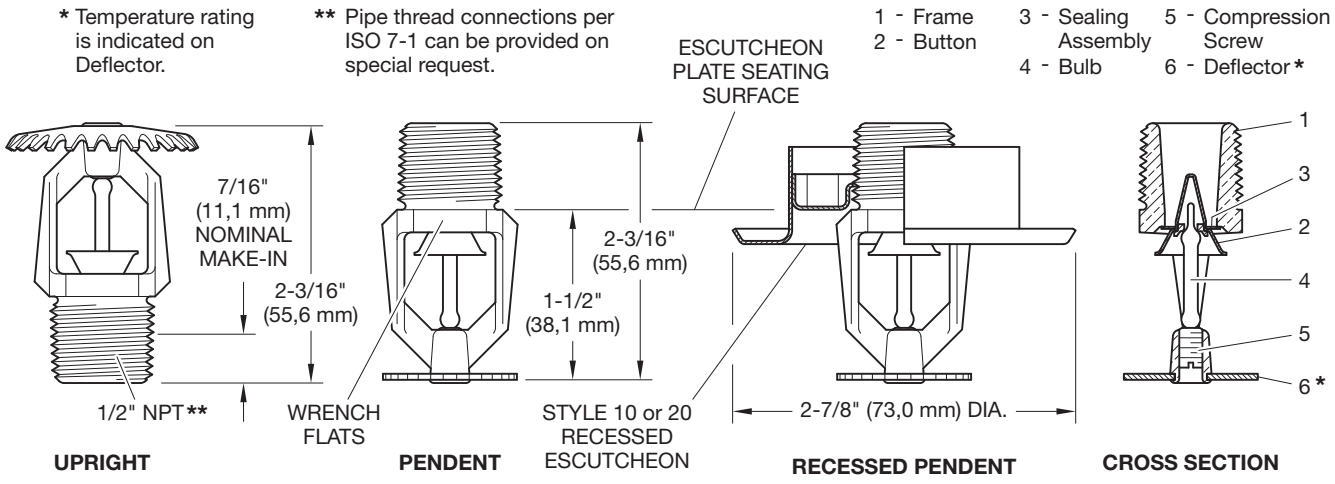


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 IN. NPT

Discharge Coefficient
K=2.8 GPM/psi½ (40,3 LPM/bar½)
K=4.2 GPM/psi½ (60,5 LPM/bar½)
K=5.6 GPM/psi½ (80,6 LPM/bar½)
K=8.0 GPM/psi½ (115,2 LPM/bar½)

Temperature Rating
Refer to Table A and B

Finishes
Sprinkler: Refer to Table D

Recessed Escutcheon: Signal or Pure White, Grey Aluminum, Jet Black, Chrome Plated, or Natural Brass

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

Poly-Stainless
Physical Characteristics
Frame . . . . . Bronze
Button . . . . . L316 Stainless Steel*
Bulb . . . . . Glass
Compression Screw . . . . . L316 Stainless Steel*
Deflector . . . . . Copper/Bronze
Sealing Assembly . Gold Plated Beryllium Nickel w/TEFLON

*Type L316 stainless steel (UNS 31603) per ASTM A479/479M or BS EN 1008 WN1.4404.

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 based on the requirements of NFPA 13 and FM Approval based on the requirements of the FM Global Loss Prevention Data Sheets. Use only the style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, for recessed pendent installations.

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RSN: 1474602
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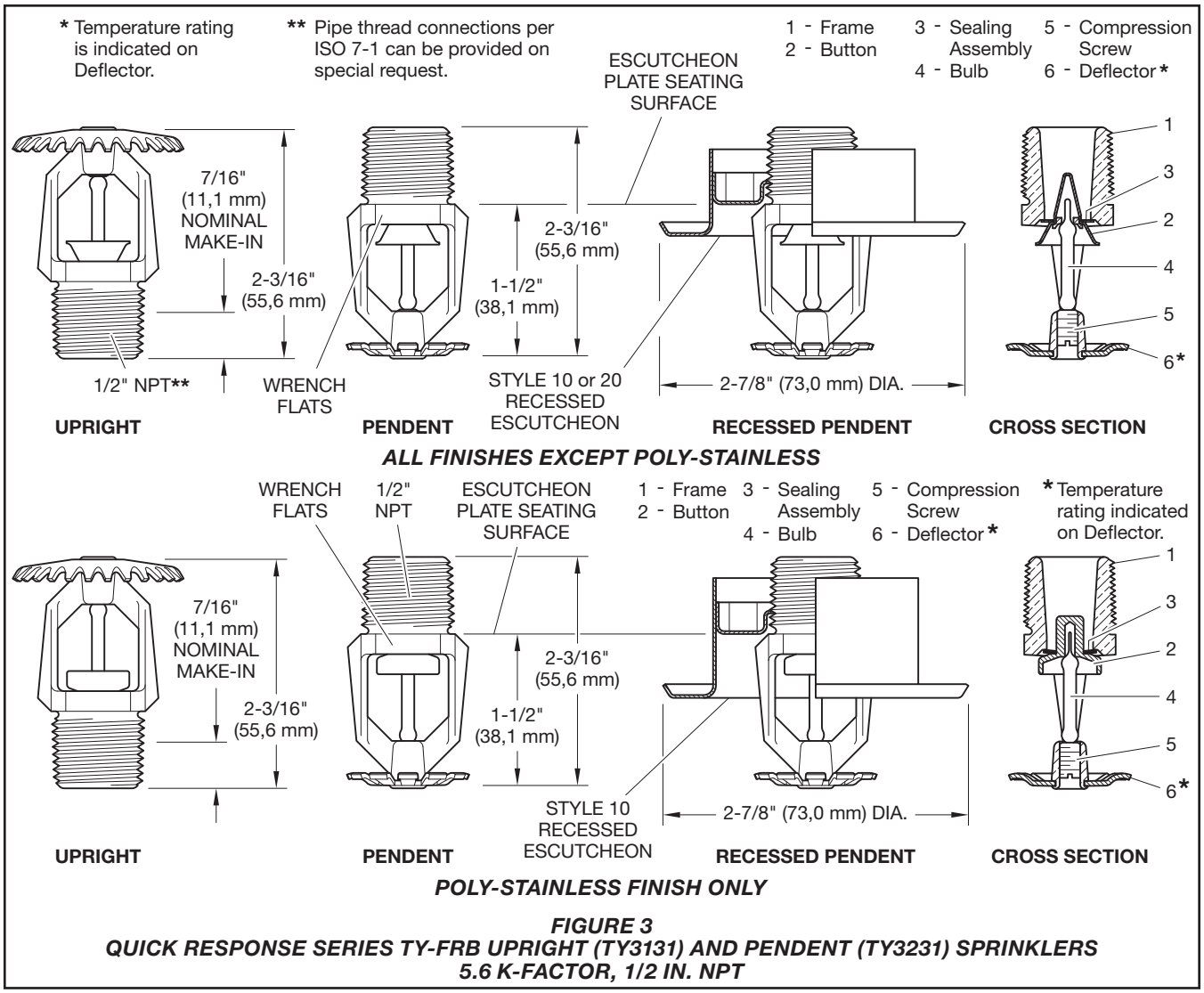


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 IN. NPT

Installation

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

General Instructions
Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 135°F (57°C) and 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings. A leak-tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). A leak tight 3/4 in. NPT sprinkler joint should be obtained with a torque of 10 to 20 lb-ft (13,4 to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet and cause 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 Upright and Pendent 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.

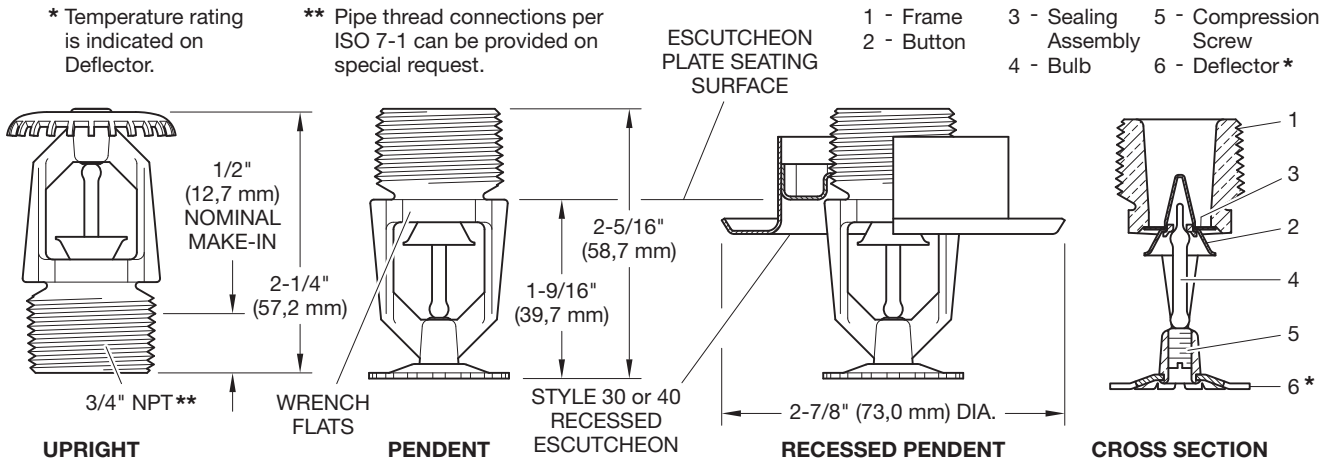
Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Ref. Figure 14). With reference to Figure 1 to Figure 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

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

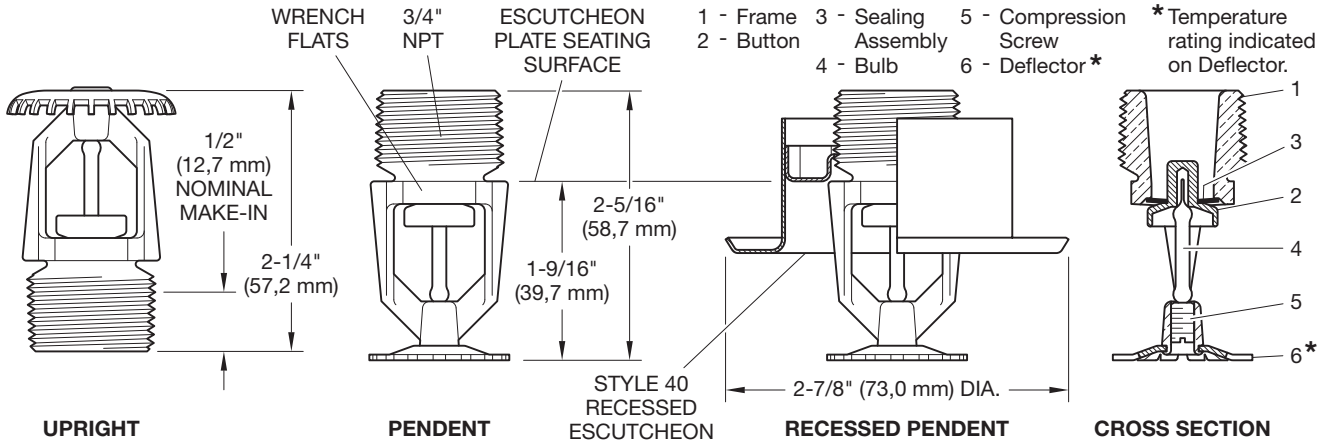
Step 1. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 2. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Ref. Figure 15). With reference to Figure 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step 3. After the ceiling is installed or the finish coat is applied, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Recessed Pendent Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.



ALL FINISHES EXCEPT POLY-STAINLESS



POLY-STAINLESS FINISH ONLY

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

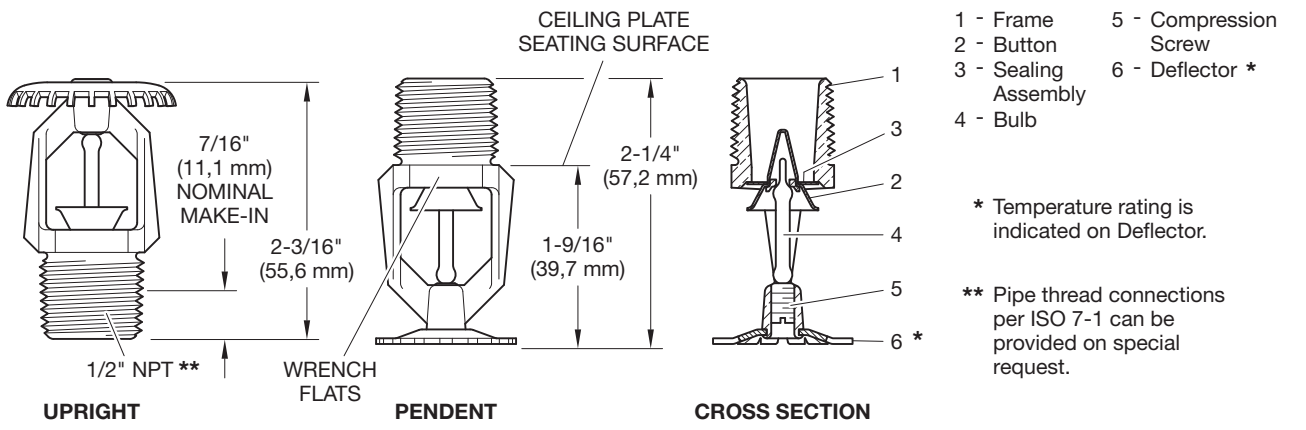


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 IN. NPT

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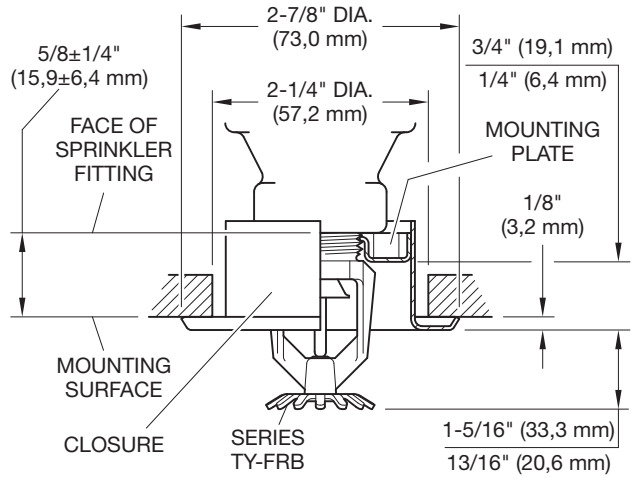


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 IN. NPT

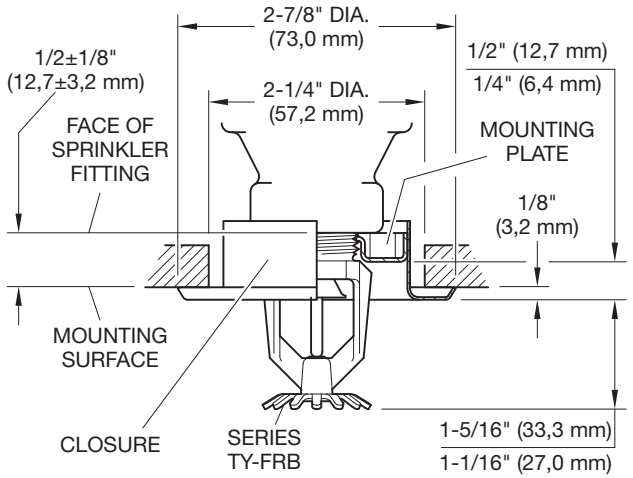


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 IN. NPT

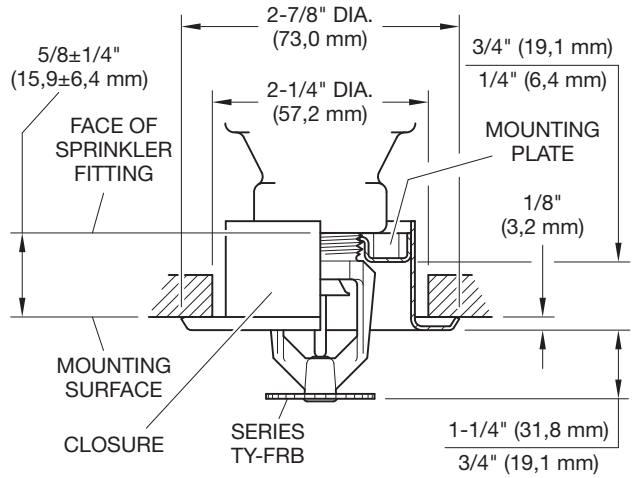


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 IN. NPT

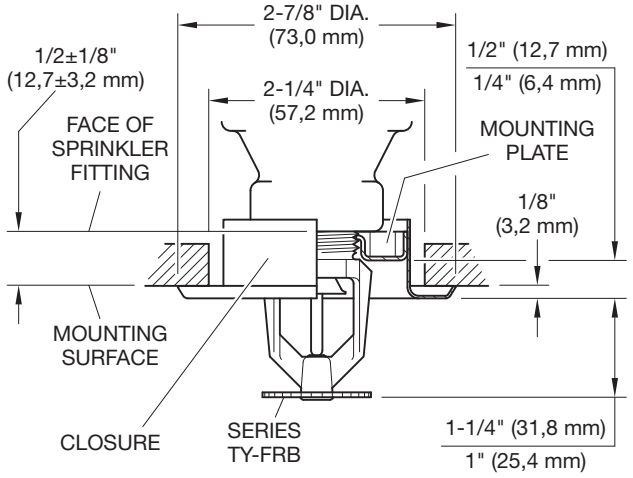


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 IN. NPT

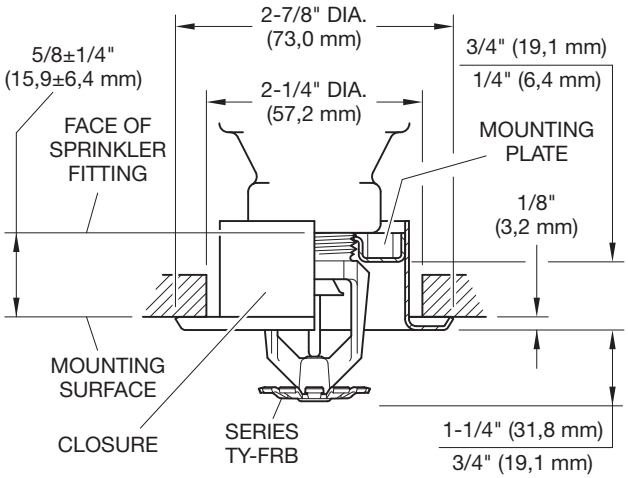


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 IN. NPT

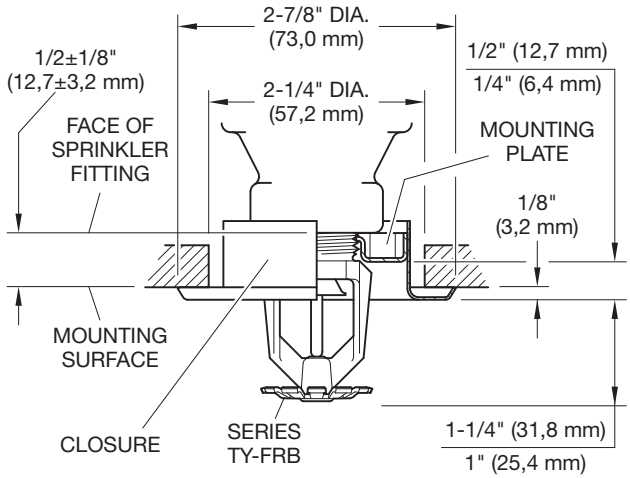


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 IN. NPT

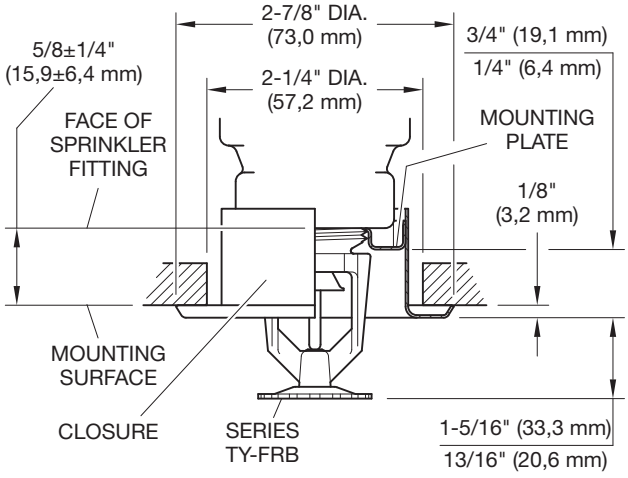


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 IN. NPT

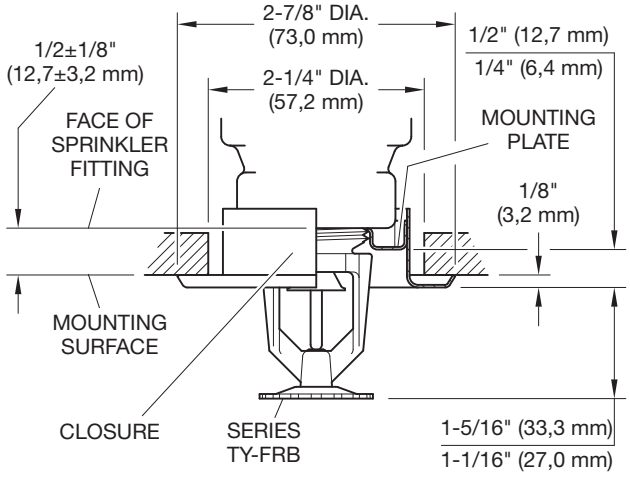


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 IN. NPT

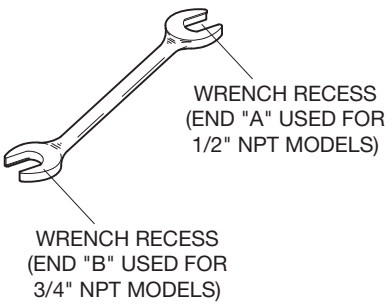


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

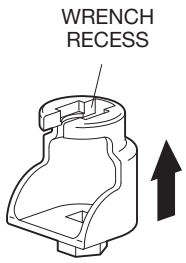


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

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K-Factor	Type	Temperature	Sprinkler Finish[5]			
			Bulb Liquid Color	Natural Brass	Chrome Plated	Polyester[c]
2.8 1/2 in. 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)[a] 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)[b] 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 in. 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)[a] 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)[b] Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
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, the sprinklers are UL and C-UL Listed as corrosion-resistant sprinklers.

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

			Sprinkler Finish[8]					
K-Factor	**Type**	**Temperature**	**Bulb Liquid Color**	**Natural Brass**	**Chrome Plated**	**Polyester[c]**	**Poly-Stainless[c]**	**Lead Coated**
5.6 1/2 in. NPT	**Pendent (TY3231) and Upright (TY3131)**	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2	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)[a] Figure 10	135°F (57°C)	Orange	1, 2, 4, 5			1, 2	N/A[d]
		155°F (68°C)	Red					
		175°F (79°C)	Yellow					
		200°F (93°C)	Green					
		286°F (141°C)	Blue					
	Recessed Pendent (TY3231)[b] Figure 11	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A	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 in. NPT	**Pendent (TY4231) and Upright (TY4131)**	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2	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)[a] Figure 12	135°F (57°C)	Orange	1, 2, 5			1, 2	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)[b] Figure 13	135°F (57°C)	Orange	1, 2, 3, 5			N/A	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 in. NPT	**Pendent (TY4931) and Upright (TY4831)**	135°F (57°C)	Orange	1, 2, 4, 5, 6			N/A	1, 2, 5
		155°F (68°C)	Red					
		175°F (79°C)	Yellow					
		200°F (93°C)	Green					
		286°F (141°C)	Blue					

NOTES
a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
d. Not Available (N/A)
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 Johnson Controls, 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.

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

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K-Factor	Type	Sprinkler Finish			
		Natural Brass	Chrome Plated	Polyester	Lead Coated
2.8 1/2 in. NPT	Pendent (TY1231) and Upright (TY1131)	175 psi (12,1 bar)			N/A[2]
	Recessed Pendent (TY1231)				
4.2 1/2 in. NPT	Pendent (TY2231) and Upright (TY2131)	175 psi (12,1 bar)			N/A
	Recessed Pendent (TY2231)				
5.6 1/2 in. NPT	Pendent (TY3231) and Upright (TY3131)	250 psi (17,2 bar) or 175 psi (12,1 bar)[1]			
	Recessed Pendent (TY3231)				
8.0 3/4 in. 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 in. 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.
2. Not applicable (N/A).

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers 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 taken 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.

P/N 57 – XXX – X – XXX

SIN		
330	2.8K UPRIGHT (1/2 in. NPT)	TY1131
331	2.8K PENDENT (1/2 in. NPT)	TY1231
340	4.2K UPRIGHT (1/2 in. NPT)	TY2131
341	4.2K PENDENT (1/2 in. NPT)	TY2231
370	5.6K UPRIGHT (1/2 in. NPT)	TY3131
371	5.6K PENDENT (1/2 in. NPT)	TY3231
390	8.0K UPRIGHT (3/4 in. NPT)	TY4131
391	8.0K PENDENT (3/4 in. NPT)	TY4231
360	8.0K UPRIGHT (1/2 in. NPT)	TY4831
361	8.0K PENDENT (1/2 in. NPT)	TY4931

SPRINKLER FINISH	
1	NATURAL BRASS
2	POLY-STAINLESS GREY ALUMINUM (RAL9007)[1] POLYESTER
3	PURE WHITE POLYESTER (RAL9010)[2]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[3]
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)

NOTES
1. Available only on TY3131, TY3231, TY4131, and TY4231
2. Eastern Hemisphere sales only.
3. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires longer lead time to manufacture.

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

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

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*)

* Refer to Technical Data Sheet TFP770

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

1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700

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Johnson Controls

Fire Sprinkler Pipe

A53 Schedule 40

Submittal Data Sheet



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RSN: 1474602
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FM Approved and Fully Listed Sprinkler Pipe
Wheatland's A53 Schedule 40 steel fire sprinkler pipe is UL® Listed and FM Approved, sizes 1–6 NPS, for use in fire sprinkler pipe applications, and is suitable for welding, threading and grooving. 8 NPS Schedule 40 is FM Approved but not UL Listed.

Approvals and Specifications
The product meets or exceeds the following standards:

- ASTM A53, Type F, Grade A, 1–4"
- ASTM A53, Type E, Grade B, 2–8"
- ASME B36.10M
- Federal Specification WW-P-404

Manufacturing Protocols
The weld seam of Wheatland's A53 ERW Grade B is heat-treated after welding to 1,400° F; we slowly cool the steel in order to toughen it and reduce its brittleness. Our products are subjected to the toughest possible testing protocols to ensure the highest quality and long-lasting performance.

Wheatland's SureThread™ standard steel pipe is hot-formed and heated during tube formation—not just the edges. As the coiled steel reaches 2,450° F, rollers bend the steel into a cylindrical shape, and the pressure and heat fuse the edges together. There are no flash forms in this process, allowing for a continuous weld. It all adds up to an extremely strong yet easily machinable pipe. Our 1–4" SureThread product is a full-bodied annealed product.

Finishes and Coatings
The average weight of zinc coating shall not be less than 1.8 ounces per square foot of surface (inside and outside). When galvanized pipe is bent or otherwise fabricated to a degree that causes zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

Wheatland's MIC SHIELD™ antimicrobial coating, when initially applied to the inner wall of the pipe, acts as a sanitizing agent to clean the contact surface. MIC SHIELD coating thereafter adheres to the pipe wall, serving as a protective coating that guards against contamination by impeding the attachment of microbes to the pipe wall. This limits the opportunities for corrosion from microbiological organisms in the water supply when the sprinkler pipe is initially installed. The integrity and benefits of this protection can be preserved through a combination of additional and routine treatment options outlined in NFPA 13. MIC SHIELD coating is available for Wheatland black steel pipe, sizes 1–6" and 8" upon request.

WEIGHTS AND DIMENSIONS CHART

NPS	NOM. OD INCHES	NOMINAL WALL	WT./FT. H_2O FILLED	WT./LBS. FT.
1	1.315	0.133	2.052	2.17
1¼	1.660	0.140	2.919	2.27
1½	1.990	0.145	3.601	2.72
2	2.375	0.154	5.109	3.66
2½	2.875	0.203	7.871	5.80
3	3.500	0.216	10.783	7.58
4	4.500	0.237	16.311	10.88
5	5.563	0.258	23.262	14.63
6	6.625	0.280	31.498	18.99
8*	8.625	0.322	50.210	28.58

**8 NPS Schedule 40 is FM Approved but not UL Listed.*

Product Marking
Each length of Wheatland fire sprinkler pipe is continuously stenciled to show the manufacturer, type of pipe, grade, size and length. Bar coding is acceptable as a supplementary identification method.

SUBMITTAL INFORMATION

PROJECT: _____ CONTRACTOR: _____ DATE: _____

ENGINEER: _____ SPECIFICATION REFERENCE: _____ SYSTEM TYPE: _____

LOCATIONS: _____ COMMENTS: _____

WFS-080416

700 South Dock Street
Sharon, PA 16146
P 800.257.8182
F 724.346.7260

info@wheatland.com
wheatland.com
Follow us on Twitter:
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Wheatland Tube
A DIVISION OF ZEKELMAN INDUSTRIES

SPF™ Cast Iron Threaded Fittings

UL FM ULC APPROVED

SPF™ Cast Iron Threaded Fittings are UL/ULC Listed and FM Approved for 300 psi service. These fittings are available in a range of styles and specifications. All SPF™ Cast Iron Threaded Fittings dimensions conform to ANSI B16.4 Class 125 requirements, and threads are NPT per ANSI/ASME B1.20.1.



Project Information:		Approval Stamp:
Project: undefined		
Date: undefined	**Phone:** undefined	
Architect / Engineer: undefined		
Contractor: undefined		
Address: undefined		
Notes 1: undefined		
Notes 2: undefined		

 For the latest UL/ULC Listed and FM Approved pressure ratings, versus pipe schedule, go to www.anvilstar.com or contact your local AnvilStar representative

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AnvilStar™ SPF™ Product - Submittal Sheet

FIGURE MT-3 THREADED MECHANICAL BRANCH TEE

Model MT-3 mechanical tee serves the same function as MT-1 & MT-8 but uses a steel electro-plated U-Bolt to save space and for easier installation in tight places. It is ideal for direct connections with sprinkler heads and drop nipples.





UL UL C FM APPROVED

Material Specifications:

Housing:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12.

U-bolt & Nuts:
U-bolt is carbon steel SAE Grade 2, Zinc Plated. with plated hex nuts carbon steel AST A194, Zinc Plated.

Threads:
MT-3 NPT per ANSI/ASME B1.20.1

Coatings:
❑ Zinc Electroplated

Gaskets: Materials (Specify when ordering)
Properties as designated in accordance with ASTM D-2000

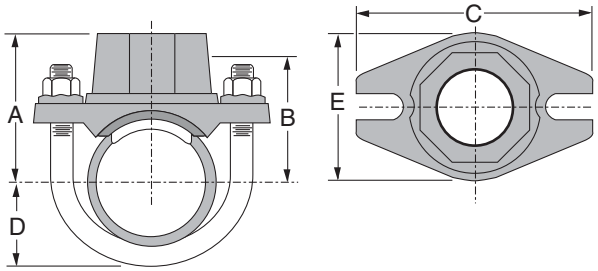
❑ **Grade "E" EPDM** (Green color code)
-30°F to 230°F (Service Temperature Range) (-34°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, salts, oil-free air and many chemical services not involving hydrocarbons, oils or gases.
NOT FOR USE WITH HYDROCARBONS.

❑ Other_____

Project Information:		Approval Stamp:
Project: undefined		
Date: undefined	**Phone:** undefined	
Architect / Engineer: undefined		
Contractor: undefined		
Address: undefined		
Notes 1: undefined		
Notes 2: undefined		

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RSN: 4746602
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FIGURE MT-3 THREADED MECHANICAL BRANCH TEE



MT-3 Mechanical Tees

Nominal Size	Pipe O.D.	Hole Diameter		Max. Wk. Pressure	Dimensions-				Approx. Wt. Ea.
		Min. Diameter	Max. Diameter		*A*	*B*	*C*	*T Take-Out*	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./kg*
1¼ x ½	1.660 x 0.840	1 3/16	1 5/16	300	2⅛	3½	2¼	1⅝	0.8
32 x 12	*42.4 x 21.3*	*30*	*33*	*20.7*	*54*	*89*	*57.2*	*42*	*0.4*
1¼ x ¾	1.660 x 1.050	1 3/16	1 5/16	300	2⅛	3½	2¼	1⅝	0.8
32 x 19	*42.4 x 26.7*	*30*	*33*	*20.7*	*54*	*89*	*57.2*	*42*	*0.4*
1¼ x 1	1.660 x 1.315	1 3/16	1 5/16	300	2¼	3½	2¼	1⅝	1.1
32 x 25	*42.4 x 33.7*	*30*	*33*	*20.7*	*58*	*89*	*57.2*	*41*	*0.5*
1½ x ½	1.900 x 0.840	1 3/16	1 5/16	300	2¼	3½	2¼	1¾	0.8
40 x 12	*48.3 x 21.3*	*30*	*33*	*20.7*	*57*	*89*	*57.2*	*48*	*0.4*
1½ x ¾	1.900 x 1.050	1 3/16	1 5/16	300	2¼	3½	2¼	1¾	0.9
40 x 19	*48.3 x 26.7*	*30*	*33*	*20.7*	*57*	*89*	*57.2*	*48*	*0.4*
1½ x 1	1.900 x 1.315	1 3/16	1 5/16	300	2⅜	3½	2¼	1¾	1.1
40 x 25	*48.3 x 33.7*	*30*	*33*	*20.7*	*61*	*89*	*57.2*	*44*	*0.5*
2 x ½	2.375 x 0.840	1 3/16	1 5/16	300	2½	3¾	2¼	2	0.9
50 x 12	*60.3 x 21.3*	*30*	*33*	*20.7*	*64*	*95*	*57.2*	*51*	*0.4*
2 x ¾	2.375 x 1.050	1 3/16	1 5/16	300	2½	3¾	2¼	2	0.9
50 x 19	*60.3 x 26.7*	*30*	*33*	*20.7*	*64*	*95*	*57.2*	*51*	*0.4*
2 x 1	2.375 x 1.315	1 3/16	1 5/16	300	2⅝	3¾	2¼	2	1.1
50 x 25	*60.3 x 33.7*	*30*	*33*	*20.7*	*67*	*95*	*57.2*	*50*	*0.5*
2½ x ½	2.875 x 0.840	1 3/16	1 5/16	300	2¾	4¼	2¼	2¼	0.9
65 x 12	*73.0 x 21.3*	*30*	*33*	*20.7*	*70*	*108*	*57.2*	*57*	*0.4*
2½ x ¾	2.875 x 1.050	1 3/16	1 5/16	300	2¾	4¼	2¼	2¼	0.9
65 x 19	*73.0 x 26.7*	*30*	*33*	*20.7*	*70*	*108*	*57.2*	*57*	*0.4*
2½ x 1	2.875 x 1.315	1 3/16	1 5/16	300	2⅞	4¼	2¼	2¼	1.1
65 x 25	*73.0 x 33.7*	*30*	*33*	*20.7*	*73*	*108*	*57.2*	*56*	*0.5*

*** All MT-3 branches can be used as mechanical crosses.

BSP equivalent is available as a MT-9

§ – For additional Bolt Torque information, see Technical Data section

Note: Tighten nuts alternatively to a recommended maximum torque of 20 ft-lbs on pipe wall less than schedule 10 or 25 ft-lbs on pipe walls schedule 10 and above.

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Fig. 200 - "Trimline" Adjustable Band Hanger

c UL US LISTED
FM APPROVED

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 —

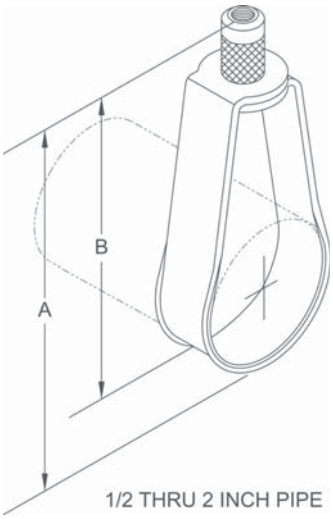
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2½" thru 8") Spring tension on nut holds it securely in hanger before installation.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

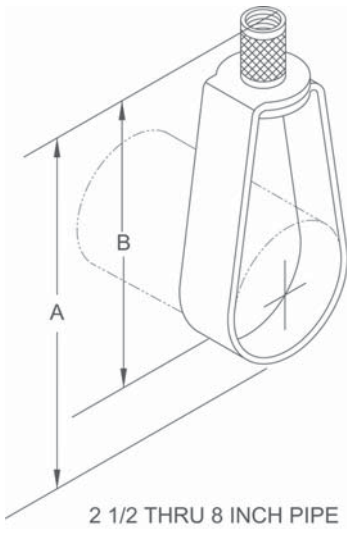
Maximum Temperature — 650°F

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

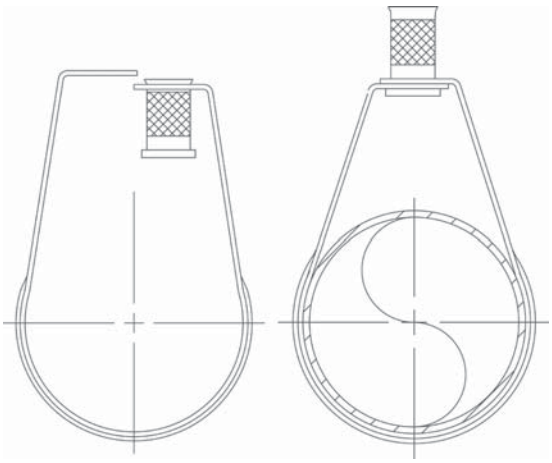
Order By — Figure number and pipe size



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. Wt./100
1/2	3/8	8mm or 10mm	3⅛	2⅝	400	11
3/4	3/8	8mm or 10mm	3⅛	2½	400	11
1	3/8	8mm or 10mm	3⅜	2⅝	400	12
1¼	3/8	8mm or 10mm	3¾	2⅞	400	13
1½	3/8	8mm or 10mm	3⅞	2⅞	400	14
2	3/8	8mm or 10mm	4½	3	400	15
2½	3/8	10mm	5⅝	4⅛	600	27
3	3/8	10mm	5⅞	4	600	29
3½	3/8	10mm	7⅜	5¼	600	34
4	3/8	10mm	7⅜	5	1000	35
5	1/2	12mm	9⅛	6¼	1250	66
6	1/2	12mm	10⅛	6¾	1250	73
8	1/2	12mm	13⅛	8¾	1250	136

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

Component of State of California OSHPD Approved Seismic Restraints System

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)**. 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. Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines.

Finish — Plain

Note — Available in Electro-Galvanized and HDG finish.

Order By — Figure number, rod size and finish

Fig. 65 Patent #4,570,885

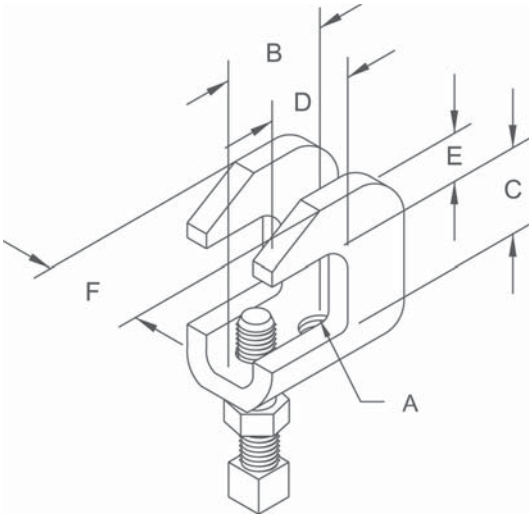


Fig. 65

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	1½	3/4	1	9/16	1¼	1130	55
5/8	1½	3/4	1	9/16	1¼	1130	55

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

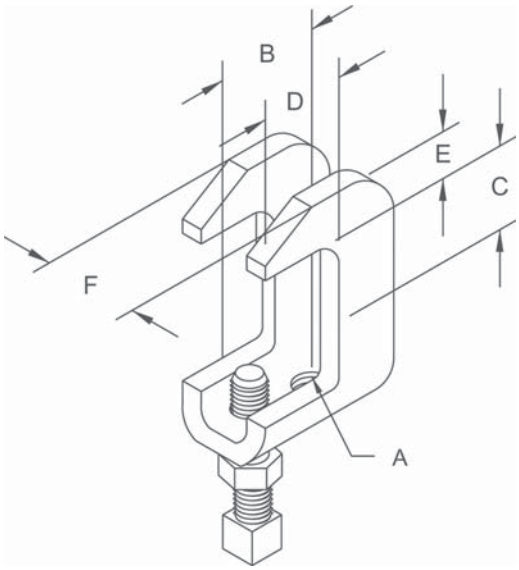


Fig. 66

Dimensions • Weights

Rod Size A	B	C	D	E	F	Max. Rec. Load Lbs.*	Approx. Wt./100
3/8	1 3/16	1¼	1	7/16	1	610	28
1/2	1½	1¼	1	9/16	1¼	1130	55
5/8	1½	1¼	1	9/16	1¼	1130	55

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

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Fig. 70 - Steel Rod Coupling
Fig. 70R - Steel Reducing Rod Coupling
Fig. 70S - Short Pattern Steel Rod Coupling
Fig. 71 - Steel Window Rod Coupling

Size Range — 1/4" thru 1 1/2" rod

Material — Carbon Steel

Function — Used for coupling two threaded rods together of equal or reduced rod sizes, with or without inspection hole.

Finish — Electro-Galvanized

Note — Available in HDG finish or Stainless Steel materials.

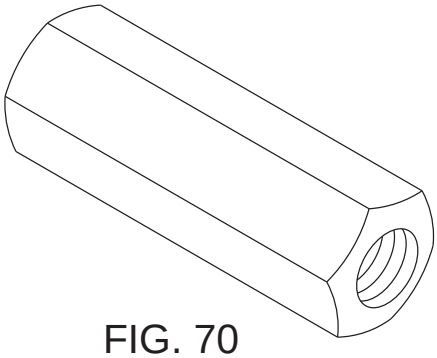


FIG. 70

Fig. 70

Dimensions • Weights

Rod Size	Length	Max Rec. Load Lbs.	Approx. Wt./100
1/4	7/8	240	2
5/16	1 3/4	300	13
3/8	1 3/4	610	11
1/2	1 3/4	1130	11
5/8	2 1/8	1810	16
3/4	2 1/4	2710	27
7/8	2 1/2	3770	57
1	2 3/4	4960	70

1 1/8" - 1 1/2" — Consult factory for specifications

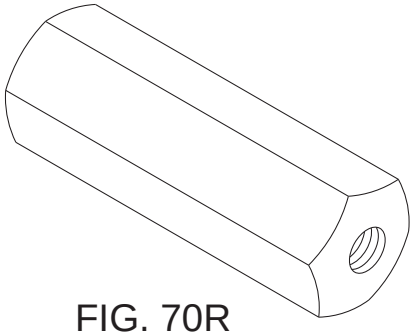


FIG. 70R

Fig. 70R

Dimensions • Weights

Rod Size	Length	Max Rec. Load Lbs.	Approx. Wt./100
3/8 x 1/4	1	240	4
1/2 x 3/8	1 1/4	610	7
5/8 x 1/2	1 1/4	1130	14
3/4 x 5/8	1 1/2	1810	21
7/8 x 3/4	1 3/4	2710	40

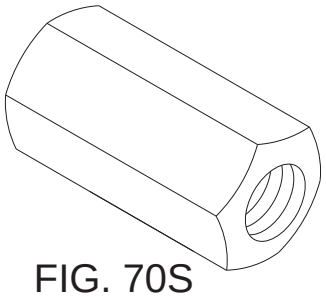


FIG. 70S

Fig. 70S/Fig. 71

Dimensions • Weights

Rod Size	Length	Max Rec. Load Lbs.	Approx. Wt./100
3/8	1 1/8	610	4
1/2	1 1/4	1130	6

For rod sizes 5/8" to 1" - consult factory

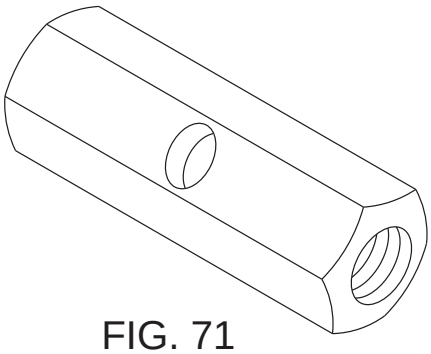


FIG. 71

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Fig. 98 - Rod Stiffener

Component of State of California OSHPD Approved Seismic Restraints System

Size Range — Secures 3/8" thru 7/8" hanger rod

Material — Carbon Steel

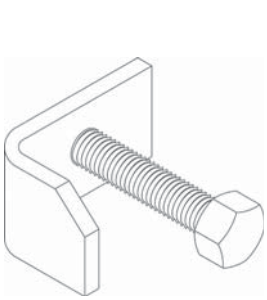
Function — Secures channel to hanger rod for vertical seismic bracing.

Approvals — Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines

Finish — Electro Galvanized

Note — Available in HDG finish or Stainless Steel materials.

Order By — Figure number



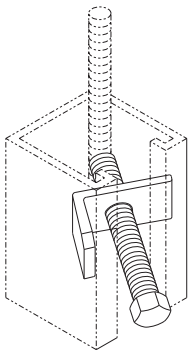


Fig. 99 - All Thread Rod Cut to Length

Size Range — Secures 3/8" thru 7/8" rod in 1" increments

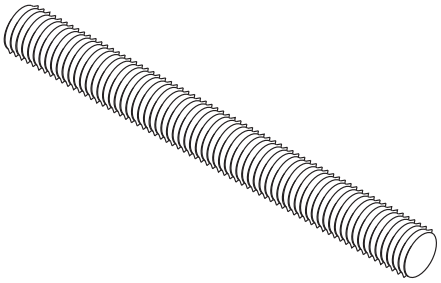
Material — Carbon Steel

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

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

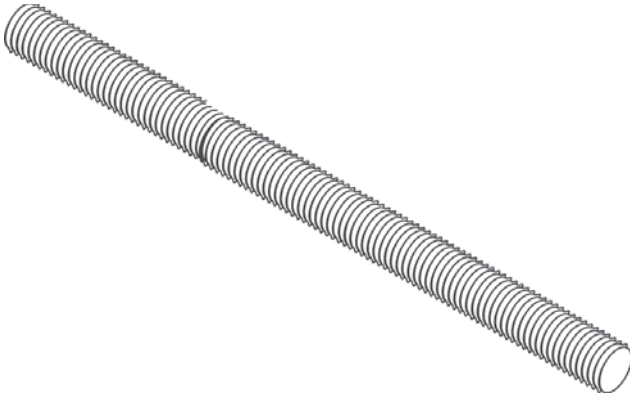
Material — Carbon Steel

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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