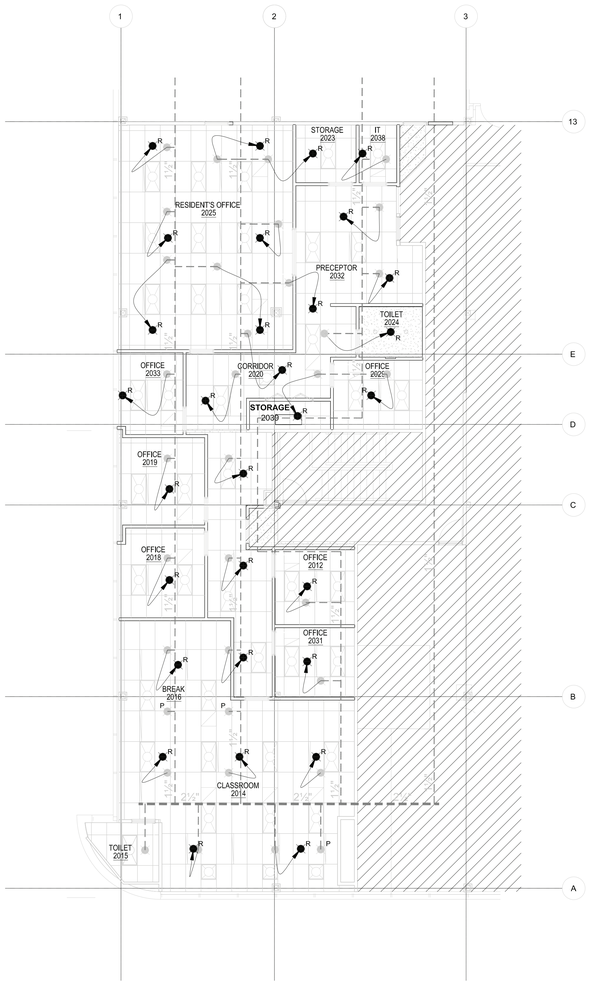


FIRE PROTECTION PLAN

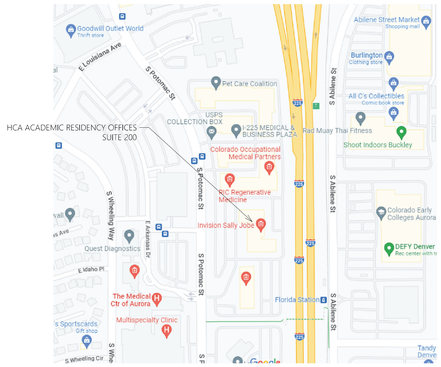
SCALE: 1/8" = 1'-0"

0' 2' 4' 6' 8' 10' 12' 14' 16'

	(34)	EXISTING TYCO SPRINKLER	TY3211	5.6K
R	(30)	RELOCATED TYCO SSP SPRINKLER	TY3211	5.6K
P	(3)	PLUGGED PENDANT SPRINKLER		
		EXISTING SPRINKLER PIPE		

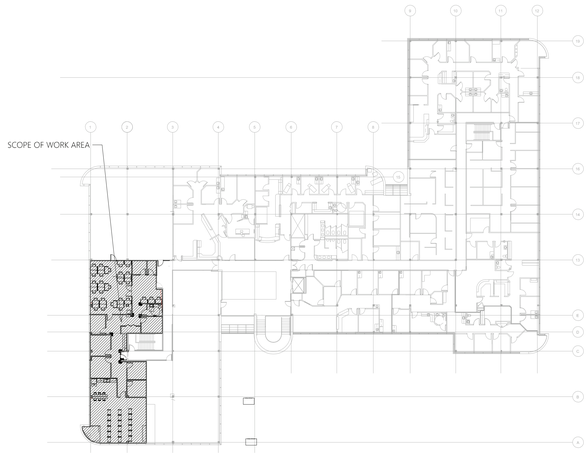
FIRE SPRINKLER LEGEND

NTS



VICINITY PLAN

SCALE: NONE

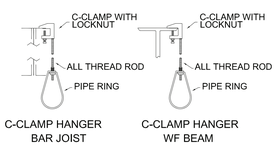


KEY PLAN

SCALE: NONE

HANGER SPACING LEGEND	PER NFPA 13 TABLE								
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	15-0	15-0	15-0
CPVC	5-6	6-0	6-6	7-0	8-0	9-0	N/A	N/A	N/A

WHERE STATIC OR OPERATING PRESSURES EXCEED 100 PSI HANGERS SHALL BE PER NFPA 13



HANGER DETAILS

NTS

CITY OF AURORA NOTES:

* THIS PROJECT CONSISTS OF A TENANT IMPROVEMENT TO SUITE 200. INTERIOR WALLS WILL BE DEMOLISHED AND NEW WALLS LAID OUT. (30) RELOCATED FIRE SPRINKLERS TOTAL TO STAY WITHIN CODE. THIS SCOPE OF WORK WILL NOT AFFECT THE EXISTING HYDRAULIC DESIGN AREA(S).
* TYPE OF CONSTRUCTION: II-B.
* BUILDING OCCUPANCY CLASSIFICATION PER THE 2015 IBC IS B, E, AND S.
* SYSTEM CAN BE CALCULATED AS A WET PIPE SYSTEM DESIGNED TO THE 2013 NFPA13.
* 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 2013 NFPA 13 EDITION.
* ALL ROOMS INCLUDING CLOSETS SHALL BE SPRINKLERED.
* LOW POINTS IN SYSTEM SHALL HAVE PROVISIONS FOR DRAINAGE.
* ALL MATERIAL TO MEET 2013 NFPA 13 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 OR @ 50 PSI ABOVE CITY PRESSURE, WHICHEVER IS GREATER.
*HYDRAULIC ELEVATIONS ARE PROGRESSIVE FROM THE FIRST FLOOR FIN FLOOR TO THE HIGHEST LEVEL.
*HEAD CABINET WITH SPARE SPRINKLERS, ESCUTCHEONS AND WRENCHES TO BE PROVIDED,AS NEEDED.
*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 2013 NFPA 13, 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, 2013 NFPA 13 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. 2013 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)
* 2020 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: 2
* THIS BUILDING FIRE SPRINKLED:YES
* THIS IS A NEW SYSTEM: NO
* CONSTRUCTION TYPE: ~~II-B~~ UBC Type II-N
* SQUARE FOOTAGE PROJECT AREA: 3,193 SQ. FT.

* FIRE SPRINKLER CONTRACTOR:
TJ FIRE PROTECTION
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 WEST ALAMEDA PARKWAY SUITE 135 LAKEWOOD, COLORADO 80228
KERRY L MADIGAN CERT# 29596 FIRE PROTECTION ENGINEER
303-985-3300 /303-985-5594

City of Aurora Building Division
Counter Permit intake by: RET
Date: *Dec 08, 2022*
RSN: *1677981*
Permit: *2022 2254516 CT*
2015 INTERNATIONAL CODES & 2020 NEC Scope of permit to be field verified.

Provide a full size set of legible approved construction documents **PRINTED IN COLOR** for review by the Field Inspector.

COA Adopted Codes for this project:
ICC-2015 - NEC-2020
NFPA 13-2013 - NFPA 72-2013
COA Amendments 22 & 66

TJ FIRE PROTECTION
DENVER, COLORADO 80202
720-434-5065

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 11/30/22 PROFESSIONAL ENGINEER

HCA ACADEMIC RESIDENCY OFFICES

1400 S. POTOMAC, SUITE 200
AURORA, COLORADO 80012

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PROJECT NUMBER:
VERITAS: 22-1447

DATE: 11.30.22
DRAWN BY: BG
CHECKED BY: KLM

ISSUE:

11.30.22	PERMIT SET

HCA Academic FP.dwg

FIRE SPRINKLER PLAN

FP1

1 OF 1

RSN: 1677981
Permit # 2022-2254516-CT
Sheet 2 of 17

Series TY-L – 5.6 and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers Standard Response, Standard Coverage

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.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/series-ty-l-5-6-and-8K

General Description

The TYCO Series TY-L 5.6 and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers described herein are standard response, standard coverage, solder type spray sprinklers. They are designed for use in light, ordinary, and extra-hazard commercial occupancies such as banks, hotels, shopping malls, factories, refineries, and chemical plants.

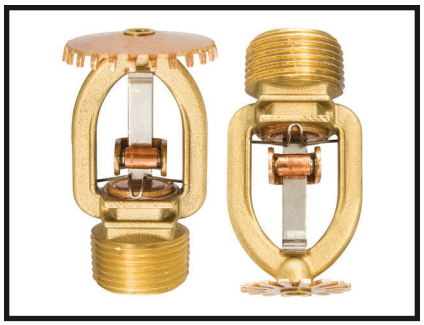
The Series TY-L Recessed Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. It uses a two-piece Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) Recessed Escutcheon. The Recessed Escutcheon provides 1/4 in. (6,4 mm) of recessed adjustment or up to 1/2 in. (12,7 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 about 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-L Pendent Sprinkler can be obtained by utilizing the Series TY-L Pendent Sprinkler in combination with the Model S Shield.

NOTICE

The Series TY-L 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, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any other 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. Contact the installing contractor or product manufacturer 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)

TY3111 . . . Upright 5.6K, 1/2 in. NPT
TY3211 . . .Pendent 5.6K, 1/2 in. NPT
TY4111 . . . Upright 8.0K, 3/4 in. NPT
TY4211 . . .Pendent 8.0K, 3/4 in. NPT
TY4811 . . . Upright 8.0K, 1/2 in. NPT
TY4911 . . .Pendent 8.0K, 1/2 in. NPT

TY3111 is a re-designation for S1800 and G3111
TY3211 is a re-designation for S1801 and G3112
TY4111 is a re-designation for S1810 and G3101
TY4211 is a re-designation for S1811 and G3102
TY4811 is a re-designation for S1805
TY4911 is a re-designation for S1806

RSN: 1677981
Permit # 2022-2254516-CT
Sheet 3 of 17

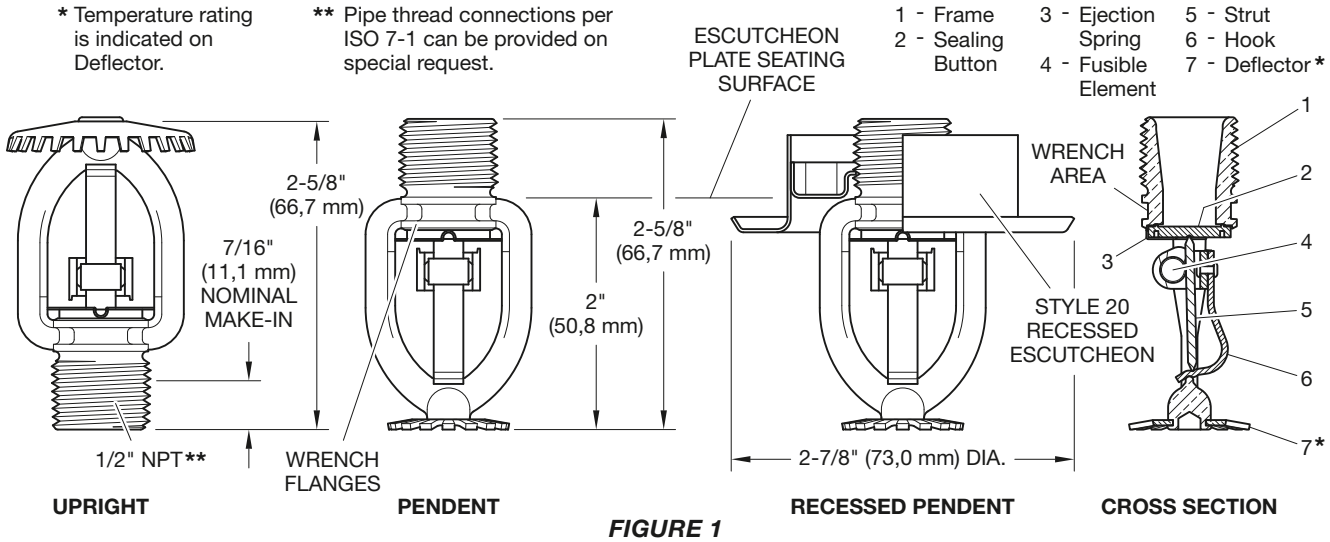


FIGURE 1
SERIES TY-L UPRIGHT (TY3111) AND PENDENT (TY3211) SPRINKLERS, 5.6 K-FACTOR, 1/2 IN. NPT

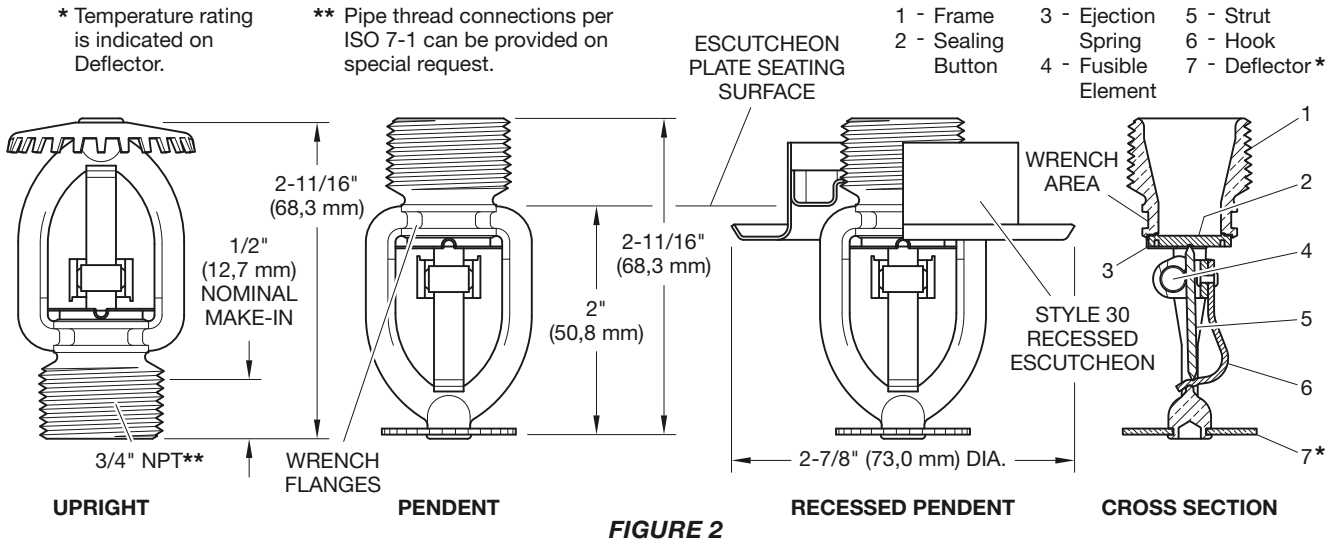


FIGURE 2
SERIES TY-L UPRIGHT (TY4111) AND PENDENT (TY4211) SPRINKLERS, 8.0 K-FACTOR, 3/4 IN. NPT

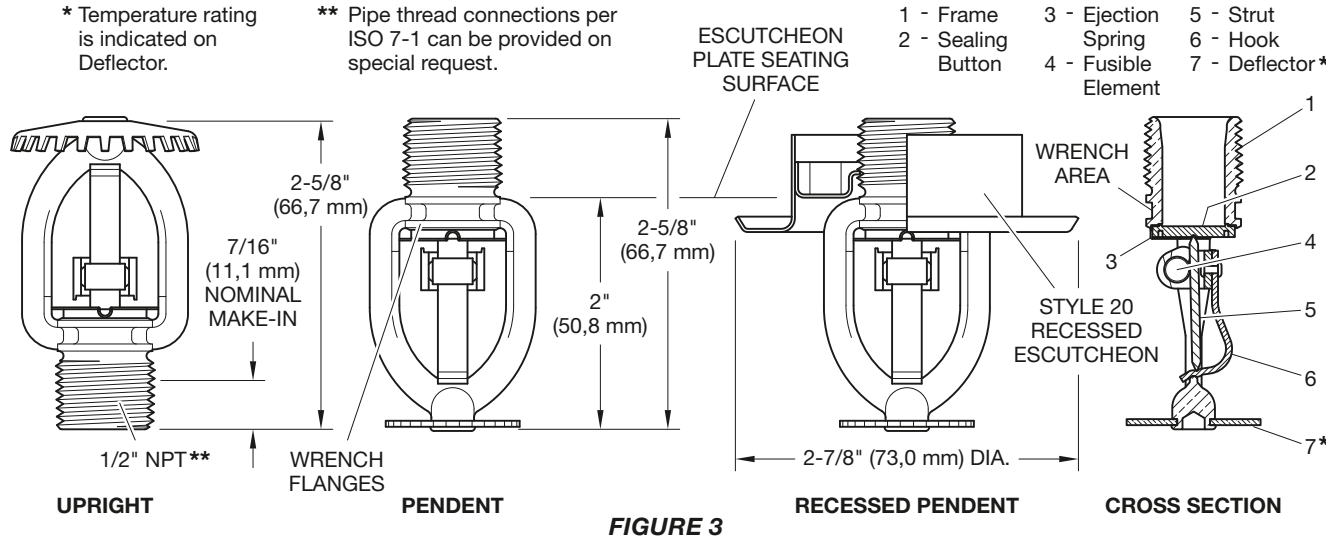


FIGURE 3
SERIES TY-L UPRIGHT (TY4811) AND PENDENT (TY4911) SPRINKLERS, 8.0 K-FACTOR, 1/2 IN. NPT

K-Factor	Type	Temperature Rating	Frame Color Code	Sprinkler Finish				
				Natural Brass	Chrome Plated	Lead Coated	Wax Coated	Wax-Over-Lead Coated
5.6 1/2 in. NPT	Upright (TY3111)	165°F (74°C)	Unpainted	1, 2, 3, 5, 7		1, 2, 3, 7		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Pendent (TY3211)	165°F (74°C)	Unpainted	1, 2, 3, 7		1, 2, 3, 7		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Recessed Pendent (TY3211 w/Style 20)	165°F (74°C)	Unpainted	1, 2, 3, 7		6		
		212°F (100°C)	White	1, 2, 3, 7				

NOTES:
1. UL Listed
2. C-UL Listed
3. FM Approved
4. FM Approved for maximum 150°F (68°C) ambient temperatures
5. LPCB Approved (LPCB Ref. No. 094a/03)
6. Not Available (N/A)
7. EAC Appproved

TABLE A
SERIES TY-L 5.6 K-FACTOR SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

K-Factor	Type	Temperature Rating	Frame Color Code	Sprinkler Finish				
				Natural Brass	Chrome Plated	Lead Coated	Wax Coated	Wax-Over-Lead Coated
8.0 3/4 in. NPT	Upright (TY4111)	165°F (74°C)	Unpainted	1, 2, 3, 5		1, 2, 3		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Pendent (TY4211)	165°F (74°C)	Unpainted	1, 2, 3		1, 2, 3		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Recessed Pendent (TY4211 w/Style 30)	165°F (74°C)	Unpainted	1, 2		6		
		212°F (100°C)	White					
8.0 1/2 in. NPT	Upright (TY4811)	165°F (74°C)	Unpainted	1, 2, 3, 5		1, 2, 3		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Pendent (TY4911)	165°F (74°C)	Unpainted	1, 2, 3		1,2,3		
		212°F (100°C)	White					
		280°F (138°C)	Blue			6		
	Recessed Pendent (TY4911 w/Style 20)	165°F (74°C)	Unpainted	1, 2		6		
		212°F (100°C)	White					

NOTES:
1. UL Listed
2. C-UL Listed
3. FM Approved
4. FM Approved for maximum 150°F (68°C) ambient temperatures
5. LPCB Approved (LPCB Ref. No. 094a/03)
6. Not Available (N/A)

TABLE B
SERIES TY-L 8.0 K-FACTOR SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Technical Data

Approvals
UL and C-UL Listed
FM and LPCB Approved
EAC Approved

See Tables A and B for complete approval information including corrosion resistant status.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=5.6 gpm/psi½ (80,6 Lpm/bar½)
K=8.0 gpm/psi½ (115,2 Lpm/bar½)

Temperature Ratings
See Tables A and B

Finishes
Sprinkler: See Tables A and B Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated

Physical Characteristics
Frame . . . . . Brass
Sealing Button . . . . . Bronze w/TEFLON
Ejection Spring . . . . . Stainless Steel
Strut . . . . . MONEL
Hook . . . . . Bronze/MONEL
Deflector . . . . . Bronze
Fusible Element . . . . . Solder, Copper, Stainless Steel

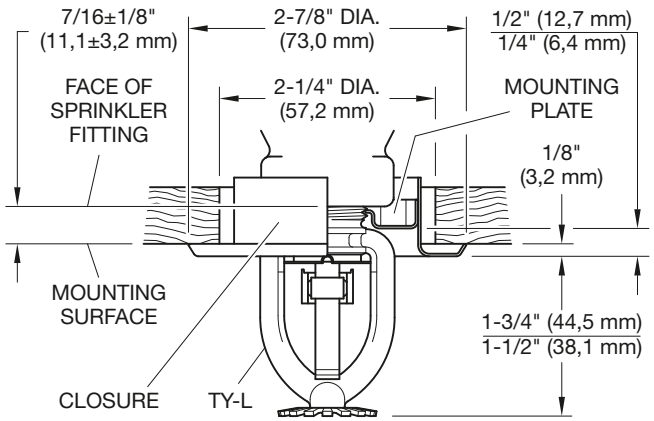


FIGURE 4
SERIES TY-L (TY3211) RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 1/2 IN. TOTAL ADJUSTMENT STYLE 20 RECESSED ESCUTCHEON 5.6 K-FACTOR, 1/2 IN. NPT

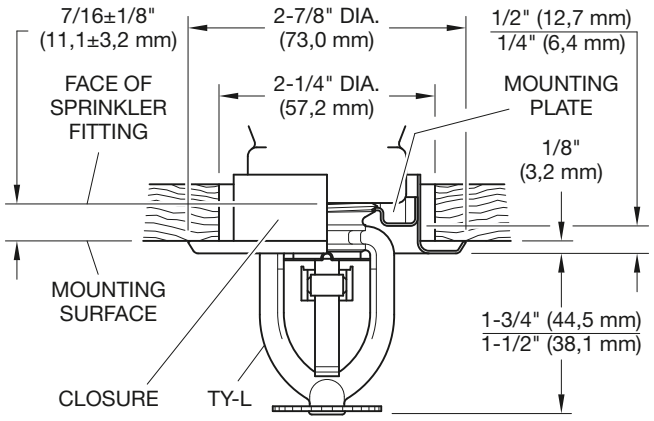


FIGURE 5
SERIES TY-L (TY4211) RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 1/2 IN. TOTAL ADJUSTMENT STYLE 30 RECESSED ESCUTCHEON 8.0 K-FACTOR, 3/4 IN. NPT

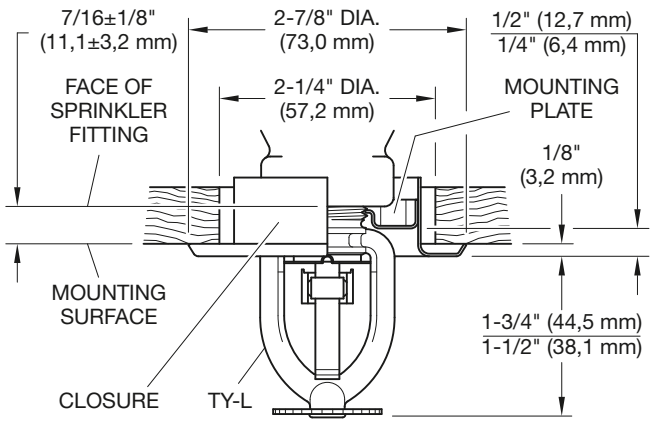


FIGURE 6
SERIES TY-L (TY4911) RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 1/2 IN. TOTAL ADJUSTMENT STYLE 20 RECESSED ESCUTCHEON 8.0 K-FACTOR, 1/2 IN. NPT

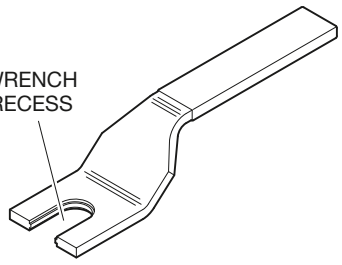


FIGURE 7
W-TYPE 9 SPRINKLER WRENCH

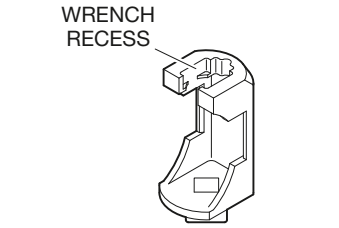


FIGURE 8
W-TYPE 10 RECESSED SPRINKLER WRENCH

Operation

A copper tube sealed by two stainless steel balls holds a fusible alloy. When the rated temperature is reached, the alloy melts and the balls are forced toward each other. This releases the tension mechanism and allows the sprinkler to operate.

Design Criteria

The TYCO Series TY-L 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 the UL Listing based on the requirements of NFPA 13 and FM Approval based on the requirements of FM Loss Prevention Data Sheets. Use only the Style 20 or 30 Recessed Escutcheon, as applicable, for recessed pendent installations.

Installation

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

General Instructions
A leak tight 1/2 in. NPT sprinkler joint should be obtained with a torque of 7 to 14 ft-lb (9,5 to 19,0 Nm). A leak- tight 3/4 in. NPT sprinkler joint should be obtained with a torque of 10 to 20 ft-lb (13,4 to 26,8 Nm). Higher levels of torque may 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-L Upright and Pendent Sprinklers Installation
The Series TY-L 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 9 Sprinkler Wrench, see Figure 7. For wax coated sprinklers, use an 8 or 10 in. adjustable Crescent wrench. With reference to Figures 1, 2, and 3, apply the W-Type 9 Sprinkler Wrench to the wrench area, or as applicable, apply the adjustable Crescent wrench to the wrenching flanges.

Wax Coated Sprinklers
When installing wax-coated sprinklers with the adjustable Crescent wrench, take care to prevent damage to the wax coating on the sprinkler wrench flats or frame arms and, consequently, exposure of bare metal to the corrosive environment:

- Open the jaws of the wrench sufficiently wide to pass over the wrench flats without damaging the wax coating.
- Before wrench tightening the sprinkler, adjust the jaws of the wrench to just contact the sprinkler flats.
- After wrench tightening the sprinkler, loosen the wrench jaws before removing the wrench.

After Installation
After installation, complete the following:

- Inspect the sprinkler wrench flats and frame arms and retouch (repair) the wax coating whenever the coating has been damaged and bare metal is exposed.
- Retouch the wax coating on the wrench flats by gently applying a heated 1/8 in. diameter steel rod to the damaged areas of the wax, to smooth it back over areas where bare metal is exposed.

NOTICE

Only retouching of the wax coating applied to the wrench flats and frame arms is permitted, and the retouching is to be performed only at the time of the initial sprinkler installation.

The steel rod should be heated only to the point it can begin to melt the wax, and appropriate precautions need to be taken when handling the heated rod to prevent the installer from being burned.

If attempts to retouch the wax coating with complete coverage are unsuccessful, additional wax can be ordered in the form of a wax stick, the end of which is color coded. Only the correct color coded wax is to be used, and retouching of wrench flats and frame arms is only permitted at the time of initial sprinkler installation.

With the steel rod heated as previously described, touch the rod to the area requiring additional wax with the rod angled downward, and then touch the wax stick to the rod approximately 1/2 in. (12,7 mm) away from the area requiring retouching. The wax will melt and run down onto the sprinkler.

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

Step 1. After installing the Style 20 or 30 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 10 Recessed Sprinkler Wrench, see Figure 8. With reference to Figure 1, 2, or 3, apply the W-Type 10 Recessed Sprinkler Wrench to the sprinkler wrenching flanges.

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

Care and Maintenance

The TYCO Series TY-L 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, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

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

Sprinklers that 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 or over-heated sprinklers must be replaced. 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.

Frequent visual inspections are recommended to be initially performed for corrosion resistant coated sprinklers, after the installation has been

P/N 53 - XXX - X - XXX

		SIN
111	5.6K UPRIGHT (1/2 in. NPT)	TY3111
112	5.6K PENDENT (1/2 in. NPT)	TY3211
101	8.0K UPRIGHT (3/4 in. NPT)	TY4111
102	8.0K PENDENT (3/4 in. NPT)	TY4211
106	8.0K UPRIGHT (1/2 in. NPT)	TY4811
107	8.0K PENDENT (1/2 in. NPT)	TY4911

	SPRINKLER FINISH
1	NATURAL BRASS
6	WAX COATED[1]
7	LEAD COATED[1]
8	WAX OVER LEAD[1]
9	CHROME PLATED

	TEMPERATURE RATING
165	165°F (74°C)
212	212°F (100°C)
280	280°F (138°C)

NOTES:
1. 165°F (74°C) and 212°F (100°C) Temperature Ratings only.

TABLE C
SERIES TY-L PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

completed, to verify the integrity of the corrosion-resistant coating. Thereafter, annual inspections per NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made so as to better determine the exact sprinkler condition and the long-term integrity of the corrosion resistant coating, as it may be affected by the corrosive conditions present.

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, such as, NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

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-L (specify SIN), (specify K-factor), (specify Upright, Pendent, or Recessed Pendent) Sprinkler, Standard Response, Standard Coverage, (specify) temperature rating, (specify) finish or coating, P/N (specify from Table C)

Recessed Escutcheon
Specify: Style (specify) Recessed Escutcheon, (specify material) with (specify*) finish, P/N (specify*)

*Refer to Technical Data Sheet TFP770

Sprinkler Wrench
Specify: W-Type 9 Sprinkler Wrench, P/N 56-000-1-849

Specify: W-Type 10 Sprinkler Wrench, P/N 56-000-1-948

Wax Sticks (for retouching wrench-damaged wax coating)
Specify: Series TY-L Sprinklers, (specify color), color coded Wax Stick for retouching, (specify) temperature rated, P/N (specify):

Red for 165°F (74°C) . . . . . P/N 56-065-1-155
Blue for 212°F (100°C)
and 280°F (138°C) . . . . . P/N 56-065-1-286

Note: *Each wax stick is suitable for retouching up to twenty-five sprinklers. The wax used for 280°F (138°C) sprinklers is the same as for 212°F (100°C) sprinklers. Therefore, the 280°F (138°C) sprinkler is limited to the same maximum ceiling temperature as the 212°F (100°C) sprinkler, which is 150°F (65°C).*

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Johnson Controls

BIS Ductile Fittings

UL Listed and FM Approved at 500 psi



Specifications

Design	ASME B 16.3, ASME B 16.4, ASME B16.39
Threads	ASME B 1.20.1 and BS 21, ISO 7, ISO 228
Material	ASTM A536
Tensile	448 MPa
Elongation	12%
Finish	Black

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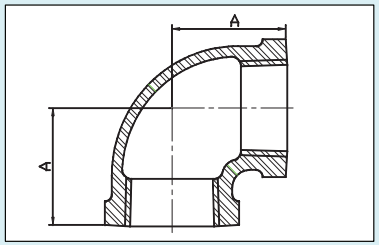
FIG. 90 ELBOWS 90°		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1/2	28.5		0.115	50	200	UL, FM
		1	38.1		0.260	20	60	UL, FM
		1 1/4	44.5		0.440	20	40	UL, FM
		1 1/2	49.3		0.650	15	30	UL, FM
		2	57.2		0.876	8	16	UL, FM
		2 1/2	68.6		1.310	12	12	UL, FM

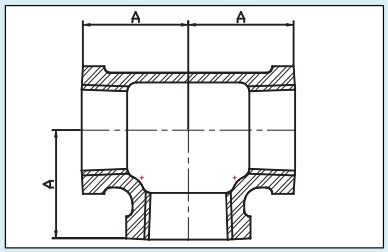
FIG. 130 TEES		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1	38.1		0.376	20	40	UL, FM
		1 1/4	44.5		0.590	14	28	UL, FM
		1 1/2	49.3		0.760	12	24	UL, FM
		2	57.2		1.264	8	16	UL, FM

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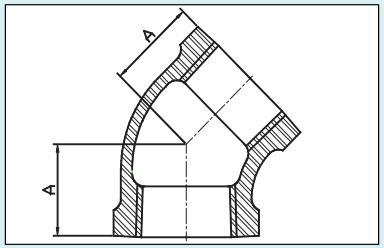
FIG. 120 ELBOWS 45°		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1	28.5		0.251	20	60	UL, FM
		1 1/4	32.8		0.386	20	40	UL, FM
		1 1/2	36.3		0.510	10	30	UL, FM
		2	42.7		0.700	12	24	UL, FM

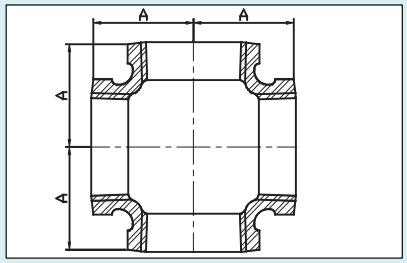
FIG. 180 CROSS		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1	38.1		0.443	15	30	UL, FM
		1 1/4	44.5		0.702	10	20	UL, FM
		1 1/2	49.3		0.836	8	16	UL, FM
		2	57.2		1.480	5	10	UL, FM

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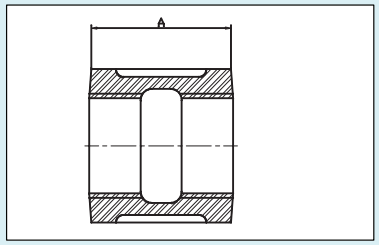
FIG. 270 COUPLING		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1	42.4		0.215	25	100	UL, FM
		1 1/4	49		0.300	16	64	UL, FM
		1 1/2	54.6		0.425	18	36	UL, FM
		2	64.3		0.678	12	24	UL, FM

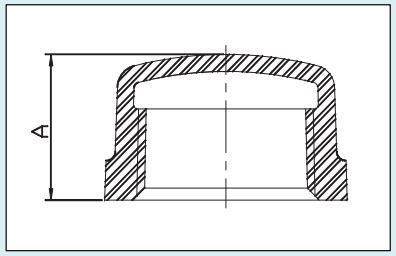
FIG. 301 CAP		SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
		1	29.5		0.145	25	100	UL, FM
		1 1/4	32.5		0.220	20	80	UL, FM
		1 1/2	33.8		0.306	18	54	UL, FM
		2	36.8		0.397	12	36	UL, FM

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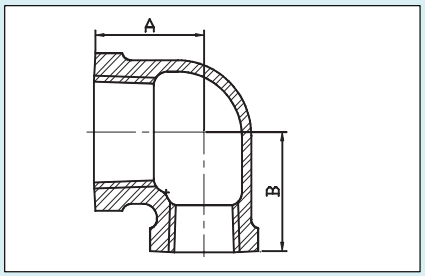
FIG. 90R REDUCING ELBOWS

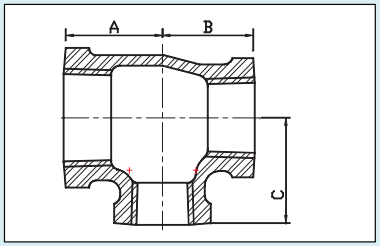




SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
3/4 x 1/2	30.5	31		0.147	40	160	
1 x 1/2	32	35.5		0.193	25	100	UL, FM
1 x 3/4	34.8	36.8		0.253	50	100	UL, FM
11/4 x 1/2	34	38.9		0.278	20	80	UL, FM
11/4 x 3/4	36.8	41.2		0.321	15	60	UL, FM
11/4 x 1	40.1	42.4		0.333	10	40	UL, FM
11/2 x 1/2	38.6	44.5		0.323	15	60	UL, FM
11/2 x 3/4	38.6	44.5		0.459	10	40	UL, FM
11/2 x 1	41.9	45.7		0.418	10	40	UL, FM
11/2 x 11/4	46.2	47.8		0.473	15	30	UL, FM
2 x 1/2	40.6	50		0.480	10	40	
2 x 3/4	40.6	50		0.500	9	36	UL, FM
2 x 1	43.9	51.3		0.554	14	28	UL, FM
2 x 11/4	48.3	53.3		0.670	10	20	UL, FM
2 x 11/2	51.3	54.9		0.708	10	20	UL, FM

FIG. 130R REDUCING TEES





SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
3/4 x 3/4 x 1/2	30.5	30.5	31	0.236	20	80	
3/4 x 3/4 x 1	36.8	36.8	34.8	0.287	40	80	
3/4 x 3/4 x 11/4	41.2	41.2	36.8	0.372	20	60	
1 x 1/2 x 1/2	32	28.5	35.5	0.219	20	80	
1 x 1/2 x 3/4	34.8	31	36.8	0.245	20	80	
1 x 1/2 x 1	38.1	31	36.8	0.313	15	60	UL, FM
1 x 3/4 x 1/2	32	30.5	35.5	0.262	20	80	
1 x 3/4 x 3/4	34.8	33.3	36.6	0.298	15	60	
1 x 3/4 x 1	38.1	36.8	38.1	0.340	30	60	UL, FM
1 x 1 x 1/2	32	32	35.5	0.291	15	60	UL, FM
1 x 1 x 3/4	34.8	34.8	36.8	0.316	12	48	UL, FM

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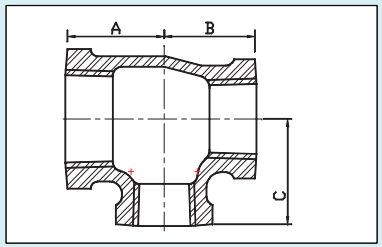
FIG. 130R REDUCING TEES





SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
1 x 1 x 1/2	32	32	35.5	0.291	15	60	UL, FM
1 x 1 x 3/4	34.8	34.8	36.8	0.316	12	48	UL, FM
1 x 1 x 11/4	42.4	42.4	40.1	0.495	11	44	UL, FM
1 x 1 x 11/2	45.7	45.7	41.9	0.553	9	36	UL, FM
1 x 1 x 2	51.3	51.3	48.9	0.700	12	24	
11/4 x 1/2 x 1	40.1	34.5	42.4	0.397	20	40	
11/4 x 1/2 x 11/4	44.5	38.9	44.5	0.467	20	40	UL, FM
11/4 x 3/4 x 3/4	36.8	33.3	41.2	0.368	10	40	
11/4 x 3/4 x 1	40.1	36.8	42.4	0.425	10	40	
11/4 x 3/4 x 11/4	44.5	41.2	44.5	0.496	20	40	
11/4 x 1 x 1/2	34	32	38.9	0.378	20	40	UL, FM
11/4 x 1 x 3/4	36.8	34.8	41.2	0.393	20	40	UL, FM
11/4 x 1 x 1	40.1	38.1	42.4	0.457	20	40	UL, FM
11/4 x 1 x 11/4	44.5	42.5	44.5	0.527	15	30	UL, FM
11/4 x 1 x 11/2	47.8	47.8	46.2				UL, FM
11/4 x 11/4 x 1/2	34	34	38.9	0.396	20	40	UL, FM
11/4 x 11/4 x 3/4	36.8	36.8	41.2	0.442	20	40	UL, FM
11/4 x 11/4 x 1	40.1	40.1	42.4	0.480	20	40	UL, FM
11/4 x 11/4 x 11/2	47.8	47.8	46.2	0.964	12	24	UL, FM
11/4 x 11/4 x 2	53.3	53.3	48.3	0.830	12	24	UL, FM
11/2 x 1/2 x 11/2	49.3	42.2	49.3	0.660	12	24	
11/2 x 3/4 x 11/2	49.3	44.5	49.3	0.652	12	24	
11/2 x 1 x 1/2							
11/2 x 1 x 3/4							
11/2 x 1 x 1	41.9	38.1	45.7	0.547	15	30	UL, FM
11/2 x 1 x 11/4	46.2	42.4	47.8	0.604	12	24	UL, FM
11/2 x 1 x 11/2	49.3	45.7	49.3	0.718	12	24	UL, FM
11/2 x 11/4 x 1/2	35.8	34	42.2	0.459	12	24	UL, FM

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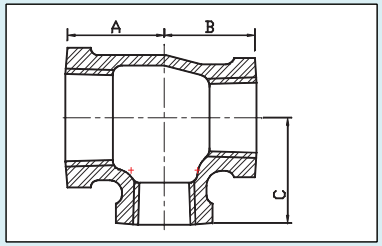
FIG. 130R REDUCING TEES





SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
11/2 x 11/4 x 3/4	38.6	36.3	44.5	0.499	12	24	UL, FM
11/2 x 11/4 x 1	41.9	40.1	45.7	0.565	12	24	UL, FM
11/2 x 11/4 x 11/4	46.2	44.5	47.8	0.638	12	24	
11/2 x 11/4 x 11/2	49.3	47.8	49.3	0.700	12	24	UL, FM
11/2 x 11/4 x 2	54.9	54.9	51.3	0.917	8	16	UL, FM
11/2 x 11/2 x 1/2	35.8	35.8	42.2	0.469	18	36	UL, FM
11/2 x 11/2 x 3/4	38.6	38.6	44.5	0.580	15	30	UL, FM
11/2 x 11/2 x 1	41.9	41.9	45.7	0.635	10	30	UL, FM
11/2 x 11/2 x 11/4	46.2	46.2	47.8	0.685	12	24	UL, FM
11/2 x 11/2 x 2	54.9	54.9	51.3	0.930	8	16	UL, FM
2 x 1/2 x 2	57.2	47.8	57.2	1.000	8	16	
2 x 3/4 x 2	57.2	50	57.2	0.734	8	16	
2 x 1 x 11/2	51.3	45.7	54.9	0.859	10	20	
2 x 1 x 2	57.2	51.3	57.2	1.000	8	16	UL, FM
2 x 11/4 x 11/4	48.3	44.5	53.3	0.800	8	16	
2 x 11/4 x 11/2	51.3	47.8	54.9	1.003	8	16	
2 x 11/4 x 2	57.2	53.3	57.2	0.997	8	16	UL, FM
2 x 11/2 x 1/2	43.9	41.9	51.3	0.770	10	20	UL, FM
2 x 11/2 x 3/4	43.9	41.9	51.3				UL, FM
2 x 11/2 x 1	43.9	41.9	51.3	0.726	10	20	UL, FM
2 x 11/2 x 11/4	48.3	46.2	53.3	0.798	8	16	UL, FM
2 x 11/2 x 11/2	51.3	49.3	54.9	0.860	8	16	UL, FM
2 x 11/2 x 2	57.2	54.8	57.2	0.852	8	16	UL, FM
2 x 2 x 1/2	37.9	37.9	47.8	0.776	10	20	UL, FM
2 x 2 x 3/4	40.6	40.6	50	0.769	10	20	UL, FM
2 x 2 x 1	43.9	43.9	51.3	0.818	10	20	UL, FM
2 x 2 x 11/4	48.3	48.3	53.3	0.930	8	16	UL, FM
2 x 2 x 11/2	51.3	51.3	54.9	0.950	8	16	UL, FM
2 x 2 x 21/2	66	66	60.7	1.571	6	12	

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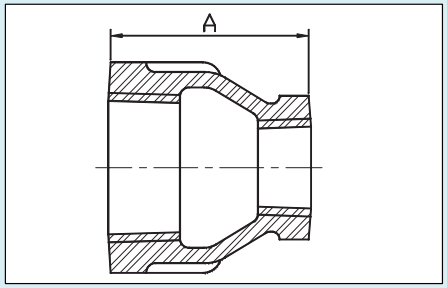
FIG. 240 REDUCING COUPLING	SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
	3/4 x 1/2	36.6			0.118	60	180	
	1 x 1/2	42.9			0.170	30	120	Hexagon small end, UL, FM
	1 x 3/4	42.9			0.190	25	100	Hexagon small end, UL, FM
	11/4 x 3/8	52.3			0.215	25	75	
	11/4 x 1/2	52.3			0.259	25	75	
	11/4 x 3/4	52.3			0.273	25	75	UL, FM
	11/4 x 1	52.3			0.280	15	60	

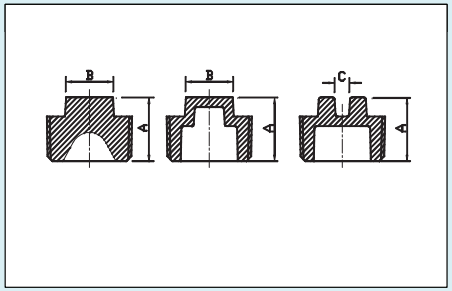
FIG. 291 PLUGS	SIZE (INCH)	A	B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
	1/2	24.1			0.044	50	600	hollow, UL, FM
	3/4	27.1			0.071	35	420	hollow, UL, FM
	1	31.8			0.119	20	240	hollow, UL, FM
	1 1/4	34.5			0.139	40	120	hollow, UL, FM
	1 1/2	36			0.250	30	90	hollow, UL, FM
	2	40			0.294	20	60	hollow, UL, FM

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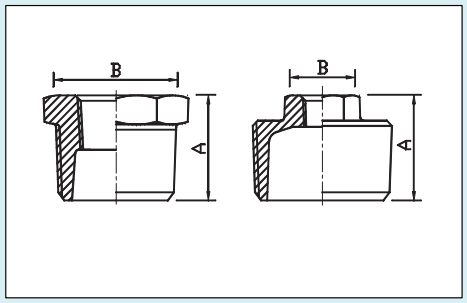
FIG. 241 BUSHINGS

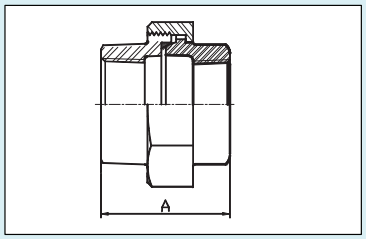




SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
3/4 x 1/2	26		0.062	75	300	outside head
1 X 1/2	29		0.125	50	200	outside head, UL, FM
1 X 3/4	29		0.088	50	200	outside head, UL, FM
11/4 x 1/2	33		0.130	30	120	inside head
11/4 x 3/4	33		0.170	30	120	outside head
11/4 x 1	33		0.138	30	120	outside head, UL, FM
11/2 x 1/2	34		0.210	25	75	inside head
11/2 x 3/4	34		0.212	25	75	inside head
11/2 x 1	34		0.234	25	75	outside head, UL, FM
11/2 x 11/4	34		0.166	25	75	outside head, UL, FM
2 x 1/2	38		0.408	20	60	inside head
2 x 3/4	38		0.303	20	60	inside head
2 x 1	38		0.399	20	60	inside head, UL, FM
2 x 11/4	38		0.360	20	60	outside head, UL, FM
2 x 11/2	38		0.300	20	60	outside head, UL, FM

FIG. 350 UNION BRASS SEAT





SIZE (INCH)	A B (mm.)	C	Approx WT KG.	INNER BOX PCS/BOX	MASTER Ctn. PCS/Ctn.	Remarks
3/8	42		0.146	40	160	UL
1/2	50		0.196	50	100	UL
3/4	52		0.270	35	70	UL
1	58		0.424	20	40	UL
1 1/4	61		0.596	15	30	UL
1 1/2	67		0.790	10	20	UL
2	78		1.250	6	12	UL
2 1/2	85		2.060	4	8	UL
3	95		2.700	4	8	UL

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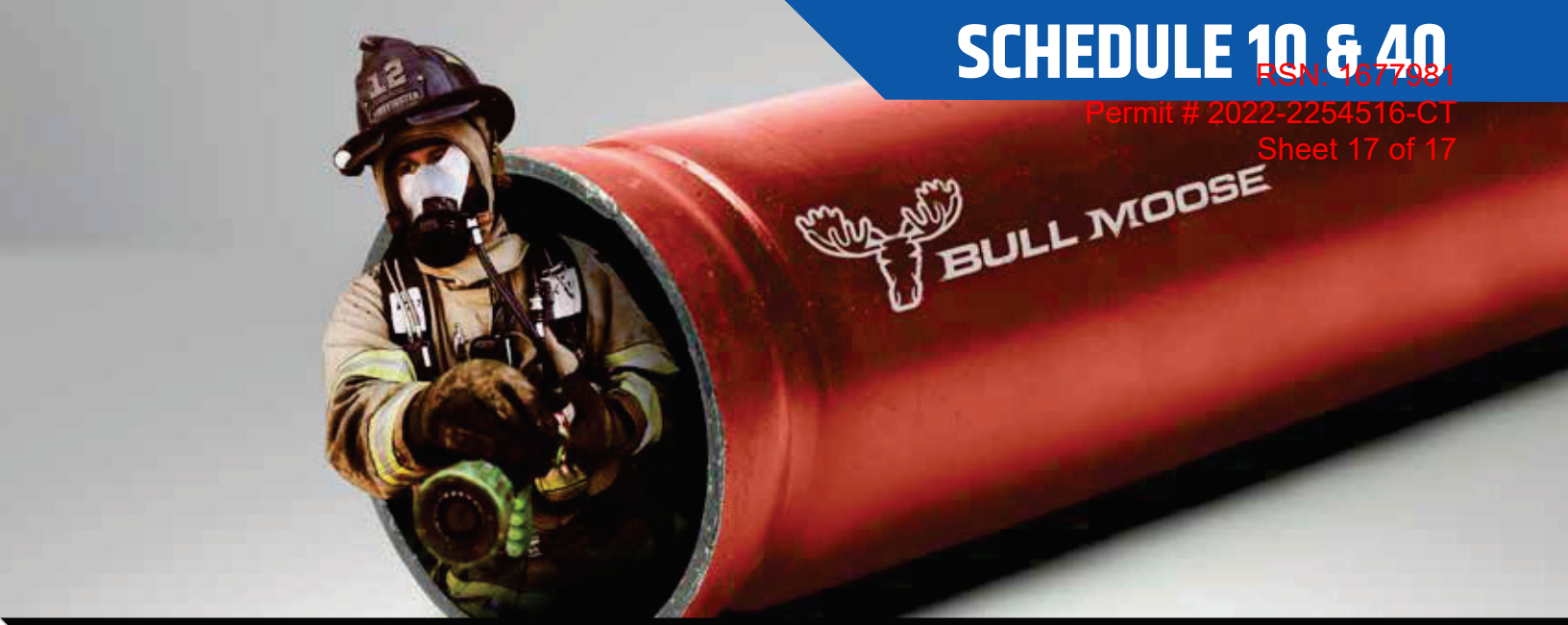
SCHEDULE 10 & 40



Always ready to protect your most valuable assets.

As the leading supplier of steel sprinkler pipe, we understand that there are no second chances in fire suppression. You need products of enduring quality and exceptional strength–plus reliable service. You need Bull Moose.

Bull Moose Fire Sprinkler Pipe Product Information

	Nominal Pipe Size (Inches)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
SCHEDULE 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940
	Water Filled Weight (lb/ft)	1.820	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
	Lift Weight (lbs) 21' lengths	2,695	2,319	2,677	2,051	2,224	1,732	2,242	1,951	2,490
	Lift Weight (lbs) 24' lengths	3,079	2,650	3,060	2,344	2,542	1,979	2,563	2,230	2,848
	Lift Weight (lbs) 25' lengths	3,208	2,760	3,187	2,442	2,648	2,062	2,670		

	NPS (In.)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
SCHEDULE 40		1.315	1.660	1.900	2.375	2.875	3.500	4.500
		1.049	1.380	1.610	2.067	2.469	3.068	4.026
		1.680	2.270	2.720	3.660	5.800	7.580	10.800
		2.055	2.918	3.602	5.114	7.875	10.783	16.316
		1.00	1.00	1.00	1.00	1.00	1.00	1.00
		70	51	44	30	30	19	19
		2,470	2,431	2,513	2,306	3,654	3,024	4,309
		2,822	2,778	2,872	2,635	4,176	3,456	4,925
		2,940	2,894	2,992	2,745	4,350	3,601	5,130

SCHEDULE 10 & 40 ADVANTAGES:

- UL listed (US & Canada) and FM approved
- ASTM A135 and A795 Type E, Grade A Certified
- Complies with NFPA-13, 13R and 14
- Industry-leading hydraulic characteristics
- CRR of 1.0 and greater
- All pipe NDT weld tested

OTHER BENEFITS/SERVICES:

- We have the most stocking locations in the industry, for best delivery and availability
- Plain end or roll groove
- Eddy Guard II™ bacterial-resistant internal coating
- Custom length options
- Hot dipped galvanization
- Reddi-Pipe® red or black pipe eliminates field painting
- Compatible for use in wet, dry, preaction and deluge sprinkler systems
- The only maker with EPDs (to help earn LEED points).

Exclusive maker of Reddi-Pipe®
RED OR BLACK PAINTED PIPE.

CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

cULus LISTED

FM APPROVED

NFPA

AFSA American Fire Sprinkler Association

NFSA The Voice of the Fire Sprinkler Industry

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