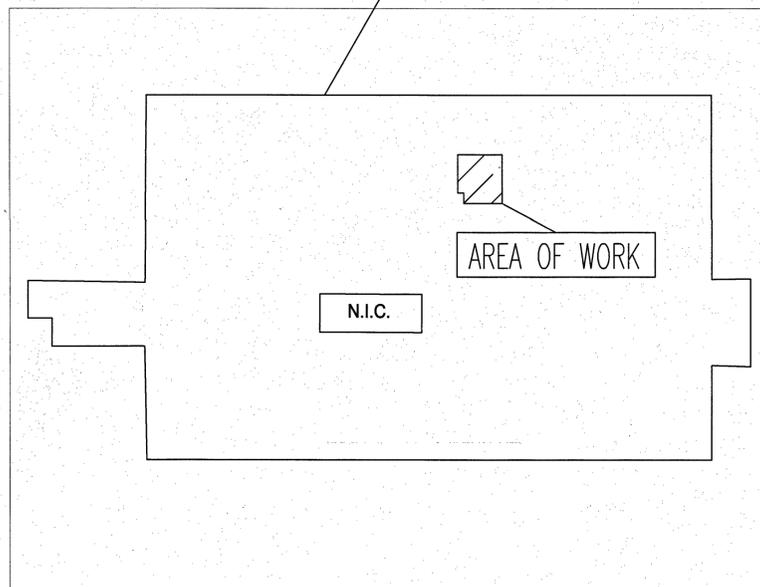


PIPE ELEVATION @ 9'-6"
CONCRETE DECK ELEVATION @ 12'-6" AFF

FIRE PROTECTION REMODEL PLAN
1/4" = 1'-0"

FDC LOCATION



KEY PLAN
N.T.S.

REMODEL LEGEND

- EXISTING SPRINKLER PIPE
- NEW SPRINKLER PIPE
- A ADD NEW SR CONCEALED PENDENT SPRINKLER 2
- EXISTING SR CONCEALED SSP SPRINKLER

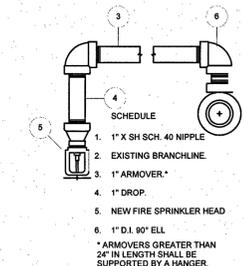
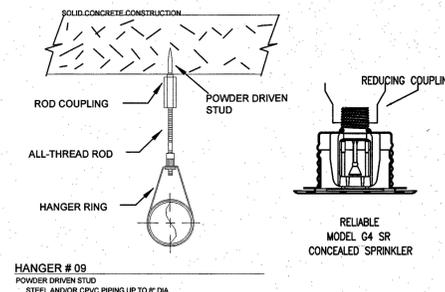
CONSTRUCTION DATA	
BUILDING CODE	2015 IBC
PLUMBING CODE	2015 IPC
MECHANICAL CODE	2015 IMC
ELECTRICAL CODE	2015 NEC
FIRE CODE	2015 IFC
NFPA 13	2013 EDITION
BUILDING STORES	2
OCCUPANCY	F
TYPE OF CONSTRUCTION	I-B
GROSS FLOOR AREA	2,000
FIRE PROTECTION	FULLY SPRINKLERED

01. SEE THE FIRE PROTECTION EQUIPMENT DATA FOR ALL APPLICABLE MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT.
02. THIS SET OF FIRE PROTECTION PLANS AND HYDRAULIC CALCULATIONS HAVE BEEN DESIGNED BY ARAPAHOE FIRE PROTECTION IN THEIR ENTIRETY, AND HAVE BEEN SEALED BY A PROFESSIONAL ENGINEER OR MINIMUM NICET LEVEL III ENGINEER AS REQUIRED BY THE STATE OF COLORADO.
03. THESE FIRE PROTECTION PLANS AND CALCULATIONS HAVE BEEN DESIGNED PER NFPA 13, 2013, PROJECT SPECIFICATIONS, AND APPLICABLE STATE CODES AND REGULATIONS.
04. ALL MATERIALS AND DEVICES INSTALLED UNDER THIS CONTRACT SHALL BE UL LISTED AND/OR FACTORY MUTUAL APPROVED.
05. ALL MATERIALS, DEVICES, AND HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTINGS AND MINIMUM APPLICABLE NFPA 13, 2013 ENGINEERING STANDARDS.
06. SPRINKLERS TO BE INSTALLED IN ACCORDANCE WITH MINIMUM NFPA 13, 2013 REQUIREMENTS.
07. VALVES CONTROLLING WATER SUPPLY TO 20 OR MORE SPRINKLERS SHALL BE ELECTRICALLY SUPERVISED AND SHALL BE MONITORED BY AN APPROVED MONITORING AGENCY. ANY AND ALL ELECTRICAL AND/OR ALARM WIRING, CONNECTIONS AND TERMINATIONS, OR HORN AND STROBE(S) SHALL BE BY OTHERS. FIRE ALARM SYSTEMS (BY OTHERS) SHALL BE INTERCONNECTED WITH FIRE SPRINKLER SYSTEMS FLOW SWITCH AND HORN AND STROBE(S).
08. IT IS THE RESPONSIBILITY OF THE OWNER OR OTHERS TO PROVIDE, INSTALL AND MAINTAIN AN APPROVED MONITORING SYSTEM OF ALL FIRE PROTECTION SYSTEM COMPONENTS ELECTRICAL OR OTHERWISE INSTALLED UNDER THIS CONTRACT.
09. IT SHALL BE THE SOLE RESPONSIBILITY OF THE OWNER TO PROVIDE ADEQUATE HEAT THROUGHOUT THE FACILITY WHERE WET PIPE SPRINKLER SYSTEMS ARE PRESENT, TO PREVENT FREEZING OF SPRINKLER SYSTEM COMPONENTS (MIN 40° F).
10. THE OWNER SHALL MAINTAIN A CLEAR SPACE OF 18" BETWEEN THE TOP OF STORAGE AND STANDARD SPRAY SPRINKLERS.
11. ALL SPRINKLER PIPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE SEALED WITH AN APPROVED MATERIAL EQUAL TO THE RATING OF SUCH ASSEMBLY PENETRATED.
12. ALL NEW SPRINKLER PIPING UNDER THIS CONTRACT SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH ALL APPLICABLE NFPA ENGINEERING STANDARDS AND STATE AND LOCAL CODES.
13. UPON SUCCESSFUL INSTALLATION AND COMPLETION:
 - A SPARE SPRINKLER HEAD BOX WITH SPRINKLERS AND WRENCHES AS NOTED WILL BE INSTALLED PER MINIMUM NFPA 13, 2013 REQUIREMENTS.
 - HYDRAULIC PLACARDS, CARE AND MAINTENANCE CARDS, AND 24 HOUR EMERGENCY PHONE NUMBER SHALL BE POSTED.
 - OPERATIONS AND MAINTENANCE MANUALS SHALL BE PROVIDED.
 - CONTRACTORS MATERIALS AND TEST CERTIFICATES SHALL BE PROVIDED.
 - ALL SYSTEM CONTROL VALVES SHALL BE ACCESSIBLE, LEFT OPEN, AND IN SERVICE.
 - ALL SYSTEM DEVICES SHALL BE IDENTIFIED PER MINIMUM NFPA 13 REQUIREMENTS.
14. ADEQUATE DRAINAGE OF FIRE PROTECTION PIPING SHALL BE PROVIDED PER MINIMUM NFPA 13 REQUIREMENTS.
15. SEISMIC BRACING IS NOT PART OF THIS CONTRACT.
16. CHLORINATION OF FIRE PROTECTION PIPING IS NOT PART OF THIS CONTRACT.
17. PAINTING OF FIRE PROTECTION PIPING IS NOT PART OF THIS CONTRACT.
18. FIRE EXTINGUISHERS AND CABINETS ARE NOT PART OF THIS CONTRACT.
19. FIRE PROTECTION IDENTIFICATION, IS NOT PART OF THIS CONTRACT.
20. CENTERING OF SPRINKLER HEADS IN CEILING TILES IS PART OF THIS CONTRACT.
21. PROTECTION OF ELECTRICAL DEVICES, SUCH AS CIRCUIT BREAKER PANELS FROM WATER DISCHARGE, SHALL BE BY OTHERS.
22. ARAPAHOE FIRE PROTECTION, INC. SHALL NOT BE HELD RESPONSIBLE SHOULD THE NOTED WATER MODEL RESULTS NOT BE SUPPLIED AT THE POINT OF CONNECTION NOW, OR IN THE FUTURE, DUE TO THE POSSIBILITY OF DETERIORATING WATER SUPPLIES. SEE HYDRAULIC SOURCE NODE LOCATION.
23. ALL KNOX EQUIPMENT IS NOT PART OF THIS CONTRACT AND SHALL BE PROVIDED AND INSTALLED BY OTHERS.
24. ALL REQUIRED SIGNAGE NOT PER MINIMUM NFPA 13 REQUIREMENTS SHALL BE PROVIDED AND INSTALLED BY OTHERS.
25. PROVISIONS FOR FLUSHING FIRE SPRINKLER PIPING INSTALLED UNDER THIS CONTRACT WILL BE MADE BY ARAPAHOE FIRE PROTECTION, INC. ARAPAHOE FIRE PROTECTION WILL PERFORM ALL TESTING AND PROVIDE ALL REQUIRED TESTING EQUIPMENT REQUIRED BY THE LIFE SAFETY INSPECTOR.
26. ALL UNDERGROUND PIPING SHALL BE TESTED AND FLUSHED BY THE INSTALLING CONTRACTOR. UNDERGROUND TESTING CERTIFICATIONS SHALL BE PROVIDED TO ARAPAHOE FIRE PROTECTION, INC. PRIOR TO ANY ABOVEGROUND PIPING BEING CONNECTED TO THE UNDERGROUND FIRE LINE LEAD IN FLANGE.
27. PIPE AND FITTING NOTES:
 - ALL PIPING SHALL BE IN ACCORDANCE WITH NFPA STANDARDS.
 - ALL THREADABLE PIPING SHALL BE EDDYTHREAD 40 BLACK STEEL PIPING PER ASTM A135/A795 WITH COMPATIBLE DUCTILE IRON FITTINGS, UNLESS NOTED OTHERWISE.
 - ALL GROOVABLE PIPING SHALL BE EDDYFLOW BLACK STEEL PIPING PER ASTM A135/A795 WITH WELDED OUTLET FITTINGS, AND ROLL GROOVED JOINTS, COMPATIBLE WITH FITTINGS USED.
 - ALL SCREWED FITTINGS SHALL MEET ANSI B.16.4 REQUIREMENTS.
 - ALL FLANGED FITTINGS SHALL MEET ANSI B.16.1 REQUIREMENTS.
 - ALL GROOVED FITTINGS SHALL MEET ASTM A436 REQUIREMENTS.
 - ALL METHODS OF JOINING PIPE SHALL BE IN ACCORDANCE WITH NFPA 13 SECTIONS 2-5.
28. SCOPE OF WORK IS TO MODIFY THE EXISTING HYDRAULICALLY CALCULATED FIRE SPRINKLER SYSTEM TO ACCOMMODATE THE NEW TENANT FINISH AREA. ARAPAHOE FIRE PROTECTION WORK SHOWN ON THESE PLANS WILL NOT ADVERSELY AFFECT THE CURRENT HYDRAULIC SPRINKLER SYSTEM.
29. SYSTEM DESIGN IS LIGHT HAZARD 225 SQ. FT. FOR MAXIMUM SPRINKLER COVERAGE AREA.

NOMINAL PIPE SIZE (N.)	PER NFPA 13 2013 EDITION AND MANUFACTURERS MATERIAL DATA SHEETS										
	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.
DYNA THREAD	N/A	1.080	1.408	1.639	2.104						
DYNA FLOW	N/A	N/A	1.536	1.728	2.203	2.703	3.314	4.310	N/A	N/A	N/A
MEGA THREAD	N/A	1.087	1.416	1.650	2.117						
MEGA FLOW	N/A	N/A	1.530	1.740	2.215	2.707	3.316	4.316	N/A	6.395	N/A
EDDYTHREAD	.0856	1.083	1.418	1.654	2.123						
EDDYFLOW	N/A	N/A	1.530	1.728	2.203	2.705	3.334	4.310	N/A	N/A	N/A
SCH 40	N/A	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.085	7.981
SCH 10	N/A	1.097	1.442	1.682	2.157	2.635	3.260	4.280	5.295	6.357	8.249
	0.874	1.101	1.394	1.598	2.003	N/A	N/A	N/A	N/A	N/A	N/A
COPPER (TYPE M)	0.811	1.055	1.291	1.527	2.009	2.495	2.981	3.935	N/A	N/A	N/A

NOMINAL PIPE SIZE (N.)	PER NFPA 13 TABLE 9.2.2.1 2013 EDITION									
	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	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	15-0
THREADED LIGHTWALL	N/A	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A	N/A
COPPER	8-0	8-0	1	1	12-0	12-0	12-0	15-0	15-0	15-0
CPCV	5-6	6-0	6-6	7-0	8-0	9-0	1	N/A	N/A	N/A

WHERE STATIC OR OPERATING PRESSURES EXCEED 100 PSI HANGERS SHALL BE PER NFPA 13 9.2.3.5.2.1 2013 EDITION



City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: John J Van Essen 08-587
Date: Oct 14, 2016
2015 INTERNATIONAL CODES & 2014 NEC
2013 NFPA 13
RSN: 1157028
Permit #2016-1192807-CT



Arapahoe
FIRE PROTECTION, INC.
11901 East 14th Ave.
Aurora, Colorado 80010
Voice: (303)366-4905 Fax: (303)366-4966
Email: office@arapahoe-fire.com Colorado State Registration #034

**AURORA UROLOGY @
AMC SUITE 210**
1411 S. POTOMAC ST. #210
AURORA, CO 80012

REMODEL OF
FIRE SPRINKLER
CONTRACT NO. 6411
DESIGNED BY DARRYL C.
SUBMIT REVIEW BY JS
FAB. REVIEW BY
SCALE 1/4" = 1' - 0"
DATE 12OCT16
REVISED
PLOTTED FP1 OF 01

PROJECT CONTACTS		
OWNER	AUTHORITY HAVING JURISDICTION #1	
GENERAL CONTRACTOR	AUTHORITY HAVING JURISDICTION #2	
ARCHITECT	AUTHORITY HAVING JURISDICTION #3	
REVISIONS		
DATE	DESCRIPTION	BY

SPRINKLER SCHEDULE & LEGEND						
SYM	SPRINKLER MAKE, MODEL, TRM, NPT	ORIFICE	K	TEMP.	FINISH	QUANTITY
●	RELIABLE MODEL G4 SR CONCEALED PENDENT	1/2"	5.6	155	WHT	2
HEAD CABT & WRENCH(ES) PROVIDED						TOTAL COUNT THIS SHEET = 2
						TOTAL COUNT THIS JOB = 2

MATERIAL SUBMITTAL



FOR

AURORA UROLOGY

@ AMC

1411 S. POTOMAC ST., #210

AURORA , CO 80012

JOB 6411

DARRYL CRONON

Reliable®

Model G4 Concealed Automatic Sprinkler

The Concealer® A Concealed Sprinkler With ½" (13mm) or 1½" (38mm) Adjustment

Features

1. Cover plate assembly attachment (Plain or Perforated) with ½" (13mm) adjustment. Does not require clips or springs.
2. 1½" (38mm) Total adjustment provided by adjustable inlet versions.
3. Adjustable inlet version available with either 1" NPT male or female threads eliminating costly reducing coupling.
4. Smooth aesthetic ceiling profile.
5. Available in white or other color painted or brass, chrome, or black plated finishes.
6. Ordinary and intermediate temperature ratings.
7. Multiple orifices for design flexibility.

Approvals & Listings

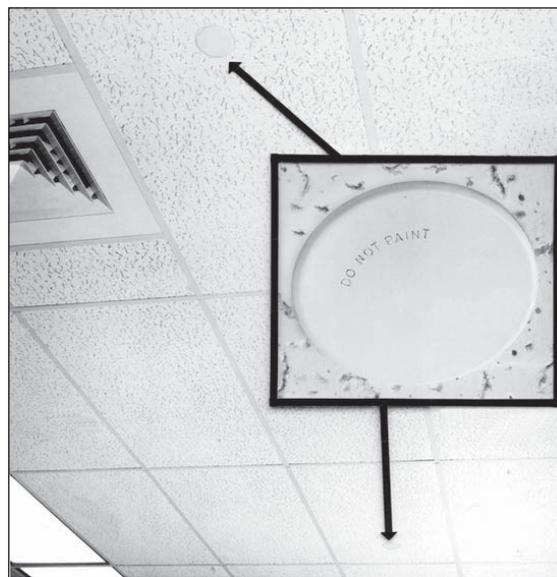
1. Underwriters Laboratories Inc. (UL)
2. Underwriters Laboratories of Canada. (ULC)
3. N.Y.C. BS&A No. 587-75-SA.

Note: Approvals are for light and ordinary hazard, except for small orifice sprinklers which are limited to light hazard occupancies. The cup and skirt are fabricated from plated steel and are intended for interior non corrosive applications.

U.S. Patent No. 4,880,063.

Application

The Reliable Model G4 Concealer® is the most versatile concealed sprinkler available. It provides the best form of fire protection while offering an attractive appearance and ½" (13mm) of cover adjustment for ease of installation. The adjustable 1" NPT inlet versions have 1½" (38mm) of total adjustment and also eliminates the need for a reducing coupling. The small diameter cover plate assembly is easily attached and blends into the ceiling, concealing the most dependable fire protection available, an automatic sprinkler system.



The Concealer® is designed for use where aesthetic appearance is important. Offices, hospitals, motels and restaurants are but a few of the applications where it can be used. It is available in different orifice sizes allowing the designer to optimize system performance, thereby achieving a most efficient installation.

The Concealer® can eliminate the need for precise cutting of drop nipples. The cover plate assembly can be adjusted without tools so it mates accurately with the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Product Description

The Reliable Model G4 Concealer® standard response uses the proven Model G fusible element in a standard style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. This threaded engagement provides ½" (13mm) of cover adjustment. The flat cover plate is attached to the skirt using an ordinary temperature classification solder. This results in a strong cover plate assembly with an ordinary temperature rating, and an intermediate temperature sprinkler which can be installed in 150°F (66°C) environments. When the ceiling temperature rises, the solder holding the cover plate to the skirt melts, the flat cover plate released thus exposing the sprinkler inside to the rising ambient temperature.

The subsequent fusing of the sprinkler element opens the waterway and causes the deflector to drop into position to distribute the discharging water. Any secure engagement of the threads between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling when a sprinkler operates.

Do not install The Concealer® in ceilings which have positive pressure in the space in the space above.

After a 2⁵/₈ inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model G4 Wrench. The wrench has drive tangs which insert into cup slots. When installing a sprinkler the wrench is first positioned into the sprinkler/cup assembly until the wrench tangs engage drive slots in the top of the cup (there are two sets of mating drive slots in the cup). The sprinkler is then tightened into the pipe fitting. When inserting or removing the wrench from the sprinkler/cup assembly care should be taken to prevent damage to the sprinkler. **DO NOT WRENCH ON ANY OTHER PART OF THE SPRINKLER/CUP ASSEMBLY.**

The adjustable inlet versions are similar to the standard Model G4 except that an addition 1" (25mm) of adjustment is provided by means of a telescoping inlet section that threads in or out of a stationary coupling reducer (either 1 male or 1 female) as shown in Fig. 2 or Fig. 3. These sprinklers must be installed before the ceiling is in place, by wrenching on only the coupling reducer hex flats. After the ceiling has been installed with holes for the sprinkler, each telescoping inlet section

Temperature Ratings

Classification	Sprinkler	Cover Plate	Max. Ambient Temp.
Ordinary	135°F/57°C	135°F/57°C	100°F/38°C
Ordinary	165°F/74°C	135°F/57°C	100°F/38°C
Ordinary	165°F/74°C	165°F/74°C	150°F/66°C
Intermediate	212°F/100°C	165°F/74°C	150°F/66°C

Installation Data

Sprinkler Inlet	Total Adjustment	Nominal Orifice	Nominal K Factor		Thread	Approvals	Sprinkler Identification Number (SIN)
			US	Metric			
Non-Adjustable	1/2" (13mm)	1/2" (15mm)	5.6	80	1/2" NPT (R1/2)	1,2,3	R2115
Non-Adjustable	1/2" (13mm)	7/16" (11mm)	4.2	60	1/2" NPT (R1/2)	1,2,3	R2113
Non-Adjustable	1/2" (13mm)	3/8" (10mm)	2.8	40	1/2" NPT (R1/2)	1,2,3	R2111
Adjustable	1 1/2" (38mm)	1/2" (15mm)	5.6	80	1" NPT Male or Female	1,2,3	R2118
Adjustable	1 1/2" (38mm)	7/16" (11mm)	4.2	60	1" NPT Male or Female	1,2,3	R2113
Adjustable	1 1/2" (38mm)	3/8" (10mm)	2.8	40	1" NPT Male or Female	1,2,3	R2112

tion is to be adjusted with the G4 Wrench. Install the cover plate assembly by hand turning it clockwise until it is tight against the ceiling.

Maintenance

The Model G4 Concealer® should be inspected and the sprinkler system maintained in accordance with NFPA 25. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove any sprinkler that has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in the original cartons and packaging to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Ordering Information

1. Sprinkler Model
2. Temperature Rating
3. Nominal Orifice
4. Flat Cover Plate Finish
5. Inlet Type

Note: Unless otherwise specified, the 165°F (74°C) sprinkler will be provided with the 165°F (74°C) cover.

Cover Plate Finishes⁽¹⁾

Standard Finishes
Chrome
White Paint
Special Application Finishes ⁽²⁾
Bright Brass
Finished Bronze
Black Plating
Black Paint
Off White
Satin Chrome

(1) Other finishes and colors are available on special order. Consult factory for details. Coverplate custom paint is semi-gloss, unless specified otherwise.

(2) For the perforated style coverplate, consult factory for availability on these and other custom finishes.

Note: Paint or any other coatings applied over the factory finish will void all approvals and warranties.

Installation Wrench

Model G4 Sprinkler Wrench

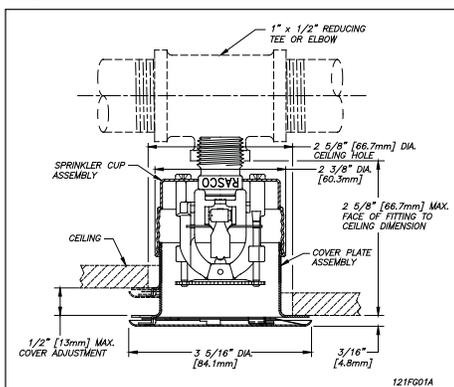


Fig. 1 - 1/2" NPT (R1/2) Non-Adjustable Inlet

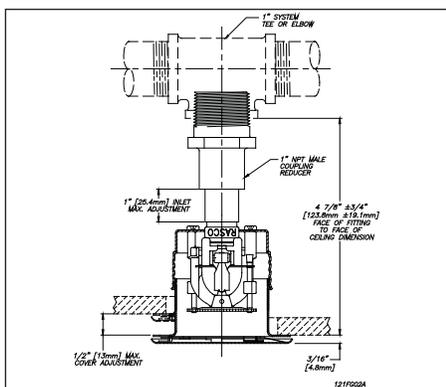


Fig. 2 - 1" NPT Male-Adjustable Inlet

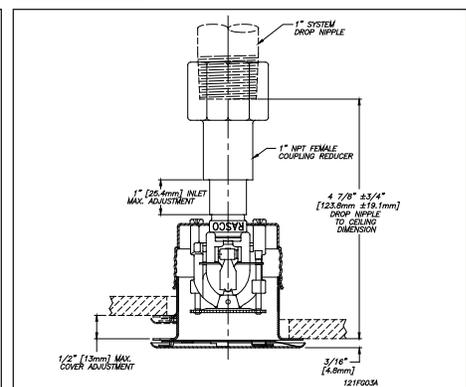


Fig. 3 - 1" NPT Female-Adjustable Inlet

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

Products manufactured and distributed by Reliable have been protecting life and property for over 90 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

Manufactured by



The Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588 Sales Offices
 (800) 848-6051 Sales Fax
 (914) 829-2042 Corporate Offices
 www.reliablesprinkler.com Internet Address



Revision lines indicate updated or new data.

Eddythread 40

A Lightweight Schedule 40 Replacement Pipe That Has a Corrosion Resistance Ratio of 1.0

Bull Moose Tube Company has been making pipe for a long time and is recognized as a producer of quality pipe products. Eddythread 40 is designed with the same thoroughness as our other fine pipe products and now our customers have an option to buy a carefully designed replacement for Schedule 40 that:

- Has a Corrosion Resistance Ratio of 1.0
- Has a Pressure Rating of 300 psi
- Is Lighter Weight Than Schedule 40
- Is Approved by Factory Mutual and Listed by Underwriters Laboratories
- Is Produced in Accordance to ASTM A-135 and A-795
- Can be Used With Standard Schedule 40 Threaded Fittings, Couplings and Valves
- Is Produced From Steel With Excellent Properties of Strength and Threadability
- Can be Used in Wet, Dry, Preaction, and Deluge Type Sprinkler Systems*
- Offers Lower Freight Costs

EDDYTHREAD 40 SPECIFICATIONS

NOMINAL PIPE SIZE (in)	WEIGHT (lbs/ft)	I.D. (in)	BUNDLE SIZE
1	1.461	1.083	70
1 1/4	2.070	1.418	51
1 1/2	2.547	1.654	44
2	3.308	2.123	30

CORROSION RESISTANCE RATIOS

NOMINAL PIPE SIZE (in)	SCHEDULE 40	EDDYTHREAD 40
1	1.00	1.00
1 1/4	1.00	1.00
1 1/2	1.00	1.00
2	1.00	1.00

* Eddythread 40 can be hot dipped galvanized to meet FM's requirement for dry systems



BULL MOOSE TUBE COMPANY

A  company

1819 Clarkson Road
Chesterfield, MO 63017
(800) 325-4467
FAX: (636) 537-2645

www.bullmoosetube.com

e-mail: sales@bullmoosetube.com

For additional information,
contact your salesperson today at
(800) 325-4467 or (636) 537-2600
in the USA, or from Canada
call (800) 882-4666



Eddy Flow

The Cost Effective Replacement for Schedule 10

Realizing the growing need of fire protection systems in commercial and residential construction, Bull Moose Tube has added Eddy Flow to its comprehensive line of sprinkler pipe products.

Eddy Flow is a specially engineered replacement for schedule 10, offering better flow characteristics while providing design flexibility. This product is FM approved, as well as UL listed (for U.S. and Canada) for roll grooving and welding for use in fire protection

systems with a working pressure of 300 psi or less. Please check with appropriate sources for up-to-date listings and approval information.

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

COMPARISON

Nominal Pipe Size (in)	O.D. (in)	INSIDE DIAMETER			C.R.R.*	
		Eddy Flow (in)	Schedule 10 (in)	Schedule 40 (in)	Eddy Flow	Schedule 40
1 1/4	1.660	1.530	1.442	1.380	1.98	1.00
1 1/2	1.900	1.728	1.682	1.610	3.44	1.00
2	2.375	2.203	2.157	2.067	2.78	1.00
2 1/2	2.875	2.705	2.635	2.469	1.66	1.00
3	3.500	3.334	3.260	3.068	1.00	1.00
4	4.500	4.310	4.260	4.026	1.00	1.00

* Corrosion Resistance Ratio

BENEFITS

- **Dual Certified to ASTM A135 and A795.**
- **FM Approved for roll grooved, and welded, and plain-end application in wet systems.**
- **UL Listed (for U.S. and Canada) for joining by welding or by listed rubber gasketed fittings for use in wet, dry, preaction, and deluge type sprinkler systems.**
- **UL Listed (for US and Canada) and FM Approved for use with Victaulic® FIT® Fittings in plain end applications.**
- **Lightweight - saves shipping costs, and offers easier handling.**
- **Can be used with roll grooved couplings or welded outlets for pressures up to 300 psi.**
- **Floor stock available in various lengths produced in Casa Grande (AZ), Gerald (MO), and Masury (OH). Also can be ordered in custom lengths..**
- **Can be used for wet and dry* systems.**

* Eddy Flow can be hot dipped galvanized to meet FM's requirement for dry systems.

PIPE PREPARATION

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



A CAPARO company

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

For additional information, contact your salesperson today at (800) 325-4467 or (636) 537-2600 in the USA, or from Canada call (800) 882-4666





D.I. THREADED FITTINGS

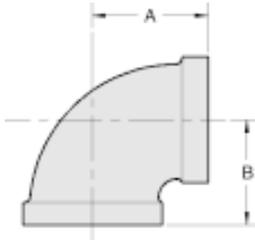


LISTED

LISTED

APPROVED

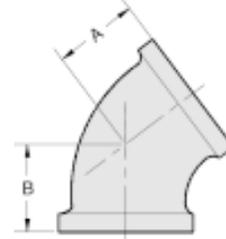
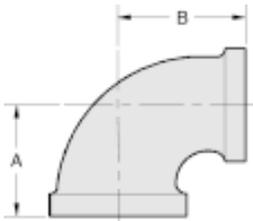
For fire protection services request submittal GRS 1.3



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

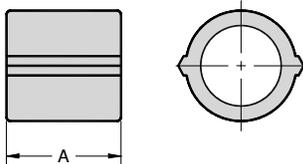
NOTICE: DUCTILE IRON FITTINGS HAVE HIGHER TENSILE STRENGTH THEN THAT OF STEEL PIPE. THEREFORE, OVER TIGHTENING CAN CAUSE DAMAGE TO PIPE THREADS WHICH MAY CAUSE LEAKAGE. DUCTILE IRON FITTINGS SHOULD BE TIGHTENED THREE TURNS BEYOND HAND TIGHT, BUT NO MORE THAN FOUR TURNS.

DUCTILE IRON 90 DEG. ELBOW					
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DB90033	500	1.50	1.50	0.62
1 1/4	DB90044	500	1.75	1.75	0.90
1 1/2	DB90055	500	1.94	1.94	1.20
2	DB90066	500	2.25	2.25	1.85

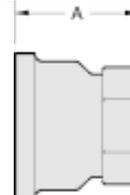


DUCTILE IRON 45 DEG. ELBOW					
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1	DB45033	500	1.12	1.12	0.46
1 1/4	DB45044	500	1.29	1.29	0.73
1 1/2	DB45055	500	1.43	1.43	0.92
2	DB45066	500	1.68	1.68	1.50

DUCTILE IRON RED.90 DEG. ELBOW					
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS		WEIGHT EACH PIECE
			A	B	
1X1/2	DB90031	500	1.26	1.36	0.44
1X3/4	DB90032	500	1.37	1.45	0.52
1 1/4X1/2	DB90041	500	1.34	1.53	0.64
1 1/4X3/4	DB90042	500	1.45	1.62	0.72
1 1/4X1	DB90043	500	1.58	1.67	0.75
1 1/2X1	DB90053	500	1.65	1.80	0.92
1 1/2X1 1/4	DB90054	500	1.82	1.88	1.08
2X1/2	DB90061	500	1.49	1.88	1.08
2X3/4	DB90062	500	1.60	1.97	1.24
2X1	DB90063	500	1.73	2.02	1.40
2X1 1/4	DB90064	500	1.90	2.10	1.52
2X1 1/2	DB90065	500	2.02	2.16	1.65



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



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

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



D.I. THREADED FITTINGS

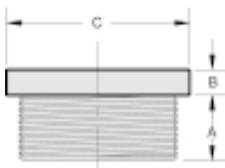
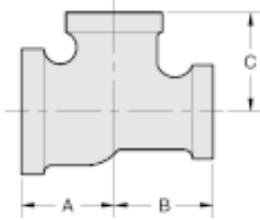


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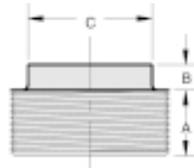
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APPROVED

For fire protection services request submittal GRS 1.3



OUTSIDE HEAD



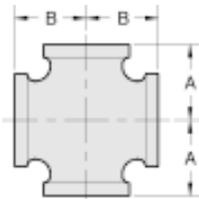
INSIDE HEAD

DUCTILE IRON REDUCING TEE

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS			WEIGHT EACH PIECE
			A	B	C	
1X1X1/2	DT331	500	1.26	1.26	1.36	0.64
1X1X3/4	DT332	500	1.37	1.37	1.45	0.73
1X1X2X1	DT313	500	1.50	1.36	1.50	0.71
1X3/4X1	DT323	500	1.50	1.45	1.50	0.76
1X1X1 1/4	DT334	500	1.67	1.67	1.58	0.98
1X1X1 1/2	DT335	500	1.80	1.80	1.65	1.16
1 1/4X1X1/2	DT431	500	1.34	1.26	1.53	0.82
1 1/4X1X3/4	DT432	500	1.45	1.37	1.62	0.90
1 1/4X1X1	DT433	500	1.58	1.50	1.67	1.00
1 1/4X1X1 1/4	DT434	500	1.75	1.67	1.75	1.08
1 1/4X1X1 1/2	DT435	500	1.88	1.80	1.82	1.42
1 1/4X1 1/4X1/2	DT441	500	1.34	1.34	1.53	0.86
1 1/4X1 1/4X3/4	DT442	500	1.45	1.45	1.62	0.92
1 1/4X1 1/4X1	DT443	500	1.58	1.58	1.67	0.95
1 1/4X1 1/4X1 1/2	DT445	500	1.88	1.88	1.82	1.45
1 1/4X1 1/4X2	DT446	500	2.10	2.10	1.90	1.75
1 1/2X1X1/2	DT531	500	1.41	1.34	1.66	0.95
1 1/2X1X3/4	DT532	500	1.52	1.37	1.75	1.14
1 1/2X1X1	DT533	500	1.65	1.50	1.80	1.17
1 1/2X1X1 1/4	DT534	500	1.82	1.67	1.88	1.34
1 1/2X1X1 1/2	DT535	500	1.94	1.80	1.94	1.45
1 1/2X1 1/4X1/2	DT541	500	1.41	1.34	1.66	1.05
1 1/2X1 1/4X3/4	DT542	500	1.52	1.45	1.75	1.15
1 1/2X1 1/4X1	DT543	500	1.65	1.58	1.80	1.25
1 1/2X1 1/4X2	DT546	500	2.16	2.10	2.02	1.90
1 1/2X1 1/2X1/2	DT551	500	1.41	1.41	1.16	1.15
1 1/2X1 1/2X3/4	DT552	500	1.52	1.52	1.75	1.24
1 1/2X1 1/2X1	DT553	500	1.65	1.65	1.80	1.30
1 1/2X1 1/2X1 1/4	DT554	500	1.82	1.82	1.88	1.48
1 1/2X1 1/2X2	DT556	500	2.16	2.16	2.02	1.98
2X1X2	DT636	500	2.25	2.02	2.25	2.15
2X1 1/4X2	DT646	500	2.25	2.10	2.25	2.30
2X1 1/2X1/2	DT651	500	1.49	1.41	1.88	1.50
2X1 1/2X3/4	DT652	500	1.60	1.52	1.97	1.62
2X1 1/2X1	DT653	500	1.73	1.65	2.02	1.64
2X1 1/2X1 1/4	DT654	500	1.90	1.82	2.10	1.80
2X1 1/2X1 1/2	DT655	500	2.02	1.94	2.16	2.00
2X1 1/2X2	DT656	500	2.25	2.16	2.25	2.35
2X2X1/2	DT661	500	1.49	1.49	1.88	1.60
2X2X3/4	DT662	500	1.60	1.60	1.97	1.68
2X2X1	DT663	500	1.73	1.73	2.02	1.85
2X2X1 1/4	DT664	500	1.90	1.90	2.10	2.04
2X2X1 1/2	DT665	500	2.02	2.02	2.16	2.18
2X2X2 1/2	DT667	500	2.60	2.60	2.39	3.61
2 1/2X2X3/4	DT762	500	1.74	1.60	2.32	2.28

DUCTILE IRON BUSHINGS

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



DUCTILE IRON CROSS

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



DUCTILE IRON CAP

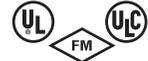
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION	WEIGHT EACH PIECE
			A	
1	DCP003	500	1.16	0.32
1 1/4	DCP004	500	1.28	0.43
1 1/2	DCP005	500	1.33	0.60
2	DCP006	500	1.45	0.91

FIG. MT-30 Threaded Mechanical Branch Tee

Submittal Sheet



Model MT-30 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.



APPROVED
 For Listing / Approval details contact your AnvilStar™ Representative.



WARNING
 For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok® Xtreme™ Lubricant is recommended.

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 ASTM A-194, Zinc Plated.

THREADS:

MT-30 NPT per ANSI/ASME B1.20.1

COATINGS:

- Zinc Electroplated
 - Other (Specify): _____ Example: RAL3000 or RAL9000 Series
- For other Coating requirements contact an AnvilStar Representative.

GASKETS: Materials

Properties as designated in accordance with ASTM D-2000.

- Grade "E" EPDM (Green color code)
 - 40°F to 230°F (Service Temperature Range) (-40°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 _____

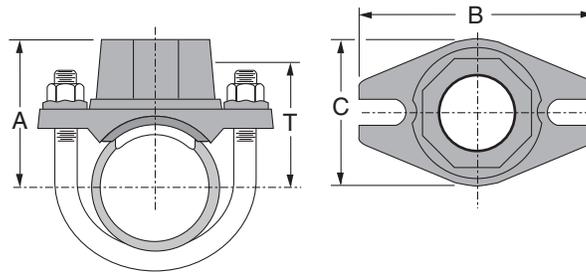
PROJECT INFORMATION:

APPROVAL STAMP:

Project:	
Date:	Phone:
Architect / Engineer:	
Contractor:	
Address:	
Notes 1:	
Notes 2:	

FIG. MT-30 Threaded Mechanical Branch Tee

Submission Sheet



MT-30 MECHANICAL TEES

Nominal Size	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 32 x 12	1.660 x 0.840 42.4 x 21.3	1⅜ 30	1⅝ 33	300 20.7	2⅞ 54	3½ 89	2¼ 57.2	1⅝ 42	0.8 0.4
1¼ x ¾ 32 x 19	1.660 x 1.050 42.4 x 26.7	1⅜ 30	1⅝ 33	300 20.7	2⅞ 54	3½ 89	2¼ 57.2	1⅝ 42	0.8 0.4
1¼ x 1 32 x 25	1.660 x 1.315 42.4 x 33.7	1⅜ 30	1⅝ 33	300 20.7	2¼ 58	3½ 89	2¼ 57.2	1⅝ 41	1.1 0.5
1½ x ½ 40 x 12	1.900 x 0.840 48.3 x 21.3	1⅜ 30	1⅝ 33	300 20.7	2¼ 57	3½ 89	2¼ 57.2	1¾ 48	0.8 0.4
1½ x ¾ 40 x 19	1.900 x 1.050 48.3 x 26.7	1⅜ 30	1⅝ 33	300 20.7	2¼ 57	3½ 89	2¼ 57.2	1¾ 48	0.9 0.4
1½ x 1 40 x 25	1.900 x 1.315 48.3 x 33.7	1⅜ 30	1⅝ 33	300 20.7	2⅜ 61	3½ 89	2¼ 57.2	1¾ 44	1.1 0.5
2 x ½ 50 x 12	2.375 x 0.840 60.3 x 21.3	1⅜ 30	1⅝ 33	300 20.7	2½ 64	3¾ 95	2¼ 57.2	2 51	0.9 0.4
2 x ¾ 50 x 19	2.375 x 1.050 60.3 x 26.7	1⅜ 30	1⅝ 33	300 20.7	2½ 64	3¾ 95	2¼ 57.2	2 51	0.9 0.4
2 x 1 50 x 25	2.375 x 1.315 60.3 x 33.7	1⅜ 30	1⅝ 33	300 20.7	2⅝ 67	3¾ 95	2¼ 57.2	2 50	1.1 0.5
2½ x ½ 65 x 12	2.875 x 0.840 73.0 x 21.3	1⅜ 30	1⅝ 33	300 20.7	2¾ 70	4¼ 108	2¼ 57.2	2¼ 57	0.9 0.4
2½ x ¾ 65 x 19	2.875 x 1.050 73.0 x 26.7	1⅜ 30	1⅝ 33	300 20.7	2¾ 70	4¼ 108	2¼ 57.2	2¼ 57	0.9 0.4
2½ x 1 65 x 25	2.875 x 1.315 73.0 x 33.7	1⅜ 30	1⅝ 33	300 20.7	2⅞ 73	4¼ 108	2¼ 57.2	2¼ 56	1.1 0.5

BSP equivalent is available as a MT-90.

NOTE: Tighten nuts alternatively to a recommended torque of 18 -22 ft-lbs (25 - 30 N-m) on pipe wall less than schedule 10 or 23 -27 ft-lbs (31 - 37 N-m) on pipe walls schedule 10 and above.

RSN: 1157028

Permit #: 2016-1192807-CT

Fig. 200 - "Trimline" Adjustable Band Hanger

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

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

Features —

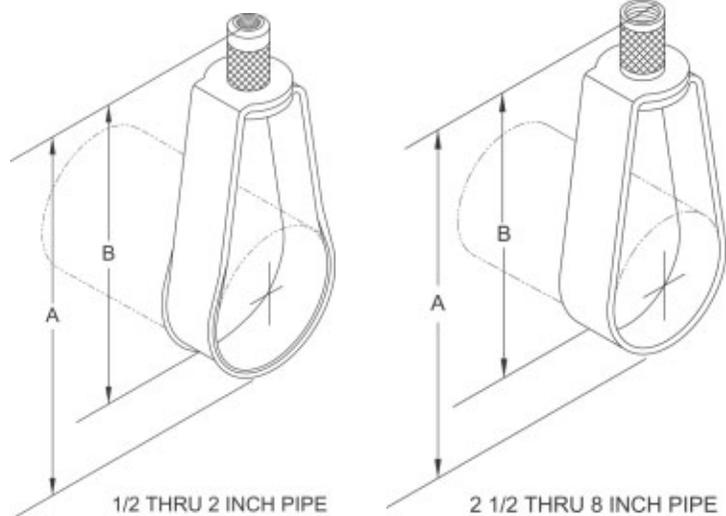
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2 1/2" thru 8" Spring tension on nut holds it securely in hanger before installation.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

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

Maximum Temperature — 650°F

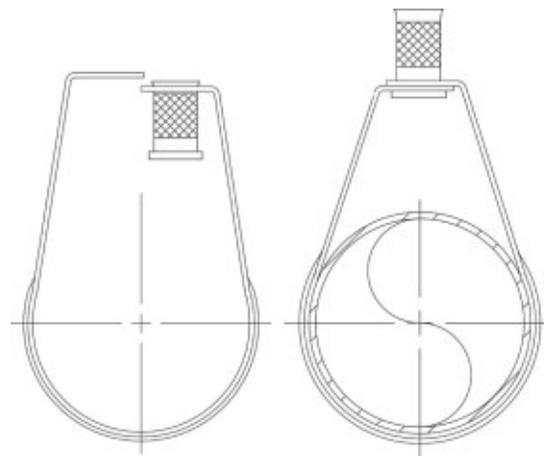
Finish — Mil. Galvanized. For Stainless Steel materials, order TOLCO™ Fig. 200WON.

Order By — Figure number and pipe size



1/2 THRU 2 INCH PIPE

2 1/2 THRU 8 INCH PIPE



Dimensions • Weights

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

RSN: **1157028**

Permit #: **2016-1192807-CT**

Fig. 65 and Fig. 66

Reversible C-Type Beam Clamps 3/4" and 1 1/4" Throat Openings

Size Range — (Fig. 65 and Fig. 66) 3/8", 1/2" and 5/8" rod

Material — Carbon Steel with hardened cup point set screw and jam nut

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

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

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

Component of State of California OSHPD Approved Seismic Restraints System

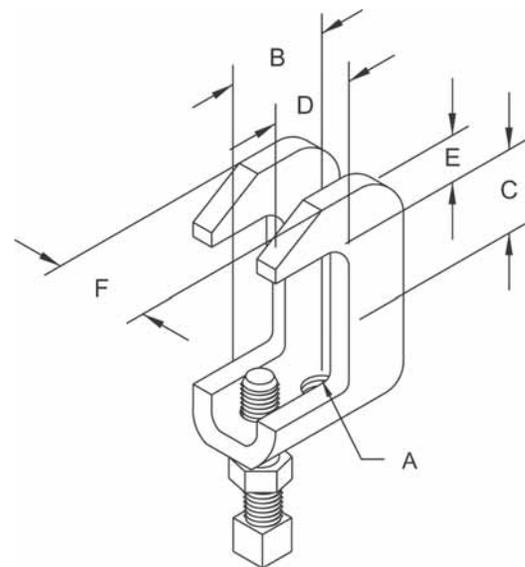
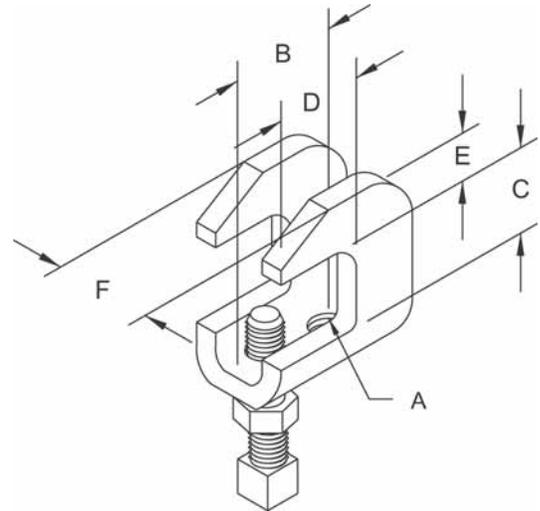


Fig. 65

Dimensions • Weights

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

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

Fig. 66

Dimensions • Weights

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

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

SAMMY X

RSN: 1157028
Permit #: 2016-1192807-CT

ITW Buildex PRESS®

XP 200 for 1/4" and
XP 20 & XP 35 for 3/8" Rod

Expands to provide direct vertical attachment in:

- Metal Deck (22-16 gauge)
- Purlin (18-16 gauge)

U.S. Patent No.
6,935,821

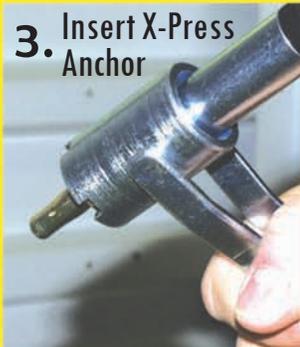
- Installs in seconds, saves time & installation costs.
- Use in applications where easy access to the back of the installed fastener is prohibited.
- No retaining nut required.



1. Pre-Drill



2. Attach Sleeve



3. Insert X-Press Anchor



4. Install

*Tool Includes: Sleeve, Bit Receiver, Hex Wrench and 25/64" Drill Bit.

Ask your supplier or call us at 800-BUILDDEX.

SSS05

	Approvals	Min Steel Ga.	Part #	Model	Screw Description	Rod Size	Pipe Size	Test Load
Pipe Hanger	FM	12 ga	8150922	XP 20	Sammy X-Press 20	3/8 - 16"	3/4 - 4"	1475 Lbs.
		12 ga	8153922	XP 35	Sammy X-Press 35	3/8 - 16"	3/4 - 4"	1475 Lbs.
	UL 9R21	22 ga	8150922	XP 20	Sammy X-Press 20	3/8 - 16"	3/4 - 2"	750 Lbs.
		18 ga	8153922	XP 35	Sammy X-Press 35	3/8 - 16"	3/4 - 3-1/2"	1250 Lbs.
Luminaire Fitting	Approvals	Min Steel Ga.	Part #	Model	Screw Description	Rod Size	Load Rating	
	UL 25ES	22 ga	8150922	XP 20	Sammy X-Press 20	3/8 - 16"	185 Lbs.	
			8153922	XP 35	Sammy X-Press 35	3/8 - 16"	185 Lbs.	
		16 ga	8181922	XP 200	Sammy X-Press 200	1/4 - 20"	185 Lbs.	
			8150922	XP 20	Sammy X-Press 20	3/8 - 16"	250 Lbs.	
			8153922	XP 35	Sammy X-Press 35	3/8 - 16"	250 Lbs.	
			8181922	XP 200	Sammy X-Press 200	1/4 - 20"	250 Lbs.	
			8151910	XPIT	Sammy X-Press It® Installation Tool			
		8152910	XPDB	25/64" Drill Bit				