



### Discharge Coefficient

$K = 5.6 \text{ GPM/psi}^{1/2} (80,6 \text{ LPM/bar}^{1/2})$

### Adjustment

1/2 inch (12,7 mm)

### Finishes

See the Ordering Procedure section.

### Physical Characteristics

Frame	Bronze
Support Cup	Plated Steel
Guide Pins	Stainless Steel
Deflector	Bronze
Compression Screw	Brass
Bulb	Glass
Cap	Bronze or Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Cover Plate	Brass
Retainer	Brass
Ejection Spring	Stainless Steel

## Design Criteria

The TYCO Series RFI 5.6 K-factor, "Royal Flush II" Concealed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 and VdS Approval is based on the CEA 4001.

For more information on LPCB and VdS Approvals, contact Johnson Controls at the following office:

Enschede, Netherlands  
 Telephone: 31-53-428-4444  
 Fax: 31-53-428-3377

The Series RFI Concealed Pendent Sprinklers are only listed and approved with the Series RFI Concealed Cover Plates having a factory applied finish.

### NOTICE

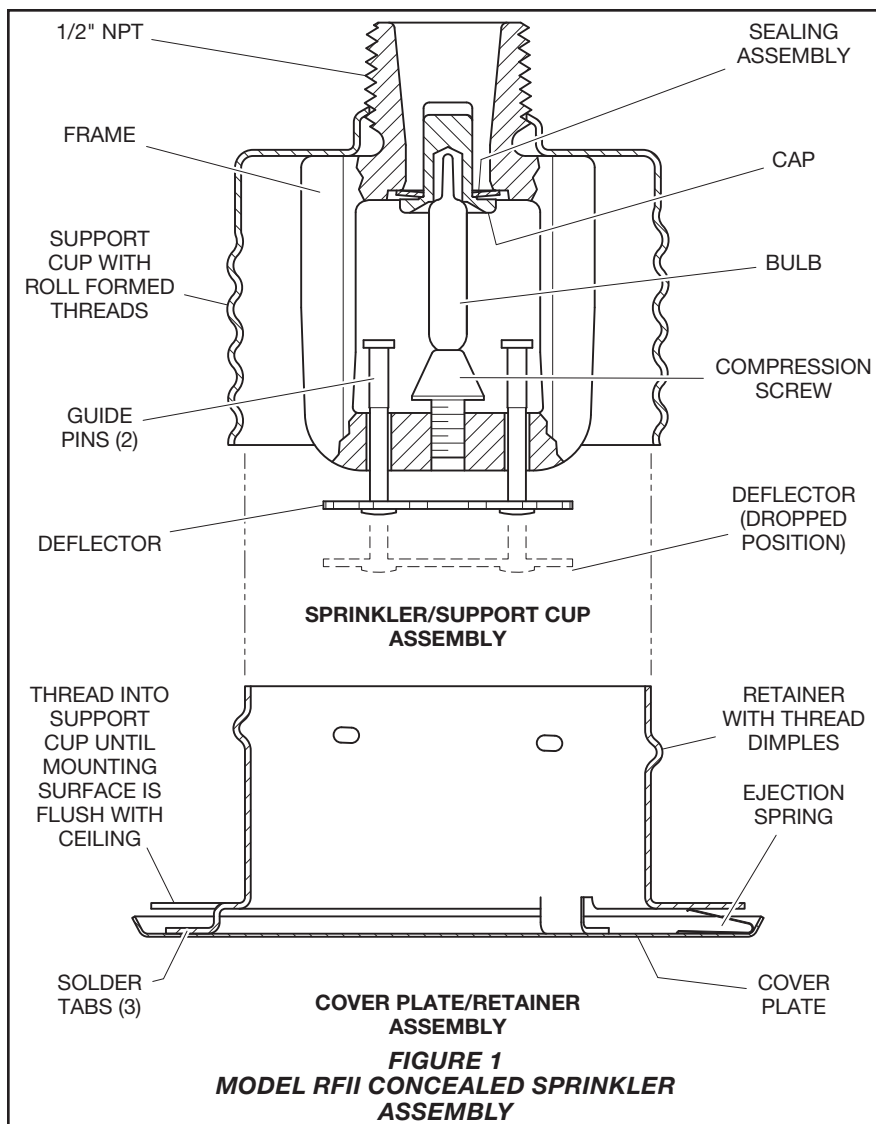
*Do not use the Series RFI in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Sprinkler/Support Cup Assembly can delay sprinkler operation in a fire situation.*

## Operation

When exposed to heat from a fire, the Cover Plate, normally soldered to the Retainer at three points, falls away to expose the Sprinkler/Support Cup Assembly.

The Deflector — supported by the Guide Pins — then drops down to its operational position.

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, activating the sprinkler and allowing water to flow.



## Installation

The TYCO Series RFI 5.6 K-factor, "Royal Flush II" Concealed Pendent Sprinklers must be installed in accordance with this section.

### General Instructions

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 155°F (68°C) and 3/32 inch (2,4 mm) for the 200°F (93°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Sprinkler by under- or over-tightening the Sprinkler/Support Cup Assembly. Re-adjust the position of the sprinkler fitting to suit.

**Step 1.** Install the sprinkler only in the pendent position with the center-line of the sprinkler perpendicular to the mounting surface.

**Step 2.** Remove the Protective Cap.

**Step 3.** With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

**Step 4.** Wrench-tighten the sprinkler using only the RFI Sprinkler Wrench. (Refer to Figure 3.) Apply the RFI Sprinkler Wrench to the Sprinkler as shown in Figure 3.





Worldwide  
Contacts

www.tyco-fire.com

## Series RFI — 5.6 K-factor “Royal Flush II” Concealed Pendent Sprinklers Quick & Standard Response, Standard Coverage

### General Description

The TYCO Series RFI 5.6 K-factor, “Royal Flush II” Concealed Pendent Sprinklers Quick Response (3-mm bulb) and Standard Response (5-mm bulb), are decorative sprinklers featuring a flat cover plate designed to conceal the sprinkler. These sprinklers are optimal for architecturally sensitive areas such as hotel lobbies, office buildings, churches, and restaurants.

Each sprinkler includes a Cover Plate/Retainer Assembly and a Sprinkler/Support Cup Assembly. The separable, two-piece assembly design provides the following benefits:

- Allows installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling or application of the finish coating to a fixed ceiling.
- Permits the removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers.
- Provides for 1/2 in. (12,7 mm) of vertical adjustment to allow a measure of flexibility in determining the length of fixed piping to cut for the sprinkler drops.

#### 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.

The Series RFI Sprinklers are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed during installation and replaced to help protect the sprinkler during ceiling installation or finish. The tip of the Protective Cap can be used to mark the center of the ceiling hole into plaster board or ceiling tiles by gently pushing the ceiling product against the Protective Cap. When ceiling installation is complete, the Protective Cap is removed and the Cover Plate/Retainer Assembly is installed.

As an option, the Series RFI Standard Response (5-mm bulb) “Royal Flush II” Concealed Pendent Sprinklers can be fitted with a silicone Air and Dust Seal. (Refer to Figure 5.) The Air and Dust Seal is intended for sensitive areas where it is desirable to prevent air and dust from the area above the ceiling to pass through the cover plate.

#### NOTICE

*The Series RFI Concealed 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.*

### Sprinkler Identification Number (SIN)

TY3531 — 3 mm bulb  
TY3551 — 5 mm bulb



### Technical Data

#### Sprinkler Approvals

Approvals apply only to the service conditions indicated in the Design Criteria section.

- TY3531 (3 mm Bulb) is UL Listed, C-UL Listed and NYC Approved (MEA 353-01-E) as Quick Response.
- TY3531 (3 mm Bulb) is VdS Approved (Certificate No. G4090007).
- TY3531 (3 mm Bulb) is FM and LPCB Approved (Ref. No. 094a/10) as Standard Response.

**Note:** FM and LPCB do not approve concealed sprinklers for quick response.

- TY3551 (5 mm Bulb) is UL Listed, C-UL Listed, FM Approved, LPCB Approved (Ref. No. 094a/9), and NYC Approved (MEA 353-01-E) as Standard Response.

#### Approvals for Air and Dust Seal

UL and C-UL Listed for use with the RFI Standard Response Concealed Sprinkler (TY3551)

#### Maximum Working Pressure

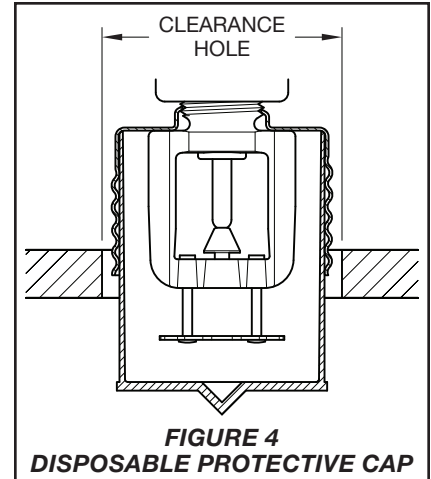
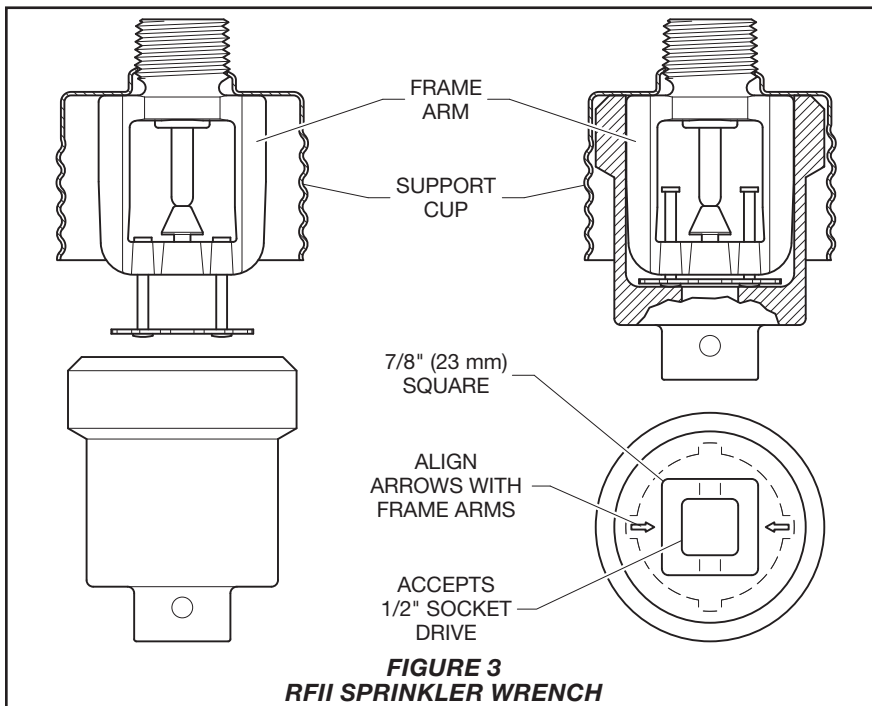
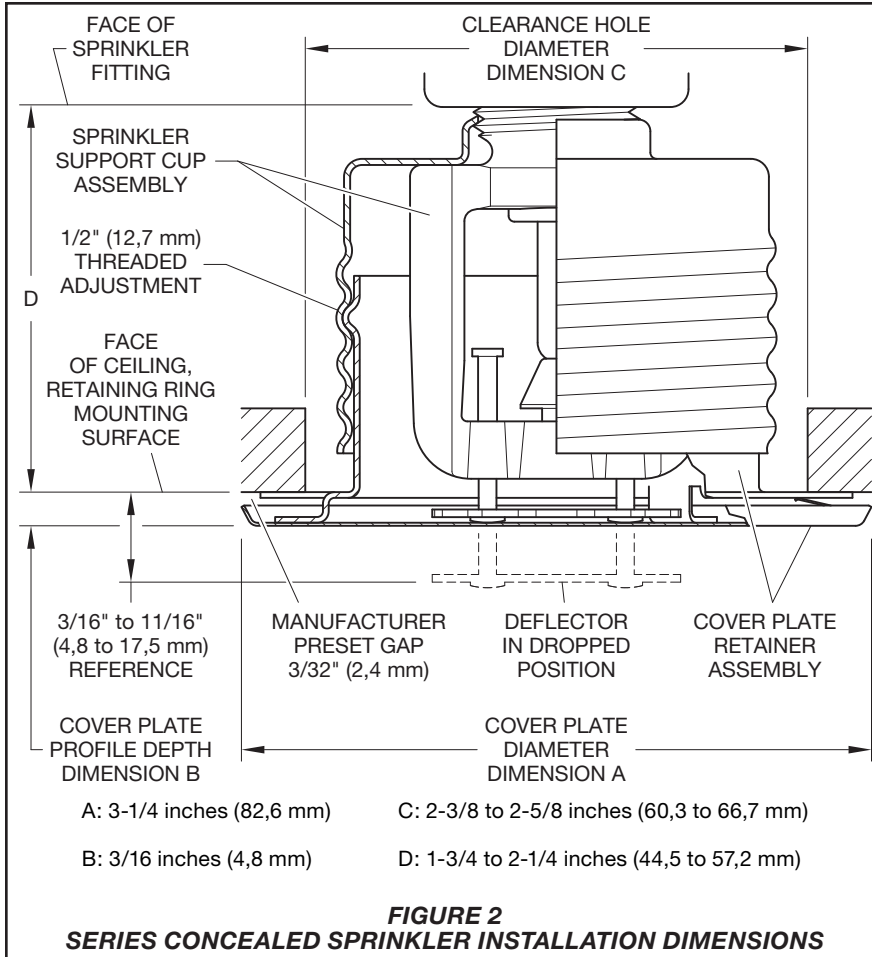
Maximum 250 psi (17,3 bar) by UL, C-UL, and NYC

Maximum 175 psi (12,1 bar) by FM, VdS, and LPCB

#### Temperature Rating

155°F (68°C) Sprinkler with  
139°F (59°C) Cover Plate

200°F (93°C) Sprinkler with  
165°F (74°C) Cover Plate



**Step 5.** Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. (Refer to Figure 4.) The Protective Cap helps prevent damage to the Deflector and Arms during ceiling installation and/or finish. You can also use the Protective Cap to locate the center of the clearance hole by gently pushing the ceiling material up against the center point of the Protective Cap.

**NOTICE**

*As long as the Protective Cap remains in place, the system is considered "Out of Service".*

**Step 6.** After the ceiling has been completed with the 2-1/2 in. (63,5 mm) diameter clearance hole and in preparation for installing the Cover Plate/Retainer Assembly, remove and discard the Protective Cap. Verify that the Deflector moves up and down freely.

If the Sprinkler is damaged and the Deflector does not move up and down freely, replace the entire Sprinkler. Do not attempt to modify or repair a damaged sprinkler.

**Step 7.** When installing an Air and Dust Seal, refer to Figure 5; otherwise, proceed to Step 8. To attach the Air and Dust Seal, verify the angle of the outside edge of the seal is oriented according to Figure 5. Start the edge of the Retainer in the grooved slot of the Air and Dust Seal and continue around the retainer until the entire Air and Dust Seal is engaged.



**Step 8.** Screw on the Cover Plate/Retainer Assembly until the Retainer (shown in Figure 2) or the Air and Dust Seal (shown in Figure 5) contacts the ceiling. Do not continue to screw on the Cover Plate/Retainer Assembly so that it lifts a ceiling panel out of its normal position. If you cannot engage the Cover Plate/Retainer Assembly with the Support Cup or you cannot engage the Cover Plate/Retainer Assembly sufficiently to contact the ceiling, you must reposition the Sprinkler Fitting.

## Care and Maintenance

The TYCO Series RFII 5.6 K-factor, "Royal Flush II" Concealed 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 system from the proper authorities and notify all personnel who may be affected by this action.

Absence of the Cover Plate/Retainer Assembly can delay sprinkler operation in a fire situation.

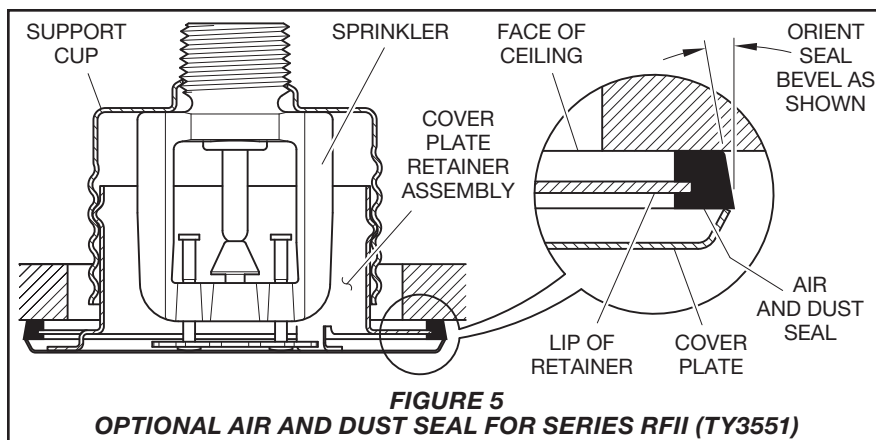
When properly installed, there is a nominal 3/32 in. (2,4 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 2.

This air gap is necessary for proper operation of the sprinkler. If the ceiling requires repainting after sprinkler installation, ensure that the new paint does not seal off any of the air gap.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

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

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.



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

Exercise care to avoid damage to sprinklers before, during, and after installation. Replace sprinklers damaged by dropping, striking, wrench twisting, wrench slipping, or the like. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Refer to the Installation section.)

If you must remove a sprinkler, do not reinstall it or a replacement without reinstalling the Cover Plate/Retainer Assembly. If a Cover Plate/Retainer Assembly becomes dislodged during service, replace it immediately.

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, for example, 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 should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.

## Limited Warranty

For warranty terms and conditions, visit [www.tyco-fire.com](http://www.tyco-fire.com).

## Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name.

**Sprinkler/Support Cup Assembly**  
Specify: Series RFII (specify SIN), K=5.6, "Royal Flush II" Pendent Sprinklers (specify) temperature rating, P/N\* (specify):

	155°F (68°C)	200°F (93°C)
TY3531	51-792-1-155	51-792-1-200
TY3551	51-790-1-155	51-790-1-200

\* Use Suffix "I" for ISO 7-1 connection; for example, 51-792-1-155-I

### Separately Ordered Cover Plate/Retainer Assembly:

Specify: (temperature rating from below) Series RFII Concealed Cover Plate with (finish), P/N (specify).

	139°F (59°C)(a)	165°F (74°C)(b)
Grey White (RAL9002) . . . . .	56-792-0-135	56-792-0-165
Brass . . . . .	56-792-1-135	56-792-1-165
Pure White (c) (RAL9010) . . . . .	56-792-3-135	56-792-3-165
Signal White (RAL9003) . . . . .	56-792-4-135	56-792-4-165
Jet Black (RAL9005) . . . . .	56-792-6-135	56-792-6-165
Brushed		
Chrome . . . . .	56-792-8-135	56-792-8-165
Chrome . . . . .	56-792-9-135	56-792-9-165
Custom . . . . .	56-792-X-135	56-792-X-165

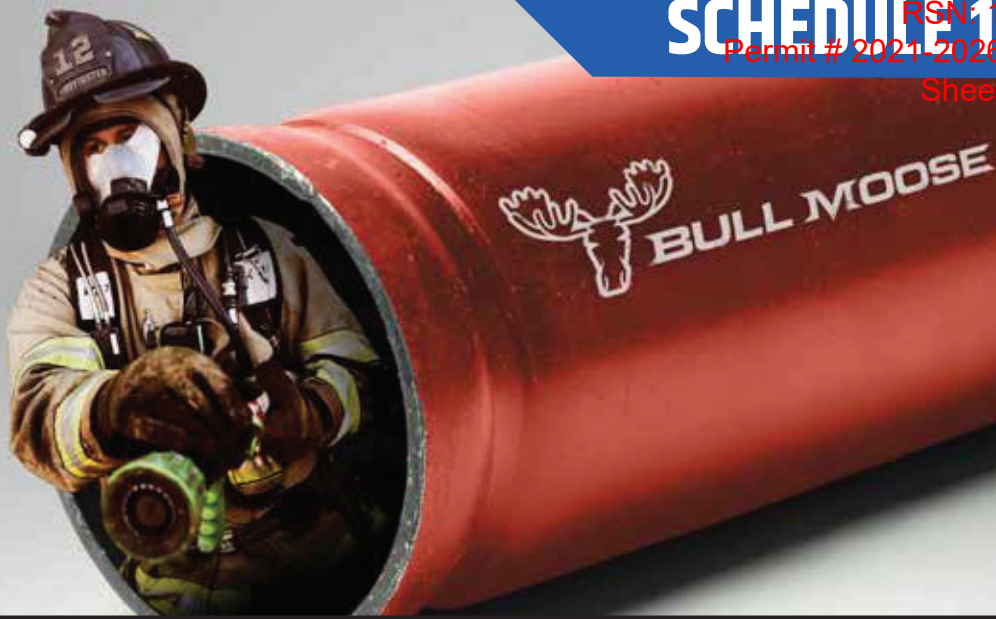
- (a) For use with 155°F (68°C) sprinklers.
- (b) For use with 200°F (93°C) sprinklers.
- (c) Eastern Hemisphere sales only.

### Sprinkler Wrench

Specify: RFII Sprinkler Wrench, P/N 56-000-1-075

### Air and Dust Seal

Specify: Air and Dust Seal, P/N 56-908-1-001



## 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"	NPS (In.)		1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
SCHEDULE 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625	SCHEDULE 40	1.315	1.660	1.900	2.375	2.875	3.500	4.500	
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249		1.049	1.380	1.610	2.067	2.469	3.068	4.026	
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940		1.680	2.270	2.720	3.660	5.800	7.580	10.800	
	Water Filled Weight (lb/ft)	1.820	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086		2.055	2.918	3.602	5.114	7.875	10.783	16.316	
	C.R.R.	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	Pieces per Lift	91	61	61	37	30	19	19	10	7		70	51	44	30	30	19	19	
	Lift Weight (lbs) 21' lengths	2,695	2,319	2,677	2,051	2,224	1,732	2,242	1,951	2,490		2,470	2,431	2,513	2,306	3,654	3,024	4,309	
	Lift Weight (lbs) 24' lengths	3,079	2,650	3,060	2,344	2,542	1,979	2,563	2,230	2,848		2,822	2,778	2,872	2,635	4,176	3,456	4,925	
	Lift Weight (lbs) 25' lengths	3,208	2,760	3,187	2,442	2,648	2,062	2,670				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.



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## 5.0 Installation System Hangers

## Rod couplers

## Material Specifications

<b>Material</b>	ASTM A563, Grade A carbon steel;
<b>Finish</b>	Zinc electroplated to ASTM B 633-98, SC 1, Type I
<b>Thread</b>	Class 2A fit; Class 2B thread



## Ordering Information

Description	Length	Width across flats	Qty	Item No.	MSS-SP-58 <sup>1</sup> Allowable Tensile Load at 650°F	AISC <sup>2</sup> Allowable Load (lb)
<b>1/4" Rod Coupler</b>	7/8"	3/8"	100	411746	300	780
<b>3/8" Rod Coupler</b>	1-1/8"	1/2"	50	411747	730	1750
<b>1/2" Rod Coupler</b>	1-1/4"	5/8"	50	411748	1350	3110
<b>5/8" Rod Coupler</b>	2-1/8"	13/16"	50	411749	2160	4860
<b>3/4" Rod Coupler</b>	2-1/4"	1"	25	411750	3230	6700

<sup>1</sup> Per MSS-SP-58-2002, the ultimate tensile loads are based on a tensile stress of 50,000 psi multiplied by the threaded rod root area based on coarse thread UNC.

<sup>2</sup> AISC Allowable Tensile load =  $0.33 \times F_u \times A_{nom}$

AISC Allowable Shear load =  $0.17 \times F_u \times A_{nom}$



### 3.2.11.1 Product description

### 3.2.11.2 Material specifications

### 3.2.11.3 Technical data

### 3.2.11.4 Installation instructions

### 3.2.11.5 Ordering information



X-W6

W10

### Listings/Approvals

**ICC-ES (International Code Council)**  
ESR-1663 with LABC/LARC Supplement

**FM (Factory Mutual)**

W10-30-27P10, W10-30-32P10 and W10-30-42P10 Fasteners for Sprinkler Pipe Hangers

**UL (Underwriters Laboratories)**

W10-30-32P10 and W10-30-42P10, Fasteners for Sprinkler Pipe Hangers - Up to 2-1/2" diameter pipe



## 3.2.11 STUD FASTENERS FOR ATTACHMENT TO CONCRETE

### 3.2.11.1 PRODUCT DESCRIPTION

The Hilti threaded stud program is for use with Hilti powder-actuated tools to provide a faster and more reliable solution for making attachments to concrete base materials. Threaded studs are available in standard carbon steel. The X-W6 and W10 threaded

studs have varying shank lengths to provide more reliable fastenings to standard and high strength concrete. Thread diameters of 1/4" have thread lengths ranging from 1/2" through 1-1/2". The 3/8" thread diameter has a single thread length of 1-3/16".

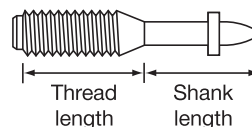
### 3.2.11.2 Material specifications

Fastener designation	Fastener material	Fastener plating
X-W6	Carbon Steel	5 µm Zinc <sup>1</sup>
W10	Carbon Steel	5 µm Zinc <sup>1</sup>

<sup>1</sup> ASTM B633, SC1, Type III. Refer to Section 2.3.3.1 for more information.

### 3.2.11.3 Technical data

Fastener designation	Thread designation	Thread length in. (mm)	Shank length in. (mm)
X-W6-20-22	UNC 1/4-inch	3/4 (20)	7/8 (22)
X-W6-20-27	UNC 1/4-inch	3/4 (20)	1 (27)
X-W6-38-27	UNC 1/4-inch	1-1/2 (38)	1 (27)
W10-30-27	UNC 3/8-inch	1-3/16 (30)	1 (27)
W10-30-32	UNC 3/8-inch	1-3/16 (30)	1-1/4 (32)
W10-30-42	UNC 3/8-inch	1-3/16 (30)	1-5/8 (42)



### Allowable loads in normal weight concrete<sup>1,2</sup>

Description	Fastener	Shank diameter in. (mm)	Minimum embedment in. (mm)	Concrete compressive strength			
				2000 psi		4000 psi	
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
1/4-20 Threaded stud	X-W6	0.145 (3.7)	3/4 (19)	40 (0.18)	55 (0.24)	40 (0.18)	55 (0.24)
			1 (25)	85 (0.38)	195 (0.87)	110 (0.49)	225 (1.00)
3/8-16 Threaded stud	W10	0.205 (5.2)	1 (25)	85 (0.38)	95 (0.42)	100 (0.44)	105 (0.47)
			1-1/4 (32)	175 (0.78)	345 (1.53)	200 (0.89)	380 (1.69)
			1-5/8 (41)	285 (1.27)	380 (1.69)	385 (1.71)	395 (1.76)

<sup>1</sup> The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.

<sup>2</sup> Multiple fasteners are recommended for any attachment.

### Allowable Loads in Minimum $f'_c = 3000$ psi Structural Lightweight Concrete<sup>1,4</sup>

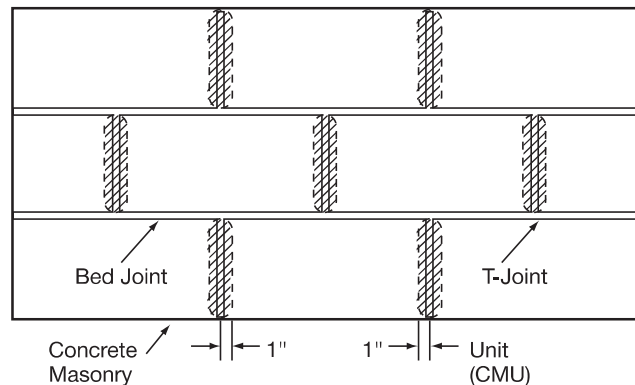
Fastener description	Fastener	Shank dia. in. (mm)	Min. embed. in. (mm)	Fastener location				
				Installed into concrete		Installed through 3" deep metal deck into concrete <sup>2,3</sup>		
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)		Shear lb (kN)
						Upper flute	Lower flute	
1/4-20 Threaded Stud	X-W6	0.145 (3.7)	3/4 (20)	125 (0.56)	185 (0.82)	125 (0.56)	115 (0.54)	185 (0.82)
			1 (25)	175 (0.78)	185 (0.82)	160 (0.71)	180 (0.80)	185 (0.82)
3/8-16 Threaded Stud	W10	0.205 (5.2)	1 (25)	265 (1.18)	190 (0.85)	160 (0.71)	–	185 (0.82)
			1-1/4 (32)	280 (1.25)	380 (1.69)	160 (0.71)	210 (0.93)	470 (2.09)
			1-5/8 (41)	445 (1.98)	540 (2.40)	435 (1.93)	325 (1.45)	675 (3.00)

- The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
- The steel deck profile is 3" deep composite floor deck with a thickness of 20 gauge (0.0358"). Figure 1 (Section 3.2.1.6) shows the nominal flute dimensions, fastener locations and load orientations for the deck profile.
- Structural lightweight concrete fill above top of metal deck shall be a minimum of 3-1/4" deep.
- Multiple fasteners are recommended for any attachment.

### Allowable Loads in Concrete Masonry Units<sup>1,2,3,4,5,8</sup>

Fastener description	Fastener	Shank diameter in. (mm)	Minimum embedment in. (mm)	Hollow CMU				Grout filled CMU			
				Face shell <sup>6</sup>		Mortar joint <sup>6</sup>		Face shell <sup>6</sup>		Mortar joint <sup>6</sup>	
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear <sup>7</sup> lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear <sup>7</sup> lb (kN)
1/4-20 Threaded Stud	X-W6	0.145 (3.7)	1 (25)	105 (0.47)	175 (0.78)	80 (0.36)	110 (0.49)	125 (0.56)	175 (0.78)	135 (0.60)	150 (0.67)

- The tabulated allowable load values are for the low-velocity fastener only, using a safety factor of 5.0 or higher. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
- The tabulated allowable load values are for low-velocity fasteners installed in normal weight or lightweight concrete masonry units conforming to ASTM C90.
- The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with mortar conforming to ASTM C270, Type N.
- The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with grout conforming to ASTM C476, as coarse grout.
- The tabulated allowable load values are for one low-velocity fastener installed in an individual masonry unit cell and at least 4" from the edge of the wall.
- Fastener can be located anywhere on the face shell or mortar joint as shown in the figure to the right.
- Shear direction can be horizontal or vertical (Bed Joint or T-Joint) along the CMU wall plane.
- Multiple fasteners are recommended for any attachment.



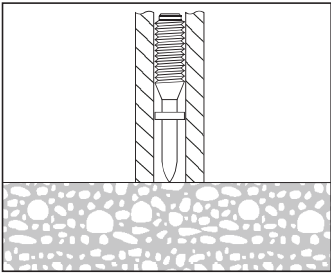
Acceptable locations (NON-SHADED AREAS) for threaded studs in CMU walls

### Allowable bending moments for threaded stud fasteners installed in minimum 2,000 psi concrete<sup>1,2</sup>

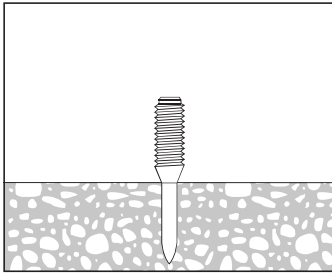
Fastener designation	$M_{rec}$ ft-lb (Nm)
X-W6	3.6 (4.9)
W10	10.0 (13.6)

- Based on a safety factor greater than or equal to 2.0.
- For more information on bending moments, reference Section 3.2.2.7.

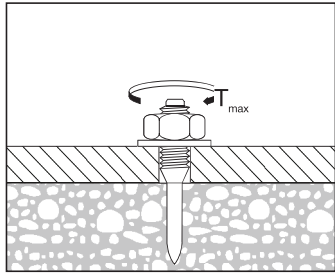
### 3.2.11.4 INSTALLATION INSTRUCTIONS\*



1. Press tip of fastener to concrete base material. Drive fastener with Hilti powder-actuated tool.



2. Ensure proper threaded stud embedment.



3. Make attachment. Do not exceed Maximum Tightening Torque,  $T_{max}$ .

\* These are abbreviated instructions which may vary by application. **ALWAYS** review/follow the instructions accompanying the product.

Maximum tightening torque,  $T_{max}$ , for threaded studs driven into concrete, ft-lb (Nm)

Stud type	
X-W6	W10
3.0 (4.0)	4.5 (6.0)

### 3.2.11.5 ORDERING INFORMATION

Fastener description	Shank length in. (mm)	Shank Ø in. (mm)	Thread length in. (mm)	Thread Ø	Guidance washer Ø	Packaging quantity
X-W6-20-22 FP8	7/8 (22)	0.145 (3.7)	3/4 (20)	UNC 1/4-inch	8 mm plastic	100 pcs
X-W6-20-27 FP8	1 (27)	0.145 (3.7)	3/4 (20)	UNC 1/4-inch	8 mm plastic	100 pcs
X-W6-38-27 FP8	1 (27)	0.145 (3.7)	1-1/2 (38)	UNC 1/4-inch	8 mm plastic	100 pcs
W10-30-27 P10	1 (27)	0.205 (5.2)	1-3/16 (30)	UNC 3/8-inch	10 mm plastic	100 pcs
W10-30-32 P10	1-1/4 (32)	0.205 (5.2)	1-3/16 (30)	UNC 3/8-inch	10 mm plastic	100 pcs
W10-30-42 P10	1-5/8 (42)	0.205 (5.2)	1-3/16 (30)	UNC 3/8-inch	10 mm plastic	100 pcs



X-W6



W10\*

\* W10 threaded stud installation requires a 10mm fastener base plate.



## Fasteners

Anchors, expansion shields, concrete inserts, explosive-driven fasteners and threaded head screws provide anchorage to building structural members for supporting pipe hangers. See PIPE HANGER listing for other components and minimum rod sizes. Unless specifically noted in the listing, the following fasteners are FM Approved for vertical installation only.

### Explosive-Driven Fasteners

Explosive-driven fasteners provide anchorage to concrete or steel building members for supporting pipe hangers. The powder-actuated tool used for driving these fasteners may represent an ignition source; therefore, it should not be used in classified hazardous locations or near easily ignited materials. Fasteners should not be used for support of pipe hangers to structural members in Earthquake Zones 500 or less as defined by FM Global Property Loss Prevention Data Sheet 1-2.

A coupling and locknut are provided with each fastener for attaching a pipe hanger to the fastener.

### Explosive-Driven Fasteners

<i>Fastener, Cat. No.</i>	<i>Coupling, Cat. No.</i>	<i>For Use In</i>	<i>Max Pipe Size, in. (mm)</i>
W10-30-27P10	D1025	Concrete	2 (51)
W10-30-27P10	ACI-F	"	3 1/2 (89)
W10-30-27P10	ACI-H	"	5 (127)
W10-30-32P10	D1025	"	2 (51)
W10-30-32P10	ACI-F	"	3 1/2 (89)
W10-30-32P10	ACI-H	"	5 (127)
W10-30-42P10	D1025	"	2 (51)
W10-30-42P10	ACI-F	"	3 1/2 (89)
W10-30-42P10	ACI-H	"	5 (127)
W10-30-47P10	D1025	"	2 (51)
W10-30-47P10	ACI-F	"	3 1/2 (89)
W10-30-47P10	ACI-H	"	5 (127)
EW10-30-15P10	D1025	Steel	2 (51)
EW10-30-15P10	ACI-F	"	3 1/2 (89)
EW10-30-15P10	ACI-H	"	5 (127)

<i>Fastener, Cat. No.</i>	<i>Rod Size, in.</i>	<i>For Use In</i>	<i>Max Pipe Size, in. (mm)</i>
X-EW6H-11-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-11-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-20-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-20-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-28-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-28-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-38-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-38-9 P12	1/4	Steel	3 1/2 (89)
X-HS W6 U19 P8 S15	1/4	Steel	3 1/2 (89)
X-HS W10 U19 P8 S15	3/8	Steel	5 (127)
X-EW10H-30-14 P10	3/8	Steel	5 (127)

These fasteners are also FM Approved for horizontal installation. Max pipe size 3 1/2 in. (89 mm).

<b>Company Name:</b>	Hilti Inc
<b>Company Address:</b>	5400 S 122nd East Ave, Tulsa, Oklahoma 74146, USA
<b>Company Website:</b>	<a href="http://www.hilti.com">http://www.hilti.com</a>
<b>New/Updated Product Listing:</b>	No
<b>Listing Country:</b>	United States of America
<b>Certification Type:</b>	FM Approved



# THREADED IRON

## BROWSE TITUS FIRE PROTECTION PRODUCTS

GROOVED COUPLINGS

GROOVED FITTINGS

THREADED IRON

BALL VALVES

FASTENERS



## CAST IRON

- Available in sizes from 1" to 2½", Class 125 Standard
- **UL / FM Approved** at 300 psi
- Air Tested

## MALLEABLE IRON

- Available in sizes from 1/8" to 6", Class 150
- **UL / FM Approved** at 300 psi
- Air Tested

## DUCTILE IRON

- Available in sizes from 1/2" to 2", Class 150 Standard DI
- **UL / FM Approved** at 500 psi





# TITUS

## MALLEABLE IRON THREADED PRODUCTS TECHNICAL BULLETINS

[www.titusindustrial.com](http://www.titusindustrial.com)

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# MALLEABLE IRON THREADED PRODUCTS

RSN: 1566134

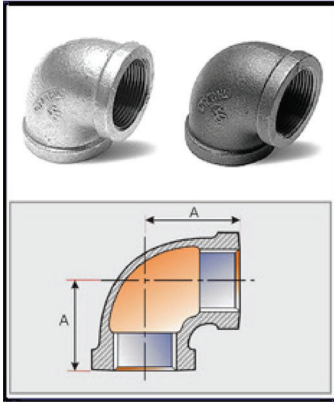
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## ELBOWS 90°

AL 90, BL 90

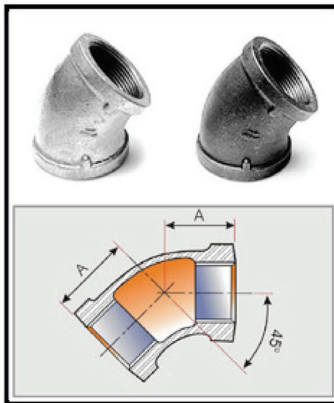


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	50	600	12	0.0306	18
1/4	20.6	35	420	12	0.0515	22
3/8	24.1	90	360	4	0.0710	26
1/2	28.4	50	200	4	0.1195	24
3/4	33.3	35	105	3	0.1865	20
1	38.1	20	60	3	0.2838	17
1 1/4	44.5	20	40	2	0.4504	18
1 1/2	49.3	15	30	2	0.5736	17
2	57.2	8	16	2	0.8932	14
2 1/2	68.6	-	12	1	1.4816	18
3	78.2	-	8	1	2.2560	20
3 1/2	86.9	-	4	1	3.1930	13
4	96.3	-	2	1	4.2200	8
5	114.3	-	2	1	6.7980	14
6	132.0	-	1	1	8.8690	9

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## ELBOWS 45°

AL 45, BL 45

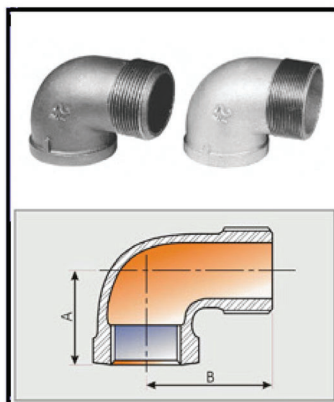


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	16.0	50	600	12	0.0245	15
1/4	18.5	30	360	12	0.0464	17
3/8	20.3	75	300	4	0.0676	20
1/2	22.3	50	200	4	0.1024	20
3/4	24.9	40	120	3	0.1628	20
1	28.4	20	60	3	0.2503	15
1 1/4	32.8	20	40	2	0.3467	14
1 1/2	36.3	10	30	3	0.5098	15
2	42.7	12	24	2	0.8008	19
2 1/2	49.5	-	12	1	1.2640	15
3	55.1	-	10	1	1.9436	19
4	66.3	-	4	1	3.4280	14
5	77.5	-	2	1	4.8500	10
6	87.9	-	1	1	6.7660	7

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## STREET ELBOWS 90°

ASL 90, BSL 90



Size (inch)	Dimensions A	Dimensions B	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	25.4	60	720	12	0.0256	18
1/4	20.6	30.2	35	420	12	0.0440	18
3/8	24.1	36.6	60	240	4	0.0720	17
1/2	28.4	41.4	60	180	3	0.1070	19
3/4	33.3	48.0	35	105	3	0.1740	18
1	38.1	54.3	45	90	2	0.2693	24
1 1/4	44.5	62.2	25	50	2	0.4216	21
1 1/2	49.3	68.3	9	27	3	0.5734	15
2	57.2	82.8	8	16	2	1.0092	16
2 1/2	68.6	98.0	5	10	2	1.6400	16
3	78.2	114.5	-	8	1	2.4160	19
4	96.3	144.5	-	4	1	4.2400	17
5	114.3	174.2	-	1	1	5.5000	6
6	130.3	204.0	-	1	1	12.3666	12

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$



# MALLEABLE IRON THREADED PRODUCTS

RSN: 1566134

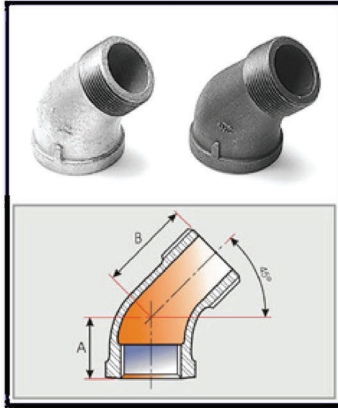
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## STREET ELBOWS 45°

ASL 45, BSL 45

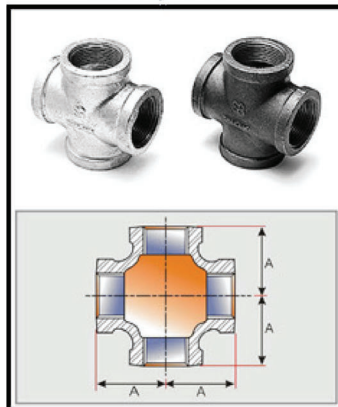


Size (inch)	Dimensions		Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B					
1/8	16.0	21.0	70	840	12	0.0243	20
1/4	18.5	23.9	40	480	12	0.0395	19
3/8	20.3	26.2	100	400	4	0.0582	23
1/2	22.3	33.0	75	225	3	0.0996	22
3/4	24.9	37.5	40	120	3	0.1436	17
1	28.4	43.0	25	75	3	0.2540	19
1 1/4	32.8	47.4	10	40	4	0.3546	14
1 1/2	36.3	51.7	10	30	3	0.5104	15
2	42.7	60.4	12	24	2	0.7944	19
2 1/2	49.5	69.0	6	12	2	1.3512	16
3	55.1	80.2	3	6	2	2.1280	13
4	66.3	99.0	-	4	1	3.3770	14

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## CROSSES

ACR, BCR

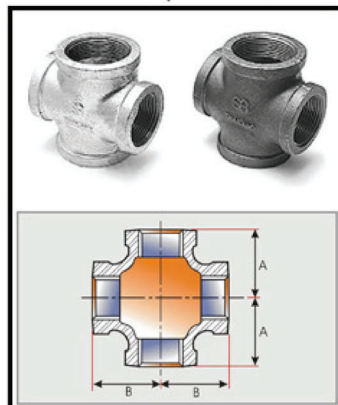


Size (inch)	Dimensions		Inner Box B	Master Ctn. Pcs./Box	NO. of Pcs./Ctn.	Weight/Pcs. Inner Box	N.W./Ctn. (Kgs.)
	A						
1/8	17.5		30	360	12	0.0520	19
1/4	20.6		60	240	4	0.0881	21
3/8	24.1		50	150	3	0.1310	20
1/2	28.4		30	90	3	0.1980	18
3/4	33.3		20	60	3	0.3006	18
1	38.1		15	30	2	0.4642	14
1 1/4	44.5		10	20	2	0.7200	14
1 1/2	49.3		8	16	2	0.9384	15
2	57.2		5	10	2	1.4200	14
2 1/2	68.6		3	6	2	2.4520	15
3	78.2		2	4	2	3.7440	15
4	96.3		1	2	2	6.2900	13

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## REDUCING CROSSES

ARCR, BRRCR



Size (inch)	Dimensions		Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B					
1 1/2 X 1 1/4	46.2	47.8	9	18	2	0.9060	16
2 X 1 1/4	48.3	53.3	5	10	2	1.1380	11
2 1/2 X 1 1/4	52.0	62.0	4	8	2	1.4510	12
2 1/2 X 1 1/2	56.0	63.0	4	8	2	1.5430	12

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$



# MALLEABLE IRON THREADED PRODUCTS

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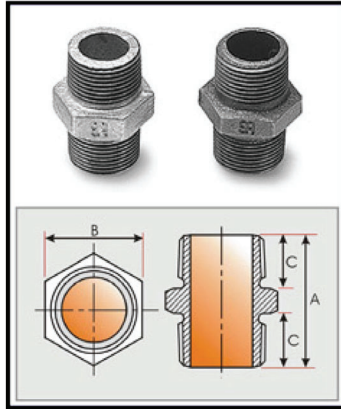
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## NIPPLES

NI

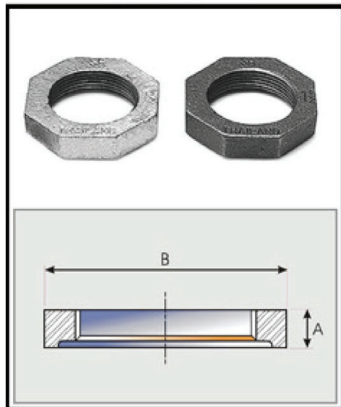


Size (inch)	Dimensions			Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B	C					
1/8	32	14	11.0	240	960	4	0.0220	21
1/4	34	17	12.0	200	800	4	0.0260	21
3/8	36	21	13.0	150	600	4	0.0410	25
1/2	45	27	18.5	80	320	4	0.0692	22
3/4	48	32	19.5	60	180	3	0.1056	20
1	53	38	21.5	40	120	3	0.1560	19
1 1/4	56	48	23.0	35	70	2	0.2226	19
1 1/2	60	55	24.0	25	50	2	0.3360	17
2	70	70	28.0	18	36	2	0.6112	22
2 1/2	76	85	31.0	10	20	2	0.8636	17
3	84	100	34.0	6	12	2	1.2865	15
4	95	130	38.5	3	6	2	1.8512	11

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## LOCKNUTS

ALN, LN

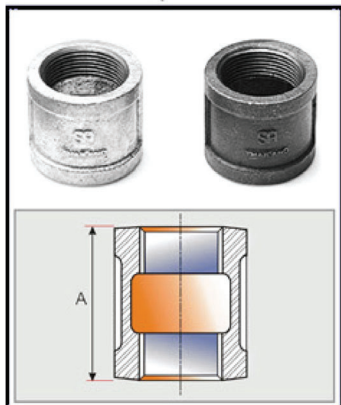


Size (inch)	Dimensions		Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B					
1/8	5.0	17.5	250	3000	12	0.0080	24
1/4	6.6	21.3	125	1500	12	0.0117	18
3/8	7.3	25.4	125	1500	12	0.0150	23
1/2	8.1	30.0	150	600	4	0.0387	23
3/4	8.8	36.3	90	360	4	0.0526	19
1	9.9	44.5	60	240	4	0.0826	20
1 1/4	10.9	53.3	45	180	4	0.1220	22
1 1/2	12.1	59.7	45	135	3	0.2084	28
2	13.7	73.2	25	75	3	0.2680	19
2 1/2	15.2	98.0	20	40	2	0.5150	21
3	17.2	117.3	20	40	2	0.6090	24
4	20.5	147.1	7	14	2	0.7530	11

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## COUPLINGS

AS, BS



Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	24.4	70	840	12	0.0250	21
1/4	26.9	40	480	12	0.0399	19
3/8	29.5	40	480	12	0.0574	28
1/2	34.0	60	240	4	0.0920	22
3/4	38.6	50	150	3	0.1330	20
1	42.4	25	100	4	0.2077	21
1 1/4	49.0	16	64	4	0.3164	20
1 1/2	54.6	18	36	2	0.4196	15
2	64.3	12	24	2	0.6556	16
2 1/2	73.2	8	16	2	1.0320	17
3	80.8	-	12	1	1.6377	20
4	93.7	3	6	2	2.6060	16

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

# MALLEABLE IRON THREADED PRODUCTS

RSN: 1566134

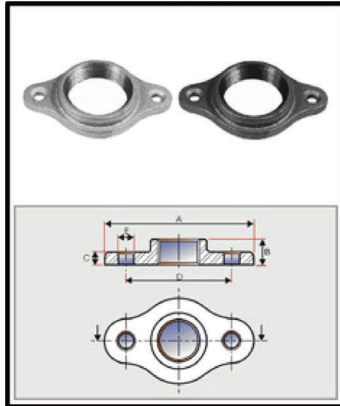
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## WASTENUTS

AWN

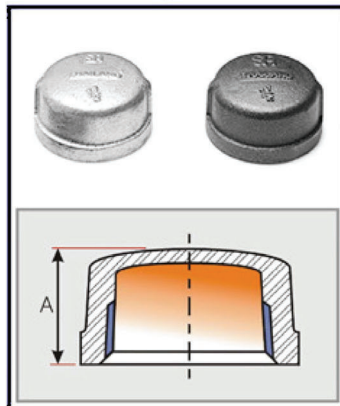


Size (inch)	Dimensions					Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight./Pcs	N.W./Ctn. (Kgs.)
	A	B	C	D	E					
1/2	62.0	6.0	4.4	46.0	6.0	90	360	4	0.0540	19
3/4	73.0	10.5	5.0	54.0	7.3	80	240	3	0.0800	19
1	84.1	11.2	4.8	65.1	7.2	50	200	4	0.0960	19
1 1/4	100.0	12.7	5.6	77.8	8.7	30	120	4	0.1450	17
1 1/2	109.5	14.3	6.4	87.3	8.7	50	100	2	0.1890	19
2	130.2	16.0	7.2	104.8	8.7	30	60	2	0.2850	17

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm$  3%

## CAPS

ACA, BCA

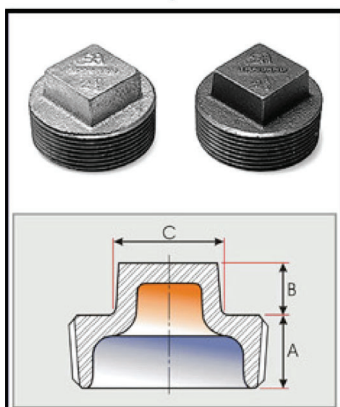


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	13.5	120	1440	12	0.0161	23
1/4	16.0	80	960	12	0.0245	24
3/8	18.8	60	720	12	0.0347	25
1/2	22.1	75	300	4	0.0575	17
3/4	24.6	40	160	4	0.0966	15
1	29.5	25	100	4	0.1424	14
1 1/4	32.5	20	80	4	0.2008	16
1 1/2	33.8	18	54	3	0.2528	14
2	36.8	12	36	3	0.4220	15
2 1/2	43.2	20	40	2	0.7270	29
3	45.7	-	24	1	1.0684	26
3 1/2	48.3	6	12	2	1.4680	18
4	52.8	6	12	2	1.7672	21

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm$  3%

## PLUGS

AP, P



Size (inch)	Dimensions			Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B	C					
1/8	9.8	6.1	7.1	300	3,600	12	0.0058	21
1/4	11.6	7.1	9.5	150	1,800	12	0.0149	27
3/8	12.6	8.0	11.0	100	1,200	12	0.0220	26
1/2	14.7	9.7	14.3	50	600	12	0.0414	22
3/4	16.5	11.2	15.9	30	360	12	0.0660	21
1	19.1	12.7	20.9	20	240	12	0.1100	22
1 1/4	20.9	14.2	23.8	40	120	3	0.1840	21
1 1/2	21.7	15.8	28.6	30	90	3	0.2500	20
2	23.2	17.3	33.3	20	60	3	0.3840	21
2 1/2	32.0	18.8	38.1	16	32	2	0.5091	16
3	29.4	20.3	42.9	16	32	2	0.7532	24
4	31.0	25.4	58.0	6	12	2	1.4873	18

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm$  3%

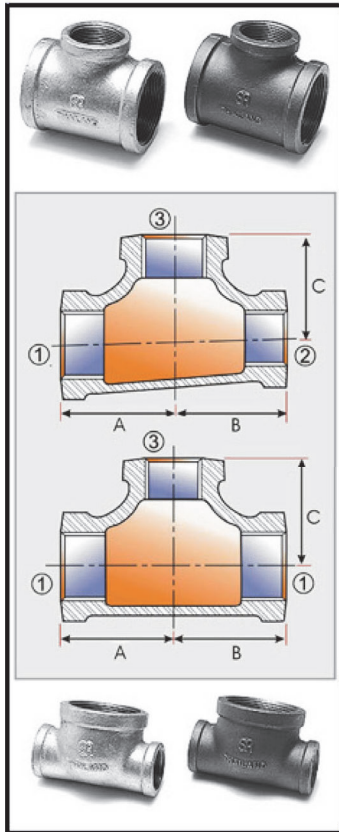
# MALLEABLE IRON THREADED PRODUCTS

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**OTRUS**

## REDUCING TEES

ART, BRT



Size 1 x 2 x 3 (inch)	Dimensions			Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
	A	B	C					
1/4 X 1/8	18.8	18.8	19.3	25	300	12	0.0601	18
3/8 X 1/8	22.4	20.6	21.6	90	360	4	0.0730	26
3/8 X 1/4	22.4	22.4	22.9	60	240	4	0.0979	23
1/2 X 1/8	21.9	21.9	23.5	40	160	4	0.1080	17
1/2 X 1/4	24.6	24.6	24.9	40	160	4	0.1248	20
1/2 X 3/8	25.9	25.9	25.7	40	160	4	0.1350	22
3/4 X 1/8	24.0	24.0	25.7	32	128	4	0.1520	19
3/4 X 1/4	26.7	26.7	27.4	25	100	4	0.1746	17
3/4 X 3/8	27.9	27.9	28.1	25	100	4	0.1800	18
3/4 X 1/2	29.9	29.9	30.4	20	80	4	0.2239	18
1 X 1/4	27.6	27.6	30.4	20	80	4	0.2398	19
1 X 3/8	30.0	30.0	32.3	15	60	4	0.2730	16
1 X 1/2	31.4	31.4	34.8	15	60	4	0.3060	18
1 X 3/4	34.8	34.8	36.8	12	48	4	0.3484	17
1 1/4 X 1/4	30.0	30.0	36.6	20	40	2	0.3450	14
1 1/4 X 3/8	32.0	32.0	36.6	20	40	2	0.4009	16
1 1/4 X 1/2	34.0	34.0	38.9	20	40	2	0.4206	17
1 1/4 X 3/4	36.8	36.8	41.2	20	40	2	0.4719	19
1 1/4 X 1	40.1	40.1	42.2	20	40	2	0.5369	21
1 1/2 X 3/8	40.1	40.1	40.2	18	36	2	0.4450	16
1 1/2 X 1/2	35.8	35.8	42.2	18	36	2	0.4840	17
1 1/2 X 3/4	35.8	35.8	44.5	15	30	2	0.5320	16
1 1/2 X 1	41.9	41.9	45.7	10	30	3	0.6168	19
1 1/2 X 1 1/4	41.9	41.9	47.8	12	24	2	0.6906	17
2 X 3/8	46.2	46.2	-	10	20	2	0.6600	13
2 X 1/2	37.9	37.9	47.8	10	20	2	0.6768	14
2 X 3/4	40.6	40.6	50.0	10	20	2	0.7980	16
2 X 1	43.9	43.9	51.3	10	20	2	0.8096	16
2 X 1 1/4	47.3	47.3	52.2	8	16	2	0.9056	14
2 X 1 1/2	50.3	50.3	53.8	8	16	2	1.0662	17
2 1/2 X 1/2	40.2	40.2	55.9	6	12	2	1.2800	3
2 1/2 X 3/4	44.2	44.2	58.9	6	12	2	1.2680	15
2 1/2 X 1	46.5	46.5	59.0	5	10	2	1.3776	14
2 1/2 X 1 1/4	47.5	47.5	62.2	5	10	2	1.4808	15
2 1/2 X 1 1/2	54.9	54.9	63.8	5	10	2	1.5068	15
2 1/2 X 2	60.7	60.7	66.0	4	8	2	1.7044	14
3 X 1/2	46.5	46.5	65.0	4	8	2	1.7130	14
3 X 3/4	45.5	45.5	65.3	3	6	2	1.3280	8
3 X 1	50.8	50.8	67.6	3	6	2	1.9765	12
3 X 1 1/4	55.1	55.1	69.6	3	6	2	1.6976	10
3 X 1 1/2	58.2	58.2	71.1	3	6	2	2.1740	13
3 X 2	64.0	64.0	73.4	3	6	2	2.3873	14
3 X 2 1/2	71.9	71.9	76.0	3	6	2	2.7200	16
4 X 1/2	53.5	53.5	79.2	2	4	2	2.5000	10
4 X 3/4	53.5	53.5	79.2	2	4	2	2.7500	11
4 X 1	-	-	-	2	4	2	3.0466	12
4 X 1 1/4	61.0	61.0	86.5	2	4	2	3.1120	12
4 X 1 1/2	62.5	62.5	82.6	2	4	2	3.4200	14
4 X 2	68.2	68.2	84.9	-	3	1	3.6770	11
4 X 2 1/2	77.5	77.5	89.2	-	3	1	4.1900	13
4 X 3	82.1	82.1	89.6	1	2	2	4.1920	8

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$



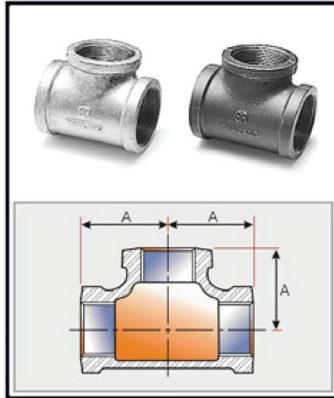
# MALLEABLE IRON THREADED PRODUCTS

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## TEES

AT, BT

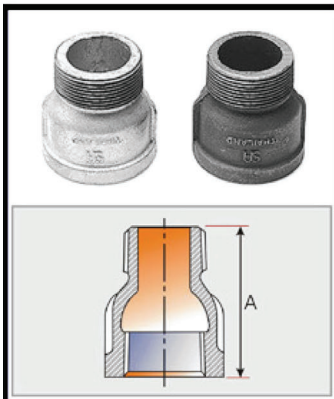


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	120	480	4	0.0452	22
1/4	20.6	75	300	4	0.0702	21
3/8	24.1	45	180	4	0.1087	20
1/2	28.4	40	120	3	0.1686	20
3/4	33.3	35	70	2	0.2542	18
1	38.1	20	40	2	0.3998	16
1 1/4	44.5	14	28	2	0.6020	17
1 1/2	49.3	12	24	2	0.7254	17
2	57.2	8	16	2	1.2100	19
2 1/2	68.6	4	8	2	2.2133	18
3	78.2	-	6	1	2.9500	18
4	96.3	1	2	2	5.2920	11
5	114.3	-	1	1	9.1200	9
6	132.0	-	1	1	11.8133	12

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## EXTENSION

AX, BX

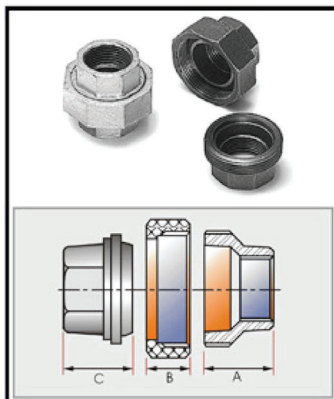


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
3/8	32	40	480	12	0.0480	23
1/2	40	75	300	4	0.0712	5
3/4	48	40	160	4	0.1400	20
1	55	30	90	3	0.1892	17
1 1/4	60	30	60	2	0.2872	17
1 1/2	65	20	40	2	0.3902	16
2	70	15	30	2	0.5990	18

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$

## UNIONS CONICAL IRON TO IRON SEAT

U340



Size (inch)	Dimensions A	Dimensions B	Dimensions C	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/2	26.0	19.0	30.0	50	100	2	0.1990	20
3/4	28.0	20.0	30.5	35	70	2	0.2860	20
1	31.0	22.0	34.0	20	40	2	0.3480	14
1 1/4	33.0	24.0	40.0	15	30	2	0.6040	18
1 1/2	36.0	25.0	42.5	10	20	2	0.7180	14
2	42.0	27.0	46.0	6	12	2	1.0740	13
2 1/2	44.0	33.5	51.5	4	8	2	2.0000	16

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$



# MALLEABLE IRON THREADED PRODUCTS

RSN: 1566134

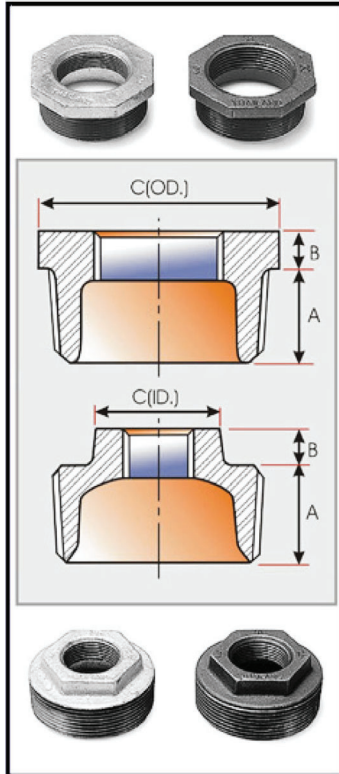
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## BUSHINGS

ABU, BU



Size (inch)	Dimensions				Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO. of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
A	B	C(id)	C(od)						
1/4 X 1/8	13.2	3.8	-	16.3	120	1440	12	0.0130	19
3/8 X 1/8	12.2	4.1	-	21.6	75	900	12	0.0250	23
3/8 X 1/4	12.2	4.1	-	21.1	75	900	12	0.0201	18
1/2 X 1/8	16.4	4.8	-	26.2	150	600	4	0.0492	30
1/2 X 1/4	14.2	4.8	-	26.2	150	600	4	0.0425	26
1/2 X 3/8	14.2	4.8	-	26.2	150	600	4	0.0352	21
3/4 X 1/8	16.0	5.6	-	29.2	75	300	4	0.0758	23
3/4 X 1/4	16.0	5.6	-	29.2	75	300	4	0.0616	18
3/4 X 3/8	16.0	5.6	-	29.2	75	300	4	0.0524	16
3/4 X 1/2	18.0	5.6	-	29.2	75	300	4	0.0500	15
1 X 1/8	19.1	9.6	28.5	-	50	200	4	0.0938	19
1 X 1/4	19.1	9.6	28.5	-	50	200	4	0.0910	18
1 X 3/8	19.1	9.6	28.5	-	50	200	4	0.0862	17
1 X 1/2	21.6	6.4	-	36.1	50	200	4	0.1044	21
1 X 3/4	21.6	6.4	-	36.1	50	200	4	0.0844	17
1 1/4 X 1/4	22.8	8.6	28.5	-	30	120	4	0.1338	16
1 1/4 X 3/8	22.8	8.6	28.5	-	30	120	4	0.1200	14
1 1/4 X 1/2	22.8	8.6	31.5	-	30	120	4	0.1474	18
1 1/4 X 3/4	20.3	7.1	-	44.7	30	120	4	0.1864	22
1 1/4 X 1	20.3	7.1	-	44.7	30	120	4	0.1350	16
1 1/2 X 1/8	21.1	9.4	28.4	-	25	75	3	0.2950	22
1 1/2 X 1/4	23.6	9.4	28.5	-	25	75	3	0.1790	13
1 1/2 X 3/8	23.6	9.4	28.5	-	25	75	3	0.1740	13
1 1/2 X 1/2	23.6	9.4	34.0	-	25	75	3	0.1936	15
1 1/2 X 3/4	23.6	9.4	36.5	-	25	75	3	0.1892	14
1 1/2 X 1	23.3	7.9	-	50.8	25	75	3	0.2160	16
1 1/2 X 1 1/4	23.3	7.9	-	50.8	25	75	3	0.1471	11
2 X 1/4	21.8	10.6	28.5	-	20	60	3	0.2732	16
2 X 3/8	22.4	10.0	28.5	-	20	60	3	0.2784	26
2 X 1/2	24.9	10.4	34.0	-	20	60	3	0.2832	17
2 X 3/4	24.9	10.4	41.4	-	20	60	3	0.3150	19
2 X 1	24.9	10.4	45.0	-	20	60	3	0.3080	18
2 X 1 1/4	27.0	11.0	-	63.0	20	60	3	0.3840	23
2 X 1 1/2	27.0	11.0	-	63.0	20	60	3	0.3155	19
2 1/2 X 1/2	27.2	11.2	34.0	-	15	30	2	0.7130	21
2 1/2 X 3/4	27.2	11.2	41.4	-	15	30	2	0.4328	13
2 1/2 X 1	27.2	11.2	49.5	-	15	30	2	0.4576	14
2 1/2 X 1 1/4	27.2	11.2	60.7	-	15	30	2	0.4973	15
2 1/2 X 1 1/2	27.2	11.2	-	75.7	15	30	2	0.6208	19
2 1/2 X 2	29.7	9.4	-	75.7	15	30	2	0.4460	13
3 X 1/2	28.7	12.2	34.0	-	12	24	2	1.0100	24
3 X 3/4	28.7	12.2	41.4	-	12	24	2	0.6180	15
3 X 1	28.7	12.2	49.5	-	12	24	2	0.6536	16
3 X 1 1/4	28.7	12.2	60.7	-	12	24	2	0.7950	19
3 X 1 1/2	28.7	12.2	68.1	-	12	24	2	0.7576	18
3 X 2	28.7	12.2	-	98.0	12	24	2	0.9220	22
3 X 2 1/2	28.7	12.2	-	98.0	12	24	2	0.8360	20
3 1/2 X 1 1/2	30.0	13.2	70.0	-	8	16	2	1.0000	16
3 1/2 X 2	33.0	13.2	83.3	-	8	16	2	1.1500	18
3 1/2 X 3	30.0	10.9	-	117.3	8	16	2	0.8488	14
4 X 1/2	39.8	14.2	-	121.0	5	10	2	1.6600	17
4 X 3/4	38.0	13.0	-	121.0	5	10	2	1.4650	15
4 X 1	31.0	15.2	-	-	5	10	2	1.1620	12
4 X 1 1/4	31.0	15.2	60.7	-	5	10	2	1.3712	14
4 X 1 1/2	31.0	15.2	68.1	-	5	10	2	1.0866	11
4 X 2	36.0	15.2	83.3	-	5	10	2	1.3592	14
4 X 2 1/2	31.0	15.2	98.0	-	5	10	2	1.5376	15
4 X 3	37.0	14.0	-	126.0	5	10	2	1.6804	17

\* THE ACTUAL WEIGHT CAN VARY BY  $\pm 3\%$



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# BAND HANGERS



## NFPA SWIVEL RING HANGER

## FIG. 141 & 141F

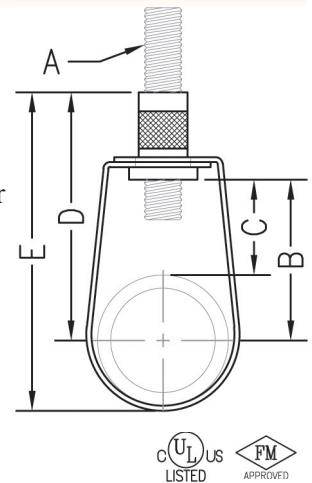
**Function:** Designed for the suspension of non-insulated stationary pipe lines. The knurled insert nut that allows a vertical adjustment after installation, is tapped to NFPA reduced rod size standards. Captured knurled insert nut present on pipe sizes  $\frac{1}{2}$ " (15mm) to 2" (50mm). The capture is permanent in the bottom portion of the band, allowing the hanger to be opened during installation if desired, but preventing the knurled insert nut from falling completely out. Fig. 141F has a layer of felt which separates the pipe from the hanger to reduce vibration and sound.

**Material:** Carbon steel

**Finish:** Pre-galvanized (**Fig. 141**) or pre-galvanized with felt lining (**Fig. 141F**)

**Approvals:** Underwriters' Laboratories Listed in the U.S. (UL), Canada (CUL), for use with standard steel pipe sizes  $\frac{3}{4}$ " (20mm) to 8" (200mm) and CPVC pipe size  $\frac{3}{4}$ " (20mm) to 4" (100mm). Factory Mutual Approved for steel pipe sizes  $\frac{3}{4}$ " (20mm) to 8" (200mm). Complies with Federal Specifications A-A-1192A (Type 10), and Manufacturers' Standardization Society ANSI/MSS SP-58 (Type 10) which supersedes ANSI/MSS SP-69.

**Ordering:** Specify figure number and pipe size.



**NOTE:** If ordering Fig. 141F felt lined hangers for pipe sizes of  $3\frac{1}{2}$ " (90mm) or under, order the next largest size to allow for the thickness of the felt lining. Metric knurl insert nuts available upon request.

Pipe Size		Rod Size	B		Adj. C		D		E		Max. Rec. Load		Wt. Each	
											lbs.	kN	lbs.	kg
$\frac{1}{2}$	(15)	$\frac{3}{8}$	$1\frac{7}{8}$	(47.63)	$1\frac{7}{16}$	(36.51)	$2\frac{3}{4}$	(69.85)	$3\frac{1}{16}$	(77.79)	300	(1.33)	.10	(.05)
$\frac{3}{4}$	(20)	$\frac{3}{8}$	$1\frac{11}{16}$	(42.86)	$1\frac{1}{8}$	(28.58)	$2\frac{1}{2}$	(63.50)	$3\frac{1}{16}$	(77.79)	300	(1.33)	.10	(.05)
1	(25)	$\frac{3}{8}$	$1\frac{5}{8}$	(41.28)	1	(25.40)	$2\frac{1}{2}$	(63.50)	$3\frac{3}{16}$	(80.96)	300	(1.33)	.10	(.05)
$1\frac{1}{4}$	(32)	$\frac{3}{8}$	$1\frac{15}{16}$	(49.21)	$1\frac{1}{16}$	(26.99)	$2\frac{13}{16}$	(71.44)	$3\frac{9}{16}$	(90.49)	300	(1.33)	.11	(.05)
$1\frac{1}{2}$	(40)	$\frac{3}{8}$	$2\frac{1}{8}$	(53.98)	$1\frac{1}{16}$	(26.99)	$3\frac{1}{8}$	(79.38)	$3\frac{7}{8}$	(98.43)	300	(1.33)	.11	(.05)
2	(50)	$\frac{3}{8}$	$2\frac{7}{16}$	(61.91)	$1\frac{1}{8}$	(28.58)	$3\frac{5}{16}$	(84.14)	$4\frac{3}{8}$	(111.13)	300	(1.33)	.14	(.06)
$2\frac{1}{2}$	(65)	$\frac{3}{8}$	$3\frac{1}{16}$	(77.79)	$1\frac{5}{8}$	(41.28)	$3\frac{15}{16}$	(100.01)	$5\frac{3}{8}$	(136.53)	525	(2.34)	.19	(.09)
3	(80)	$\frac{3}{8}$	$3\frac{11}{16}$	(93.66)	$1\frac{7}{8}$	(47.63)	$4\frac{9}{16}$	(115.89)	$6\frac{5}{16}$	(160.34)	525	(2.34)	.23	(.10)
$3\frac{1}{2}$	(90)	$\frac{3}{8}$	$3\frac{3}{4}$	(95.25)	$1\frac{7}{8}$	(47.63)	$4\frac{5}{8}$	(117.48)	$6\frac{5}{8}$	(168.28)	525	(2.34)	.25	(.11)
4	(100)	$\frac{3}{8}$	$4\frac{3}{16}$	(106.36)	$1\frac{7}{8}$	(47.63)	$5\frac{1}{16}$	(128.59)	$7\frac{5}{16}$	(185.74)	650	(2.89)	.30	(.14)
5	(125)	$\frac{1}{2}$	$4\frac{5}{8}$	(117.48)	$1\frac{5}{8}$	(41.28)	$5\frac{5}{8}$	(142.88)	$8\frac{3}{8}$	(212.73)	1000	(4.45)	.50	(.23)
6	(150)	$\frac{1}{2}$	$5\frac{5}{8}$	(142.88)	$2\frac{1}{4}$	(57.15)	$6\frac{1}{2}$	(165.10)	$9\frac{13}{16}$	(249.24)	1000	(4.45)	.58	(.26)
8	(200)	$\frac{1}{2}$	$6\frac{13}{16}$	(173.04)	$2\frac{7}{16}$	(61.91)	$7\frac{15}{16}$	(201.61)	$12\frac{1}{4}$	(311.15)	1000	(4.45)	.90	(.41)

# BAND HANGERS



## SURGE RESTRAINT

## FIG. 055

**Function:** Designed to restrict the upward movement of activated fire sprinkler systems.

Grips ring hanger, NOT THE NUT, and allows for fine tuning adjustments. Listed for use with PHD Manufacturing, Inc. Figure 141 ring hangers only.

**Material:** Spring Steel

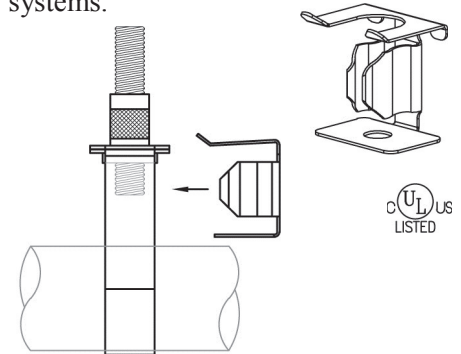
**Finish:** Powder Coated

**Install:** Installs easily before or after pipe installation and without tools. Simply clip Fig. 055 onto Fig. 141 ring hanger and run the hanger rod down to the bottom plate surface to ensure proper restraint.

**Approvals:** Underwriters Laboratories listed for US and Canada.

**Ordering:** Specify figure number.

**NOTE:** For use up to 2" (50) pipe, one size fits all.



**Fig. 055**  
(Pictured With Fig. 141)





**PHD Manufacturing, Inc.**

44018 Columbiana-Waterford Road  
Columbiana, Ohio 44408-9481  
Phone: 800-321-2736 • 330-482-9256  
Fax: 330-482-2763  
Web: [www.phd-mfg.com](http://www.phd-mfg.com)

**FIG. 055 SURGE RESTRAINT**

**PIPE SIZES:** 3/4" through 2"

**FUNCTION:** Designed to restrict the upward movement of activated fire sprinkler systems. Grips ring hanger, NOT THE NUT, and allows for fine tuning adjustments. Listed for use with PHD Manufacturing, Inc. Figure 141 ring hangers only.

**ORIENTATIONS:**

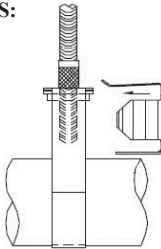


Illustration 1

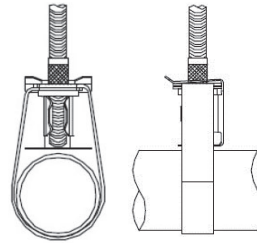


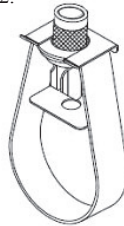
Illustration 1

**APPROVALS:** Underwriters Laboratories listed for US and Canada

**MATERIAL:** Spring Steel

**FINISH:** Black E-Coat

**INSTALLATION:** Installs easily before or after pipe installation and without tools. Simply clip Fig. 055 onto Fig. 141 ring hanger as shown above in Illustration 1. Run the hanger rod down to the bottom plate surface to ensure proper restraint as seen in Illustration 2.



*The Complete Line of Pipe Supports and Devices*

Pipe Hangers ▲ Strut & Accessories ▲ Pipe Clamps ▲ Beam Clamps ▲ Shields