

Reliable®

Model RFC43 (SIN RA0612)
Model RFC49 (SIN RA0616)
Flat Concealed
Residential Sprinklers

Bulletin 006 Rev D

A Concealed Residential Sprinkler engineered for a minimum design density of 0.05 gpm/ft² with low GPM requirements.

Features

1. Very low water flow requirements.
2. 1/2" (13mm) Total adjustment.
3. Thread-On/Thread-Off or Push-On/Thread Off cover attachment option.
4. Smooth aesthetic ceiling profile.
5. Available in brass, chrome and black plated or painted finishes.

Listings & Approval

1. Listed by Underwriters Laboratories, and certified by UL for Canada (cULus)
2. NYC MEA 258-93-E

UL Listing Categories

Residential Automatic Sprinklers

UL Guide Number

VKKW

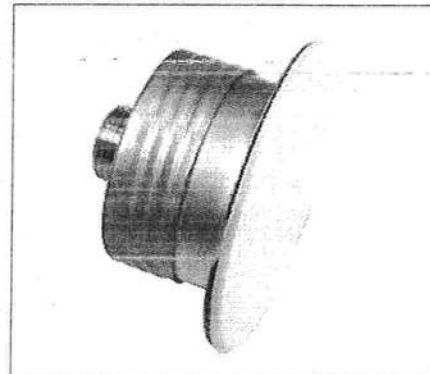
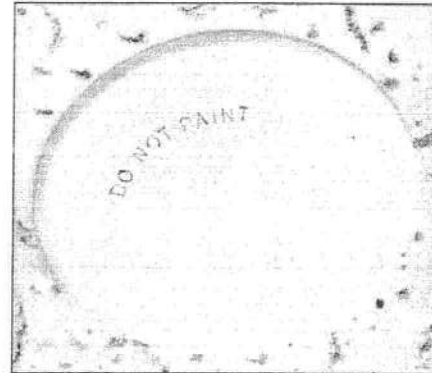
Product Description

Model RFC43 and RFC49 Concealed Residential Sprinklers are fast response residential fusible solder link automatic sprinklers. Residential sprinklers differ from standard sprinklers primarily in their response time and water distribution patterns.

Model RFC43 and RFC49 sprinklers discharge water in a hemispherical pattern below the sprinkler deflector. Residential distribution patterns are higher and generally contain a finer droplet size than standard sprinkler patterns.

The combination of speed of operation and high discharge pattern required for residential sprinklers has demonstrated, in fire testing, an ability for controlling residential fires, and thereby providing significant evacuation time for occupants.

The RFC43 and RFC49 Sprinklers provide the best form of fire protection by combining an attractive appearance and 1/2" (13mm) of cover adjustment for ease of installation. The small diameter cover plate is easily and positively attached and blends into the ceiling, concealing the most dependable fire protection available, an automatic sprinkler system.



The RFC43 and RFC49 are UL Listed Residential Sprinklers to be installed in the residential portions of any occupancy in accordance with NFPA 13, 13R, & 13D.

The RFC43 and RFC49 can reduce the need for precise cutting of drop nipples. The threaded cover plate assembly can be adjusted without tools to fit accurately against the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Application and Installation

The RFC43 and RFC49, for residential installations, use a 165°F (74°C) fusible solder link in a tuning fork style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. The cover plate is attached to the skirt, using 135°F (57°C) ordinary temperature classification solder. When the ceiling temperature rises, the solder holding the cover plate releases the cover allowing the deflector to drop into position and

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

exposing the sprinkler inside to ceiling temperature. The subsequent operation of the solder link opens the waterway and causes the deflector to drop into position to distribute the discharging water in a hemispherical pattern below the sprinkler deflector. Any adjustment of thread engagement between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling. The residential distribution pattern contains a finer droplet size than a standard sprinkler, and the pattern produces significantly higher wall wetting.

After a 2 5/8 inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model FC Wrench. When installing a sprinkler, the wrench is first positioned into the sprinkler/cup assembly and around the hexagonal body of the sprinkler frame. The Wrench must bottom out against the cup in order to ensure proper, safe installation. 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.** MODEL RFC43 AND RFC49 CONCEALED SPRINKLERS MUST BE INSTALLED ONLY WITH 135°F RATED COVERS.

Cover assemblies provide up to 1/2" (13mm) of adjustment. Turn the cover clockwise until the flange is in contact with the ceiling. For the push-on/thread-off option, the cover assembly is pushed onto the cup and final adjustment is made by turning the cover clockwise until the skirt flange makes full contact with the ceiling. Cover removal requires turning in the counter-clockwise direction.

In ceilings that have a plenum space above the sprinkler, the plenum space may have neutral or negative pressurization but must not be positively pressurized. Inspect all sprinklers after installation to ensure that the gap between the cover plate and ceiling and the 4 slots in the cup are all open and free from any air flow impediment.

Temperature Rating

| Sprinkler | Cover Plate | Max. Ambient Temp. |
|------------|-------------|--------------------|
| 165°F/74°C | 135°F/57°C | 100°F/38°C |

Installation Data: RFC43 (SIN RA0612)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.3 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 12 (45) | 7.8 (0.54) |
| 1/2" (15mm) | 4.3 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 18 (68) | 17.5 (1.21) |
| 1/2" (15mm) | 4.3 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 21 (79) | 23.8 (1.64) |

Note: 1 bar = 100 Kpa

Installation Data: RFC49 (RA0616)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.9 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 17 (64.3) | 12.0 (0.83) |
| 1/2" (15mm) | 4.9 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 20 (75.7) | 16.7 (1.14) |

Note: 1 bar = 100 Kpa

FOR SLOPED CEILING APPLICATIONS SEE RASCO BULLETIN 035.

Maintenance

Model RFC43 and RFC49 Concealed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gentle vacuuming. Remove any sprinkler cover plate assembly which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Model RFC43 and RFC49 Residential Concealed Sprinkler Specification

Sprinklers shall be cULus Listed low flow residential concealed sprinklers with drop-down deflector and adjustable flat cover plate engineered for a minimum design density of 0.05 gpm/ft². Sprinkler frame and deflector shall be of bronze frame construction having a 1/2" NPT thread. Thermal element shall consist of an approved black-painted beryllium-nickel fusible solder link with symmetric lever mechanism, maintaining a Teflon-coated Belleville spring washer and machined brass cap water seal assembly containing no plastic parts. Sprinkler K-factor shall be nominal 4.3 (62.4), having a 7/16" orifice. Temperature rating shall be Ordinary 165°F (74°C); cover plate temperature rating to be

135°F (57°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange allowing a 1/2" cover plate adjustment. Any secure engagement between the cover plate and the cup will assure that the drop-down deflector is properly located below the ceiling. A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the drop-down sprinkler deflector from damage, which could occur during construction before the cover plate is installed. Standard cover finish: [Chrome] [White] [Specialty – specify]. Residential concealed sprinklers shall be Reliable Model RFC43, SIN RA0612 (Bulletin 006) or Model RFC49, SIN RA0616 (Bulletin 006).

Ordering Information

Specify:

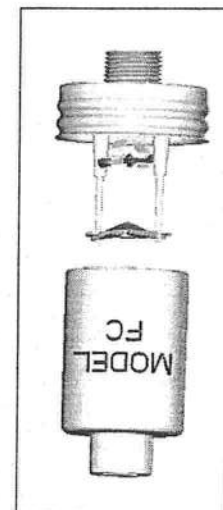
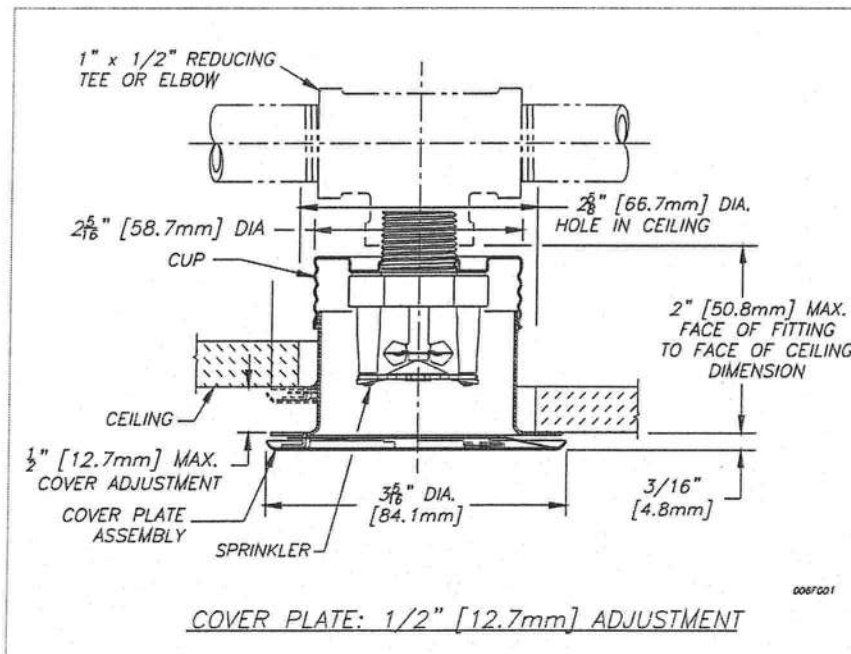
1. Sprinkler Model
2. Cover Plate Finish
3. Thread-On or Push-On Feature

Cover Plate Finishes ⁽¹⁾

| Standard Finishes |
|------------------------------|
| Chrome |
| White |
| Special Application Finishes |
| Bright Brass |
| Black Plating |
| Black Paint |
| Off White |
| Satin Chrome |

⁽¹⁾ Other colors and finishes available. Consult factory for details.

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



Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Supertrol electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

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Reliable®

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Sales Fax
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Internet Address



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Revision lines indicate updated or new data
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Reliable®

Model F1FR Model F1FR Recessed Quick Response Sprinklers

Model F1FR Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Vertical Sidewall
Horizontal Sidewall
– HSW 1 Deflector

Model F1FR Recessed Sprinkler Types

Recessed Pendent
Recessed Horizontal Sidewall
– HSW 1 Deflector

Listings & Approvals

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters' Laboratories of Canada (ULC)
3. Certified by FM Approvals
4. Loss Prevention Council (LPC, UK)
5. NYC BS&A No. 587-75-SA
6. Meets MIL-S-901C and MIL-STD 167-1
7. Verband der Schadenversicherer (VdS, Germany)
8. NYC MEA 258-93-E

UL Listing Category

Sprinklers, Automatic & Open
Quick Response Sprinkler

UL Guide Number

VNIV

Patents: US Patent No. 6,374,920 Applies to
Model F1FR Vertical Sidewall Sprinklers.

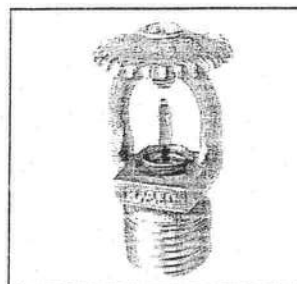
Product Description

Reliable Models F1FR and F1FR Recessed Sprinklers are quick response sprinklers which combine the durability of a standard sprinkler with the attractive low profile of a decorative sprinkler.

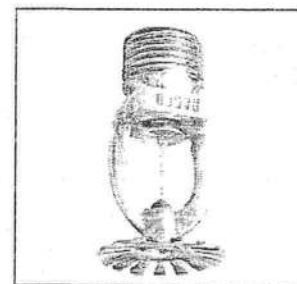
The Models F1FR and F1FR Recessed automatic sprinklers utilize a 3.0 mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five to ten times faster than standard response sprinklers. This quick response enables the Model F1FR and F1FR Recessed sprinklers to apply water to a fire much faster than standard sprinklers of the same temperature rating.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. The balance of parts are made of brass, copper and beryllium nickel.

At normal temperatures, the glass bulb contains the fluid in both the liquid and vapor phases. The vapor phase can be seen as a small bubble. As heat is applied, the liquid ex-



Upright



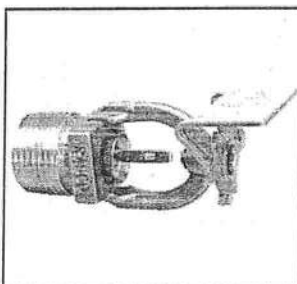
Pendent



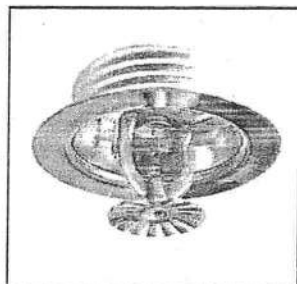
Vertical Sidewall



Conventional



Horizontal Sidewall
HSW 1 Deflector



Recessed Pendent
(Model FP Shown)

pands, forcing the bubble smaller and smaller as the liquid pressure increases. Continued heating forces the liquid to push out against the bulb, causing the glass to shatter, opening the waterway and allowing the deflector to distribute the discharging water.

Application

Quick response sprinklers are used in fixed fire protection systems: Wet, Dry, Deluge or Preaction. Care must be exercised that the orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of the National Fire Protection Association or the approving Authority Having Jurisdiction. Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-8N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

Model F1FR Quick Response Upright, Pendent & Conventional Sprinklers
Installation Wrench: Model D Sprinkler Wrench
Installation Data:

| Sprinkler Type | K Factor | | Sprinkler Height | Approval Organization | Sprinkler Identification Number (SIN) | | |
|---|----------|--------|------------------|-----------------------|---------------------------------------|-------|--|
| | US | Metric | | | SSU | SSP | |
| Standard-Upright (SSU) and Pendent (SSP) Deflectors Marked to Indicate Position | | | | | | | |
| 1/2" (15mm) Standard Orifice with 1/2" NPT (R1/2) Thread | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,6,7 | R3625 ⁽¹⁾ | R3615 | |
| 1 1/4" (20mm) Large Orifice with 3/4" NPT (R3/4) Thread | 8.0 | 115 | 2.3" (58mm) | 1,2,3,4,7,8 | R3622 ⁽¹⁾ | R3612 | |
| 7/16" (17mm) Small Orifice with 1/2" NPT (R1/2) Thread | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3623 ⁽¹⁾ | R3613 | |
| 3/8" (10mm) Small Orifice with 1/2" NPT (R1/2) Thread | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3621 ⁽¹⁾ | R3611 | |
| 10mm Orifice XLH with R3/8" Thread | 4.2 | 60 | 56mm | 4,6,7 | R3624 | R3614 | |
| Conventional-Install in Upright or Pendent Position | | | | | | | |
| 10mm Orifice XLH with R3/8" Thread | 4.2 | 60 | 56mm | — | R3674 | | |
| 15mm Standard Orifice with 1/2" NPT (R1/2) Thread | 5.6 | 80 | 56mm | 4,6,7 | R3675 | | |
| 20mm Large Orifice with 3/4" NPT (R3/4) Thread | 8.0 | 115 | 58mm | 4,7 | R3672 | | |

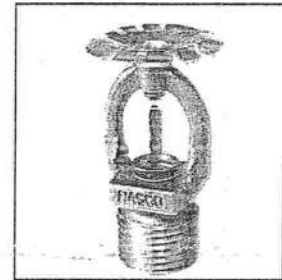
⁽¹⁾ Polyester coated upright UL and ULC listed corrosion resistant.



Upright



Pendent

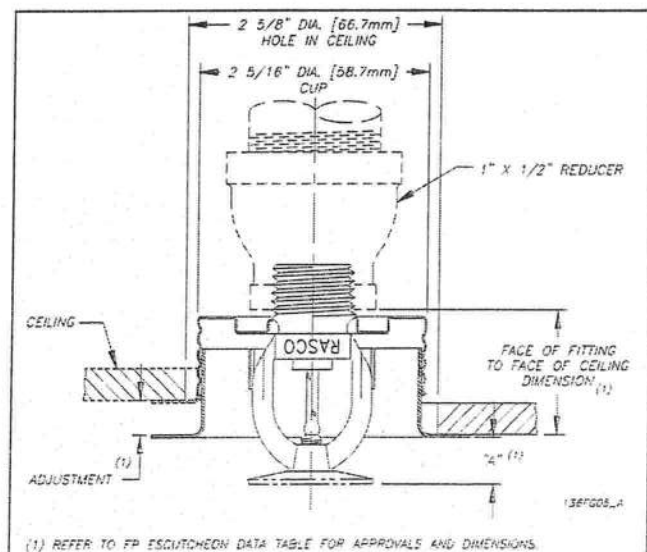
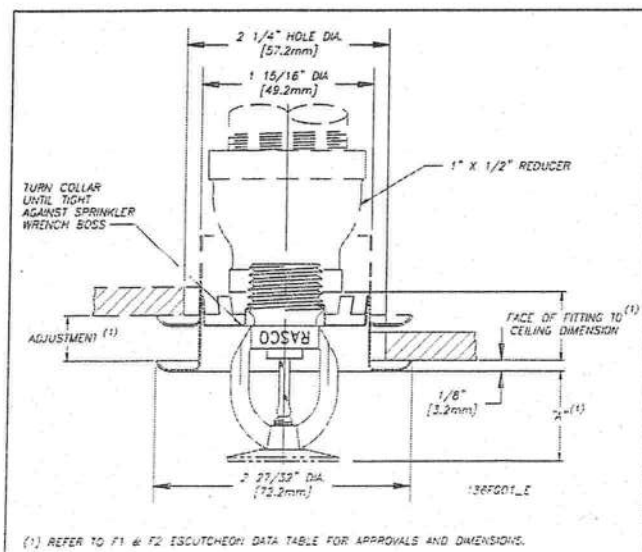


Conventional

Model F1FR Quick Response Recessed Pendent Sprinkler
Installation Wrench: Model GFR1 Sprinkler Wrench
Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval ⁽¹⁾ Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|---------------------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" (15mm) | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,7,8 | R3615 |
| 1 1/4" (20mm) | 3/4" NPT (R3/4) | 8.0 | 115 | 2.3" (58mm) | 1,2,3,8 | R3612 |
| 7/16" (11mm) | 1/2" NPT (R1/2) | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3613 |
| 3/8" (10mm) | 1/2" NPT (R1/2) | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3611 |
| 10mm | R3/8" | 4.2 | 60 | 56mm | 4,7 | R3614 |

⁽¹⁾ Refer to escutcheon data table for approvals and dimensions.



Model F1FR Quick Response Vertical Sidewall Sprinkler

Installation Wrench: Model D Sprinkler Wrench

Installation Position: Upright or Pendent

Approval Type: Light Hazard Occupancy

Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1, 2, 3, 6, 8 | R3685 |
| 15mm | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 4 ⁽¹⁾ | |

⁽¹⁾ LPC Approval is for Pendent position only.



Vertical Sidewall

| Orientation | Deflector to Ceiling Dimension (Min. - Max.) |
|-------------|--|
| Upright | 4" - 12" (102mm - 305mm) |
| Pendent | 6" - 12" (152mm - 305mm) |

US Patent No. 6,374,920

Model F1FR Quick Response Horizontal Sidewall Sprinkler

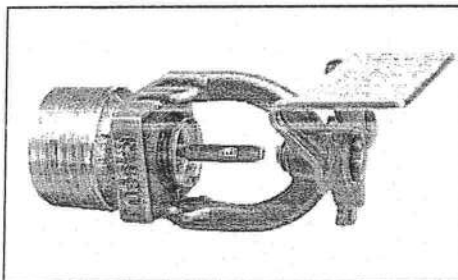
Deflector: HSW 1

Installation Wrench: Model D Sprinkler Wrench

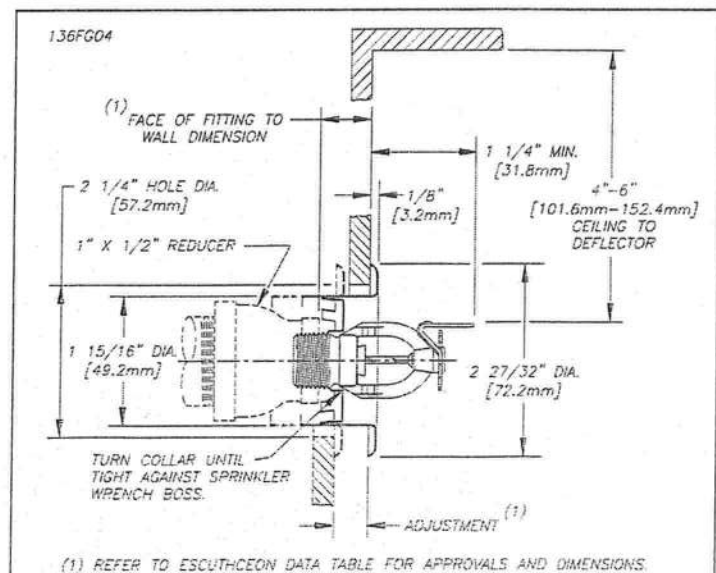
Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Length | Approval Organizations and Type of Approval | | Sprinkler Identification Number (SIN) |
|-----------------|----------------|----------|--------|------------------|---|-----------------|---------------------------------------|
| | | US | Metric | | Light Hazard | Ordinary Hazard | |
| 1/2" (15mm) | 1/2" NPT(R1/2) | 5.6 | 80 | 2.63" (67mm) | 1,2,3,5,8 | 1,2,5,8 | R3635 |

NOTE: UL, ULC and MEA Listing permits use with F1 or F2 recessed escutcheon. FM Approvals do not permit recessed usage.



Horizontal Sidewall



Installation

Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-81N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

The Model F1FR Recessed Quick Response Sprinklers are to be installed as shown. The Model F1 or F2 Escutcheons illustrated are the only recessed escutcheons to be used with the Model F1FR Sprinklers. The use of any other recessed escutcheon will void all approvals and negate all warranties.

When installing Model F1FR Sprinklers, use the Model D Sprinkler Wrench. When installing Model F1FR Recessed Pendant or Sidewall Sprinklers, use the Model GFR1 Sprinkler Wrench. Any other type of wrench may damage these sprinklers.

Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Temperature Ratings

| Classification | Sprinkler Temperature | | Max. Ambient Temp. | Bulb Color |
|---------------------|-----------------------|-----|--------------------|------------|
| | °C | °F | | |
| Ordinary | 57 | 135 | 100°F (38°C) | Orange |
| Ordinary | 68 | 155 | 100°F (38°C) | Red |
| Intermediate | 79 | 175 | 150°F (66°C) | Yellow |
| Intermediate | 93 | 200 | 150°F (66°C) | Green |
| High ⁽¹⁾ | 141 | 286 | 225°F (107°C) | Blue |

⁽¹⁾ Not available for recessed sprinklers.

Escutcheon Data

| Escutcheon Model | Approvals | Adjustment | "A" Dimension | Face of Fitting to Ceiling or Wall Dimension |
|-----------------------|-------------------------------|--------------------------|-----------------------------------|--|
| F1 | 1,2,4,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 3/4" (19.1mm) | 3/16" - 1/16" (5mm - 24mm) |
| F2 | 1,2,3 ⁽¹⁾ ,4,5,7,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 1 5/16" (24mm) | 3/16" - 1/16" (5mm - 17mm) |
| FP Push-on/Thread-off | 1,2 | Max Recessed | 7/16" (11mm) | 1 1/2" (38.1mm) |
| | 1,2 | Min Recessed | 1 5/16" (24mm) | 1" (25.4mm) |

No Dimensional Figure for FP

⁽¹⁾ Horizontal Sidewall is not FM approved in the recessed configuration.

Maintenance

The Models F1FR and F1FR Recessed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gen-

tle vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Sprinkler Types

Standard Upright
Standard Pendant
Conventional
Sidewall (Vertical, Horizontal HSW1)
Recessed Pendant
Recessed Horizontal Sidewall HSW1

Finishes ^{(1) (2)}

| Standard Finishes | |
|---------------------------------------|------------------------------|
| Sprinkler | Escutcheon |
| Bronze | Brass |
| Chrome Plated | Chrome Plated ⁽³⁾ |
| White Polyester Coated ⁽⁴⁾ | White Painted ⁽³⁾ |
| Special Application Finishes | |
| Sprinkler | Escutcheon |
| Bright Brass | Bright Brass |
| Black Plated | Black Plated |
| Black Paint | Black Paint |
| Off White | Off White |
| Satin Chrome | Satin Chrome |

⁽¹⁾ Other finishes and colors are available on special order. Consult the factory for details.

⁽²⁾ FM Approvals is limited to bronze and brass, chrome or black plated finishes only.

⁽³⁾ FP Push-on/Thread-off escutcheon.

⁽⁴⁾ UL and ULC listed corrosion resistance.

SIN numbers: R3621, R3622, R3623, R3625.

Note: For 1/2" orifice pendant FM approved white polyester coated and UL approved white polyester corrosion resistant sprinklers refer to Bulletin 014.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Orifice Size
4. Deflector Type
5. Temperature Rating
6. Sprinkler Finish
7. Escutcheon Type
8. Escutcheon Finish (where applicable)

Note: When Model F1FR Recessed sprinklers are ordered, the sprinklers and escutcheons are packaged separately.

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

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EG, Printed in U.S.A. 06/09

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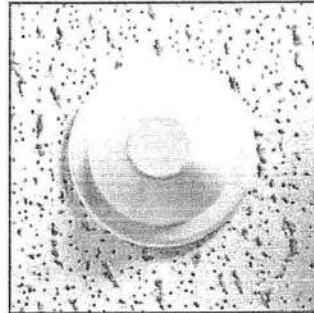
Model F3QR Quick Response Dry Sprinklers

Bulletin 157 Rev G

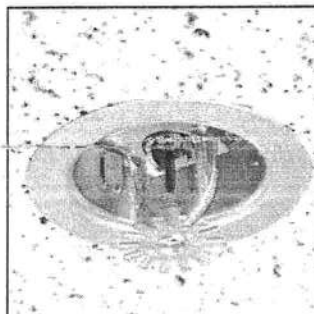
Bulletin 157 Rev G

Features

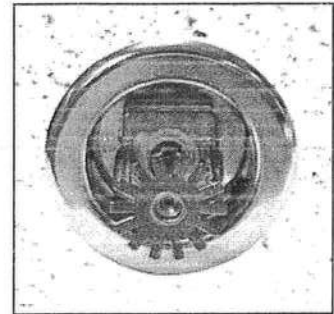
1. The Model F3QR sprinkler utilizes Belleville Spring Closure Technology. Reliable is the first in the industry to produce a Quick Response Dry Concealed sprinkler utilizing this technology.
2. Styles available
 - Pendent
 - Recessed FP Pendent
 - Recessed F1 Pendent
 - Concealed
 - Horizontal Sidewall
 - Recessed Horizontal Sidewall - FP
 - Recessed F1 Horizontal Sidewall
3. 1½" (38mm) escutcheon adjustment on pendent sprinkler.
4. ½" (13mm) escutcheon adjustment on recessed sprinkler with push-on/ thread-off FP Model Escutcheon ring.
5. ⅝" (9.5mm) cover plate adjustment on concealed sprinkler with push-on/ thread-off CCP Cover Plate.
6. ¾" (19mm) escutcheon adjustment on recessed sprinkler with G/F1 Escutcheon.
7. Attractive appearance. Employs 3mm frangible glass bulb and galvanized nipple.
8. Lengths available to accommodate installation dimensions from 2" - to - 48" (51mm - to - 1219mm), in ¼" (6mm) increments.
9. Available in a variety of plated and painted finishes.



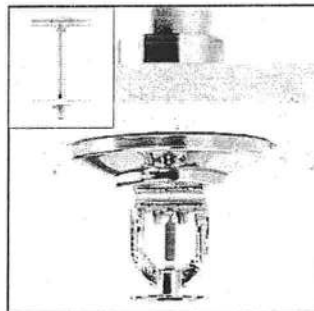
Concealed



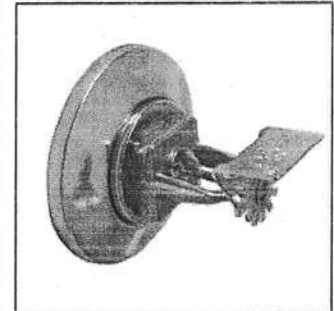
Recessed FP Pendent



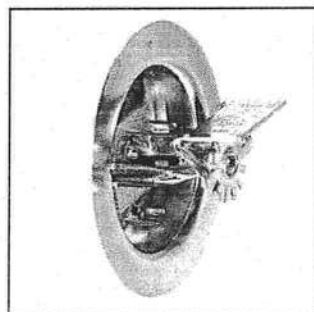
Recessed F1 Pendent



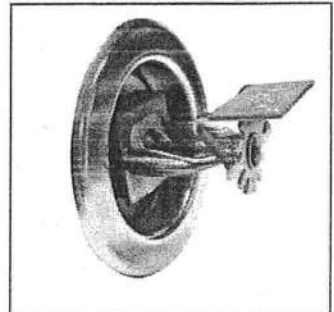
Pendent



Horizontal Sidewall



Recessed FP
Horizontal Sidewall



Recessed F1
Horizontal Sidewall

Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)

| Style | Response | Sprinkler System Type | Hazard |
|--|----------|---------------------------------------|----------------|
| Pendent Recessed Pendent Recessed F1 Pendent CCP Concealed (R5714) | Quick | Wet Pipe Dry Pipe All Preaction | Light Ordinary |
| Horizontal Sidewall Recessed FP Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | | | |

2. Certified by FM Approvals

| Style | Response | Sprinkler System Type | Hazard |
|---|----------|--|-------------------------------|
| Pendent Recessed F1 Pendent (R5714) | Quick | Wet Pipe, Single Interlock Preaction | Light Ordinary, Groups 1&2 |
| Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | Quick | Wet Pipe, Single Interlock Preaction | Light |

3. NYC MEA 258-93-E

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford NY 10523

Model F3QR Dry Pendent Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated cans.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

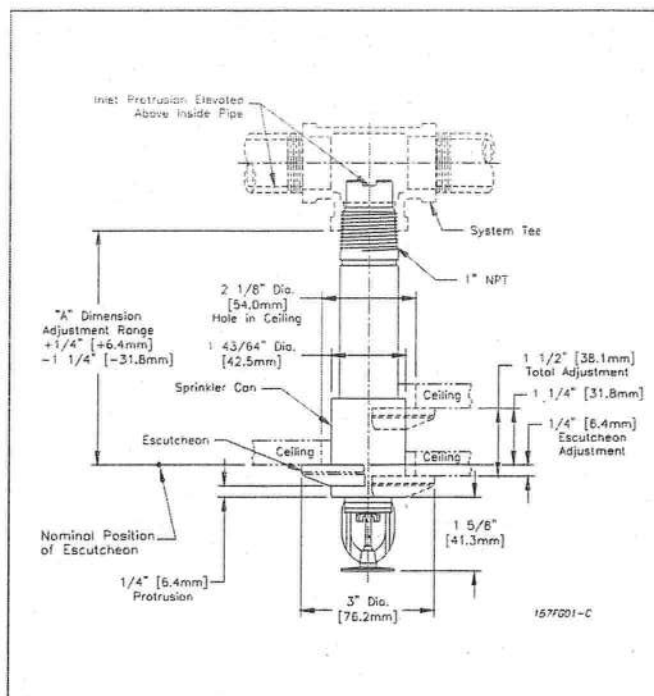
Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

Sprinkler Guard: Model C-2

Sprinkler Installation Wrench

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: The sprinkler Can protrudes 1/4\" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4\" (+6mm) to -1/4\" (-32mm) \"A\" dimension adjustment range.

Model F3QR Dry Recessed Pendent Sprinkler

"A" Dim. 3/2\" to 48\" (89mm to 1219mm) in 1/4\" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. Only the escutcheon will contain desired finish.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

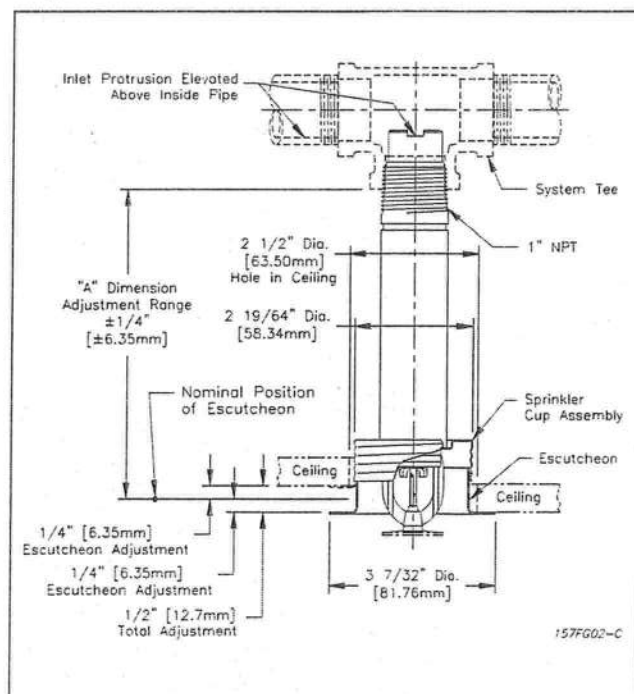
Sprinkler cup and FP escutcheon fabricated of steel and recommended for interior applications.

* Listed and Certified only by cULus

Sprinkler Installation Wrench

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: Do not install the Model F3QR Dry Pendent Recessed Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Pendent Concealed Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

CCP Cover Plate⁽¹⁾ Finishes⁽²⁾

| Standard Finishes | Special Application Finishes |
|------------------------|---|
| Chrome Plated White | Bright Brass Plated Black Plated Black Paint Off White Satin Chrome |

⁽¹⁾ Utilizes the 1/2" cover plate with 3/8" total adjustment.

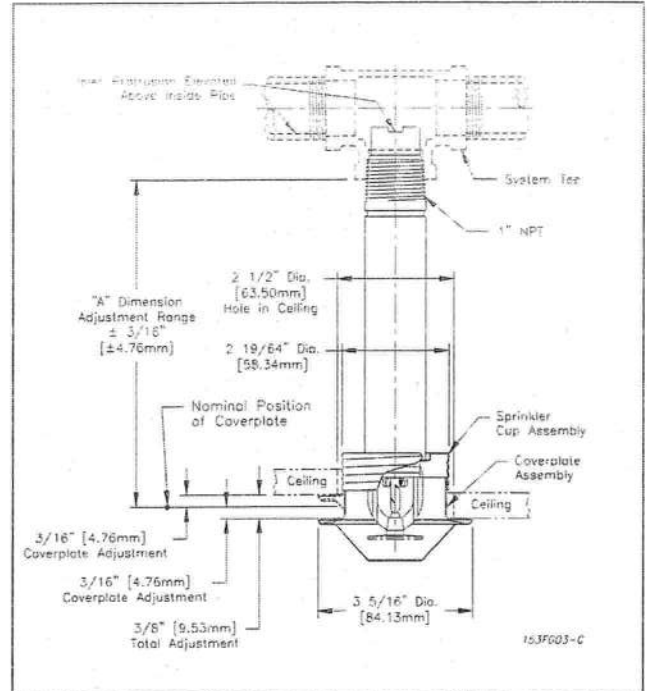
⁽²⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Cover Plate Temp. Rating | Max. Ambient Temp. |
|----------------|------------------------------|--------------------------|--------------------|
| Ordinary | 135°F (57°C) | 135°F (57°C) | 100°F (38°C) |
| Ordinary | 155°F (68°C) | 135°F (57°C) | 100°F (38°C) |
| Intermediate | 200°F (93°C) | 165°F (74°C) | 150°F (66°C) |
| High* | 286°F (141°C) | 165°F (74°C) | 150°F (66°C) |

Sprinkler cup fabricated of steel and CCP Cover Plate fabricated of brass and recommended for interior applications.

* Listed and Certified only by cULus.



Note: Do not install the Model F3QR Dry Pendent Concealed Sprinkler in ceilings which have positive pressure in the space above.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714

Model F3QR Dry Horizontal Sidewall Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

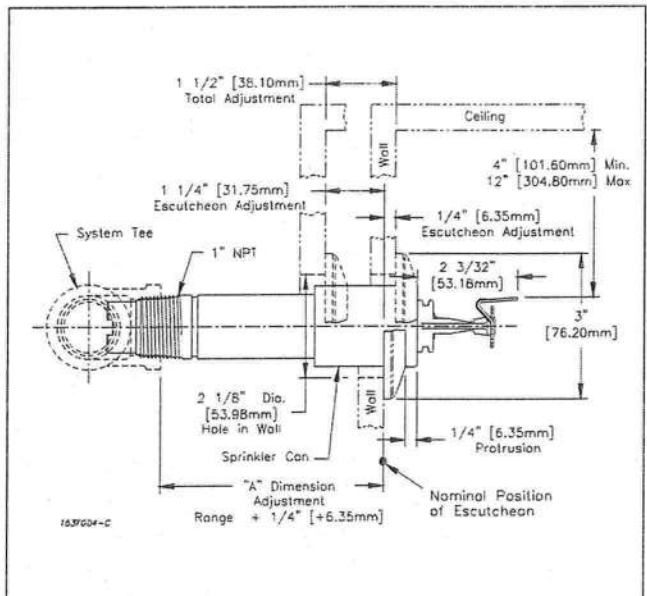
⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated can.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

Sprinkler can and escutcheon fabricated of brass for weather resistance in exterior applications.



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1 1/4" (-32mm) "A" dimension adjustment range.

Sprinkler Installation Wrench:

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734

Model F3QR Dry Recessed F1 Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------|---------------|---------------|
| Chrome Plated | Chrome Plated | Chrome Plated |
| White | White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

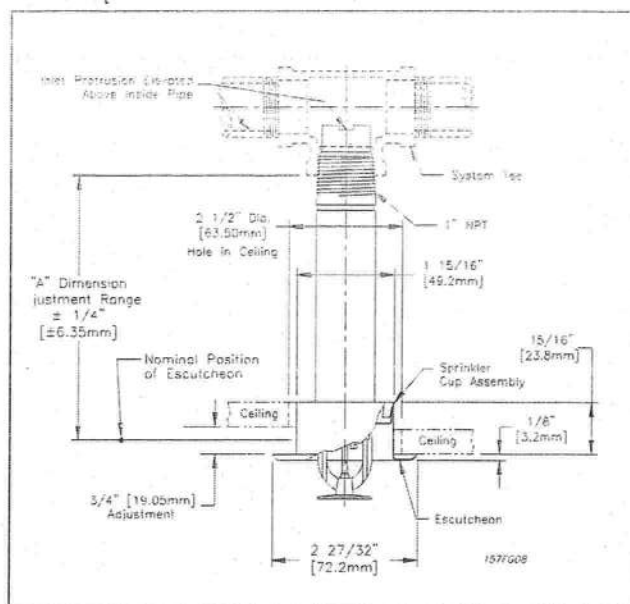
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Model F3QR Dry Horizontal Recessed F1 Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------|---------------|---------------|
| Chrome Plated | Chrome Plated | Chrome Plated |
| White | White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

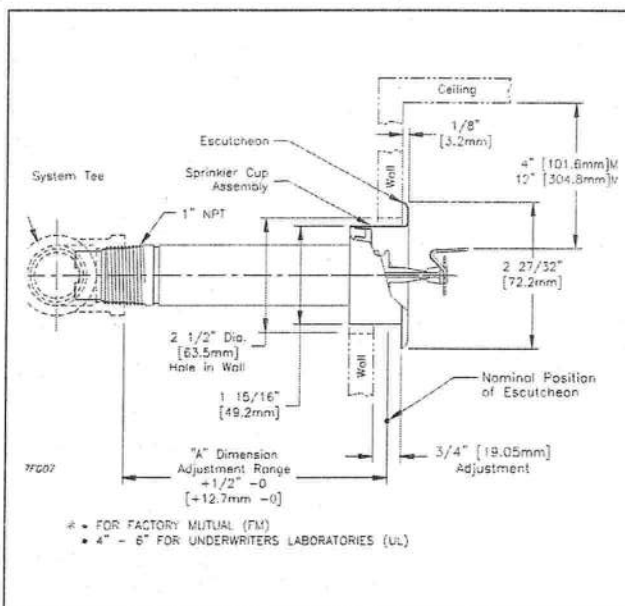
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Model F3QR Dry Horizontal Recessed Sidewall Sprinkler

"A" Dim. 3 1/2 to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. "See page 2"

Standard Temperature Ratings

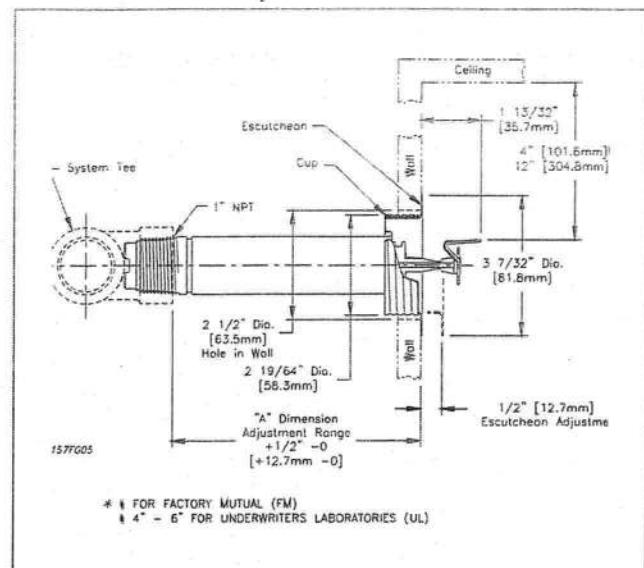
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



Notes: Do not install the Model F3QR Dry Horizontal Recessed Sidewall Sprinkler in walls which have positive pressure in their side space.

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Technical Data:

Orifice Size: 1/2" (15mm)

Thread Size: 1" NPT per ANSI B2.1

Working Pressure: 175 psi (12 bar)

Nominal K Factor - US / (Metric): 5.6 / (80)

Product Description

Reliable Model F3QR Dry Sprinklers are quick response sprinklers utilizing a durable 3mm frangible glass bulb. This quick response enables these sprinklers to apply water to a fire much sooner than standard response sprinklers of the similar temperature rating.

Model F3QR Dry Sprinklers are intended for use in dry and preaction systems and in areas subjected to freezing temperatures, such as freezers and unheated portions inside and outside buildings.

Environments wherein dry sprinklers are employed can be corrosive. For this reason, Model F3 Sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminants from entering the internal portion of the drop nipple. The wax must not be removed.

Operation

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. When the temperature increases sufficiently, due to a fire, the bulb shatters allowing operating parts to clear the waterway. This enables the inlet seal to release air or water and subsequently, cause water flow over the deflector in a uniform spray pattern, controlling or extinguishing the fire.

Ordering Information

Specify:

1. Sprinkler Type (select one):
 - (a) Model F3QR Dry Pendant
 - (b) Model F3QR Dry Recessed Pendant
 - (c) Model F3QR Dry Recessed F1 Pendant
 - (d) Model F3QR Dry Concealed Pendant
 - (e) Model F3QR Dry Horizontal Sidewall
 - (f) Model F3QR Dry Recessed Horizontal Sidewall
 - (g) Model F3QR Dry Recessed F1 Horizontal Sidewall
2. Sprinkler Temperature Rating.
3. Sprinkler Finish.
4. Escutcheon type (G/F1 or FP).
5. Cover Plate/Escutcheon Finish.
6. Length:

"A" Dimension (face of tee to face of ceiling or wall) in 1/4" (6mm) increments.
7. Model F3QR Dry Pendant (a) is available without sprinkler can and escutcheon.

Note:

1. The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15mm) per ANSI B2.1 [7 1/2 threads approximately].
2. All platings and paintings are decorative and intended for interior use.

General Installation Instructions

Model F3QR dry sprinklers must be installed only in standard (ANSI B 16.3 class 150 and ANSI B 16.4 class 125) pipe tees in the horizontal position, even at branch line ends. They should not be installed into elbows or pipe couplings located on drop nipples to the sprinklers. For these and other fittings including CPVC*, the dry sprinkler should be installed into a fitting to allow protrusion into the fitting in accordance with the diagrams. The "A" dimension of the dry sprinkler, which extends into the freezers or a freezing zone from wet pipe systems, should be selected to provide, as a minimum, the specified lengths in inches shown in the following table, between face of the fitting and the exterior face of the protected area. The following table is used for freezing zones when the ambient temperature around the wet pipe system is kept at 40 °F (4°C), and specifies the minimum length from fitting face to inside face of ceiling or wall for different protected area temperatures.

TABLE 1 (See Fig. 8)

| Minimum Length (Face to inside Face Ceiling/Wall) | Temperature (Protected Area)** |
|--|-----------------------------------|
| 12 inches / 300 mm | -20°F / -29°C |
| 18 inches / 450 mm | -40°F / -40°C |
| 24 inches / 600 mm | -60°F / -51°C |

** For temperatures falling between those in the above chart, the minimum length may be determined by interpolation.

During installation, the following steps must be followed:

1. Cut the specified size hole (see illustrations) for the sprinkler in the ceiling or wall directly in line with the tee.
2. Apply pipe joint compound to the 1" (25mm) pipe threads and install sprinkler using the Model G3 or G3 R/C Sprinkler Wrench as specified.
3. Install the Model FP push-on / thread-off escutcheon or CCP cover plate if required.

Note: Installation of the Model F3QR Sprinklers is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinklers.

Model F3QR Concealed and Recessed Installation Instructions

- The Model G3 R/C wrench (Fig. 1) is designed to locate on the wrenching pads of the recessed sprinkler while centering in the cup. A standard ½" drive ratchet may be used to drive this wrench. Figures 1 and 2 show sequentially the insertion of the wrench. First the wrench, with its jaws above the sprinkler deflector, is moved laterally until centered with the cup. Then raise the wrench inside of the cup until its jaws engage the sprinkler's square wrenching pads (Fig. 3). To remove the wrench, follow this procedure in reverse order. Care should be taken to avoid striking the deflector, with the wrench.
- Model G3 Wrench (Fig. 4) is used for installation of Pendent and Horizontal Sidewall sprinklers.
- Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors

before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Model F3QR Quick Response Dry Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

* Spears CPVC sprinkler adapter tees (with steel thread insert) can only be used with horizontal sidewall sprinklers which do not require protrusion into tees to prevent ice or debris blockage of sprinkler inlets. These CPVC tees do not permit sufficient sprinkler inlet protrusion as required for pendent installation.

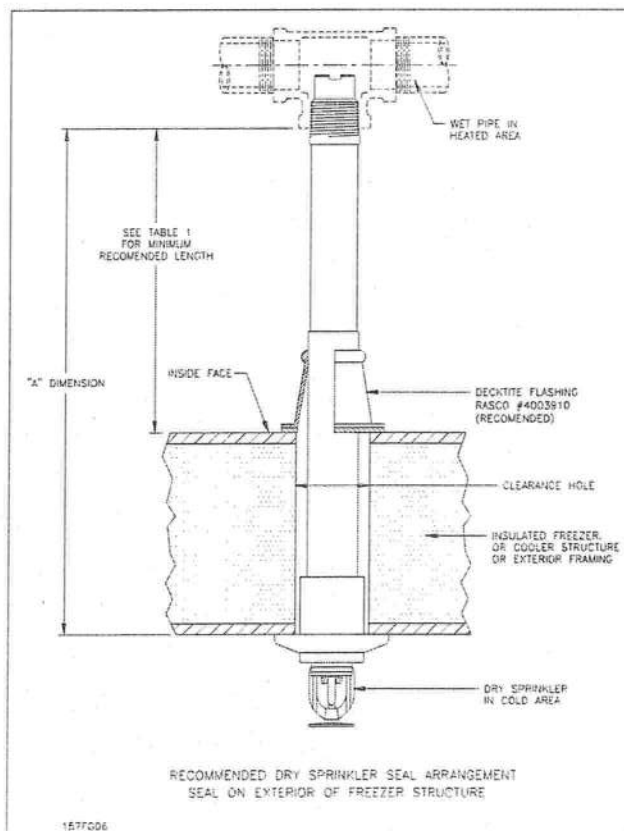


Fig. 8

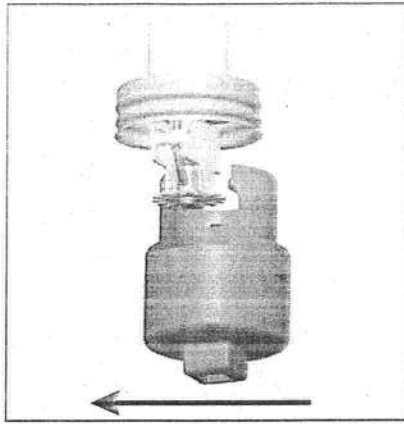


Fig. 1 - G3 R/C Wrench

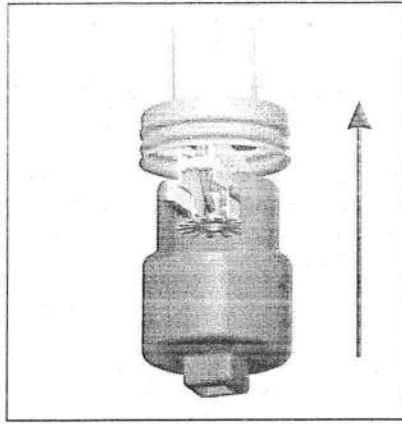


Fig. 2 - G3 R/C Wrench

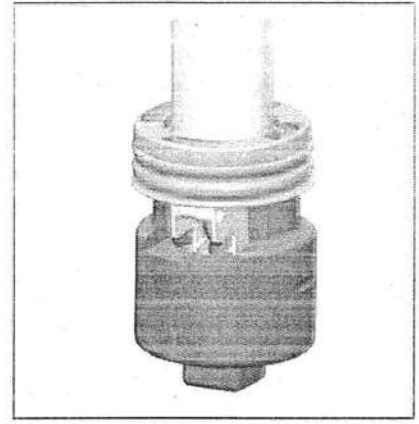


Fig. 3 - G3 R/C Wrench

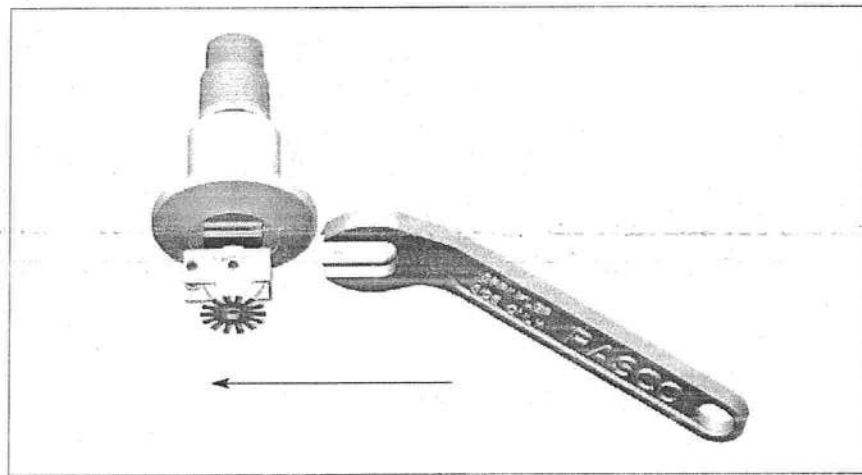


Fig. 4 - G3 Wrench

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588
(800) 848-6051
(914) 829-2042
www.reliablesprinkler.com

Sales Offices
Sales Fax
Corporate Offices
Internet Address



Revision lines indicate updated or new data
E.G. Printed in USA 05/09 P/N9999970175



CARIBBEAN FIRE & ASSOCIATES, INC.

MATERIAL DATA SUBMITTAL

For :

**EASTSIDE CARE CENTER
LIVING FACILITY**

LAKE CITY, FL 32055



Model RFC43 (SIN RA0612)
Model RFC49 (SIN RA0616)
Flat Concealed
Residential Sprinklers

Bulletin 006 Rev.D

A Concealed Residential Sprinkler engineered for a minimum design density of 0.05 gpm/ft² with low GPM requirements.

Features

1. Very low water flow requirements.
2. 1/2" (13mm) Total adjustment.
3. Thread-On/Thread-Off or Push-On/Thread Off cover attachment option.
4. Smooth aesthetic ceiling profile.
5. Available in brass, chrome and black plated or painted finishes.

Listings & Approval

1. Listed by Underwriters Laboratories, and certified by UL for Canada (cULus)
2. NYC MEA 258-93-E

UL Listing Categories

Residential Automatic Sprinklers

UL Guide Number

VKKW

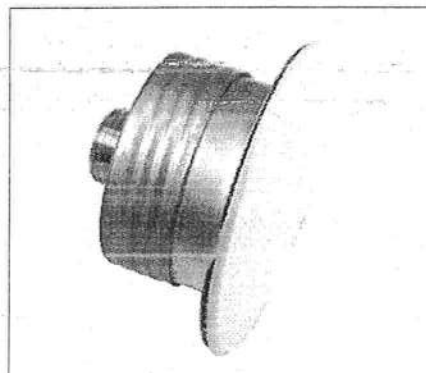
Product Description

Model RFC43 and RFC49 Concealed Residential Sprinklers are fast response residential fusible solder link automatic sprinklers. Residential sprinklers differ from standard sprinklers primarily in their response time and water distribution patterns.

Model RFC43 and RFC49 sprinklers discharge water in a hemispherical pattern below the sprinkler deflector. Residential distribution patterns are higher and generally contain a finer droplet size than standard sprinkler patterns.

The combination of speed of operation and high discharge pattern required for residential sprinklers has demonstrated, in fire testing, an ability for controlling residential fires, and thereby providing significant evacuation time for occupants.

The RFC43 and RFC49 Sprinklers provide the best form of fire protection by combining an attractive appearance and 1/2" (13mm) of cover adjustment for ease of installation. The small diameter cover plate is easily and positively attached and blends into the ceiling, concealing the most dependable fire protection available, an automatic sprinkler system.



The RFC43 and RFC49 are UL Listed Residential Sprinklers to be installed in the residential portions of any occupancy in accordance with NFPA 13, 13R, & 13D.

The RFC43 and RFC49 can reduce the need for precise cutting of drop nipples. The threaded cover plate assembly can be adjusted without tools to fit accurately against the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Application and Installation

The RFC43 and RFC49, for residential installations, use a 165°F (74°C) fusible solder link in a tuning fork style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. The cover plate is attached to the skirt, using 135°F (57°C) ordinary temperature classification solder. When the ceiling temperature rises, the solder holding the cover plate releases the cover allowing the deflector to drop into position and

exposing the sprinkler inside to ceiling temperature. The subsequent operation of the solder link opens the waterway and causes the deflector to drop into position to distribute the discharging water in a hemispherical pattern below the sprinkler deflector. Any adjustment of thread engagement between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling. The residential distribution pattern contains a finer droplet size than a standard sprinkler, and the pattern produces significantly higher wall wetting.

After a 2 5/8 inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model FC Wrench. When installing a sprinkler, the wrench is first positioned into the sprinkler/cup assembly and around the hexagonal body of the sprinkler frame. The Wrench must bottom out against the cup in order to ensure proper, safe installation. 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. MODEL RFC43 AND RFC49 CONCEALED SPRINKLERS MUST BE INSTALLED ONLY WITH 135°F RATED COVERS.

Cover assemblies provide up to 1/2" (13mm) of adjustment. Turn the cover clockwise until the flange is in contact with the ceiling. For the push-on/thread-off option, the cover assembly is pushed onto the cup and final adjustment is made by turning the cover clockwise until the skirt flange makes full contact with the ceiling. Cover removal requires turning in the counter-clockwise direction.

In ceilings that have a plenum space above the sprinkler, the plenum space may have neutral or negative pressurization but must not be positively pressurized. Inspect all sprinklers after installation to ensure that the gap between the cover plate and ceiling and the 4 slots in the cup are all open and free from any air flow impediment.

Temperature Rating

| Sprinkler | Cover Plate | Max. Ambient Temp. |
|------------|-------------|--------------------|
| 165°F/74°C | 135°F/57°C | 100°F/38°C |

Installation Data: RFC43 (SIN RA0612)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.3 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 12 (45) | 7.8 (0.54) |
| 1/2" (15mm) | 4.3 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 18 (68) | 17.5 (1.21) |
| 1/2" (15mm) | 4.3 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 21 (79) | 23.8 (1.64) |

Note: 1 bar = 100 Kpa

Installation Data: RFC49 (RA0616)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.9 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 17 (64.3) | 12.0 (0.83) |
| 1/2" (15mm) | 4.9 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 20 (75.7) | 16.7 (1.14) |

Note: 1 bar = 100 Kpa

FOR SLOPED CEILING APPLICATIONS SEE RASCO BULLETIN 035.

Maintenance

Model RFC43 and RFC49 Concealed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gentle vacuuming. Remove any sprinkler cover plate assembly which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Model RFC43 and RFC49 Residential Concealed Sprinkler Specification

Sprinklers shall be cULus Listed low flow residential concealed sprinklers with drop-down deflector and adjustable flat cover plate engineered for a minimum design density of 0.05 gpm/ft². Sprinkler frame and deflector shall be of bronze frame construction having a 1/2" NPT thread. Thermal element shall consist of an approved black-painted beryllium-nickel fusible solder link with symmetric lever mechanism, maintaining a Teflon-coated Belleville spring washer and machined brass cap water seal assembly containing no plastic parts. Sprinkler K-factor shall be nominal 4.3 (62.4), having a 7/16" orifice. Temperature rating shall be Ordinary 165°F (74°C); cover plate temperature rating to be

135°F (57°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange allowing a 1/2" cover plate adjustment. Any secure engagement between the cover plate and the cup will assure that the drop-down deflector is properly located below the ceiling. A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the drop-down sprinkler deflector from damage, which could occur during construction before the cover plate is installed. Standard cover finish: [Chrome] [White] [Specialty—specify]. Residential concealed sprinklers shall be Reliable Model RFC43, SIN RA0612 (Bulletin 006) or Model RFC49, SIN RA0616 (Bulletin 006).

Ordering Information Specify:

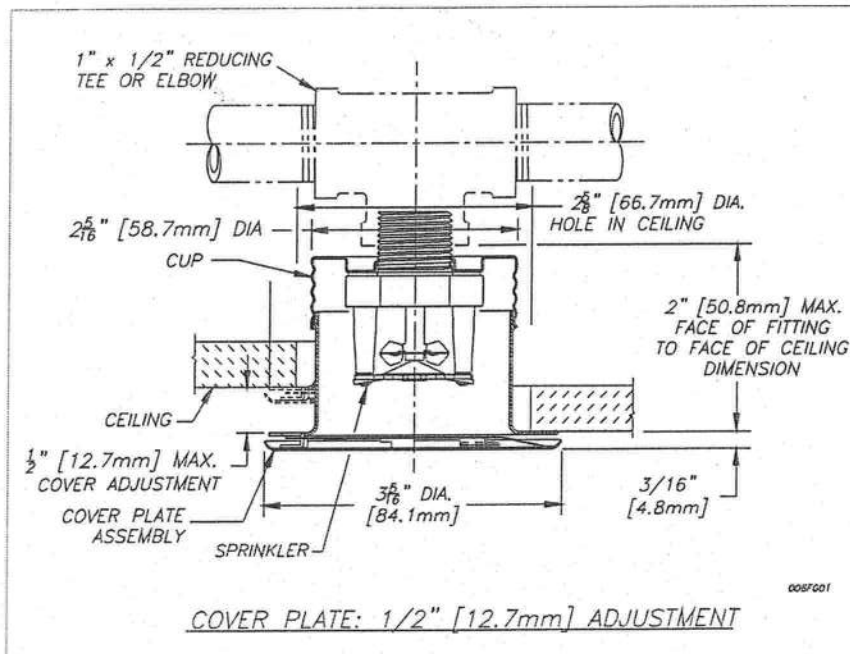
1. Sprinkler Model
2. Cover Plate Finish
3. Thread-On or Push-On Feature

Cover Plate Finishes ⁽¹⁾

| Standard Finishes |
|------------------------------|
| Chrome |
| White |
| Special Application Finishes |
| Bright Brass |
| Black Plating |
| Black Paint |
| Off White |
| Satin Chrome |

⁽¹⁾ Other colors and finishes available. Consult factory for details.

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



Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Supertrol electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

(800) 848-6051

(914) 829-2042

www.reliablesprinkler.com

Sales Offices

Sales Fax

Corporate Offices

Internet Address



Revision lines indicate updated or new data
E.G. Printed in USA, 12/06 P/N 9999970261

Reliable®

Model F1FR Model F1FR Recessed Quick Response Sprinklers

Model F1FR Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Vertical Sidewall
Horizontal Sidewall
– HSW 1 Deflector

Model F1FR Recessed Sprinkler Types

Recessed Pendent
Recessed Horizontal Sidewall
– HSW 1 Deflector

Listings & Approvals

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters' Laboratories of Canada (ULC)
3. Certified by FM Approvals
4. Loss Prevention Council (LPC, UK)
5. NYC BS&A No. 587-75-SA
6. Meets MIL-S-901C and MIL-STD 167-1
7. Verband der Schadenversicherer (VdS, Germany)
8. NYC MEA 258-93-E

UL Listing Category

Sprinklers, Automatic & Open
Quick Response Sprinkler

UL Guide Number

VNIV

**Patents: US Patent No. 6,374,920 Applies to
Model F1FR Vertical Sidewall Sprinklers.**

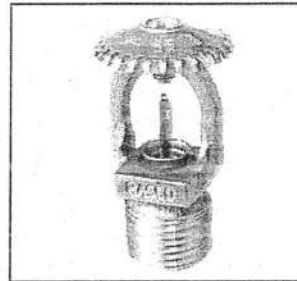
Product Description

Reliable Models F1FR and F1FR Recessed Sprinklers are quick response sprinklers which combine the durability of a standard sprinkler with the attractive low profile of a decorative sprinkler.

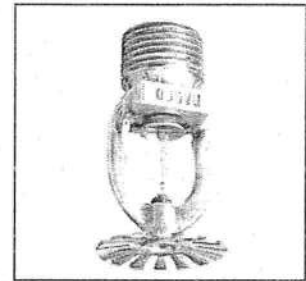
The Models F1FR and F1FR Recessed automatic sprinklers utilize a 3.0 mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five to ten times faster than standard response sprinklers. This quick response enables the Model F1FR and F1FR Recessed sprinklers to apply water to a fire much faster than standard sprinklers of the same temperature rating.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. The balance of parts are made of brass, copper and beryllium nickel.

At normal temperatures, the glass bulb contains the fluid in both the liquid and vapor phases. The vapor phase can be seen as a small bubble. As heat is applied, the liquid ex-



Upright



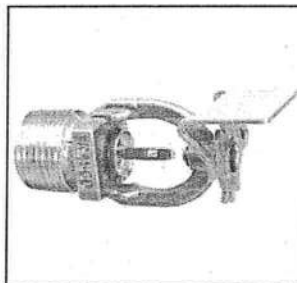
Pendent



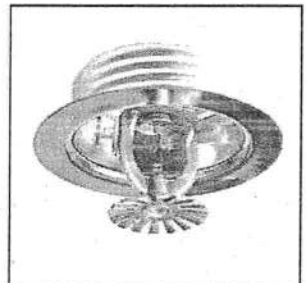
Vertical Sidewall



Conventional



Horizontal Sidewall
HSW 1 Deflector



Recessed Pendent
(Model FP Shown)

pands, forcing the bubble smaller and smaller as the liquid pressure increases. Continued heating forces the liquid to push out against the bulb, causing the glass to shatter, opening the waterway and allowing the deflector to distribute the discharging water.

Application

Quick response sprinklers are used in fixed fire protection systems: Wet, Dry, Deluge or Preaction. Care must be exercised that the orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of the National Fire Protection Association or the approving Authority Having Jurisdiction. Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-8N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

Model F1FR Quick Response Upright, Pendent & Conventional Sprinklers Installation Wrench: Model D Sprinkler Wrench Installation Data:

Installation Data:

| Sprinkler Type | K Factor | | Sprinkler Height | Approval Organization | Sprinkler Identification Number (SIN) | | |
|---|----------|--------|------------------|-----------------------|---------------------------------------|-------|--|
| | US | Metric | | | SSU | SSP | |
| Standard-Upright (SSU) and Pendent (SSP) Deflectors Marked to Indicate Position | | | | | | | |
| ½" (15mm) Standard Orifice with ½" NPT (R½) Thread | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,6,7 | R3625 ⁽¹⁾ | R3615 | |
| ⅞" (20mm) Large Orifice with ¾" NPT (R¾) Thread | 8.0 | 115 | 2.3" (58mm) | 1,2,3,4,7,8 | R3622 ⁽¹⁾ | R3612 | |
| ⅞" (17mm) Small Orifice with ½" NPT (R½) Thread | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3623 ⁽¹⁾ | R3613 | |
| ⅜" (10mm) Small Orifice with ½" NPT (R½) Thread | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3621 ⁽¹⁾ | R3611 | |
| 10mm Orifice XLH with R⅜" Thread | 4.2 | 60 | 56mm | 4,6,7 | R3624 | R3614 | |
| Conventional-Install in Upright or Pendent Position | | | | | | | |
| 10mm Orifice XLH with R⅜" Thread | 4.2 | 60 | 56mm | — | R3674 | | |
| 15mm Standard Orifice with ½" NPT (R½) Thread | 5.6 | 80 | 56mm | 4,6,7 | R3675 | | |
| 20mm Large Orifice with ¾" NPT (R¾) Thread | 8.0 | 115 | 58mm | 4,7 | R3672 | | |

(1) Polyester coated upright UL and ULC listed corrosion resistant.



Upright



Pendent



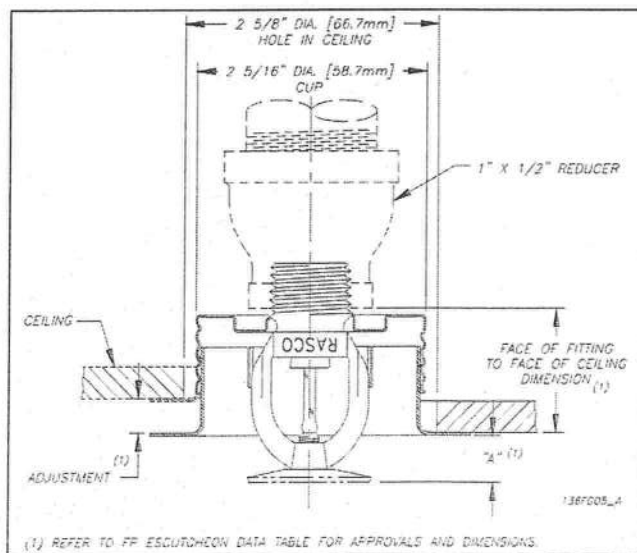
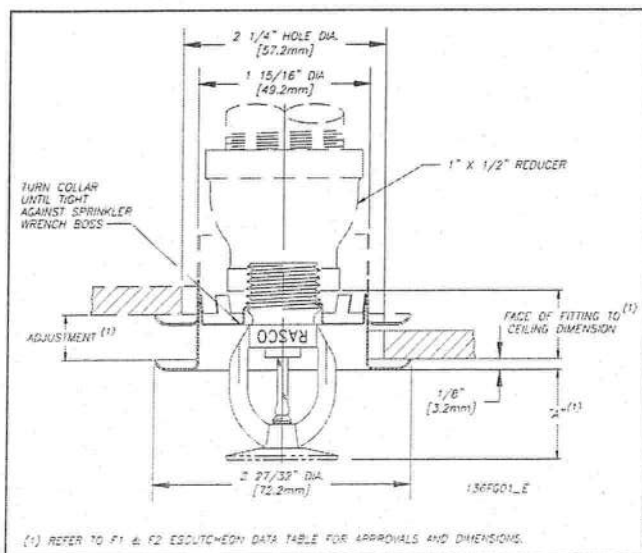
Conventional

Model F1FR Quick Response Recessed Pendent Sprinkler

Installation Wrench: Model GFR1 Sprinkler Wrench
 Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval ⁽¹⁾ Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|---------------------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" (15mm) | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,7,8 | R3615 |
| 17/32" (20mm) | 3/4" NPT (R3/4) | 8.0 | 115 | 2.3" (58mm) | 1,2,3,8 | R3612 |
| 7/16" (11mm) | 1/2" NPT (R1/2) | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3613 |
| 3/8" (10mm) | 1/2" NPT (R1/2) | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3611 |
| 10mm | R3/8" | 4.2 | 60 | 56mm | 4,7 | R3614 |

(1) Refer to escutcheon data table for approvals and dimensions.



Model F1FR Quick Response Vertical Sidewall Sprinkler

Installation Wrench: Model D Sprinkler Wrench

Installation Position: Upright or Pendent

Approval Type: Light Hazard Occupancy

Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1, 2, 3, 6, 8 | R3685 |
| 15mm | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 4 ⁽¹⁾ | |

⁽¹⁾ LPC Approval is for Pendent position only.



Vertical Sidewall

| Orientation | Deflector to Ceiling Dimension (Min. - Max.) |
|-------------|--|
| Upright | 4" - 12" (102mm - 305mm) |
| Pendent | 6" - 12" (152mm - 305mm) |

US Patent No. 6,374,920

Model F1FR Quick Response Horizontal Sidewall Sprinkler

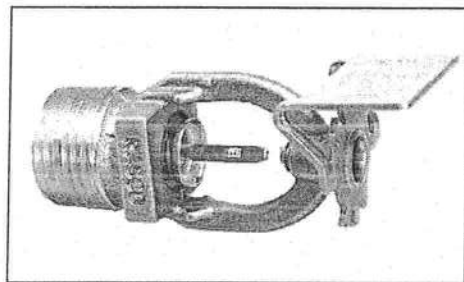
Deflector: HSW 1

Installation Wrench: Model D Sprinkler Wrench

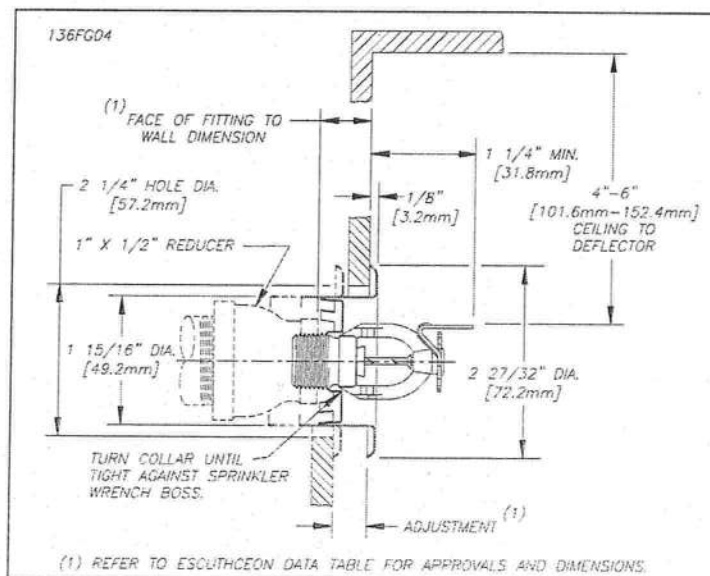
Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Length | Approval Organizations and Type of Approval | | Sprinkler Identification Number (SIN) |
|-----------------|----------------|----------|--------|------------------|---|-----------------|---------------------------------------|
| | | US | Metric | | Light Hazard | Ordinary Hazard | |
| 1/2" (15mm) | 1/2" NPT(R1/2) | 5.6 | 80 | 2.63" (67mm) | 1,2,3,5,8 | 1,2,5,8 | R3635 |

NOTE: UL, ULC and MEA Listing permits use with F1 or F2 recessed escutcheon. FM Approvals do not permit recessed usage.



Horizontal Sidewall



Installation

Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-8N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

The Model F1FR Recessed Quick Response Sprinklers are to be installed as shown. The Model F1 or F2 Escutcheons illustrated are the only recessed escutcheons to be used with the Model F1FR Sprinklers. The use of any other recessed escutcheon will void all approvals and negate all warranties.

When installing Model F1FR Sprinklers, use the Model D Sprinkler Wrench. When installing Model F1FR Recessed Pendent or Sidewall Sprinklers, use the Model GFR1 Sprinkler Wrench. Any other type of wrench may damage these sprinklers.

Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Temperature Ratings

| Classification | Sprinkler Temperature | | Max. Ambient Temp. | Bulb Color |
|---------------------|-----------------------|-----|--------------------|------------|
| | °C | °F | | |
| Ordinary | 57 | 135 | 100°F (38°C) | Orange |
| Ordinary | 68 | 155 | 100°F (38°C) | Red |
| Intermediate | 79 | 175 | 150°F (66°C) | Yellow |
| Intermediate | 93 | 200 | 150°F (66°C) | Green |
| High ⁽¹⁾ | 141 | 286 | 225°F (107°C) | Blue |

(1) Not available for recessed sprinklers.

Escutcheon Data

| Escutcheon Model | Approvals | Adjustment | "A" Dimension | Face of Fitting to Ceiling or Wall Dimension |
|-----------------------|-------------------------------|--------------------------|-----------------------------------|--|
| F1 | 1,2,4,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 3/4" (19.1mm) | 3/16" - 1/4" (5mm - 24mm) |
| F2 | 1,2,3 ⁽¹⁾ ,4,5,7,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 1 5/16" (24mm) | 3/16" - 1/4" (5mm - 17mm) |
| FP Push-on/Thread-off | 1,2 | Max Recessed | 7/16" (11mm) | 1 1/2" (38.1mm) |
| | 1,2 | Min Recessed | 15/16" (24mm) | 1" (25.4mm) |

No Dimensional Figure for FP

(1) Horizontal Sidewall is not FM approved in the recessed configuration.

Maintenance

The Models F1FR and F1FR Recessed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gen-

tle vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Sidewall (Vertical, Horizontal HSW1)
Recessed Pendent
Recessed Horizontal Sidewall HSW1

Finishes ^{(1) (2)}

| Standard Finishes | |
|---------------------------------------|------------------------------|
| Sprinkler | Escutcheon |
| Bronze | Brass |
| Chrome Plated | Chrome Plated ⁽³⁾ |
| White Polyester Coated ⁽⁴⁾ | White Painted ⁽³⁾ |
| Special Application Finishes | |
| Sprinkler | Escutcheon |
| Bright Brass | Bright Brass |
| Black Plated | Black Plated |
| Black Paint | Black Paint |
| Off White | Off White |
| Satin Chrome | Satin Chrome |

(1) Other finishes and colors are available on special order. Consult the factory for details.

(2) FM Approvals is limited to bronze and brass, chrome or black plated finishes only.

(3) FP Push-on/Thread-off escutcheon.

(4) UL and ULC listed corrosion resistance.

SIN numbers: R3621, R3622, R3623, R3625.

Note: For 1/2" orifice pendent FM approved white polyester coated and UL approved white polyester corrosion resistant sprinklers refer to Bulletin 014.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Orifice Size
4. Deflector Type
5. Temperature Rating
6. Sprinkler Finish
7. Escutcheon Type
8. Escutcheon Finish (where applicable)

Note: When Model F1FR Recessed sprinklers are ordered, the sprinklers and escutcheons are packaged separately.

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800)431-1588

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(914)829-2042

www.reliablesprinkler.com

Sales Offices

Sales Fax:

Corporate Offices

Internet Address



Revision lines indicate updated or new data

EG. Printed in U.S.A. 06/09

P/14999970027



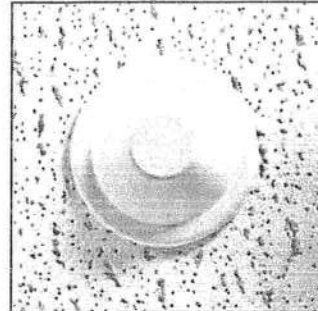
Model F3QR Quick Response Dry Sprinklers

Bulletin 157 Rev G

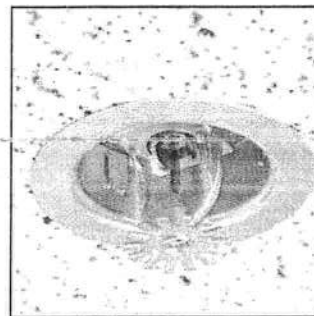
Bulletin 157 Rev G

Features

1. The Model F3QR sprinkler utilizes Belleville Spring Closure Technology. Reliable is the first in the industry to produce a Quick Response Dry Concealed sprinkler utilizing this technology.
2. Styles available
 - Pendent
 - Recessed FP Pendent
 - Recessed F1 Pendent
 - Concealed
 - Horizontal Sidewall
 - Recessed Horizontal Sidewall - FP
 - Recessed F1 Horizontal Sidewall
3. 1½" (38mm) escutcheon adjustment on pendent sprinkler.
4. ½" (13mm) escutcheon adjustment on recessed sprinkler with push-on/ thread-off FP Model Escutcheon ring.
5. ⅜" (9.5mm) cover plate adjustment on concealed sprinkler with push-on/ thread-off CCP Cover Plate.
6. ¾" (19mm) escutcheon adjustment on recessed sprinkler with G/F1 Escutcheon.
7. Attractive appearance. Employs 3mm frangible glass bulb and galvanized nipple.
8. Lengths available to accommodate installation dimensions from 2" - to - 48" (51mm - to - 1219mm), in ¼" (6mm) increments.
9. Available in a variety of plated and painted finishes.



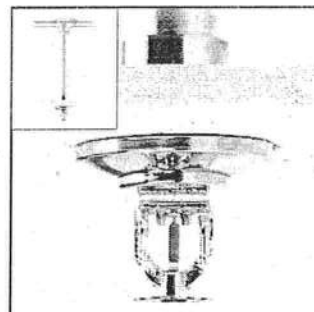
Concealed



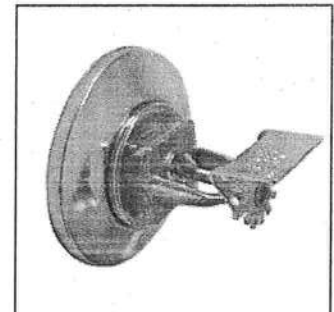
Recessed FP Pendent



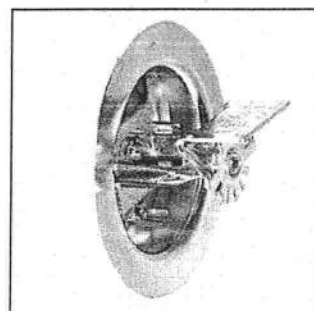
Recessed F1 Pendent



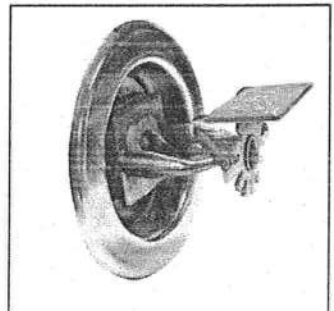
Pendent



Horizontal Sidewall



Recessed FP
Horizontal Sidewall



Recessed F1
Horizontal Sidewall

Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)

| Style | Response | Sprinkler System Type | Hazard |
|---|----------|---------------------------------------|-------------------|
| Pendent Recessed Pendent Recessed F1 Pendent CCP Concealed (R5714) | Quick | Wet Pipe Dry Pipe All Preaction | Light Ordinary |
| Horizontal Sidewall Recessed FP Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | | | |

2. Certified by FM Approvals

| Style | Response | Sprinkler System Type | Hazard |
|--|----------|--|-------------------------------------|
| Pendent Recessed F1 Pendent (R5714) | Quick | Wet Pipe, Single Interlock Preaction | Light Ordinary, Groups 1&2 |
| Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | Quick | Wet Pipe, Single Interlock Preaction | Light |

3. NYC MEA 258-93-E

Model F3QR Dry Pendent Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated cans.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

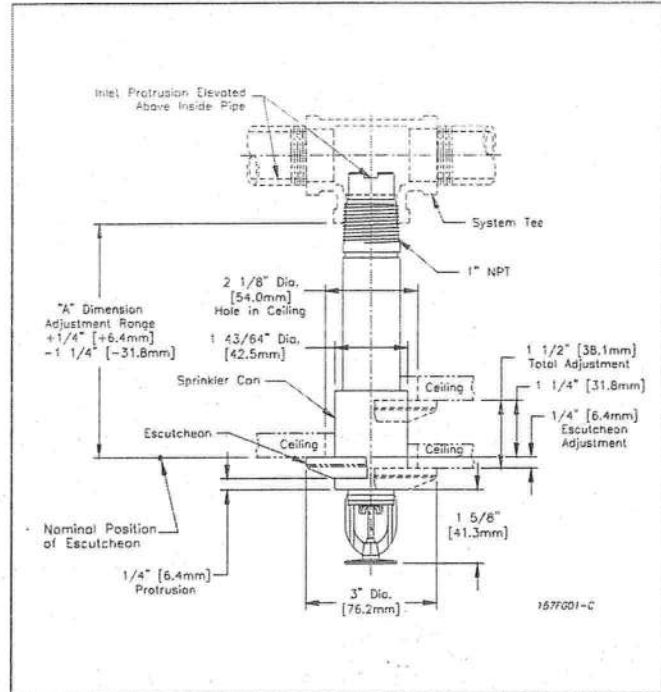
Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

Sprinkler Guard: Model C-2

Sprinkler Installation Wrench

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1/4" (-32mm) "A" dimension adjustment range.

Model F3QR Dry Recessed Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. Only the escutcheon will contain desired finish.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

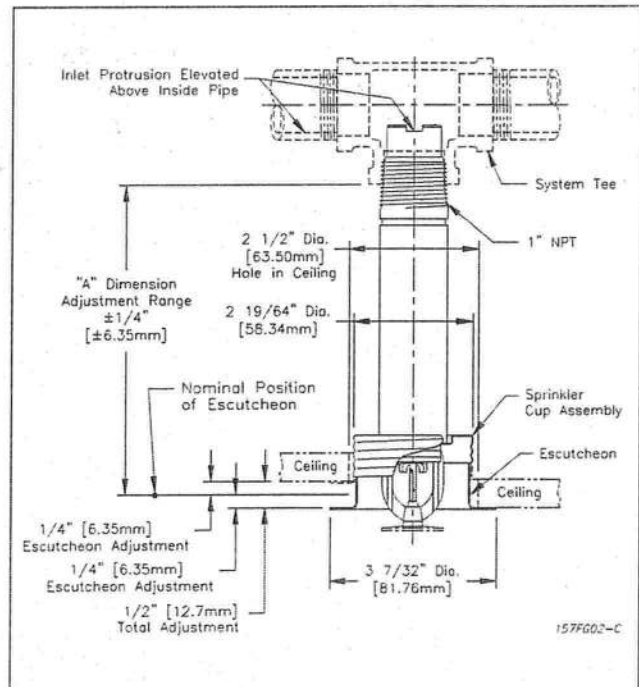
Sprinkler cup and FP escutcheon fabricated of steel and recommended for interior applications.

* Listed and Certified only by cULus

Sprinkler Installation Wrench

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: Do not install the Model F3QR Dry Pendent Recessed Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Pendent Concealed Sprinkler

"A" Dim. 3/4" to 48" (89mm to 1219mm) in 1/2" (6mm) increments

CCP Cover Plate⁽¹⁾ Finishes⁽²⁾

| Standard Finishes | Special Application Finishes |
|------------------------|---|
| Chrome Plated White | Bright Brass Plated Black Plated Black Paint Off White Satin Chrome |

⁽¹⁾ Utilizes the 1/2" cover plate with 3/8" total adjustment.

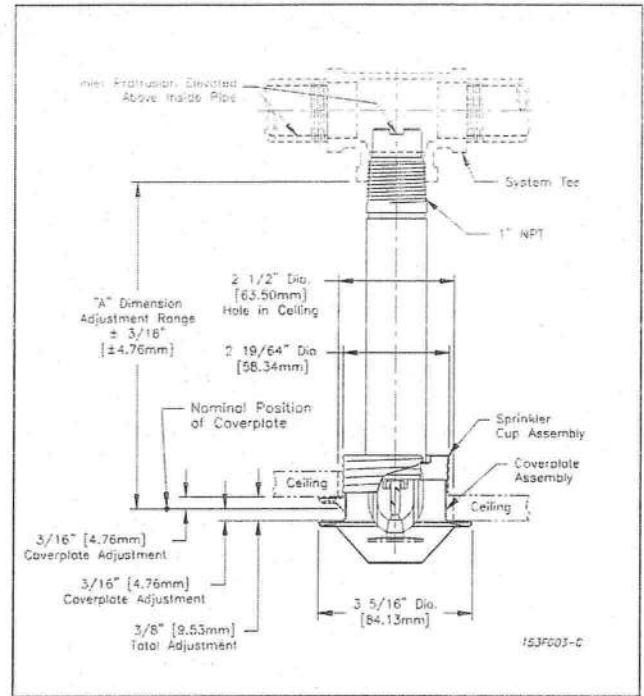
⁽²⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Cover Plate Temp. Rating | Max. Ambient Temp. |
|----------------|------------------------------|--------------------------|--------------------|
| Ordinary | 135°F (57°C) | 135°F (57°C) | 100°F (38°C) |
| Ordinary | 155°F (68°C) | 135°F (57°C) | 100°F (38°C) |
| Intermediate | 200°F (93°C) | 165°F (74°C) | 150°F (66°C) |
| High* | 286°F (141°C) | 165°F (74°C) | 150°F (66°C) |

Sprinkler cup fabricated of steel and CCP Cover Plate fabricated of brass and recommended for interior applications.

* Listed and Certified only by cULus.



Note: Do not install the Model F3QR Dry Pendent Concealed Sprinkler in ceilings which have positive pressure in the space above.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714

Model F3QR Dry Horizontal Sidewall Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

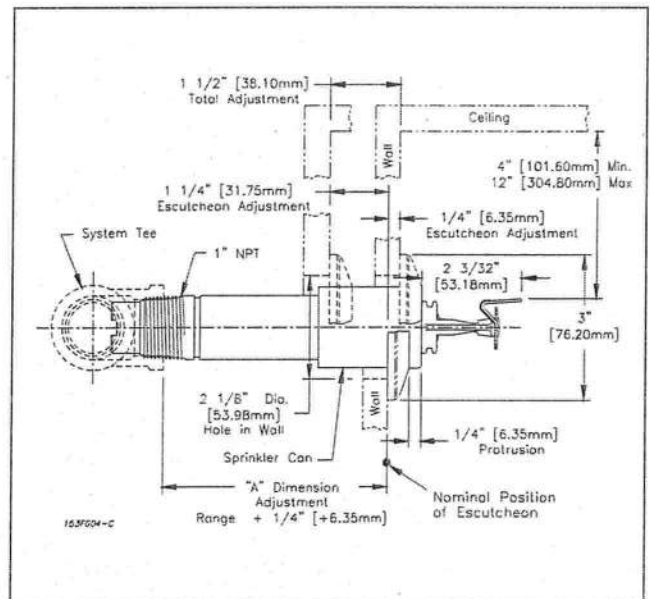
⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated can.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

Sprinkler can and escutcheon fabricated of brass for weather resistance in exterior applications.



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1/4" (-32mm) "A" dimension adjustment range.

Sprinkler Installation Wrench:

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734

Model F3QR Dry Recessed F1 Pendent Sprinkler

"A" Dim. 3/4" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

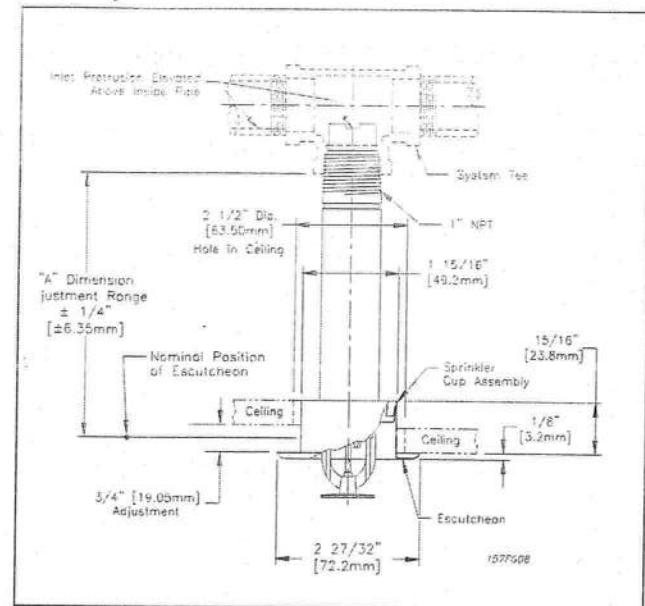
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Model F3QR Dry Horizontal Recessed F1 Sidewall Sprinkler

"A" Dim. 3/4" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

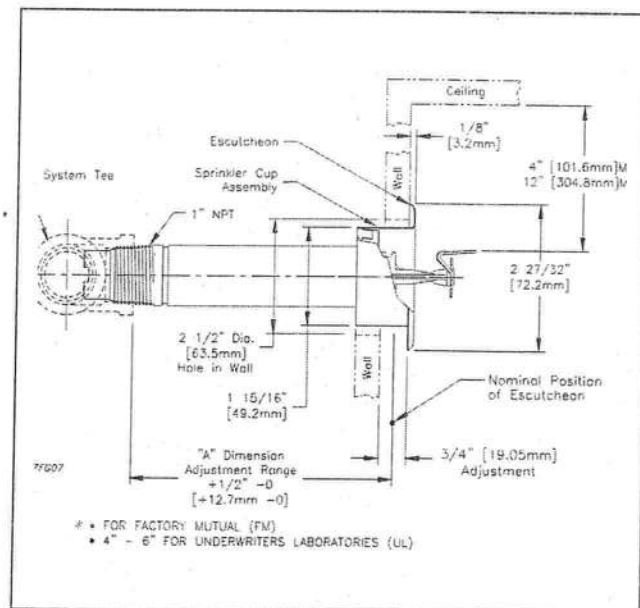
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Model F3QR Dry Horizontal Recessed Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. "See page 2"

Standard Temperature Ratings

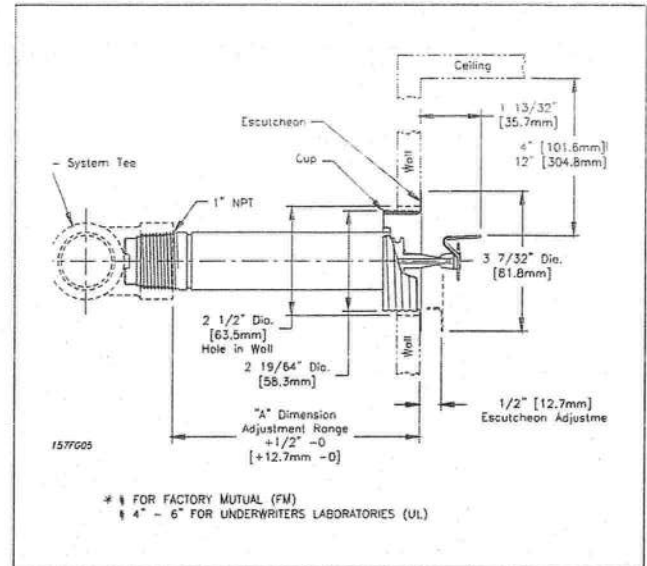
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



Notes: Do not install the Model F3QR Dry Horizontal Recessed Sidewall Sprinkler in walls which have positive pressure in their side space.

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Technical Data:

Orifice Size: 1/2" (15mm)

Thread Size: 1" NPT per ANSI B2.1

Working Pressure: 175 psi (12 bar)

Nominal K Factor - US / (Metric): 5.6 / (80)

Product Description

Reliable Model F3QR Dry Sprinklers are quick response sprinklers utilizing a durable 3mm frangible glass bulb. This quick response enables these sprinklers to apply water to a fire much sooner than standard response sprinklers of the similar temperature rating.

Model F3QR Dry Sprinklers are intended for use in dry and preaction systems and in areas subjected to freezing temperatures, such as freezers and unheated portions inside and outside buildings.

Environments wherein dry sprinklers are employed can be corrosive. For this reason, Model F3 Sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminants from entering the internal portion of the drop nipple. The wax must not be removed.

Operation

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. When the temperature increases sufficiently, due to a fire, the bulb shatters allowing operating parts to clear the waterway. This enables the inlet seal to release air or water and subsequently, cause water flow over the deflector in a uniform spray pattern, controlling or extinguishing the fire.

Ordering Information

Specify:

1. Sprinkler Type (select one):
 - (a) Model F3QR Dry Pendant
 - (b) Model F3QR Dry Recessed Pendant
 - (c) Model F3QR Dry Recessed F1 Pendant
 - (d) Model F3QR Dry Concealed Pendant
 - (e) Model F3QR Dry Horizontal Sidewall
 - (f) Model F3QR Dry Recessed Horizontal Sidewall
 - (g) Model F3QR Dry Recessed F1 Horizontal Sidewall
2. Sprinkler Temperature Rating.
3. Sprinkler Finish.
4. Escutcheon type (G/F1 or FP).
5. Cover Plate/Escutcheon Finish.
6. Length:

"A" Dimension (face of tee to face of ceiling or wall) in 1/4" (6mm) increments.
7. Model F3QR Dry Pendant (a) is available without sprinkler can and escutcheon.

Note:

1. The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15mm) per ANSI B2.1 [7 1/2 threads approximately].
2. All platings and paintings are decorative and intended for interior use.

General Installation Instructions

Model F3QR dry sprinklers must be installed only in standard (ANSI B 16.3 class 150 and ANSI B 16.4 class 125) pipe tees in the horizontal position, even at branch line ends. They should not be installed into elbows or pipe couplings located on drop nipples to the sprinklers. For these and other fittings including CPVC*, the dry sprinkler should be installed into a fitting to allow protrusion into the fitting in accordance with the diagrams. The "A" dimension of the dry sprinkler, which extends into the freezers or a freezing zone from wet pipe systems, should be selected to provide, as a minimum, the specified lengths in inches shown in the following table, between face of the fitting and the exterior face of the protected area. The following table is used for freezing zones when the ambient temperature around the wet pipe system is kept at 40 °F (4°C), and specifies the minimum length from fitting face to inside face of ceiling or wall for different protected area temperatures.

TABLE 1 (See Fig. 8)

| Minimum Length (Face to inside Face Ceiling/Wall) | Temperature (Protected Area)** |
|--|-----------------------------------|
| 12 inches / 300 mm | -20°F / -29°C |
| 18 inches / 450 mm | -40°F / -40°C |
| 24 inches / 600 mm | -60°F / -51°C |

** For temperatures falling between those in the above chart, the minimum length may be determined by interpolation.

During installation, the following steps must be followed:

1. Cut the specified size hole (see illustrations) for the sprinkler in the ceiling or wall directly in line with the tee.
2. Apply pipe joint compound to the 1" (25mm) pipe threads and install sprinkler using the Model G3 or G3 R/C Sprinkler Wrench as specified.
3. Install the Model FP push-on / thread-off escutcheon or CCP cover plate if required.

Note: Installation of the Model F3QR Sprinklers is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinklers.

Model F3QR Concealed and Recessed Installation Instructions

- The Model G3 R/C wrench (Fig. 1) is designed to locate on the wrenching pads of the recessed sprinkler while centering in the cup. A standard ½" drive ratchet may be used to drive this wrench. Figures 1 and 2 show sequentially the insertion of the wrench. First the wrench, with its jaws above the sprinkler deflector, is moved laterally until centered with the cup. Then raise the wrench inside of the cup until its jaws engage the sprinkler's square wrenching pads (Fig. 3). To remove the wrench, follow this procedure in reverse order. Care should be taken to avoid striking the deflector, with the wrench.
- Model G3 Wrench (Fig. 4) is used for installation of Pendent and Horizontal Sidewall sprinklers.
- Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors

before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Model F3QR Quick Response Dry Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

* Spears CPVC sprinkler adapter tees (with steel thread insert) can only be used with horizontal sidewall sprinklers which do not require protrusion into tees to prevent ice or debris blockage of sprinkler inlets. These CPVC tees do not permit sufficient sprinkler inlet protrusion as required for pendent installation.

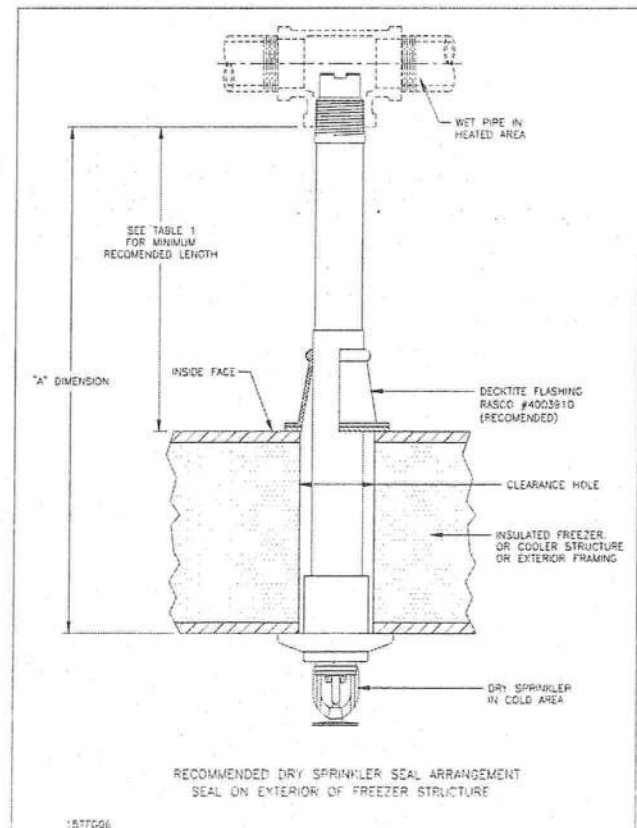


Fig. 8

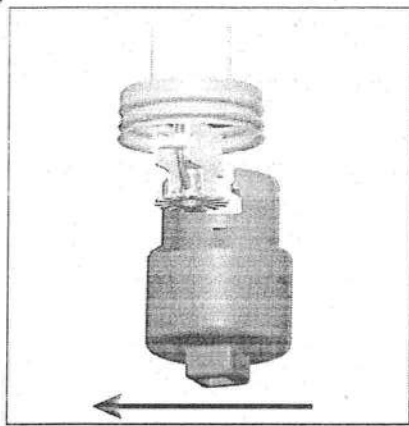


Fig. 1 - G3 R/C Wrench

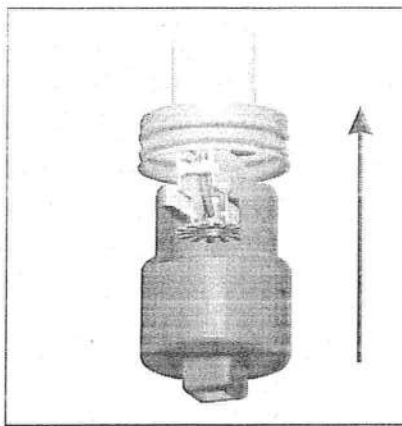


Fig. 2 - G3 R/C Wrench



Fig. 3 - G3 R/C Wrench

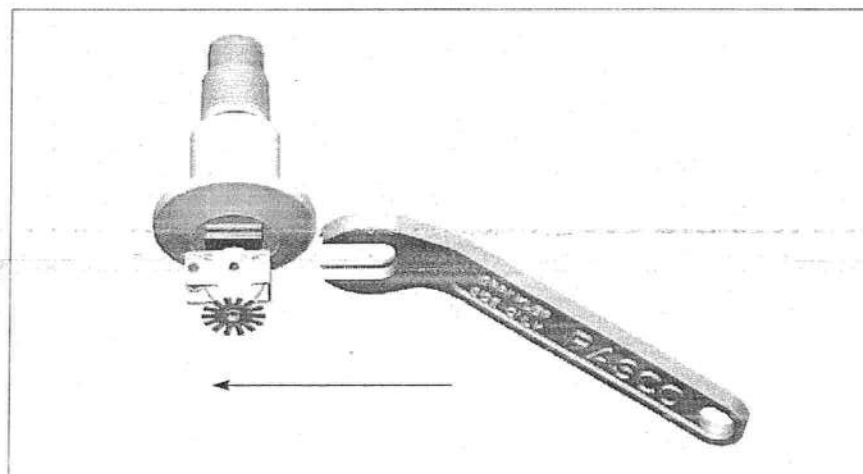


Fig. 4 - G3 Wrench

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

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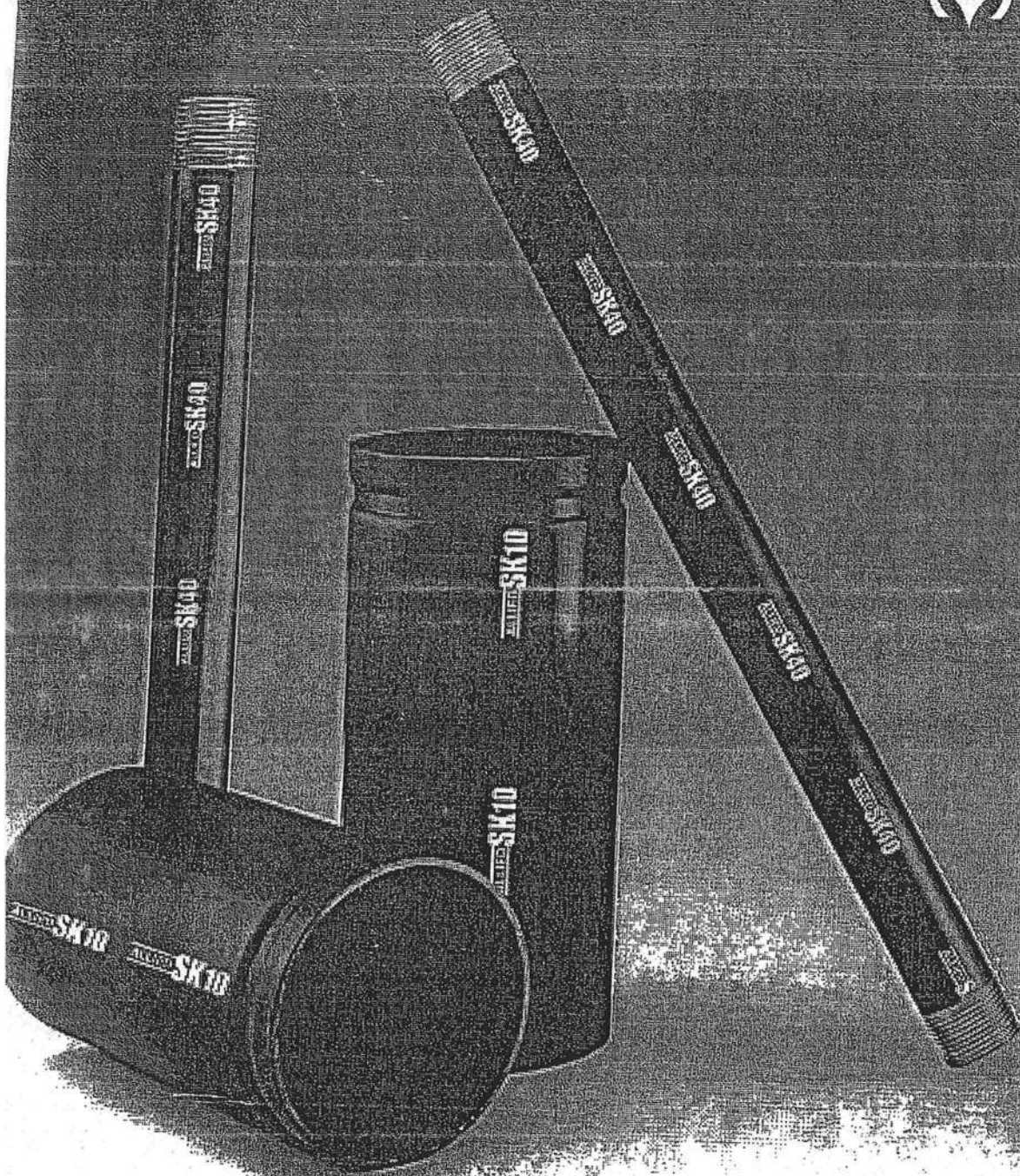
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TUBE & CONDUIT



SCHEDULE-10/40

Schedule-10®/Schedule-40®

Fully Listed and FM Approved Sprinkler Pipe

When you specify Schedule-10/Schedule-40 sprinkler pipe you get a UL listed and FM approved product. Although these products do not require separate approvals, Schedule-10/Schedule-40 gives you the extra quality assurance you demand. Our Sch-10 (1¼"– 8") pipe and Sch-40 (1"– 2½") pipe have passed the same thorough lab testing as our other listed pipe products, and receive periodic mill inspections from both UL and FM agents to ensure consistent quality.

Galvanized Pipe

Schedule-10/Schedule-40 product can be "hot-dip" galvanized to meet FM requirements for dry systems in accordance with the zinc coating specifications of ASTM A-123.

Superior Coating

Our advanced formula mill coating offers a clean, durable surface. It is also paint-ready for custom color applications without special preparation.

The internal surface of all black Allied Tube & Conduit Fire Sprinkler pipe products up to 4.5000" in diameter is coated with our new Antibacterial Formula, "ABF". In scientific laboratory test, ABS proved to have superior resistance to microbial colonization of pipe walls, thereby delaying or possibly preventing the onset of Microbiologically Influenced corrosion (MIC) when the First Sprinkler System is first installed.

American Made

Meets "Buy American" requirement and is available through distributors in the USA, Canada and Mexico.

Specifications & Approvals

Schedule-10/Schedule-40 pipe are in compliance with the following:

ASTM A-135, and NFPA 13. Both pipe products have a working pressure rating of 300 psi maximum and also meet the stringent requirement for the following tests:

- Welded Outlets
- Hydrostatic Pressure
- Side Wall Rupture
- Vibration Test

Sch-40 Specifications

| NPS In; mm | Nominal I.D. In; mm | Wt. Lbs/Ft; Kg/m | Wt. (H2O Filled) Lbs/Ft; Kg/m | Pcs/ Lift | Wt/Lift (21') Lbs; Kg | Wt/Lift (24') Lbs; Kg | Wt/Lift (25') Lbs; Kg |
|---------------|------------------------|---------------------|----------------------------------|--------------|--------------------------|--------------------------|--------------------------|
| 1" | 1.049 | 1.680 | 2.05 | 70 | 2,470 | 2,822 | 2,940 |
| 25 | 26.6 | 2.5 | 3.05 | 70 | 1,120 | 1,280 | 1,334 |
| 1¼" | 1.380 | 2.270 | 2.93 | 51 | 2,431 | 2,778 | 2,894 |
| 32 | 35.1 | 4.36 | 4.36 | 51 | 1,103 | 1,260 | 1,313 |
| 1½" | 1.610 | 2.720 | 3.61 | 44 | 2,513 | 2,872 | 2,992 |
| 40 | 40.9 | 4.0 | 5.37 | 44 | 1,140 | 1,303 | 1,357 |
| 2" | 2.067 | 3.650 | 5.13 | 30 | 2,300 | 2,628 | 2,738 |
| 50 | 52.5 | 5.4 | 7.63 | 30 | 1,043 | 1,192 | 1,242 |
| 2½" | 2.469 | 5.790 | 7.86 | 19 | 2,310 | 2,640 | 2,750 |
| 65 | 62.7 | 8.6 | 11.73 | 19 | 1,048 | 1,197 | 1,247 |

Sch-10 Specifications

| NPS In; mm | Nominal I.D. In; mm | Wt. Lbs/Ft; Kg/m | Wt. (H2O Filled) Lbs/Ft; Kg/m | Pcs/ Lift | Wt/Lift (21') Lbs; Kg | Wt/Lift (24') Lbs; Kg | Wt/Lift (25') Lbs; Kg |
|---------------|------------------------|---------------------|----------------------------------|--------------|--------------------------|--------------------------|--------------------------|
| 1" | 1.097 | 1.400 | 1.81 | 91 | 2,675 | 3,053 | 3,185 |
| 25 | 27.9 | 2.1 | 2.70 | 91 | 1,213 | 1,385 | 1,445 |
| 1¼" | 1.442 | 1.810 | 2.52 | 61 | 2,319 | 2,664 | 2,760 |
| 32 | 36.6 | 2.7 | 3.75 | 61 | 1,052 | 1,208 | 1,252 |
| 1½" | 1.682 | 2.080 | 3.04 | 61 | 2,664 | 3,045 | 3,172 |
| 40 | 42.7 | 3.1 | 4.52 | 61 | 1,208 | 1,381 | 1,439 |
| 2" | 2.157 | 2.640 | 4.22 | 37 | 2,051 | 2,344 | 2,442 |
| 50 | 54.8 | 3.9 | 6.28 | 37 | 930 | 1,063 | 1,108 |
| 2½" | 2.635 | 3.530 | 5.89 | 30 | 2,224 | 2,542 | 2,648 |
| 65 | 66.9 | 5.3 | 8.77 | 30 | 1,009 | 1,153 | 1,201 |
| 3" | 3.260 | 4.330 | 7.94 | 19 | 1,728 | 1,975 | 2,057 |
| 80 | 82.8 | 6.4 | 11.82 | 19 | 784 | 896 | 933 |
| 4" | 4.260 | 5.610 | 11.78 | 19 | 2,238 | 2,558 | 2,665 |
| 90 | 108.2 | 8.3 | 17.53 | 19 | 1,015 | 1,160 | 1,209 |
| 5" | 5.295 | 7.77 | 17.33 | 10 | 1,632 | 1,865 | 1,943 |
| 125 | 134.5 | 11.56 | 25.80 | 10 | 740 | 846 | 881 |
| 6" | 6.357 | 9.290 | 23.03 | 10 | 1,951 | 2,230 | 2,322 |
| 150 | 161.5 | 13.8 | 34.27 | 10 | 885 | 1,012 | 1,053 |
| 8" | 8.249 | 16.490 | 40.15 | 7 | 2,424 | 2,770 | 2,885 |
| 200 | 209.5 | 24.5 | 59.75 | 7 | 1,100 | 1,256 | 1,309 |



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SPRINKLER PIPE CHART

| SCHEDULE 40 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.250 | 1.660 | 1.442 | 0.109 | 61 | 1.81 | 1,281 | 2,319 |
| 1.500 | 1.900 | 1.682 | 0.109 | 61 | 2.09 | 1,281 | 2,677 |
| 2.000 | 2.375 | 2.157 | 0.109 | 37 | 2.64 | 777 | 2,051 |
| 2.500 | 2.875 | 2.635 | 0.120 | 37 | 3.54 | 777 | 2,751 |
| 3.000 | 3.500 | 3.260 | 0.120 | 19 | 4.34 | 399 | 1,732 |
| 4.000 | 4.500 | 4.260 | 0.120 | 19 | 5.62 | 399 | 2,242 |

| SCHEDULE 7 | | | | | | | |
|------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.250 | 1.660 | 1.512 | 0.074 | 61 | 1.25 | 1,281 | 1,601 |
| 1.500 | 1.900 | 1.734 | 0.083 | 61 | 1.61 | 1,281 | 2,062 |
| 2.000 | 2.375 | 2.209 | 0.083 | 37 | 2.03 | 777 | 1,577 |
| 2.500 | 2.875 | 2.709 | 0.083 | 37 | 2.48 | 777 | 1,927 |
| 3.000 | 3.500 | 3.334 | 0.090 | 19 | 3.28 | 399 | 1,309 |
| 4.000 | 4.500 | 4.310 | 0.105 | 19 | 4.93 | 399 | 1,967 |

| SCHEDULE 40 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.000 | 1.315 | 1.049 | 0.133 | 61 | 1.68 | 1,281 | 2,152 |
| 1.250 | 1.660 | 1.380 | 0.140 | 61 | 2.28 | 1,281 | 2,921 |
| 1.500 | 1.900 | 1.610 | 0.145 | 61 | 2.72 | 1,281 | 3,484 |
| 2.000 | 2.375 | 2.067 | 0.154 | 37 | 3.66 | 777 | 2,844 |

| SCHEDULE 30 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.000 | 1.292 | 1.054 | 0.119 | 61 | 1.49 | 1,281 | 1,909 |
| 1.250 | 1.637 | 1.389 | 0.124 | 61 | 2.01 | 1,281 | 2,575 |
| 1.500 | 1.877 | 1.619 | 0.129 | 61 | 2.41 | 1,281 | 3,087 |
| 2.000 | 2.352 | 2.080 | 0.136 | 37 | 3.22 | 777 | 2,502 |

Welded Tube - Berkeley also stocks additional sprinkler pipe in 6" and 8" sizes.

Fig. 69

Adjustable Swivel Ring, Tapped Per NFPA Standards

Size Range: 1/2" through 8"

Material: Carbon steel

Finish: ☐ Galvanized

Service: Recommended for suspension of non-insulated stationary pipe line.

Maximum Temperature: 650° F

Approvals: Complies with Federal Specification A-A-1192A (Type 10)

WW-H-171-E (Type 10) and MSS-SP-69 (Type 10).

UL Listed and FM Approved (Sizes 3/4" - 8").

Features:

- Threads are countersunk so that they cannot become burred or damaged.
- Knurled swivel nut provides vertical adjustment after piping is in place.
- Captured swivel nut in the 1/2" through 3" sizes.

Ordering: Specify size, figure number and name.

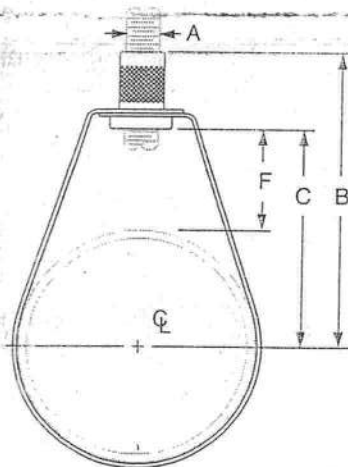
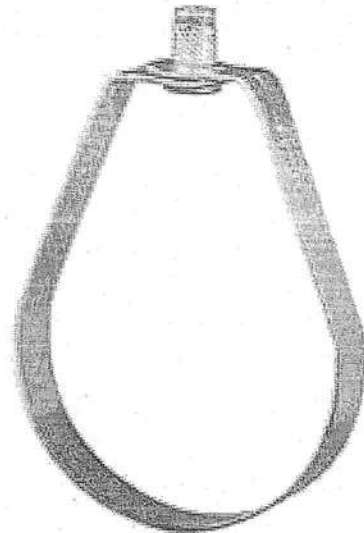


Fig. 69: Loads (lbs) • Weight (lbs) • Dimensions (in)

| Pipe Size | Max Load | Weight | Rod Size A | B | C | F |
|-----------|----------|--------|------------|--------|--------|--------|
| 1/2 | 300 | 0.10 | 3/8 | 27/8 | 2 | 19/16 |
| 3/4 | | 0.10 | | 23/4 | 17/8 | 115/16 |
| 1 | | 0.10 | | 29/16 | 111/16 | 1 |
| 1 1/4 | | 0.10 | | 25/8 | 13/4 | 7/8 |
| 1 1/2 | | 0.10 | | 23/4 | 17/8 | |
| 2 | | 0.11 | | 31/4 | 23/8 | 11/8 |
| 2 1/2 | 525 | 0.20 | 1/2 | 4 | 23/4 | 15/16 |
| 3 | | 0.20 | | 313/16 | 215/16 | 13/16 |
| 4 | 650 | 0.30 | | 411/16 | 313/16 | 19/16 |
| 5 | | 0.54 | | 55/16 | 43/8 | |
| 6 | 1,000 | 0.65 | | 611/16 | 59/16 | 21/4 |
| 8 | | 1.00 | | 8 | 7 | 211/16 |

Pipe Hanger Submittal Sheet

| | | |
|--------------------|------------------------------|------------------------|
| Project: | Architect / Engineer: | Approval Stamp: |
| Date: | Phone: | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

Grooved Fittings

Section
56

Couplings



| PFS Number | Mfg. Number | Description | Pack |
|------------|-------------|-------------|------|
|------------|-------------|-------------|------|

ABBREVIATIONS

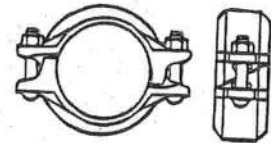
GVD = Grooved

Firelock Style #005 Ridgid Grooved Couplings

This coupling has a unique, patented angle-pad design which allows the housings to offset while clamping the grooves. By permitting the housings to slide on the angled bolt pads, rigidity is obtained. The FireLock system provides rigidity for valve connections, fire mains and long straight runs. Support and hanging requirements correspond to NFPA 13 Sprinkler Systems.

| | | |
|--------|------------|--------|
| 561110 | CO12005PEO | 1-1/4" |
| 561111 | CO14005PEO | 1-1/2" |
| 561112 | CO20005PEO | 2" |
| 561113 | CO24005PEO | 2-1/2" |
| 561114 | CO30005PEO | 3" |
| 561116 | CO40005PEO | 4" |
| 561118 | CO60005PEO | 6" |
| 561119 | CO80005PEO | 8" |

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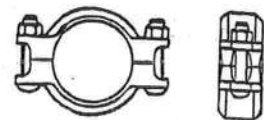


Standard Coupling for Roll Grooved Pipe #75

These couplings are designed for joining large diameter piping systems. This coupling is ideal for roll grooved IPS black or galvanized steel and stainless steel systems.

| | | |
|--------|------------|--------|
| 562301 | CO14075PEO | 1-1/2" |
| 562303 | CO24075PEO | 2-1/2" |

1
1



Flexible Couplings #75 Flex

These couplings are available where moderate pressures are expected or weight considerations are a factor. Rated for service up to 500 PSI, depending on size.

| | | |
|--------|------------|--------|
| 562349 | CO10004PEO | 1" |
| 562351 | CO14004PEO | 1-1/2" |
| 562350 | CO12004PEO | 1-1/4" |
| 562352 | CO20004PEO | 2" |
| 562353 | CO24004PEO | 2-1/2" |
| 562354 | CO30004PEO | 3" |
| 562356 | CO40004PEO | 4" |
| 562358 | CO60004PEO | 6" |
| 562359 | CO80004PEO | 8" |

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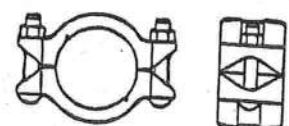


Roust-A-Bout Couplings (Style 99)

These couplings consist of a durable, ductile iron housing. Its curved case-hardened steel jaws grip the pipe when nuts are tightened to full torque specifications, and it requires no pipe end preparation.

| | | |
|--------|------------|--------|
| 565225 | CO14099PEO | 1-1/2" |
| 565226 | CO20099PEO | 2" |
| 565227 | CO24099PEO | 2-1/2" |
| 565228 | CO30099PEO | 3" |
| 565229 | CO40099PEO | 4" |
| 565230 | CO60099PEO | 6" |

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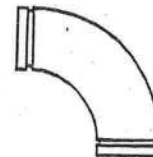
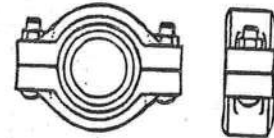
Grooved Fittings

Section
56

Couplings & Cast Fittings

| PFS Number | Mfg. Number | Description | Pack |
|--|-------------|-----------------|------|
| Style #750 Reducing Couplings This coupling permits direct reduction on the piping run. It features a reducing gasket for pressure responsive sealing. A steel washer which prevents telescoping of the smaller pipe inside the larger during vertical systems assembly is available upon request. | | | |
| 562421 | C367750PEO | 2" X 1-1/2" | 1 |
| 562432 | CC07750PEO | 2-1/2" X 2" | 1 |
| 562442 | CC43750PEO | 3" X 2" | 1 |
| 562443 | CC49750PEO | 3" X 2-1/2" | 1 |
| 562462 | CD29750PEO | 4" X 2" | 1 |
| 562463 | CD35750PEO | 4" X 2-1/2" | 1 |
| 562464 | CD44750PEO | 4" X 3" | 1 |
| 562486 | CE79750PEO | 6" X 4" | 1 |
| 562498 | CF47750PEO | 8" X 6" | 1 |
| Grooved Fittings FireLock fittings are designed for use exclusively with Style 005 FireLock couplings and are rated for the same pressure service. Use of other products may result in bolt pad interference. | | | |
| 90° Elbows - Firelock (#001) | | | |
| 562500 | FO12010POO | 1-1/4" STANDARD | 1 |
| 562501 | FO14010POO | 1-1/2" STANDARD | 1 |
| 562002 | FO20001POO | 2" | 1 |
| 562003 | FO24001POO | 2-1/2" | 1 |
| 562004 | FO30001POO | 3" | 1 |
| 562006 | FO40001POO | 4" | 1 |
| 562008 | FO60001POO | 6" | 1 |
| 562009 | FO80001POO | 8" | 1 |
| 45° Elbows - Firelock (#003) | | | |
| 562600 | FO12011POO | 1-1/4" STANDARD | 1 |
| 562601 | FO14011POO | 1-1/2" STANDARD | 1 |
| 563002 | FO20003POO | 2" | 1 |
| 563003 | FO24003POO | 2-1/2" | 1 |
| 563004 | FO30003POO | 3" | 1 |
| 563006 | FO40003POO | 4" | 1 |
| 563008 | FO60003POO | 6" | 1 |
| 563009 | FO80003POO | 8" | 1 |
| 22-1/2° Elbows (#12) | | | |
| 562702 | FO20012POO | 2" STANDARD | 1 |
| 562709 | FO80012POO | 8" STANDARD | 1 |

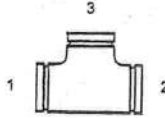
Victaulic



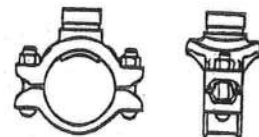
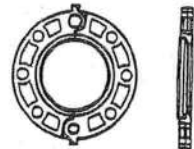
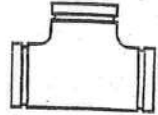
Grooved Fittings

Section
56

Cast Grooved Fittings

| PFS Number | Mfg. Number | Description | Pack |
|---|-------------|-------------|------|
| Tees (#002) Tees are read straight through and then outlet 1,2,3.  | | | |
| 562800 | FO12020POO | 1-1/4" | 1 |
| 562801 | FO14020POO | 1-1/2" | 1 |
| 564002 | FO20002POO | 2" | 1 |
| 564003 | FO24002POO | 2-1/2" | 1 |
| 564004 | FO30002POO | 3" | 1 |
| 564006 | FO40002POO | 4" | 1 |
| 564008 | FO60002POO | 6" | 1 |
| 564009 | FO80002POO | 8" | 1 |
| Caps (#006) | | | |
| 564200 | FD12006POO | 1-1/4" | 1 |
| 564201 | FO14006POO | 1-1/2" | 1 |
| 564202 | FO20006POO | 2" | 1 |
| 564203 | FO24006POO | 2-1/2" | 1 |
| 564204 | FO30006POO | 3" | 1 |
| 564206 | FO40006POO | 4" | 1 |
| 564208 | FO60006POO | 6" | 1 |
| 564209 | FO80006POO | 8" | 1 |
| Flanges (#744) Designed for Incorporating flanged components with ANSI CL 125 or CL 150 bolt hole patterns into a grooved pipe system. Incorporates small teeth inside the key shoulder I.D. to prevent rotation. | | | |
| 564302 | CO20744PEO | 2" | 1 |
| 564303 | CO24744PEO | 2-1/2" | 1 |
| 564304 | CO30744PEO | 3" | 1 |
| 564306 | CO40744PEO | 4" | 1 |
| 564308 | CO60744PEO | 6" | 1 |
| 564309 | CO80744PEO | 8" | 1 |
| Mechanical Tees - Grooved (#920) Used for tee connections where a grooved outlet is required at mid-pipe. Malleable iron body, internal locating collar, full sectional EPDM rubber gasket. Rated for working pressures to 300 PSI. | | | |
| 569701 | 920 | 4" X 2" | 1 |
| 569702 | 920 | 4" X 2-1/2" | 1 |
| 569703 | 920 | 4" X 3" | 1 |
| 569710 | 920 | 6" X 2" | 1 |
| 569711 | 920 | 6" X 2-1/2" | 1 |
| 569712 | 920 | 6" X 3" | 1 |
| 569713 | 920 | 6" X 4" | 1 |
| 569721 | 920 | 8" X 2-1/2" | 1 |
| 569722 | 920 | 8" X 3" | 1 |
| 569723 | 920 | 8" X 4" | 1 |

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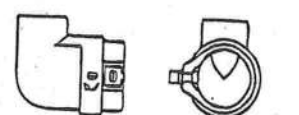
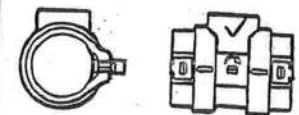
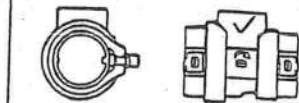
Grooved Fittings

Section
56

FIT Fittings

Victaulic

| PFS Number | Mfg. Number | Description | Pack |
|---|----------------|--------------------------|------|
| FIT FITTINGS | | | |
| FIT Fittings | | | |
| Direct connection of differing sizes on the run are possible with this fitting. No special reducing fittings are necessary. | | | |
| FIT Reducing Run and Outlet Tees (#969) | | | |
| 567600 | 969 | 1-1/4" X 1" X 1" | |
| 562454 | 969 | 1-1/2" X 1-1/4" X 3/4" | 1 |
| 562455 | 969 | 1-1/2" X 1-1/4" X 1" | 1 |
| 562458 | 969 | 2" X 1-1/2" X 1" | 1 |
| FIT Reducing Tees (#96) | | | |
| Joins same size pipe while providing a female threaded outlet. It also accomodates drop nipples, branches, sprinkler heads, gauges and other male threaded connections. | | | |
| 567402 | 96 | 1" X 1" X 1/2" | 1 |
| 567404 | 96 | 1" X 1" X 3/4" | 1 |
| 567406 | 96 | 1" X 1" X 1" | 1 |
| 567408 | 96 | 1-1/4" X 1-1/4" X 1/2" | 1 |
| 567410 | 96 | 1-1/4" X 1-1/4" X 3/4" | 1 |
| 567412 | 96 | 1-1/4" X 1-1/4" X 1" | 1 |
| 567416 | 96 | 1-1/2" X 1-1/2" X 1/2" | 1 |
| 567414 | 96 | 1-1/2" X 1-1/2" X 3/4" | 1 |
| 567418 | 96 | 1-1/2" X 1-1/2" X 1" | 1 |
| 567420 | 96 | 2" X 2" X 1/2" | 1 |
| 567422 | 96 | 2" X 2" X 3/4" | 1 |
| 567424 | 96 | 2" X 2" X 1" | 1 |
| FIT Straight Tee (#963) | | | |
| Useful for fire protection system connections. | | | |
| 567500 | 963 | 1" X 1" X 1" | 1 |
| 567502 | 963 | 1-1/4" X 1-1/4" X 1-1/4" | 1 |
| 567504 | 963 | 1-1/2" X 1-1/2" X 1-1/2" | 1 |
| 567506 | 963 | 2" X 2" X 2" | 1 |
| FIT Reducing Elbows (#966) | | | |
| Designed for automatic sprinkler systems. This elbow provides a reduced threaded connection for 1/2" or 3/4" sprinkler heads or 1" outlets. | | | |
| 567602 | 966 | 1" X 1/2" | 1 |
| 567604 | 966 | 1" X 3/4" | 1 |
| 567606 | 966 | 1-1/4" X 1/2" | 1 |
| 567608 | 966 | 1-1/4" X 3/4" | 1 |
| 567610 | 966 | 1-1/2" X 1/2" | 1 |
| 567612 | 966 | 1-1/2" X 3/4" | 1 |
| 567614 | 966 | 2" X 1/2" | 1 |
| 567616 | 966 | 2" X 3/4" | 1 |



Grooved Fittings

Section
56

FIT Fittings

| PFS Number | Mfg. Number | Description | Pack |
|------------|-------------|---|------|
| | | FIT Couplings (#960) Straight coupling allows direct plain end connections without outlets. Ideal for connecting plain end finned tube or equipment in perimeter heating systems or for small grid sprinkler systems. | |
| 567101 | 960 | 1" | 1 |
| 567102 | 960 | 1-1/4" | 1 |
| 567103 | 960 | 1-1/2" | 1 |
| 567104 | 960 | 2" | 1 |
| | | FIT 90° Elbows (#961) Full flow elbow for minimum pressure drop. Elbows rotate for alignment before locking. Internal pipe stop provides uniform takeout. | |
| 567201 | 961 | 1" X 1" | 1 |
| 567210 | 961 | 1-1/4" X 1-1/4" | 1 |
| 567211 | 961 | 1-1/2" X 1-1/2" | 1 |
| 567212 | 961 | 2" X 2" | 1 |

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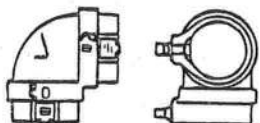
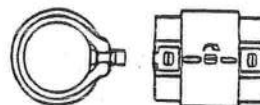


FIG. 1104 45° Street Elbow



Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.

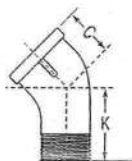


FIGURE 1104 45° STREET ELBOW

| Size NPS/DN | C in/mm | K in/mm | Weight | |
|----------------|------------|------------|-----------------|-----------------|
| | | | black lbs/kg | galv. lbs/kg |
| 1/8 | 1 1/16 | 7/8 | 0.06 | 0.07 |
| 6 | 17 | 22 | 0.03 | 0.03 |
| 1/4 | 3/4 | 1 5/16 | 0.1 | 0.11 |
| 8 | 19 | 24 | 0.05 | 0.05 |
| 3/8 | 1 5/16 | 1 | 0.14 | 0.14 |
| 10 | 22 | 25 | 0.06 | 0.06 |
| 1/2 | 7/8 | 1 7/8 | 0.2 | 0.21 |
| 15 | 22 | 29 | 0.09 | 0.1 |
| 3/4 | 1 | 1 3/4 | 0.33 | 0.34 |
| 20 | 25 | 33 | 0.15 | 0.15 |
| 1 | 1 7/8 | 1 1/4 | 0.52 | 0.53 |
| 25 | 29 | 37 | 0.24 | 0.24 |
| 1 1/4 | 1 3/4 | 1 11/16 | 0.84 | 0.87 |
| 32 | 33 | 43 | 0.38 | 0.39 |
| 1 1/2 | 1 7/8 | 1 7/8 | 1.2 | 1.3 |
| 40 | 37 | 48 | 0.55 | 0.58 |
| 2 | 1 11/16 | 2 1/4 | 1.9 | 2 |
| 50 | 43 | 57 | 0.88 | 0.88 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1162 45° Elbow

ANVILStar™
Fire Products Division of Anvil International



Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



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For Listing / Approval
details contact your
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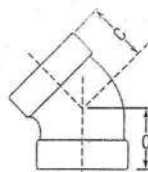


FIGURE 1162 45° ELBOW

| Size | C | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 13/16 | 0.19 | 0.2 |
| 3/8 | 22 | 0.09 | 0.09 |
| 1/2 | 1/8 | 0.28 | 0.29 |
| 3/4 | 22 | 0.13 | 0.13 |
| 1 | 1 | 0.43 | 0.44 |
| 1 1/4 | 25 | 0.2 | 0.2 |
| 1 1/2 | 1 1/8 | 0.66 | 0.68 |
| 2 | 29 | 0.3 | 0.31 |
| 2 1/2 | 1 1/4 | 1 | 1 |
| 3 | 33 | 0.45 | 0.46 |
| 3 1/2 | 1 1/2 | 1.7 | 1.7 |
| 4 | 38 | 0.76 | 0.77 |
| 4 1/2 | 1 1/2 | 2.1 | 2.3 |
| 5 | 43 | 1 | 1 |
| 5 1/2 | 2 | 3.4 | 3.5 |
| 6 | 51 | 1.5 | 1.6 |
| 6 1/2 | 2 1/4 | 5.5 | 5.6 |
| 7 | 57 | 2.5 | 2.5 |
| 7 1/2 | 2 1/2 | 8.1 | 8.5 |
| 8 | 64 | 3.7 | 3.9 |
| 8 1/2 | 2 13/16 | 13 | 14 |
| 9 | 72 | 6.1 | 6.3 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



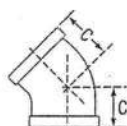
FIG. 1102 45° Elbow

Malleable Iron Class 150 (Standard)

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1102 45° ELBOW**

| Size | C | Weight | |
|--------|--------|--------|--------|
| | | black | galv. |
| NPS/DN | in./mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 0.06 | 0.08 |
| 1/4 | 3/4 | 0.11 | 0.11 |
| 3/8 | 1 3/16 | 0.16 | 0.18 |
| 1/2 | 1 | 0.21 | 0.24 |
| 3/4 | 1 1/8 | 0.37 | 0.39 |
| 1 | 1 1/4 | 0.54 | 0.57 |
| 1 1/4 | 1 7/8 | 0.86 | 0.87 |
| 1 1/2 | 2 | 1.1 | 1.2 |
| 2 | 2 1/2 | 1.7 | 1.9 |
| 2 1/2 | 3 | 2.8 | 2.9 |
| 3 | 3 1/2 | 4.5 | 4.6 |
| 4 | 4 1/2 | 7.2 | 7.3 |
| 5 | 5 1/2 | 11 | 12 |
| 6 | 6 1/2 | 17 | 18 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

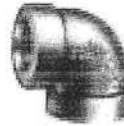
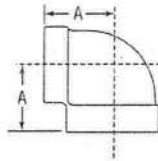
ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1161**90° Elbow – Straight****ANVILStar™**
Fire Products Division of Anvil International**Malleable Iron Fittings Class 300 (XS/XH)****Submittal Sheet**

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

**FIGURE 1161 90° ELBOW STRAIGHT**

| Size | A | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 15/16 | 0.2 | 0.2 |
| 8 | 24 | 0.09 | 0.09 |
| 3/8 | 11/16 | 0.29 | 0.32 |
| 10 | 27 | 0.13 | 0.15 |
| 1/2 | 1 1/4 | 0.47 | 0.48 |
| 15 | 32 | 0.21 | 0.22 |
| 3/4 | 1 1/8 | 0.66 | 0.68 |
| 20 | 37 | 0.3 | 0.31 |
| 1 | 1 3/8 | 1.2 | 1.2 |
| 25 | 41 | 0.53 | 0.54 |
| 1 1/4 | 1 15/16 | 1.9 | 1.9 |
| 32 | 40 | 0.85 | 0.88 |
| 1 1/2 | 2 1/8 | 2.5 | 2.6 |
| 40 | 54 | 1.1 | 1.2 |
| 2 | 2 1/2 | 4.2 | 4.3 |
| 50 | 62 | 1.9 | 1.9 |
| 2 1/2 | 2 15/16 | 5.3 | 5.9 |
| 65 | 75 | 2.4 | 2.7 |
| 3 | 3 3/8 | 9.7 | 9.8* |
| 80 | 86 | 4.4 | 4.4* |
| 4 | 4 1/2 | 16 | 16 |
| 100 | 114 | 7.2 | 7.4 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



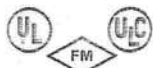
FIG. 1101

90° Elbow

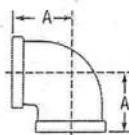


Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1101 90° ELBOW**

| Size | A | Weight | |
|--------|--------|--------|--------|
| | | black | galv |
| NPS/DN | in./mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 0.06 | 0.07 |
| 1/4 | 1 3/16 | 0.11 | 0.12 |
| 3/8 | 1 5/16 | 0.17 | 0.17 |
| 1/2 | 1 7/8 | 0.26 | 0.27 |
| 3/4 | 1 9/16 | 0.38 | 0.43 |
| 1 | 1 1/2 | 0.63 | 0.65 |
| 1 1/4 | 1 3/4 | 0.96 | 0.94 |
| 1 1/2 | 1 5/8 | 1.3 | 1.3 |
| 2 | 2 1/4 | 2.1 | 2 |
| 2 1/2 | 2 1/2 | 3.5 | 3.6 |
| 3 | 3 1/16 | 5.2 | 5.3 |
| 3 1/2 | 3 1/8 | 7.1 | 7.2 |
| 4 | 3 3/8 | 8.9 | 9.4 |
| 5 | 4 1/2 | 14 | 15 |
| 6 | 5 1/8 | 23 | 24 |
| 150 | 130 | 10 | 11 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

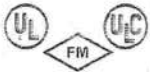
NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.**PROJECT INFORMATION:****APPROVAL STAMP:**

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

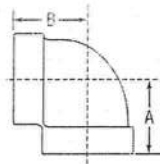
FIG. 1161R 90° Reducing Elbow

Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1161R 90° REDUCING ELBOW**

| Size | A | B | Weight | |
|---------------|--------|---------|---------|---------|
| | | | black | galv. |
| NPS/DN | in./mm | in./mm | lbs./kg | lbs./kg |
| 3/8 x 1/4 | 1 | 1 | 0.26* | — |
| 10 x 8 | 25 | 25 | 0.12* | — |
| 1/2 x 3/8 | 1 3/16 | 1 3/16 | 0.41* | — |
| 15 x 10 | 30 | 30 | 0.19* | — |
| 3/4 x 1/2 | 1 5/16 | 1 3/8 | 0.62* | 0.67* |
| 20 x 15 | 33 | 35 | 0.28* | 0.30* |
| 1 x 1/2 | 1 7/16 | 1 1/2 | 0.87* | 0.89 |
| 25 x 15 | 37 | 38 | 0.39 | — |
| 1 x 3/4 | 1 1/2 | 1 1/16 | 1 | — |
| 25 x 20 | 38 | 40 | 0.45 | — |
| 1 1/4 x 3/4 | 1 5/8 | 1 3/4 | 1.4 | — |
| 32 x 20 | 41 | 44 | 0.64 | — |
| 1 1/4 x 1 | 1 3/4 | 1 13/16 | 1.6* | — |
| 32 x 25 | 44 | 47 | 0.73* | — |
| 1 1/2 x 1 | 1 | 1 13/16 | 2 | — |
| 40 x 25 | 25 | 47 | 0.91 | — |
| 1 1/2 x 1 1/4 | 2 | 2 1/16 | 2.1 | — |
| 40 x 32 | 51 | 52 | 1 | — |
| 2 x 1 1/4 | 2 1/8 | 2 5/16 | 3.1 | — |
| 50 x 32 | 54 | 59 | 1.4 | — |
| 2 x 1 1/2 | 2 1/4 | 2 3/8 | 3.3 | 3.3 |
| 50 x 40 | 57 | 60 | 1.5 | 1.5 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

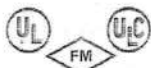
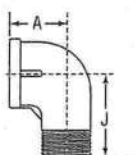
Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1103R**90° Reducing Street Elbow****AnvilStar™**
Fire Products Division of Anvil International**Malleable Iron Fittings Class 150 (Standard)****Submittal Sheet****APPROVED**For Listing / Approval
details contact your
AnvilStar™ Representative.**90° STREET ELBOW
FIGURE 1103R – REDUCING**

FIRST SIZE DENOTES FEMALE END

| Size | A | J | Weight | |
|---------------|---------|---------|--------|--------|
| | | | black | galv. |
| NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/2 x 3/8 | 1 1/16 | 1 9/16 | 0.23 | 0.25 |
| 15 x 10 | 27 | 40 | 0.1 | 0.11 |
| 3/4 x 1/2 | 1 3/16 | 1 3/4 | 0.32 | 0.36 |
| 20 x 15 | 30 | 44 | 0.15 | 0.16 |
| 1 x 3/4 | 1 3/8 | 2 1/16 | 0.54 | 0.56 |
| 25 x 20 | 35 | 52 | 0.24 | 0.25 |
| 1 1/4 x 1 | 1 7/8 | 2 3/8 | 0.86 | 0.89 |
| 32 x 25 | 40 | 59 | 0.39 | 0.4 |
| 1 1/2 x 3/4 | 1 7/8 | 2 1/4 | 0.75* | 0.77* |
| 32 x 20 | 37 | 57 | 0.34 | 0.35 |
| 1 1/2 x 1 1/4 | 1 13/16 | 2 7/8 | 1.2 | 1.3 |
| 40 x 32 | 47 | 65 | 0.54 | 0.56 |
| 1 1/2 x 1 | 1 7/8 | 2 1/2 | 1.1* | 1.1* |
| 40 x 25 | 41 | 64 | 0.49 | 0.5 |
| 2 x 1 1/2 | 2 | 2 15/16 | 1.9 | 1.9 |
| 50 x 40 | 51 | 75 | 0.84 | 0.85 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

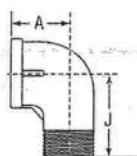
in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.**PROJECT INFORMATION:****APPROVAL STAMP:**

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



FIG. 1103**90° Street Elbow****ANVILStar™**
Fire Products Division of Anvil International**Malleable Iron Fittings Class 150 (Standard)****Submittal Sheet****APPROVED**For Listing / Approval
details contact your
AnvilStar™ Representative.**90° STREET ELBOW**
FIGURE 1103 – STRAIGHT

| Size | A | J | Weight | |
|--------|--------|--------|--------|--------|
| | | | black | galv. |
| NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 1 | 0.06 | 0.06 |
| 1/4 | 1 1/8 | 1 1/8 | 0.03 | 0.03 |
| 3/8 | 1 3/8 | 1 3/8 | 0.11 | 0.12 |
| 1/2 | 1 1/2 | 1 1/2 | 0.05 | 0.05 |
| 3/4 | 1 5/8 | 1 5/8 | 0.17 | 0.18 |
| 1 | 1 3/4 | 1 3/4 | 0.08 | 0.08 |
| 1 1/4 | 2 1/8 | 2 1/8 | 0.24 | 0.26 |
| 1 1/2 | 2 1/4 | 2 1/4 | 0.11 | 0.12 |
| 2 | 2 3/4 | 2 3/4 | 0.41 | 0.42 |
| 2 1/2 | 3 1/8 | 3 1/8 | 0.19 | 0.19 |
| 3 | 3 1/2 | 3 1/2 | 0.62 | 0.64 |
| 3 1/2 | 3 3/4 | 3 3/4 | 0.28 | 0.29 |
| 4 | 4 1/4 | 4 1/4 | 1.1 | 1.1 |
| 4 1/2 | 4 3/8 | 4 3/8 | 0.5 | 0.52 |
| 5 | 4 1/2 | 4 1/2 | 1.4 | 1.6 |
| 6 | 5 1/8 | 5 1/8 | 0.65 | 0.7 |
| 8 | 6 1/4 | 6 1/4 | 2.9 | 2.7 |
| 10 | 7 1/8 | 7 1/8 | 1.3 | 1.2 |
| 12 | 8 1/4 | 8 1/4 | 4 | 4 |
| 14 | 9 1/8 | 9 1/8 | 1.8 | 1.8 |
| 16 | 10 1/4 | 10 1/4 | 6.1 | 6.3 |
| 18 | 11 1/8 | 11 1/8 | 2.7 | 2.8 |
| 20 | 12 1/4 | 12 1/4 | 9.9 | 11 |
| 24 | 15 1/8 | 15 1/8 | 4.5 | 5 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.**PROJECT INFORMATION:****APPROVAL STAMP:**

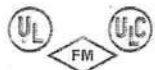
| | |
|-----------------------|--------|
| Project: | |
| Date: | Phone: |
| Architect / Engineer: | |
| Contractor: | |
| Address: | |
| Notes 1: | |
| Notes 2: | |



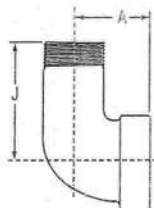
FIG. 1170 90° Street Elbow

Malleable Iron Fittings Class 300 (XS/XH)

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details contact your
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**FIGURE 1170 90° STREET ELBOW**

| Size | A | J | Weight | |
|--------|---------|---------|---------|---------|
| | | | black | galv. |
| NPS/DN | in./mm | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 5/16 | 1 1/16 | 0.17 | 0.18 |
| 8 | 24 | 37 | 0.08 | 0.08 |
| 3/8 | 1 1/16 | 1 3/8 | 0.26 | 0.27 |
| 10 | 27 | 41 | 0.12 | 0.12 |
| 1/2 | 1 1/4 | 2 | 0.4 | 0.42 |
| 15 | 32 | 51 | 0.18 | 0.19 |
| 3/4 | 1 7/16 | 2 3/16 | 0.68 | 0.71 |
| 20 | 37 | 56 | 0.31 | 0.32 |
| 1 | 1 3/8 | 2 9/16 | 1.1 | 1.1 |
| 25 | 41 | 65 | 0.48 | 0.5 |
| 1 1/4 | 1 15/16 | 2 7/8 | 1.6 | 1.6 |
| 32 | 49 | 73 | 0.73 | 0.73 |
| 1 1/2 | 2 1/8 | 3 1/8 | 2.2 | 2.3 |
| 40 | 54 | 79 | 1 | 1 |
| 2 | 2 1/2 | 3 11/16 | 3.6 | 3.8 |
| 50 | 64 | 94 | 1.6 | 1.7 |
| 3 | 3 3/8 | 5 1/8 | 9.6* | 9.9* |
| 80 | 86 | 130 | 4.3* | 4.5* |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1124 Cap



Malleable Iron Fittings Class 150 (Standard)

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details contact your
AnvilStar™ Representative.



FIGURE 1124 CAP

| Size | Weight | |
|---------|---------|---------|
| | black | galv. |
| NPS/DN | lbs./kg | lbs./kg |
| • 1/8 | 0.03 | 0.04 |
| • 1/4 | 0.06 | 0.06 |
| • 3/8 | 0.09 | 0.1 |
| • 1/2 | 0.12 | 0.12 |
| • 3/4 | 0.22 | 0.2 |
| • 1 | 0.38 | 0.38 |
| • 1 1/4 | 0.58 | 0.61 |
| • 1 1/2 | 0.73 | 0.75 |
| • 2 | 1.1 | 1.2 |
| • 2 1/2 | 1.8 | 1.8 |
| • 3 | 2.6 | 2.8 |
| • 3 1/2 | 3.2 | 3.2 |
| • 4 | 4.5 | 4.6 |
| • 5 | 6.4 | 6.9 |
| • 6 | 10 | 10 |

• 1/8, 1/4 & 3/8 (6, 8 & 10 DN) are Made in Steel

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

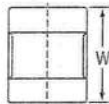
FIG. 1166 Coupling**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 300

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details contact your
AnvilStar™ Representative.

**FIGURE 1166 COUPLING**

| Size | End to End W | Weight | |
|--------|--------------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 3/8 | 0.17 | 0.18 |
| 8 | 35 | 0.08 | 0.08 |
| 3/8 | 1 5/8 | 0.26 | 0.27 |
| 10 | 41 | 0.12 | 0.12 |
| 1/2 | 1 7/8 | 0.42 | 0.43 |
| 15 | 48 | 0.19 | 0.2 |
| 3/4 | 2 1/8 | 0.65 | 0.68 |
| 20 | 54 | 0.29 | 0.31 |
| 1 | 2 3/8 | 0.99 | 1 |
| 25 | 60 | 0.45 | 0.47 |
| 1 1/4 | 2 7/8 | 1.6 | 1.7 |
| 32 | 73 | 0.74 | 0.76 |
| 1 1/2 | 2 7/8 | 2 | 2.1 |
| 40 | 73 | 0.9 | 0.9 |
| 2 | 3 3/8 | 3.2 | 3.3 |
| 50 | 92 | 1.5 | 1.5 |
| 2 1/2 | 4 1/8 | 5.5 | 5.7 |
| 65 | 105 | 2.5 | 2.6 |
| 3 | 4 1/8 | 7.3 | 7.4 |
| 80 | 105 | 3.3 | 3.4 |

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



FIG. 1107 Cross

ANVILStar™
Fire Products Division of Anvil International



Malleable Iron Fittings Class 150 (Standard)

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details contact your
AnvilStar™ Representative.

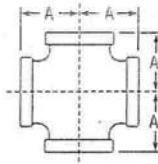


FIGURE 1107 CROSS

| Size | A | Weight | |
|--------|-------|--------|--------|
| | | black | galv. |
| NPS/DN | in/mm | lbs/kg | lbs/kg |
| 1/8 | 11/16 | 0.12 | 0.13 |
| 1/4 | 17 | 0.05 | 0.06 |
| 3/8 | 13/16 | 0.18 | 0.19 |
| 1/2 | 22 | 0.08 | 0.09 |
| 3/4 | 15/16 | 0.27 | 0.27 |
| 1 | 24 | 0.12 | 0.12 |
| 1 1/4 | 1 1/8 | 0.41 | 0.43 |
| 1 1/2 | 29 | 0.19 | 0.2 |
| 2 | 1 5/8 | 0.69 | 0.68 |
| 2 1/2 | 33 | 0.31 | 0.31 |
| 3 | 1 1/2 | 1.1 | 1.1 |
| 3 1/2 | 38 | 0.51 | 0.52 |
| 4 | 1 3/4 | 1.4 | 1.6 |
| 4 1/2 | 44 | 0.65 | 0.71 |
| 5 | 1 7/8 | 2 | 2 |
| 5 1/2 | 49 | 0.9 | 0.9 |
| 6 | 2 1/4 | 3.3 | 3.3 |
| 6 1/2 | 57 | 1.5 | 1.5 |
| 7 | 2 1/2 | 5.9 | 5.8 |
| 7 1/2 | 68 | 2.7 | 2.6 |
| 8 | 3 1/8 | 7.9 | 8.1 |
| 8 1/2 | 78 | 3.6 | 3.7 |
| 9 | 3 1/4 | 14 | 14 |
| 9 1/2 | 98 | 6.1 | 6.3 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



FIG. 1101R Reducing Elbow



Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



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For Listing / Approval
details contact your
AnvilStar™ Representative.

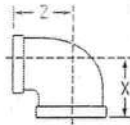


FIGURE 1101R REDUCING ELBOW

| Size | | X | Z | Weight | |
|--------|--------|-------|-------|--------|--------|
| | | | | black | galv. |
| NPS/DN | NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/4 | 1/8 | 3/4 | 3/4 | 0.1 | 0.1 |
| 1/2 | 1/4 | 1 1/2 | 1 1/2 | 0.05 | 0.05 |
| 3/8 | 1/8 | 1 1/2 | 1 1/2 | 0.12 | 0.13 |
| 10 | 1/2 | 2 1/2 | 2 1/2 | 0.05 | 0.06 |
| | 3/4 | 2 1/2 | 2 1/2 | 0.14 | 0.15 |
| | 1 | 2 1/2 | 2 1/2 | 0.06 | 0.07 |
| 1/2 | 1/4 | 1 | 1 | 0.19 | 0.2 |
| 15 | 3/8 | 1 1/2 | 1 1/2 | 0.09 | 0.09 |
| | 10 | 2 1/2 | 2 1/2 | 0.21 | 0.22 |
| | 1 1/2 | 2 1/2 | 2 1/2 | 0.1 | 0.1 |
| | 2 | 2 1/2 | 2 1/2 | 0.26 | 0.28 |
| | 3 | 2 1/2 | 2 1/2 | 0.12 | 0.13 |
| 3/4 | 1/2 | 1 1/2 | 1 1/2 | 0.29 | 0.3 |
| 20 | 3/4 | 2 1/2 | 2 1/2 | 0.15 | 0.16 |
| | 1 | 2 1/2 | 2 1/2 | 0.39 | 0.4 |
| | 1 1/2 | 2 1/2 | 2 1/2 | 0.16 | 0.18 |
| | 2 | 2 1/2 | 2 1/2 | 0.41 | 0.42 |
| | 2 1/2 | 2 1/2 | 2 1/2 | 0.19 | 0.19 |
| 1 | 1/2 | 1 1/2 | 1 1/2 | 0.46 | 0.47 |
| 25 | 3/4 | 2 1/2 | 2 1/2 | 0.21 | 0.21 |
| | 1 | 2 1/2 | 2 1/2 | 0.55 | 0.58 |
| | 1 1/2 | 2 1/2 | 2 1/2 | 0.25 | 0.26 |
| | 2 | 2 1/2 | 2 1/2 | 0.62 | 0.64 |
| | 2 1/2 | 2 1/2 | 2 1/2 | 0.26 | 0.29 |
| 1 1/4 | 3/4 | 2 1/2 | 2 1/2 | 0.71 | 0.73 |
| 32 | 1 | 2 1/2 | 2 1/2 | 0.32 | 0.33 |
| | 1 1/2 | 2 1/2 | 2 1/2 | 0.86 | 0.9 |
| | 2 | 2 1/2 | 2 1/2 | 0.39 | 0.41 |

| Size | | X | Z | Weight | |
|--------|--------|-------|-------|--------|--------|
| | | | | black | galv. |
| NPS/DN | NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1 1/2 | 3/4 | 1 1/2 | 1 1/2 | 0.83 | 0.85 |
| 40 | 20 | 3 1/2 | 4 1/2 | 0.38 | 0.39 |
| | 1 | 1 1/2 | 1 1/2 | 1 | 1.1 |
| | 2 1/2 | 4 1/2 | 4 1/2 | 0.45 | 0.48 |
| | 3 1/2 | 4 1/2 | 4 1/2 | 1.2 | 1.2 |
| | 4 1/2 | 4 1/2 | 4 1/2 | 0.53 | 0.54 |
| | 5 1/2 | 4 1/2 | 4 1/2 | 1.3 | 1.3 |
| | 6 1/2 | 4 1/2 | 4 1/2 | 0.59 | 0.6 |
| 2 | 1 | 1 1/2 | 2 | 1.4 | 1.5 |
| 50 | 2 1/2 | 4 1/2 | 5 1/2 | 0.61 | 0.66 |
| | 3 1/2 | 4 1/2 | 5 1/2 | 1.5 | 1.6 |
| | 4 1/2 | 4 1/2 | 5 1/2 | 0.69 | 0.7 |
| | 5 1/2 | 4 1/2 | 5 1/2 | 1.8 | 1.8 |
| | 6 1/2 | 4 1/2 | 5 1/2 | 0.78 | 0.81 |
| 2 1/2 | 1 1/2 | 2 1/2 | 2 1/2 | 2.3 | 2.5 |
| 65 | 40 | 5 1/2 | 6 1/2 | 1.1 | 1.2 |
| | 2 | 2 1/2 | 2 1/2 | 3 | 3 |
| | 3 | 2 1/2 | 2 1/2 | 1.4 | 1.4 |
| | 4 | 2 1/2 | 2 1/2 | 3.8 | 3.9 |
| | 5 | 2 1/2 | 2 1/2 | 1.7 | 1.8 |
| 3 | 2 1/2 | 2 1/2 | 2 1/2 | 4 | 4 |
| 80 | 45 | 5 1/2 | 6 1/2 | 1.8 | 1.8 |
| | 3 | 3 1/2 | 3 1/2 | 7.9 | 8 |
| 4 | 100 | 80 | 82 | 2.6 | 2.6 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1105R

Reducing Tee



Malleable Iron Fittings Class 150 (Standard) Submittal Sheet



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For Listing / Approval
details contact your
AnvilStar™ Representative.

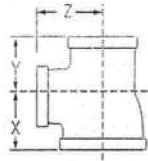


FIG. 1105R REDUCING TEE

| Size | | | X | Y | Z | Weight | |
|--------|--------|--------|-------|-------|-------|--------|-------|
| NPS/DN | NPS/DN | NPS/DN | | | | black | galv. |
| 1/8 | 1/8 | 1/4 | 3/4 | 3/4 | 3/4 | 0.12 | 0.14 |
| 1/8 | 1/8 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.05 | 0.06 |
| 1/4 | 1/4 | 1/2 | 3/4 | 3/4 | 3/4 | 0.13 | 0.14 |
| 1/4 | 1/4 | 3/8 | 1 1/4 | 1 1/4 | 1 1/4 | 0.05 | 0.06 |
| 3/8 | 3/8 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.19 | 0.2 |
| 3/8 | 3/8 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.09 | 0.09 |
| 3/8 | 3/8 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 0.19 | 0.2 |
| 3/8 | 3/8 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.21 | 0.22 |
| 3/8 | 3/8 | 2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.29 | 0.29 |
| 3/8 | 3/8 | 2 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.13 | 0.13 |
| 1/2 | 1/2 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.21 | 0.22 |
| 1/2 | 1/2 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 0.21 | 0.22 |
| 1/2 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.26 | 0.29 |
| 1/2 | 1/2 | 2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.12 | 0.13 |
| 1/2 | 1/2 | 2 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.3 | 0.31 |
| 1/2 | 1/2 | 3 | 1 1/4 | 1 1/4 | 1 1/4 | 0.14 | 0.14 |
| 3/4 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.28 | 0.29 |
| 3/4 | 3/4 | 2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.13 | 0.13 |
| 3/4 | 3/4 | 2 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.27 | 0.29 |
| 3/4 | 3/4 | 3 | 1 1/4 | 1 1/4 | 1 1/4 | 0.12 | 0.13 |
| 3/4 | 3/4 | 3 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.3 | 0.32 |
| 3/4 | 3/4 | 4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.14 | 0.15 |
| 3/4 | 3/4 | 5 | 1 1/4 | 1 1/4 | 1 1/4 | 0.43 | 0.45 |
| 3/4 | 3/4 | 6 | 1 1/4 | 1 1/4 | 1 1/4 | 0.2 | 0.2 |
| 3/4 | 3/4 | 8 | 1 1/4 | 1 1/4 | 1 1/4 | 0.55 | 0.57 |
| 3/4 | 3/4 | 10 | 1 1/4 | 1 1/4 | 1 1/4 | 0.25 | 0.26 |

| Size | | | X | Y | Z | Weight | |
|--------|--------|--------|-------|-------|-------|--------|-------|
| NPS/DN | NPS/DN | NPS/DN | | | | black | galv. |
| 1/4 | 1/4 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.45 | 0.46 |
| 1/4 | 1/4 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.2 | 0.21 |
| 3/8 | 3/8 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.36 | — |
| 3/8 | 3/8 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.46 | 0.48 |
| 3/8 | 3/8 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 0.27 | 0.22 |
| 1/2 | 1/2 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.43 | 0.47 |
| 1/2 | 1/2 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 0.51 | 0.51 |
| 1/2 | 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.23 | 0.23 |
| 1/2 | 1/2 | 2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.38 | 0.4 |
| 1/2 | 1/2 | 2 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.17 | 0.18 |
| 3/4 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.42 | 0.46 |
| 3/4 | 3/4 | 2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.18 | 0.21 |
| 3/4 | 3/4 | 2 1/2 | 1 1/4 | 1 1/4 | 1 1/4 | 0.46 | 0.49 |
| 3/4 | 3/4 | 3 | 1 1/4 | 1 1/4 | 1 1/4 | 0.27 | 0.29 |
| 3/4 | 3/4 | 4 | 1 1/4 | 1 1/4 | 1 1/4 | 0.62 | 0.66 |
| 3/4 | 3/4 | 5 | 1 1/4 | 1 1/4 | 1 1/4 | 0.28 | 0.3 |
| 3/4 | 3/4 | 6 | 1 1/4 | 1 1/4 | 1 1/4 | 0.9 | 0.93 |
| 3/4 | 3/4 | 8 | 1 1/4 | 1 1/4 | 1 1/4 | 0.41 | 0.42 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



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details contact your
AnvilStar representative.

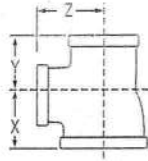


FIG. 1105R REDUCING TEE (CONT.)

| Size | | | X | Y | Z | Weight | |
|--------|--------|--------|-------|--------|-------|--------|-------|
| NPS/DN | NPS/DN | NPS/DN | | | | black | galv. |
| 1 | 1/4 | 1 | 1 1/2 | 1 3/16 | 1 1/2 | 0.69 | 0.71 |
| | | 8 | 38 | 33 | 38 | 0.31 | 0.32 |
| | | 15 | 32 | 29 | 35 | 0.25 | 0.25 |
| | | 20 | 35 | 32 | 37 | 0.25 | 0.28 |
| | 1/2 | 1 | 1 1/2 | 1 3/8 | 1 1/2 | 0.76 | 0.73 |
| | | 8 | 38 | 35 | 38 | 0.34 | 0.33 |
| | | 15 | 32 | 30 | 35 | 0.27 | 0.28 |
| | | 20 | 35 | 33 | 37 | 0.33 | 0.34 |
| | 3/4 | 1 | 1 1/2 | 1 7/16 | 1 1/2 | 0.78 | 0.81 |
| | | 8 | 38 | 37 | 38 | 0.35 | 0.37 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |
| 1 1/4 | 1/2 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 3/4 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |
| 1 1/2 | 1/2 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 3/4 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |
| 2 | 1/2 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 3/4 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |
| 2 1/2 | 1/2 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 3/4 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |
| 3 | 1/2 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 3/4 | 1 | 1 3/8 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 8 | 44 | 44 | 44 | 0.49 | 0.5 |
| | | 15 | 38 | 38 | 38 | 0.38 | 0.39 |
| | | 20 | 41 | 41 | 41 | 0.41 | 0.42 |
| | 1 | 1/4 | 1 1/8 | 1 1/8 | 1 1/4 | 0.6 | 0.63 |
| | | 8 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 25 | 40 | 40 | 40 | 0.42 | 0.44 |
| | | 30 | 43 | 43 | 43 | 0.47 | 0.49 |
| | | 35 | 46 | 46 | 46 | 0.51 | 0.54 |
| | | 40 | 49 | 49 | 49 | 0.55 | 0.58 |



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details contact your
AnvilStar™ Representative.

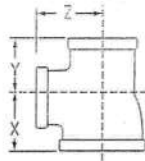


FIG. 1105R REDUCING TEE (CONT.)

| Size | | | X | Y | Z | Weight | |
|--------------------|-------------|--------|---------|---------|---------|--------|-------|
| NPS/DN | NPS/DN | NPS/DN | | | | black | galv. |
| 2 50 (Cont.) | 2 50 | 1/2 | 1 1/2 | 1 1/2 | 1 1/8 | 1.6 | 1.7 |
| | | 15 | 38 | 38 | 48 | 0.75 | 0.77 |
| | | 3/4 | 1 3/8 | 1 3/8 | 2 | 1.9 | 1.9 |
| | | 20 | 41 | 41 | 51 | 0.85 | 0.86 |
| | | 1 | 1 3/4 | 1 3/4 | 2 | 1.8 | 2 |
| | | 25 | 44 | 44 | 51 | 0.81 | 0.91 |
| | | 1 1/4 | 1 7/8 | 1 7/8 | 2 1/8 | 2.4 | 2.5 |
| | | 32 | 48 | 48 | 54 | 1.1 | 1.2 |
| | | 1 1/2 | 2 | 2 | 2 3/16 | 2.5 | 2.6 |
| | | 40 | 51 | 51 | 56 | 1.2 | 1.2 |
| | | 2 1/2 | 2 3/8 | 2 3/8 | 2 3/8 | 3.5 | 3.6 |
| | | 65 | 67 | 67 | 60 | 1.6 | 1.6 |
| 2 1/2 65 | 1 1/2 40 | 2 | 2 3/8 | 2 3/8 | 2 3/8 | 3.4 | 3.5 |
| | | 50 | 60 | 56 | 67 | 1.5 | 1.6 |
| | 2 50 | 2 1/2 | 2 11/16 | 2 1/2 | 2 11/16 | 3.8 | 3.8 |
| | | 65 | 68 | 64 | 68 | 1.7 | 1.7 |
| | 2 1/2 65 | 2 | 2 3/8 | 2 1/4 | 2 3/8 | 3.3 | 3.3 |
| | | 50 | 60 | 57 | 67 | 1.5 | 1.5 |
| | | 2 1/2 | 2 11/16 | 2 3/8 | 2 11/16 | 3.6 | 4.1 |
| | | 65 | 68 | 67 | 68 | 1.7 | 1.9 |
| | | 3/4 | 1 3/4 | 1 3/4 | 2 3/16 | 2.8 | 2.8 |
| | | 20 | 44 | 44 | 58 | 1.3 | 1.3 |
| | | 1 | 1 7/8 | 1 7/8 | 2 3/8 | 2.9 | 3 |
| | | 25 | 48 | 48 | 60 | 1.3 | 1.4 |
| | | 1 1/4 | 2 1/16 | 2 1/16 | 2 1/16 | 3.3 | 3.5 |
| | | 32 | 52 | 52 | 62 | 1.5 | 1.6 |
| | | 1 1/2 | 2 3/16 | 2 3/16 | 2 1/2 | 3.5 | 3.6 |
| | | 40 | 56 | 56 | 64 | 1.6 | 1.6 |
| | 3 80 | 2 | 2 3/8 | 2 3/8 | 2 3/8 | 3.6 | 3.8 |
| | | 50 | 60 | 60 | 67 | 1.7 | 1.7 |
| | 2 50 | 3 | 3 | 3 | 2 13/16 | 5.8 | 6 |
| | | 80 | 76 | 76 | 78 | 2.6 | 2.7 |
| 3 80 | 2 50 | 2 | 2 1/2 | 2 1/4 | 2 1/8 | 4.1 | 4.3 |
| | | 50 | 64 | 57 | 73 | 1.9 | 2 |
| | 3 80 | 3 1/8 | 2 7/8 | 3 1/8 | 3 1/8 | 6.1 | 6.5 |
| | | 80 | 79 | 78 | 79 | 2.8 | 3 |
| | 2 1/2 65 | 2 | 2 1/2 | 2 3/8 | 2 1/8 | 4.8 | 4.8 |
| | | 50 | 64 | 60 | 73 | 2.2 | 2.2 |
| | 3 80 | 2 1/2 | 2 13/16 | 2 11/16 | 3 | 5.8 | 5.9 |
| | | 65 | 73 | 68 | 76 | 2.6 | 2.7 |
| | | 3/4 | 1 7/8 | 1 7/8 | 2 3/8 | 4 | 4.2 |
| | | 20 | 48 | 48 | 67 | 1.8 | 1.9 |
| | | 1 | 2 | 2 | 2 3/8 | 4.2 | 4.4 |
| | | 25 | 51 | 51 | 67 | 1.9 | 2 |
| | | 1 1/4 | 2 3/16 | 2 3/16 | 2 3/4 | 4.7 | 4.7 |
| | | 32 | 56 | 56 | 70 | 2.1 | 2.1 |
| | | 1 1/2 | 2 3/16 | 2 3/16 | 2 13/16 | 5.1 | 5.3 |
| | | 40 | 58 | 58 | 73 | 2.3 | 2.4 |
| | 2 50 | 2 | 2 1/2 | 2 1/2 | 2 1/8 | 5.8 | 5.8 |
| | | 50 | 64 | 64 | 73 | 2.6 | 2.6 |
| | 2 1/2 65 | 2 1/2 | 2 13/16 | 2 13/16 | 3 | 6.1 | 6.2 |
| | | 65 | 73 | 73 | 78 | 2.8 | 2.8 |

| Size | | | X | Y | Z | Weight | |
|----------|----------|--------|---------|--------|---------|--------|-------|
| NPS/DN | NPS/DN | NPS/DN | | | | black | galv. |
| 4 100 | 3 80 | 4 | 3 13/16 | 3 3/8 | 3 13/16 | 12 | 11 |
| | | 100 | 96 | 82 | 96 | 5.4 | 5 |
| | 4 100 | 2 | 2 3/4 | 2 3/4 | 3 1/16 | 8.4 | 8.8 |
| | | 50 | 70 | 70 | 87 | 3.8 | 4 |
| | | 2 1/2 | 3 1/16 | 3 1/16 | 3 1/2 | 9.8 | 9.3 |
| | | 65 | 78 | 78 | 89 | 4.4 | 4.2 |
| | | 3 | 3 5/16 | 3 5/16 | 3 3/8 | 11 | 11 |
| | | 80 | 84 | 84 | 92 | 5 | 5.1 |

FIG. 1164R

Reducing Tee



Malleable Iron Fittings Class 300

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.

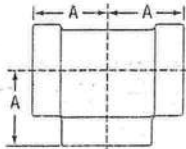
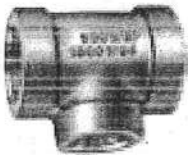


FIGURE 1164R REDUCING TEE

| Size | | | Center to End | | | Weight | |
|--------|--------|--------|---------------|--------|--------|---------|---------|
| | | | A | B | C | black | galv |
| NPS/DN | NPS/DN | NPS/DN | in./mm | in./mm | in./mm | lbs./kg | lbs./kg |
| 3/8 | 3/8 | 1/4 | 1 | 1 | 1 | 0.37 | — |
| 10 | 10 | 8 | 25 | 25 | 25 | 0.77 | — |
| 1/2 | 15 | 1/4 | 1 1/16 | 1 1/16 | 1 1/8 | 0.48* | 0.52 |
| | | 3/8 | 1 3/16 | 1 3/16 | 1 3/16 | 0.61* | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 0.28* | — |
| | | 3/4 | 1 3/8 | 1 3/8 | 1 3/16 | 0.8 | — |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 0.36 | — |
| 3/4 | 20 | 1/4 | 1 1/16 | 1 1/8 | 1 1/16 | 0.93 | — |
| | | 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 0.42 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 0.78 | — |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.35 | — |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 0.76* | 0.8 |
| 1 | 25 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.34* | 0.36 |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 0.8 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 0.36 | — |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.9 | 0.88 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 0.41 | 0.4 |
| 1 1/4 | 32 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 1.4 | — |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 0.62 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 1.3* | — |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.58* | — |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 1.4 | — |
| 1 1/2 | 40 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.63 | — |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 1.1 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 1.3 | 1.3 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.57 | 0.59 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 1.3 | 1.4 |
| 2 | 50 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.6 | 0.65 |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 1.1 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 1.3 | 1.3 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.57 | 0.59 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 1.3 | 1.4 |
| 2 1/2 | 65 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 1.9 | — |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 0.87 | — |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 1.7 | 1.9 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 0.77 | 0.85 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 1.9 | 2 |
| 3 | 80 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.86 | 0.9 |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 2.1 | 2.1 |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 2.1 | 2.1 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 2.1 | 2.1 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 2.1 | 2.1 |

| Size | | | Center to End | | | Weight | |
|--------|--------|--------|---------------|--------|--------|---------|---------|
| | | | A | B | C | black | galv |
| NPS/DN | NPS/DN | NPS/DN | in./mm | in./mm | in./mm | lbs./kg | lbs./kg |
| 1 1/2 | 40 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 2.3 | 2.3 |
| 1 1/2 | 40 | 3/4 | 1 1/16 | 1 1/16 | 1 1/8 | 2.5 | 2.5 |
| | | 1 | 1 3/8 | 1 3/8 | 1 3/8 | 2.6 | 2.7 |
| | | 1 1/4 | 2 | 2 | 2 1/16 | 3.0* | 3.1* |
| | | 1 1/2 | 2 1/8 | 2 1/8 | 2 1/8 | 4.5 | — |
| | | 2 | 2 1/2 | 2 1/2 | 2 1/2 | 4.5 | — |
| 2 | 50 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 3.4 | 3.5 |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 3.6 | 3.6 |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 3.6 | 3.6 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 4 | 4 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 4.2 | 4.4 |
| 2 1/2 | 65 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 4.6 | 4.7 |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 4.6 | 4.7 |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 4.6 | 4.7 |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 6.3* | 6.6* |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 6.3* | 6.6* |
| 3 | 80 | 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 7.6* | 7.5* |
| | | 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 7.6* | 7.5* |
| | | 1/2 | 1 5/8 | 1 5/8 | 1 5/8 | 7.6* | 7.5* |
| | | 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 9.6 | 10 |
| | | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 9.6 | 10 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

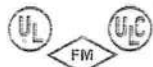
Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1121**Right Hand Coupling****Malleable Iron Fittings Class 150 (Standard)****Submittal Sheet****APPROVED**For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1121 RIGHT HAND COUPLING**

| Size | W | Weight | |
|--------|---------|--------|--------|
| | | black | galv. |
| NPS/DN | in./mm | lbs/kg | lbs/kg |
| 1/8 | 1 5/16 | 0.06 | 0.06 |
| 1/4 | 1 1/4 | 0.03 | 0.03 |
| 3/8 | 1 1/4 | 0.09 | 0.09 |
| 1/2 | 1 3/8 | 0.04 | 0.04 |
| 3/4 | 1 3/8 | 0.13 | 0.13 |
| 1 | 1 3/4 | 0.06 | 0.06 |
| 1 1/2 | 1 5/8 | 0.2 | 0.21 |
| 2 | 1 5/8 | 0.09 | 0.1 |
| 2 1/2 | 1 1/2 | 0.29 | 0.31 |
| 3 | 1 1/2 | 0.13 | 0.14 |
| 3 1/2 | 1 11/16 | 0.48 | 0.49 |
| 4 | 1 11/16 | 0.22 | 0.22 |
| 4 1/2 | 1 5/8 | 0.74 | 0.76 |
| 5 | 1 5/8 | 0.34 | 0.34 |
| 5 1/2 | 2 1/8 | 1 | 1 |
| 6 | 2 1/8 | 0.45 | 0.45 |
| 6 1/2 | 2 1/2 | 1.5 | 1.6 |
| 7 | 2 1/2 | 0.66 | 0.7 |
| 7 1/2 | 2 3/8 | 2.4 | 2.5 |
| 8 | 2 3/8 | 1.1 | 1.1 |
| 8 1/2 | 3 3/16 | 3.3 | 3.4 |
| 9 | 3 3/16 | 1.5 | 1.5 |
| 9 1/2 | 3 1/4 | 5.7 | 5.7 |
| 10 | 3 1/4 | 2.6 | 2.6 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.**PROJECT INFORMATION:****APPROVAL STAMP:**

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

Address:

Notes 1:

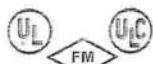
Notes 2:

FIG. 1105 Straight Tee



Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



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

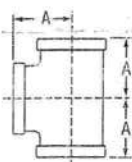


FIGURE 1105 STRAIGHT TEE

| Size | A | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/8 | 1 1/16 | 0.09 | 0.1 |
| 1/4 | 1 3/16 | 0.15 | 0.16 |
| 3/8 | 1 5/16 | 0.23 | 0.24 |
| 1/2 | 1 7/8 | 0.36 | 0.37 |
| 3/4 | 1 5/8 | 0.56 | 0.58 |
| 1 | 1 1/2 | 0.9 | 0.92 |
| 1 1/4 | 1 3/4 | 1.3 | 1.4 |
| 1 1/2 | 1 5/8 | 1.7 | 1.8 |
| 2 | 2 1/4 | 2.5 | 2.8 |
| 2 1/2 | 2 11/16 | 4.9 | 5 |
| 3 | 3 1/16 | 7.1 | 7.3 |
| 3 1/2 | 3 7/16 | 9.0* | 9.4* |
| 4 | 3 13/16 | 11 | 12 |
| 5 | 4 1/2 | 19 | 20 |
| 6 | 5 1/8 | 26 | 30 |

*P.O.A.

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

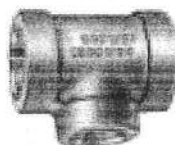
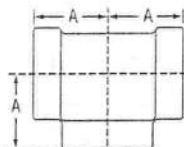
FIG. 1164 Straight Tee**ANVILStar™**
Fire Products Division of Anvil International**ANVIL**
INTERNATIONAL

Malleable Iron Fittings Class 300

Submittal Sheet



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

**FIGURE 1164 STRAIGHT TEE**

| Size | Center to End A | Weight | |
|--------|-----------------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 5/16 | 0.27 | 0.3 |
| 3/8 | 1 3/8 | 0.12 | 0.14 |
| 1/2 | 1 1/4 | 0.42 | 0.43 |
| 3/4 | 1 1/2 | 0.18 | 0.2 |
| 1 | 1 3/4 | 0.65 | 0.69 |
| 1 1/4 | 2 1/4 | 0.29 | 0.31 |
| 1 1/2 | 2 3/4 | 1.1 | 1.1 |
| 2 | 3 1/4 | 0.49 | 0.5 |
| 2 1/2 | 4 1/4 | 1.6 | 1.6 |
| 3 | 5 1/4 | 0.74 | 0.75 |
| 3 1/2 | 6 1/4 | 2.5 | 2.6 |
| 4 | 7 1/4 | 1.1 | 1.2 |
| 4 1/2 | 8 1/4 | 3.4 | 3.5 |
| 5 | 9 1/4 | 1.5 | 1.6 |
| 5 1/2 | 10 1/4 | 5.2 | 5.4 |
| 6 | 11 1/4 | 2.4 | 2.4 |
| 6 1/2 | 12 1/4 | 8 | 8 |
| 7 | 13 1/4 | 3.6 | 3.6 |
| 7 1/2 | 14 1/4 | 13 | 13 |
| 8 | 15 1/4 | 5.7 | 5.8 |
| 8 1/2 | 16 1/4 | 24 | 24 |
| 9 | 17 1/4 | 11 | 11 |

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

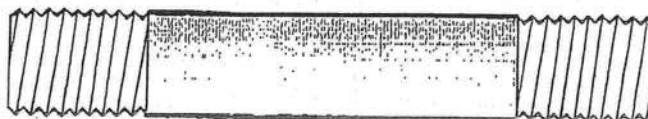
ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

Carbon Steel Schedule 40 Welded Pipe Nipples Threaded to Spec. ANSI/ASME B1.20.1
Galvanized to Spec. ASTM A 153, for Zinc Coating

PIPE NIPPLES GALVANIZED

DESCRIPTION
GALVANIZED STEEL

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" |
| CLOSE | 1NG0101 | 1NG0201 | 1NG0301 | 1NG0401 | 1NG0501 | 1NG0601 | 1NG0701 | 1NG0801 |
| 1/4" | 1NG0102 | 1NG0202 | NA | NA | NA | NA | NA | NA |
| 3/8" | 1NG0103 | 1NG0203 | 1NG0303 | NA | NA | NA | NA | NA |
| 1/2" | 1NG0104 | 1NG0204 | 1NG0304 | 1NG0404 | NA | NA | NA | NA |
| 3/4" | 1NG0105 | 1NG0205 | 1NG0305 | 1NG0405 | 1NG0505 | NA | NA | NA |
| 1" | 1NG0106 | 1NG0206 | 1NG0306 | 1NG0406 | 1NG0506 | 1NG0606 | NA | NA |
| 1 1/4" | 1NG0107 | 1NG0207 | 1NG0307 | 1NG0407 | 1NG0507 | 1NG0607 | 1NG0707 | NA |
| 1 1/2" | 1NG0108 | 1NG0208 | 1NG0308 | 1NG0408 | 1NG0508 | 1NG0608 | 1NG0708 | 1NG0808 |
| 2" | 1NG0109 | 1NG0209 | 1NG0309 | 1NG0409 | 1NG0509 | 1NG0609 | 1NG0709 | 1NG0809 |
| 2 1/2" | 1NG0110 | 1NG0210 | 1NG0310 | 1NG0410 | 1NG0510 | 1NG0610 | 1NG0710 | 1NG0810 |
| 3" | 1NG0111 | 1NG0211 | 1NG0311 | 1NG0411 | 1NG0511 | 1NG0611 | 1NG0711 | 1NG0811 |
| 3 1/2" | 1NG0111.5 | 1NG0211.5 | 1NG0311.5 | 1NG0411.5 | 1NG0511.5 | 1NG0611.5 | 1NG0711.5 | 1NG0811.5 |
| 4" | 1NG0112 | 1NG0212 | 1NG0312 | 1NG0412 | 1NG0512 | 1NG0612 | 1NG0712 | 1NG0812 |
| 4 1/2" | 1NG0112.5 | 1NG0212.5 | 1NG0312.5 | 1NG0412.5 | 1NG0512.5 | 1NG0612.5 | 1NG0712.5 | 1NG0812.5 |
| 5" | 1NG0113 | 1NG0213 | 1NG0313 | 1NG0413 | 1NG0513 | 1NG0613 | 1NG0713 | 1NG0813 |
| 5 1/2" | 1NG0113.5 | 1NG0213.5 | 1NG0313.5 | 1NG0413.5 | 1NG0513.5 | 1NG0613.5 | 1NG0713.5 | 1NG0813.5 |
| 6" | 1NG0114 | 1NG0214 | 1NG0314 | 1NG0414 | 1NG0514 | 1NG0614 | 1NG0714 | 1NG0814 |
| 8" | 1NG0115 | 1NG0215 | 1NG0315 | 1NG0415 | 1NG0515 | 1NG0615 | 1NG0715 | 1NG0815 |
| 9" | 1NG0116 | 1NG0216 | 1NG0316 | 1NG0416 | 1NG0516 | 1NG0616 | 1NG0716 | 1NG0816 |
| 10" | 1NG0117 | 1NG0217 | 1NG0317 | 1NG0417 | 1NG0517 | 1NG0617 | 1NG0717 | 1NG0817 |
| 11" | 1NG0118 | 1NG0218 | 1NG0318 | 1NG0418 | 1NG0518 | 1NG0618 | 1NG0718 | 1NG0818 |
| 12" | 1NG0119 | 1NG0219 | 1NG0319 | 1NG0419 | 1NG0519 | 1NG0619 | 1NG0719 | 1NG0819 |

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|---------|---------|---------|---------|
| | 2" | 2 1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
| CLOSE | 1NG0901 | 1NG1001 | 1NG1101 | 1NG1201 | 1NG1401 | 1NG1501 | 1NG1701 | 1NG1901 |
| 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/8" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 2" | 1NG0909 | NA | NA | NA | NA | NA | NA | NA |
| 2 1/2" | 1NG0910 | 1NG1010 | NA | NA | NA | NA | NA | NA |
| 3" | 1NG0911 | 1NG1011 | 1NG1111 | NA | NA | NA | NA | NA |
| 3 1/2" | 1NG0911.5 | 1NG1011.5 | 1NG1111.5 | NA | NA | NA | NA | NA |
| 4" | 1NG0912 | 1NG1012 | 1NG1112 | 1NG1212 | NA | NA | NA | NA |
| 4 1/2" | 1NG0912.5 | 1NG1012.5 | 1NG1112.5 | 1NG1212.5 | NA | NA | NA | NA |
| 5" | 1NG0913 | 1NG1013 | 1NG1113 | 1NG1213 | NA | NA | NA | NA |
| 5 1/2" | 1NG0913.5 | 1NG1013.5 | 1NG1113.5 | 1NG1213.5 | NA | NA | NA | NA |
| 6" | 1NG0914 | 1NG1014 | 1NG1114 | 1NG1214 | 1NG1414 | 1NG1514 | 1NG1714 | 1NG1914 |
| 8" | 1NG0915 | 1NG1015 | 1NG1115 | 1NG1215 | 1NG1415 | 1NG1515 | 1NG1715 | 1NG1915 |
| 9" | 1NG0916 | 1NG1016 | 1NG1116 | 1NG1216 | 1NG1416 | 1NG1516 | 1NG1716 | 1NG1916 |
| 10" | 1NG0917 | 1NG1017 | 1NG1117 | 1NG1217 | 1NG1417 | 1NG1517 | 1NG1717 | 1NG1917 |
| 11" | 1NG0918 | 1NG1018 | 1NG1118 | 1NG1218 | 1NG1418 | 1NG1518 | 1NG1718 | 1NG1918 |
| 12" | 1NG0919 | 1NG1019 | 1NG1119 | 1NG1219 | 1NG1419 | 1NG1519 | 1NG1719 | 1NG1919 |

PIPE NIPPLES BLACK

Carbon Steel Schedule 40 Welded Pipe Nipples Threaded to Spec. ANSI/ASME B1.20.1

DESCRIPTION
BLACK STEEL

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1/4" | 1/2" | 3/8" | 1/2" | 3/4" | 1" | 1 1/2" | 2" |
| CLOSE | 1NB0101 | 1NB0201 | 1NB0301 | 1NB0401 | 1NB0501 | 1NB0601 | 1NB0701 | 1NB0801 |
| 1/4" | 1NB0102 | 1NB0202 | NA | NA | NA | NA | NA | NA |
| 3/8" | 1NB0103 | 1NB0203 | 1NB0303 | NA | NA | NA | NA | NA |
| 1/2" | 1NB0104 | 1NB0204 | 1NB0304 | 1NB0404 | NA | NA | NA | NA |
| 3/4" | 1NB0105 | 1NB0205 | 1NB0305 | 1NB0405 | 1NB0505 | NA | NA | NA |
| 1" | 1NB0106 | 1NB0206 | 1NB0306 | 1NB0406 | 1NB0506 | 1NB0606 | NA | NA |
| 1 1/4" | 1NB0107 | 1NB0207 | 1NB0307 | 1NB0407 | 1NB0507 | 1NB0607 | 1NB0707 | NA |
| 1 1/2" | 1NB0108 | 1NB0208 | 1NB0308 | 1NB0408 | 1NB0508 | 1NB0608 | 1NB0708 | 1NB0808 |
| 2" | 1NB0109 | 1NB0209 | 1NB0309 | 1NB0409 | 1NB0509 | 1NB0609 | 1NB0709 | 1NB0809 |
| 2 1/2" | 1NB0110 | 1NB0210 | 1NB0310 | 1NB0410 | 1NB0510 | 1NB0610 | 1NB0710 | 1NB0810 |
| 3" | 1NB0111 | 1NB0211 | 1NB0311 | 1NB0411 | 1NB0511 | 1NB0611 | 1NB0711 | 1NB0811 |
| 3 1/2" | 1NB0111.5 | 1NB0211.5 | 1NB0311.5 | 1NB0411.5 | 1NB0511.5 | 1NB0611.5 | 1NB0711.5 | 1NB0811.5 |
| 4" | 1NB0112 | 1NB0212 | 1NB0312 | 1NB0412 | 1NB0512 | 1NB0612 | 1NB0712 | 1NB0812 |
| 4 1/2" | 1NB0112.5 | 1NB0212.5 | 1NB0312.5 | 1NB0412.5 | 1NB0512.5 | 1NB0612.5 | 1NB0712.5 | 1NB0812.5 |
| 5" | 1NB0113 | 1NB0213 | 1NB0313 | 1NB0413 | 1NB0513 | 1NB0613 | 1NB0713 | 1NB0813 |
| 5 1/2" | 1NB0113.5 | 1NB0213.5 | 1NB0313.5 | 1NB0413.5 | 1NB0513.5 | 1NB0613.5 | 1NB0713.5 | 1NB0813.5 |
| 6" | 1NB0114 | 1NB0214 | 1NB0314 | 1NB0414 | 1NB0514 | 1NB0614 | 1NB0714 | 1NB0814 |
| 8" | 1NB0115 | 1NB0215 | 1NB0315 | 1NB0415 | 1NB0515 | 1NB0615 | 1NB0715 | 1NB0815 |
| 9" | 1NB0116 | 1NB0216 | 1NB0316 | 1NB0416 | 1NB0516 | 1NB0616 | 1NB0716 | 1NB0816 |
| 10" | 1NB0117 | 1NB0217 | 1NB0317 | 1NB0417 | 1NB0517 | 1NB0617 | 1NB0717 | 1NB0817 |
| 11" | 1NB0118 | 1NB0218 | 1NB0318 | 1NB0418 | 1NB0518 | 1NB0618 | 1NB0718 | 1NB0818 |
| 12" | 1NB0119 | 1NB0219 | 1NB0319 | 1NB0419 | 1NB0519 | 1NB0619 | 1NB0719 | 1NB0819 |

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|---------|---------|---------|---------|
| | 2" | 2 1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
| CLOSE | 1NB0901 | 1NB1001 | 1NB1101 | 1NB1201 | 1NB1401 | 1NB1501 | 1NB1701 | 1NB1901 |
| 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/8" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 2" | 1NB0909 | NA | NA | NA | NA | NA | NA | NA |
| 2 1/2" | 1NB0910 | 1NB1010 | NA | NA | NA | NA | NA | NA |
| 3" | 1NB0911 | 1NB1011 | 1NB1111 | NA | NA | NA | NA | NA |
| 3 1/2" | 1NB0911.5 | 1NB1011.5 | 1NB1111.5 | NA | NA | NA | NA | NA |
| 4" | 1NB0912 | 1NB1012 | 1NB1112 | 1NB1212 | NA | NA | NA | NA |
| 4 1/2" | 1NB0912.5 | 1NB1012.5 | 1NB1112.5 | 1NB1212.5 | NA | NA | NA | NA |
| 5" | 1NB0913 | 1NB1013 | 1NB1113 | 1NB1213 | NA | NA | NA | NA |
| 5 1/2" | 1NB0913.5 | 1NB1013.5 | 1NB1113.5 | 1NB1213.5 | NA | NA | NA | NA |
| 6" | 1NB0914 | 1NB1014 | 1NB1114 | 1NB1214 | 1NB1414 | 1NB1514 | 1NB1714 | 1NB1914 |
| 8" | 1NB0915 | 1NB1015 | 1NB1115 | 1NB1215 | 1NB1415 | 1NB1515 | 1NB1715 | 1NB1915 |
| 9" | 1NB0916 | 1NB1016 | 1NB1116 | 1NB1216 | 1NB1416 | 1NB1516 | 1NB1716 | 1NB1916 |
| 10" | 1NB0917 | 1NB1017 | 1NB1117 | 1NB1217 | 1NB1417 | 1NB1517 | 1NB1717 | 1NB1917 |
| 11" | 1NB0918 | 1NB1018 | 1NB1118 | 1NB1218 | 1NB1418 | 1NB1518 | 1NB1718 | 1NB1918 |
| 12" | 1NB0919 | 1NB1019 | 1NB1119 | 1NB1219 | 1NB1419 | 1NB1519 | 1NB1719 | 1NB1919 |



GUARDIAN
FIRE EQUIPMENT, INC.
MIAMI, FL
Ph. 800.327.6584 • Fax 800.827.3869

DETAIL AND SUBMITTAL SHEET

9200 Series - Test and Drain Equipment

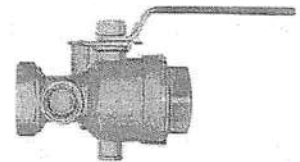
Project/Location: _____ Date: _____
Architect/Engineer: _____ Qty: _____
Contractor: _____

☒ **Appropriate Selection**

☐ **Model 9250 - Test and Drain Valve**

Used to test water flow through sprinkler systems. Forged brass body with three-position ball valve (OFF-TEST-DRAIN). Integral sight glass with acrylic see-through windows. $\frac{1}{2}$ " restricted orifice for system test position. UL listed/FM Approved, Patented design.

Size: ☐ 1" NPT ☐ $\frac{1}{4}$ " NPT

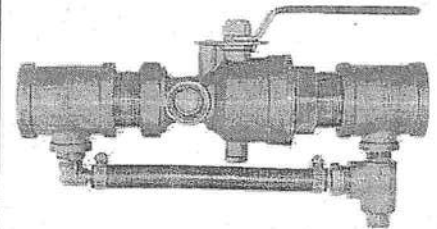


9250

☐ **Model 9255 - Test and Drain Valve with Pressure Relief Assembly**

Used to test water flow through sprinkler systems. Forged brass body with three-position ball valve (OFF-TEST-DRAIN). Integral sight glass with acrylic see-through windows. $\frac{1}{2}$ " restricted orifice for system test position. Additional field-adjustable pressure relief feature (50-200 PSI). UL listed/FM Approved, Patented design.

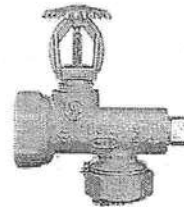
Size: ☐ 1" NPT ☐ $\frac{1}{4}$ " NPT



9255

☐ **Model 9260 - Line Tester**

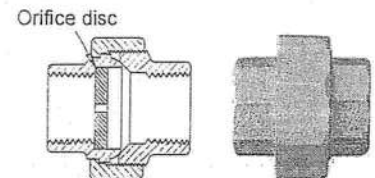
Used for sprinkler branch line testing and flushing. Forged brass body with shut-off valve and connection for $\frac{1}{2}$ " sprinkler head. 1" F. NPT inlet x 1" NPSH drain outlet with cap. UL listed.



9260 (Sprinkler not included)

☐ **Model 9265 - Restricting Orifice Union**

Used in sensing lines for fire pumps and jockey pumps - two per line in clean water applications (per NFPA 20). Cast brass with ground face diaphragm. $\frac{1}{2}$ " F. NPT inlet/outlet with $\frac{3}{32}$ " orifice.



9265

WFD Series Waterflow Detector

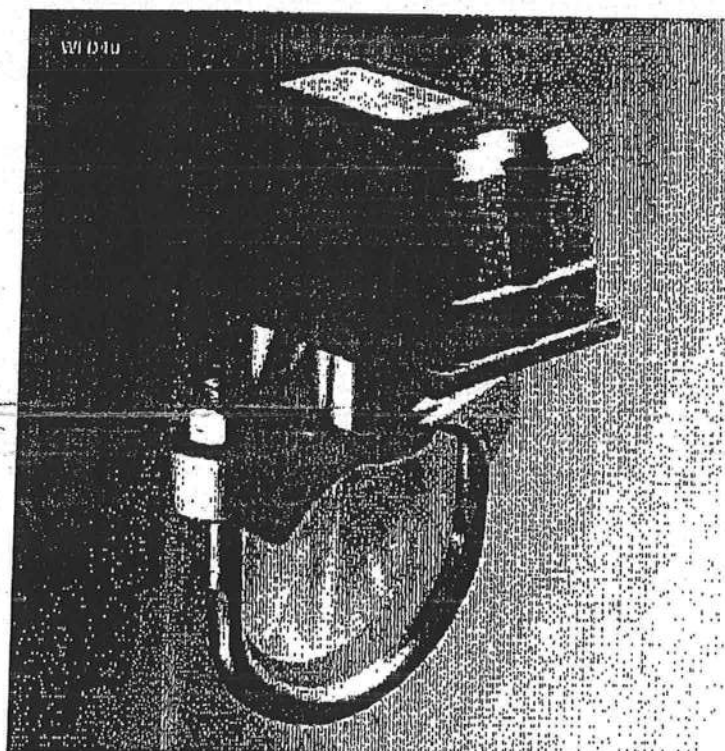


UL Models ULC/Canadian Models

| | |
|---------|----------|
| WFD20 | WFD20A |
| WFD25 | WFD25A |
| WFD30 | WFD30A |
| WFD30-2 | WFD30-2A |
| WFD35 | WFD35A |
| WFD40 | WFD40A |
| WFD50 | WFD50A |
| WFD60 | WFD60A |
| WFD80 | WFD80A |

Replacement Parts

| | |
|-----------|-------------------------|
| A3008-00 | Retard Mechanism |
| A77-01-02 | Terminal Block |
| 546-7000 | Cover Tamper Switch Kit |
| WFDW | Cover Wrench |
| WFDN4 | Replacement gasket kit |



Product Overview

New WFD30-2 models install in 2" hole sizes

UL models are NEMA 4 rated

Sealed retard mechanism assures that the retard is not contaminated by dust and dirt when the cover is removed

Visual switch activation permits installer to accurately set retard under noisy conditions

Rugged, dual SPDT switches are enclosed in a durable terminal block

Accommodates up to 12 AWG wire

100% synchronization activates both alarm panel and local bell simultaneously

System Sensor's WFD series is compatible with schedule 10 through 40 steel pipe, sizes 2" through 8", and can be mounted in a vertical or horizontal position.

Robust Construction. The WFD series consists of a rugged, NEMA 4 rated enclosure. Designed for both indoor and outdoor use, the WFD series operates across a wide temperature range, from 32°F to 120°F.

Reliable Performance. UL listed models are equipped with tamper resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block to assure reliable performance.

False Alarm Immunity. The WFD series incorporates a mechanical retard feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the sprinkler system. In addition, the mechanical retard's unique sealed design is immune to dust and other contaminants.

Simplified Operation. The WFD series is designed to simplify installation. Two conduit openings permit easy attachment to the local alarm system. The retard mechanism and dual SPDT switches are field-replaceable.



Engineering Specifications

Vane-type waterflow detectors shall be installed on system piping as designated on the drawing and/or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run, at least 6" from any fittings which may change water direction, flow rate, or pipe diameter or no closer than 24" from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 450 psi for 2" - 8" pipes. The detector shall respond to waterflow in the specified direction after a preset time delay which is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual indication of actuation. The actuation mechanism shall include a polyethylene vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating
450 PSI

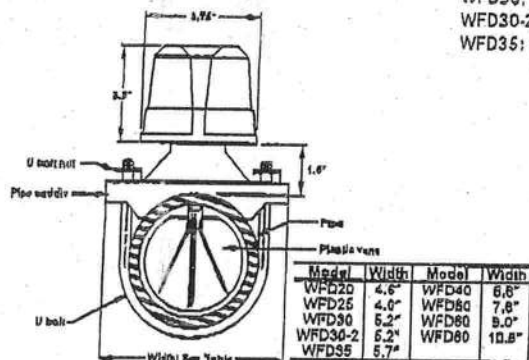
Triggering Threshold Bandwidth (Flow Rate)
4-10 GPM

Maximum Surge
18 Feet Per Second (FPS)

Compatible Pipe:
Steel water pipe, schedule 10 through 40

Contact Ratings:
Two sets of SPDT (Form C)
10.0 A, 1/2 HP @ 125/250 VAC
2.5 A @ 6/12/24 VDC

Overall Dimensions Installed:



Conduit Entrances

Two openings for 1/2" conduit. One open, one knock-out type

Operating Temperature Range
32°F to 120°F (0°C to 49°C)

Enclosure Rating
NEMA 4 - suitable for indoor/outdoor use

Cover Tamper Switch
Standard with ULC models
Optional for UL models, part no. 546-7000

Shipping Weight

WFD20: 4.2 lbs. WFD40: 5.2 lbs.
WFD25: 4.3 lbs. WFD50: 6.3 lbs.
WFD30: 4.5 lbs. WFD60: 6.8 lbs.
WFD30-2: 4.5 lbs. WFD80: 7.5 lbs.
WFD35: 4.7 lbs.

Service Use

Automatic Sprinkler: NFPA-13
One or Two Family Dwelling: NFPA 13D
Residential Occupancies up to 4 Stories: NFPA 13R
National Fire Alarm Code: NFPA-72

Warranty

3 Years

U.S. Patent Numbers

3,845,259

4,782,333

5,213,205

Ordering Information

| UL Model Numbers | ULC/Canadian Model Numbers | Pipe Size | Hole Size |
|------------------|----------------------------|-----------|-----------|
| WFD20 | WFD20A | 2" | 1 1/4" |
| WFD25 | WFD25A | 2 1/2" | 1 1/4" |
| WFD30 | WFD30A | 3" | 1 1/4" |
| WFD30-2" | WFD30-2A | 3" | 2" |
| WFD35 | WFD35A | 3 1/2" | 1 1/4" |
| WFD40 | WFD40A | 4" | 2" |
| WFD50 | WFD50A | 5" | 2" |
| WFD60 | WFD60A | 6" | 2" |
| WFD80 | WFD80A | 8" | 2" |

*UL listed only.

| Part Number | Description |
|-------------|-------------------------------|
| A3008-00 | Retard mechanism |
| A77-01-02 | Terminal block |
| 546-7000 | Tamper proof switch kit |
| WFDW | Tamper proof wrench for cover |
| WFDN4 | Gasket kit |

System Sensor Sales and Service

System Sensor Headquarters

3825 Ohio Avenue
St. Charles, IL 60174

Ph: 800-SENSOR2
Fx: 630/377-6495

Documents On Demand:
1-800-736-7672 x3

Web: www.systemsensor.com

System Sensor in Canada

Ph: 905.812.0767
Fx: 905.812.0771

System Sensor in Europe

Ph: + 44.1403.276500
Fx: + 44.1403.276501

System Sensor in China

Ph: + 86.28.524.6253
Fx: + 86.28.524.6259

System Sensor in Singapore

Ph: + 65.273.2230
Fx: + 65.273.2610

System Sensor in the Far East

Ph: + 852.21919003
Fx: + 852.27366580

System Sensor in India

Ph: + 91.11.558.2119
Fx: + 91.11.567.6815

System Sensor in Australia

Ph: + 613.54.281.142
Fx: + 613.54.281.172



6" BELL SHOWN

UL Listed

Sizes Available: 6" (150mm), 8" (200mm) and 10" (250mm)

Voltages Available: 24VAC

120VAC

12VDC (10.2 to 15.6) Polarized

24VDC (20.4 to 31.2) Polarized

Service Use: Fire Alarm
General Signaling
Burglar Alarm

Environment: Indoor or outdoor use (See Note 1)
-40° to 150°F (-40° to 66°C)
(Outdoor use requires weatherproof backbox.)

Termination: 4 No. 18 AWG stranded wires

Finish: Red powder coating

Optional: Model BBK-1 weatherproof backbox

These vibrating type bells are designed for use as fire, burglar or general signaling devices. They have low power consumption and high decibel ratings. The unit mounts on a standard 4" (101mm) square electrical box for indoor use or on a model BBK-1 weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1, Stock No. 1500001.

ALL DC BELLS ARE POLARIZED AND HAVE BUILT-IN TRANSIENT PROTECTION:

| SIZE INCHES (mm) | VOLTAGE | MODEL NO. | STOCK NO. | CURRENT (MAX.) | TYPICAL dB AT 10 FT. (3m) (2) | MINIMUM dB AT 10 FT. (3m) (1) |
|------------------------|---------|-----------|-----------|-------------------|-------------------------------------|-------------------------------------|
| 6 (150) | 12VDC | PBD126 | 1706012 | .12A | 85 | 76 |
| 8 (200) | 12VDC | PBD128 | 1708012 | .12A | 90 | 77 |
| 10 (250) | 12VDC | PBD1210 | 1710012 | .12A | 92 | 78 |
| 6 (150) | 24VDC | PBD246 | 1706024 | .06A | 87 | 77 |
| 8 (200) | 24VDC | PBD248 | 1708024 | .06A | 91 | 79 |
| 10 (250) | 24VDC | PBD2410 | 1710024 | .06A | 94 | 80 |
| 6 (150) | 24VAC | PBA246 | 1806024 | .17A | 91 | 78 |
| 8 (200) | 24VAC | PBA248 | 1808024 | .17A | 94 | 77 |
| 10 (250) | 24VAC | PBA2410 | 1810024 | .17A | 94 | 78 |
| 6 (150) | 120VAC | PBA1206 | 1806120 | .05A | 92 | 83 |
| 8 (200) | 120VAC | PBA1208 | 1808120 | .05A | 99 | 84 |
| 10 (250) | 120VAC | PBA12010 | 1810120 | .05A | 99 | 86 |

Notes:

1. Minimum dB ratings are calculated from integrated sound pressure measurements made at Underwriters Laboratories as specified in UL Standard 464. UL temperature range is -30° to 150°F (-34° to 66°C).
2. Typical dB ratings are calculated from measurements made with a conventional sound level meter and are indicative of output levels in an actual installation.

DIMENSIONS
INCHES (mm)

FIG. 1

BELLS

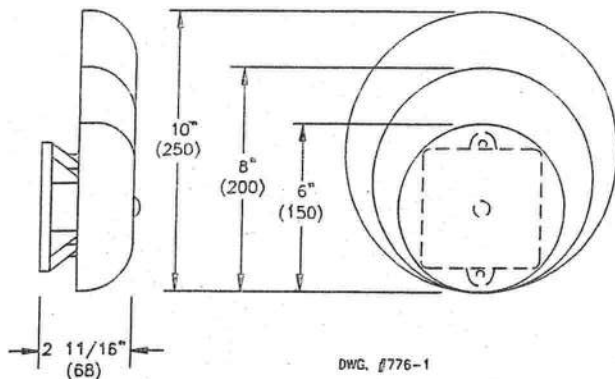


FIG. 2 **WEATHERPROOF BACKBOX**

BOX HAS ONE THREADED 1/2" CONDUIT ENTRANCE

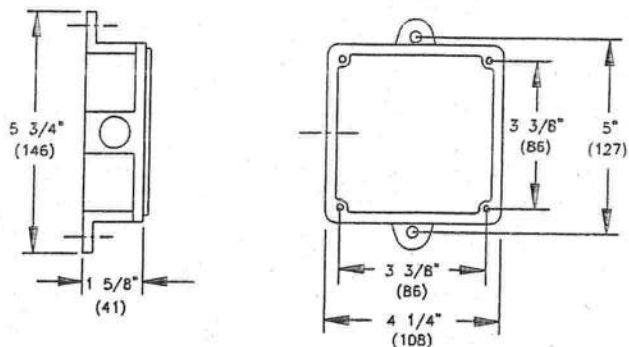
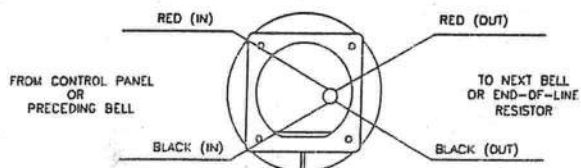


FIG. 3

WIRING (REAR VIEW)

D.C. BELLS (OBSERVE POLARITY)

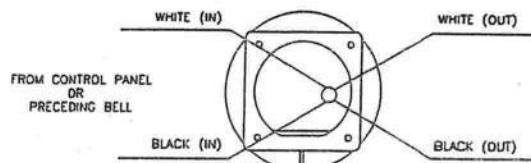


CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. OBSERVE POLARITY TO RING D.C. BELLS.
2. RED WIRES POSITIVE (+)
3. BLACK WIRES NEGATIVE (-)

A.C. BELLS



CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. WHEN USING A.C. BELLS, TERMINATE EACH EXTRA WIRE SEPARATELY AFTER LAST BELL.
2. END-OF-LINE RESISTOR IS NOT REQUIRED ON A.C. BELLS.

DWG. #776-3

INSTALLATION

1. The bell shall be installed in accordance with NFPA 72 or local Ahj. The top of the device shall be no less than 90" Aff and not less than 6" below the ceiling.
2. Remove the gong.
3. Connect wiring (see Fig. 3).
4. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
5. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
6. Test all bells for proper operation and observe that they can be heard where required (bells must be heard in all areas as designated by the authority having jurisdiction).



TECHNICAL DATA

WATER AND AIR PRESSURE GAUGES

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Pressure Gauges give visual indication of the water or air pressure available to the fire protection system.

2. LISTINGS AND APPROVALS

UL Listed - VEVX (Ashcroft Inc.)

ULc Listed - VEVXC (Ashcroft Inc.)

FM Approved - Pressure Gauges (Ashcroft Inc.)

3. TECHNICAL DATA

Connection: 1/4" NPT

Working Pressure:

- Water Gauge: 300 psi (20.7 bar)
- Air Gauge: 80 PSI (5.5 bar)

Maximum Pressure:

- Water Gauge: 300 psi (20.7 bar)
- Air Gauge: 250 PSI (17.2 bar) (Air gauge includes a "Retard Zone" between 80 and 250 PSI)



Water Pressure Gauge
P/N: VWATERSF



Air Pressure Gauge
P/N: VAIRSF

Material Standards

Case: ABS (Acrylonitrile Butadiene Styrene)

Window: Polycarbonate

Dial: Black figures on White Background

Pointer: Black, Aluminum

Movement: Suspended Spring with Polyester Segment

Bourdon Tube: Bronze

Socket: Brass, Soft Soldered

Ordering Information

Available since 1977

Water Pressure Gauge - VWATERSF

Air Pressure Gauge - VAIRSF

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.

4. INSTALLATION

1. Gauges are to be installed in accordance with the latest published standards of the National Fire Protection Association or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable.
2. Gauges must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install gauges that have been dropped or damaged in any way. Such gauges should be destroyed immediately.
3. Adequate heat must be provided where gauges are installed.
4. The gauges must be protected from mechanical damage. Install the gauges according to the following steps:
 - a. Apply a small amount of pipe-joint compound or tape to the external threads of the gauge only. Take care that no joint compound is allowed into the orifice of the gauge.
 - b. Turn the unit clockwise to thread the gauge into the 1/2" (15 mm) NPT outlet of the coupling. DO NOT over-tighten the gauge.

7. AVAILABILITY

The water and air gauges are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

VIKING**TECHNICAL DATA****WATER AND AIR
PRESSURE GAUGES**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

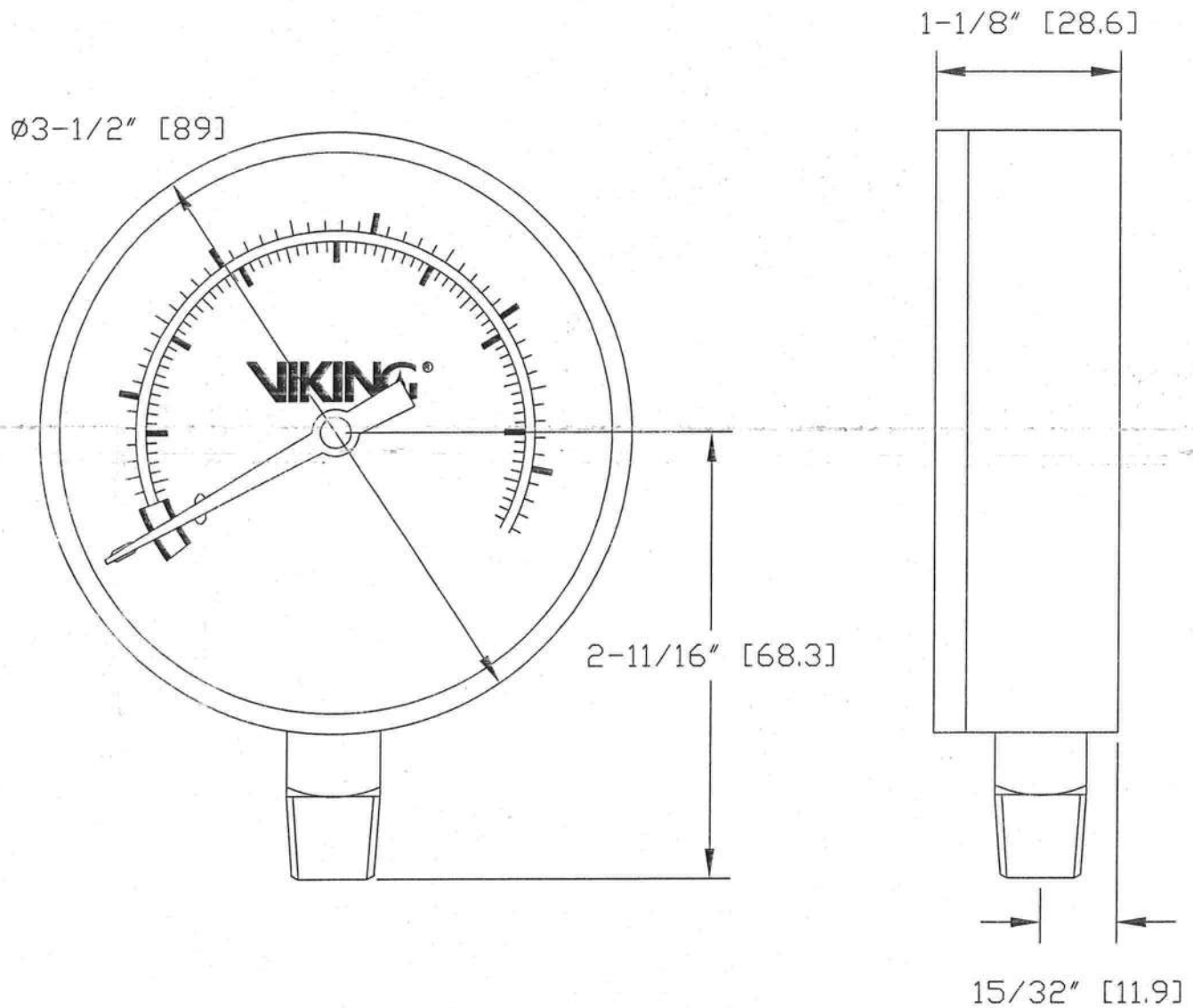


Figure 1 - Gauge Dimensions
(Dimensions apply to Air and Water Gauges)

Series 3000SS

Double Check Detector Assemblies

Sizes: 2 1/2" - 12" (65 - 300mm)



Features

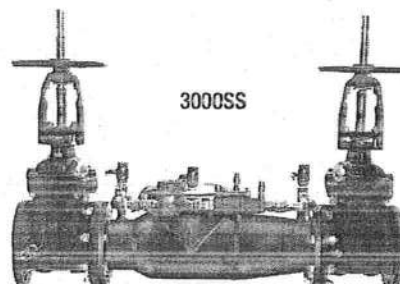
- Patented Cam-Check Assembly valve provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless Steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved-style coupling for ease of maintenance
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- Furnished with 5/8" x 3/4" bronze meter (gpm or cfm)
- Detects underground leaks and unauthorized water use
- Maybe installed horizontal or vertical "flow up" position

Available Models

Suffix:

- LG - less shutoff valves
- OSY - UL/FM outside stem and yoke resilient seated gate valves
- OSY FxG - flanged inlet gate connection and grooved outlet gate connection
- OSY GxF - grooved inlet gate connection and flanged outlet gate connection
- OSY GxG - grooved inlet gate connection and grooved outlet gate connection
- CFM - cubic feet per minute
- GPM - gallons per minute meter

Post indicator plate and operating nut available - consult factory



Series 3000SS Double Check Detector Assemblies are designed for use in accordance with water utility non-health hazard containment requirements. It is mandatory to prevent the reverse flow of fire protection system substances, i.e., glycerin wetting agents, stagnant water and water of non-potable quality from being pumped or siphoned into the potable water supply.

Specifications

A Double Check Detector Assembly shall be installed on fire protection systems when connected to a potable water supply. Degree of hazard present is determined by the local authority having jurisdiction. The main valve body shall be manufactured from 300 Series stainless steel to provide corrosion resistance, 100% lead free through the waterway. The double check detector assembly consists of two independently operating, spring loaded check valves, two UL, FM, OSY resilient seated gate valves, and bypass assembly. The bypass assembly consists of a meter (cubic ft. or gallons), a double check including shutoff valves and required test cocks. Each cam-check shall be internally loaded and provide a positive drip tight closure against reverse flow. Cam-check includes a stainless steel cam arm and spring, rubber faced disc and a replaceable seat. There shall be no brass or bronze parts used within the cam-check valve assembly. The check valve seats shall be of molded thermoplastic construction. The use of seat screws as a retention method is prohibited. All internal parts shall be accessible through a single cover on the valve assembly. The valve cover shall be held in place through the use of a single grooved style two-bolt coupling. The bypass line shall be hydraulically sized to accurately measure low flow. The bypass line shall consist of a meter, a small diameter double check assembly with test cocks and isolation valves. The bypass line double check valve shall have two independently operating modular poppet check valves, and top mounted test cocks. The assembly shall be an Ames 3000SS.

Materials

All internal metal parts: 300 Series stainless steel, Main valve body: 300 Series stainless steel, Check assembly: Noryl® Flange dimension in accordance with AWWA Class D. Noryl® is a registered trademark of General Electric Company.

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

Ames product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Ames Technical Service. Ames reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Ames products previously or subsequently sold.

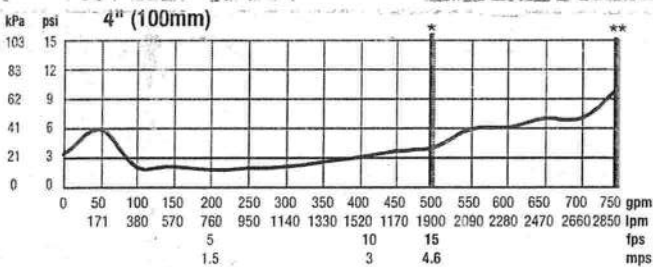
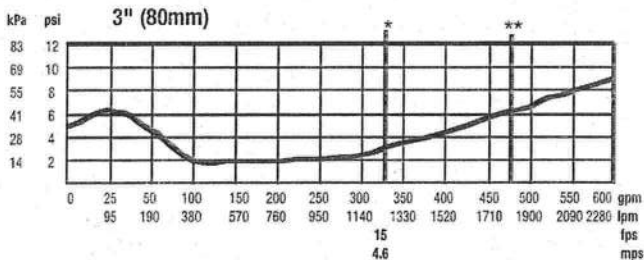
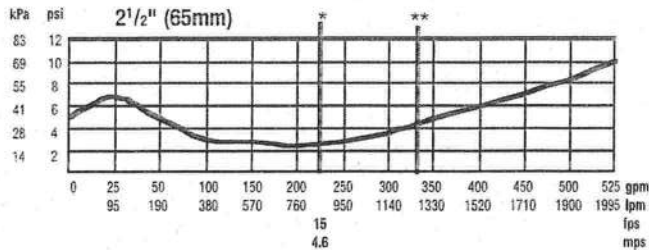
www.amesfirewater.com

Pressure — Temperature

Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12 bar)

Capacity

Flow curves as tested by Underwriters Laboratory per UL 1469, 1996. * Rated flow **UL Tested

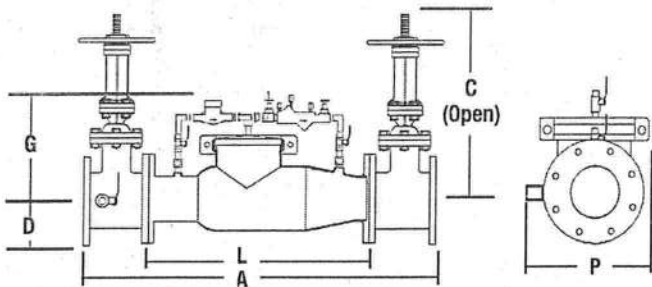
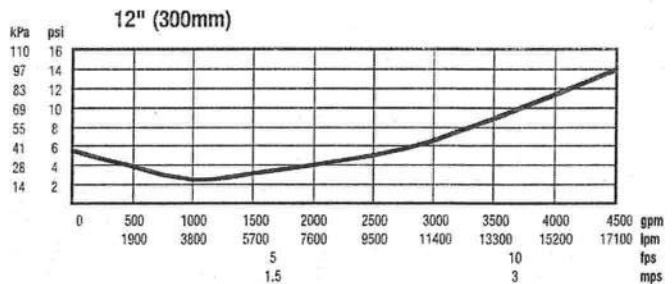
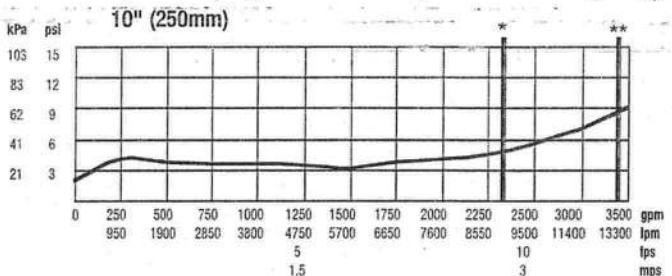
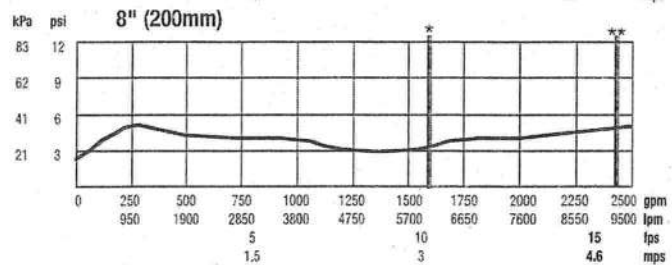
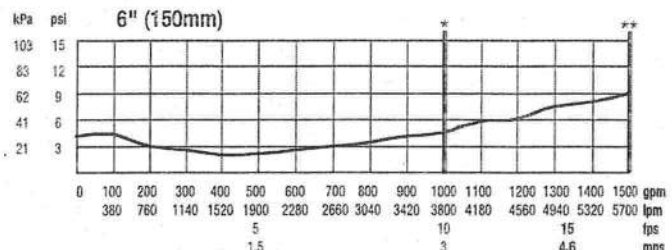


Standards

ASSE 1048, AWWA C510-92, CSA B64.5, UL 1469

Approvals

UL Classified (OSY only), FM (sizes 2 1/2" – 10", OSY only)



| SIZE (DN) | | | | DIMENSIONS | | | | | | | | NET WEIGHT | | | | NET WEIGHT | |
|-----------|-----|-----|------|------------|------|-----|-----|-----|-----|-----|-----|------------|-----|---------|-----|------------|-----|
| | | A | | C (OSY) | | D | | G | | L | | P | | w/Gates | | w/o Gates | |
| in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | lb. | kg. | lb. | kg. |
| 2½ | 65 | 37 | 965 | 16⅞ | 416 | 3½ | 89 | 10 | 250 | 22 | 559 | 12½ | 318 | 155 | 70 | 68 | 31 |
| 3 | 80 | 38 | 965 | 18⅞ | 479 | 3¾ | 95 | 10 | 250 | 22 | 559 | 13 | 330 | 230 | 104 | 70 | 32 |
| 4 | 100 | 40 | 1016 | 22¾ | 578 | 4½ | 114 | 10 | 250 | 22 | 559 | 14½ | 368 | 240 | 109 | 73 | 33 |
| 6 | 150 | 48½ | 1232 | 30⅞ | 765 | 5½ | 140 | 15 | 381 | 27½ | 699 | 15½ | 394 | 390 | 177 | 120 | 54 |
| 8 | 200 | 52½ | 1334 | 37¾ | 959 | 6¾ | 171 | 15 | 381 | 29½ | 749 | 18½ | 464 | 572 | 259 | 180 | 82 |
| 10 | 250 | 55½ | 1410 | 45¾ | 1162 | 8 | 200 | 15 | 381 | 29½ | 749 | 19½ | 495 | 774 | 351 | 190 | 86 |
| 12 | 300 | 57½ | 1461 | 53⅞ | 1349 | 9½ | 241 | 15 | 381 | 29½ | 749 | 21 | 533 | 1044 | 474 | 220 | 100 |



www.amesfirewater.com



ISO 9001-2000
CERTIFIED

A Watts Water Technologies Company

USA: Backflow- 1427 N. Market Blvd • Suite #9 • Sacramento, CA 95834 • T: 916-928-0123 • F: 916-928-9333

Control Valves- 18550 Hansen Road • Houston, TX 77075 • T: 713-943-0688 • F: 713-944-9445

Canada: 5435 North Service Rd. • Burlington, ONT. L7L 5H7 • T: 905-332-4090 • F: 905-332-7068

ES-A-3000SS 0936

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CARIBBEAN FIRE & ASSOCIATES, INC.

MATERIAL DATA SUBMITTAL

For :

**EASTSIDE CARE CENTER
LIVING FACILITY**

LAKE CITY, FL 32055



Model RFC43 (SIN RA0612)
Model RFC49 (SIN RA0616)
Flat Concealed
Residential Sprinklers

Bulletin 006 Rev.D

A Concealed Residential Sprinkler engineered for a minimum design density of 0.05 gpm/ft² with low GPM requirements.

Features

1. Very low water flow requirements.
2. 1/2" (13mm) Total adjustment.
3. Thread-On/Thread-Off or Push-On/Thread Off cover attachment option.
4. Smooth aesthetic ceiling profile.
5. Available in brass, chrome and black plated or painted finishes.

Listings & Approval

1. Listed by Underwriters Laboratories, and certified by UL for Canada (cULus)
2. NYC MEA 258-93-E

UL Listing Categories

Residential Automatic Sprinklers

UL Guide Number

VKKW

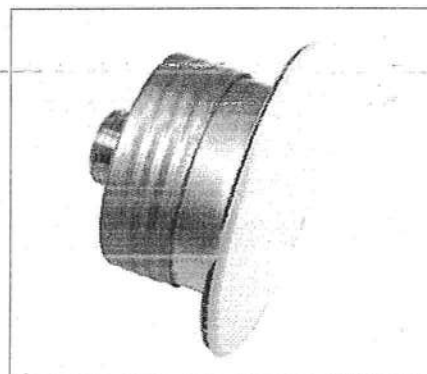
Product Description

Model RFC43 and RFC49 Concealed Residential Sprinklers are fast response residential fusible solder link automatic sprinklers. Residential sprinklers differ from standard sprinklers primarily in their response time and water distribution patterns.

Model RFC43 and RFC49 sprinklers discharge water in a hemispherical pattern below the sprinkler deflector. Residential distribution patterns are higher and generally contain a finer droplet size than standard sprinkler patterns.

The combination of speed of operation and high discharge pattern required for residential sprinklers has demonstrated, in fire testing, an ability for controlling residential fires, and thereby providing significant evacuation time for occupants.

The RFC43 and RFC49 Sprinklers provide the best form of fire protection by combining an attractive appearance and 1/2" (13mm) of cover adjustment for ease of installation. The small diameter cover plate is easily and positively attached and blends into the ceiling, concealing the most dependable fire protection available, an automatic sprinkler system.



The RFC43 and RFC49 are UL Listed Residential Sprinklers to be installed in the residential portions of any occupancy in accordance with NFPA 13, 13R, & 13D.

The RFC43 and RFC49 can reduce the need for precise cutting of drop nipples. The threaded cover plate assembly can be adjusted without tools to fit accurately against the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Application and Installation

The RFC43 and RFC49, for residential installations, use a 165°F (74°C) fusible solder link in a tuning fork style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. The cover plate is attached to the skirt, using 135°F (57°C) ordinary temperature classification solder. When the ceiling temperature rises, the solder holding the cover plate releases the cover allowing the deflector to drop into position and

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

exposing the sprinkler inside to ceiling temperature. The subsequent operation of the solder link opens the waterway and causes the deflector to drop into position to distribute the discharging water in a hemispherical pattern below the sprinkler deflector. Any adjustment of thread engagement between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling. The residential distribution pattern contains a finer droplet size than a standard sprinkler, and the pattern produces significantly higher wall wetting.

After a 2 5/8 inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model FC Wrench. When installing a sprinkler, the wrench is first positioned into the sprinkler/cup assembly and around the hexagonal body of the sprinkler frame. The Wrench must bottom out against the cup in order to ensure proper, safe installation. 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. MODEL RFC43 AND RFC49 CONCEALED SPRINKLERS MUST BE INSTALLED ONLY WITH 135°F RATED COVERS.

Cover assemblies provide up to 1/2" (13mm) of adjustment. Turn the cover clockwise until the flange is in contact with the ceiling. For the push-on/thread-off option, the cover assembly is pushed onto the cup and final adjustment is made by turning the cover clockwise until the skirt flange makes full contact with the ceiling. Cover removal requires turning in the counter-clockwise direction.

In ceilings that have a plenum space above the sprinkler, the plenum space may have neutral or negative pressurization but must not be positively pressurized. Inspect all sprinklers after installation to ensure that the gap between the cover plate and ceiling and the 4 slots in the cup are all open and free from any air flow impediment.

Temperature Rating

| Sprinkler | Cover Plate | Max. Ambient Temp. |
|------------|-------------|--------------------|
| 165°F/74°C | 135°F/57°C | 100°F/38°C |

Installation Data: RFC43 (SIN RA0612)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.3 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 12 (45) | 7.8 (0.54) |
| 1/2" (15mm) | 4.3 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 18 (68) | 17.5 (1.21) |
| 1/2" (15mm) | 4.3 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 21 (79) | 23.8 (1.64) |

Note: 1 bar = 100 Kpa

Installation Data: RFC49 (RA0616)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.9 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 17 (64.3) | 12.0 (0.83) |
| 1/2" (15mm) | 4.9 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 20 (75.7) | 16.7 (1.14) |

Note: 1 bar = 100 Kpa

FOR SLOPED CEILING APPLICATIONS SEE RASCO BULLETIN 035.

Maintenance

Model RFC43 and RFC49 Concealed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gentle vacuuming. Remove any sprinkler cover plate assembly which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Model RFC43 and RFC49 Residential Concealed Sprinkler Specification

Sprinklers shall be cULus Listed low flow residential concealed sprinklers with drop-down deflector and adjustable flat cover plate engineered for a minimum design density of 0.05 gpm/ft². Sprinkler frame and deflector shall be of bronze frame construction having a 1/2" NPT thread. Thermal element shall consist of an approved black-painted beryllium-nickel fusible solder link with symmetric lever mechanism, maintaining a Teflon-coated Belleville spring washer and machined brass cap water seal assembly containing no plastic parts. Sprinkler K-factor shall be nominal 4.3 (62.4), having a 7/16" orifice. Temperature rating shall be Ordinary 165°F (74°C); cover plate temperature rating to be

135°F (57°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange allowing a 1/2" cover plate adjustment. Any secure engagement between the cover plate and the cup will assure that the drop-down deflector is properly located below the ceiling. A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the drop-down sprinkler deflector from damage, which could occur during construction before the cover plate is installed. Standard cover finish: [Chrome] [White] [Specialty – specify]. Residential concealed sprinklers shall be Reliable Model RFC43, SIN RA0612 (Bulletin 006) or Model RFC49, SIN RA0616 (Bulletin 006).

Ordering Information Specify:

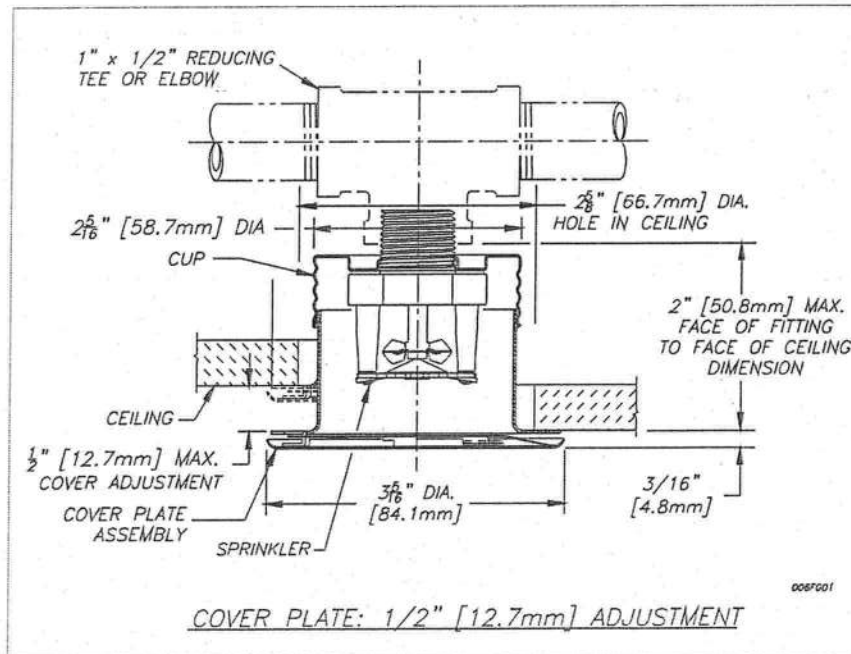
1. Sprinkler Model
2. Cover Plate Finish
3. Thread-On or Push-On Feature

Cover Plate Finishes⁽¹⁾

| Standard Finishes |
|------------------------------|
| Chrome |
| White |
| Special Application Finishes |
| Bright Brass |
| Black Plating |
| Black Paint |
| Off White |
| Satin Chrome |

⁽¹⁾ Other colors and finishes available. Consult factory for details.

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



Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Supertrol electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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:

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588

(800) 848-6051

(914) 829-2042

www.reliablesprinkler.com

Sales Offices

Sales Fax

Corporate Offices

Internet Address



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Revision lines indicate updated or new data
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Reliable®

Model F1FR Model F1FR Recessed Quick Response Sprinklers

Model F1FR Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Vertical Sidewall
Horizontal Sidewall
– HSW 1 Deflector

Model F1FR Recessed Sprinkler Types

Recessed Pendent
Recessed Horizontal Sidewall
– HSW 1 Deflector

Listings & Approvals

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters Laboratories of Canada (ULC)
3. Certified by FM Approvals
4. Loss Prevention Council (LPC, UK)
5. NYC BS&A No. 587-75-SA
6. Meets MIL-S-901C and MIL-STD 167-1
7. Verband der Schadenversicherer (VdS, Germany)
8. NYC MEA 258-93-E

UL Listing Category

Sprinklers, Automatic & Open
Quick Response Sprinkler

UL Guide Number

VNIV

**Patents: US Patent No. 6,374,920 Applies to
Model F1FR Vertical Sidewall Sprinklers.**

Product Description

Reliable Models F1FR and F1FR Recessed Sprinklers are quick response sprinklers which combine the durability of a standard sprinkler with the attractive low profile of a decorative sprinkler.

The Models F1FR and F1FR Recessed automatic sprinklers utilize a 3.0 mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five to ten times faster than standard response sprinklers. This quick response enables the Model F1FR and F1FR Recessed sprinklers to apply water to a fire much faster than standard sprinklers of the same temperature rating.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. The balance of parts are made of brass, copper and beryllium nickel.

At normal temperatures, the glass bulb contains the fluid in both the liquid and vapor phases. The vapor phase can be seen as a small bubble. As heat is applied, the liquid ex-



Upright



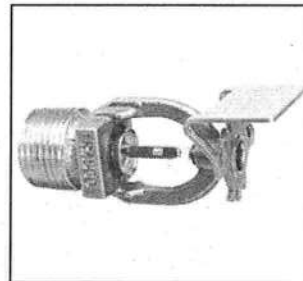
Pendent



Vertical Sidewall



Conventional



Horizontal Sidewall
HSW 1 Deflector



Recessed Pendent
(Model FP Shown)

pands, forcing the bubble smaller and smaller as the liquid pressure increases. Continued heating forces the liquid to push out against the bulb, causing the glass to shatter, opening the waterway and allowing the deflector to distribute the discharging water.

Application

Quick response sprinklers are used in fixed fire protection systems: Wet, Dry, Deluge or Preaction. Care must be exercised that the orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of the National Fire Protection Association or the approving Authority Having Jurisdiction. Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-8N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

Model F1FR Quick Response Upright, Pendent & Conventional Sprinklers

Installation Wrench: Model D Sprinkler Wrench

Installation Data:

| Sprinkler Type | K Factor | | Sprinkler Height | Approval Organization | Sprinkler Identification Number (SIN) | |
|---|----------|--------|------------------|-----------------------|---------------------------------------|-------|
| | US | Metric | | | SSU | SSP |
| | | | | | | |
| Standard-Upright (SSU) and Pendent (SSP) Deflectors Marked to Indicate Position | | | | | | |
| ½" (15mm) Standard Orifice with ½" NPT (R½) Thread | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,6,7 | R3625 ⁽¹⁾ | R3615 |
| 17⁄32" (20mm) Large Orifice with ¾" NPT (R¾) Thread | 8.0 | 115 | 2.3" (58mm) | 1,2,3,4,7,8 | R3622 ⁽¹⁾ | R3612 |
| 7⁄16" (17mm) Small Orifice with ½" NPT (R½) Thread | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3623 ⁽¹⁾ | R3613 |
| 3⁄8" (10mm) Small Orifice with ½" NPT (R½) Thread | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3621 ⁽¹⁾ | R3611 |
| 10mm Orifice XLH with R3⁄8" Thread | 4.2 | 60 | 56mm | 4,6,7 | R3624 | R3614 |
| Conventional-Install in Upright or Pendent Position | | | | | | |
| 10mm Orifice XLH with R3⁄8" Thread | 4.2 | 60 | 56mm | — | R3674 | |
| 15mm Standard Orifice with ½" NPT (R½) Thread | 5.6 | 80 | 56mm | 4,6,7 | R3675 | |
| 20mm Large Orifice with ¾" NPT (R¾) Thread | 8.0 | 115 | 58mm | 4,7 | R3672 | |

⁽¹⁾ Polyester coated upright UL and ULC listed corrosion resistant.



Upright



Pendent



Conventional

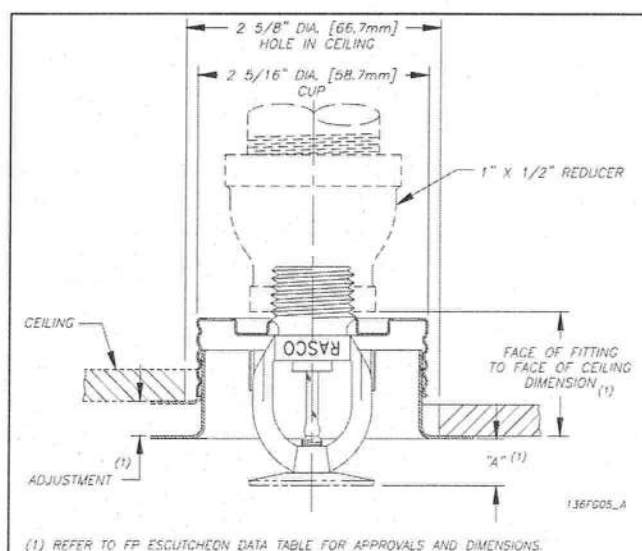
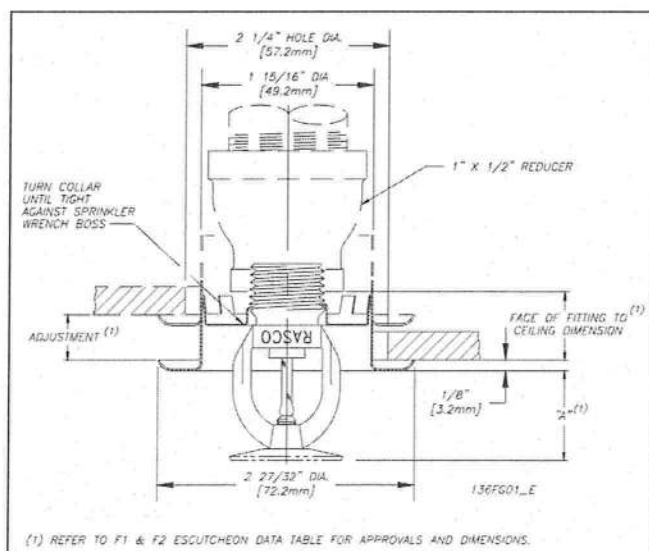
Model F1FR Quick Response Recessed Pendent Sprinkler

Installation Wrench: Model GFR1 Sprinkler Wrench

Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval ⁽¹⁾ Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|---------------------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" (15mm) | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,7,8 | R3615 |
| 17/32" (20mm) | 3/4" NPT (R3/4) | 8.0 | 115 | 2.3" (58mm) | 1,2,3,8 | R3612 |
| 7/16" (11mm) | 1/2" NPT (R1/2) | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3613 |
| 3/8" (10mm) | 1/2" NPT (R1/2) | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3611 |
| 10mm | R3/8" | 4.2 | 60 | 56mm | 4,7 | R3614 |

⁽¹⁾ Refer to escutcheon data table for approvals and dimensions.



Model F1FR Quick Response Vertical Sidewall Sprinkler

Installation Wrench: Model D Sprinkler Wrench

Installation Position: Upright or Pendent

Approval Type: Light Hazard Occupancy

Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1, 2, 3, 6, 8 | R3685 |
| 15mm | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 4 ⁽¹⁾ | |

⁽¹⁾ LPC Approval is for Pendent position only.



Vertical Sidewall

| Orientation | Deflector to Ceiling Dimension (Min. - Max.) |
|-------------|--|
| Upright | 4" - 12" (102mm - 305mm) |
| Pendent | 6" - 12" (152mm - 305mm) |

US Patent No. 6,374,920

Model F1FR Quick Response Horizontal Sidewall Sprinkler

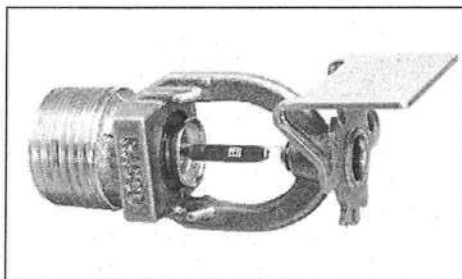
Deflector: HSW 1

Installation Wrench: Model D Sprinkler Wrench

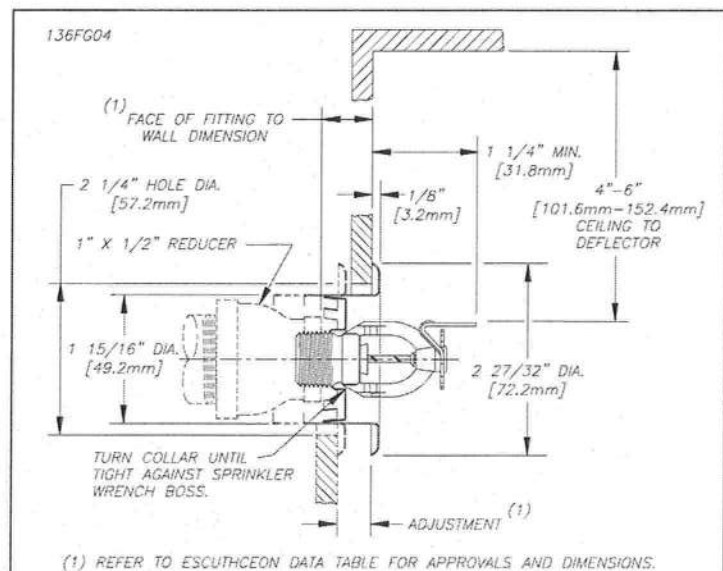
Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Length | Approval Organizations and Type of Approval | | Sprinkler Identification Number (SIN) |
|-----------------|----------------|----------|--------|------------------|---|-----------------|---------------------------------------|
| | | US | Metric | | Light Hazard | Ordinary Hazard | |
| 1/2" (15mm) | 1/2" NPT(R1/2) | 5.6 | 80 | 2.63" (67mm) | 1,2,3,5,8 | 1,2,5,8 | R3635 |

NOTE: UL, ULC and MEA Listing permits use with F1 or F2 recessed escutcheon. FM Approvals do not permit recessed usage.



Horizontal Sidewall



Installation

Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-8N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

The Model F1FR Recessed Quick Response Sprinklers are to be installed as shown. The Model F1 or F2 Escutcheons illustrated are the only recessed escutcheons to be used with the Model F1FR Sprinklers. The use of any other recessed escutcheon will void all approvals and negate all warranties.

When installing Model F1FR Sprinklers, use the Model D Sprinkler Wrench. When installing Model F1FR Recessed Pendent or Sidewall Sprinklers, use the Model GFR1 Sprinkler Wrench. Any other type of wrench may damage these sprinklers.

Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Temperature Ratings

| Classification | Sprinkler Temperature | | Max. Ambient Temp. | Bulb Color |
|---------------------|-----------------------|-----|--------------------|------------|
| | °C | °F | | |
| Ordinary | 57 | 135 | 100°F (38°C) | Orange |
| Ordinary | 68 | 155 | 100°F (38°C) | Red |
| Intermediate | 79 | 175 | 150°F (66°C) | Yellow |
| Intermediate | 93 | 200 | 150°F (66°C) | Green |
| High ⁽¹⁾ | 141 | 286 | 225°F (107°C) | Blue |

(1) Not available for recessed sprinklers.

Escutcheon Data

| Escutcheon Model | Approvals | Adjustment | "A" Dimension | Face of Fitting to Ceiling or Wall Dimension |
|------------------------------|-------------------------------|--------------------------|-----------------------------------|--|
| F1 | 1,2,4,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 3/4" (19.1mm) | 3/16" - 1/4" (5mm - 24mm) |
| F2 | 1,2,3 ⁽¹⁾ ,4,5,7,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 1 5/16" (24mm) | 3/16" - 1/4" (5mm - 17mm) |
| FP Push-on/ Thread-off | 1,2 | Max Recessed | 7/16" (11mm) | 1 1/2" (38.1mm) |
| | 1,2 | Min Recessed | 1 9/16" (24mm) | 1" (25.4mm) |

No Dimensional Figure for FP

(1) Horizontal Sidewall is not FM approved in the recessed configuration.

Maintenance

The Models F1FR and F1FR Recessed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gen-

tle vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Sidewall (Vertical, Horizontal HSW1)
Recessed Pendent
Recessed Horizontal Sidewall HSW1

Finishes ^{(1) (2)}

| Standard Finishes | |
|---------------------------------------|------------------------------|
| Sprinkler | Escutcheon |
| Bronze | Brass |
| Chrome Plated | Chrome Plated ⁽³⁾ |
| White Polyester Coated ⁽⁴⁾ | White Painted ⁽³⁾ |
| Special Application Finishes | |
| Sprinkler | Escutcheon |
| Bright Brass | Bright Brass |
| Black Plated | Black Plated |
| Black Paint | Black Paint |
| Off White | Off White |
| Satin Chrome | Satin Chrome |

(1) Other finishes and colors are available on special order. Consult the factory for details.

(2) FM Approvals is limited to bronze and brass, chrome or black plated finishes only.

(3) FP Push-on/Thread-off escutcheon.

(4) UL and ULC listed corrosion resistance.

SIN numbers: R3621, R3622, R3623, R3625.

Note: For 1/2" orifice pendent FM approved white polyester coated and UL approved white polyester corrosion resistant sprinklers refer to Bulletin 014.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Orifice Size
4. Deflector Type
5. Temperature Rating
6. Sprinkler Finish
7. Escutcheon Type
8. Escutcheon Finish (where applicable)

Note: When Model F1FR Recessed sprinklers are ordered, the sprinklers and escutcheons are packaged separately.

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800)431-1588

(800)848-6051

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www.reliablesprinkler.com

Sales Offices

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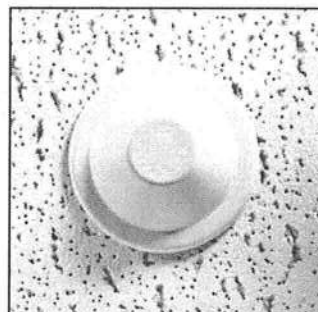
Model F3QR Quick Response Dry Sprinklers

Bulletin 157 Rev.G

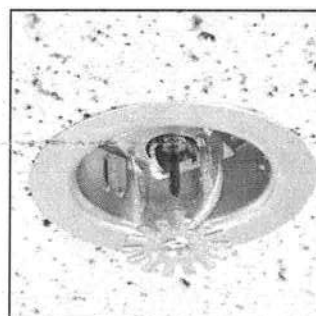
Bulletin 157 Rev.G

Features

1. The Model F3QR sprinkler utilizes Belleville Spring Closure Technology. Reliable is the first in the industry to produce a Quick Response Dry Concealed sprinkler utilizing this technology.
2. Styles available
 - Pendent
 - Recessed FP Pendent
 - Recessed F1 Pendent
 - Concealed
 - Horizontal Sidewall
 - Recessed Horizontal Sidewall - FP
 - Recessed F1 Horizontal Sidewall
3. 1½" (38mm) escutcheon adjustment on pendent sprinkler.
4. ½" (13mm) escutcheon adjustment on recessed sprinkler with push-on/ thread-off FP Model Escutcheon ring.
5. ⅜" (9.5mm) cover plate adjustment on concealed sprinkler with push-on/ thread-off CCP Cover Plate.
6. ¾" (19mm) escutcheon adjustment on recessed sprinkler with G/F1 Escutcheon.
7. Attractive appearance. Employs 3mm frangible glass bulb and galvanized nipple.
8. Lengths available to accommodate installation dimensions from 2' - to - 48" (51mm - to - 1219mm), in ¼" (6mm) increments.
9. Available in a variety of plated and painted finishes.



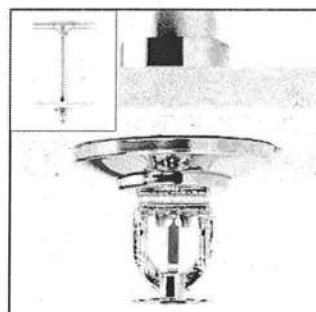
Concealed



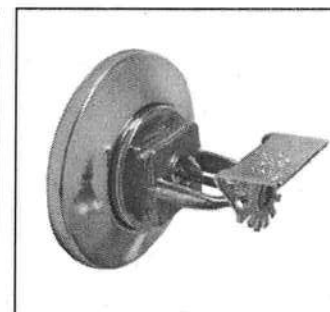
Recessed FP Pendent



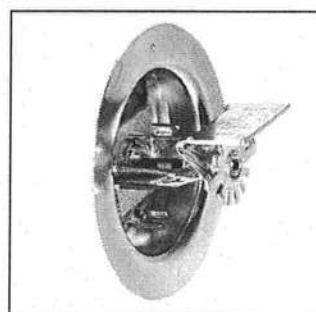
Recessed F1 Pendent



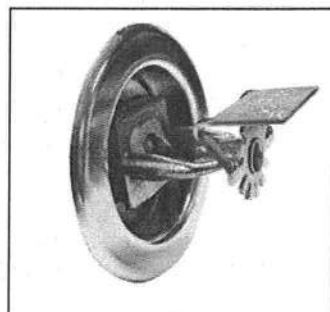
Pendent



Horizontal Sidewall



Recessed FP
Horizontal Sidewall



Recessed F1
Horizontal Sidewall

Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)

| Style | Response | Sprinkler System Type | Hazard |
|---|----------|---------------------------------------|----------------|
| Pendent Recessed Pendent Recessed F1 Pendent CCP Concealed (R5714) | Quick | Wet Pipe Dry Pipe All Preaction | Light Ordinary |
| Horizontal Sidewall Recessed FP Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | | | |

2. Certified by FM Approvals

| Style | Response | Sprinkler System Type | Hazard |
|--|----------|--|-------------------------------|
| Pendent Recessed F1 Pendent (R5714) | Quick | Wet Pipe, Single Interlock Preaction | Light Ordinary, Groups 1&2 |
| Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | Quick | Wet Pipe, Single Interlock Preaction | Light |

3. NYC MEA 258-93-E

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford NY 10523

Model F3QR Dry Pendent Sprinkler

"A" Dim. 2' to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated cans.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

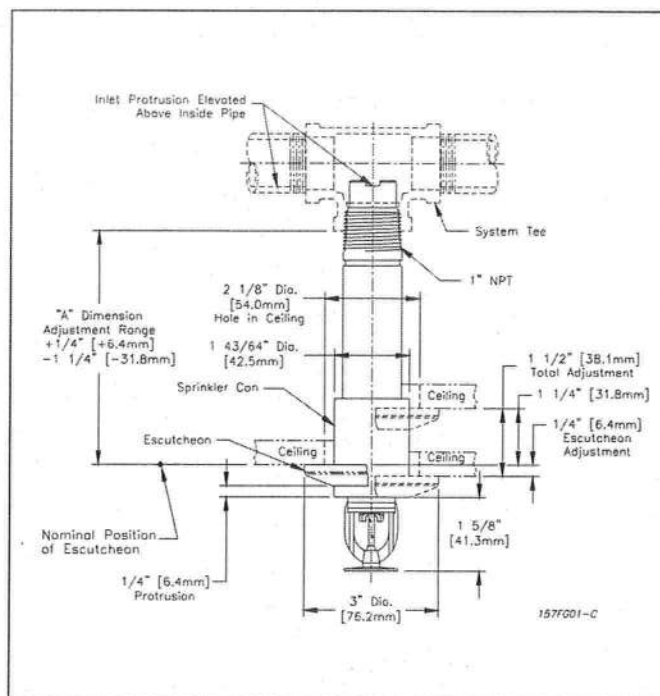
Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

Sprinkler Guard: Model C-2

Sprinkler Installation Wrench

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1/4" (-32mm) "A" dimension adjustment range.

Model F3QR Dry Recessed Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. Only the escutcheon will contain desired finish.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

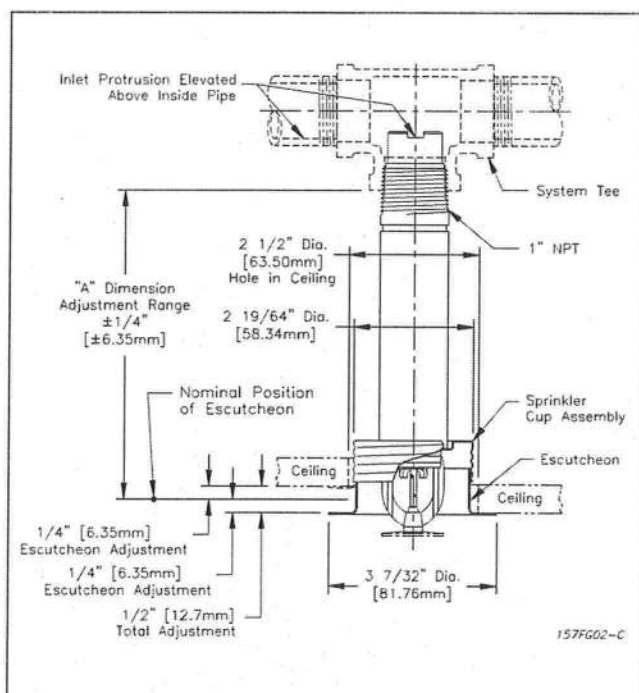
Sprinkler cup and FP escutcheon fabricated of steel and recommended for interior applications.

* Listed and Certified only by cULus

Sprinkler Installation Wrench

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: Do not install the Model F3QR Dry Pendent Recessed Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Pendent Concealed Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

CCP Cover Plate⁽¹⁾ Finishes⁽²⁾

| Standard Finishes | Special Application Finishes |
|------------------------|---|
| Chrome Plated White | Bright Brass Plated Black Plated Black Paint Off White Satin Chrome |

⁽¹⁾ Utilizes the 1/2" cover plate with 3/8" total adjustment.

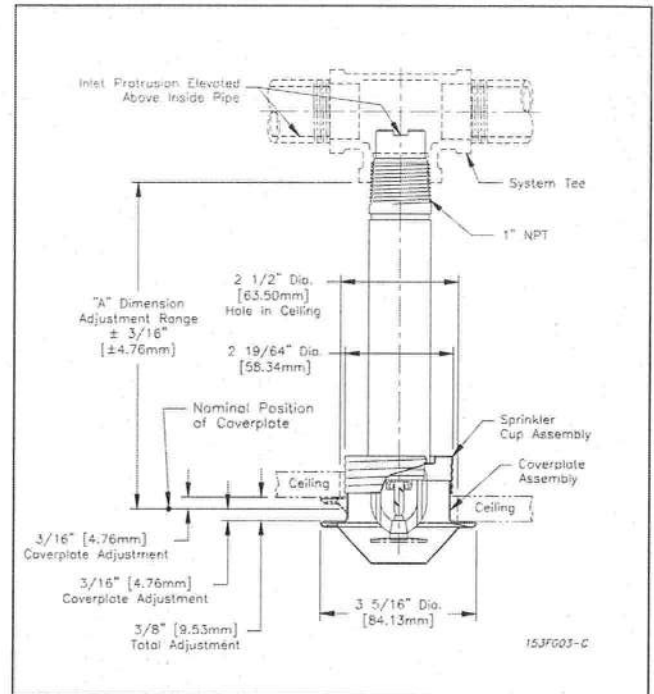
⁽²⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Cover Plate Temp. Rating | Max. Ambient Temp. |
|----------------|------------------------------|--------------------------|--------------------|
| Ordinary | 135°F (57°C) | 135°F (57°C) | 100°F (38°C) |
| Ordinary | 155°F (68°C) | 135°F (57°C) | 100°F (38°C) |
| Intermediate | 200°F (93°C) | 165°F (74°C) | 150°F (66°C) |
| High* | 286°F (141°C) | 165°F (74°C) | 150°F (66°C) |

Sprinkler cup fabricated of steel and CCP Cover Plate fabricated of brass and recommended for interior applications.

* Listed and Certified only by cULus.



Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714

Note: Do not install the Model F3QR Dry Pendent Concealed Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Horizontal Sidewall Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

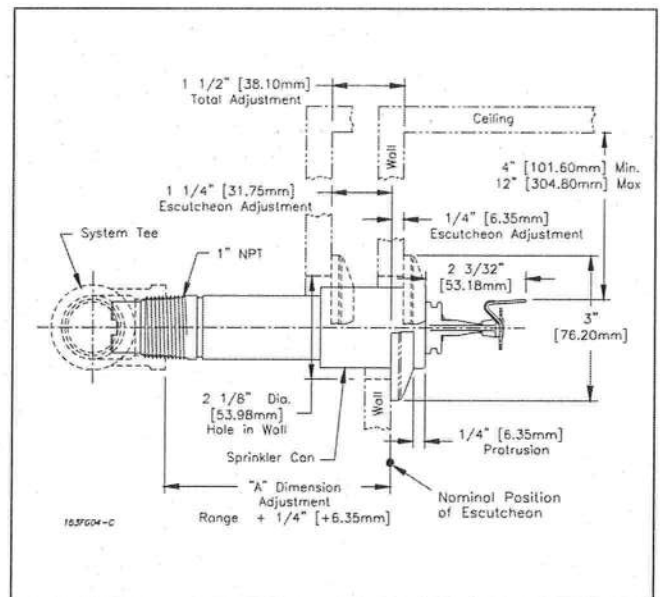
⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated can.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

Sprinkler can and escutcheon fabricated of brass for weather resistance in exterior applications.



Sprinkler Installation Wrench:

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734

Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1/4" (-32mm) "A" dimension adjustment range.

Model F3QR Dry Recessed F1 Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

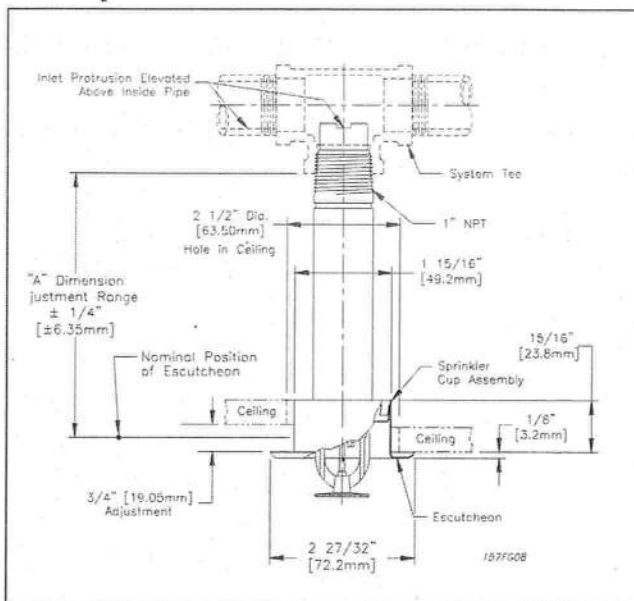
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Model F3QR Dry Horizontal Recessed F1 Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

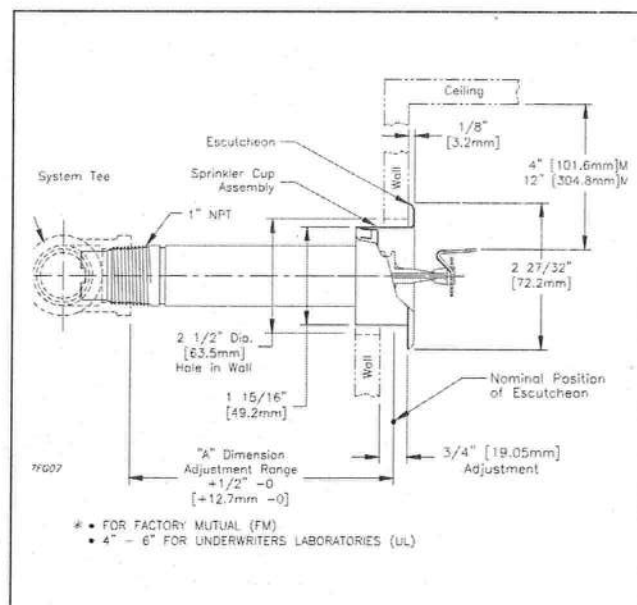
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Model F3QR Dry Horizontal Recessed Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. "See page 2"

Standard Temperature Ratings

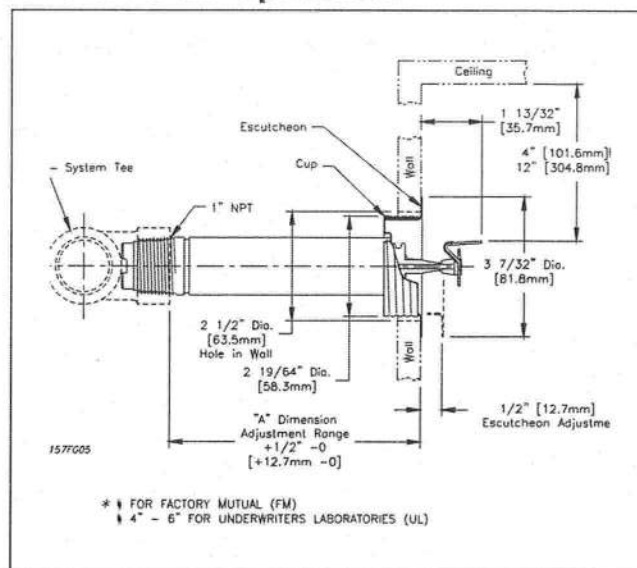
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



Notes: Do not install the Model F3QR Dry Horizontal Recessed Sidewall Sprinkler in walls which have positive pressure in their side space.

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Technical Data:

Orifice Size: 1/2" (15mm)

Thread Size: 1" NPT per ANSI B2.1

Working Pressure: 175 psi (12 bar)

Nominal K Factor - US / (Metric): 5.6 / (80)

Product Description

Reliable Model F3QR Dry Sprinklers are quick response sprinklers utilizing a durable 3mm frangible glass bulb. This quick response enables these sprinklers to apply water to a fire much sooner than standard response sprinklers of the similar temperature rating.

Model F3QR Dry Sprinklers are intended for use in dry and preaction systems and in areas subjected to freezing temperatures, such as freezers and unheated portions inside and outside buildings.

Environments wherein dry sprinklers are employed can be corrosive. For this reason, Model F3 Sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminants from entering the internal portion of the drop nipple. The wax must not be removed.

Operation

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. When the temperature increases sufficiently, due to a fire, the bulb shatters allowing operating parts to clear the waterway. This enables the inlet seal to release air or water and subsequently, cause water flow over the deflector in a uniform spray pattern, controlling or extinguishing the fire.

Ordering Information

Specify:

- Sprinkler Type (select one):
 - Model F3QR Dry Pendent
 - Model F3QR Dry Recessed Pendent
 - Model F3QR Dry Recessed F1 Pendent
 - Model F3QR Dry Concealed Pendent
 - Model F3QR Dry Horizontal Sidewall
 - Model F3QR Dry Recessed Horizontal Sidewall
 - Model F3QR Dry Recessed F1 Horizontal Sidewall
- Sprinkler Temperature Rating.
- Sprinkler Finish.
- Escutcheon type (G/F1 or FP).
- Cover Plate/Escutcheon Finish.
- Length:

"A" Dimension (face of tee to face of ceiling or wall) in 1/4" (6mm) increments.
- Model F3QR Dry Pendent (a) is available without sprinkler can and escutcheon.

Note:

- The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15mm) per ANSI B2.1 [7 1/2 threads approximately].
- All platings and paintings are decorative and intended for interior use.

General Installation Instructions

Model F3QR dry sprinklers must be installed only in standard (ANSI B 16.3 class 150 and ANSI B 16.4 class 125) pipe tees in the horizontal position, even at branch line ends. They should not be installed into elbows or pipe couplings located on drop nipples to the sprinklers. For these and other fittings including CPVC*, the dry sprinkler should be installed into a fitting to allow protrusion into the fitting in accordance with the diagrams. The "A" dimension of the dry sprinkler, which extends into the freezers or a freezing zone from wet pipe systems, should be selected to provide, as a minimum, the specified lengths in inches shown in the following table, between face of the fitting and the exterior face of the protected area. The following table is used for freezing zones when the ambient temperature around the wet pipe system is kept at 40 °F (4°C), and specifies the minimum length from fitting face to inside face of ceiling or wall for different protected area temperatures.

TABLE 1 (See Fig. 8)

| Minimum Length (Face to inside Face Ceiling/Wall) | Temperature (Protected Area)** |
|--|-----------------------------------|
| 12 inches / 300 mm | -20°F / -29°C |
| 18 inches / 450 mm | -40°F / -40°C |
| 24 inches / 600 mm | -60°F / -51°C |

** For temperatures falling between those in the above chart, the minimum length may be determined by interpolation.

During installation, the following steps must be followed:

1. Cut the specified size hole (see illustrations) for the sprinkler in the ceiling or wall directly in line with the tee.
2. Apply pipe joint compound to the 1" (25mm) pipe threads and install sprinkler using the Model G3 or G3 R/C Sprinkler Wrench as specified.
3. Install the Model FP push-on / thread-off escutcheon or CCP cover plate if required.

Note: Installation of the Model F3QR Sprinklers is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinklers.

Model F3QR Concealed and Recessed Installation Instructions

- The Model G3 R/C wrench (Fig. 1) is designed to locate on the wrenching pads of the recessed sprinkler while centering in the cup. A standard ½" drive ratchet may be used to drive this wrench. Figures 1 and 2 show sequentially the insertion of the wrench. First the wrench, with its jaws above the sprinkler deflector, is moved laterally until centered with the cup. Then raise the wrench inside of the cup until its jaws engage the sprinkler's square wrenching pads (Fig. 3). To remove the wrench, follow this procedure in reverse order. Care should be taken to avoid striking the deflector, with the wrench.
- Model G3 Wrench (Fig. 4) is used for installation of Pendent and Horizontal Sidewall sprinklers.
- Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors

before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Model F3QR Quick Response Dry Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

* Spears CPVC sprinkler adapter tees (with steel thread insert) can only be used with horizontal sidewall sprinklers which do not require protrusion into tees to prevent ice or debris blockage of sprinkler inlets. These CPVC tees do not permit sufficient sprinkler inlet protrusion as required for pendent installation.

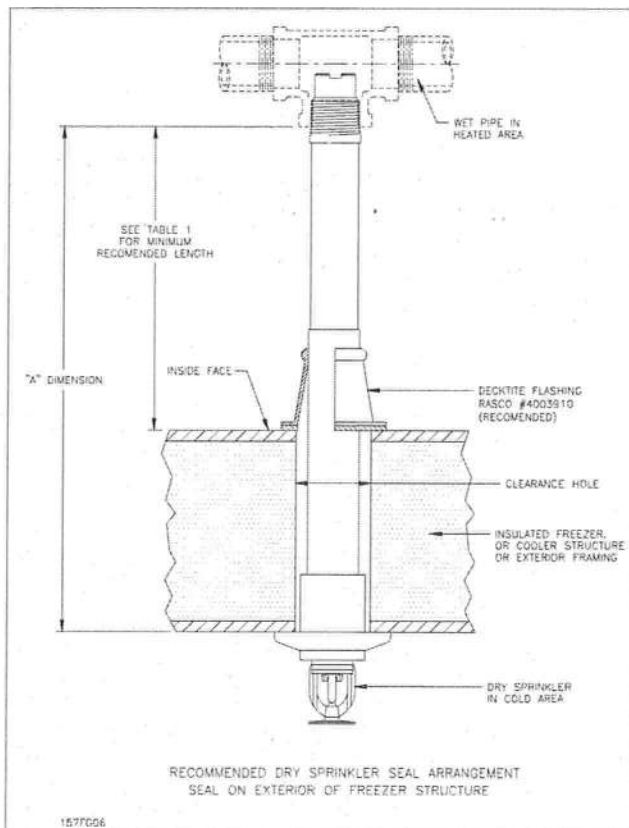


Fig. 8

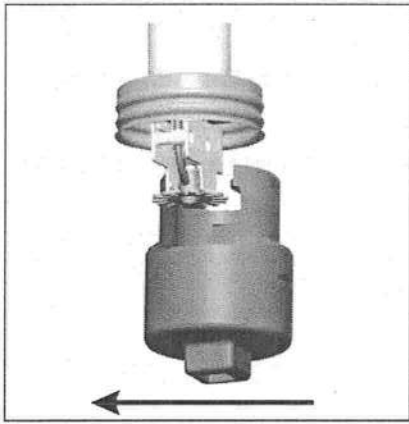


Fig. 1 - G3 R/C Wrench

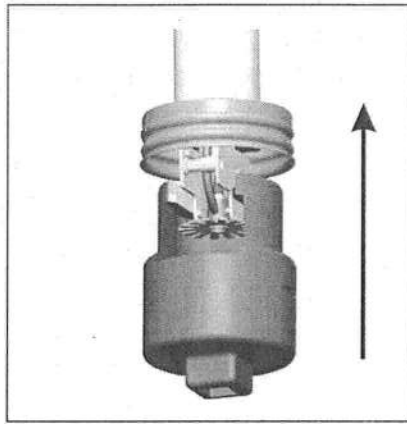


Fig. 2 - G3 R/C Wrench

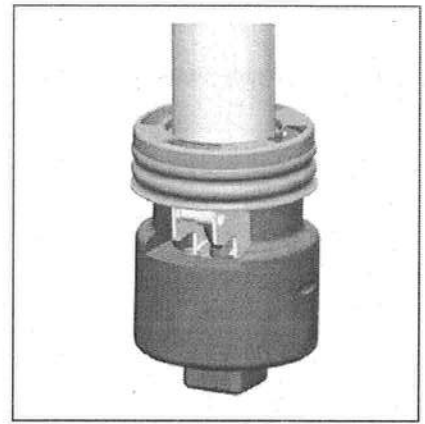


Fig. 3 - G3 R/C Wrench

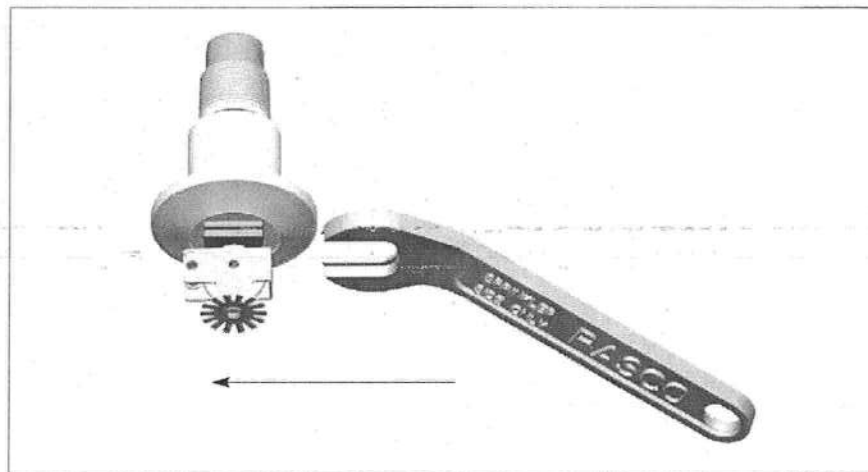


Fig. 4 - G3 Wrench

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

Reliable[®]

The Reliable Automatic Sprinkler Co., Inc.

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(800) 848-6051
(914) 829-2042
www.reliablesprinkler.com

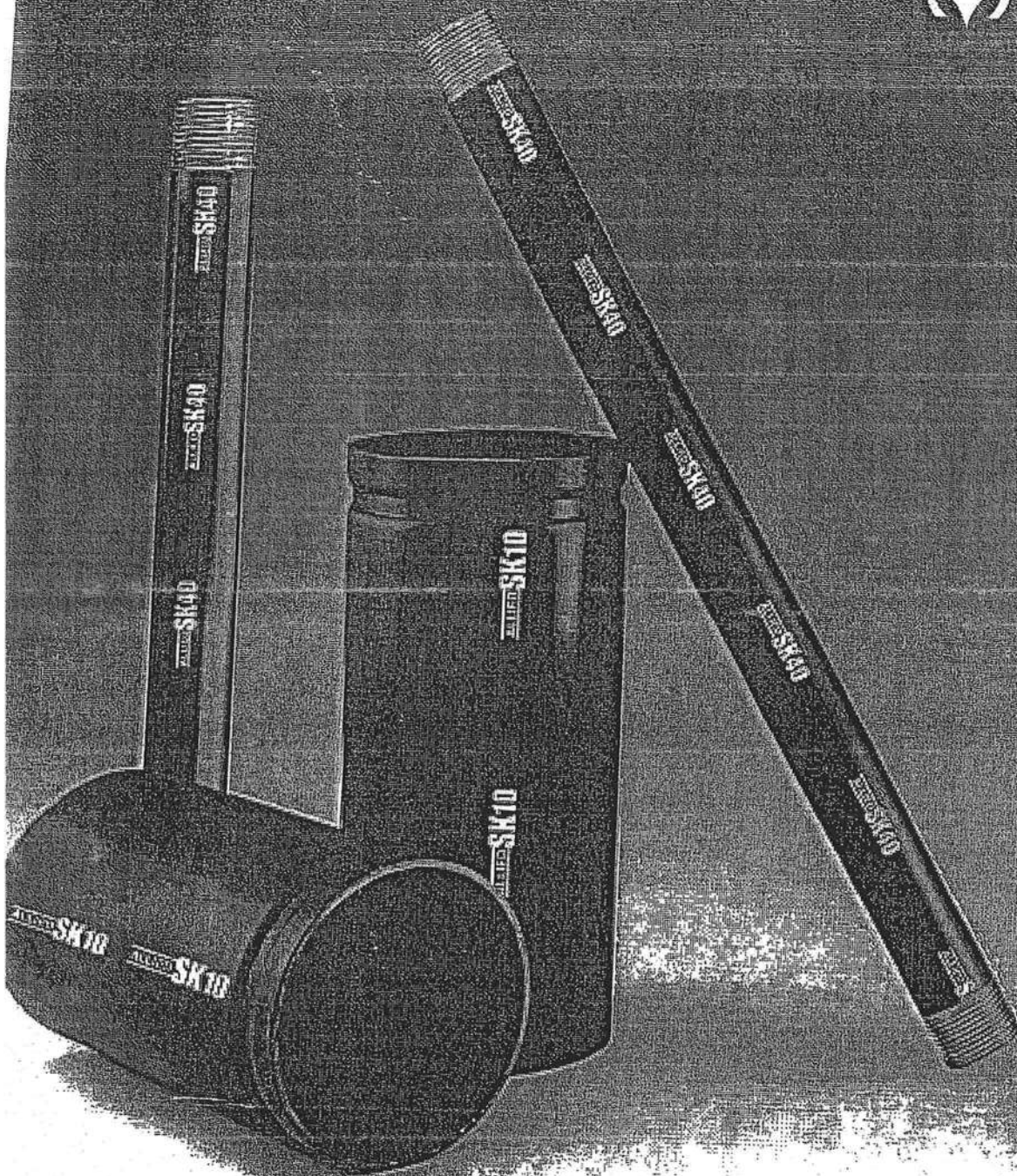
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TUBE & CONDUIT



SCHEDULE-10/40

Schedule-10®/Schedule-40®

Fully Listed and FM Approved Sprinkler Pipe

When you specify Schedule-10/Schedule-40 sprinkler pipe you get a UL listed and FM approved product. Although these products do not require separate approvals, Schedule-10/Schedule-40 gives you the extra quality assurance you demand. Our Sch-10 (1¼"– 8") pipe and Sch-40 (1"– 2½") pipe have passed the same thorough lab testing as our other listed pipe products, and receive periodic mill inspections from both UL and FM agents to ensure consistent quality.

Galvanized Pipe

Schedule-10/Schedule-40 product can be "hot-dip" galvanized to meet FM requirements for dry systems in accordance with the zinc coating specifications of ASTM A-123.

Superior Coating

Our advanced formula mill coating offers a clean, durable surface. It is also paint-ready for custom color applications without special preparation.

The internal surface of all black Allied Tube & Conduit Fire Sprinkler pipe products up to 4.5000" in diameter is coated with our new Antibacterial Formula, "ABF". In scientific laboratory test, ABS proved to have superior resistance to microbial colonization of pipe walls, thereby delaying or possibly preventing the onset of Microbiologically Influenced corrosion (MIC) when the First Sprinkler System is first installed.

American Made

Meets "Buy American" requirement and is available through distributors in the USA, Canada and Mexico.

Specifications & Approvals

Schedule-10/Schedule-40 pipe are in compliance with the following:

ASTM A-135, and NFPA 13. Both pipe products have a working pressure rating of 300 psi maximum and also meet the stringent requirement for the following tests:

- Welded Outlets
- Hydrostatic Pressure
- Side Wall Rupture
- Vibration Test

Sch-40 Specifications

| NPS In; mm | Nominal I.D. In; mm | Wt. Lbs/Ft; Kg/m | Wt. (H2O Filled) Lbs/Ft; Kg/m | Pcs/ Lift | Wt/Lift (21') Lbs; Kg | Wt/Lift (24') Lbs; Kg | Wt/Lift (25') Lbs; Kg |
|---------------|------------------------|---------------------|----------------------------------|--------------|--------------------------|--------------------------|--------------------------|
| 1" | 1.049 | 1.680 | 2.05 | 70 | 2,470 | 2,822 | 2,940 |
| 25 | 26.6 | 2.5 | 3.05 | 70 | 1,120 | 1,280 | 1,334 |
| 1¼" | 1.380 | 2.270 | 2.93 | 51 | 2,431 | 2,778 | 2,894 |
| 32 | 35.1 | 4.36 | 4.36 | 51 | 1,103 | 1,260 | 1,313 |
| 1½" | 1.610 | 2.720 | 3.61 | 44 | 2,513 | 2,872 | 2,992 |
| 40 | 40.9 | 4.0 | 5.37 | 44 | 1,140 | 1,303 | 1,357 |
| 2" | 2.067 | 3.650 | 5.13 | 30 | 2,300 | 2,628 | 2,738 |
| 50 | 52.5 | 5.4 | 7.63 | 30 | 1,043 | 1,192 | 1,242 |
| 2½" | 2.469 | 5.790 | 7.86 | 19 | 2,310 | 2,640 | 2,750 |
| 65 | 62.7 | 8.6 | 11.73 | 19 | 1,048 | 1,197 | 1,247 |

Sch-10 Specifications

| NPS In; mm | Nominal I.D. In; mm | Wt. Lbs/Ft; Kg/m | Wt. (H2O Filled) Lbs/Ft; Kg/m | Pcs/ Lift | Wt/Lift (21') Lbs; Kg | Wt/Lift (24') Lbs; Kg | Wt/Lift (25') Lbs; Kg |
|---------------|------------------------|---------------------|----------------------------------|--------------|--------------------------|--------------------------|--------------------------|
| 1" | 1.097 | 1.400 | 1.81 | 91 | 2,675 | 3,053 | 3,185 |
| 25 | 27.9 | 2.1 | 2.70 | 91 | 1,213 | 1,385 | 1,445 |
| 1¼" | 1.442 | 1.810 | 2.52 | 61 | 2,319 | 2,664 | 2,760 |
| 32 | 36.6 | 2.7 | 3.75 | 61 | 1,052 | 1,208 | 1,252 |
| 1½" | 1.682 | 2.080 | 3.04 | 61 | 2,664 | 3,045 | 3,172 |
| 40 | 42.7 | 3.1 | 4.52 | 61 | 1,208 | 1,381 | 1,439 |
| 2" | 2.157 | 2.640 | 4.22 | 37 | 2,051 | 2,344 | 2,442 |
| 50 | 54.8 | 3.9 | 6.28 | 37 | 930 | 1,063 | 1,108 |
| 2½" | 2.635 | 3.530 | 5.89 | 30 | 2,224 | 2,542 | 2,648 |
| 65 | 66.9 | 5.3 | 8.77 | 30 | 1,009 | 1,153 | 1,201 |
| 3" | 3.260 | 4.330 | 7.94 | 19 | 1,728 | 1,975 | 2,057 |
| 80 | 82.8 | 6.4 | 11.82 | 19 | 784 | 896 | 933 |
| 4" | 4.260 | 5.610 | 11.78 | 19 | 2,238 | 2,558 | 2,665 |
| 90 | 108.2 | 8.3 | 17.53 | 19 | 1,015 | 1,160 | 1,209 |
| 5" | 5.295 | 7.77 | 17.33 | 10 | 1,632 | 1,865 | 1,943 |
| 125 | 134.5 | 11.56 | 25.80 | 10 | 740 | 846 | 881 |
| 6" | 6.357 | 9.290 | 23.03 | 10 | 1,951 | 2,230 | 2,322 |
| 150 | 161.5 | 13.8 | 34.27 | 10 | 885 | 1,012 | 1,053 |
| 8" | 8.249 | 16.490 | 40.15 | 7 | 2,424 | 2,770 | 2,885 |
| 200 | 209.5 | 24.5 | 59.75 | 7 | 1,100 | 1,256 | 1,309 |



Listed



Approved



Listed

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W.C.A. TAMPA

002

SPRINKLER PIPE CHART

| SCHEDULE 10 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.250 | 1.660 | 1.442 | 0.109 | 61 | 1.81 | 1,281 | 2,319 |
| 1.500 | 1.900 | 1.682 | 0.109 | 61 | 2.09 | 1,281 | 2,677 |
| 2.000 | 2.375 | 2.157 | 0.109 | 37 | 2.64 | 777 | 2,051 |
| 2.500 | 2.875 | 2.635 | 0.120 | 37 | 3.54 | 777 | 2,751 |
| 3.000 | 3.500 | 3.260 | 0.120 | 19 | 4.34 | 399 | 1,732 |
| 4.000 | 4.500 | 4.260 | 0.120 | 19 | 5.62 | 399 | 2,242 |

| SCHEDULE 7 | | | | | | | |
|------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.250 | 1.660 | 1.512 | 0.074 | 61 | 1.25 | 1,281 | 1,601 |
| 1.500 | 1.900 | 1.734 | 0.083 | 61 | 1.61 | 1,281 | 2,062 |
| 2.000 | 2.375 | 2.209 | 0.083 | 37 | 2.03 | 777 | 1,577 |
| 2.500 | 2.875 | 2.709 | 0.083 | 37 | 2.48 | 777 | 1,927 |
| 3.000 | 3.500 | 3.334 | 0.090 | 19 | 3.28 | 399 | 1,309 |
| 4.000 | 4.500 | 4.310 | 0.105 | 19 | 4.93 | 399 | 1,967 |

| SCHEDULE 40 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.000 | 1.315 | 1.049 | 0.133 | 61 | 1.68 | 1,281 | 2,152 |
| 1.250 | 1.660 | 1.380 | 0.140 | 61 | 2.28 | 1,281 | 2,921 |
| 1.500 | 1.900 | 1.610 | 0.145 | 61 | 2.72 | 1,281 | 3,484 |
| 2.000 | 2.375 | 2.067 | 0.154 | 37 | 3.66 | 777 | 2,844 |

| SCHEDULE 30 | | | | | | | |
|-------------|-------|-------|-------|---------------|----------------|-----------|-------|
| NOMINAL | | | | LIFT COUNT | LB PER FOOT | 21' LIFTS | |
| SIZE | OD | ID | WALL | | | FEET | LB |
| 1.000 | 1.292 | 1.054 | 0.119 | 61 | 1.49 | 1,281 | 1,909 |
| 1.250 | 1.637 | 1.389 | 0.124 | 61 | 2.01 | 1,281 | 2,575 |
| 1.500 | 1.877 | 1.619 | 0.129 | 61 | 2.41 | 1,281 | 3,087 |
| 2.000 | 2.352 | 2.080 | 0.136 | 37 | 3.22 | 777 | 2,502 |

Welded Tube - Berkeley also stocks additional sprinkler pipe in 6" and 8" sizes.

Fig. 69

Adjustable Swivel Ring, Tapped Per NFPA Standards

Size Range: 1/2" through 8"

Material: Carbon steel

Finish: ☐ Galvanized

Service: Recommended for suspension of non-insulated stationary pipe line.

Maximum Temperature: 650° F

Approvals: Complies with Federal Specification A-A-1192A (Type 10)

WW-H-171-E (Type 10) and MSS-SP-69 (Type 10).

UL Listed and FM Approved (Sizes 3/4" - 8").

Features:

- Threads are countersunk so that they cannot become burred or damaged.
- Knurled swivel nut provides vertical adjustment after piping is in place.
- Captured swivel nut in the 1/2" through 3" sizes.

Ordering: Specify size, figure number and name.

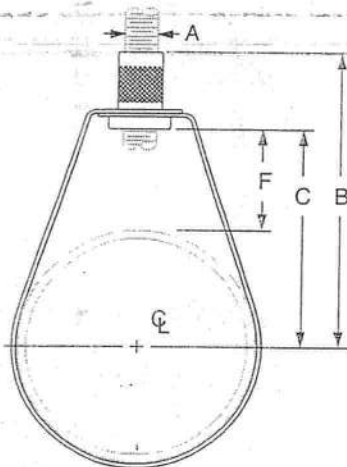
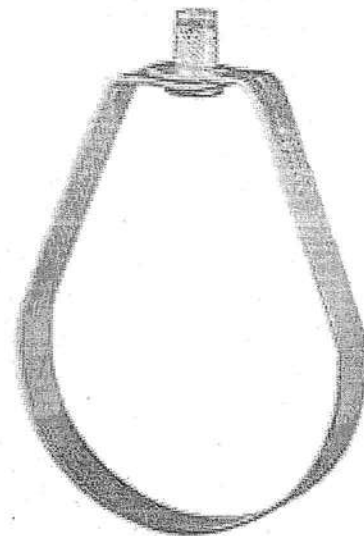


Fig. 69: Loads (lbs) • Weight (lbs) • Dimensions (in)

| Pipe Size | Max Load | Weight | Rod Size A | B | C | F |
|-----------|----------|--------|------------|---------|---------|---------|
| 1/2 | 300 | 0.10 | 3/8 | 2 7/8 | 2 | 1 9/16 |
| 3/4 | | 0.10 | | 2 3/4 | 1 7/8 | 1 15/16 |
| 1 | | 0.10 | | 2 9/16 | 1 11/16 | 1 |
| 1 1/4 | | 0.10 | | 2 5/8 | 1 3/4 | 7/8 |
| 1 1/2 | | 0.10 | | 2 3/4 | 1 7/8 | |
| 2 | 525 | 0.11 | 3/8 | 3 1/4 | 2 3/8 | 1 1/8 |
| 2 1/2 | | 0.20 | | 4 | 2 3/4 | 1 5/16 |
| 3 | | 0.20 | | 3 13/16 | 2 15/16 | 1 3/16 |
| 4 | 650 | 0.30 | 1/2 | 4 11/16 | 3 13/16 | 1 9/16 |
| 5 | 1,000 | 0.54 | | 5 5/16 | 4 3/8 | |
| 6 | | 0.65 | | 6 11/16 | 5 9/16 | 2 1/4 |
| 8 | | 1.00 | | 8 | 7 | 2 11/16 |

Pipe Hanger Submittal Sheet

| | | |
|-------------|-----------------------|-----------------|
| Project: | Architect / Engineer: | Approval Stamp: |
| Date: | Phone: | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

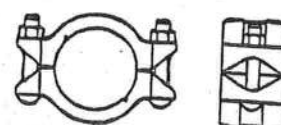
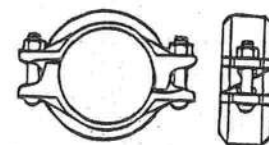
Grooved Fittings

Section
56

Couplings

| PFS Number | Mfg. Number | Description | Pack |
|---|-------------|-------------|------|
| ABBREVIATIONS GVD = Grooved | | | |
| Firelock Style #005 Ridgid Grooved Couplings This coupling has a unique, patented angle-pad design which allows the housings to offset while clamping the grooves. By permitting the housings to slide on the angled bolt pads, rigidity is obtained. The FireLock system provides rigidity for valve connections, fire mains and long straight runs. Support and hanging requirements correspond to NFPA 13 Sprinkler Systems. | | | |
| 561110 | CO12005PEO | 1-1/4" | 1 |
| 561111 | CO14005PEO | 1-1/2" | 1 |
| 561112 | CO20005PEO | 2" | 1 |
| 561113 | CO24005PEO | 2-1/2" | 1 |
| 561114 | CO30005PEO | 3" | 1 |
| 561116 | CO40005PEO | 4" | 1 |
| 561118 | CO60005PEO | 6" | 1 |
| 561119 | CO80005PEO | 8" | 1 |
| Standard Coupling for Roll Grooved Pipe #75 These couplings are designed for joining large diameter piping systems. This coupling is ideal for roll grooved IPS black or galvanized steel and stainless steel systems. | | | |
| 562301 | CO14075PEO | 1-1/2" | 1 |
| 562303 | CO24075PEO | 2-1/2" | 1 |
| Flexible Couplings #75 Flex These couplings are available where moderate pressures are expected or weight considerations are a factor. Rated for service up to 500 PSI, depending on size. | | | |
| 562349 | CO10004PEO | 1" | 1 |
| 562351 | CO14004PEO | 1-1/2" | 1 |
| 562350 | CO12004PEO | 1-1/4" | 1 |
| 562352 | CO20004PEO | 2" | 1 |
| 562353 | CO24004PEO | 2-1/2" | 1 |
| 562354 | CO30004PEO | 3" | 1 |
| 562356 | CO40004PEO | 4" | 1 |
| 562358 | CO60004PEO | 6" | 1 |
| 562359 | CO80004PEO | 8" | 1 |
| Roust-A-Bout Couplings (Style 99) These couplings consist of a durable, ductile iron housing. Its curved case-hardened steel jaws grip the pipe when nuts are tightened to full torque specifications, and it requires no pipe end preparation. | | | |
| 565225 | CO14099PEO | 1-1/2" | 1 |
| 565226 | CO20099PEO | 2" | 1 |
| 565227 | CO24099PEO | 2-1/2" | 1 |
| 565228 | CO30099PEO | 3" | 1 |
| 565229 | CO40099PEO | 4" | 1 |
| 565230 | CO60099PEO | 6" | 1 |

Victaulic



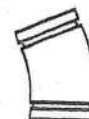
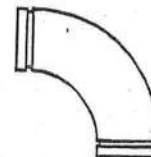
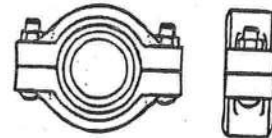
Grooved Fittings

Section
56

Couplings & Cast Fittings

| PFS Number | Mfg. Number | Description | Pack |
|--|-------------|-----------------|------|
| Style #750 Reducing Couplings This coupling permits direct reduction on the piping run. It features a reducing gasket for pressure responsive sealing. A steel washer which prevents telescoping of the smaller pipe inside the larger during vertical systems assembly is available upon request. | | | |
| 562421 | C367750PEO | 2" X 1-1/2" | 1 |
| 562432 | CC07750PEO | 2-1/2" X 2" | 1 |
| 562442 | CC43750PEO | 3" X 2" | 1 |
| 562443 | CC49750PEO | 3" X 2-1/2" | 1 |
| 562462 | CD29750PEO | 4" X 2" | 1 |
| 562463 | CD35750PEO | 4" X 2-1/2" | 1 |
| 562464 | CD44750PEO | 4" X 3" | 1 |
| 562486 | CE79750PEO | 6" X 4" | 1 |
| 562498 | CF47750PEO | 8" X 6" | 1 |
| Grooved Fittings FireLock fittings are designed for use exclusively with Style 005 FireLock couplings and are rated for the same pressure service. Use of other products may result in bolt pad interference. | | | |
| 90° Elbows - Firelock (#001) | | | |
| 562500 | FO12010POO | 1-1/4" STANDARD | 1 |
| 562501 | FO14010POO | 1-1/2" STANDARD | 1 |
| 562002 | FO20001POO | 2" | 1 |
| 562003 | FO24001POO | 2-1/2" | 1 |
| 562004 | FO30001POO | 3" | 1 |
| 562006 | FO40001POO | 4" | 1 |
| 562008 | FO60001POO | 6" | 1 |
| 562009 | FO80001POO | 8" | 1 |
| 45° Elbows - Firelock (#003) | | | |
| 562600 | FO12011POO | 1-1/4" STANDARD | 1 |
| 562601 | FO14011POO | 1-1/2" STANDARD | 1 |
| 563002 | FO20003POO | 2" | 1 |
| 563003 | FO24003POO | 2-1/2" | 1 |
| 563004 | FO30003POO | 3" | 1 |
| 563006 | FO40003POO | 4" | 1 |
| 563008 | FO60003POO | 6" | 1 |
| 563009 | FO80003POO | 8" | 1 |
| 22-1/2° Elbows (#12) | | | |
| 562702 | FO20012POO | 2" STANDARD | 1 |
| 562709 | FO80012POO | 8" STANDARD | 1 |

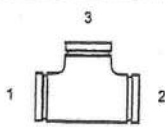
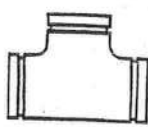

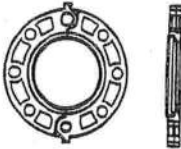
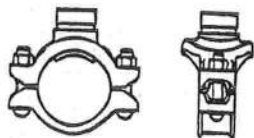
Victaulic



Grooved Fittings

Section
56

Cast Grooved Fittings

| PFS Number | Mfg. Number | Description | Pack |
|---|-------------|-------------|------|
| <div>  </div> | | | |
| Tees (#002) Tees are read straight through and then outlet 1,2,3. | | | |
| 562800 | FO12020POO | 1-1/4" | 1 |
| 562801 | FO14020POO | 1-1/2" | 1 |
| 564002 | FO20002POO | 2" | 1 |
| 564003 | FO24002POO | 2-1/2" | 1 |
| 564004 | FO30002POO | 3" | 1 |
| 564006 | FO40002POO | 4" | 1 |
| 564008 | FO60002POO | 6" | 1 |
| 564009 | FO80002POO | 8" | 1 |
| <div>  </div> | | | |
| Caps (#006) | | | |
| 564200 | FD12006POO | 1-1/4" | 1 |
| 564201 | FO14006POO | 1-1/2" | 1 |
| 564202 | FO20006POO | 2" | 1 |
| 564203 | FO24006POO | 2-1/2" | 1 |
| 564204 | FO30006POO | 3" | 1 |
| 564206 | FO40006POO | 4" | 1 |
| 564208 | FO60006POO | 6" | 1 |
| 564209 | FO80006POO | 8" | 1 |
| <div>  </div> | | | |
| Flanges (#744) Designed for Incorporating flanged components with ANSI CL. 125 or CL. 150 bolt hole patterns into a grooved pipe system. Incorporates small teeth inside the key shoulder I.D. to prevent rotation. | | | |
| 564302 | CO20744PEO | 2" | 1 |
| 564303 | CO24744PEO | 2-1/2" | 1 |
| 564304 | CO30744PEO | 3" | 1 |
| 564306 | CO40744PEO | 4" | 1 |
| 564308 | CO60744PEO | 6" | 1 |
| 564309 | CO80744PEO | 8" | 1 |
| <div>  </div> | | | |
| Mechanical Tees - Grooved (#920) Used for tee connections where a grooved outlet is required at mid-pipe. Malleable iron body, internal locating collar, full sectional EPDM rubber gasket. Rated for working pressures to 300 PSI. | | | |
| 569701 | 920 | 4" X 2" | 1 |
| 569702 | 920 | 4" X 2-1/2" | 1 |
| 569703 | 920 | 4" X 3" | 1 |
| 569710 | 920 | 6" X 2" | 1 |
| 569711 | 920 | 6" X 2-1/2" | 1 |
| 569712 | 920 | 6" X 3" | 1 |
| 569713 | 920 | 6" X 4" | 1 |
| 569721 | 920 | 8" X 2-1/2" | 1 |
| 569722 | 920 | 8" X 3" | 1 |
| 569723 | 920 | 8" X 4" | 1 |
| <div>  </div> | | | |

Grooved Fittings

Section
56

FIT Fittings



| PFS Number | Mfg. Number | Description | Pack |
|---|----------------|--------------------------|------|
| FIT FITTINGS | | | |
| FIT Fittings Direct connection of differing sizes on the run are possible with this fitting. No special reducing fittings are necessary. | | | |
| FIT Reducing Run and Outlet Tees (#969) | | | |
| 567600 | 969 | 1-1/4" X 1" X 1" | |
| 562454 | 969 | 1-1/2" X 1-1/4" X 3/4" | 1 |
| 562455 | 969 | 1-1/2" X 1-1/4" X 1" | 1 |
| 562458 | 969 | 2" X 1-1/2" X 1" | 1 |
| FIT Reducing Tees (#96) Joins same size pipe while providing a female threaded outlet. It also accomodates drop nipples, branches, sprinkler heads, gauges and other male threaded connections. | | | |
| 67402 | 96 | 1" X 1" X 1/2" | 1 |
| 67404 | 96 | 1" X 1" X 3/4" | 1 |
| 67406 | 96 | 1" X 1" X 1" | 1 |
| 67408 | 96 | 1-1/4" X 1-1/4" X 1/2" | 1 |
| 67410 | 96 | 1-1/4" X 1-1/4" X 3/4" | 1 |
| 67412 | 96 | 1-1/4" X 1-1/4" X 1" | 1 |
| 67416 | 96 | 1-1/2" X 1-1/2" X 1/2" | 1 |
| 67414 | 96 | 1-1/2" X 1-1/2" X 3/4" | 1 |
| 67418 | 96 | 1-1/2" X 1-1/2" X 1" | 1 |
| 7420 | 96 | 2" X 2" X 1/2" | 1 |
| 7422 | 96 | 2" X 2" X 3/4" | 1 |
| 7424 | 96 | 2" X 2" X 1" | 1 |
| FIT Straight Tee (#963) Useful for fire protection system connections. | | | |
| 7500 | 963 | 1" X 1" X 1" | 1 |
| 7502 | 963 | 1-1/4" X 1-1/4" X 1-1/4" | 1 |
| 7504 | 963 | 1-1/2" X 1-1/2" X 1-1/2" | 1 |
| 7506 | 963 | 2" X 2" X 2" | 1 |
| FIT Reducing Elbows (#966) Designed for automatic sprinkler systems. This elbow provides a reduced threaded connection for 1/2" or 3/4" sprinkler heads or 1" outlets. | | | |
| 9602 | 966 | 1" X 1/2" | 1 |
| 9604 | 966 | 1" X 3/4" | 1 |
| 9606 | 966 | 1-1/4" X 1/2" | 1 |
| 9608 | 966 | 1-1/4" X 3/4" | 1 |
| 9610 | 966 | 1-1/2" X 1/2" | 1 |
| 9612 | 966 | 1-1/2" X 3/4" | 1 |
| 9614 | 966 | 2" X 1/2" | 1 |
| 9616 | 966 | 2" X 3/4" | 1 |



Grooved Fittings

Section
56

FIT Fittings

| PFS Number | Mfg. Number | Description | Pack |
|---|-------------|-----------------|------|
| FIT Couplings (#960) Straight coupling allows direct plain end connections without outlets. Ideal for connecting plain end finned tube or equipment in perimeter heating systems or for small grid sprinkler systems. | | | |
| 567101 | 960 | 1" | 1 |
| 567102 | 960 | 1-1/4" | 1 |
| 567103 | 960 | 1-1/2" | 1 |
| 567104 | 960 | 2" | 1 |
| FIT 90° Elbows (#961) Full flow elbow for minimum pressure drop. Elbows rotate for alignment before locking. Internal pipe stop provides uniform takeout. | | | |
| 567201 | 961 | 1" X 1" | 1 |
| 567210 | 961 | 1-1/4" X 1-1/4" | 1 |
| 567211 | 961 | 1-1/2" X 1-1/2" | 1 |
| 567212 | 961 | 2" X 2" | 1 |

Victaulic

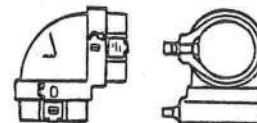
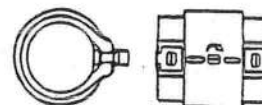


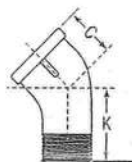
FIG. 1104 45° Street Elbow**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



APPROVED

For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1104 45° STREET ELBOW**

| Size | C | K | Weight | |
|--------|---------|---------|--------|--------|
| | | | black | galv. |
| NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 7/8 | 0.06 | 0.07 |
| 6 | 17 | 22 | 0.03 | 0.03 |
| 1/4 | 3/4 | 1 5/16 | 0.1 | 0.11 |
| 8 | 19 | 24 | 0.05 | 0.05 |
| 3/8 | 1 3/16 | 1 | 0.14 | 0.14 |
| 10 | 22 | 25 | 0.06 | 0.06 |
| 1/2 | 7/8 | 1 1/8 | 0.2 | 0.21 |
| 15 | 22 | 29 | 0.09 | 0.1 |
| 3/4 | 1 | 1 5/16 | 0.33 | 0.34 |
| 20 | 25 | 33 | 0.15 | 0.15 |
| 1 | 1 1/8 | 1 7/16 | 0.52 | 0.53 |
| 25 | 29 | 37 | 0.24 | 0.24 |
| 1 1/4 | 1 5/16 | 1 11/16 | 0.84 | 0.87 |
| 32 | 33 | 43 | 0.38 | 0.39 |
| 1 1/2 | 1 7/16 | 1 7/8 | 1.2 | 1.3 |
| 40 | 37 | 46 | 0.55 | 0.58 |
| 2 | 1 11/16 | 2 1/4 | 1.9 | 2 |
| 50 | 43 | 57 | 0.88 | 0.88 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



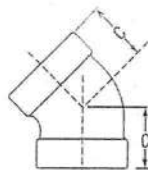
FIG. 1162 45° Elbow**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



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details contact your
AnvilStar™ Representative.

**FIGURE 1162 45° ELBOW**

| Size | C | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 13/16 | 0.19 | 0.2 |
| 3/8 | 22 | 0.09 | 0.09 |
| 1/2 | 1/8 | 0.28 | 0.29 |
| 3/4 | 22 | 0.13 | 0.13 |
| 1 | 1 | 0.43 | 0.44 |
| 1 1/4 | 25 | 0.2 | 0.2 |
| 1 1/2 | 1 1/8 | 0.66 | 0.68 |
| 2 | 29 | 0.3 | 0.31 |
| 2 1/2 | 1 1/4 | 1 | 1 |
| 3 | 33 | 0.45 | 0.46 |
| 3 1/2 | 1 1/2 | 1.7 | 1.7 |
| 4 | 38 | 0.76 | 0.77 |
| 4 1/2 | 1 1/2 | 2.1 | 2.3 |
| 5 | 43 | 1 | 1 |
| 5 1/2 | 2 | 3.4 | 3.5 |
| 6 | 51 | 1.5 | 1.6 |
| 6 1/2 | 2 1/4 | 5.5 | 5.6 |
| 7 | 57 | 2.5 | 2.5 |
| 7 1/2 | 2 1/2 | 8.1 | 8.5 |
| 8 | 64 | 3.7 | 3.9 |
| 8 1/2 | 2 13/16 | 13 | 14 |
| 9 | 73 | 6.1 | 6.3 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



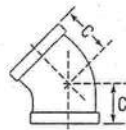
FIG. 1102 45° Elbow**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Class 150 (Standard)

Submittal Sheet



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For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1102 45° ELBOW**

| Size | C | Weight | |
|--------|--------|--------|--------|
| | | black | galv. |
| NPS/DN | in./mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 0.06 | 0.08 |
| 1/4 | 3/4 | 0.11 | 0.11 |
| 3/8 | 1 3/16 | 0.16 | 0.18 |
| 1/2 | 1 | 0.21 | 0.24 |
| 3/4 | 1 1/8 | 0.37 | 0.39 |
| 1 | 1 1/4 | 0.54 | 0.57 |
| 1 1/4 | 1 7/8 | 0.86 | 0.87 |
| 1 1/2 | 2 | 1.1 | 1.2 |
| 2 | 2 1/2 | 1.7 | 1.9 |
| 2 1/2 | 3 | 2.8 | 2.9 |
| 3 | 3 1/2 | 4.5 | 4.6 |
| 4 | 4 1/2 | 7.2 | 7.3 |
| 5 | 5 1/2 | 11 | 12 |
| 6 | 6 1/2 | 17 | 18 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.**PROJECT INFORMATION:****APPROVAL STAMP:**

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

Address:

Notes 1:

Notes 2:



FIG. 1161

90° Elbow – Straight

ANVILStar™
Fire Products Division of Anvil International



Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



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AnvilStar™ Representative.

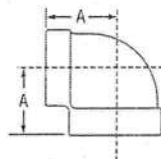


FIGURE 1161 90° ELBOW STRAIGHT

| Size | A | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 15/16 | 0.2 | 0.2 |
| 3/8 | 24 | 0.09 | 0.09 |
| 1/2 | 11/16 | 0.29 | 0.32 |
| 3/4 | 27 | 0.12 | 0.15 |
| 1 | 1 1/4 | 0.47 | 0.48 |
| 1 1/4 | 32 | 0.21 | 0.22 |
| 1 1/2 | 1 1/8 | 0.66 | 0.68 |
| 2 | 37 | 0.2 | 0.31 |
| 2 1/2 | 1 3/8 | 1.2 | 1.2 |
| 3 | 41 | 0.53 | 0.54 |
| 3 1/2 | 1 15/16 | 1.9 | 1.9 |
| 4 | 48 | 0.85 | 0.88 |
| 4 1/2 | 2 1/8 | 2.5 | 2.6 |
| 5 | 54 | 1.1 | 1.2 |
| 5 1/2 | 2 1/2 | 4.2 | 4.3 |
| 6 | 64 | 1.9 | 1.9 |
| 6 1/2 | 2 5/8 | 5.3 | 5.9 |
| 7 | 75 | 2.4 | 2.7 |
| 7 1/2 | 3 1/8 | 9.7 | 9.8* |
| 8 | 86 | 4.4 | 4.4* |
| 8 1/2 | 4 1/2 | 16 | 16 |
| 9 | 100 | 7.2 | 7.4 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

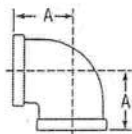
FIG. 1101 90° Elbow

Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



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For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1101 90° ELBOW**

| Size | A | Weight | |
|--------|---------|--------|--------|
| | | black | galv |
| NPS/DN | in/mm | lbs/kg | lbs/kg |
| 1/8 | 11/16 | 0.06 | 0.07 |
| 1/4 | 17 | 0.03 | 0.03 |
| 3/8 | 13/16 | 0.11 | 0.12 |
| 1/2 | 22 | 0.05 | 0.05 |
| 3/4 | 15/16 | 0.17 | 0.17 |
| 1 | 24 | 0.08 | 0.08 |
| 1 1/2 | 1 1/8 | 0.26 | 0.27 |
| 2 | 29 | 0.12 | 0.12 |
| 2 1/2 | 1 5/8 | 0.38 | 0.43 |
| 3 | 33 | 0.17 | 0.2 |
| 3 1/2 | 1 1/2 | 0.63 | 0.65 |
| 4 | 38 | 0.29 | 0.29 |
| 4 1/2 | 1 3/4 | 0.96 | 0.94 |
| 5 | 44 | 0.44 | 0.43 |
| 5 1/2 | 1 5/8 | 1.3 | 1.3 |
| 6 | 49 | 0.59 | 0.61 |
| 6 1/2 | 2 1/4 | 2.1 | 2 |
| 7 | 57 | 0.9 | 0.9 |
| 7 1/2 | 2 11/16 | 3.5 | 3.6 |
| 8 | 68 | 1.6 | 1.7 |
| 8 1/2 | 3 1/8 | 5.2 | 5.3 |
| 9 | 78 | 2.4 | 2.4 |
| 9 1/2 | 3 1/4 | 7.1 | 7.2 |
| 10 | 87 | 3.2 | 3.3 |
| 10 1/2 | 3 5/8 | 8.9 | 9.4 |
| 11 | 98 | 4.1 | 4.3 |
| 11 1/2 | 4 1/2 | 14 | 15 |
| 12 | 114 | 6.3 | 6.6 |
| 12 1/2 | 5 1/8 | 23 | 24 |
| 13 | 130 | 10 | 11 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

PROJECT INFORMATION:**APPROVAL STAMP:**

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

Address:

Notes 1:

Notes 2:

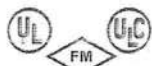
FIG. 1161R 90° Reducing Elbow

ANvilStar™
Fire Products Division of Anvil International



Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



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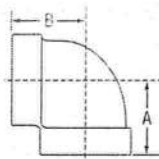


FIGURE 1161R 90° REDUCING ELBOW

| Size | A | B | Weight | |
|---------------|--------|---------|---------|---------|
| | | | black | galv. |
| NPS/DN | in./mm | in./mm | lbs./kg | lbs./kg |
| 3/8 x 1/4 | 1 | 1 | 0.26* | — |
| 10 x 6 | 25 | 25 | 0.12* | — |
| 1/2 x 3/8 | 1 3/16 | 1 3/16 | 0.41* | — |
| 15 x 10 | 30 | 30 | 0.19* | — |
| 3/4 x 1/2 | 1 3/8 | 1 3/8 | 0.62* | 0.67* |
| 20 x 15 | 53 | 55 | 0.28* | 0.30* |
| 1 x 1/2 | 1 1/2 | 1 1/2 | 0.87* | 0.89 |
| 25 x 15 | 37 | 38 | 0.39 | 0.4 |
| 1 x 3/4 | 1 1/2 | 1 1/4 | 1 | — |
| 25 x 20 | 38 | 40 | 0.45 | — |
| 1 1/4 x 3/4 | 1 3/8 | 1 3/4 | 1.4 | — |
| 32 x 20 | 41 | 44 | 0.64 | — |
| 1 1/4 x 1 | 1 3/4 | 1 13/16 | 1.6* | — |
| 32 x 25 | 44 | 47 | 0.73* | — |
| 1 1/2 x 1 | 1 | 1 13/16 | 2 | — |
| 40 x 25 | 25 | 47 | 0.91 | — |
| 1 1/2 x 1 1/4 | 2 | 2 1/16 | 2.1 | — |
| 40 x 32 | 51 | 52 | 1 | — |
| 2 x 1 1/4 | 2 1/8 | 2 3/16 | 3.1 | — |
| 50 x 32 | 54 | 59 | 1.4 | — |
| 2 x 1 1/2 | 2 1/4 | 2 3/8 | 3.3 | 3.3 |
| 50 x 40 | 57 | 60 | 1.5 | 1.5 |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

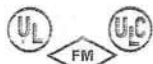
sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

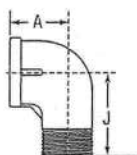
NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

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



FIG. 1103R**90° Reducing Street Elbow****ANVILStar™**
Fire Products Division of Anvil International**Malleable Iron Fittings Class 150 (Standard)****Submittal Sheet**

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details contact your
AnvilStar™ Representative.

**90° STREET ELBOW
FIGURE 1103R – REDUCING**

FIRST SIZE DENOTES FEMALE END

| Size | A | J | Weight | |
|---------------|---------|---------|--------|--------|
| | | | black | galv. |
| NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/2 x 3/8 | 1 1/16 | 1 1/16 | 0.23 | 0.25 |
| 15 x 10 | 27 | 40 | 0.1 | 0.11 |
| 3/4 x 1/2 | 1 3/16 | 1 3/4 | 0.32 | 0.36 |
| 20 x 15 | 30 | 44 | 0.15 | 0.16 |
| 1 x 3/4 | 1 5/8 | 2 1/16 | 0.54 | 0.56 |
| 25 x 20 | 35 | 52 | 0.24 | 0.25 |
| 1 1/4 x 1 | 1 7/8 | 2 3/16 | 0.86 | 0.89 |
| 32 x 25 | 40 | 59 | 0.39 | 0.4 |
| 1 1/2 x 3/4 | 1 7/8 | 2 1/4 | 0.75* | 0.77* |
| 32 x 20 | 37 | 57 | 0.34 | 0.35 |
| 1 1/2 x 1 1/4 | 1 13/16 | 2 3/16 | 1.2 | 1.3 |
| 40 x 32 | 47 | 65 | 0.54 | 0.59 |
| 1 1/2 x 1 | 1 5/8 | 2 1/2 | 1.1* | 1.1* |
| 40 x 25 | 41 | 64 | 0.49 | 0.5 |
| 2 x 1 1/2 | 2 | 2 15/16 | 1.9 | 1.9 |
| 50 x 40 | 51 | 75 | 0.84 | 0.85 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



FIG. 1103

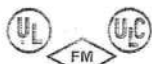
90° Street Elbow

ANVILStar™
Fire Products Division of Anvil International

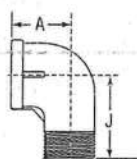


Malleable Iron Fittings Class 150 (Standard)

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AnvilStar™ Representative.



90° STREET ELBOW
FIGURE 1103 - STRAIGHT

| Size NPS/DN | A in/mm | J in/mm | Weight | |
|----------------|------------|------------|-----------------|-----------------|
| | | | black lbs/kg | galv. lbs/kg |
| 1/8 | 1 1/4 | 1 | 0.06 | 0.06 |
| 1/4 | 1 3/4 | 1 1/4 | 0.08 | 0.08 |
| 3/8 | 2 1/4 | 1 3/4 | 0.11 | 0.12 |
| 1/2 | 2 3/4 | 2 | 0.15 | 0.15 |
| 3/4 | 3 1/4 | 2 1/4 | 0.17 | 0.18 |
| 1 | 3 3/4 | 2 3/4 | 0.24 | 0.26 |
| 1 1/4 | 4 1/4 | 3 1/4 | 0.31 | 0.32 |
| 1 1/2 | 4 3/4 | 3 3/4 | 0.41 | 0.42 |
| 2 | 5 1/4 | 4 1/4 | 0.49 | 0.50 |
| 2 1/2 | 5 3/4 | 4 3/4 | 0.62 | 0.64 |
| 3 | 6 1/4 | 5 1/4 | 0.78 | 0.79 |
| 3 1/2 | 6 3/4 | 5 3/4 | 1.1 | 1.1 |
| 4 | 7 1/4 | 6 1/4 | 1.4 | 1.4 |
| 4 1/2 | 7 3/4 | 6 3/4 | 1.6 | 1.6 |
| 5 | 8 1/4 | 7 1/4 | 1.8 | 1.8 |
| 5 1/2 | 8 3/4 | 7 3/4 | 2.3 | 2.3 |
| 6 | 9 1/4 | 8 1/4 | 2.7 | 2.7 |
| 6 1/2 | 9 3/4 | 8 3/4 | 3.1 | 3.1 |
| 7 | 10 1/4 | 9 1/4 | 3.5 | 3.5 |
| 8 | 11 1/4 | 10 1/4 | 4.5 | 4.5 |
| 10 | 13 1/4 | 12 1/4 | 6.1 | 6.3 |
| 12 | 15 1/4 | 14 1/4 | 8.9 | 11 |
| 14 | 17 1/4 | 16 1/4 | 11 | 11 |
| 16 | 19 1/4 | 18 1/4 | 13 | 13 |
| 18 | 21 1/4 | 20 1/4 | 15 | 15 |
| 20 | 23 1/4 | 22 1/4 | 17 | 17 |
| 22 | 25 1/4 | 24 1/4 | 19 | 19 |
| 24 | 27 1/4 | 26 1/4 | 21 | 21 |
| 26 | 29 1/4 | 28 1/4 | 23 | 23 |
| 28 | 31 1/4 | 30 1/4 | 25 | 25 |
| 30 | 33 1/4 | 32 1/4 | 27 | 27 |
| 32 | 35 1/4 | 34 1/4 | 29 | 29 |
| 34 | 37 1/4 | 36 1/4 | 31 | 31 |
| 36 | 39 1/4 | 38 1/4 | 33 | 33 |
| 38 | 41 1/4 | 40 1/4 | 35 | 35 |
| 40 | 43 1/4 | 42 1/4 | 37 | 37 |
| 42 | 45 1/4 | 44 1/4 | 39 | 39 |
| 44 | 47 1/4 | 46 1/4 | 41 | 41 |
| 46 | 49 1/4 | 48 1/4 | 43 | 43 |
| 48 | 51 1/4 | 50 1/4 | 45 | 45 |
| 50 | 53 1/4 | 52 1/4 | 47 | 47 |
| 52 | 55 1/4 | 54 1/4 | 49 | 49 |
| 54 | 57 1/4 | 56 1/4 | 51 | 51 |
| 56 | 59 1/4 | 58 1/4 | 53 | 53 |
| 58 | 61 1/4 | 60 1/4 | 55 | 55 |
| 60 | 63 1/4 | 62 1/4 | 57 | 57 |
| 62 | 65 1/4 | 64 1/4 | 59 | 59 |
| 64 | 67 1/4 | 66 1/4 | 61 | 61 |
| 66 | 69 1/4 | 68 1/4 | 63 | 63 |
| 68 | 71 1/4 | 70 1/4 | 65 | 65 |
| 70 | 73 1/4 | 72 1/4 | 67 | 67 |
| 72 | 75 1/4 | 74 1/4 | 69 | 69 |
| 74 | 77 1/4 | 76 1/4 | 71 | 71 |
| 76 | 79 1/4 | 78 1/4 | 73 | 73 |
| 78 | 81 1/4 | 80 1/4 | 75 | 75 |
| 80 | 83 1/4 | 82 1/4 | 77 | 77 |
| 82 | 85 1/4 | 84 1/4 | 79 | 79 |
| 84 | 87 1/4 | 86 1/4 | 81 | 81 |
| 86 | 89 1/4 | 88 1/4 | 83 | 83 |
| 88 | 91 1/4 | 90 1/4 | 85 | 85 |
| 90 | 93 1/4 | 92 1/4 | 87 | 87 |
| 92 | 95 1/4 | 94 1/4 | 89 | 89 |
| 94 | 97 1/4 | 96 1/4 | 91 | 91 |
| 96 | 99 1/4 | 98 1/4 | 93 | 93 |
| 98 | 101 1/4 | 100 1/4 | 95 | 95 |
| 100 | 103 1/4 | 102 1/4 | 97 | 97 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

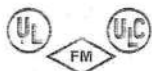
| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
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| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



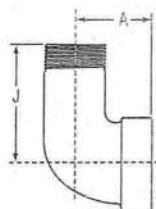
FIG. 1170 90° Street Elbow**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 300 (XS/XH)

Submittal Sheet



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For Listing / Approval
details contact your
AnvilStar™ Representative.

**FIGURE 1170 90° STREET ELBOW**

| Size | A | J | Weight | |
|--------|--------|--------|---------|---------|
| | | | black | galv. |
| NPS/DN | in./mm | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 3/16 | 1 1/16 | 0.17 | 0.18 |
| 3/8 | 24 | 37 | 0.08 | 0.08 |
| 1/2 | 1 1/4 | 2 | 0.26 | 0.27 |
| 3/4 | 27 | 41 | 0.12 | 0.12 |
| 1 | 32 | 51 | 0.4 | 0.42 |
| 1 1/4 | 1 1/16 | 2 3/16 | 0.18 | 0.19 |
| 1 1/2 | 37 | 56 | 0.68 | 0.71 |
| 2 | 41 | 65 | 0.37 | 0.32 |
| 2 1/2 | 1 1/16 | 2 1/8 | 1.1 | 1.1 |
| 3 | 49 | 73 | 0.48 | 0.5 |
| 3 1/2 | 2 1/8 | 3 1/8 | 1.6 | 1.6 |
| 4 | 54 | 79 | 0.73 | 0.73 |
| 4 1/2 | 2 1/2 | 3 1/16 | 2.2 | 2.3 |
| 5 | 64 | 94 | 1 | 1 |
| 5 1/2 | 2 1/2 | 3 1/16 | 3.6 | 3.8 |
| 6 | 64 | 94 | 1.6 | 1.7 |
| 8 | 3 3/8 | 5 1/8 | 9.6* | 9.9* |
| 10 | 86 | 130 | 4.3* | 4.5* |

*POA

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



FIG. 1124 Cap



Malleable Iron Fittings Class 150 (Standard)

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details contact your
AnvilStar™ Representative.



FIGURE 1124 CAP

| Size | Weight | |
|---------|---------|---------|
| | black | galv. |
| NPS/DN | lbs./kg | lbs./kg |
| • 1/8 | 0.03 | 0.04 |
| • 1/4 | 0.06 | 0.06 |
| • 3/8 | 0.09 | 0.1 |
| • 1/2 | 0.12 | 0.12 |
| • 3/4 | 0.22 | 0.2 |
| • 1 | 0.38 | 0.38 |
| • 1 1/4 | 0.58 | 0.61 |
| • 1 1/2 | 0.73 | 0.75 |
| • 2 | 1.1 | 1.2 |
| • 2 1/2 | 1.8 | 1.8 |
| • 3 | 2.6 | 2.8 |
| • 3 1/2 | 3.2 | 3.2 |
| • 4 | 4.5 | 4.6 |
| • 5 | 6.4 | 6.9 |
| • 6 | 10 | 10 |

• 1/8, 1/4 & 3/8 (6, 8 & 10 DN) are Made in Steel

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

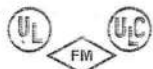
NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

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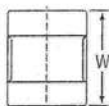
FIG. 1166 Coupling

Malleable Iron Fittings Class 300

Submittal Sheet



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AnvilStar™ Representative.

**FIGURE 1166 COUPLING**

| Size | End to End W | Weight | |
|--------|--------------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 3/8 | 0.17 | 0.18 |
| 8 | 35 | 0.08 | 0.08 |
| 3/8 | 1 3/8 | 0.26 | 0.27 |
| 10 | 41 | 0.12 | 0.12 |
| 1/2 | 1 7/8 | 0.42 | 0.43 |
| 15 | 48 | 0.19 | 0.2 |
| 3/4 | 2 1/8 | 0.65 | 0.68 |
| 20 | 54 | 0.29 | 0.31 |
| 1 | 2 3/8 | 0.99 | 1 |
| 25 | 60 | 0.45 | 0.47 |
| 1 1/4 | 2 7/8 | 1.6 | 1.7 |
| 32 | 73 | 0.74 | 0.76 |
| 1 1/2 | 2 7/8 | 2 | 2.1 |
| 40 | 73 | 0.9 | 0.9 |
| 2 | 3 3/8 | 3.2 | 3.3 |
| 50 | 92 | 1.5 | 1.5 |
| 2 1/2 | 4 1/8 | 5.5 | 5.7 |
| 65 | 105 | 2.5 | 2.6 |
| 3 | 4 1/8 | 7.3 | 7.4 |
| 80 | 105 | 3.3 | 3.4 |

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

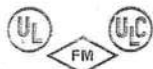
| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1107 Cross



Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



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details contact your
AnvilStar™ Representative.

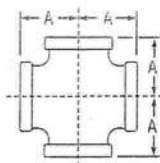


FIGURE 1107 CROSS

| Size | A | Weight | |
|--------|--------|--------|--------|
| | | black | galv. |
| NPS/DN | in/mm | lbs/kg | lbs/kg |
| 1/8 | 1 1/16 | 0.12 | 0.13 |
| 1/4 | 1 1/8 | 0.05 | 0.06 |
| 3/8 | 1 3/8 | 0.18 | 0.19 |
| 1/2 | 1 1/2 | 0.08 | 0.09 |
| 3/4 | 1 5/8 | 0.27 | 0.27 |
| 1 | 1 3/4 | 0.12 | 0.12 |
| 1 1/4 | 2 1/8 | 0.41 | 0.43 |
| 1 1/2 | 2 1/4 | 0.19 | 0.2 |
| 2 | 2 3/4 | 0.69 | 0.68 |
| 2 1/2 | 3 1/8 | 0.31 | 0.31 |
| 3 | 3 1/2 | 1.1 | 1.1 |
| 3 1/2 | 3 3/4 | 0.51 | 0.52 |
| 4 | 4 1/8 | 1.4 | 1.6 |
| 4 1/2 | 4 1/4 | 0.65 | 0.71 |
| 5 | 4 3/8 | 2 | 2 |
| 5 1/2 | 4 7/8 | 0.9 | 0.9 |
| 6 | 5 1/4 | 3.3 | 3.3 |
| 6 1/2 | 5 3/8 | 1.5 | 1.5 |
| 7 | 5 7/8 | 5.9 | 5.8 |
| 7 1/2 | 6 1/8 | 2.7 | 2.6 |
| 8 | 6 3/4 | 7.9 | 8.1 |
| 8 1/2 | 7 1/8 | 3.6 | 3.7 |
| 9 | 7 1/2 | 14 | 14 |
| 10 | 8 1/8 | 6.1 | 6.3 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
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| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

FIG. 1101R Reducing Elbow



Malleable Iron Fittings Class 150 (Standard)

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details contact your
AnvilStar™ Representative.

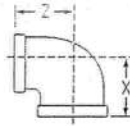


FIGURE 1101R REDUCING ELBOW

| Size | | X | Z | Weight | |
|--------|--------|--------|--------|--------|--------|
| | | | | black | galv. |
| NPS/DN | NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1/4 | 1/8 | 3/4 | 3/4 | 0.1 | 0.1 |
| 5 | 6 | 19 | 19 | 0.05 | 0.05 |
| 3/8 | 1/8 | 13/16 | 7/8 | 0.12 | 0.13 |
| | 6 | 22 | 22 | 0.05 | 0.06 |
| | 10 | 1/4 | 13/16 | 0.14 | 0.15 |
| 1/2 | 3/8 | 22 | 24 | 0.06 | 0.07 |
| | 1/4 | 1 | 1 | 0.19 | 0.2 |
| | 15 | 25 | 25 | 0.09 | 0.09 |
| 3/4 | 3/8 | 1 1/16 | 1 1/16 | 0.21 | 0.22 |
| | 10 | 27 | 27 | 0.1 | 0.1 |
| | 15 | 1/4 | 1 1/8 | 0.26 | 0.28 |
| 20 | 3/8 | 29 | 29 | 0.13 | 0.13 |
| | 10 | 1 1/8 | 1 1/8 | 0.29 | 0.3 |
| | 15 | 29 | 29 | 0.13 | 0.14 |
| 1 | 1/2 | 1 3/16 | 1 3/16 | 0.39 | 0.4 |
| | 30 | 32 | 32 | 0.18 | 0.18 |
| | 3/8 | 1 3/16 | 1 3/16 | 0.41 | 0.42 |
| 25 | 10 | 30 | 32 | 0.19 | 0.19 |
| | 1/2 | 1 1/4 | 1 3/8 | 0.46 | 0.47 |
| | 15 | 33 | 35 | 0.21 | 0.21 |
| 1 1/4 | 3/4 | 1 3/8 | 1 3/8 | 0.55 | 0.58 |
| | 20 | 35 | 37 | 0.25 | 0.26 |
| | 1/2 | 1 3/8 | 1 3/8 | 0.62 | 0.64 |
| 32 | 15 | 35 | 40 | 0.26 | 0.29 |
| | 3/4 | 1 3/8 | 1 3/8 | 0.71 | 0.73 |
| | 20 | 37 | 41 | 0.32 | 0.33 |
| 25 | 1 | 1 1/16 | 1 1/16 | 0.86 | 0.9 |
| | 40 | 43 | 43 | 0.39 | 0.41 |

| Size | | X | Z | Weight | |
|--------|--------|--------|--------|--------|--------|
| | | | | black | galv. |
| NPS/DN | NPS/DN | in/mm | in/mm | lbs/kg | lbs/kg |
| 1 1/2 | 3/4 | 1 1/2 | 1 3/4 | 0.83 | 0.85 |
| | 20 | 38 | 44 | 0.38 | 0.39 |
| | 1 | 1 3/8 | 1 3/16 | 1 | 1.1 |
| 40 | 25 | 41 | 47 | 0.45 | 0.48 |
| | 1 1/4 | 1 3/16 | 1 3/8 | 1.2 | 1.2 |
| | 32 | 47 | 48 | 0.53 | 0.54 |
| 2 | 3/4 | 1 3/8 | 2 | 1.3 | 1.3 |
| | 20 | 41 | 51 | 0.59 | 0.6 |
| | 1 | 1 3/4 | 2 | 1.4 | 1.5 |
| 50 | 25 | 44 | 51 | 0.61 | 0.66 |
| | 1 1/4 | 1 3/8 | 2 1/8 | 1.5 | 1.6 |
| | 32 | 48 | 54 | 0.69 | 0.7 |
| 2 1/2 | 1 1/2 | 2 | 2 1/8 | 1.8 | 1.8 |
| | 40 | 51 | 54 | 0.79 | 0.81 |
| | 1 1/2 | 2 1/16 | 2 1/2 | 2.3 | 2.5 |
| 65 | 40 | 56 | 64 | 1.1 | 1.2 |
| | 2 | 2 1/16 | 2 3/8 | 3 | 3 |
| | 50 | 62 | 67 | 1.4 | 1.4 |
| 3 | 2 | 2 1/16 | 2 1/16 | 3.8 | 3.9 |
| | 50 | 65 | 75 | 1.7 | 1.8 |
| | 2 1/2 | 2 1/16 | 3 | 4 | 4 |
| 60 | 65 | 73 | 76 | 1.8 | 1.8 |
| | 4 | 3 | 3 3/16 | 7.9 | 8 |
| 100 | 80 | 84 | 92 | 3.6 | 3.6 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

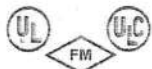
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| Notes 1: | | |
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FIG. 1105R

Reducing Tee



Malleable Iron Fittings Class 150 (Standard) Submittal Sheet



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details contact your

AnvilStar™ Representative.

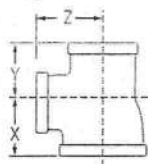


FIG. 1105R REDUCING TEE

| Size | | | X | Y | Z | Weight | |
|--------|--------|--------|--------|--------|--------|-----------------|-----------------|
| NPS/DN | NPS/DN | NPS/DN | in./mm | in./mm | in./mm | black lbs/ka | galv. lbs/ka |
| 1/8 | 1/8 | 1/4 | 3/4 | 3/4 | 3/4 | 0.12 | 0.14 |
| 1/8 | 1/8 | 1/2 | 1 1/8 | 1 1/8 | 1 1/8 | 0.05 | 0.06 |
| 1/4 | 1/4 | 1/2 | 3/4 | 3/4 | 3/4 | 0.13 | 0.14 |
| 1/4 | 1/4 | 3/8 | 1 1/8 | 1 1/8 | 1 1/8 | 0.06 | 0.06 |
| 1/4 | 1/4 | 1/2 | 1 1/8 | 1 1/8 | 1 1/8 | 0.19 | 0.2 |
| 1/4 | 1/4 | 3/4 | 1 5/8 | 1 5/8 | 1 5/8 | 0.09 | 0.09 |
| 3/8 | 3/8 | 1/2 | 1 1/8 | 1 1/8 | 1 1/8 | 0.19 | 0.2 |
| 3/8 | 3/8 | 3/4 | 1 5/8 | 1 5/8 | 1 5/8 | 0.09 | 0.09 |
| 3/8 | 3/8 | 1 | 1 5/8 | 1 5/8 | 1 5/8 | 0.21 | 0.22 |
| 3/8 | 3/8 | 1 1/4 | 2 1/8 | 2 1/8 | 2 1/8 | 0.1 | 0.1 |
| 3/8 | 3/8 | 1 1/2 | 2 1/8 | 2 1/8 | 2 1/8 | 0.29 | 0.29 |
| 3/8 | 3/8 | 2 | 2 5/8 | 2 5/8 | 2 5/8 | 0.13 | 0.13 |
| 1/2 | 1/2 | 3/4 | 1 5/8 | 1 5/8 | 1 5/8 | 0.21 | 0.22 |
| 1/2 | 1/2 | 1 | 2 1/8 | 2 1/8 | 2 1/8 | 0.1 | 0.1 |
| 1/2 | 1/2 | 1 1/4 | 2 5/8 | 2 5/8 | 2 5/8 | 0.26 | 0.29 |
| 1/2 | 1/2 | 1 1/2 | 2 5/8 | 2 5/8 | 2 5/8 | 0.12 | 0.13 |
| 1/2 | 1/2 | 2 | 3 1/8 | 3 1/8 | 3 1/8 | 0.3 | 0.31 |
| 1/2 | 1/2 | 2 1/2 | 3 1/8 | 3 1/8 | 3 1/8 | 0.14 | 0.14 |
| 1/2 | 1/2 | 3 | 3 1/8 | 3 1/8 | 3 1/8 | 0.28 | 0.29 |
| 1/2 | 1/2 | 3 1/2 | 3 5/8 | 3 5/8 | 3 5/8 | 0.13 | 0.13 |
| 1/2 | 1/2 | 4 | 3 5/8 | 3 5/8 | 3 5/8 | 0.27 | 0.29 |
| 1/2 | 1/2 | 4 1/2 | 3 5/8 | 3 5/8 | 3 5/8 | 0.12 | 0.13 |
| 1/2 | 1/2 | 5 | 3 5/8 | 3 5/8 | 3 5/8 | 0.3 | 0.32 |
| 1/2 | 1/2 | 6 | 3 5/8 | 3 5/8 | 3 5/8 | 0.14 | 0.15 |
| 1/2 | 1/2 | 8 | 3 5/8 | 3 5/8 | 3 5/8 | 0.43 | 0.45 |
| 1/2 | 1/2 | 10 | 3 5/8 | 3 5/8 | 3 5/8 | 0.2 | 0.2 |
| 1/2 | 1/2 | 12 | 3 5/8 | 3 5/8 | 3 5/8 | 0.55 | 0.57 |
| 1/2 | 1/2 | 14 | 3 5/8 | 3 5/8 | 3 5/8 | 0.25 | 0.26 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

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| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

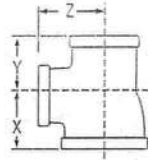


FIG. 1105R REDUCING TEE (CONT.)

| Size | | | X | Y | Z | Weight | |
|--------|--------|--------|---------|---------|---------|-----------------|-----------------|
| NPS/DN | NPS/DN | NPS/DN | in./mm | in./mm | in./mm | black lbs/ko | galv. lbs/ko |
| 1 | 1/2 | 1 | 1 1/2 | 1 3/8 | 1 1/2 | 0.69 | 0.71 |
| | | 25 | 38 | 33 | 38 | 0.31 | 0.32 |
| | | 1/2 | 1 1/4 | 1 1/8 | 1 3/8 | 0.55 | 0.55 |
| | | 15 | 32 | 29 | 35 | 0.25 | 0.25 |
| | | 3/4 | 1 3/8 | 1 1/4 | 1 1/2 | 0.56 | 0.62 |
| | | 20 | 35 | 32 | 37 | 0.25 | 0.26 |
| | 3/4 | 1 | 1 1/2 | 1 3/8 | 1 1/2 | 0.76 | 0.73 |
| | | 25 | 38 | 35 | 38 | 0.34 | 0.33 |
| | | 1/2 | 1 1/4 | 1 1/8 | 1 3/8 | 0.59 | 0.62 |
| | | 15 | 32 | 30 | 35 | 0.27 | 0.28 |
| | | 3/4 | 1 3/8 | 1 1/4 | 1 1/2 | 0.73 | 0.75 |
| | | 20 | 35 | 33 | 37 | 0.33 | 0.34 |
| | 1 | 1 | 1 1/2 | 1 3/8 | 1 1/2 | 0.78 | 0.81 |
| | | 25 | 38 | 37 | 38 | 0.35 | 0.37 |
| | | 1/2 | 1 1/4 | 1 1/8 | 1 3/8 | 0.55 | 0.55 |
| | | 15 | 29 | 29 | 44 | 0.25 | 0.25 |
| | | 3/8 | 1 3/16 | 1 3/16 | 1 1/4 | 0.6 | 0.63 |
| | | 10 | 30 | 30 | 32 | 0.27 | 0.29 |
| | 1 1/4 | 1/2 | 1 1/4 | 1 1/4 | 1 3/8 | 0.7 | 0.74 |
| | | 15 | 32 | 32 | 35 | 0.32 | 0.34 |
| | | 3/4 | 1 3/8 | 1 3/8 | 1 1/2 | 0.82 | 0.84 |
| | | 20 | 35 | 35 | 37 | 0.37 | 0.38 |
| | | 1 1/4 | 1 11/16 | 1 11/16 | 1 3/4 | 0.92 | 0.97 |
| | | 32 | 43 | 43 | 40 | 0.42 | 0.44 |
| 1 1/2 | 1/2 | 1 | 1 1/2 | 1 3/8 | 1 1/2 | 1.2 | 1.2 |
| | | 40 | 47 | 46 | 41 | 0.54 | 0.56 |
| | | 2 | 2 | 2 | 1 3/4 | 1.6 | 1.6 |
| | | 50 | 51 | 51 | 44 | 0.74 | 0.74 |
| | | 1 | 1 1/4 | 1 3/8 | 1 11/16 | 0.87 | 0.94 |
| | | 25 | 40 | 35 | 43 | 0.39 | 0.43 |
| | 3/4 | 1 1/4 | 1 3/4 | 1 3/4 | 1 3/4 | 1 | 1.1 |
| | | 32 | 44 | 40 | 44 | 0.47 | 0.49 |
| | | 3/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.86 | 0.86 |
| | | 20 | 37 | 33 | 41 | 0.39 | 0.39 |
| | | 1 | 1 1/4 | 1 3/8 | 1 11/16 | 0.96 | 0.88 |
| | | 25 | 40 | 37 | 43 | 0.44 | 0.4 |
| | 1 | 1 1/4 | 1 3/4 | 1 3/8 | 1 3/4 | 1.1 | 1.1 |
| | | 32 | 44 | 41 | 44 | 0.49 | 0.5 |
| | | 1/2 | 1 3/8 | 1 1/4 | 1 3/8 | 0.76 | 0.79 |
| | | 15 | 35 | 32 | 40 | 0.34 | 0.36 |
| | | 3/4 | 1 3/8 | 1 3/8 | 1 3/8 | 0.87 | 0.92 |
| | | 20 | 37 | 35 | 41 | 0.39 | 0.42 |
| | 1 1/4 | 1 | 1 1/4 | 1 1/2 | 1 11/16 | 1.1 | 1.1 |
| | | 25 | 40 | 38 | 43 | 0.5 | 0.51 |
| | | 1 1/4 | 1 3/4 | 1 11/16 | 1 3/4 | 1.1 | 1.2 |
| | | 32 | 44 | 43 | 44 | 0.51 | 0.54 |
| | | 3/8 | 1 1/4 | 1 1/4 | 1 1/2 | 0.86 | 0.89 |
| | | 10 | 32 | 32 | 37 | 0.24 | 0.4 |
| 2 | 1/2 | 1/2 | 1 3/8 | 1 3/8 | 1 3/8 | 0.98 | 0.98 |
| | | 15 | 35 | 35 | 40 | 0.44 | 0.44 |
| | | 3/4 | 1 3/8 | 1 3/8 | 1 3/8 | 1.1 | 1.1 |
| | | 20 | 37 | 37 | 41 | 0.48 | 0.5 |
| | | 1 | 1 1/4 | 1 3/8 | 1 11/16 | 1.2 | 1.2 |
| | | 25 | 40 | 40 | 43 | 0.54 | 0.55 |
| | 3/4 | 1 1/2 | 1 3/8 | 1 3/8 | 1 3/8 | 1.5 | 1.4 |
| | | 40 | 48 | 48 | 47 | 0.66 | 0.64 |
| | | 2 | 2 1/8 | 2 1/8 | 1 3/4 | 1.7 | 1.8 |
| | | 50 | 54 | 54 | 57 | 0.77 | 0.85 |
| | | 1 1/2 | 1 3/8 | 1 3/8 | 1 3/8 | 0.98 | 0.98 |
| | | 40 | 48 | 48 | 47 | 0.66 | 0.66 |
| 2 1/2 | 1/2 | 1/2 | 2 1/8 | 2 1/8 | 2 1/8 | 2.2 | 2.4 |
| | | 50 | 57 | 56 | 57 | 1.1 | 1.1 |
| | | 1 1/2 | 2 1/8 | 2 1/8 | 2 1/8 | 2.2 | 2.4 |
| | | 40 | 51 | 51 | 56 | 0.88 | 0.88 |
| | | 2 | 2 1/4 | 2 3/8 | 2 1/4 | 2.2 | 2.4 |
| | | 50 | 57 | 56 | 57 | 1.1 | 1.1 |
| 3 | 1/2 | 1/2 | 2 3/8 | 2 3/8 | 2 3/8 | 2.4 | 2.4 |
| | | 50 | 57 | 56 | 57 | 1.1 | 1.1 |
| | | 1 1/2 | 2 3/8 | 2 3/8 | 2 3/8 | 2.4 | 2.4 |
| | | 40 | 51 | 51 | 56 | 0.88 | 0.88 |
| | | 2 | 2 1/4 | 2 3/8 | 2 1/4 | 2.2 | 2.4 |
| | | 50 | 57 | 56 | 57 | 1.1 | 1.1 |

FIG. 1105R

Reducing Tee



Malleable Iron Fittings Class 150 (Standard) Submittal Sheet



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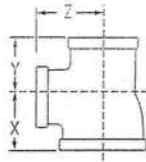


FIG. 1105R REDUCING TEE (CONT.)

| Size | | X | Y | Z | Weight | |
|--------------------|-------------|--------|---------|---------|--------|--------|
| NPS/DN | NPS/DN | | | | black | galv. |
| | | in./mm | in./mm | in./mm | lbs/ka | lbs/ka |
| 2 50 (Cont.) | 2 50 | 1/2 | 1 1/2 | 1 1/8 | 1.6 | 1.7 |
| | | 15 | 38 | 38 | 0.75 | 0.77 |
| | | 3/4 | 1 3/8 | 1 3/8 | 1.9 | 1.9 |
| | | 20 | 41 | 41 | 0.85 | 0.86 |
| | | 1 | 1 3/4 | 1 3/4 | 1.8 | 2 |
| | | 25 | 44 | 44 | 0.81 | 0.81 |
| | | 1 1/4 | 1 7/8 | 2 1/8 | 2.4 | 2.5 |
| | | 32 | 48 | 48 | 1.1 | 1.2 |
| | | 1 1/2 | 2 | 2 3/16 | 2.5 | 2.6 |
| | | 40 | 51 | 51 | 1.2 | 1.2 |
| | | 2 1/2 | 2 3/8 | 2 3/8 | 3.5 | 3.6 |
| | | 65 | 67 | 60 | 1.6 | 1.6 |
| 2 1/2 65 | 1 1/2 40 | 2 | 2 3/8 | 2 3/16 | 3.4 | 3.5 |
| | | 50 | 60 | 56 | 1.6 | 1.6 |
| | 2 50 | 2 1/2 | 2 11/16 | 2 1/2 | 3.8 | 3.8 |
| | | 65 | 68 | 64 | 1.7 | 1.7 |
| | 2 1/2 65 | 2 | 2 3/8 | 2 1/4 | 3.3 | 3.3 |
| | | 50 | 60 | 57 | 1.5 | 1.5 |
| | 2 1/2 65 | 2 1/2 | 2 11/16 | 2 3/8 | 3.6 | 4.1 |
| | | 65 | 68 | 67 | 1.7 | 1.9 |
| | | 3/4 | 1 3/4 | 1 3/4 | 2.8 | 2.8 |
| | | 20 | 44 | 44 | 1.3 | 1.3 |
| | | 1 | 1 7/8 | 1 7/8 | 2.9 | 3 |
| | | 25 | 48 | 48 | 1.3 | 1.4 |
| | | 1 1/4 | 2 1/16 | 2 1/16 | 3.3 | 3.5 |
| | | 32 | 52 | 52 | 1.5 | 1.6 |
| | | 1 1/2 | 2 3/16 | 2 3/16 | 3.5 | 3.6 |
| | | 40 | 56 | 56 | 1.6 | 1.6 |
| 3 80 | 2 50 | 2 | 2 3/8 | 2 3/8 | 3.6 | 3.8 |
| | | 50 | 60 | 60 | 1.7 | 1.7 |
| | 2 1/2 65 | 3 | 3 | 3 | 5.8 | 6 |
| | | 80 | 76 | 76 | 2.6 | 2.7 |
| | 2 50 | 2 | 2 1/2 | 2 1/4 | 4.1 | 4.3 |
| | | 50 | 64 | 57 | 1.9 | 2 |
| | 2 1/2 65 | 3 | 3 1/8 | 2 7/8 | 6.1 | 6.5 |
| | | 80 | 79 | 73 | 2.8 | 3 |
| | 2 1/2 65 | 2 | 2 1/2 | 2 3/8 | 4.8 | 4.8 |
| | | 50 | 64 | 60 | 2.2 | 2.2 |
| | 3 80 | 2 1/2 | 2 13/16 | 2 11/16 | 5.8 | 5.9 |
| | | 65 | 73 | 68 | 2.6 | 2.7 |
| | | 3/4 | 1 7/8 | 1 7/8 | 4 | 4.2 |
| | | 20 | 48 | 48 | 1.6 | 1.9 |
| | | 1 | 2 | 2 | 4.2 | 4.4 |
| | | 25 | 51 | 51 | 1.9 | 2 |
| | | 1 1/4 | 2 3/16 | 2 3/16 | 4.7 | 4.7 |
| | | 32 | 56 | 56 | 2.1 | 2.1 |
| | | 1 1/2 | 2 3/16 | 2 3/16 | 5.1 | 5.3 |
| | | 40 | 59 | 59 | 2.5 | 2.4 |
| 3 1/2 90 | 2 50 | 2 | 2 1/2 | 2 1/8 | 5.8 | 5.8 |
| | | 50 | 64 | 73 | 2.6 | 2.6 |
| | 2 1/2 65 | 2 1/2 | 2 13/16 | 3 | 6.1 | 6.2 |
| | | 65 | 73 | 76 | 2.8 | 2.8 |

| Size | | X | Y | Z | Weight | |
|--------------|----------|--------|---------|--------|--------|--------|
| NPS/DN | NPS/DN | | | | black | galv. |
| | | in./mm | in./mm | in./mm | lbs/ka | lbs/ka |
| 4 100 | 3 80 | 4 | 3 13/16 | 3 3/8 | 12 | 11 |
| | | 100 | 98 | 98 | 5.4 | 5 |
| | 4 100 | 2 | 2 3/4 | 2 3/4 | 8.4 | 8.8 |
| | | 50 | 70 | 70 | 3.8 | 4 |
| | | 2 1/2 | 3 1/16 | 3 1/16 | 9.8 | 9.3 |
| | | 65 | 78 | 78 | 4.4 | 4.2 |
| 4 1/2 110 | 3 80 | 3 3/16 | 3 3/16 | 3 3/8 | 11 | 11 |
| | | 80 | 84 | 92 | 5 | 5.1 |

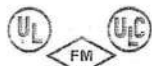
FIG. 1164R

Reducing Tee



Malleable Iron Fittings Class 300

Submittal Sheet



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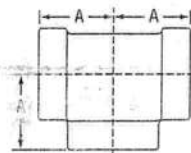
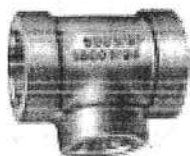


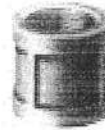
FIGURE 1164R REDUCING TEE

| Size | | | Center to End | | | Weight | |
|--------|--------|--------|---------------|--------|--------|---------|---------|
| | | | A | B | C | black | galv |
| NPS/DN | NPS/DN | NPS/DN | in./mm | in./mm | in./mm | lbs./kg | lbs./kg |
| 3/8 | 3/8 | 1/4 | 1 | 1 | 1 | 0.37 | — |
| 1/2 | 1/2 | 3/8 | 1 1/4 | 1 1/4 | 1 1/4 | 0.48* | 0.52 |
| 3/4 | 3/4 | 1/2 | 1 3/4 | 1 3/4 | 1 3/4 | 0.61* | — |
| 1 | 1 | 3/4 | 2 | 2 | 2 | 0.8 | — |
| 1 1/4 | 1 1/4 | 1 | 2 1/4 | 2 1/4 | 2 1/4 | 1.1 | — |
| 1 1/2 | 1 1/2 | 1 1/4 | 2 3/4 | 2 3/4 | 2 3/4 | 1.3 | 1.3 |
| 2 | 2 | 1 1/2 | 3 | 3 | 3 | 1.6 | 1.6 |
| 2 1/2 | 2 1/2 | 2 | 3 1/2 | 3 1/2 | 3 1/2 | 1.9 | 1.9 |
| 3 | 3 | 2 1/2 | 4 | 4 | 4 | 2.1 | 2.1 |
| 3 1/2 | 3 1/2 | 3 | 4 1/2 | 4 1/2 | 4 1/2 | 2.3 | 2.3 |
| 4 | 4 | 3 1/2 | 5 | 5 | 5 | 2.6 | 2.6 |
| 4 1/2 | 4 1/2 | 4 | 5 1/2 | 5 1/2 | 5 1/2 | 2.8 | 2.8 |
| 5 | 5 | 4 1/2 | 6 | 6 | 6 | 3.1* | 3.1* |
| 5 1/2 | 5 1/2 | 5 | 6 1/2 | 6 1/2 | 6 1/2 | 3.3* | 3.3* |
| 6 | 6 | 5 1/2 | 7 | 7 | 7 | 3.6* | 3.6* |
| 6 1/2 | 6 1/2 | 6 | 7 1/2 | 7 1/2 | 7 1/2 | 3.8* | 3.8* |
| 7 | 7 | 6 1/2 | 8 | 8 | 8 | 4.1* | 4.1* |
| 7 1/2 | 7 1/2 | 7 | 8 1/2 | 8 1/2 | 8 1/2 | 4.3* | 4.3* |
| 8 | 8 | 7 1/2 | 9 | 9 | 9 | 4.6* | 4.6* |
| 8 1/2 | 8 1/2 | 8 | 9 1/2 | 9 1/2 | 9 1/2 | 4.8* | 4.8* |
| 9 | 9 | 8 1/2 | 10 | 10 | 10 | 5.1* | 5.1* |
| 9 1/2 | 9 1/2 | 9 | 10 1/2 | 10 1/2 | 10 1/2 | 5.3* | 5.3* |
| 10 | 10 | 9 1/2 | 11 | 11 | 11 | 5.6* | 5.6* |
| 10 1/2 | 10 1/2 | 10 | 11 1/2 | 11 1/2 | 11 1/2 | 5.8* | 5.8* |
| 11 | 11 | 10 1/2 | 12 | 12 | 12 | 6.1* | 6.1* |
| 11 1/2 | 11 1/2 | 11 | 12 1/2 | 12 1/2 | 12 1/2 | 6.3* | 6.3* |
| 12 | 12 | 11 1/2 | 13 | 13 | 13 | 6.6* | 6.6* |
| 12 1/2 | 12 1/2 | 12 | 13 1/2 | 13 1/2 | 13 1/2 | 6.8* | 6.8* |
| 13 | 13 | 12 1/2 | 14 | 14 | 14 | 7.1* | 7.1* |
| 13 1/2 | 13 1/2 | 13 | 14 1/2 | 14 1/2 | 14 1/2 | 7.3* | 7.3* |
| 14 | 14 | 13 1/2 | 15 | 15 | 15 | 7.6* | 7.6* |
| 14 1/2 | 14 1/2 | 14 | 15 1/2 | 15 1/2 | 15 1/2 | 7.8* | 7.8* |
| 15 | 15 | 14 1/2 | 16 | 16 | 16 | 8.1* | 8.1* |
| 15 1/2 | 15 1/2 | 15 | 16 1/2 | 16 1/2 | 16 1/2 | 8.3* | 8.3* |
| 16 | 16 | 15 1/2 | 17 | 17 | 17 | 8.6* | 8.6* |
| 16 1/2 | 16 1/2 | 16 | 17 1/2 | 17 1/2 | 17 1/2 | 8.8* | 8.8* |
| 17 | 17 | 16 1/2 | 18 | 18 | 18 | 9.1* | 9.1* |
| 17 1/2 | 17 1/2 | 17 | 18 1/2 | 18 1/2 | 18 1/2 | 9.3* | 9.3* |
| 18 | 18 | 17 1/2 | 19 | 19 | 19 | 9.6* | 9.6* |
| 18 1/2 | 18 1/2 | 18 | 19 1/2 | 19 1/2 | 19 1/2 | 9.8* | 9.8* |
| 19 | 19 | 18 1/2 | 20 | 20 | 20 | 10.1* | 10.1* |
| 19 1/2 | 19 1/2 | 19 | 20 1/2 | 20 1/2 | 20 1/2 | 10.3* | 10.3* |
| 20 | 20 | 19 1/2 | 21 | 21 | 21 | 10.6* | 10.6* |
| 20 1/2 | 20 1/2 | 20 | 21 1/2 | 21 1/2 | 21 1/2 | 10.8* | 10.8* |
| 21 | 21 | 20 1/2 | 22 | 22 | 22 | 11.1* | 11.1* |
| 21 1/2 | 21 1/2 | 21 | 22 1/2 | 22 1/2 | 22 1/2 | 11.3* | 11.3* |
| 22 | 22 | 21 1/2 | 23 | 23 | 23 | 11.6* | 11.6* |
| 22 1/2 | 22 1/2 | 22 | 23 1/2 | 23 1/2 | 23 1/2 | 11.8* | 11.8* |
| 23 | 23 | 22 1/2 | 24 | 24 | 24 | 12.1* | 12.1* |
| 23 1/2 | 23 1/2 | 23 | 24 1/2 | 24 1/2 | 24 1/2 | 12.3* | 12.3* |
| 24 | 24 | 23 1/2 | 25 | 25 | 25 | 12.6* | 12.6* |
| 24 1/2 | 24 1/2 | 24 | 25 1/2 | 25 1/2 | 25 1/2 | 12.8* | 12.8* |
| 25 | 25 | 24 1/2 | 26 | 26 | 26 | 13.1* | 13.1* |
| 25 1/2 | 25 1/2 | 25 | 26 1/2 | 26 1/2 | 26 1/2 | 13.3* | 13.3* |
| 26 | 26 | 25 1/2 | 27 | 27 | 27 | 13.6* | 13.6* |
| 26 1/2 | 26 1/2 | 26 | 27 1/2 | 27 1/2 | 27 1/2 | 13.8* | 13.8* |
| 27 | 27 | 26 1/2 | 28 | 28 | 28 | 14.1* | 14.1* |
| 27 1/2 | 27 1/2 | 27 | 28 1/2 | 28 1/2 | 28 1/2 | 14.3* | 14.3* |
| 28 | 28 | 27 1/2 | 29 | 29 | 29 | 14.6* | 14.6* |
| 28 1/2 | 28 1/2 | 28 | 29 1/2 | 29 1/2 | 29 1/2 | 14.8* | 14.8* |
| 29 | 29 | 28 1/2 | 30 | 30 | 30 | 15.1* | 15.1* |
| 29 1/2 | 29 1/2 | 29 | 30 1/2 | 30 1/2 | 30 1/2 | 15.3* | 15.3* |
| 30 | 30 | 29 1/2 | 31 | 31 | 31 | 15.6* | 15.6* |
| 30 1/2 | 30 1/2 | 30 | 31 1/2 | 31 1/2 | 31 1/2 | 15.8* | 15.8* |
| 31 | 31 | 30 1/2 | 32 | 32 | 32 | 16.1* | 16.1* |
| 31 1/2 | 31 1/2 | 31 | 32 1/2 | 32 1/2 | 32 1/2 | 16.3* | 16.3* |
| 32 | 32 | 31 1/2 | 33 | 33 | 33 | 16.6* | 16.6* |
| 32 1/2 | 32 1/2 | 32 | 33 1/2 | 33 1/2 | 33 1/2 | 16.8* | 16.8* |
| 33 | 33 | 32 1/2 | 34 | 34 | 34 | 17.1* | 17.1* |
| 33 1/2 | 33 1/2 | 33 | 34 1/2 | 34 1/2 | 34 1/2 | 17.3* | 17.3* |
| 34 | 34 | 33 1/2 | 35 | 35 | 35 | 17.6* | 17.6* |
| 34 1/2 | 34 1/2 | 34 | 35 1/2 | 35 1/2 | 35 1/2 | 17.8* | 17.8* |
| 35 | 35 | 34 1/2 | 36 | 36 | 36 | 18.1* | 18.1* |
| 35 1/2 | 35 1/2 | 35 | 36 1/2 | 36 1/2 | 36 1/2 | 18.3* | 18.3* |
| 36 | 36 | 35 1/2 | 37 | 37 | 37 | 18.6* | 18.6* |
| 36 1/2 | 36 1/2 | 36 | 37 1/2 | 37 1/2 | 37 1/2 | 18.8* | 18.8* |
| 37 | 37 | 36 1/2 | 38 | 38 | 38 | 19.1* | 19.1* |
| 37 1/2 | 37 1/2 | 37 | 38 1/2 | 38 1/2 | 38 1/2 | 19.3* | 19.3* |
| 38 | 38 | 37 1/2 | 39 | 39 | 39 | 19.6* | 19.6* |
| 38 1/2 | 38 1/2 | 38 | 39 1/2 | 39 1/2 | 39 1/2 | 19.8* | 19.8* |
| 39 | 39 | 38 1/2 | 40 | 40 | 40 | 20.1* | 20.1* |
| 39 1/2 | 39 1/2 | 39 | 40 1/2 | 40 1/2 | 40 1/2 | 20.3* | 20.3* |
| 40 | 40 | 39 1/2 | 41 | 41 | 41 | 20.6* | 20.6* |
| 40 1/2 | 40 1/2 | 40 | 41 1/2 | 41 1/2 | 41 1/2 | 20.8* | 20.8* |
| 41 | 41 | 40 1/2 | 42 | 42 | 42 | 21.1* | 21.1* |
| 41 1/2 | 41 1/2 | 41 | 42 1/2 | 42 1/2 | 42 1/2 | 21.3* | 21.3* |
| 42 | 42 | 41 1/2 | 43 | 43 | 43 | 21.6* | 21.6* |
| 42 1/2 | 42 1/2 | 42 | 43 1/2 | 43 1/2 | 43 1/2 | 21.8* | 21.8* |
| 43 | 43 | 42 1/2 | 44 | 44 | 44 | 22.1* | 22.1* |
| 43 1/2 | 43 1/2 | 43 | 44 1/2 | 44 1/2 | 44 1/2 | 22.3* | 22.3* |
| 44 | 44 | 43 1/2 | 45 | 45 | 45 | 22.6* | 22.6* |
| 44 1/2 | 44 1/2 | 44 | 45 1/2 | 45 1/2 | 45 1/2 | 22.8* | 22.8* |
| 45 | 45 | 44 1/2 | 46 | 46 | 46 | 23.1* | 23.1* |
| 45 1/2 | 45 1/2 | 45 | 46 1/2 | 46 1/2 | 46 1/2 | 23.3* | 23.3* |
| 46 | 46 | 45 1/2 | 47 | 47 | 47 | 23.6* | 23.6* |
| 46 1/2 | 46 1/2 | 46 | 47 1/2 | 47 1/2 | 47 1/2 | 23.8* | 23.8* |
| 47 | 47 | 46 1/2 | 48 | 48 | 48 | 24.1* | 24.1* |
| 47 1/2 | 47 1/2 | 47 | 48 1/2 | 48 1/2 | 48 1/2 | 24.3* | 24.3* |
| 48 | 48 | 47 1/2 | 49 | 49 | 49 | 24.6* | 24.6* |
| 48 1/2 | 48 1/2 | 48 | 49 1/2 | 49 1/2 | 49 1/2 | 24.8* | 24.8* |
| 49 | 49 | 48 1/2 | 50 | 50 | 50 | 25.1* | 25.1* |
| 49 1/2 | 49 1/2 | 49 | 50 1/2 | 50 1/2 | 50 1/2 | 25.3* | 25.3* |
| 50 | 50 | 49 1/2 | 51 | 51 | 51 | 25.6* | 25.6* |
| 50 1/2 | 50 1/2 | 50 | 51 1/2 | 51 1/2 | 51 1/2 | 25.8* | 25.8* |
| 51 | 51 | 50 1/2 | 52 | 52 | 52 | 26.1* | 26.1* |
| 51 1/2 | 51 1/2 | 51 | 52 1/2 | 52 1/2 | 52 1/2 | 26.3* | 26.3* |
| 52 | 52 | 51 1/2 | 53 | 53 | 53 | 26.6* | 26.6* |
| 52 1/2 | 52 1/2 | 52 | 53 1/2 | 53 1/2 | 53 1/2 | 26.8* | 26.8* |
| 53 | 53 | 52 1/2 | 54 | 54 | 54 | 27.1* | 27.1* |
| 53 1/2 | 53 1/2 | 53 | 54 1/2 | 54 1/2 | 54 1/2 | 27.3* | 27.3* |
| 54 | 54 | 53 1/2 | 55 | 55 | 55 | 27.6* | 27.6* |
| 54 1/2 | 54 1/2 | 54 | 55 1/2 | 55 1/2 | 55 1/2 | 27.8* | 27.8* |
| 55 | 55 | 54 1/2 | 56 | 56 | 56 | 28.1* | 28.1* |
| 55 1/2 | 55 1/2 | 55 | 56 1/2 | 56 1/2 | 56 1/2 | 28.3* | 28.3* |
| 56 | 56 | 55 1/2 | 57 | 57 | 57 | 28.6* | 28.6* |
| 56 1/2 | 56 1/2 | 56 | 57 1/2 | 57 1/2 | 57 1/2 | 28.8* | 28.8* |
| 57 | 57 | 56 1/2 | 58 | 58 | 58 | 29.1* | 29.1* |
| 57 1/2 | 57 1/2 | 57 | 58 1/2 | 58 1/2 | 58 1/2 | 29.3* | 29.3* |
| 58 | 58 | 57 1/2 | 59 | 59 | 59 | 29.6* | 29.6* |
| 58 1/2 | 58 1/2 | 58 | 59 1/2 | 59 1/2 | 59 1/2 | 29.8* | 29.8* |
| 59 | 59 | 58 1/2 | 60 | 60 | 60 | 30.1* | 30.1* |
| 59 1/2 | 59 1/2 | 59 | 60 1/2 | 60 1/2 | 60 1/2 | 30.3* | 30.3* |
| 60 | 60 | 59 1/2 | 61 | 61 | 61 | 30.6* | 30.6* |
| 60 1/2 | 60 1/2 | 60 | 61 1/2 | 61 1/2 | 61 1/2 | 30.8* | 30.8* |
| 61 | 61 | 60 1/2 | 62 | 62 | 62 | 31.1* | 31.1* |
| 61 1/2 | 61 1/2 | 61 | 62 1/2 | 62 1/2 | 62 1/2 | 31.3* | 31.3* |
| 62 | 62 | 61 1/2 | 63 | 63 | 63 | 31.6* | 31.6* |
| 62 1/2 | 62 1/2 | 62 | 63 1/2 | 63 1/2 | 63 1/2 | 31.8* | 31.8* |
| 63 | 63 | 62 1/2 | 64 | 64 | 64 | 32.1* | 32.1* |
| 63 1/2 | 63 1/2 | 63 | 64 1/2 | 64 1/2 | 64 1/2 | 32.3* | 32.3* |
| 64 | 64 | 63 1/2 | 65 | 65 | 65 | 32.6* | 32.6* |
| 64 1/2 | 64 1/2 | 64 | 65 1/2 | 65 1/2 | 65 1/2 | 32.8* | 32.8* |
| 65 | 65 | 64 1/2 | 66 | 66 | 66 | 33.1* | 33.1* |
| 65 1/2 | 65 1/2 | 65 | 66 1/2 | 66 1/2 | 66 1/2 | 33.3* | 33.3* |
| 66 | 66 | 65 1/2 | 67 | 67 | 67 | 33.6* | 33.6* |
| 66 1/2 | 66 1/2 | 66 | 67 1/2 | 67 1/2 | 67 1/2 | 33.8* | 33.8* |
| 67 | 67 | 66 1/2 | 68 | 68 | 68 | 34.1* | 34.1* |
| 67 1/2 | 67 1/2 | 67 | 68 1/2 | 68 1/2 | 68 1/2 | 34.3* | 34.3* |
| 68 | 68 | 67 1/2 | 69 | 69 | 69 | 34.6* | 34.6* |
| 68 1/2 | 68 1/2 | 68 | 69 1/2 | 69 1/2 | 69 1/2 | 34.8* | 34.8* |
| 69 | 69 | 68 1/2 | 70 | 70 | 70 | 35.1* | 35.1* |
| 69 1/2 | 69 1/2 | 69 | 70 1/2 | 70 1/2 | 70 1/2 | 35.3* | 35.3* |
| 70 | 70 | 69 1/2 | 71 | 71 | 71 | 35.6* | 35.6* |
| 70 1/2 | 70 1/2 | 70 | 71 1/2 | 71 1/2 | 71 1/2 | 35.8* | 35.8* |
| 71 | 71 | 70 1/2 | 72 | 72 | 72 | 36.1* | 36.1* |
| 71 1/2 | 71 1/2 | 71 | 72 1/2 | 72 1/2 | 72 1/2 | 36.3* | 36.3* |
| 72 | 72 | 71 1/2 | 73 | 73 | 73 | 36.6* | 36.6* |
| 72 1/2 | 72 1/2 | 72 | 73 1/2 | 73 1/2 | 73 1/2 | 36.8* | 36.8* |
| 73 | 73 | 72 1/2 | 74 | 74 | 74 | 37.1* | 37.1* |
| 73 1/2 | 73 1/2 | 73 | 74 1/2 | 74 1/2 | 74 1/2 | 37.3* | 37.3* |
| 74 | 74 | 73 1/2 | 75 | 75 | 75 | 37.6* | 37.6* |
| 74 1/2 | 74 1/2 | 74 | 75 1/2 | 75 1/2 | 75 1/2 | 37.8* | 37.8* |
| 75 | 75 | 74 1/2 | 76 | 76 | 76 | 38.1* | 38.1* |
| 75 1/2 | 75 1/2 | 75 | 76 1/2 | 76 1/2 | 76 1/2 | 38.3* | 38.3* |
| 76 | 76 | 75 1/2 | 77 | 77 | 77 | 38.6* | 38.6* |
| 76 1/2 | 76 1/2 | 76 | 77 1/2 | 77 1/2 | 77 1/2 | 38.8* | 38.8* |
| 77 | 77 | 76 1/2 | 78 | 78 | 78 | 39.1* | 39.1* |
| 77 1/2 | 77 1/2 | 77 | 78 1/2 | 78 1/2 | 78 1/2 | 39.3* | 39.3* |
| 78 | 78 | 77 1/2 | 79 | 79 | 79 | 39.6* | 39.6* |
| 78 1/2 | 78 1/2 | 78 | 79 1/2 | 79 1/2 | 79 1/2 | 39.8* | 39.8* |
| 79 | 79 | 78 1/2 | 80 | 80 | 80 | 40.1* | 40.1*</ |

FIG. 1121 Right Hand Coupling**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet

APPROVED
For Listing / Approval
details contact your
AnvilStar™ Representative.**FIGURE 1121 RIGHT HAND COUPLING**

| Size | W | Weight | |
|--------|---------|--------|--------|
| | | black | galv. |
| NPS/DN | in./mm | lbs/kg | lbs/kg |
| 1/8 | 1 5/16 | 0.06 | 0.06 |
| 6 | 24 | 0.03 | 0.03 |
| 1/4 | 1 1/4 | 0.09 | 0.09 |
| 8 | 27 | 0.04 | 0.04 |
| 3/8 | 1 3/4 | 0.13 | 0.13 |
| 10 | 30 | 0.06 | 0.06 |
| 1/2 | 1 7/8 | 0.2 | 0.21 |
| 15 | 33 | 0.09 | 0.1 |
| 3/4 | 1 1/2 | 0.29 | 0.31 |
| 20 | 38 | 0.13 | 0.14 |
| 1 | 1 1/2 | 0.48 | 0.49 |
| 25 | 43 | 0.22 | 0.22 |
| 1 1/4 | 1 13/16 | 0.74 | 0.76 |
| 32 | 49 | 0.34 | 0.34 |
| 1 1/2 | 2 1/8 | 1 | 1 |
| 40 | 54 | 0.45 | 0.45 |
| 2 | 2 1/2 | 1.5 | 1.6 |
| 50 | 64 | 0.66 | 0.7 |
| 2 1/2 | 2 7/8 | 2.4 | 2.5 |
| 65 | 73 | 1.1 | 1.1 |
| 3 | 3 1/4 | 3.3 | 3.4 |
| 80 | 81 | 1.5 | 1.5 |
| 4 | 3 1/2 | 5.7 | 5.7 |
| 100 | 94 | 2.6 | 2.6 |

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

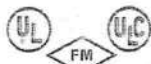


FIG. 1105 Straight Tee



Malleable Iron Fittings Class 150 (Standard)

Submittal Sheet



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

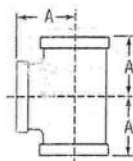


FIGURE 1105 STRAIGHT TEE

| Size | A | Weight | |
|--------|---------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/8 | 1 1/16 | 0.09 | 0.1 |
| 1/4 | 1 3/16 | 0.15 | 0.16 |
| 3/8 | 1 5/16 | 0.23 | 0.24 |
| 1/2 | 1 7/8 | 0.36 | 0.37 |
| 3/4 | 1 5/8 | 0.56 | 0.58 |
| 1 | 1 1/2 | 0.9 | 0.92 |
| 1 1/4 | 1 3/4 | 1.3 | 1.4 |
| 1 1/2 | 1 5/8 | 1.7 | 1.8 |
| 2 | 2 1/4 | 2.5 | 2.8 |
| 2 1/2 | 2 11/16 | 4.9 | 5 |
| 3 | 3 1/4 | 7.1 | 7.3 |
| 3 1/2 | 3 3/4 | 9.0* | 9.4* |
| 4 | 3 13/16 | 11 | 12 |
| 5 | 4 1/2 | 19 | 20 |
| 6 | 5 1/8 | 26 | 30 |
| 150 | 130 | 12 | 14 |

*P.O.A.

MATERIAL SPECIFICATIONS

Anvil Class 150 (standard Weight) Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

Anvil standard weight banded pattern fittings in this catalog, sizes 1/8 NPS to 6 NPS (6 to 150 DN) inclusive, are included

in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |

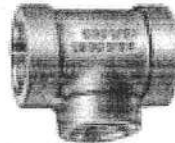
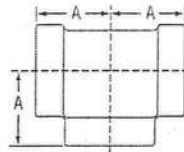
FIG. 1164 Straight Tee**ANVILStar™**
Fire Products Division of Anvil International

Malleable Iron Fittings Class 300

Submittal Sheet



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

**FIGURE 1164 STRAIGHT TEE**

| Size | Center to End A | Weight | |
|--------|-----------------|---------|---------|
| | | black | galv. |
| NPS/DN | in./mm | lbs./kg | lbs./kg |
| 1/4 | 1 3/16 | 0.27 | 0.3 |
| 8 | 33 | 0.12 | 0.14 |
| 3/8 | 1 1/16 | 0.42 | 0.43 |
| 10 | 27 | 0.19 | 0.2 |
| 1/2 | 1 1/4 | 0.65 | 0.69 |
| 15 | 32 | 0.29 | 0.31 |
| 3/4 | 1 1/8 | 1.1 | 1.1 |
| 20 | 37 | 0.49 | 0.5 |
| 1 | 1 3/8 | 1.6 | 1.6 |
| 25 | 41 | 0.72 | 0.75 |
| 1 1/4 | 1 5/16 | 2.5 | 2.6 |
| 32 | 49 | 1.1 | 1.2 |
| 1 1/2 | 2 1/8 | 3.4 | 3.5 |
| 40 | 54 | 1.5 | 1.6 |
| 2 | 2 1/2 | 5.2 | 5.4 |
| 50 | 64 | 2.4 | 2.4 |
| 2 1/2 | 2 5/16 | 8 | 8 |
| 65 | 75 | 3.6 | 3.6 |
| 3 | 3 3/8 | 13 | 13 |
| 80 | 86 | 5.7 | 5.8 |
| 4 | 4 1/2 | 24 | 24 |
| 100 | 114 | 11 | 11 |

MATERIAL SPECIFICATIONS

Anvil Class 300 XS/XH fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Anvil extra heavy banded pattern fittings in this catalog,

sizes 1/4 to 4 NPS (8 to 100 DN), are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

ALL ELBOWS & TEES 3/8" (10 DN) and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. (6.9 bar)

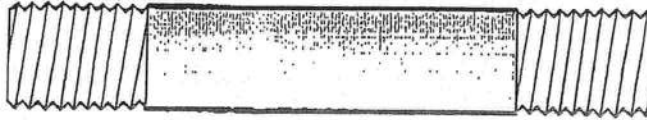
NOTE: See the Technical Data section for pressure-temperature ratings. See AnvilStar Web site for the most current Listings and approvals.

| PROJECT INFORMATION: | | APPROVAL STAMP: |
|-----------------------|--------|-----------------|
| Project: | | |
| Date: | Phone: | |
| Architect / Engineer: | | |
| Contractor: | | |
| Address: | | |
| Notes 1: | | |
| Notes 2: | | |



Carbon Steel Schedule 40 Welded Pipe Nipples Threaded to Spec. ANSI/ASME B1.20.1
Galvanized to Spec. ASTM A 153- for Zic Coating

PIPE NIPPLES GALVANIZED

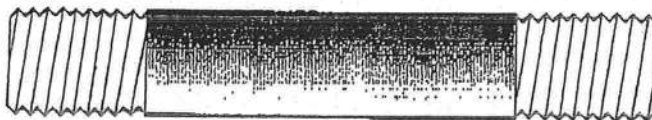
DESCRIPTION
GALVANIZED STEEL

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" |
| CLOSE | 1NG0101 | 1NG0201 | 1NG0301 | 1NG0401 | 1NG0501 | 1NG0601 | 1NG0701 | 1NG0801 |
| 1/4" | 1NG0102 | 1NG0202 | NA | NA | NA | NA | NA | NA |
| 3/8" | 1NG0103 | 1NG0203 | 1NG0303 | NA | NA | NA | NA | NA |
| 1/2" | 1NG0104 | 1NG0204 | 1NG0304 | 1NG0404 | NA | NA | NA | NA |
| 3/4" | 1NG0105 | 1NG0205 | 1NG0305 | 1NG0405 | 1NG0505 | NA | NA | NA |
| 1" | 1NG0106 | 1NG0206 | 1NG0306 | 1NG0406 | 1NG0506 | 1NG0606 | NA | NA |
| 1 1/4" | 1NG0107 | 1NG0207 | 1NG0307 | 1NG0407 | 1NG0507 | 1NG0607 | 1NG0707 | NA |
| 1 1/2" | 1NG0108 | 1NG0208 | 1NG0308 | 1NG0408 | 1NG0508 | 1NG0608 | 1NG0708 | 1NG0808 |
| 2" | 1NG0109 | 1NG0209 | 1NG0309 | 1NG0409 | 1NG0509 | 1NG0609 | 1NG0709 | 1NG0809 |
| 2 1/2" | 1NG0110 | 1NG0210 | 1NG0310 | 1NG0410 | 1NG0510 | 1NG0610 | 1NG0710 | 1NG0810 |
| 3" | 1NG0111 | 1NG0211 | 1NG0311 | 1NG0411 | 1NG0511 | 1NG0611 | 1NG0711 | 1NG0811 |
| 3 1/2" | 1NG0111.5 | 1NG0211.5 | 1NG0311.5 | 1NG0411.5 | 1NG0511.5 | 1NG0611.5 | 1NG0711.5 | 1NG0811.5 |
| 4" | 1NG0112 | 1NG0212 | 1NG0312 | 1NG0412 | 1NG0512 | 1NG0612 | 1NG0712 | 1NG0812 |
| 4 1/2" | 1NG0112.5 | 1NG0212.5 | 1NG0312.5 | 1NG0412.5 | 1NG0512.5 | 1NG0612.5 | 1NG0712.5 | 1NG0812.5 |
| 5" | 1NG0113 | 1NG0213 | 1NG0313 | 1NG0413 | 1NG0513 | 1NG0613 | 1NG0713 | 1NG0813 |
| 5 1/2" | 1NG0113.5 | 1NG0213.5 | 1NG0313.5 | 1NG0413.5 | 1NG0513.5 | 1NG0613.5 | 1NG0713.5 | 1NG0813.5 |
| 6" | 1NG0114 | 1NG0214 | 1NG0314 | 1NG0414 | 1NG0514 | 1NG0614 | 1NG0714 | 1NG0814 |
| 8" | 1NG0115 | 1NG0215 | 1NG0315 | 1NG0415 | 1NG0515 | 1NG0615 | 1NG0715 | 1NG0815 |
| 9" | 1NG0116 | 1NG0216 | 1NG0316 | 1NG0416 | 1NG0516 | 1NG0616 | 1NG0716 | 1NG0816 |
| 10 | 1NG0117 | 1NG0217 | 1NG0317 | 1NG0417 | 1NG0517 | 1NG0617 | 1NG0717 | 1NG0817 |
| 11 | 1NG0118 | 1NG0218 | 1NG0318 | 1NG0418 | 1NG0518 | 1NG0618 | 1NG0718 | 1NG0818 |
| 12 | 1NG0119 | 1NG0219 | 1NG0319 | 1NG0419 | 1NG0519 | 1NG0619 | 1NG0719 | 1NG0819 |

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|---------|---------|---------|---------|
| | 2" | 2 1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
| CLOSE | 1NG0901 | 1NG1001 | 1NG1101 | 1NG1201 | 1NG1401 | 1NG1501 | 1NG1701 | 1NG1901 |
| 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/8" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 2" | 1NG0909 | NA | NA | NA | NA | NA | NA | NA |
| 2 1/2" | 1NG0910 | 1NG1010 | NA | NA | NA | NA | NA | NA |
| 3" | 1NG0911 | 1NG1011 | 1NG1111 | NA | NA | NA | NA | NA |
| 3 1/2" | 1NG0911.5 | 1NG1011.5 | 1NG1111.5 | NA | NA | NA | NA | NA |
| 4" | 1NG0912 | 1NG1012 | 1NG1112 | 1NG1212 | NA | NA | NA | NA |
| 4 1/2" | 1NG0912.5 | 1NG1012.5 | 1NG1112.5 | 1NG1212.5 | NA | NA | NA | NA |
| 5" | 1NG0913 | 1NG1013 | 1NG1113 | 1NG1213 | NA | NA | NA | NA |
| 5 1/2" | 1NG0913.5 | 1NG1013.5 | 1NG1113.5 | 1NG1213.5 | NA | NA | NA | NA |
| 6" | 1NG0914 | 1NG1014 | 1NG1114 | 1NG1214 | 1NG1414 | 1NG1514 | 1NG1714 | 1NG1914 |
| 8" | 1NG0915 | 1NG1015 | 1NG1115 | 1NG1215 | 1NG1415 | 1NG1515 | 1NG1715 | 1NG1915 |
| 9" | 1NG0916 | 1NG1016 | 1NG1116 | 1NG1216 | 1NG1416 | 1NG1516 | 1NG1716 | 1NG1916 |
| 10 | 1NG0917 | 1NG1017 | 1NG1117 | 1NG1217 | 1NG1417 | 1NG1517 | 1NG1717 | 1NG1917 |
| 11 | 1NG0918 | 1NG1018 | 1NG1118 | 1NG1218 | 1NG1418 | 1NG1518 | 1NG1718 | 1NG1918 |
| 12 | 1NG0919 | 1NG1019 | 1NG1119 | 1NG1219 | 1NG1419 | 1NG1519 | 1NG1719 | 1NG1919 |

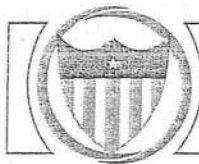
PIPE NIPPLES BLACK

Carbon Steel Schedule 40 Welded Pipe Nipples Threaded to Spec. ANSI/ASME B1.20.1

DESCRIPTION
BLACK STEEL

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1/4" | 1/2" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" |
| CLOSE | 1NB0101 | 1NB0201 | 1NB0301 | 1NB0401 | 1NB0501 | 1NB0601 | 1NB0701 | 1NB0801 |
| 1/4" | 1NB0102 | 1NB0202 | NA | NA | NA | NA | NA | NA |
| 3/8" | 1NB0103 | 1NB0203 | 1NB0303 | NA | NA | NA | NA | NA |
| 1/2" | 1NB0104 | 1NB0204 | 1NB0304 | 1NB0404 | NA | NA | NA | NA |
| 3/4" | 1NB0105 | 1NB0205 | 1NB0305 | 1NB0405 | 1NB0505 | NA | NA | NA |
| 1" | 1NB0106 | 1NB0206 | 1NB0306 | 1NB0406 | 1NB0506 | 1NB0606 | NA | NA |
| 1 1/4" | 1NB0107 | 1NB0207 | 1NB0307 | 1NB0407 | 1NB0507 | 1NB0607 | 1NB0707 | NA |
| 1 1/2" | 1NB0108 | 1NB0208 | 1NB0308 | 1NB0408 | 1NB0508 | 1NB0608 | 1NB0708 | 1NB0808 |
| 2" | 1NB0109 | 1NB0209 | 1NB0309 | 1NB0409 | 1NB0509 | 1NB0609 | 1NB0709 | 1NB0809 |
| 2 1/2" | 1NB0110 | 1NB0210 | 1NB0310 | 1NB0410 | 1NB0510 | 1NB0610 | 1NB0710 | 1NB0810 |
| 3" | 1NB0111 | 1NB0211 | 1NB0311 | 1NB0411 | 1NB0511 | 1NB0611 | 1NB0711 | 1NB0811 |
| 3 1/2" | 1NB0111.5 | 1NB0211.5 | 1NB0311.5 | 1NB0411.5 | 1NB0511.5 | 1NB0611.5 | 1NB0711.5 | 1NB0811.5 |
| 4" | 1NB0112 | 1NB0212 | 1NB0312 | 1NB0412 | 1NB0512 | 1NB0612 | 1NB0712 | 1NB0812 |
| 4 1/2" | 1NB0112.5 | 1NB0212.5 | 1NB0312.5 | 1NB0412.5 | 1NB0512.5 | 1NB0612.5 | 1NB0712.5 | 1NB0812.5 |
| 5" | 1NB0113 | 1NB0213 | 1NB0313 | 1NB0413 | 1NB0513 | 1NB0613 | 1NB0713 | 1NB0813 |
| 5 1/2" | 1NB0113.5 | 1NB0213.5 | 1NB0313.5 | 1NB0413.5 | 1NB0513.5 | 1NB0613.5 | 1NB0713.5 | 1NB0813.5 |
| 6" | 1NB0114 | 1NB0214 | 1NB0314 | 1NB0414 | 1NB0514 | 1NB0614 | 1NB0714 | 1NB0814 |
| 8" | 1NB0115 | 1NB0215 | 1NB0315 | 1NB0415 | 1NB0515 | 1NB0615 | 1NB0715 | 1NB0815 |
| 9" | 1NB0116 | 1NB0216 | 1NB0316 | 1NB0416 | 1NB0516 | 1NB0616 | 1NB0716 | 1NB0816 |
| 10" | 1NB0117 | 1NB0217 | 1NB0317 | 1NB0417 | 1NB0517 | 1NB0617 | 1NB0717 | 1NB0817 |
| 11" | 1NB0118 | 1NB0218 | 1NB0318 | 1NB0418 | 1NB0518 | 1NB0618 | 1NB0718 | 1NB0818 |
| 12" | 1NB0119 | 1NB0219 | 1NB0319 | 1NB0419 | 1NB0519 | 1NB0619 | 1NB0719 | 1NB0819 |

| LENGTH | NOMINAL SIZE | | | | | | | |
|--------|--------------|-----------|-----------|-----------|---------|---------|---------|---------|
| | 2" | 2 1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
| CLOSE | 1NB0901 | 1NB1001 | 1NB1101 | 1NB1201 | 1NB1401 | 1NB1501 | 1NB1701 | 1NB1901 |
| 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/8" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 3/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/4" | NA | NA | NA | NA | NA | NA | NA | NA |
| 1 1/2" | NA | NA | NA | NA | NA | NA | NA | NA |
| 2" | 1NB0909 | NA | NA | NA | NA | NA | NA | NA |
| 2 1/2" | 1NB0910 | 1NB1010 | NA | NA | NA | NA | NA | NA |
| 3" | 1NB0911 | 1NB1011 | 1NB1111 | NA | NA | NA | NA | NA |
| 3 1/2" | 1NB0911.5 | 1NB1011.5 | 1NB1111.5 | NA | NA | NA | NA | NA |
| 4" | 1NB0912 | 1NB1012 | 1NB1112 | 1NB1212 | NA | NA | NA | NA |
| 4 1/2" | 1NB0912.5 | 1NB1012.5 | 1NB1112.5 | 1NB1212.5 | NA | NA | NA | NA |
| 5" | 1NB0913 | 1NB1013 | 1NB1113 | 1NB1213 | NA | NA | NA | NA |
| 5 1/2" | 1NB0913.5 | 1NB1013.5 | 1NB1113.5 | 1NB1213.5 | NA | NA | NA | NA |
| 6" | 1NB0914 | 1NB1014 | 1NB1114 | 1NB1214 | 1NB1414 | 1NB1514 | 1NB1714 | 1NB1914 |
| 8" | 1NB0915 | 1NB1015 | 1NB1115 | 1NB1215 | 1NB1415 | 1NB1515 | 1NB1715 | 1NB1915 |
| 9" | 1NB0916 | 1NB1016 | 1NB1116 | 1NB1216 | 1NB1416 | 1NB1516 | 1NB1716 | 1NB1916 |
| 10" | 1NB0917 | 1NB1017 | 1NB1117 | 1NB1217 | 1NB1417 | 1NB1517 | 1NB1717 | 1NB1917 |
| 11" | 1NB0918 | 1NB1018 | 1NB1118 | 1NB1218 | 1NB1418 | 1NB1518 | 1NB1718 | 1NB1918 |
| 12" | 1NB0919 | 1NB1019 | 1NB1119 | 1NB1219 | 1NB1419 | 1NB1519 | 1NB1719 | 1NB1919 |



GUARDIAN
FIRE EQUIPMENT, INC.
MIAMI, FL
Ph. 800.327.6584 • Fax 800.827.3869

DETAIL AND SUBMITTAL SHEET

9200 Series - Test and Drain Equipment

Project/Location: _____

Date: _____

Architect/Engineer: _____

Qty: _____

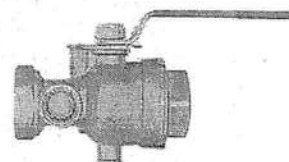
Contractor: _____

☒ *Appropriate Selection*

☐ **Model 9250 - Test and Drain Valve**

Used to test water flow through sprinkler systems. Forged brass body with three-position ball valve (OFF-TEST-DRAIN). Integral sight glass with acrylic see-through windows. 1/2" restricted orifice for system test position. UL listed/FM Approved, Patented design.

Size: ☐ 1" NPT ☐ 1 1/4" NPT

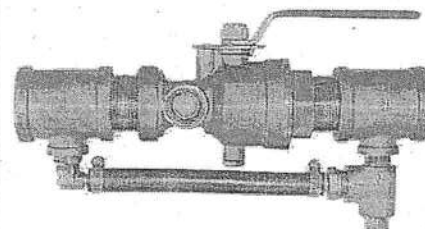


9250

☐ **Model 9255 - Test and Drain Valve with Pressure Relief Assembly**

Used to test water flow through sprinkler systems. Forged brass body with three-position ball valve (OFF-TEST-DRAIN). Integral sight glass with acrylic see-through windows. 1/2" restricted orifice for system test position. Additional field-adjustable pressure relief feature (50-200 PSI). UL listed/FM Approved, Patented design.

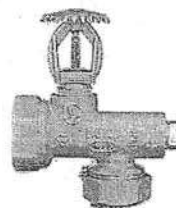
Size: ☐ 1" NPT ☐ 1 1/4" NPT



9255

☐ **Model 9260 - Line Tester**

Used for sprinkler branch line testing and flushing. Forged brass body with shut-off valve and connection for 1/2" sprinkler head. 1" F. NPT inlet x 1" NPSH drain outlet with cap. UL listed.

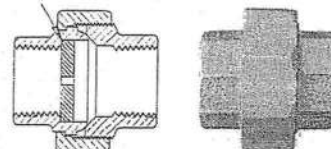


9260 (Sprinkler not included)

☐ **Model 9265 - Restricting Orifice Union**

Used in sensing lines for fire pumps and jockey pumps - two per line in clean water applications (per NFPA 20). Cast brass with ground face diaphragm. 1/2" F. NPT inlet/outlet with 3/32" orifice.

Orifice disc



9265

WFD Series Waterflow Detector

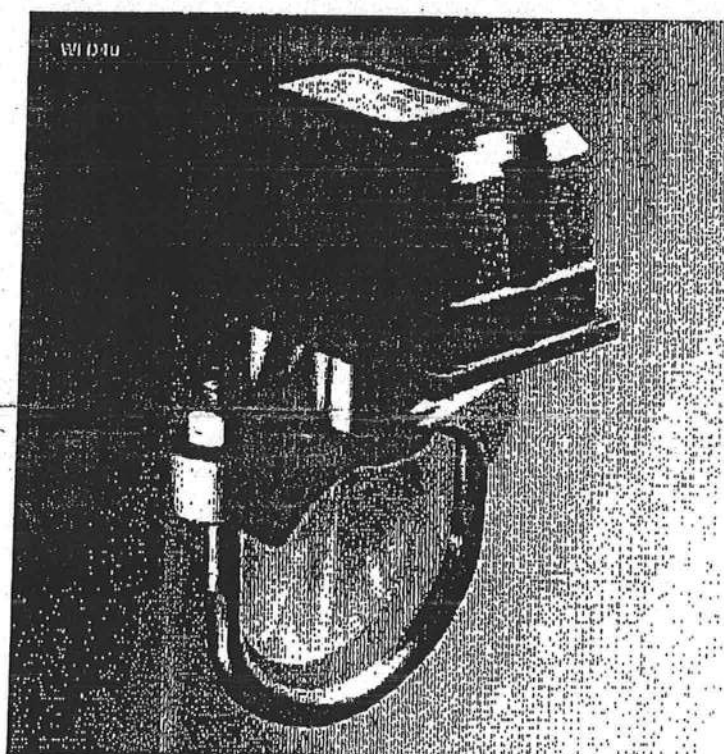


UL Models ULC/Canadian Models

| | |
|---------|----------|
| WFD20 | WFD20A |
| WFD25 | WFD25A |
| WFD30 | WFD30A |
| WFD30-2 | WFD30-2A |
| WFD35 | WFD35A |
| WFD40 | WFD40A |
| WFD50 | WFD50A |
| WFD60 | WFD60A |
| WFD80 | WFD80A |

Replacement Parts

| | |
|-----------|-------------------------|
| A3008-00 | Retard Mechanism |
| A77-01-02 | Terminal Block |
| 546-7000 | Cover Tamper Switch Kit |
| WFDW | Cover Wrench |
| WFDN4 | Replacement gasket kit |



Product Overview

New WFD30-2 models install in 2" hole sizes

UL models are NEMA 4 rated

Sealed retard mechanism assures that the retard is not contaminated by dust and dirt when the cover is removed

Visual switch activation permits installer to accurately set retard under noisy conditions

Rugged, dual SPDT switches are enclosed in a durable terminal block

Accommodates up to 12 AWG wire

100% synchronization activates both alarm panel and local bell simultaneously

System Sensor's WFD series is compatible with schedule 10 through 40 steel pipe, sizes 2" through 8", and can be mounted in a vertical or horizontal position.

Robust Construction. The WFD series consists of a rugged, NEMA 4 rated enclosure. Designed for both indoor and outdoor use, the WFD series operates across a wide temperature range, from 32°F to 120°F.

Reliable Performance. UL listed models are equipped with tamper resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block to assure reliable performance.

False Alarm Immunity. The WFD series incorporates a mechanical retard feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the sprinkler system. In addition, the mechanical retard's unique sealed design is immune to dust and other contaminants.

Simplified Operation. The WFD series is designed to simplify installation. Two conduit openings permit easy attachment to the local alarm system. The retard mechanism and dual SPDT switches are field-replaceable.



Engineering Specifications

Vane-type waterflow detectors shall be installed on system piping as designated on the drawing and/or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run, at least 6" from any fittings which may change water direction, flow rate, or pipe diameter or no closer than 24" from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 450 psi for 2" - 8" pipes. The detector shall respond to waterflow in the specified direction after a preset time delay which is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual indication of actuation. The actuation mechanism shall include a polyethylene vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating
450 PSI

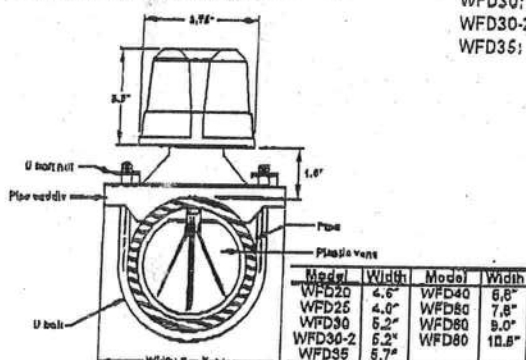
Triggering Threshold Bandwidth (Flow Rate)
4-10 GPM

Maximum Surge
18 Feet Per Second (FPS)

Compatible Pipe:
Steel water pipe, schedule 10 through 40

Contact Ratings
Two sets of SPDT (Form C)
10.0 A, 1/2 HP @ 125/250 VAC
2.5 A @ 5/12/24 VDC

Overall Dimensions Installed:



Conduit Entrances

Two openings for 1/2" conduit. One open, one knock-out type

Operating Temperature Range
32°F to 120°F (0°C to 49°C)

Enclosure Rating

NEMA 4 - suitable for indoor/outdoor use

Cover Tamper Switch

Standard with ULC models

Optional for UL models, part no. 546-7000

Shipping Weight

WFD20: 4.2 lbs. WFD40: 5.2 lbs.

WFD25: 4.3 lbs. WFD50: 6.3 lbs.

WFD30: 4.5 lbs. WFD60: 6.8 lbs.

WFD30-2: 4.5 lbs. WFD80: 7.5 lbs.

WFD35: 4.7 lbs.

Service Use

Automatic Sprinkler: NFPA-13

One or Two Family Dwelling: NFPA 13D

Residential Occupancies up to 4 Stories: NFPA 13R

National Fire Alarm Code: NFPA-72

Warranty

3 Years

U.S. Patent Numbers

3,845,259

4,782,333

5,213,205

Ordering Information

| UL Model Numbers | ULC/Canadian Model Numbers | Pipe Size | Hole Size |
|------------------|----------------------------|-----------|-----------|
| WFD20 | WFD20A | 2" | 1 1/4" |
| WFD25 | WFD25A | 2 1/2" | 1 1/4" |
| WFD30 | WFD30A | 3" | 1 1/4" |
| WFD30-2 | WFD30-2A | 3" | 2" |
| WFD35 | WFD35A | 3 1/2" | 1 1/4" |
| WFD40 | WFD40A | 4" | 2" |
| WFD50 | WFD50A | 5" | 2" |
| WFD60 | WFD60A | 6" | 2" |
| WFD80 | WFD80A | 8" | 2" |

*UL listed only.

| Part Number | Description |
|-------------|-------------------------------|
| A3008-00 | Retard mechanism |
| A77-01-02 | Terminal block |
| 546-7000 | Tamper proof switch kit |
| WFDW | Tamper proof wrench for cover |
| WFDN4 | Gasket kit |

System Sensor Sales and Service

System Sensor Headquarters

3825 Ohio Avenue
St. Charles, IL 60174
Ph: 800-SENSOR2
Fx: 630/377-6495
Documents On Demand:
1-800-736-7672 x3
Web: www.systemsensor.com

System Sensor in Canada

Ph: 905.812.0767
Fx: 905.812.0771

System Sensor in Europe

Ph: + 44.1403.276500
Fx: + 44.1403.276501

System Sensor in China

Ph: + 86.20.524.6253
Fx: + 86.20.524.6259

System Sensor in Singapore

Ph: + 65.273.2230
Fx: + 65.273.2610

System Sensor in the Far East

Ph: + 652.21919003
Fx: + 652.27365580

System Sensor in Australia

Ph: + 613.54.281.142
Fx: + 613.54.281.172

System Sensor in India

Ph: + 91.11.558.2119
Fx: + 91.11.567.6815



6" BELL SHOWN

UL Listed

Sizes Available: 6" (150mm), 8" (200mm) and 10" (250mm)

Voltages Available: 24VAC
120VAC
12VDC (10.2 to 15.6) Polarized
24VDC (20.4 to 31.2) Polarized

Service Use: Fire Alarm
General Signaling
Burglar Alarm

Environment: Indoor or outdoor use (See Note 1)
-40° to 150°F (-40° to 66°C)
(Outdoor use requires weatherproof
backbox.)

Termination: 4 No. 18 AWG stranded wires

Finish: Red powder coating

Optional: Model BBK-1 weatherproof backbox

These vibrating type bells are designed for use as fire, burglar or general signaling devices. They have low power consumption and high decibel ratings. The unit mounts on a standard 4" (101mm) square electrical box for indoor use or on a model BBK-1 weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1, Stock No. 1500001.

ALL DC BELLS ARE POLARIZED AND HAVE BUILT-IN TRANSIENT PROTECTION:

| SIZE INCHES (mm) | VOLTAGE | MODEL NO. | STOCK NO. | CURRENT (MAX.) | TYPICAL dB AT 10 FT. (3m) (2) | MINIMUM dB AT 10 FT. (3m) (1) |
|------------------------|---------|-----------|-----------|-------------------|-------------------------------------|-------------------------------------|
| 6 (150) | 12VDC | PBD126 | 1706012 | .12A | 85 | 76 |
| 8 (200) | 12VDC | PBD128 | 1708012 | .12A | 90 | 77 |
| 10 (250) | 12VDC | PBD1210 | 1710012 | .12A | 92 | 78 |
| 6 (150) | 24VDC | PBD246 | 1706024 | .06A | 87 | 77 |
| 8 (200) | 24VDC | PBD248 | 1708024 | .06A | 91 | 79 |
| 10 (250) | 24VDC | PBD2410 | 1710024 | .06A | 94 | 80 |
| 6 (150) | 24VAC | PBA246 | 1806024 | .17A | 91 | 78 |
| 8 (200) | 24VAC | PBA248 | 1808024 | .17A | 94 | 77 |
| 10 (250) | 24VAC | PBA2410 | 1810024 | .17A | 94 | 78 |
| 6 (150) | 120VAC | PBA1206 | 1806120 | .05A | 92 | 83 |
| 8 (200) | 120VAC | PBA1208 | 1808120 | .05A | 99 | 84 |
| 10 (250) | 120VAC | PBA12010 | 1810120 | .05A | 99 | 86 |

Notes:

1. Minimum dB ratings are calculated from integrated sound pressure measurements made at Underwriters Laboratories as specified in UL Standard 464. UL temperature range is -30° to 150°F (-34° to 66°C).
2. Typical dB ratings are calculated from measurements made with a conventional sound level meter and are indicative of output levels in an actual installation.

DIMENSIONS
INCHES (mm)

FIG. 1 BELLS

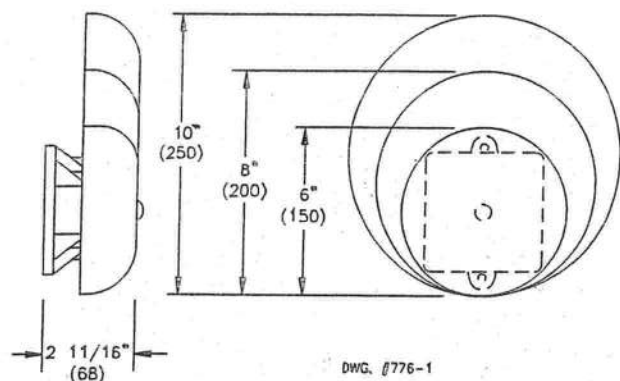


FIG. 2 WEATHERPROOF BACKBOX
BOX HAS ONE THREADED 1/2" CONDUIT ENTRANCE

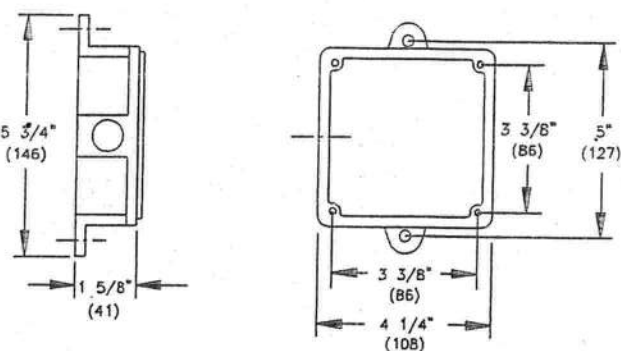
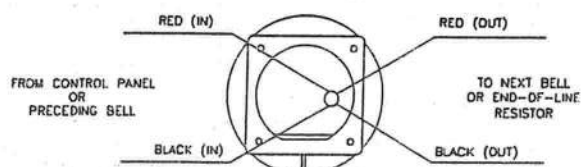


FIG. 3 WIRING (REAR VIEW)

D.C. BELLS (OBSERVE POLARITY)

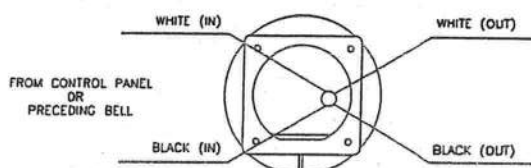


CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. OBSERVE POLARITY TO RING D.C. BELLS.
2. RED WIRES POSITIVE (+)
3. BLACK WIRES NEGATIVE (-)

A.C. BELLS



CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. WHEN USING A.C. BELLS, TERMINATE EACH EXTRA WIRE SEPARATELY AFTER LAST BELL.
2. END-OF-LINE RESISTOR IS NOT REQUIRED ON A.C. BELLS.

DWG. #776-3

INSTALLATION

1. The bell shall be installed in accordance with NFPA 72 or local Ahj. The top of the device shall be no less than 90" Aff and not less than 6" below the ceiling.
2. Remove the gong.
3. Connect wiring (see Fig. 3).
4. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
5. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
6. Test all bells for proper operation and observe that they can be heard where required (bells must be heard in all areas as designated by the authority having jurisdiction).



TECHNICAL DATA

WATER AND AIR PRESSURE GAUGES

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Pressure Gauges give visual indication of the water or air pressure available to the fire protection system.

2. LISTINGS AND APPROVALS

UL Listed - VEVX (Ashcroft Inc.)
ULc Listed - VEVXC (Ashcroft Inc.)
FM Approved - Pressure Gauges (Ashcroft Inc.)

3. TECHNICAL DATA

Connection: 1/4" NPT

Working Pressure:

- Water Gauge: 300 psi (20.7 bar)
- Air Gauge: 80 PSI (5.5 bar)

Maximum Pressure:

- Water Gauge: 300 psi (20.7 bar)
- Air Gauge: 250 PSI (17.2 bar) (Air gauge includes a "Retard Zone" between 80 and 250 PSI)



Water Pressure Gauge
P/N: VWATERSF



Air Pressure Gauge
P/N: VAIRSF

Material Standards

Case: ABS (Acrylonitrile Butadiene Styrene)

Window: Polycarbonate

Dial: Black figures on White Background

Pointer: Black, Aluminum

Movement: Suspended Spring with Polyester Segment

Bourdon Tube: Bronze

Socket: Brass, Soft Soldered

Ordering Information

Available since 1977

Water Pressure Gauge - VWATERSF

Air Pressure Gauge - VAIRSF

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.

4. INSTALLATION

1. Gauges are to be installed in accordance with the latest published standards of the National Fire Protection Association or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable.
2. Gauges must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install gauges that have been dropped or damaged in any way. Such gauges should be destroyed immediately.
3. Adequate heat must be provided where gauges are installed.
4. The gauges must be protected from mechanical damage. Install the gauges according to the following steps:
 - a. Apply a small amount of pipe-joint compound or tape to the external threads of the gauge only. Take care that no joint compound is allowed into the orifice of the gauge.
 - b. Turn the unit clockwise to thread the gauge into the 1/2" (15 mm) NPT outlet of the coupling. DO NOT over-tighten the gauge.

7. AVAILABILITY

The water and air gauges are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

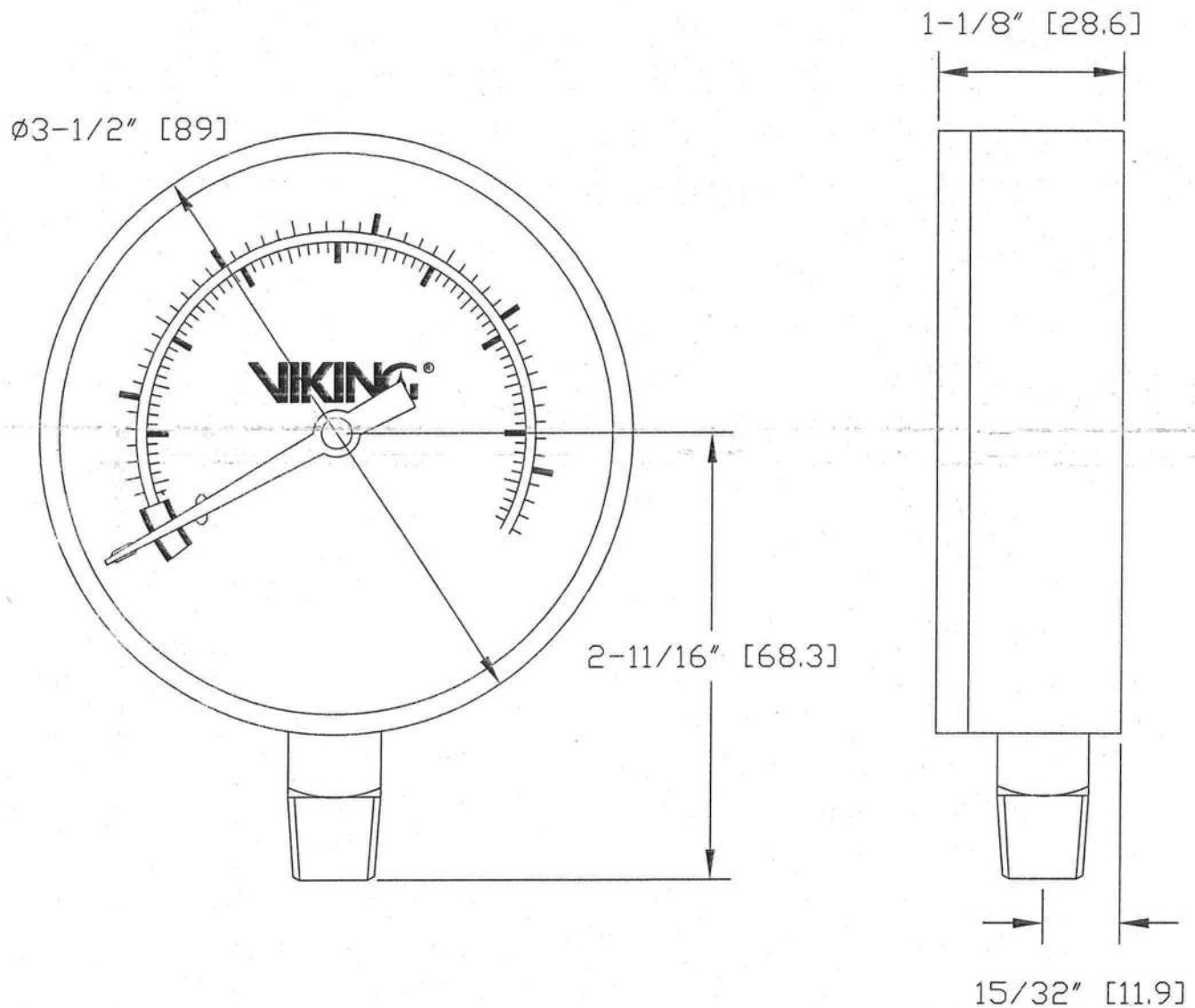
8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

**TECHNICAL DATA****WATER AND AIR
PRESSURE GAUGES**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com



Series 3000SS

Double Check Detector Assemblies

Sizes: 2 1/2" - 12" (65 - 300mm)



Features

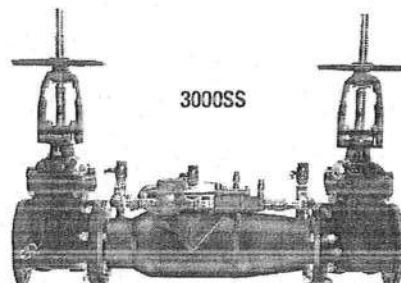
- Patented Cam-Check Assembly valve provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless Steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved style-coupling for ease of maintenance
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- Furnished with 5/8" x 3/4" bronze meter (gpm or cfm)
- Detects underground leaks and unauthorized water use
- Maybe installed horizontal or vertical "flow up" position

Available Models

Suffix:

- LG - less shutoff valves
- OSY - UL/FM outside stem and yoke resilient seated gate valves
- OSY FxG - flanged inlet gate connection and grooved outlet gate connection
- OSY GxF - grooved inlet gate connection and flanged outlet gate connection
- OSY GxG - grooved inlet gate connection and grooved outlet gate connection
- CFM - cubic feet per minute
- GPM - gallons per minute meter

Post indicator plate and operating nut available - consult factory



Series 3000SS Double Check Detector Assemblies are designed for use in accordance with water utility non-health hazard containment requirements. It is mandatory to prevent the reverse flow of fire protection system substances, i.e., glycerin wetting agents, stagnant water and water of non-potable quality from being pumped or siphoned into the potable water supply.

Specifications

A Double Check Detector Assembly shall be installed on fire protection systems when connected to a potable water supply. Degree of hazard present is determined by the local authority having jurisdiction. The main valve body shall be manufactured from 300 Series stainless steel to provide corrosion resistance, 100% lead free through the waterway. The double check detector assembly consists of two independently operating, spring loaded check valves, two UL, FM, OSY resilient seated gate valves, and bypass assembly. The bypass assembly consists of a meter (cubic ft. or gallons), a double check including shutoff valves and required test cocks. Each cam-check shall be internally loaded and provide a positive drip tight closure against reverse flow. Cam-check includes a stainless steel cam arm and spring, rubber faced disc and a replaceable seat. There shall be no brass or bronze parts used within the cam-check valve assembly. The check valve seats shall be of molded thermoplastic construction. The use of seat screws as a retention method is prohibited. All internal parts shall be accessible through a single cover on the valve assembly. The valve cover shall be held in place through the use of a single grooved style two-bolt coupling. The bypass line shall be hydraulically sized to accurately measure low flow. The bypass line shall consist of a meter, a small diameter double check assembly with test cocks and isolation valves. The bypass line double check valve shall have two independently operating modular poppet check valves, and top mounted test cocks. The assembly shall be an Ames 3000SS.

Materials

All internal metal parts: 300 Series stainless steel, Main valve body: 300 Series stainless steel, Check assembly: Noryl® Flange dimension in accordance with AWWA Class D. Noryl® is a registered trademark of General Electric Company.

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

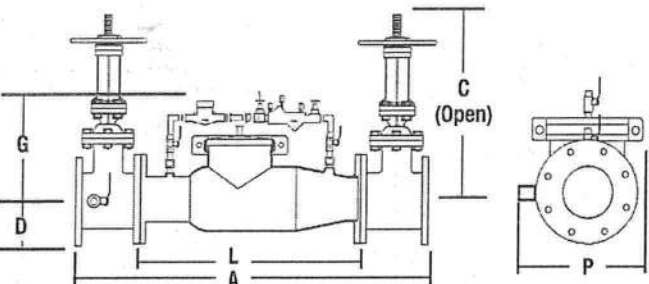
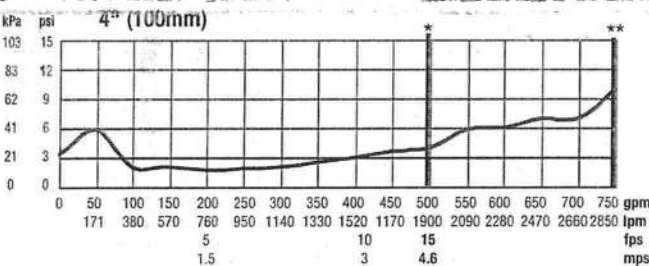
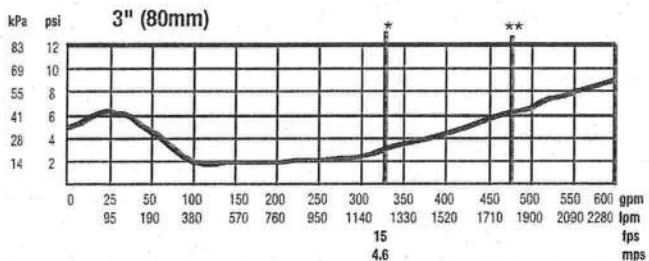
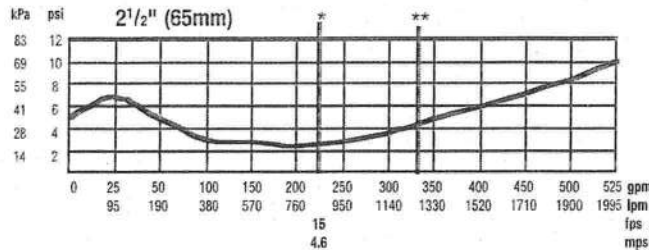
Ames product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Ames Technical Service. Ames reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Ames products previously or subsequently sold.

Pressure — Temperature

Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12 bar)

Capacity

Flow curves as tested by Underwriters Laboratory per UL 1469, 1996. * Rated flow **UL Tested

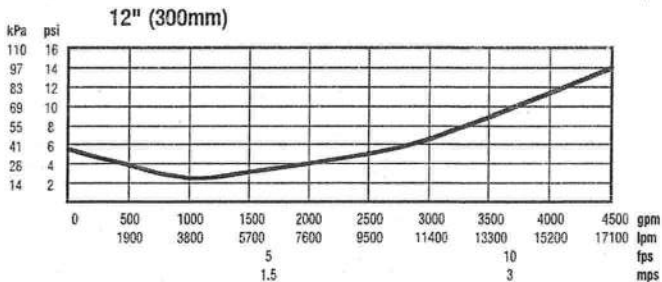
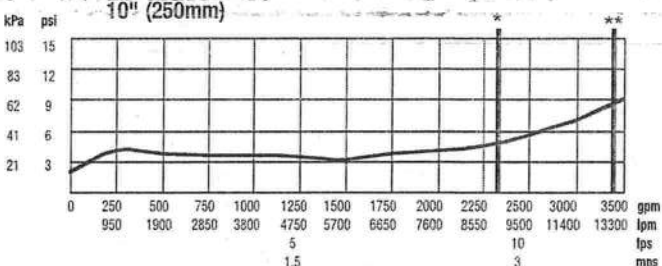
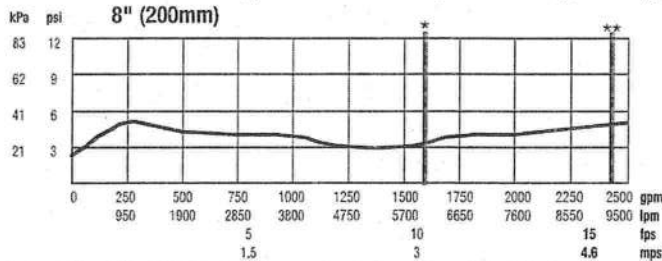
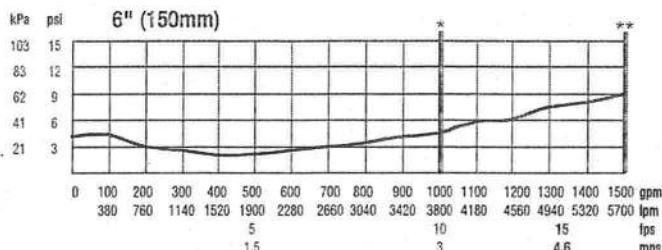


Standards

ASSE 1048, AWWA C510-92, CSA B64.5, UL 1469

Approvals

UL Classified (OSY only), FIM (sizes 2 1/2" – 10", OSY only)



| SIZE (DN) | | | | DIMENSIONS | | | | | | | | NET WEIGHT | | | | NET WEIGHT | |
|-----------|-----|-----|------|------------|------|-----|-----|-----|-----|-----|-----|------------|-----|---------|-----|------------|-----|
| | | A | | C (OSY) | | D | | G | | L | | P | | w/Gates | | w/o Gates | |
| in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | lb. | kg. | lb. | kg. |
| 2½ | 65 | 37 | 965 | 16⅜ | 416 | 3½ | 89 | 10 | 250 | 22 | 559 | 12½ | 318 | 155 | 70 | 68 | 31 |
| 3 | 80 | 38 | 965 | 18⅞ | 479 | 3¾ | 95 | 10 | 250 | 22 | 559 | 13 | 330 | 230 | 104 | 70 | 32 |
| 4 | 100 | 40 | 1016 | 22¾ | 578 | 4½ | 114 | 10 | 250 | 22 | 559 | 14½ | 368 | 240 | 109 | 73 | 33 |
| 6 | 150 | 48½ | 1232 | 30⅞ | 765 | 5½ | 140 | 15 | 381 | 27½ | 699 | 15½ | 394 | 390 | 177 | 120 | 54 |
| 8 | 200 | 52½ | 1334 | 37¾ | 959 | 6¾ | 171 | 15 | 381 | 29½ | 749 | 18½ | 464 | 572 | 259 | 180 | 82 |
| 10 | 250 | 55½ | 1410 | 45¾ | 1162 | 8 | 200 | 15 | 381 | 29½ | 749 | 19½ | 495 | 774 | 351 | 190 | 86 |
| 12 | 300 | 57½ | 1461 | 53⅞ | 1349 | 9½ | 241 | 15 | 381 | 29½ | 749 | 21 | 533 | 1044 | 474 | 220 | 100 |



www.amesfirewater.com



A Watts Water Technologies Company

USA: Backflow- 1427 N. Market Blvd • Suite #9 • Sacramento, CA 95834 • T: 916-928-0123 • F: 916-928-9333

Control Valves- 18550 Hansen Road • Houston, TX 77075 • T: 713-943-0688 • F: 713-944-9445

Canada: 5435 North Service Rd. • Burlington, ONT. L7L 5H7 • T: 905-332-4090 • F: 905-332-7068

ES-A-3000SS 0936

© 2009 Ames Fire & Waterworks



for Patel
10/2/09

... Fire Protection by Computer Design

CARIBBEAN FIRE & ASSOCIATES
3856 S.W 30TH AVENUE
SUITE 109
HOLLYWOOD, FL 33312
954-581-9393

Job Name : EASTSIDE CARE CENTENR
Building : # 1
Location : 152 SE DEFENDER AVENUE LAKE CITY FLORIDA 32055
System : 1
Contract :
Data File : EASTSIDE.WX1

Hydraulic Design Information Sheet

Name - EASTSIDE CARE CENTER LIVING FACILITY Date - 10.01.09
Location - 152 SE DEFENDER AVENUE LAKE CITY FLORIDA 32055
Building - # 1 System No. - 1
Contractor - CARIBBEAN FIRE Contract No. -
Calculated By - CARIBBEAN FIRE Drawing No. - 1
Construction: (X) Combustible () Non-Combustible Ceiling Height - 10
Occupancy - UNUSED ATTIC

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
Y () NFPA 231 () NFPA 231C (X) Figure 11.2.3.1.5 Curve LH

S Other

T Specific Ruling

Made By

Date

E

| | | | |
|---|------------------------------------|---------------|------------------|
| M | Area of Sprinkler Operation - 1500 | System Type | Sprinkler/Nozzle |
| | Density - 0.10 | (X) Wet | Make RELIABLE |
| D | Area Per Sprinkler - 130 | () Dry | Model F1FR |
| E | Elevation at Highest Outlet - 15' | () Deluge | Size 1/2" |
| S | Hose Allowance - Inside - 100 | () Preaction | K-Factor 5.6 |
| I | Rack Sprinkler Allowance - | () Other | Temp.Rat.200 |
| G | Hose Allowance - Outside - | | |

N

Note

Calculation Flow Required - 291.82 Press Required - 40.30 AT TEST
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test:

Pump Data:

Tank or Reservoir:

A Date of Test -

Cap. -

T Time of Test -

Rated Cap.-

Elev.-

E Static Press - 60

@ Press -

R Residual Press - 50

Elev. -

Well
Proof Flow

Flow - 1100

S Elevation -

U

P Location -

P

L Source of Information - DROUGHT CONDITION

Y

C Commodity

Class

Location

O Storage Ht.

Area

Aisle W.

M Storage Method:

Solid Piled

%

Palletized

%

Rack

M

() Single Row () Conven. Pallet () Auto. Storage () Encap.

S R () Double Row () Slave Pallet () Solid Shelf () Non

T A () Mult. Row () Open Shelf

O

C

R K Flue Spacing Clearance:Storage to Ceiling

A Longitudinal Transverse

G

E Horizontal Barriers Provided:

Water Supply Curve (C)

CARIBBEAN FIRE & ASSOCIATES
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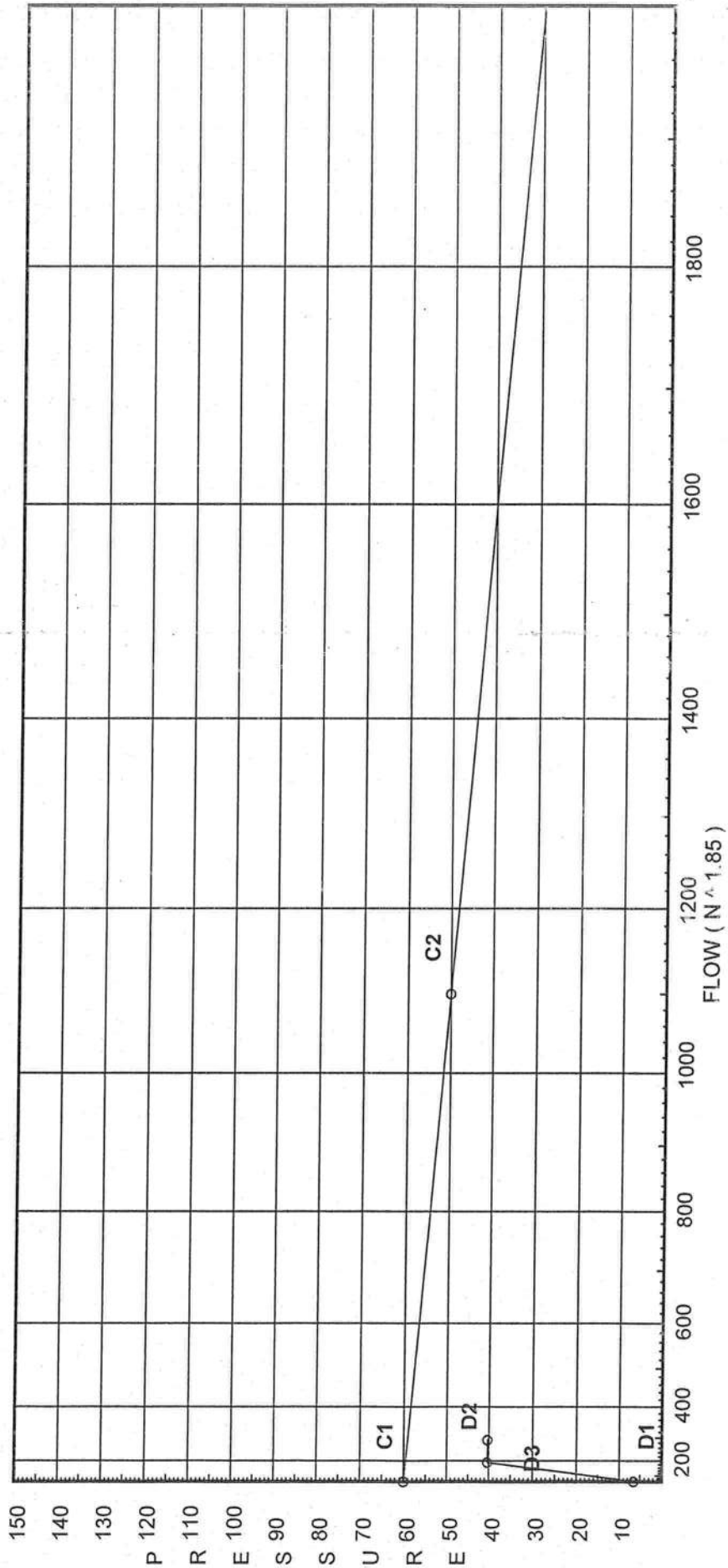
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City Water Supply:

C1 - Static Pressure : 60
C2 - Residual Pressure: 50
C2 - Residual Flow : 1100

Demand:

D1 - Elevation : 6.496
D2 - System Flow : 191.822
D2 - System Pressure : 40.309
Hose (Adj City) : 100
Hose (Demand) : 291.822
D3 - System Demand : 18.832
Safety Margin :



Fittings Used Summary

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| Fitting Legend Abbrev. Name | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 3 1/2 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|--------------------------------|--|-----|---|-------|-------|----|-------|----|-------|----|----|----|----|----|----|----|----|----|-----|-----|
| E NFPA 13 90' Standard Elbow | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |
| G NFPA 13 Gate Valve | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 13 |
| T NFPA 13 90' Flow thru Tee | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 17 | 20 | 25 | 30 | 35 | 50 | 60 | 71 | 81 | 91 | 101 | 121 |
| Zaf Ames 3000SS | Fitting generates a Fixed Loss Based on Flow | | | | | | | | | | | | | | | | | | | |

Units Summary

Diameter Units
Length Units
Flow Units
Pressure Units

Inches
Feet
US Gallons per Minute
Pounds per Square Inch

Pressure / Flow Summary - STANDARD

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| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| S001 | 12.0 | 5.6 | 8.61 | na | 16.44 | 0.1 | 130 | 7.0 |
| S002 | 15.0 | 5.6 | 7.0 | na | 14.82 | 0.1 | 130 | 7.0 |
| S003 | 12.0 | 5.6 | 8.29 | na | 16.13 | 0.1 | 130 | 7.0 |
| S004 | 12.0 | 5.6 | 9.18 | na | 16.97 | 0.1 | 130 | 7.0 |
| S005 | 15.0 | 5.6 | 7.21 | na | 15.04 | 0.1 | 130 | 7.0 |
| S006 | 12.0 | 5.6 | 8.29 | na | 16.13 | 0.1 | 130 | 7.0 |
| S007 | 15.0 | 5.6 | 7.32 | na | 15.15 | 0.1 | 130 | 7.0 |
| S008 | 12.0 | 5.6 | 8.38 | na | 16.22 | 0.1 | 130 | 7.0 |
| S009 | 15.0 | 5.6 | 7.66 | na | 15.5 | 0.1 | 130 | 7.0 |
| S010 | 12.0 | 5.6 | 8.49 | na | 16.32 | 0.1 | 130 | 7.0 |
| S011 | 15.0 | 5.6 | 8.35 | na | 16.18 | 0.1 | 130 | 7.0 |
| S012 | 12.0 | 5.6 | 9.16 | na | 16.95 | 0.1 | 130 | 7.0 |
| 41 | 11.0 | | 8.96 | na | | | | |
| 40 | 11.0 | | 9.17 | na | | | | |
| 39 | 11.0 | | 9.29 | na | | | | |
| 38 | 11.0 | | 9.63 | na | | | | |
| 37 | 11.0 | | 10.34 | na | | | | |
| 36 | 11.0 | | 8.99 | na | | | | |
| 35 | 11.0 | | 8.99 | na | | | | |
| 34 | 11.0 | | 9.08 | na | | | | |
| 33 | 11.0 | | 9.19 | na | | | | |
| 32 | 11.0 | | 9.88 | na | | | | |
| 31 | 11.0 | | 9.32 | na | | | | |
| 30 | 11.0 | | 9.9 | na | | | | |
| 29 | 11.0 | | 28.52 | na | | | | |
| 23 | 11.0 | | 9.7 | na | | | | |
| 24 | 11.0 | | 9.63 | na | | | | |
| 25 | 11.0 | | 9.63 | na | | | | |
| 26 | 11.0 | | 9.75 | na | | | | |
| 27 | 11.0 | | 10.12 | na | | | | |
| 28 | 11.0 | | 10.87 | na | | | | |
| 1 | 11.0 | | 9.67 | na | | | | |
| 17 | 11.0 | | 9.6 | na | | | | |
| 18 | 11.0 | | 9.6 | na | | | | |
| 19 | 11.0 | | 9.7 | na | | | | |
| 20 | 11.0 | | 10.04 | na | | | | |
| 21 | 11.0 | | 10.79 | na | | | | |
| 22 | 11.0 | | 21.51 | na | | | | |
| 9 | 11.0 | | 21.68 | na | | | | |
| 7 | 11.0 | | 21.74 | na | | | | |
| 16 | 11.0 | | 28.38 | na | | | | |
| 2 | 11.0 | | 9.79 | na | | | | |
| 3 | 11.0 | | 9.88 | na | | | | |
| 4 | 11.0 | | 10.49 | na | | | | |
| 8 | 11.0 | | 21.75 | na | | | | |
| 10 | 11.0 | | 21.66 | na | | | | |
| 13 | 11.0 | | 28.58 | na | | | | |
| 14 | 11.0 | | 28.73 | na | | | | |
| 15 | 11.0 | | 29.73 | na | | | | |
| TOP | 11.0 | | 32.75 | na | | | | |
| BOR | 0.0 | | 39.76 | na | | | | |
| A | 0.0 | | 40.25 | na | | | | |
| TEST | 0.0 | | 40.31 | na | 100.0 | | | |

The maximum velocity is 16.84 and it occurs in the pipe between nodes 15 and TOP

Final Calculations - Hazen-Williams

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|--------------------------------|--------------------------|-----------------------|-------------------|-------------------------|-------------------------|----------------|-------|-------------------------------|-------|
| S001 to 31 | 16.44 16.44 0.0 16.44 | 1.049 120.0 0.0903 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.615 0.433 0.271 | | | K Factor = 5.60 Vel = 6.10 | |
| | | | | | | 9.319 | | | K Factor = 5.39 | |
| S002 to 41 | 14.82 14.82 0.0 14.82 | 1.049 120.0 0.0750 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.000 1.732 0.225 | | | K Factor = 5.60 Vel = 5.50 | |
| | | | | | | 8.957 | | | K Factor = 4.95 | |
| S003 to 36 | 16.13 16.13 0.0 16.13 | 1.049 120.0 0.0873 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.293 0.433 0.262 | | | K Factor = 5.60 Vel = 5.99 | |
| | | | | | | 8.988 | | | K Factor = 5.38 | |
| S004 to 30 | 16.97 16.97 0.0 16.97 | 1.049 120.0 0.0960 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 9.180 0.433 0.288 | | | K Factor = 5.60 Vel = 6.30 | |
| | | | | | | 9.901 | | | K Factor = 5.39 | |
| S005 to 40 | 15.04 15.04 0.0 15.04 | 1.049 120.0 0.0767 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.210 1.732 0.230 | | | K Factor = 5.60 Vel = 5.58 | |
| | | | | | | 9.172 | | | K Factor = 4.97 | |
| S006 to 35 | 16.13 16.13 0.0 16.13 | 1.049 120.0 0.0877 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.293 0.433 0.263 | | | K Factor = 5.60 Vel = 5.99 | |
| | | | | | | 8.989 | | | K Factor = 5.38 | |
| S007 to 39 | 15.15 15.15 0.0 15.15 | 1.049 120.0 0.0780 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.320 1.732 0.234 | | | K Factor = 5.60 Vel = 5.62 | |
| | | | | | | 9.286 | | | K Factor = 4.97 | |
| S008 to 34 | 16.22 16.22 0.0 16.22 | 1.049 120.0 0.0883 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.385 0.433 0.265 | | | K Factor = 5.60 Vel = 6.02 | |
| | | | | | | 9.083 | | | K Factor = 5.38 | |
| S009 to 38 | 15.50 15.5 0.0 15.50 | 1.049 120.0 0.0813 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.659 1.732 0.244 | | | K Factor = 5.60 Vel = 5.75 | |
| | | | | | | 9.635 | | | K Factor = 4.99 | |
| S010 to 33 | 16.32 16.32 0.0 16.32 | 1.049 120.0 0.0893 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.491 0.433 0.268 | | | K Factor = 5.60 Vel = 6.06 | |

Final Calculations - Hazen-Williams

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|----------------|--------------------------|-----------------------|-------------------|-------------------------|-------------------------|----------------|-------|-------------------------------|-------|
| | 0.0 16.32 | | | | | 9.192 | | | K Factor = 5.38 | |
| S011 to 37 | 16.18 16.18 | 1.049 120.0 0.0880 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 8.346 1.732 0.264 | | | K Factor = 5.60 Vel = 6.01 | |
| | 0.0 16.18 | | | | | 10.342 | | | K Factor = 5.03 | |
| S012 to 32 | 16.95 16.95 | 1.049 120.0 0.0960 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 9.163 0.433 0.288 | | | K Factor = 5.60 Vel = 6.29 | |
| | 0.0 16.95 | | | | | 9.884 | | | K Factor = 5.39 | |
| *P-6 | | | | | | | | | | |
| 41 to 24 | 14.82 14.82 | 1.049 120.0 0.0747 | 1E 1T | 2.0 5.0 0.0 | 2.000 7.000 9.000 | 8.957 0.0 0.672 | | | Vel = 5.50 | |
| | 0.0 14.82 | | | | | 9.629 | | | K Factor = 4.78 | |
| *P-9 | | | | | | | | | | |
| 40 to 25 | 15.04 15.04 | 1.049 120.0 0.0768 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 9.172 0.0 0.461 | | | Vel = 5.58 | |
| | 0.0 15.04 | | | | | 9.633 | | | K Factor = 4.85 | |
| *P-12 | | | | | | | | | | |
| 39 to 26 | 15.15 15.15 | 1.049 120.0 0.0778 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 9.286 0.0 0.467 | | | Vel = 5.62 | |
| | 0.0 15.15 | | | | | 9.753 | | | K Factor = 4.85 | |
| *P-15 | | | | | | | | | | |
| 38 to 27 | 15.50 15.5 | 1.049 120.0 0.0812 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 9.635 0.0 0.487 | | | Vel = 5.75 | |
| | 0.0 15.50 | | | | | 10.122 | | | K Factor = 4.87 | |
| *P-18 | | | | | | | | | | |
| 37 to 28 | 16.18 16.18 | 1.049 120.0 0.0878 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 10.342 0.0 0.527 | | | Vel = 6.01 | |
| | 0.0 16.18 | | | | | 10.869 | | | K Factor = 4.91 | |
| *P-21 | | | | | | | | | | |
| 36 to 17 | 16.13 16.13 | 1.049 120.0 0.0874 | 1T | 5.0 0.0 0.0 | 2.000 5.000 7.000 | 8.988 0.0 0.612 | | | Vel = 5.99 | |

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|---------------|----------------------|-----------------------|--------|-------------------------|----------------|----------------|------------|--------|-------|
| | 0.0 16.13 | | | | | 9.600 | | K Factor = | 5.21 | |
| *P-24 | | | | | | | | | | |
| 35 | 16.13 | 1.049 | 1T | 5.0 | 2.000 | 8.989 | | | | |
| to | | 120.0 | | 0.0 | 5.000 | 0.0 | | | | |
| 18 | 16.13 | 0.0873 | | 0.0 | 7.000 | 0.611 | | Vel = | 5.99 | |
| | 0.0 16.13 | | | | | 9.600 | | K Factor = | 5.21 | |
| *P-27 | | | | | | | | | | |
| 34 | 16.22 | 1.049 | 1T | 5.0 | 2.000 | 9.083 | | | | |
| to | | 120.0 | | 0.0 | 5.000 | 0.0 | | | | |
| 19 | 16.22 | 0.0883 | | 0.0 | 7.000 | 0.618 | | Vel = | 6.02 | |
| | 0.0 16.22 | | | | | 9.701 | | K Factor = | 5.21 | |
| *P-30 | | | | | | | | | | |
| 33 | 16.32 | 1.049 | 1E | 2.0 | 2.500 | 9.192 | | | | |
| to | | 120.0 | 1T | 5.0 | 7.000 | 0.0 | | | | |
| 20 | 16.32 | 0.0894 | | 0.0 | 9.500 | 0.849 | | Vel = | 6.06 | |
| | 0.0 16.32 | | | | | 10.041 | | K Factor = | 5.15 | |
| *P-33 | | | | | | | | | | |
| 32 | 16.95 | 1.049 | 1E | 2.0 | 2.500 | 9.884 | | | | |
| to | | 120.0 | 1T | 5.0 | 7.000 | 0.0 | | | | |
| 21 | 16.95 | 0.0958 | | 0.0 | 9.500 | 0.910 | | Vel = | 6.29 | |
| | 0.0 16.95 | | | | | 10.794 | | K Factor = | 5.16 | |
| *P-36 | | | | | | | | | | |
| 31 | 16.44 | 1.049 | 1T | 5.0 | 1.160 | 9.319 | | | | |
| to | | 120.0 | | 0.0 | 5.000 | 0.0 | | | | |
| 3 | 16.44 | 0.0906 | | 0.0 | 6.160 | 0.558 | | Vel = | 6.10 | |
| | 0.0 16.44 | | | | | 9.877 | | K Factor = | 5.23 | |
| *P-39 | | | | | | | | | | |
| 30 | 16.97 | 1.049 | 1T | 5.0 | 1.160 | 9.901 | | | | |
| to | | 120.0 | | 0.0 | 5.000 | 0.0 | | | | |
| 4 | 16.97 | 0.0959 | | 0.0 | 6.160 | 0.591 | | Vel = | 6.30 | |
| | 0.0 16.97 | | | | | 10.492 | | K Factor = | 5.24 | |
| *P-42 | | | | | | | | | | |
| 29 | -47.05 | 1.682 | 2T | 19.799 | 86.660 | 28.515 | | | | |
| to | | 120.0 | | 0.0 | 19.799 | 0.0 | | | | |
| 8 | -47.05 | -0.0635 | | 0.0 | 106.459 | -6.765 | | Vel = | 6.79 | |
| | 0.0 -47.05 | | | | | 21.750 | | K Factor = | -10.09 | |
| *P-45 | | | | | | | | | | |
| 23 | -11.71 | 1.682 | 1T | 9.9 | 4.620 | 9.699 | | | | |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | | | |
| 24 | -11.71 | -0.0048 | | 0.0 | 14.520 | -0.070 | | Vel = | 1.69 | |

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|------------------|---------------------------|-----------------------|----------------------|-----------------------------|-------------------------|----------------|-------|------------------|-------|
| 24 to 25 | 14.82 3.11 | 1.682 120.0 0.0004 | | 0.0 0.0 0.0 | 10.000 0.0 10.000 | 9.629 0.0 0.004 | | | Vel = 0.45 | |
| 25 to 26 | 15.03 18.14 | 1.682 120.0 0.0109 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 9.633 0.0 0.120 | | | Vel = 2.62 | |
| 26 to 27 | 15.15 33.29 | 1.682 120.0 0.0335 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 9.753 0.0 0.369 | | | Vel = 4.81 | |
| 27 to 28 | 15.50 48.79 | 1.682 120.0 0.0679 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 10.122 0.0 0.747 | | | Vel = 7.04 | |
| 28 to 9 | 16.18 64.97 | 1.682 120.0 0.1155 | 2E 1T | 9.9 9.9 0.0 | 73.830 19.800 93.630 | 10.869 0.0 10.810 | | | Vel = 9.38 | |
| | 0.0 64.97 | | | | | 21.679 | | | K Factor = 13.95 | |
| *P-48 | | | | | | | | | | |
| 1 to 17 | -15.78 -15.78 | 1.682 120.0 -0.0085 | 1E | 4.95 0.0 0.0 | 3.660 4.950 8.610 | 9.673 0.0 -0.073 | | | Vel = 2.28 | |
| 17 to 18 | 16.13 0.35 | 1.682 120.0 0.0 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 9.600 0.0 0.0 | | | Vel = 0.05 | |
| 18 to 19 | 16.12 16.47 | 1.682 120.0 0.0092 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 9.600 0.0 0.101 | | | Vel = 2.38 | |
| 19 to 20 | 16.22 32.69 | 1.682 120.0 0.0324 | | 0.0 0.0 0.0 | 10.500 0.0 10.500 | 9.701 0.0 0.340 | | | Vel = 4.72 | |
| 20 to 21 | 16.32 49.01 | 1.682 120.0 0.0685 | | 0.0 0.0 0.0 | 11.000 0.0 11.000 | 10.041 0.0 0.753 | | | Vel = 7.08 | |
| 21 to 22 | 16.95 65.96 | 1.682 120.0 0.1187 | 3E | 14.849 0.0 0.0 | 75.410 14.849 90.259 | 10.794 0.0 10.716 | | | Vel = 9.52 | |
| 22 to 10 | 0.0 65.96 | 2.157 120.0 0.0353 | | 0.0 0.0 0.0 | 4.160 0.0 4.160 | 21.510 0.0 0.147 | | | Vel = 5.79 | |
| | 0.0 65.96 | | | | | 21.657 | | | K Factor = 14.17 | |
| *P-51 | | | | | | | | | | |
| 9 to 14 | 48.11 48.11 | 1.682 120.0 0.0662 | 2T | 19.799 0.0 0.0 | 86.660 19.799 106.459 | 21.679 0.0 7.050 | | | Vel = 6.95 | |
| | 0.0 48.11 | | | | | 28.729 | | | K Factor = 8.98 | |

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|----------|----------------------|---------------------------|-------------------------|----------------|----------------|------------|-------|-------|
| *P-54 | | | | | | | | | |
| 7 | 47.80 | 1.682 | 1E | 4.95 | 86.660 | 21.738 | | | |
| to | | 120.0 | 1T | 9.9 | 14.850 | 0.0 | | | |
| 16 | 47.8 | 0.0654 | | 0.0 | 101.510 | 6.642 | Vel = | 6.90 | |
| 16 | 0.0 | 2.157 | | 0.0 | 6.910 | 28.380 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 29 | 47.8 | 0.0195 | | 0.0 | 6.910 | 0.135 | Vel = | 4.20 | |
| 29 | 47.05 | 2.157 | 1T | 12.307 | 5.290 | 28.515 | | | |
| to | | 120.0 | | 0.0 | 12.307 | 0.0 | | | |
| 15 | 94.85 | 0.0692 | | 0.0 | 17.597 | 1.218 | Vel = | 8.33 | |
| | 0.0 | | | | | | | | |
| | 94.85 | | | | | 29.733 | K Factor = | 17.39 | |
| *P-57 | | | | | | | | | |
| 1 | 15.78 | 2.157 | | 0.0 | 10.580 | 9.673 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 23 | 15.78 | 0.0025 | | 0.0 | 10.580 | 0.026 | Vel = | 1.39 | |
| 23 | 11.71 | 2.157 | 1E | 6.153 | 6.910 | 9.699 | | | |
| to | | 120.0 | | 0.0 | 6.153 | 0.0 | | | |
| 2 | 27.49 | 0.0070 | | 0.0 | 13.063 | 0.092 | Vel = | 2.41 | |
| 2 | 0.0 | 1.682 | | 0.0 | 3.660 | 9.791 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 3 | 27.49 | 0.0235 | | 0.0 | 3.660 | 0.086 | Vel = | 3.97 | |
| 3 | 16.44 | 1.682 | | 0.0 | 11.000 | 9.877 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 4 | 43.93 | 0.0559 | | 0.0 | 11.000 | 0.615 | Vel = | 6.34 | |
| 4 | 16.96 | 1.682 | 1T | 9.9 | 99.910 | 10.492 | | | |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | | |
| 7 | 60.89 | 0.1024 | | 0.0 | 109.810 | 11.246 | Vel = | 8.79 | |
| 7 | -47.79 | 2.157 | | 0.0 | 6.910 | 21.738 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 8 | 13.1 | 0.0017 | | 0.0 | 6.910 | 0.012 | Vel = | 1.15 | |
| 8 | -47.05 | 2.157 | | 0.0 | 6.910 | 21.750 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 9 | -33.95 | -0.0103 | | 0.0 | 6.910 | -0.071 | Vel = | 2.98 | |
| 9 | 16.86 | 2.157 | | 0.0 | 7.500 | 21.679 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 10 | -17.09 | -0.0029 | | 0.0 | 7.500 | -0.022 | Vel = | 1.50 | |
| 10 | 65.96 | 1.682 | 1E | 4.95 | 86.660 | 21.657 | | | |
| to | | 120.0 | 1T | 9.9 | 14.850 | 0.0 | | | |
| 13 | 48.87 | 0.0682 | | 0.0 | 101.510 | 6.919 | Vel = | 7.06 | |
| 13 | 0.0 | 2.157 | | 0.0 | 7.500 | 28.576 | | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | | |
| 14 | 48.87 | 0.0204 | | 0.0 | 7.500 | 0.153 | Vel = | 4.29 | |
| 14 | 48.11 | 2.157 | 1T | 12.307 | 1.620 | 28.729 | | | |
| to | | 120.0 | | 0.0 | 12.307 | 0.0 | | | |
| 15 | 96.98 | 0.0721 | | 0.0 | 13.927 | 1.004 | Vel = | 8.51 | |
| 15 | 94.84 | 2.157 | 1E | 6.153 | 5.700 | 29.733 | | | |
| to | | 120.0 | | 0.0 | 6.153 | 0.0 | | | |
| TOP | 191.82 | 0.2548 | | 0.0 | 11.853 | 3.020 | Vel = | 16.84 | |

Final Calculations - Hazen-Williams

CARIBBEAN FIRE & ASSOCIATES
EASTSIDE CARE CENTENR

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|------------------|--------------------------|---------------------------|-------------------------|------------------------------|--------------------------|-------|---------------------------------|-------|
| TOP to BOR | 0.0 191.82 | 4.26 120.0 0.0093 | 1E 1G 1Zaf | 13.167 2.633 0.0 | 10.000 15.800 25.800 | 32.753 6.764 0.239 | | * Fixed loss = 2 Vel = 4.32 | |
| BOR to A | 0.0 191.82 | 4.26 140.0 0.0070 | 2E | 35.024 0.0 0.0 | 36.000 35.024 71.024 | 39.756 0.0 0.495 | | Vel = 4.32 | |
| A to TEST | 0.0 191.82 | 8.249 140.0 0.0003 | 1T 1G | 54.673 6.248 0.0 | 148.000 60.921 208.921 | 40.251 0.0 0.058 | | Vel = 1.15 | |
| | 100.00 291.82 | | | | | 40.309 | | Qa = 100.00 K Factor = 45.96 | |

AutoPeaking Summary

CARIBBEAN FIRE & ASSOCIATES
EASTSIDE CARE CENTENR

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Auto Peaking Summary - List of Pipes for Area Calculated

| Left Side | | | Right Side | | |
|--------------|----|--------|---------------|----|--------|
| From | To | Length | From | To | Length |
| 28 | 9 | 73.830 | 23 | 24 | 4.620 |
| 21 | 22 | 75.410 | 1 | 17 | 3.660 |

| | | | Flow | Safety | Pressure |
|-----------------|--------|--|----------|--------|--------------|
| | | | Required | Margin | Differential |
| <hr/> | | | | | |
| Left | 11.000 | | 291.886 | 19.706 | -0.874 |
| Area Calculated | | | 291.822 | 18.832 | 0.000 |

Typical Distance Between Heads = 11.000

Split Point Used in Worst Area Peaked = S002

Reliable®

Model RFC43 (SIN RA0612)
Model RFC49 (SIN RA0616)
Flat Concealed
Residential Sprinklers

Bulletin 006 Rev.D

A Concealed Residential Sprinkler engineered for a minimum design density of 0.05 gpm/ft² with low GPM requirements.

Features

1. Very low water flow requirements.
2. ½" (13mm) Total adjustment.
3. Thread-On/Thread-Off or Push-On/Thread Off cover attachment option.
4. Smooth aesthetic ceiling profile.
5. Available in brass, chrome and black plated or painted finishes.

Listings & Approval

1. Listed by Underwriters Laboratories, and certified by UL for Canada (cULus)
2. NYC MEA 258-93-E

UL Listing Categories

Residential Automatic Sprinklers

UL Guide Number

VKKW

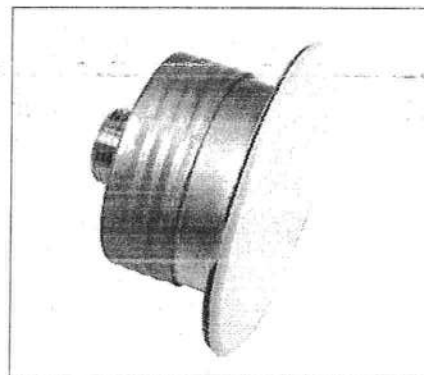
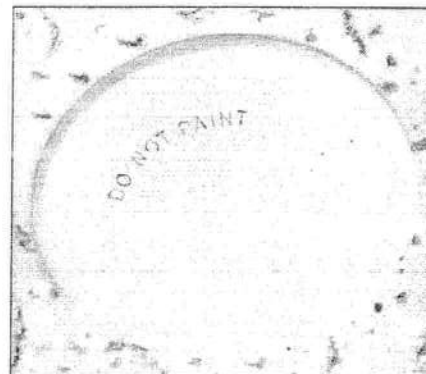
Product Description

Model RFC43 and RFC49 Concealed Residential Sprinklers are fast response residential fusible solder link automatic sprinklers. Residential sprinklers differ from standard sprinklers primarily in their response time and water distribution patterns.

Model RFC43 and RFC49 sprinklers discharge water in a hemispherical pattern below the sprinkler deflector. Residential distribution patterns are higher and generally contain a finer droplet size than standard sprinkler patterns.

The combination of speed of operation and high discharge pattern required for residential sprinklers has demonstrated, in fire testing, an ability for controlling residential fires, and thereby providing significant evacuation time for occupants.

The RFC43 and RFC49 Sprinklers provide the best form of fire protection by combining an attractive appearance and ½" (13mm) of cover adjustment for ease of installation. The small diameter cover plate is easily and positively attached and blends into the ceiling, concealing the most dependable fire protection available, an automatic sprinkler system.



The RFC43 and RFC49 are UL Listed Residential Sprinklers to be installed in the residential portions of any occupancy in accordance with NFPA 13, 13R, & 13D.

The RFC43 and RFC49 can reduce the need for precise cutting of drop nipples. The threaded cover plate assembly can be adjusted without tools to fit accurately against the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Application and Installation

The RFC43 and RFC49, for residential installations, use a 165°F (74°C) fusible solder link in a tuning fork style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. The cover plate is attached to the skirt, using 135°F (57°C) ordinary temperature classification solder. When the ceiling temperature rises, the solder holding the cover plate releases the cover allowing the deflector to drop into position and

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

exposing the sprinkler inside to ceiling temperature. The subsequent operation of the solder link opens the waterway and causes the deflector to drop into position to distribute the discharging water in a hemispherical pattern below the sprinkler deflector. Any adjustment of thread engagement between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling. The residential distribution pattern contains a finer droplet size than a standard sprinkler, and the pattern produces significantly higher wall wetting.

After a 2 5/8 inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model FC Wrench. When installing a sprinkler, the wrench is first positioned into the sprinkler/cup assembly and around the hexagonal body of the sprinkler frame. The Wrench must bottom out against the cup in order to ensure proper, safe installation. 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. MODEL RFC43 AND RFC49 CONCEALED SPRINKLERS MUST BE INSTALLED ONLY WITH 135°F RATED COVERS.

Cover assemblies provide up to 1/2" (13mm) of adjustment. Turn the cover clockwise until the flange is in contact with the ceiling. For the push-on/thread-off option, the cover assembly is pushed onto the cup and final adjustment is made by turning the cover clockwise until the skirt flange makes full contact with the ceiling. Cover removal requires turning in the counter-clockwise direction.

In ceilings that have a plenum space above the sprinkler, the plenum space may have neutral or negative pressurization but must not be positively pressurized. Inspect all sprinklers after installation to ensure that the gap between the cover plate and ceiling and the 4 slots in the cup are all open and free from any air flow impediment.

Temperature Rating

| Sprinkler | Cover Plate | Max. Ambient Temp. |
|------------|-------------|--------------------|
| 165°F/74°C | 135°F/57°C | 100°F/38°C |

Installation Data: RFC43 (SIN RA0612)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.3 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 12 (45) | 7.8 (0.54) |
| 1/2" (15mm) | 4.3 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 9.1 (0.63) |
| 1/2" (15mm) | 4.3 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 18 (68) | 17.5 (1.21) |
| 1/2" (15mm) | 4.3 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 21 (79) | 23.8 (1.64) |

Note: 1 bar = 100 Kpa

Installation Data: RFC49 (RA0616)

| Thread Size inch (mm) | K Factor | Sprinkler Spacing ft. (m) | Maximum Distance to Wall ft. (m) | Minimum Distance between sprinklers, ft. (m) | Minimum Required Sprinkler Discharge | |
|--------------------------|-------------|---------------------------------|--|--|---|---------------------|
| | | | | | Flow gpm (Lpm) | Press. psi (bar) |
| 1/2" (15mm) | 4.9 | 12 x 12 (3.6x3.6) | 6 (1.83) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 14 x 14 (4.3x4.3) | 7 (2.13) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 16 x 16 (4.9x4.9) | 8 (2.43) | 8 (2.43) | 13 (49) | 7.0 (0.48) |
| 1/2" (15mm) | 4.9 | 18 x 18 (5.5x5.5) | 9 (2.74) | 8 (2.43) | 17 (64.3) | 12.0 (0.83) |
| 1/2" (15mm) | 4.9 | 20 x 20 (6.0x6.0) | 10 (3.05) | 8 (2.43) | 20 (75.7) | 16.7 (1.14) |

Note: 1 bar = 100 Kpa

FOR SLOPED CEILING APPLICATIONS SEE RASCO BULLETIN 035.

Maintenance

Model RFC43 and RFC49 Concealed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gentle vacuuming. Remove any sprinkler cover plate assembly which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Model RFC43 and RFC49 Residential Concealed Sprinkler Specification

Sprinklers shall be cULus Listed low flow residential concealed sprinklers with drop-down deflector and adjustable flat cover plate engineered for a minimum design density of 0.05 gpm/ft². Sprinkler frame and deflector shall be of bronze frame construction having a 1/2" NPT thread. Thermal element shall consist of an approved black-painted beryllium-nickel fusible solder link with symmetric lever mechanism, maintaining a Teflon-coated Belleville spring washer and machined brass cap water seal assembly containing no plastic parts. Sprinkler K-factor shall be nominal 4.3 (62.4), having a 7/16" orifice. Temperature rating shall be Ordinary 165°F (74°C); cover plate temperature rating to be

135°F (57°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange allowing a 1/2" cover plate adjustment. Any secure engagement between the cover plate and the cup will assure that the drop-down deflector is properly located below the ceiling. A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the drop-down sprinkler deflector from damage, which could occur during construction before the cover plate is installed. Standard cover finish: [Chrome] [White] [Specialty – specify]. Residential concealed sprinklers shall be Reliable Model RFC43, SIN RA0612 (Bulletin 006) or Model RFC49, SIN RA0616 (Bulletin 006).

Ordering Information Specify:

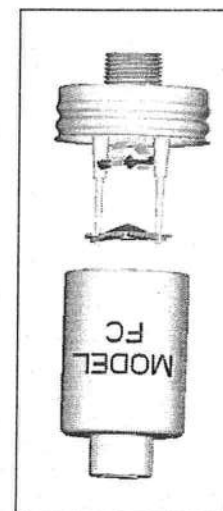
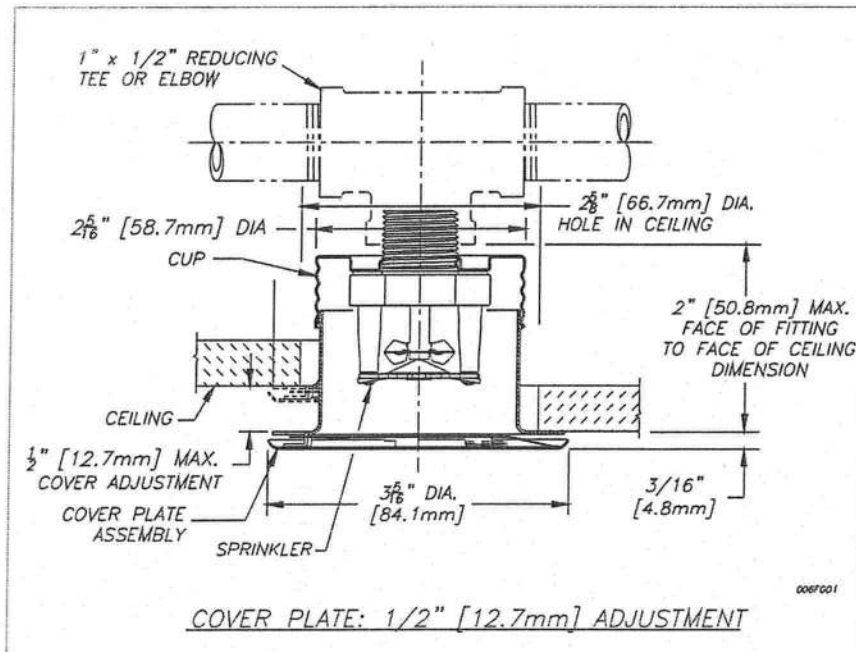
1. Sprinkler Model
2. Cover Plate Finish
3. Thread-On or Push-On Feature

Cover Plate Finishes ⁽¹⁾

| Standard Finishes |
|------------------------------|
| Chrome |
| White |
| Special Application Finishes |
| Bright Brass |
| Black Plating |
| Black Paint |
| Off White |
| Satin Chrome |

⁽¹⁾ Other colors and finishes available. Consult factory for details.

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



Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Supertrol electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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:

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588

(800) 848-6051

(914) 829-2042

www.reliablesprinkler.com

Sales Offices

Sales Fax

Corporate Offices

Internet Address



Revision lines indicate updated or new data
E.G. Printed in USA: 12/06 P/N 9999970261



Model F1FR Model F1FR Recessed Quick Response Sprinklers

Model F1FR Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Vertical Sidewall
Horizontal Sidewall
– HSW 1 Deflector

Model F1FR Recessed Sprinkler Types

Recessed Pendent
Recessed Horizontal Sidewall
– HSW 1 Deflector

Listings & Approvals

1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters' Laboratories of Canada (ULC)
3. Certified by FM Approvals
4. Loss Prevention Council (LPC, UK)
5. NYC BS&A No. 587-75-SA
6. Meets MIL-S-901C and MIL-STD 167-1
7. Verband der Schadenversicherer (VdS, Germany)
8. NYC MEA 258-93-E

UL Listing Category

Sprinklers, Automatic & Open
Quick Response Sprinkler

UL Guide Number

VNIV

Patents: US Patent No. 6,374,920 Applies to
Model F1FR Vertical Sidewall Sprinklers.

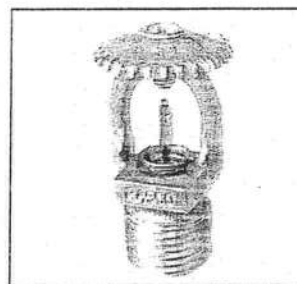
Product Description

Reliable Models F1FR and F1FR Recessed Sprinklers are quick response sprinklers which combine the durability of a standard sprinkler with the attractive low profile of a decorative sprinkler.

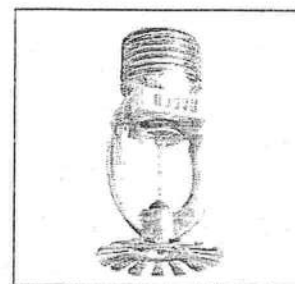
The Models F1FR and F1FR Recessed automatic sprinklers utilize a 3.0 mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five to ten times faster than standard response sprinklers. This quick response enables the Model F1FR and F1FR Recessed sprinklers to apply water to a fire much faster than standard sprinklers of the same temperature rating.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. The balance of parts are made of brass, copper and beryllium nickel.

At normal temperatures, the glass bulb contains the fluid in both the liquid and vapor phases. The vapor phase can be seen as a small bubble. As heat is applied, the liquid ex-



Upright



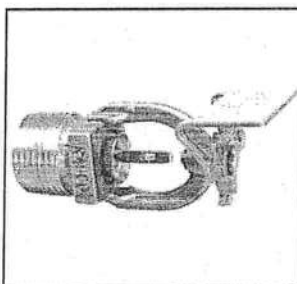
Pendent



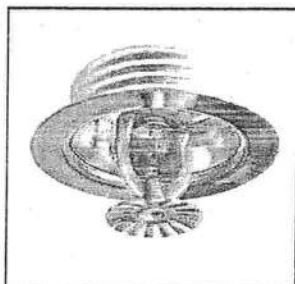
Vertical Sidewall



Conventional



Horizontal Sidewall
HSW 1 Deflector



Recessed Pendent
(Model FP Shown)

pands, forcing the bubble smaller and smaller as the liquid pressure increases. Continued heating forces the liquid to push out against the bulb, causing the glass to shatter, opening the waterway and allowing the deflector to distribute the discharging water.

Application

Quick response sprinklers are used in fixed fire protection systems: Wet, Dry, Deluge or Preaction. Care must be exercised that the orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of the National Fire Protection Association or the approving Authority Having Jurisdiction. Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-81N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be intermixed.

Model F1FR Quick Response Upright, Pendent & Conventional Sprinklers Installation Wrench: Model D Sprinkler Wrench Installation Data:

| Sprinkler Type | K Factor | | Sprinkler Height | Approval Organization | Sprinkler Identification Number (SIN) | |
|---|----------|--------|------------------|-----------------------|---------------------------------------|-------|
| | US | Metric | | | SSU | SSP |
| Standard-Upright (SSU) and Pendent (SSP) Deflectors Marked to Indicate Position | | | | | | |
| 1/2" (15mm) Standard Orifice with 1/2" NPT (R1/2) Thread | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,6,7 | R3625 ⁽¹⁾ | R3615 |
| 17/32" (20mm) Large Orifice with 3/4" NPT (R3/4) Thread | 8.0 | 115 | 2.3" (58mm) | 1,2,3,4,7,8 | R3622 ⁽¹⁾ | R3612 |
| 7/16" (17mm) Small Orifice with 1/2" NPT (R1/2) Thread | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3623 ⁽¹⁾ | R3613 |
| 3/8" (10mm) Small Orifice with 1/2" NPT (R1/2) Thread | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3621 ⁽¹⁾ | R3611 |
| 10mm Orifice XLH with R3/8" Thread | 4.2 | 60 | 56mm | 4,6,7 | R3624 | R3614 |
| Conventional-Install in Upright or Pendent Position | | | | | | |
| 10mm Orifice XLH with R3/8 Thread | 4.2 | 60 | 56mm | — | R3674 | |
| 15mm Standard Orifice with 1/2" NPT (R1/2) Thread | 5.6 | 80 | 56mm | 4,6,7 | R3675 | |
| 20mm Large Orifice with 3/4" NPT (R3/4) Thread | 8.0 | 115 | 58mm | 4,7 | R3672 | |

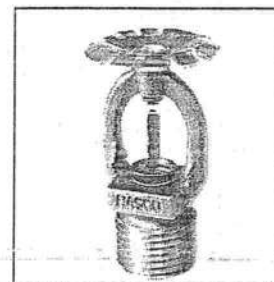
(1) Polyester coated upright UL and ULC listed corrosion resistant.



Upright



Pendent

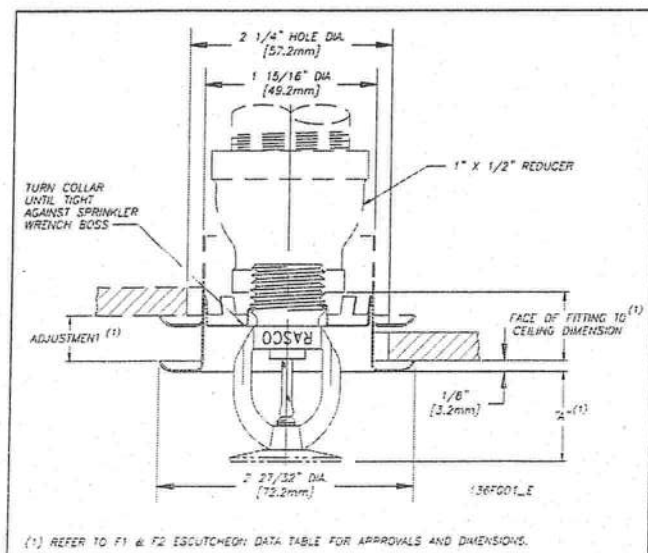


Conventional

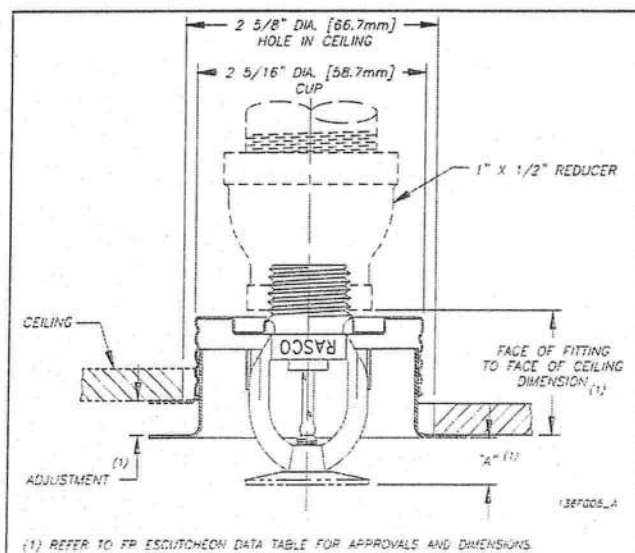
Model F1FR Quick Response Recessed Pendent Sprinkler Installation Wrench: Model GFR1 Sprinkler Wrench Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval ⁽¹⁾ Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|---------------------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" (15mm) | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1,2,3,4,5,7,8 | R3615 |
| 17/32" (20mm) | 3/4" NPT (R3/4) | 8.0 | 115 | 2.3" (58mm) | 1,2,3,8 | R3612 |
| 7/16" (11mm) | 1/2" NPT (R1/2) | 4.2 | 60 | 2.2" (56mm) | 1,2,8 | R3613 |
| 3/8" (10mm) | 1/2" NPT (R1/2) | 2.8 | 40 | 2.2" (56mm) | 1,2,8 | R3611 |
| 10mm | R3/8" | 4.2 | 60 | 56mm | 4,7 | R3614 |

(1) Refer to escutcheon data table for approvals and dimensions.



(1) REFER TO F1 & F2 ESCUTCHEON DATA TABLE FOR APPROVALS AND DIMENSIONS.



(1) REFER TO FP ESCUTCHEON DATA TABLE FOR APPROVALS AND DIMENSIONS.

Model F1FR Quick Response Vertical Sidewall Sprinkler

Installation Wrench: Model D Sprinkler Wrench

Installation Position: Upright or Pendent

Approval Type: Light Hazard Occupancy

Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Height | Approval Organizations | Sprinkler Identification Number (SIN) |
|-----------------|-----------------|----------|--------|------------------|------------------------|---------------------------------------|
| | | US | Metric | | | |
| 1/2" | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 1, 2, 3, 6, 8 | R3685 |
| 15mm | 1/2" NPT (R1/2) | 5.6 | 80 | 2.2" (56mm) | 4 ⁽¹⁾ | |

⁽¹⁾ LPC Approval is for Pendent position only.



Vertical Sidewall

| Orientation | Deflector to Ceiling Dimension (Min. - Max.) |
|-------------|--|
| Upright | 4" - 12" (102mm - 305mm) |
| Pendent | 6" - 12" (152mm - 305mm) |

US Patent No. 6,374,920

Model F1FR Quick Response Horizontal Sidewall Sprinkler

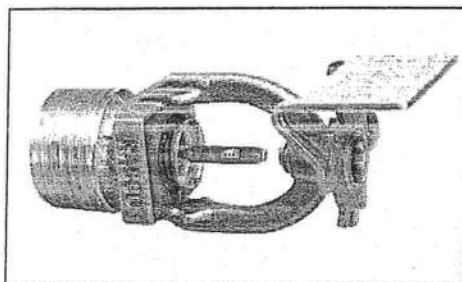
Deflector: HSW 1

Installation Wrench: Model D Sprinkler Wrench

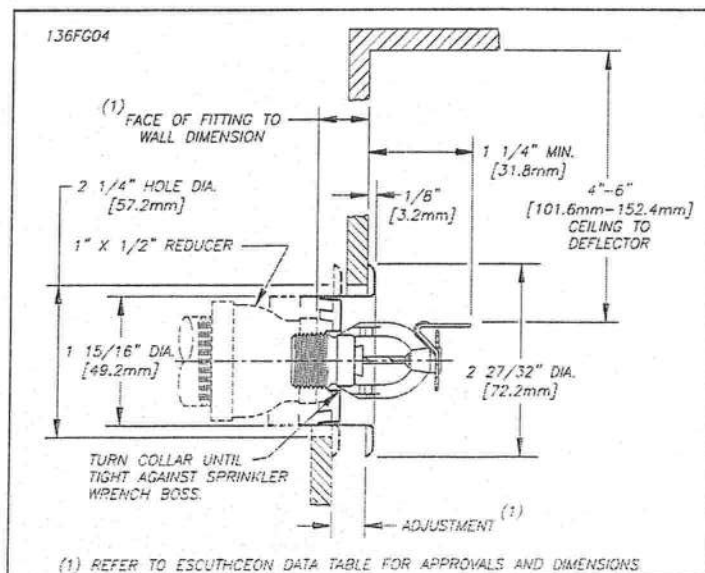
Installation Data:

| Nominal Orifice | Thread Size | K Factor | | Sprinkler Length | Approval Organizations and Type of Approval | | Sprinkler Identification Number (SIN) |
|-----------------|----------------|----------|--------|------------------|---|-----------------|---------------------------------------|
| | | US | Metric | | Light Hazard | Ordinary Hazard | |
| 1/2" (15mm) | 1/2" NPT(R1/2) | 5.6 | 80 | 2.63" (67mm) | 1,2,3,5,8 | 1,2,5,8 | R3635 |

NOTE: UL, ULC and MEA Listing permits use with F1 or F2 recessed escutcheon. FM Approvals do not permit recessed usage.



Horizontal Sidewall



Installation

Quick response sprinklers are intended for installation as specified in NFPA 13, FM Global Loss Prevention Data Sheet 2-81N or other applicable standards. Quick response sprinklers and standard response sprinklers should not be inter-mixed.

The Model F1FR Recessed Quick Response Sprinklers are to be installed as shown. The Model F1 or F2 Escutcheons illustrated are the only recessed escutcheons to be used with the Model F1FR Sprinklers. The use of any other recessed escutcheon will void all approvals and negate all warranties.

When installing Model F1FR Sprinklers, use the Model D Sprinkler Wrench. When installing Model F1FR Recessed Pendent or Sidewall Sprinklers, use the Model GFR1 Sprinkler Wrench. Any other type of wrench may damage these sprinklers.

Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Temperature Ratings

| Classification | Sprinkler Temperature | | Max. Ambient Temp. | Bulb Color |
|---------------------|-----------------------|-----|--------------------|------------|
| | °C | °F | | |
| Ordinary | 57 | 135 | 100°F (38°C) | Orange |
| Ordinary | 68 | 155 | 100°F (38°C) | Red |
| Intermediate | 79 | 175 | 150°F (66°C) | Yellow |
| Intermediate | 93 | 200 | 150°F (66°C) | Green |
| High ⁽¹⁾ | 141 | 286 | 225°F (107°C) | Blue |

⁽¹⁾ Not available for recessed sprinklers.

Escutcheon Data

| Escutcheon Model | Approvals | Adjustment | "A" Dimension | Face of Fitting to Ceiling or Wall Dimension |
|------------------------------|-------------------------------|--------------------------|-----------------------------------|--|
| F1 | 1,2,4,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 3/4" (19.1mm) | 3/16" - 1/16" (5mm - 24mm) |
| F2 | 1,2,3 ⁽¹⁾ ,4,5,7,8 | Max Recess Min Recess | 1 1/2" (38.1mm) 1 5/16" (24mm) | 3/16" - 1/16" (5mm - 17mm) |
| FP Push-on/ Thread-off | 1,2 | Max Recessed | 7/16" (11mm) | 1 1/2" (38.1mm) |
| | 1,2 | Min Recessed | 1 5/16" (24mm) | 1" (25.4mm) |

No Dimensional Figure for FP

⁽¹⁾ Horizontal Sidewall is not FM approved in the recessed configuration.

Maintenance

The Models F1FR and F1FR Recessed Sprinklers should be inspected quarterly 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 dust by using a soft brush or gen-

tle vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Sprinkler Types

Standard Upright
Standard Pendent
Conventional
Sidewall (Vertical, Horizontal HSW1)
Recessed Pendent
Recessed Horizontal Sidewall HSW1

Finishes ^{(1) (2)}

| Standard Finishes | |
|---------------------------------------|------------------------------|
| Sprinkler | Escutcheon |
| Bronze | Brass |
| Chrome Plated | Chrome Plated ⁽³⁾ |
| White Polyester Coated ⁽⁴⁾ | White Painted ⁽³⁾ |
| Special Application Finishes | |
| Sprinkler | Escutcheon |
| Bright Brass | Bright Brass |
| Black Plated | Black Plated |
| Black Paint | Black Paint |
| Off White | Off White |
| Satin Chrome | Satin Chrome |

⁽¹⁾ Other finishes and colors are available on special order. Consult the factory for details.

⁽²⁾ FM Approvals is limited to bronze and brass, chrome or black plated finishes only.

⁽³⁾ FP Push-on/Thread-off escutcheon.

⁽⁴⁾ UL and ULC listed corrosion resistance.

SIN numbers: R3621, R3622, R3623, R3625.

Note: For 1/2" orifice pendent FM approved white polyester coated and UL approved white polyester corrosion resistant sprinklers refer to Bulletin 014.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Orifice Size
4. Deflector Type
5. Temperature Rating
6. Sprinkler Finish
7. Escutcheon Type
8. Escutcheon Finish (where applicable)

Note: When Model F1FR Recessed sprinklers are ordered, the sprinklers and escutcheons are packaged separately.

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

Reliable®

The Reliable Automatic Sprinkler Co., Inc.

(800)431-1588

(800)848-6051

(914)829-2042

www.reliable-sprinkler.com

Sales Offices

Sales Fax

Corporate Offices

Internet Address



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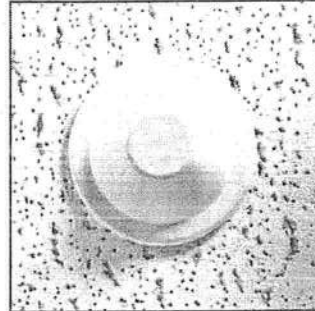
Revision lines indicate updated or new data

EG, Printed in U.S.A. 06/09

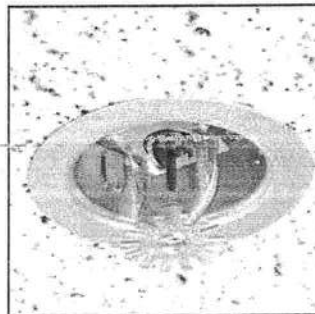
P/N999970027

Features

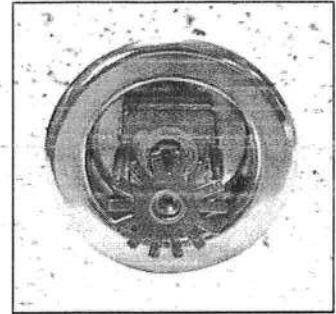
1. The Model F3QR sprinkler utilizes Belleville Spring Closure Technology. Reliable is the first in the industry to produce a Quick Response Dry Concealed sprinkler utilizing this technology.
2. Styles available
 - Pendent
 - Recessed FP Pendent
 - Recessed F1 Pendent
 - Concealed
 - Horizontal Sidewall
 - Recessed Horizontal Sidewall - FP
 - Recessed F1 Horizontal Sidewall
3. 1½" (38mm) escutcheon adjustment on pendent sprinkler.
4. ½" (13mm) escutcheon adjustment on recessed sprinkler with push-on/ thread-off FP Model Escutcheon ring.
5. ⅝" (9.5mm) cover plate adjustment on concealed sprinkler with push-on/ thread-off CCP Cover Plate.
6. ¾" (19mm) escutcheon adjustment on recessed sprinkler with G/F1 Escutcheon.
7. Attractive appearance. Employs 3mm frangible glass bulb and galvanized nipple.
8. Lengths available to accommodate installation dimensions from 2" - to - 48" (51mm - to - 1219mm), in ¼" (6mm) increments.
9. Available in a variety of plated and painted finishes.



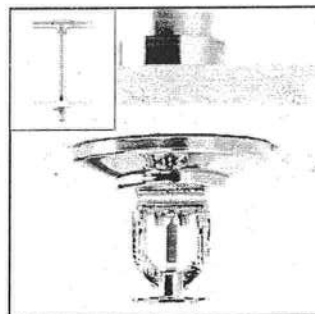
Concealed



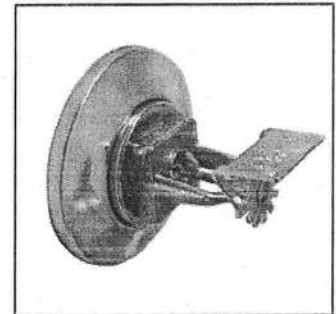
Recessed FP Pendent



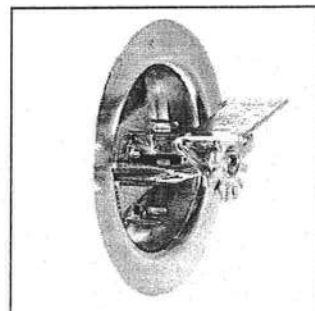
Recessed F1 Pendent



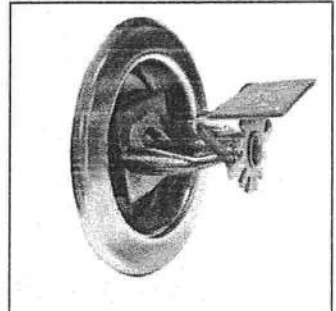
Pendent



Horizontal Sidewall



Recessed FP
Horizontal Sidewall



Recessed F1
Horizontal Sidewall

Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)

| Style | Response | Sprinkler System Type | Hazard |
|--|----------|---------------------------------------|-------------------|
| Pendent Recessed Pendent Recessed F1 Pendent CCP Concealed (R5714) | Quick | Wet Pipe Dry Pipe All Preaction | Light Ordinary |
| Horizontal Sidewall Recessed FP Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | | | |

2. Certified by FM Approvals

| Style | Response | Sprinkler System Type | Hazard |
|---|----------|--|-------------------------------------|
| Pendent Recessed F1 Pendent (R5714) | Quick | Wet Pipe, Single Interlock Preaction | Light Ordinary, Groups 1&2 |
| Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734) | Quick | Wet Pipe, Single Interlock Preaction | Light |

3. NYC MEA 258-93-E

Model F3QR Dry Pendent Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated cans.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

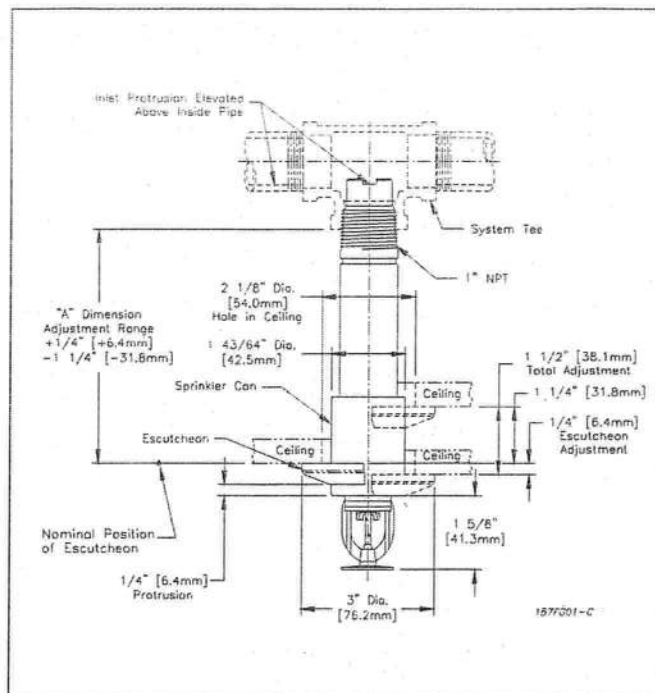
Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

Sprinkler Guard: Model C-2

Sprinkler Installation Wrench

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1 1/4" (-32mm) "A" dimension adjustment range.

Model F3QR Dry Recessed Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. Only the escutcheon will contain desired finish.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

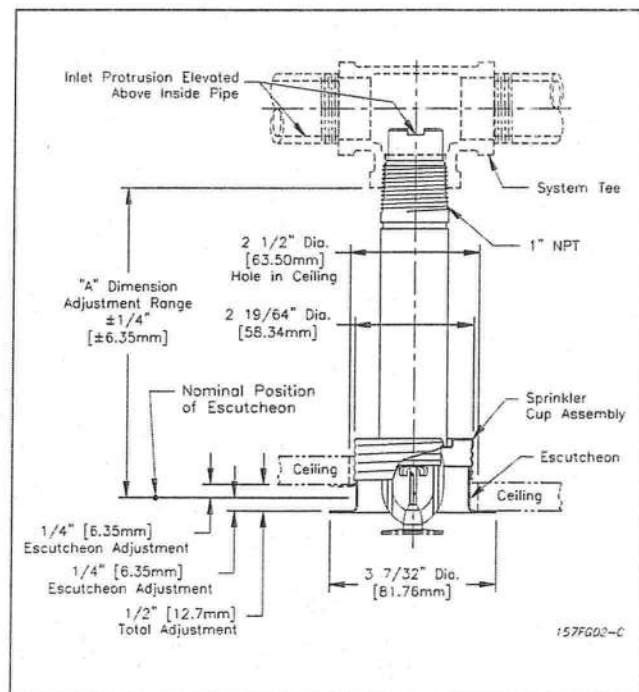
Sprinkler cup and FP escutcheon fabricated of steel and recommended for interior applications.

* Listed and Certified only by cULus

Sprinkler Installation Wrench

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Note: Do not install the Model F3QR Dry Pendent Recessed Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Pendent Concealed Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

CCP Cover Plate⁽¹⁾ Finishes⁽²⁾

| Standard Finishes | Special Application Finishes |
|------------------------|---|
| Chrome Plated White | Bright Brass Plated Black Plated Black Paint Off White Satin Chrome |

⁽¹⁾ Utilizes the 1/2" cover plate with 3/8" total adjustment.

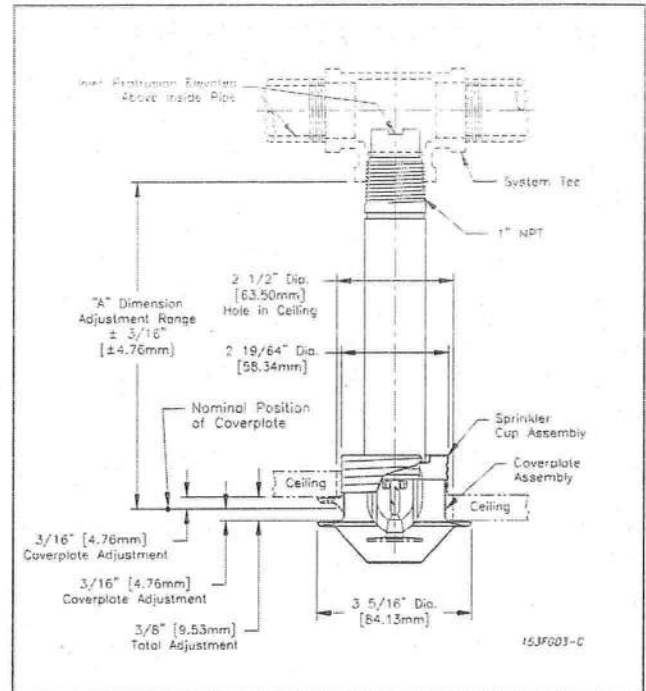
⁽²⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Cover Plate Temp. Rating | Max. Ambient Temp. |
|----------------|------------------------------|--------------------------|--------------------|
| Ordinary | 135°F (57°C) | 135°F (57°C) | 100°F (38°C) |
| Ordinary | 155°F (68°C) | 135°F (57°C) | 100°F (38°C) |
| Intermediate | 200°F (93°C) | 165°F (74°C) | 150°F (66°C) |
| High* | 286°F (141°C) | 165°F (74°C) | 150°F (66°C) |

Sprinkler cup fabricated of steel and CCP Cover Plate fabricated of brass and recommended for interior applications.

* Listed and Certified only by cULus.



Note: Do not install the Model F3QR Dry Pendent Concealed Sprinkler in ceilings which have positive pressure in the space above.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714

Model F3QR Dry Horizontal Sidewall Sprinkler

"A" Dim. 2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|----------------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White ⁽²⁾ | White |

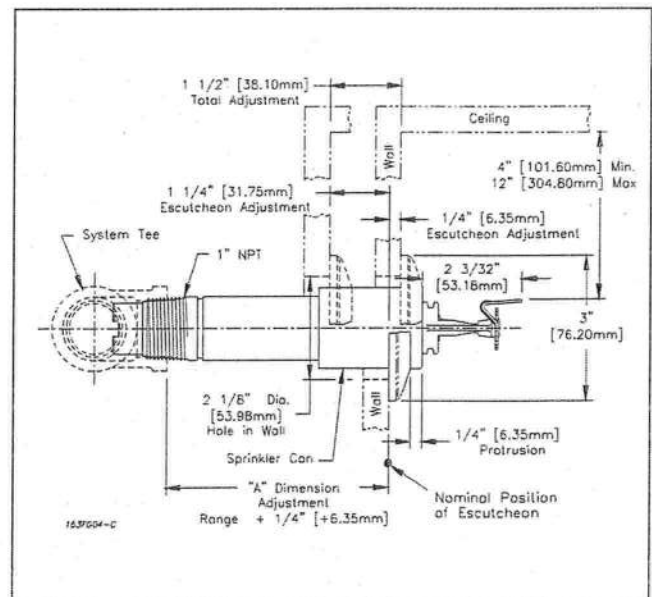
⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

⁽²⁾ White coated sprinklers will have chrome plated can.

Standard Temperature Ratings

| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High | 286°F (141°C) | 225°F (107°C) | Blue |

Sprinkler can and escutcheon fabricated of brass for weather resistance in exterior applications.



Note: The sprinkler Can protrudes 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides +1/4" (+6mm) to -1/4" (-32mm) "A" dimension adjustment range.

Sprinkler Installation Wrench:

Model G3 Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734

Model F3QR Dry Recessed F1 Pendent Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

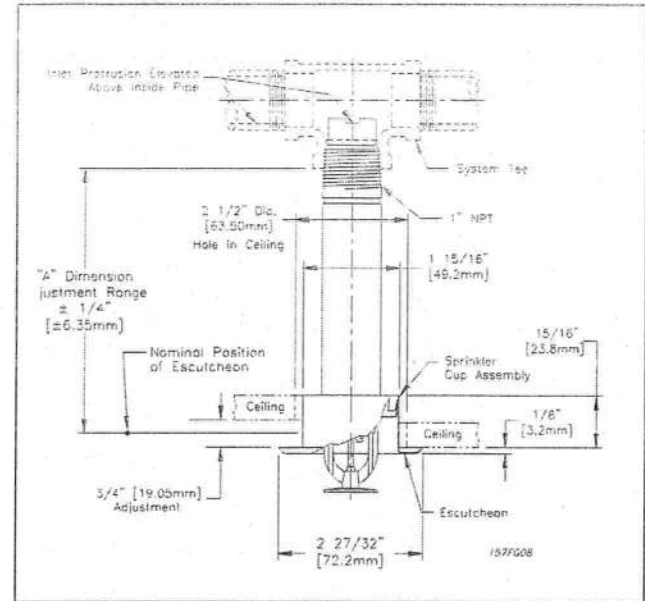
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5714



Model F3QR Dry Horizontal Recessed F1 Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon | Collar |
|---------------------|---------------------|---------------------|
| Chrome Plated White | Chrome Plated White | Chrome Plated White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

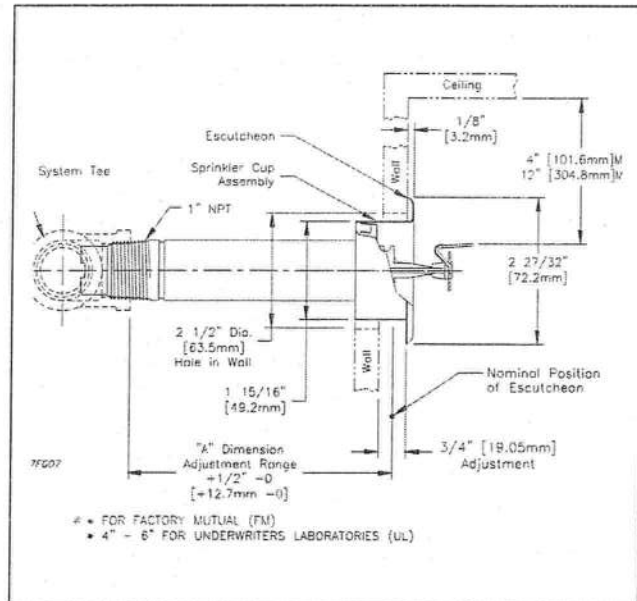
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Model F3QR Dry Horizontal Recessed Sidewall Sprinkler

"A" Dim. 3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments

Finishes⁽¹⁾

| Sprinkler | Escutcheon |
|---------------|---------------|
| Bronze | Brass |
| Chrome Plated | Chrome Plated |
| White | White |

⁽¹⁾ Other finishes and colors are available on special order. Consult factory for details. Cup remains unfinished. "See page 2"

Standard Temperature Ratings

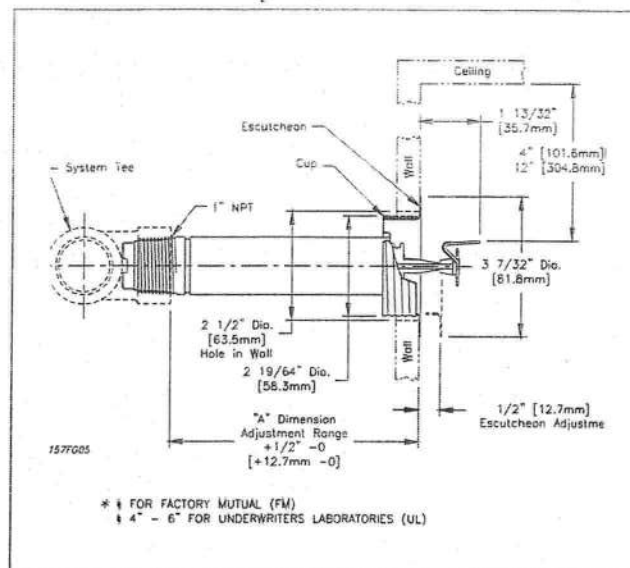
| Classification | Sprinkler Temperature Rating | Max. Ambient Temp. | Bulb Color |
|----------------|------------------------------|--------------------|------------|
| Ordinary | 135°F (57°C) | 100°F (38°C) | Orange |
| Ordinary | 155°F (68°C) | 100°F (38°C) | Red |
| Intermediate | 200°F (93°C) | 150°F (66°C) | Green |
| High* | 286°F (141°C) | 225°F (107°C) | Blue |

* Listed and Certified only by cULus.

Sprinkler Installation Wrench:

Model G3 R/C Sprinkler Wrench

Sprinkler Identification Number (SIN): R5734



Notes: Do not install the Model F3QR Dry Horizontal Recessed Sidewall Sprinkler in walls which have positive pressure in their side space.

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Technical Data:

Orifice Size: 1/2" (15mm)

Thread Size: 1" NPT per ANSI B2.1

Working Pressure: 175 psi (12 bar)

Nominal K Factor - US / (Metric): 5.6 / (80)

Product Description

Reliable Model F3QR Dry Sprinklers are quick response sprinklers utilizing a durable 3mm frangible glass bulb. This quick response enables these sprinklers to apply water to a fire much sooner than standard response sprinklers of the similar temperature rating.

Model F3QR Dry Sprinklers are intended for use in dry and preaction systems and in areas subjected to freezing temperatures, such as freezers and unheated portions inside and outside buildings.

Environments wherein dry sprinklers are employed can be corrosive. For this reason, Model F3 Sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminants from entering the internal portion of the drop nipple. The wax must not be removed.

Operation

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. When the temperature increases sufficiently, due to a fire, the bulb shatters allowing operating parts to clear the waterway. This enables the inlet seal to release air or water and subsequently, cause water flow over the deflector in a uniform spray pattern, controlling or extinguishing the fire.

Ordering Information

Specify:

1. Sprinkler Type (select one):
 - (a) Model F3QR Dry Pendent
 - (b) Model F3QR Dry Recessed Pendent
 - (c) Model F3QR Dry Recessed F1 Pendent
 - (d) Model F3QR Dry Concealed Pendent
 - (e) Model F3QR Dry Horizontal Sidewall
 - (f) Model F3QR Dry Recessed Horizontal Sidewall
 - (g) Model F3QR Dry Recessed F1 Horizontal Sidewall
2. Sprinkler Temperature Rating.
3. Sprinkler Finish.
4. Escutcheon type (G/F1 or FP).
5. Cover Plate/Escutcheon Finish.
6. Length:

"A" Dimension (face of tee to face of ceiling or wall) in 1/4" (6mm) increments.
7. Model F3QR Dry Pendent (a) is available without sprinkler can and escutcheon.

Note:

1. The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15mm) per ANSI B2.1 [7 1/2 threads approximately].
2. All platings and paintings are decorative and intended for interior use.

General Installation Instructions

Model F3QR dry sprinklers must be installed only in standard (ANSI B 16.3 class 150 and ANSI B 16.4 class 125) pipe tees in the horizontal position, even at branch line ends. They should not be installed into elbows or pipe couplings located on drop nipples to the sprinklers. For these and other fittings including CPVC*, the dry sprinkler should be installed into a fitting to allow protrusion into the fitting in accordance with the diagrams. The "A" dimension of the dry sprinkler, which extends into the freezers or a freezing zone from wet pipe systems, should be selected to provide, as a minimum, the specified lengths in inches shown in the following table, between face of the fitting and the exterior face of the protected area. The following table is used for freezing zones when the ambient temperature around the wet pipe system is kept at 40 °F (4°C), and specifies the minimum length from fitting face to inside face of ceiling or wall for different protected area temperatures.

TABLE 1 (See Fig. 8)

| Minimum Length (Face to Inside Face Ceiling/Wall) | Temperature (Protected Area)** |
|--|-----------------------------------|
| 12 inches / 300 mm | -20°F / -29°C |
| 18 inches / 450 mm | -40°F / -40°C |
| 24 inches / 600 mm | -60°F / -51°C |

** For temperatures falling between those in the above chart, the minimum length may be determined by interpolation.

During installation, the following steps must be followed:

1. Cut the specified size hole (see illustrations) for the sprinkler in the ceiling or wall directly in line with the tee.
2. Apply pipe joint compound to the 1" (25mm) pipe threads and install sprinkler using the Model G3 or G3 R/C Sprinkler Wrench as specified.
3. Install the Model FP push-on / thread-off escutcheon or CCP cover plate if required.

Note: Installation of the Model F3QR Sprinklers is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinklers.

Model F3QR Concealed and Recessed Installation Instructions

- The Model G3 R/C wrench (Fig. 1) is designed to locate on the wrenching pads of the recessed sprinkler while centering in the cup. A standard ½" drive ratchet may be used to drive this wrench. Figures 1 and 2 show sequentially the insertion of the wrench. First the wrench, with its jaws above the sprinkler deflector, is moved laterally until centered with the cup. Then raise the wrench inside of the cup until its jaws engage the sprinkler's square wrenching pads (Fig. 3). To remove the wrench, follow this procedure in reverse order. Care should be taken to avoid striking the deflector, with the wrench.
- Model G3 Wrench (Fig. 4) is used for installation of Pendent and Horizontal Sidewall sprinklers.
- Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors

before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Model F3QR Quick Response Dry Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Remove any sprinkler which 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 until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

* Spears CPVC sprinkler adapter tees (with steel thread insert) can only be used with horizontal sidewall sprinklers which do not require protrusion into tees to prevent ice or debris blockage of sprinkler inlets. These CPVC tees do not permit sufficient sprinkler inlet protrusion as required for pendent installation.

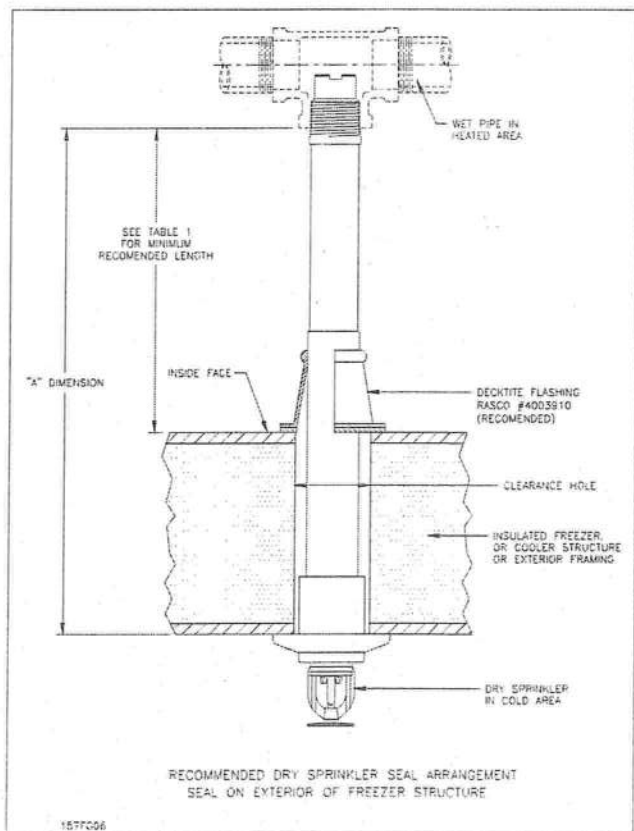


Fig. 8

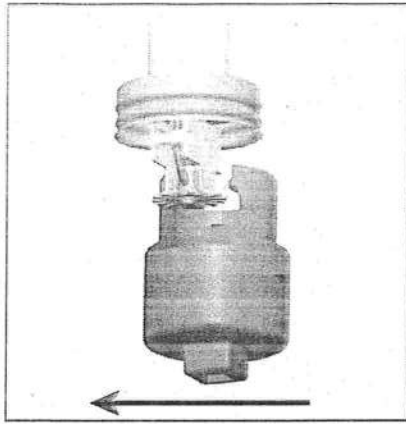


Fig. 1 - G3 R/C Wrench

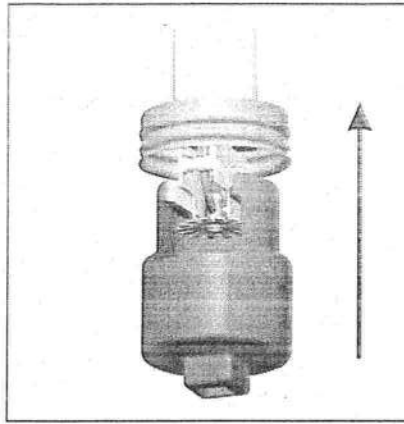


Fig. 2 - G3 R/C Wrench

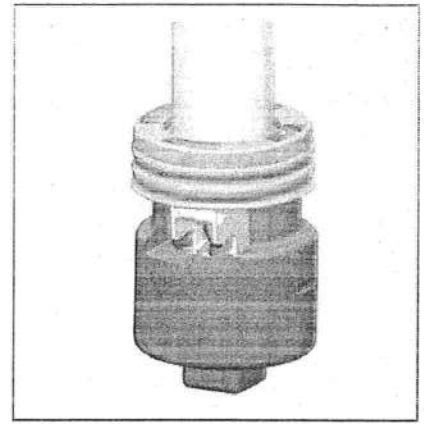


Fig. 3 - G3 R/C Wrench

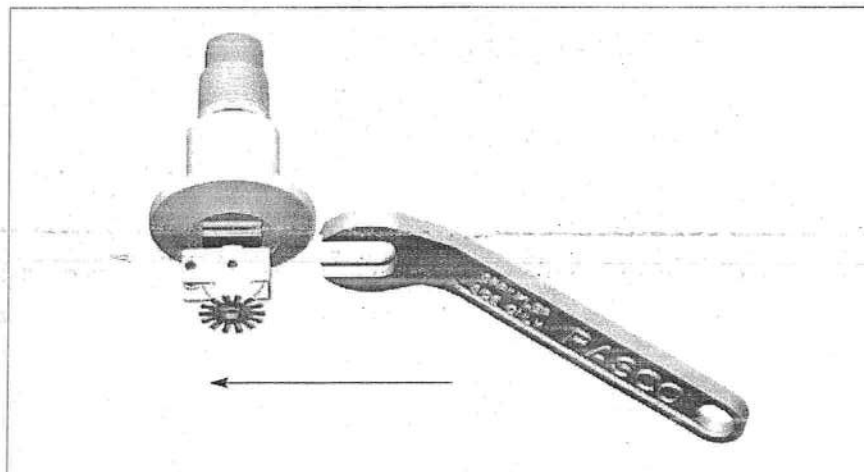


Fig. 4 - G3 Wrench

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest pertinent 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 80 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

(800) 848-6051

(914) 829-2042

www.reliablesprinkler.com

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Sales Fax

Corporate Offices

Internet Address



Recycled
Paper

Revision lines indicate updated or new data

E.G. Printed in USA 05/09

P/N9999970175

84'-2-0"

4'-0-0"

TOIG

TOI (44)

FIREWALL TRUSS

TOIFWT

TRUSS SPAN 33-1-8
33-2-0

PAUL S. LI
CONSULTING ENGINEER
SHOP DRAWING
REVIEW

☒ APPROVED

☐ APPROVED AS NOTED

☐ DIS-APPROVED, RESUBMIT

DATE: 10/26/09 BY: [Signature]

Approval does not relieve the
supplier or subcontractor of the
responsibility for furnishing all
quantities required. All items must
comply with the plans, specifications
and intent of the design.

3'-5 1/2"

3'-5 1/2"

ALL 8' FLAT CLGS

DIMENSIONS ARE FROM FRAME WALL

EXISTING STRUCTURE

BEARING HEIGHT SCHEDULE

8'-0"

NOTES:

- 1) REFER TO HIS 91 (RECOMMENDATIONS FOR BRACING INSTALLATION AND TEMPORARY BRACING) DETAIL TO SUBMITTED DRAWINGS FOR PERMANENT BRACING REQUIRED.
- 2) ALL TRUSSES (INCLUDING TRUSSES UNDER VALLEY FRAMING) MUST BE COMPLETELY DECKED OR REFER TO DETAIL V09 FOR ALTERNATE BRACING REQUIREMENTS.
- 3) ALL VALLEYS ARE TO BE CONVENTIONALLY FRAMED BY BULDER.
- 4) ALL TRUSSES ARE DESIGNED FOR 2' O.C. MAXIMUM SPACING, UNLESS OTHERWISE NOTED.
- 5) ALL WALLS SHOWN ON PLACEMENT PLAN ARE CONSIDERED TO BE LOAD BEARING, UNLESS OTHERWISE NOTED.
- 6) 5"x2" TRUSSES MUST BE INSTALLED WITH THE TOP BEING UP.
- 7) ALL ROOF TRUSS HANGERS TO BE SAMPSON HT106 UNLESS OTHERWISE NOTED. ALL FLOOR TRUSS HANGERS TO BE SAMPSON TH4422 UNLESS OTHERWISE NOTED.
- 8) BEAM/AUGER/INTEL (H09) TO BE FURNISHED BY BULDER.

SHOP DRAWING APPROVAL

THIS LAYOUT IS THE SOLE SOURCE FOR FABRICATION OF TRUSSES AND V09S. ALL PREVIOUS ARCHITECTURAL OR OTHER TRUSS LAYOUTS, REVIEW AND APPROVAL OF THIS LAYOUT MUST BE RECEIVED BEFORE ANY TRUSSES WILL BE BUILT. VERIFY ALL CONDITIONS TO INSURE AGAINST CHANGES THAT WILL RESULT IN EXTRA CHARGES TO YOU.

Prepared Drawing Date: _____

Approved By: _____ Date: _____



Burnell

PHONE: 904-437-3344 FAX: 904-437-3444

Jacksonville

PHONE: 904-772-6000 FAX: 904-772-6973

Lake City

PHONE: 386-795-6694 FAX: 386-795-7473

Sanford

PHONE: 407-322-0094 FAX: 407-322-5553

BULDER

COASTAL RECONSTRUCTION INC.

11001 ADDRESS:

EA515IDE CARE CENTER, COLUMBIA CTY

WALL: CUSTOM SCALE: NTS

DATE: 9-24-09 DRAWN BY: B. CANNADY 3/6/05