PRODUCT SUBMITTALS

Project:

15 Merrill Street
Portland, ME

Prepared By:

LIFE SAFETY
Fire Protection, Inc.
SPRINKLER SYSTEM DESIGN & INSTALLATION

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Reliable

Model RFC Series Residential Sprinklers

Flat Cover Plate, Concealed Pendent Sprinkler

cULus Listed

Product Features

- **cULus Listed as Residential Sprinklers**
- **Push-On cover plate installation**
- **Low water flow requirements**

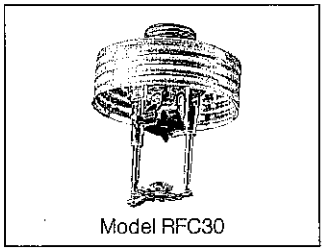
Product Description

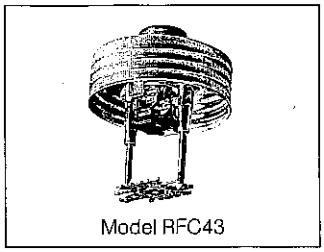
Model RFC Series residential sprinklers are flat cover plate, concealed pendent sprinklers intended for installation in accordance with NFPA 13, NFPA 13R, or NFPA 13D. The sprinklers are cULus Listed as Residential Sprinklers in accordance with UL 1626.

Model RFC30, RFC43, and RFC49 sprinklers have a 165°F (74°C) temperature rated fusible-link operating element. Model RFC58 sprinklers are offered with either a 165°F (74°C) or 212°F (100°C) temperature rated fusible-link operating element. Sprinklers with a 165°F (74°C) temperature rating are ordinary temperature classification and should be used with a 135°F (57°C) temperature rated cover plate. Sprinklers with a 212°F (100°C) temperature rating are intermediate temperature classification and should be used with a 165°F (74°C) temperature rated cover plate.

Model RFC Series sprinklers are installed with a Model RFC cover plate. Model RFC cover plates may be installed by either pushing or threading the cover plate into the sprinkler cup. Model RFC30, RFC43, and RFC49 sprinklers allow 1/2" (13 mm) of cover plate adjustment. Model RFC58 sprinklers allow 3/4" (19 mm) of cover plate adjustment.

Model RFC cover plates are available in a variety of finishes as listed in Table H. In addition, Model RFC cover plates may be ordered as either traditional solid cover plates or perforated cover plates.


Model RFC30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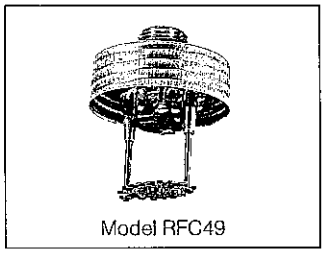
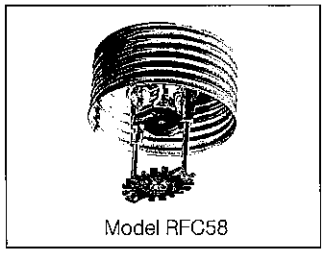
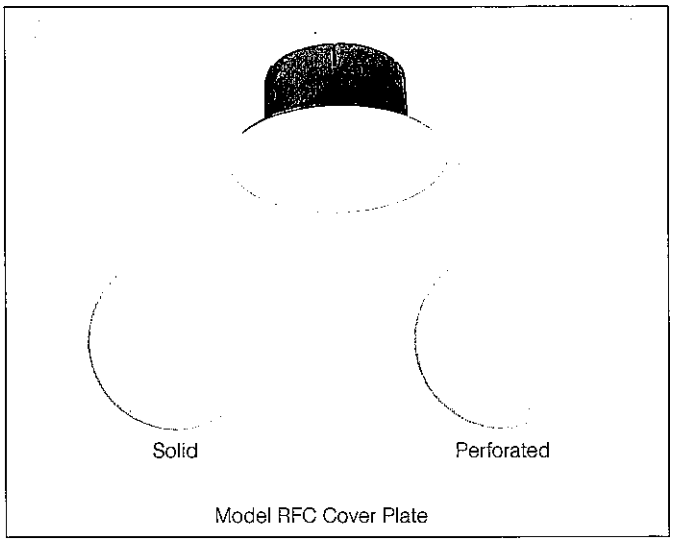

Model RFC49


Model RFC58



Model RFC Cover Plate

Table A

Sprinkler Model	Nominal K-Factor gpm/psi$^{1/2}$ (l/min/bar$^{1/2}$)	Max. Coverage Area ft x ft (m x m)	Sprinkler Identification Number (SIN)
RFC30	3.0 (43.2)	14 x 14 (4.3 x 4.3)	RA0611
RFC43	4.3 (62)	20 x 20 (6.1 x 6.1)	RA0612
RFC49	4.9 (70.6)	20 x 20 (6.1 x 6.1)	RA0616
RFC58	5.8 (84)	20 x 20 (6.1 x 6.1)	RA0613

Model RFC30 Residential Sprinkler — SIN RA0611

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 3.0 (43.2 metric)
Max. Working Pressure: 175 psi (12 bar)
Min. Spacing: 8 ft. (2.4 m)

Material Specifications
Thermal Sensor: Nickel Alloy Solder Link
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Cover Plate Finishes
(See Table H)

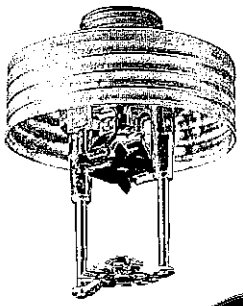
Sensitivity
Fast-response

Temperature Rating
165°F (74°C) sprinkler
135°F (57°C) cover plate

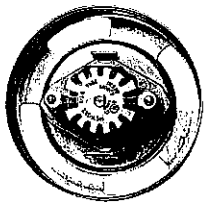
Cover Plate
Model RFC cover plate

Sprinkler Wrench
Model FC

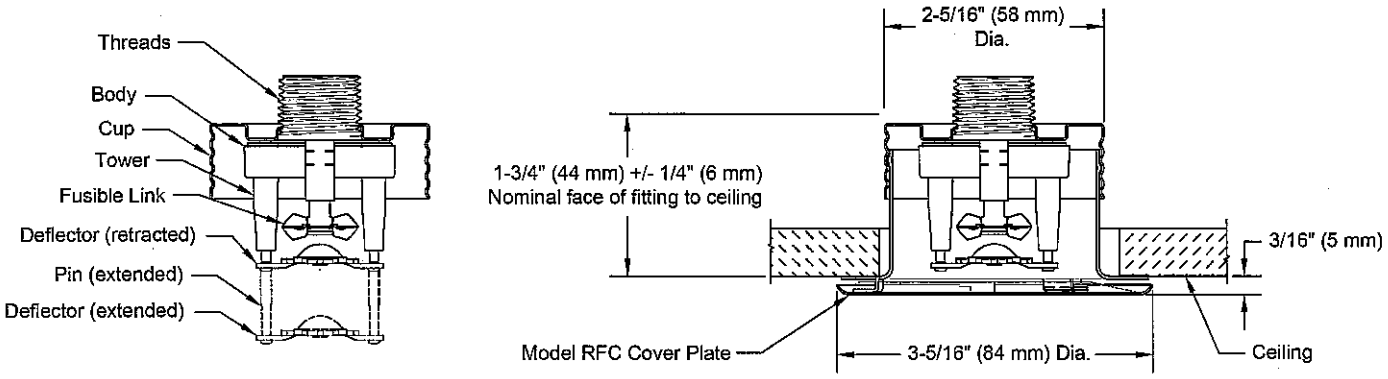
Listings and Approvals
cULus Listed



Bottom View



Model RFC30 Sprinkler Components and Dimensions — **Figure 1**



Model RFC30 Sprinkler Hydraulic Design Criteria — **Table B**

Minimum Flow and Residual Pressure		
Max. Coverage Area ft. x ft. (m x m)	**Flow gpm (l/min)**	**Pressure psi (bar)**
12 x 12 (3.6 x 3.6)	9 (34)	9.0 (0.62)
14 x 14 (4.3 x 4.3)	10 (38)	11.0 (0.76)

Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in Table B above and (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use the minimum required flow for the next larger max. coverage area listed.

Model RFC43 Residential Sprinkler — SIN RA0612

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 4.3 (62 metric)
Max. Working Pressure: 175 psi (12 bar)
Min. Spacing: 8 ft. (2.4 m)

Material Specifications
Thermal Sensor: Nickel Alloy Solder Link
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Cover Plate Finishes
(See Table H)

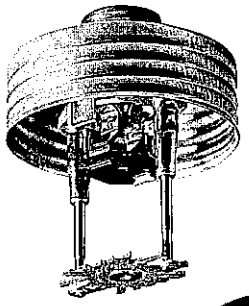
Sensitivity
Fast-response

Temperature Rating
165°F (74°C) sprinkler
135°F (57°C) cover plate

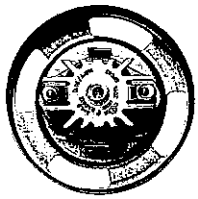
Cover Plate
Model RFC cover plate

Sprinkler Wrench
Model FC

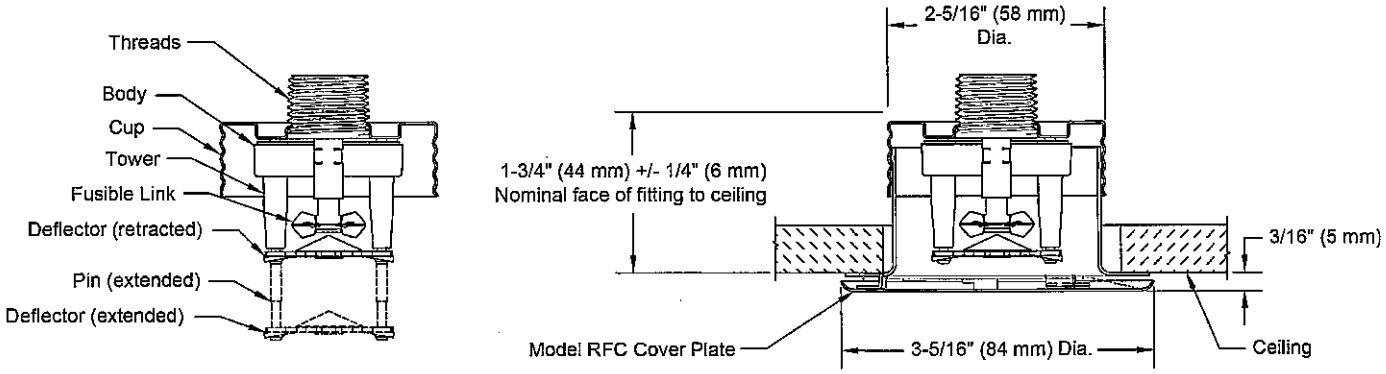
Listings and Approvals
cULus Listed



Bottom View



Model RFC43 Sprinkler Components and Dimensions — Figure 2



Model RFC43 Sprinkler Hydraulic Design Criteria — Table C

Minimum Flow and Residual Pressure		
Max. Coverage Area ft. x ft. (m x m)	**Flow gpm (l/min)**	**Pressure psi (bar)**
12 x 12 (3.6 x 3.6)	12 (45)	7.8 (0.54)
14 x 14 (4.3 x 4.3)	13 (49)	9.1 (0.63)
16 x 16 (4.9 x 4.9)	13 (49)	9.1 (0.63)
18 x 18 (5.5 x 5.5)	18 (68)	17.5 (1.21)
20 x 20 (6.1 x 6.1)	21 (79)	23.8 (1.64)

Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in Table C above and (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use the minimum required flow for the next larger max. coverage area listed.

Model RFC49 Residential Sprinkler — SIN RA0616

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 4.9 (70.6 metric)
Max. Working Pressure: 175 psi (12 bar)
Min. Spacing: 8 ft. (2.4 m)

Material Specifications
Thermal Sensor: Nickel Alloy Solder Link
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Cover Plate Finishes
(See Table H)

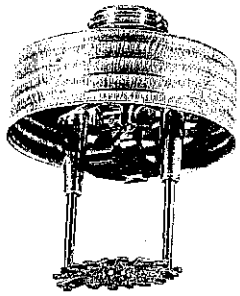
Sensitivity
Fast-response

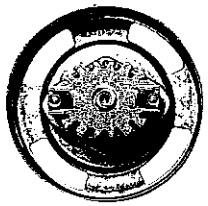
Temperature Rating
165°F (74°C) sprinkler
135°F (57°C) cover plate

Cover Plate
Model RFC cover plate

Sprinkler Wrench
Model FC

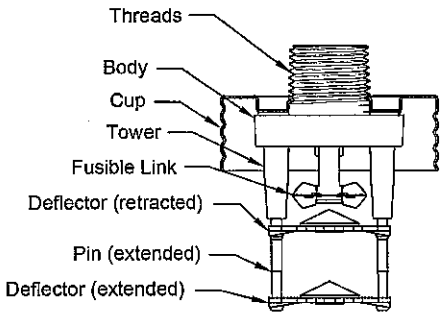
Listings and Approvals
cULus Listed

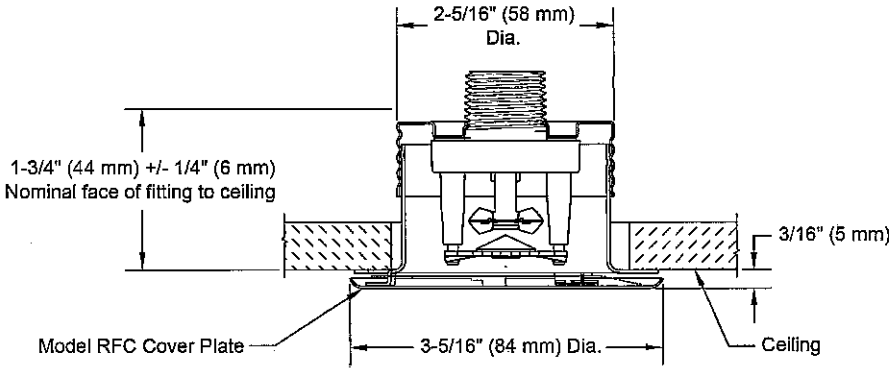




Bottom View

Model RFC49 Sprinkler Components and Dimensions — Figure 3





Model RFC49 Sprinkler Hydraulic Design Criteria — Table D

Minimum Flow and Residual Pressure		
Max. Coverage Area ft. x ft. (m x m)	**Flow gpm (l/min)**	**Pressure psi (bar)**
16 x 16 (4.9 x 4.9)	13 (49.0)	7.0 (0.48)
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.15)

Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in Table D above and (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use the minimum required flow for the next larger max. coverage area listed.

Model RFC58 Residential Sprinkler — SIN RA0613

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 5.8 (84 metric)
Max. Working Pressure: 175 psi (12 bar)
Min. Spacing: 8 ft. (2.4 m)

Material Specifications
Thermal Sensor: Nickel Alloy Solder Link
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Chrome Plated Bronze Alloy
Cup: Steel

Cover Plate Finishes
(See Table H)

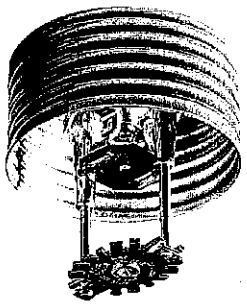
Sensitivity
Fast-response

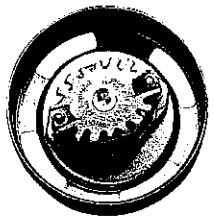
Temperature Ratings
Ordinary:
165°F (74°C) sprinkler
135°F (57°C) cover plate
Intermediate:
212°F (100°C) sprinkler
165°F (74°C) cover plate

Cover Plate
Model RFC Cover Plate

Sprinkler Wrench
Model FC

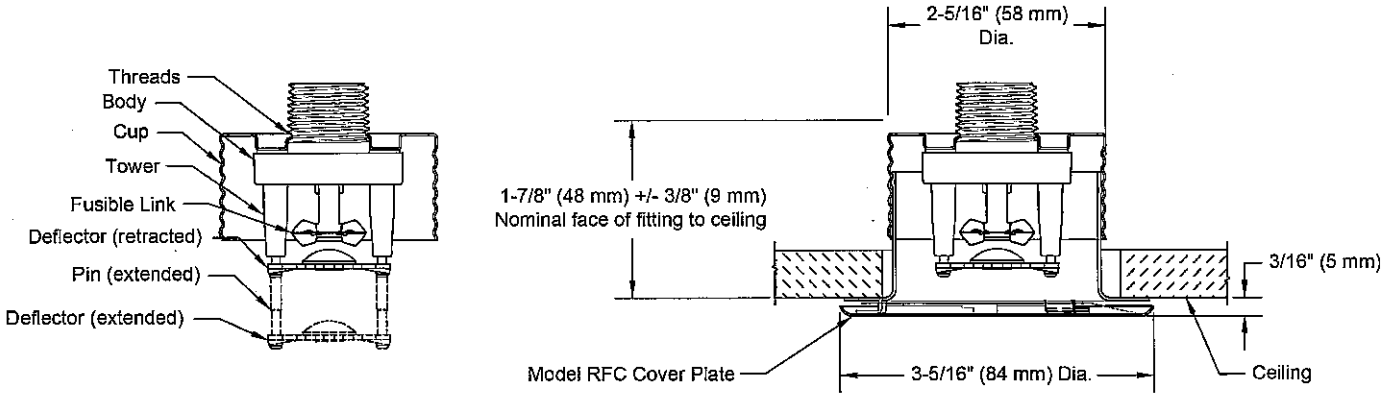
Listings and Approvals
cULus Listed





Bottom View

Model RFC58 Sprinkler Components and Dimensions — Figure 4



Model RFC58 Sprinkler Hydraulic Design Criteria — Table E

Minimum Flow and Residual Pressure		
Max. Coverage Area[2] ft. x ft. (m x m)	**Flow gpm (l/min)**	**Pressure psi (bar)**
16 x 16 (4.9 x 4.9)	16 (60.6)	7.6 (0.53)
18 x 18 (5.5 x 5.5)	18 (68.1)	9.6 (0.66)
20 x 20 (6.1 x 6.1)	20 (75.7)	11.9 (0.82)

Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in Table E above and (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use the minimum required flow for the next larger max. coverage area listed.

Cover Plate Finishes[1]

Table H

Standard Finishes	Special Application Finishes		
White Polyester	Off White Paint	Black Paint	Raw Brass
Chrome Plated	Bright Brass	Finished Bronze	Black Plated
	Satin Chrome	Stainless Steel Clad[3]	Custom Color Paint[2]

Notes:

1. Paint or any other coating applied over the factory finish will void all approvals and warranties.
2. Custom color paint is semi-gloss, unless specified otherwise.
3. Stainless steel clad cover plates are Type 316 Stainless Steel on the finished side and C102 Copper Allow on the back side. Cover plates are not listed or approved as corrosion resistant. Stainless steel clad cover plates are not available perforated.

Installation Dimensions

Table J

Sprinkler Model	Cover Plate Model	Cover Plate Diameter inch (mm)	Recommended Hole Diameter in Ceiling inch (mm)	Cover Plate Adjustment inch (mm)	Min. to Max. Face of Fitting to Ceiling[1] inch (mm)	Min. to Max. Dropped Deflector Distance below Ceiling inch (mm)	Cover Plate Temperature Rating
RFC30 RFC43 RFC49	RFC	3-5/16 (84)	2-5/8 (67)	1/2 (13)	1-1/2 to 2 (38 to 51)	1/2 to 1 (13 to 25)	135°F (57°C)
RFC58	RFC	3-5/16 (84)	2-5/8 (67)	3/4 (19)	1-1/2 to 2-1/4 (38 to 57)	1/4 to 1 (6 to 25)	135°F[2] (57°C) or 165°F[3] (74°C)

Notes:

1. Face of fitting to ceiling dimensions are based on a nominal thread make up. Verify dimensions based on fitting and thread sealing method prior to installation. A 1/2" x 1/2" brass nipple extension (Reliable P/N 6999991900) is available where necessary for replacement of existing sprinklers.
2. For use with 165°F (74°C) temperature rated sprinklers where the Maximum Ceiling Temperature does not exceed 100°F (38°C).
3. For use with 212°F (100°C) temperature rated sprinklers with the Maximum Ceiling Temperature does not exceed 150°F (66°C).

Installation

Model RFC series sprinklers are intended to be installed in accordance with NFPA 13, NFPA 13R, or NFPA 13D, as well as the requirements of applicable authorities having jurisdiction. Model RFC series sprinklers must not be installed in ceilings with positive pressure in the space above. Ensure that the 4 slots in the cup are open and unobstructed following installation. Model RFC series sprinklers are shipped with a protective cap that should remain on the sprinkler until installed. The protective cap should be replaced following installation of the sprinkler and permanently removed only when the cover plate is installed and the sprinkler system is placed in service following construction.

Model RFC series sprinklers are installed with the Model FC wrench. The use of any other wrench to installed Model RFC series sprinklers is not permitted and may damage the sprinkler. Temporarily remove the protective cap during installation of the sprinkler. Insert the Model FC wrench over the sprinkler until the wrench engages the body. Do not wrench any other part of the sprinkler/cup assembly. The Model FC wrench is designed to be turned with a standard 1/2" square drive. Tighten the sprinkler into the fitting after applying a PTFE based thread sealant to the sprinkler's threads. Recommended installation torque is 8 to 18 ft/lb (11 to 24 N/m).

Do not exceed the maximum recommended torque. Exceeding the maximum recommended torque may cause leakage or impairment of the sprinkler. Use care when inserting or removing the wrench from the sprinkler to avoid damage to the sprinkler.

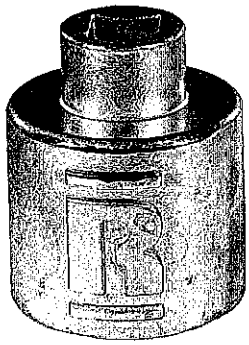
Install the cover plate by hand by pushing the cover plate into the cup and turning the cover in the clockwise direction until it is tight against the ceiling.

Application

Model RFC series sprinklers are intended for installation where residential sprinklers are permitted or required by NFPA 13, NFPA 13R, and NFPA 13D. The sprinklers are concealed pendent residential sprinklers.

Model RFC 30, RFC43, and RFC49 sprinklers are available in ordinary temperature classification for installation where the Maximum Ceiling Temperature does not exceed 100°F (38°C). Model RFC58 sprinklers are available in either ordinary or intermediate temperature classification for installation where the Maximum Ceiling Temperature does not exceed 100°F (38°C) or 150°F (66°C), respectively.

Wrench



Model FC

Maintenance

Model RFC series sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by gentle vacuuming. Replace 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.

Listings and Approvals

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

UL Listing Category

Residential Automatic Sprinkler

UL Guide Number

VKKW

Guarantee

For the Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Patents

Model RFC30, RFC43, RFC49, and RFC58 sprinklers are covered by U.S. Patent No. 9,248,327 and U.S. Patent No. 7,275,603.

Model RFC30 and RFC43 sprinklers are additionally covered by U.S. Patent No. 8,776,903.

Ordering Information

Specify the following when ordering.

Sprinkler
- Model (RFC30, RFC43, RFC49, RFC58)
- Temperature Rating

Cover Plate
- Model RFC
- Temperature Rating
- Finish (See Table H)

Sprinkler Wrench
- Model FC

P/N 999997026I

Bulletin 135 Rev. H

Reliable®

Model F1 Residential Sprinklers for Design Density of .05 gpm/ft²

Model F1 Res Sprinklers engineered for the lowest flows to meet the minimum design density of .05 gpm/ft²

Types:

1. F1 Res 30 Pendent
2. F1 Res 30 Recessed Pendent/F2
3. F1 Res 30 Recessed Pendent/FP
4. F1 Res 49 Pendent
5. F1 Res 49 Recessed Pendent/F1
6. F1 Res 49 Recessed Pendent/FP
7. F1 Res 58 Pendent
8. F1 Res 58 Recessed Pendent/F1
9. F1 Res 58 Recessed Pendent/FP
10. F1 Res 76 Pendent
11. F1 Res 76 Recessed Pendent/F1
12. F1 Res 76 Recessed Pendent/FP
13. F1 Res 30 CCP Pendent
14. F1 Res 49 CCP Pendent
15. F1 Res 58 CCP Pendent
16. F1 Res 76 CCP Pendent
17. F1 Res 44 HSW
18. F1 Res 44 Recessed HSW/F2
19. F1 Res 58 HSW
20. F1 Res 58 HSW Recessed HSW/F2
21. F1 Res 44 SWC

Listings & Approvals

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

Slope Ceiling Approvals: Refer to Bulletin 035

Sprinklers for .10 Density: Refer to Bulletin 176

UL Listing Category

Residential Automatic Sprinkler

UL Guide Number

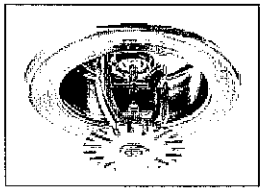
VKKW

Patents

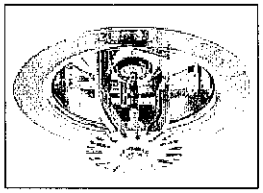
US Patent No. 6,516,893 applies to the Model F1 Res 49 & 58 Pendent Sprinklers

Product Description

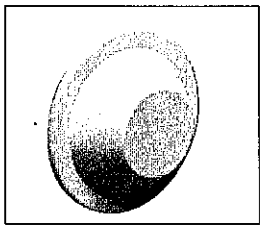
Model F1 Res Pendent sprinklers (Figs. 1, 2, 3, & 4) are fast response sprinklers combining excellent durability, high sensitivity glass-bulb and low profile decorative design. The F1 Res Horizontal Sidewall sprinklers (Figs. 5, 6 & 7) are equally attractive when above ceiling piping cannot be used.



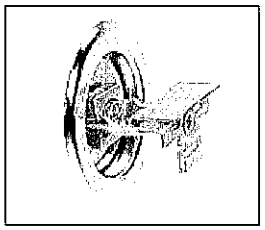
F1 Res 30, 49, 58 & 76 Recessed Pendent / F1



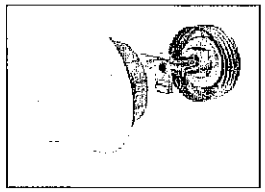
F1 Res 30, 49, 58 & 76 Recessed Pendent / FP



F1 Res 30, 49, 58 & 76 CCP Pendent



F1 Res 44 & 58 Recessed HSW/F2



F1 Res 44 SWC

The 3mm glass-bulb pendent sprinklers permit the efficient use of residential water supplies for sprinkler coverage in residential fire protection design.

The low flow F1 Res sprinklers are specially engineered for fast thermal response to meet the sensitive fire protection application needs of the latest residential market standards (UL 1626 Standard). Upon fire conditions, rising heat causes a sprinkler's heat-sensitive glass-bulb to shatter, releasing the waterway for water flow onto the deflector, evenly distributing the discharged water to control a fire.

Technical Data:

- Thermal Sensor: Nominal 3mm glass-bulb
- Sprinkler Frame : Brass Casting
- Sprinklers' Pressure Rating : 175 psi
  Factory Hydrostatically Tested to 500 psi
- Thread Size: ½" NPT (R½)
- K-Factor: 3.0 (Actual) - F1 Res 30 Pendent Sprinkler
  4.9 (Actual) - F1 Res 49 Pendent Sprinkler
  5.8 (Actual) - F1 Res 58 Pendent & HSW Sprinkler
  7.6 (Actual) - F1 Res 76 Pendent Sprinkler
  4.4 (Actual) - F1 Res 44 HSW Sprinkler
- Density: Minimum 0.05 gpm/ft²

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

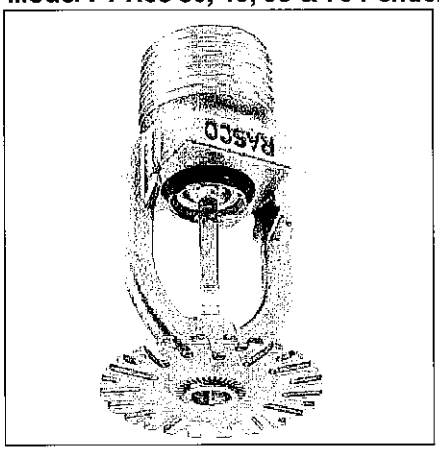
Application

Model F1 Res Sprinklers are used for Residential Fire Protection according to UL 1626 Standard*. Be sure that 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.

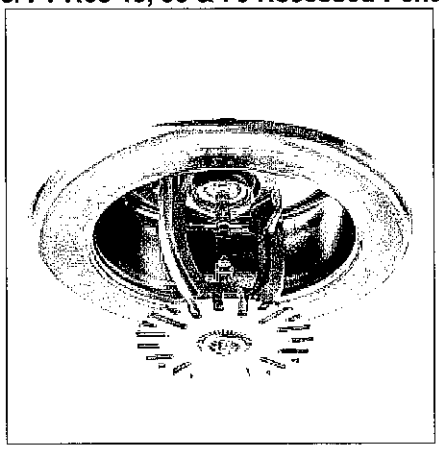
Installation

Models F1 Res sprinklers are to be installed as shown. Model F1, F2 and FP Escutcheons, illustrated herewith, are the only recessed escutcheons to be used with Model F1 Res sprinklers. Use of any other recessed escutcheon will void all approvals and warranties. For installing Model F1 Res Pendent sprinklers use only the Model D sprinkler

- **Model F1 Res 30, 49, 58 & 76 Pendent**



- **Model F1 Res 30 Recessed Pendent / F2**
- **Model F1 Res 49, 58 & 76 Recessed Pendent / F1**



F1 escutcheon, 3/4" (19mm) adjustment

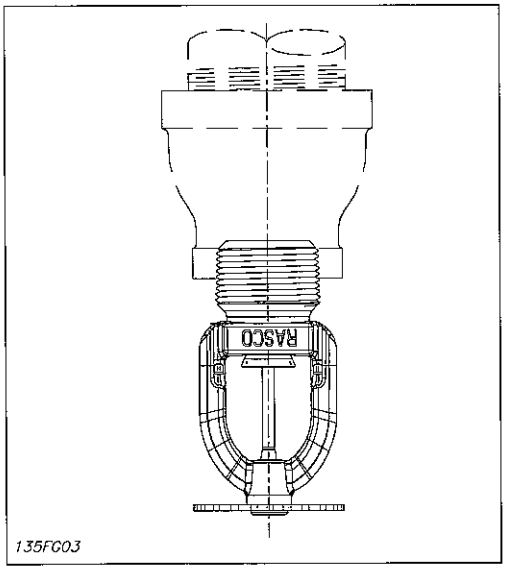


Fig. 1

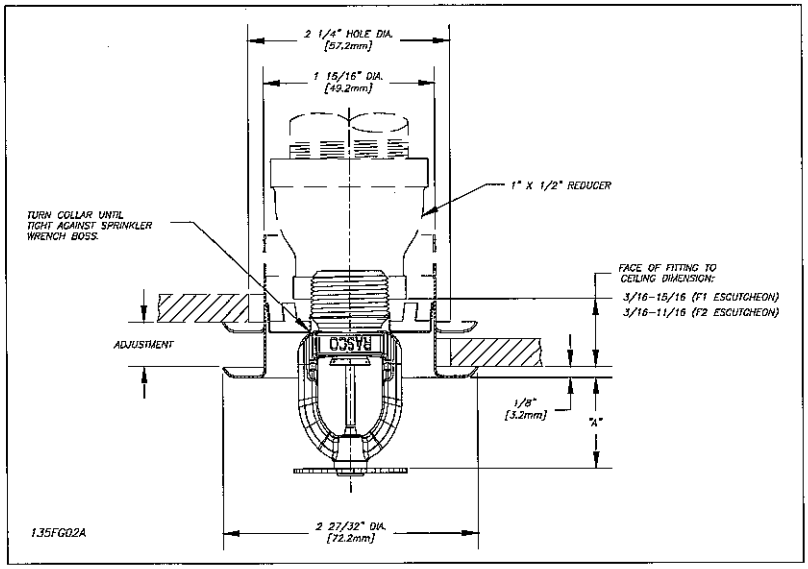


Fig. 2

Wrench; for installing Models F1 Res Recessed Pendent, CCP & SWC sprinklers use only the Model GFR2 sprinkler wrench; for installing Model F1 Res Recessed HSW sprinklers use only the Model GFR2 Sprinkler Wrench. Use of wrenches other than those specified may damage these sprinklers. Install F1 Res 44 with a ceiling to deflector distance of 4" - 12". Flow arrow on deflector must point away from near wall and "Top" marking must face ceiling.

Escutcheon*, F1 or F2, Data:

Type	Adjustment Inch (mm)	"A" Inch (mm)	Face of fitting to ceiling Inch (mm)
F1	3/4 (19.0)	Min.=3/4" (19.1) Max.=1 1/2" (38.1)	3/16 - 15/16 (4.7 - 24.0)
F2	1/2 (12.7)	Min.=15/16" (23.8) Max.=1 1/2" (38.1)	3/16 - 11/16 (4.7 - 17.4)

*** Note:** Escutcheons F1 or F2 may be used with Model F1 Res 49, 58 & 76 Recessed Pendent Sprinkler

Technical Data: F1Res 30 Pendent and Recessed Pendent

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	Actual K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	21/64" (8.2)	155 175	68 79	175 (12)	100	38	3.0	2.25 (57)

Deflector - to - ceiling
Maximum 1" (25mm) to 4" (100mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	8 (30.3)	7.0 (0,48)	R3511
14 x 14 (4,3 x 4,3)	10 (37.8)	11 (0,76)	

Technical Data: F1Res 49 Pendent and Recessed Pendent.

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	Actual K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	7/16" (11)	155 175	68 79	175 (12)	100 150	38 66	4.9	2.25 (57)

Deflector - to - ceiling
Maximum 1" (25mm) to 4" (100mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	13 (49)	7.0 (0,48)	R3516
14 x 14 (4,3 x 4,3)	13 (49)	7.0 (0,48)	
16 x 16 (4,9 x 4,9)	13 (49)	7.0 (0,48)	
18 x 18 (5,5 x 5,5)	17 (64.3)	12.0 (0,83)	
20 x 20 (6,1 x 6,1)	20 (75.7)	16.7 (1,14)	

Deflector - to - ceiling
Maximum 4" (100mm) to 8" (203mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	15 (57)	9.4 (0,65)	R3516
14 x 14 (4,3 x 4,3)	16 (60.5)	10.6 (0,73)	
16 x 16 (4,9 x 4,9)	17 (64.3)	12.0 (0,83)	
18 x 18 (5,5 x 5,5)	19 (72)	15.0 (1,0)	
20 x 20 (6,1 x 6,1)	22 (83.2)	20.2 (1,4)	

***Note:** The F1 Res 49 pendent and recessed pendent residential sprinklers can be installed per NFPA 13 in beamed ceilings meeting the following criteria:

1. Maximum beam depth = 7" (178mm)
2. Beam spacing at or greater than 7.5 ft. (2.3m) on center.

Technical Data: F1Res 58 Pendent and Recessed Pendent.

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	Actual K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	½" (13)	155 175	68 79	175 (12)	100 150	38 66	5.8	2.25 (57)

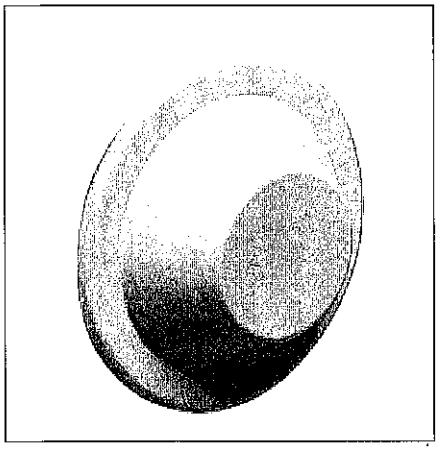
Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Ceiling -to- Deflector Inch (mm)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	16 (61)	7.6 (0,53)	1- 4 (25 - 100)	R3513
14 x 14 (4,3 x 4,3)	16 (61)	7.6 (0,53)		
16 x 16 (4,9 x 4,9)	16 (61)	7.6 (0,53)		
18 x 18 (5,5 x 5,5)	19 (72)	10.8 (0,75)		
20 x 20 (6,1 x 6,1)	22 (83.3)	14.4 (1,0)		

Technical Data: F1 Res 76 Pendent and Recessed Pendent

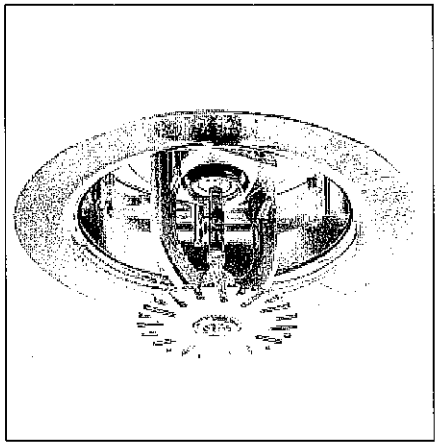
Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
3/4" NPT (R1/2)	17/32" (13.5)	155 175	68 79	175 (12)	100 150	38 66	7.6	2.25 (57)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	21 (79.5)	7.6 (0,53)	R7618
14 x 14 (4,3 x 4,3)	21 (79.5)	7.6 (0,53)	
16 x 16 (4,9 x 4,9)	21 (79.5)	7.6 (0,53)	
18 x 18 (5,5 x 5,5)	21 (79.5)	7.6 (0,53)	
20 x 20 (6,1 x 6,1)	23 (87.1)	9.2 (0,63)	

- **Model F1 Res 30, 49, 58 & 76 CCP Pendent**



- **Model F1 Res 30, 49, 58 & 76 Recessed Pendent / FP**



FP push-on/thread-off escutcheon

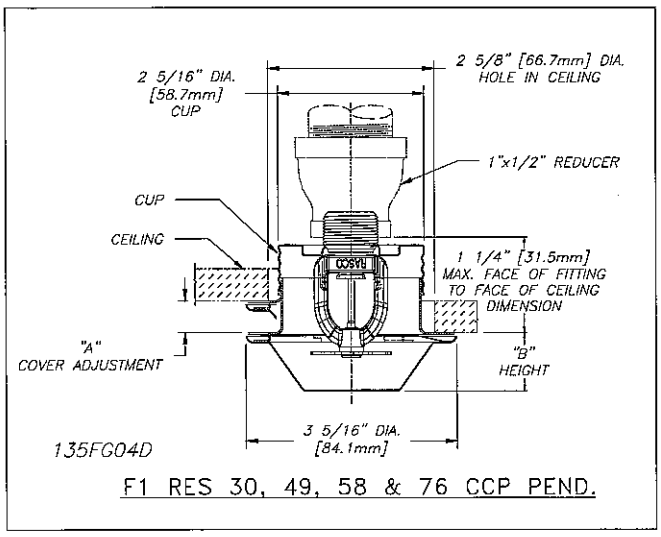


Fig. 3

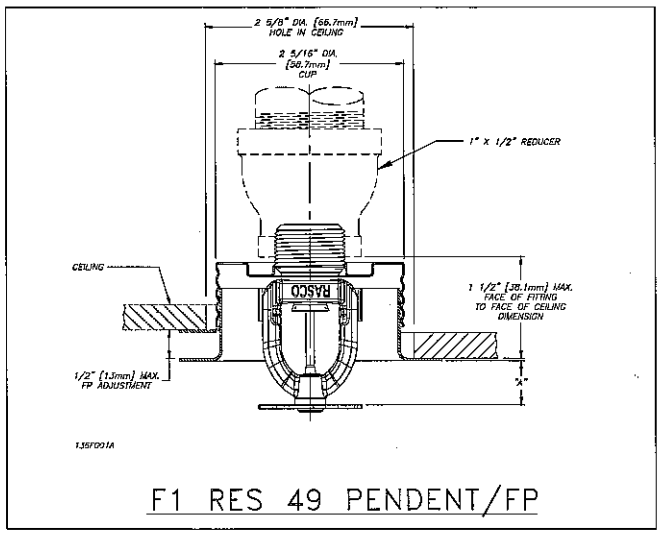


Fig. 4

Note: The F1 Res 76 will use a 1" x ¾" reducer.

Technical Data: F1Res 30 CCP Pendent and Recessed Pendent/FP

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	CCP Assembly Temp. Rating °F	CCP Assembly Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	21/64" (8.2)	155	68	135	57	175 (12)	100	38	3.0	2.25 (57)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	8 (30.3)	7.0 (0,48)	R3511
14 x 14 (4,3 x 4,3)	11 (41.6)	13.4 (0,92)	

Technical Data: F1Res 49 CCP Pendent and Recessed Pendent/FP

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	CCP Assembly Temp. Rating °F	CCP Assembly Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	7/16" (11)	155	68	135	57	175 (12)	100	38	4.9	2.25 (57)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	13 (49)	7.0 (0,48)	R3516
14 x 14 (4,3 x 4,3)	13 (49)	7.0 (0,48)	
16 x 16 (4,9 x 4,9)	14 (53)	8.2 (0,56)	
18 x 18 (5,5 x 5,5)	18 (68.1)	13.5 (0,93)	
20 x 20 (6,1 x 6,1)	20 (75.7)	16.7 (1,14)	

CCP Options Data:

"A" Cover Adjustment Inch (mm)	"B" CCP Height Inch (mm)
1/2 (12.7)	15/16 (24)
5/16 (7.9)	3/4 (19)

FP Data "A":

FP Position	"A" Inch (mm)
Max. Recessed	7/16 (11)
Min. Recessed	15/16 (24)

Note: Sprinklers shown in Fig. 3 and Fig. 4 are not suitable for installation in ceilings which have positive pressure in the space above.

Technical Data: F1Res 58 CCP Pendent and Recessed Pendent/FP

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	CCP Assembly Temp. Rating °F	CCP Assembly Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	1/2" (13)	155	68	135	57	175 (12)	100	38	5.8	2.25 (57)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	16 (61)	7.6 (0,53)	R3513
14 x 14 (4,3 x 4,3)	16 (61)	7.6 (0,53)	
16 x 16 (4,9 x 4,9)	16 (61)	7.6 (0,53)	
18 x 18 (5,5 x 5,5)	19 (72)	10.8 (0,75)	
20 x 20 (6,1 x 6,1)	22 (83.3)	14.4 (1,0)	

Technical Data: F1Res 76 CCP Pendent and Recessed Pendent/FP

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	CCP Assembly Temp. Rating °F	CCP Assembly Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
3/4" NPT (R3/4)	17/32" (13.5)	155 175	68 79	135	57	175 (12)	100 150	38 66	7.6	2.25 (57)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	21 (79.5)	7.6 (0,53)	R7618
14 x 14 (4,3 x 4,3)	21 (79.5)	7.6 (0,53)	
16 x 16 (4,9 x 4,9)	21 (79.5)	7.6 (0,53)	
18 x 18 (5,5 x 5,5)	22 (83.3)	8.4 (0,58)	
20 x 20 (6,1 x 6,1)	25 (94.6)	10.8 (0,74)	

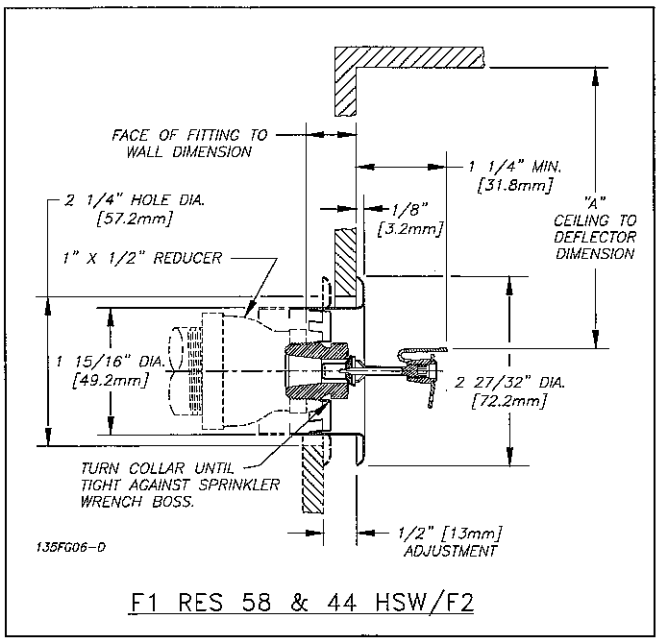
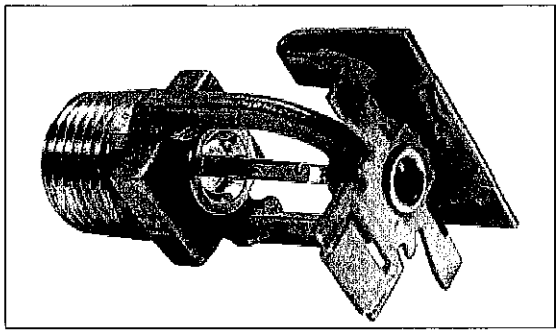
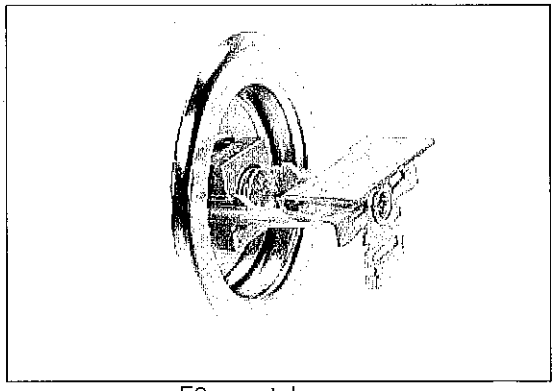


Fig. 5

- **Model F1 Res 44 & 58 HSW**



- **Model F1 Res 44 & 58 Recessed HSW/F2**



F2 escutcheon,
1/2" (13mm) adjustment

Technical Data: F1Res 44 HSW & HSW/F2

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Pressure psi (bar)	Max. Ambient Temp. °F	Max. Ambient Temp. °C	K Factor	Sprinkler Length Inch (mm)
½" NPT (R½)	3/8" (10)	155 175	68 79	175 (12)	100 150	38 66	4.4	2.45 (62)

Escutcheon, F2, Data:

Type	Adjustment Inch (mm)	Face of Fitting to wall Inch (mm)
F2	½ (13)	3/16 - 11/16 (4.7 - 17.4)

Max. Sprinkler Spacing ft (m)	"A" Ceiling to Deflector Inch (mm)	Sprinkler Temp. Rating °F (°C)		Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3,6 x 3,6)	4 - 6 (101 - 152)	155 (68)	175 (79)	12 (45,4)	7.5 (0,52)	R3531
14 x 14 (4,3 x 4,3)		155 (68)	175 (79)	14 (53,0)	10.2 (0,71)	
16 x 16 (4,9 x 4,9)		155 (68)	175 (79)	16 (60,6)	13.3 (0,92)	
16 x 18 (4,9 x 5,5)		155 (68)	175 (79)	18 (68,1)	16.8 (1,16)	
18 x 18 (5,5 x 5,5)		155 (68)	175 (79)	19 (72,0)	18.7 (1,29)	
16 x 20 (4,9 x 6,1)		155 (68)	175 (79)	23 (87,1)	27.4 (1,89)	
12 x 12 (3,6 x 3,6)	6 - 12 (152 - 305)	155 (68)	175 (79)	14 (53,0)	10.2 (0,71)	
14 x 14 (4,3 x 4,3)		155 (68)	175 (79)	16 (60,6)	13.3 (0,92)	
16 x 16 (4,9 x 4,9)		155 (68)	175 (79)	17 (64,4)	15.0 (1,04)	
16 x 18 (4,9 x 5,5)		155 (68)	175 (79)	20 (75,7)	20.7 (1,43)	
16 x 20 (4,9 x 6,1)		155 (68)	175 (79)	23 (87,1)	27.4 (1,89)	

Reliable®

Model F1FR
Model F1FR Recessed Quick Response Sprinklers

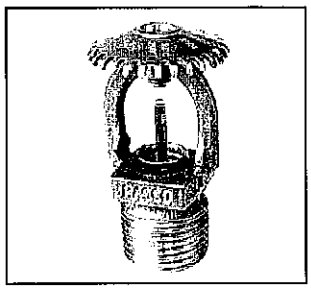
Bulletin 136 Rev.L

Model F1FR Sprinkler Types

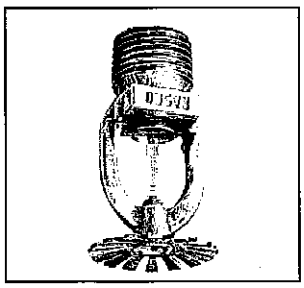
Standard Upright
Standard Pendent
Conventional
Vertical Sidewall
Horizontal Sidewall
– HSW 1 Deflector

Model F1FR Recessed Sprinkler Types

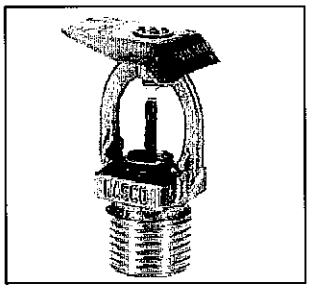
Recessed Pendent
Recessed Horizontal Sidewall
– HSW 1 Deflector



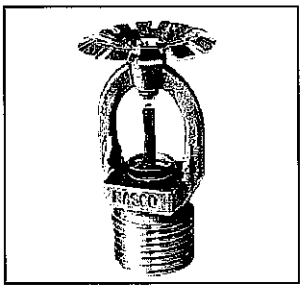
Upright



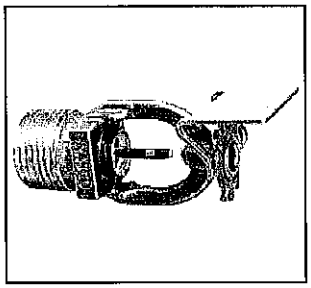
Pendent



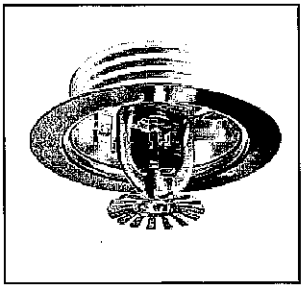
Vertical Sidewall



Conventional



Horizontal Sidewall
HSW 1 Deflector



Recessed Pendent

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

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 expands, 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.

The temperature rating of the sprinkler is identified by the color of the glass bulb.

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. Quick response sprinklers and standard response sprinklers should not be intermixed.

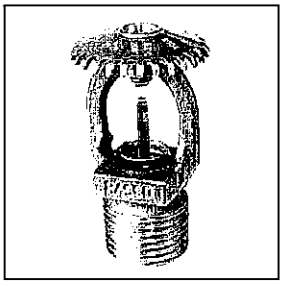
The Reliable Automatic Sprinkler Co., Inc. 525 North MacQuesten Parkway, Mount Vernon, New York 10552

Model F1FR Quick Response Upright, Pendent & Conventional Sprinklers

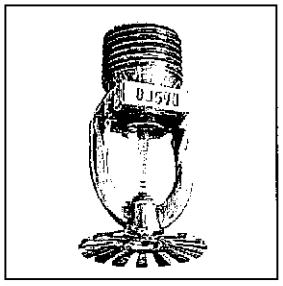
Installation Wrench: Model D Sprinkler Wrench

Installation Data:

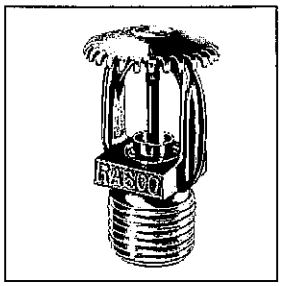
Sprinkler Type Standard–Upright (SSU) and Pendent (SSP) Deflectors Marked to Indicate Position	K Factor		Sprinkler Height	Approval Organization	Sprinkler Identification Number (SIN)	
	US	Metric			SSU	SSP
½" (15mm) Standard Orifice with ½" NPT (R½) Thread	5.6	80	2.2" (56mm)	1,2,3,4,5,6,7	R3625	R3615
17/32" (20mm) Large Orifice with ¾" NPT (R¾)Thread	8.0	115	2.3" (58mm)	1,2,3,4,7,8	R3622	R3612
7/16" (17mm) Small Orifice with ½" NPT (R½) Thread	4.2	60	2.54" (65mm)	1,2,8	R3623	R3613
3/8" (10mm) Small Orifice with ½" NPT (R½) Thread	2.8	40	2.54" (65mm)	1,2,8	R3621	R3611
10mm Orifice XLH with R3/8" Thread	4.2	60	56.1mm	4,6,7	R3624	R3614
Conventional–Install in Upright or Pendent Position						
10mm Orifice XLH with R3/8 Thread	4.2	60	56.1mm	——	R3674	
15mm Standard Orifice with ½" NPT (R½) Thread	5.6	80	56.1mm	4,6,7	R3675	
20mm Large Orifice with ¾" NPT (R¾)Thread	8.0	115	58.4mm	4,7	R3672	



Upright



Pendent



Upright

Conventional

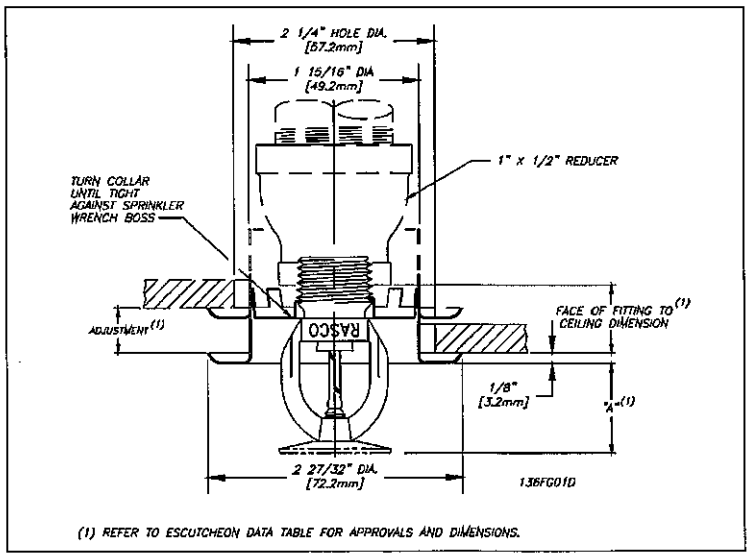
Model F1FR Quick Response Recessed Pendent Sprinkler

Installation Wrench: Model RC1 Sprinkler Wrench

Installation Data:

Nominal Orifice	Thread Size	K Factor		Sprinkler Height	Approval[1] Organizations	Sprinkler Identification Number (SIN)
		US	Metric			
½" (15mm)	½" NPT (R½)	5.6	80	2.2" (56mm)	1,2,3,4,5,7,8	R3615
17/32" (20mm)	¾" NPT (R¾)	8.0	115	2.3" (58mm)	1,2,3	R3612
7/16" (11mm)	½" NPT (R½)	4.2	60	2.54" (65mm)	1,2,8	R3613
3/8" (10mm)	½" NPT (R½)	2.8	40	2.54" (65mm)	1,2,8	R3611
10mm	R3/8	4.2	60	56.1mm	4,7	R3614

[1] Refer to escutcheon data table for approvals and dimensions.

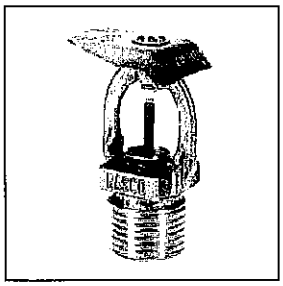


Model F1FR Quick Response Vertical Sidewall Sprinkler

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			
½"	½" NPT (R½)	5.6	80	2.2" (56mm)	1, 2, 3, 6, 8	R3685
15mm	½" NPT (R½)	5.6	80	2.2" (56mm)	4 [1]	

[1] LPC Approval is for Pendent position only.



Vertical Sidewall

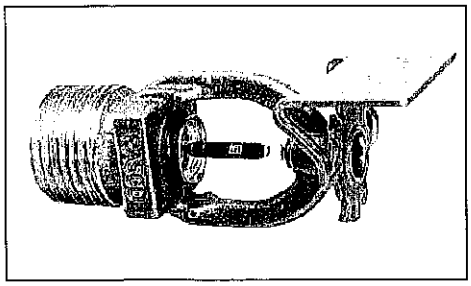
Orientation	Deflector to Ceiling Dimension (Min. - Max.)
Upright	4" - 12" (102mm - 305mm)
Pendent	6" - 12" (152mm - 305mm)

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	
½" (15mm)	½" NPT(R½)	5.6	80	2.63" (67mm)	1,2,3,5,8	1,2,5,8	R3635

NOTE: UL and ULC Listing permits use with F1 or F2 recessed escutcheon.



Horizontal Sidewall

Installation

Quick response sprinklers are intended for installation as specified in NFPA 13. 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 Sidewall Sprinklers, use the Model GFR1 Sprinkler Wrench. Use the Model RC1 Wrench for installing F1FR Recessed Pendent Sprinklers. Any other type of wrench may damage these sprinklers.

Temperature Ratings

Classification	Sprinkler Temperature °C	Sprinkler Temperature °F	Max. Ambient Temp.	Bulb Color
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	3/4" (19mm)	3/4" (19mm)	3/16" - 15/16" (5mm - 24mm)
F2	1,2,3,4,5,7,8	1/2" (13mm)	1" (25mm)	3/16" - 1 1/16" (5mm - 17mm)
FP Push-on/ Thread-off	1,2	Fully Recessed	7/16" (11mm)	
	1,2	Fully Retracted	15/16" (24mm)	

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 gentle 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	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

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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F.W. WEBB COMPANY

SUBMITTAL DATA
Rev. 03/31/03

ASTM A 53 TYPE F GRADE A PIPE

SCOPE

Covers black and hot-dipped galvanized furnace-butt welded (continuous welded) Grade A pipe. Pipe is intended for mechanical and pressure applications and is acceptable for ordinary uses in steam, water, gas and air lines. Pipe is suitable for welding, threading, grooving and bending. Pipe is not intended for flanging. Produced to ASTM A53/A 53M latest revision.

HOT-DIPPED GALVANIZED

The average weight of zinc coating shall be not less than 1.8 oz. per sq. ft. of surface (inside and outside).

When galvanized pipe is bent or otherwise fabricated to a degree which causes zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

HYDROSTATIC TESTING

Hydrostatic test pressures for plain-end pipe is indicated below.

NPS	Standard Weight - PSI	Extra Strong Weight - PSI
1/8 through 3/8	700	850
1/2 through 1	1500	1500
1-1/4 - 1-1/2	2000	2000
2 through 3	2500	2500
3 ½ - 4	2800	2800

END FINISH

Plain End:
NPS 1-1/2 and smaller: unless otherwise specified on order, end finish shall be at the option of the manufacturer.

NPS 2 and larger: STD and Sch 80 weights: ends beveled to angle of 30°, +5°, -0° with a root face of 1/16" ± 1/32".

Threaded: To ANSI Standard B 1.20.1

Couplings: To ASTM Standard A 865.

CHEMICAL REQUIREMENTS

Composition, max. %

Carbon	Manganese	Phosphorus	Sulfur
.30	1.20	.05	.045

*Copper	*Nickel	*Chromium	*Molybdenum	*Vanadium
.40	.40	.40	.15	.08

*The combination of these five elements shall not exceed 1.00%.

TENSILE REQUIREMENTS

Tensile Strength, min.	48 000 psi
Yield Strength, min.	30 000 psi.
Elongation in 2"	Refer to A 53 Table x 4.1, latest revision – ASTM A53/A 53M

BENDING TEST (COLD) FOR NPS 2 and UNDER:

	Degree of Bend	Diameter of Mandrel
Standard	90°	12 x outside pipe diameter
Close Coiling	90°	8 x outside pipe diameter

FLATTENING TEST - NPS 2-1/2 and Greater

As a test for quality of the weld, position the weld at 90° from the direction of force and flatten until the OD is 3/4 of the original outside diameter. No cracks shall occur along the inside or outside surface of the weld.

DIMENSIONS and WEIGHTS

BLACK PLAIN END

Nominal Size	OD Inches	Sch. 40		Sch. 80	
		Wall Inches	Weight Lb./Ft.	Wall Inches	Weight Lb./Ft.
1/8"	.405	.068	.24	.095	.31
1/4"	.540	.088	.43	.119	.54
3/8"	.675	.091	.57	.126	.74
1/2"	.840	.109	.85	.147	1.09
3/4"	1.050	.113	1.13	.154	1.48
1"	1.315	.133	1.68	.179	2.17
1-1/4"	1.660	.140	2.27	.191	3.00
1-1/2"	1.900	.145	2.72	.200	3.63
2"	2.375	.154	3.66	.218	5.03
2-1/2"	2.875	.203	5.80	.276	7.67
3"	3.500	.216	7.58	.300	10.26
3-1/2"	4.000	.226	9.12	.318	12.52
4"	4.500	.237	10.80	.337	15.00

PERMISSIBLE VARIATIONS IN WALL THICKNESS

Minimum wall thickness at any point shall not be more than 12.5% under nominal wall thickness specified.

PERMISSIBLE VARIATIONS IN OUTSIDE DIAMETER

NPS	1-1/2 and under	± .016"
NPS	2 and over	± 1%

PERMISSIBLE VARIATIONS IN WEIGHT PER FOOT

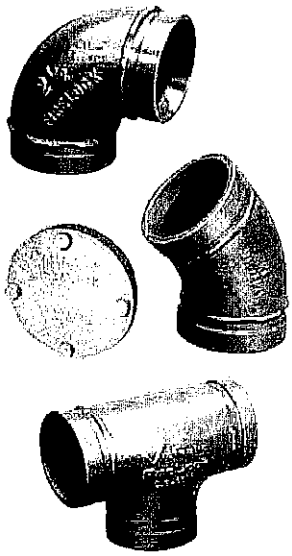
Pipe shall not vary more than ± 10% from the standard specified.

PRODUCT MARKING

Each length of pipe 1/2 NPS and larger is continuously stenciled to show the manufacturer, the grade of pipe (ASTM A 53), the kind of pipe (F for Continuous Weld, A for Grade A,) the size (Sch 80 for extra strong), and length. Bar Coding is acceptable as a supplementary identification method.

FireLock® Fittings

PRODUCT DESCRIPTION



FireLock® products comprise a unique system specifically designed for fire protection services. FireLock full-flow elbows and tees are a CAD-developed, hydrodynamic design that has a shorter center-to-end dimension than standard fittings. A noticeable bulge allows the water to make a smoother turn to maintain similar flow characteristics as standard full flow fittings.

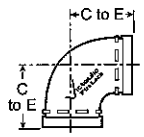
FireLock fittings are designed for use exclusively with Style 005 and Style 009 FireLock couplings. Use of other couplings or flange adapters may result in bolt pad interference.

Victaulic FireLock fittings pressure ratings conform to the ratings of Victaulic FireLock Style 005 couplings.

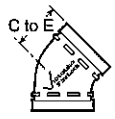
Patented

See Victaulic publication 10.01 for details.

DIMENSIONS



No. 001



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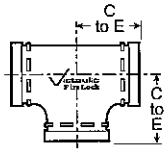

No. 002

No. 006

Fitting Size		No. 001 90° Elbow		No. 003 45° Elbow		No. 002 Straight Tee		No. 006 Cap	
Nominal Diameter Inches/mm	Actual Outside Diameter Inches/mm	C to E Inches mm	Aprx. Weight Each Lbs./kg	C to E Inches mm	Aprx. Weight Each Lbs./kg	C to E Inches mm	Aprx. Weight Each Lbs./kg	Thickness "T" Inches mm	Aprx. Weight Each Lbs./kg
1¼ 32	1.660 42.4	– –	– –	– –	– –	– –	– –	0.82 21	0.3 0.1
1½ 40	1.900 48.3	2.75 70	1.2 0.5	1.75 45	0.9 4.1	2.75 70	2.0 0.9	0.82 21	0.4 0.2
2 50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2½ 65	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
76.1 mm	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	– –	– –	– –	– –
3 80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	0.88 22	1.2 0.5
108 mm	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	– –	– –
4 100	4.500 114.3	4.00 102	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5 125	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
159 mm	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	3.50 140	17.9 8.0	– –	– –
6 150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
8 200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8

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Australasia • Phone: 86-21-54253300 • Fax: 86-21-54253671 • e-mail: vicap@victaulic.com

FireLock® Rigid Coupling

§ LPC and VdS Approved, see notes on page 4
SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

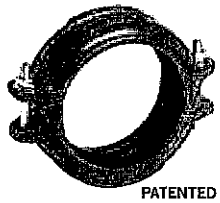
FireLock® Style 005 rigid coupling has a unique, patented angle-pad design which allows the housings to offset while clamping the grooves. By permitting the housings to slide on the angled bolt pads, rigidity is obtained.

Support and hanging requirements correspond to NFPA 13 Sprinkler Systems. Angle-pad design permits assembly by removing one nut/bolt and swinging the housing over the gasket. This reduces components to handle during assembly.

Style 005 FireLock coupling are designed and recommended for use ONLY on fire protection systems.

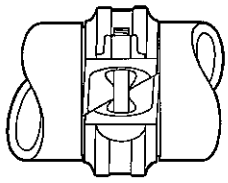
Vic-Plus™ Gasket System:

In North America, Victaulic® offers a gasket system which requires no field lubrication on wet pipe systems that are hydrostatically tested. The Vic-Plus™ System (patented) is dry, clean, and non-toxic. It reduces assembly time substantially and eliminates the mess and chance of over-lubrication. Please refer to the latest copy of the Victaulic Field Installation Handbook (I-100) for supplemental lubrication requirements and dry pipe fire protection system notes.



PATENTED

VicPlus Gasket System



Exaggerated for clarity

LISTING/APPROVALS

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Related Working Pressure – psi					Related Working Pressure – psi					Related Working Pressure – psi				
Pipe Sch.	Size – Inches	UL	ULC	FM	Pipe Sch.	Size – Inches	UL	ULC	FM	Pipe Sch.	Size – Inches	UL	ULC	FM
5	1¼ – 3	175	175	175	EL	1¼ – 2	300	N/A	N/A	MT	1¼ – 2	300	N/A	N/A
10, 40	1¼ – 4	350	350	350	ET	1¼ – 2	300	N/A	N/A	STF	1¼ – 4	N/A	N/A	300
	5 – 8	300	300	300	EZ	4 – 6	300#	N/A	300	Steady Thd.	1¼ – 2	N/A	N/A	300
BLT	1¼ – 2	300	300	N/A	FF	1¼ – 4	N/A	N/A	300	TF	3 – 8	N/A	N/A	300
DF	1¼ – 4	300	300	300	GAL - 7	1¼ – 2	300	N/A	N/A	WLS	1¼ – 2	300	300	N/A
DT	1¼ – 2	300	300	N/A	MLT	1¼ – 2	300	N/A	N/A	XL	1¼ – 3	300	300	300
EF	1¼ – 4	175@	N/A	175	MF	1¼ – 4	300	N/A	300*					

* FM approved for service in 1½ – 4" pipe.

UL Listed for service up to 4" pipe only.

@ UL Listed for service up to 3" only.

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

Spec Sect _____ Para _____

Approved _____

Date _____

F.W. WEBB COMPANY

MALLEABLE IRON THREADED FITTINGS

Standard Class 150 Specifications:
ANSI B1.20.1, Threads, B 16.3, Dimensions, Pressure Rating
ASTM A197, Material. A153, Galvanizing
Federal Spec: WWP 521
Pressure Ratings: 150 psig – Saturated Stream
300 psig – At 150 Degrees W. O. G.
U.L.C. and U.L. listed where applicable, FM approved

Extra Heavy Class 300 Specifications:
ANSI B1.20.1, Threads, B16.3, Dimensions, Pressure Rating
ASTM A197, Material A153, Galvanizing
Pressure Ratings: 300 psig – Saturated Stream
¼" - 1" – 2000 psig – At 150 Degrees W.O.G.
1 ¼" - 2" – 1500 psig – At 150 Degrees W.O.G.
2 ½" - 3" – 1000 psig – At 150 Degrees W.O.G.
U.L.C. and U.L. listed where applicable, FM approved

Union Specifications:
(Brass to Brass, Brass to Iron, Iron to Iron, Gasket Type, Dielectric Iron to Brass)
ANSI B1.20.1, Threads, B16.39, Dimensions, Pressure Rating
ASTM A197, Material. A153, Galvanizing
Federal Spec: WW-U-531
Pressure Ratings: Class 150: 150 psig – Saturated Stream
300 psig – At 150 Degrees W.O.G.
Class 250: 250 psig – Saturated Stream
500 psig – At 150 Degrees W.O.G.
Class 300: 300 psig – Saturated Stream
600 psig – At 150 Degrees W.O.G.
U.L.C. and U.L. listed where applicable, FM approved

Top Beam & C-Clamp Specifications:
Malleable Iron
ASTM A197, Material. A153, Galvanizing
3/8",1/2" rod size
Supplied with set screw and lock nut
Clamp Range: Small mouth Beam Clamp & C-Clamp – ¾"
Large mouth Beam Clamp & C-Clamp – 1 ¼"
U.L.C. and U.L. listed where applicable, FM approved

ANSI B1.20.1, Threads, B 16.4, Dimensions, Pressure Rating
ASTM A126, Material. A153, Galvanizing
Federal Spec: WWP 521
Pressure Ratings: 125 psig – Saturated Stream
175 psig – At 150 Degrees W. O. G.
Federal Spec: WW-P-501
U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

Plug and Bushing Specifications:
ANSI B1.20.1, Threads, B16.14, Dimensions, Pressure Rating
ASTM A197 (Malleable), A126 (Cast), Material A153, Galvanizing
Pressure Ratings: Malleable: 150 psig – Saturated Stream
300 psig – At 150 Degrees W.O.G.
Pressure Ratings: Cast: 125 psig – Saturated Stream
175 psig – At 150 Degrees W.O.G.
Federal Spec: WW-P-471
U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

Drainage Fitting Specifications:
ANSI B1.20.1, Threads, B16.12, Dimensions
ASTM A126, Material. A153, Galvanizing
Federal Spec: WW-F-941

Cast Iron Flange Specifications:
ANSI B1.20.1, Threads, B16.1, Dimensions, Pressure Rating
ASTM A126, Material. A153, Galvanizing
Pressure Ratings: 125 psig – Saturated Stream
175 psig – At 150 Degrees W.O.G.
Federal Spec: WW-F-406
U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

Cast Iron Flange Fitting Specifications:
ANSI B16.1, Pressure Rating
ASTM A126, Material
Pressure Ratings: 125 psig – Saturated Stream
175 psig – At 150 Degrees W.O.G.
Federal Spec: WW-F-406
U.L.C. and U.L. Listed Where Applicable
FM

F.W. WEBB COMPANY

PLAIN-END FITTING SPECIFICATIONS

Housing: Cast Iron to ASTM A126 Class A
Set Screws: Carbon Steel, Cadmium Plated, Self-Locking
Gaskets: E.P.D.M. to ASTM D-2000 With Temperature Range of -30 to 230 °F
Threaded Outlets: Conform to ANSI B-1.20.1 Specifications
Pressure Ratings: 175 psig
U.L. Listed, FM Approved

MECHANICAL BRANCH CONNECTOR SPECIFICATIONS

Housing: Cast Iron to A126 Class A, Ductile to A536
Gasket: E.P.D.M. to ASTM D-2000
Hole Size: 1 3/16"
U-Bolt: Plated High Tensile Steel
Threaded Outlet: Conform to ANSI/ASME B-1.20.1 Specifications
Run Sizes: 1 1/4", 1 1/2", 2", 2 1/2"
Outlet Sizes: 1/2", 3/4", 1"
Pressure Ratings: 175 psig
U.L. Listed, FM Approved

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

rapid response™
HOME FIRE SPRINKLER SYSTEM

BlazeMaster® CPVC Fire Sprinkler Pipe & Fittings Submittal Sheet

General Description

Tyco® CPVC Pipe and Fittings produced by Tyco Fire & Building Products (TFBP) are designed exclusively for use in wet pipe automatic fire sprinkler systems. The Tyco CPVC Pipe and Fittings are produced from BlazeMaster® CPVC compound that is a specially developed thermoplastic compound composed of post chlorinated polyvinyl chloride (CPVC) resin and state of the art additives. Tyco CPVC Pipe and Fittings are easier to install than traditional steel pipe systems, and at the same time, provide superior heat resistance and strength as compared to traditional CPVC and PVC piping materials used in the plumbing trade. Various adapters are available to connect CPVC pipe to metallic piping. All female pipe thread adapters have brass inserts for durability. Grooved adapters connect directly to grooved end valves and metallic pipe, with flexible grooved end couplings.

NOTICE

Tyco® CPVC Pipe and Fittings produced with BlazeMaster® CPVC compound described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Technical Data

Sizes
3/4" to 3"

Maximum Working Pressure
175 psi

Approvals
UL, FM, C-UL, NSF, LPCB, MEA, and the City of Los Angeles. (Refer to Installation Handbook IH-1900 dated June 2008 for exact listing/approval information.)

Manufacture Source
U.S.A.

Material

- Pipe: ASTM F442, SDR 13.5
- Fittings: ASTM F438 (Sch. 40) and ASTM F439 (Sch. 80), ASTM F1970

Color
Orange

BlazeMaster® is a registered trademark of The Lubrizol Corporation

Installation

Tyco® CPVC Pipe and Fittings produced by Tyco Fire & Building Products (TFBP) are to be installed in accordance with Installation Handbook IH-1900 dated June 2008.

Care and Maintenance

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

NOTICE

Before closing a fire protection system control valve for inspection or maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Fig. 28M - Offset Hanger & Restrainer for CPVC Plastic Pipe and IPS Steel Pipe **

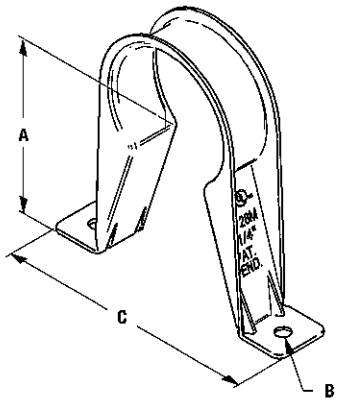
TOLCO

c UL us LISTED

Size Range: 3/4" (20mm) thru 2" (32mm)

Material: Steel, Pre-Galvanized

Function: Designed to be used as a hanger and restrainer for CPVC piping or steel piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.



Features:

- Flared edge design protects CPVC pipe from any rough or abrasive surfaces
- Unique snap-on design holds pipe firmly in place and allows retrofit type of installation
- The "Stand-Off" design eliminates the need for wood block extension
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation
- Attaches easily to wood structure with two hex head self-threading screws furnished with product
- Installs easily using rechargeable electrical driver with 5/16" (7.9mm) extension socket eliminating impact tool damage to pipe
- Attaches easily to steel, minimum 18 gauge (1.024mm) with (2) 1/4" x 1" tek type self drilling tapping screws
- **cULus** Listed as a hanger and a restrainer for fire sprinkler piping

Installation Note: When installed in wood structural members and threads from the #10 x 1" screws are exposed, use Fig. 27B speed nut to secure

Approvals: Underwriters Laboratory Listed in the USA **(UL)** and Canada **(cUL)** to support automatic fire sprinkler systems.
May be installed into wood using fasteners screws.
Meets and exceeds the requirements of NFPA 13, 13R and 13D. Fig. 28M satisfies the UL vertical restraint requirements where needed.

Order By: Figure number and pipe size

Patent #7,744,042

** With reduced spacing, consult factory.

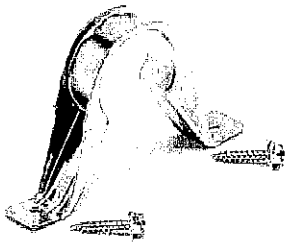
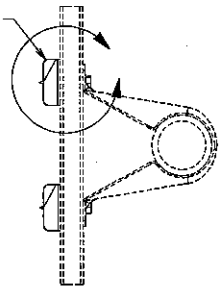
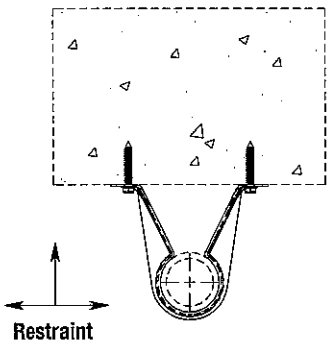


Fig. 27B
(2) Required



Hanger and Restraint Application



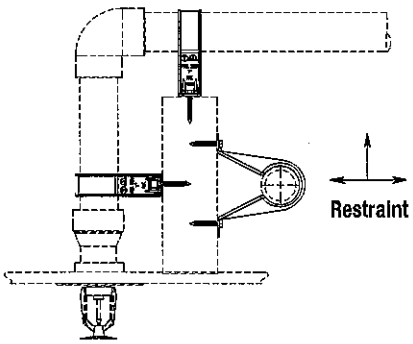
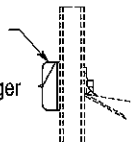


Fig. 27B
(1) Required
High Side of Hanger



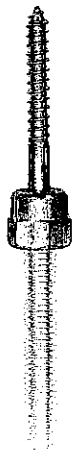
Detail A Hanger Application

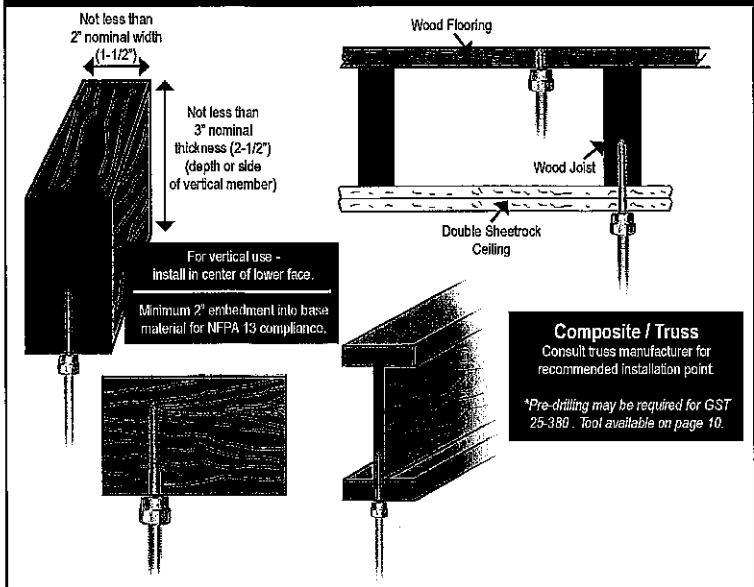
Part No.	Pipe Size in.	Pipe Size (mm)	A in.	A (mm)	Hole Dia. B in.	Hole Dia. B (mm)	C in.	C (mm)	Max Spacing* in.	Max Spacing* (mm)	Approx. Wt./100 lbs.	Approx. Wt./100 (kg)
28M-3/4	3/4"	(20)	2"	(50.8)	3/16"	(4.8)	3 5/16"	(84.1)	5'-6"	(1676)	9	(4.1)
28M-1	1"	(25)	2 1/8"	(54.0)	3/16"	(4.8)	3 1/2"	(88.9)	6'-0"	(1829)	12	(5.4)
28M-1 1/4	1 1/4"	(32)	2 5/16"	(58.7)	3/16"	(4.8)	3 1/2"	(88.9)	6'-6"	(1981)	13	(5.9)
28M-1 1/2	1 1/2"	(49)	2 7/16"	(61.9)	3/16"	(4.8)	3 7/8"	(98.4)	7'-0"	(2133)	14	(6.3)
28M-2	2"	(50)	2 5/8"	(66.7)	3/16"	(4.8)	4 7/16"	(112.7)	8'-0"	(2438)	15	(6.8)

* Required per NFPA 13 for CPVC plastic pipe

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

SAMMYS® for Wood





Product Features

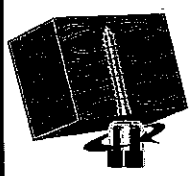
- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill/driver.
- Saves time from traditional methods.
- Reduces installation cost.
- Made in the U.S.A.

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Box Qty	Case Qty
	1/4"	8002957	GST 100	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)			25	125
	1/4"	8003957	GST 200	1/4 x 2"	1760 (Fir)			25	125
	1/4"	8004957	GST 300	1/4 x 3"	2060 (Fir)			25	125
	3/8"	8006957	GST .75	1/4 x 3/4"	564 (3/4" Ply)			25	125
UL	3/8"	8007957	GST 10	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)	300		25	125
UL FM	3/8"	8008957	GST 20	1/4 x 2"	1760 (Fir)	850	1475	25	125
UL	3/8"	8068925	GST 20-SS	1/4 x 2"	1760 (Fir)	850		25	125
UL	3/8"	8009925	GST 25-380	3/8 x 2-1/2"	2113 (Fir)	1500		25	125
UL FM	3/8"	8010957	GST 30	1/4 x 3"	2060 (Fir)	1500	1475	25	125
	3/8"	8069925	GST 30-SS	1/4 x 3"	2060 (Fir)			25	125
	3/8"	8011925	GST 40	1/4 x 4"	2180 (Fir)			25	125
	3/8"	8012925	GST 60	1/4 x 6"	2230 (Fir)			25	125
	1/2"	8013925	GST 2	1/4 x 2"	1760 (Fir)			25	125
	1/2"	8014925	GST 2.5-380	3/8 x 2-1/2"	2113 (Fir)			25	125
	1/2"	8015925	GST 3	1/4 x 3"	2275 (Fir)			25	125
	1/2"	8016925	GST 4	1/4 x 4"	2180 (Fir)			25	125
	1/2"	8017925	GST 6	1/4 x 6"	2230 (Fir)			25	125

#14 Black Nut Driver Part # 8113910

#14 SW Red Nut Driver Part # 8114910

SAMMY Swivel Head® for Wood



Product Features

- Eliminates distortion of threaded rod.
- Accommodates up to 3 ½" x 12 pitch roof.
- Allows 17° deflection from vertical.
- Saves time from traditional methods.
- Reduces installation cost.
- Made in the U.S.A.

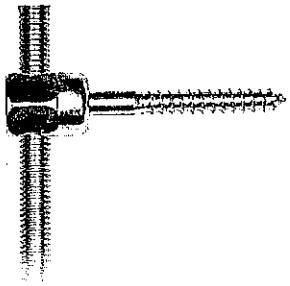
Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Min Thickness	Box Qty	Case Qty
UL FM	3/8"	8139957	SH-GST 20	1/4 x 2"	1257 (Fir)	1050	1475	25	125	125
UL FM	3/8"	8141957	SH-GST 30	1/4 x 3"	1720 (Fir)	1500	1475	25	125	

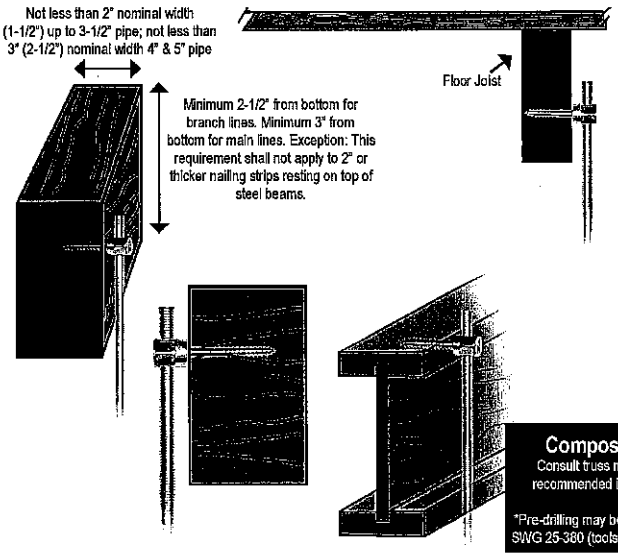
#14 Black Nut Driver Part # 8113910

SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

MADE IN U.S.A. RoHS Compliant

SIDEWINDERS® for Wood





Composite/Truss
Consult truss manufacturer for recommended installation point.

*Pre-drilling may be required for Model SWG 25-380 (tools available on pg 10)

Product Features

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill/driver.
- Saves time from traditional methods.
- Reduces installation cost.
- Made in the U.S.A.

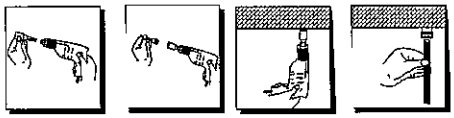
#14 SW Red Nut Driver Part # 8114910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	Box Qty	Case Qty
	1/4"	8018957	SWG 100	1/4 x 1"	622 (Fir)		25	125
	1/4"	8019957	SWG 200	1/4 x 2"	1725 (Fir)		25	125
	3/8"	8020957	SWG 10	1/4 x 1"	622 (Fir)	300	25	125
	3/8"	8021957	SWG 20	1/4 x 2"	1725 (Fir)	1050	25	125
	3/8"	8073925	SWG 20-SS	1/4 x 2"	1725 (Fir)	850	25	125
	3/8"	8022925	SWG 25-380	3/8 x 2-1/2"	2249 (Fir)	1500	25	125
	3/8"	8023925	SWG 30	1/4 x 3"	1884 (Fir)		25	125

VERTICAL

1. *Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.*
2. *Insert the SAMMYS into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.*
3. *Push the face of the nut driver tight to the member. When the nut driver spins freely on the SAMMYS, stop drill and remove.*
4. *The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)*

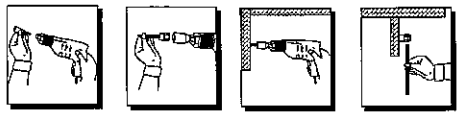
***Note:** When installing DSTR, follow the above instructions, then add retainer nut and torque to 20 foot lbs. for maximum pullout in purlin steel.*



HORIZONTAL

1. *Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.*
2. *Insert the SAMMYS into the #14SW (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.*
3. *When the nut driver spins free on the SAMMYS, stop the drill and remove.*
4. *The unit is now ready to receive 1/4", 3/8" or metric all thread rod or bolt stock.*

Note: When installing SWDR, follow the above instructions, then add retainer nut and torque to 20 foot lbs. for maximum pullout in purlin steel.



SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

Fig. 98 - Rod Stiffener

Component of State of California OSHPD Approved Seismic Restraints System c UL us LISTED

Size Range — Secures 3/8" thru 7/8" hanger rod
Material — Carbon Steel
Function — Secures channel to hanger rod for vertical seismic bracing.
Approvals — Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines
Finish — Electro Galvanized
Note — Available in HDG finish or Stainless Steel materials.
Order By — Figure number

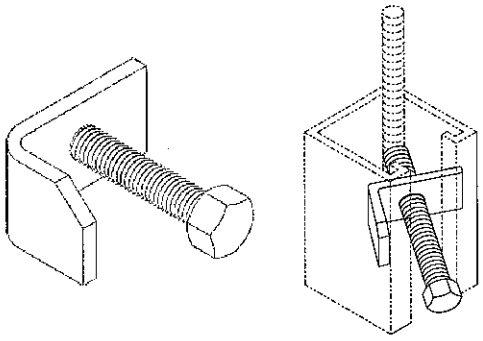
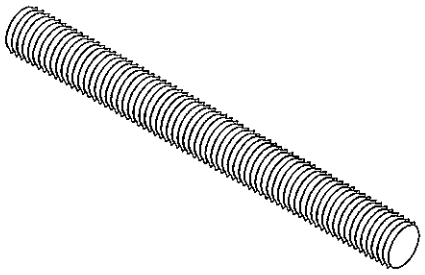


Fig. 99 - All Thread Rod Cut to Length

Size Range — Secures 3/8" thru 7/8" rod in 1" increments
Material — Carbon Steel
Maximum Temperature — 750°F
Finish — Plain
Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
Order By — Figure number, rod diameter, rod length and finish

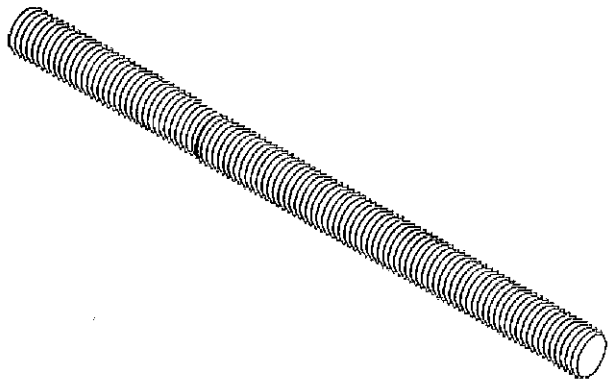


Dimensions • Weights

Rod Size	Max. Rec. Load Lbs. For Service Temps 650°F	750°F
3/8	610	540
1/2	1130	1010
5/8	1810	1610
3/4	2710	2420
7/8	3770	3360

Fig. 100 - All Thread Rod Full Lengths

Size Range — Secures 3/8" thru 7/8" rod in 10' lengths
Material — Carbon Steel
Maximum Temperature — 750°F
Finish — Plain
Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
Order By — Figure number, rod diameter and finish



Dimensions • Weights

Rod Size	Max Rec. Load Lbs. For Service Temps 650°F	750°F	Approx. Wt./100
1/4	240	215	12
3/8	610	540	29
1/2	1130	1010	53
5/8	1810	1610	84
3/4	2710	2420	123
7/8	3770	3360	169
1	4960	4420	222
1¼	8000	7140	360
1½	11630	10370	510

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www.tolco.com

Fig. 200 - "Trimline" Adjustable Band Hanger

c UL us LISTED
FM APPROVED

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

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

Features —

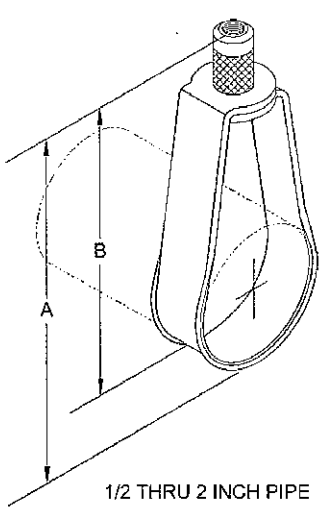
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2½" thru 8" Spring tension on nut holds it securely in hanger before installation.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

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

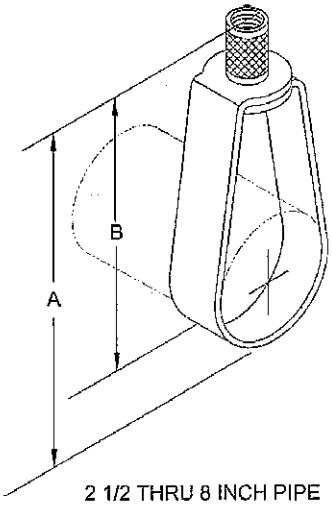
Maximum Temperature — 650°F

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

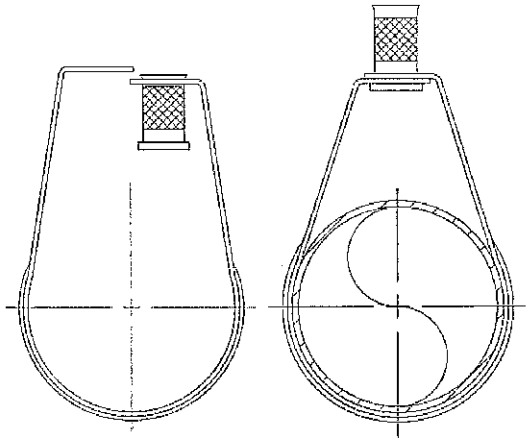
Order By — Figure number and pipe size



1/2 THRU 2 INCH PIPE



2 1/2 THRU 8 INCH PIPE



Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Length
1/2	3/8	8mm or 10mm	3⅛	2⅝	400	11
3/4	3/8	8mm or 10mm	3⅛	2½	400	11
1	3/8	8mm or 10mm	3⅜	2⅝	400	12
1¼	3/8	8mm or 10mm	3¾	2⅞	400	13
1½	3/8	8mm or 10mm	3⅞	2⅞	400	14
2	3/8	8mm or 10mm	4½	3	400	15
2½	3/8	10mm	5⅝	4⅛	600	27
3	3/8	10mm	5⅞	4	600	29
3½	3/8	10mm	7⅜	5¼	600	34
4	3/8	10mm	7⅜	5	1000	35
5	1/2	12mm	9⅛	6¼	1250	66
6	1/2	12mm	10⅛	6¾	1250	73
8	1/2	12mm	13⅛	8¾	1250	136

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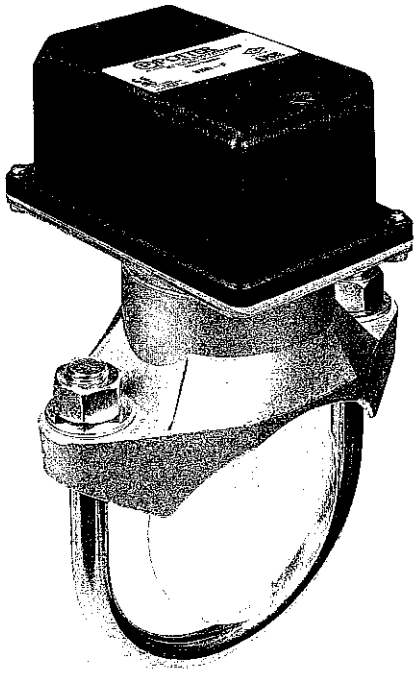
VSR-F

VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD



U.S. Pat. No. 3921989
Canadian Pat. No. 1009680
Other Patents Pending
Potter Electric, Rd., 1990

UL, ULC and CSFM Listed, FM and LPCB Approved, NYMEA Accepted, CE Marked

Service Pressure: Up to 450 PSI (31 BAR)

Minimum Flow Rate for Alarm: 10 GPM (38 LPM)

Maximum Surge: 18 FPS (5,5 m/s)

Contact Ratings: Two sets of SPDT (Form C)
15.0 Amps at 125/250VAC
2.0 Amps at 30VDC Resistive

Conduit Entrances: Two knockouts provided for 1/2" conduit

Environmental Specifications:

- Suitable for indoor or outdoor use with factory installed gasket and die-cast housing.
- NEMA 4/IP54 Rated Enclosure - use with appropriate conduit fitting.
- Temperature Range: 40°F/120°F, 4,5°C/49°C
- Non-corrosive sleeve factory installed in saddle.

Caution: This device is not intended for applications in explosive environments.

Sizes Available: Steel Pipe schedules 10 thru 40, sizes 2" thru 8"
BS 1387 pipe 50mm thru 200mm
Note: For copper or plastic pipe use Model VSR-CF.

Service Use:

Automatic Sprinkler	NFPA-13
One or two family dwelling	NFPA-13D
Residential occupancy up to four stories	NFPA-13R
National Fire Alarm Code	NFPA-72

Optional: Cover Tamper Switch Kit, Stock No. 0090018

GENERAL INFORMATION

The Model VSR-F is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50mm thru 200mm).

LPC approved sizes are 2" thru 8" (50mm thru 200mm).

The unit may also be used as a sectional waterflow detector on large systems.

The unit contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 gallons per minute (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

ENCLOSURE: The unit is enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin no. 5400775 for installation instructions of this switch.

INSTALLATION: See Fig.2

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they should be installed on the top side of the pipe where they will be accessible. The units should not be installed within 6" (15cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

Drain the system and drill a hole in the pipe using a circular saw in a slow speed drill. The 2" (50mm) and 2 1/2" (65mm) devices require a hole with a diameter of 1 1/4" + 1/8" - 1/16" (33mm ±2mm). All other sizes require a hole with a diameter of 2" ±1/8" (50mm ±2mm).

Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole.

Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Install the saddle strap and tighten nuts alternately to an eventual 50 ft-lbs. (68 n-m) of torque (see Fig. 2). The vane must not rub the inside of the pipe or bind in any way.

Specifications subject to change without notice.

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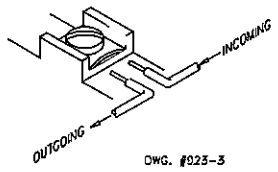
VSR-F
VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

FIG. 1

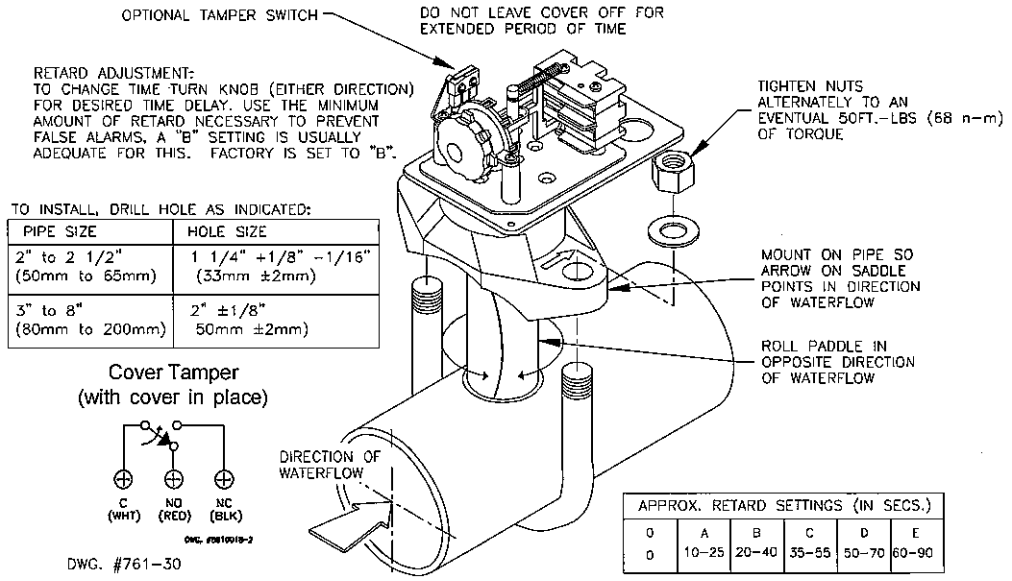
SWITCH TERMINAL CONNECTIONS CLAMPING PLATE TERMINAL



DWG. #923-3

CAUTION:
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

FIG. 2



TO INSTALL, DRILL HOLE AS INDICATED:

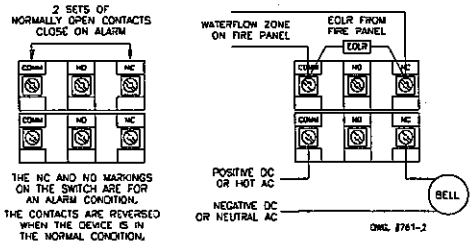
PIPE SIZE	HOLE SIZE
2" to 2 1/2" (50mm to 65mm)	1 1/4" +1/8" -1/16" (33mm ±2mm)
3" to 8" (80mm to 200mm)	2" ±1/8" 50mm ±2mm)

Cover Tamper
(with cover in place)

DWG. #761-30

APPROX. RETARD SETTINGS (IN SECS.)					
0	A	B	C	D	E
0	10-25	20-40	35-55	50-70	60-90

FIG. 3 TYPICAL ELECTRICAL CONNECTIONS



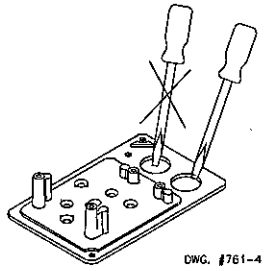
DWG. #761-2

NOTES:

1. The Model VSR-F has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits see "Switch Terminal Connections" drawing and caution note (Fig. 1).

FIG. 4

To remove knockouts: Place screwdriver at edge of knockouts, not in the center.



DWG. #761-4

APPLICATION WARNING!

Due to the possibility of unintended discharges caused by pressure surges, trapped air, or short retard times, waterflow switches that are monitoring wet pipe sprinkler systems should not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems.

TESTING

The frequency of inspection and testing for the model VSR-F and its associated protective monitoring system should be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve, that is usually located at the end of the most remote branch line, should always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR-F is not recommended or advisable.

A minimum flow of 10 gpm (38 Lpm) is required to activate this device.

IMPORTANT NOTICE: Please advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

POTTER
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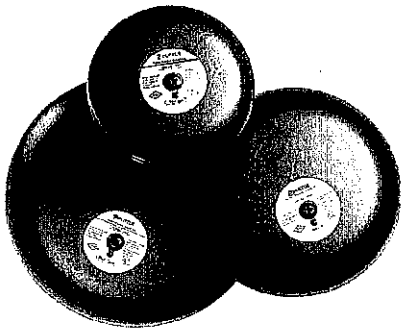
BELLS
PBA-AC & MBA-DC



UL, ULC, and FM Approved
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: AC Bells - 4 No. 18 AWG stranded wires
DC Bells - Terminal strip
Finish: Red powder coating
Optional: Model BBK-1 weatherproof backbox
Model BBX-1 deep 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 or BBX-1 deep weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1, Stock No. 1500001.

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.
3. ULC only applies to MBA DC bells.

Size inches (mm)	Voltage	Model Number	Stock Number	Current (Max.)	Typical dB at 10 ft. (3m) (2)	Minimum dB at 10 ft. (3m) (1)
6 (150)	12VDC	MBA126	1750070	.12A	85	76
8 (200)	12VDC	MBA128	1750080	.12A	90	77
10 (250)	12VDC	MBA1210	1750060	.12A	92	78
6 (150)	24VDC	MBA246	1750100	.06A	87	77
8 (200)	24VDC	MBA248	1750110	.06A	91	79
10 (250)	24VDC	MBA2410	1750090	.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

All DC bells are polarized and have built-in transient protection.
* Does not have ULC listing.

⚠WARNING

In outdoor or wet installations, bell must be mounted with weatherproof backbox, BBK-1 or BBX-1. Standard electrical boxes will not provide a weatherproof enclosure. If the bell and/or assembly is exposed to moisture, it may fail or create an electrical hazard.

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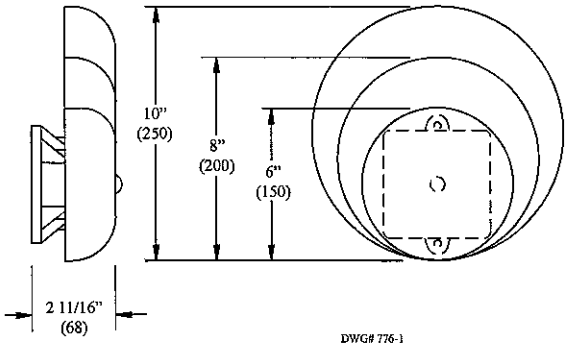
BELLS
PBA-AC & MBA-DC

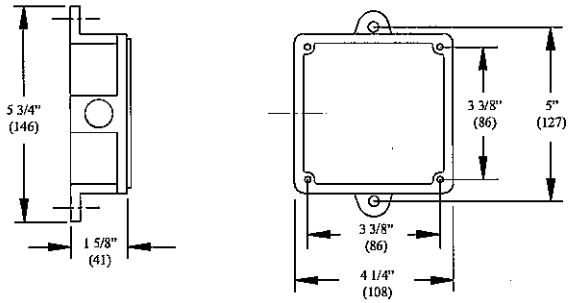
Bells Dimensions Inches (mm)
Fig. 1



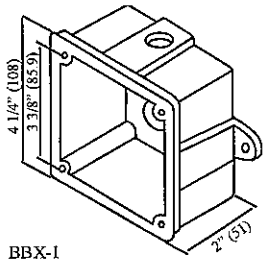
DWG# 776-1

Weatherproof Backbox Dimensions Inches (mm)
Fig. 2

Box has one threaded 1/2" conduit entrance

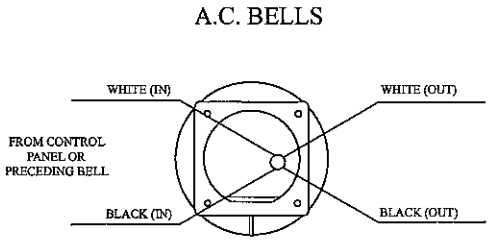


DWG# 776-2



BBX-1

Wiring (rear view)
Fig. 3

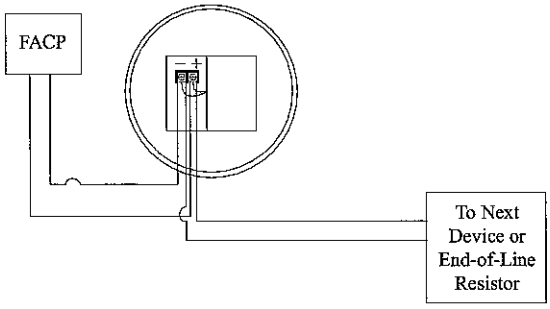


CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

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

DWG# 776-3



Installation

1. The bell shall be installed in accordance with NFPA 13, 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).

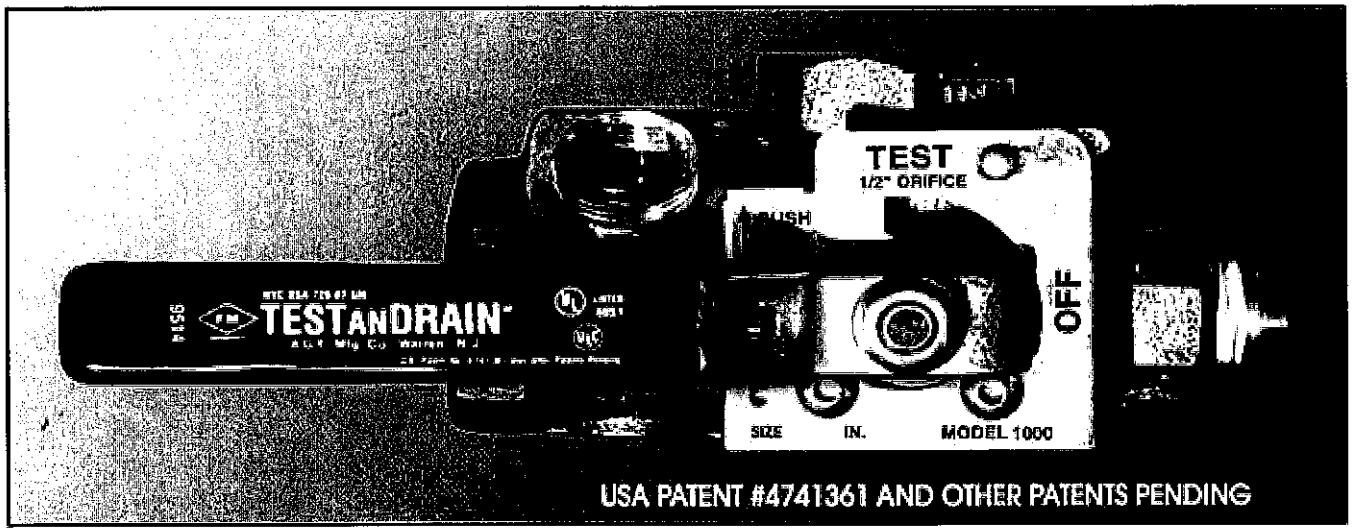
⚠WARNING

Failure to install striker down will prevent bell from operating.

TEST AN DRAIN®

3/4" 1" 1 1/4" 1 1/2" 2"

3/4" UL LISTED ONLY



- The AGF Manufacturing Co., Inc. Model 1000 has been designed to provide both the **Test Function and the Express Drain Function** in a multistory installation.
- Complies with all requirements of NFPA-13, NFPA-13R, and NFPA-13D
- Positive shut off
- Single Handle
- Tapped for Pressure Gauge
- Tamper Resistant Orifice permanently installed
- Available with all required Orifices
- Orifice size noted on indicator plate
- Lightweight and compact
- 300 PSI Rating
- Integral tamper resistant sight glasses
- Full range of sizes from 3/4" to 2"

Visit us
on the Internet
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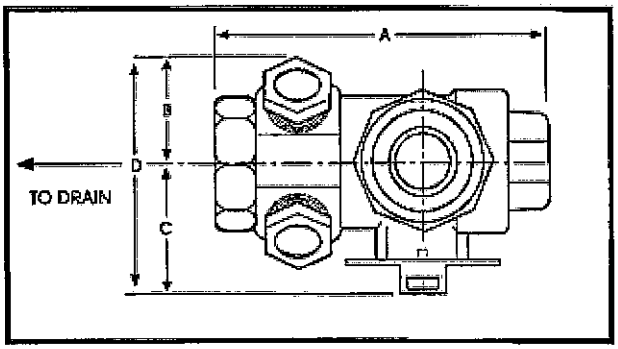
MODEL 1000 300 PSI

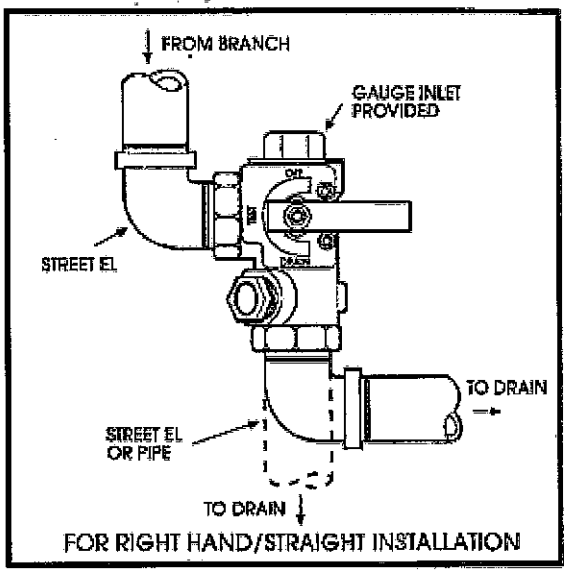
TEST AN DRAIN®

3/4" 1" 1 1/4" 1 1/2" 2"

PLAN VIEW

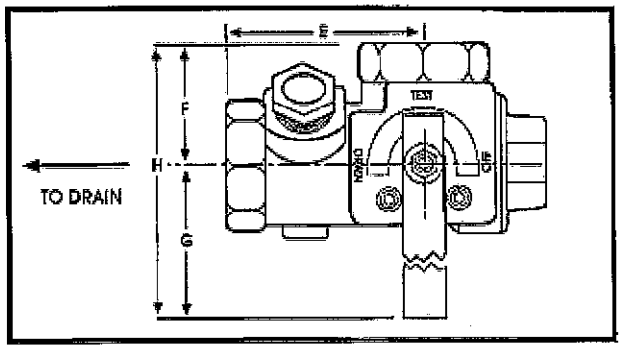


FRONT VIEW/VERTICAL INSTALLATION



FOR RIGHT HAND/STRAIGHT INSTALLATION

FRONT VIEW/HORIZONTAL INSTALLATION



APPROVALS:

- ❑ UL and ULC Listed
- ❑ FM Approved except 3/4"
- ❑ NYC BD. of S&A CAL. NO. 720-87-SM
- ❑ CA. State Fire Marshall

ORIFICE SIZE AVAILABLE - 3/8, 7/16, 1/2, 17/32, ELO(5/8)*, ESFR(3/4)*

DIMENSIONS - INCHES

SIZE	A	B	C	D	E	F	G	H
3/4"	5 1/16" 128mm	1 1/2" 37.58mm	2 3/16" 55.65mm	3 5/8" 93.23mm	3 3/8" 85.68mm	1 13/16" 45.30mm	4 9/16" 117.12mm	6 3/8" 162.42mm
1"	5 1/16" 128mm	1 1/2" 37.58mm	2 3/16" 55.65mm	3 5/8" 93.23mm	3 3/8" 85.68mm	1 13/16" 45.30mm	4 9/16" 117.12mm	6 3/8" 162.42mm
1 1/4"	5 7/16" 137.70mm	1 11/16" 42.70mm	2 9/16" 65.36mm	4 1/4" 108.36mm	3 5/16" 82.84mm	1 15/16" 50.89mm	5 9/16" 141.39mm	5 1/2" 192.28mm
1 1/2"	6 7/16" 163.38mm	1 13/16" 45.50mm	3 1/4" 81.50mm	5 1/16" 127mm	3 7/8" 99.18mm	2 5/8" 66.97mm	8 1/4" 206.63mm	10 7/8" 273.60mm
2"	6 7/16" 163.38mm	1 13/16" 45.50mm	3 1/4" 81.50mm	5 1/16" 127mm	3 7/8" 99.18mm	2 5/8" 66.97mm	8 1/4" 206.63mm	10 7/8" 273.60mm

*Available on 1 1/4" to 2" size units only.

MATERIAL LIST

PART:	MATERIAL:
HANDLE	STEEL
STEM	ROD BRASS
BALL	C.P. BRONZE
BODY	BRONZE
VALVE SEAT	IMPREGNATED TEFLON
INDICATOR PLATE	STEEL
HANDLE LOCK	SPRING STEEL

2" ELO/ESFR is UL Listed & FM Approved
1 1/4" ELO/ESFR is UL Listed

The Reliable Automatic Sprinkler Co., Inc
525 N. MacQuesten Parkway
Mount Vernon, NY 10552
Phone 800.431.1588
www.reliablesprinkler.com

MADE IN U.S.A.

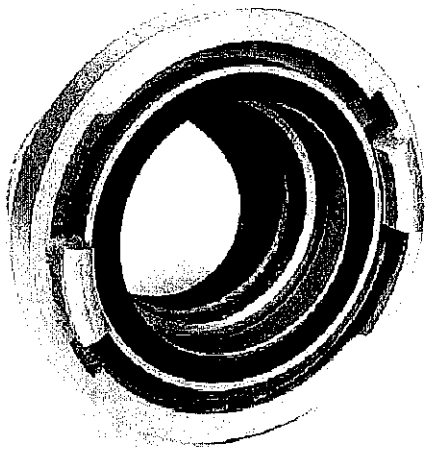
JOB NAME: _____

ARCHITECT: _____

ENGINEER: _____

CONTRACTOR: _____

Storz Type
Fire Department Connections



Description

Storz type Fire Department Connections are typically used for large diameter hose connections. Each connection features two to three lugs for "quick" connection of the fitting depending on hose diameter. Storz type fittings are genderless. Manufactured of forged aluminum alloy for increased service life and corrosion resistance. Each fitting also features a nitrile seal which is impervious to most chemicals and also features a lever type lock to prevent fittings from twisting apart during use. See specifications for additional information and available configurations. Meets NFPA1963 requirements

Installation

Installation of a Storz fitting is accomplished with normal installation methods* used in the fire sprinkler industry. Make sure the female threads of the Storz fitting and the male pipe end are free of contaminants and debris. Apply a suitable thread sealant to the threads of the male pipe end such as PipeFit® or PipeFit® AS. Thread the Storz fitting on to the male pipe end until hand tight.

*Tighten the Storz type fitting one additional turn using a specially designed spanner wrench to prevent damage to the outer surfaces of the fitting. Engage set screw (if equipped) of the Storz fitting into the male pipe end. The set screw prevents unintentional removal of the fitting.

Specifications

Material:
Forged Aluminum Alloy

Seal: Nitrile

Approvals:
Meets NFPA 1963 edition 1998 Standard for fire hose connections

Available sizes:*
4" Storz x 4" FNPT
4" Storz w/ 30° Elbow
5" Storz x 4" FNPT
5" Storz w/ 30° Elbow

Accessories:
4" Blind cap w/ tether
5" Blind cap w/ tether
Spanner Wrench for 4-6"

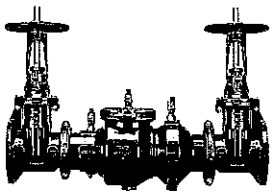
*Also available as kits. Each kit contains one STORZ connection, blind cap and an identification sign.

Fire Protection Products, Inc
3198 Lionshead Avenue, Carlsbad, CA 92010-4701
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

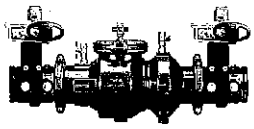
WILKINS
a ZURN company

Model 350A
Double Check Valve Assembly

SPECIFICATION SUBMITTAL SHEET



(with OSY gates)



(with BGVIC valves)

APPLICATION
Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. The Model 350A shall provide protection where a potential health hazard does not exist. Ideal for use where lead-free* valves are required.

STANDARDS COMPLIANCE (Horizontal & Vertical)
- ASSE® Listed 1015
- AWWA Compliant C510 (with gates only)
- IAPMO® Listed
- CSA® Certified
- UL® Classified
- C-UL® Classified
- FM® Approved
- NYC MEA 220-04-M Vol 2 (2 1/2" - 8")
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California
- NSF® Listed-Standard 61, Annex G*

*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

FEATURES
Sizes: ❑2 1/2"* ❑3"* ❑4" ❑6" ❑8" ❑10"

Maximum working water pressure	175 PSI
Maximum working water temperature	140˚F
Hydrostatic test pressure	350 PSI
End connections	
(Grooved for steel pipe)	AWWA C606
(Flanged)	ANSI B16.1 Class 125

*2 1/2" & 3" sizes use 4" body & reducer couplings

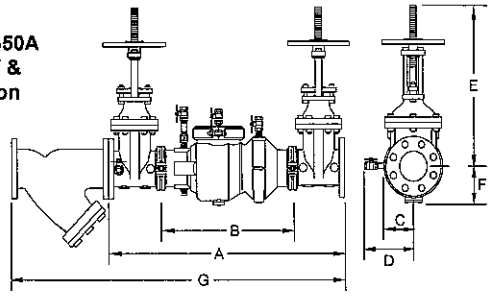
OPTIONS (Suffixes can be combined)
- ❑ - with flanged end NRS gate valves (standard)
- ❑ FSC - with epoxy coated wye type strainer (flanged only)
- ❑ G - with grooved end NRS gate valves
- ❑ GF - with grooved inlet gate connection and flanged outlet gate connection
- ❑ FG - with flanged inlet gate connection and grooved outlet gate connection
- ❑ L - less shut-off valves (grooved body connections)
- ❑ OSY - with flanged end OS&Y gate valves
- ❑OSYG - with grooved end OS&Y gate valves
- ❑ PI - with Post Indicator Gate Valves (3"-12")
- ❑BGVIC - with grooved end butterfly valves

ACCESSORIES
- ❑ Repair kit (rubber only)
- ❑ Thermal expansion tank (Model XT)
- ❑ OS & Y Gate valve tamper switch (OSY-40)
- ❑ Test Cock Lock (Model TCL24)

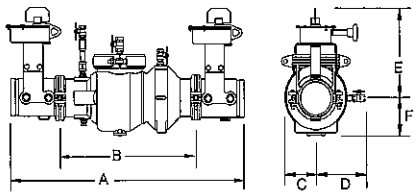
MATERIALS

Main valve body	Ductile Iron ASTM A 536 Grade 4
Access covers	Ductile Iron ASTM A 536 Grade 4
Coatings	FDA Approved electrostatic epoxy finish
Internals	Stainless steel, 300 Series NORYL™, NSF Listed
Fasteners & springs	Stainless Steel, 300 Series
Seal ring	EPDM (FDA approved)
O-ring	Buna Nitrile (FDA approved)

MODEL 350A with OSY & FSC option



MODEL 350A with BGVIC option



DIMENSIONS & WEIGHTS (do not include pkg.)

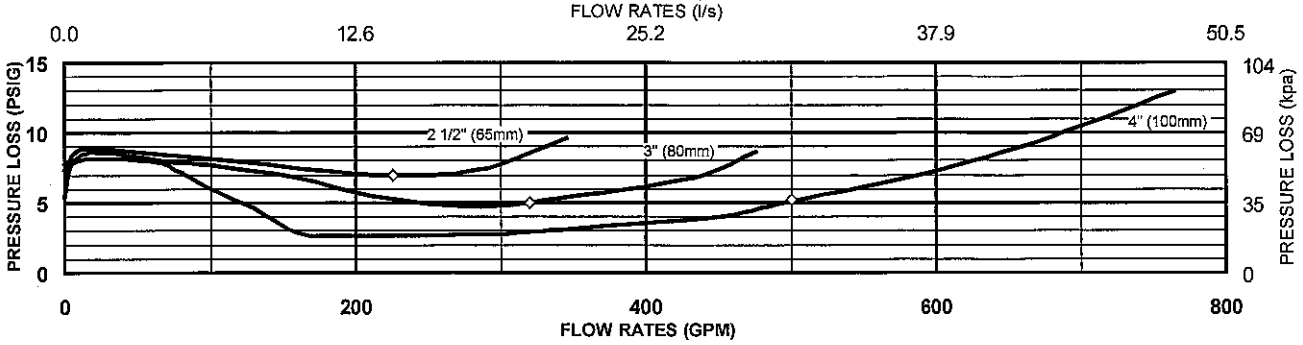
MODEL SIZE		WEIGHT											
		WITHOUT GATES		WITH NRS GATES (GXF)		WITH OS&Y GATES (GXF)		WITH NRS GATES (GXG)		WITH OS&Y GATES (GXG)		WITH BUTTERFLY VALVES (GXG)	
in.	mm	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
2 1/2	65	90	41	184	83.5	192	87	176	80	184	83.5	108.8	49.4
3	80	89	40.5	204	92.5	210	95.3	194	88	200	90.8	109.4	50
4	100	76	34.5	220	100	230	104	194	88	204	93	108	49
6	150	126	57.2	346	157	362	164	316	143	332	151	178	81
8	200	286	130	738	335	762	335	738	335	738	335	394	179
10	250	339	153.8	966	438.2	1024	464.5	844	382.8	902	409.1	511	232

MODEL SIZE		DIMENSION (approximate)																					
		A		A WITH BUTTERFLY		B LESS GATE VALVES		C		D		E OS&Y OPEN		E OS&Y CLOSED		E NRS GATE		E WITH BUTTERFLY VALVES		F		G	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2 1/2	65	35 1/8	892	32 1/8	816	20 1/8	511	4 1/2	114	7 1/4	184	16 3/8	416	13 7/8	352	11 3/8	289	8	203	6	152	45 1/4	1150
3	80	36 1/8	918	33	838	20 1/8	511	4 1/2	114	7 1/4	184	18 7/8	479	15 5/8	397	12 3/8	314	8	203	6	152	46 7/8	1191
4	100	38 1/4	972	33 1/4	845	19 7/8	505	4 1/2	114	8	203	22 3/4	578	18 1/4	464	14 3/4	375	9 1/8	232	6	152	53 3/8	1356
6	150	47 1/4	1200	40 1/4	1022	25 7/8	657	5 1/2	140	10	254	30 1/8	765	23 3/4	603	19	483	10 1/8	257	7	178	65 3/8	1661
8	200	62	1575	55	1397	38 1/2	978	10	254	11	279	37 3/4	959	29 1/4	743	22 1/2	572	11 15/16	303	8 1/2	216	86 3/8	2194
10	250	64 5/8	1642	58 1/2	1485	38 1/2	978	10	254	12	305	45 3/4	1162	35 3/8	899	26 1/2	673	13 5/16	338	8 1/2	216	94 3/8	2398

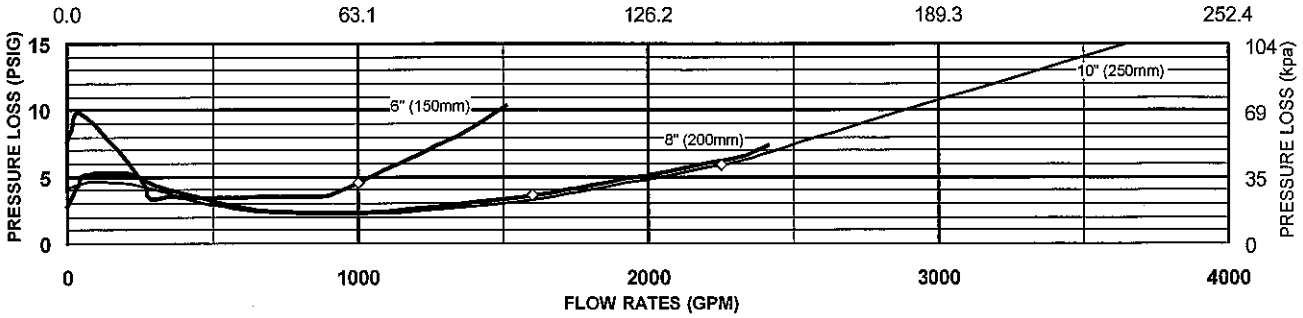
Attention: Model 350A (grooved body) & Model 350 (flange body) have different lay lengths.

FLOW CHARACTERISTICS

MODEL 350A 2 1/2", 3" & 4" (STANDARD & METRIC)



MODEL 350A 6", 8" & 10" (STANDARD & METRIC)

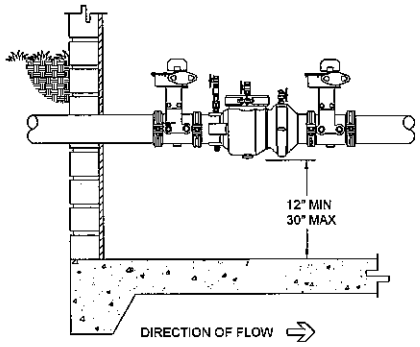


◇ Rated Flow (established by approval agencies)

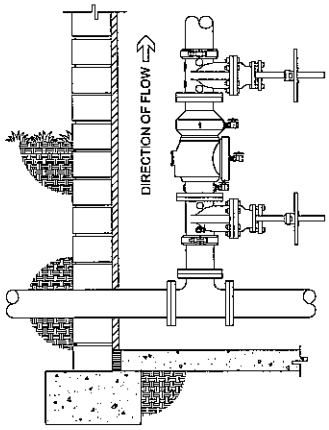
TYPICAL INSTALLATION

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

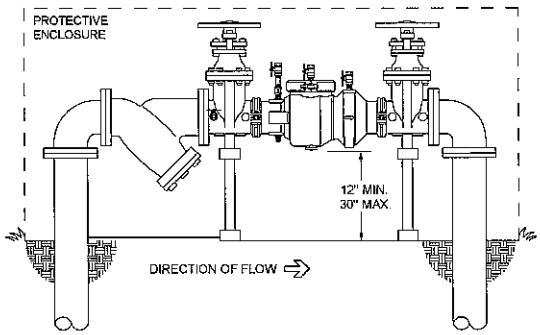
Capacity thru Schedule 40 Pipe (GPM)				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
2 1/2"	75	112	149	224
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687
12"	1763	2644	3525	5288



INDOOR INSTALLATION MODEL 350ABGVIC



INDOOR INSTALLATION (VERT.) MODEL 350A



OUTDOOR INSTALLATION MODEL 350AFS

SPECIFICATIONS

The Double Check Backflow Prevention Assembly shall be ASSE® Listed 1015, and supplied with full port gate valves. The main body and access cover shall be epoxy coated ductile iron (ASTM A 536 Grade 4), the seat ring and check valve shall be NORYL™, the stem shall be stainless steel (ASTM A 276) and the seat disc elastomers shall be EPDM. The checks shall be accessible for maintenance without removing the device from the line. The Double Check Backflow Prevention Assembly shall be a WILKINS Model 350A.