Bulletin 176 Rev. A

Model F1 Residential Sprinklers for Design Density of .10 gpm/ft^2

Model F1 Res Sprinklers engineered for the lowest flows to meet the minimum design density of .05 gpm/ft^2

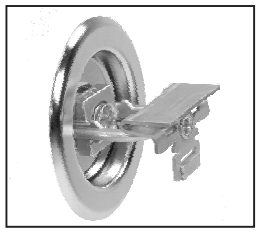
Types:

1. F1 Res 49 Pendent
2. F1 Res 49 Recessed Pendent/F1
3. F1 Res 49 Recessed Pendent/FP
4. F1 Res 49 CCP Pendent
5. F1 Res 58 Pendent
6. F1 Res 58 Recessed Pendent/F1
7. F1 Res 58 Recessed Pendent/FP
8. F1 Res 58 CCP Pendent
9. F1 Res 44 & 58 HSW
10. F1 Res 44 & 58 HSW Recessed HSW/F2
11. F1 Res 44 SWC
12. F1 Res 76 Pendent
13. F1 Res 76 Recessed Pendent/F1
14. F1 Res 76 Recessed Pendent/FP
15. F1 Res 76 CCP Pendent

F1 Res 49, 58 & 76 Recessed Pendent / F1

F1 Res 49, 58 & 76 Recessed Pendent / FP

F1 Res 49, 58 & 76 CCP Pendent



F1 Res 44 & 58 Recessed HSW/F2

F1 Res 44 SWC

Listings & Approvals

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

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 F1Res Pendent sprinklers (Figs. 1, 2, 3 & 4) combine excellent durability, high sensitivity glass-bulb and low profile decorative design.

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 (R1/2)
- K-Factor: 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 0.10 gpm/ft^2

***** Effective date 7/12/02

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.

When using F1 Residential Sprinklers for systems design to NFPA 13D or NFPA 13R, use listed area of coverage and minimum flow and pressure requirements shown in Bulletin 135.

For systems designed to NFPA 13, use information in this bulletin. The number of design sprinklers shall be the most hydraulically demanding sprinklers as required by NFPA 13. Flows and pressures can not be below the baseline flows and pressurers.

NFPA 13

For residential sprinkler systems designed to NFPA 13, a minimum density of 0.1 gpm/ft^2 must be provided over the "design area" that includes the four (4) hydraulically most demanding sprinklers for the actual coverage areas being protected by the 4 sprinklers. The minimum required discharge from each of the four most hydraulically demanding sprinklers shall be the greater of the following:

1. The flow rates given in the Reliable Residential Sprinkler Technical Bulletins referenced in Table A for NFPA 13D and 13R as a function of temperature rating and maximum allowable coverage area (for actual coverage areas less than or between those indicated in the respective technical bulletin, it is required to use the minimum required flow for the next largest coverage area); or
2. A minimum discharge density of 0.1 gpm/ft^2 applied over the "design area" consisting of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers. The maximum dimension of the actual coverage area cannot be any greater than the maximum coverage area indicated in the technical bulletins referenced in Table A.

   Design Note: Using the A_S = S x L method to determine the sprinkler protection area of coverage in accordance with NFPA 13, apply the 0.1 gpm/ft^2 density to this area to determine the minimum required flow. Compare this flow to the minimum 0.05 gpm/ft^2 cULus Listed flow for the appropriate coverage area in the technical bulletin for the specific residential sprinkler. If the flow stated in the technical bulletin is less than the calculated 0.1 gpm/ft^2 density flow required, the .1 density flow must then be used in the equation $Q=K\sqrt{P}$, solving for P, to establish the minimum required pressure using the sprinkler K-factor. **Note:** In many cases the listed flow of individual residential sprinklers may exceed the required minimum 0.05 gpm/ft^2 density. Reliable has available residential sprinklers with larger K-factors (K=5.8 and K=7.6) that will provide lower pressure demands for 0.1 gpm/ft^2 densities in NFPA 13 residential applications.

Example No. 1
Room Size= 12 ft x 20 ft (3.6 m x 6.1 m)
Coverage Area= 12 x 20 = 240 ft^2 (22.3 m^2)
Flow @ 0.10 gpm/ft^2 density= 240 x 0.10 = 24 gpm
Using an F1 Res 49 Pendent Sprinkler, K=4.9
Pressure= $(24/4.9)^2$ = 24 psi (1.65 bar)
The baseline flow for a 20 ft x 20 ft (6.1 m x 6.1 m) coverage area using the baseline density of 0.05 gpm/ft^2 will be 20 gpm @ 16.7 psi (75.7 L/min @ 1.14 bar). Therefore, the minimum flow required is 24 gpm @ 24 psi (90.8 L/min @ 1.65 bar).

Example No. 2
Room Size= 8 ft x 20 ft (2.4 m x 6.1 m)
Coverage Area= 8 x 20 = 160 ft^2 (14.9 m^2)
Flow @ 0.10 gpm/ft^2 density= 160 x 0.10 = 16 gpm
Using an F1 Res 49 Pendent Sprinkler, K=4.9
Pressure= $(16/4.9)^2$ = 10.7 psi (0.74 bar)
The baseline flow for a 20 ft x 20 ft (6.1 m x 6.1 m) coverage area using the baseline density of 0.05 gpm/ft^2 will be 20 gpm @ 16.7 psi (75.7 L/min @ 1.14 bar). Therefore, the minimum flow required is 20 gpm @ 16.7 psi (75.7 L/min @ 1.14 bar).

Example No. 3
Room Size= 10 ft x 16 ft (3.0 m x 4.91 m)
Coverage Area= 10 x 16 = 160 ft^2 (14.9 m^2)
Flow @ 0.10 gpm/ft^2 density= 160 x 0.10 = 16 gpm
Using an F1 Res 76 Pendent Sprinkler, K=7.6
The baseline flow for a 16 ft x 16 ft coverage area is 21 gpm @ 7.6 psi (79.5 L/min @ 0.52 bar). Therefore, the minimum flow and pressure is 21 gpm @ 7.6 psi (79.5 L/min @ 0.52 bar).

Example No. 4
Room Size= 14 ft x 18 ft (4.3 m x 5.5 m)
Coverage Area= 14 x 18 = 252 ft^2 (23.6 m^2)
Flow @ 0.10 gpm/ft^2 density= 252 x 0.10 = 25.2 gpm (94.6 L/min)
Using an F1 Res 76 Pendent Sprinkler, K=7.6
Pressure= $(252/7.6)^2$ = 11 psi (0.76 bar)
The baseline flow and pressure of an 18 ft x 18 ft coverage area is 21 gpm @ 7.6 psi (79.5 L/min @ 0.52 bar). Therefore, the minimum flow and pressure is 25.2 gpm @ 11 psi (94.6 L/min @ 0.76 bar).

In general residential sprinklers require flows and pressures as listed for 0.05 densities to achieve the proper spray pattern so the flows and pressures at 0.05 density are the baseline flows and pressures. Flows and pressures below the listed 0.05 density shall not be used.

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 Wrench; for installing Models F1 Res Recessed Pendent, CCP 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.

Note: A 'leak tight" sprinkler joint can be obtained with the following torque:

- ¾" NPT (R3/4) – 14-20 ft-lbs (19 - 27.1 N-m)
- ½" NPT (R1/2) – 8-18 ft-lbs (10.8 – 24.4 N-m)

Do not tighten sprinklers over maximum recommended torque. It may cause leakage or impairment of the sprinklers.

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

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

F1 escutcheon, ¾" (19mm) adjustment

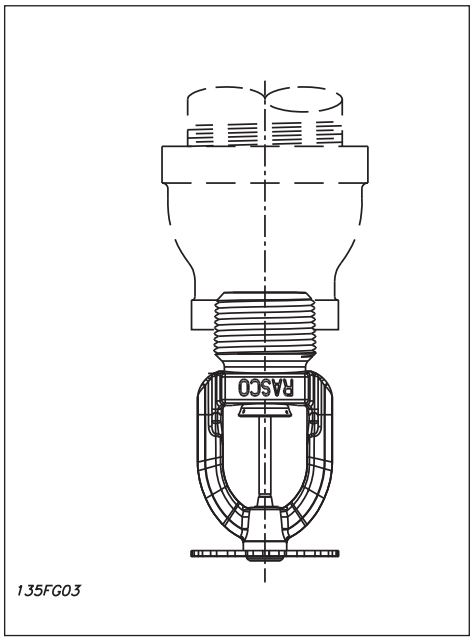


Fig. 1

Note: See escutcheon table for dimensions.

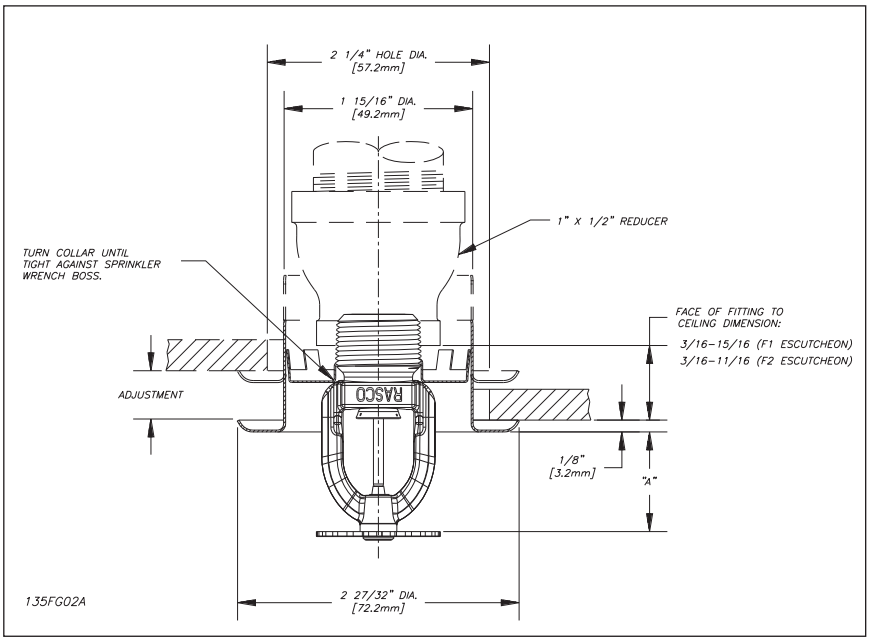


Fig. 2

Technical Data: F1 Res 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)

Escutcheon*, F1 or F2, Data:

Type	Adjustment Inch (mm)	"A" Inch (mm)	Face of fitting to ceiling Inch (mm)
F1	¾ (19.0)	Min.= ¾″ (19.1) Max.=1½″ (38.1)	3/16 - 15/16 (4.7 - 24.0)
F2	½ (12.7)	Min.= 15/16″ (23.8) Max.=1½″ (38.1)	3/16 - 1 1/16 (4.7 - 17.4)

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

**Baseline flows and pressures for 0.05 density

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 (3.6x3.6)	13 (49)	7.0 (0.48)	R3516
14 x 14 (4.3x4.3)	13 (49)	7.0 (0.48)	
16 x 16 (4.9x4.9)	13 (49)	7.0 (0.48)	
18 x 18 (5.5x5.5)	17 (64.3)	12.0 (0.83)	
20 x 20 (6.1x6.1)	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 (3.6x3.6)	15 (57)	9.4 (0.65)	R3516
14 x 14 (4.3x4.3)	16 (60.5)	10.6 (0.73)	
16 x 16 (4.9x4.9)	17 (64.3)	12.0 (0.83)	
18 x 18 (5.5x5.5)	19 (72)	15.0 (1.0)	
20 x 20 (6.1x6.1)	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: F1 Res 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	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)

**Baseline flows and pressures for 0.05 density

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Ceiling -to- Deflector Inch (mm)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	16 (61)	7.6 (0.53)	1-4 (25-100)	R3513
14 x 14 (4.3x4.3)	16 (61)	7.6 (0.53)		
16 x 16 (4.9x4.9)	16 (61)	7.6 (0.53)		
18 x 18 (5.5x5.5)	19 (72)	10.8 (0.75)		
20 x 20 (6.1x6.1)	22 (83.3)	14.4 (1.0)		

****Calculate for a .10 density but in no case go below the baseline flows & pressures

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)
¾" NPT (R¾)	17/32" (13.5)	155 175	68 79	175 (12)	100 150	38 66	7.6	2.25 (57)

Type	Adjustment Inch (mm)	"A" Inch (mm)	Face of fitting to ceiling Inch (mm)
F1	¾ (19.0)	Min.= ¾" (19.1) Max.=1½" (38.1)	3/16 - 15/16 (4.7 - 24.0)
F2	½ (12.7)	Min.= 15/16" (23.8) Max.=1½" (38.1)	3/16 - 11/16 (4.7 - 17.4)

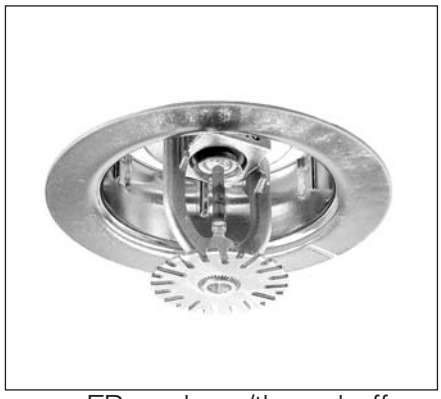
*Baseline flows and pressures for 0.05 density

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	21	7.6 (0.53)	R7618
14 x 14 (4.3x4.3)	21	7.6 (0.53)	
16 x 16 (4.9x4.9)	21	7.6 (0.53)	
18 x 18 (5.5x5.5)	21	7.6 (0.53)	
20 x 20 (6.1x6.1)	23	9.2 (0.63)	

*Calculate for a .10 density but in no case go below the baseline flows & pressures

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

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



FP push-on/thread-off escutcheon

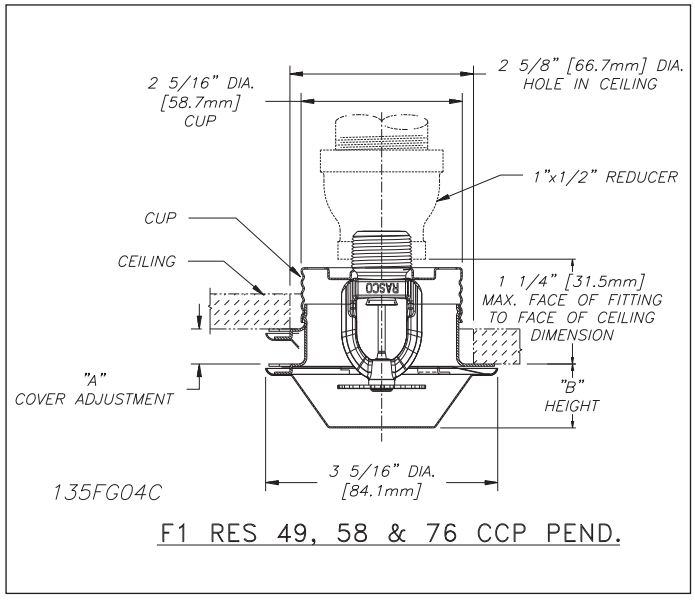


Fig. 3

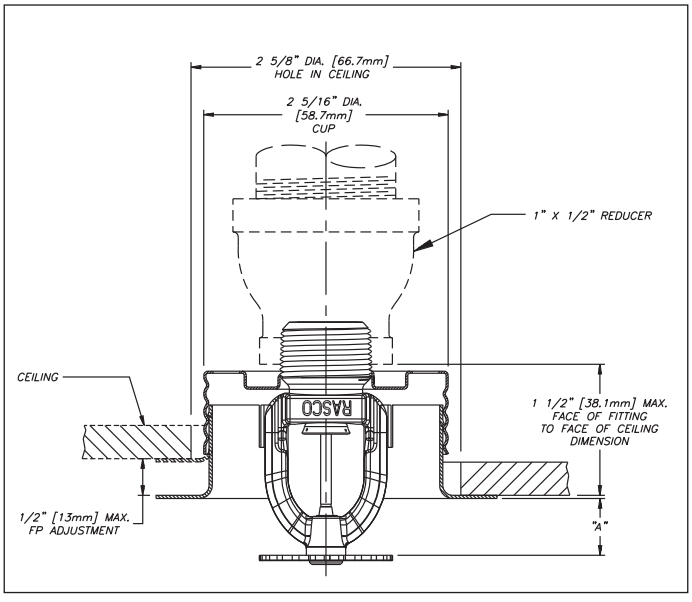


Fig. 4

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

Technical Data: F1 Res 49 CCP Pendent and Recessed Pendent / FP

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

CCP Options Data:

"A" Cover Adjustment Inch (mm)	"B" CCP Height Inch (mm)
½ (12.7)	15/16 (24)
3/16 (4.7)	¾ (19)

*Baseline flows and pressures for 0.05 density

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	13 (49)	7.0 (0.48)	R3516
14 x 14 (4.3x4.3)	13 (49)	7.0 (0.48)	
16 x 16 (4.9x4.9)	14 (53)	8.2 (0.56)	
18 x 18 (5.5x5.5)	18 (68.1)	13.5 (0.93)	
20 x 20 (6.1x6.1)	20 (75.7)	16.7 (1.14)	

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: F1 Res 58 CCP Pendent and Recessed Pendent/FP

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

*Baseline flows and pressures for 0.05 density

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	16 (61)	7.6 (0.53)	R3513
14 x 14 (4.3x4.3)	16 (61)	7.6 (0.53)	
16 x 16 (4.9x4.9)	16 (61)	7.6 (0.53)	
18 x 18 (5.5x5.5)	19 (72)	10.8 (0.75)	
20 x 20 (6.1x6.1)	22 (83.3)	14.4 (1.0)	

Technical Data: F1 Res 76 CCP Pendent and Recessed Pendent/FP

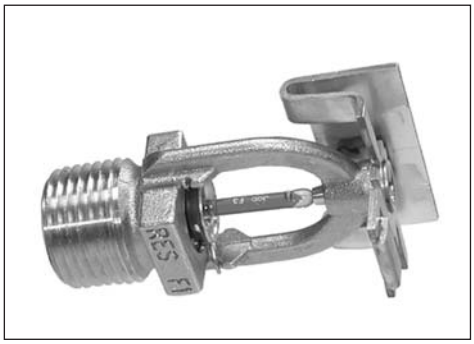
Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating		CCP Assembly Temp. Rating		Max. Pressure psi (bar)	Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
		°F	°C	°F	°C		°F	°C		
¾" NPT (R3/4)	17/32" (13.5)	155 175	68 79	135	57	175 (12)	100 150	38 66	7.6	2.25 (57)

*Baseline flows and pressures for 0.05 density

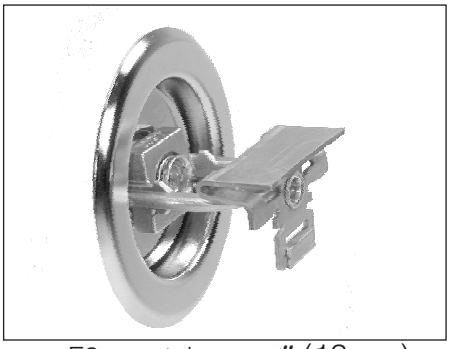
Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	21	7.6 (0.53)	R7618
14 x 14 (4.3x4.3)	21	7.6 (0.53)	
16 x 16 (4.9x4.9)	21	7.6 (0.53)	
18 x 18 (5.5x5.5)	22	8.4 (0.58)	
20 x 20 (6.1x6.1)	25	10.8 (0.74)	

*Calculate for a .10 density but in no case go below the baseline flows & pressures

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



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



F2 escutcheon, ½″ (13mm) adjustment

Technical Data: F1 Res 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)	⅜" (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)

*Baseline flows and pressures for 0.05 density

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 (3.6x3.6)	4 - 6 (101-152)	155 (68)	175 (79)	12 (45.4)	7.5 (0.52)	R3531
14 x 14 (4.3x4.3)		155 (68)	175 (79)	14 (53.0)	10.2 (0.71)	
16 x 16 (4.9x4.9)		155 (68)	175 (79)	16 (60.6)	13.3 (0.92)	
16 x 18 (4.9x5.5)		155 (68)	175 (79)	18 (68.1)	16.8 (1.16)	
18 x 18 (5.5x5.5)		155 (68)	175 (79)	19 (72.0)	18.7 (1.29)	
16 x 20 (4.9x6.1)		155 (68)	175 (79)	23 (87.1)	27.4 (1.89)	
12 x 12 (3.6x3.6)	6 - 12 (152-305)	155 (68)	175 (79)	14 (53.0)	10.2 (0.71)	
14 x 14 (4.3x4.3)		155 (68)	175 (79)	16 (60.6)	13.3 (0.92)	
16 x 16 (4.9x4.9)		155 (68)	175 (79)	17 (64.4)	15.0 (1.04)	
16 x 18 (4.9x5.5)		155 (68)	175 (79)	20 (75.7)	20.7 (1.43)	
16 x 20 (4.9x6.1)		155 (68)	175 (79)	23 (87.1)	27.4 (1.89)	

*Calculate for a .10 density but in no case go below the baseline flows & pressures

- **Model F1 Res 44 SWC**

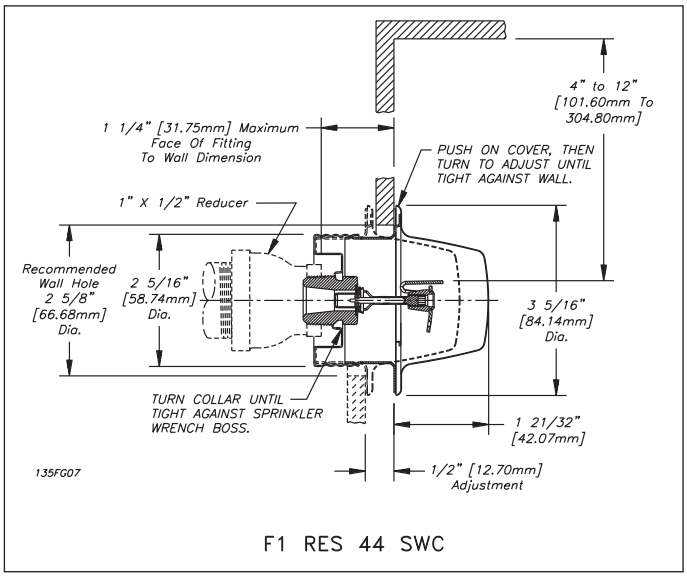


Fig. 5

Technical Data: F1 Res 44 SWC

Thread Size	Nominal Orifice Inch (mm)	Sprinkler Temp. Rating		Cover Temp. Rating		Max. Pressure psi (bar)	Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
		°F	°C	°F	°C		°F	°C		
½" NPT (R½)	⅜" (10)	155	68	135	57	175 (12)	100	38	4.4	2.45 (62)

*Baseline flows and pressures for 0.05 density

Max. Sprinkler Spacing ft (m)	"A" Ceiling -to-Deflector Inch (mm)	Flow gpm (Lpm)	Pressure psi (bar)	Sprinkler Identification Number (SIN)
12 x 12 (3.6x3.6)	4 - 6 (101-152)	13 (49.2)	8.7 (0.60)	R3531
14 x 14 (4.3x4.3)		14 (53.0)	10.2 (0.71)	
16 x 16 (4.9x4.9)		17 (64.3)	15.0 (1.1)	
16 x 18 (4.9x5.5)		19 (71.8)	18.7 (1.13)	
16 x 20 (4.9x6.1)		23 (87.1)	27.4 (1.89)	
12 x 12 (3.6x3.6)	6 - 12 (152-305)	14 (52.9)	10.2 (0.71)	
14 x 14 (4.3x4.3)		15 (56.7)	11.7 (0.81)	
16 x 16 (4.9x4.9)		18 (68.1)	16.8 (1.16)	
16 x 18 (4.9x5.5)		20 (75.6)	20.7 (1.43)	

*Calculate for a .10 density but in no case go below the baseline flows & pressures

Technical Data: F1 Res 58 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)	½" (13)	155 175	68 79	175 (12)	100 150	38 66	5.8	2.45 (62)

Escutcheon, F2, Data:

Type	Adjustment Inch (mm)	Face of Fitting to wall Inch (mm)
F2	½ (13)	3/16 - 1 1/16 (4.7 - 17.4)

*Baseline flows and pressures for 0.05 density

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 (3.6x3.6)	4 - 6 (101-152)	155 (68)	175 (79)	16 (60.6)	7.6 (0.53)	R3533
14 x 14 (4.3x4.3)		155 (68)	175 (79)	18 (68.2)	9.7 (0.67)	
16 x 16 (4.9x4.9)		155 (68)	175 (79)	21 (79.5)	13.2 (0.91)	
16 x 18 (4.9x5.5)		155 (68)	175 (79)	25 (94.7)	18.6 (1.28)	
16 x 20 (4.9x6.1)		155 (68)	175 (79)	29 (109.8)	25 (1.73)	
12 x 12 (3.6x3.6)	6 - 12 (152-305)	155 (68)	175 (79)	22 (83.3)	14.4 (1.0)	
14 x 14 (4.3x4.3)		155 (68)	175 (79)	22 (83.3)	14.4 (1.0)	
16 x 16 (4.9x4.9)		155 (68)	175 (79)	26 (98.4)	20.1 (1.39)	
16 x 18 (4.9x5.5)		155 (68)	175 (79)	31 (117.4)	28.6 (1.97)	

*Calculate for a .10 density but in no case go below the baseline flows & pressures

Finishes[1]

Standard Finishes	
Sprinkler	**F1, F2, FP Escutcheons**
Bronze Chrome Plated White Polyester Coated	Brass Bright Chrome Plated White Painted
Special Application Finishes	
Sprinkler	**F1, F2, Escutcheons**
Bright Brass Black Plated Black Paint Off White Satin Chrome	Bright Brass Black Plated Black Paint Off White Satin Chrome

[1] Other finishes and colors are available on special order. Consult factory for details.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Temperature Rating
4. Sprinkler Finish
5. Escutcheon Finish

Maintenance

Model F1 Res 49, F1 Res 58 & F1 Res 76 Sprinklers should be inspected quarterly, and the sprinkler system maintained in accordance with NFPA 25, 13, 13D, and 13R. Do not clean sprinkler 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 remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Model F1RES 49 Residential Sprinkler Specifications

Model F1 Res 49 & 58 Pendent

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential pendent sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where pendent residential sprinklers are installed under sloped ceilings having a pitch of up to [4/12] [8/12], the sprinklers shall be listed for such use. Deflector-to-ceiling distance listing shall be 1" to 8" maximum. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and top-loaded extruded cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 4.9 & 5.8. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential pendent sprinklers shall be Reliable Model F1 Res 49 & 58, SIN R3516 & R3513 (Bulletin 135).

Model F1 Res 49 & 58 Recessed Pendent/F1, Model F1 Res 49 & 58 Recessed Pendent/F2, Model F1 Res 49 & 58 Recessed Pendent/FP

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential recessed pendent sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where pendent residential sprinklers are installed under sloped ceilings having a pitch of up to [4/12] [8/12], the sprinklers shall be listed for such use. Deflector-to-ceiling distance listing shall be 1" to 8" maximum. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and top-loaded extruded cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 4.9 (70). Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Recessed escutcheon assembly shall be a steel, two-piece escutcheon [with ½" adjustment (Model F2)] [with ¾" adjustment (Model F1)] [of push-on and thread off design with ½" adjustment (Model FP)]. Standard finish shall be [brass][bright chrome] [white painted]. Residential recessed pendent sprinklers shall be Reliable [Model F1 Res 49 & 58 Recessed Pendent/F1] [Model F1 Res 49 & 58 Recessed Pendent/F2] [Model F1 Res 49 & 58 Recessed Pendent/FP] SIN R3516 & R3513 (Bulletin 135).

Model F1 Res 49 & 58 CCP Pendent (Concealed)

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential concealed sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where pendent residential sprinklers are installed under sloped ceilings having a pitch of up to [4/12] [8/12], the sprinklers shall be listed for such use. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and top-loaded extruded cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of 155°F (68°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange. Method of attaching the cover plate to the sprinkler cup shall be a push-on and thread-off design allowing a ½" cover plate adjustment. Cover plate temperature rating shall be 135°F (57°C). A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the sprinkler from damage, which could occur during construction before the cover plate is installed. Standard cover plate finish: [White] [Custom Color– specify].]. Concealed pendent sprinklers shall be Reliable Model F1 Res 49 & 58 CCP, SIN R3516 & R3513 (Bulletin 135).

Model F1 Res 44 & 58 Horizontal Sidewall Sprinkler

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential horizontal sidewall sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where horizontal sidewall residential sprinklers are installed under sloped ceilings having a pitch of up to [4/12] [8/12], the sprinklers shall be listed for such use. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and top-loaded extruded cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 5.8. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential horizontal sidewall sprinklers shall be Reliable Model F1 Res 58, SIN R3513 (Bulletin 135).

Model F1 Res 44 & 58 Recessed Horizontal Sidewall Sprinkler

Use description for the Model F1 Res 58 horizontal sidewall sprinkler with the following modifications: Replace "horizontal sidewall sprinkler" with "recessed horizontal sprinkler." Add: Recessed escutcheon assembly shall be a steel, two-piece escutcheon with ½" adjustment (Model F2). Standard finish shall be [brass][bright chrome] [white painted] [Special finish– specify]. Residential recessed horizontal sidewall sprinklers shall be Reliable Model F1 Res 58/F2, SIN R3513 (Bulletin 135).

Model F1 Res 76 Pendent

Sprinklers shall be [cULus Listed] low flow residential pendent sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and machined cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 7.6. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential pendent sprinklers shall be Reliable Model F1 Res 76, SIN R7618 (Bulletin 135).

Model F1 Res 76 Recessed Pendent/F1, Model F1 Res 76 Recessed Pendent/F2, Model F1 Res 76 Recessed Pendent/FP

Sprinklers shall be [cULus Listed] low flow residential recessed pendent sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and machined cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 7.6. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Recessed escutcheon assembly shall be a steel, two-piece escutcheon [with ½" adjustment (Model F2)] [with ¾" adjustment (Model F1)] [of push-on and thread off design with ½" adjustment (Model FP)]. Standard finish shall be [brass][bright chrome] [white painted]. Residential recessed pendent sprinklers shall be Reliable [Model F1 Res 76 Recessed Pendent/F1] [Model F1 Res 76 Recessed Pendent/F2] [Model F1 Res 76 Recessed Pendent/FP] SIN R7618 (Bulletin 135).

Model F1 Res 76 CCP Pendent (Concealed)

Sprinklers shall be [cULus Listed] low flow residential concealed sprinklers engineered to provide a minimum design density of 0.10 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer and machined cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of 155°F (68°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange. Method of attaching the cover plate to the sprinkler cup shall be a push-on and thread-off design allowing a ½" cover plate adjustment. Cover plate temperature rating shall be 135°F (57°C). A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the sprinkler from damage, which could occur during construction before the cover plate is installed. Standard cover plate finish: [White] [Custom Color– specify].]. Concealed pendent sprinklers shall be Reliable Model F1 Res 76 CCP, SIN R7618 (Bulletin 135).

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

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

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