

Reliable Solutions

FOR MULTIPURPOSE RESIDENTIAL SYSTEMS



Featuring a full line of patent pending low lead
sprinklers meeting NSF/ANSI 61, annex G certification



Company Profile



Our new state-of-the-art manufacturing facility in Liberty, SC



Frank J. Fee



Frank J. Fee, Jr.

COMPANY

The Reliable Automatic Sprinkler Co., Inc. is one of the world's largest producers of automatic fire sprinklers and sprinkler system control equipment.

Reliable has undertaken a major expansion of its manufacturing capability with the construction of a new state-of-the-art plant located in Liberty, South Carolina, a short distance from Greenville. This new 300,000 square foot facility has been fully operational since summer 2006 and is ISO9001 certified.

In mid 2006 the company relocated its corporate headquarters to Elmsford, NY, which is also the Northeast regional sales and distribution center. Reliable also maintains sales and regional distribution centers in Washington, D.C., Atlanta, Orlando, Chicago, Minneapolis, Denver, Dallas, Houston, Los Angeles, Las Vegas, Seattle, and Toronto, Canada. Reliable has sales offices in Boston, Philadelphia, Richmond, San Francisco, and Vancouver B.C. Reliable ships products to more than 50 countries worldwide, with international sales conducted from its offices in London, England, Mannheim, Germany, Beijing, Shanghai and Hong Kong, PR of China.

Reliable now offers fabrication in local areas. One Source Fabrication is operated and managed by individuals with over 30 years of fabrication experience. Local areas are now in Grand Prairie, Portland, Denver, and Las Vegas and soon to be in many other locations.

HISTORY

Reliable was founded in 1918 by Frank J. Fee, a mechanical contractor who began manufacturing sprinklers when he had trouble securing them for his own jobs. Frank J. Fee, Jr., succeeded his father as company President in 1945, and his son, Frank J. Fee III, became President in 1976. This puts Reliable today in its third generation of Fee family leadership. As part of senior management with Frank J. Fee III are his two brothers, Kevin T. Fee, Executive Vice President, and Michael R. Fee, Vice President, Marketing and Sales Operations. The family-run company also has many employees who have served in excess of 25 years, enhancing its team-family tradition.

PRODUCT OFFERINGS

The company is a manufacturer of automatic fire sprinklers, valve and accessory products, and a major distributor of sprinkler system components. Reliable produces both of the industry's two basic types of sprinklers, the solder type and the frangible bulb, which can be used for virtually every type of building applications. Reliable also produces a broad range of valves including alarm, dry, deluge, preaction, and check valve that control water flow to sprinkler systems and actuate alarm signaling.

FIRE PROTECTION INDUSTRY

Reliable has always been an industry-minded company. Reliable is an active participant in the



Frank J. Fee, III

following industry associations: American Fire Sprinkler Association, American Society of Plumbing Engineers, British Automatic Fire Sprinkler Association, bvfa Bundesverband Technischer Brandschutz, Canadian Automatic Sprinkler Association, European Fire Sprinkler Network, Factory Mutual Advisory Board, Home Fire Sprinkler Coalition, International Fire Sprinkler Association, National Fire Protection Association, National Fire Sprinkler Association, National Fire Sprinkler Network, and Society of Fire Protection Engineers.

Past President Frank J. Fee, Jr., attained many notable positions in the fire protection community, including Chairman of the National Fire Protection Association and Chairman of the National Automatic Sprinkler and Fire Control Association.

Frank J. Fee III is currently serving on the National Fire Protection Association's International Advisory Board and has held several Board of Directors positions for NFPA including Treasurer, Secretary, and Director. He was past Chairman of the Board and Director of the National Fire Sprinkler Association. Frank has been the recipient of the AFSA's "Henry S. Parmelee Award" (1990), the NFPA's "Distinguished Service Award" (1998), and the NFSAs "Golden Sprinkler Award" (1998), in recognition of his outstanding contributions to the fire sprinkler industry.



Kevin T. Fee

Kevin T. Fee is currently serving on the Board of Directors of the National Fire Sprinkler Association and has been appointed Treasurer. Kevin is the recipient of NFSAs "Golden Sprinkler Award" (2008). He was Chairman (1990 - 1994). Kevin has been a Board member since 1981 and is approaching his 30th consecutive year and is the longest tenured Board member in the history of NFSAs. Kevin was a founding member of the International Fire Sprinkler Association and served as its first Chairman (2000 - 2003) and is presently a Board member. Kevin was also past Chairman of the American Fire Sprinkler Association's Manufacturer and Supplier Council.

Michael R. Fee is currently serving on the American Fire Sprinkler Association's Manufacturer and Supplier Council and Legislative Committee. For many years, Michael has been on the Membership Committee and helped establish the local chapter development programs. Michael has been Chairman (2000-2004) of AFSA's Manufacturer and Supplier Council.



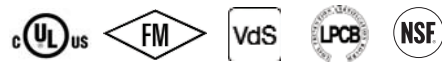
Michael R. Fee

MISSION

Three goals are at the heart of the mission that the Fee family established long ago: first to be the leading worldwide manufacturer of innovative, quality-oriented fire sprinklers and systems devices; second, to be a leading supplier of fire sprinkler system components; and third, to be the leader in providing the highest level of operational excellence in customer service, exceeding all customer expectations. It is this mission that propels Reliable through the 21st Century and beyond in its service to the fire sprinkler industry.

LISTINGS AND APPROVALS

Reliable products are listed and approved by various fire protection product approval laboratories and organizations such as:



CE, GOS, CNBOP, PAVUS, SBSC, VKF, SZIE YMETK

Refer to the product's Technical Bulletin for specific listing and approval information.

ENVIRONMENT

Reliable is pursuing a **GREEN POLICY** and is committed to protecting our environment by developing products that use recycled materials that reduce the use of natural resources.

Introduction



Developed specifically for residential occupancies, Reliable offers the most complete line of Residential Sprinklers and accessories in the industry.

- Our patent pending LL Residential Sprinklers are cULus Listed and NSF/ANSI 61 annex G certified.
- We offer all our Residential Sprinklers in a variety of finishes. Custom finishes can also be provided.
- Most of our Residential Sprinklers have sloped ceiling approvals for up to 4/12 and 8/12 pitch.

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Look at the Residential Options from Reliable

Pendent and Recessed Pendent	K = 3.0	K = 4.9	K = 5.8
Conical Concealed (CCP)	K = 3.0	K = 4.9	K = 5.8
Horizontal Sidewall (HSW)		K = 4.4	K = 5.8
Flat Residential Concealed (RFC)	K = 3.0	K = 4.3	K = 4.9

- All of Reliable’s residential fire sprinklers identify the K-Factor of the sprinkler in the model number of the sprinkler (i.e. F1RES 30 LL: K-Factor = 3.0)
- All of Reliable’s residential fire sprinklers have passed UL 1626 and/or UL 1626A fire tests and are listed for use in installations governed by the NFPA 13D, 13R & 13 standards.
- NFPA 13D (2007 & 2010) section 8.1.3.1.2 state, “Where construction features or other special conditions exist that are outside the scope of the sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitations.” Also see the appendix material of these two sections in the standards and the explanatory information offered in the 2007 & 2010 edition of the Automatic Sprinkler Systems for Residential Occupancies Handbook.
- Flat ceilings are defined by the NFPA standards as having a slope not exceeding 2 inches of rise for 12 inches of run.
- See page 12 of Reliable’s Bulletin 035 regarding new low flow requirements at 10’ x 10’ maximum spacing for sloped ceiling applications.
- The Reliable Automatic Sprinkler Co. now offers fire sprinklers that meet or exceed the new National Sanitary Foundation (NSF) maximum lead content requirements for use in potable water (i.e. drinking water) systems. All Residential Sprinklers designated LL are certified under NSF/ANSI 61, annex G.

Ceiling Application Matrices

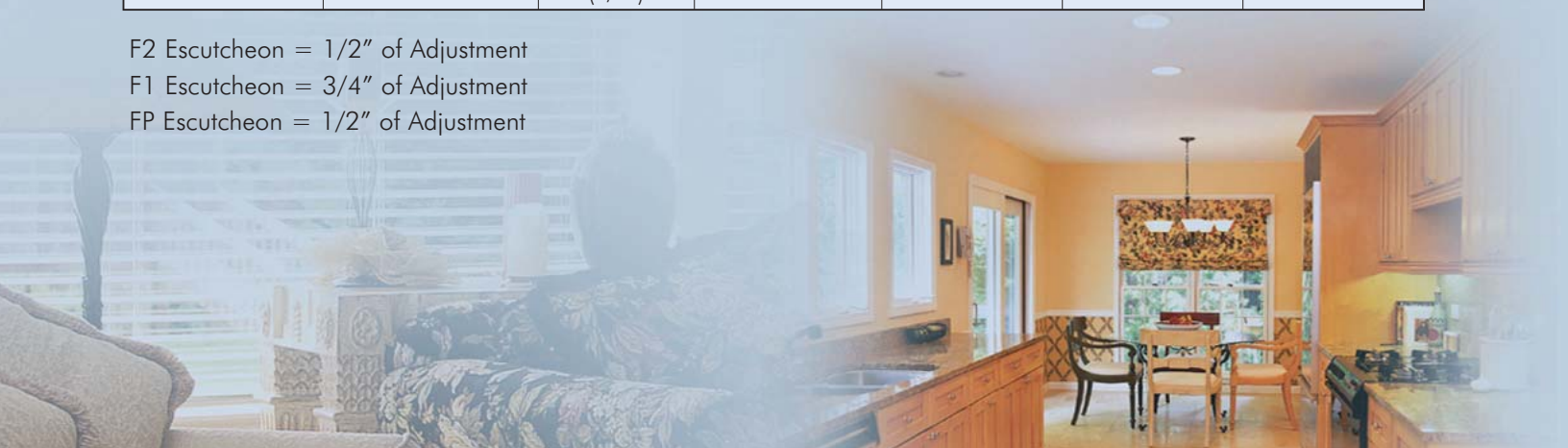
PENDENT SPRINKLERS

Ceiling Application Matrix for Pendent Sprinklers			Flat Ceiling		Sloped Ceiling	
			Maximum Slope of 2/12 (9.4°) Pitch		Maximum Slope of 4/12 (18.4°) Pitch	Maximum Slope of 8/12 (33.7°) Pitch
Sprinkler Type	Sprinkler Model	Escutcheon Type (Adj.)	1" to 4" Deflector to Ceiling	4" to 8" Deflector to Ceiling	1" to 4" Deflector to Ceiling	1" to 4" Deflector to Ceiling
Pendent	F1RES 30 LL	----	Listed	----	----	----
Recessed Pendent	F1RES 30 LL	F2 (1/2")	Listed	----	----	----
Recessed Pendent	F1RES 30 LL	FP (1/2")	Listed	----	----	----
Pendent	F1RES 49 LL	----	Listed	Listed	Listed	Listed
Recessed Pendent	F1RES 49 LL	F1 (3/4")	Listed	Listed	----	----
Recessed Pendent	F1RES 49 LL	F2 (1/2")	Listed	Listed	Listed	Listed
Recessed Pendent	F1RES 49 LL	FP (1/2")	Listed	----	----	----
Pendent	F1RES 58 LL	----	Listed	----	Listed	Listed
Recessed Pendent	F1RES 58 LL	F1 (3/4")	Listed	----	----	----
Recessed Pendent	F1RES 58 LL	F2 (1/2")	Listed	----	Listed	Listed
Recessed Pendent	F1RES 58 LL	FP (1/2")	Listed	----	----	----
Conical Concealed	F1RES 30 LL CCP	Concealed (1/2")	Listed	----	----	----
Conical Concealed	F1RES 49 LL CCP	Concealed (1/2")	Listed	----	Listed	Listed
Conical Concealed	F1RES 58 LL CCP	Concealed (1/2")	Listed	----	Listed	----
Flat Concealed	RFC30 LL	Concealed (1/2")	Listed	----	----	----
Flat Concealed	RFC43 LL	Concealed (1/2")	Listed	----	Listed	Listed
Flat Concealed	RFC 49 LL	Concealed (1/2")	Listed	----	Listed	Listed

F2 Escutcheon = 1/2" of Adjustment

F1 Escutcheon = 3/4" of Adjustment

FP Escutcheon = 1/2" of Adjustment



HORIZONTAL SIDEWALL SPRINKLERS

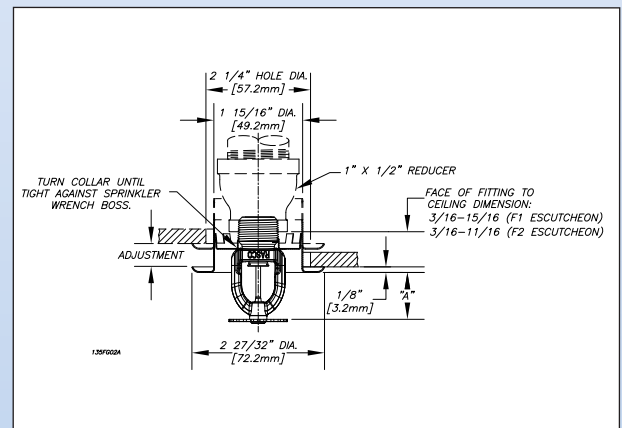
Ceiling Application Matrix for Horizontal Sprinklers			Flat Ceiling		Sloped Ceiling				
			Maximum Slope of 2/12 (9.4°) Pitch		Maximum Slope of 4/12 (18.4°) Pitch		Maximum Slope of 8/12 (33.7°) Pitch		
					Discharge Directed Across the Slope		Discharge Directed Down the Slope		Discharge Directed Across the Slope
Sprinkler Type	Sprinkler Model	Escutcheon Type (Adj.)	4" to 6" Deflector to Ceiling	6" to 12" Deflector to Ceiling	4" to 6" Deflector to Ceiling	6" to 12" Deflector to Ceiling	4" to 6" Deflector to Ceiling	6" to 12" Deflector to Ceiling	4" to 12" Deflector to Ceiling
Horizontal Sidewall	F1RES 44 LL	----	Listed	Listed	Listed	Listed	Listed	Listed	Listed
Recessed Horizontal Sidewall	F1RES 44 LL	F2 (1/2")	Listed	Listed	Listed	Listed	Listed	Listed	Listed
Horizontal Sidewall Concealed	F1RES 44 LL SWC	Concealed (1/2")	Listed	Listed	----	----	----	----	----
Horizontal Sidewall	F1RES 58 LL	----	Listed	Listed	----	----	----	----	----
Recessed Horizontal Sidewall	F1RES 58 LL	F2 (1/2")	Listed	Listed	----	----	----	----	----

F2 Escutcheon = 1/2" of Adjustment
 F1 Escutcheon = 3/4" of Adjustment
 FP Escutcheon = 1/2" of Adjustment

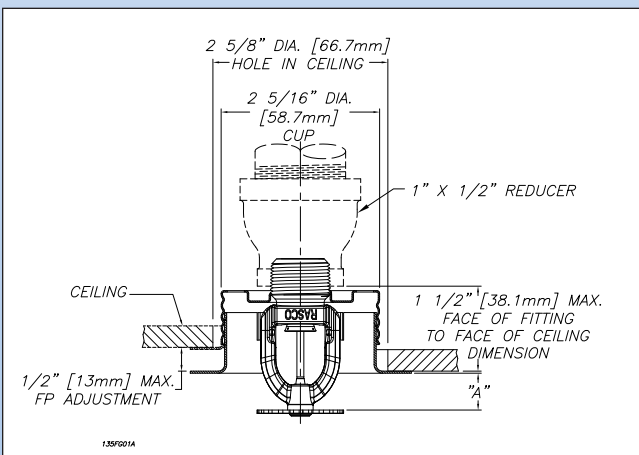
Escutcheon*, F1 or F2, Data:

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)

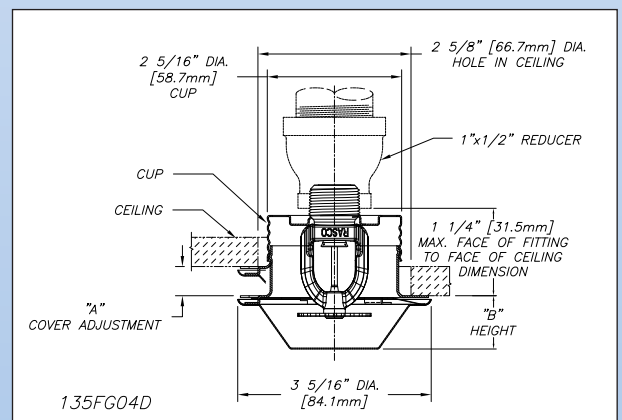
Note: Escutcheons F1 or F2 may be used with Model F1RES 49 LL & 58 LL Recessed Pendant



F1 or F2 Escutcheon



FP Escutcheon



F1RES 30, 49, 58 LL CCP PEND

Pendent & Recessed Pendent SPRINKLERS

F1RES 30 LL



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in NFPA 13D installations with limited water supplies or small water meters that limit the available gpm.
- Great for retrofit installations.
- For use on flat ceilings.

Style: Pendent & Recessed Pendent

K-Factor: 3.0 (40)

Temp: 155°F (68°C), 175°F (79°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: F2 (1/2" adjustment), FP (1/2" adjustment)

Finish: White, Chrome, Brass, Black, Custom

Approvals: cULus, NSF/ANSI

F1RES 30 LL/F2



F1RES 30 LL/FP



Technical Data: F1RES 30 LL Pendent and Recessed Pendent For Flat Ceilings

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

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	8 (30)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	10 (38)	11.0 (0.76)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon.

Technical Data: F1RES 30 LL Recessed Pendent/FP For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	8 (30)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	10 (38)	11.0 (0.76)

Note: The above pressures and flows utilize the Model FP Recessed Escutcheon. The Model FP Escutcheon is not suitable for installation in ceilings which have positive pressure in the space above.

Required Sprinkler Wrench:

Pendent: Model D

F2 & FP: Model GFR2

Pendent & Recessed Pendent SPRINKLERS cont.

F1RES 49 LL



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Approved for up to 8 inches below the ceiling.
- Available with 3/4" & 1/2" adjustable two-piece escutcheons and 1/2" adjustable low profile, push-on/thread-off escutcheon.
- Can be used for flat and sloped ceilings.

Style: Pendent & Recessed Pendent

K-Factor: 4.9 (70,6)

Temp: 155°F (68°C), 175°F (79°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: F1 (3/4" adjustment), F2 (1/2" adjustment), FP (1/2" adjustment)

Finish: White, Chrome, Brass, Black, Custom

Approvals: cULus, NSF/ANSI

F1RES 49 LL/F1/F2



F1RES 49 LL/FP



Technical Data: F1RES 49 LL Pendent and Recessed Pendent**

For Flat Ceilings

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

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)
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)

Flow gpm (Lpm)	Pressure psi (bar)
15 (57.0)	9.4 (0.65)
16 (60.5)	10.6 (0.73)
17 (64.3)	12.0 (0.83)
19 (72.0)	15.0 (1.00)
22 (83.2)	20.2 (1.40)

***Note:** The F1RES 49 LL 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' 6" (2.3m) on center
3. Refer to Bulletin 035 for additional details

****Note:** The above pressures and flows utilize the Model F1 and F2 Recessed Escutcheons

Technical Data: F1RES 49 LL Recessed Pendent/FP

For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)
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)

Note: The above pressures and flows utilize the Model FP Recessed Escutcheon. The Model FP Escutcheon is not suitable for installation in ceilings which have positive pressure in the space above.

Pendent & Recessed Pendent SPRINKLERS cont.

F1RES 49 LL/F2



Technical Data: F1RES 49 LL Pendent & F1RES 49 LL Recessed Pendent/F2 For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch				Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)		Pressure psi (bar)		Sprinkler Temp. Rating °F (°C) 155 (68) & 175 (79)	
	155°F (68°C)	175°F (79°C)	155°F (68°C)	175°F (79°C)	Min. Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	13 (49)	13 (49)	7.0 (0.48)	7.0 (0.48)	13 (49)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	13 (49)	13 (49)	7.0 (0.48)	7.0 (0.48)	13 (49)	7.0 (0.48)
16 x 16 (4.9 x 4.9)	13 (49)	13 (49)	7.0 (0.48)	7.0 (0.48)	13 (49)	7.0 (0.48)
18 x 18 (5.5 x 5.5)	17 (64.3)	18 (68.2)	12 (0.83)	13.5 (0.93)	17 (64.3)	12 (0.83)
20 x 20 (6.1 x 6.1)	20 (75.7)	21 (79.5)	16.7 (1.15)	18.4 (1.28)	20 (75.7)	16.7 (1.15)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon

F1RES 58 LL/F2



Technical Data: F1RES 58 LL Pendent & F1RES 58 LL Recessed Pendent/F2 For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch				Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)		Pressure psi (bar)		Min. Flow gpm (Lpm)	Pressure psi (bar)
	155°F (68°C)	175°F (79°C)	155°F (68°C)	175°F (79°C)	155°F (68°C)	
12 x 12 (3.6 x 3.6)	21 (79.5)	23 (87)	13.1 (0.9)	15.7 (1.1)	----	----
14 x 14 (4.3 x 4.3)	21 (79.5)	23 (87)	13.1 (0.9)	15.7 (1.1)	----	----
16 x 16 (4.9 x 4.9)	21 (79.5)	23 (87)	13.1 (0.9)	15.7 (1.1)	----	----
18 x 18 (5.5 x 5.5)	23 (87)	----	15.7 (1.1)	----	20 (75.7)	12 (0.83)
20 x 20 (6.1 x 6.1)	23 (87)	----	15.7 (1.1)	----	20 (75.7)	12 (0.83)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon

Required Sprinkler Wrench:

Pendent: Model D

F1 & F2: Model GFR2

FP Recessed: Model GFR2

Pendent & Recessed Pendent SPRINKLERS cont.

F1RES 58 LL



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA13.
- Available with 3/4" & 1/2" adjustable two-piece escutcheon and 1/2" adjustable low profile push-on/thread-off escutcheon.
- Can be used for flat and sloped ceilings.

Style: Pendent & Recessed Pendent

K-Factor: 5.8 (83,5)

Temp: 155°F (68°C), 175°F (79°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: F1 (3/4" adjustment), F2 (1/2" adjustment), FP (1/2" adjustment)

Finish: White, Chrome, Brass, Black, Custom

Approvals: cULus, NSF/ANSI

F1RES 58 LL/F1/F2



F1RES 58 LL/FP



Technical Data: F1RES 58 LL Pendent and Recessed Pendent For Flat Ceilings

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

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	16 (61)	7.6 (0.53)
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 (1.00)

Note: The above pressures and flows utilize the Model F1 and F2 Recessed Escutcheon

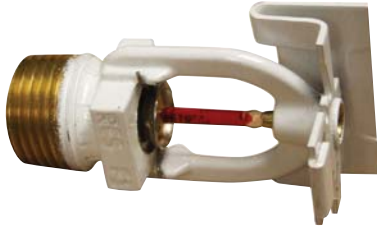
Technical Data: F1RES 58 LL Recessed Pendent/FP For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	16 (61)	7.6 (0.53)
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 (1.00)

Note: The above pressures and flows utilize the Model FP Recessed Escutcheon. The Model FP Escutcheon is not suitable for installations in ceilings which have positive pressure in the space above.

HSW & Recessed HSW SPRINKLERS

F1RES 44 LL HSW



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- Available with 1/2" (13 mm) adjustable two-piece escutcheon.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Can be used for flat and sloped ceilings, specifically for discharging down and across the slope.

Style:	HSW & Recessed HSW
K-Factor:	4.4 (63,4)
Temp:	Sprinkler: 155°F (68°C), 175°F (79°C)
Thread Size:	1/2" NPT (R1/2)
Escutcheon:	F2 (1/2" adjustment)
Finish:	White, Chrome, Brass, Black, Custom
Approvals:	cULus, NSF/ANSI

F1RES 44 LL/HSW/F2



Technical Data: F1RES 44 LL HSW and HSW/F2 For Flat Ceilings

Deflector - to - ceiling

Maximum 4" (100mm) to 6" (150mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (0.92)
16 x 18 (4.9 x 5.5)	18 (68.1)	16.8 (1.16)
18 x 18 (5.5 x 5.5)	19 (72.0)	18.7 (1.29)
16 x 20 (4.9 x 6.1)	23 (87.1)	27.4 (1.89)

Deflector - to - ceiling

Maximum 6" (150mm) to 12" (305mm)

Flow gpm (Lpm)	Pressure psi (bar)
14 (53.0)	10.2 (0.71)
16 (60.6)	13.3 (0.92)
17 (64.4)	15.0 (1.04)
20 (75.7)	20.7 (1.43)
----	----
23 (87.1)	27.4 (1.89)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon

Technical Data: F1RES 44 LL HSW & F1RES 44 LL HSW Recessed HSW/F2 For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 4/12 (18.4°) Pitch			
	Discharge Directed Across the slope 4" to 6" Deflector to Ceiling		Discharge Directed Across the slope 6" to 12" Deflector to Ceiling	
	⁽¹⁾ Min. Flow gpm (Lpm)	Pressure psi (bar)	⁽¹⁾ Min. Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	16 (60.5)	13.3 (0.92)	17 (64.3)	15 (1.04)
14 x 14 (4.3 x 4.3)	16 (60.5)	13.3 (0.92)	17 (64.3)	15 (1.04)
16 x 16 (4.9 x 4.9)	16 (60.5)	13.3 (0.92)	17 (64.3)	15 (1.04)
16 x 18 (4.9 x 5.5)	18 (68.1)	16.8 (1.16)	20 (75.6)	20.7 (1.43)
16 x 20 (4.9 x 6.1)	23 (72.0)	27.4 (1.89)	23 (68.1)	27.4 (1.89)

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon

HSW & Recessed HSW SPRINKLERS cont.

F1RES 44 LL HSW/F2



Technical Data: F1RES 44 LL HSW & F1RES 44 LL Recessed HSW/F2 For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch					
	Discharge Directed Down the Slope 4" to 6" Deflector to Ceiling		Discharge Directed Down the Slope 6" to 12" Deflector to Ceiling		⁽²⁾⁽³⁾ Discharge Directed Down the Slope 4" to 12" Deflector to Ceiling	
	⁽¹⁾ Min. Flow gpm (Lpm)	Pressure psi (bar)	⁽¹⁾ Min. Flow gpm (Lpm)	Pressure psi (bar)	⁽¹⁾⁽³⁾ Min. Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)	14 (53.0)	10.2 (0.71)	16 (60.6)	13.3 (0.92)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)	16 (60.6)	13.3 (0.92)	16 (60.6)	13.3 (0.92)
16 x 16 (4.9 x 4.9)	16 (60.6)	13.3 (0.92)	17 (64.4)	15.0 (1.04)	16 (60.6)	13.3 (0.92)
16 x 18 (4.9 x 5.5)	18 (68.1)	16.8 (1.16)	20 (75.7)	20.7 (1.43)	----	----
20 x 20 (6.1 x 6.1)	23 (72.0)	27.4 (1.89)	23 (87.1)	27.4 (1.89)	----	----

⁽¹⁾ Minimum flow per sprinkler gpm (Lpm)

⁽²⁾ Minimum 3 head design in a compartment

⁽³⁾ 155°F

Note: Refer to Bulletin 035 - Residential Sprinklers for Sloped Ceilings for Additional Information. The above pressures and flows utilize the model F2 Recessed Escutcheon.

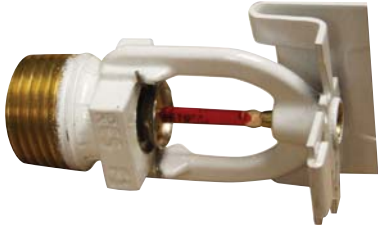
Required Sprinkler Wrench:

HSW: Model D

F2: Model GFR2

HSW & Recessed HSW SPRINKLERS cont.

F1RES 58 LL HSW



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Available with 1/2" (13 mm) adjustable two-piece escutcheon.
- Can be used for flat and sloped ceilings.

Style: Horizontal Sidewall, Recessed Horizontal Sidewall

K-Factor: 5.8 (83,5)

Temp: 155°F (68°C), 175°F (79°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: F2 (1/2" adjustment)

Finish: White, Chrome, Brass, Black, Custom

Approvals: cULus, NSF/ANSI

F1RES 58 LL HSW/F2



Technical Data: F1RES 58 LL HSW and HSW/F2 For Flat Ceilings

Deflector - to - ceiling

Maximum 4" (100mm) to 6" (150mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	16 (60.6)	7.6 (0.53)
14 x 14 (4.3 x 4.3)	18 (68.2)	9.7 (0.67)
16 x 16 (4.9 x 4.9)	21 (79.5)	13.2 (0.91)
16 x 18 (4.9 x 5.5)	25 (94.7)	18.6 (1.28)
16 x 20 (4.9 x 6.1)	29 (109.8)	25 (1.73)

Deflector - to - ceiling

Maximum 6" (150mm) to 12" (305mm)

Flow gpm (Lpm)	Pressure psi (bar)
22 (83.3)	14.4 (1.0)
22 (83.3)	14.4 (1.0)
26 (98.4)	20.1 (1.39)
31 (117.4)	28.6 (1.97)
----	----

Note: The above pressures and flows utilize the Model F2 Recessed Escutcheon.

Required Sprinkler Wrenches:

F1RES 58 LL HSW: Model D

F1RES 58 LL Rec. HSW: Model GFR2

Concealed HSW (SWC) SPRINKLERS

F1RES 44 LL SWC



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft²
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Available with 1/2" (13 mm) adjustable escutcheon.
- Can be used for flat ceilings.

Style: Sidewall Concealed

K-Factor: 4.4 (63,4)

Temp: Sprinkler: 155°F (68°C) Cover Plate: 135°F (57°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: SWC Concealed (1/2" adjustment)

Finish: Sprinkler: Bronze, Cover Plate: White, Custom

Approvals: cULus, NSF/ANSI

Technical Data: F1RES 44 LL SWC For Flat Ceilings

Deflector - to - ceiling Maximum 4" (100mm) to 6" (150mm)

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	13 (49.2)	8.7 (0.60)
14 x 14 (4.3 x 4.3)	14 (53.0)	10.2 (0.71)
16 x 16 (4.9 x 4.9)	17 (64.3)	15.0 (1.10)
16 x 18 (4.9 x 5.5)	19 (71.8)	18.7 (1.13)
16 x 20 (4.9 x 6.1)	23 (87.1)	27.4 (1.89)

Deflector - to - ceiling Maximum 6" (150mm) to 12" (305mm)

Flow gpm (Lpm)	Pressure psi (bar)
14 (52.9)	10.2 (0.71)
15 (56.7)	11.7 (0.81)
18 (68.1)	16.8 (1.16)
20 (75.6)	20.7 (1.43)
----	----

Required Sprinkler Wrench: [Model GFR2](#)

Conical Concealed (CCP) SPRINKLERS

F1RES 30 LL CCP



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in NFPA 13D installations with limited water supplies or small water meters that limit the available gpm.
- Great for retrofit installations.
- For use on flat ceilings.

Style: Conical Concealed Pendant (CCP)

K-Factor: 3.0 (40)

Temp: Sprinkler: 155°F (68°C) CCP Coverplate: 135°F (57°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: CCP (1/2" & 5/16") Adjustment escutcheons available

Finish: White, Custom

Approvals: cULus, NSF/ANSI

Technical Data: F1RES 30 LL Conical Concealed Pendant (CCP) For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	8 (30.3)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	11 (41.6)	13.4 (0.92)

Note: The F1RES 30 LL Conical Concealed (CCP) Sprinkler is not suitable for installations in ceilings which have positive pressure in the space above.

Required Sprinkler Wrench: [Model GFR2](#)

Conical Concealed (CCP) SPRINKLERS cont.

F1RES 49 LL CCP



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Available with 1/2" & 5/16" adjustable two-piece escutcheon.
- Can be used for flat and sloped ceilings.

Style: Conical Concealed Pendant (CCP)

K-Factor: 4.9 (70,6)

Temp: Sprinkler: 155°F (68°C) CCP Cover Plate: 135°F (57°C)

Thread Size: 1/2" NPT (R1/2)

Escutcheon: CCP (1/2" & 5/16") adjustment escutcheons available

Finish: White, Chrome, Custom

Approvals: cULus, NSF/ANSI

Technical Data: F1RES 49 LL Conical Concealed Pendant (CCP)

For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	13 (49)	7.0 (0.48)
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)

Technical Data: F1RES 49 LL Conical Concealed Pendant (CCP)

For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch		Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)	Min Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)
10 x 10 (3 x 3)	13 (49)	7.0 (0.49)	----	----
12 x 12 (3.6 x 3.6)	14 (53)	8.2 (0.57)	13 (49)	7.0 (0.48)
14 x 14 (4.3 x 4.3)	14 (53)	8.2 (0.57)	13 (49)	7.0 (0.48)
16 x 16 (4.9 x 4.9)	14 (53)	8.2 (0.57)	14 (53)	8.2 (0.56)
18 x 18 (5.5 x 5.5)	23 (87)	22 (1.52)	20 (75.6)	18.4 (1.27)
20 x 20 (6.1 x 6.1)	23 (87)	22 (1.52)	21 (79.4)	17 (1.17)

Note: The F1RES 49 LL Conical Concealed (CCP) Sprinkler is not suitable for installations in ceilings which have positive pressure in the space above.

Required Sprinkler Wrench: [Model GFR2](#)

Conical Concealed (CCP) SPRINKLERS cont.

F1RES 58 LL CCP



Technical Bulletin: 033

Features:

- Listed for a minimum of .05 gpm/ft².
- 3 mm glass bulb.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Available with 1/2" & 5/16" adjustable two-piece escutcheons.
- Can be used for flat ceilings.

Style:	Conical Concealed Pendant (CCP)
K-Factor:	5.8 (83,5)
Temp:	Sprinkler: 155°F (68°C) CCP Coverplate: 135°F (57°C)
Thread Size:	1/2" NPT (R1/2)
Escutcheon:	CCP (1/2" & 5/16") adjustment escutcheons available
Finish:	White, Custom
Approvals:	cULus, NSF/ANSI

Technical Data: F1RES 58 LL Conical Concealed Pendant (CCP) For Flat Ceilings

Max. Sprinkler Spacing ft (m)	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	16 (61)	7.6 (0.53)
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 58 LL Conical Concealed Pendant (CCP) For Sloped Ceilings

Max. Sprinkler Spacing ft (m)	Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)
18 x 18 (5.5 x 5.5)	20 (75.7)	12 (0.83)
20 x 20 (6.1 x 6.1)	20 (75.7)	12 (0.83)

Note: The F1RES 58 LL Conical Concealed (CCP) Sprinkler is not suitable for installations in ceilings which have positive pressure in the space above.

Required Sprinkler Wrench: Model GFR2

Flat Concealed SPRINKLERS

RFC30 LL



Technical Bulletin: 032

Features:

- Listed for a minimum of .05 gpm/ft².
- Solder fusible link.
- Smooth, aesthetic ceiling profile.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Push-On/Thread-Off cover plate provides 1/2" (13 mm) of adjustment.
- Can be used for flat and sloped ceilings.

Style: Flat Concealed

K-Factor: 3.0 (43)

Temp: Sprinkler: 165°F (74°C), Cover Plate: 135°F (57°C)

Thread Size: 1/2" NPT (R1/2)

Cover Plate: Flat Concealed (1/2" adjustment)

Finish: White, Chrome, Custom

Approvals: cULus, NSF/ANSI

Technical Data: RFC30 LL

For Flat Ceilings

Sprinkler Spacing ft(m)	Min. Required Sprinkler Discharge	
	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	8 (30.0)	7 (0.48)
14 x 14 (4.3 x 4.3)	10 (37.8)	11 (0.76)

Required Sprinkler Wrench: [Model FC](#)

Flat Concealed SPRINKLERS

RFC43 LL



Technical Bulletin: 032

Features:

- Listed for a minimum of .05 gpm/ft².
- Solder fusible link.
- Smooth, aesthetic ceiling profile.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Push-On/Thread-Off cover plate provides 1/2" (13 mm) of adjustment.
- Can be used for flat and sloped ceilings.

Style:	Flat Concealed
K-Factor:	4.3 (62)
Temp:	Sprinkler: 165°F (74°C), Cover Plate: 135°F (57°C)
Thread Size:	1/2" NPT (R1/2)
Cover Plate:	Flat Concealed (1/2" adjustment)
Finish:	White, Chrome, Custom
Approvals:	cULus, NSF/ANSI

Technical Data: RFC43 LL

For Flat Ceilings

Sprinkler Spacing ft(m)	Min. Required Sprinkler Discharge	
	Min. Flow Per Sprinkler Head gpm (Lpm)	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)

Technical Data: RFC43 LL

For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch		Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	18 (68)	17.5 (1.21)	13 (49)	9.1 (0.63)
14 x 14 (4.3 x 4.3)	18 (68)	17.5 (1.21)	13 (49)	9.1 (0.63)
16 x 16 (4.9 x 4.9)	18 (68)	17.5 (1.21)	13 (49)	9.1 (0.63)
18 x 18 (5.5 x 5.5)	24 (91)	31 (2.14)	18 (68)	17.5 (1.21)
20 x 20 (6.1 x 6.1)	24 (91)	31 (2.14)	21 (79)	23.8 (1.64)

Required Sprinkler Wrench: Model FC

Flat Concealed SPRINKLERS cont.

RFC49 LL



Technical Bulletin: 032

Features:

- Listed for a minimum of .05 gpm/ft².
- Solder fusible link.
- Smooth, aesthetic ceiling profile.
- For use in wet pipe systems in accordance with NFPA 13D and 13R, and for use in the residential portions of any occupancy per NFPA 13.
- Push-On/Thread-Off cover plate provides 1/2" (13 mm) of adjustment.
- For use on flat and sloped ceilings.

Style: Flat Concealed

K-Factor: 4.9 (70.6)

Temp: Sprinkler: 165°F (74°C), Cover Plate: 135°F (57°C)

Thread Size: 1/2" NPT (R1/2)

Cover Plate: Flat Concealed (1/2" adjustment)

Finish: White, Chrome, Custom

Approvals: cULus, NSF/ANSI

Technical Data: RFC49 LL

For Flat Ceilings

Sprinkler Spacing ft(m)	Min. Required Sprinkler Discharge	
	Flow gpm (Lpm)	Pressure psi (bar)
12 x 12 (3.6 x 3.6)	12 (45)	7.0 (0.48)
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)

Technical Data: RFC49 LL

For Sloped Ceilings

Max. Sprinkler Spacing along Slope (W)Width x (L)Length ft(m)	Max. Slope of 8/12 (33.7°) Pitch		Max. Slope of 4/12 (18.4°) Pitch	
	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)	Min. Flow Per Sprinkler Head gpm (Lpm)	Pressure psi (bar)
10 x 10 (3 x 3)	14 (53)	8.2 (0.57)	----	----
16 x 16 (4.9 x 4.9)	28 (106)	23 (19.3)	----	----
18 x 18 (5.5 x 5.5)	29 (109.8)	29 (20.0)	18 (68)	13.5 (0.93)
20 x 20 (6.1 x 6.1)	30 (113.6)	30 (30.0)	23 (87)	22 (1.52)

Required Sprinkler Wrench: Model FC

Cover Plate Finishes

Reliable cover plates are available in three standard finishes



Bronze



Bright Chrome



White Paint

And in five special application finishes



Due to variation in printing, we cannot guarantee the colors shown here with actual products. Please check with your local Reliable sales office.



Bright Brass



Black Plating



Black Paint



Off White



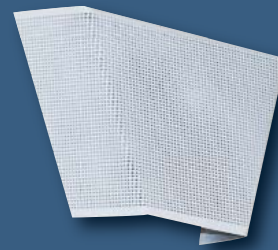
Satin Chrome

**Custom colors can also be provided.
Please allow additional time.
All custom finishes must be done by Reliable.**

COMING SOON



For Ceilings



For Walls

**A new optional
non-traditional look for sprinkler cover plates**

Accessories

Cabinets



Technical Bulletin: 204

Features:

Sprinkler Emergency Cabinets carry an emergency supply of sprinklers and a sprinkler wrench.

- Two Models:
 - (1) Model A4 - 3, 6 or 12 capacity
 - (2) Model A3 - 6, 12 capacity
- Provides storage for spare sprinklers and sprinkler wrench

Escutcheons



Technical Bulletin: 204

Features:

Escutcheons enhance the appearance of installations by covering exposed fittings of automatic sprinklers that are visible beyond finished ceilings and walls.

- Model A - One Piece
Diameter: 3"; Depth including lips: 13/16"; 1/2" NPT
- Model B - One Piece
Diameter: 2-7/8"; Depth: 11/16"; 1/2" NPT
- Model C - One Piece
Diameter: 2-7/8"; Depth: 1/8"; 1/2" NPT
- Model HB - Two Piece
Diameter: 3-1/2"; Depth: 2"; Min: 3"; Max: 1/2" and 3/4" NPT

Installation and Service Wrenches



Technical Bulletin: 205

Features:

Different wrench models available for our sprinklers and valves.

Please refer to the individual Sprinkler's Technical Bulletin for the correct wrench.

Sprinkler Wrenches:

- Model G4
 - Model GFR2
 - Model RC1
 - Model G3R/C
 - Model ZX Pendent
 - Model XLO EC
 - Model XLO
 - Model XLO2
 - Model ZX
 - Model FC Flat Concealed
 - Model D
 - Model H
 - Model G3
 - Model N
 - Model J1
 - Model RJ
 - Model FEA Escutcheon Wrench
- Horizontal Sidewall

MP LL Multipurpose Residential Riser



Technical Bulletin: 426

Features:

- Designed to alarm on single fire sprinkler operation and not during normal household water usage.
- Potable-water safe to NSF/ANSI Standard 61 annex G.
- Water flow detector is preset to operate at 12 gpm +/- 1gpm (45.4 Lpm +/- 3.8 Lpm), and is factory installed with a weather-proof metal cover.
- Dedicated UL Listed water-flow detector assures optimum sensitivity with the adjustable delay device minimizes false alarms caused by pressure surges or short periods of water usage above 12 gpm.
- Switch can be wired for 24 VDC or 125/260 VAC operation.
- Stainless steel 1" (25mm) manifold with NPT or Metric Inlet and Outlet Threads.
- Factory assembled and tested.
- Rated working pressure not to exceed 175 psi.
- UL Listed Assembly.
- When the Model MP LL Riser is utilized in sprinkler systems with sprinklers having K-factors less than 4.4, there must be a minimum of 15 psi of operating pressure at the system's most remote head.
- NSF-61 Certified to NSF/ANSI Standard 61 annex G (Less than 0.25% Lead content).

Available Sizes: 1" (25mm)



Viega
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The global leader
in plumbing and
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Reliable can also provide the best in multipurpose piping systems

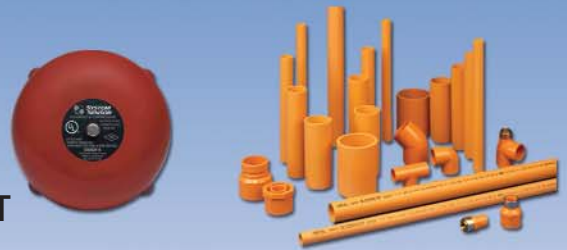
Viega PEX pipe, fittings, tools and accessories to install your system

- The flexibility and installation speed of a PEX-based system
- The fastest and easiest PEX joining method with Viega PEX Press
- Tubing can bend around obstacles requiring fewer fittings
- UL listing in accordance with NFPA 13D, 130 psi at 120°F
- Fittings designed for the installation of sprinklers
- Faster installation by connecting pipe between premounted fittings and sprinklers
- Elimination of cements, glues, adhesives, or soldering
- More freeze resistance than rigid piping products
- The immediate use of compressed air for system testing
- Corrosion resistant
- Over 30 years of proven performance



Reliable also offers a complete line of sprinklers and products for Stand-Alone residential systems.

- CPVC PIPE & FITTINGS
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- HANGERS
- FIRE DEPARTMENT CONNECTIONS



**For complete Stand-Alone Residential Applications, please see our
"Residential Brochure"**

Residential
PRODUCT BROCHURE



Selection Guide

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