Reliable®

Model KRes Series Fusible Link Residential Sprinklers

For NFPA 13, NFPA 13R, and NFPA 13D Applications

cULus Listed

Features

- cULus Listed Residential Sprinklers
- Available in pendent and horizontal sidewall orientations
- Decorative recessed escutcheons available

Product Description

Model KRes Series sprinklers are residential pendent and horizontal sidewall sprinklers with a fusible link operating element. A variety of K-Factors and recessed finish options are available as detailed in this Bulletin.

The KRes Series sprinklers are specially engineered for fast thermal response to meet the requirements of UL 1626. They are intended for installation in accordance with NFPA 13, 13R, and 13D.

Application

The Model KRes Series sprinklers cULus Listed Residential sprinklers are intended for use in accordance with NFPA 13, NFPA 13R, or NFPA 13D. The Model KRes residential sprinklers are cULus Listed for use in residential occupancies and residential portions of any occupancy, where permitted by NFPA 13, NFPA 13R, or NFPA 13D. For NFPA 13R and NFPA 13D applications, the design flow and pressure shall not be less than the minimum flow and pressure specified in the Listed Design Criteria tables in this Bulletin. For NFPA 13 applications, the design density shall be a minimum of 0.1 gpm/sf (4.1 mm/min), but in no case shall the flow and pressure be less than the minimum flow and pressure specified in the Listed Design Criteria tables in this bulletin. Model KRes Series sprinklers are listed for use in wet systems only.

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.



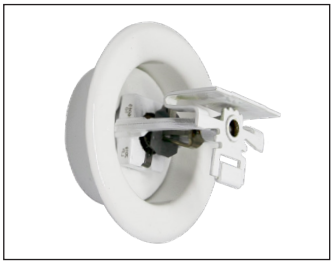
KRes30 Recessed Pendent



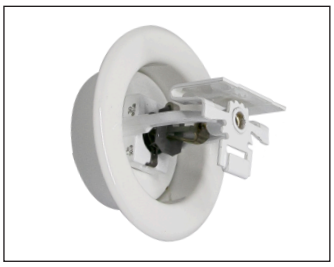
KRes49 Recessed Pendent



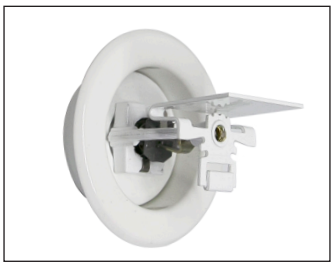
KRes58 Recessed Pendent



KRes44 HSW Recessed Horizontal Sidewall



KRes58 HSW Recessed Horizontal Sidewall



KRes58 HSWX Recessed Horizontal Sidewall

Residential Sprinkler Summary — **Table A**

Sprinkler Model	Sprinkler Identification Number (SIN)	Orientation	K-Factor gpm/psi$^{1/2}$ (lpm/bar$^{1/2}$)	Thread Size NPT or ISO7-1	Installation Options	Max. Coverage Area ft x ft (m x m)
KRes30	R3591	Pendent	3.0 (43)	1/2	Pendent or Recessed	16 x16 (4.9 x 4.9)
KRes49	R3596	Pendent	4.9 (71)	1/2	Pendent or Recessed	20 x 20 (6.1 x 6.1)
KRes58	R3593	Pendent	5.8 (84)	1/2	Pendent or Recessed	20 x 20 (6.1 x 6.1)
KRes44 HSW	RA3591	Horizontal Sidewall	4.4 (63)	1/2	Sidewall or Recessed	16 x 20 (4.9 x 6.1)
KRes58 HSW	RA3503	Horizontal Sidewall	5.8 (84)	1/2	Sidewall or Recessed	16 x 20 (4.9 x 6.1)
KRes 58 HSWX	RA3593	Horizontal Sidewall	5.8 (84)	1/2	Sidewall or Recessed	14 x 26 (4.3 x 7.9)

Model KRes30 — SIN R3591

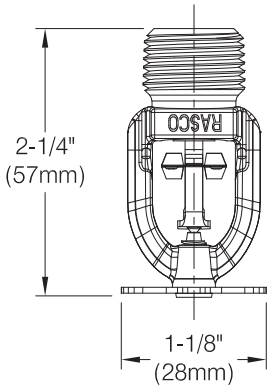
Technical Specifications
Style: Pendent
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 3.0 (43 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

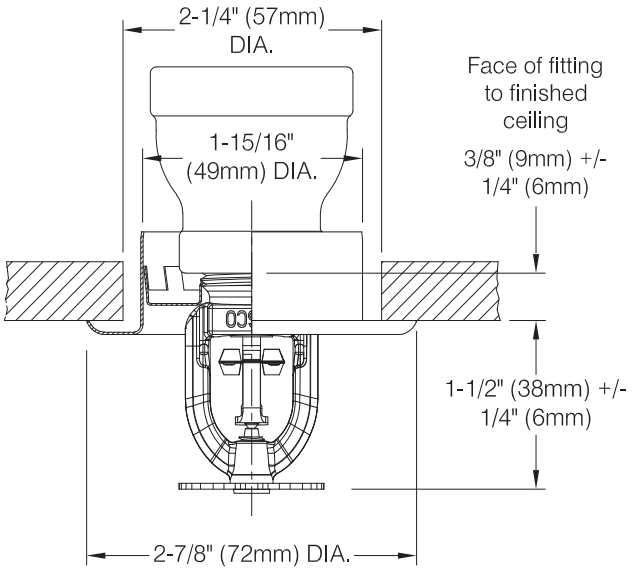
Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
212°F (100°C), White Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes30 Sprinkler Drop — **Figure 1**



Dimensions



F2 Recessed Escutcheon Installation

Model KRes30 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)**	**Deflector to Ceiling Distance**
12 x 12 (3.6 x 3.6)	8 (30.3)	7 (0.48)	General 1 to 4 inches (25 to 100mm) F2 Escutcheon 1-1/4 to 1-3/4 inches (31.7 to 44.4 mm)
14 x 14 (4.3 x 4.3)	10 (37.8)	11 (0.76)	
16 x 16 (4.9 x 4.9)	13 (49)	18.8 (1.3)	

Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in the table above or (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 maximum coverage area listed.

Model KRes49 — SIN R3596

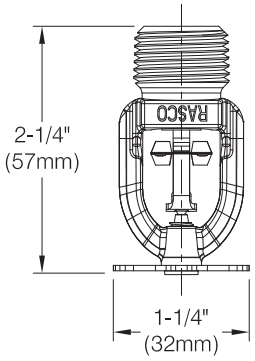
Technical Specifications
Style: Pendent
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 4.9 (71 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

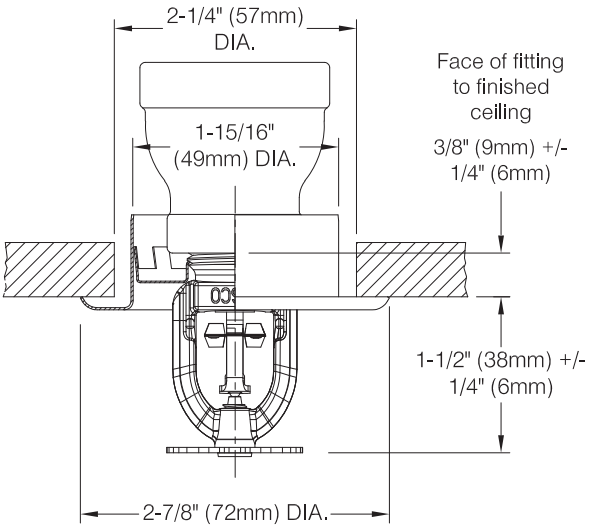
Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
212°F (100°C), White Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes49 Sprinkler Drop — **Figure 2**



Dimensions



F2 Recessed Escutcheon Installation

Model KRes49 Sprinkler Hydraulic Design Criteria — **Table C**

Minimum Flow and Residual Pressure					
Max. Coverage Area ft. x ft. (m x m)	Ordinary Temp. Rating (165°F/74°C)		Intermediate Temp. Rating (212°F/100°C)		Deflector to Ceiling Distance
	Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)	
12 x 12 (3.6 x 3.6)	13 (49)	7 (0.48)	13 (49)	7 (0.48)	General 1 to 4 inches (25 to 100mm) F2 Escutcheon 1-1/4 to 1-3/4 inches (31.7 to 44.4 mm)
14 x 14 (4.3 x 4.3)	13 (49)	7 (0.48)	13 (49)	7 (0.48)	
16 x 16 (4.9 x 4.9)	13 (49)	7 (0.48)	15 (56.8)	9.4 (0.65)	
18 x 18 (5.5 x 5.5)	17 (64.3)	12.0 (0.83)	17 (64.3)	12.0 (0.83)	
20 x 20 (6.1 x 6.1)	20 (75.7)	16.7 (1.14)	22 (83.3)	20.2 (1.39)	

Model KRes58 — SIN R3593

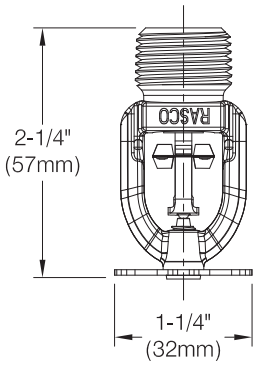
Technical Specifications
Style: Pendent
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 5.8 (84 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

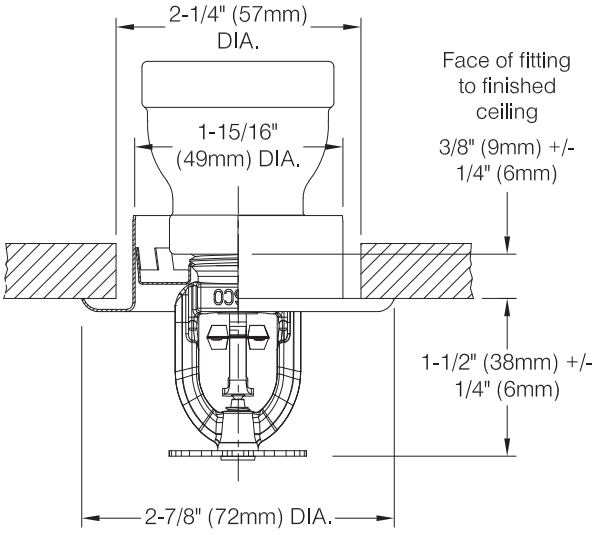
Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
212°F (100°C), White Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes58 Sprinkler Drop — **Figure 3**



Dimensions



F2 Recessed Escutcheon Installation

Model KRes58 Sprinkler Hydraulic Design Criteria — **Table D**

Minimum Flow and Residual Pressure					
Max. Coverage Area ft. x ft. (m x m)	Ordinary Temp. Rating (165°F/74°C)		Intermediate Temp. Rating (212°F/100°C)		Deflector to Ceiling Distance
	Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)	
12 x 12 (3.6 x 3.6)	16 (61)	7.6 (0.53)	16 (61)	7.6 (0.53)	General 1 to 4 inches (25 to 100mm) F2 Escutcheon 1-1/4 to 1-3/4 inches (31.7 to 44.4 mm)
14 x 14 (4.3 x 4.3)	16 (61)	7.6 (0.53)	16 (61)	7.6 (0.53)	
16 x 16 (4.9 x 4.9)	16 (61)	7.6 (0.53)	17 (64.3)	8.6 (0.59)	
18 x 18 (5.5 x 5.5)	19 (72)	10.8 (0.75)	19 (72)	10.8 (0.75)	
20 x 20 (6.1 x 6.1)	22 (83.3)	14.4 (1.0)	23 (87.1)	15.7 (1.08)	

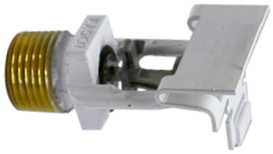
Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in the table above or (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above,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

Model KRes44 HSW — SIN RA3591

Technical Specifications
Style: Horizontal Sidewall
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 4.4 (63 metric)
Max. Working Pressure: 175 psi (12 bar)

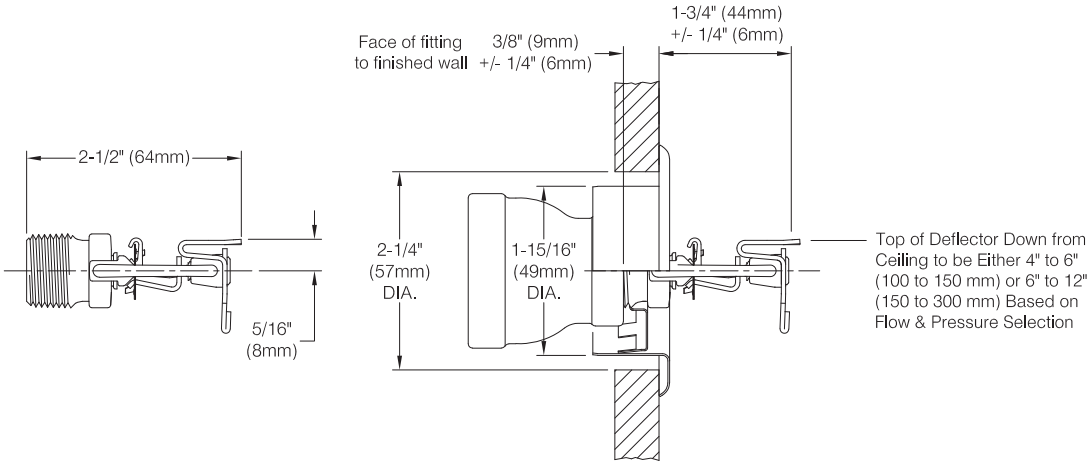
Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes44 HSW/F2

Figure 4



Dimensions **F2 Recessed Escutcheon Installation**

Model KRes44 HSW/F2 Sprinkler Hydraulic Design Criteria

Table E

Minimum Flow and Residual Pressure			
Max. Coverage Area ft. x ft. (m x m)	**Ordinary Temp. Rating (165°F/74°C)**		**Deflector to Ceiling Distance**
	Flow GPM (L/min)	**Pressure PSI (bar)**	
12 x 12 (3.6 x 3.6)	12 (45.4)	7.5 (0.52)	4 to 6 inches (100 to 150mm)
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)(3)	21 (79)	22.8 (1.57)	
18 x 18 (5.5 x 5.5) (3)	21 (79)	22.8 (1.57)	
16 x 20 (4.9 x 6.1)	23 (87.1)	27.4 (1.89)	
12 x 12 (3.6 x 3.6)	14 (53.0)	10.2 (0.71)	6 to 12 inches (150 to 300 mm)
14 x 14 (4.3 x 4.3)	16 (60.6)	13.3 (0.92)	
16 x 16 (4.9 x 4.9)	17 (64.4)	15.0 (1.04)	
16 x 18 (4.9 x 5.5) (3)	21 (79)	22.8 (1.57)	
16 x 20 (4.9 x 6.1)	23 (87.1)	27.4 (1.89)	

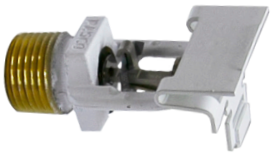
Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in the table above or (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use the minimum required flow for the next larger maximum coverage area listed.
3. Previous versions of this bulletin specify different minimum flow rates for some spacings for the Model KRes44 Horizontal Sidewall sprinkler. Please contact Reliable Technical Services for additional information.

Model KRes58 HSW — SIN RA3503

Technical Specifications
Style: Horizontal Sidewall
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 5.8 (84 metric)
Max. Working Pressure: 175 psi (12 bar)

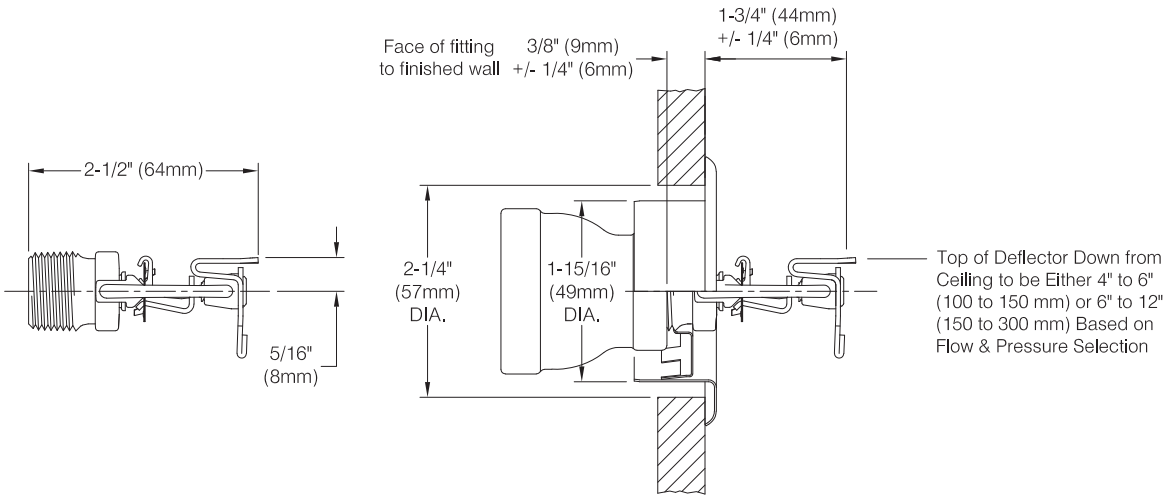
Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes58 HSW/F2

Figure 5



Dimensions — **F2 Recessed Escutcheon Installation**

Model KRes58 HSW/F2 Sprinkler Hydraulic Design Criteria

Table F

Minimum Flow and Residual Pressure			
Max. Coverage Area ft. x ft. (m x m)	**Ordinary Temp. Rating (165°F/74°C)**		**Deflector to Ceiling Distance**
	Flow GPM (L/min)	**Pressure PSI (bar)**	
12 x 12 (3.6 x 3.6)	16 (60.6)	7.6 (0.53)	4 to 6 inches (100 to 150 mm)
14 x 14 (4.3 x 4.3)	18 (68.2)	9.7 (0.69)	
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)	
12 x 12 (3.6 x 3.6)	22 (83.3)	14.4 (1.0)	6 to 12 inches (150 to 300 mm)
14 x 14 (4.3 x 4.3)	22 (83.3)	14.4 (1.0)	
16 x 16 (4.9 x 4.9)	26 (98.4)	20.1 (1.39)	
16 x 18 (4.9 x 5.5)	31 (117.4)	28.6 (1.97)	
16 x 20 (4.9 x 6.1)	33 (124.9)	32 (2.21)	

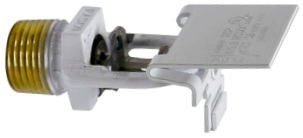
Notes:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in the table above or (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above,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

Model KRes58 HSWX Residential Sprinkler — SIN RA3593

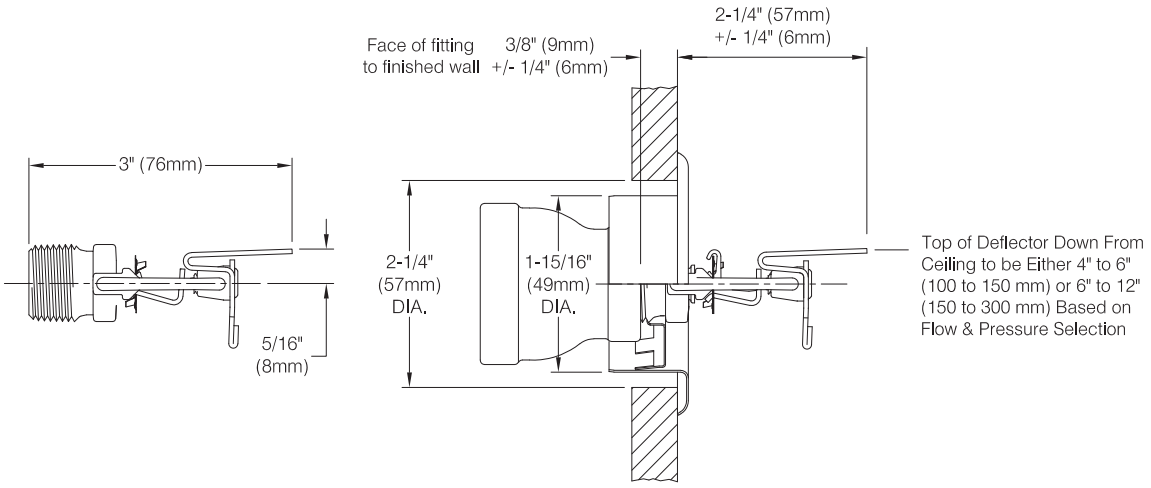
Technical Specifications
Style: Horizontal Sidewall
Threads: 1/2" NPT or ISO7-1R1/2
Nominal K-Factor: 5.8 (84 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications (Ref. Fig. 7)
Thermal Sensor: Nickel Alloy fusible link
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy
Lever: Stainless Steel
Strut: Stainless Steel

Finishes
(See Table H)
Sensitivity
Fast-response
Temperature Ratings
165°F (74°C), Gray Link
Recessed Escutcheons
F2 Recessed
Sprinkler Wrenches
Model W2
Model W1 (recessed)
Listings and Approvals
cULus



Model KRes58 HSWX Sprinkler Components and Dimensions — Figure 6



Dimensions — **F2 Recessed Escutcheon Installation**

Model KRes58 HSWX Sprinkler Hydraulic Design Criteria — Table G

Minimum Flow and Residual Pressure			
Max. Coverage Area ft. x ft. (m x m)	**Flow gpm (l/min)**	**Pressure psi (bar)**	**Deflector to Ceiling Distance**
18 x 20 (5.5 x 6.1)	29 (109)	25 (1.72)	4 to 6 inches (100 to 150 mm)
20 x 20 (6.1 x 6.1)	30 (114)	26.8 (1.85)	
16 x 22 (4.9 x 6.7)	33 (125)	32.4 (2.23)	
16 x 24 (4.9 x 7.3)	38 (144)	42.9 (2.96)	
14 x 26 (4.3 x 7.9)	42 (160)	52.4 (3.75)	
18 x 20 (5.5 x 6.1)	35 (133)	36.4 (2.5)	6 to 12 inches (150 to 300 mm)
16 x 22 (4.9 x 6.7)	38 (144)	42.9 (2.96)	
16 x 24 (4.9 x 7.3)	42 (160)	52.4 (3.6)	
14 x 26 (4.3 x 7.9)	46 (174)	62.9 (4.34)	

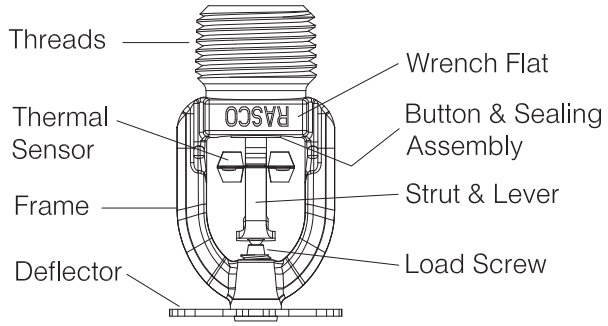
Note:
1. For NFPA 13 installations the flow per sprinkler must be the greater of: (1) the flow listed in the table above or (2) the flow required to achieve a minimum design density of 0.1 gpm/sq ft over the design area of the sprinkler.
2. For coverage area dimensions less than those listed above, use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

Finishes **Table H**

Standard Finishes		Special Application Finishes	
Sprinkler*	**F2 Escutcheon**	**Sprinkler***	**F2 Escutcheon**
Bronze	Brass	Bright Brass	Bright Brass
Chrome Plated	Chrome Plated	Satin Chrome	Satin Chrome
White Polyester	White Polyester	Black Polyester	Black Polyester
--	--	Custom Color Polyester	Custom Color Polyester
--	--	Electroless Nickel PTFE	--

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

Components **Figure 7**



Components

Note: Deflector varies by model

Installation

Models KRes fire sprinklers are to be installed in accordance with NFPA 13, 13D, or 13R and as shown in this bulletin. For recessed installations, the Model F2 recessed escutcheon is the only escutcheon to be used with the KRes sprinklers. Use of any other recessed escutcheon will void approvals and warranties.

For installing Model KRes sprinklers, use only the Model W2 sprinkler Wrench; for installing Models KRes Recessed Pendent and Sidewall sprinklers use only the Model W1 sprinkler wrench. Use of wrenches other than those specified may damage these sprinklers.

Installation of KRes sprinklers in a wall or ceiling will require a hole diameter of 2-1/4" (57 mm) for F2 recessed escutcheons.

Install KRes HSW sprinklers with a ceiling to deflector distance that complies with the hydraulic design criteria tables in this bulletin. The flow arrow on deflector must point away from near wall and "Top" marking must face the ceiling.

A 'leak tight" sprinkler joint can be obtained with a torque of 8-18 ft-lbs (11 – 24 N·m).

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



Model W1



Model W2

Maintenance

Reliable Model KRes Sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, 13, 13D, and 13R, as well as the requirements of any Authorities Having Jurisdiction.

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.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied) or damaged.

A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers.
Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Listings & Approvals

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

Guarantee

For Reliable Automatic Sprinkler Company guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Patents

For patents applicable to products contained in this technical bulletin, please visit www.r-s.co

Ordering Information

Specify the following when ordering:

Sprinkler
- Model (See Table A)
- Temperature Rating
- Threads (NPT or ISO7-1)
- Finish (See Table H)

Escutcheon
- Model F2 Recessed
- Finish (See Table H)

Note: A variety of surface mount escutcheons are also available; please refer to Reliable Technical Bulletin 204.

Sprinkler Wrench
- Model W2 (Pendent and HSW)
- W1 (Recessed and Concealed)

P/N 9999970458