

Reliable®

Features

- Coverage for DD80 spans up to 70 ft (21 m) with one row of sprinklers
- Coverage for DD80 spans up to 100 ft (30.5 m) with three rows of sprinklers
- All models use a 212°F (100°C) temperature rated fusible-link operating element
- 150 square foot per sprinkler protection using GP56 and AH Series sprinklers

Product Description

Reliable Attic Sprinklers are cULus Listed Specific Application sprinklers. The sprinklers are available for protection of combustible and non-combustible light hazard concealed spaces with roof slopes of 4:12 to 8:12, and in some cases up to 12:12. Reliable Attic Sprinklers are upright sprinklers listed for use on wet-pipe or dry-pipe sprinkler systems. All Reliable Attic sprinklers use a 212°F (100°C) temperature rated fusible-link operating element that is Listed for installation where the maximum ceiling temperature is up to 150°F (66°C). Table A provides a summary of available Reliable Attic sprinklers.

Application

Reliable Attic Sprinklers are listed for installation in accordance with this bulletin and NFPA 13, "Standard for the Installation of Fire Sprinklers." The sprinklers are classified as Special Sprinklers by NFPA 13, and are intended for installation within combustible or noncombustible roof structures, including those with wooden trusses. Coverage area, spacing requirements, and design flow and pressure for each sprinkler are provided in tables B-I on the individual sprinkler data sheets in this bulletin. Example sprinkler layouts and hydraulic design criteria are provided in Figures 9 through 26. Please note that the example sprinkler layouts are intended as design aids only, and do not necessarily reflect all possible construction methods. In

Models DD56-6, DD56-27, DD80-6, DD80-27, DS56, GP56, AH42, & AH56 Sprinklers

Specific Application Sprinklers for Attic Spaces

cULus Listed

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.



Model DD56
(Model DD80 similar)



Model DS56



Model GP56



Model AH56
(Model AH42 similar)

some cases, a combination of layouts may be required. The Authority Having Jurisdiction should be consulted for situations that are not specifically addressed within this bulletin.

Special Note Regarding Insulation

Noncombustible insulation, properly secured with wire netting to prevent sagging onto sprinklers may be used at the roof deck. Spray foam has not been evaluated for use with attic sprinklers. Use of spray foam insulation with attic sprinklers should be evaluated on a case by case basis with the Authority Having Jurisdiction.

Attic Sprinkler Summary

| | | | | | | Table A |
|-----------------|---|---------------------------------|--|----------------|-----------------|---|
| Sprinkler Model | K-Factor gpm/psi ^{1/2} (L/min/bar ^{1/2}) | Thread Size NPT or ISO7-1 | Max. Coverage Area (Measured on Floor) ft x ft (m x m) | Roof Slope | Design Criteria | Sprinkler Identification Number (SIN) |
| DD56-6 | 5.6 (80) | ½ | 6 x 40 (1.8 x 12) | 4:12 to <6:12 | Table B | RA5624 |
| DD56-27 | 5.6 (80) | ½ | 6 x 40 (1.8 x 12) | 6:12 to 8:12 | Table C | RA5694 |
| DD80-6 | 8.0 (115) | ¾ | 6 x 66 or 5 x 70 (1.8 x 20 or 1.5 x 21) | 4:12 to <6:12 | Table D | RA5622 |
| DD80-27 | 8.0 (115) | ¾ | 6 x 66 or 5 x 70 (1.8 x 20 or 1.5 x 21) | 6:12 to 8:12 | Table E | RA5692 |
| DS56 | 5.6 (80) | ½ | 6 x 40 (1.8 x 12) | 4:12 to 12:12* | Table F | RA5625 |
| GP56 | 5.6 (80) | ½ | 10 x 15 (3.0 x 4.6) | 4:12 to 12:12* | Table G | RA5695 |
| AH42 | 4.2 (60) | ½ | 10 x 15 (3.0 x 4.6) | 4:12 to 12:12* | Table H | RA5623 |
| AH56 | 5.6 (80) | ½ | 10 x 15 (3.0 x 4.6) | 4:12 to 12:12* | Table I | RA5626 |

***Note:** Use in spaces with slopes over 8:12 is limited to particular areas; refer to supplemental information pages. Use in the main attic area is limited to slopes not exceeding 8:12.

Technical Specifications

Style: Upright
Orientation: Deflector horizontal
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table B and Figures 9 - 26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
Dry-pipe with steel pipe

Installation Criteria

Sprinkler Spacing

Minimum 4 ft (1.2 m), maximum 6 ft (1.8m)
between sprinklers along ridge
Minimum 26 ft (7.9 m) down the roof slope
toward eave to nearest sprinkler,
measured parallel to the roof deck

Horizontal Distance from Face of Truss

Min: 6 inches (150 mm)

Vertical Distance of Deflector Above Scissor Truss

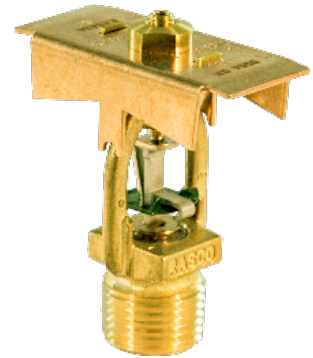
Min: 18 inches (450 mm)

Horizontal Distance from Center-line of Ridge

Max: 6 inches (150 mm)

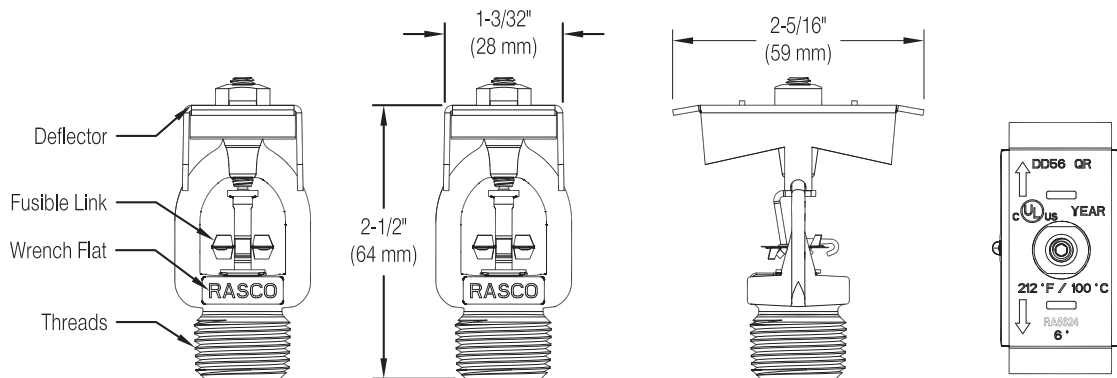
Vertical Distance of Top of Deflector Below Peak, Ridge, or Deck

Min: 17 inches (430 mm)
Max: 21 inches (530 mm)



Model DD56-6 Sprinkler Components and Dimensions

Figure 1



Model DD56-6 Minimum Required Flow and Residual Pressure

Table B

| Ceiling Slope | Max. Coverage Area ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|---------------------------------------|---------------------------------------|---------------------|-----------------------|
| 4:12 to less than 6:12 ⁽¹⁾ | 6 x 40 ⁽²⁾ (1.8 x 12) | 25 (95) | 19.9 (1.37) |

Notes:

- For the singular instance of an asymmetrical pitch of 4:12 to less than 6:12 on one side of a ridge and a pitch of 6:12 on the opposite side of the ridge, use of the Model DD56-6 is acceptable. For all other pitches of 6:12 up to 8:12, refer to the Model DD56-27.
- Long dimension of coverage area to be along the roof slope parallel to trusses. Length of coverage area is split equally to each side of the sprinkler at the ridge. Coverage area is measured parallel to the floor.

Model DD56-27 Specific Application Sprinkler

SIN RA5694

Technical Specifications

Style: Upright
Orientation: Deflector horizontal
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table C and Figures 9 - 26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe

Installation Criteria

Sprinkler Spacing

Minimum 4 ft (1.2 m), maximum 6 ft (1.8 m)
 between sprinklers along ridge
 Minimum 26 ft (7.9 m) down the roof slope
 toward eave to nearest sprinkler,
 measured parallel to the roof deck

Horizontal Distance from Face of Truss

Min: 6 inches (150 mm)

Vertical Distance of Deflector Above Scissor Truss

Min: 18 inches (450 mm)

Horizontal Distance from Center-line of Ridge

Max: 6 inches (150 mm)

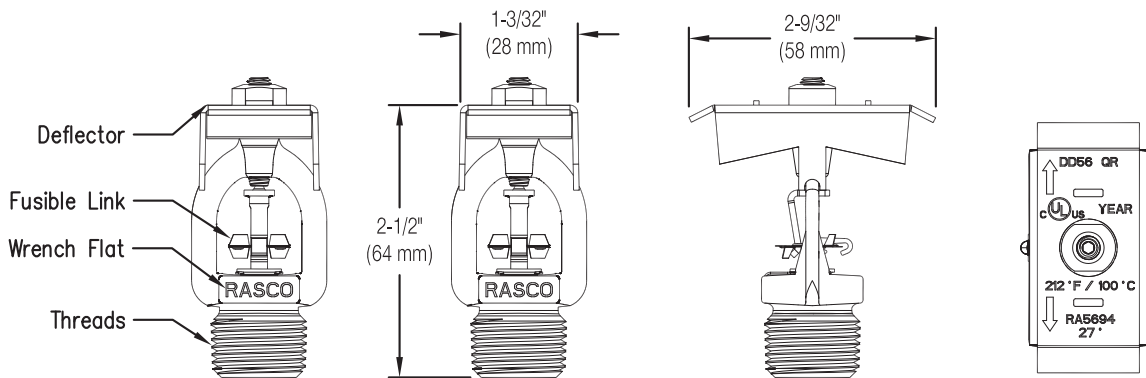
Vertical Distance of Top of Deflector Below Peak, Ridge, or Deck

Min: 17 inches (430 mm)
 Max: 21 inches (530 mm)



Model DD56-27 Sprinkler Components and Dimensions

Figure 2



Model DD56-27 Minimum Required Flow and Residual Pressure

Table C

| Ceiling Slope | Max. Coverage Area ⁽¹⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|---------------|--|---------------------|-----------------------|
| 6:12 to 8:12 | 6 x 40 (1.8 x 12) | 25 (95) | 19.9 (1.37) |

Notes:

1. Long dimension of coverage area to be along the roof slope parallel to trusses. Length of coverage area is split equally to each side of the sprinkler at the ridge. Coverage area is measured parallel to the floor.

Technical Specifications

Style: Upright
Orientation: Deflector horizontal
Threads: 3/4" NPT or ISO 7-1R3/4
Nominal K-Factor: 8.0 (115 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table D and Figures 9 - 26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
Dry-pipe with steel pipe

Installation Criteria

Sprinkler Spacing

Minimum 4 ft (1.2 m), maximum 6 ft (1.8m)
between sprinklers along ridge
Minimum 26 ft (7.9 m) down the roof slope
toward eave to nearest sprinkler,
measured parallel to the roof deck

Horizontal Distance from Face of Truss

Min: 6 inches (150 mm)

Vertical Distance of Deflector Above Scissor Truss

Min: 18 inches (450 mm)

Horizontal Distance from Center-line of Ridge

Max: 6 inches (150 mm)

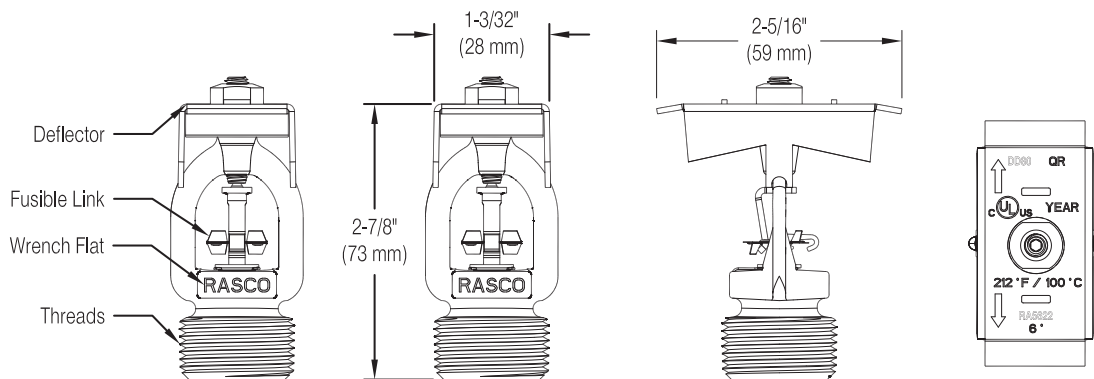
Vertical Distance of Top of Deflector Below Peak, Ridge, or Deck

Min: 17 inches (430 mm)
Max: 21 inches (530 mm)



Model DD80-6 Sprinkler Components and Dimensions

Figure 3



Model DD80-6 Minimum Required Flow and Residual Pressure

Table D

| Ceiling Slope | Max. Coverage Area ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|---------------------------------------|---------------------------------------|---------------------|-----------------------|
| 4:12 to less than 6:12 ⁽¹⁾ | 6 x 40 (1.8 x 12) ⁽²⁾ | 25 (95) | 9.8 (0.68) |
| | 6 x 63 (1.8 x 19) ⁽²⁾ | 38 (144) | 22.6 (1.56) |
| | 6 x 66 (1.8 x 20) ⁽²⁾ | 40 (151) | 25 (1.72) |
| | 5 x 70 (1.5 x 21) ⁽²⁾ | 38 (144) | 22.6 (1.56) |

Notes:

- For the singular instance of an asymmetrical pitch of 4:12 to less than 6:12 on one side of a ridge and a pitch of 6:12 on the opposite side of the ridge, use of the Model DD80-6 is acceptable. For all other pitches of 6:12 up to 8:12, refer to the Model DD80-27.
- Long dimension of coverage area to be along the roof slope parallel to trusses. Length of coverage area is split equally to each side of the sprinkler at the ridge. Coverage area is measured parallel to the floor.

Technical Specifications

Style: Upright
Orientation: Deflector horizontal
Threads: 3/4" NPT or ISO 7-1R3/4
Nominal K-Factor: 8.0 (115 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table E and Figures 9 - 26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe

Installation Criteria**Sprinkler Spacing**

Minimum 4 ft (1.2 m), maximum 6 ft (1.8 m)
 between sprinklers along ridge
 Minimum 26 ft (7.9 m) down the roof slope
 toward eave to nearest sprinkler,
 measured parallel to the roof deck

Horizontal Distance from Face of Truss

Min: 6 inches (150 mm)

Vertical Distance of Deflector Above Scissor Truss

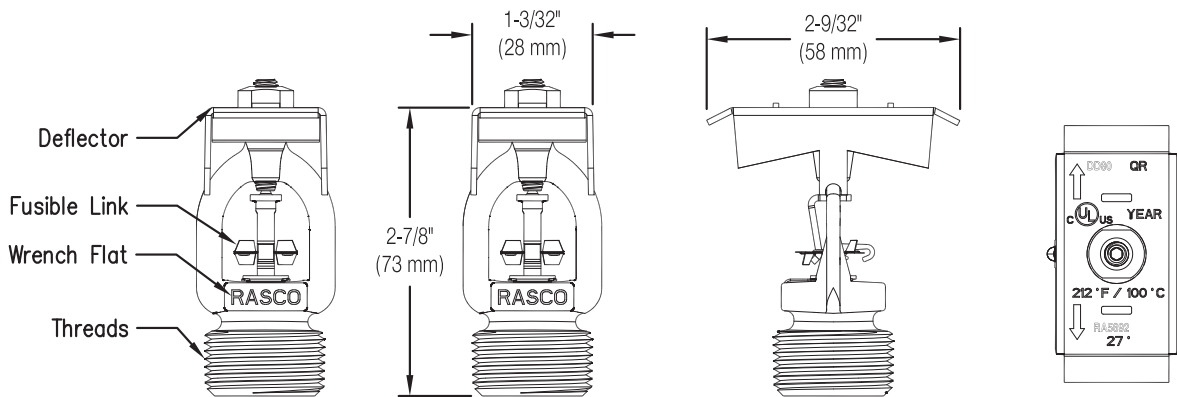
Min: 18 inches (450 mm)

Horizontal Distance from Center-line of Ridge

Max: 6 inches (150 mm)

Vertical Distance of Top of Deflector Below Peak, Ridge, or Deck

Min: 17 inches (430 mm)
 Max: 21 inches (530 mm)

**Model DD80-27 Sprinkler Components and Dimensions****Figure 4****Model DD80-27 Minimum Required Flow and Residual Pressure****Table E**

| Ceiling Slope | Max. Coverage Area ⁽¹⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|---------------|--|---------------------|-----------------------|
| 6:12 to 8:12 | 6 x 40 (1.8 x 12) | 28 (106) | 12.3 (0.85) |
| | 6 x 63 (1.8 x 19) | 38 (144) | 22.6 (1.56) |
| | 6 x 66 (1.8 x 20) | 40 (151) | 25 (1.72) |
| | 5 x 70 (1.5 x 21) | 38 (144) | 22.6 (1.56) |

Notes:

- Long dimension of coverage area to be along the roof slope parallel to trusses. Length of coverage area is split equally to each side of the sprinkler at the ridge. Coverage area is measured parallel to the floor.

Technical Specifications

Style: Upright
Orientation: Frame arms perpendicular to roof deck
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table F and Figures 9 - 26)

Finish

Brass

Sprinkler Wrench

Model DS56

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Brass Alloy
Frame Body: Brass Alloy
Frame Arms: Brass Alloy
Yoke: Copper Alloy
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe

Installation Criteria**Sprinkler Spacing**

Minimum 4 ft (1.2 m), maximum 6 ft (1.8 m) between sprinklers along ridge
 Minimum 26 ft (7.9 m) down the roof slope toward eave to nearest sprinkler, measured parallel to the roof deck

Horizontal Distance from Face of Truss

Min: 6 inches (150 mm)

Horizontal Distance from Draft Curtain or Wall ⁽¹⁾

Min: 30 inches (762 mm)
 Max: 42 inches (1067 mm)

Vertical Distance of Top of Deflector Above Bottom of Draft Curtain

Min: 8 inches (200 mm)

Vertical Distance of Deflector Above Scissor Truss

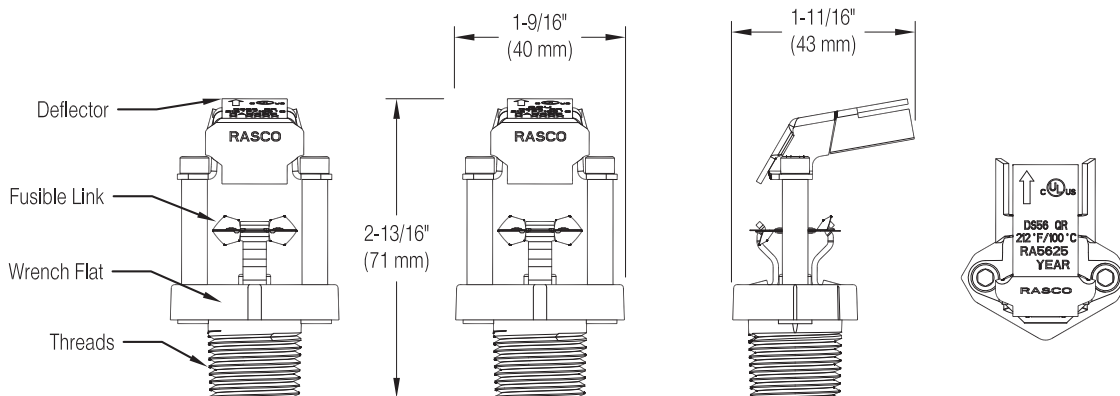
Min: 18 inches (450 mm)

Distance from Top of Deflector to Roof Deck (measured perpendicular to roof deck)

Min: 9 inches (230 mm)
 Max: 13 inches (330 mm)



⁽¹⁾ Model DS56 sprinklers may be installed back-to-back on opposite sides of a ridge where a draft curtain is installed to separate the back-to-back rows of sprinklers.

Model DS56 Sprinkler Components and Dimensions**Figure 5****Model DS56 Minimum Required Flow and Residual Pressure****Table F**

| Ceiling Slope | Max. Coverage Area ⁽²⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|-----------------------------|--|---------------------|-----------------------|
| 4:12 to 8:12 ⁽¹⁾ | 6 x 30 (1.8 x 9.1) | 23 (87) | 16.9 (1.17) |
| | 6 x 40 (1.8 x 12) | 35 (132) | 39.1 (2.70) |

Notes:

- Use in the main attic area is limited to slopes not exceeding 8:12, however, the Model DS56 may be used to protect hips, mansards, or similar single slope areas with slopes up to 12:12 where protection can be achieved with a single row of sprinklers.
- Long dimension of coverage area to be along the roof slope parallel to trusses. Length of coverage area is from the draft curtain or wall behind the sprinkler toward the eave. Coverage area to be measured parallel to the floor.

Model GP56 Specific Application Sprinkler

SIN RA5695

Technical Specifications

Style: Upright
Orientation: Top of deflector parallel to roof deck
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table G and Figure 9 - 26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe

Installation Criteria

Sprinkler Spacing

Minimum 6 ft (1.8 m), maximum 10 ft (3.0 m) between sprinklers across roof slope.
 Minimum 6 ft (1.8 m) up roof slope to nearest sprinkler, minimum 10 ft (3.0 m) down slope to nearest sprinkler, measured parallel to roof deck.

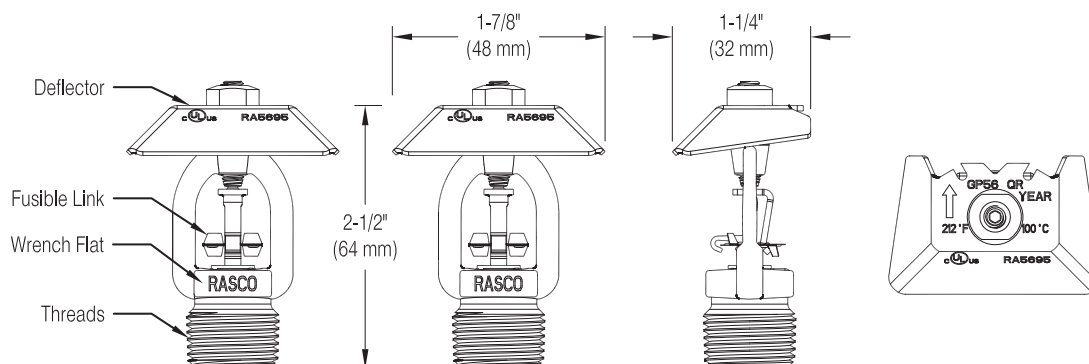
Distance from Top of Deflector to Roof Deck (measured perpendicular to roof deck)

Min: 9 inches (230 mm)
 Max: 13 inches (330 mm)



Model GP56 Sprinkler Components and Dimensions

Figure 6



Model GP56 Minimum Required Flow and Residual Pressure

Table G

| Ceiling Slope | Max. Coverage Area ⁽²⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|-----------------------------|---|------------------------|--------------------------|
| 4:12 to 8:12 ⁽¹⁾ | 10 x 15 (3.0 x 4.6) | 17 (64) | 9.2 (0.63) |

Notes:

- Use in the main attic area is limited to slopes not exceeding 8:12, however, the Model GP56 may be used to protect dormers, mansards, or similar single slope areas with slopes up to 12:12 where protection can be achieved with a single row of sprinklers.
- Long dimension of coverage area to be along the roof slope parallel to trusses. Coverage is 3 ft. (0.9m) toward the peak and 12 ft. (3.7m) toward the eave from the sprinkler. Coverage area to be measured parallel to the floor.

Model AH42 Specific Application Sprinkler

SIN RA5623

Technical Specifications

Style: Upright
Orientation: Top of deflector parallel to roof deck
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 4.2 (60 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table H, and Figures 24-26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: CHROME PLATED Bronze Alloy

Listings and Approvals

cULus Listed⁽¹⁾

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe⁽²⁾

Installation Criteria

Sprinkler Spacing

Minimum 5 ft (1.5 m), maximum 10 ft (3.0 m) between sprinklers across roof slope.

Minimum 12 ft (3.7 m) down slope to nearest sprinkler, measured parallel to roof deck.

Note: A minimum 2 ft (0.61 m) lateral offset is required between AH sprinklers when viewed looking up the roof slope.

Distance from Top of Deflector to Bottom of Truss Top Chord (measured perpendicular to roof deck)

Min: 1 inches (25 mm)

Max: 3 inches (76 mm)

Frame Arm Orientation

Frame arms are to be oriented parallel to the eave at the bottom of the protected space.

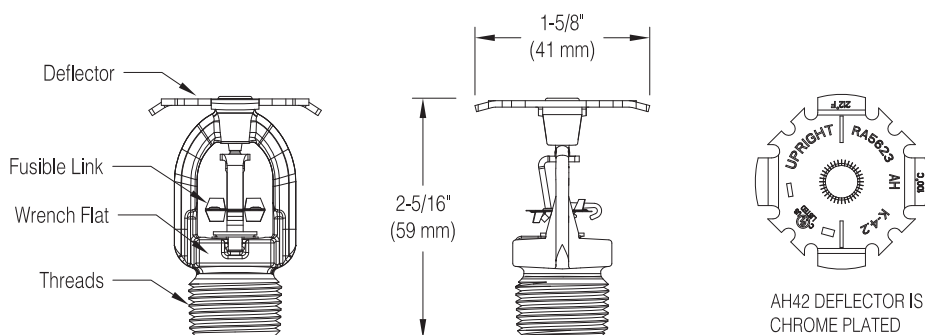


Note:

1. Listed for the protection of sloped combustible and noncombustible concealed spaces, including hip roofs with traditionally framed or step down truss construction.
2. NFPA13 requires the use of corrosion resistant or internally galvanized steel piping when using sprinklers with a K-Factor of 4.2.

Model AH42 Sprinkler Components and Dimensions

Figure 7



Model AH42 Minimum Required Flow and Residual Pressure

Table H

| Ceiling Slope | Max. Coverage Area ⁽²⁾⁽³⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|-----------------------------|---|---------------------|-----------------------|
| 4:12 to 8:12 ⁽¹⁾ | 10 x 15 (3.0 x 4.6) | 15 (57) | 12.8 (0.88) |

Notes:

1. Use in the main attic area is limited to slopes not exceeding 8:12, however, the Model AH42 may be used to protect hips and dormers with slopes up to 12:12.
2. Long dimension of coverage area to be along the roof slope. Coverage is 6'-0" (1.8m) toward the peak and 9'-0" (2.7m) toward the eave from the sprinkler. Coverage area to be measured parallel to the floor.
3. The first row of AH sprinklers may be a maximum of 9'-0" from the eave; however, the first row must always be on the eave side of the girder truss (see Figures 24 and 25).

Model AH56 Specific Application Sprinkler

SIN RA5626

Technical Specifications

Style: Upright
Orientation: Top of deflector parallel to roof deck
Threads: 1/2" NPT or ISO 7-1R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)
Sprinkler Temperature Rating: 212°F (100°C)
Sensitivity: Quick-response

Hydraulic Design Criteria

(See Table I, and Figures 24-26)

Finish

Brass

Sprinkler Wrench

Model W2

Material Specifications

Thermal Sensor: Nickel Alloy Solder Link
Levers: Stainless Steel
Sprinkler Frame: Brass Alloy
Button: Copper Alloy
Button Clip: Stainless Steel
Sealing Assembly: Nickel Alloy with PTFE
Load Screw: Bronze Alloy
Deflector: Bronze Alloy

Listings and Approvals

cULus Listed*

Hazard Classification

Light Hazard

System Types

Wet-pipe with steel or Listed CPVC pipe
 Dry-pipe with steel pipe

Installation Criteria

Sprinkler Spacing

Minimum 6 ft (1.8 m), maximum 10 ft (3.0 m) between sprinklers across roof slope.

Minimum 12 ft (3.7 m) down slope to nearest sprinkler, measured parallel to roof deck.

Note: A minimum 2 ft (0.61 m) lateral offset is required between AH sprinklers when viewed looking up the roof slope.

Distance from Top of Deflector to Bottom of Truss Top Chord (measured perpendicular to roof deck)

Min: 1 inches (25 mm)

Max: 3 inches (76 mm)

Frame Arm Orientation

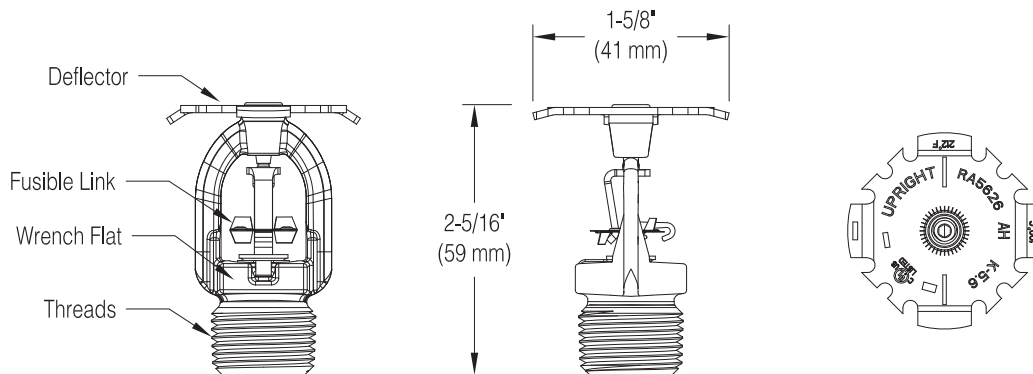
Frame arms are to be oriented parallel to the eave at the bottom of the protected space.



***Note:** Listed for the protection of sloped combustible and noncombustible concealed spaces, including hip roofs with traditionally framed or step down truss construction.

Model AH56 Sprinkler Components and Dimensions

Figure 8



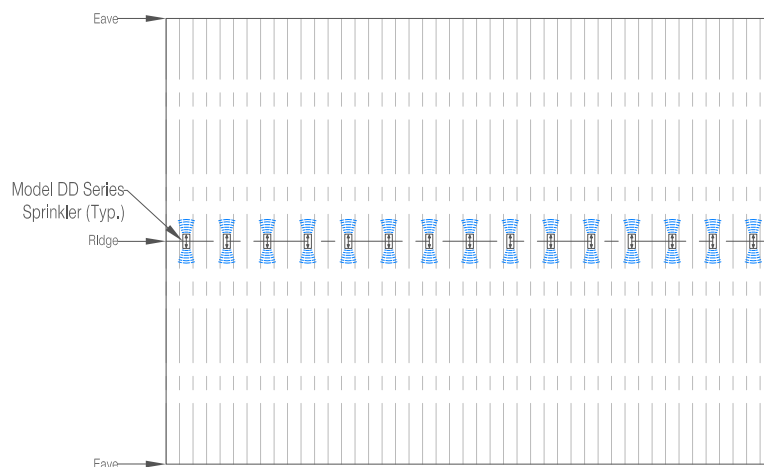
Model AH56 Minimum Required Flow and Residual Pressure

Table I

| Ceiling Slope | Max. Coverage Area ⁽²⁾⁽³⁾ ft x ft (m x m) | Flow gpm (l/min) | Pressure psi (bar) |
|-----------------------------|---|---------------------|-----------------------|
| 4:12 to 8:12 ⁽¹⁾ | 10 x 15 (3.0 x 4.6) | 15 (57) | 7.2 (0.50) |

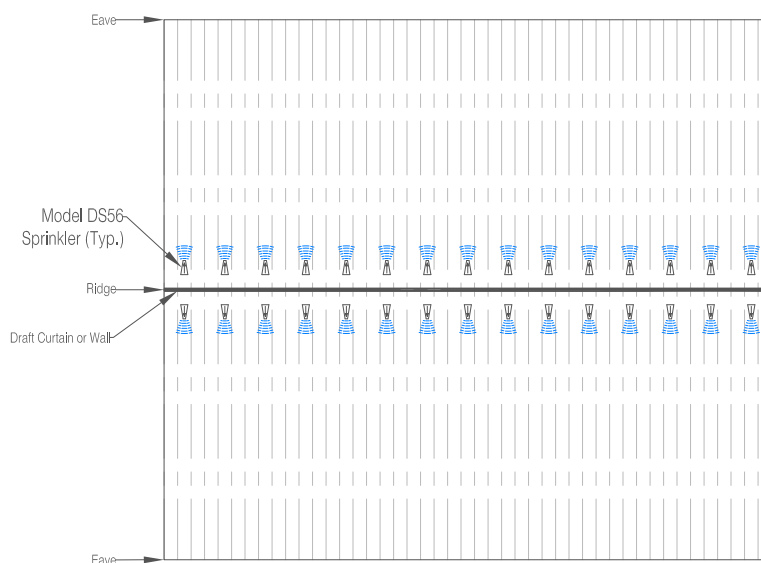
Notes:

- Use in the main attic area is limited to slopes not exceeding 8:12, however, the Model AH56 may be used to protect hips and dormers with slopes up to 12:12.
- Long dimension of coverage area to be along the roof slope. Coverage is 6'-0" (1.8m) toward the peak and 9'-0" (2.7m) toward the eave from the sprinkler. Coverage area to be measured parallel to the floor.
- The first row of AH sprinklers may be a maximum of 9'-0" from the eave; however, the first row must always be on the eave side of the girder truss (see Figures 24 and 25).


Calculation Requirements:

Wet System-Most demanding five (5) DD Series Sprinklers

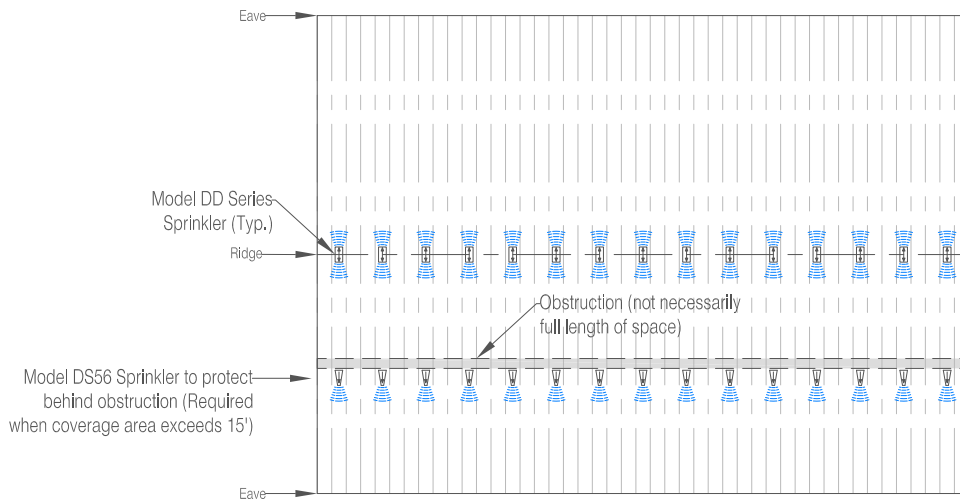
Dry System-Most demanding seven (7) DD Series Sprinklers


Calculation Requirements:

- Wet System-Most demanding five (5) DS56 Sprinklers
- Dry System-Most demanding nine (9) DS56 Sprinklers

**Model DD Series Sprinklers at Ridge with Model DS56 Sprinklers Beyond Obstruction
Example Layout (Not to Scale)**

Figure 11

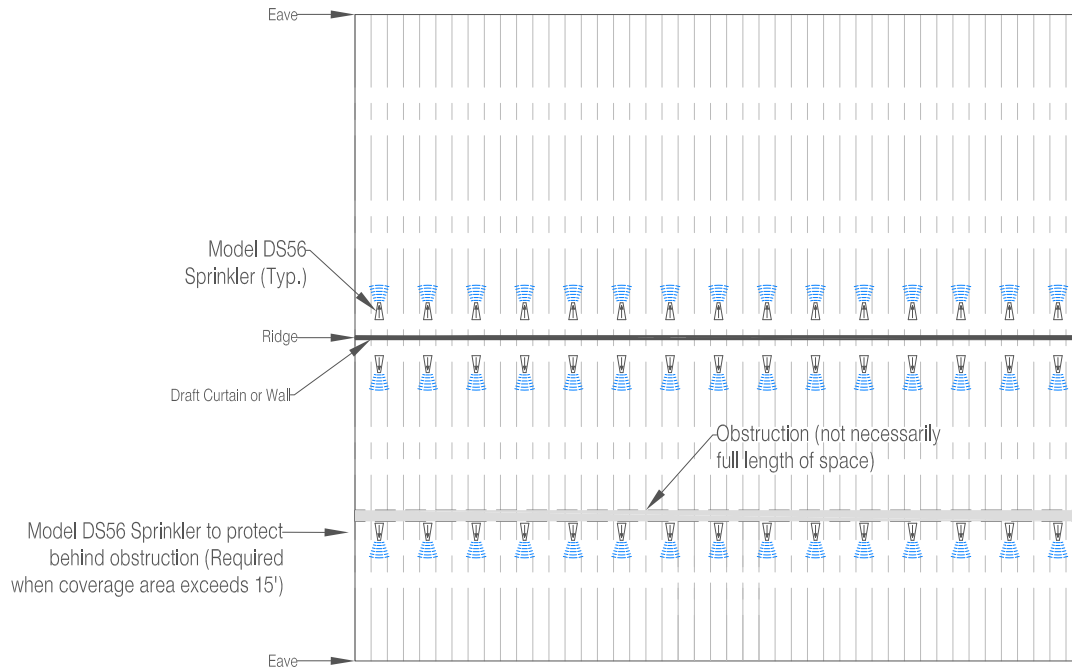


Calculation Requirements:

- Wet System-Most demanding five (5) DD Series Sprinklers and two (2) DS56 Sprinklers
- Dry System-Most demanding seven (7) DD Series Sprinklers and two (2) DS56 Sprinklers

**Model DS56 Sprinklers at Ridge with Model DS56 Sprinklers Beyond Obstruction
Example Layout (Not to Scale)**

Figure 12

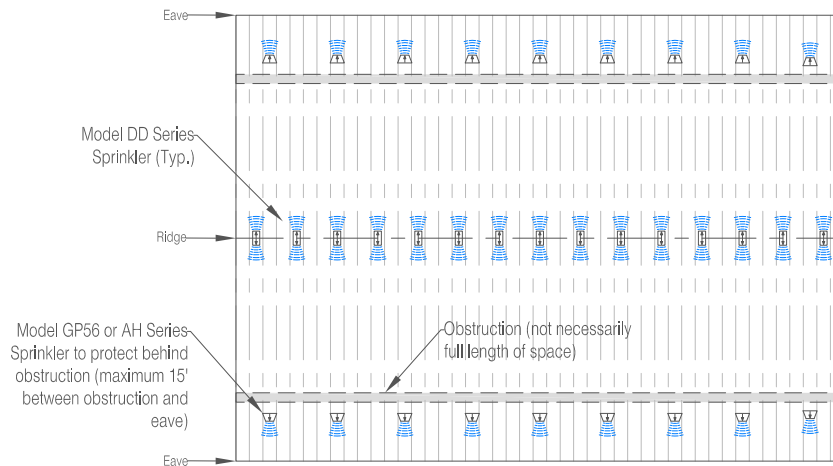


Calculation Requirements:

- Wet System-Most demanding five (5) DD Series Sprinklers and two (2) DS56 Sprinklers
- Dry System-Most demanding seven (7) DD Series Sprinklers and two (2) DS56 Sprinklers

Model DD Series Sprinklers at Ridge with Model GP56 or AH Series Sprinklers Beyond Obstruction
Example Layout (Not to Scale)

Figure 13

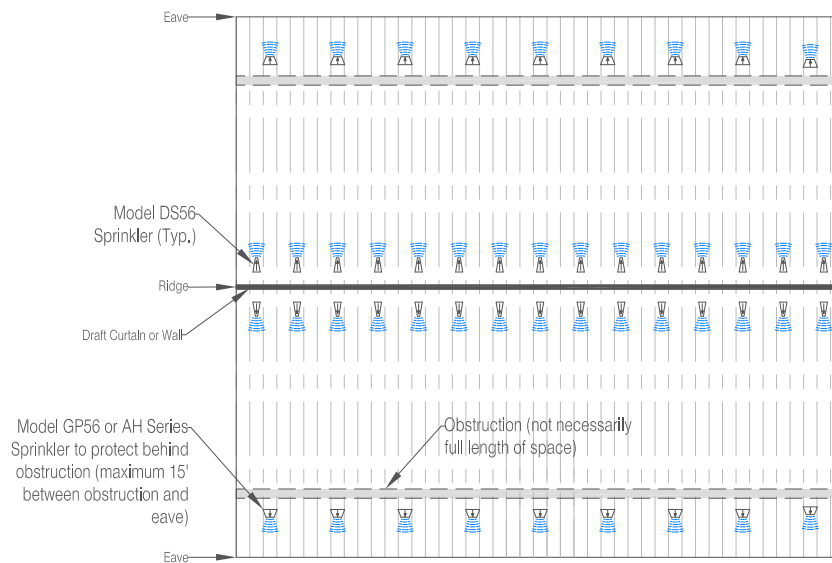


Calculation Requirements:

- Wet System-Most demanding five (5) DD Series Sprinklers and two (2) GP56 or AH Series Sprinklers
- Dry System-Most demanding seven (7) DD Series Sprinklers and two (2) GP56 or AH Series Sprinklers

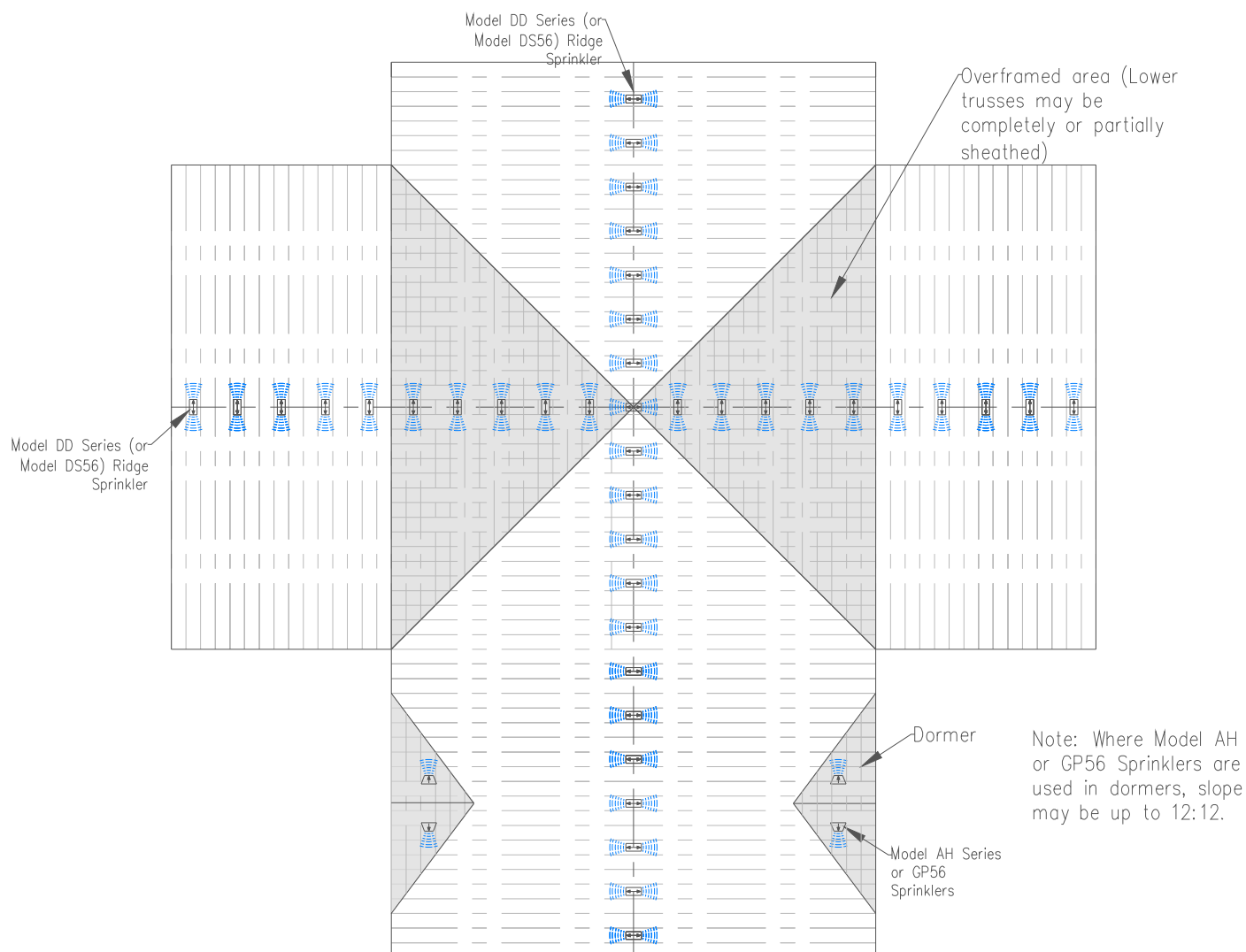
Model DS56 Sprinklers at Ridge with Model GP56 or AH Series Sprinklers Beyond Obstruction
Example Layout (Not to Scale)

Figure 14



Calculation Requirements:

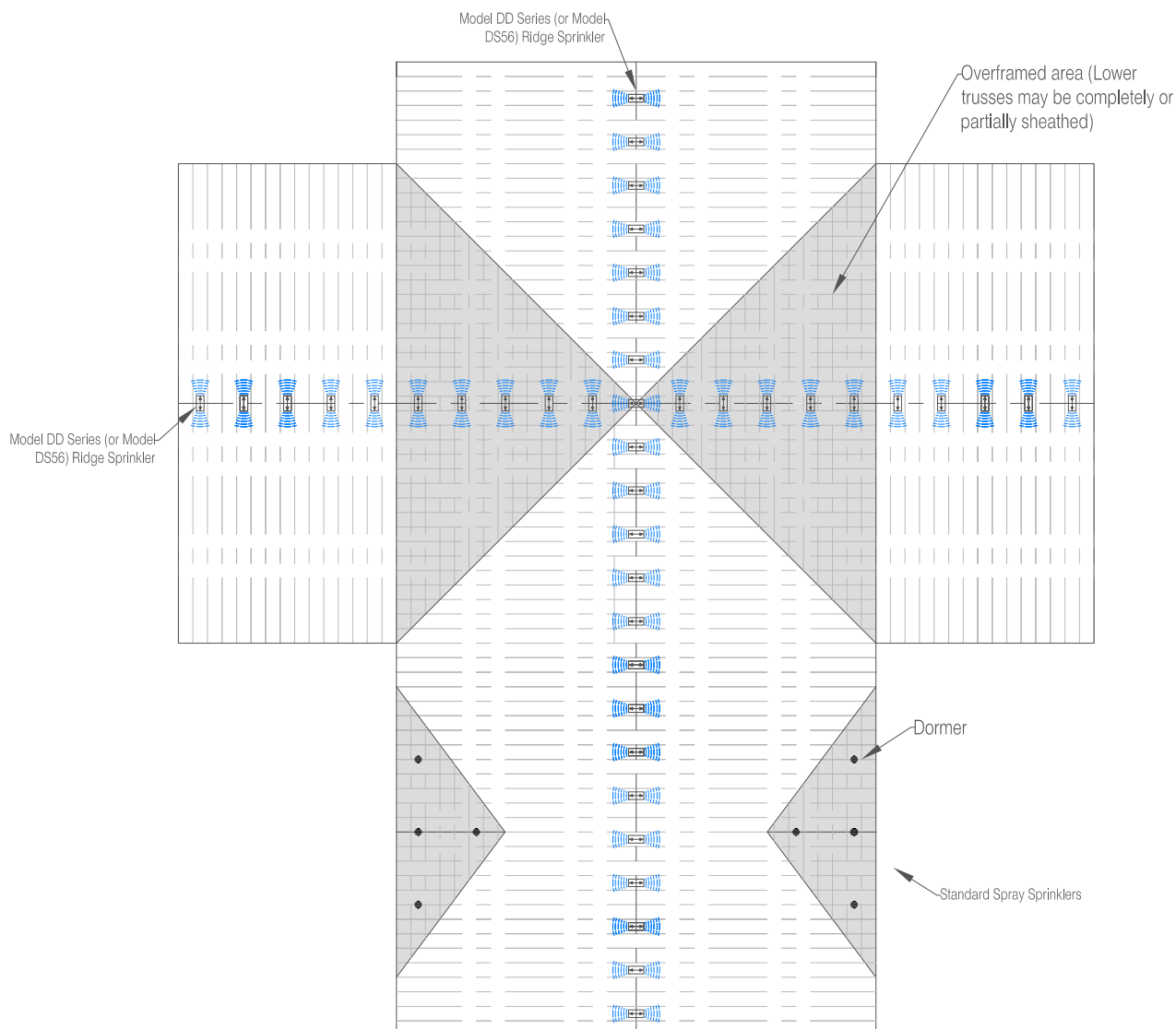
- Wet System-Most demanding five (5) DS56 Sprinklers and two (2) GP56 or AH Series Sprinklers
- Dry System-Most demanding seven (7) DS56 Sprinklers and two (2) GP56 or AH Series Sprinklers



Calculation Requirements Where Attic and Dormer Spaces are NOT Separated*:

- Wet System-Most demanding five (5) ridge sprinklers and two (2) AH Series or Model GP56 sprinklers when there are four (4) sprinklers or less in dormer. When more than four (4) AH Series or GP56 sprinklers in dormer, separately calculate (a) five (5) ridge sprinklers and (b) all AH Series or Model GP56 sprinklers in dormer (up to a maximum 1500 ft² area) and use the greater of the two demands.
- Dry System-Most demanding seven (7) ridge sprinklers and two (2) AH Series or GP56 sprinklers when there are four (4) sprinklers or less in dormer. When more than four (4) AH Series or Model GP56 sprinklers in dormer separately calculate (a) seven (7) ridge sprinklers and (b) all AH Series or Model GP56 sprinklers in dormer (up to a maximum 1950 square foot area), and use the greater of the two demands.

***Note:** Where attic and dormer spaces are separate, compartmentalized areas, the combined ridge sprinkler and dormer sprinkler calculation is not required.



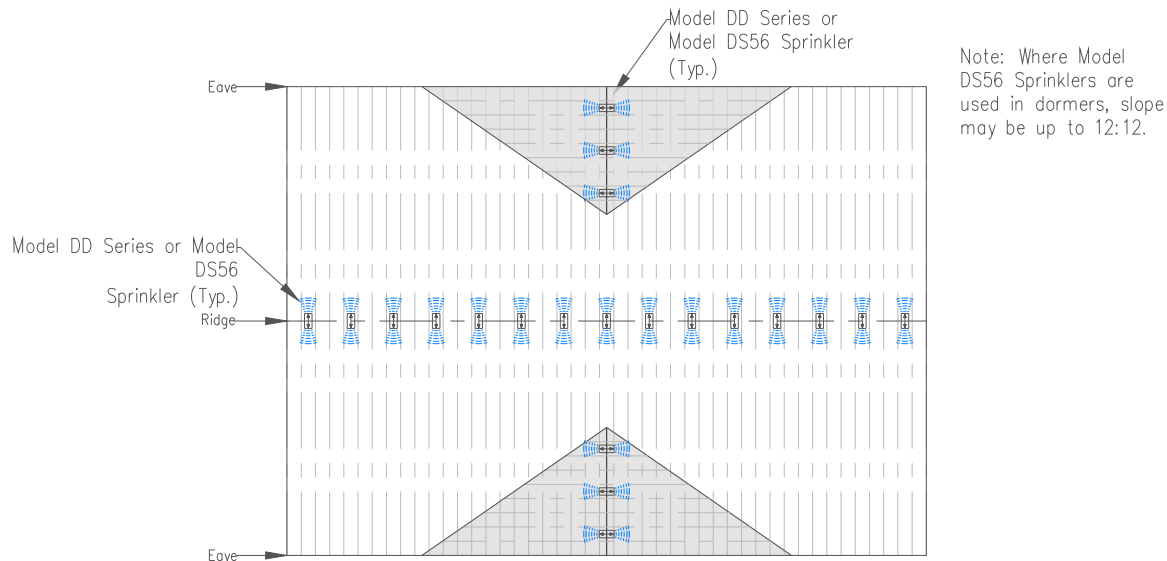
Calculation Requirements When Attic and Dormer Spaces are NOT Separated*:

- Wet System-Most demanding five (5) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in dormer. When more than four (4) sprinklers in dormer, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling is required, and remote area reduction for use of quick response standard spray sprinklers may be applicable.
- Dry System-Most demanding seven (7) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in dormer. When more than four (4) sprinklers in dormer, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling and 30% remote area increase for dry system is required.

***Note:** Where spaces are separate, compartmentalized areas, calculate the ridge sprinklers per figures 9 or 10, and the dormers per NFPA 13, and use the greater of the two demands.

Model DD Series Sprinklers at Ridge with Model DD Series Sprinklers in Dormers Example Layout (Not to Scale)

Figure 17



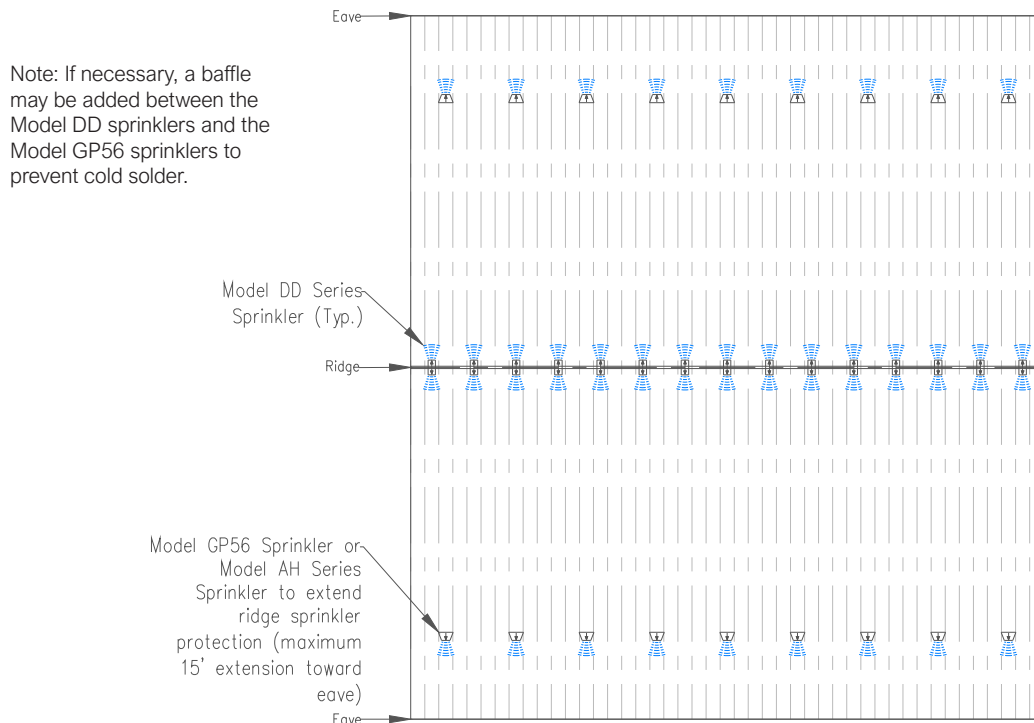
Calculation Requirements Where Attic and Dormer Spaces are NOT Separated*:

- Wet System-Most demanding five (5) Model DD Series or DS56 sprinklers at ridge plus up to two (2) sprinklers in dormer
- Dry System-Most demanding seven (7) Model DD Series or DS56 sprinklers at ridge plus up to two (2) sprinklers in dormer

*Note: Where attic and dormer spaces are separate, compartmentalized areas, refer to Figures 9 or 10.

Model DD Series Sprinklers at Ridge with Model GP56 or AH Series Sprinklers at Eave Example Layout (Not to Scale)

Figure 18

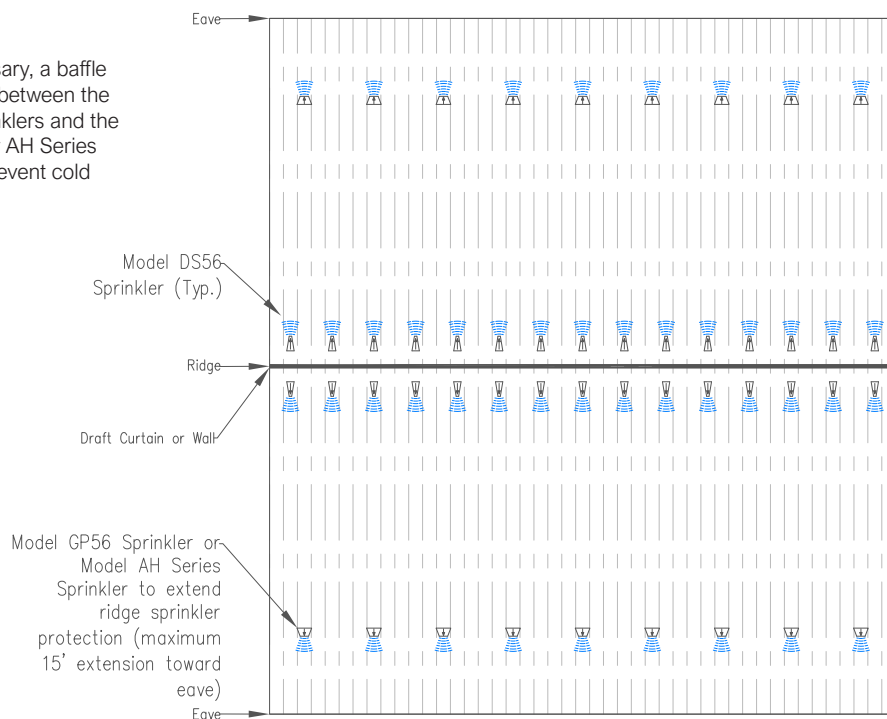


Calculation Requirements:

- Wet System-Most demanding five (5) DD Series Sprinklers and two (2) GP56 or AH Series Sprinklers
- Dry System-Most demanding seven (7) DD Series Sprinklers and two (2) GP56 or AH Series Sprinklers

Model DS56 Sprinklers at Ridge with Model GP56 or AH Series Sprinklers at Eave Example Layout (Not to Scale)

Figure 19

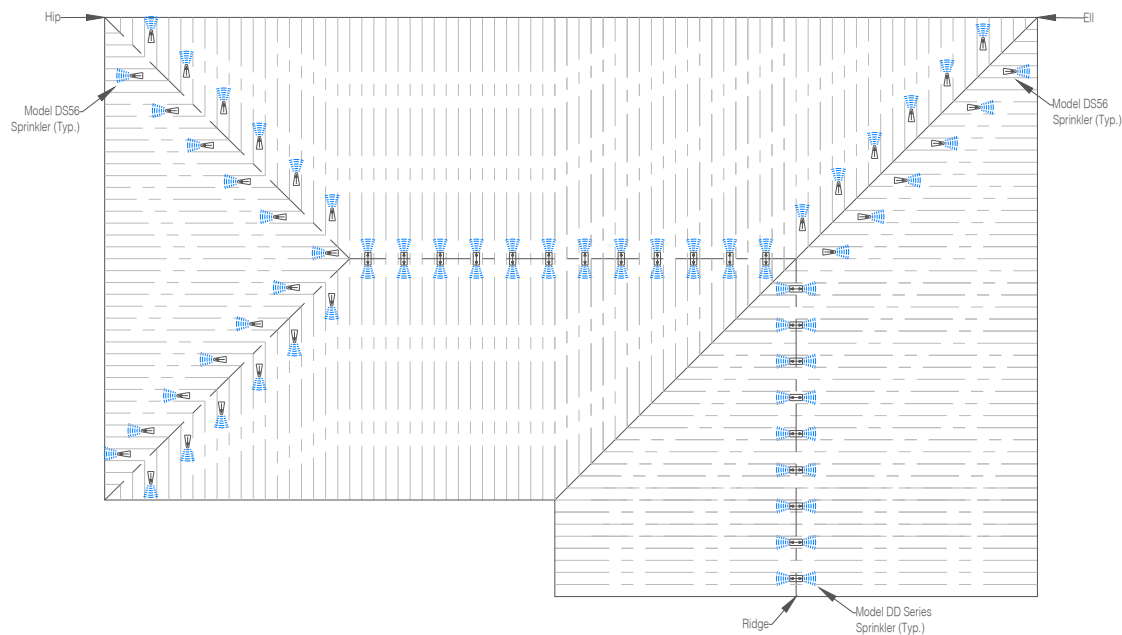


Calculation Requirements:

- Wet System-Most demanding five (5) DS56 Sprinklers and two (2) GP56 or AH Series Sprinklers
- Dry System-Most demanding seven (7) DS56 Sprinklers and two (2) GP56 or AH Series Sprinklers

Model DD Series Sprinklers at Ridge with DS56 Sprinklers at Hip or EII Example Layout (Not to Scale)

Figure 20

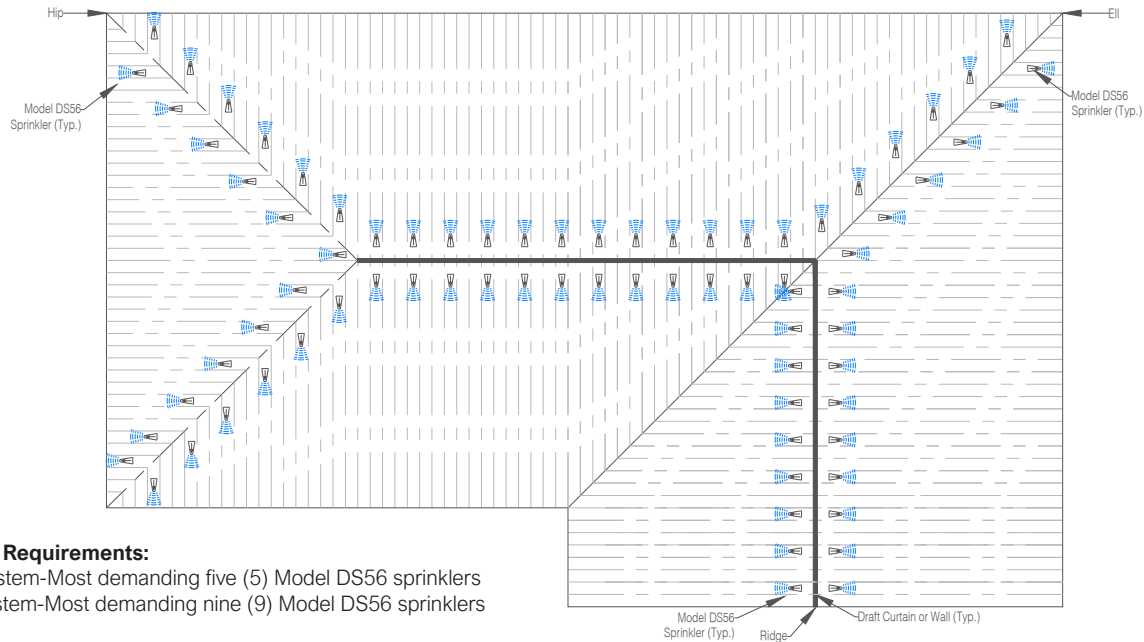


Calculation Requirements:

- Wet System-Most demanding five (5) Model DD Series and/or DS56 sprinklers
- Dry System-Most demanding nine (9) Model DD Series and/or DS56 sprinklers; of which only a maximum of seven (7) must be Model DD Series (ridge) sprinklers

**Model DS56 Sprinklers at Ridge with DS56 Sprinklers at Hip or Ell
Example Layout (Not to Scale)**

Figure 21

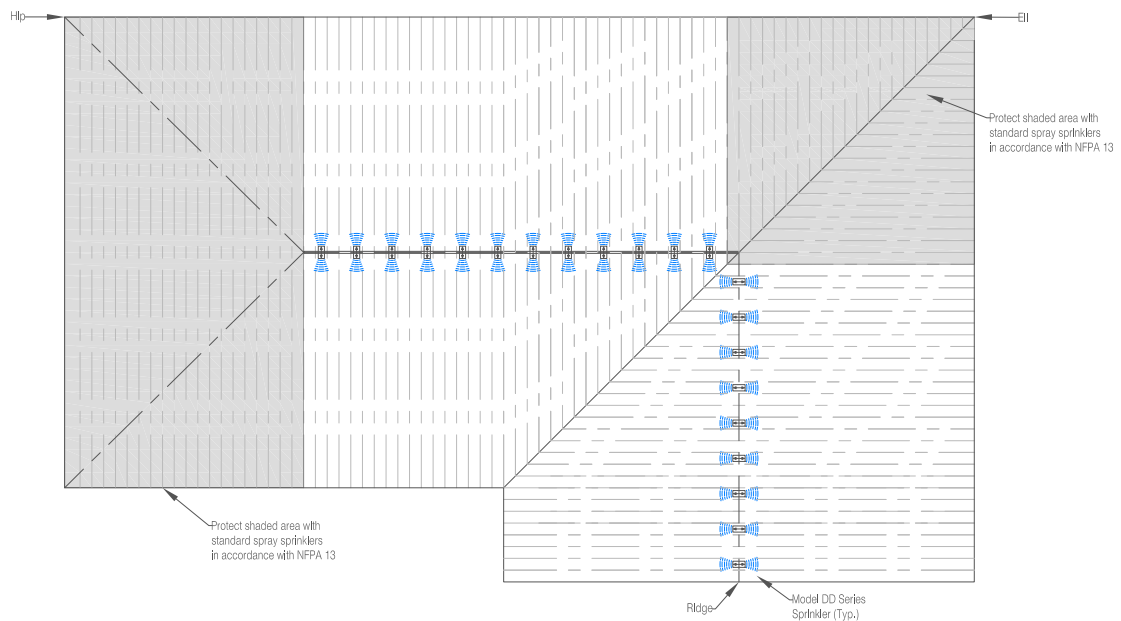


Calculation Requirements:

- Wet System-Most demanding five (5) Model DS56 sprinklers
- Dry System-Most demanding nine (9) Model DS56 sprinklers

**Model DD Series Sprinklers at Ridge with Standard Spray Sprinklers at Hip or Ell
Example Layout (Not to Scale)**

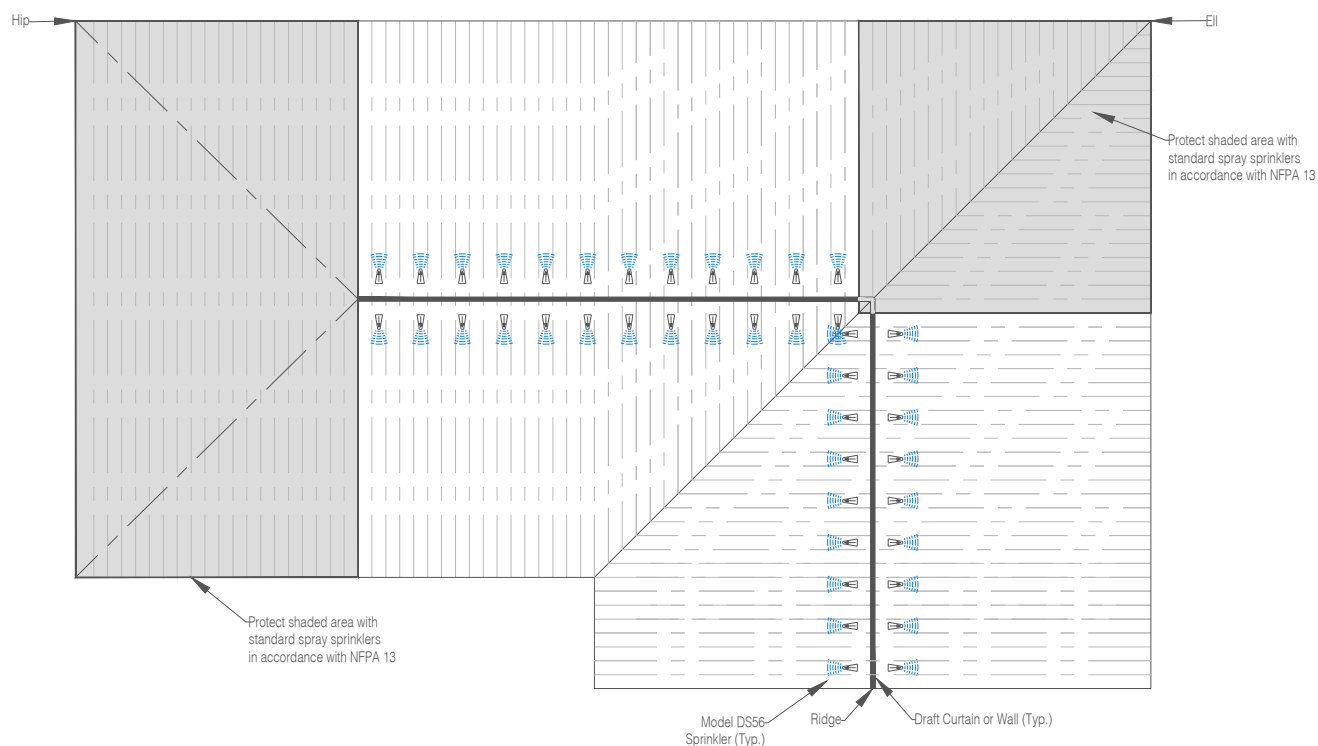
Figure 22



Calculation Requirements When Attic and Hip or Ell Spaces are NOT Separated*:

- Wet System-Most demanding five (5) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in the hip or ell. When more than four (4) sprinklers in hip or ell, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling is required, and remote area reduction for use of quick response standard spray sprinklers may be applicable.
- Dry System-Most demanding seven (7) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in hip or ell. When more than four (4) sprinklers in hip or ell, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling and 30% remote area increase for dry system is required.

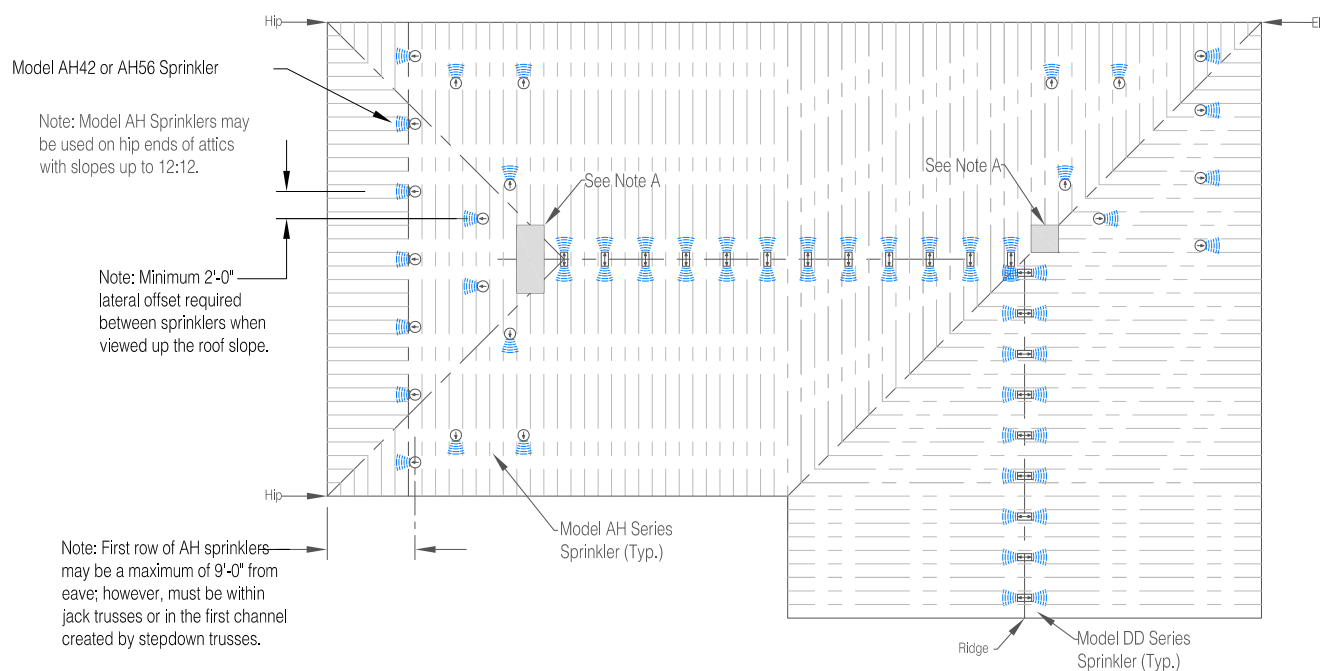
***Note:** Where spaces are separate, compartmentalized areas, calculate the ridge sprinklers per figure 9, and the hip or ell area per NFPA 13, and use the greater of the two demands.



Calculation Requirements When Attic and Hip or Ell Spaces are NOT Separated*:

- Wet System-Most demanding five (5) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in the hip or ell. When more than four (4) sprinklers in hip or ell, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling is required, and remote area reduction for use of quick response standard spray sprinklers may be applicable.
- Dry System-Most demanding seven (7) ridge sprinklers and two (2) standard spray sprinklers when there are four (4) sprinklers or less in hip or ell. When more than four (4) sprinklers in hip or ell, separately calculate the most demanding remote area, including all sprinkler types, per NFPA 13, and use the greater of the two demands. 30% remote area increase for sloped ceiling and 30% remote area increase for dry system is required.

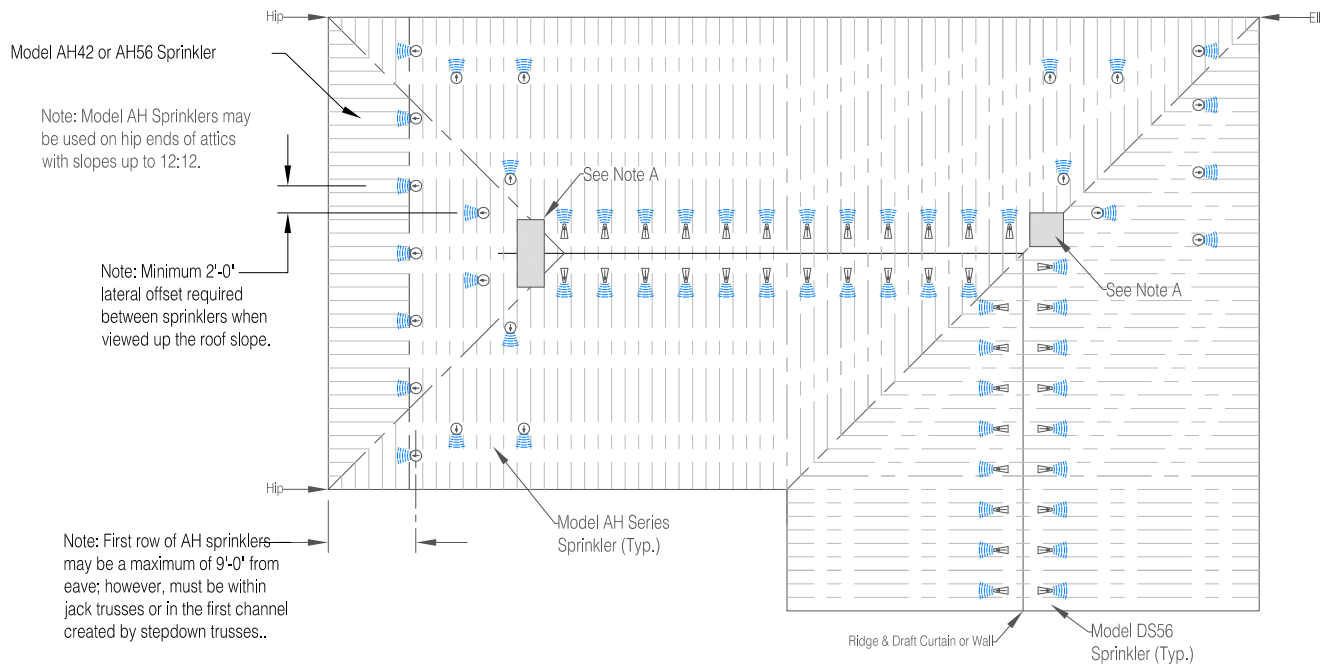
***Note:** Where spaces are separate, compartmentalized areas, calculate the ridge sprinklers per figure 10, and the hip or ell area per NFPA 13, and use the greater of the two demands.



Calculation Requirements:

- Wet System-Most demanding five (5) Model DD Series ridge sprinklers and two (2) AH sprinklers when there are four (4) AH sprinklers or less. When more than four (4) AH sprinklers, separately calculate (a) five (5) Model DD Series ridge sprinklers and two (2) AH sprinklers, and (b) all AH sprinklers (up to a maximum 1500 square foot area) and use the greater of the two demands.
- Dry System-Most demanding seven (7) Model DD Series ridge sprinklers and two (2) AH sprinklers when there are four (4) AH sprinklers or less. When more than four (4) AH sprinklers, separately calculate (a) seven (7) Model DD Series ridge sprinklers and two (2) AH sprinklers, and (b) all AH sprinklers (up to a maximum 1950 square foot area) and use the greater of the two demands.

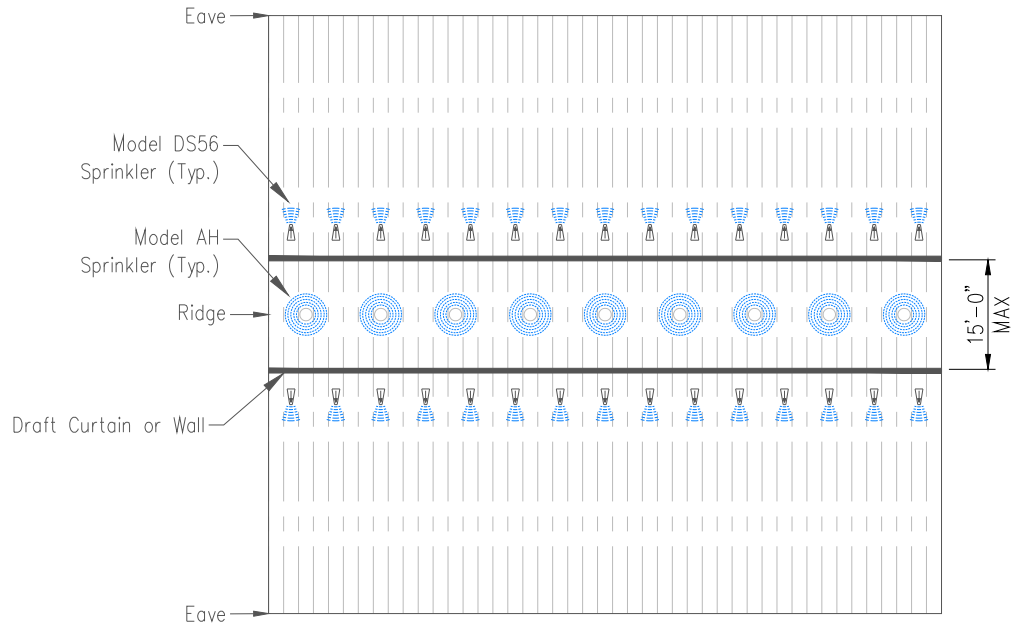
Note A: A single quick-response standard spray upright sprinkler installed in accordance with NFPA 13 may be used for the protection of small areas outside the coverage areas of the specific application attic sprinklers. Demand for the single sprinkler shall be added to the calculations listed above if it falls within the 1500 ft² wet system or 1950 ft² dry system design area. CPVC piping on wet pipe systems is permitted for supplying individual quick-response standard spray upright sprinklers installed in this manner.



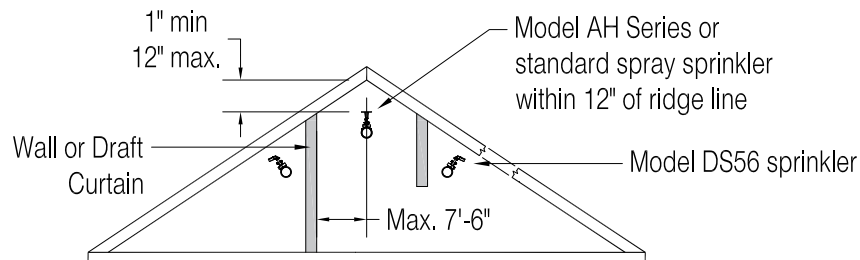
Calculation Requirements:

- Wet System-Most demanding five (5) Model DS-56 Series ridge sprinklers and two (2) AH sprinklers when there are four (4) AH sprinklers or less. When more than four (4) AH sprinklers, separately calculate (a) five (5) Model DS-56 Series ridge sprinklers and two (2) AH sprinklers, and (b) all AH sprinklers (up to a maximum 1500 square foot area) and use the greater of the two demands.
- Dry System-Most demanding seven (7) Model DS-56 Series ridge sprinklers and two (2) AH sprinklers when there are four (4) AH sprinklers or less. When more than four (4) AH sprinklers, separately calculate (a) seven (7) Model DS-56 Series ridge sprinklers and two (2) AH sprinklers, and (b) all AH sprinklers (up to a maximum 1950 square foot area) and use the greater of the two demands.

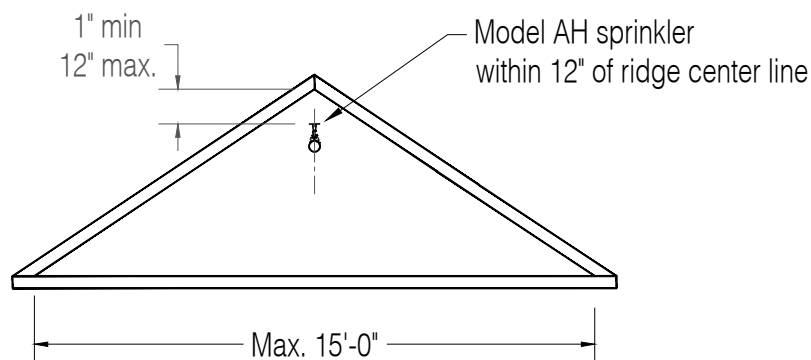
Note A: A single quick-response standard spray upright sprinkler installed in accordance with NFPA 13 may be used for the protection of small areas outside the coverage areas of the specific application attic sprinklers. Demand for the single sprinkler shall be added to the calculations listed above if it falls within the 1500 sf wet system or 1950 sf dry system design area. CPVC piping on wet pipe systems is permitted for supplying individual quick-response standard spray upright sprinklers installed in this manner.


Calculation Requirements:

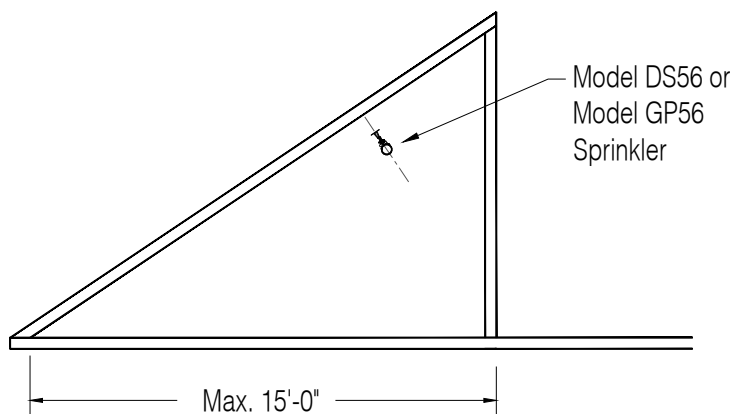
- Wet System-Most demanding five (5) sprinklers of either type
- Dry System-Most demanding nine (9) DS56 Sprinklers or (7) AH Series Sprinklers



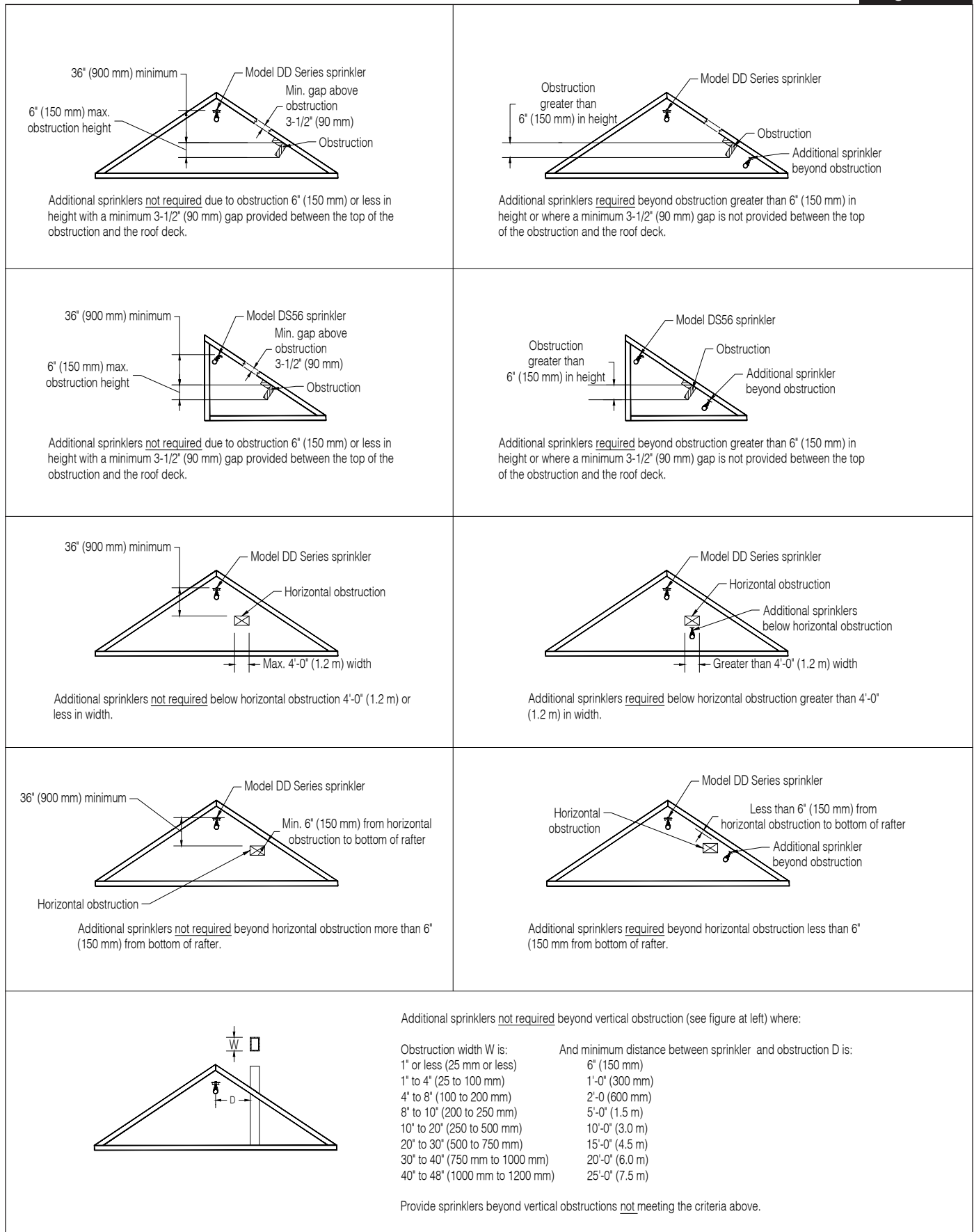
- Model AH Series Sprinklers used in this arrangement shall have the deflector oriented flat (parallel to the floor), and the frame arms parallel to the ridge line (i.e., frame window opening toward eaves).
- Coverage area, flow and pressure requirements, and obstruction rules for AH Series sprinklers to be in accordance with pages 8 and 9 of this bulletin.
- Reference NFPA 13 when using standard spray sprinklers at peak.

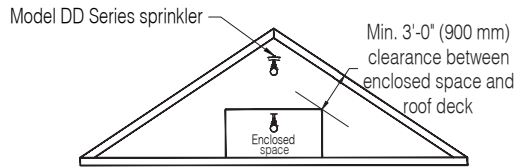


- Model AH Sprinklers may be used in dormers having slopes of up to 12:12.
- Model AH Series Sprinklers used in this arrangement shall have the deflector oriented flat (parallel to the floor), and the frame arms parallel to the ridge line (i.e., frame window opening toward eaves).
- Coverage area, flow and pressure requirements, and obstruction rules for AH Series sprinklers to be in accordance with pages 8 and 9 of this bulletin.

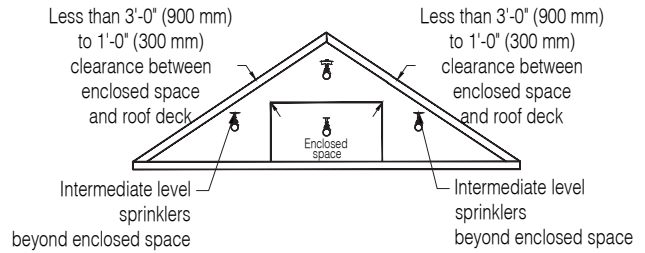


- Model DS56 and Model GP56 Sprinklers may be used in mansards or other similar single slope areas having slopes of up to 12:12.
- Model DS56 and Model GP56 sprinklers used in this arrangement shall be installed in accordance with Figures 29 and 30.
- Coverage area, flow and pressure requirements, and obstruction rules for sprinklers to be in accordance with pages 6 through 9 of this bulletin.

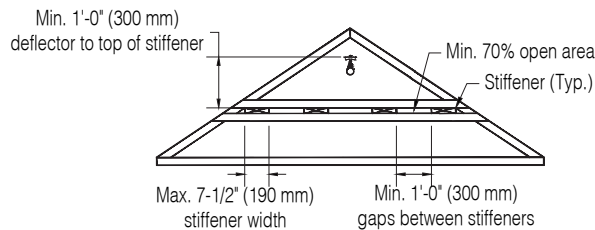




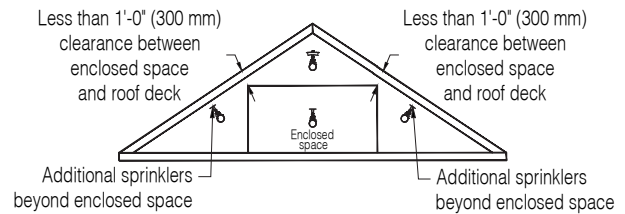
Additional sprinklers not required beyond enclosed space more than 3'-0" (900 mm) from roof deck.



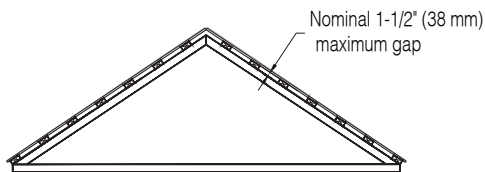
Additional intermediate level sprinklers required beyond enclosed space less than 3'-0" (900 mm) to 1'-0" (300 mm) from roof deck.



Additional sprinklers not required below stiffeners meeting all of the following criteria: (1) minimum 1'-0" (300 mm) below Reliable Attic sprinklers, (2) maximum 7-1/2" (190 mm) wide stiffeners, (3) minimum 1'-0" (300 mm) gaps between stiffeners, and (4) minimum 70% open area.

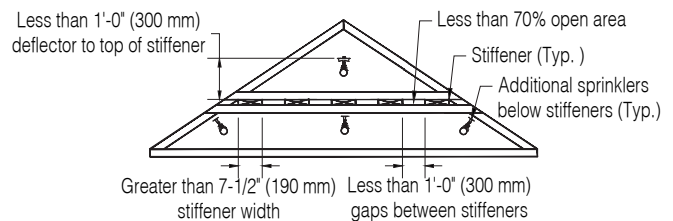


Additional sprinklers required beyond enclosed space less 1'-0" (300 mm) from roof deck.



Alternate Allowable Framing Method

A maximum 1-1/2 in (38 mm) gap between sheathing and top of structural framing members (such as that formed by nailers laid flat) is acceptable.



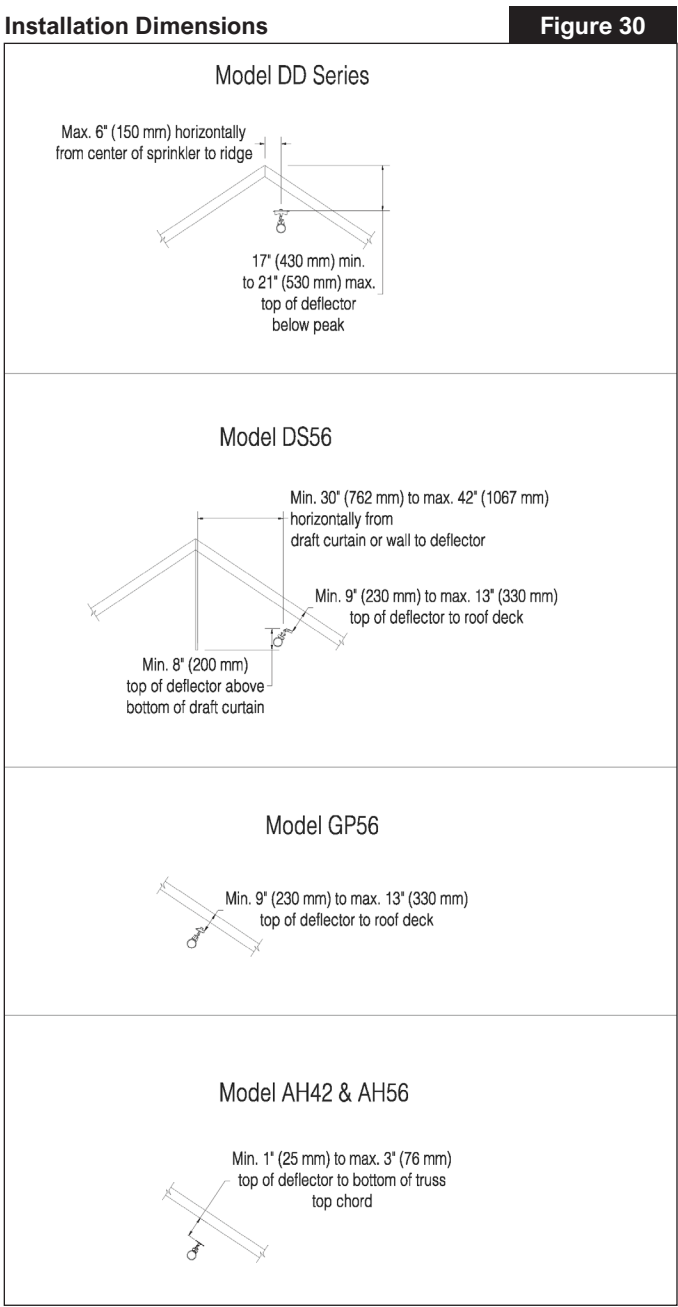
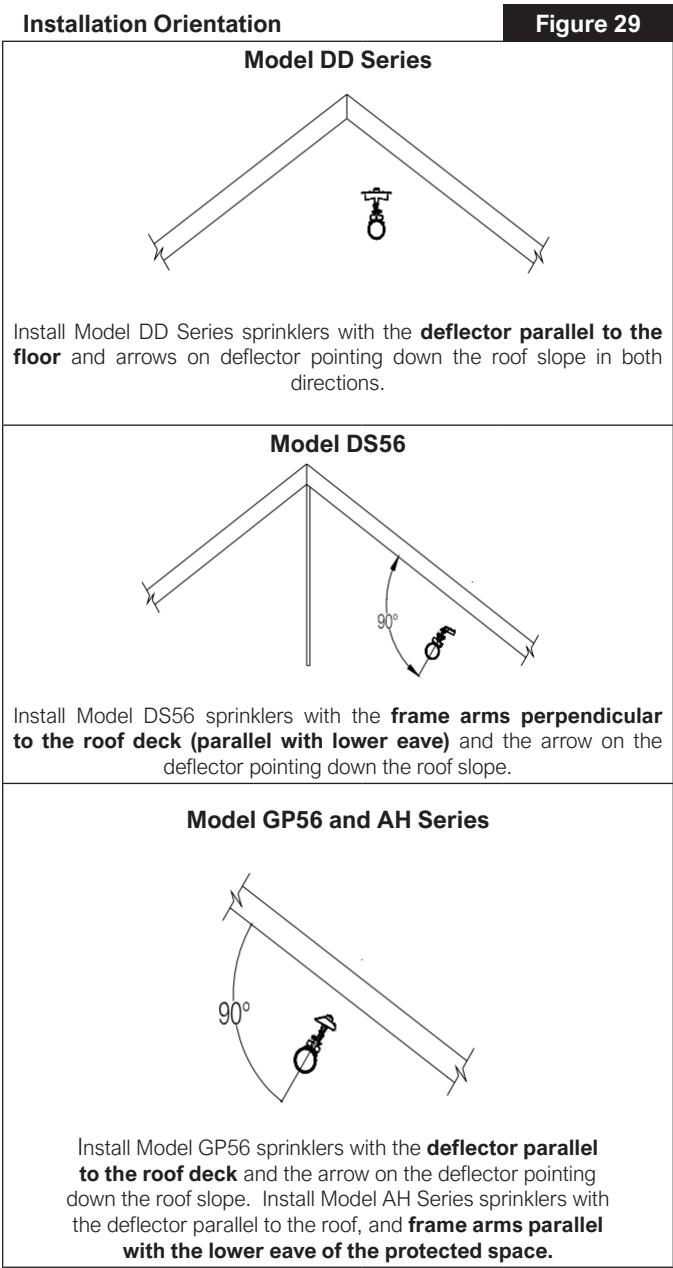
Additional sprinklers required below stiffeners: (1) less than 1'-0" (300 mm) below Reliable Attic sprinklers, (2) more than 7-1/2" (190 mm) wide stiffeners, (3) gaps between stiffeners are less than 1'-0" (300 mm), or (4) where the area of the horizontal plane where the stiffeners are located is less than 70% open.

Notes:

- Attic sprinklers may be installed directly on pipe up to 2-1/2" NPS. For 3" NPS and larger pipe, the obstruction rules for Extended Coverage Upright Spray Sprinklers shall be followed.
- Where specific obstruction criteria is not shown in Figures 27 and 28, the obstruction rules for Extended Coverage Upright Spray Sprinklers shall be followed.

Installation

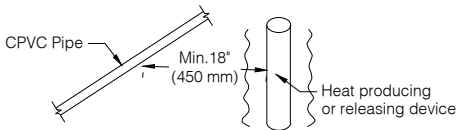
Install Reliable Attic Sprinklers only in the orientation indicated in Figure 28. Figure 29 provides additional select installation criteria for each sprinkler model.



Note: Where Reliable Attic Sprinklers are installed on wet-pipe sprinkler systems with CPVC pipe, the CPVC pipe must be protected in accordance with the pipe manufacturer's installation instruction as well as the requirements in Figure 31 & 32.

Installation Requirements for Use of Reliable Attic Sprinklers with Listed CPVC Pipe

Figure 31



Maintain at least 18" (450 mm) between CPVC pipe and heat producing or releasing devices.

Install sprinklers on CPVC pipe only in the following configurations: (1) directly mounted to a fitting on the branch line pipe, (2) on an angled sprig where the horizontal distance between the sprinkler and the branch line does not exceed 6" (150 mm), (3) on an armover sprig where the horizontal distance between the sprinkler and the branch line does not exceed 6" (150 mm), or (4) on a vertical sprig.

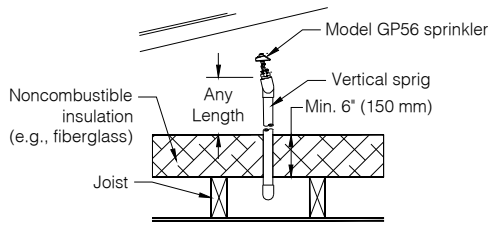
Locate a sprinkler within 1'-0" (300 mm) horizontally of CPVC risers

Branch lines over joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass). A maximum of 3'-0" (900 mm) of an angled sprig may extend above the insulation to supply Model GP56 and AH Series sprinklers.

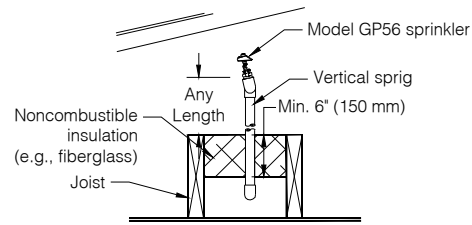
Branch lines over joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass). A maximum of 10'-0" (3 m) of a vertical sprig may extend above the insulation to supply Model GP56 sprinklers.

Branch lines between joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A maximum of 3'-0" (900 mm) of an angled sprig may extend above the insulation to supply Model GP56 and AH Series sprinklers.

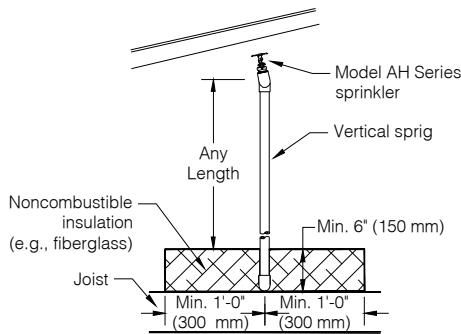
Branch lines between joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A maximum of 3'-0" (900 mm) of an angled sprig may extend above the insulation to supply Model GP56 and AH Series sprinklers.



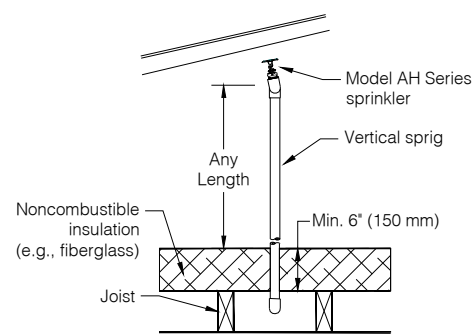
Branch lines between joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A maximum of 10'-0" (3 m) of a vertical sprig may extend above the insulation to supply Model GP56 sprinklers.



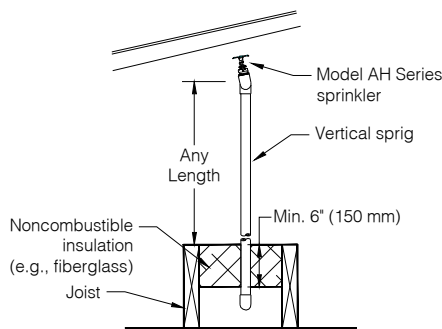
Branch lines between joists must be protected with a minimum 6" (150 mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A maximum of 10'-0" (3 m) of a vertical sprig may extend above the insulation to supply Model GP56 sprinklers.



Branch lines over joists must be protected with a minimum 6" (150mm) thickness of noncombustible insulation (e.g., fiberglass). A vertical sprig of any length may extend above the insulation to supply Model AH Series sprinklers.



Branch lines over joists must be protected with a minimum 6" (150mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A vertical sprig of any length may extend above the insulation to supply Model AH Series sprinklers.



Branch lines over joists must be protected with a minimum 6" (150mm) thickness of noncombustible insulation (e.g., fiberglass) either within the joist bay or on top of the joists. A vertical sprig of any length may extend above the insulation to supply Model AH Series sprinklers.

Caution:

1. Insulation required by Figures 30 and 31 is for fire protection purposes and not for freeze protection.
2. Follow installation requirements of the CPVC pipe manufacturer and listing, including verifying compatibility of any insulation or other materials used with CPVC pipe.
3. Sprig ups to Model GP56 and AH Series sprinklers must be properly secured and supported in accordance with NFPA 13 requirements.

Installation

Model DD Series, Model GP56, and Model AH Series sprinklers are installed with the W2 wrench. The Model DS56 wrench is used to install Model DS56 sprinklers. The use of any other wrench to install Reliable Attic sprinklers is not permitted and may damage the sprinkler. Place the specified wrench over the sprinkler until the wrench engages the wrench flats. Do not wrench any other part of the sprinkler assembly. Tighten the sprinkler into the fitting after applying a PTFE based thread sealant to the sprinkler's threads. Recommended installation torque is specified in Table J.

| Installation Torque | | Table J |
|----------------------|---|---------|
| Sprinkler Threads | Recommended Installation Torque (min. – max.) | |
| | ft-lb | N-m |
| ½" NPT or ISO7-1R1/2 | 8-18 | 11-24 |
| ¾" NPT or ISO7-1R3/4 | 14-20 | 19-27 |

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



Maintenance

Reliable Attic sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, 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). Replace any sprinkler which has been 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.

Listing & Approval Agency

Underwriters Laboratories, Inc. and UL Canada (cULus)
Listing Category: Sprinklers, Automatic and Open
Guide Number: VNIV, VNIV7

Guarantee

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

Ordering Information

Specify the following when ordering.

Sprinkler

- Model (DD56-6, DD56-27, DD80-6, DD80-27, DS56, GP56, AH42, AH56)
- Threads (NPT or ISO 7-1)

Sprinkler Wrench

- Model W2 (for Model DD Series, Model GP56, and Model AH Series sprinklers)
- Model DS56 (for Model DS56 sprinklers)