

# **SPECIFIC APPLICATION MODEL "IC" INTERSTITIAL COMBUSTIBLE CONCEALED SPACE UPRIGHT SPRINKLER GL5608**

## **GENERAL DESCRIPTION**

The Globe Series GL-SS/IC GL5608 Interstitial Combustible Space Sprinkler is a quick response, upright, specific application sprinkler designed to provide protection of light hazard combustible and non-combustible concealed spaces, inclusive of interstitial (between floors) or attic spaces (with slopes 2:12 or less). Each GL5608 sprinkler can be designed for up to 16ft x 16ft (4.9m x 4.9m) spacing, providing as much as 256 ft<sup>2</sup> (23.8m<sup>2</sup>) of protection per sprinkler.

The GL5608 sprinkler meets the requirements of Underwriters Laboratories UL 199H to comply with criteria for the protection of combustible concealed spaces as described in NFPA 13.

When heat is absorbed, liquid within the glass bulb expands, increasing the internal pressure. At the prescribed temperature the internal pressure within the ampule exceeds the strength of the glass causing the glass to shatter. This results in water discharge which is distributed in an approved pattern.

## **APPLICATION**

The GL-SS/IC GL5608 can be designed for installation in CPVC wet pipe sprinkler systems and steel wet pipe or dry pipe sprinkler systems. The GL5608 can be used in concealed spaces having roof pitch of 2 in 12 or less constructed of wood truss, non-combustible bar joist, solid wood joists, or composite wood joists. The specific design requirements for each type of piping system, and construction materials can be found in the following sections of this document.

## **NFPA 13 REQUIREMENTS**

Sprinklers shall be Listed for use in combustible concealed spaces (with a slope not exceeding 2 in 12) with combustible wood truss, wood joist construction, or bar joist construction having a combustible upper surface and where the depth of the space is less than 36" (914.4mm) from deck to deck or with double wood joist and composite wood joist construction with a maximum of 36" (914.4mm) between the top of the bottom joist and the bottom of the upper joist.

## **HYDRAULIC DESIGN AREA**

For all pipe and construction types the design area shall be 1000 ft<sup>2</sup> (92.9m<sup>2</sup>) except for Steel Pipe Systems with insulation filled joists, the design area shall be in accordance with the Light Hazard Systems requirements of NFPA 13.

## **SPRINKLER COVERAGE AREA**

The coverage area of any single GL-SS/IC Sprinkler shall utilize the SxL rule for all sprinkler spacings (i.e. 16 x 10 = 160 sq. ft. X 0.10 = 16 gpm).



**GL5608**

## **SERIES GL-SS/IC UPRIGHT SPRINKLER:**

The Globe GL-SS/IC GL5608 Interstitial Combustible Upright Sprinkler has been Listed to be used beyond the 36" (914.4mm) height to a height of 60" (1.5m) to provide more functionality in installation specifically in areas where the height of the concealed space is both above and below the height of 36" (914.4mm).

## **TECHNICAL DATA**

- cULus Listed for coverage areas up to 256 ft<sup>2</sup> (23.8 m<sup>2</sup>)
- 16 ft (4.9 m) maximum and 6 ft (1.8 m) minimum Sprinkler Spacing
- Maximum Open Space Height 60 in (1.5 m)
- Temperature Ratings - 175°F (79°C), 200°F (93°C)
- Finish - Factory Bronze
- Water Working Pressure Rating - 175 psi (12 Bars)
- Maximum low temperature glass bulb rating -67°F (-55°C)
- Materials of Construction, Frame - bronze, Deflector - brass, Screw - brass, Bulb seat - copper, Spring - nickel alloy, Seal - teflon, Bulb - glass with alcohol based solution, 3mm size

**TABLE A GENERAL INSTALLATION ALLOWANCES**

CONSTRUCTION TYPE	STEEL PIPING			CPVC PIPING			COVERAGE AREA Feet <sup>2</sup> (Meters <sup>2</sup> )	DISTANCE BETWEEN SPRINKLERS Feet (Meters)		
	OPEN SPACE HEIGHT		TOTAL ALLOWED SPACE HEIGHT <sup>1</sup> Inches (mm)	OPEN SPACE HEIGHT		TOTAL ALLOWED SPACE HEIGHT <sup>1</sup> Inches (mm)				
	MINIMUM Inches (mm)	MAXIMUM Inches (mm)		MINIMUM Inches (mm)	MAXIMUM Inches (mm)					
Unobstructed Wood Truss	6 (152)	60 (1524)	60 (1524)	6 (152)	60 (1524)	60 (1524)	256 (78.0) MAXIMUM	6 (1.8) MINIMUM 16 (4.9) MAXIMUM		
Non-Combustible Bar Joist										
Obstructed Wood Truss	6 (152)	60 (1524)	84 (2134)	N/A	N/A	N/A				
Solid Wood Joist										
Insulation Filled Joist	6 (152)	60 (1524)	72 (1829) <sup>2</sup>	6 (152)	60 (1524)	72 (1829) <sup>2</sup>				

NOTE: METRIC CONVERSIONS ARE APPROXIMATE.

<sup>1</sup> WHEN TRUSS OR JOIST SPACE IS NONINSULATION FILLED, THE MAXIMUM ALLOWED TOP MEMBER DEPTH IS 12" (305 mm).

<sup>2</sup> UP TO 12" (305mm) LOWER MEMBER SPACE.

**TABLE B SPRINKLER SPECIFICATION AND APPROVALS**

STYLE	SIN MODEL	NOMINAL "K" FACTOR	HAZARD <sup>1</sup>	THREAD SIZE	SPRINKLER LENGTH	FINISH	TEMPERATURE RATING		PRESSURE RATING	MAX. LOW TEMP. BULB RATING	cULus
							175°F (79°C)	200°F (93°C)			
UPRIGHT	GL5608	5.6 (80 metric)	LH	1/2" NPT (15mm)	2 1/4" (5.7cm)	Factory Bronze	X	X	175 psi (12 Bars)	-67°F (-55°C)	X

NOTE:

<sup>1</sup> METRIC CONVERSIONS ARE APPROXIMATE.

<sup>2</sup> SPRINKLERS SHALL BE LIMITED AS PER THE REQUIREMENTS OF NFPA13 AND ANY OTHER RELATED DOCUMENTS.

## OBSTRUCTION CRITERIA

For systems where the Globe "IC" Upright Sprinklers are positioned with 15' (4.6m) or less between sprinklers the Globe "IC" Upright Sprinkler must use the obstruction requirements for standard spray upright sprinklers.

For systems where the Globe "IC" Upright Sprinklers are positioned with greater than 15' (4.6m) between sprinklers

the Globe "IC" Upright Sprinkler must use the obstruction requirements for extended coverage upright sprinklers.

NOTE:

<sup>1</sup> WEB MEMBERS AND GUSSETS SHALL NOT BE CONSIDERED OBSTRUCTIONS PROVIDED THE MINIMUM 4-1/2 INCH LATERAL DISTANCE REQUIRED BY THE SPECIFIC APPLICATION LISTING IS MAINTAINED.

## CPVC DESIGN REQUIREMENTS

### SYSTEM TYPE

Wet pipe system.

### ALLOWABLE CONSTRUCTION TYPES

- Unobstructed wood truss construction<sup>1</sup>
- Unobstructed bar joist construction<sup>1</sup>
- Non-combustible insulation filled solid wood joist construction<sup>2</sup>
- Non-combustible insulation filled composite wood joist construction<sup>2</sup>

NOTE:

<sup>1</sup> Upper joist/truss cannot be more than 4" (101.6mm) in height.

<sup>2</sup> The joist space in non-combustible insulation filled joist construction must be completely filled with noncombustible insulation and secured in place by metal wire netting to hold the insulation in place in the event of a fire.

### PARTITION REQUIREMENTS

The concealed space being protected must be broken up into areas no greater than 1000 square feet either by full height walls or by draft curtains.

### DRAFT CURTAINS

When draft curtains are used they must be 8" (203.2mm) in height or one third of the depth of the concealed space, whichever is greater. Draft curtains must be constructed of a material that will not allow for heat to escape through or above them.

## DEFLECTOR POSITION

- 1 ½ to 4 inches below the upper deck for unobstructed wood truss and bar joist constructions. Deflector must be below the bottom of the top chord in trusses or below bottom of joist.
- 1 ½ to 4 inches below the joists for non-combustible insulation filled solid and composite wood joist constructions.
- 4 ½ inches away from trusses.

## CONCEALED SPACE SIZE

All spaces must have a minimum open space (from top of lower joist, cord, or truss to bottom of upper joist, cord, or truss) of 6" (152.4mm). (see **Figures 1 and 2**)

Unobstructed wood truss and bar joist construction must not have a total bottom of floor to top of ceiling space height of more than 60" (1.5m). (see **Figure 2**)

Joist construction with noncombustible insulation in the upper deck must not have an open space (from top of lower joist to bottom of upper joist) of greater than 60 inches in size. They must not have a total concealed space height of greater than 72" (1.8m). This allows for a maximum lower joist space of 12" (304.8mm).

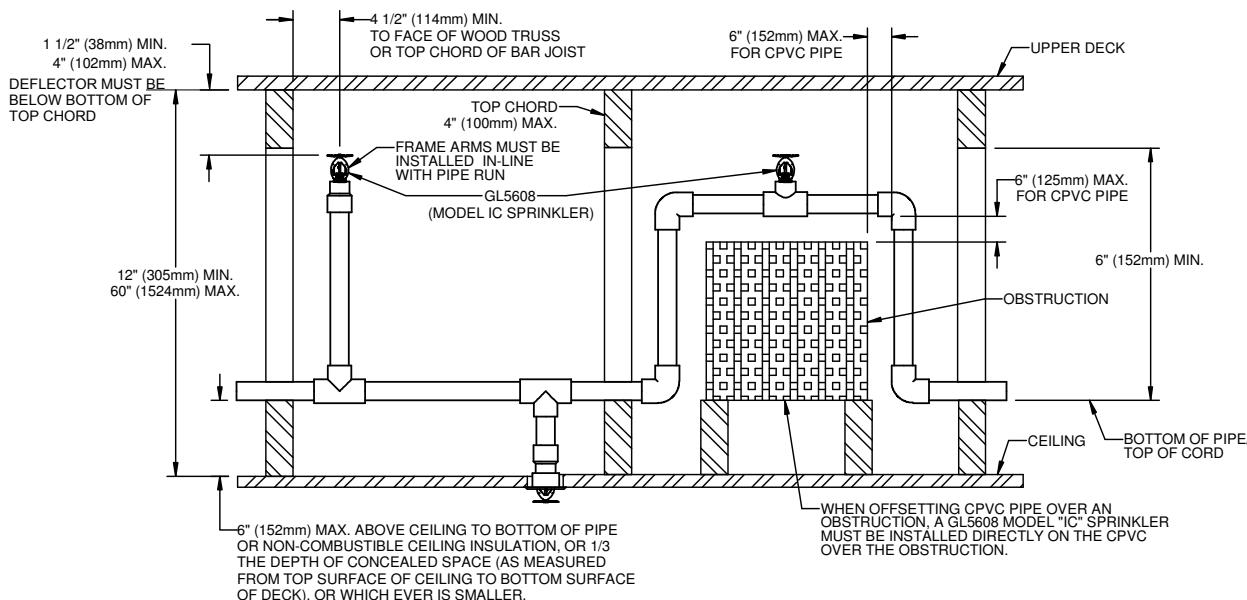
Solid wood joist and obstructed truss construction must not have an open space (from top of lower joist or truss to bottom of upper joist or truss) of greater than 60"(1.5m) in size. They must not have a total concealed space height of greater than 84"(2.1m). The upper joist space must not be greater than 12"(304.8mm) in depth (see **Figure 2**)

## CPVC PIPE INSTALLATION

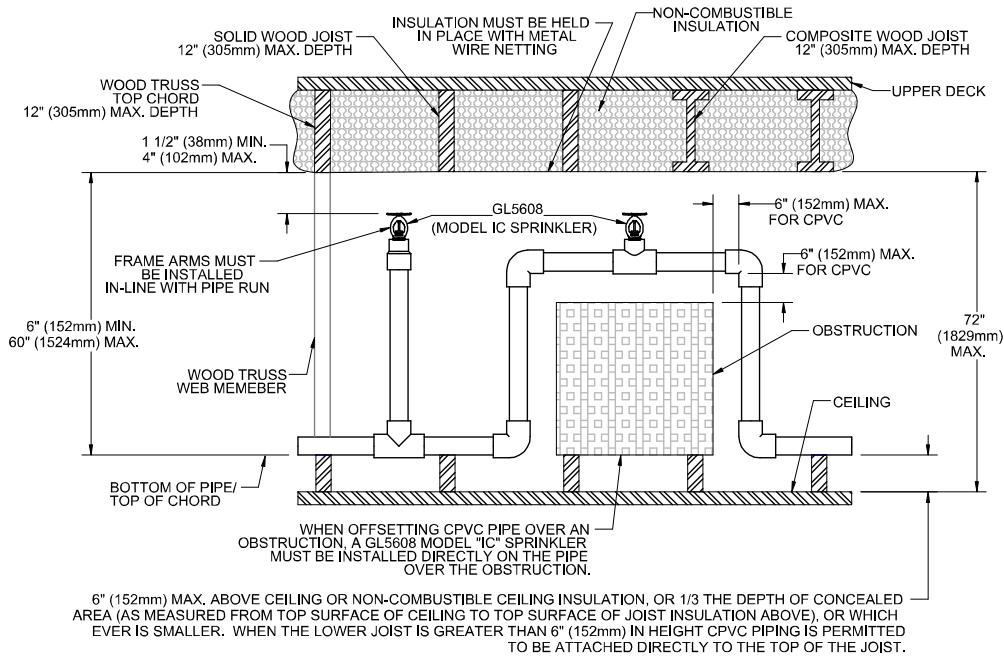
Horizontal runs of CPVC piping must be located with the bottom of the piping not more than 6" (152.4mm) above the ceiling below or above ceiling insulation (if present), or one third depth of the combustible concealed space as measured between the top surface of the ceiling below to the bottom of the floor above or the bottom of the noncombustible insulation above. Whichever is smaller.

When the lower joists are greater than 6"(152.4mm) in height, CPVC piping is permitted to be attached directly to the top of the joist. The CPVC piping can be used to supply the Globe "IC" Upright Sprinklers as well as the sprinklers protecting the space below.

When using 1" (DN25) or larger pipe, a hanger must be located at the truss nearest a sprig for purposes of restraint. If using ¾" (DN19) piping, all sprigs over 12" (304.8mm) must be laterally braced using methods described in the NFPA standards. Where CPVC piping must be offset to go over an obstruction that will violate the horizontal positioning requirements the CPVC piping must be spaced not greater than 6 inches from that obstruction and an additional Globe IC Upright Sprinkler must be provided to protect the section of CPVC piping (see Figure 1 and 2). CPVC piping must be kept a minimum of 18" (457.2mm) laterally away from heat sources such as heat pumps, fan motors, and heat lamps.



**FIGURE 1: CPVC PIPE UNOBSTRUCTED WOOD TRUSS AND BAR JOIST CONSTRUCTION**



**FIGURE 2: CPVC PIPE NON-COMBUSTIBLE INSULATION FILLED UPPER DECK SOLID WOOD, COMPOSITE WOOD JOIST, OR WOOD TRUSS CONSTRUCTION**

## STEEL PIPING DESIGN REQUIREMENTS

### SYSTEM TYPE

Wet pipe system and dry type systems.

### ALLOWABLE CONSTRUCTION TYPES

- Unobstructed wood truss construction<sup>1</sup>
- Unobstructed bar joist construction<sup>1</sup>
- Solid wood joist construction<sup>2</sup>
- Obstructed wood truss construction<sup>2</sup>
- Non-combustible insulation filled solid wood joist construction<sup>3</sup>
- Non-combustible insulation filled composite wood joist construction<sup>3</sup>

NOTE:

<sup>1</sup> Upper joist/truss cannot be more than 4" (101.6mm) in height.

<sup>2</sup> Upper joist/truss cannot be more than 12" (304.8mm) in height.

<sup>3</sup> The joist space in non-combustible insulation filled joist construction must be completely filled with noncombustible insulation and secured in place by metal wire netting to hold the insulation in place in the event of a fire.

### PARTITION REQUIREMENTS

For unobstructed wood truss construction, unobstructed bar joist construction, solid wood joist construction, and obstructed wood truss construction the concealed space being protected must be broken up into areas no greater than 1000 square feet either by full height walls or by draft curtains.

Noncombustible insulation filled joist construction is not required to be broken up into partitioned areas.

### DRAFT CURTAINS

Draft Curtain for Unobstructed wood truss construction and noncombustible bar joist construction must be 8" (203.2mm) in height or one third of the depth of the concealed space, whichever is greater. Draft curtains must be constructed of a material that will not allow for heat to escape through or above them.

Draft Curtain for Obstructed wood truss and solid wood joist construction must be 6" (152.4mm) in height or one third of the depth of the concealed space, whichever is greater. Draft curtains must be constructed of a material that will not allow for heat to escape through or above them.

### DEFLECTOR POSITION

- 1 1/2 to 4 inches below the upper deck for unobstructed wood truss and bar joist constructions. Deflector must be below the bottom of the top chord in trusses or below bottom of joist.
- 1 1/2 to 4 inches below the joists for noncombustible insulation filled solid and composite wood joist construction.
- 1 1/2 to 2 inches below the joist or truss for solid wood joist or obstructed truss construction.
- 4 1/2 inches away from trusses

### BLOCKING

For solid wood joist and obstructed wood truss construction blocking must be provided in each of the channels between the upper joists or trusses. The blocking must be located where the draft curtains intersect the channels. The blocking must be installed to the full depth of the joists and be installed as to not allow heat to escape through or above the blocking. The blocking must be installed using either the same material as the joists or a noncombustible material.

## CONCEALED SPACE SIZE

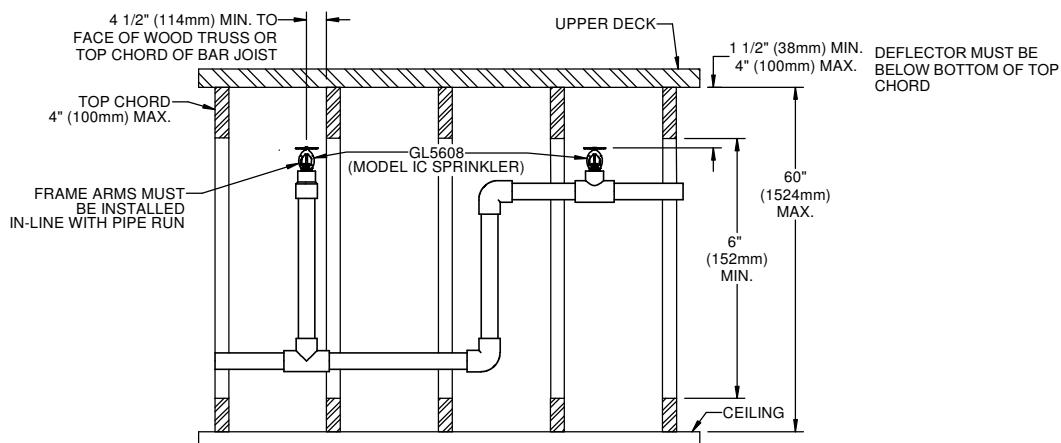
All spaces must have a minimum open space (from top of lower joist, cord, or truss to bottom of upper joist, cord, or truss) of 6"(152.4mm) (see Figures 3, 4, and 5).

Unobstructed wood truss and bar joist construction must not have a total concealed space height of more than 60"(1.5m). (see Figure 3).

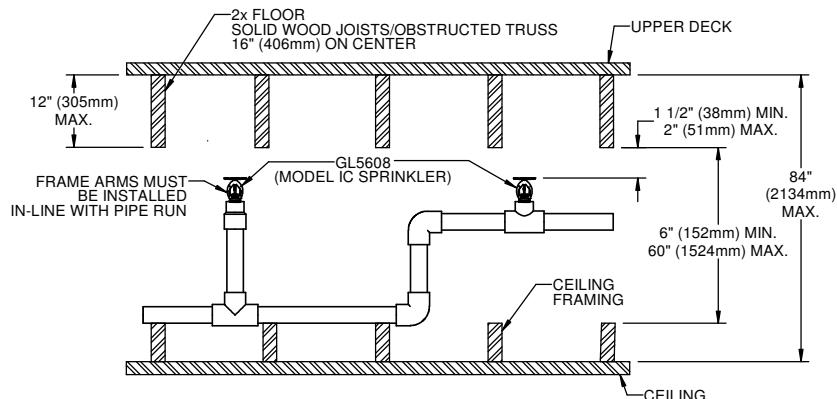
Joist construction with noncombustible insulation in the upper deck must not have an open space (from top of lower joist to bottom of upper joist) of greater than 60"(1.5m) in

size. They must not have a total concealed space height of greater than 72"(1.8m). This allows for a maximum lower joist space of 12"(304.8mm) (see Figure 4).

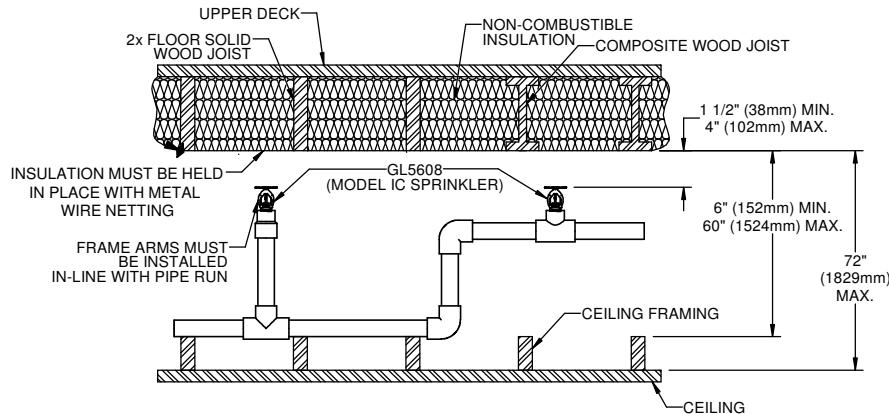
Solid wood joist and obstructed truss construction must not have an open space (from top of lower joist or truss to bottom of upper joist or truss) of greater than 60"(1.5m) in size. They must not have a total concealed space height of greater than 84"(2.1m). The upper joist space must not be greater than 12"(304.8mm) in depth (see Figure 4).



**FIGURE 3: STEEL PIPE UNOBSSTRUCTED WOOD TRUSS OR NON-COMBUSTIBLE BAR JOIST CONSTRUCTION**



**FIGURE 4: STEEL PIPE OBSTRUCTED WOOD TRUSS OR SOLID WOOD JOIST CONSTRUCTION**



**FIGURE 5: STEEL PIPE NON-COMBUSTIBLE INSULATION FILLED UPPER DECK SOLID WOOD OR COMPOSITE WOOD JOIST CONSTRUCTION**

## ORDERING INFORMATION

Quantity • SIN • Style • Orifice • Thread Size  
 Temperature • Finishes • Desired Quantity  
 Wrench - P/N 325390

## GLOBE® PRODUCT WARRANTY

Globe agrees to repair or replace any of its own manufactured products found to be defective in material or workmanship for a period of one year from date of shipment.

For specific details of our warranty please refer to Price List Terms and Conditions of Sale (Our Price List).

4077 Airpark Dr.  
 Standish, MI 48658  
 Ph. 989-846-4583

Technical Support  
 1-800-248-0278  
[techservice@globesprinkler.com](mailto:techservice@globesprinkler.com)

[www.globesprinkler.com](http://www.globesprinkler.com)

