Model CC1

Combustible Concealed Space Sprinklers™

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General Description

The Central Model CC1 Combustible Concealed Sprinklers are specific application sprinklers designed to provide protection of specific light hazard combustible, as well as non-combustible, concealed spaces requiring sprinkler protection. The Model CC1 Sprinklers can in some cases allow for the use of Blazemaster® CPVC piping within concealed spaces requiring automatic sprinkler protection.

When using the Model CC1 Sprinklers with Blazemaster CPVC piping, the system can be installed in wood truss construction. Until recently, the listing of CPVC piping for fire protection systems did not allow the use of CPVC piping in combustible concealed spaces requiring automatic sprinkler protection. With the extensive full scale fire testing of the Central Model CC1 Combustible Concealed Space Sprinklers, performed at UL, Blazemaster CPVC may now be used in the specified combustible concealed spaces requiring automatic sprinkler protection, when installed in accordance with this Technical Data Sheet.

As an added feature, the Model CC1 Sprinklers can now be used with steel piping for the protection of solid wood joist construction.

The effectiveness of the Model CC1 Sprinklers, in the combustible concealed spaces investigated, was clearly evident during the full scale fire testing for this product. Concealed spaces between floors, as well as low pitch attics are inherently shallow. Standard spray sprinklers by design have an umbrella like spray pattern that poses a difficult challenge when trying to achieve effective coverage within a shallow space. The Model CC1 Combustible Concealed Space Sprinklers have addressed the difficult "above ceiling" fire challenge.

Operation. The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, which allows the sprinkler to activate and flow water.

WARNINGS

The Model CC1 Combustible Concealed Space Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the integrity of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

Technical Data

Sprinkler Identification Number
SIN C1189

Approvals
UL and C-UL Listed.
(Listings and approvals only apply to the service conditions indicated in the Design Criteria sections.)

Maximum Working Pressure
175 psi (12.1 bar)

Pipe Thread Connection
1/2 inch NPT

Discharge Coefficient
K = 3.0 GPM/psi$^{1/2}$
(43.2 LPM/bar$^{1/2}$)

Specific Application Combustible Concealed Space Sprinklers

Temperature Ratings
175°F/79°C

Finish
Natural Brass

Physical Characteristics
The Model CC1 utilizes a 3 mm diameter glass bulb and a dezincification resistant bronze alloy frame. The frame orifice is sealed with a gasketed spring plate (Belleville Seal) consisting of a beryllium nickel disc spring that is sealed on both its inside and outside edges with a Teflon† gasket.

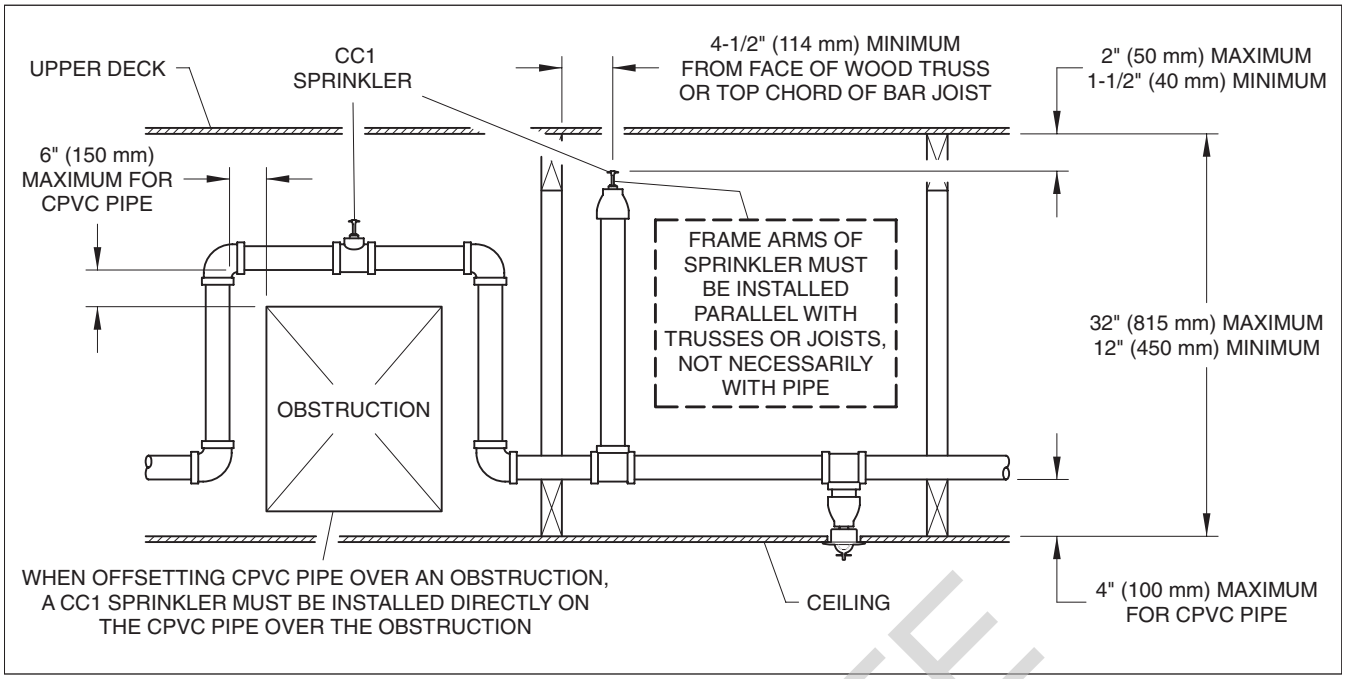

Figure 1
Wood Truss Construction or Non-Combustible Bar Joist Construction (CPVC Pipe)
Cross Section Elevation View

Design Criteria

Reference Figure 1

Area Of Use:
Flat concealed spaces of wood truss construction, or flat concealed spaces of non-combustible bar joist construction.

Concealed Space Area:
The area of the concealed space is not limited, however draft-curtains must be provided at 1000 ft^2 (93 m^2) areas. This draft curtain shall be at least 1/3 the depth of the wood truss or 8 inches (200 mm), whichever is greater and be constructed using a material which will not allow heat to escape through or above the draft curtain.

Concealed Space Size:
The depth of the concealed space is 32 inches (815 mm) maximum to 12 inches (305 mm) minimum.

System Type:
Light hazard, wet pipe system.

Minimum Distance Between CC1 Sprinklers:
6 feet (3.1 m). *Minimum spacing does not apply to any additional sprinklers required for protection of Blazemaster CPVC which is offset over an obstruction.*

Maximum Distance Between CC1 Sprinklers Located Just Below Upper Deck:
10 feet (3.1 m).

Maximum Coverage Area:
100 ft^2 (9.3 m^2)

Deflector Position:
Upright and 1-1/2 to 2 inches (40 to 50 mm) below upper deck

Minimum Distance Away From Trusses:
4-1/2 inches (114 mm)

Remote Area:
1000 ft^2 (93 m^2). *The remote area does not include any additional sprinklers required for protection of Blazemaster CPVC which is offset over an obstruction.*

Required Density:
0.10 gpm/ft^2 (4.1 mm/min).

Minimum Operating Pressure:
10 psi (0.7 bar).

Obstructions:
All obstruction criteria per NFPA for standard spray sprinklers apply, unless modified by this Technical Data Sheet.

UL Listed Use Of Blazemaster CPVC Piping With Model CC1 Sprinklers:
Only Blazemaster CPVC product may be used in concealed spaces requiring automatic sprinklers, when used in conjunction with Model CC1 Sprinklers. In order to use the Blazemaster CPVC product, the bottom of horizontally run pipe must be no greater than 4 inches (100 mm) above the ceiling. The CPVC piping, can then be used to supply the Model CC1 Sprinklers, as well as the sprinklers below the ceiling. Unless modified by this Technical Data Sheet, all other guidelines of the "Blazemaster — Installation Instructions & Technical Manual" must be met. When using 1 inch (DN25) or larger pipe, a hanger must be located at the truss nearest a sprig for purposes of restraint. If using 3/4 inch (DN19) piping, all sprigs over 12 inches (305 mm) must be laterally braced using methods described in the NFPA standards.

For this listing to use the Blazemaster CPVC product in concealed spaces requiring automatic sprinklers, a minimum lateral distance of 18 inches (450 mm) must be maintained between the CPVC and the edge of heat sources (e.g., fan motors, heat lamps, HVAC heat pump units, etc.).

Where the CPVC must be offset up and over an obstruction such that the bottom of the pipe will be located at greater than 4 inches (100 mm) above the ceiling, additional Model CC1 Sprinklers are to be installed as shown in Figure 1 to protect the Blazemaster CPVC product.

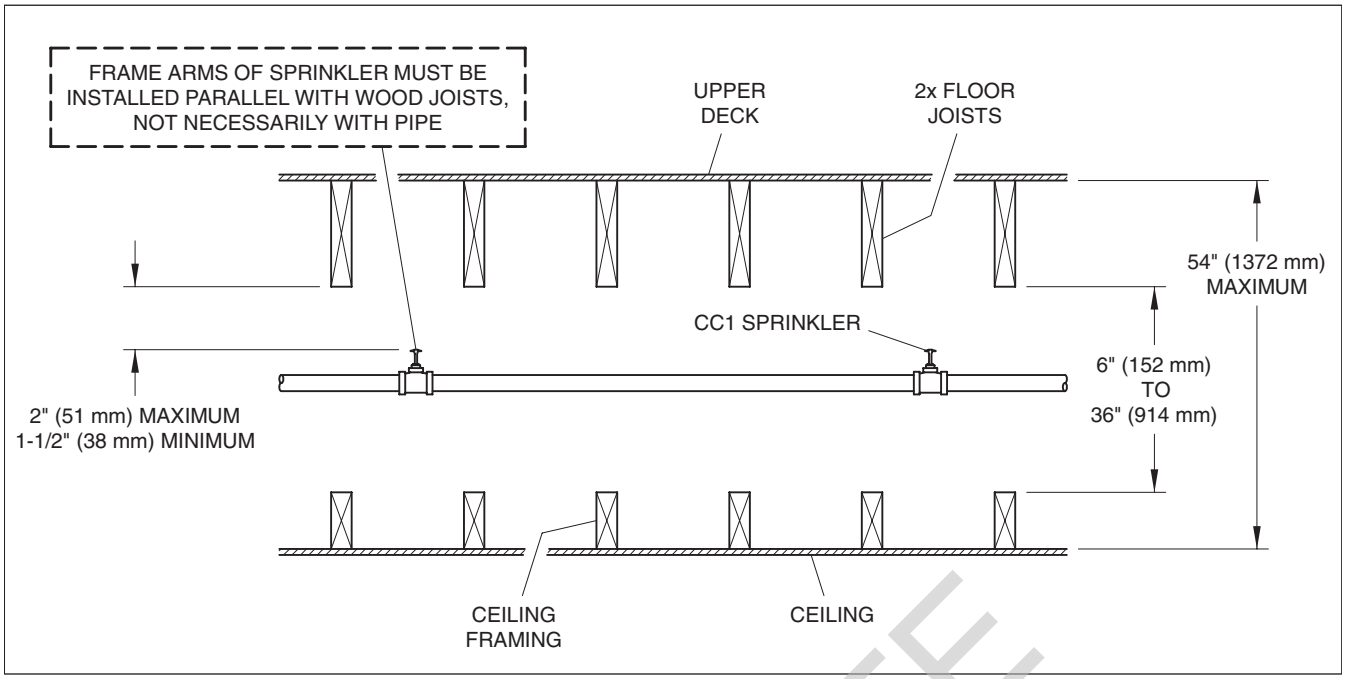

Figure 2
Solid Wood Joist Construction (Steel Pipe)
Cross Section Elevation View

Design Criteria

Reference Figure 2

Area Of Use:
Flat concealed spaces of solid wood joist construction. The upper deck and ceiling joists may have a maximum depth of 12 inches (300 mm) and typical on center joist spacing of minimum 16 inches (400 mm).

Concealed Space Area:
The area of the concealed space is not limited, however blocking must be provided in each upper deck and ceiling joist channel at a maximum 32 feet (9.75 m) intervals. This blocking shall be installed to the full depth of the joists and be constructed using a material which will not allow heat to escape through or above the blocking.

Concealed Space Size:
The minimum and maximum concealed space depth is as follows:

The maximum depth of the concealed space is 54 inches (1372 mm) from bottom of upper deck to top of ceiling, and the minimum depth is 6 inches (150 mm) from the bottom of the upper deck joists to the top of the ceiling joists.

System Type:
Light hazard, wet pipe system.

Minimum Distance Between CC1 Sprinklers:
6 feet (3.1 m).

Maximum Distance Between CC1 Sprinklers:
10 feet (3.1 m).

Maximum Coverage Area:
100 ft^2 (9.3 m2)

Deflector Position:
Upright and 1-1/2 to 2 inches (38 to 51 mm) below joists.

Remote Area:
1000 ft^2 (93 m^2).

Required Density:
0.10 gpm/ft^2 (4.1 mm/min).

Minimum Operating Pressure:
10 psi (0.7 bar).

Obstructions:
All obstruction criteria per NFPA for standard spray sprinklers apply, unless modified by this Technical Data Sheet.

Use Of Blazemaster CPVC Piping With Model CC1 Sprinklers:
Not applicable for solid wood joist construction.

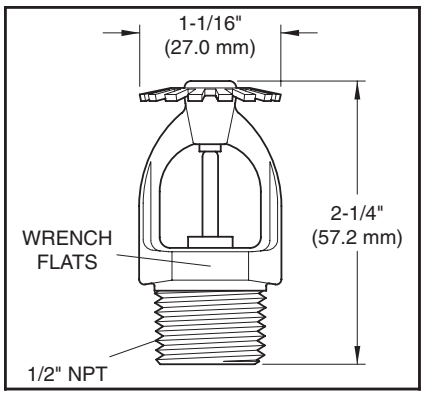

Figure 3
Model CC1 Sprinkler

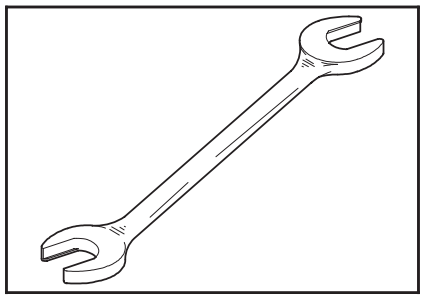

Figure 4
1106 Combination Sprinkler Wrench

Installation

The Model CC1 Sprinklers must be installed in accordance with the following instructions:

NOTES

The CC1 Sprinklers are to be installed upright and with their frame arms (ref. Figure 1 or 2, as applicable) parallel with the wood trusses, top chord of the bar joist, or wood joists, as opposed to being necessarily parallel with the pipe.

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1.6 mm) for the 175°F/79°C temperature rating.

A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft.lbs. (9.5 to 19.0 Nm). A maximum of 20 ft.lbs. (28.5 Nm) of torque is to be used to install sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

The Model CC1 Combustible Concealed Space Sprinklers must only be installed in the upright position with the deflector parallel to the upper deck. With pipe thread sealant applied to the pipe threads, use only the 1106 Combination Sprinkler Wrench (Figure 4) for installation of the Model CC1 Sprinklers by applying the wrench to the sprinkler wrench flats only.

Care & Maintenance

The Model CC1 Sprinklers must be maintained and serviced in accordance with the following instructions:

NOTE

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection systems must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be shipped or stored where their temperature will exceed 100°F/38°C and they must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb (ref. Installation Section).

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service.

Limited Warranty

Products manufactured by Tyco Fire Products are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by Tyco Fire Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire Products or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by Tyco Fire Products to be defective shall be either repaired or replaced, at Tyco Fire Products' sole option. Tyco Fire Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire Products shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

IN NO EVENT SHALL TYCO FIRE PRODUCTS BE LIABLE, IN CONTRACT, TORT, STRICT LIABILITY OR UNDER ANY OTHER LEGAL THEORY, FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LABOR CHARGES, REGARDLESS OF WHETHER TYCO FIRE PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE PRODUCTS' LIABILITY EXCEED AN AMOUNT EQUAL TO THE SALES PRICE.

THE FOREGOING WARRANTY IS MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Ordering Information

Ordering Procedure: When placing an order, indicate the full product name. Please specify the quantity, model, style, size, and wrench, as applicable. Refer to Price List for complete listing of Part Numbers.

Patents: Patents are pending.