

# Model S170

## Standard or Quick Response Standard Coverage Dry Pendent Sprinklers



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### General Description

The Central Model S170, 5.6 K-Factor (1/2 inch orifice), Standard or Quick Response, Standard Coverage, Dry Pendent Sprinklers are decorative glass bulb automatic sprinklers designed for use

- where pendent sprinklers are required on dry pipe systems that are exposed to freezing temperatures (e.g. sprinkler drops from unheated portions of buildings), or
- where sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures (e.g. sprinkler drops from wet systems into freezers), or
- where pendent sprinklers are used on systems that are seasonably drained to avoid freezing (e.g. vacation resort areas).

The Model S170 Dry Pendent Sprinklers are available in standard response (5 mm bulb) or quick response (3 mm bulb) and in a wide range of operating temperatures and order lengths. The Model S170 Sprinklers are intended for use in fire sprinkler systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (e.g., UL Listing is based on NFPA 13 requirements). They produce a hemispherical water discharge pattern below the deflector.

The Recessed, Standard, and Deep Ceiling Escutcheons for the Model S170 are separable two-piece designs which allow installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling. They also permit removal of suspended ceiling panels without having to first shut down the fire protection system and remove the sprinklers.

**Operation:** When the Model S170 is in service, water is prevented from entering the assembly by the Plug & O-ring (Ref. Figure 2) in the Inlet of the Sprinkler. 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, and the Bulb Seat is released. The compressed Spring is then able to expand and push the Water Tube as well as the Guide Tube outward. This action simultaneously pulls inward on the Yoke, withdrawing the Plug & O-ring from the Inlet, which then allows the sprinkler to activate and flow water.

#### WARNINGS

*The Model S170 Dry Pendent 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.*

*The Model S170 Dry Pendent Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.*



### Technical Data

**Sprinkler Identification Number**  
SIN C3255 (Standard Response)  
SIN C3235 (Quick Response)

**Approvals**  
UL and ULC Listed. FM Approved.  
(Refer to Table A)



### Recessed, Standard, and Deep Ceiling Escutcheons

**Maximum Working Pressure**  
175 psi (12,1 bar)

**Pipe Thread Connection**  
1 inch NPT or ISO 7-R1

**Discharge Coefficient**  
K = 5.6 GPM/psi<sup>1/2</sup>  
(80,6 LPM/bar<sup>1/2</sup>)

**Temperature Ratings**  
Refer to Table A

**Finishes**  
Sprinkler: Natural Brass, Chrome Plated, White Polyester  
Escutcheon: White Coated or Chrome Plated  
(Colors other than white are available on request.)

**Physical Characteristics**  
The Plug and Inlet are brass, and the O-ring is silicone rubber. The Casing is galvanized carbon steel. The Frame is bronze, the Deflector is brass, and the Compression

		SPRINKLER FINISH								
		w/ Recessed Escutcheon "A" Order Length: 3-1/2 to 48 inches (88,9 to 1219,2 mm)			w/ Standard Escutcheon "A" Order Length: 2-1/2 to 48 inches (63,5 to 1219,2 mm)			w/ Deep Ceiling Escutcheon "A" Order Length: 1/2 to 46 inches (12,7 to 1168,4 mm)		
Temperature Rating	Bulb Color Code	Natural Brass	Chrome Plated	Polyester (All Colors)	Natural Brass	Chrome Plated	Polyester (All Colors)	Natural Brass	Chrome Plated	Polyester (All Colors)
135°F/57°C	Orange	1, 2, 3		1, 2	1, 2, 3		1, 2	1, 2, 3		1, 2
155°F/68°C	Red	1, 2, 3		1, 2	1, 2, 3		1, 2	1, 2, 3		1, 2
175°F/79°C	Yellow	1, 2, 3		1, 2	1, 2, 3		1, 2	1, 2, 3		1, 2
200°F/93°C	Green	1, 2, 3		1, 2	1, 2, 3		1, 2	1, 2, 3		1, 2
286°F/141°C	Blue	N/A			1, 2, 3		1, 2	1, 2, 3		1, 2
360°F/182°C*	Mauve	N/A			1, 2, 3		1, 2	1, 2, 3		1, 2

**Notes:**

- Listed by Underwriters Laboratories, Inc.
- Listed by Underwriters' Laboratories of Canada.
- Approved by Factory Mutual Research Corporation. (FM limits Quick Response Sprinklers to wet pipe systems.)

\* Available in Standard Response Only.  
N/A - Not Available.

**Table A**  
**Model S170 Standard and Quick Response Dry Pendent Sprinkler Laboratory Listings and Approvals**

Screw is bronze. The Water Tube is brass, and the Bulb Seat, Spring, and Yoke are stainless steel. The Guide Tube sub-assembly is constructed of stainless steel and brass. The two pieces of the three available Escutcheons are low carbon steel.



The Model S170 Dry Sprinklers are to be installed in the 1 inch NPT outlet of a malleable iron threaded tee fitting per ANSI B16.3 or cast iron threaded tee fitting per ANSI B16.4 with the end sprinkler fitting on a branch line to be plugged as shown in Figure 1. Only use maximum 2-1/2 inch size reducing tee's for dry pipe sprinkler systems.

**NOTES**

*Do not install the Model S170 into any other type fitting without first consulting the Technical Services Department. Failure to use the appropriate fitting may result in: failure of the sprinkler to properly operate due to formation of ice over the inlet Plug or binding of the inlet Plug; or, insufficient engagement of the inlet pipe threads with consequent leakage.*

*In the case of a dry pipe sprinkler system subject to freezing, the use of a fitting of other than the types specified may result in failure of the*

*sprinkler to properly operate due to the formation of ice over the Inlet.*

Branch, cross, and feedmain piping connected to Dry Sprinklers and subject to freezing temperatures must be pitched for drainage in accordance with the minimum requirements of the National Fire Protection Association for dry pipe sprinkler systems.

When Dry Sprinklers are to be used in wet pipe sprinkler systems protecting areas subject to freezing temperatures (e.g., sprinkler drops into freezers), consideration must be given to the appropriate length of the sprinkler that will prevent freezing of the water in the connecting pipes due to conduction. When the temperature surrounding the wet pipe sprinkler system is maintained at a minimum temperature of 40°F/4°C, the following are the minimum recommended lengths between the face of the sprinkler fitting and the outside surface of the protected area (i.e., length exposed to minimum ambient of 40°F/4°C):

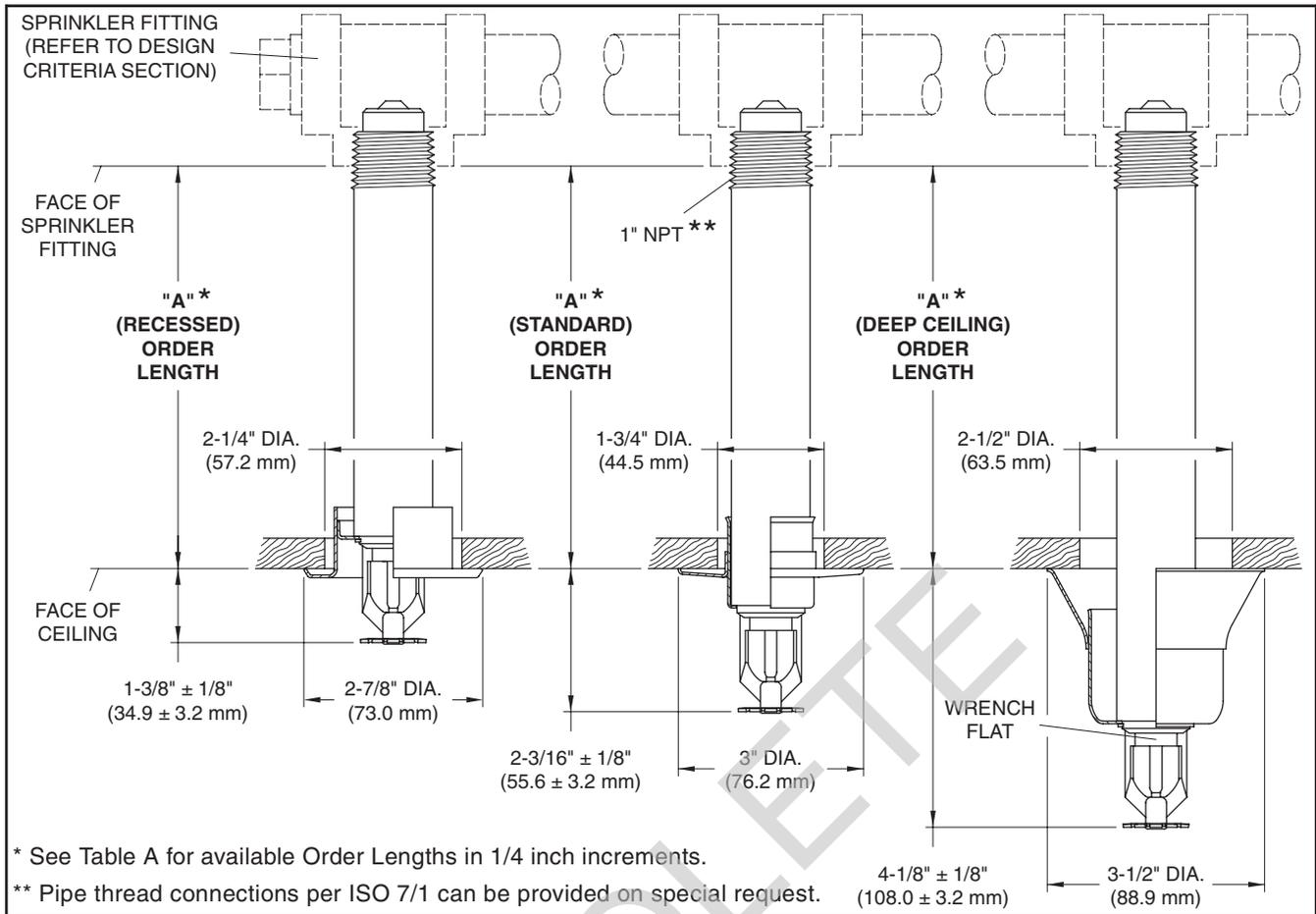
- 12 inches (300 mm) when the temperature within the protected area is -20°F/-29°C
- 18 inches (450 mm) when the temperature within the protected area is -40°F/-40°C
- 24 inches (600 mm) when the temperature within the protected area is -60°F/-51°C

For protected area temperatures be-

tween those given above, the minimum recommended length from the face of the fitting to the outside of the protected area may be determined by interpolating between the indicated values.

**NOTE**

*When Dry Sprinklers penetrate a ceiling into an area subject to freezing, the clearance space around the Sprinkler Casing must be completely sealed in order to prevent the leakage of moist air into the freezing area which might result in the formation of condensate around the Frame, Deflector, Bulb Seat, or Bulb. Failure to prevent the formation of condensate could result in the build-up of ice around the releasing components and, consequently, either an inadvertent operation of the sprinkler or impaired operation due to reduced thermal sensitivity.*



**Figure 1**  
**Model S170 Dry Pendent Sprinkler Installation Dimensions**

## Installation

The Model S170 must be installed in accordance with the following instructions:

### NOTES

The Model S170 must only be installed in fittings that meet the requirements of the Design Criteria section.

Refer to the Design Criteria section for other important requirements regarding piping design and sealing of the clearance space around the Sprinkler Casing.

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 135°F/57°C rating to 1/8 inch (3,2 mm) for the 360°F/182°C rating.

A leak tight 1 inch NPT sprinkler joint should be obtained with a

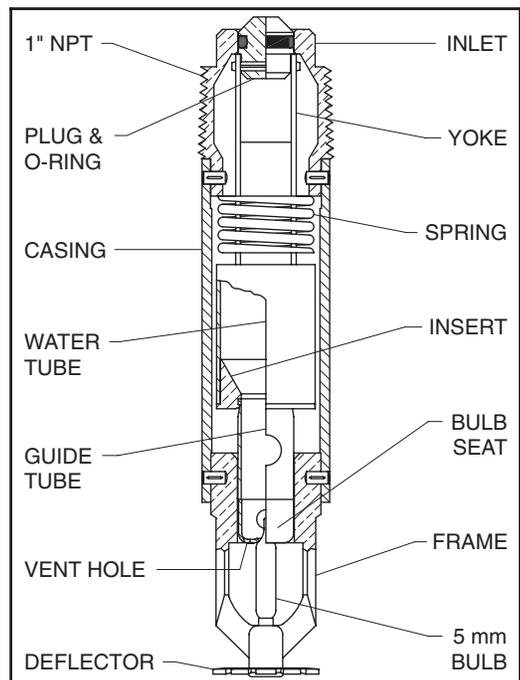
torque of 20 to 30 ft.lbs. (26,8 to 40,2 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

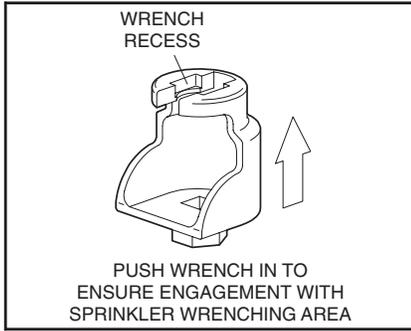
**Step 1.** The sprinkler must be installed only in the pendent position and with the deflector parallel to the mounting surface.

**Step 2.** With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

**Step 3.** Wrench tighten the sprinkler by wrenching on the Casing with a pipe wrench whenever the casing is readily accessible. Otherwise, use a W-Type 7 Sprinkler Wrench (Ref. Figure 3). The wrench recess of the W-Type 7 is to be applied to the sprinkler wrench flats (Ref. Figure 1).



**Figure 2**  
**Model S170**  
**Dry Pendent Sprinkler Assembly**



**Figure 3**  
**W-Type 7 Sprinkler Wrench**

**Step 4.** After a suspended ceiling has been installed or the finish coat has been applied to a fixed ceiling (as applicable), slide on the outer piece of the Escutcheon until it comes in contact with the ceiling. Do not lift the ceiling panel out of its normal position.

In the case of the outer piece of the Deep Ceiling Escutcheon, hold the outer piece in contact with the mounting surface (ceiling), and then rotate the inner piece approximately 1/4 turn with respect to the outer piece, to hold the Deep Escutcheon firmly together.



## Care & Maintenance

The Model S170 must be maintained and serviced in accordance with the following instructions:

### NOTES

*Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.*

*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.*

*A Vent Hole is provided in the Bulb Seat (Ref. Figure 2) to indicate if the Dry Sprinkler is remaining dry. Evidence of leakage from the Vent Hole is an indication that there may be weepage past the O-ring seal and, therefore, it is an indication that the sprinkler needs to be removed for determining the cause of leakage (e.g. an improper installation or an ice plug). The fire protection system con-*

*trol valve must be closed and the system drained before removing the sprinkler.*

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 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/slip-page, 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.

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**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 Information:

1. When placing an order, indicate the full product name. Please include the quantity, model, response characteristic, style of escutcheon, temperature rating, finish, and order length.

*Dry Sprinklers are furnished based upon Order Length as measured from the face of the ceiling to the face of the sprinkler fitting in which the individual sprinkler is to be installed. After the measurement is taken, round it to the nearest 1/4 inch increment.*

2. W-Type 7 Sprinkler Wrench.

### Patents:

U.S.A. Patent Number 5,188,185 is applicable to the Model S170 Dry Pendent Sprinklers.