STAR

Standard Response
Standard Coverage
Dry Upright Sprinklers
Luminous™ S170, 5 mm Bulb

GENERAL DESCRIPTION

The Star Luminous S170, 5.6 K-Factor, Standard Response Dry Upright Sprinklers are glass bulb automatic sprinklers designed for use where sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures (e.g. sprinkler sprigs into unheated attics).

The Luminous S170, 5 mm Bulb, Dry Upright Sprinklers are “standard response - standard orifice spray sprinklers” and are available in a wide range of operating temperatures and order lengths. The Luminous 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.

WARNINGS

The Luminous S170 Standard Response, Dry Upright 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 Luminous S170 Standard Response, Dry Upright Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.

OPERATION

When the Luminous 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.

TECHNICAL DATA

Approvals
UL and ULC Listed. FM Approved.
NYC Approved (MEA 212-98-E).
(Refer to Table A.)

Maximum Working Pressure
175 psi (12.1 bar)

Discharge Coefficient
K = 5.6 GPM/psi¹/² (80.6 LPM/bar¹/²)

Temperature Ratings
Pendent: 135°F/57°C to 360°F/182°C (Refer to Table A)

Finishes
Sprinkler: Natural Brass, Chrome Plated, White Polyester

Physical Characteristics (Ref. Figure 1)
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 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.

Patents
U.S.A. Patent Number 5,188,185 is applicable to the Luminous S170 Dry Upright Sprinklers.

DESIGN CRITERIA

The Luminous 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.

NOTE
Do not install the Luminous S170 into any other type fit-
When Dry Sprinklers are to be used in wet pipe sprinkler systems protecting areas subject to freezing temperatures (e.g., sprinkler sprigs up into attics), 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 between 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.

### Table A
**LUMINOUS S170 STANDARD RESPONSE (SR) DRY UPRIGHT SPRINKLER LABORATORY LISTINGS AND APPROVALS**

<table>
<thead>
<tr>
<th>Temperature Rating</th>
<th>Bulb Color Code</th>
<th>Natural Brass</th>
<th>Chrome Plated</th>
<th>Polyester (All Colors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>135°F/57°C</td>
<td>Orange</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>155°F/68°C</td>
<td>Red</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>175°F/79°C</td>
<td>Yellow</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>200°F/93°C</td>
<td>Green</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>286°F/141°C</td>
<td>Blue</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>360°F/182°C</td>
<td>Mauve</td>
<td>1, 2, 3, 4</td>
<td>1, 2, 4</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Listed by Underwriters Laboratories, Inc.
2. Listed by Underwriters’ Laboratories of Canada.
3. Approved by Factory Mutual Research Corporation.
4. Approved by the City of New York under MEA 212-98-E.
INSTALLATION

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

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

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.

1. The sprinkler must be installed only in the upright position.
2. With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.
3. Wrench tighten the sprinkler by wrenching on the Casing with a pipe wrench.

CARE AND MAINTENANCE

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

NOTES
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.

It is recommended that the piping connected to Dry Sprinklers be periodically checked to assure that proper pitch and drainage is in accordance with the minimum requirements of the National Fire Protection Association if the piping is subject to freezing temperatures.

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 control 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 temperatures 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 to the sprinklers — 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 Note).

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 PROCEDURE

Please Specify:
Luminous S170, 5.6 K-Factor, SR Dry Upright Sprinkler (#3233)

Dry sprinklers are furnished based upon Order Length as measured from the top of the deflector 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.

Please refer to Figure 1 for available “A” Order Lengths.

Refer to Price List for complete listing of Part Numbers with respect to temperature ratings, finishes, order lengths, etc.