

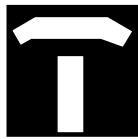
Model K17-231

16.8 K-factor Standard Response Standard Coverage

Upright & Pendent Glass Bulb Automatic Sprinkler



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General Description

The Central Model K17-231, 16.8 K-factor, Standard Response, Standard Coverage, Pendent & Upright Sprinklers are automatic sprinklers of the frangible bulb type. They are "standard response - spray sprinklers" which produce a hemispherical water distribution pattern below the deflector.

The Model K17-231 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 the requirements of the National Fire Protection Association). Also, when acceptable to the Authority Having Jurisdiction, they may be used with a "Reduced Design Area" as indicated in Table 2.

The 16.8 K-factor Model K17-231 Sprinklers were subjected to full scale, high-piled storage, fire tests to qualify their use in lieu of 5.6 or 8.0 K-factor standard spray sprinklers for the protection of high-piled storage.

Higher flow rates can be achieved at much lower pressures with the Model K17-231 Sprinklers; making their use highly advantageous in high density applications, such as the protection of high-piled storage.

The use of the 16.8 K-factor Model K17-231 Sprinkler also has the advantage of having a specific application listing, which in some cases can subsequently reduce the design area and the overall water demand of a sprinkler system. Refer to Table 2 for details.

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 then allows the sprinkler to activate & flow water.

WARNING

The K17-231 Upright and 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.



Technical Data

Sprinkler Identification Number
SIN C7151 - Upright
SIN C7251 - Pendent

Approvals
UL & C-UL Listed. FM Approved
(Refer to Tables 1 & 2. The approvals apply only to the service conditions indicated in the Design Criteria Section)

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
3/4 inch NPT

Discharge Coefficient
K = 16.8 GPM/psi^{1/2} (241,9 LPM/bar^{1/2})

Temperature Ratings
155°F/68°C, 200°F/93°C, 286°F/141°C

Finishes
Sprinkler: Natural Brass



Standard Spray Upright & Pendent Sprinklers

Physical Characteristics

The Model K17-231 Upright & Pendent Sprinklers utilize a dezincification resistant (DZR) bronze frame and a 5 mm bulb. The two-piece button assembly is brass and copper. The sprinkler 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. The compression screw is bronze, & the deflector is brass.

Figure 1 - Model K17-231, Upright Sprinkler

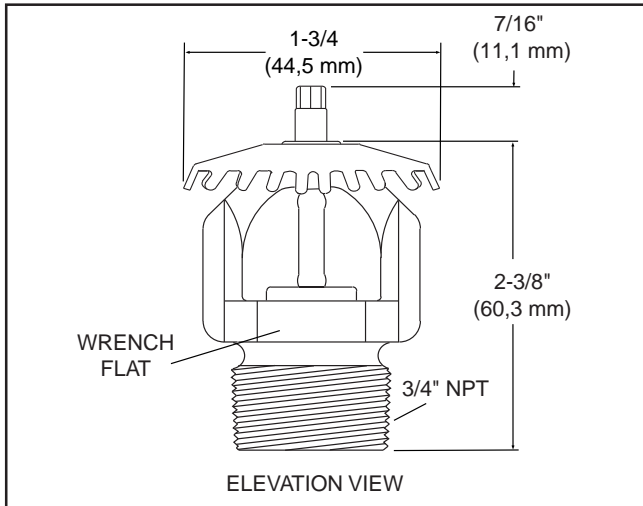
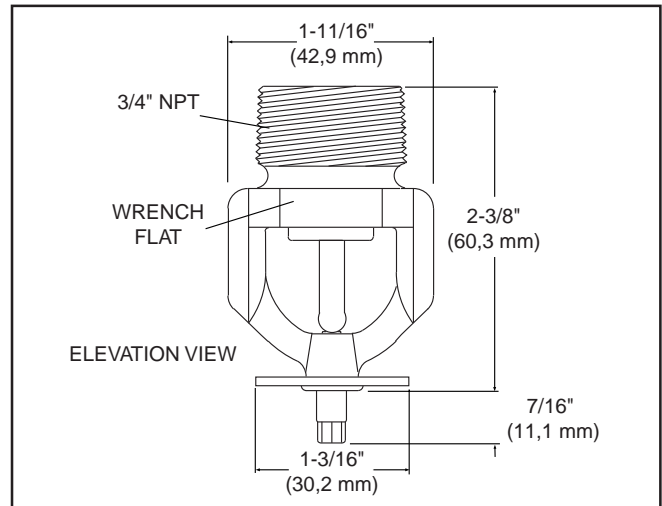


Figure 2 - K17-231, Pendent Sprinkler



Design Criteria

The Model K17-231, 16.8 K-factor Upright and Pendent Sprinklers (Ref. Table 1) are UL and C-UL Listed as Standard Response, Standard Coverage, Spray Sprinklers for use accordance with current NFPA standards for the protection of light, ordinary & extra hazard as well as storage occupancies. These Area/Density sprinklers are listed with a minimum residual (flowing) pressure of 7 psi (0,48 bar).

The Model K17-231, 16.8 K-factor Upright and Pendent Sprinklers are UL and C-UL Listed for use, when acceptable to the Authority Having Jurisdiction, as "specific application" sprinklers in accordance with the design parameters set forth in Table 2 of this Data Sheet.

The Model K17-231, 16.8 K-factor Upright Sprinklers (Ref. Table 1) are FM Approved for use in accordance with the FM Loss Prevention Data Sheets. These "Control Mode Area/Density Sprinklers" are approved with a minimum residual (flowing) pressure of 7 psi (0,48 bar).

These sprinklers can be used with any metallic flush or extended escutcheon, provided the maximum ceiling to top of sprinkler deflector dimension specified in NFPA 13 is maintained. These sprinklers are not listed or approved for recessed applications.

Table 1 - Laboratory Listings and Approvals (16.8 K-factor Sprinklers 3/4" NPT)

		SPRINKLER FINISH	
		Pendent	Upright
Temperature Rating	Bulb Color Code	Natural Brass	Natural Brass
155°F/68°C	Red	1,2	1,2,3
200°F/93°C	Green	1,2	1,2,3
286°F/141°C	Blue	1,2	1,2,3

Notes:

1. Listed by Underwriters Laboratories, Inc.
2. Listed by Underwriters Laboratories for use in Canada.
3. Approved by Factory Mutual Research Corporation.

Installation

The Model K17-231 Upright & Pendent Sprinklers must be installed in accordance with the following instructions.

NOTES

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 155°F/68°C to 3/32 inch (2,4 mm) for the 286°F/141°C rating.

A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.lbs. (13,4 to 26,8 Nm). A

maximum of 30 ft.lbs. (40.7 Nm) of torque is to be used to install 3/4 inch NPT sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Step 1. Upright sprinklers must be installed only in the upright position and pendent sprinklers must be installed only in the pendent position. The deflector is to be parallel to the ceiling, roof, or mounting surface, as applicable.

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

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 8 Sprinkler Wrench (Ref. Figure 4), With reference to Figure 1 & 2, the W-Type 8 Sprinkler Wrench is to be applied to the wrench flats only.

**Figure 3 - Cross Section
Model K17-231, Upright Sprinkler**

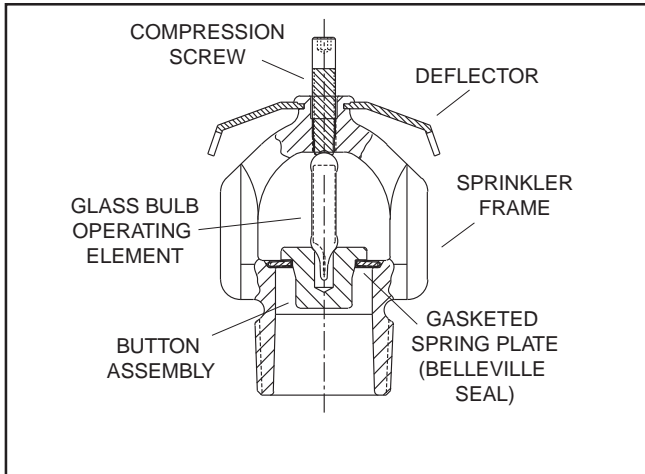


Figure 4 - W-Type 8, Sprinkler Wrench (Part #1068)

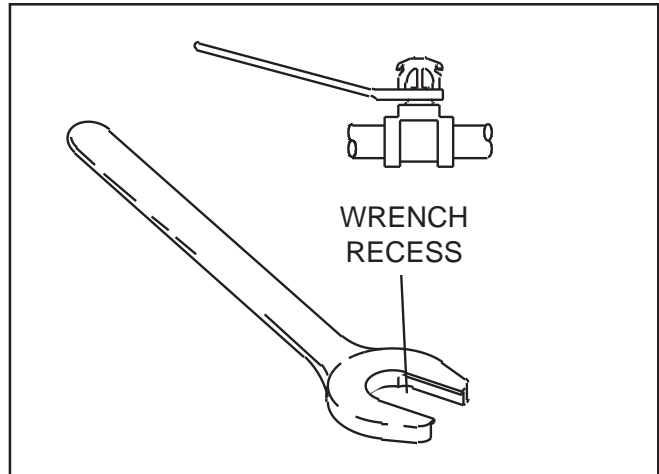


Table 2 - K17-231, UL & C-UL Specific Application Guidelines

<p>Type of Storage: Single, double, multiple-row and portable rack storage (No Solid Shelves) and solid piled or palletized storage.</p>	<p>Temperature Rating: 155°F/68°C 200°F/93°C 286°F/141°C</p>
<p>Commodity: Class I-IV, encapsulated or non-encapsulated. Group A and B plastics - cartoned, expanded or unexpanded as well as exposed, unexpanded.</p>	<p>Hydraulic Design Criteria: The density required is 0.60 gpm/sq. ft. (24,5 mm/min).</p>
<p>Maximum Storage Height: 20'-0" (6,1 m)</p>	<p>Design Area: For wet systems 2000 sq. ft. (186 m²) and for dry systems use 2600 sq. ft. (242 m²)</p>
<p>Clearance: 36" (0,9 m) minimum from deflector to top of storage.</p>	<p>Spacing: Maximum spacing is 100 sq. ft. (9,3 m²). The maximum distance between sprinklers is 12'-0" (3,7 m) - 12'-6" (3,8 m) spacing is allowed in 25'-0" (7,6 m) bays. Minimum spacing is 6'-0" (1,8 m) apart unless separated by baffles.</p>
<p>Max. Ceiling Height in Area of Storage: 25'-0" (7,6 m)</p>	<p>Obstructions: NFPA criteria for standard spray sprinklers.</p>
<p>Construction Type: All types - deflector distances per NFPA 13.</p>	
<p>System Type: Wet or dry</p>	



Care & Maintenance

The Model K17-231 Upright & Pendent Sprinklers 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 it controls, permission to shut down the affected fire protection systems must be obtained from the proper authorities. 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 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 - 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 Information: When placing an order, indicate the full product name. Please specify the quantity, model, style, orifice size, temperature rating, type of finish or coating, and sprinkler wrench. Refer to price list for complete listing of Part Numbers.

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