

Model ESFR-14 14.0 K-factor Pendent Sprinklers Early Suppression, Fast Response

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.



docs.jci.com/tycofire/TFP319

General Description

The TYCO Model ESFR-14, K-factor Pendent Sprinklers are Early Suppression, Fast Response (ESFR) sprinklers with a nominal K-factor of 14.0. They are suppression-mode sprinklers that are especially advantageous as a means of eliminating the use of in-rack sprinklers when protecting high-piled storage.

Model ESFR-14 Sprinklers are primarily designed for protection of the following storage arrangements:

- Most encapsulated or non-encapsulated common materials including cartoned, unexpanded plastics
- Some storage arrangements of rubber tires, roll paper, flammable liquids

For more specific criteria, see Table B and the applicable design standard.

NOTICE

The TYCO Model ESFR-14 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 (NFPA), in addition to the standards of any other authorities having jurisdiction, such as FM Global. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

In all cases, the appropriate NFPA, FM Approvals installation standard, or other applicable standard, must be referenced to ensure applicability and to obtain complete installation guidelines. The general guidelines in this technical data sheet are not intended to provide complete installation criteria.



Sprinkler Identification Number (SIN)

See Table A

Technical Data

Approvals

UL and C-UL Listed
FM Approved
EAC Approved

Finish

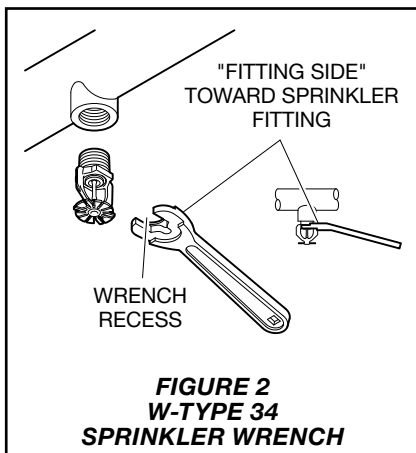
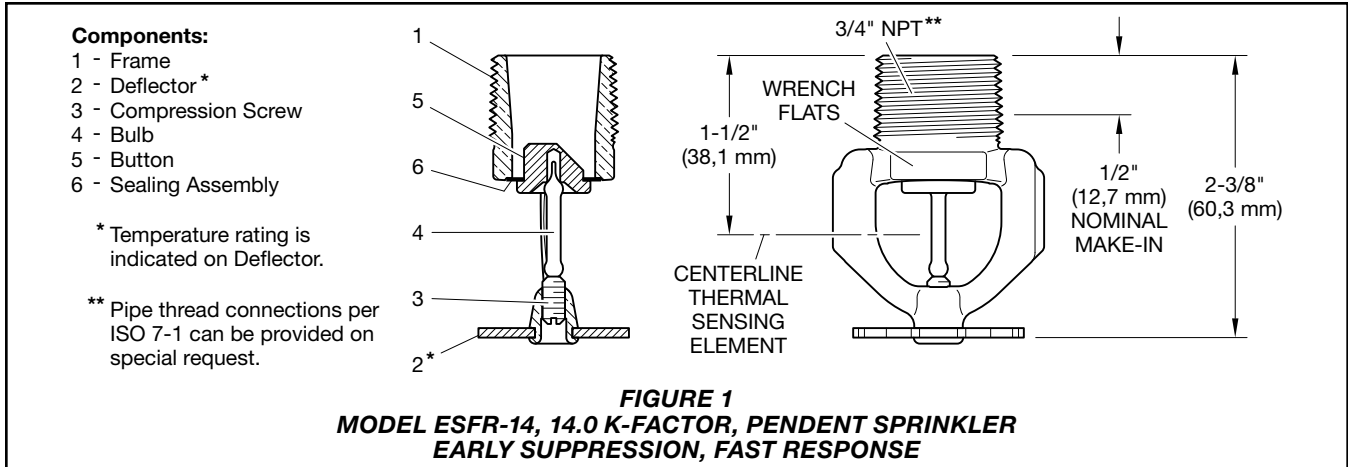
Natural Brass

Physical Characteristics

Frame	Brass
Deflector	Bronze
Compression Screw	Bronze
Button	Brass
Bulb (3 mm)	Glass
Sealing Assembly	Beryllium Nickel w/TEFLON

Additional Technical Data

See Table A



Item	Description
Sprinkler Identification Number (SIN)	TY6236
K-factor, gpm/psi ^{1/2} (Lpm/bar ^{1/2})	14.0 gpm/psi ^{1/2} (201,6 Lpm/bar ^{1/2})
Temperature Rating °F (°C)	155°F (68°C) 200°F (93°C)
Thread Size	3/4 in. NPT or ISO 7-1
Sprinkler Orientation	Pendent
Maximum Working Pressure, psi (bar)	175 psi (12 bar)

TABLE A
MODEL ESFR-14 PENDENT SPRINKLER
TECHNICAL DATA

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, allowing the sprinkler to activate and water to flow.

Storage Type	NFPA	FM Global
Sprinkler Type	ESFR	Storage
Response Type	FR	QR
System Type	Wet	Wet
Temperature Rating °F (°C)	155°F (68°C) 200°F (93°C)	155°F (68°C) 200°F (93°C)
Open Frame (i.e., no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Idle Pallet Storage	Refer to NFPA 13	Refer to FM 2-0, 8-9, and 8-24
Rubber Tire Storage	Refer to NFPA 13	Refer to FM 2-0 and 8-3
Roll Paper Storage (Refer to the Standard)	Refer to NFPA 13	Refer to FM 8-21
Flammable/Ignitable Liquid Storage (Refer to the Standard)	Refer to NFPA 30	Refer to FM 7-29
Aerosol Storage (Refer to the Standard)	Refer to NFPA 30B	Refer to FM 7-31
Automotive Components in Portable Racks (Control mode only; refer to the Standard)	N/A	N/A
N/A – Not Applicable		
TABLE B MODEL ESFR-14 PENDENT SPRINKLERS COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW		

Design Criteria

The following general guidelines provided for the TYCO Model ESFR-14, 14.0 K-factor, Pendent Sprinklers can be used for quick reference.

NOTICE

The National Fire Protection Association and FM Approvals provide installation standards that must be used to properly design an automatic sprinkler system utilizing Early Suppression, Fast Response (ESFR) Sprinklers. The guidelines provided by NFPA and FM Global may differ; consequently, the appropriate standard must be used for a given installation.

In all cases, the appropriate NFPA or FM Approvals installation standard must be referenced to assure appli-

cability and to obtain complete installation guidelines, since the following general guidelines are not intended to provide complete installation criteria.

Roof Construction

Unobstructed or obstructed construction; for example, smooth ceiling, bar joists, beam and girder, and so forth.

Note: In buildings with obstructed construction, where the depths of the solid structural members, as in beams and stem, exceed 12 in. (302 mm), install ESFR Sprinklers in each channel formed by the structural members.

Ceiling Slope

Maximum 2 in. rise for 12 in. run (16.7%)

Maximum Coverage Area

100 ft² (9,3 m²)

Minimum Coverage Area

64 ft² (5,8 m²) per
 NFPA 13 and FM Global 2-0

Maximum Spacing

- 12 ft (3,7 m) for building heights up to 30 ft (9,1 m)
- 10 ft (3,1 m) for building heights greater than 30 ft (9,1 m)

Minimum Spacing

8 ft (2,4 m)

Minimum Clearance to Commodity

36 in. (914 mm)

NFPA 13

Deflector-to-Ceiling Distance

6 in. to 14 in. (152 mm to 356 mm)

FM Global

Centerline of Thermal Sensing

Element-to-Ceiling Distance

Refer to FM Global 2-0 for Storage Sprinklers.

Installation

TYCO Model ESFR-14 Pendent Sprinklers must be installed in accordance with this section.

General Instructions

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.

A leak-tight 3/4 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 10 to 20 lb-ft (13,4 to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Note: Install the Model ESFR-14 Pendent Sprinkler only in the pendent position as shown in Figure 1.

Step 1. With pipe thread sealant applied, hand-tighten the sprinkler into the sprinkler fitting.

Step 2. Wrench-tighten the Model ESFR-14 Sprinkler using only the W-Type 34 Sprinkler Wrench as shown in Figure 2, and by fully engaging (seating) the wrench on the sprinkler wrench flats as shown in Figure 1.

Step 3. After installation, inspect the bulb of each Model ESFR-14 Sprinkler for damage. In particular, verify that the bulb is not cracked. Replace damaged sprinklers.

Care and Maintenance

TYCO Model ESFR-14, 14.0 K-factor, Pendent Sprinklers (TY6236) must be maintained and serviced in accordance with this section.

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

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

Automatic sprinklers 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. For more information, see the 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, such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies

Specify: Model ESFR-14 (TY6236), K=14.0, Pendent Sprinkler with (specify) temperature rating, Natural Brass, P/N (specify):

155°F (68°C) 58-449-1-155
200°F (93°C) 58-449-1-200

Special Order

Sprinkler Assemblies with ISO 7-1 Thread Connections

Specify: Model ESFR-14 (TY6236), K=14.0, Early Suppression, Fast Response Pendent Sprinkler with ISO 7-1 Thread Connection, (specify) temperature rating, Natural Brass, P/N (specify):

155°F (68°C) 58-443-1-155
200°F (93°C) 58-443-1-200

Sprinkler Wrenches

Specify: W-Type 34 Sprinkler Wrench
P/N 56-462-1-001



TFP319 Change History Appendix

ISSUE DATE	NOTES
12-22	Page 1, updated QR code and URL; Page 3, Design Criteria Roof Construction sub-section, added note requiring sprinkler installed in each channel formed by structural members in areas of buildings with obstructed construction consisting of solid structural members exceeding 12 in. (302 mm) deep; Page 4, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 Telephone +1-401-781-8220, formerly 1400 Pennbrook Parkway, Lansdale, PA 19446 Telephone +1-215-362-0700.
04-22	Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 1, Approvals sub-section, added EAC Approved.
12-20	Removed greater coverage area statements from Maximum Coverage Area and Maximum Spacing sections in Design Criteria; Removed references to other Tyco ESFR technical data sheets.
03-20	Table B Commodity Selection and Design Criteria, changed NFPA Response Type to Fast Response (FR), formerly Quick Response (QR).
08-18	Updated Tyco® branding and document format; Added Johnson Controls copyright; Added disclaimer stating specifications and information subject to change without notice; Added reference to Regulatory and Health Warning Technical Data Sheet TFP2300.
05-18	Organized technical information into tables as required by UL.
12-15	Table A, Rubber Tire Storage, changed FM Global Data Sheet to 8-3, formerly shown as 8-9; Removed W-Type 30 sprinkler wrench; Added W-Type 34 sprinkler wrench, replacing W-Type 2.
11-14	Added the W-Type 30 sprinkler wrench.
01-14	Technical Data Sheet TFP319 describes the new Model ESFR-14 TY6236 Early Suppression Fast Response 14.0 K-factor sprinkler featuring glass bulb heat-sensitive element and low-profile frame.