

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

General Description

TYCO Model ESFR-14, 14.0 K-factor, Pendent Sprinklers are Early Suppression, Fast Response (ESFR) sprinklers having 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 in this technical data sheet as well as 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.

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.

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 for sprinkler identification number.

Technical Data

Approvals

UL and C-UL Listed
FM 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

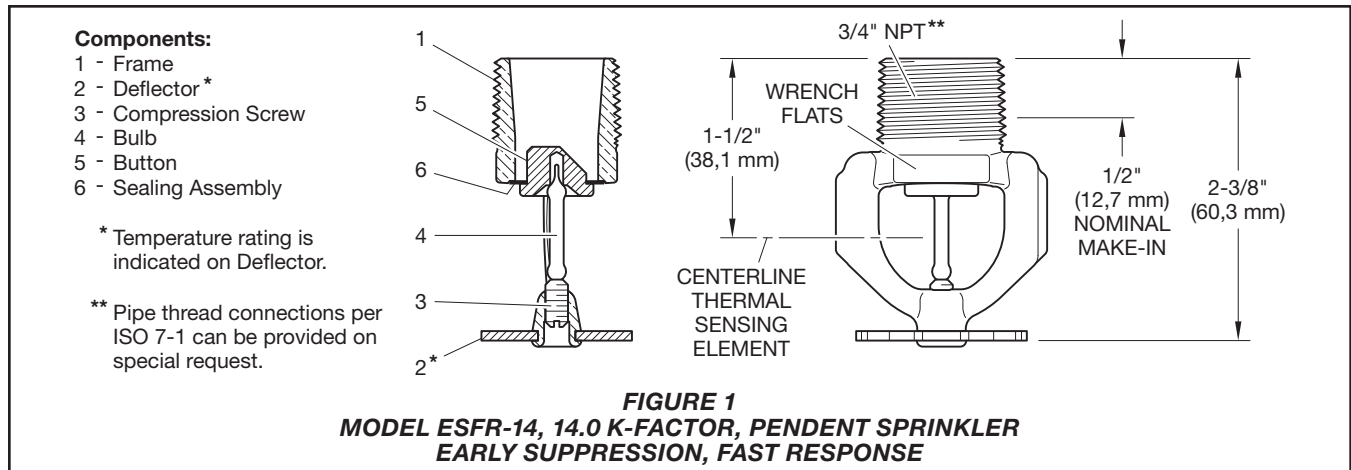
Additional Technical Data

See Table A for additional 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.



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

ESFR-14 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)

In some cases, the installation standards permit a greater coverage area.

Minimum Coverage Area
 64 ft² (5,8 m²) per NFPA 13 / 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 2-0
 Consult FM Global guidelines for allowable deflector-to-ceiling distances as well as thermal-sensing element-to-ceiling criteria.

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

In addition to this technical data sheet, the following data sheets describe other TYCO ESFR Sprinklers:

- **TFP312**
 Model ESFR-25 (TY9226)
 K=25.2 Pendent Sprinkler
- **TFP313**
 Model ESFR-22 (TY8226)
 K=22.4 Pendent Sprinkler
- **TFP315**
 Model ESFR-17 (TY7226)
 K=16.8 Pendent Sprinkler
- **TFP316**
 Model ESFR-17 (TY7126)
 K=16.8 Upright Sprinkler
- **TFP317**
 Model ESFR-17 (TY7223)
 K=16.8 Pendent Sprinkler
- **TFP318**
 Model ESFR-1 (TY6226)
 K=14.0 Pendent Sprinkler
- **TFP320**
 Model ESFR-17 (TY7229)
 K=16.8 Pendent Sprinkler

Roof Construction

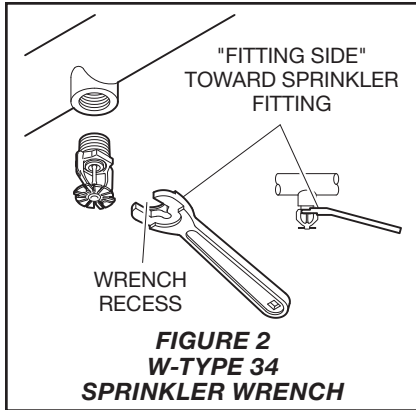
Unobstructed or obstructed construction; for example, smooth ceiling, bar joists, beam and girder, and so forth.

Where the depths of solid structural members, such as beams and stem, exceed 12 in. (302 mm), install Model

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



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 (see 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 (see Figure 2) and by fully engaging (seating) the wrench on the sprinkler wrench flats (see 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. See Installation section for additional information.

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