Model ESFR-17
16.8 K-factor Pendent Sprinkler
Early Suppression, Fast Response

General Description

TYCO Model ESFR-17 Pendent Sprinklers are Early Suppression, Fast Response (ESFR) sprinklers having a nominal K-factor of 16.8 (Ref. Figures 1 and 2). They are suppression mode sprinklers that are especially advantageous as a means of eliminating in-rack sprinklers when protecting high-piled storage.

Model ESFR-17 Pendent Sprinklers are primarily used for ceiling-only sprinkler protection of, but not limited to, the following storage applications:

- most encapsulated or non-encapsulated common materials including cartoned, unexpanded plastics
- cartoned, expanded plastics
- uncartoned, unexpanded plastics
- uncartoned, expanded plastics
- some storage arrangements of rubber tires, roll paper, and aerosols

For more specific criteria, refer to Table B in this technical data sheet as well as the applicable design standard.

The Model ESFR-17 Pendent Sprinklers provide the system designer with hydraulic and sprinkler placement options not presently available to traditional ESFR Sprinklers having a nominal K-factor of 14.0. In particular, Model ESFR-17 Pendent Sprinklers are designed to operate at substantially lower-end head pressures, as compared to ESFR Sprinklers having a nominal K-factor of 14.0. This feature offers flexibility when sizing system piping, as well as possibly reducing or eliminating the need for a system fire pump.

Applications for the ESFR-17 Pendent Sprinklers are expanding beyond currently recognized installation standards. For information on research fire tests, such as flammable liquids and aerosols, that may be acceptable to an authority having jurisdiction, contact Technical Services.

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.

WARNING

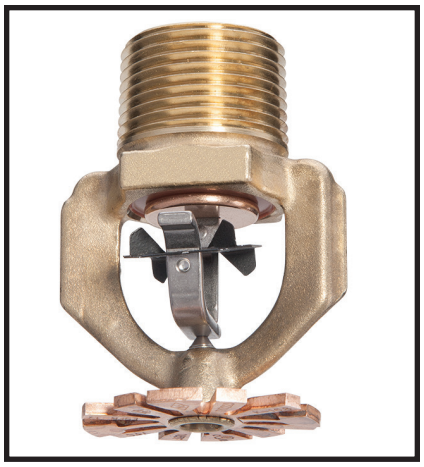
Orange protector must not be removed until sprinkler is to be placed in service. The W-Type 35 sprinkler wrench must be used for proper installation of the sprinkler. Failure to do so may result in equipment damage or failure.

NOTICE

The Model ESFR-17 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 (NFPA), in addition to the standards of any 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 or FM Global 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)

Refer to 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	Stainless Steel
Hook	MONEL
Strut	MONEL
Link Assembly	Solder, Nickel
Button	Phosphor Bronze
Sealing Assembly	Beryllium Nickel w/TEFLON

Additional Technical Data
Refer to Table A for additional technical data.

Components:
1 - Frame
2 - Deflector *
3 - Compression Screw
4 - Hook
5 - Strut
6 - Link Assembly
7 - Button
8 - Sealing Assembly

*Temperature rating is indicated on Deflector.

**ISO 7-R 3/4 pipe thread can be provided on special request.

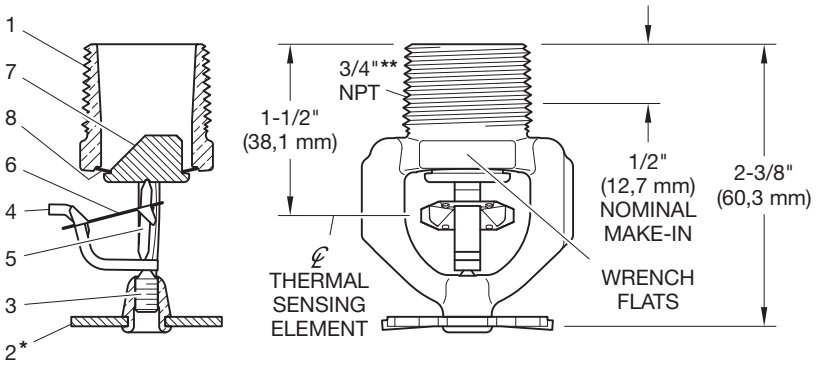


FIGURE 1
MODEL ESFR-17 PENDENT SPRINKLER, 16.8K, 165°F (74°C)
EARLY SUPPRESSION, FAST RESPONSE

Components:
1 - Frame
2 - Deflector *
3 - Compression Screw
4 - Hook
5 - Strut
6 - Link Assembly
7 - Button
8 - Sealing Assembly

*Temperature rating is indicated on Deflector.

**ISO 7-R 3/4 pipe thread can be provided on special request.

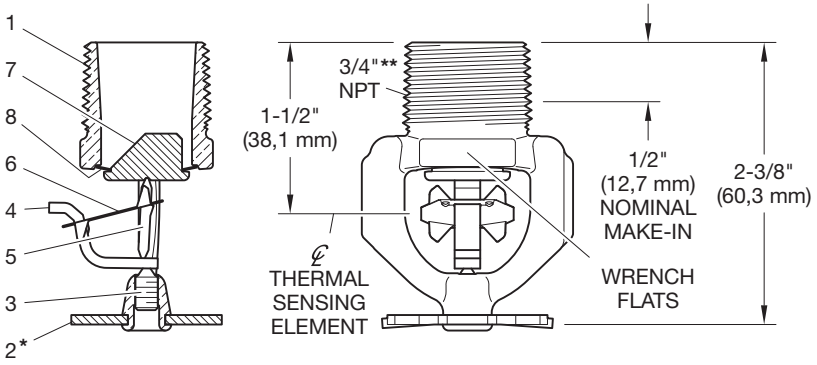


FIGURE 2
MODEL ESFR-17 PENDENT SPRINKLER, 16.8K, 212°F (100°C)
EARLY SUPPRESSION, FAST RESPONSE

Operation

The fusible link assembly is comprised of two link halves that are joined together by a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate, activating the sprinkler and flowing water.

Design Criteria

The following general guidelines provided for the TYCO Model ESFR-17 Pendent Sprinklers can be used for a quick reference.

The National Fire Protection Association (NFPA) and FM Global (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. Refer to Table B for additional information.

Item	Description
Sprinkler Identification Number (SIN)	TY7223
K Factor, (gpm/psi½) (lpm/bar½)	16.8 gpm/psi½ (241,9 lpm/bar½)
Temperature Rating °F (°C)	165°F (74°C) 212°F (100°C)
Thread Size	3/4 in. NPT or ISO 7-R 3/4
Sprinkler Orientation	Pendent
Maximum Working Pressure, psi (bar)	175 psi (12,1 bar)

TABLE A
MODEL ESFR-17 PENDENT SPRINKLER
TECHNICAL DATA

In all cases, the appropriate NFPA or FM Global installation standard must be referenced to ensure applicability and to obtain complete installation guidelines. 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 Pendnet Sprinkler
- **TFP315**
  Model ESFR-17 (TY7226)
  K=16.8 Pendent Sprinkler
- **TFP316**
  Model ESFR-17 (TY7126)
  K=16.8 Upright Sprinkler

Storage Type	NFPA	FM Global
Sprinkler Type	ESFR	Storage
Response Type	QR	QR
System Type	Wet	Wet
Temperature Rating °F (°C)	165°F (74°C) 212°F (100°C)	165°F (74°C) 212°F (100°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-17 PENDENT SPRINKLER
COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW

- **TFP318**
  Model ESFR-1 (TY6226)
  K=14.0 Pendent Sprinkler
- **TFP319**
  Model ESFR-14 (TY6236)
  K=14.0 Pendent Sprinkler
- **TFP320**
  Model ESFR-17 (TY7229)
  K=16.8 Pendent Sprinkler

Roof Construction
Unobstructed or obstructed construction, such as smooth ceiling, bar joists, beam and girder.

Where the depths of the solid structural members, such as 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)

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

Minimum Coverage Area
64 ft² (5,8 m²) per NFPA 13

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 and/or FM Global guidelines for allowable deflector-to-ceiling distances as well as thermal sensing element-to-ceiling criteria.