Series EC-11 and EC-14 Sprinklers, 11.2 K and 14.0 K Upright and Pendent Extended Coverage Light and Ordinary Hazard

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/series-ec-11_ec-14

General Description

TYCO Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers are decorative glass-bulb sprinklers designed for use in light or ordinary hazard occupancies. They are intended for use in automatic sprinkler systems designed in accordance with standard installation rules, such as NFPA 13, for a maximum coverage area of 400 ft^2 (37,2 m^2) as compared to the maximum coverage area of 130 ft^2 (12,1 m^2) for standard coverage sprinklers used in ordinary hazard occupancies, Series EC-11 and EC-14 Extended Coverage Sprinklers feature a UL and C-UL Listing that permits their use with unobstructed or non-combustible obstructed ceiling construction as defined and permitted by NFPA 13, as well as a specific application listing for use under concrete tees.

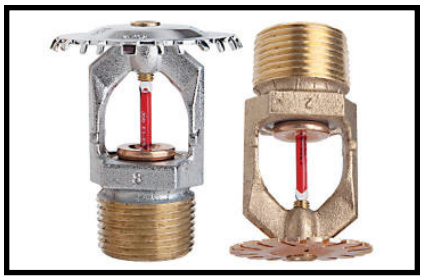
Series EC-11 and EC-14 Extended Coverage Sprinklers have been fire tested to compare their performance to that of standard coverage spray sprinklers. These tests have shown that the protection provided is equal to or more effective than standard coverage spray sprinklers.

Corrosion-resistant coatings, where applicable, help extend the life of copper alloy sprinklers beyond that which occurs when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers passed standard corrosion tests of the applicable approval agencies, this testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these corrosion-resistant coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity should be considered, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

NOTICE

Series EC-11 and EC-14 Extended Coverage 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. 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.





Sprinkler Identification Numbers

TY5137 . . . . . Upright, 11.2K
TY5237 . . . . . .Pendent, 11.2K
TY6137 . . . . . Upright, 14.0K
TY6237 . . . . . Pendent, 14.0K

TY5137 is a re-designation for C5137, G1894, and S2510
TY5237 is a re-designation for C5237, G1893, and S2511
TY6137 is a re-designation for C6137, G1896, and S2610
TY6237 is a re-designation for C6237, G1895, and S2611

Technical Data

Approvals

TYCO Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers are UL and C-UL Listed. See Table A for complete sprinkler approval information including corrosion-resistant status. The approvals apply to the service conditions indicated in the Design Criteria section.

Series EC-11 and EC-14 Extended Coverage Sprinklers are FM Approved. See Table A for complete sprinkler approval information including corrosion-resistant status. The approvals apply to the service conditions indicated in the Design Criteria section.

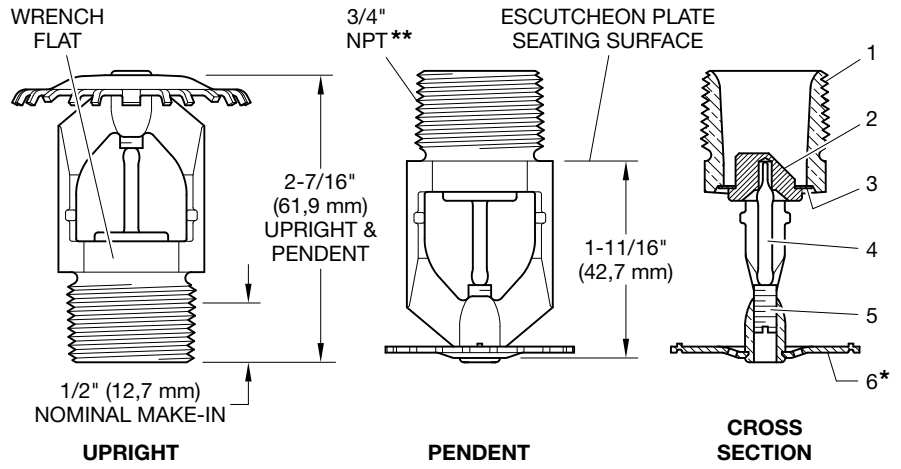


FIGURE 1
SERIES EC-11 AND EC-14 EXTENDED COVERAGE SPRINKLERS
11.2 K-FACTOR UPRIGHT (TY5137) AND PENDENT (TY5237)
14.0 K-FACTOR UPRIGHT (TY6137) AND PENDENT (TY6237)
ASSEMBLY

The Style 60 Two-Piece Flush Escutcheon shown in Figure 4 is UL Listed for use with the Series EC-11 and EC-14 Pendent Sprinklers.

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
3/4 in. NPT

Discharge Coefficients
K = 11.2 GPM/psi½ (161,3 LPM/bar½)
K = 14.0 GPM/psi½ (201,6 LPM/bar½)

Temperature Ratings
See Table A

Finish
Sprinkler: See Table A

Recessed or Flush Escutcheon: White-Coated, Chrome-Plated, and Brass-Plated

Physical Characteristics

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

Operation

The glass bulb contains a fluid that 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 and flow water.

Design Criteria

TYCO Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers must only be installed in accordance with the applicable UL and C-UL Listing or FM Approval requirements as indicated below. Only Style 30 or 40 Recessed Escutcheons are to be used for recessed installation, as applicable. See Tables A, B, and C, for more information.

UL and C-UL Listing Requirements

1. Series EC-11 and EC-14 Extended Coverage Sprinklers may be used for the coverage areas shown in Table D, based on maintaining the minimum specified flow rate as a function of coverage area and hazard group for all sprinklers in the design area.

2. Series EC-11 and EC-14 Extended Coverage Sprinklers are permitted to be used with unobstructed or non-combustible obstructed ceiling construction as defined and permitted by NFPA 13; for example:

- Unobstructed, combustible or noncombustible, ceiling construction with a deflector to ceiling/roof deck distance of 1 to 12 in. (25 to 300 mm).
- Obstructed, non-combustible, ceiling construction with a deflector location below structural members of 1 to 6 in. (25 to 150 mm) and a maximum deflector to ceiling/roof deck distance of 22 in. (550 mm).

3. Series EC-11 and EC-14 Extended Coverage Sprinklers, specifically tested and listed for non-combustible obstructed construction, are permitted to be used within trusses or bar joists having non-combustible web members greater than 1 in. (25,4 mm) when applying the 4 times obstruction criteria rule defined under “Obstructions to Sprinkler Discharge Pattern Development”.

4. To prevent cold soldering, the minimum allowable spacing between Series EC-11 and EC-14 Extended Coverage Sprinklers is 8 ft (2,4 m) for upright sprinklers and 9 ft (2,7 m) for pendent sprinklers.

5. Series EC-11 and EC-14 Extended Coverage Sprinklers are to be installed in accordance with all other requirements of NFPA 13 for extended coverage upright and pendent sprinklers; For example, obstructions to sprinkler discharge, obstructions to sprinkler pattern development, obstructions to prevent sprinkler discharge from reaching hazard and clearance to storage.

Hazard	Type	Temperature	Bulb Liquid	Sprinkler Finish (See Note 5)			
				Natural Brass	Chrome Plated	Polyester*	Lead Coated
Light **Table B describes UL and C-UL Sensitivity Rating** **Table C describes FM Sensitivity Rating**	Upright K=11.2 (TY5137) Pendent K=11.2 (TY5237) K=14.0 (TY6237)	135°F (57°C)	Orange	1, 2, 3**, 4			
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green	1, 2, 4			1, 2, 4
		286°F (141°C)	Blue				
	Recessed Pendent K=11.2 (TY5237) K=14.0 (TY6237) With Style 30 Escutcheon	135°F (57°C)	Orange	1, 2, 3, 4			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow	1, 2, 4			
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
Ordinary **Table B describes UL and C-UL Sensitivity Rating** **Table C describes FM Sensitivity Rating**	Upright K=11.2 (TY5137) K=14.0 (TY6137) Pendent K=11.2 (TY5237) K=14.0 (TY6237)	135°F (57°C)	Orange	1, 2, 3, 4			1, 2, 3, 4
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				1, 2, 4
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Pendent K=11.2 (TY5237) K=14.0 (TY6237) With Style 30 or 40 Escutcheon	135°F (57°C)	Orange	1, 2, 4			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				

NOTES
1. Listed by Underwriters Laboratories, Inc. (UL)
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL)
3. Approved by Factory Mutual Research Corporation (FM)
4. Approved by the City of New York under MEA 177-03-E
5. Where Polyester Coated or Lead Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion Resistant Sprinklers

N/A = Not Available
* Frame and Deflector only
** Pendent only

TABLE A
LABORATORY LISTINGS AND APPROVALS

Area ft x ft	Style	Light Hazard					Ordinary Hazard				
		135°F (57°C)	155°F (68°C)	175°F (79°C)	200°F (93°C)	286°F (141°C)	135°F (57°C)	155°F (68°C)	175°F (79°C)	200°F (93°C)	286°F (141°C)
14 x 14	Upright or Pendent	-	-	-	-	-	QR	QR	QR	QR	QR
	Style 30 Recessed	-	-	-	-	-	QR	QR	QR	QR	QR
	Style 40 Recessed	-	-	-	-	-	QR	QR	QR	QR	QR
16 x 16	Upright or Pendent	QR*	QR*	QR*	QR*	QR*	SR	SR	SR	SR	SR
	Style 30 Recessed	QR*	QR*	QR*	QR*	QR*	SR	SR	SR	SR	SR
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	SR
18 x 18	Upright or Pendent	QR*	QR*	QR*	QR*	QR*	SR	SR	SR	SR	SR
	Style 30 Recessed	QR*	QR*	QR*	QR*	QR*	SR	SR	SR	SR	SR
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	SR
20 x 20	Upright or Pendent	QR*	QR*	QR*	SR*	SR*	SR	SR	SR	SR	SR
	Style 30 Recessed	QR*	QR*	QR*	SR*	SR*	SR	SR	SR	SR	SR
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	SR

NOTES
- QR = Quick Response
- SR = Standard Response
- N/A = Not Applicable

* Does not apply to Upright K=14.0

TABLE B
SENSITIVITY RATING FOR UL AND C-UL LISTING OF SERIES EC-11 OR EC-14 SPRINKLERS
(SEE TABLE D FOR PERMITTED K-FACTOR/AREA COMBINATIONS)

HC-1								
Linear Spacing ft		Area Spacing ft		Ceiling Height ft	Ceiling Type	K-factor	Style	Response
Min	Max	Min	Max					
10	20	100	400	Up to 30	Noncombustible Unobstructed, Noncombustible Obstructed, or Combustible Unobstructed	11.2 EC 14.0 EC	Pendent or Upright	Quick
10	20	100	400	Up to 30	Noncombustible Unobstructed, Noncombustible Obstructed, or Combustible Unobstructed	11.2 EC 14.0 EC	Pendent Recessed Style 30	
10	20	100	400	Up to 30	Combustible Obstructed	11.2 EC 14.0 EC	Pendent or Upright	
10	20	100	400	Up to 30	Combustible Obstructed	11.2 EC 14.0 EC	Pendent Recessed Style 30	
10	20	100	400	Over 30 and up to 45	Noncombustible Unobstructed	11.2 EC 14.0 EC	Upright	
HC-2								
Linear Spacing ft		Area Spacing ft		Ceiling Height ft	Ceiling Type	K-factor	Style	Response
Min	Max	Min	Max					
10	20	100	400	Up to 30	Noncombustible Unobstructed, Combustible Unobstructed	11.2 EC	Pendent or Upright	Quick
10	20	100	400	Up to 30		14.0 EC	Pendent or Upright	
10	16	100	256	Over 30 and up to 45		11.2 EC 14.0 EC	Upright	
HC-3								
Linear Spacing ft		Area Spacing ft		Ceiling Height ft	Ceiling Type	K-Factor	Style	Response
Min	Max	Min	Max					
10	16	100	256	Up to 30	Noncombustible Unobstructed, Combustible Unobstructed	11.2 EC	Upright	Quick
10	20	100	400	Up to 30		14.0 EC	Pendent or Upright	
10	16	100	256	Over 30 and up to 45		11.2 EC, 14.0 EC	Upright	

NOTES
- The design for K 11.2 EC (K 160 EC) sprinklers should not include fewer than six sprinklers or have a design pressure of less than 12 psi (0,8 bar); similarly the design for K 14.0 EC (K 200 EC)sprinklers should not include fewer than four sprinklers or have a design pressure of less than 18 psi (1,2 bar).
- For flow criteria, refer to FM Loss Prevention Data Sheet 3-26.
- Refer to FM Loss Prevention Data Sheet 2-0 for permitted K-Factor/Area Combinations.

TABLE C
SENSITIVITY RATING FOR FM APPROVAL OF SERIES EC-11 OR EC-14 SPRINKLERS

UL and C-UL Specific Application Listing Requirements for Installation under Concrete Tees

Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers (TY5137, TY5237, TY6137 and TY6237) have a UL and C-UL Specific Application Listing for use under concrete tees when installed as follows:

1. Stems of the concrete tee construction must be spaced at less than 7.5 ft (2,3 m) on center but more than 3 ft (0,9 m) on center. The depth of the concrete tees must not exceed 30 in. (762 mm). The maximum permitted concrete tee length is 32 ft (9,8 m). However, where the concrete tee length exceeds 32 ft (9,8 m), non-combustible baffles, equal in height to the depth of the tees, can be installed so that the space between the tees does not exceed 32 ft (9,8 m) in length.
2. The sprinkler deflectors are to be located in a horizontal plane at or above 1 in. (25,4 mm) below the bottom of the concrete tee stems.
3. When the sprinkler deflectors are located higher than a horizontal plane 1 in. (25,4 mm) beneath the bottom of the concrete tee stems, the obstruction to sprinkler discharge criteria requirements of NFPA 13 for extended coverage upright and pendent sprinklers applies.

Description	Area ft x ft	Light Hazard 0.10 GPM/ft²		Group I Ordinary Hazard 0.15 GPM/ft²		Group II Ordinary Hazard 0.20 GPM/ft²	
		GPM	PSI	GPM	PSI	GPM	PSI
TY5137 (K=11.2) Upright	14 x 14	30	7.2	30	7.2	39	12.1
	16 x 16	30	7.2	39	12.1	51	20.7
	18 x 18	33	8.7	49	19.1	65	33.7
	20 x 20	40	12.8	60	28.7	80	51.0
TY5237 (K=11.2) Pendent	14 x 14	30	7.2	30	7.2	39	12.1
	16 x 16	30	7.2	39	12.1	51	20.7
	18 x 18	33	8.7	49	19.1	65	33.7
	20 x 20	40	12.8	60	28.7	80	51.0
TY6137 (K=14.0) Upright	14 x 14	N/A	N/A	39	7.8	51	13.3
	16 x 16	N/A	N/A	39	7.8	51	13.3
	18 x 18	N/A	N/A	49	12.3	65	21.6
	20 x 20	N/A	N/A	60	18.4	80	32.7
TY6237 (K=14.0) Pendent	14 x 14	37	7.0	39	7.8	51	13.3
	16 x 16	37	7.0	39	7.8	51	13.3
	18 x 18	37	7.0	49	12.3	65	21.6
	20 x 20	40	8.2	60	18.4	80	32.7

NOTES
- 1 ft = 0,3048 m
- 1 ft² = 0,093 m²
- 1 GPM = 3,785 LPM
- 1 psi = 0,06895 bar
- 1 GPM/ft² = 40,74 mm/min

TABLE D
FLOW CRITERIA FOR UL AND C-UL LISTING OF SERIES EC-11 AND EC-14 SPRINKLERS

FM Approval Requirements
Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers are to be installed in accordance with the applicable FM Loss Prevention Data Sheet for limited use in buildings of specific roof construction and for the protection of certain specific ordinary hazard (non-storage and/or non-flammable or combustible liquid) occupancies. Information provided in the FM Loss Prevention Data Sheets relates to, but is not limited to, hydraulic design, ceiling slope, and obstructions, minimum and maximum allowable spacing, and deflector-to-ceiling distance.

These criteria may differ from UL and/or NFPA criteria. Therefore, the designer should review and become familiar with FM requirements before proceeding with design.

Installation

TYCO Series EC-11 and EC-14 Extended Coverage Upright and 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. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 135°F (57°C) to 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings.

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 may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under or over-tightening the Sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Step 1. Install the sprinkler with the deflector parallel to the mounting surface. Install pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. After installing the Style 30, 40, or 60 mounting plate, or other applicable escutcheon, over the sprinkler pipe threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. For upright or pendent sprinklers, wrench-tighten using only the W-Type 3 (End A) Sprinkler Wrench. For the pendent sprinkler installed with Style 30, 40, or 60 Escutcheon, wrench-tighten the sprinkler using only the W-Type 22 Sprinkler Wrench.

Apply the wrench recess of the applicable sprinkler wrench, Figure 5 and 6, to the sprinkler wrench flats, Figure 1.

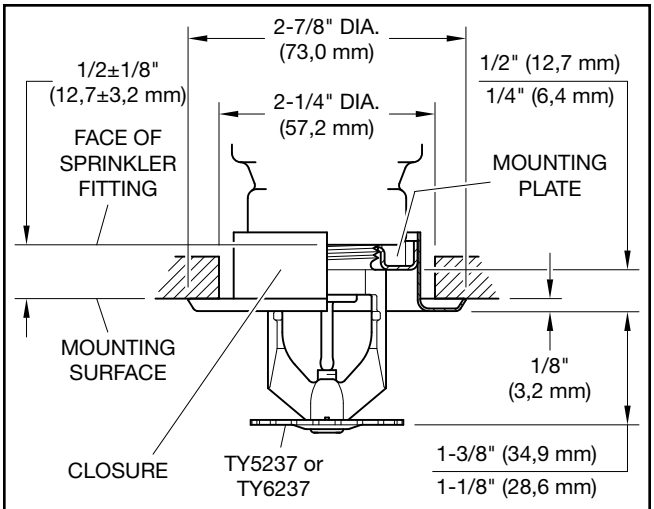


FIGURE 2
SERIES EC-11 AND EC-14 RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 1/2 IN. TOTAL ADJUSTMENT STYLE 30 RECESSED ESCUTCHEON

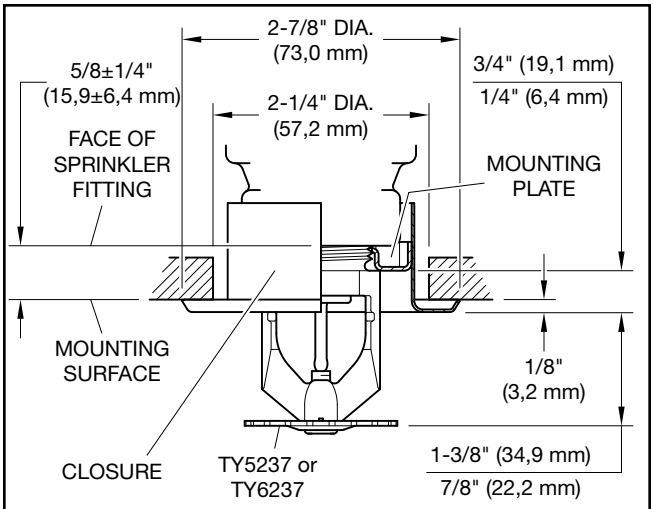


FIGURE 3
SERIES EC-11 AND EC-14 RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 IN. TOTAL ADJUSTMENT STYLE 40 RECESSED ESCUTCHEON

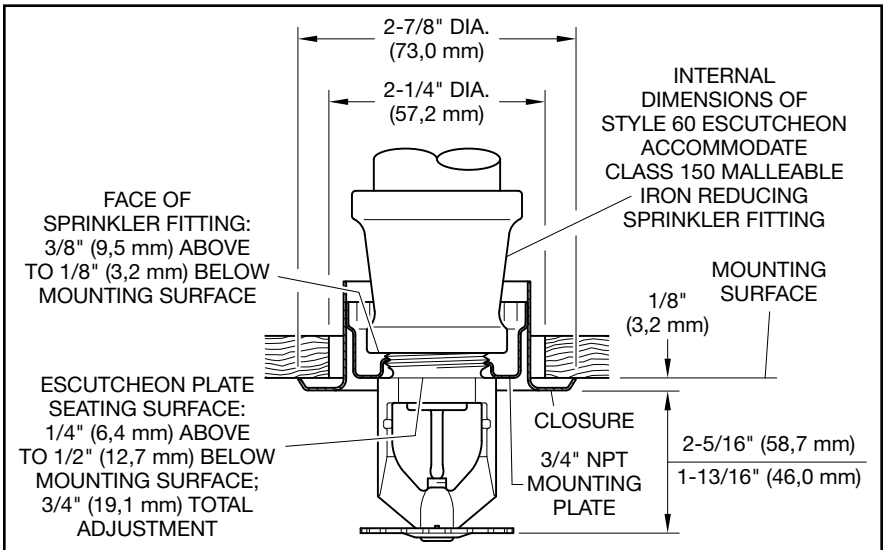


FIGURE 4
SERIES EC-11 AND EC-14 PENDENT SPRINKLER ASSEMBLY WITH 3/4 IN. TOTAL ADJUSTMENT STYLE 60 TWO-PIECE FLUSH ESCUTCHEON

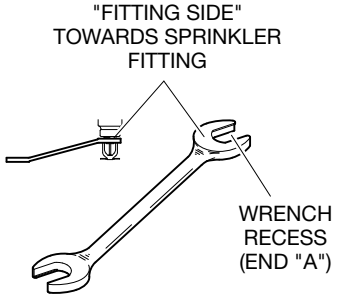


FIGURE 5
W-TYPE 3 SPRINKLER WRENCH

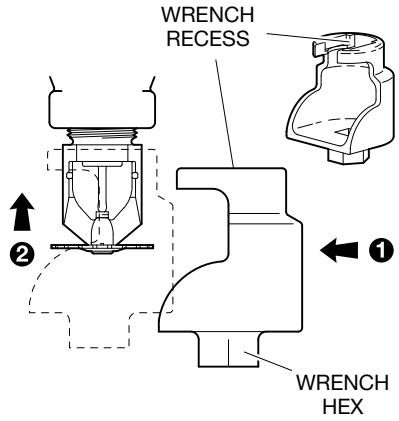


FIGURE 6
W-TYPE 22 RECESSED SPRINKLER WRENCH

P/N 51 – XXX – X – XXX

		SIN
893	11.2K Pendent	TY5237
894	11.2K Upright	TY5137
895	14.0K Pendent	TY6237
896	14.0K Upright	TY6137

	SPRINKLER FINISH[1]
1	NATURAL BRASS
4	SIGNAL WHITE (RAL9003) POLYESTER
5	JET BLACK (RAL9005) POLYESTER
7	LEAD COATED
9	CHROME-PLATED

	TEMPERATURE RATING
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)
000	OPEN[2]

NOTES:
1. Escutcheon ordered separately.
2. OPEN indicates the sprinkler assembly without glass bulb, button, and sealing assembly.

TABLE E
SERIES EC-11 AND EC-14 UPRIGHT AND PENDENT SPRINKLERS
PART NUMBER SELECTION

Care and Maintenance

TYCO Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers 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. Refer to the Installation section, for more information.

Frequent visual inspections are recommended to be initially performed for corrosion resistant coated sprinklers, after the installation has been completed, to verify the integrity of the corrosion resistant coating. Thereafter, annual inspections per NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the corrosion resistant coating, as it may be affected by the corrosive conditions present.

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 recognized by the Approval agency, such as NFPA 25, in addition to the standards of any 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 with NPT Thread Connections
Specify: Series EC-11 or EC-14 (specify) Sprinkler, SIN (specify), (specify) K-factor, Pendent or Upright (specify) Extended Coverage, (specify) temperature rating, (specify) finish, P/N (from Table E)

Recessed Escutcheon, Two-Piece
Specify: Style (30 or 40) Two-Piece Recessed Escutcheon with (specify) finish, P/N (specify*)

*Refer to Technical Data Sheet TFP770

Flush Escutcheon, Two-Piece
Specify: Style 60 Two-Piece Flush Escutcheon with (specify) finish, P/N (specify**)

**Refer to Technical Data Sheet TFP778

Sprinkler Wrenches
Specify: W-Type 3 Sprinkler Wrench, P/N 56-895-1-001

Specify: W-Type 22 Recessed Sprinkler Wrench, P/N 56-665-7-001

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