

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.

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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 ft² (37,2 m²) as compared to the maximum coverage area of 130 ft² (12,1 m²) 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

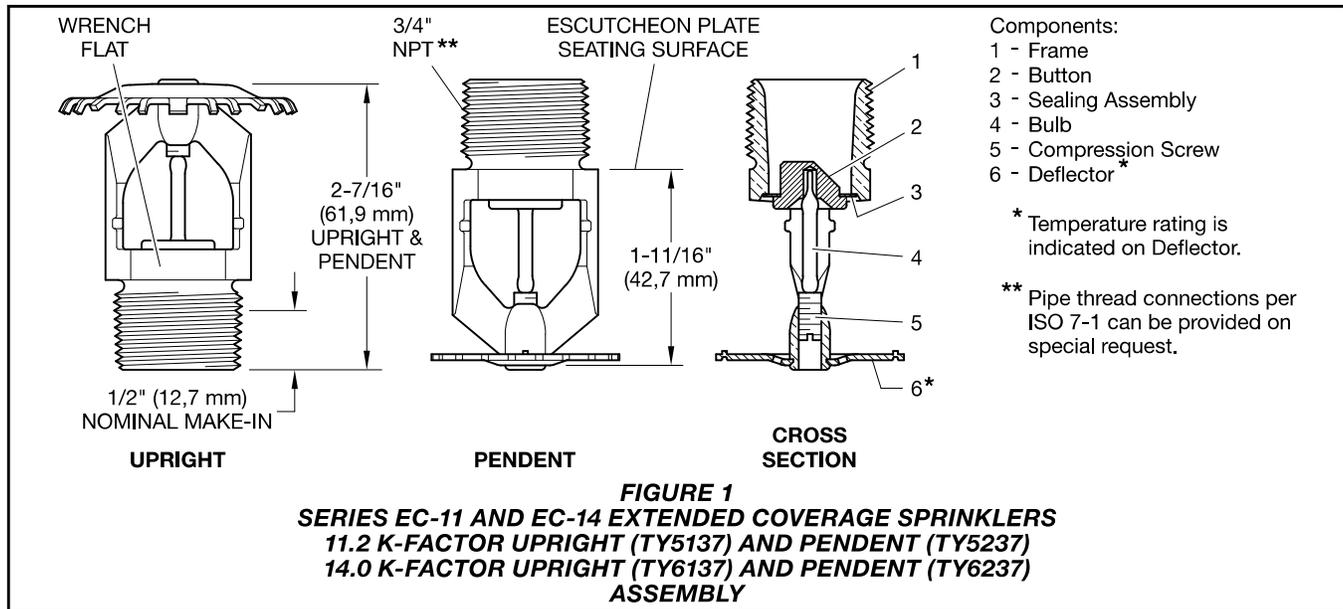
Approvals

Series EC-11 and EC-14 Sprinklers
UL and C-UL Listed
FM Approved

Note: For complete sprinkler approval information including corrosion-resistant status, see Table A. The approvals apply to the service conditions indicated in the Design Criteria section.

Escutcheons

The Style 60 Two-Piece Flush Escutcheon, as 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/psi^{1/2} (161,3 LPM/bar^{1/2})
K = 14.0 GPM/psi^{1/2} (201,6 LPM/bar^{1/2})

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 C, 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.

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

Hazard	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish ⁴		
				Natural Brass	Chrome Plated	Polyester ⁵
NFPA Light Hazard See Table B for UL and C-UL Sensitivity Rating	Upright K=11.2 (TY5137) Pendent K=11.2 (TY5237) K=14.0 (TY6237)	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	Recessed Pendent K=11.2 (TY5237) K=14.0 (TY6237) With Style 30 Escutcheon	286°F (141°C)	Blue			
		135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
NFPA Ordinary Hazard See Table B for UL and C-UL Sensitivity Rating	Upright K=11.2 (TY5137) K=14.0 (TY6137) Pendent K=11.2 (TY5237) K=14.0 (TY6237)	200°F (93°C)	Green	1, 2, 4		
		286°F (141°C)	Blue			
		135°F (57°C)	Orange			
		155°F (68°C)	Red			
	Recessed Pendent K=11.2 (TY5237) K=14.0 (TY6237) With Style 30 or 40 Escutcheon	175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		135°F (57°C)	Orange			
FM Global HC-1, HC-2, and HC-3 Refer to FM Loss Prevention Data Sheet 2-0 for permitted sprinkler and hazard combinations	Upright K=11.2 (TY5137) K=14.0 (TY6137) Pendent K=11.2 (TY5237) K=14.0 (TY6237)	155°F (68°C)	Red	3		
		175°F (79°C)	Yellow			
		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			
		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. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion Resistant Sprinklers.
5. Frame and Deflector only

TABLE A
SERIES EC-11 AND EC-14 EXTENDED COVERAGE SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

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.

FM Approval Requirements

Series EC-11 and EC-14 Extended Coverage Upright and Pendent Sprinklers are FM Approved as quick response sprinklers and 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 hazards (non-storage and/or non-flammable or combustible liquid) occupancies.

The design for K 11.2 EC (K160 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 (K200 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 as well as the occupant specific data sheets, as applicable. Refer to FM Loss Prevention Data Sheet 2-0 for permitted K-Factor/Area Combinations as well as installation criteria such as ceiling slope, and obstructions, minimum and maximum allowable spacing, and deflector-to-ceiling distances.

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.

Area ft x ft	Orientation	SIN	Recessed Escutcheon 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	TY5137	None	QR					QR								
	Pendent	TY5237	None	QR													
			Style 30	N/A													
			Style 40	N/A													
	Upright	TY6137	None	N/A													
	Pendent	TY6237	None	QR		N/A								QR		N/A	
Style 30			QR					QR		N/A							
Style 40			N/A					QR		N/A							
16 x 16	Upright	TY5137	None	QR					SR								
	Pendent	TY5237	None	QR													
			Style 30	N/A													
			Style 40	N/A													
	Upright	TY6137	None	N/A													
	Pendent	TY6237	None	QR		N/A								QR		N/A	
Style 30			QR					QR		N/A							
Style 40			N/A					QR		N/A							
18 x 18	Upright	TY5137	None	QR					SR								
	Pendent	TY5237	None	QR													
			Style 30	N/A													
			Style 40	N/A													
	Upright	TY6137	None	N/A													
	Pendent	TY6237	None	QR		N/A								QR		N/A	
Style 30			QR					QR		N/A							
Style 40			N/A					QR		N/A							
20 x 20	Upright	TY5137	None	QR					SR								
	Pendent	TY5237	None	QR		N/A								QR		N/A	
			Style 30	QR	N/A	QR	N/A							QR		N/A	
			Style 40	N/A										QR		N/A	
	Upright	TY6137	None	N/A													
	Pendent	TY6237	None	QR		N/A								QR		N/A	
Style 30			QR					QR		N/A							
Style 40			N/A					QR		N/A							

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

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

Description	Area ft x ft	Light Hazard 0.10 GPM/ft ²		Group I Ordinary Hazard 0.15 GPM/ft ²		Group II Ordinary Hazard 0.20 GPM/ft ²	
		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 C
SERIES EC-11 AND EC-14 EXTENDED COVERAGE SPRINKLERS
FLOW CRITERIA FOR UL AND C-UL LISTING

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.

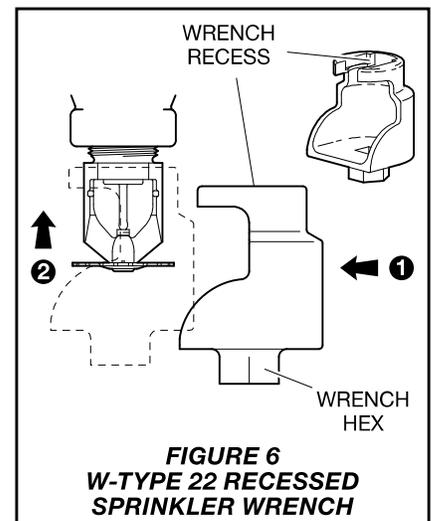
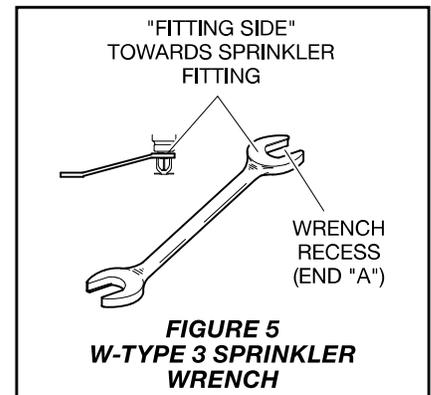
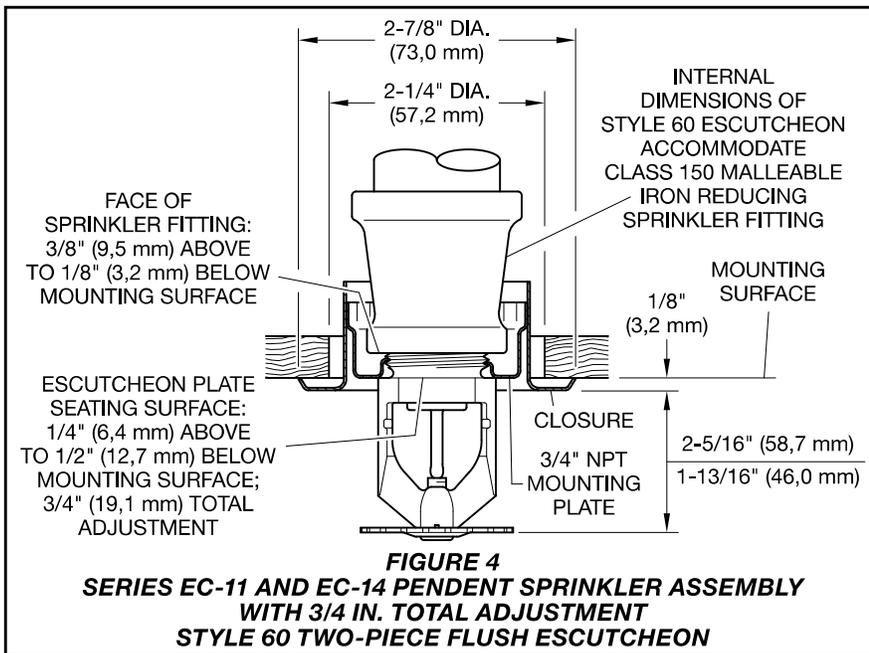
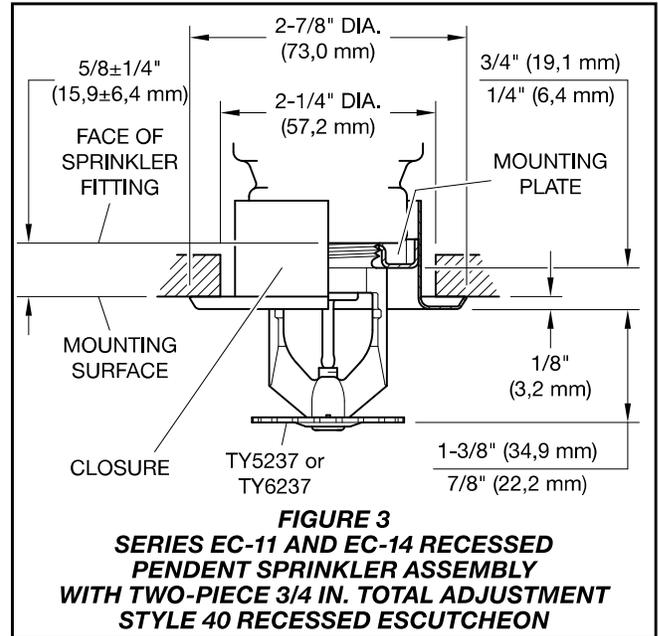
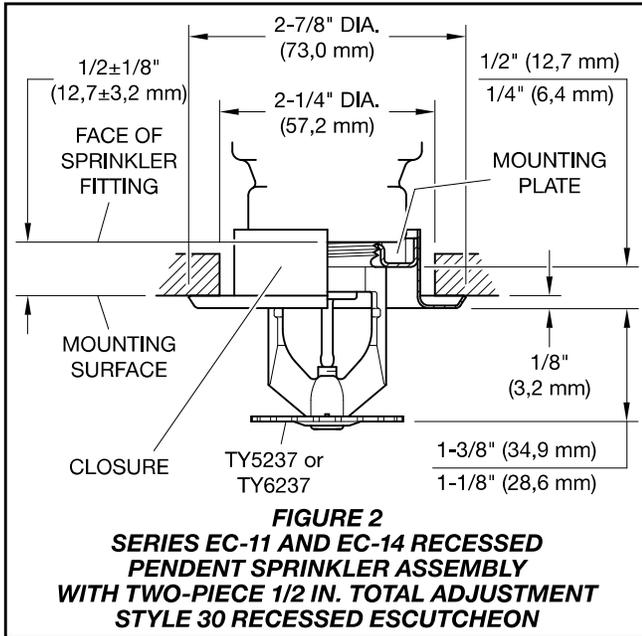
Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under or over-tightening the Sprinkler. Re-adjust the position of the sprinkler fitting to suit.

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, as shown in Figure 5 or Figure 6, to the sprinkler wrench flats, as shown in Figure 1.



P/N 51 XXXXXX

		SIN	SPRINKLER FINISH ¹		TEMPERATURE RATING		TEMPERATURE RATING	
893	11.2K Pendent	TY5237	1	NATURAL BRASS	135	135°F (57°C)	200	200°F (93°C)
894	11.2K Upright	TY5137	4	SIGNAL WHITE (RAL9003) POLYESTER ²	155	155°F (68°C)	286	286°F (141°C)
895	14.0K Pendent	TY6237	5	JET BLACK (RAL9005) POLYESTER ³	175	175°F (79°C)		
896	14.0K Upright	TY6137	9	CHROME-PLATED ⁴				

NOTES:

1. Escutcheon ordered separately.
2. Signal White finish not available for TY6237 14.0K pendent sprinkler in 200°F (93°C) temperature rating
3. Jet Black finish not available for: TY5237 11.0K pendent sprinkler in 200°F (93°C) temperature rating; TY5137 11.0K upright sprinkler in 155°F (68°C) and 200°F (93°C) temperature ratings; TY6237 14.0K pendent sprinkler in 286°F (141°C) temperature rating
4. Chrome Plated finish not available for TY6237 14.0K pendent sprinkler in 286°F (141°C) temperature rating

TABLE D
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 D)

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 568951001

Specify: W-Type 22 Recessed Sprinkler Wrench, P/N 566657001

