

Series EC-11 & EC-14 – 11.2 and 14.0 K-factor Extended Coverage (Light and Ordinary Hazard) Upright, Pendent, and Recessed Pendent Sprinklers

General Description

The 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 (for example, 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 or 225 ft² (20,6 m²) for standard coverage sprinklers used in light hazard occupancies.

The Series EC-11 and EC-14 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.

The 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.

IMPORTANT

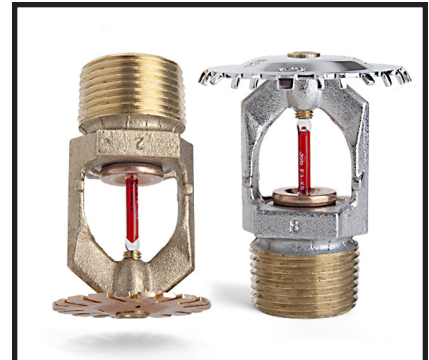
Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail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

Corrosion resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion resistant coated sprinklers passed standard corrosion tests of the applicable approval agencies, the 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, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

NOTICE

The Series EC-11 and EC-14 Extended Coverage Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any 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. The installing contractor or sprinkler manufacturer should be contacted with any questions.



Sprinkler Identification Numbers (SINs)

TY5137 - Upright, 11.2K

TY5237 - Pendent, 11.2K

TY6137 - Upright, 14.0K

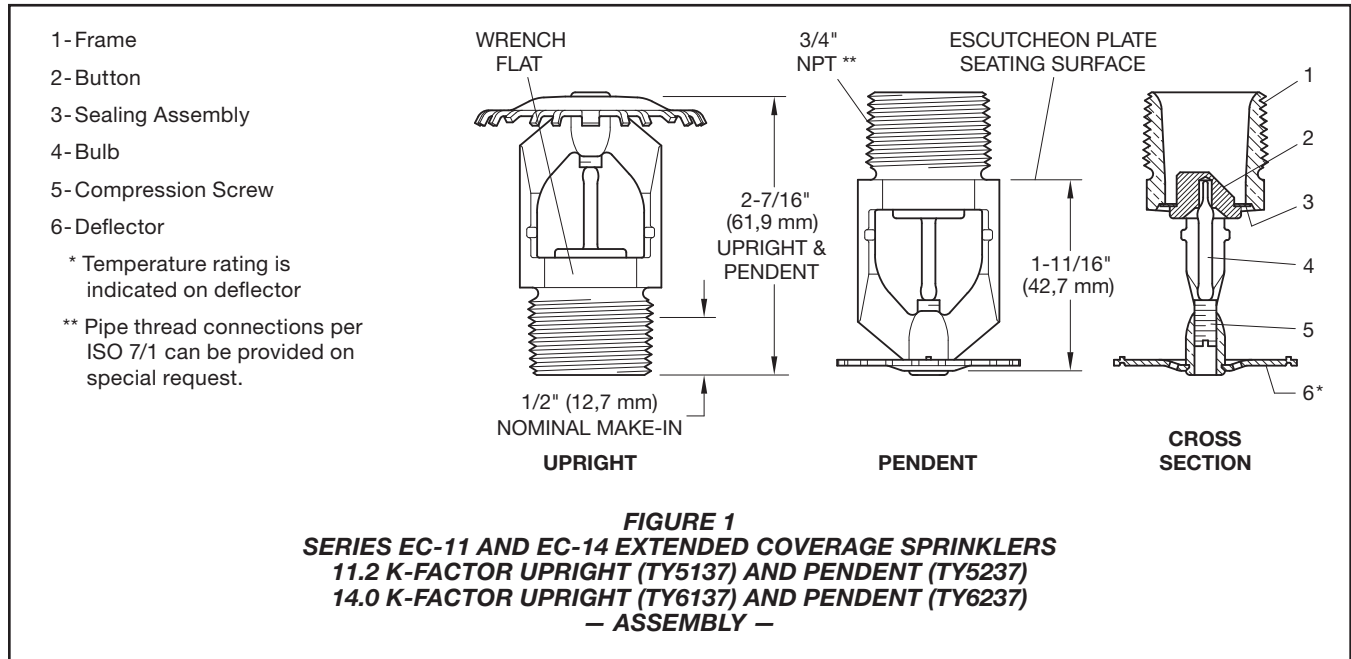
TY6237 - Pendent, 14.0K

TY5137 is a redesignation for C5137, G1894, and S2510.

TY5237 is a redesignation for C5237, G1893, and S2511.

TY6137 is a redesignation for C6137, G1896, and S2610.

TY6237 is a redesignation for C6237, G1895, and S2611.



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

Notes:

- Listed by Underwriters Laboratories, Inc. (UL)
 - Listed by Underwriters Laboratories, Inc. for use in Canada (C-UL)
 - Approved by Factory Mutual Research Corporation (FM)
 - Approved by the City of New York under MEA 177-03- E
 - 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
- * Frame and Deflector only. Listings and approvals apply to color (Special Order)
 ** Pendent Only
 N/A: Not Available

TABLE A
— LABORATORY LISTINGS AND APPROVALS —

Area	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	SR
	Style 30 Recessed	-	-	-	-	-	QR	QR	QR	QR	N/A
	Style 40 Recessed	-	-	-	-	-	QR	QR	QR	QR	N/A
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	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	N/A
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	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	N/A
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	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	SR	SR	SR	SR	N/A

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
(Refer to Table D for Permitted K-Factor/Area Combinations)

Area	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	-	-	-	-	-	SR	SR	SR	SR	SR
	Style 30 Recessed	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A
	Style 40 Recessed	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A
16 x 16	Upright or Pendent	QR*	QR*	N/A	N/A	N/A	SR	SR	SR	SR	SR
	Style 30 Recessed	QR*	QR*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18 x 18	Upright or Pendent	QR*	QR*	N/A	N/A	N/A	SR	SR	SR	SR	SR
	Style 30 Recessed	QR	QR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20 x 20	Upright or Pendent	QR*	QR*	N/A	N/A	N/A	SR	SR	SR	SR	SR
	Style 30 Recessed	QR	QR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Style 40 Recessed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

QR: Quick Response
SR: Standard Response
N/A: Not Applicable
* Does not apply to Upright K=14.0

TABLE C
SENSITIVITY RATING FOR FM APPROVAL OF SERIES EC-11 OR EC-14 SPRINKLERS
(Refer to FM Loss Prevention Data Sheet 2-8N for Permitted K-Factor/Area Combinations)

Technical Data

Approvals

Refer to Table A for approval information on the TYCO Series EC-11 and EC-14 Sprinklers, as well as the TYCO Style 30 and Style 40 Two-Piece Recessed Escutcheons. The approvals apply to the service conditions indicated in the Design Criteria section.

The TYCO Style 60 Two-Piece Flush Escutcheon (Figure 4) is UL Listed and FM Approved 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 inch NPT

Discharge Coefficients

- $K = 11.2 \text{ GPM/psi}^{1/2}$
(161,3 LPM/bar^{1/2})
- $K = 14.0 \text{ GPM/psi}^{1/2}$
(201,6 LPM/bar^{1/2})

Temperature Ratings
135°F (57°C) to 286°F (141°C)

Finish

- Sprinkler:
Refer to 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 dia.)
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.

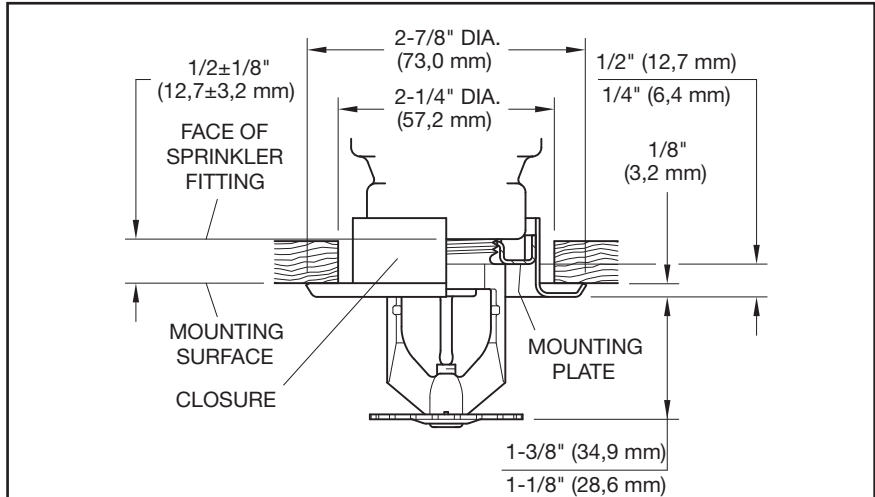


FIGURE 2
SERIES EC-11 AND EC-14 RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 1/2-INCH TOTAL ADJUSTMENT STYLE 30 RECESSED ESCUTCHEON

Design Criteria

The TYCO Series EC-11 and EC-14 Extended Coverage Sprinklers must only be installed in accordance with the applicable UL and C-UL Listing or FM Approval requirements as indicated below. Only the Style 30 or 40 Recessed Escutcheon is to be used for recessed installation, as applicable (Refer to Tables A, B, and C).

UL and C-UL Listing Requirements

- The Series EC-11 and EC-14 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.
- The Series EC-11 and EC-14 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 non-combustible, ceiling construction with a deflector to ceiling/roof deck distance of 1 to 12 inches (25 to 300 mm).
 - Obstructed, non-combustible, ceiling construction with a deflector location below structural members of 1 to 6 inches (25 to 150 mm) and a maximum deflector to ceiling/roof deck distance of 22 inches (550 mm).

- The Series EC-11 and EC-14 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 inch (25.4 mm) when applying the 4 times obstruction criteria rule defined under "Obstructions to Sprinkler Discharge Pattern Development".
- The minimum allowable spacing, to prevent cold soldering between Series EC-11 and EC-14 Sprinklers, is 8 feet (2,4 m) for upright sprinklers and 9 feet (2,7 m) for pendent sprinklers.
- The Series EC-11 and EC-14 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, clearance to storage, etc.

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

The 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:

- The stems of the concrete tee construction must spaced at less than 7.5 feet (2,3 m) on center but

more than 3 feet (0,9 m) on center. The depth of the concrete tees must not exceed 30 inches (762 mm). The maximum permitted concrete tee length is 32 feet (9,8 m); however, where the concrete tee length exceeds 32 feet (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 feet (9,8 m) in length.

- The sprinkler deflectors are to be located in a horizontal plane at or above 1 inch (25,4 mm) below the bottom of the concrete tee stems.
- When the sprinkler deflectors are located higher than a horizontal plane 1 inch (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 sprinklers applies.

FM Approval Requirements

The Series EC-11 and EC-14 Extended Coverage Sprinklers are to be installed in accordance with the applicable Factory Mutual 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 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 must review and become familiar with Factory Mutual requirements before proceeding with design.

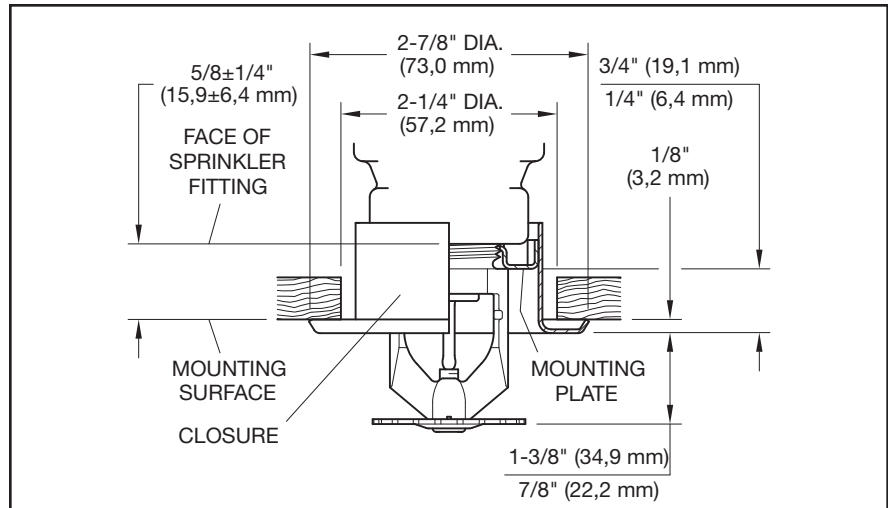


FIGURE 3
SERIES EC-11 AND EC-14 RECESSED PENDENT SPRINKLER ASSEMBLY
WITH TWO-PIECE 3/4-INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON

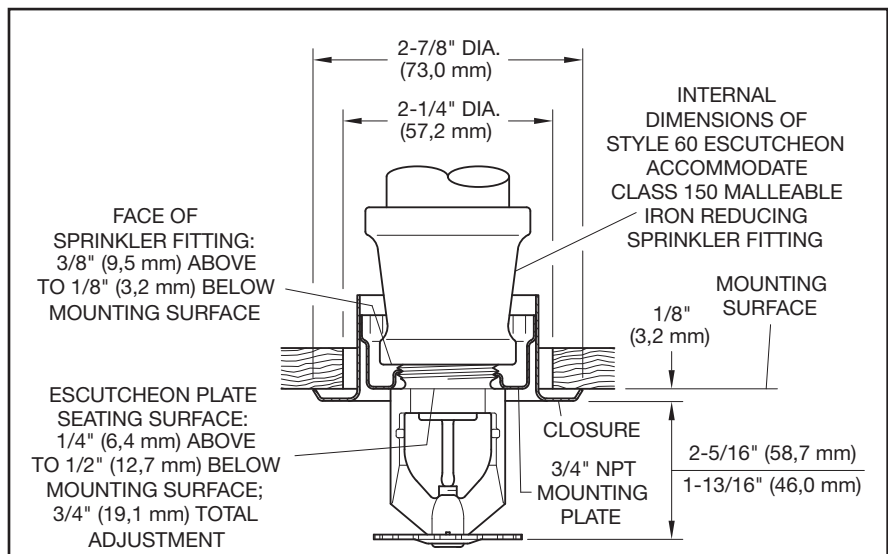


FIGURE 4
SERIES EC-11 AND EC-14 PENDENT SPRINKLER ASSEMBLY
WITH 3/4-INCH TOTAL ADJUSTMENT
STYLE 60 TWO-PIECE FLUSH ESCUTCHEON

Installation

The TYCO Series EC-11 and EC-14 Sprinklers must be installed in accordance with the following instructions:

NOTICE

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 inch (1,6 mm) for the 135°F (57°C) to 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A 3/4 inch NPT sprinkler joint should be obtained with a minimum-to-maximum torque of 10 to 20 ft.lbs. (13,4 to 26,8 Nm). 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. The sprinkler must be installed with the deflector parallel to the mounting surface. Pendent sprinklers must be installed in the pendent position, and upright sprinklers must be installed in the upright position.

Step 2. After installing the Style 30, 40, or 60 mounting plate (or other escutcheon, as applicable) 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. Wrench tighten upright or pendent sprinklers using only the W-Type 3 (End A) Sprinkler Wrench. When installing the pendent sprinkler with Style 30, 40, or 60 Escutcheon, wrench tighten the sprinkler using only the W-Type 22 Sprinkler Wrench. The wrench recess of the applicable sprinkler wrench (Ref. Figure 5 and 6) is to be applied to the sprinkler wrench flats (Ref. Figure 1).

Care and Maintenance

The TYCO Series EC-11 and EC-14 Sprinklers must be maintained and serviced in accordance with the following instructions:

NOTICE

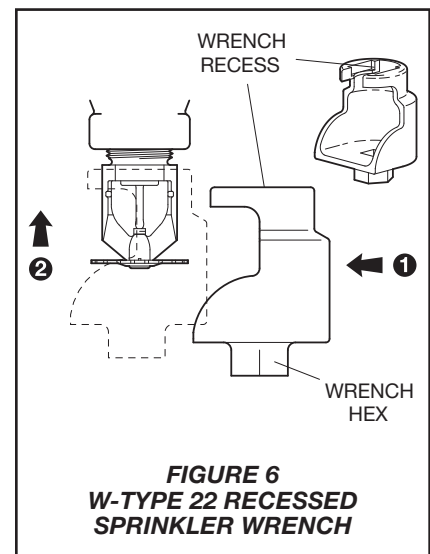
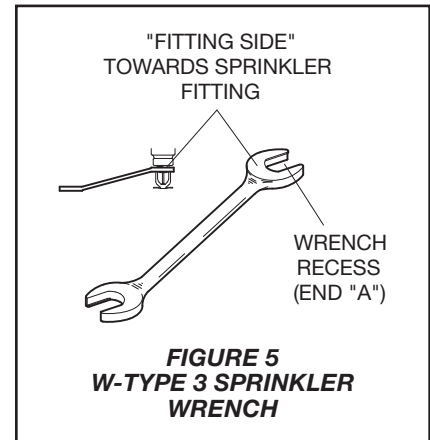
Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection systems must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Exercise care to avoid damage to sprinklers before, during, and after installation. Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory. Modified sprinklers must be replaced.

Also sprinklers must be replaced that:

- were damaged by dropping, striking, wrench twisting, wrench slippage, or the like;
- are leaking or exhibiting visible signs of corrosion;
- were exposed to corrosive products of combustion but have not operated, if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush; or
- have a cracked Bulb or have lost liquid from the Bulb. Refer to the Installation section in this data sheet.

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 (for example, NFPA 25), in addition to the standards of any authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding 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.

Description	Area	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	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	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	-	-	-	-
	16 x 16	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	-	-	-	-	-	-
	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

1 ft. = 0.3048 m
1 ft.² = 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

P/N 51 - XXX - X - XXX

		SIN			Sprinkler Finish				Temperature Rating	
893	11.2K Pendent	TY5237	1	Natural Brass	135	135°F (57°C)				
894	11.2K Upright	TY5137	4	White Polyester	155	155°F (68°C)				
895	14.0K Pendent	TY6237	7	Lead Coated	175	175°F (79°C)				
896	14.0K Upright	TY6137	9	Chrome-Plated	200	200°F (93°C)				
					286	286°F (141°C)				

TABLE E
PART NUMBERS FOR
SERIES EC-11 AND EC-14 SPRINKLERS

Limited Warranty

Products manufactured by Tyco Fire Protection Products (TFPP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFPP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFPP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFPP to be defective shall be either repaired or replaced, at TFPP's sole option. TFPP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFPP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFPP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFPP was informed about the possibility of such damages, and in no event shall TFPP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name, description, and P/N. Refer to the Price List for complete listing of Part Numbers.

Sprinkler Assemblies with NPT Thread Connections

Specify (SIN), (K-Factor), (temperature rating), (Pendent or Upright) Extended Coverage Sprinkler with (finish), P/N. Refer to Table E

Recessed Escutcheon, Two-Piece

Specify Style (30 or 40) Two-Piece Recessed Escutcheon with (material or finish), P/N. Refer to Technical Data Sheet TFP770.

Flush Escutcheon, Two-Piece

Specify Style 60 Two-Piece Flush Escutcheon with (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.