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

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
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.
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/psi (161,3 LPM/bar)
K = 14.0 GPM/psi (201,6 LPM/bar)

**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

**Components:**
1. Frame
2. Button
3. Sealing Assembly
4. Bulb
5. Compression Screw
6. Deflector

* Temperature rating is indicated on Deflector.

**Pipe thread connections per ISO 7-1 can be provided on special request.**

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**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.

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**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.
### Table A: Laboratory Listings and Approvals

<table>
<thead>
<tr>
<th>Area ft x ft</th>
<th>Style</th>
<th>Light Hazard</th>
<th>Ordinary Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>135°F (57°C)</td>
<td>155°F (68°C)</td>
</tr>
<tr>
<td><strong>14 x 14</strong></td>
<td>Upright or Pendent</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Style 30 Recessed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Style 40 Recessed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>16 x 16</strong></td>
<td>Upright or Pendent</td>
<td>QR*</td>
<td>QR*</td>
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<tr>
<td></td>
<td>Style 30 Recessed</td>
<td>QR*</td>
<td>QR*</td>
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<tr>
<td></td>
<td>Style 40 Recessed</td>
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<td>N/A</td>
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<tr>
<td><strong>18 x 18</strong></td>
<td>Upright or Pendent</td>
<td>QR*</td>
<td>QR*</td>
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<tr>
<td></td>
<td>Style 30 Recessed</td>
<td>QR*</td>
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<td>Style 40 Recessed</td>
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<td>N/A</td>
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<tr>
<td><strong>20 x 20</strong></td>
<td>Upright or Pendent</td>
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<td>QR*</td>
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<td>Style 30 Recessed</td>
<td>QR*</td>
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</tr>
<tr>
<td></td>
<td>Style 40 Recessed</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**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)
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 pendant sprinklers applies.

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

<table>
<thead>
<tr>
<th>Linear Spacing ft</th>
<th>Area Spacing ft</th>
<th>Ceiling Height ft</th>
<th>Ceiling Type</th>
<th>K-factor</th>
<th>Style</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Max</td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>100</td>
<td>400</td>
<td>Up to 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.2 EC</td>
<td>14.0 EC</td>
<td>Pendent or Upright</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>20</td>
<td>100</td>
<td>400</td>
<td>Up to 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.2 EC</td>
<td>14.0 EC</td>
<td>Pendent or Upright</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>100</td>
<td>400</td>
<td>Over 30 and up to 45</td>
<td>Noncombustible Unobstructed</td>
<td>11.2 EC</td>
</tr>
</tbody>
</table>

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.
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.

### Table D

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Area ft x ft</th>
<th>Light Hazard 0.10 GPM/ft²</th>
<th>Group I Ordinary Hazard 0.15 GPM/ft²</th>
<th>Group II Ordinary Hazard 0.20 GPM/ft²</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>GPM</td>
<td>PSI</td>
<td>GPM</td>
</tr>
<tr>
<td>TY5137 (K=11.2) Upright</td>
<td>14 x 14</td>
<td>30</td>
<td>7.2</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>16 x 16</td>
<td>30</td>
<td>7.2</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>18 x 18</td>
<td>33</td>
<td>8.7</td>
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</tr>
<tr>
<td></td>
<td>20 x 20</td>
<td>40</td>
<td>12.8</td>
<td>60</td>
</tr>
<tr>
<td>TY5237 (K=11.2) Pendent</td>
<td>14 x 14</td>
<td>30</td>
<td>7.2</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>16 x 16</td>
<td>30</td>
<td>7.2</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>18 x 18</td>
<td>33</td>
<td>8.7</td>
<td>49</td>
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<tr>
<td></td>
<td>20 x 20</td>
<td>40</td>
<td>12.8</td>
<td>60</td>
</tr>
<tr>
<td>TY6137 (K=14.0) Upright</td>
<td>14 x 14</td>
<td>N/A</td>
<td>N/A</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>16 x 16</td>
<td>N/A</td>
<td>N/A</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>18 x 18</td>
<td>N/A</td>
<td>N/A</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>20 x 20</td>
<td>N/A</td>
<td>N/A</td>
<td>60</td>
</tr>
<tr>
<td>TY6237 (K=14.0) Pendent</td>
<td>14 x 14</td>
<td>37</td>
<td>7.0</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>16 x 16</td>
<td>37</td>
<td>7.0</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>18 x 18</td>
<td>37</td>
<td>7.0</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>20 x 20</td>
<td>40</td>
<td>8.2</td>
<td>60</td>
</tr>
</tbody>
</table>

**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
**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
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 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.

<table>
<thead>
<tr>
<th>SIN</th>
<th>SPRINKLER FINISH</th>
<th>TEMPERATURE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NATURAL BRASS</td>
<td>135°F (57°C)</td>
</tr>
<tr>
<td>4</td>
<td>SIGNAL WHITE (RAL9003) POLYESTER</td>
<td>155°F (68°C)</td>
</tr>
<tr>
<td>5</td>
<td>JET BLACK (RAL9005) POLYESTER</td>
<td>175°F (79°C)</td>
</tr>
<tr>
<td>7</td>
<td>LEAD COATED</td>
<td>200°F (93°C)</td>
</tr>
<tr>
<td>9</td>
<td>CHROME-PLATED</td>
<td>286°F (141°C)</td>
</tr>
<tr>
<td>000</td>
<td>OPEN²</td>
<td></td>
</tr>
</tbody>
</table>

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

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*)

Flush Escutcheon, Two-Piece
Specify: Style 60 Two-Piece Flush Escutcheon with (specify) finish, P/N (specify**) (*Refer to Technical Data Sheet TFP770)

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

*Refer to Technical Data Sheet TFP778