Series TY-FRL — 5.6 and 8.0 K-factor
Extended Coverage Horizontal Sidewall Sprinklers
Quick & Standard Response (Light Hazard)

General Description
The Series TY-FRL, 5.6, and 8.0 K-factor, Extended Coverage Horizontal Sidewall Sprinklers are solder type spray sprinklers designed for use in hydraulically calculated sprinkler systems in light hazard, commercial occupancies such as churches, restaurant seating areas, hotels, educational facilities, offices, etc. With their coverage up to 16 ft (4.9 m) wide by 24 ft (7.3 m) long, they are designed for installation along a wall or the side of a beam and just beneath a smooth, flat, horizontal ceiling. Horizontal sidewall sprinklers are commonly used instead of pendent or upright sprinklers due to aesthetics or building construction considerations where piping across the ceiling is not desirable.

The fast response thermal sensitivity rating of the Series TY-FRL provides for a quick response extended coverage (QREC) rating for many of the coverage areas detailed in Tables B and C.

NOTICE
The Series TY-FRL 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, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

Sprinkler Identification Number
TY3322 — EC HSW, 5.6K, 1/2"NPT
TY4322 — EC HSW, 8.0K, 3/4"NPT
TY3322 is a redesignation for S1888 and G8970.
TY4322 is a redesignation for S1868 and G8170.

Technical Data
Approvals
UL and C-UL Listed.
FM and NYC Approved.
(Refer to Table A for complete approval information, as well as the Design Criteria Section pertaining to special design considerations.)

Maximum Working Pressure
175 psi (12.1 bar)

Discharge Coefficient
K = 5.6 GPM/psi (80.6 LPM/bar)
K = 8.0 GPM/psi (115.2 LPM/bar)

Temperature Ratings
Refer to Table A

Finishes
Sprinkler: Refer to Table A

Physical Characteristics
Frame .......................... Bronze
Strut .......................... Monel
Deflector ......................... Bronze
Hook .......................... Monel
Link Assembly ................. Nickel
Ejection Spring ................ Inconel
Button .......................... Bronze
Seal ............................ TEFLON

Operation
The fusible link (heat collector) assembly is comprised of two 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, allowing the sprinkler to operate.

Design Criteria
The Series TY-FRL Extended Coverage Horizontal Sidewall Sprinklers must be installed and utilized in Light Hazard Occupancies, under smooth, flat, horizontal ceilings as outlined in the applicable installation standard recognized by the Approval Agency (e.g., UL recognizes NFPA 13, and FM recognizes the FM Loss Prevention Data Sheets). Installation of the Series TY-FRL Horizontal Sidewall Sprinklers in recessed escutcheons will void all manufacturer’s warranties, as well as possibly void the sprinkler’s Approvals and/or Listings.
Installation

The Series TY-FRL Sprinklers must be installed in accordance with this section.

**NOTICE**

A leak tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 lb-ft (9,5 to 19,0 N-m). 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 and cause leakage or impairment of the sprinkler.

Do not attempt to make-up for insufficient adjustment in the escutcheon plate by under- or over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

**Step 1.** The Series TY-FRL Horizontal Sidewall Sprinklers must be installed with their centerline of waterway parallel to the ceiling and perpendicular to the back wall surface. The word “TOP” on the deflector must face upwards toward the ceiling.

**Step 2.** After installing an 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.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 9 Sprinkler Wrench (Ref. Figure 3). With reference to Figure 1 or 2, the W-Type 9 Sprinkler Wrench is to be applied to the wrench area.
### NOTES:
1. List by Underwriters Laboratories, Inc. (UL) per Table B.
2. Listed by Underwriters Laboratories, Inc. for use in Canada per Table B.
3. Approved by Factory Mutual Research Corporation (FM) per Table C.
4. Approved by the City of New York under MEA 112-04-B.

#### TABLE A
LABORATORY LISTINGS AND APPROVALS (REFER TO THE DESIGN CRITERIA SECTION)

#### 5.6 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3322)

<table>
<thead>
<tr>
<th>Response Rating</th>
<th>Coverage Area</th>
<th>Minimum Flow</th>
<th>Minimum Pressure</th>
<th>Deflector-To-Ceiling Distance</th>
<th>Sprinkler Temperature Rating</th>
<th>Minimum Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick</td>
<td>16 x 16 (4.9 x 4.9)</td>
<td>29 (110)</td>
<td>26.8 (1.85)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2.4)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 20 (4.9 x 6.1)</td>
<td>33 (125)</td>
<td>34.7 (2.39)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2.4)</td>
</tr>
<tr>
<td>Quick</td>
<td>18 x 16 (5.5 x 4.9)</td>
<td>29 (110)</td>
<td>26.8 (1.85)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2.4)</td>
</tr>
</tbody>
</table>

#### 8.0 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4322)

<table>
<thead>
<tr>
<th>Response Rating</th>
<th>Coverage Area</th>
<th>Minimum Flow</th>
<th>Minimum Pressure</th>
<th>Deflector-To-Ceiling Distance</th>
<th>Sprinkler Temperature Rating</th>
<th>Minimum Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick</td>
<td>16 x 16 (4.9 x 4.9)</td>
<td>26 (98)</td>
<td>10.6 (0.73)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 18 (4.9 x 5.5)</td>
<td>29 (110)</td>
<td>13.1 (0.90)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 18 (4.9 x 5.5)</td>
<td>38 (144)</td>
<td>22.6 (1.56)</td>
<td>4 to 18 (100 to 450)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 20 (4.9 x 6.1)</td>
<td>34 (129)</td>
<td>18.1 (1.25)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 22 (4.9 x 6.7)</td>
<td>37 (140)</td>
<td>21.4 (1.48)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>18 x 16 (5.5 x 4.9)</td>
<td>31 (117)</td>
<td>15.0 (1.03)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>18 x 18 (5.5 x 5.5)</td>
<td>33 (125)</td>
<td>17.0 (1.17)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Quick</td>
<td>20 x 16 (6.1 x 4.9)</td>
<td>35 (133)</td>
<td>19.1 (1.32)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Standard</td>
<td>16 x 20 (4.9 x 6.1)</td>
<td>45 (170)</td>
<td>31.6 (2.18)</td>
<td>4 to 18 (100 to 450)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Standard</td>
<td>16 x 22 (4.9 x 6.7)</td>
<td>37 (140)</td>
<td>21.4 (1.48)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
<tr>
<td>Standard</td>
<td>16 x 24 (4.9 x 7.3)</td>
<td>44 (167)</td>
<td>30.3 (2.09)</td>
<td>4 to 6 (100 to 150)</td>
<td>165</td>
<td>10 (3.1)</td>
</tr>
</tbody>
</table>

### TABLE B
UL AND C-UL LISTING COVERAGE AND FLOW RATE CRITERIA

<table>
<thead>
<tr>
<th>K</th>
<th>TYPE</th>
<th>TEMP. RATING</th>
<th>FRAME COLOR CODE</th>
<th>SPRINKLER FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.6</td>
<td>1/2 in. NPT</td>
<td>165°F/74°C</td>
<td>Unpainted</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>8.0</td>
<td>3/4 in. NPT</td>
<td>165°F/74°C</td>
<td>Unpainted</td>
<td>1, 2, 3, 4</td>
</tr>
</tbody>
</table>
5.6 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3322)

<table>
<thead>
<tr>
<th>Response Rating</th>
<th>Coverage Area (1), Ft x Ft (m x m)</th>
<th>Minimum Flow (2), GPM (LPM)</th>
<th>Minimum Pressure (3), PSI (BAR)</th>
<th>Deflector-To-Ceiling Distance (3), In. (mm)</th>
<th>Sprinkler Temperature Rating, °F</th>
<th>Minimum Spacing (4), Ft. (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick</td>
<td>16 x 16 (4,9 x 4,9)</td>
<td>26 (98)</td>
<td>22 (1,51)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2,4)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 18 (4,9 x 5,5)</td>
<td>30 (114)</td>
<td>29 (2,00)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2,4)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 20 (4,9 x 6,1)</td>
<td>33 (125)</td>
<td>35 (2,41)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>8 (2,4)</td>
</tr>
</tbody>
</table>

8.0 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4322)

<table>
<thead>
<tr>
<th>Response Rating</th>
<th>Coverage Area (1), Ft x Ft (m x m)</th>
<th>Minimum Flow (2), GPM (LPM)</th>
<th>Minimum Pressure (3), PSI (BAR)</th>
<th>Deflector-To-Ceiling Distance (3), In. (mm)</th>
<th>Sprinkler Temperature Rating, °F</th>
<th>Minimum Spacing (4), Ft. (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick</td>
<td>16 x 16 (4,9 x 4,9)</td>
<td>32 (121)</td>
<td>16 (1,10)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>10 (3,1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 18 (4,9 x 5,5)</td>
<td>36 (136)</td>
<td>20 (1,38)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>10 (3,1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 20 (4,9 x 6,1)</td>
<td>40 (151)</td>
<td>25 (1,72)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>10 (3,1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 22 (4,9 x 6,7)</td>
<td>44 (167)</td>
<td>30 (2,06)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>10 (3,1)</td>
</tr>
<tr>
<td>Quick</td>
<td>16 x 24 (4,9 x 7,3)</td>
<td>48 (182)</td>
<td>36 (2,48)</td>
<td>4 to 12 (100 to 300)</td>
<td>165</td>
<td>10 (3,1)</td>
</tr>
</tbody>
</table>

NOTES
1. Backwall (where sprinkler is located) by sidewall (length of throw).
2. Requirement is based on maintaining both minimum flow and minimum residual pressure.
3. The centerline of the sprinkler waterway is located 7/16 inch (11,1 mm) below the deflector (Ref. Figures 1 and 2).
4. Minimum spacing is for lateral distance between sprinklers located along a single wall. Otherwise adjacent sprinklers (i.e., sidewall sprinklers on an adjacent wall, on an opposite wall, or pendent sprinklers) must be located outside of the maximum listed protection area of the extended coverage sidewall sprinkler being utilized.

TABLE C
FM COVERAGE AND FLOW RATE CRITERIA

Care and Maintenance
The Series TY-FRL 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, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.

Sprinklers that 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 or over-heated sprinklers must be replaced.

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.

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 of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.
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: (Specify Model/SIN), (specify K-factor), Series TY-FRL Extended Coverage Horizontal Sidewall Sprinkler with (specify finish), P/N (specify from Table D)

Sprinkler Wrench
Specify: W-Type 9 Sprinkler Wrench, P/N 56-000-1-849