RAPID RESPONSE Series LFII Residential Sprinklers
5.8 K-factor Horizontal Sidewall, NFPA 13 Optimized Wet Pipe Systems

General Description
The TYCO RAPID RESPONSE Series LFII (TY4334) Residential Horizontal Sidewall Sprinklers are decorative, fast response, frangible bulb sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When enhanced flow characteristics for residential portions of any occupancy per NFPA 13 is the major consideration, the Series LFII (TY4334) should be the first choice.

When higher flow demands are required for residential sprinklers used in an NFPA 13 design, the large 5.8 K-factor of the Series LFII (TY4334) is an attractive choice. Although mostly intended where residential sprinklers are to be used in an NFPA 13 design, the Series LFII (TY4334) can also be used in wet pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D, and wet pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R.

The recessed version of the Series LFII (TY4334) is intended for use in areas with finished walls. It employs a two-piece Style 20 Recessed Escutcheon. The Recessed Escutcheon provides 1/4 in. (6.4 mm) of recessed adjustment or up to 1/2 in. (12.7 mm) of total adjustment from the flush mounting surface position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the pipe nipples to the sprinklers must be cut.

The Series LFII (TY4334) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated. 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 have passed the 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 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 LFII (TY4334) Residential Horizontal Sidewall 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 Number (SIN)
TY4334
Components:

1 - Frame
2 - Button
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector
7 - Ejection Spring

* Temperature rating is indicated on top of Deflector.

FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY4334)

FIGURE 2
STYLE 20 RECESSED ESCUTCHEON FOR USE WITH THE RAPID RESPONSE SERIES LFII RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER (TY4334)

FIGURE 3
W-TYPE 6 SPRINKLER WRENCH

FIGURE 4
W-TYPE 7 RECESSED SPRINKLER WRENCH
Technical Data

Approvals:
UL and C-UL Listed
FM Approved
Certified to all requirements of NSF/ANSI 61

Note: Sprinklers with a polyester finish are UL Listed as corrosion-resistant sprinklers.
See the Design Criteria section for details on these approvals.

Maximum Working Pressure:
175 psi (12.1 bar)

Discharge Coefficient:
K = 5.8 GPM/psi² (83.5 LPM/bar²)

Temperature Rating:
155°F (68°C) or 175°F (79°C)

Finishes:
Natural Brass, Signal White Polyester Coated, or Chrome Plated

Physical Characteristics:
Frame ................. Brass
Button ................. Brass
Sealing Assembly . Beryllium Nickel w/Teflon
Bulb .................. 3 mm dia. Glass
Compression Screw ......... Brass
Deflector ............... Brass
Ejection Spring ......... Stainless Steel

Operation

The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

UL AND C-UL LISTING CRITERIA
The TYCO RAPID RESPONSE Series LFII (TY4334) Residential Horizontal Sidewall Sprinklers are UL and C-UL Listed for installation in accordance with this section.

Residential Sprinkler Design Guide
When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer’s recommendations that may be acceptable to the local authority having jurisdiction.

System Type
Only wet pipe systems may be utilized.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design
(NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rate are given in Table A as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of design sprinklers as specified in NFPA 13D or NFPA 13R.

Hydraulic Design
(NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Table A as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ft² over the design area comprised of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers.

Example No. 1: A corridor being protected is 8 ft wide; consequently, an actual coverage area of 8 ft x 20 ft is being contemplated. Based on using the LFII (TY4334) Residential Horizontal Sidewall Sprinklers, the flow rate provided in Table A for a 16 ft x 20 ft coverage area is 29 gpm. However based on minimum discharge of 0.1 gpm/ft² the flow rate would be 16 gpm. In this case a minimum flow rate of 29 gpm for this design sprinkler must be utilized.

Example No. 2: The room being protected is 16 ft x 16 ft. Based on using the LFII (TY4334) Residential Horizontal Sidewall Sprinklers, the flow rate provided in Table A for a 16 ft x 16 ft coverage area is 21 gpm. However based on minimum discharge of 0.1 gpm/ft² the flow rate would be 26 gpm. In this case a minimum flow rate of 26 gpm for this design sprinkler must be utilized.

Obstruction To Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the TYCO Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed with an end-of-deflector-boss to wall distance of 1-1/4 in. to 6 in. In addition the top-of-deflector-to-ceiling distance is to be within the range (see Table A) being hydraulically calculated.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 ft (2.4 m). The maximum spacing between sprinklers cannot exceed the width of the coverage area (see Table A) being hydraulically calculated (for example, maximum 12 ft for a 12 ft x 12 ft coverage area, or 16 ft for a 16 ft x 20 ft coverage area).

FM APPROVAL CRITERIA
The Series LFII (TY4334) Residential Horizontal Sidewall Sprinklers are FM Approved for installation in accordance with the applicable Factory Mutual Loss Prevention Data Sheet FM 2-5. Criteria provided by FM may differ for UL and/or NFPA, therefore the designer should review and become familiar with Factory Mutual requirements before proceeding with design.

The following information pertaining to System Type, Hydraulic Design, and Sprinkler spacing are provided for reference and are not intended to provide complete installation criteria as provided in the applicable Factory Mutual Loss Prevention Data Sheet.

Residential Sprinkler Design Guide
When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer’s recommendations that may be acceptable to the local authority having jurisdiction.

System Type
Only wet pipe systems may be utilized.

Hydraulic Design
The number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be greater than the following:

- The flow rates given in Table B as a function of the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ft² over the design area comprised of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers.

Example No. 1: A corridor being protected is 10 ft wide; consequently, an actual coverage area of 10 ft x 16 ft is being contemplated. Based on using the LFII (TY4334) Residential Horizontal Sidewall Sprinklers, the flow rate provided in Table B for a 16 ft x 20 ft coverage area is 32 gpm. However based on minimum discharge of 0.1 gpm/ft² the flow rate would be 16 gpm. In this case a minimum flow rate of 24 gpm for this design sprinkler must be utilized.
## WET PIPE SYSTEM

### UL AND C-UL LISTED

**SERIES LFII RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY4334)**

**NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA**

<table>
<thead>
<tr>
<th>Max. Coverage Area Width x Length (ft x ft)</th>
<th>Max. Spacing ft (m)</th>
<th>Ordinary Temp. Rating 155°F (68°C)</th>
<th>Intermediate Temp. Rating 175°F (79°C)</th>
<th>Deflector to Ceiling</th>
<th>Installation Type</th>
<th>Minimum Spacing ft (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 x 12 (3.7 x 3.7)</td>
<td>12 (3.7)</td>
<td>19 (71.9)</td>
<td>10.7 (0.74)</td>
<td></td>
<td>Recessed using Style 20 Escutcheon or non-recessed per NFPA 13D, 13R, or 13</td>
<td></td>
</tr>
<tr>
<td>14 x 14 (4.3 x 4.3)</td>
<td>14 (4.3)</td>
<td>21 (79.5)</td>
<td>13.1 (0.90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 14 (4.9 x 4.3)</td>
<td>16 (4.9)</td>
<td>21 (79.5)</td>
<td>13.1 (0.90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 16 (4.9 x 4.9)</td>
<td>16 (4.9)</td>
<td>21 (79.5)</td>
<td>13.1 (0.90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 18 (4.9 x 5.5)</td>
<td>16 (4.9)</td>
<td>23 (87.1)</td>
<td>15.7 (1.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 20 (4.9 x 6.1)</td>
<td>16 (4.9)</td>
<td>29 (108.8)</td>
<td>25.0 (1.72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 x 18 (5.5 x 5.5)</td>
<td>18 (5.5)</td>
<td>29 (108.8)</td>
<td>25.0 (1.72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 22 (4.9 x 6.7)</td>
<td>16 (4.9)</td>
<td>38 (143.8)</td>
<td>42.9 (2.96)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 x 12 (3.7 x 3.7)</td>
<td>12 (3.7)</td>
<td>19 (71.9)</td>
<td>10.7 (0.74)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 14 (4.3 x 4.3)</td>
<td>14 (4.3)</td>
<td>23 (87.1)</td>
<td>15.7 (1.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 14 (4.9 x 4.3)</td>
<td>16 (4.9)</td>
<td>23 (87.1)</td>
<td>15.7 (1.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 16 (4.9 x 4.9)</td>
<td>16 (4.9)</td>
<td>23 (87.1)</td>
<td>15.7 (1.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 18 (4.9 x 5.5)</td>
<td>16 (4.9)</td>
<td>24 (90.8)</td>
<td>17.1 (1.18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 20 (4.9 x 6.1)</td>
<td>16 (4.9)</td>
<td>30 (113.6)</td>
<td>26.8 (1.85)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 x 18 (5.5 x 5.5)</td>
<td>18 (5.5)</td>
<td>30 (113.6)</td>
<td>26.8 (1.85)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 22 (4.9 x 6.7)</td>
<td>16 (4.9)</td>
<td>40 (151.4)</td>
<td>47.6 (3.28)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

a. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

b. Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. See Hydraulic Design under the Design Criteria section.

c. For NFPA 13 residential applications, the greater of 0.1 gpm/ft² over the design area or the flow in accordance with the criteria in this table must be used.

d. The Width x Length dimension refers to the Width (backwall where the sprinkler is located) times the Length (horizontal throw of sprinkler).
### Installation

The TYCO RAPID RESPONSE Series LFII (TY4334) Residential Horizontal and Recessed Horizontal Sidewall 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).
- **A leak-tight 1/2 in. NPT sprinkler joint** should be obtained with a minimum to maximum torque of 7 to 14 lb-ft (9.5 to 19.0 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. Readjust the position of the sprinkler fitting to suit.

### Step 1.

Horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the Deflector is to face towards the ceiling with the front edge of the Deflector parallel to the ceiling.

### Step 2.

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 6 Sprinkler Wrench (see Figure 3). With reference to Figure 1, the W-Type 6 Sprinkler Wrench is to be applied to the wrench flats.

### Series LFII Residential Recessed Horizontal Sidewall Sprinklers

The Series LFII Recessed Horizontal Sidewall Sprinklers must be installed in accordance with the following instructions.

#### Step A.

Recessed horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the Deflector is to face towards the ceiling.

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### Table B

**WET PIPE SYSTEM**

**FM APPROVED SERIES LFII RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY4334)**

<table>
<thead>
<tr>
<th>Max. Coverage Area (Width x Length) ft x ft (m x m)</th>
<th>Max. Spacing ft (m)</th>
<th>WET PIPE SYSTEM Minimum Flow and Residual Pressure &lt;sup&gt;(a), (b)&lt;/sup&gt;</th>
<th>Deflector to Ceiling</th>
<th>Installation Type</th>
<th>Minimum Spacing ft (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 x 12 (3.7 x 3.7)</td>
<td>12 (3.7)</td>
<td>Flow &lt;sup&gt;(b)&lt;/sup&gt; GPM (L/min) 22 (83.3)</td>
<td>14.4 (0.99)</td>
<td>4 in. to 12 in.</td>
<td>8 (2.4)</td>
</tr>
<tr>
<td>14 x 14 (4.3 x 4.3)</td>
<td>14 (4.3)</td>
<td>22 (83.3)</td>
<td>14.4 (0.99)</td>
<td>Recessed using Style 20 Escutcheon or non-recessed</td>
<td></td>
</tr>
<tr>
<td>16 x 16 (4.9 x 4.9)</td>
<td>16 (4.9)</td>
<td>24w (90.8)</td>
<td>17.1 (1.18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 18 (4.9 x 5.5)</td>
<td>16 (4.9)</td>
<td>28 (106.0)</td>
<td>23.3 (1.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 x 20 (4.9 x 6.1)</td>
<td>16 (4.9)</td>
<td>32 (121.0)</td>
<td>30.4 (2.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 x 18 (5.5 x 5.5)</td>
<td>18 (5.5)</td>
<td>33 (125.0)</td>
<td>32.4 (2.23)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

a. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
b. Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. See Hydraulic Design under the Design Criteria section.
c. For FM residential applications, the greater of 0.1 gpm/ft <sup>(a)</sup> over the design area (i.e., SxL) or the flow in accordance with the criteria in this table must be used.
d. The Width x Length dimension refers to the Width (backwall where the sprinkler is located) times the Length (horizontal throw of sprinkler).
Step B. After installing the Style 20 Mounting Plate over the sprinkler threads and with pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (see Figure 4). With reference to Figure 1, the W-Type 7 Recessed Sprinkler Wrench is to be applied to the sprinkler wrench flats.

Step D. After the wall has been installed or the finish coat has been applied, slide on the Style 20 Closure over the Series LFII Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the wall.

Care and Maintenance

The TYCO RAPID RESPONSE Series LFII (TY4334) Residential Horizontal and Recessed Horizontal Sidewall 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 which 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 Plate may delay the sprinkler operation in a fire situation.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinkler systems are recommended to 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

When placing an order, indicate the full product name. Contact your local distributor for availability.

Sprinkler Assembly
Specify: Series LFII (TY4334), K=5.8, Residential Horizontal Sidewall Sprinkler, (specify) temperature rating, (specify) finish, P/N (specify).

155°F (68°C)
- Natural Brass .................. 51-534-1-155
- Signal White (RAL9003) .......................... 51-534-4-155
- Chrome Plated .................. 51-534-9-155

175°F (79°C)
- Natural Brass .................. 51-534-1-175
- Signal White (RAL9003) .......................... 51-534-4-175
- Chrome Plated .................. 51-534-9-175

1. UL Listed as corrosion-resistant.

Recessed Escutcheon
Specify: Style 20 Recessed Escutcheon with (specify*) finish, P/N (specify*).

*Refer to Technical Data Sheet TFP770.

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387
Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001