

## Series LFII Residential Flush Horizontal Sidewall Sprinklers 4.2 K-factor

### General Description

The Series LFII (TY2384) Residential Flush Horizontal Sidewall Sprinklers are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When aesthetics is the major consideration, the Series LFII (TY2384) should be the first choice.

The Series LFII are to be used in wet pipe residential sprinkler systems for one- and two-family dwellings and manufactured homes per NFPA 13D; wet pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R; or, wet pipe sprinkler systems for the residential portions of any occupancy per NFPA 13.

The Series LFII (TY2384) has a 4.2 (60,5) K-factor that provides the required residential flow rates at reduced pressures, enabling smaller pipe sizes and water supply requirements.

The flush design of the Series LFII (TY2384) features a separable escutcheon providing 3/16 inch (4,8 mm) horizontal adjustment. This adjustment reduces the accuracy to which the pipe nipples to the sprinklers must

be cut to help assure a perfect fit installation.

The Series LFII (TY2384) 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.

#### WARNINGS

*The Series LFII (TY2384) Residential Flush 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, 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. The installing contractor or sprinkler manufacturer should be contacted with any questions.*



**Temperature Rating:**  
162°F/72°C

**Horizontal Adjustment:**  
3/16 inch (4,8 mm)

**Finishes:**  
Sprinkler and Escutcheon:  
White, Chrome, or Black

**Physical Characteristics:**

Body	.....	Bronze
Deflector	.....	Copper
Valve Cap	.....	Brass
Orifice Seal	.....	Copper
Heat Collectors	.....	Copper

### Sprinkler/Model Identification Number

SIN TY2384

### Technical Data

**Approvals:**  
UL and C-UL Listed.

**Maximum Working Pressure:**  
175 psi (12,1 bar)

**Discharge Coefficient:**  
K = 4.2 GPM/psi<sup>1/2</sup> (60,5 LPM/bar<sup>1/2</sup>)

### Operation

The sprinkler assembly contains a small fusible solder element. When exposed to sufficient heat from a fire, the solder melts and enables the internal components of the sprinkler to fall away. At this point the sprinkler activates with the deflector extending into its operated position (Reference Figure 1C), permitting water to flow.

#### 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.*

# Design Criteria

The Series LFII (TY2384) Residential Flush Horizontal Sidewall Sprinklers are UL Listed and C-UL Listed for installation in accordance with the following criteria.

**NOTE**

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 minimum required sprinkler flow rate for systems designed to NFPA 13D or NFPA 13R 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.

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 for NFPA 13D and 13R as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/sq. ft. over the "design area" comprised of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers.

**Obstruction To Water Distribution.** Locations of sprinklers are to be in accordance with the obstruction rules of NFPA 13 for residential sprinklers.

**Operational Sensitivity.** The sprinklers are to be installed in the flush position per Figure 1 with the provided escutcheon.

In addition the top-of-deflector-to-ceiling distance is to be within the range (Ref. Table A) being hydraulically calculated.

**Sprinkler Spacing.** The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A) being hydraulically calculated



**ELEVATION**

Maximum Coverage Area (a) Width x Length (b) Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Minimum Flow (c) and Residual Pressure
		Top-Of-Deflector- To- Ceiling: 4 to 6 Inches (100 to 150 mm)
		<b>162°F/72°C</b>
12 x 12 (3,7 x 3,7)	12 (3,7)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	20 GPM (75,7 LPM) 22.7 psi (1,57 bar)

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

(b) Width (backwall where sprinkler is located) x Length (horizontal throw of sprinkler).

(c) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design Criteria Section for details.

(d) Sidewall sprinklers, where installed under a ceiling with a slope greater than 0 inch rise for a 12 inch run to a slope up to 2 inch rise for 12 inch run, must be located per one of the following:

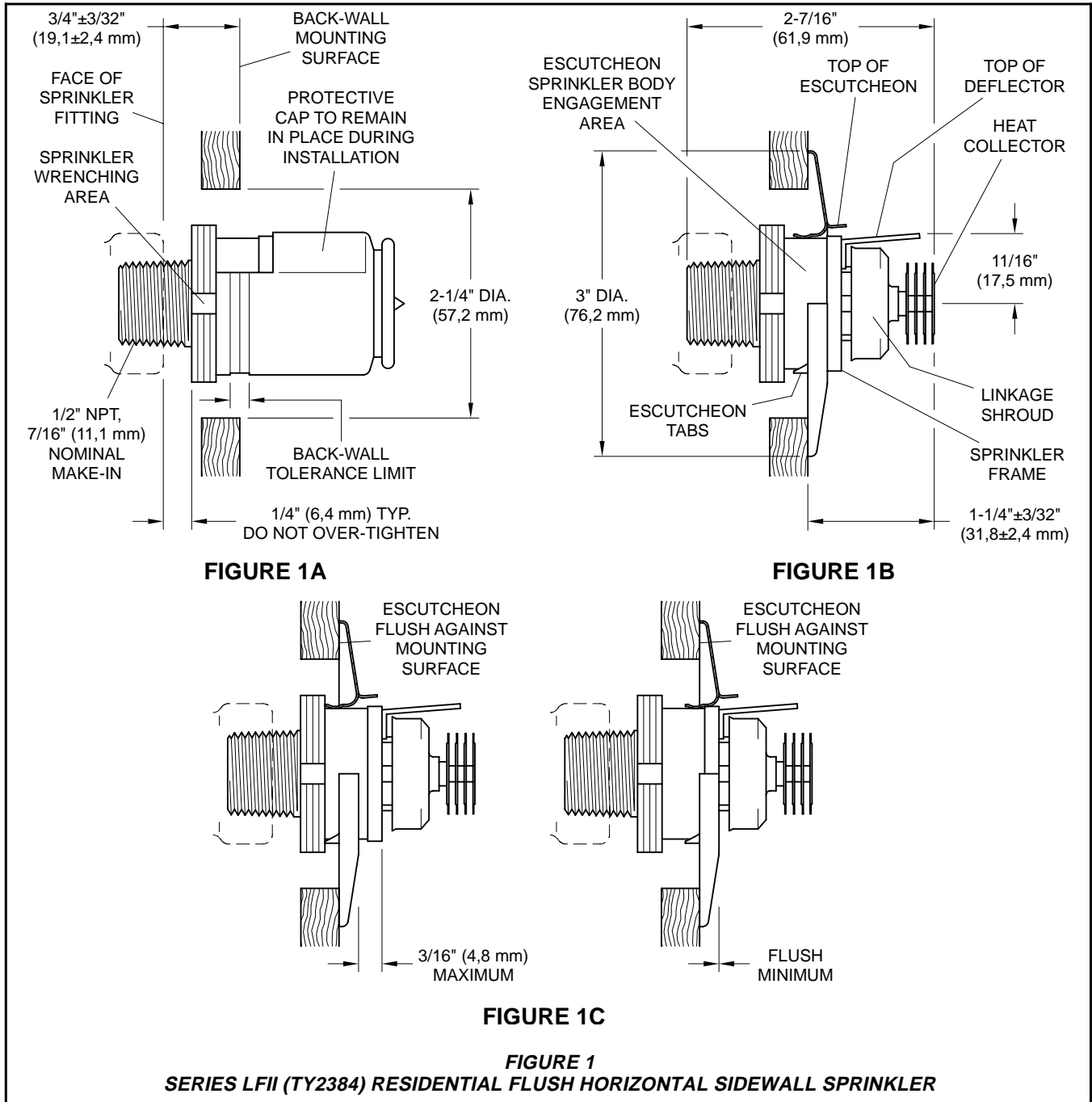
- Locate the sprinklers at the high point of the slope and positioned to discharge down the slope.
- Locate the sprinklers along the slope and positioned to discharge across the slope.

**TABLE A**  
**NFPA 13D AND NFPA 13R WET PIPE HYDRAULIC DESIGN CRITERIA**  
**FOR THE SERIES LFII (TY2384)**  
**RESIDENTIAL FLUSH HORIZONTAL SIDEWALL SPRINKLERS**  
**FOR HORIZONTAL CEILING (Maximum 2 Inch Rise for 12 Inch Run)**

(e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 16 feet for a 16 ft. x 16 ft. coverage area).

**Precautionary Warnings for Corrosive Environments.** The Series LFII (TY2384) flush sprinkler heads must be installed in a non-corrosive environ-

ment. The improper use of corrosive agents such as flux, other products that contain chloride ions described, whether applied internally or externally to the sprinkler system, may result in corrosion of the sprinkler head, or stress corrosion cracking, which in



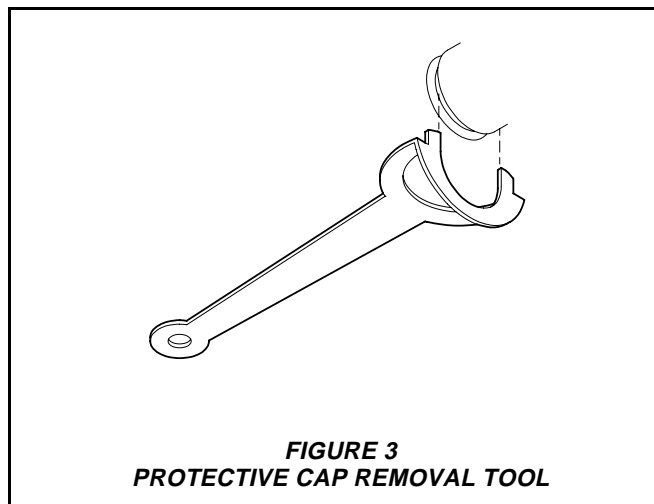
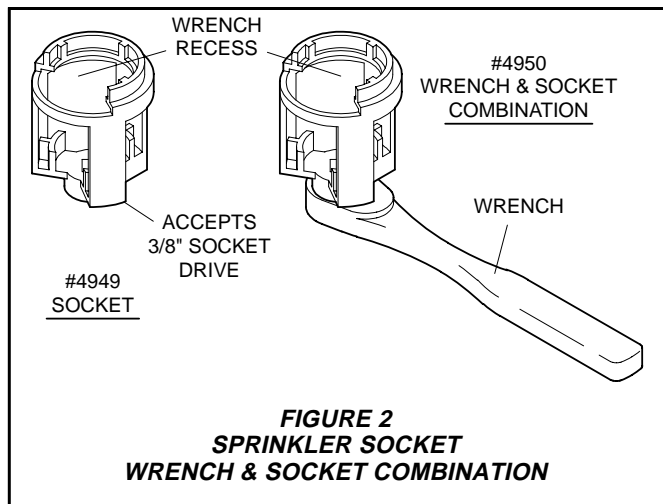
turn may cause the sprinklers heads to develop leaks, operate unexpectedly, or not operate properly.

Accordingly, it is essential that the Series LFII (TY2384) flush sprinkler head be installed only by experienced fire sprinkler engineers, who comply fully with NFPA13, 13D, 13R and 25, ASTM B813, ASTM B828 and Copper Development Association (CDA).

**Copper sprinkler system piping.** Any time copper piping is used in any part of a fire sprinkler system, the copper piping must be installed in confor-

mance with all applicable standards and requirements for copper piping, including: NFPA13, 13D, 13R and 25, ASTM B813, ASTM B828, and Copper Development Association (CDA). Any soldering in any part of a sprinkler system, either internally or externally, must be done with use of only an ASTM B 813 approved flux. Residual flux must be thoroughly REMOVED from both the interior and exterior surfaces of the piping before installing the sprinkler heads. The use of improper flux, or the failure to thoroughly remove proper flux, may result in corro-

sion of the sprinkler head or stress cracking, which in turn may cause the sprinklers heads to develop leaks, operate unexpectedly, or not operate properly.



## Installation

The Series LFII (TY2384) must be installed in accordance with the following instructions:

### NOTES

*The Protective Cap is to remain on the sprinkler during installation until the wall installation is complete. The Protective Cap must be removed to place the sprinkler in service.*

*A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). A maximum of 21 ft.lbs. (28,5 Nm) of torque is to be used to install sprinklers. 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.*

*Each sprinkler must be inspected before installation. Do not use any sprinkler that exhibits any deformations or cracks, including cracks on the protective cap.*

**Step 1.** The Sprinkler must be installed only in the sidewall position and with the Sprinkler waterway centerline perpendicular to the mounting surface.

**Step 2.** Install the sprinkler fitting so that the distance from the face of the fitting to the mounting surface will be nominally 3/4 inches (19,1 mm) as shown in Figure 1A.

**Step 3.** With pipe thread sealant applied to the pipe threads, hand tighten the Sprinkler into the sprinkler fitting.

**Step 4.** Wrench tighten the Sprinkler using only the Sprinkler Socket or Wrench & Socket Combination (Ref. Figure 2). The wrench recess of the

Socket is to be applied to the sprinkler wrenching area (Ref. Figure 1A).

### NOTE

*The Sprinkler Wrench must be correctly aligned to slide over the Protective Cap. After the leading edge of the Sprinkler Wrench passes over the flat portion of the Protective Cap, it must be rotated and realigned to engage with the sprinkler wrenching area.*

*Conversely to remove the Sprinkler Wrench, sufficiently pull the Sprinkler Wrench so that it disengages from the sprinkler wrenching area, and then rotate the Sprinkler Wrench so that it can pass over the Protective Cap.*

**Step 5.** Use the “backwall tolerance limit” indicator (Ref. Figure 1A) on the Protective Cap to check for proper installation depth. The finished wall surface must line up within the 3/16 inch (4,8 mm) range of the “backwall tolerance limit”. Figure 1A illustrates the finished wall surface at the mid-point of the “backwall tolerance limit”. Relocate the sprinkler fitting as necessary.

If desired the Protective Cap may also be used to locate the center of the clearance hole. Apply chalk to the center point of the Cap and then gently touch the wall material against the center point of the Cap.

**Step 6.** After the wall has been completed with the 2-1/4 inch (57,2 mm) diameter clearance hole, use the Protective Cap Removal Tool (Ref. Figure 3) to remove the Protective Cap and then push on the Escutcheon until its flange comes in contact with the wall.

If the Escutcheon cannot be engaged sufficiently to contact the wall and/or the Escutcheon cannot be engaged per Figure 1C (i.e., 3/16 inch (4,8 mm) to flush with respect to the face of the sprinkler body), relocate the sprinkler fitting.

## Care and Maintenance

The Series LFII (TY2384) must be maintained and serviced in accordance with the following instructions:

### NOTES

*Absence of an Escutcheon Plate may delay the time to sprinkler operation in a fire situation.*

*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.*

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 or over heated sprinklers must be replaced.

Care must be exercised to avoid damage - 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. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

**NOTE**

*The owner must assure that the sprinklers are not used for hanging of 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.*

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 codes.

## Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) 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 TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP 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 TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP 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 TFBP 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 TFBP was informed about the possibility of such damages, and in no event shall TFBP'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

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

**Sprinkler Assembly:**

Series LFII (TY2384), K=4.2, Residential Flush Horizontal Sidewall Sprinkler without Escutcheon and having a (specify) finish, P/N (specify).

Chrome .....	51-124-9-162
White .....	51-124-4-162
Black .....	51-124-5-162

**Escutcheon:**

Escutcheon for Series LFII (TY2384), K=4.2, Residential Flush Horizontal Sidewall Sprinkler with (specify) finish, P/N (specify).

Chrome .....	56-124-9-001
White .....	56-124-4-001
Black .....	56-124-5-001

**Accessories:**

Socket for Series LFII (TY2384) Residential Flush Horizontal Sidewall Sprinkler, P/N 56-000-4-949.

Wrench & Socket for Series LFII (TY2384) Residential Flush Horizontal Sidewall Sprinkler, P/N 56-000-4-950.

Protective Cap Removal Tool for Series LFII (TY2384) Residential Flush Horizontal Sidewall Sprinkler, P/N 56-000-4-300.

