# Series LFII Residential Sprinklers 4.2 K-factor Horizontal Sidewall Wet Pipe and Dry Pipe Systems

***IMPORTANT***

*Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.*

*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.*

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## General Description

The TYCO Series LFII Residential Horizontal Sidewall Sprinklers (TY1334) are decorative, fast response, frangible bulb sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When aesthetics and optimized flow characteristics are the major consideration, the Series LFII Residential Sidewall Sprinklers (TY1334) should be the first choice.

The Series LFII Residential Sprinklers are intended for use in the following scenarios:

- Wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- Wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- Wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

The recessed version of the Series LFII Residential Sprinklers 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 Residential Sprinklers have 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.



NSF Certified to NSF/ANSI 61

**Dry Pipe System Application**

The Series LFII Residential Horizontal and Recessed Horizontal Sidewall Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Horizontal Sidewall Sprinklers (TY1334) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R. Non-water filled pipe will permit options for areas sensitive to freezing.

Components:

1 - Frame
2 - Button Assembly
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector *

* Temperature rating is indicated on top of Deflector.

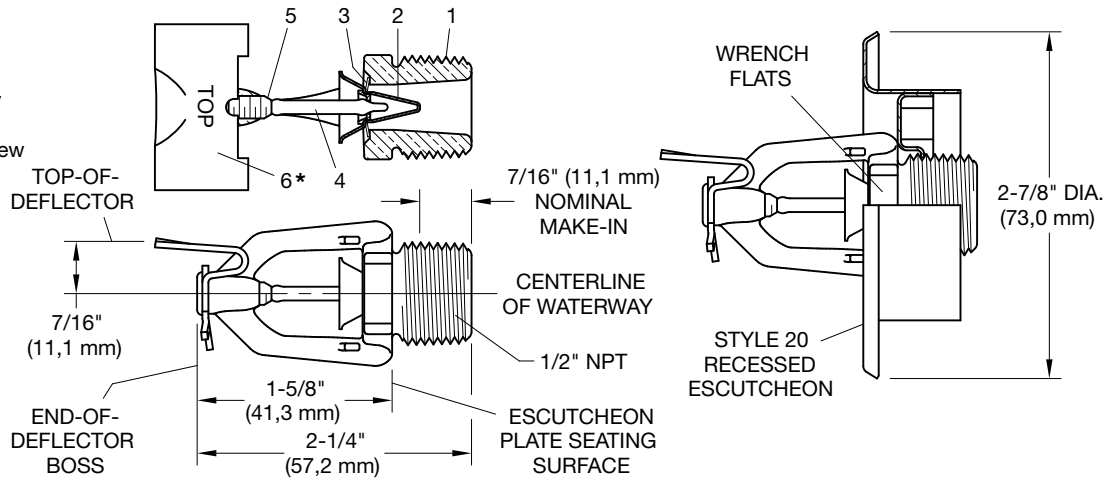



***FIGURE 1***
***SERIES LFII RESIDENTIAL***
***HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY1334)***

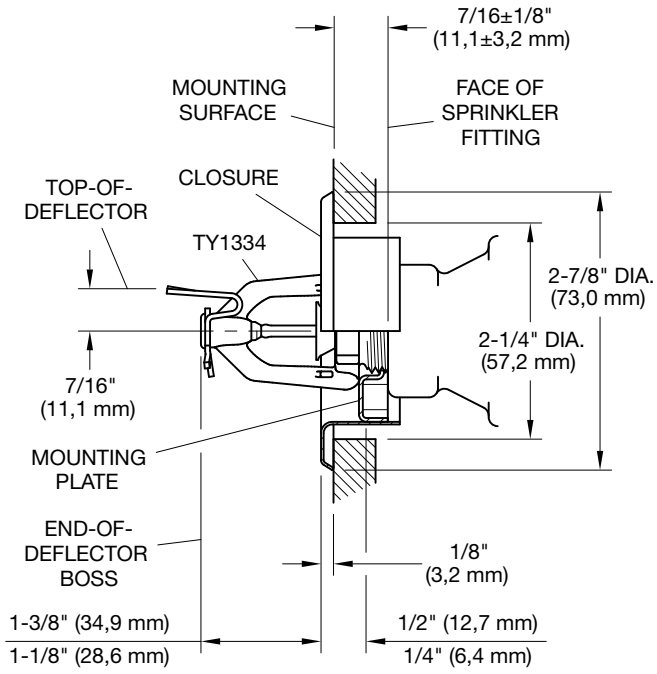



***FIGURE 2***
***STYLE 20 RECESSED ESCUTCHEON***
***FOR USE WITH THE SERIES LFII RESIDENTIAL***
***HORIZONTAL SIDEWALL SPRINKLER (TY1334)***

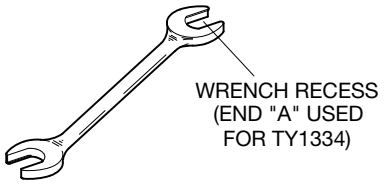



***FIGURE 3***
***W-TYPE 6***
***SPRINKLER WRENCH***

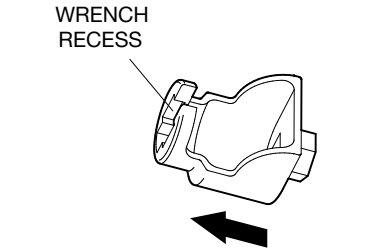



***FIGURE 4***
***W-TYPE 7 RECESSED***
***SPRINKLER WRENCH***

***NOTICE***

*The Series LFII Residential Horizontal Sidewall Sprinklers described herein must be installed and maintained in compliance with this document and the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), 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. Contact the installing contractor or product manufacturer with any questions.*

# *Sprinkler Identification Number (SIN)*

TY1334

# Technical Data

**Approvals**
- UL Listed (for use with wet pipe and dry pipe systems)
- C-UL Listed (for use only with wet pipe systems)
- Certified to all requirements of NSF/ANSI 61
- Australian WaterMark Certified

***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=4.2 GPM/psi½ (60,5 LPM/bar½)

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

**Finishes**
Natural Brass, Pure White Polyester Coated, Signal White Polyester Coated, Jet Black Polyester Coated, or Chrome Plated

**Physical Characteristics**

| | |
|---|---|
| Frame | Brass |
| Button | Copper |
| Sealing Assembly | Beryllium Nickel w/TEFLON |
| Bulb (3 mm) | Glass |
| Compression Screw | Bronze |
| Deflector | Copper |

# 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, allowing the sprinkler to activate and flow water.

# Design Criteria

The TYCO Series LFII Residential Horizontal and Recessed Horizontal Sidewall Sprinklers (TY1334) are UL and C-UL Listed for installation in accordance with the following criteria.

**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 Types**
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized. Refer to Technical Data Sheet TFP485 about the use of Residential Sprinklers in residential dry pipe systems.

**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 rates are given in Tables A and B 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. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

**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 Tables A and B as a function of temperature rating and the maximum allowable coverage area
- A minimum discharge of 0.1 gpm/ft$^2$ over the "design area" comprised of the four most hydraulically demanding sprinklers for actual coverage areas protected by the four sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

**Dry Pipe System Water Delivery**
When using the Series LFII Residential Horizontal Sidewall Sprinklers (TY1334) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

**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 to 6 inches. In addition the top-of-deflector-to-ceiling distance is to be within the range (Tables A and B) 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 (Tables A and B) 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.

# Installation

The TYCO Series LFII Residential Horizontal and Recessed Horizontal Sidewall Sprinklers (TY1334) 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 by applying a minimum to maximum torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). Higher levels of torque can 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.

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

**Step 1.** Install horizontal sidewall sprinklers in the horizontal position with their centerline of waterway perpendicular to the backwall 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 (Figure 3). With reference to Figure 1, apply the W-Type 6 Sprinkler Wrench to the wrench flats.

| Max. Coverage Area [a] Width x Length [d] ft x ft (m x m) | Max. Spacing ft (m) | WET PIPE SYSTEM Minimum Flow and Residual Pressure[b, c] | | | | Deflector to Ceiling | Installation Type | Minimum Spacing ft (m) |
|---|---|---|---|---|---|---|---|---|
| | | Ordinary Temp. Rating 155°F (68°C) | | Intermediate Temp. Rating 175°F (79°C) | | | | |
| | | Flow GPM (L/min) | Pressure PSI (bar) | Flow GPM (L/min) | Pressure PSI (bar) | | | |
| 12 x 12 (3,7 x 3,7) | 12 (3,7) | 12 (45,4) | 8.2 (0,57) | 12 (45,4) | 8.2 (0,57) | 4 to 6 in. | Recessed using Style 20 Escutcheon or non-recessed per NFPA 13D, 13R, or 13 | 8 (2,4) |
| 14 x 14 (4,3 x 4,3) | 14 (4,3) | 14 (53,0) | 11.1 (0,77) | 16 (60,6) | 14.5 (1,00) | | | |
| 16 x 16 (4,9 x 4,9) | 16 (4,9) | 16 (60,6) | 14.5 (1,00) | 16 (60,6) | 14.5 (1,00) | | | |
| 16 x 18 (4,9 x 5,5) | 16 (4,9) | 19 (71,9) | 20.5 (1,41) | 19 (71,9) | 20.5 (1,41) | | | |
| 16 x 20 (4,9 x 6,1) | 16 (4,9) | 23 (87,1) | 30.0 (2,07) | 23 (87,1) | 30.0 (2,07) | | | |
| 12 x 12 (3,7 x 3,7) | 12 (3,7) | 13 (49,2) | 9.6 (0,66) | 13 (49,2) | 9.6 (0,66) | 6 to 12 in. | | |
| 14 x 14 (4,3 x 4,3) | 14 (4,3) | 17 (64,3) | 16.4 (1,13) | 18 (68,1) | 18.4 (1,27) | | | |
| 16 x 16 (4,9 x 4,9) | 16 (4,9) | 18 (68,1) | 18.4 (1,27) | 18 (68,1) | 18.4 (1,27) | | | |
| 16 x 18 (4,9 x 5,5) | 16 (4,9) | 21 (79,5) | 25.0 (1,72) | 21 (79,5) | 25.0 (1,72) | | | |
| 16 x 20 (4,9 x 6,1) | 16 (4,9) | 26 (98,4) | 38.3. (2,64) | 26 (98,4) | 38.3. (2,64) | | | |

**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/ft$^2$ 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).

***TABLE A***
***WET PIPE SYSTEM***
***SERIES LFII RESIDENTIAL HORIZONTAL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY1334)***
***NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA***

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

**Step A.** Install recessed horizontal sidewall sprinklers in the horizontal position with their centerline of waterway perpendicular to the backwall and parallel to the ceiling. The word "TOP" on the Deflector is to face towards the ceiling.

**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 (Figure 4). With reference to Figure 1, apply the W-Type 7 Recessed Sprinkler Wrench 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 Residential Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the wall.

# *Care and Maintenance*

The TYCO Series LFII Residential Horizontal and Recessed Horizontal Sidewall Sprinklers (TY1334) 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.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay 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 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.

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. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. See the Installation section for additional information.

| Max. Coverage Area [a] Width x Length [d] ft x ft (m x m) | Max. Spacing ft (m) | DRY PIPE SYSTEM Minimum Flow and Residual Pressure[b, c] | | | | Deflector to Ceiling | Installation Type | Minimum Spacing ft (m) |
|---|---|---|---|---|---|---|---|---|
| | | Ordinary Temp. Rating 155°F (68°C) | | Intermediate Temp. Rating 175°F (79°C) | | | | |
| | | Flow GPM (L/min) | Pressure PSI (bar) | Flow GPM (L/min) | Pressure PSI (bar) | | | |
| 12 x 12 (3,7 x 3,7) | 12 (3,7) | 12 (45,4) | 8.2 (0,57) | 12 (45,4) | 8.2 (0,57) | 4 in. to 6 in. | Recessed using Style 20 Escutcheon or non-recessed per NFPA 13D, 13R, or 13 | 8 (2,4) |
| 14 x 14 (4,3 x 4,3) | 14 (4,3) | 16 (60,6) | 14.5 (1,00) | 16 (60,6) | 14.5 (1,00) | | | |
| 16 x 16 (4,9 x 4,9) | 16 (4,9) | 16 (60,6) | 14.5 (1,00) | 16 (60,6) | 14.5 (1,00) | | | |
| 16 x 18 (4,9 x 5,5) | 16 (4,9) | 19 (71,9) | 20.5 (1,41) | N/A | N/A | | | |
| 16 x 20 (4,9 x 6,1) | 16 (4,9) | 23 (87,1) | 30.0 (2,07) | N/A | N/A | | | |
| 12 x 12 (3,7 x 3,7) | 12 (3,7) | 13 (49,2) | 9.6 (0,66) | 13 (49,2) | 9.6 (0,66) | 6 in. to 12 in. | | |
| 14 x 14 (4,3 x 4,3) | 14 (4,3) | 18 (68,1) | 18.4 (1,27) | 18 (68,1) | 18.4 (1,27) | | | |
| 16 x 16 (4,9 x 4,9) | 16 (4,9) | 18 (68,1) | 18.4 (1,27) | 21 (79,5) | 25.0 (1,72) | | | |
| 16 x 18 (4,9 x 5,5) | 16 (4,9) | 21 (79,5) | 25.0 (1,72) | 21 (79,5) | 25.0 (1,72) | | | |
| 16 x 20 (4,9 x 6,1) | 16 (4,9) | N/A | N/A | N/A | N/A | | | |

**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/ft$^2$ 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).

***TABLE B***
***DRY PIPE SYSTEM***
***SERIES LFII RESIDENTIAL HORIZONTAL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS (TY1334)***
***NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA***

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, 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.

# *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 Assembly**
Specify: Series LFII (TY1334), K=4.2, Residential Horizontal Sidewall Sprinkler, (specify) temperature rating, (specify) finish, P/N (specify):

**155°F (68°C)**
Natural Brass . . . . . 512111155
Pure White (RAL9010)
Polyester[1, 2] . . . . . 512113155
Signal White (RAL9003)
Polyester[1] . . . . . 512114155
Jet Black (RAL9005)
Polyester[1] . . . . . 512115155
Chrome Plated . . . . . 512119155

**175°F (79°C)**
Natural Brass . . . . . 512111175
Pure White (RAL9010)
Polyester[1, 2] . . . . . 512113175
Signal White (RAL9003)
Polyester[1] . . . . . 512114175
Jet Black (RAL9005)
Polyester[1] . . . . . 512115175
Chrome Plated . . . . . 512119175

1. UL Listed as corrosion-resistant.
2. Eastern Hemisphere sales only.

**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 560006387

Specify W-Type 7 Sprinkler Wrench, P/N 568504001

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