

## Series RFII — 5.6 K-factor “Royal Flush II” Pendent Concealed Sprinklers Quick & Standard Response, Standard Coverage

### General Description

The Series RFII Quick Response (3 mm bulb) & Standard Response (5 mm bulb), 5.6 K-Factor, “Royal Flush II” Concealed Pendent Sprinklers are decorative sprinklers featuring a flat cover plate designed to conceal the sprinkler. It is the best choice for architecturally sensitive areas such as hotel lobbies, office buildings, churches, and restaurants.

Each unit includes a Cover Plate Assembly that conceals the sprinkler operating components above the ceiling. The separable two-piece design of the Cover Plate and Support Cup Assemblies allows installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling or application of the finish coating to a fixed ceiling. They also permit removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers. Also, the separable two-piece design of the the Sprinkler provides for 1/2 inch (12,7 mm) of vertical adjustment, to reduce the accuracy to which the length of fixed pipe drops to the sprinklers must be cut.

The Series RFII Sprinklers are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

As an option, the Series RFII Standard Response (5 mm bulb) “Royal Flush II”

Concealed Pendent Sprinklers may be fitted with a silicone Air and Dust Seal (Ref. Fig. 5). The Air and Dust Seal is intended for sensitive areas where it is desirable to stop air and dust travel through the cover plate from the area above the ceiling.

#### WARNINGS

*The Series RFII Concealed Pendent 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 integrity 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 relative to any questions.*

### Model/Sprinkler Identification Numbers

**TY3551** (5mm bulb) & **TY3531** (3 mm bulb): maximum 175 psi (12,1 bar) by UL, C-UL, and FM.

NYC under MEA 353-01-E.

**TY3504** (5 mm bulb) & **TY3505** (3 mm bulb): maximum 250 psi (17,3 bar) by UL and C-UL, and maximum 175 psi (12,1 bar) by FM.

NYC under MEA 353-01-E.

### Technical Data

#### Approvals for Series RFII

UL and C-UL Listed. FM Approved. (The approvals apply only to the service conditions indicated in the Design Criteria section and maximum pressure ratings indicated in the



Model/Sprinkler Identification Numbers section.)

#### Approvals for Air & Dust Seal (Part #10908100)

UL and C-UL Listed for use with the RFII (TY3551 & TY3504) Standard Response Concealed Sprinkler.

#### Temperature Ratings

155F/68C Sprinkler - 135F/57C Plate  
200F/93C Sprinkler - 165F/74C Plate

#### Discharge Coefficient

K = 5.6 GPM/psi<sup>1/2</sup> (80,6 LPM/bar<sup>1/2</sup>)

#### Adjustment

1/2 inch (12,7 mm)

#### Finishes

Cover Plate: Chrome Plated, Brass Plated, or White Painted (Custom paint matches and colors other than white are available on request.)

#### Physical Characteristics

Frame	.....	Bronze
Support Cup	..	Chrome Plated Steel
Guide Pins	.....	Stainless Steel
Deflector	.....	Bronze
Compression Screw	.....	Brass
Bulb	.....	Glass
Cap	.....	Bronze or Copper
Sealing Assembly	.....	Beryllium Nickel w/Teflon*
Cover Plate	.....	Brass
Retainer	.....	Brass
Ejection Spring	...	Stainless Steel

#### Patents

U.S.A. Patent No. 4,014,388 may be applicable to the Air and Dust Seal.

## Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Retainer at three points, falls away to expose the Sprinkler Assembly. At this point the Deflector supported by the Guide Pins drops down to its operational position.

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, activating the sprinkler and allowing water to flow.

## Design Criteria

The RFI (TY3551 & TY3504), 5 mm Bulb Type, Concealed Pendent Sprinklers are UL and C-UL Listed as standard response - standard spray sprinklers for use in accordance with the current NFPA standard. They are FM Approved as standard response - standard spray sprinklers for use in accordance with the current FM Loss Prevention Data Sheets.

The RFI (TY3531 & TY3505) 3 mm Bulb Type, Concealed Pendent Sprinklers are UL and C-UL Listed as quick response - standard spray sprinklers for use in accordance with the current NFPA standard. They are FM Approved as standard response - standard spray sprinklers for use in accordance with the current FM Loss Prevention Data Sheets.

The Series RFI Concealed Pendent Sprinklers are only listed and approved with the Series RFI Concealed Cover Plates having a metallic or white painted finish.

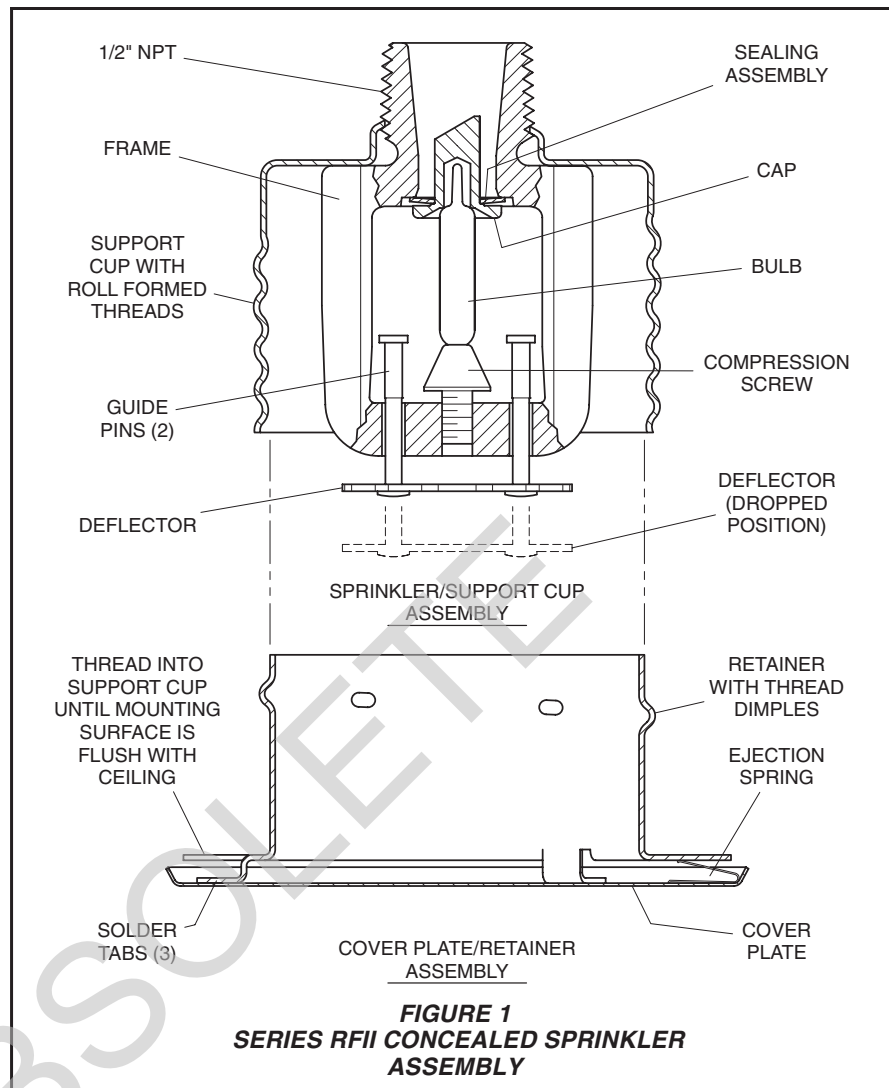
The Series RFI must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

## Installation

The Series RFI must be installed in accordance with the following instructions:

### NOTES

*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 inch (1,6 mm) for the 155°F/68°C and 3/32 inch (2,4 mm) for the 200°F/93°C temperature ratings.*



**FIGURE 1**  
**SERIES RFI CONCEALED SPRINKLER**  
**ASSEMBLY**

*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 the Sprinkler Assembly by under- or over-tightening the Sprinkler/Support Cup Assembly. Readjust the position of the sprinkler fitting to suit.*

**Step 1.** The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

**Step 2.** Remove the Protective Cap.

**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 RFI Sprinkler Wrench (Ref. Figure 3). The RFI Sprinkler

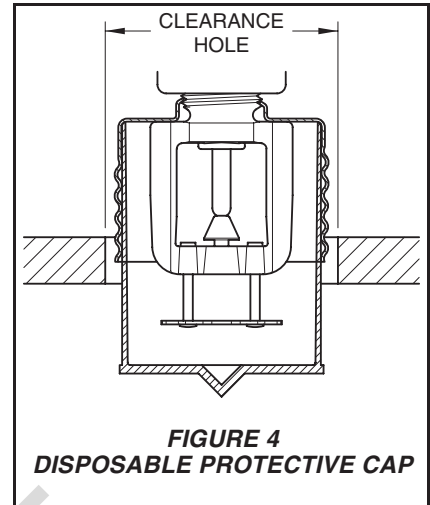
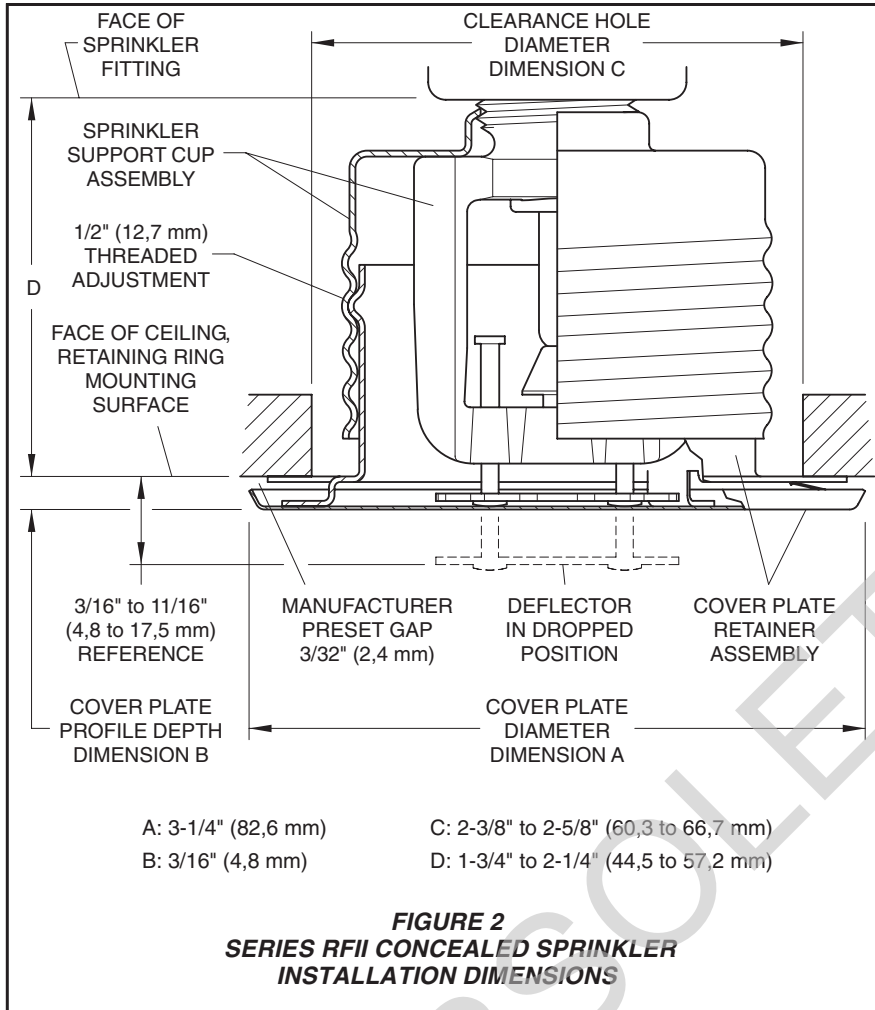
Wrench is to be applied to the Sprinkler as shown in Figure 3.

**Step 5.** Replace the Protective Cap (Ref. Figure 4) by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Arms during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material up against the center point of the Protective Cap.

### NOTE

*As long as the Protective Cap remains in place, the system is considered to be "Out of Service".*

**Step 6.** After the ceiling has been completed with the 2-1/2 inch (63,5 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely. If the Sprinkler has been damaged and



the Deflector does not move up and down freely, replace the entire Sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

**Step 7.** When installing an Air and Dust Seal, refer to Figure 5, otherwise proceed to Step 8. To attach the Air and Dust Seal, verify the angle of the outside edge of the seal is oriented according to Figure 5. Start the edge of the Retainer in the grooved slot of the Air and Dust Seal and continue around the retainer until the entire Air and Dust Seal is engaged.

**NOTE**

The Air and Dust Seal is only to be installed on the periphery of the Retainer.

**Step 8.** Screw on the Cover Plate/Retainer Assembly until the Retainer - Figure 2 (or Air and Dust Seal - Figure 5) contacts with the ceiling. Do not continue to screw on the Cover Plate/Retainer Assembly such that it lifts a ceiling panel out of its normal position. If the Cover Plate/Retainer Assembly cannot be engaged with the Support Cup or the Cover Plate/Retainer Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

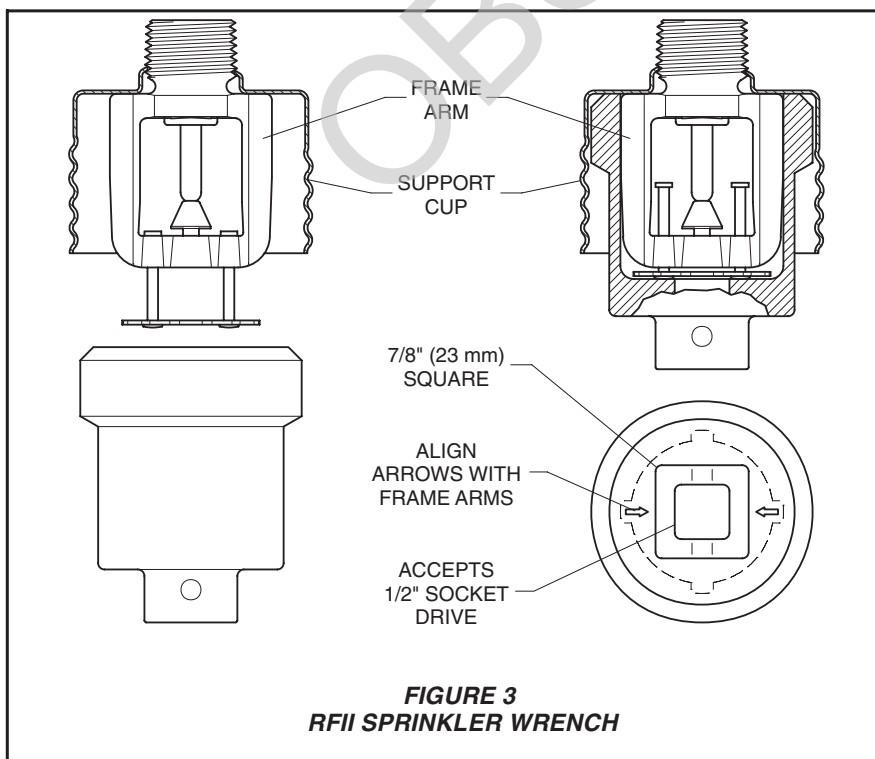
**Care and Maintenance**

The Series RFII must be maintained and serviced in accordance with the following instructions:

**NOTES**

Absence of the Cover Plate Assembly may delay sprinkler operation in a fire situation.

When properly installed, there is a nominal 3/32 inch (2,4 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 2. This



air gap is necessary for proper operation of the sprinkler. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does NOT seal off any of the air gap.

Factory painted Cover Plates MUST NOT be repainted. They should be replaced, if necessary, by factory painted units.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

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.

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

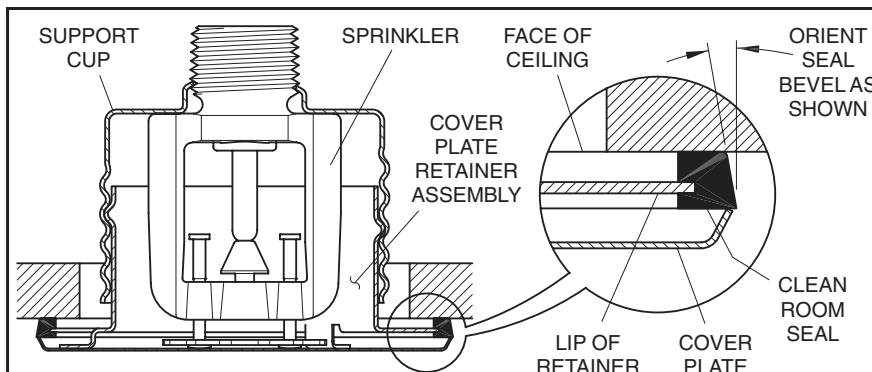
Automatic sprinklers must never be shipped or stored where their temperature will exceed 100°F/38°C and they must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, 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. (Ref. Installation Section).

If a sprinkler must be removed, do not reinstall it or a replacement without reinstalling the Cover Plate Assembly. If a Cover Plate Assembly becomes dislodged during service, replace it immediately.

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.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service.



**FIGURE 5**  
**OPTIONAL AIR AND DUST SEAL FOR SERIES RFI (TY3551 & TY3504)**

## Limited Warranty

Products manufactured by Tyco Fire Products 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 Tyco Fire Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire Products 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 Tyco Fire Products to be defective shall be either repaired or replaced, at Tyco Fire Products' sole option. Tyco Fire Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire Products 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 TYCO FIRE PRODUCTS 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 TYCO FIRE PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE PRODUCTS' LI-

ABILITY 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.**

## Ordering Procedure

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

### Sprinkler Assembly:

Specify: (SIN), (specify temperature rating) Series RFI Concealed Pendant Sprinkler, P/N (specify).

	155F/68C	200F/93C
TY3551	51-790-1-155	51-790-1-200
TY3504	51-796-1-155	51-796-1-200
TY3531	51-792-1-155	51-792-1-200
TY3505	51-797-1-155	51-797-1-200

### Separately Ordered Cover Plate:

Specify: (specify temperature rating) Series RFI Concealed Cover Plate with (specify finish), P/N (specify).

	135F/57C*	165F/74C**
Brass	56-792-1-135	56-792-1-165
Bright Brass	56-792-2-135	56-792-2-165
Chrome	56-792-9-135	56-792-9-165
Brushed Chrome	56-792-8-135	56-792-8-165
White	56-792-0-135	56-792-0-165
Bright White	56-792-4-135	56-792-4-165
Off White	56-792-5-135	56-792-5-165
Black	56-792-6-135	56-792-6-165
Custom	56-792-X-135	56-792-X-165

\* For use with 155F/68C sprinklers.

\*\* For use with 200F/93C sprinklers.

### Sprinkler Wrench:

Specify: RFI Sprinkler Wrench, P/N 56-000-1-075.

### Air and Dust Seal:

Specify: Air and Dust Seal, P/N 56-908-1-001.