

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

### General Description

The Tyco® Series RFI 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 Sprinkler provides for 1/2 inch (12.7 mm) of vertical adjustment, to provide a measure of flexibility with regard to which the length of fixed pipe drops to the sprinklers must be cut.

The Series RFI 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 RFI 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.

#### NOTICE

*The Series RFI Concealed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, 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. The installing contractor or sprinkler manufacturer should be contacted with any questions.*

### Model/Sprinkler Identification Number

**TY3551** (5 mm bulb)  
**TY3531** (3 mm bulb)



### Technical Data

#### Approvals:

UL and C-UL Listed. FM Approved NYC under MEA 353-01-E. LPCB (Ref. No. 094a/09 for TY3551 & 094a/10 for TY3531)

The approvals apply only to the service conditions indicated in the Design Criteria section.

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

UL and C-UL Listed for use with the RFI (TY3551); Standard Response Concealed Sprinkler.

#### Maximum Working Pressure:

Maximum 250 psi (17.3 bar) by UL, C-UL, and NYC. Maximum 175 psi (12.1 bar) by FM and LPCB.

#### Temperature Rating:

155°F/68°C - Sprinkler  
139°F/59°C - Plate  
200°F/93°C - Sprinkler  
165°F/74°C - Plate

#### Discharge Coefficient:

K= 5.6 GPM/psi<sup>1/2</sup> (80.6 LPM/bar<sup>1/2</sup>)

#### Adjustment:

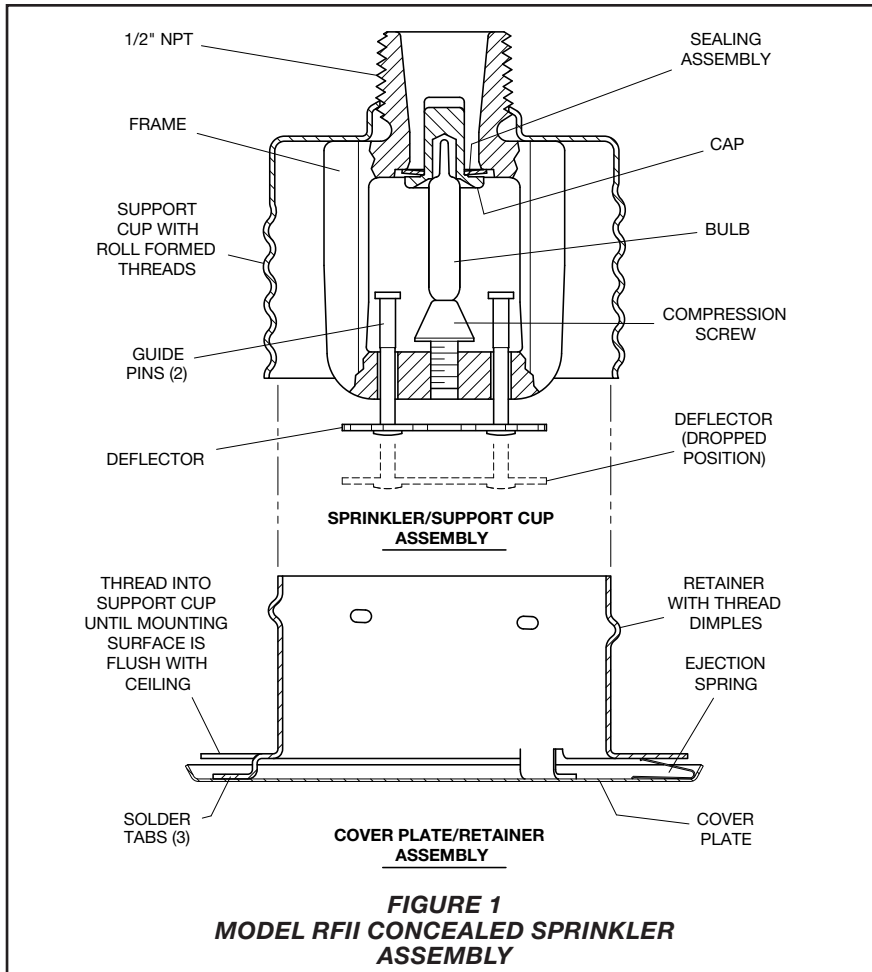
1/2 inch (12.7 mm)

#### Finishes:

Refer to Ordering Procedure section.

#### 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.*



Plates having a factory applied finish.  
**The Series RFII 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 Tyco® Series RFII must be installed in accordance with the following instructions:

### NOTICE

*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.*

*A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). 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.*

### Physical Characteristics:

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

†DuPont Registered Trademark

### Patents:

U.S.A. Patent No. 4,014,388

## Operation

When exposed to heat from a fire, the Cover Plate, 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 RFII (TY3551), 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 RFII (TY3531) 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 RFII Concealed Pendent Sprinklers are only listed and approved with the Series RFII Concealed Cover

**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.

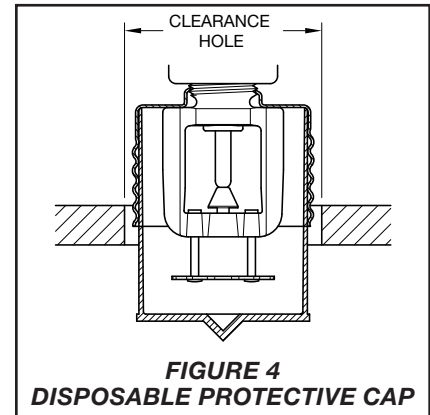
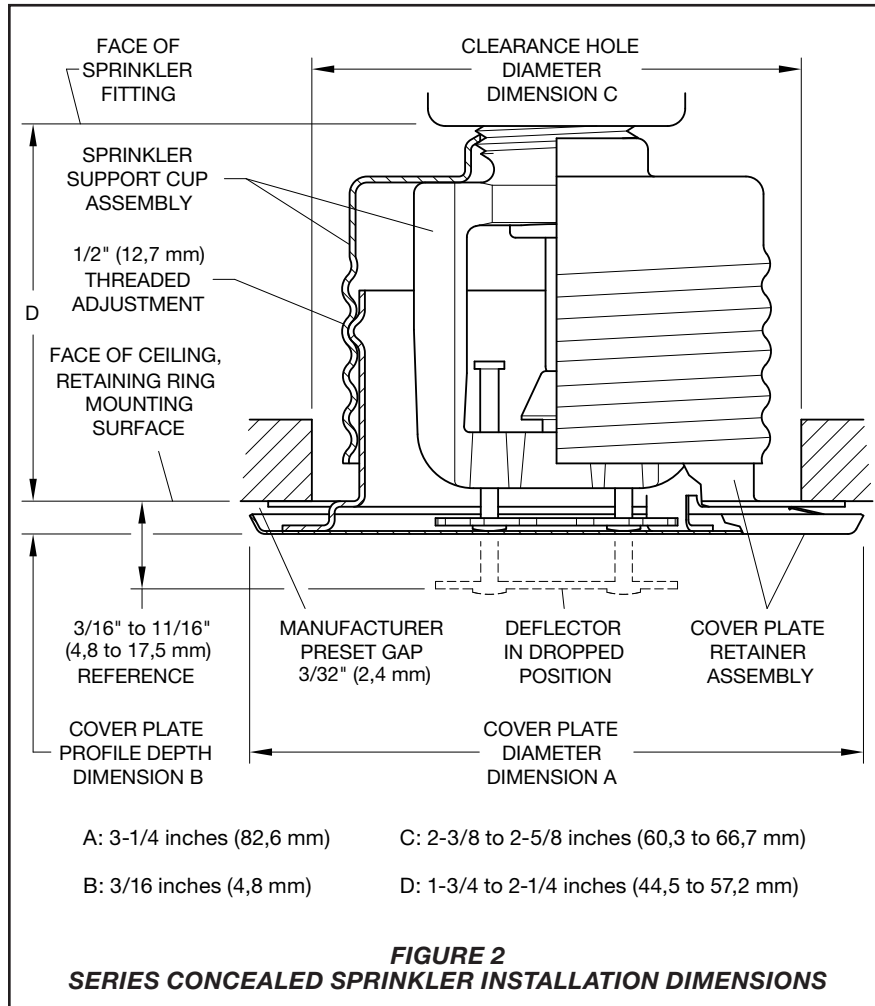
**Step 3.** With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

**Step 4.** Wrench tighten the sprinkler using only the RFII Sprinkler Wrench (Ref. Figure 3). The RFII 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.

### NOTICE

*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.

**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.

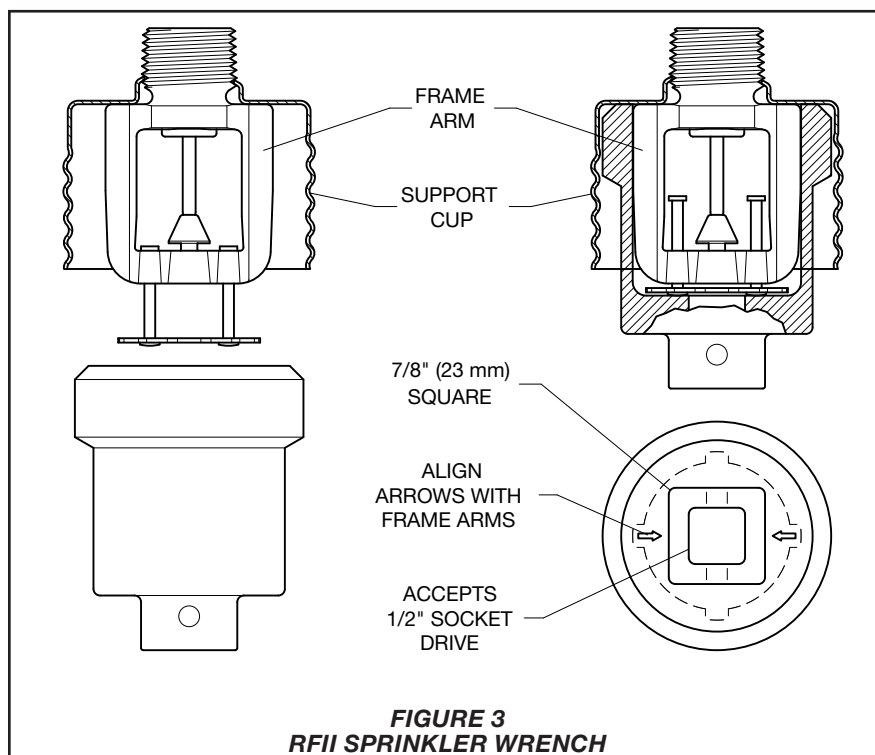
## Care and Maintenance

The Tyco® Series RFI must be maintained and serviced in accordance with the following instructions:

### NOTICE

*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. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

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.

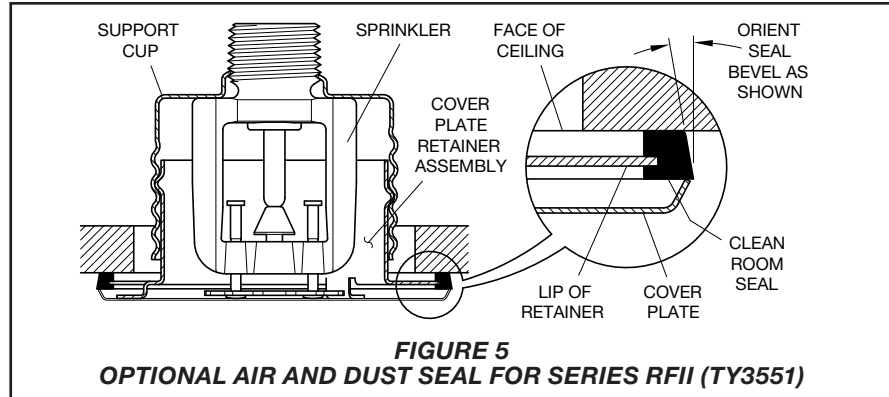
Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

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. 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.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.



## 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, materi-

als 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

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

	155°F/68°C	200°F/93°C
TY3551	51-790-1-155	51-790-1-200
TY3531	51-792-1-155	51-792-1-200

### Separately Ordered Cover Plate:

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

	139°F/59°C(a)	165°F/74°C(b)
Brass.....	56-792-1-135	56-792-1-165
Chrome.....	56-792-9-135	56-792-9-165
Signal White (c) (RAL 9003)....	56-792-4-135	56-792-4-165
Grey White (d) (RAL 9002)....	56-792-0-135	56-792-0-165
Pure White (e) (RAL 9010)....	56-792-3-135	56-792-3-165
Custom.....	56-792-X-135	56-792-X-165

- (a) For use with 155°F/68°C sprinklers.
- (b) For use with 200°F/93°C sprinklers.
- (c) Previously known as Bright White.
- (d) Previously known as Standard White.
- (e) Eastern Hemisphere sales only.

### 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.