

# **tyco** Fire Suppression & Building Products

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

### **General Description**

The Tyco® Series RFII Quick Response (3-mm bulb) and 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. These sprinklers are optimal for architecturally sensitive areas such as hotel lobbies, office buildings, churches, and restaurants.

Each sprinkler includes a Cover Plate/Retainer Assembly and a Sprinkler/Support Cup Assembly. The separable, two-piece assembly design provides the following benefits:

- 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.
- Permits the removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers.
- Provides for 1/2 inch (12,7 mm) of vertical adjustment to allow a measure of flexibility in determining the length of fixed piping to cut for the sprinkler drops.

#### **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.

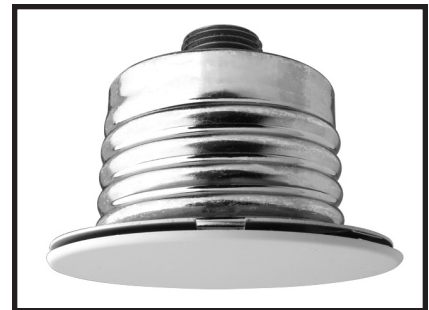
The Series RFII Sprinklers are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed during installation and replaced to help protect the sprinkler during ceiling installation or finish. The tip of the Protective Cap can be used to mark the center of the ceiling hole into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

As an option, the Series RFII Standard Response (5-mm bulb) “Royal Flush II” Concealed Pendent Sprinklers can be fitted with a silicone Air and Dust Seal. (Refer to Figure 5.) The Air and Dust Seal is intended for sensitive areas where it is desirable to prevent air and dust from the area above the ceiling to pass through the cover plate.

#### **NOTICE**

*The Series RFII 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.*



### **Sprinkler Identification Number (SIN)**

TY3531 — 3 mm bulb  
TY3551 — 5 mm bulb

# Technical Data

## Sprinkler Approvals

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

- TY3531 (3-mm Bulb) is UL Listed, C-UL Listed, LPCB Approved (Ref. No. 094a/10), VdS Approved (Certificate No. G 4090007), and NYC Approved (MEA 353-01-E) as Quick Response.
- TY3531 (3-mm Bulb) is FM Approved as Standard Response.  
 Factory Mutual does not approve any concealed sprinklers for quick response.
- TY3551 (5-mm Bulb) is UL Listed, C-UL Listed, FM Approved, LPCB Approved (Ref. No. 094a/9), and NYC Approved (MEA 353-01-E) as Standard Response.

## Approvals for Air and Dust Seal

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

## Maximum Working Pressure

Maximum 250 psi (17,3 bar) by UL, C-UL, and NYC

Maximum 175 psi (12,1 bar) by FM, VdS, and LPCB

## Temperature Rating

155°F/68°C Sprinkler with  
 139°F/59°C Plate

200°F/93°C Sprinkler with  
 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

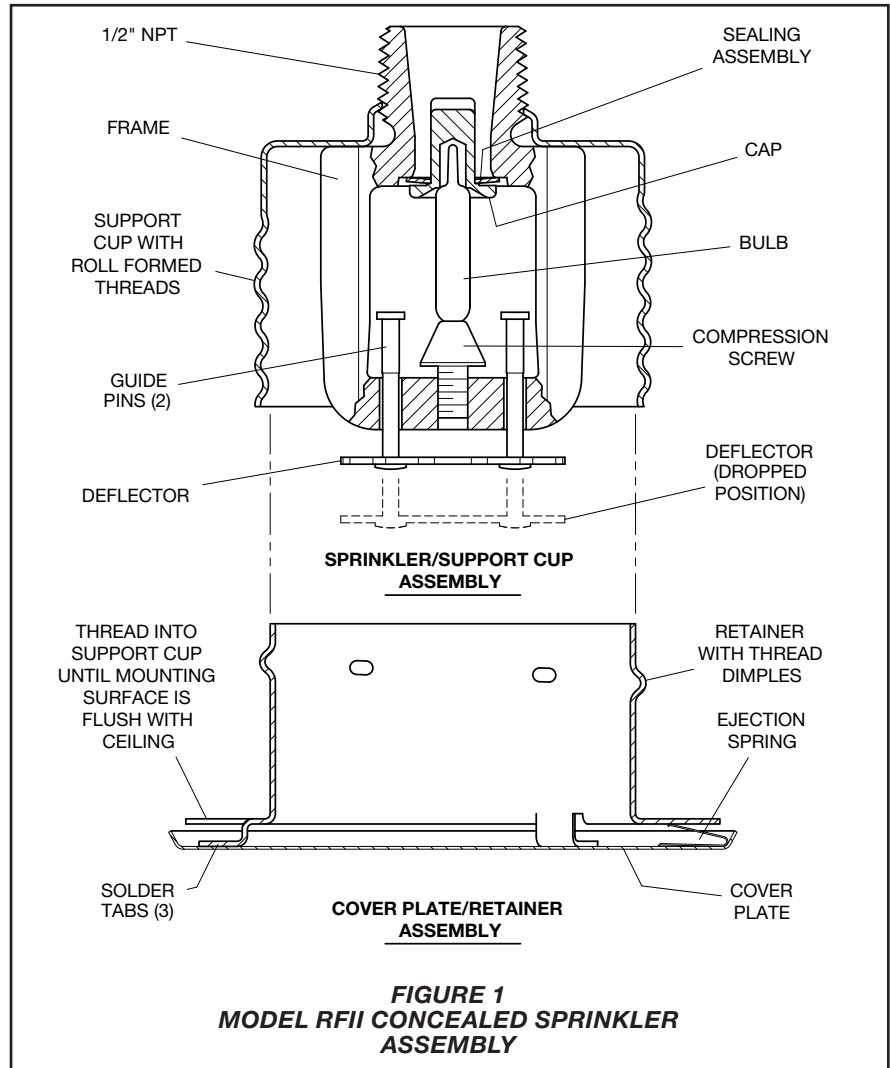
1/2 inch (12,7 mm)

## Finishes

See the Ordering Procedure section.

## 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



**FIGURE 1**  
**MODEL RFII CONCEALED SPRINKLER ASSEMBLY**

## Design Criteria

The Tyco® Series RFII Concealed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 and VdS Approval is based on the CEA 4001.

For more information on LPCB and VdS Approvals, contact Tyco Fire Suppression & Building Products at the following office:

Enschede, Netherlands  
 Telephone: 31-53-428-4444  
 Fax: 31-53-428-3377

The Series RFII Concealed Pendent Sprinklers are only listed and approved with the Series RFII Concealed Cover Plates having a factory applied finish.

### NOTICE

*Do not use the Series RFII in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Sprinkler/Support Cup Assembly can delay sprinkler operation in a fire situation.*

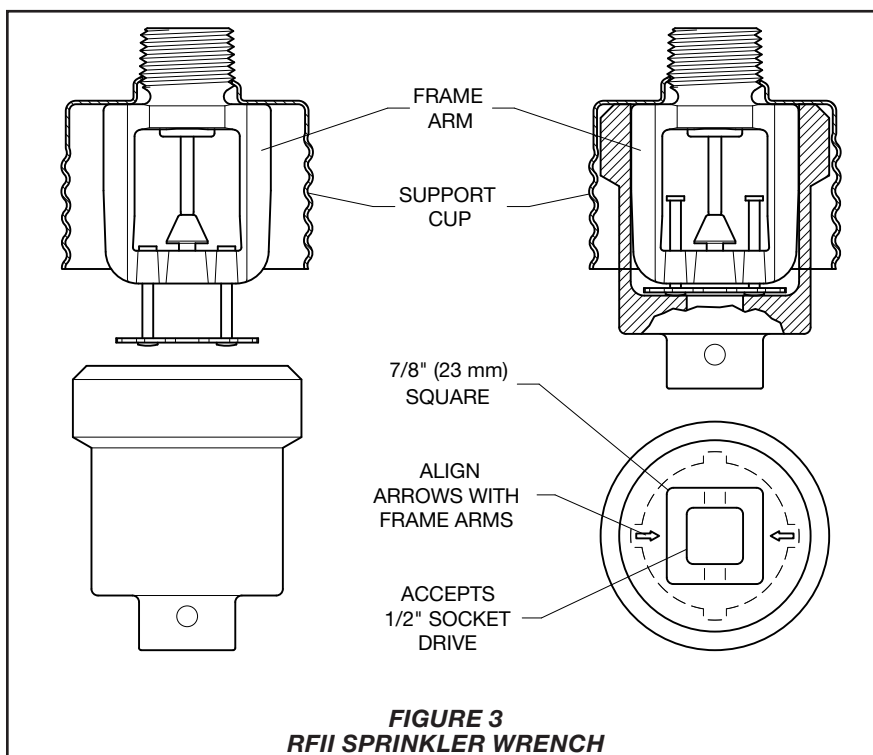
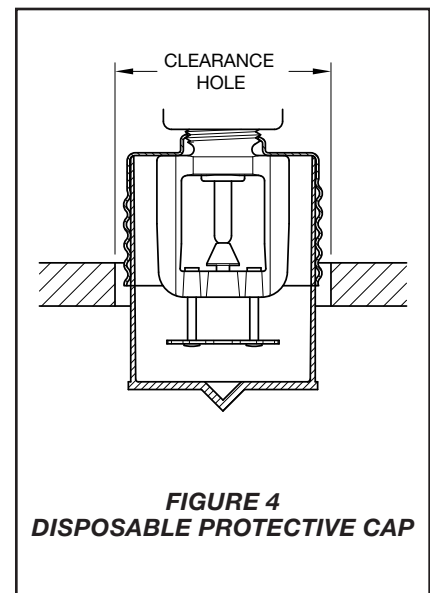
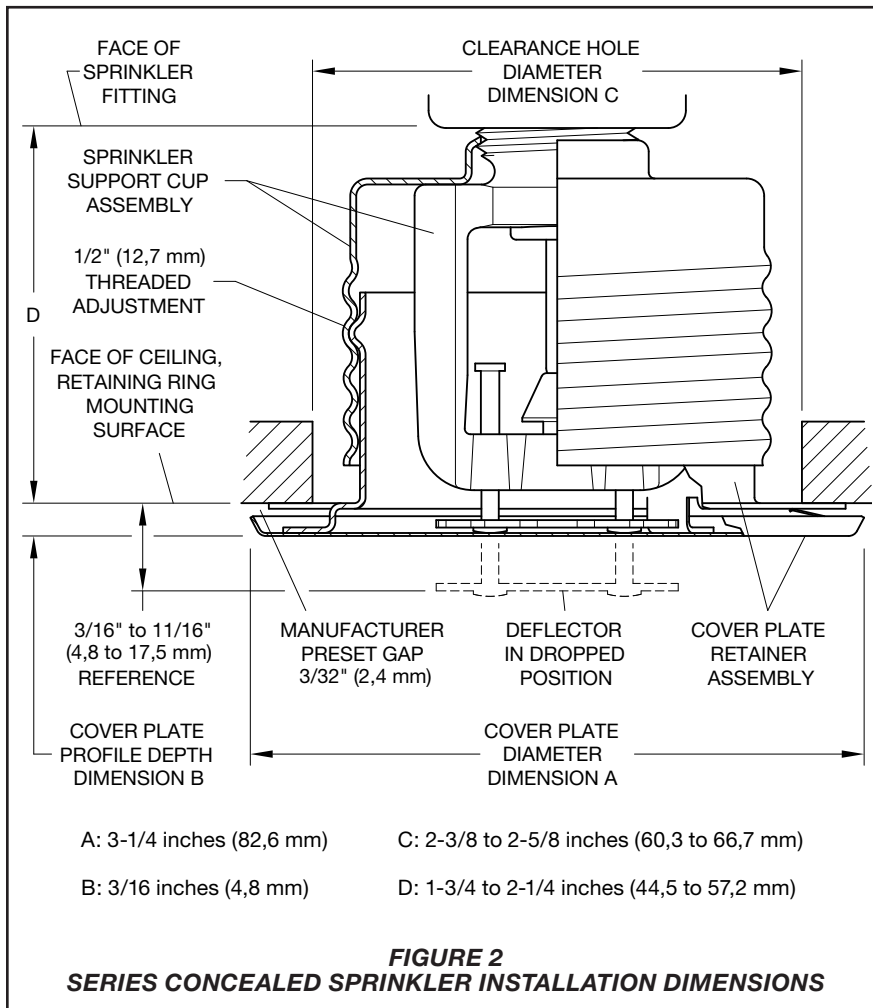
†DuPont Registered Trademark

## 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/Support Cup Assembly.

The Deflector—supported by the Guide Pins—then 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.



## Installation

The Tyco® Series RFI 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.

Obtain a 1/2 inch NPT sprinkler joint by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). 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 the Sprinkler by under- or over-tightening the Sprinkler/Support Cup Assembly. Re-adjust the position of the sprinkler fitting to suit.

**Step 1.** Install the sprinkler only in the pendent position with the center-line 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. (Refer to Figure 3.) Apply the RFI Sprinkler Wrench to the Sprinkler as shown in Figure 3.

**Step 5.** Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. (Refer to Figure 4.) The Protective Cap helps prevent damage to the Deflector and Arms during ceiling installation and/or finish. You can also use the Protective Cap 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 "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/Retainer Assembly, remove and discard the Protective Cap. Verify that the Deflector moves up and down freely.

If the Sprinkler is damaged and the Deflector does not move up and down freely, replace the entire Sprinkler.

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 (shown in Figure 2) or the Air and Dust Seal (shown in Figure 5) contacts the ceiling. Do not continue to screw on the Cover Plate/Retainer Assembly so that it lifts a ceiling panel out of its normal position. If you cannot engage the Cover Plate/Retainer Assembly with the Support Cup or you cannot engage the Cover Plate/Retainer Assembly sufficiently to contact the ceiling, you must reposition the Sprinkler Fitting.

## Care and Maintenance

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

### NOTICE

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 system from the proper authorities and notify all personnel who may be affected by this action.

Absence of the Cover Plate/Retainer Assembly can 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 requires repainting after sprinkler installation, ensure that the new paint does not seal off any of the air gap.

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

Replace sprinklers that:

- are leaking or exhibiting visible signs of corrosion.
- were modified or over-heated.

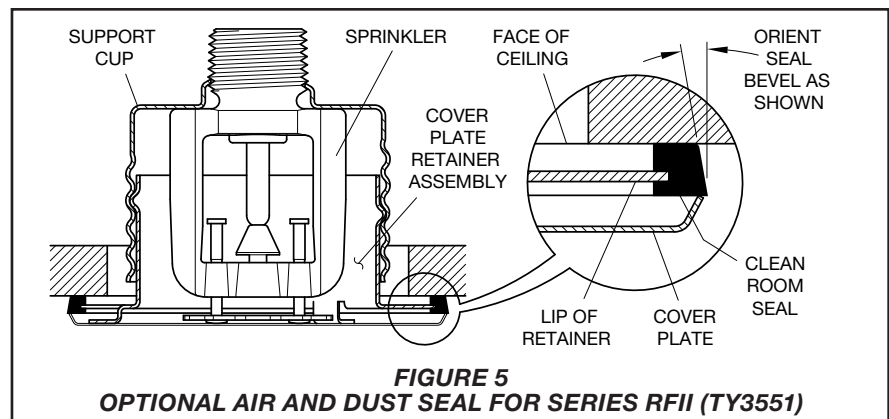
Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory. Never repaint factory-painted Cover Plates. If necessary, replace them with factory-painted units. Non-factory applied paint can adversely delay or prevent sprinkler operation in the event of a fire.

Exercise care to avoid damage to sprinklers before, during, and after installation. Replace sprinklers damaged by dropping, striking, wrench twisting, wrench slipping, or the like. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Refer to the Installation section.)

If you must remove a sprinkler, do not reinstall it or a replacement without re-installing the Cover Plate/Retainer Assembly. If a Cover Plate/Retainer Assembly becomes dislodged during service, replace it immediately.

Responsibility lies with sprinkler owners 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 other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding 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 Suppression & Building Products (TFSBP) 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 TFSBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFSBP 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 TFSBP to be defective shall be either repaired or replaced, at TFSBP's sole option. TFSBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFSBP 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 TFSBP 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 TFSBP was informed about the possibility of such damages, and in no event shall TFSBP'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

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

### Sprinkler/Support Cup Assembly

Specify: (SIN), (temperature rating from below) Series RFII Concealed Pendent Sprinkler, P/N (specify).

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

### Separately Ordered Cover Plate/ Retainer Assembly:

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

	<b>139°F/59°C(a)</b>	<b>165°F/74°C(b)</b>
Brass . . . . .	56-792-1-135	56-792-1-165
Chrome . . . . .	56-792-9-135	56-792-9-165
Signal White (RAL 9003). . . . .	56-792-4-135	56-792-4-165
Grey White (RAL 9002). . . . .	56-792-0-135	56-792-0-165
Pure White (c) (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) Eastern Hemisphere sales only.

### Sprinkler Wrench

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

### Air and Dust Seal

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

