

## **Series TY-B – 2.8, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers Standard Response, Standard Coverage**

### **General Description**

TYCO Series TY-B, 2.8, 5.6, and 8.0 K-factor, Upright and Pendent Sprinklers described in this technical data sheet are standard response, standard coverage decorative 5 mm glass bulb type spray sprinklers designed for use in light, ordinary, or extra hazard, commercial occupancies such as banks, hotels, shopping malls, factories, refineries, and chemical plants.

The recessed version of the Series TY-B Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. It uses a two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon. The Recessed Escutcheon provides 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

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.

An intermediate level version of the Series TY-B Pendent Sprinkler can be obtained by utilizing the Series TY-B Pendent Sprinkler in combination with the Model S2 Shield.

#### **NOTICE**

*The Series TY-B 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 (NFPA), 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. Contract the installing contractor or product manufacturer with any questions.*

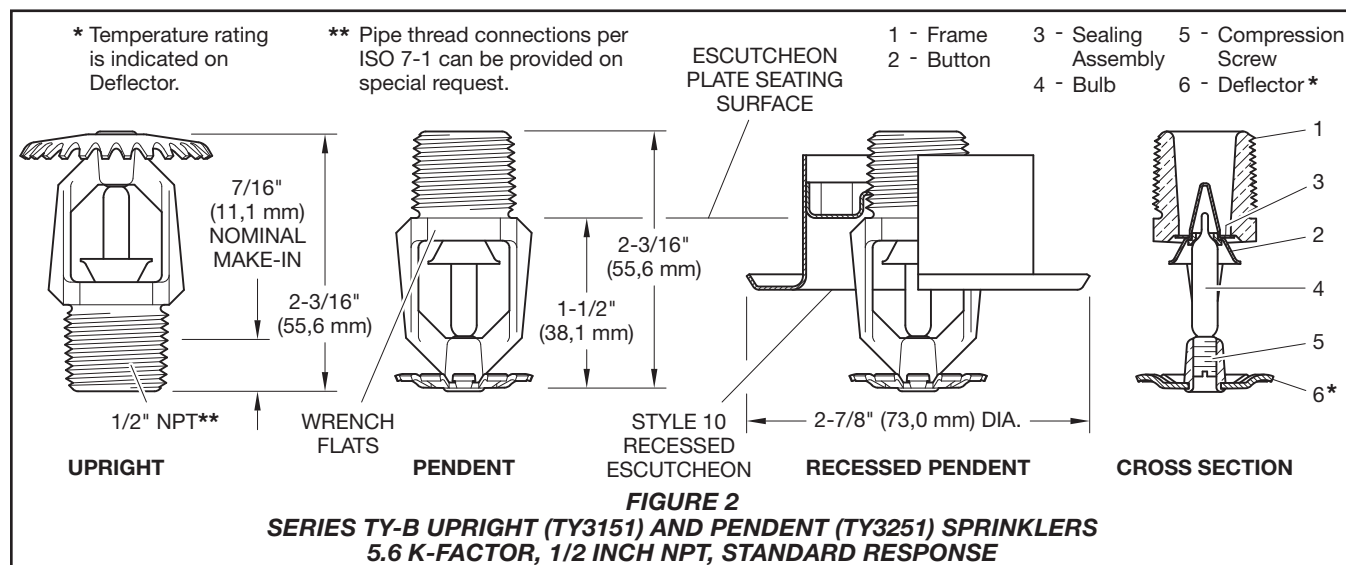
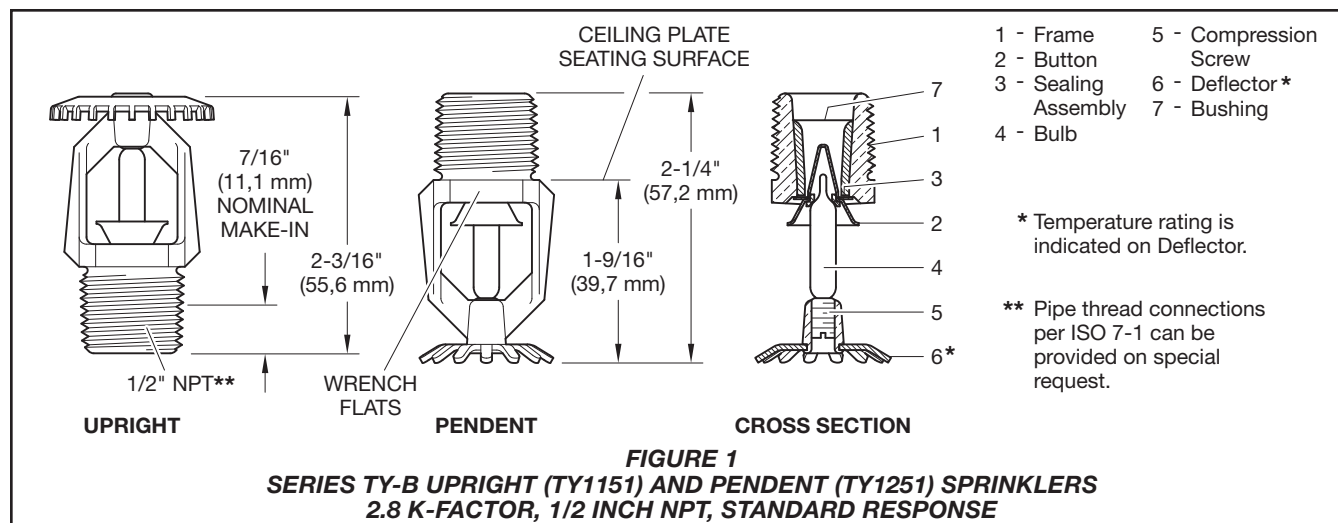


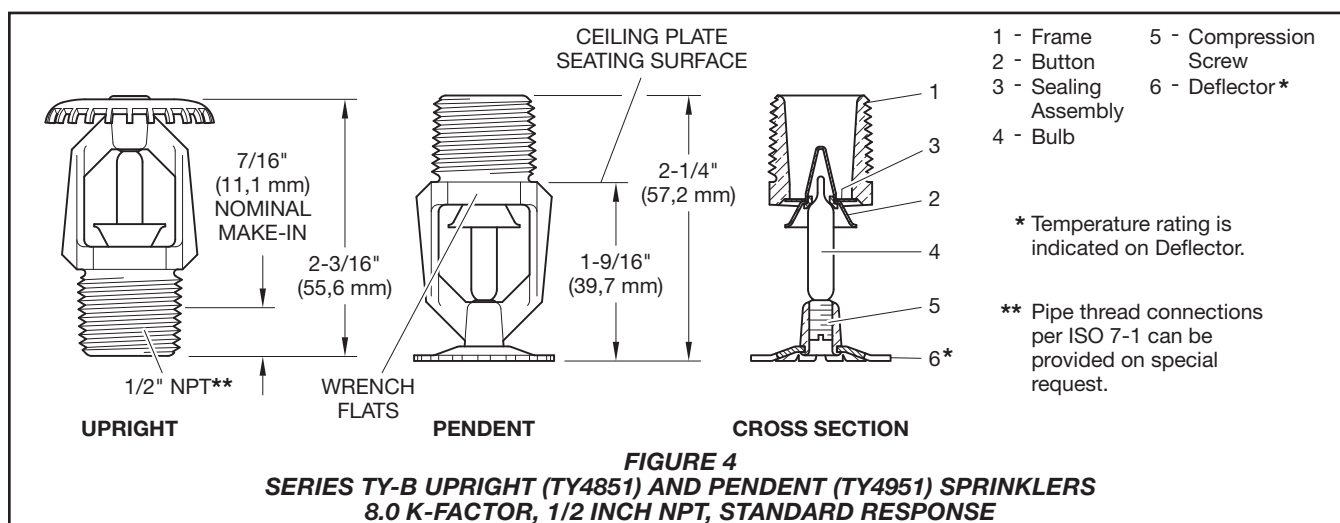
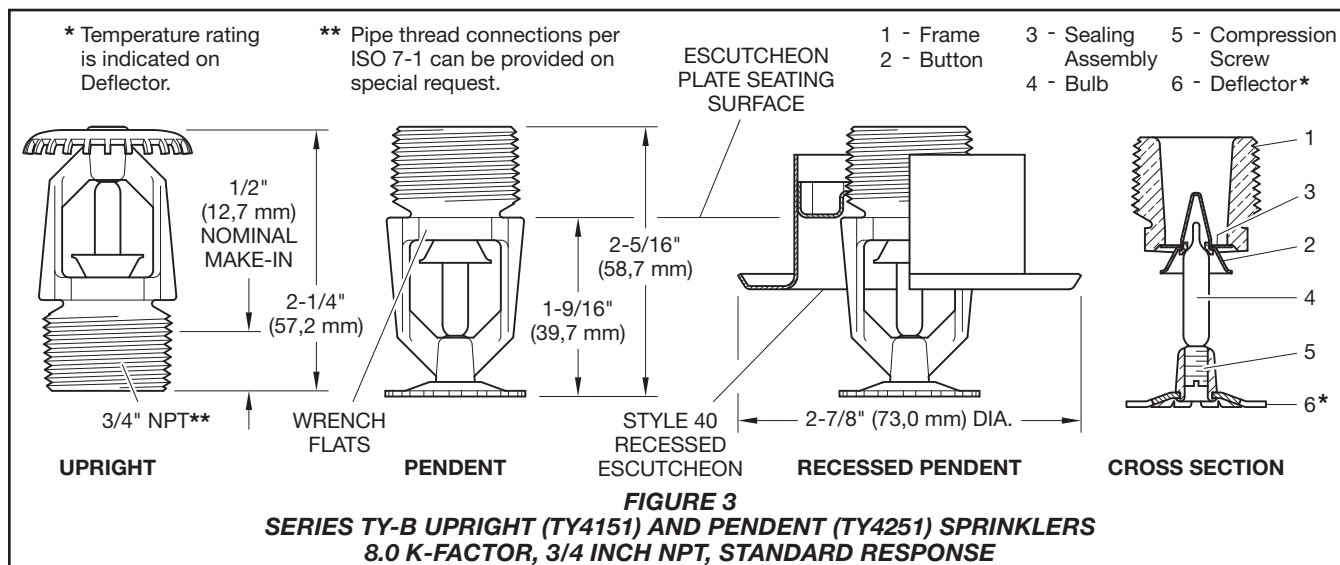
### **Sprinkler Identification Numbers (SINs)**

TY1151 – Upright 2.8K, 1/2" NPT  
TY1251 – Pendent 2.8K, 1/2" NPT  
TY3151 – Upright 5.6K, 1/2" NPT  
TY3251 – Pendent 5.6K, 1/2" NPT  
TY4151 – Upright 8.0K, 3/4" NPT  
TY4251 – Pendent 8.0K, 3/4" NPT  
TY4851 – Upright 8.0K, 1/2" NPT  
TY4951 – Pendent 8.0K, 1/2" NPT

#### **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.*





K	SPRINKLER TYPE	TEMPERATURE RATING	BULB LIQUID COLOR	SPRINKLER FINISH <sup>(8)</sup>					
				NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED	WAX COATED	WAX-OVER-LEAD COATED
2.8 1/2" NPT	UPRIGHT (TY1151) and PENDENT (TY1251) Figure 1	135°F (57°C)	Orange	1, 2, 3			N/A		
		155°F (68°C)	Red						
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue						
		360°F (182°C)	Mauve	1, 2					
5.6 1/2" NPT	UPRIGHT (TY3151) and PENDENT (TY3251) Figure 2	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5	1, 2, 3, 5	1, 2, 3, 5
		155°F (68°C)	Red						
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue					1**, 2**, 3**, 5**	1**, 2**, 3**, 5**
		360°F (182°C)	Mauve					N/A	
	RECESSED PENDENT (TY3251)* Figure 5	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A		
		155°F (68°C)	Red						
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue						
		8.0 3/4" NPT	UPRIGHT (TY4151) and PENDENT (TY4251) Figure 3	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			
155°F (68°C)	Red								
175°F (79°C)	Yellow								
200°F (93°C)	Green								
286°F (141°C)	Blue			1**, 2**, 3**, 5**	1**, 2**, 5**				
360°F (182°C)	Mauve			N/A					
RECESSED PENDENT (TY4251)* Figure 6	135°F (57°C)		Orange	1, 2, 3, 4, 5			N/A		
	155°F (68°C)		Red						
	175°F (79°C)		Yellow						
	200°F (93°C)		Green						
	286°F (141°C)		Blue						
	8.0 1/2" NPT		UPRIGHT (TY4851) and PENDENT (TY4951) Figure 4	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6			
155°F (68°C)		Red							
175°F (79°C)		Yellow							
200°F (93°C)		Green							
286°F (141°C)		Blue							
360°F (182°C)		Mauve							

**Notes:**

- Listed by Underwriters Laboratories, Inc. (UL)
  - Listed by Underwriters Laboratories, Inc. for use in Canada (C-UL)
  - Approved by FM Global (FM Approvals)
  - Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/03)
  - Approved by the City of New York under MEA 354-01-E
  - VdS Approved (For details contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444 / Fax 31-53-428-3377)
  - Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/05)
  - Where Polyester Coated, Lead Coated, Wax Coated, and Wax-over-Lead Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead Coated, Wax Coated, and Wax-over-Lead Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as Corrosion-Resistant Sprinklers.
- \* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable  
 \*\* 150°F (66°C) maximum ceiling temperature  
 \*\*\* Frame and deflector only  
 N/A – Not Applicable

**TABLE A**  
**SERIES TY-B UPRIGHT AND PENDENT SPRINKLERS**  
**LABORATORY LISTINGS AND APPROVALS**

K	TYPE	SPRINKLER FINISH					
		NATURAL BRASS	CHROME PLATED	POLYESTER*	LEAD COATED	WAX COATED	WAX-OVER-LEAD COATED
2.8 1/2" NPT	UPRIGHT (TY1151) and PENDENT (TY1251)	175 psi (12,1 bar)			N/A		
5.6 1/2" NPT	UPRIGHT (TY3151) and PENDENT (TY3251)	250 psi (17,2 bar) <sup>(a)</sup> OR 175 psi (12,1 bar)					
	RECESSED PENDENT (TY3251)						
8.0 3/4" NPT	UPRIGHT (TY4151) and PENDENT (TY4251)	175 psi (12,1 bar)					
	RECESSED PENDENT (TY4251)	175 psi (12,1 bar)			N/A		
8.0 1/2" NPT	UPRIGHT (TY4851) and PENDENT (TY4951)	175 psi (12,1 bar)					
<b>Notes:</b> a. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories, Inc. (UL), the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL), and the Approval by the City of New York. * Frame and deflector only N/A – Not Applicable							
<div>TABLE B</div> <div>SERIES TY-B UPRIGHT AND PENDENT SPRINKLERS</div> <div>MAXIMUM WORKING PRESSURE</div>							

## Technical Data

### Approvals

UL and C-UL Listed  
FM Approved  
LPCB Approved  
VdS Approved  
NYC Approved

(Refer to Table A for complete approval information, including corrosion-resis-tant status.)

### Maximum Working Pressure

Refer to Table B.

### Discharge Coefficient

K=2.8 gpm/psi<sup>1/2</sup> (40,3 lpm/bar<sup>1/2</sup>)  
K=5.6 gpm/psi<sup>1/2</sup> (80,6 lpm/bar<sup>1/2</sup>)  
K=8.0 gpm/psi<sup>1/2</sup> (115,2 lpm/bar<sup>1/2</sup>)

### Temperature Ratings

Refer to Table A.

### Finishes

Sprinkler: Refer to Table C.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

### Physical Characteristics

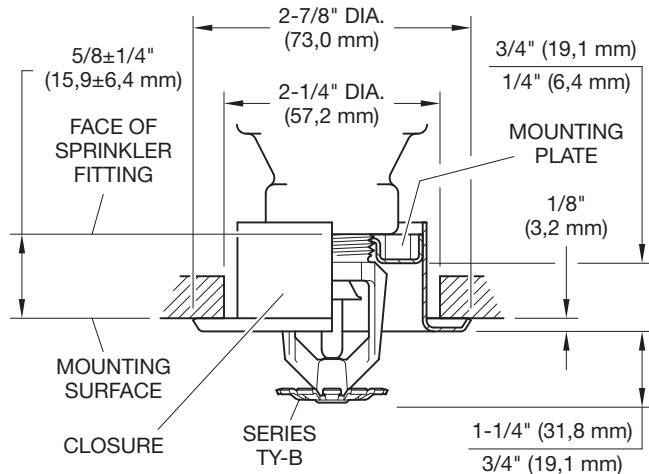
Frame ..... Bronze  
Button. .... Brass/Copper  
Sealing Assembly. .... Beryllium Nickel w/TEFLON  
Bulb ..... Glass  
Compression Screw. .... Bronze  
Deflector. .... Copper  
Bushing (K=2.8) ..... Bronze

## Operation

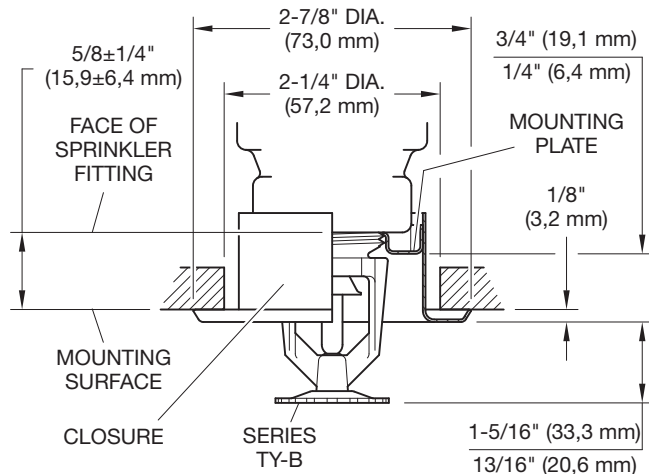
The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

## Design Criteria

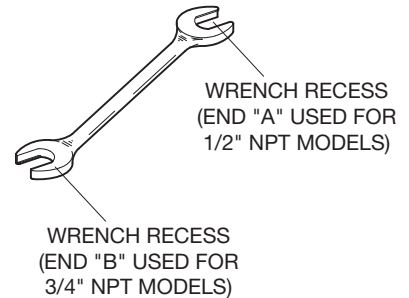
TYCO Series TY-B, 2.8, 5.6, and 8.0 K-factor, Upright and Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (e.g., UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of the FM Global Loss Prevention Data Sheets). Only the Style 10 or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.



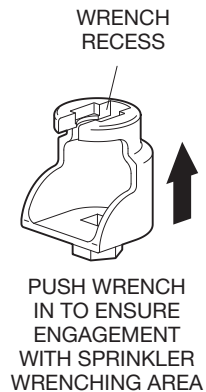
**FIGURE 5**  
**SERIES TY-B RECESSED PENDENT SPRINKLER ASSEMBLY**  
**WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT**  
**STYLE 10 RECESSED ESCUTCHEON 5.6 K-FACTOR, 1/2 INCH NPT**



**FIGURE 6**  
**SERIES TY-B RECESSED PENDENT SPRINKLER ASSEMBLY**  
**WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT**  
**STYLE 40 RECESSED ESCUTCHEON 8.0 K-FACTOR, 3/4 INCH NPT**



**FIGURE 7**  
**W-TYPE 6**  
**SPRINKLER WRENCH**



**FIGURE 8**  
**W-TYPE 7 RECESSED**  
**SPRINKLER WRENCH**

## Installation

TYCO Series TY-B, 2.8, 5.6, and 8.0 K-factor, Upright and Pendent Sprinklers 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 inch (1,6 mm) for the 135°F (57°C) to 3/32 inch (2,4 mm) for the 360°F (182°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Obtain a leak-tight 3/4 inch NPT sprinkler joint by applying a minimum to maximum torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

Do not attempt to make-up for insufficient adjustment in the escutcheon plate by under- or over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

### **Upright and Pendent Sprinklers**

The Series TY-B Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

**Note:** *Install pendent sprinklers in the pendent position; install upright sprinklers in the upright position.*

**Step 1.** With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

**Step 2.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 7). For wax-coated sprinklers, use an 8 or 10 inch adjustable wrench. With reference to Figures 1 through 4, the W-Type 7 Recessed Sprinkler Wrench or an adjustable wrench, as applicable, is to be applied to the sprinkler wrench flats.

When installing wax-coated sprinklers with an adjustable wrench, exercise care to prevent damage to the wax coating on the sprinkler wrench flats or frame arms and, consequently, exposure of bare metal to the corrosive environment. Open the jaws of the wrench sufficiently wide to pass over the wrench flats without damaging the wax coating. Before wrench tightening the sprinkler, adjust the jaws of the wrench to contact only the sprinkler wrench flats. After wrench tightening the sprinkler, loosen the wrench jaws before removing the wrench.

After installation, inspect the sprinkler wrench flats and frame arms and retouch (repair) the wax coating whenever the coating has been damaged and bare metal is exposed. Retouch the wax coating on the wrench flats by gently applying a heated 1/8 inch diameter steel rod to the damaged areas of wax, to smooth it back over areas where bare metal is exposed.

### **NOTICE**

*Only retouching of the wax coating applied to the wrench flats and frame arms is permitted, and the retouching is to be performed only at the time of the initial sprinkler installation.*

*The steel rod should be heated only to the point at which it can begin to melt the wax, and appropriate precautions need to be taken when handling the heated rod in order to prevent the installer from being burned.*

### **Recessed Pendent Sprinklers**

The Series TY-B Recessed Pendent Sprinklers must be installed in accordance with the following instructions:

**Step A.** After installing the Style 10 or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

**Step B.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 8). With reference to Figure 3 or 4, the W-Type 7 Recessed Sprinkler Wrench is to be applied to the sprinkler wrench flats.

**Step C.** After the ceiling is installed or the finish coat is applied, slide on the Style 10 or 40 Closure over the Series TY-B Sprinkler and push the Closure over the Mounting Plate until its flange contacts the ceiling.

## **Care and Maintenance**

TYCO Series TY-B, 2.8, 5.6, and 8.0 K-factor, Upright and Pendent Sprinklers 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 system from the proper authorities and notify all personnel who may be affected by this action.

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.

Absence of an escutcheon, which is used to cover a clearance, may delay the time to sprinkler operation in a fire situation.

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. (Refer to Installation Section.)

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. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinklers are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

P/N 57 - XXX - X - XXX			SPRINKLER FINISH		TEMPERATURE RATING	
		SIN				
530	2.8K UPRIGHT (1/2" NPT)	TY1151	1	NATURAL BRASS	135	135°F (57°C)
531	2.8K PENDENT (1/2" NPT)	TY1251	3	PURE WHITE (RAL9010) * POLYESTER	155	155°F (68°C)
570	5.6K UPRIGHT (1/2" NPT)	TY3151	4	SIGNAL WHITE (RAL9003) POLYESTER	175	175°F (79°C)
571	5.6K PENDENT (1/2" NPT)	TY3251	5	JET BLACK (RAL9005) ** POLYESTER	200	200°F (93°C)
590	8.0K UPRIGHT (3/4" NPT)	TY4151	6	WAX COATED 286°F (141°C) MAX	286	286°F (141°C)
591	8.0K PENDENT (3/4" NPT)	TY4251	7	LEAD COATED	360	360°F (182°C)
560	8.0K UPRIGHT (1/2" NPT)	TY4851	8	WAX-OVER-LEAD 286°F (141°C) MAX	000	OPEN***
561	8.0K PENDENT (1/2" NPT)	TY4951	9	CHROME PLATED		

**Notes:**  
 \* Eastern Hemisphere sales only  
 \*\* Available in only 8.0K, 155°F (68°C) or 200°F (93°C); requires lead time to manufacture  
 \*\*\* Available only for 8.0 K-factor TY4151 and TY4251 for use in deluge systems ("OPEN" indicates sprinkler assembly without glass bulb, button, and sealing assembly)

**TABLE C**  
**SERIES TY-B UPRIGHT AND PENDENT SPRINKLERS**  
**PART NUMBER SELECTION**

## Limited Warranty

For warranty terms and conditions, visit [www.tyco-fire.com](http://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 Assemblies with NPT Thread Connections

Specify: Series TY-B (specify SIN), (specify K-factor), (specify Upright or Pendent) Sprinkler with (specify) temperature rating, (specify) finish or coating, P/N (Refer to Table C)

### Recessed Escutcheon

Specify: Style (10 or 40) Recessed Escutcheon with (specify) finish, P/N\*

\* Refer to Technical Data Sheet TFP770

### Sprinkler Wrenches

Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

### Wax Sticks

(for retouching wrench-damaged wax coating)

Specify: (specify color, below) Colored Coded Wax Stick for retouching (specify temperature rating) temperature-rated Series TY-B Sprinklers, P/N (specify)

Black for 135°F (57°C) . . . . . P/N 56-065-1-135  
 Red for 155°F (68°C) . . . . . P/N 56-065-1-155  
 Yellow for 175°F (79°C) . . . . . P/N 56-065-1-175  
 Blue for 200°F (93°C)  
 and 286°F (141°C) . . . . . P/N 56-065-1-286

**Note:** Each wax stick is suitable for retouching up to 25 sprinklers.

**Note:** The wax used for 286°F (141°C) sprinklers is the same as for 200°F (93°C) sprinklers, and, therefore, the 286°F (141°C) sprinkler is limited to the same maximum ceiling temperature as the 200°F (93°C) sprinkler (i.e., 150°F [66°C]).