

http://www.tyco-fireproducts.com

## Series TY-FRB — 80 and 115 K-factor Extended Coverage Horizontal Sidewall Sprinklers Quick & Standard Response (Light Hazard)

## General Description

The Series TY-FRB, 80 and 115 K-factor, Extended Coverage Horizontal Sidewall Sprinklers are extended coverage, decorative 3 mm glass bulb type spray sprinklers designed for use in hydraulically calculated sprinkler systems in light hazard, commercial occupancies such as churches, restaurant seating areas, hotels, educational facilities, offices, etc. With their coverage up to 4,9 m (16 feet) wide by 7,3 m (24 ft) long, they are designed for installation along a wall or the side of a beam and just beneath a smooth and level ceiling. Horizontal sidewall sprinklers are commonly used instead of pendent or upright sprinklers due to aesthetics or building construction considerations, where piping across the ceiling is not desirable.

The fast response thermal sensitivity rating of the Series TY-FRB, 3mm Bulb Type Sprinklers provides for a quick response extended coverage (QREC) rating for many of the coverage areas detailed in Tables B and C.

The recessed version of the Series TY-FRB Extended Coverage Horizontal Sidewall Sprinkler utilizes either a two-piece Style 10 (1/2" NPT) or Style 40 (3/4" NPT) Recessed Escutcheon with 12,5 mm (1/2") of recessed adjustment or up to 19 mm (3/4") of total adjustment from the flush sidewall posi-

### 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. tion, or a two-piece Style 20 (1/2" NPT) or Style 30 (3/4" NPT) Recessed Escutcheon with 6,4 mm (1/4") of recessed adjustment or up to 12,5 mm (1/2") of total adjustment from the flush sidewall position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe lengths 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.

### WARNINGS

The Series TY-FRB 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 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 Numbers

TY3332 - EC HSW, 80K, 1/2"NPT TY4332 - EC HSW, 115K, 3/4"NPT

# **Technical Data**

## Approvals

UL and C-UL Listed. FM, VdS, and NYC Approved.

(Refer to Table A for complete approval information including corrosion resistant status, as well as the Design Criteria Section pertaining to special design considerations.)

Maximum Working Pressure Refer to Table B.



#### **Discharge Coefficient**

80,6 l/min·bar<sup>0,5</sup> (5.6 usgpm/psi<sup>0,5</sup>) 115,2 l/min·bar<sup>0,5</sup> (8.0 usgpm/psi<sup>0,5</sup>)

#### **Temperature Ratings** Refer to Table A

### Finish

Sprinkler: Refer to Table A. Recessed Escutcheon: White Coated, Chrome Plated, Brass Plated

#### **Physical Characteristics**

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	
Berylliun	n Nickel w/Teflon*
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper
*Registered trademark of	DuPont.

# 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, activating the sprinkler and allowing water to flow.

# Design Criteria

The Series TY-FRB Extended Coverage Horizontal Sidewall Sprinklers must be installed and utilized in Light Hazard Occupancies, under smooth level ceilings as outlined in the applicable installation standard recognized by the Approval Agency (e.g., UL recognizes NFPA 13, and FM recognizes the FM Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed installations.

				SPRINKLER FINISH (See Note 5)			
к	ТҮРЕ	ТЕМР.	BULB LIQUID	NATURAL BRASS	CHROME- PLATED	WHITE *** POLYESTER	
		57°C (135°F)	Orange				
	EC HSW (TY3332)	68°C (155°F)	Red		1,2,3,4,6		
	(110001)	79°C (175°F)	Yellow				
80	RECESSED	57°C (135°F)	Orange				
1/2″	EC HSW*	68°C (155°F)	Red		1,2,4		
NPT	(TY3332)	79°C (175°F)	Yellow				
	RECESSED	57°C (135°F)	Orange				
	EC HSW**	68°C (155°F)	Red		1,2,3,4		
	(TY3332)	79°C (175°F)	Yellow	]			
		57°C (135°F)	Orange				
	EC HSW (TY4332)	68°C (155°F)	Red		1,23,4		
	(111002)	79°C (175°F)	Yellow				
115	RECESSED	57°C (135°F)	Orange		124		
3/4″	EC HSW*	68°C (155°F)	Red		1,2,4		
NPT	(TY4332)	79°C (175°F)	Yellow		1,2,3,4		
	RECESSED	57°C (135°F)	Orange				
	EC HSW**	68°C (155°F)	Red	1,2,3,4			
	(TY4332)	79°C (175°F)	Yellow				



1. Listed by Underwriters Laboratories, Inc. (UL) per Table C.

2. Listed by Underwriters Laboratories, Inc. for use in Canada per Table C.

3. Approved by Factory Mutual Research Corporation (FM) per Table D.

4. Approved by the City of New York under MEA 354-01-E.

5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed Corrosion Resistant Sprinklers.

6. VdS Approved (For details contact Tyco Fire & Building Products, Enchede, Netherlands, Tel. +31 53-428-4444/Fax +31 53-428-3377).

\* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.

\*\* Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.

### TABLE A, LABORATORY LISTINGS AND APPROVALS (Refer to the Design Criteria Section)

		SPRINKLER FINISH				
К	ТҮРЕ	NATURAL CHROME WHITE BRASS PLATED POLYESTER				
80	EC HSW (TY3332)	17,2 bar (250 psi) or				
NPT	RECESSED EC HSW (TY3332)	- 12,1 bar (175 psi) (SEE NOTE 1)				
115	EC HSW (TY4332)	12.1 hav (175 mail)				
3/4 NPT	RECESSED EC HSW (TY4332)	- 12,1 bar (175 psi)				

#### NOTES:

1. The maximum working pressure of 17,2 bar (250 psi) 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.

### TABLE B, MAXIMUM WORKING PRESSURE



80 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3332)	
---------------------------------------------------------------	--

Response Rat- ing	Coverage Area <sup>(1)</sup> m x m (ft x ft)	Minimum Flow <sup>(2)</sup> I/min (gpm)	Minimum Pres- sure <sup>(2)</sup> , bar (psi)	Deflector-To- Ceiling Dis- tance <sup>(3)</sup> mm (in)	Sprinkler Tem- perature Rating °C	Minimum Spac- ing <sup>(4)</sup> m (ft)
Quick	4,9 x 4,9 (16 x 16)	98 (26)	1,48 (21.6)	100 - 300 (4 - 12)	57, 68, 79	3,1 (10)
Quick	4,9 x 5,5 (16 x 18)	110 (29)	1,85 (26.8)	100 - 300 (4 - 12)	57, 68, 79	3,1 (10)
Quick	4,9 x 6,1 (16 x 20)	121 (32)	2,25 (32.7)	100 - 150 (4 - 6)	57	3,1 (10)
Quick	4,9 x 6,7 (16 x 22)	133 (35)	2,70 (39.1)	100 - 150 (4 - 6)	57	3,1 (10)
Standard	4,9 x 6,1 (16 x 20)	121 (32)	2,25 (32.7)	100 - 150 (4 - 6)	68	3,1 (10)
Standard	4,9 x 6,7 (16 x 22)	133 (35)	2,70 (39.1)	100 - 150 (4 - 6)	68, 79	3,1 (10)

## 115 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4332)

Response Rat- ing	Coverage Area <sup>(1)</sup> m x m (ft x ft)	Minimum Flow <sup>(2)</sup> I/min (gpm)	Minimum Pres- sure <sup>(2)</sup> , bar (psi)	Deflector-To- Ceiling Dis- tance <sup>(3)</sup> mm (in)	Sprinkler Tem- perature Rating °C	Minimum Spac- ing <sup>(4)</sup> m (ft)
Quick	4,9 x 4,9 (16 x 16)	98 (26)	0,73 (10.6)	100 - 300 (4 - 12)	57, 68, 79	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 5,5 (16 x 18)	110 (29)	0,90 (13.1)	100 - 300 (4 - 12)	57, 68, 79	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 6,1 (16 x 20)	121 (32)	1,10 (16.0)	100 - 150 (4 - 6)	57	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 6,1 (16 x 20)	125 (33)	1,17 (17.0)	100 - 300 (4 - 12)	57	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 6,7 (16 x 22)	133 (35)	1,32 (19.1)	100 - 150 (4 - 6)	57	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 6,7 (16 x 22)	136 (36)	1,59 (20.3)	100 - 300 (4 - 12)	57	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 7,3 (16 x 24)	148 (39)	1,64 (23.8)	100 - 150 (4 - 6)	57	10 (3,1)/13 (4,0)(5)
Quick	4,9 x 7,3 (16 x 24)	151 (40)	1,72 (25.0)	100 - 300 (4 - 12)	57	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 6,1 (16 x 20)	121 (32)	1,10 (16.0)	100 - 150 (4 - 6)	68	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 6,1 (16 x 20)	125 (33)	1,17 (17.0)	100 - 300 (4 - 12)	68	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 6,7 (16 x 22)	133 (35)	1,32 (19.1)	100 - 150 (4 - 6)	68, 79	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 6,7 (16 x 22)	136 (36)	1,59 (20.3)	100 - 300 (4 - 12)	68, 79	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 7,3 (16 x 24)	148 (39)	1,64 (23.8)	100 - 150 (4 - 6)	68, 79	10 (3,1)/13 (4,0)(5)
Standard	4,9 x 7,3 (16 x 24)	151 (40)	1,72 (25.0)	100 - 300 (4 - 12)	68, 79	10 (3,1)/13 (4,0)(5)

### NOTES

1. Backwall (where sprinkler is located) by sidewall (length of throw).

2. Requirement is based on minimum flow in GPM from each sprinkler. The indicted residual pressures are based on the nominal K-factor.

3. The centerline of the sprinkler waterway is located 11,1 mm (7/16") below the deflector (Ref. Figures 1 and 2).

4. Miinimum spacing is for lateral distance between sprinklers located along a single wall. Otherwise adjacent sprinklers (i.e., sidewall sprinklers on an adjacent wall, on an opposite wall, or pendent sprinklers) must be located outside of the maximum listed protection area of the extended coverage sidewall sprinkler being utilized.

5. Minimum spacing is 4,0 m (13 feet) when design pressure exceeds 12,1 bar (175 psi), otherwise the minimum spacing is 3,1 m (10 feet).

### TABLE C UL AND C-UL LISTING COVERAGE AND FLOW RATE CRITERIA

## 80 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3332)

Response Rat- ing	Coverage Area <sup>(1)</sup> m x m (ft x ft)	Minimum Flow <sup>(2)</sup> I/min (gpm)	Minimum Pres- sure <sup>(2)</sup> , bar (psi)	Deflector-To- Ceiling Dis- tance <sup>(3)</sup> mm (in)	Sprinkler Tem- perature Rating °C	Minimum Spac- ing <sup>(4)</sup> m (ft)
Quick	4,9 x 4,9 (16 x 16)	98 (26)	1,51 (22)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 5,5 (16 x 18)	114 (30)	2,00 (29)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 6,1 (16 x 20)	125 (33)	2,41 (35)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Standard	4,9 x 4,9 (16 x 16)	98 (26)	1,51 (22)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 5,5 (16 x 18)	114 (30)	2,00 (29)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 6,1 (16 x 20)	125 (33)	2,41 (35)	100 - 300 (4 - 12)	79	3,1 (10)

## 115 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4332)

Response Rat- ing	Coverage Area <sup>(1)</sup> m x m (ft x ft)	Minimum Flow <sup>(2)</sup> I/min (gpm)	Minimum Pres- sure <sup>(2)</sup> , bar (psi)	Deflector-To- Ceiling Dis- tance <sup>(3)</sup> mm (in)	Sprinkler Tem- perature Rating °C	Minimum Spac- ing <sup>(4)</sup> m (ft)
Quick	4,9 x 4,9 (16 x 16)	121 (32)	1,10 (16.0)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 5,5 (16 x 18)	136 (36)	1,38 (20)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 6,1 (16 x 20)	151 (40)	1,72 (25.0)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 6,7 (16 x 22)	167 (44)	2,06 (30)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Quick	4,9 x 7,3 (16 x 24)	182 (48)	2,48 (36)	100 - 300 (4 - 12)	57, 68	3,1 (10)
Standard	4,9 x 4,9 (16 x 16)	121 (32)	1,10 (16.0)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 5,5 (16 x 18)	136 (36)	1,38 (20)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 6,1 (16 x 20)	151 (40)	1,72 (25.0)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 6,7 (16 x 22)	167 (44)	2,06 (30)	100 - 300 (4 - 12)	79	3,1 (10)
Standard	4,9 x 7,3 (16 x 24)	182 (48)	2,48 (36)	100 - 300 (4 - 12)	79	3,1 (10)

### NOTES

1. Backwall (where sprinkler is located) by sidewall (length of throw).

2. Requirement is based on maintaining both minimum flow and minimum residual pressure.

3. The centerline of the sprinkler waterway is located 11,1 mm (7/16") below the deflector (Ref. Figures 1 and 2).

4. Minimum spacing is for lateral distance between sprinklers located along a single wall. Otherwise adjacent sprinklers (i.e., sidewall sprinklers on an adjacent wall, on an opposite wall, or pendent sprinklers) must be located outside of the maximum listed protection area of the extended coverage sidewall sprinkler being utilized.

## TABLE D FM COVERAGE AND FLOW RATE CRITERIA



## Installation

The Series TY-FRB Sprinklers 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 1,5 mm (1/16").

A leak tight 1/2" NPT sprinkler joint should be obtained with a torque of 9,5 to 19 Nm (7 to 14 ft.lbs.). A maximum of 29 Nm (21 ft.lbs.) of torque may be used to install sprinklers with 1/2" NPT connections. A leak tight 3/4" NPT sprinkler joint should be obtained with a torque of 13 to 27 Nm (10 to 20 ft.lbs.). A maximum of 40,7 Nm (30 ft.lbs.) of torque is to be used to install sprinklers with 3/4" NPT connections. 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 underor over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

The **Series TY-FRB EC Sidewall Sprinklers** must be installed in accordance with the following instructions.

**Step 1.** Horizontal sidewall sprinklers are to be installed with their centerline perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the deflector is to face towards 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 (Ref. Figure 7). With reference to Figures 1 and 2, the W-Type 6 Sprinkler Wrench is to be applied to the sprinkler wrench flats.

The Series TY-FRB Recessed EC Sidewall Sprinklers must be installed in accordance with the following instructions.

**Step A.** Horizontal sidewall sprinklers are to be installed with their centerline perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the deflector is to face towards the ceiling.

**Step B.** After installing the Style 10. 20, 30, 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 C.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Ref. Figure 8). With reference to Figure 1 or 2, the W-Type 7 Recessed Sprinkler Wrench is to be applied to the sprinkler wrench flats.

**Step D.** After the wall has been installed or the finish coat has been applied, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the wall.

## Care and Maintenance

The Series TY-B Sprinklers must be maintained and serviced in accordance with the following instructions:

### NOTE

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 systems must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

The owner must assure that the sprinklers are not used for hanging of any objects; 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 hole, may delay the time to sprinkler operation in a fire situation.

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 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). Frequent visual inspections are recommended to be initially performed for corrosion resistant coated sprinklers, after the installation has been completed, to verify the integrity of the corrosion resistant coating. Thereafter, annual inspections per NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the corrosion resistant coating, as it may be affected by the corrosive conditions present.

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 in accordance with local requirements and/or national codes.



\* For sales outside the Americas only

TABLE E PART NUMBER SELECTION SERIES TY-FRB EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLERS

# 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' 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' 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

When placing an order, indicate the full product name. Refer to the Price List for complete listing of Part Numbers.

Contact your local distributor for availability.

# Sprinkler Assemblies with NPT Thread Connections:

Specify: (Specify Model/SIN), (specify K-factor), (specify temperature rating), Series TY-FRB Extended Coverage Horizontal Sidewall Sprinkler with (specify type of finish or coating), P/N (specify from Table E).

#### **Recessed Escutcheon:**

Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify\*) finish, P/N (specify\*).

\* Eastern Hemisphere sales only.

## Sprinkler Wrench:

Specify: W-Type 6 Sprinkler Wrench ......P/N 56-000-6-387. Specify: W-Type 7 Sprinkler Wrench

.....P/N 56-850-4-001.

Note: This document is a translated document. Translations of any materials into languages other than English are intended solely as a convenience to the non-English-reading public. Translation accuracy is neither guaranteed nor implied. If any questions arise related to the accuracy of the information contained in the translation, please refer to the English version of document TFP296 which is the official version of the document. Any discrepancies or differences created in the translation are not binding and have no legal effect for compliance, enforcement or any other purposes. www.quicksilvertranslate.com.