

11505 Burnham Dr. NW Ste. 201 Gig Harbor, WA 98332 EmeraldFireLLC.com Phone: 253-857-2056 | Fax: 253-857-2312

Puyallup Library Teen Zone

324 S Meridian, Puyallup, WA 98371

Fire Sprinkler Product Submittal Data

Puyallup Library Tenn Zone Fire Sprinkler Product Submittal Data Table of Contents

Sprinklers

• Tyco TY3251 TY-B K=5.6 ½" 155* SR Pendent

Hangers/Bracing

- Flex Drop
- Tolco Fig. 66 Beam Clamp

Pipe/Fittings

• Borusan Mannesmann Schedule 10 and Schedule 40 Black Pipe



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

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. 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)

I Y1151 –	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









			BUIR	SPRINKLER FINIS			H ⁽⁸⁾			
к	SPRINKLER TYPE	TEMPERATURE RATING	LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED	WAX COATED	WAX-OVER-LEAD COATED	
		135°F (57°C)	Orange							
	UPRIGHT	155°F (68°C)	Red							
2.8	(111151) and	175°F (79°C)	Yellow		1, 2, 3			NI/A		
NPT	PENDENT (TY1251)	200°F (93°C)	Green					17/7		
	Figure 1	286°F (141°C)	Blue							
		360°F (182°C)	Mauve	1, 2						
		135°F (57°C)	Orange							
	UPRIGHT	155°F (68°C)	Red					1025	1025	
	(1¥3151) and	175°F (79°C)	Yellow		10045	6 7	1005	1, 2, 3, 5	1, 2, 3, 5	
	PENDENT (TV3251)	200°F (93°C)	Green		1, 2, 3, 4, 3,	0, 7	1, 2, 3, 5			
5.6	Figure 2	286°F (141°C)	Blue					1**, 2**, 3**, 5**	1**, 2**, 3**, 5**	
1/2″		360°F (182°C)	Mauve						N/A	
NPT		135°F (57°C)	Orange	1, 2, 3, 4, 5						
	RECESSED	155°F (68°C)	Red				N/A			
F	PENDENT (TV3251)*	175°F (79°C)	Yellow							
	Figure 5	200°F (93°C)	Green							
		286°F (141°C)	Blue	1, 2						
		135°F (57°C)	Orange							
	UPRIGHT	155°F (68°C)	Red					1005		
	(TY4151) and	175°F (79°C)	Yellow		1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5	1, 2, 5	
	PENDENT	200°F (93°C)	Green			6, 7	1, 2, 5			
	(114251) Figure 3	286°F (141°C)	Blue					1**, 2**, 3**, 5**	1**, 2**, 5**	
8.0 3/4″		360°F (182°C)	Mauve						N/A	
NPT		135°F (57°C)	Orange							
	RECESSED	155°F (68°C)	Red			-				
	PENDENT	175°F (79°C)	Yellow		1, 2, 3, 4,	5		N/A		
	Figure 6	200°F (93°C)	Green							
		286°F (141°C)	Blue		1, 2					
		135°F (57°C)	Orange							
	UPRIGHT	155°F (68°C)	Red							
8.0	(TY4851) and	175°F (79°C)	Yellow							
1/2″ NPT	PENDENT	200°F (93°C)	Green		1, 2, 3, 4, 5	o, 6		N/A		
	(1 14951) Figure 4	286°F (141°C)	Blue							
	360°F (182°C)	Mauve								

 Notes:

 1. Listed by Underwriters Laboratories, Inc. (UL)

 2. Listed by Underwriters Laboratories, Inc. for use in Canada (C-UL)

 3. Approved by FM Global (FM Approvals)

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

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

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

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

 7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/05)

 8. Where Polyester Coated, Lead Coated, Max 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.

 8. Where Polyestic 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable

N/A – Not Applicable

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

TFP151 Page 4 of 8

к	ТҮРЕ	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	UPRIGHT (TY3151) and PENDENT (TY3251)		250 psi (17,2 bar) ^(a)							
NPT	RECESSED PENDENT (TY3251)		0R 175 psi (12,1 bar)							
8.0 3/4″	UPRIGHT (TY4151) and PENDENT (TY4251)		175 psi (12,1 bar)							
NPT	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)								

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

TABLE B SERIES TY-B UPRIGHT AND PENDENT SPRINKLERS MAXIMUM WORKING PRESSURE

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^{1/2} (40,3 lpm/bar^{1/2}) K=5.6 gpm/psi^{1/2} (80,6 lpm/bar^{1/2}) K=8.0 gpm/psi^{1/2} (115,2 lpm/bar^{1/2})

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.





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.

TFP151 Page 8 of 8

	P/N 57 -	XXX –	X –		Χ		
		SIN			SPRINKLER FINISH		TEMPERATURE RATING
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	1	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.

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)

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]).





RASCOFLEX® Sprinkler Connections

cULus Listed, FM Approved

Product Description

RASCOFLEX[®] Sprinkler Connections are intended to connect a branch line to a sprinkler using a flexible stainless steel hose assembly. RASCOFLEX[®] Sprinkler Connections are suitable for use in suspended and hard ceiling applications such as T-Bar ceiling grids, wood, metal stud, or hat furring channel hard lid ceilings. Every package contains one (1) fully assembled stainless steel flexible sprinkler system complete with hose, branch line connection, and sprinkler connection, as well as the preassembled bracket assembly to attach to the ceiling.

RASCOFLEX[®] Sprinkler Connections are designed for use in hydraulically calculated wet, preaction, or dry sprinkler systems per NFPA 13, 13R, 13D, and FM Global Loss Prevention Data Sheets.

Technical Data		Table A		
Maximum Wo	rking Pressure	FM: 200 psi (13.8 bar) UL: 175 psi (12.1 bar)		
Maximum Work	ing Temperature	300°F (149°C)		
Connections	Inlet/Branch Line	1" NPT		
Connections	Outlet/Reducer	1/2" or 3/4" NPT		
Minimum Bendin	Allowable g Radius	UL: 3" (76 mm) FM: 7" (178 mm)		
Maximum Nu	mber of Bends	See Friction Loss Chart		
Maximum	1/2" Outlet	5.6 (80 metric)		
K-Factor	3/4" Outlet	14.0 (200 metric)		

Maintenance

RASCOFLEX[®] Sprinkler Connections should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Patents

RASCOFLEX[®] Sprinkler Connections may be covered by one or more of the following US Patent Nos. 10,173,088 and 10,328,296.

Listings and Approvals

FM Approved Class No. 1637 (FM) UL Listed and UL Certified for Canada to ANSI/UL 2443 (cULus)



RASCOFLEX[®] Sprinkler Connections

Ordering Information

Specify:

- Model Name • Model RFB
- Nominal Hose Length • 24" (610 mm)
 - 24 (610 mm
 - 31" (790 mm)40" (1015 mm)
 - 48" (1220 mm)
 - 60" 1525 mm)
 - 72" (1830 mm)

Reducer Outlet: 1/2" NPT or 3/4" NPT

Reducer Type

- Standard:
 - 6-1/8" (155 mm) straight
 - Optional:
 - 4-5/16" (110 mm) straight
- 5-5/16" (135 mm) straight
- 11-3/4" (300 mm) straight
- 5-5/8" (143 mm) elbow
- 7-3/8" (187 mm) elbow

Bracket Assembly Length

- 24" (610 mm) standard
- 48" (1220 mm) optional

Accessories

• See Table F

Figure 2



Reducer Dimensions

-11¹³% [300] 10¹³46" [275] .5∜₆" [135]→ -7%" [187]--61% [155]-55% [143]-55%**"** [135] 51% [130]-45⁄₁₆" [110]– -3%6 [91]→ **-**-3¾ [85]-11/4" [31]-11⁄4" [31]-1½" [31]-1½" [31]-1¼" [31]-11/4" [31]-4-5/16" (110 mm) 5-5/16 (135 mm) 6-1/8" (155 mm) 11-13/16" (300 mm) <u>5-5/8" (143 mm)</u> 7-3/8" (187 mm) Straight Straight Straight **Straight** Elbow Elbow Standard





Table B Minimum and Maximum Face of Fitting to Bottom of Ceiling Grid for Each Reducer 6-1/8" 4-5/16" 5-5/16" 11-13/16" 5-5/8" 7-3/8" (155mm) (110mm) (300mm) **Fitting Distance** (135mm) (143mm) (187mm) Straight Straight Straight Elbow Elbow Straight Standard Max. Face of Fitting 3" (7mm) 3" (7mm) Distance Above 3" (77mm) 3" (7mm) 3" (7mm) 3" (7mm) Bottom of Ceiling Grid Max. Face of Fitting 1/8" (3mm) 1-5/8" (42mm) 11/16" (17mm) 6-3/8" (148mm) 1-7/16" (36mm) 5/16" (60mm) Distance from Bottom below above above below above below of Ceiling Grid

Note: Based on 1-11/16" (43mm) tall ceiling grid.

ig. 3 Dimension C - Clearance Above Ceiling Required at Max. Sprinkler Recess Table C							
Recessed Escutcheon or	Red	ucer					
Concealed/Flush Sprinkler	5-5/8" (143mm) Elbow	7-3/8" (187mm) Elbow					
F1 recessed escutcheon	NC	5-5/8" (144mm)					
F2 or FV recessed escutcheon	NC	5-3/8" (138mm)					
FP recessed escutcheon	NC	6-1/4" (160mm)					
CCP conical concealed cover plate	NC	6-1/4" (160mm)					
G4 series concealed sprinklers	5-5/8" (144mm)	7-3/8" (188mm)					
G5 series concealed sprinklers	5-1/4" (134mm)	7" (179mm)					
RFC series concealed sprinklers	5-1/4" (134mm)	7" (179mm)					
XL commercial flush sprinkler with flat escutcheon	4-7/8" (125mm)	6-5/8" (169mm)					
XL commercial flush sprinkler with conical escutcheon	4-3/8" (112mm)	6-1/8" (157mm)					

Note: NC - Reducer not compatible with sprinkler adjustment range. Based on 1-11/16" (43mm) tall ceiling grid and flush ceiling tile.



Materials		
Number	Item Description	Material
1	Flexible Hose/Bellow	AISI Type 304 Stainless Steel
2	Isolation Ring	Nylon 66
3	Gasket	EPDM
4	Nut	Zinc Plated Carbon Steel
5	Branch Line Nipple (1")	Zinc Plated Carbon Steel
6	Reducer	Zinc Plated Carbon Steel
7	Braid	AISI Type 304 Stainless Steel
8	Welded Collar Fitting	AISI Type 304 Stainless Steel
-	Bar Stock	Zinc Plated SGCC Steel
-	Brackets: Center and Side	Zinc Plated SPCC Steel



Do NOT install the RASCOFLEX™ straight. Some flexibility in the form of an allowable bend (or bends) must be provided.





cULus Friction Loss Data

Nominal Length of Flexible	Rec	lucer	Maximum Sprinkler	Maximum Number of	Equivalent Length of 1" (33.7mm)	
Hose in (mm)	NPT Threads	Туре	Gpm/psi ^{1/2} (lpm/bar ^{1/2})	90° Bends at 3" (76mm) Bend Radius	Sch. 40 Pipe (C=120), ft (m)	
24	1/2	Straight	5.6 (80)	2	10 (3)	
(610)	3/4	Straight	14.0 (200)	2	13 (4)	
31	1/2	Straight	5.6 (80)	3	14 (4.3)	
(790)	3/4	Straight	14.0 (200)	3	16 (4.9)	
40	1/2	Straight	5.6 (80)	4	21 (6.4)	
(1015)	3/4	Straight	14.0 (200)	4	23 (7)	
48	1/2	Straight	5.6 (80)	4	24 (7.3)	
(1220)	3/4	Straight	14.0 (200)	4	26 (7.9)	
60	1/2	Straight	5.6 (80)	4	25 (7.6)	
(1525)	3/4	Straight	14.0 (200)	4	30 (9.1)	
72	1/2	Straight	5.6 (80)	5	36 (11)	
(1830)	3/4	Straight	14.0 (200)	5	33 (10.1)	

UL Notes:

1. Available data for use with 6.1" straight reducers.

2. Sprinkler K-Factor: 5.6 (80 metric) for 1/2-inch reducer and 14.0 (200 metric) for 3/4-inch reducer.

3. RASCOFLEX[®] Sprinkler Connections have been tested and approved by Underwriter's Laboratories, Inc. for use in wet, preaction, and dry sprinkler systems per NFPA 13, 13D, 13R and UL2443.





FM Friction Loss Data

Table E

Nominal Length of Flexible	Red	ucer	Maximum Sprinkler K-Factor	Maximum Number of 90° Bends at 7"	Equivalent Length of 1" (33.7mm)	
Hose in (mm)	NPT Threads	Туре	gpm/psi ^{1/2} (lpm/bar ^{1/2})	178mm) Bend Radius	Sch. 40 Pipe (C=120), ft (m)	
	1/2	Straight	5.6 (80)	1	9.7 (2.9)	
	1/2	90° Elbow	5.6 (80)	0	11.5 (3.5)	
24 (610)			8.0 (115)	1	9.9 (3)	
	3/4	Straight	11.2 (160)	1	9.8 (2.9)	
			14.0 (200)	1	9.6 (2.9)	
			8.0 (115)	0	10.2 (3.1)	
	3/4	90° Elbow	11.2 (160)	0	10 (3)	
			14.0 (200)	0	9.8 (2.9)	
	1/2	Straight	5.6 (80)	2	12.4 (3.8)	
	1/2	90° Elbow	5.6 (80)	2	15.8 (4.8)	
	3/4	Straight	8.0 (115)	2	13.7 (4.1)	
31			11.2 (160)	2	12.9 (3.9)	
(790)			14.0 (200)	2	12.2 (3.7)	
-		90° Elbow	8.0 (115)	2	14.5 (4.4)	
	3/4		11.2 (160)	2	13.7 (4.1)	
			14.0 (200)	2	13 (3.9)	
	1/2	Straight	5.6 (80)	2	15.9 (4.8)	
	1/2	90° Elbow	5.6 (80)	2	21.6 (6.6)	
	3/4	Straight	8.0 (115)	2	18.5 (5.6)	
40			11.2 (160)	2	17.4 (5.3)	
(1015)			14.0 (200)	2	16.3 (4.9)	
			8.0 (115)	2	20 (6)	
	3/4	90° Elbow	11.2 (160)	2	18.9 (5.7)	
			14.0 (200)	2	20 (6)	
	1/2	Straight	5.6 (80)	3	19.0 (5.8)	
	1/2	90° Elbow	5.6 (80)	3	25.9 (7.9)	
			8.0 (115)	3	22.7 (6.9)	
48	3/4	Straight	11.2 (160)	3	21.5 (6.5)	
(1220)			14.0 (200)	3	20.5 (6.2)	
			8.0 (115)	3	24.8 (7.5)	
	3/4	90° Elbow	11.2 (160)	3	23.6 (7.2)	
			14.0 (200)	3	22.6 (6.8)	



FM Friction Loss Data (cont.)

Table E

Nominal Length of Flexible	Red	ucer	Maximum Sprinkler K-Factor	Maximum Number of 90° Bends at 7"	Equivalent Length of 1" (33.7mm)	
Hose in (mm) NPT Threads		Туре	gpm/psi ^{1/2} (lpm/bar ^{1/2})	(178mm) Bend Radius	Sch. 40 Pipe (C=120), ft (m)	
	1/2	Straight	5.6 (80)	4	23.7 (7.2)	
	1/2	90° Elbow	5.6 (80)	4	33.1 (10)	
			8.0 (115)	4	29.1 (8.8)	
60	3/4	Straight	11.2 (160)	4	28 (8.5)	
(1525)			14.0 (200)	4	27 (8.2)	
	3/4	90° Elbow	8.0 (115)	4	32.2 (9.8)	
			11.2 (160)	4	31.1 (9.5)	
			14.0 (200)	4	30 (9.1)	
	1/2	Straight	5.6 (80)	4	28.4 (8.6)	
	1/2	90° Elbow	5.6 (80)	4	40.4 (12.3)	
			8.0 (115)	4	35.5 (10.8)	
72	3/4	Straight	11.2 (160)	4	34.3 (10.4)	
(1830)			14.0 (200)	4	33.2 (10.1)	
			8.0 (115)	4	39.5 (12)	
	3/4	90° Elbow	11.2 (160)	4	38.3 (11.6)	
			14.0 (200)	4	37.2 (11.3)	

FM Notes:

- 1. RASCOFLEX[®] Sprinkler Connections have been tested and approved by FM Approvals for use in wet, preaction, and dry sprinkler systems per FM data sheets 2-0, 2-5, and 2-8 per FM1637.
- 2. Maximum sprinkler K-Factor: 5.6 (80 metric) for 1/2-inch reducer and 14.0 (200 metric) for 3/4-inch reducer.
- 3. Differences in equivalent lengths are due to varying test methods, per FM 1637 standards.
- 4. Above data of friction loss for use with 6.1" straight reducers.



Accessories List

	5-5/8" (143mm) Elbow Reducer- Short 1/2": 7M99003303 3/4": 7M99003305		7-3/8" (187mm) Elbow Reducer- Long 1/2": 7M99003302 3/4": 7M99003304		4-5/16" (110mm) Straight Reducer 1/2": 7M99003306 3/4": 7M99003325
	5-5/16" (135mm) Straight Reducer 1/2": 7M99003307 3/4": 7M99003326		Replacement 6-1/8" (155mm) Standard Straight Reducer 1/2": 7M99003308 3/4": 7M99003327		11-13/16" (300mm) Straight Reducer 1/2": 7M99003309 3/4": 7M99003328
	Hat Channel End Bracket- Short 3" (76mm) 7M99003310	Ŕ	Hat Channel End Bracket- Long 3-3/4" (95mm) 7M99003311		Metal Stud End Bracket-Short 1-1/2" (38mm) 7M99003312
	Metal Stud End Bracket- Long 2-1/16" (53mm) 7M99003313		T-Bar End Bracket- Short 2-5/8" (68mm) 7M99003314		T-Bar End Bracket- Long 4-1/8" (105mm) 7M99003316
-	Wood Beam Stud End Bracket 7M99003317		Replacement Center Bracket 7M99003321		3" (76 mm) Bend Radius Indicator 7M99004179
	Replacement 1" NPT Inlet Adapter 7M99003322		#2 Square Drive Bit 7M99004539	C	Replacement Gasket 7M99004319
i.					48" (1220mm) Bracket Assembly 7M99003301
Bulletin 213 April 2022		Re	liable		Page 8 of 8 o



Fig. 66 - Reversible Steel C-Type Beam Clamp 1¹/4" (31.7mm) Throat Opening

Size Range: 3/8"-16, 1/2"-13 rod sizes, and 5/8"-11 rod sizes

Material: Steel with hardened cup point set screw and jam nut

Function: Recommended for hanging from steel beam where flange thickness does not exceed $1^{1}/4''$ (31.7mm).

Features: All steel construction eliminates structural deficiencies associated with casting type beam clamps. May be used on top or bottom flange of beam. (Beveled lip allows hanging from top flange where clearance is limited.) May be installed with set screw in up or down position. Offset design permits unlimited rod adjustment by allowing the rod to be threaded completely through the clamp. Open design permits inspection of thread engagement.

Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)**. Exceeds requirements of the National Fire Protection Association **(NFPA)**, pamphlet 13, 3/8"-16 rod will support 1/2" (15mm) thru 4" (100mm) pipe 1/2"-13 rod will support thru 8" (200mm) pipe

Finish: Plain. Contact B-Line for alternative finishes and materials.

Order By: Figure number and finish









0.1 11	0	A		7
Α	in. (mm)	in. (mm)	in. (mm)	in. (mr
Rod Size	В	C	D	E

Part	Rod Size	В	C	D	E
No.	Α	in. (mm)	in. (mm)	in. (mm)	in. (mm)
66 - ³ /8	³ /8″-16	1 ³ /16″ (30.2)	1 ¹ /4″ (31.7)	1″ (25.4)	⁷ /16" (11.1)
66- ¹ /2	¹ /2"-13	1 ¹ /2″ (38.1)	1 ¹ /4″ (31.7)	1″ (25.4)	⁹ /16″ (14.3)
66 - ⁵ /8	⁵ /8″-11	1 ¹ /2″ (38.1)	1 ¹ /4″ (31.7)	1" (25.4)	⁹ /16" (14.3)

Part	F		Approx. Wt./100
No.	in.	(mm)	Lbs. (kg)
66- ³ /8	1″	(25.4)	28 (12.7)
66- ¹ /2	1 ¹ /4″	(31.7)	55 (24.9)
66 - ⁵ /8	1 ¹ /4″	(31.7)	55 (24.9)



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

EASY FLOW FIRE SPRINKLER PIPES

Borusan Mannesmann is the first manufacturer in Europe and Turkey who has been UL listed and FM approved according to EN standards since 2015 and UL listed and FM approved according to ASTM standards since 2007.

In recent years, the importance of fire protections systems has increased significantly due to regulations and legislations in Occupational Health and Safety area. Fire protection systems have been disseminating in houses, shopping malls, airports and industrial facilities. In Europe over 4.000 and in the U.S over 3.500 lives are lost annually as a result of fire injuries. Consequently, fire protection measures have become an increasingly vital matter.

Borusan Mannesmann, a solution partner of its customers in the areas of black, galvanized and grooved pipes, is proud to be the avant-garde of fire protection pipes.

Easy Flow fire sprinkler pipes can be used in wet extinguishing systems including fire cabinet, hydrant and sprinkler systems. Alternatively, BM pipes have applications in sparkling, gas and dry chemical extinguishing systems for fire protection purposes.

Underwriters Laboratories (UL); is an international independent engineering and security company that tests the compliance of fire-safety systems with fire safety standards for the building elements of the system. UL is headquartered in the USA and serves in 6 continents; it operates in five main strategic areas including product safety, environment, health, university and verification services. Thousands of types of products, materials, and systems are scientifically assessed, tested, and approved by UL in compliance with the risks of electricity, fire, and injury. On the other hand, FM (Factory Mutual); is an independent technical unit of the FMI Company that insures great risks such as fire, natural disasters and it certifies the performance of the materials and systems. FM performs risk and insurance calculations through engineering analysis, which is different from the analysis prepared by insurance statisticians for many years.

Fire protection systems designed by using UL and FM approved system elements (pipe, valve, pump, sprinkler, etc.) avoids, life and property losses and provide economic advantages in insuring buildings against fire.

Borusan Mannesmann is the first steel pipe manufacturer which have UL and FM certificates according to EN standards in Europe.



Why EASY FLOW fire sprinkler pipes?

Easy Flow fire sprinkler pipes are UL and FM certified according to EN and ASTM standards. Due to having high product quality and accredited by international institutions, the use of Easy Flow fire sprinkler pipes provides economic advantages in terms of insuring the buildings against fire.

Easy Flow fire sprinkler pipes have 1 layer (up to 30 micron) of sand blasted varnish coating.

1- Provides corrosion protection for 6 months until the final layer is coated. In order to reuse the corroded pipe, sandblasting and painting processes are necessary. In some cases, pipes may not be used where atmospheric rust has progressed and deep corrosion has occurred. Easy Flow provides long lasting fire protection system, provides low overhead costs and saves time, labor and scrap.

2- The priming process applied to Easy Flow products is done immediately after the production of pipes. The primer is applied to the adherence surface without contamination of foreign matter such as dirt, dust, etc. before the atmospheric rust is formed. Therefore, Easy Flow fire sprinkler pipes are better quality and long lasting and provide savings from costs of maintenance/repair.

Inside weld bead is removed for grooved Easy Flow fire sprinkler pipes.

During grooving process, the weld bead causes measurement deviations and errors in grooved area. Such deflections may cause the seal not to be fully seated, the clamps not being fully tightened, or even leakages. Easy Flow grooved fire sprinkler pipes provide perfect connection and combination during assembly and also fully compatible with Victaulic and Atusa standards.



Easy Flow fire sprinkler pipes have perfect roundness.

When all pipes are connected to each other, perfect alignment occurs and there is no weld gap to be filled. Fast, comfortable and secure pre-weld preparation is done. It is easy to make butt-welding and it saves labor, time and cost.

BORUSAI BORUSAI

Special Procedures Applied On Request

- Solution 2018 Customized pipe length
- Production of special steel grades/qualities
- Inner / Outer Epoxy Coating
- Sandblasting and Primer Coating
- Outer PE (polyethylene) Coating
- Galvanization
- 赵 Grooving

Advantages Of Easy Flow Fire Sprinkler Pipes

- UL and FM approved in EN standards
- UL and FM approved in ASTM A53 and A795 standards.
- It can be produced as black bare, primer coated (black, gray and red colors) and galvanized.
- The red primer has high adhesion and it is resistant to corrosion, water and oil.
- With options of Plain End, Threaded & Coupled or Grooved.
- Weld bead can be removed upon request. CE certified.

About Borusan Mannesmann

- 8 World-Class Plants in Turkey, US and Italy
- Perfect Product Quality with Lean 6 Sigma Production Technique
- Wide Product Range with High Quality
- Second Se
- Excellent Service with Voice Of Customer Process
- Well established sales organization
- Second to more than 35 countries
- UL and C-UL listed, FM approved, NSF and DVGW certified
- ➢ Integrated Delivery Services



ASTM FM & UL

	Nominal Sizes (inch)	OD (mm)	Wall Thickness (inch)	Wall Thickness (mm)	Weight (lb/ft)	Weight (kg/mt PE)	FM	UL
	1	33,4	0.102	2,60	1,34	1,99	1	
	1 1/4	42,2	0.091	2,30	1,53	2,27	1	
	1 1/4	42,2	0.102	2,60	1,71	2,55	1	
Easy Flow	1 1/2	48,3	0.102	2,60	1,97	2,93		
Light Wall	2	60,3	0.114	2,90	2,76	4,10		
5	2 1/2	73	0.114	2,90	3,52	5,23		
	3	88,9	0.126	3,20	4,54	6,76		
	4	1/4,3	0.142	3,60	6,60 7,69	9,83	~	
	1	33.4	0.134	2.00	1.05	1 56		
	1 1/4	42.2	0.079	2.00	1.34	1,99		
	1 1/2	48.3	0.084	2.13	1.53	2.28		
SCH 7	2	60,3	0.084	2,13	1,93	2,88	1	
	2 1/2	73	0.086	2,18	2,67	3,97	1	
	3	88,9	0.093	2,36	3,38	5,04	1	
	4	114,3	0.108	2,60	4,81	7,16	1	
	3/4''	26,7	0.083	2,11	0,86	1,28		1
	1"	33,4	0.109	2,77	1,41	2,09		
	1 1/4"	42,2	0.109	2,77	1,81	2,69		
	1 1/2"	48,3	0.109	2,77	2,09	3,11		
	∠ 0.1/0"	72	0.109	2,11	2,04	5.95	· /	
	2 1/2	88.9	0.120	3.05	4 34	6.46	1	
SCH 10	3 1/2"	101.6	0.120	3.05	4.98	7.41	1	
	4"	114,3	0.120	3,05	5,62	8,37	1	
	5''	141,3	0.134	3,4	7,78	11,58	1	1
	6''	168,3	0.134	3,4	9,30	13,85	1	1
	8''	219,1	0.188	4,78	16,96	25,26	1	1
	10"	273,1	0.188	4,78	21,23	31,62	1	1
	12"	323,8	0.188	4,78	25,28	37,61		
	1''	33,4	0.114	2,9	1,46	2,18		
	1 1/4 1 1/2"	42,2	0.117	2,97	1,93	2,07		
	2"	60.3	0.125	3.18	3.00	4 48		
	2 1/2"	73	0.188	4.78	5.40	8.04		
	3"	88,9	0.188	4,78	6,65	9,92	1	
SCH 30	3 1/2"	101,6	0.188	4,78	7,65	11,41	1	
	4''	114,3	0.188	4,78	8,66	12,91	1	
	8''	219,1	0.277	7,04	24,70	36,81	 Image: A second s	
	10"	273,1	0.307	7,8	34,24	51,03		
	12"	323,8	0.33	8,38	43,77	65,20		
	1/2	21,3	0.109	2,11	0,00	1,27		
	1"	33.4	0.133	3.38	1,10	2 50	1	1
	1 1/4"	42.2	0.140	3.56	2.27	3.39	1	
	1 1/2"	48,3	0.145	3,68	2,72	4,05	1	1
	2"	60,3	0.154	3,91	3,66	5,45	1	1
SCH 40	2 1/2"	73	0.203	5,16	5,80	8,64	1	1
001140	3''	88,9	0.216	5,49	7,58	11,29	\checkmark	1
	3 1/2"	101,6	0.226	5,74	9,12	13,58		
	4''	114,3	0.237	6,02	10,80	16,09		
	5" 6"	141,3	0.258	6,55 7 1 1	14,63	21,79		
	8"	219.1	0.200	8 18	30.45	45.34	1	
	10"	273,1	0.365	9,27	40,52	60,29	1	1
	1/2"	21,3	0.147	3,73	1,09	1,62	1	
	3/4''	26,7	0.154	3,91	1,47	2,20	1	
	1"	33,4	0.179	4,55	2,19	3,25	1	
	1 1/4"	42,2	0.191	4,85	3,03	4,49	1	
	1 1/2"	48,3	0.200	5,08	3,65	5,39		
SCH 80	2"	60,3	0.218	5,54	5,08	7,55		
001100	2 1/2"	/3	0.276	7,01	10.25	11,52		
	3 1/2"	101.6	0.318	8.08	12.67	18.82		
	4"	114.3	0.337	8.56	15.20	22.60	1	
	5"	141,3	0.375	9,52	21,04	31,42	1	
	6"	168,3	0.432	10,97	28,88	43,05	1	
	8"	219,1	0.500	12,70	44,00	65,41	1	

EN FM & UL

	OD (mm)	Wall Thickness (mm)	FM	U
	33,7	2,0	1	
	33,7	2,6	1	
	42,4	2,0	1	
	42,4	2,3	1	
	42,4	2,6	1	
Easy	48,3	2,0	1	
Flow	48,3	2,6	1	
Light	60,3	2,0	1	
Wall	60,3	2,9	1	
	76,1	2,18	1	
	76,1	2,9	1	
	88,9	2,36	1	
	88,9	3,2	1	
	114,3	2,6	1	
	114,3	3,6	1	
	139,7	3,4	1	

	OD (mm)	Wall Thickness (mm)	FM	
	33,7	3,2	1	
	42,4	3,2	1	
N	48,3	3,2	1	
)255	60,3	3,6	1	
edium	76,1	3,6	1	
	88,9	4,0	1	
	114,3	4,5	1	
	139,7	5,0	1	
	165,1	5,0	1	

	OD (mm)	Wall Thickness (mm)	FM	UL
	21,3	3,2	1	
	26,9	3,2	1	
	33,7	4,0	1	
EN	42,4	4,0	1	
10255	48,3	4,0	1	
Heavy	60,3	4,5	1	
	76,1	4,5	1	
	88,9	5,0	1	
	114,3	5,4	1	
	139,7	5,4	1	
	165,1	5,4	1	





BORUSAN COMPANY



Technical Specifications

- 赵 Roll Grooved FM Approved 赵 UL/C-UL Listed NFS Certified Sustom Length Availability Tight tolerances
- Sconsistent roundness
- Sonsistent wall thickness
- Sonsistent straightness 赵 Weldable

Pressure Tested Reliable high steel quality Salvanised or shop primer coated black, red Salvanised or shop primer coated black. (RAL 3000, RAL 3002 and Ral 3009) or grey (RAL 7012) 🕺 CE, PED Certified

EASY FLOW FIRE SPRINKLER PIPES



A leading European producer of steel pipes, Borusan Mannesmann is the choice of customers across Europe, the US and Canada for industrial and residential fire protection sprinkler system pipes.

Factory Mutual approved, Underwriters Laboratories & Canadian UL listed, ASTM A53 / A795 and EN production standard Borusan Mannesmann sprinkler pipes... To enhance the safety of your projects with the professional service and high quality assurance of Borusan Mannesmann, known all over the world.





