EMPIRE FIRE PROTECTION

Fire Protection

Division 21

Material and Equipment Specifications

For

BOOT BARN PUYALLUP

4102D S MERIDIAN

PUYALLUP, WA 98373

Job Reference Number 1058

9/23/2024

TABLE OF CONTENTS

Section 1

Pipe and Tubing

BULL MOOSE TUBE

SCHEDULE 10 & 40 SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Schedule 10, 30 & 40 Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Schedule 10, 30 & 40 Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Schedule 10, 30 & 40 Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

	Nominal Pipe Size (inches)	1	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"†
Schedule 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.422	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.41	1.81	2.09	2.64	3.53	4.34	5.62	9.29	16.94
	Water Filled Weight (lb/ft)	1.800	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.*	15.270	9.910	7.760	6.270	4.920	3.540	2.500	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
Schedule 40 & 30†	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026	6.065	8.071
	Empty Weight (lb/ft)	1.68	2.27	2.72	3.66	5.8	7.58	10.8	18.99	24.72
	Water Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316	31.498	50.240
	C.R.R.*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Pieces per Lift	70	51	44	30	30	19	19	10	7

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

Comments

○ Schedule 10 - Black ○ Schedule 10 - Hot Dip Galvanized ○ Schedule 30 - Black ○ Schedule 30 - Hot Dip Galvanized ○ Schedule 40 - Black ○ Schedule 40 - Hot Dip Galvanized

BULLMOOSETUBE.COM
1819 Clarkson Road, Chesterfield, MO 63017
US: 800.325.4467 | Canada: 800.882.4666 | sales@BullMooseIndustries.com

Section 2

Fittings

ASC Engineered Solutions

Fig. 3201 90° Elbow

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

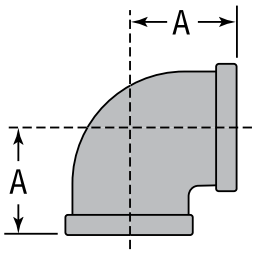
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3201 90° Elbow

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 20	500 3450	1.50 38.10	0.62 0.68
1¼ 32	500 3450	1.75 44.45	0.90 0.41
1½ 40	500 3450	1.94 49.276	1.20 0.54
2 50	500 3450	2.25 57.15	1.85 0.84

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

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Reducing 90° Elbow
Fig. 3201R

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

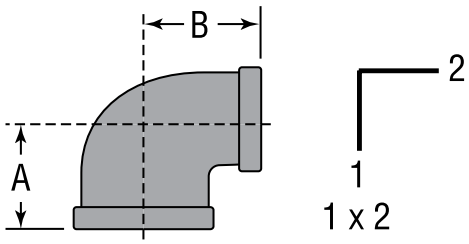
Material Specifications

- **Dimensions:** ASME B16.3
- **Material:** ASTM A536 Grade 65-45-12
- **Finish:** Black
- **Threads:** NPT per ASME B1.20.1
- **Agency Approvals:** All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Fig. 3201R Reducing 90° Elbow

Nominal Size	Max. Working Pressure ▲	Dimensions		Approx Wt. Each
1 x 2		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 x ½ 25 x 15	500 3450	1.26 32.00	1.36 34.54	0.44 0.20
1 x ¾ 25 x 20	500 3450	1.37 34.79	1.45 36.83	0.52 0.24
1¼ x ½ 32 x 15	500 34550	1.34 34.03	1.53 38.86	0.64 0.29
1¼ x ¾ 32 x 20	500 3450	1.45 36.83	1.62 41.14	0.72 0.33
1¼ x 1 32 x 25	500 3450	1.58 40.13	1.67 42.41	0.75 0.34
1½ x ½ 40 x 15	500 3450	1.41 35.81	1.66 42.16	0.64 0.29
1½ x ¾ 40 x 20	500 3450	1.52 38.61	1.75 44.45	0.77 0.35
1½ x 1 40 x 25	500 3450	1.65 41.91	1.80 45.72	0.92 0.42
1½ x 1¼ 40 x 32	500 3450	1.82 46.22	1.88 47.75	1.08 0.49
2 x ½ 50 x 15	500 3450	1.49 37.84	1.88 47.75	1.08 0.49
2 x ¾ 50 x 20	500 3450	1.60 40.64	1.97 50.03	1.24 0.56
2 x 1 50 x 25	500 3450	1.73 43.94	2.02 51.30	1.40 0.64
2 x 1¼ 50 x 32	500 3450	1.90 48.26	2.10 53.34	1.52 0.70
2 x 1½ 50 x 40	500 3450	2.02 51.30	2.16 54.86	1.65 0.75



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▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit www.asc-es.com or contact your local ASC Engineered Solutions™ Representative.

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Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

SPF Ductile Iron Threaded Fittings

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45° Elbow
Fig. 3202

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For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

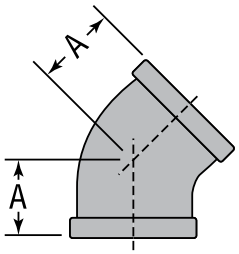
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3202 45° Elbow

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.12 28.44	0.46 0.21
1¼ 32	500 3450	1.29 32.76	0.73 0.33
1½ 40	500 3450	1.43 36.32	0.92 0.42
2 50	500 3450	1.68 42.67	1.50 0.68

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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Straight Tee
Fig. 3205

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

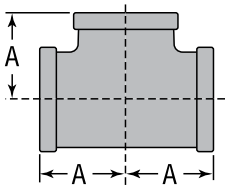
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3205 Straight Tee

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.50 38.10	0.85 0.39
1¼ 32	500 3450	1.75 44.45	1.22 0.55
1½ 40	500 3450	1.94 49.27	1.55 0.70
2 50	500 3450	2.25 57.15	2.45 1.11

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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Reducing Tee
Fig. 3205R

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Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

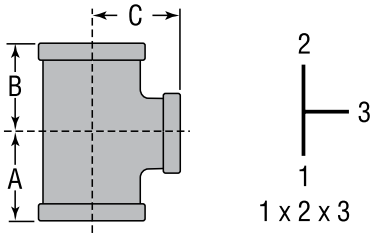

Figure 3205R Reducing Tee

Nominal Size 1 x 2 x 3	Maximum Working Pressure ▲	Dimensions A	Dimensions B	Dimensions C	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1 x ½ x 1 25 x 15 x 25	500 3450	1.50 38.10	1.36 34.54	1.50 38.10	0.64 0.29
1 x ¾ x 1 25 x 20 x 25	500 3450	1.50 38.10	1.45 36.83	1.50 38.10	0.73 0.33
1 x 1 x ½ 25 x 25 x 15	500 3450	1.26 32.00	1.26 32.00	1.36 34.54	0.71 0.32
1 x 1 x ¾ 25 x 25 x 20	500 3450	1.37 34.80	1.37 34.80	1.45 36.83	0.76 0.34
1 x 1 x 1¼* 25 x 25 x 32	500 3450	1.67 42.41	1.67 42.41	1.58 40.13	0.98 0.44
1 x 1 x 1½* 25 x 25 x 40	500 3450	1.80 45.72	1.80 45.72	1.65 41.91	1.16 0.53
1¼ x 1 x ½* 32 x 25 x 15	500 3450	1.34 34.04	1.26 32.00	1.53 38.86	0.82 0.37
1¼ x 1 x ¾ 32 x 25 x 20	500 3450	1.45 36.83	1.37 34.80	1.62 41.15	0.90 0.41
1¼ x 1 x 1 32 x 25 x 25	500 3450	1.58 40.13	1.50 38.10	1.67 42.42	1.00 0.45
1¼x 1 x 1¼ 32 x 25 x 32	500 3450	1.75 44.45	1.67 42.42	1.75 44.45	1.08 0.49
1¼ x 1 x 1½ 32 x 25 x 40	500 3450	1.88 47.75	1.80 45.72	1.82 46.22	1.42 0.64
1¼ x 1¼ x ½ 32 x 32 x 15	500 3450	1.34 34.04	1.34 34.04	1.53 38.86	0.86 0.39

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

*Part supplied as "Bull Head Tee".

Figure 3205R Reducing Tee

Nominal Size 1 x 2 x 3	Maximum Working Pressure ▲	Dimensions A	Dimensions B	Dimensions C	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1¼ x 1¼ x ¾ 32 x 32 x 20	500 3450	1.45 36.83	1.45 36.83	1.62 41.15	0.92 0.42
1¼ x 1¼ x 1 32 x 32 x 25	500 3450	1.58 40.13	1.58 40.13	1.67 42.42	0.95 0.43
1¼ x 1¼ x 1½* 32 x 32 x 40	500 3450	1.88 47.75	1.88 47.75	1.82 46.22	1.45 0.66

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Contractor:	Not approved
Engineer:	Remarks:
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Notes 2:	

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Reducing Tee
Fig. 3205R

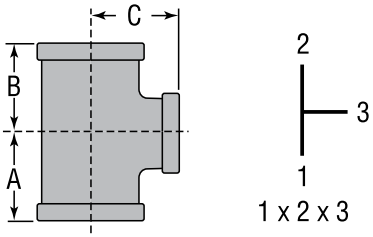

Figure 3205R Reducing Tee

Nominal Size 1 x 2 x 3	Maximum Working Pressure ▲	Dimensions A	Dimensions B	Dimensions C	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1¼ x 1¼ x 2* 32 x 32 x 50	500 3450	2.10 53.34	2.10 53.34	1.90 48.26	1.75 0.79
1½ x 1 x ½ 40 x 25 x 15	500 3450	1.41 35.81	1.34 34.04	1.66 42.16	0.95 0.43
1½ x 1 x ¾ 40 x 25 x 20	500 3450	1.52 38.61	1.37 34.80	1.75 44.45	1.14 0.52
1½ x 1 x 1 40 x 25 x 25	500 3450	1.65 41.91	1.50 38.10	1.80 45.72	1.17 0.53
1½ x 1 x 1¼ 40 x 25 x 32	500 3450	1.82 46.23	1.67 42.42	1.88 47.75	1.34 0.61
1½ x 1 x 1½ 40 x 25 x 40	500 3450	1.94 49.28	1.80 45.72	1.94 49.28	1.45 0.66
1½ x 1¼x ½ 40 x 32 x 15	500 3450	1.41 35.81	1.34 34.04	1.66 42.16	1.05 0.48
1½ x 1¼ x ¾ 40 x 32 x 20	500 3450	1.52 38.61	1.45 36.83	1.75 44.45	1.15 0.5
1½ x 1¼ x 1 40 x 32 x 25	500 3450	1.65 41.91	1.58 40.13	1.80 45.72	1.25 0.57
1½ x 1¼ x 2* 40 x 32 x 50	500 3450	2.16 54.86	2.10 53.34	2.02 51.30	1.90 0.86
1½ x 1½ x ½ 40 x 40 x 15	500 3450	1.41 35.81	1.41 35.81	1.16 29.46	1.15 0.52
1½ x 1½ x ¾ 40 x 40 x 20	500 3450	1.52 38.61	1.52 38.61	1.75 44.45	1.24 0.56
1½ x 1½ x 1 40 x 40 x 25	500 3450	1.65 41.91	1.65 41.91	1.80 45.72	1.30 0.59
1½ x 1½ x 1¼ 40 x 40 x 32	500 3450	1.82 46.23	1.82 46.23	1.88 47.75	1.48 0.67

Figure 3205R Reducing Tee

Nominal Size 1 x 2 x 3	Maximum Working Pressure ▲	Dimensions A	Dimensions B	Dimensions C	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1½ x 1½ x 2* 40 x 40 x 50	500 3450	2.16 54.86	2.16 54.86	2.02 51.30	1.98 0.90
2 x 1 x 2 50 x 25 x 50	500 3450	2.25 57.15	2.02 51.31	2.25 57.15	2.15 0.98
2 x 1¼ x 2 50 x 32 x 50	500 3450	2.25 57.15	2.10 53.34	2.25 57.15	2.30 1.04
2 x 1½ x ½ 50 x 40 x 15	500 3450	1.49 37.85	1.41 35.81	1.88 47.75	1.50 0.68
2 x 1½ x ¾ 50 x 40 x 20	500 3450	1.60 40.64	1.52 38.61	1.97 50.04	1.62 0.73
2 x 1½ x 1 50 x 40 x 25	500 3450	1.73 43.94	1.65 41.91	2.02 51.31	1.64 0.74
2 x 1½ x 1¼ 50 x 40 x 32	500 3450	1.90 48.26	1.82 46.23	2.10 53.34	1.80 0.82
2 x 1½ x 1½ 50 x 40 x 40	500 3450	2.02 51.31	1.94 49.28	2.16 54.86	2.00 0.91
2 x 1½ x 2 50 x 40 x 50	500 3450	2.25 57.15	2.16 54.86	2.25 57.15	2.35 1.07
2 x 2 x ½ 50 x 50 x 15	500 3450	1.49 37.85	1.49 37.85	1.88 47.75	1.60 0.73
2 x 2 x ¾ 50 x 50 x 20	500 3450	1.60 40.64	1.60 40.64	1.97 50.04	1.68 0.76
2 x 2 x 1 50 x 50 x 25	500 3450	1.73 43.94	1.73 43.94	2.02 51.31	1.85 0.84
2 x 2 x 1¼ 50 x 50 x 32	500 3450	1.90 44.45	1.90 42.42	2.10 44.45	2.04 0.93
2 x 2 x 1½ 50 x 50 x 40	500 3450	2.02 44.45	2.02 42.42	2.16 44.45	2.18 0.99

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

*Part supplied as "Bull Head Tee".

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SPF Ductile Iron Threaded Fittings

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Cross
Fig. 3207

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

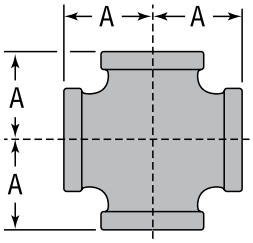
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3207 Cross

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.50 38.10	0.98 0.44
1¼ 32	500 3450	1.75 44.45	1.50 068
1½ 40	500 3450	1.94 49.27	1.90 0.86
2 50	500 3450	2.25 57.15	2.95 1.34

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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ASC Engineered Solutions

Reducing Cross
Fig. 3207R

c UL us LISTED FM APPROVED

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Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

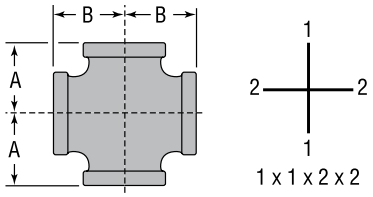
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3207R Reducing Cross

Nominal Size	Max. Working Pressure ▲	Dimensions		Approx Wt. Each
1 x 1 x 2 x 2		A	B	
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1¼ x 1¼ x 1 x 1 32 x 32 x 25 x 25	500 3450	1.58 40.13	1.67 42.41	1.27 0.58
1½ x 1½ x 1 x 1 40 x 40 x 25 x 25	500 3450	1.65 41.91	1.80 45.72	1.48 0.67
2 x 2 x 1 x 1 50 x 50 x 25 x 25	500 3450	1.73 43.94	2.02 51.30	2.10 0.95

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



SCI An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

SPF Ductile Iron Threaded Fittings

ASC Engineered Solutions

Coupling
Fig. 3221

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

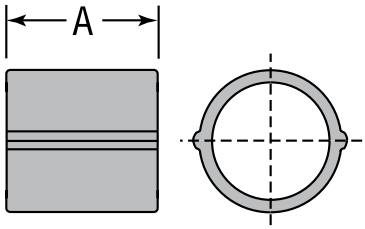
Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3221 Coupling

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.67 42.42	0.40 0.18
1¼ 32	500 3450	1.93 49.02	0.57 0.26
1½ 40	500 3450	2.15 54.61	0.75 0.34
2 50	500 3450	2.53 64.26	1.15 0.52



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

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PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

SPF Ductile Iron Threaded Fittings

ASC Engineered Solutions

Reducing Coupling
Fig. 3221R

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

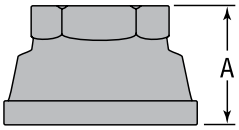
Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3221R Reducing Coupling

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 x ½ 25 x 15	500 3450	1.69 42.92	0.39 0.18
1 x ¾ 25 x 20	500 3450	1.69 42.92	0.53 0.24
1¼ x ¾ 32 x 20	500 3450	2.06 52.32	0.64 0.29



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

SCI An ASC Engineered Solution

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Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
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Notes 1:	
Notes 2:	

ASC Engineered Solutions

Cap
Fig. 3224

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

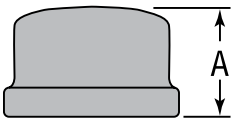
Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3224 Cap

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.16 29.46	0.32 0.15
1¼ 32	500 3450	1.28 32.51	0.43 0.20
1½ 40	500 3450	1.33 33.78	0.60 0.27
2 50	500 3450	1.45 36.83	0.91 0.41



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

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PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

ASC Engineered Solutions

Bushings
Fig. 3283

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

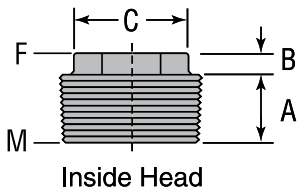
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

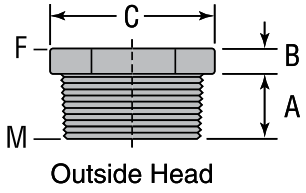
Figure 3283 Bushings

Nominal Size Male (M) x Female (F)	Maximum Working Pressure ▲	Dimensions A	B	C	Style	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	-	Lbs. (kg)
1 x ½ 25 x 15	500 3450	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.22 0.10
1 x ¾ 25 x 20	500 3450	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.17 0.08
1¼ x 1 32 x 25	500 3450	0.80 20.32	0.28 7.11	1.76 44.70	Outside	0.28 0.13
1½ x 1 40 x 25	500 3450	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.45 0.20
1½ x 1¼ 40 x 32	500 3450	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.30 0.14
2 x 1 50 x 25	500 3450	0.88 22.35	0.41 10.414	1.95 49.43	Inside	0.67 0.30
2 x 1¼ 50 x 32	500 3450	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.73 0.33
2 x 1½ 50 x 40	500 3450	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.61 0.28

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



Inside Head



Outside Head

SCI An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Cored Plug
Fig. 3388

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

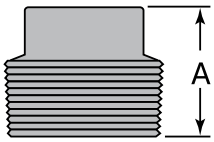
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

▲ Pressure – Temperature Ratings in accordance with ASME B16.3 Class 150

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3388 Cored Plug

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx. Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
½* 15	500 3450	0.94 23.87	0.10 0.05
¾ 20	500 3450	1.07 27.17	0.17 0.08
1 25	500 3450	1.25 31.75	0.28 0.13
1¼ 32	500 3450	1.36 34.54	0.44 0.20
1½ 40	500 3450	1.45 36.83	0.62 0.28
2 50	500 3450	1.56 39.62	0.91 0.41



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

*Part supplied as Solid Plug.

SCI An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

FireLock™ Outlet-T
Style 922

10.52

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 2 ½"/DN32 – DN65
- **Threaded Outlet Sizes:** ½"/DN15, ¾"/DN20, and 1"/DN25

NOTE

- IGS Grooved 1"/DN25 Outlets available for this product. See publication 10.54.

Maximum Working Pressure

- 300 psi/2068 kPa/21 Bar

Application

- Provides a convenient method of incorporating outlets for directly connecting sprinklers, drop nipples, sprigs, gauges, drains and other outlet products

Pipe Material

- Carbon steel
- Contact Victaulic for use on additional pipe types and wall thicknesses

2.0 CERTIFICATION/LISTINGS

LPS 1186: Issue 3.1 Cert/LPCB Ref. 491a/27

EN 10311 CPR (EU) No. 305/2011

BS EN 10311 CPR (UK) 2019 No. 465

NOTES

- See Section 7.2 REFERENCE MATERIALS for additional certification information.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

3.0 SPECIFICATIONS - MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

- ☐ Orange coating.
- ☐ Red coating (standard for EMEA-I and Asia Pacific).
- ☐ Optional: Contact Victaulic with your requirements for other coatings.
- ☐ Optional: Hot dipped galvanized.

Gasket[1]:

- ☐ **Grade "E" EPDM (Type A)**

  EPDM (Violet color code) Applicable for wet and dry (oil-free air) sprinkler services only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at -40˚F/-40˚C and above. NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.

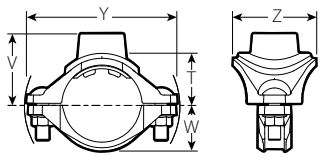
[1] Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Seal Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

Bolts/Nuts:

- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). Carbon steel hex flange nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial – hex nuts) and ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex flange nuts are zinc electroplated per ASTM B633 Fe/Zn 5, finish Type III (imperial) or Type II (metric).

4.0 DIMENSIONS

Style 922



Style 922

Size						Bolt/Nut		Dimensions					Weight
Nominal Run x Branch FPT[2] inches DN			Actual Outside Diameter inches mm			Qty.	Size inches mm	T[3] inches mm	V inches mm	W inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
1 ¼ DN32	x	½ DN15	1.660 42.4	x	0.840 21.3	2	⅜ x 1 ⅜	1.30 33	1.83 47	1.10 28	3.87 98	2.56 65	1 0.5
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.28 33	1.83 47	1.10 28	3.87 98	2.56 65	1 0.5
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.52 39	2.18 55	1.10 28	3.87 98	2.56 65	1 0.5
1 ½ 40	x	½ DN15	1.900 48.3	x	0.840 21.3	2	⅜ x 1 ⅜	1.42 36	1.95 50	1.22 31	4.08 104	2.56 65	1 0.5
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.40 36	1.95 50	1.22 31	4.08 104	2.56 65	1 0.5
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.64 42	2.30 58	1.22 31	4.08 104	2.56 65	1 0.6
2 50	x	½ DN15	2.375 60.3	x	0.840 21.3	2	⅜ x 1 ⅜	1.66 42	2.19 56	1.46 37	4.60 117	2.56 65	1 0.6
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.64 42	2.19 56	1.46 37	4.60 117	2.56 65	1 0.6
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	1.88 48	2.54 65	1.46 37	4.60 117	2.56 65	2 0.7
2 ½	x	½ DN15	2.875 73.0	x	0.840 21.3	2	⅜ x 1 ⅜	1.91 49	2.44 62	1.71 43	5.40 137	2.56 65	2 0.7
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.89 48	2.44 62	1.71 43	5.40 137	2.56 65	2 0.7
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	2.13 54	2.79 71	1.71 43	5.40 137	2.56 65	2 0.7
DN65	x	½ DN15	3.000 76.1	x	0.840 21.3	2	⅜ x 1 ⅜	1.91 49	2.44 62	1.71 43	5.50 140	2.56 65	2 0.7
		¾ DN20			1.050 26.9	2	⅜ x 1 ⅜	1.89 48	2.44 62	1.71 43	5.50 140	2.56 65	2 0.7
		1 DN25			1.315 33.7	2	⅜ x 1 ⅜	2.13 54	2.79 71	1.71 43	5.50 140	2.56 65	2 0.8

[2] Victaulic female threaded products are designed to accommodate standard NPT or BSPT (optional) male pipe threads only. Refer to the specific literature for these types of special male-threaded products for guidance and possible limitations for use. Failure to verify suitability in advance may result in assembly problems or leakage.

[3] Center of run to engaged pipe end for NPT threads (dimensions are approximate).

5.0 PERFORMANCE

Style 922

Run Size x Outlet Size inches DN			Equivalent Length of 1 inch Schedule 40 Steel Pipe (per UL 213, Section 16) (C=120)[4]	
			Threaded feet meters	**Grooved**[5] feet meters
1 ¼ DN32	x	1 DN25	8.5 2.6	12.5 3.8
1 ½ DN40	x	1 DN25	8.5 2.6	12.5 3.8
2 DN50	x	1 DN25	8.5 2.6	12.5 3.8
2 ½	x	1 DN25	8.5 2.6	12.5 3.8
DN65	x	1 DN25	8.5 2.6	12.5 3.8

4 Hazen-Williams coefficient of friction is 120.
5 1" FireLock™ Innovative Groove System (IGS) outlet

6.0 NOTIFICATIONS

WARNING

- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

	Dimensions	
	Minimum Hole Diameter/ Hole Saw Size inches mm	**Maximum Hole Diameter/ Hole Saw Size** inches mm
All Outlet Sizes	1 3⁄16	1 ¼
	30	32

7.1 REFERENCE MATERIALS

Size	Services Pressures per Regulatory Approvals and Listings[6]					
Nominal inches DN	**UL** psi kPa	**ULC** psi kPa	**FM** psi kPa	**VdS** psi kPa	**LPCB** psi kPa	**CNBOP** psi kPa
1 ¼ x ½ DN32 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ¼ x ¾ DN32 X DN20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ¼ x 1 DN32 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x ½ DN40 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x ¾ DN40 X DN20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
1 ½ x 1 DN40 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x ½ DN50 X DN15	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x ¾ DN50 X 20	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 x 1 DN50 X DN25	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x ½	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x ¾	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
2 ½ x 1	300 2068	300 2068	300 2068	232 1600	232 1600	232 1600
DN65 X DN15	–	–	300 2068	232 1600	232 1600	232 1600
DN65 X DN20	–	–	300 2068	232 1600	232 1600	232 1600
DN65 X DN25	–	–	300 2068	232 1600	232 1600	232 1600

6 Pressures listed in this chart are based upon standard wall pipe. Approved and Listed pressures may vary by pipe schedule.

NOTE

- Consult regulatory agency websites for details and the most recent regulatory information.

7.2 REFERENCE MATERIALS

05.01: Victaulic Seal Selection Guide

29.01: Victaulic Terms and Conditions of Sale

I-100: Installation Instructions

I-922: Installation Instructions FireLock™ Outlet-T

Victaulic® VicFlex™ Sprinkler Fittings
Series AH2 and AH2-CC Braided Flexible Hoses

10.85

Series AH2

Series AH2-CC

1.0 PRODUCT DESCRIPTION

Available Sizes by Component

Series AH2 1"/DN25 ID Braided Hose: 31, 36, 48, 60, 72"/790, 915, 1220, 1525, 1830 mm. Note: length includes adapter nipple and 5.75"/140 mm straight reducer.

Series AH2-CC 1"/DN25 ID Braided Hose: 31, 36, 48, 60, 72"/790, 915, 1220, 1525, 1830 mm.
Note: length includes captured coupling and 5.75"/140 mm straight reducer.

Connections

- **From Branchline**
  - ¾"/20mm BSPT female thread (VdS only)
  - 1 ¼"/32mm BSPT female thread (LPCB only)
  - 1"/25mm NPT or BSPT female Thread
  - 1"/25mm Grooved IGS (refer to Submittal 10.54 for additional IGS connections)
    - No. 116 CPVC Adapter (1"/25mm Female CPVC Socket x 1"/25mm Grooved IGS)
    - No. 142 Welded Outlet
    - Style 922 Outlet-T
    - Style 920N Mechanical-T Outlet
    - No. 65 Grooved End of Run Fitting
- **Hose Inlet**
  - 1"/25mm Grooved IGS
  - 1"/25mm NPT or BSPT male thread
  - ¾"/20mm BSPT male thread (VdS only)
  - 1 ¼"/32mm BSPT male thread (LPCB only)

1.0 PRODUCT DESCRIPTION (CONTINUED)

- **Sprinkler Reducer**
  - Sprinkler Connection: ½" and ¾"/15mm and 20mm NPT or BSPT female thread
  - Straight Lengths: 5.75", 9", 13"/140mm, 230mm, 330mm
  - 90˚ Elbows
    - Standard Short
    - Low Profile Short
    - Standard Long
    - Low Profile Long

  (Short elbows typically used with concealed sprinklers. Long elbows typically used with recessed pendent sprinklers)

Brackets

- Style AB2 for suspended and hard-lid ceilings and sidewalls, allows for vertical sprinkler adjustment, and installation before most ceiling tiles in place
- Style AB3 for surface mount applications, wood, metal and block walls, or ceilings
- Style AB4 for hard-lid ceilings with hat furring channel grid systems, allows for vertical sprinkler adjustment
- Style AB5 for hard-lid ceilings and sidewalls, allows for vertical sprinkler adjustment
- Style AB7 for suspended and hard-lid ceilings
- Style AB7 Adjustable for suspended and hard-lid ceilings
- Style AB10 for Armstrong® TechZone™ ceilings
- Style AB11 for lay-in panel suspended t-grid ceilings or drywall suspended t-grid ceilings, allows for low profile installations (use only with 90° low profile elbows)
- Style AB12 for suspended and hard-lid ceilings, allows for vertical sprinkler adjustment, and allows for low profile installation down to 4"/100mm.
- Style ABBA bracket for suspended, exposed, and hard-lid ceilings
- Style ABMM bracket for surface mount and stand off-mount applications, wood, metal and block walls, or ceilings and hard-lid ceilings
- Strut channel and pipe clamp, not supplied by Victaulic

Maximum Working Temperature

- 225°F/107°C
- 150°F/65°C (No. 116 CPVC Adapter)

Maximum Working Pressure

- 200 psi/1375 kPa (FM Approval)
- 175 psi/1206 kPa (cULus Listed)
- 1600 kPa/232 psi (VdS/LPCB Approved)
- 1.4 MPa (CCCf Approved)
- 175 psi/1206 kPa (No. 116 CPVC Adapter)

Minimum Bend Radius

- 7"/178 mm (FM/CCCf Approval)
- 2"/51 mm (cULus Listed)
- 3"/76.2 mm (VdS/LPCB Approved)

1.0 PRODUCT DESCRIPTION (CONTINUED)

Maximum Allowable Sprinkler K-Factors

- FM (½"/15 mm reducer) K5.6/8,1 (S.I.), (¾"/20 mm reducer) K14.0/20,2 (S.I.)
- cULus (½"/15 mm reducer) K8.0/11,5 (S.I.), (¾"/20 mm reducer) K14.0/20,2 (S.I.)
- VdS/LPCB (½"/15 mm reducer) K5.6/8,1 (S.I.), (¾"/20 mm reducer) K8.0/11,5 (S.I.)

2.0 CERTIFICATION/LISTINGS

LPS 1261: Issue 1.2
Cert/LPCB Ref. 1044/01
1044/04

NOTE

- The *VicFlex* Series AH2 Hose has been tested and evaluated by Spears® for acceptable use with Spears® CPVC Products and is therefore covered under the Spears® FlameGuard® Installer Protection Plan.

3.0 SPECIFICATIONS – MATERIAL

Series AH2:

Flexible Hose: 300-series Stainless Steel
Collar/Weld Fitting: 300-series Stainless Steel
Gasket Seal: Victaulic EPDM
Isolation Ring: Nylon
Nut and Nipple: Carbon Steel, Zinc-Plated
Reducer (½"/15 mm or ¾"/20 mm): Carbon Steel, Zinc-Plated
Low Profile Elbows: Ductile Iron, Zinc-Plated

Brackets: Carbon Steel, Zinc-Plated

Series AH2-CC:

Flexible Hose: 300-series Stainless Steel
Collar/Weld Fitting: 300-series Stainless Steel
Gasket Seal: Victaulic EPDM
Isolation Ring: Nylon
Coupling Retainer Ring: Polyethelene
Nut: Carbon Steel, Zinc-Plated
Reducer (½"/15 mm or ¾"/20 mm): Carbon Steel, Zinc-Plated
Low Profile Elbows: Ductile Iron, Zinc-Plated
Housing: Ductile iron conforming to ASTM A 536, Grade 65-45-12. Ductile iron conforming to ASTM A 395, Grade 65-45-15, is available upon special request.

Coupling Housing Coating:

- Orange enamel (North America, Asia Pacific).
- Red enamel (Europe).
- Hot dipped galvanized.

Gasket:[1]

Grade "E" EPDM (Type A)
FireLock EZ products have been Listed by Underwriters Laboratories Inc., Underwriters Laboratories of Canada Limited, and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services within the rated working pressure.

[1] Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

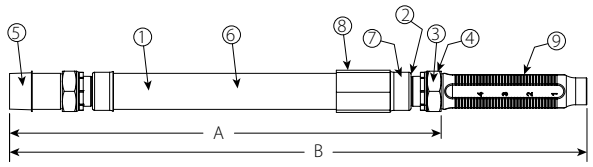
Bolts/Nut: Zinc electroplated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A 449 and physical requirements of ASTM A 183.

Linkage: CrMo Alloy Steel zinc electroplated per ASTM B633 Zn/Fe 5, Type III Finish

No. 116 Adapter Fitting: CPVC and Brass
Seal: Victaulic EPDM

4.0 DIMENSIONS

Product Details - Series AH2 Braided Hose

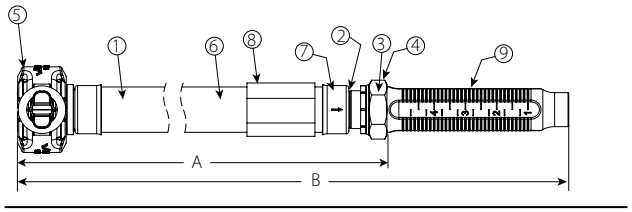


Item	Description
1	Flexible Hose
2	Isolation Ring
3	Gasket
4	Nut
5	Adapter Nipple
6	Braid
7	Collar/Weld Fitting
8	Sleeve
9	Reducer

Hose Length Dimensions

Hose Length inches mm	A inches mm	B inches mm
31 790	25.3 641	31 790
36 915	31.3 794	36 915
48 1219	42.3 1073	48 1220
60 1525	54.3 1378	60 1525
72 1830	66.3 1683	72 1830

Series AH2-CC Braided Hose

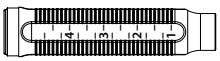


Item	Description
1	Flexible Hose
2	Isolation Ring
3	Gasket
4	Nut
5	Captured Coupling
6	Braid
7	Collar/Weld Fitting
8	Sleeve
9	Reducer

Hose Length inches mm	A inches mm	B inches mm
31 790	24.5 622	29.8 757
36 915	29.5 749	34.8 884
48 1219	41.5 1054	46.8 1189
60 1525	53.5 1359	58.8 1494
72 1830	65.5 1664	70.8 1798

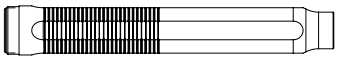
4.0 DIMENSIONS (CONTINUED)

Standard Reducer

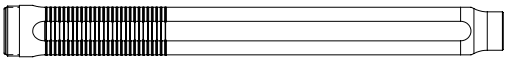


5.75"/140 mm straight reducer

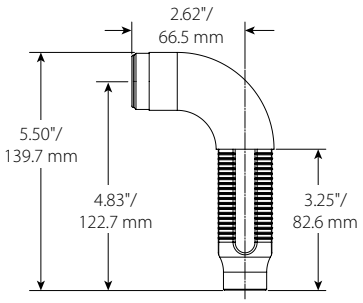
Optional Reducers



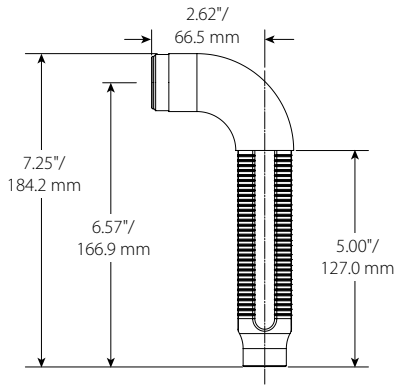
9.0"/229 mm straight reducer



13.0"/330 mm straight reducer



Short 90° elbow reducer

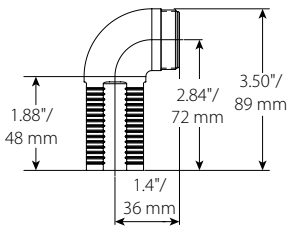


Long 90° elbow reducer

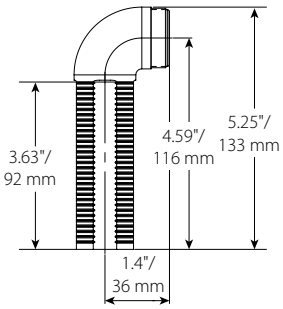
NOTE

- The Short 90° elbow reducer is typically used with concealed sprinklers while the longer 90° elbow is typically used in the installation of recessed pendent sprinklers.
- FM/VdS Approved only.

Low Profile



Short 90° elbow reducer

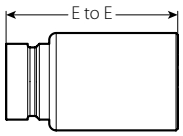


Long 90° elbow reducer

NOTE

- Style AB11: When low profiles elbows are with the Style AB11 bracket, the Low Profile Short Elbow is typically used with concealed sprinklers while the Low Profile Long Elbow is typically used in the installation of recessed pendent sprinklers.

No. 116 CPVC Adapter



NOTES

- E to E is 3.0"/76.0 mm
- The No. 116 CPVC Adapter has 2 ft. (0.6 m) EQL of 1" Schedule 40 pipe.

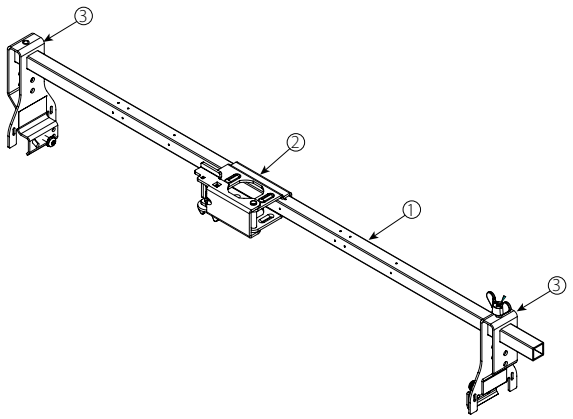
4.1 DIMENSIONS

VicFlex Brackets

Style AB2

- Suspended Ceilings
- Hard-Lid Ceilings

Item	Description
1	24"/610 mm or 48"/1219 mm Square Bar
2	Patented Vertically Adjustable Center Bracket
3	End Bracket

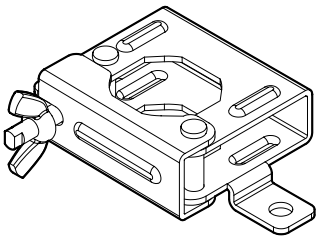


NOTE

- Both sizes FM/VdS/LPCB Approved, cULus listed

Style AB3

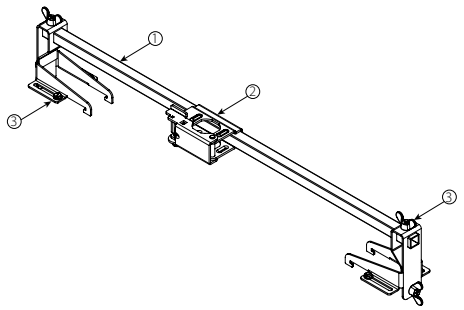
- Surface Mount Applications
- FM/LPCB Approved



Style AB4

- Hard-Lid Ceilings with Hat furring channel grid system

Item	Description
1	24"/610 mm or 48"/1219 mm Square Bar
2	Patented Vertically Adjustable Center Bracket
3	End Bracket for Hat Furring Channel



NOTE

- Both sizes FM/VdS/LPCB Approved, cULus listed.

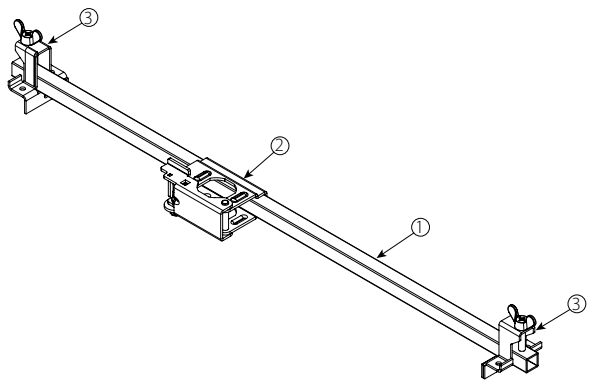
4.2 DIMENSIONS

VicFlex Brackets

Style AB5

- Hard-Lid Ceilings

Item	Description
1	24"/610 mm or 48"/1219 mm Square Bar
2	Patented Vertically Adjustable Center Bracket
3	End Bracket



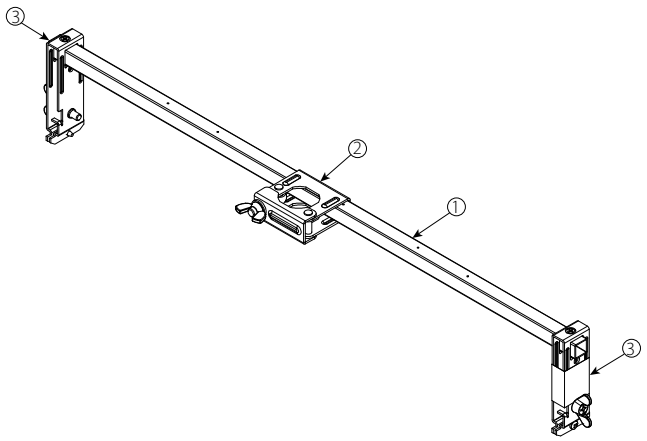
NOTE

- Both sizes FM/VdS/LPCB Approved, cULus listed.

Style AB7

- Suspended Ceilings
- Hard-Lid Ceilings

Item	Description
1	24"/610 mm or 48"/1219 mm Square Bar
2	Patented 1-Bee2® Center Bracket
3	End Bracket



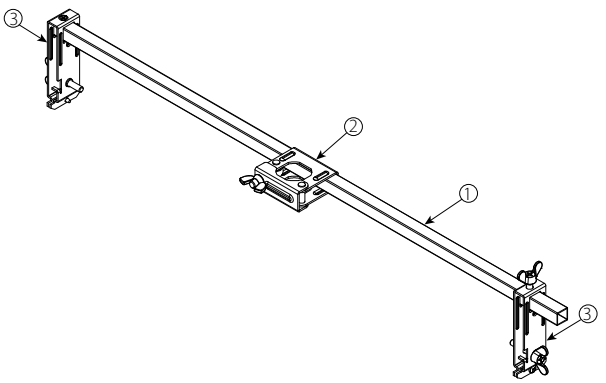
NOTE

- Both sizes FM/VdS/LPCB Approved.

Style AB7 Adjustable

- Suspended Ceilings
- Hard-Lid Ceilings

Item	Description
1	700 mm or 1400 mm Square Bar
2	Patented 1-Bee2® Center Bracket
3	End Bracket (adjustable)



NOTE

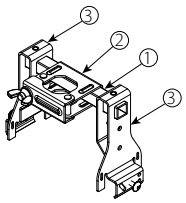
- Both sizes FM/VdS/LPCB Approved.

4.3 DIMENSIONS

VicFlex Brackets

Style AB10

- Suspended ceilings
- Armstrong® TechZone™



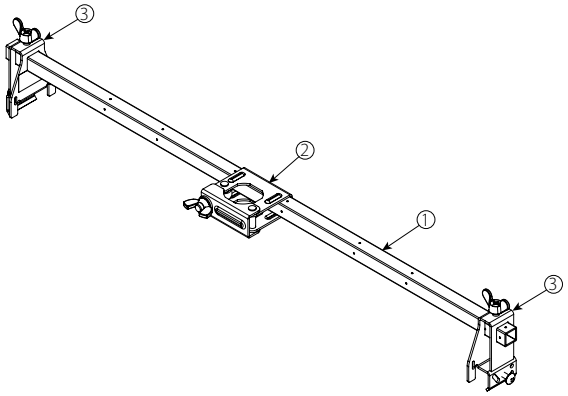
Item	Description
1	6"/152 mm Square Bar
2	Patented 1-Bee2® Center Bracket
3	End Bracket

NOTE

- FM/VdS/LPCB Approved, cULus listed.

Style AB11

- Suspended ceilings
- Hard-Lid ceilings



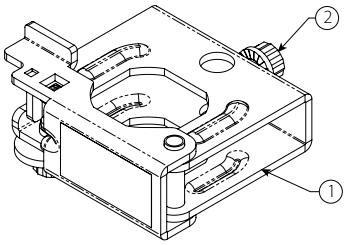
Item	Description
1	24"/610 mm or 48"/1219 mm Square Bar
2	Patented 1-Bee2® Center Bracket
3	End Bracket

NOTE

- FM/VdS Approved, cULus listed.

Style AB12

- Suspended ceilings
- Hard-Lid ceilings



Item	Description
1	Style AB12 Bracket Body
2	#2 Square Drive Set Screw

NOTE

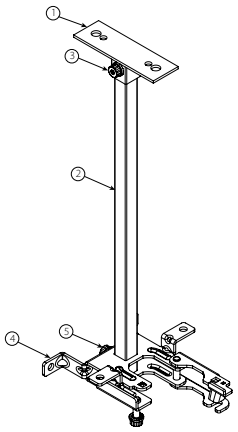
- FM/VdS Approved.

4.3 DIMENSIONS (CONTINUED)

VicFlex Brackets

Style ABBA

- Floor-above mount
- Cantilever mount
- Temporary mount in exposed ceilings



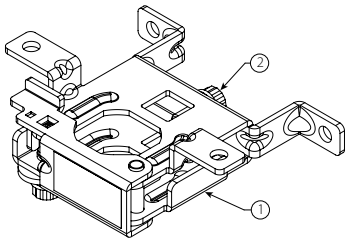
Item	Description
1	Style ABBA Mounting Plate
2	Style ABBA Square Bar
3	Cap Screw, Serated Flange, M6 x 1 x 20, T25 Torx Drive Recessed
4	Style ABMM Bracket Body
5	Cap Screw, Serated Flange, M6 x 1 x 15.24, T25 Torx Drive Recessed

NOTE

- FM Approved.

Style ABMM

- Surface mount
- Stand-off mount



Item	Description
1	Style ABMM Bracket Body
2	Cap Screw, Serated Flange, M6 x 1 x 15.24, T25 Torx Drive Recessed

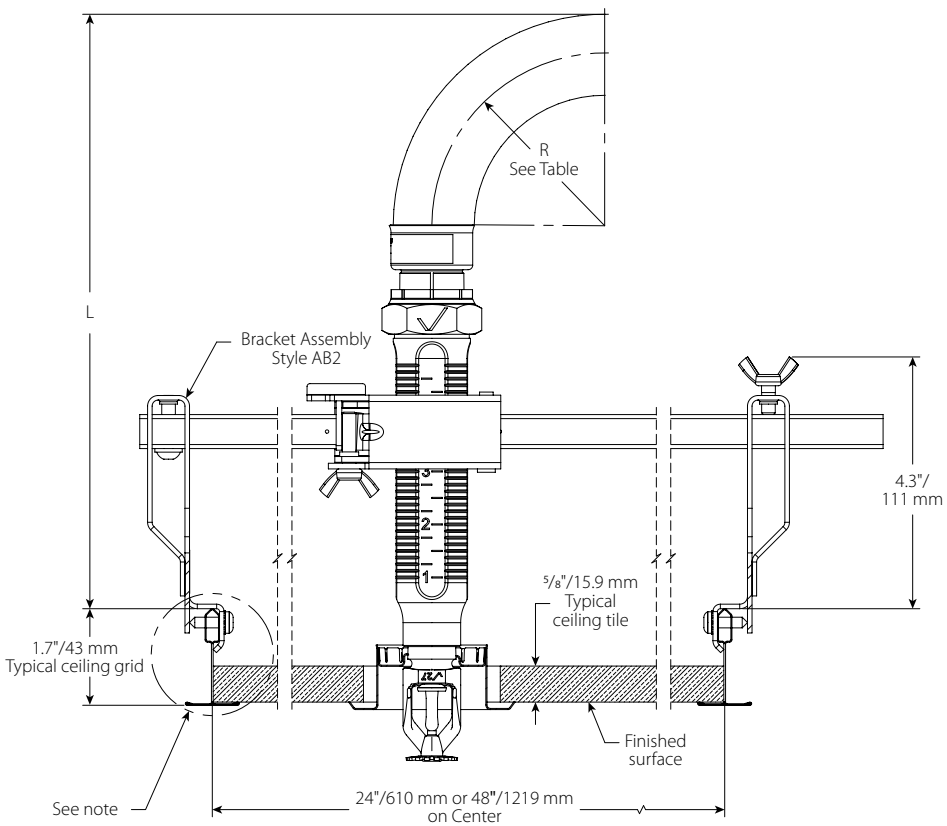
NOTE

- FM Approved.

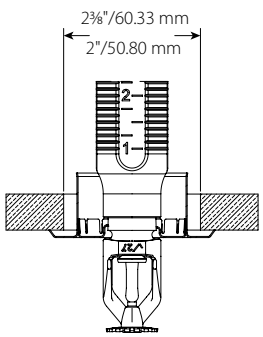
4.4 DIMENSIONS

Clearances

Series AH2 Braided Hose and Style AB2 Bracket



V2707 ¾"/19 MM MAX. RECESS



V2707 MAX. EXTENSION

Hose Clearance Chart								
	Straight Reducer						Long Elbow	Short Elbow
	V2707 ¾" Max Recess inches mm	V3802 ½" Max Recess inches mm	V2707 ¾" Max Recess inches mm	V3802 ½" Max Recess inches mm	V2707 ¾" Max Recess inches mm	V3802 ½" Max Recess inches mm	V2707 ¾" Max Recess inches mm	V3802 ½" Max Recess inches mm
"R" Minimum Bend Radius	2.0 50		3.0 80		7.0 175		–	
"A" Minimum Required Installation Space	8.6 218	10.1 269	9.6 244	11.1 281	13.6 345	15.1 383	5.8 147	5.8 147

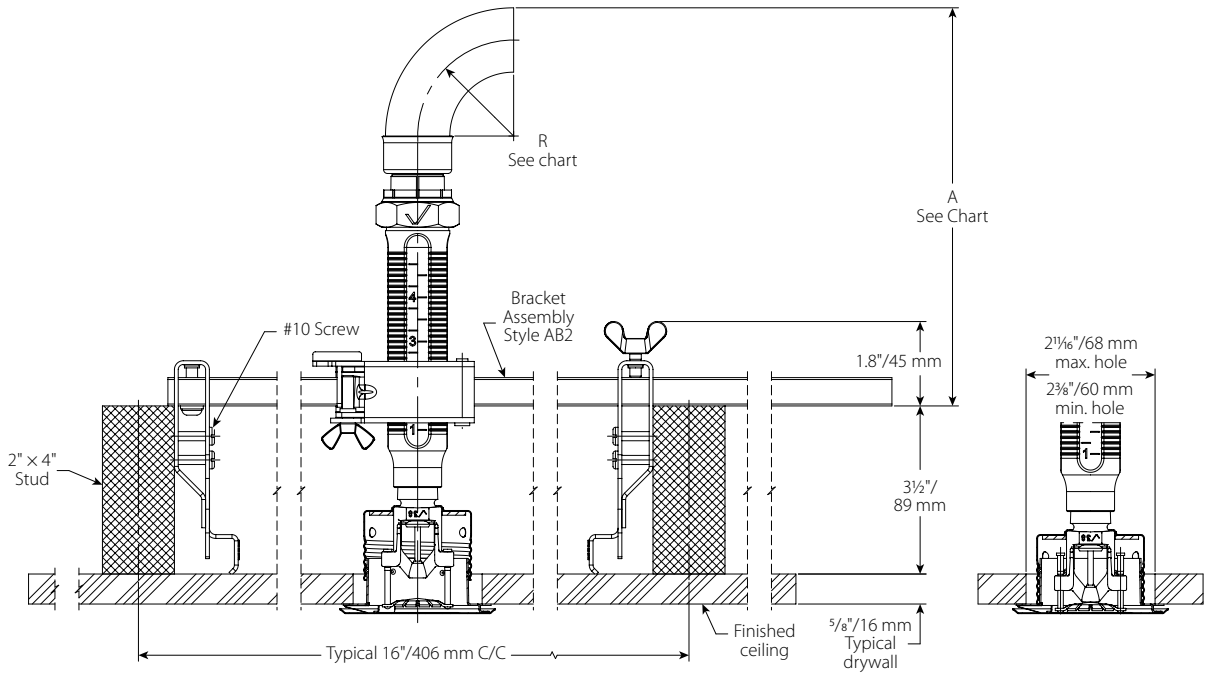
NOTE

- Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.5 DIMENSIONS

Clearances

Series AH2 Braided Hose and Style AB2 Bracket



V38 ½"/13 mm MAX. RECESS **V38 MAX. EXTENSION**

Hose Clearance Chart									
	Straight Reducer								
	V2707 ¾" | 20 mm Max Recess" inches mm	**V3802 ½" | 13 mm Max Recess** inches mm	**V2709 ¾" | 20 mm Sidewall** inches mm	**V2707 ¾" | 20 mm Max Recess** inches mm	**V3802 ½" | 13 mm Max Recess** inches mm	**V2709 ¾" | 20 mm Sidewall** inches mm	**V2707 ¾" | 20 mm Max Recess** inches mm	**V3802 ½" | 13 mm Max Recess** inches mm	**V2709 ¾" | 20 mm Sidewall** inches mm
"R" Minimum Bend Radius	2.0 50			3.0 80			7.0 175		
"A" Minimum Required Installation Space	6.2 158	7.6 193	6.1 155	7.2 183	8.6 218	7.1 180	11.2 285	12.6 320	11.1 282

Hose Clearance Chart			
	Long Elbow		Short Elbow
	V2707 ¾" | 20 mm Max Recess inches mm	**V2709 ¾" | 20 mm Sidewall** inches mm	**V3802 ½" | 13 mm Max Recess** inches mm
"R" Minimum Bend Radius	–		
"A" Minimum Required Installation Space	3.3 84	3.6 91	3.3 84

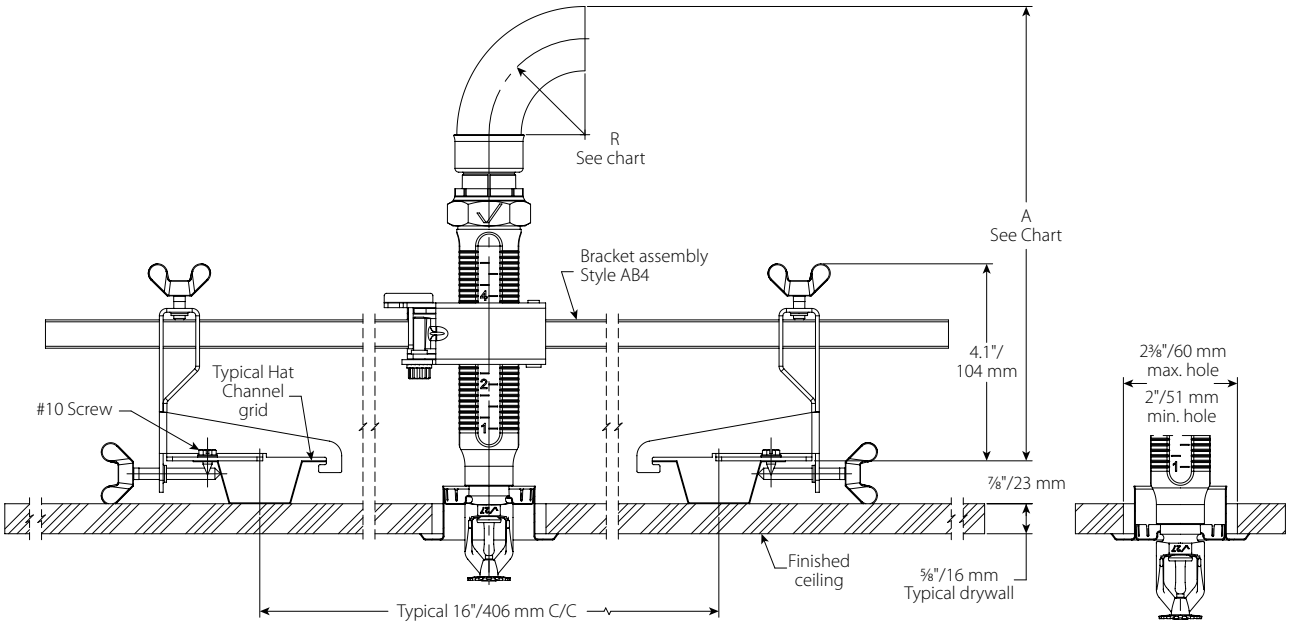
NOTE

- Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.6 DIMENSIONS

Clearances

Series AH2 Braided Hose and Style AB4 Bracket



V27 ¾"/19 mm MAX. RECESS

V27 MAX. EXTENSION

Hose Clearance Chart								
	Straight Reducer						Long Elbow	Short Elbow
	V2707 ¾" Max Recess inches mm	**V3802 ½" Max Recess** inches mm	**V2707 ¾" Max Recess** inches mm	**V3802 ½" Max Recess** inches mm	**V2707 ¾" Max Recess** inches mm	**V3802 ½" Max Recess** inches mm	**V2707 ¾" Max Recess** inches mm	**V3802 ½" Max Recess** inches mm
"R" Minimum Bend Radius	2.0 50	2.0 50	3.0 80	3.0 80	7.0 175	7.0 175	–	
"A" Minimum Required Installation Space	8.8 224	10.2 259	9.8 249	11.2 285	13.8 351	15.2 386	8.0 203	5.9 150

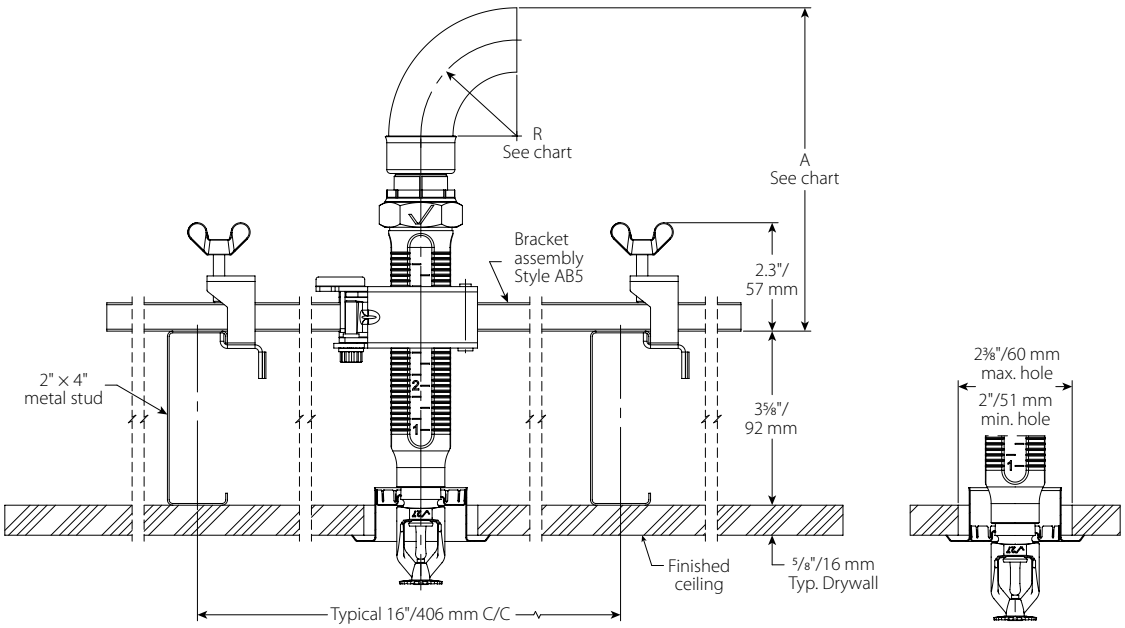
NOTE

Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.7 DIMENSIONS

Clearances

Series AH2 Braided Hose and Style AB5 Bracket



V27 ¾"/19 mm MAX. RECESS **V27 MAX. EXTENSION**

Hose Clearance Chart									
	Straight Reducer								
	"V2707 ¾" I 20 mm Max Recess" inches mm	**V3802 ½" I 13 mm Max Recess** inches mm	**V2709 ¾" I 20 mm Sidewall** inches mm	**V2707 ¾" I 20 mm Max Recess** inches mm	**V3802 ½" I 13 mm Max Recess** inches mm	**V2709 ¾" I 20 mm Sidewall** inches mm	**V2707 ¾" I 20 mm Max Recess** inches mm	**V3802 ½" I 13 mm Max Recess** inches mm	**V2709 ¾" I 20 mm Sidewall** inches mm
"R" Minimum Bend Radius	2.0 50			3.0 80			7.0 175		
"A" Minimum Required Installation Space	6.0 158	7.7 196	6.1 155	7.0 178	8.7 221	7.1 180	11.0 279	12.7 323	11.1 282

Hose Clearance Chart					
	Long Elbow			Low-Profile Long Elbow	Short Elbow
	V2707 ¾" I 20 mm Max Recess inches mm	**V3802 ½" I 13 mm Max Recess** inches mm	**V2709 ¾" I 20 mm Sidewall** inches mm	**V3802 ½" I 13 mm Max Recess** inches mm	**V3802 ½" I 13 mm Max Recess** inches mm
"R" Minimum Bend Radius	–				
"A" Minimum Required Installation Space	3.5 89	4.9 124	3.6 91	2.9 74	3.3 84

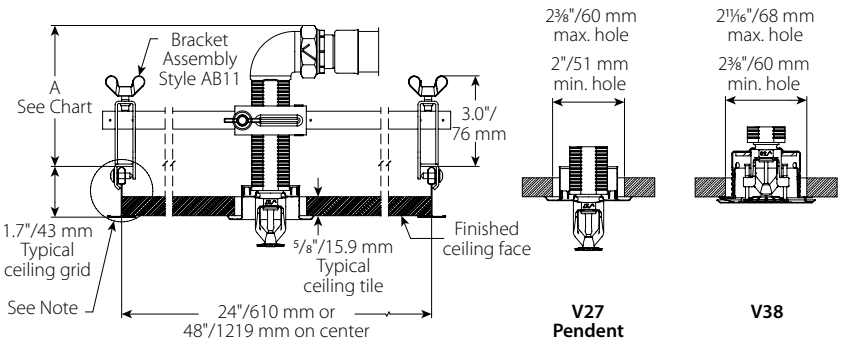
NOTE

- Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.8 DIMENSIONS

Clearances

Series AH2 Braided Hose and Style AB11 Bracket (LOW PROFILE SOLUTION)



Hose Clearance Chart		
	Low-Profile Long Elbow	**Low-Profile Short Elbow**
	V2707 ¾" I 20 mm Max Recess" inches mm	**V3802 ½" I 13 mm Max Recess** inches mm
"A" Minimum Required Installation Space	4.0 102	3.9 99

NOTE

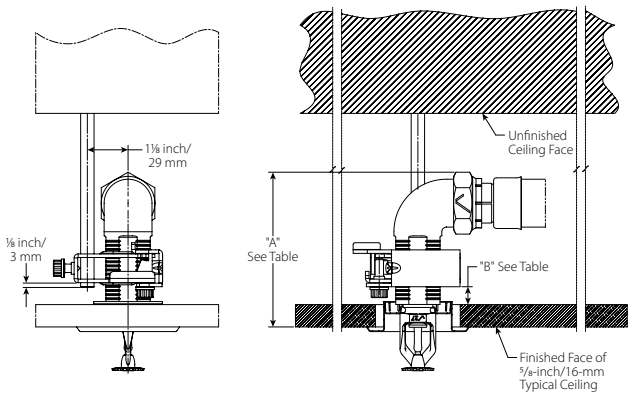
- Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.9 DIMENSIONS

Clearances

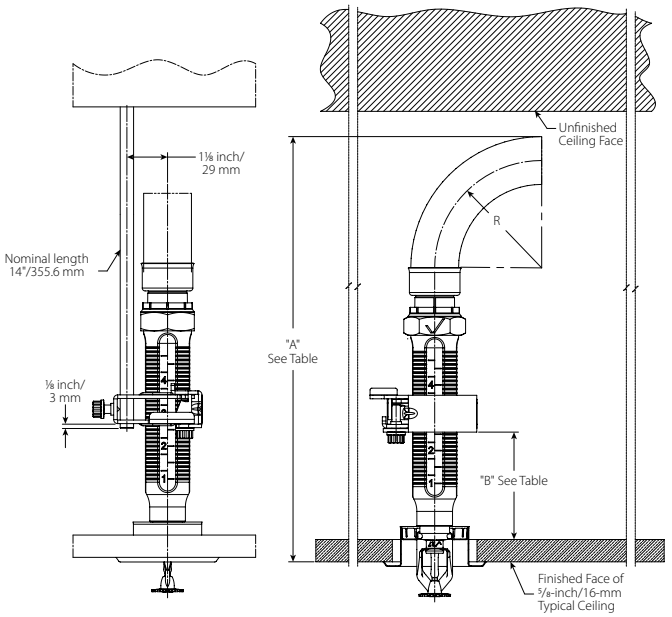
Style AB12 and ABBA Bracket

Suspended Ceiling Grid with Recessed Sprinkler with Low Profile Short Elbow



V2707 ½"/12.7 mm MAX. RECESS

Suspended Ceiling Grid with Recessed Sprinkler and Straight 5.75"/140 mm Reducer



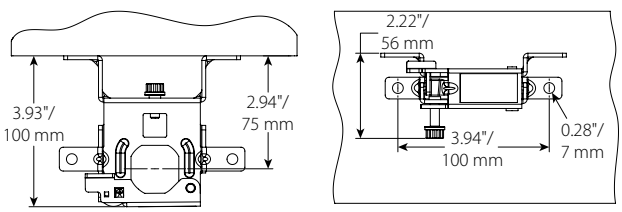
V2707 ¾"/19 mm MAX. RECESS

Dimension		Low Profile Short Elbow		Low Profile Long Elbow		Standard Short Elbow		Standard Long Elbow		Standard Straight Reducer	
		¾"/19 mm Recessed* inches mm	Concealed inches mm	¾"/19 mm Recessed inches mm	Concealed inches mm	¾"/19 mm Recessed inches mm	Concealed inches mm	¾"/19 mm Recessed inches mm	Concealed inches mm	¾"/19 mm Recessed inches mm	Concealed inches mm
A	Minimum Required Installation Space	4.0 101.6	5.5 139.7	5.6 142.2	7.2 182.9	5.9 149.9	7.5 190.5	7.7 195.6	9.3 236.2	15.0 381.0	16.6 421.6
B	Distance from Top of Typical Ceiling Tile to Bottom of Gate	0.5 12.7	2.0 50.8	1.5 38.1	1.5 38.1	1.5 38.1	1.5 38.1	3.0 76.2	3.0 76.2	3.0 76.2	3.0 76.2

* Adjustability will be limited

Style ABMM Bracket

Stand-off Dimensions

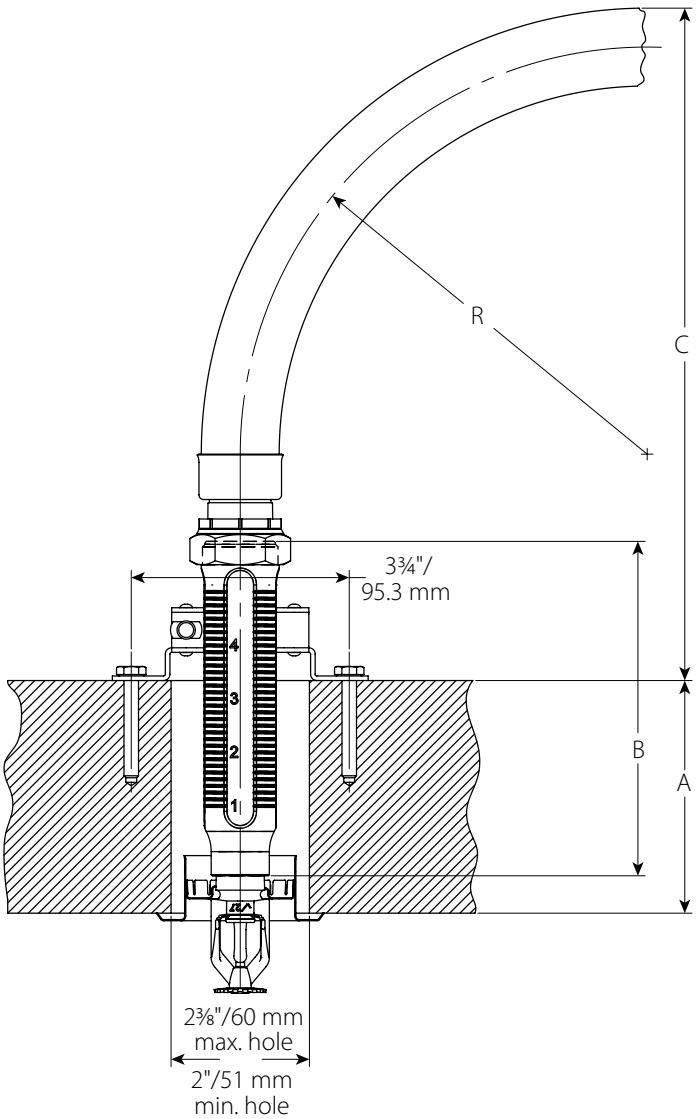


4.10 DIMENSIONS

Clearances

Style AB3 and ABMM Bracket

Surface Mount Application with Recessed Sprinkler



Hose Clearances																					
Dimension	inches mm			inches mm			inches mm		inches mm	inches mm	inches mm				inches mm			inches mm			inches mm	inches mm
Wall Thickness "A"	2 50			4 100			6 150		8 200	10 250	2 50				4 100			6 150			8 200	10 250
Outlet Length "B"	5.75 146.1	9 228.6	13 330.2	5.75 146.1	9 228.6	13 330.2	9 228.6	13 330.2	13 330.2	13 330.2	5.75 146.1	9 228.6	13 330.2	5.75 146.1	9 228.6	13 330.2	9 228.6	13 330.2	13 330.2	13 330.2	
Hose Clearance "C"	11.6 294	14.8 376	18.8 478	9.6 243	12.8 325	16.8 427	10.8 275	14.8 376	12.8 325	10.8 275	12.6 319	15.8 402	19.8 503	10.6 268	13.8 351	17.8 452	11.8 300	15.8 402	13.8 351	11.8 300	
Bend Radius "R"	7 175										8 200										

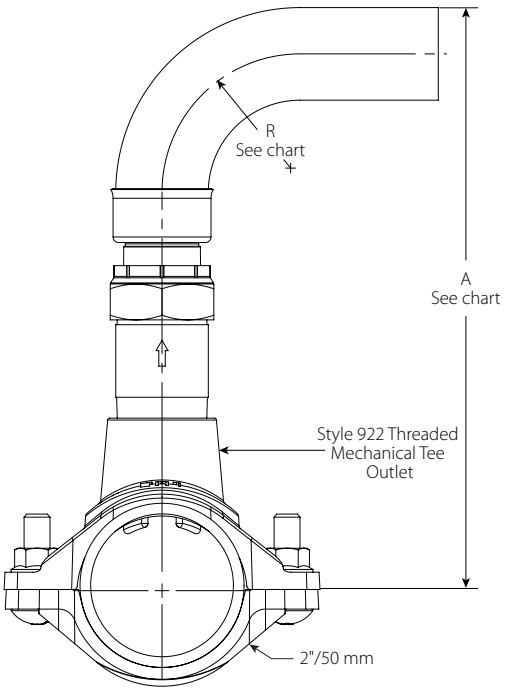
NOTE

- Variations of ceiling grids, sprinkler heads, brackets, and hoses are permitted but may result in clearance differences from the figures above.

4.11 DIMENSIONS

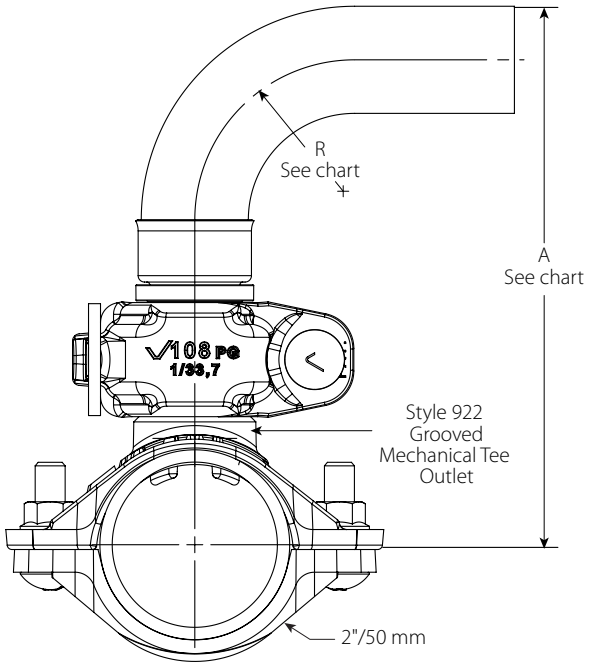
BRANCHLINE CLEARANCES

Series AH2 Braided Hose with Style 922 threaded outlet



Hose Clearance Chart						
Dimension		inches mm	inches mm	inches mm	inches mm	inches mm
R	Minimum Bend Radius	3 80	4 100	5 125	6 150	7 175
A	Min.	9.4 238	10.4 263	11.4 289	12.4 314	13.4 339

Series AH2-CC Braided Hose with Style 922 grooved outlet

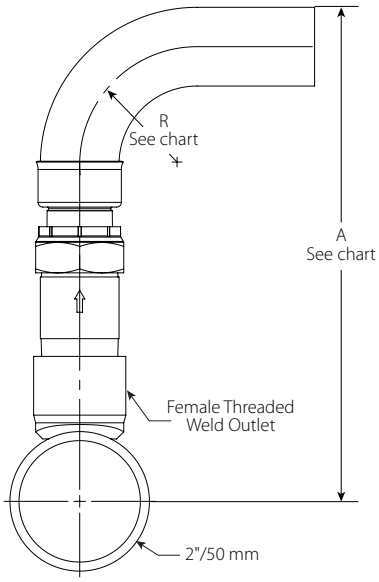


Hose Clearance Chart						
Dimension		inches mm	inches mm	inches mm	inches mm	inches mm
R	Minimum Bend Radius	3 80	4 100	5 125	6 150	7 175
A	Min.	7.7 197	8.7 222	9.7 247	10.7 273	11.7 298

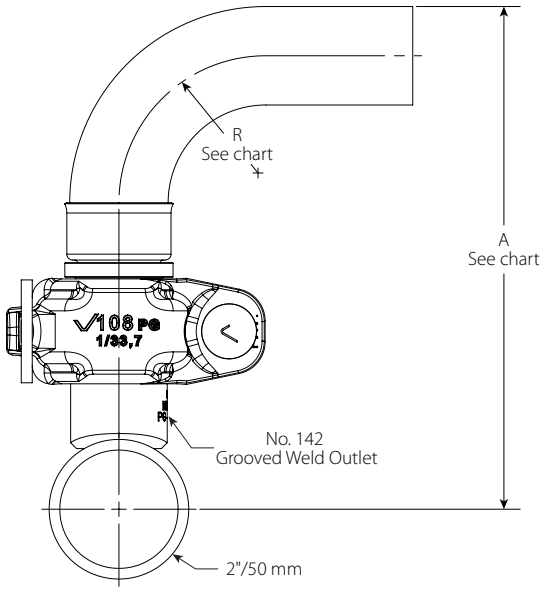
4.12 DIMENSIONS

BRANCHLINE CLEARANCES

Series AH2 Braided Hose with female threaded outlet



Series AH2-CC Braided Hose with grooved outlet



Hose Clearance Chart						
Dimension		inches mm	inches mm	inches mm	inches mm	inches mm
R	Minimum Bend Radius	3 80	4 100	5 125	6 150	7 175
A	Min.	9.4 239	10.4 264	11.4 290	12.4 315	13.41 341

Hose Clearance Chart						
Dimension		inches mm	inches mm	inches mm	inches mm	inches mm
R	Minimum Bend Radius	3 80	4 100	5 125	6 150	7 175
A	Min.	8.1 205	9.1 231	10.1 256	11.1 281	12.1 307

5.0 PERFORMANCE – FRICTION LOSS DATA

Series AH2 and AH2-CC Braided Hoses with Straight 5.75"/140 mm Reducers Style AB2, AB4, AB5 and AB10 Brackets

Hose	Reducer		UL	
Length inches mm	**Type**	**Nominal Outlet Size** inches DN	**Equivalent Length of 1"/33.7mm Sch. 40 pipe** feet meters	**Max Bends**
31 790	Straight	½ DN15	15.0 4.6	3
31 790	Straight	½ DN15	16.0 4.9	4
31 790	Straight	¾ DN20	19.0 5.8	3
31 790	Straight	¾ DN20	20.0 6.1	4
36 915	Straight	½ DN15	18.0 5.5	3
36 915	Straight	½ DN15	21.0 6.4	5
36 915	Straight	¾ DN20	21.0 6.4	3
36 915	Straight	¾ DN20	23.0 7.0	5
48 1220	Straight	½ DN15	21.0 6.4	3
48 1220	Straight	½ DN15	32.0 9.8	8
48 1220	Straight	¾ DN20	26.0 7.9	3
48 1220	Straight	¾ DN20	37.0 11.3	8
60 1525	Straight	½ DN15	27.0 8.2	3
60 1525	Straight	½ DN15	46.0 14.0	10
60 1525	Straight	¾ DN20	27.0 8.2	3
60 1525	Straight	¾ DN20	46.0 14.0	10
72 1830	Straight	½ DN15	31.0 9.4	3
72 1830	Straight	½ DN15	55.0 16.8	12
72 1830	Straight	¾ DN20	30.0 9.1	3
72 1830	Straight	¾ DN20	60.0 18.3	12

5.0 PERFORMANCE – FRICTION LOSS DATA (CONTINUED)

Series AH2 and AH2-CC Braided Hose with 90° Low Profile Elbows
Style AB11 *VicFlex* Bracket

Hose	Reducer		UL	
Length inches mm	**Type**	**Nominal Outlet Size** inches DN	**Equivalent Length of 1"/33.7mm Sch. 40 pipe** feet meters	**Max Bends**
31 790	LP Elbow	½ DN15	18.0 5.5	3
31 790	LP Elbow	½ DN15	24.0 7.3	4
31 790	LP Elbow	¾ DN20	21.0 6.4	3
31 790	LP Elbow	¾ DN20	24.0 7.3	4
36 915	LP Elbow	½ DN15	19.0 5.8	3
36 915	LP Elbow	½ DN15	26.0 7.9	5
36 915	LP Elbow	¾ DN20	23.0 7.0	3
36 915	LP Elbow	¾ DN20	28.0 8.5	5
48 1220	LP Elbow	½ DN15	23.0 7.0	3
48 1220	LP Elbow	½ DN15	43.0 13.1	8
48 1220	LP Elbow	¾ DN20	30.0 9.1	3
48 1220	LP Elbow	¾ DN20	42.0 12.8	8
60 1525	LP Elbow	½ DN15	28.0 8.5	3
60 1525	LP Elbow	½ DN15	49.0 14.9	10
60 1525	LP Elbow	¾ DN20	31.0 9.4	3
60 1525	LP Elbow	¾ DN20	50.0 15.2	10
72 1830	LP Elbow	½ DN15	31.0 9.4	3
72 1830	LP Elbow	½ DN15	65.0 19.8	12
72 1830	LP Elbow	¾ DN20	36.0 11.0	3
72 1830	LP Elbow	¾ DN20	63.0 19.2	12

5.0 PERFORMANCE – FRICTION LOSS DATA (CONTINUED)

Series AH2 and AH2-CC Braided Hoses Equivalent Length Design Guide

Equivalent length values at various numbers of 90 degree bends at 2"/51 mm center line bend radius

Length inches mm	**Nominal Outlet Size** inches DN	**1 Bend** feet meters	**2 Bends** feet meters	**3 Bends** feet meters	**4 Bends** feet meters	**5 Bends** feet meters	**6 Bends** feet meters	**7 Bends** feet meters	**8 Bends** feet meters	**9 Bends** feet meters	**10 Bends** feet meters	**11 Bends** feet meters	**12 Bends** feet meters
31 790	½ DN15	11.0 3.4	13.0 4.0	15.0 4.6	16.0 4.9	–	–	–	–	–	–	–	–
31 790	¾ DN20	12.0 3.7	14.0 4.3	19.0 5.8	20.0 6.1	–	–	–	–	–	–	–	–
36 915	½ DN15	14.0 4.3	16.0 4.9	18.0 5.5	19.0 5.8	21.0 6.4	–	–	–	–	–	–	–
36 915	¾ DN20	17.0 5.2	19.0 5.8	21.0 6.4	22.0 6.7	23.0 7.0	–	–	–	–	–	–	–
48 1220	½ DN15	18.0 5.5	19.0 5.8	21.0 6.4	23.0 7.0	25.0 7.6	27.0 8.2	30.0 9.1	32.0 9.8	–	–	–	–
48 1220	¾ DN20	21.0 6.4	24.0 7.3	26.0 7.9	28.0 8.5	31.0 9.4	33.0 10.1	35.0 10.7	37.0 11.3	–	–	–	–
60 1525	½ DN15	21.0 6.4	24.0 7.3	27.0 8.2	30.0 9.1	32.0 9.8	35.0 10.7	37.0 11.3	40.0 12.2	43.0 13.1	46.0 14.0	–	–
60 1525	¾ DN20	23.0 7.0	25.0 7.6	27.0 8.2	29.0 8.8	32.0 9.8	34.0 10.4	37.0 11.3	40.0 12.2	43.0 13.1	46.0 14.0	–	–
72 1830	½ DN15	27.0 8.2	29.0 8.8	31.0 9.4	34.0 10.4	37.0 11.3	40.0 12.2	43.0 13.1	46.0 14.0	48.0 14.6	50.0 15.2	52.0 15.8	55.0 16.8
72 1830	¾ DN20	26.0 7.9	28.0 8.5	30.0 9.1	33.0 10.1	37.0 11.3	40.0 12.2	44.0 13.4	48.0 14.6	51.0 15.5	54.0 16.5	57.0 17.4	60.0 18.3

NOTES

- Values for use with 5.75"/140 mm straight reducers.
- The values in this table are provided by the manufacturer for reference only. For friction loss data in accordance with the UL Certification, please refer to pages 19 and 20 of this publication.

How to use this Design Guide:

- For some systems, it may be advantageous for the designer to calculate the system hydraulics using shorter equivalent lengths associated with fewer than the maximum allowable number of bends. In this case, the designer may select a design number of bends for the job and use the associated equivalent length from the design guide to determine the system hydraulics.
- It is possible that the actual installed condition of some of the flexible drops may have more bends than the designer selected. When this happens, the design guide may be used to find equivalent lengths based on the actual installed number of bends for particular sprinkler installations. The system hydraulics can be recalculated using actual equivalent lengths to verify the performance of the system.

5.1 PERFORMANCE – FRICTION LOSS DATA

FM

Series AH2 and AH2-CC Braided Hoses
Style AB2, AB3, AB4, AB5, AB7, AB7 Adj., AB8, AB10, AB12, ABBA and ABMM *VicFlex* Brackets

Length of Stainless Steel Flexible Hose inches mm	K-Factor Imperial S.I.	Outlet Size inches mm type	Equivalent Length of 1"/33.7 mm Sch. 40 Pipe feet meters	Maximum Number of 90° Bends at 7"/178 mm Bend Radius
31 790	5.6 8.1	½ 15 Straight	13.8 4.2	2
		½ 15 90° Elbow	23.5 7.1	
36 915	5.6 8.1	½ 15 Straight	16.6 5.1	2
		½ 15 90° Elbow	25.6 7.8	
48 1220	5.6 8.1	½ 15 Straight	23.4 7.1	3
		½ 15 90° Elbow	30.7 9.3	
60 1525	5.6 8.1	½ 15 Straight	30.2 9.2	4
		½ 15 90° Elbow	35.9 10.9	
72 1830	5.6 8.1	½ 15 Straight	37.0 11.3	4
		½ 15 90° Elbow	41.1 12.5	
31 790	8.0 11.5	¾ 20 Straight	16.8 5.1	2
		¾ 20 90° Elbow	16.8 5.1	
36 915	8.0 11.5	¾ 20 Straight	20 6.0	2
		¾ 20 90° Elbow	19.7 6.0	
48 1220	8.0 11.5	¾ 20 Straight	27.8 8.4	3
		¾ 20 90° Elbow	26.6 8.1	

FM NOTES

- The Series AH2 hose has been tested and Approved by FM Global for use in wet, dry and preaction systems per NFPA 13, 13R, and 13D and FM data sheets 2-0, 2-5, and 2-8. FM 1637 standard for safety include, but are not limited to, pressure cycling, corrosion resistance, flow characterisitics, vibration resistance, leakage, mechanical and hydrostatic strength.
- EXAMPLE: A 48-inch hose installed with two 30° bends and two 90° bends is permitted and considered equivalent to the data in the table shown above. In this example, the total number of degrees is 240°, which is less than the allowable 270°.

5.1 PERFORMANCE – FRICTION LOSS DATA (CONTINUED)

FM

Series AH2 and AH2-CC Braided Hoses
Style AB2, AB3, AB4, AB5, AB7, AB7 Adj., AB8, AB10, AB12, ABBA and ABMM *VicFlex* Brackets

Length of Stainless Steel Flexible Hose inches mm	K-Factor Imperial S.I.	Outlet Size inches mm type	Equivalent Length of 1"/33.7 mm Sch. 40 Pipe feet meters	Maximum Number of 90° Bends at 7"/178 mm Bend Radius
60 1525	8.0 11.5	¾ 20 Straight	35.7 10.9	4
		¾ 20 90° Elbow	33.6 10.2	
72 1830	8.0 11.5	¾ 20 Straight	43.5 13.2	4
		¾ 20 90° Elbow	40.6 12.2	
31 790	11.2 16.1	¾ 20 Straight	16.5 5.0	2
		¾ 20 90° Elbow	17.8 5.4	
36 915	11.2 16.1	¾ 20 Straight	19.5 5.9	2
		¾ 20 90° Elbow	20.7 6.3	
48 1220	11.2 16.1	¾ 20 Straight	26.7 8.1	3
		¾ 20 90° Elbow	27.9 8.5	
60 1525	11.2 16.1	¾ 20 Straight	33.9 10.3	4
		¾ 20 90° Elbow	35 10.7	
72 1830	11.2 16.1	¾ 20 Straight	41.3 12.5	4
		¾ 20 90° Elbow	42.2 12.8	
31 790	14.0 20.2	¾ 20 Straight	14.9 4.5	2
		¾ 20 90° Elbow	15.5 4.72	

FM NOTES

- The Series AH2 hose has been tested and Approved by FM Global for use in wet, dry and preaction systems per NFPA 13, 13R, and 13D and FM data sheets 2-0, 2-5, and 2-8. FM 1637 standard for safety include, but are not limited to, pressure cycling, corrosion resistance, flow characterisitics, vibration resistance, leakage, mechanical and hydrostatic strength.
- EXAMPLE: A 48-inch hose installed with two 30° bends and two 90° bends is permitted and considered equivalent to the data in the table shown above. In this example, the total number of degrees is 240°, which is less than the allowable 270°.

5.1 PERFORMANCE – FRICTION LOSS DATA (CONTINUED)

Series AH2 and AH2-CC Braided Hoses
Style AB2, AB3, AB4, AB5, AB7, AB7 Adj., AB8, AB10, AB12, ABBA and ABMM *VicFlex* Brackets

Length of Stainless Steel Flexible Hose inches mm	K-Factor Imperial S.I.	Outlet Size inches mm type	Equivalent Length of 1"/33.7 mm Sch. 40 Pipe feet meters	Maximum Number of 90° Bends at 7"/178 mm Bend Radius
36 915	14.0 20.2	¾ 20 Straight	19.4 5.9	2
		¾ 20 90˚ Elbow	19.6 5.9	
48 1220	14.0 20.2	¾ 20 Straight	30.3 9.2	3
		¾ 20 90˚ Elbow	29.5 8.9	
60 1525	14.0 20.2	¾ 20 Straight	33.9 10.3	4
		¾ 20 90˚ Elbow	34.1 10.4	
72 1830	14.0 20.2	¾ 20 Straight	37.5 11.4	4
		¾ 20 90˚ Elbow	38.6 11.7	

FM NOTES

- The Series AH2 hose has been tested and Approved by FM Global for use in wet, dry and preaction systems per NFPA 13, 13R, and 13D and FM data sheets 2-0, 2-5, and 2-8. FM 1637 standard for safety include, but are not limited to, pressure cycling, corrosion resistance, flow characterisitics, vibration resistance, leakage, mechanical and hydrostatic strength.
- EXAMPLE: A 48-inch hose installed with two 30° bends and two 90° bends is permitted and considered equivalent to the data in the table shown above. In this example, the total number of degrees is 240°, which is less than the allowable 270°.

5.2 PERFORMANCE – FRICTION LOSS DATA

Series AH2 Braided Hose with 90° Low Profile Elbows Style AB5, AB11, AB12, ABBA and ABMM *VicFlex* Bracket

Length of Stainless Steel Flexible Hose inches mm	K-Factor Imperial S.I.	Outlet Size inches mm	Equivalent Length of 1"/33.7mm Sch. 40 Pipe feet meters	Maximum Number of 90° Bends at 7"/178mm Bend Radius
31 790	5.6 8.1	½ 15	13.7 4.2	2
36 915	5.6 8.1	½ 15	17.0 5.2	2
48 1220	5.6 8.1	½ 15	25.0 7.6	3
60 1525	5.6 8.1	½ 15	33.0 10.1	4
72 1830	5.6 8.1	½ 15	41.1 12.5	4
31 790	8.0 11.5	¾ 20	13.6 4.14	2
36 915	8.0 11.5	¾ 20	16.9 5.2	2
48 1220	8.0 11.5	¾ 20	27.8 8.5	3
60 1525	8.0 11.5	¾ 20	32.6 9.9	4
72 1830	8.0 11.5	¾ 20	40.6 12.4	4
31 790	11.2 16.1	¾ 20	13.7 4.2	2
36 915	11.2 16.1	¾ 20	17.0 5.2	2
48 1220	11.2 16.1	¾ 20	24.9 7.6	3
60 1525	11.2 16.1	¾ 20	32.9 10.0	4
72 1830	11.2 16.1	¾ 20	40.9 12.5	4
31 790	14.0 20.2	¾ 20	13.5 4.1	2
36 915	14.0 20.2	¾ 20	16.8 5.1	2
48 1220	14.0 20.2	¾ 20	24.7 7.5	3
60 1525	14.0 20.2	¾ 20	32.7 9.9	4
72 1830	14.0 20.2	¾ 20	40.7 12.4	4

FM NOTES

- The Series AH2 hose has been tested and Approved by FM Global for use in wet, dry and preaction systems per NFPA 13, 13R, and 13D and FM data sheets 2-0, 2-5, and 2-8. FM 1637 standard for safety include, but are not limited to, pressure cycling, corrosion resistance, flow characterisitics, vibration resistance, leakage, mechanical and hydrostatic strength.
- EXAMPLE: A 48-inch hose installed with two 30° bends and two 90° bends is permitted and considered equivalent to the data in the table shown above. In this example, the total number of degrees is 240°, which is less than the allowable 270°.

5.3 PERFORMANCE – FRICTION LOSS DATA

VdS

Series AH2 and AH2-CC Braided Hose
Style AB2, AB4, AB5, AB7, AB7 Adj., AB8, AB10, AB11 and AB12 Brackets

Length of Stainless Steel Flexible Hose mm inches	**Outlet Size** DN inches	**Equivalent Length of steel pipe according to EN 10255 DN 25 (33,7 x 3,25)** meters feet	**Maximum Number of 90° Bends at 3"/76.2 mm Bend Radius**
790 31	DN15 ½	5.5 18.0	3
	DN20 ¾		
915 36	DN15 ½	6.4 21.0	3
	DN20 ¾		
1220 48	DN15 ½	8.5 27.9	3
	DN20 ¾		
1525 60	DN15 ½	10.7 35.1	4
	DN20 ¾		
1830 72	DN15 ½	12.8 42.0	4
	DN20 ¾		

VdS Ceiling Manufacturers List

AB2, AB7, AB10 ,AB11

1. AMF
2. Armstrong
3. Chicago Metallic
4. Dipling
5. Durlum
6. Geipel
7. Gema-Armstrong
8. Hilti
9. Knauf
10. Lafarge
11. Linder
12. Odenwald
13. Richter
14. Rigips
15. Rockfon Pagos
16. Suckow & Fischer
17. USG Donn

AB4

No specific approval

AB5, AB8

1. Hilti
2. Knauf
3. Lafarge
4. Lindner
5. Rigips

5.3 PERFORMANCE – FRICTION LOSS DATA

LPS 1261: Issue 1.2
Cert/LPCB Ref. 104l/01
104l/04

Series AH2 and AH2-CC Braided Hose Style AB2, AB3, AB4, AB5, AB7, AB8, and AB10 Brackets

Length of Stainless Steel Flexible Hose mm inches	Outlet Size mm inches type	Equivalent Length of steel pipe according to EN 10255 DN 25 (33,7 x 3,25) meters feet	Maximum Number of 90° Bends at 3"/76.2 mm Bend Radius
790 31	15 mm ½ Straight	1.8 6.0	2
	20 mm ¾ Straight		
915 36	15 mm ½ Straight	3.6 11.9	3
	20 mm ¾ Straight		
1220 48	15 mm ½ Straight	4.3 14.0	3
	20 mm ¾ Straight		
1525 60	15 mm ½ Straight	4.1 13.6	3
	20 mm ¾ Straight		
1830 72	15 mm ½ Straight	5.5 18.1	3
	20 mm ¾ Straight		

Series AH2 Braided Hose Style AB2, AB3, AB4, AB5, AB7, AB8, AB10 and AB12 Brackets

Length of Flexible Hose mm inches	Equivalent Length of 1"/33.7 mm Sch. 40 Pipe	
	Straight Configuration meters feet	Bend Configuration meters feet
790 31	0.87 2.9	2.70 8.9
915 36	1.00 3.3	2.80 9.2
1220 48	2.23 7.3	4.66 15.3
1525 60	2.90 9.5	6.5 21.3
1830 72	3.31 10.9	7.16 23.5

CCCF NOTE

- Friction loss data is in accordance with GB5135.16 tested at a flow rate of 114 liters per minute (30 gallons per minute).

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**

⚠ WARNING

- **It is the responsibility of the system designer to verify suitability of 300-series stainless steel flexible hose for use with the intended fluid media within the piping system and external environments.**
- **The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on 300-series stainless steel flexible hose must be evaluated by the material specifier to confirm system life will be acceptable for the intended service.**
- **It is the responsibility of the owner of a building or their authorized agent to provide the sprinkler system installer with any knowledge that the water supply might be contaminated with or conducive to the development of microbiologically influenced corrosion (MIC), including as required by NFPA 13. Failure to identify adverse water quality issues may affect the VicFlex product and void the manufacturer's warranty.**

Failure to follow these instructions could cause product failure, resulting in serious personal injury and/or property damage.

Victaulic VicFlex Series AH2 and AH2-CC Flexible Sprinkler Fittings may be painted provided the paint is compatible with stainless steel and zinc-plated carbon steel or ductile iron. Care should be taken to ensure the sprinkler and associated escutcheon or coverplate are not painted.

Victaulic VicFlex Series AH2 and AH2-CC penetrating through non-fire rated gypsum wall (drywall) will function as designed, provided the components are installed in accordance with the respective installation instructions referenced in this document.

7.0 REFERENCE MATERIALS – CHARACTERISTICS

VicFlex Maximum Load Values

Series AH2 Hose with 24" Bracket

Model Size	Actual Length ft m	Total Load lb	Total Load N	Max. Uniform Load lb/linear ft	Max. Uniform Load N/linear m
31/790	2.6 0.8	5.2	23	2.6	38
36/915	3 0.9	5.5	25	2.8	40
48/1220	4 1.2	6.3	28	3.1	46
60/1525	5 1.5	7.0	31	3.5	51
72/1830	6 1.8	7.7	34	3.9	57

Series AH2 Hose with 48" Bracket

Model Size	Actual Length ft m	Total Load lb	Total Load N	Max. Uniform Load lb/linear ft	Max. Uniform Load N/linear m
31/790	2.6 0.8	6.1	27	1.5	22
36/915	3 0.9	6.4	29	1.6	23
48/1220	4 1.2	7.2	32	1.8	26
60/1525	5 1.5	7.9	35	2.0	29
72/1830	6 1.8	8.7	39	2.2	32

Total Load is defined as the sum of the weights of the following:

- water-filled flexible sprinkler hose with threaded end fittings, including a typical fire sprinkler
- bracket assembly (any applicable Victaulic bracket model of the relevant associated size)

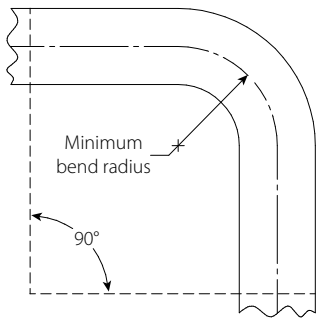
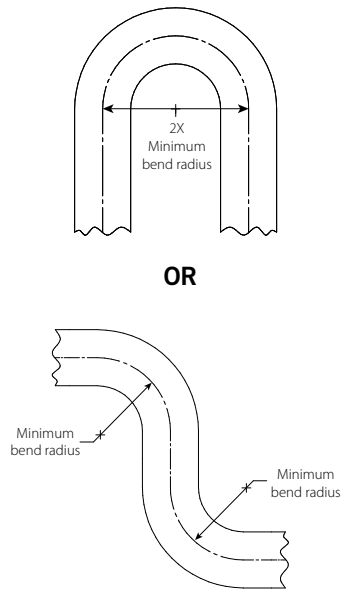
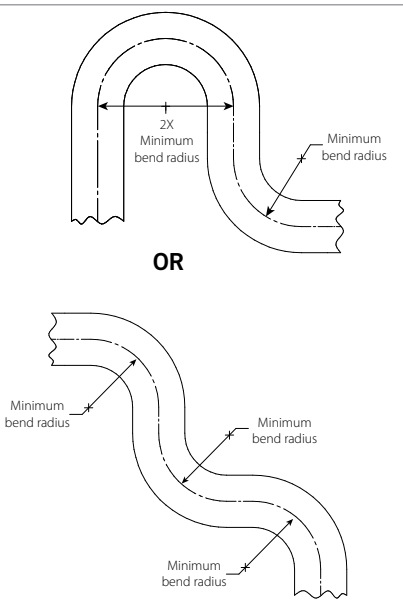
ASTM C 635: Suspension System Load-Carrying Capabilities (excerpted)

Suspension System	Actual Length ft/m	Min. Allowable Uniform Load lb/linear ft	Min. Allowable Uniform Load N/linear m
Direct Hung	Light	5.0	75.7
	Intermediate	12.0	181.0
	Heavy	16.0	241.7

SUMMARY: All direct-hung suspension system duty classifications per ASTM C 635 are able to withstand the maximum water-filled weight of the *VicFlex* sprinkler hose and bracket.

7.0 REFERENCE MATERIALS – CHARACTERISTICS (CONTINUED)

Flexible Hose In-Plane Bend Characteristics

One Bend	Two Bends	Three Bends
		

NOTE

For out-of-plane (three-dimensional) bends, care must be taken to avoid imparting torque on the hose.

I-VicFlex-AB1-AB2
I-VicFlex-AB3
I-VicFlex-AB4
I-VicFlex-AB5
I-VicFlex-AB7
I-VicFlex-AB12
I-VicFlex-ABBA
I-VicFlex-ABMM
I-RES

ASC Engineered Solutions

Adjustable Drop Nipple

Merit® Eliminator Adjustable Drop Nipples provide the user with the ability to adjust fire sprinkler assemblies (concealed, recessed, or pendent) to fit flush to the finished ceiling without having to cut a drop nipple or drain the system.

- Available in two models, female or male thread inlet, with three standard lengths with adjustment up to 3" (7.62 cm)
- UL Listed, FM Approved, and BSA-NYC Approved for installation to NFPA Bulletin 13 requirements. VdS Approved for the European market.
- Cold formed from steel conforming to ASTM Grade.
- Inner nipples employ two (2) "O-Rings" to provide added assurance of sealing. The "F" Model is designed to keep "O-Rings" from impinging upon the one inch (1") inlet threads when fully retracted.
- The bore of the outer nipple is precision formed to a close tolerance while held to a microfinish of 50 to provide for positive sealing of the "O-Rings".
- Each unit is hydrostatically tested to insure "O-Ring" integrity prior to shipment.
- Each unit is marked with a lot number to insure full traceability.
- Qualifying tests on all models are performed at 1500 psi, while the various models are rated for 300 psi operation.
- Threads are cut to be better than or equal to the requirements of ANSI B1.20.1, NPT or ISO-7-1 threads.

UL LISTED FM APPROVED VdS

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Product Approvals

Eliminator Adjustable Drop Nipple:
(UL VGSQ – EX3829, FM Approval Guide Chapter 1 -
Adjustable Sprinkler Fittings VdS Certificate #G4930033 BSA: 886-86-SA)

Adjustable Drop Model	Inlet x Outlet Size	Adjustment	Equivalent Length	Rated Pressure	Max. Ceiling Ambient Temperature
NPT	In./mm	In./mm	Ft./M	psig	F/C
M1.150	1 x ½	1	1	300	300°
	25 x 13	25.4	0.3		148°
M3.150	1 x ½	3	1		
	25 x 13	76.2	0.3		
ME3.150	1 x ½	3	1		
	25 x 13	76.2	0.3		
F1.150	1 x ½	1	4.2		
	25 x 13	25.4	1.3		
F2.150	1 x ½	2	1.3		
	25 x 13	50.8	0.4		
F3.150	1 x ½	3	1.5		
	25 x 13	76.2	0.5		
F3.175	1 x ¾	3	2.9		
	25 x 19	76.2	0.9		

Eliminator Adjustable Drop Nipple

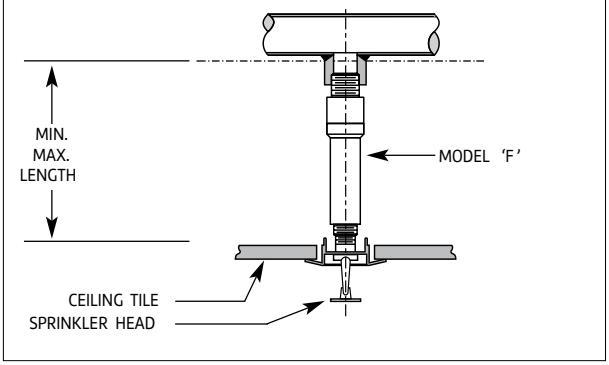
Model Number	Part #	Inlet	Outlet	Minimum Length	Maximum Length	Maximum Adjustment	Maximum Sprinkler Orifice	Weight
	NPT/ISO	NPT/ISO	NPT/ISO	In./mm	In./mm	In./mm	In./mm	Lbs./kg
M1.150*	531150	1" Male	½" Female	4.125	5.125	1.00	0.531	1.00
	551150	25 mm Male	13 mm Female	104.8	130.2	25.4	13.5	0.45
M3.150	533150	1" Male	½" Female	6.125	9.125	3.00	0.531	1.25
	553150	25 mm Male	13 mm Female	155.6	231.8	76.2	13.5	0.57
ME3.150*	543150	1" Male	½" Female	7.875	10.875	3.00	0.531	1.50
	563150	25 mm Male	13 mm Female	200.0	276.2	76.2	13.5	0.68
F1.150	501150	1" Female	½" Female	3.500	4.500	1.00	0.625	0.80
	511150	25 mm Female	13 mm Female	88.9	114.3	25.4	15.9	0.36
F2.150*	502150	1" Female	½" Female	4.500	6.500	2.00	0.625	1.00
	512150	25 mm Female	13 mm Female	114.3	165.1	50.8	15.9	0.45
F3.150	503150	1" Female	½" Female	5.500	8.500	3.00	0.531	1.25
	513150	25 mm Female	13 mm Female	139.7	215.9	76.2	13.5	0.57
F3.175	503175	1" Female	¾" Female	7.350	10.350	3.00	0.625	1.40
	513175	25 mm Female	19 mm Female	186.7	262.9	76.2	15.9	0.64

*Special Order.
Length Tolerance ± ¼".

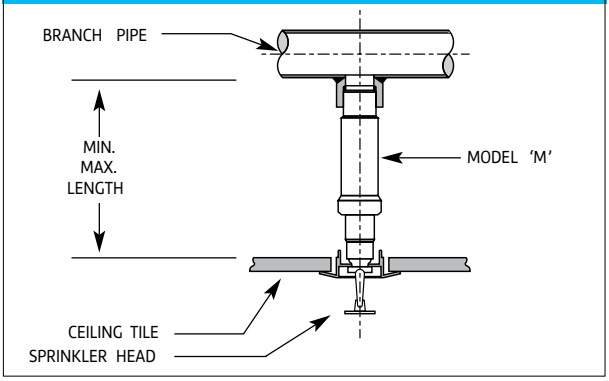
PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Adjustable Drop Nipple

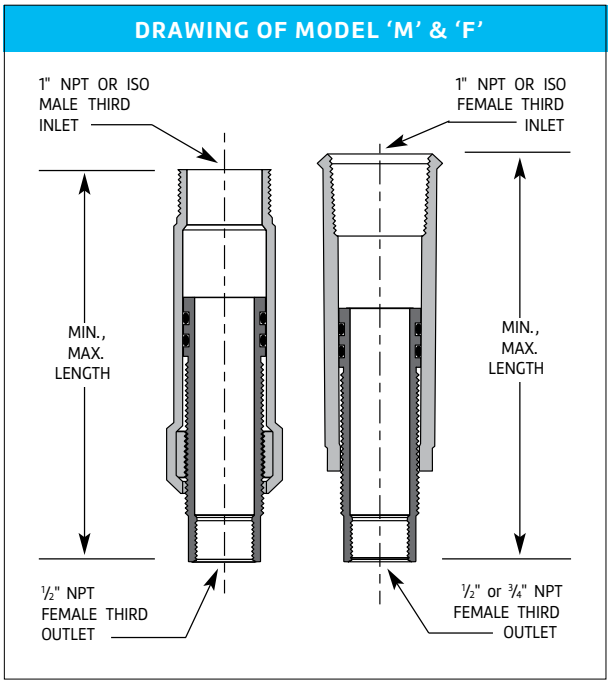
MODEL 'F' INSTALLATION



MODEL 'M' INSTALLATION



DRAWING OF MODEL 'M' & 'F'



Installation

a) For use in wet and dry pipe automatic sprinkler systems installed in accordance with all applicable standards or codes. (See item 4)

b) Before starting the job of making sprinklers into steel threads of the above fittings, count the number of fully developed male threads on the brand of sprinkler to be installed into the fittings. If seven (7) perfect threads are counted, the sprinkler should thread into the ½" or ¾" thread from three (3) to four (4) threads hand tight. If five (5) to six (6) threads are counted, the sprinkler should thread into the ½" or ¾" thread from two (2) to three (3) threads hand tight.

c) The use of an anaerobic pipe thread sealant is preferred for thread make up when connecting to another pipe fitting or nipple. If attaching a sprinkler head, please refer to the manufacturer's installation instructions and apply pipe thread sealant only to male threads of the sprinkler.

d) If either of the above fails to allow the sprinkler to make-up to a minimum of from five (5) to six (6) full threads, do not over tighten the sprinkler. Instead back the sprinkler out of the fitting. Clean any debris and/or pipe sealant from both the male and female threads. Gauge both the male threads of the sprinkler and the female threads of the Adjustable Drop Nipple for compliance with ANSI B1.2.1. Specification for Tapered Pipe Threads. The same procedure would apply if a leak has been detected. If within tolerance, reapply the anaerobic pipe sealant and make-on to the required length. Allow twenty-four hours for setting.

e) Connect the Adjustable Drop Nipple assembly to the sprinkler system by wrenching on the make-up area on the Drop Nipple. **DO NOT WRENCH ON THE BARREL PORTION OF THE UNIT OR SPRINKLER.** Damage to the Adjustable Drop Nipple or Sprinkler may result.

f) After the ceiling has been installed adjust the sprinkler to its final position by using the sprinkler wrench and assemble the escutcheon plate to the inner support ring. It is recommended that the system pressure be relieved when adjusting, however it is not necessary to drain the system.

Adjustable Drop Nipple

1 General Description

Merit Eliminator Adjustable Drop Nipples Models “M” and “F” are the screw type consisting of an outer case which has one (1) inch N.P.T. or ISO–7 male or female thread on the inlet, and an inner case which has either a one–half inch (½") or a three–quarter inch (¾") N.P.T. sprinkler connection. The inner case employs 0–Ring Seals and adjusts either in or out over the range of the adjustment. Merit Eliminator Adjustable Drop Nipples are designed for use in automatic fire sprinkler systems installed in accordance with all applicable standards or codes. (See item 4). The purpose of these fittings is to allow for the final adjustment of the drop nipple between a branch line and a pendant sprinkler by eliminating the need to re–cut the existing drop nipple in order to fit–up flush to the ceiling. Merit Eliminator Adjustable Drop Nipples do not require any secondary locking following final adjustment and they will not extend as a result of vibrations or pressure surges in the system.

2 Approvals & Standards

Merit Eliminator Adjustable Drop Nipples are listed by the Underwriters Laboratories, Inc. (UL Listing Number 57SO) and approved by the Factory Mutual Research Corporation (FM). In addition, Model “M” and “F” Adjustable Drop Nipples are approved by the New York Board of Materials and Equipment Standard (BSA–886–86–5A) and verband der Schadenversicherer e.V., (Vds).

3 Technical Data

Merit Adjustable Drop Nipples are rated for use at a maximum temperature of 300°F, and a maximum service pressure of 300 psi. The approximate friction loss based on the Hazen and Williams Formula expressed in equivalent length of one (1) inch, schedule 40 pipe (where C= 120) is 1' for ½" outlet Model “M”, 2.6' for ¾" outlet Model “M”, 4.2' for F1, 1.3' for F2, 1.5' for F3.150, and 2.9' for F3.175. Merit Eliminator Drop nipples maximum sprinkler orifice size for Models M3.150, ME3.150, M1.150, and F3.150 is $^{17}/_{32}$" and Models F1.150, F2.150 and F3.175 is $^{5}/_{8}$".
The inlet and outlet threads conform to ANSI B1.20.1 / ISO–7R/RC. The O–Ring seals used in the manufacture are an ethylene propylene elastomer (EPDM). The outer and inner casings are manufactured from high strength carbon Steel. All Model “M” and “F” Adjustable Drop Nipples are hydrostatically tested for O–ring integrity prior to shipment.

4 Warning

Adjustable Drop Nipples described herein must be installed and maintained in compliance with this document as well as the applicable standards of the National Fire Protection Association in addition to the standards for any other authorities having jurisdiction. **DO NOT USE ANY PETROLEUM BASED LUBRICANTS ON THE O–RING SEALS.** Petroleum based lubricants are incompatible with EPDM and will impair serviceability of the unit.

Section 3

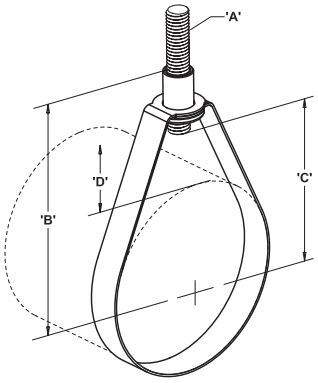
Hangers, Attachments, and Fasteners

SPECIFICATIONS

FIGURE 7010Z
HANGER

ADJUSTABLE SWIVEL RING HANGER

FEATURES
- Finish: Plated
- Color: Zinc
- UL Approved – Sizes 1/2" to 8"
- FM Approved – Sizes 3/4" to 8"
- Hanger body: Pre-Galvanized Carbon Steel ASTM A653



Note: A - Rod size (hanger rod not included), B - Center of pipe to top of knured hanger rod nut
C - Rod take out (center of pipe to bottom of hanger rod), D - Top of pipe to bottom of hanger rod nut

PRODUCT SPECIFICATIONS

Standards
- Design: MSS SP-58, Type 10
- Federal specification: WW-H-171, Type 10
- NFPA 13

DIMENSIONS

Catalog Number	Pipe Size		A (Rod Size)	B		C		D		Design Load		Weight
	in.	mm		in.	mm	in.	mm	in.	mm	lbs	kN	lbs
FNW7010Z0050	1/2	21.3	3/8"–16UNC	2.32	59	1.34	34	1.06	27	500	2.220	0.09
FNW7010Z0075	3/4	26.7	3/8"–16UNC	2.56	65	1.57	40	1.18	30	500	2.220	0.09
FNW7010Z0100	1	33.4	3/8"–16UNC	2.64	67	1.65	42	1.14	29	500	2.220	0.10
FNW7010Z0125	1-1/4	42.2	3/8"–16UNC	2.72	69	1.73	44	1.06	27	500	2.220	0.10
FNW7010Z0150	1-1/2	48.3	3/8"–16UNC	2.87	73	1.89	48	1.10	28	500	2.220	0.11
FNW7010Z0200	2	60.3	3/8"–16UNC	3.07	78	2.08	53	1.06	27	500	2.220	0.12
FNW7010Z0250	2-1/2	73	3/8"–16UNC	3.39	86	2.40	61	1.06	27	1000	4.440	0.26
FNW7010Z0300	3	88.9	3/8"–16UNC	3.90	99	2.91	74	1.30	33	1000	4.440	0.29
FNW7010Z0350	3-1/2	101.6	3/8"–16UNC	4.09	104	3.11	79	1.26	32	1000	4.440	0.32
FNW7010Z0400	4	114.3	3/8"–16UNC	4.60	117	3.62	92	1.50	38	1000	4.440	0.35
FNW7010Z0500	5	141.3	1/2"–13UNC	5.43	138	4.17	106	1.57	40	1900	8.450	0.52
FNW7010Z0600	6	168.3	1/2"–13UNC	6.34	161	5.08	129	1.97	50	1900	8.450	0.61
FNW7010Z0800	8	219.1	1/2"–13UNC	7.99	203	6.73	171	2.63	67	1900	8.450	0.77

TOLCO Fig. 65 - Reversible Steel C-Type Beam Clamp 3/4" (19.0mm) Throat Opening

Size Range:
Fig. 65 - 1/2"-13 rod sizes, and 5/8"-11 rod sizes
Fig. 65XT - 3/8"-16 rod size (see below)

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

Function: Recommended for hanging from steel beam where flange thickness does not exceed 3/4" (19.0mm).

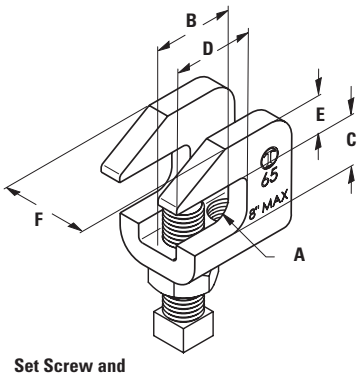
Features: All steel construction eliminates structural deficiencies associated with casting type beam clamps. May be used on top or bottom flange of beam. (Beveled lip allows hanging from top flange where clearance is limited.) May be installed with set screw in up or down position. Offset design permits 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 or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number and finish

Fig. 65 Patent #4,570,885



Set Screw and Locknut Included

Part No.	Rod Size A	B in.	B (mm)	C in.	C (mm)	D in.	D (mm)	E in.	E (mm)
65-1/2	1/2"-13	1 1/2"	(38.1)	3/4"	(19.0)	1"	(25.4)	9/16"	(14.3)
65-5/8	5/8"-11	1 1/2"	(38.1)	3/4"	(19.0)	1"	(25.4)	9/16"	(14.3)

Part No.	F in.	F (mm)	Approx. Wt./100 Lbs.	Approx. Wt./100 (kg)
65-1/2	1 1/4"	(31.7)	55	(24.9)
65-5/8	1 1/4"	(31.7)	55	(24.9)

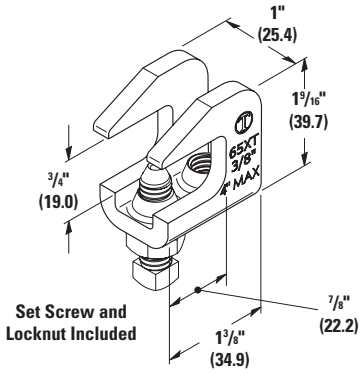
TOLCO Fig. 65XT - Reversible Steel C-Type Beam Clamp 3/4" (19.0mm) Throat Opening

Feature: Extruded holes allows for more thread engagement of threaded rod and set screw.

Finish: Plain or Electro-Galvanized

Order By: Figure number and finish
Approvals: Underwriters Laboratories Listed **(cULus)** and FM Approved **(FM)** for up to 4" (100mm) pipe.

Designed to meet or exceed requirements of FM DS 2-0 and NFPA 13.



Set Screw and Locknut Included

Part No.	For Rod Size	Approx. Wt./100 Lbs.	Approx. Wt./100 (kg)
65XT	3/8"-16	28.0	(12.7)

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

TOLCO Fig. 69 - Beam Clamp Retaining Strap

Size Range: 3/8"-16 thru 3/4"-10 rod
4" (101.6mm) thru 16" (406.4mm) lengths
Note: longer lengths are available consult factory

Material: Pre-Galvanized Steel

Function: To offer more secure fastening of various types of beam clamps to beam where danger of movement might be expected. NFPA 13 requires the use of retaining straps with all beam clamps installed in earthquake areas. Satisfies requirements of NFPA 13.

Important Note: Good installation practice of a retaining strap requires that the strap be held tightly and securely to all component parts of the assembly. Therefore a locking mechanism of some kind, such as a hex nut for the Fig. 69 or the beveled locking slot of the Fig. 69R will provide a more secure reliable installation.

Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL).** Approved for use with any listed B-Line series or Tolco beam clamp.

Finish: Pre-Galvanized

Order By: Figure number, length (L), and finish.

Note: Minimum return on strap is 1" (25.4mm). Lengths over 16" (406mm) are not UL Listed.

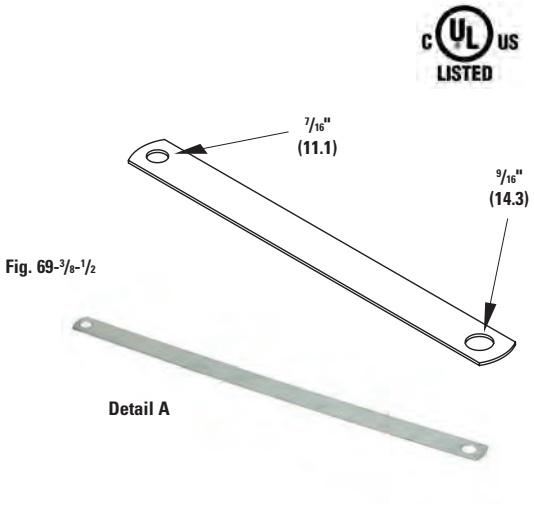


Fig. 69-3/8-1/2

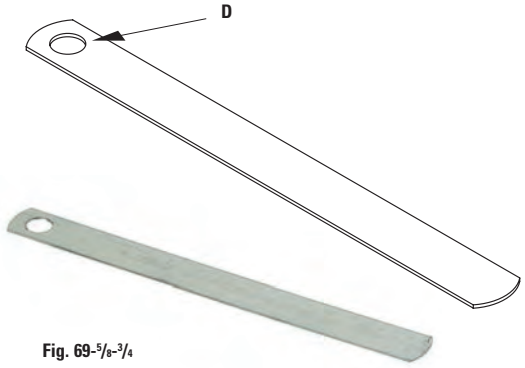
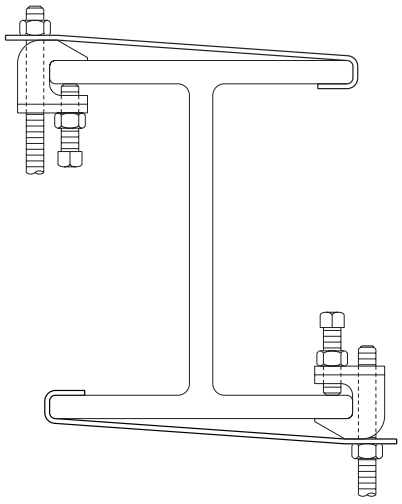


Fig. 69-5/8-3/4

Part No.	Hole Dia. D in.	(mm)	For Use With	Length
69-3/8-1/2-L	see Detail A		B3033-3/8, B3034-3/8, B3031-3/8, 65-3/8, 65XT-3/8, 66-3/8 B3033-1/2, B3034-1/2, 65-1/2, 66-1/2	Specify
69-5/8-L	11/16"	(17.5)	B3033-5/8, 65-5/8, 66-5/8	Specify
69-3/4-L	13/16"	(20.6)	B3033-3/4	Specify



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

Section 4

Fire Sprinklers

Reliable®

Model GXLO Series Sprinklers

Storage and Non-Storage Sprinklers
K11.2 (160 metric)

Product Description

Reliable Model GXLO (extra-large orifice) upright and pendent sprinklers are standard coverage standard-response sprinklers that utilize a robust center strut, solder in compression thermal element. These sprinklers are intended for use in hydraulically calculated control mode density area (CMDA) storage and non-storage occupancies in accordance with the area/density curves of NFPA 13 or other applicable standards.

The Model GXLO sprinkler is FM Approved as a standard-response storage and non-storage sprinkler when used in accordance with FM Global Property Loss Prevention Data Sheets.

For new installations, the sprinkler is provided with either 3/4-inch NPT or ISO 7-R3/4 threads. The upright version is also available with 1/2-inch NPT or ISO 7-R1/2 threads for retrofit installations only. Sprinklers without guards are installed using the Model H wrench.

For use as an intermediate level sprinkler, the Model GXLO upright sprinkler is available with a factory installed water shield. Various other water shields, guards, or guard/shield options are also available for both upright and pendent models (please refer to Technical Specifications on following pages). Sprinkler guards or guard/shields may be installed in the field or factory installed. Use of the Model JV sprinkler wrench is required for installation where a guard is added to the sprinkler prior to threading the assembly into a fitting.

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

Upright

Pendent

Model GXLO Series Sprinklers

Upright with Factory Installed Shield
(Factory Installed water shield)

Model GXLO Specifications — **Table A**

Style	Sprinkler Identification Number (SIN)	Listings and Approvals	Sensitivity	K-Factor
Upright Intermediate Upright	R2921	cULus, FM	Standard Response	11.2 (160 metric)
Pendent	R2916	FM		

Model GXLO Upright Sprinkler — SIN R2921

Technical Specifications
Style: Upright, Intermediate Upright
Threads: 3/4" NPT or ISO 7-1R3/4*
Nominal K-Factor: 11.2 (160 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Thermal Sensor: Solder Capsule
Sprinkler Frame: Brass Alloy
Button/Cup: Brass Alloy
Sealing Assembly: Brass with PTFE
Load Screw: Bronze
Deflector: Bronze Alloy
Levers: Bronze Alloy
Ejection Spring: Stainless Steel

Sprinkler Finishes
See Table C

Sensitivity
Standard Response

Temperature Ratings
See Table D

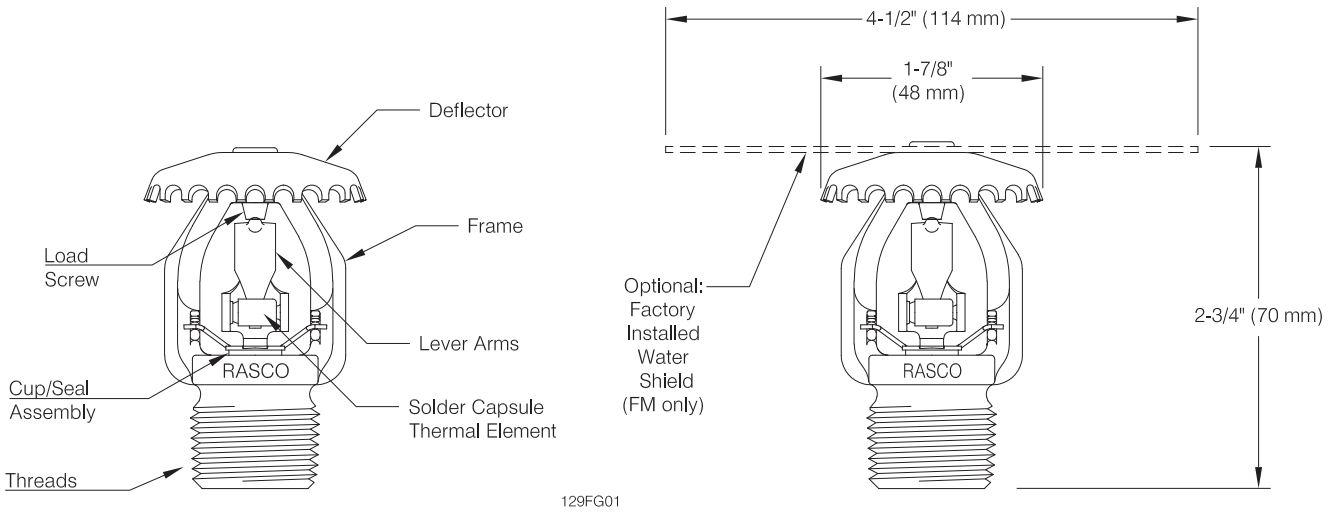
Guards & Shields
D-6 Guard & Water Shield (cULus)
D-7 Guard & Water Shield (FM)
D-8 Guard (FM)
Water Shield (factory installed; FM)

Sprinkler Wrench
Model H
Model W15 (with guard installed)

Listings and Approvals
cULus Listed
FM Approved

***Note:** 1/2" NPT and ISO 7-R1/2 threads available for RETROFIT APPLICATIONS ONLY on upright sprinkler. This sprinkler will be identified with a pintle on the deflector. Not available on intermediate upright sprinkler.

Model GXLO Upright Components and Dimensions — **Figure 1**



COMPONENTS **DIMENSIONS**

Model GXLO Pendent Sprinkler — SIN R2916

Technical Specifications
Style: Pendent
Threads: 3/4” NPT or ISO 7-1R3/4
Nominal K-Factor: 11.2 (160 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Thermal Sensor: Beryllium Nickel Solder Link
Sprinkler Frame: Brass Alloy
Button/Cup: Brass Alloy
Sealing Assembly: Brass Alloy with PTFE
Load Screw: Bronze
Deflector: Bronze Alloy
Levers: Bronze Alloy

Sprinkler Finishes
See Table C

Sensitivity
Standard Response

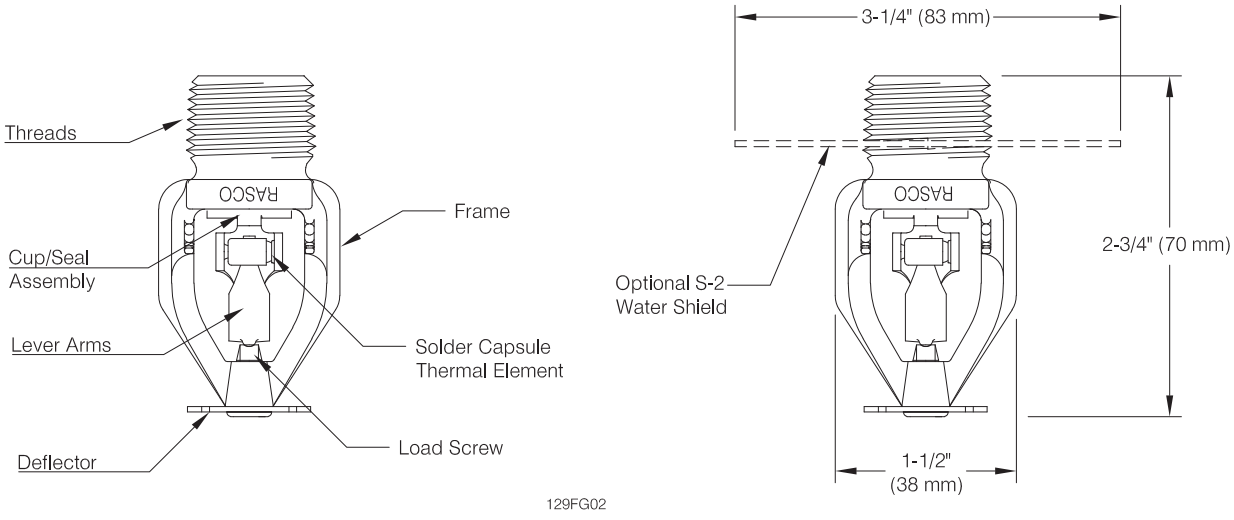
Temperature Ratings
See Table D

Guards & Shields
D-8 Guard
D-9 Guard & Water Shield
S-2 Water Shield

Sprinkler Wrench
Model H
Model W15 (with guard installed)

Listings and Approvals
FM Approved

Model GXLO Pendent Components and Dimensions — **Figure 2**



COMPONENTS **DIMENSIONS**

Model GXLO Commodity Selection and Design Criteria Overview **Table B**

Storage Type	NFPA	FM GLOBAL
Sprinkler Type	CMDA	Storage
Response Type	SR	SR
System Type	Pendent - Wet Upright - Wet, Dry, Preaction	Pendent - Wet Upright - Wet, Dry, Preaction
Temperature Rating °F (°C)	165, 212, 286 (74, 100, 141)	165, 212, 286 (74, 100, 141)
Roof Construction	See NFPA 13	See FM Global 2-0
Ceiling Slope	See NFPA 13	See FM Global 2-0
Maximum Coverage Area	See NFPA 13	See FM Global 2-0
Minimum Coverage Area	See NFPA 13	See FM Global 2-0
Maximum Spacing	See NFPA 13	See FM Global 2-0
Minimum Spacing	See NFPA 13	See FM Global 2-0
Minimum Clearance to Commodity	See NFPA 13	See FM Global 2-0
Sprinkler Distance to Ceiling	See NFPA 13	See FM Global 2-0
Open Frame, Single, Double, Multiple Row, or Portable Rack Storage of Class I - IV Commodity and Group A Plastic	See NFPA 13	See FM 2-0 & 8-9
Solid Pile or Palletized Storage of Class I - IV Commodity and Group A Plastic	See NFPA 13	See FM 2-0 & 8-9
Idle Pallet Storage	See NFPA 13	See FM 2-0,8-9 & 8-24
Rubber Tire Storage	See NFPA 13	See FM 8-3
Rolled Paper Storage	See NFPA 13	Pendent - N/A Upright - See FM 8-21
Flammable Liquid Storage	See NFPA 30	See FM 7-29 and 8-9
Aerosol Storage	See NFPA 13	See FM 7-31
Auto Components in Portable Racks	See NFPA 13	See FM 2-0 and 8-9

Finishes **Table C**

Upright (R2921)	Pendent (R2916)
Bronze	Bronze
Chrome [1]	
Lead[1][2]	
Wax[1][2][3]	
Wax over Lead[1][2][3]	

Notes:
1. Not available with factory attached water shield
2. cULus listed as corrosion resistant
3. Clear wax used on ordinary temperature rated sprinklers. Brown wax used on intermediate temperature rated sprinklers. Brown wax may be used on high temperature rated sprinklers where the ambient temperature does not exceed 150°F (66°C).

Temperature Ratings **Table D**

Classification	Sprinkler Rating		Maximum Ambient Temperature		Frame Color
	°F	°C	°F	°C	
Ordinary	165	74	100	38	Uncolored
Intermediate	212	100	150	66	White
High	286	141	225	107	Blue

Installation

Model GXLO sprinklers must be installed according to appropriate NFPA Standards, FM Global Loss Prevention Data Sheets, and/or the requirements of the authority having jurisdiction.

Use only the Model H sprinkler wrench for sprinkler installation or use the Model W15 wrench to install the sprinkler/guard assembly (Figure 3). Any other type of wrench may damage the sprinkler. Damaged sprinklers must be replaced immediately.

A leak tight joint should be obtained with a torque of 14 to 20 lb-ft (19 to 27 N.m) for 3/4 inch NPT and ISO 7-R3/4 thread sprinklers. For 1/2 inch NPT and ISO 7-R1/2 thread sprinklers the recommended installation torque is 8 to 18 lb-ft (11 to 24 N.m). Exceeding the maximum recommended torque may cause leakage or impairment of the sprinklers.

Wrenches **Figure 3**

Model H Wrench (sprinkler)

Model W15 Wrench (with guard installed)

Maintenance

Reliable Model GXLO sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied). A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers.

Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Guarantee

For the Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify the following when ordering.

Model GXLO Sprinkler
- Upright
- Intermediate Upright
- Pendent

Threads
- 3/4" NPT
- ISO 7-R3/4
- 1/2" NPT (Retrofit installations only, upright only)
- ISO 7-R1/2 (Retrofit installations only, upright only)

Temperature Rating
- 165°F (74°C)
- 212°F (100°C)
- 286°F (141°C)

Finish
See Table C

Guards/Shields
See Technical Specifications

Wrench
- Model H
- Model W15 (with guards installed)

P/N 9999970286

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

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

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.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp151

General Description

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

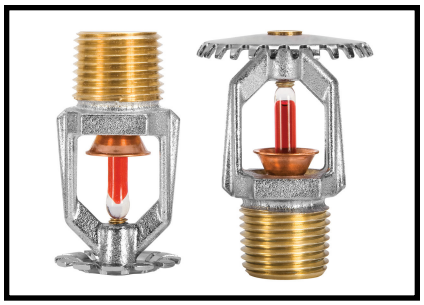
The TY-B Recessed Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. It uses a two-piece Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) Recessed Escutcheon. The Recessed Escutcheon provides 1/2 in. (12,7 mm) of recessed adjustment or up to 3/4 in. (19,1 mm) of 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 what would 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 about 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 2.8, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent 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.

NFPA 13 prohibits installation of 1/2 in. NPT sprinklers with K-factors greater than 5.6 in new construction. They are intended for retrofit in existing sprinkler systems only.

Sprinkler Identification Numbers (SIN)

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

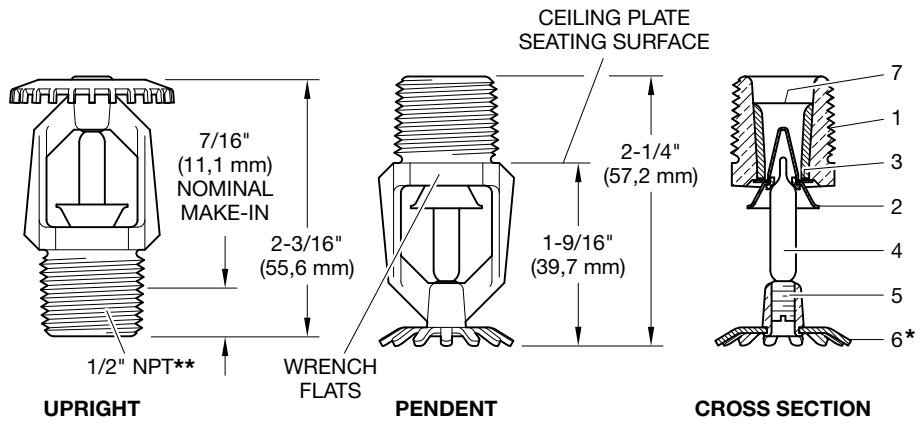


FIGURE 1
SERIES TY-B UPRIGHT (TY1151) AND PENDENT (TY1251) SPRINKLERS
2.8 K-FACTOR, 1/2 IN. NPT, STANDARD RESPONSE

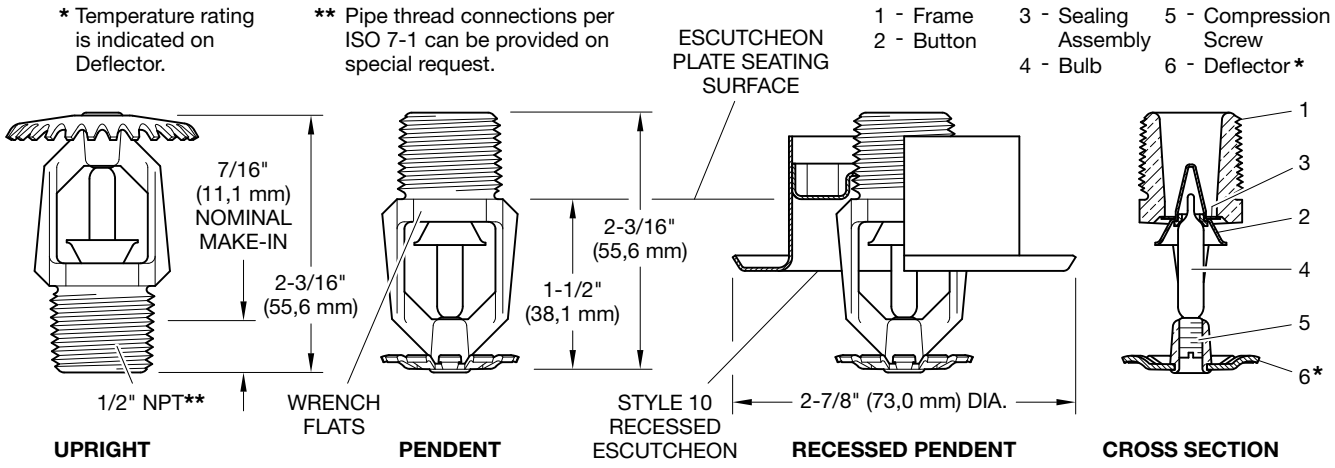


FIGURE 2
SERIES TY-B UPRIGHT (TY3151) AND PENDENT (TY3251) SPRINKLERS
5.6 K-FACTOR, 1/2 IN. NPT, STANDARD RESPONSE

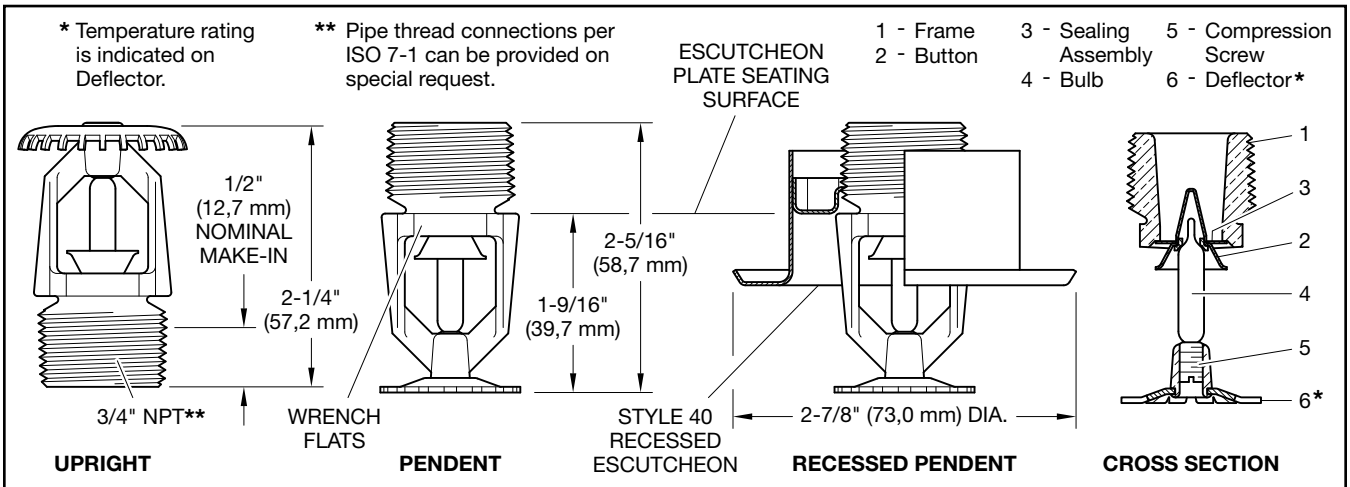


FIGURE 3
SERIES TY-B UPRIGHT (TY4151) AND PENDENT (TY4251) SPRINKLERS
8.0 K-FACTOR, 3/4 IN. NPT, STANDARD RESPONSE

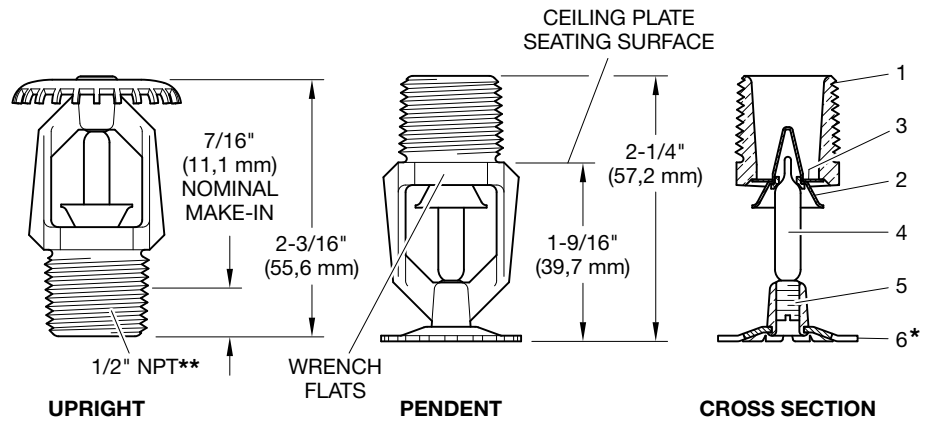


FIGURE 4
SERIES TY-B UPRIGHT (TY4851) AND PENDENT (TY4951) SPRINKLERS
8.0 K-FACTOR, 1/2 IN. NPT, STANDARD RESPONSE

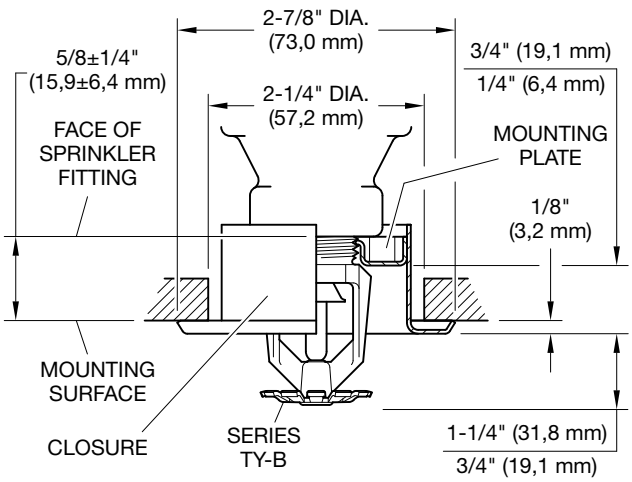


FIGURE 5
SERIES TY-B RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 IN. TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 IN. NPT

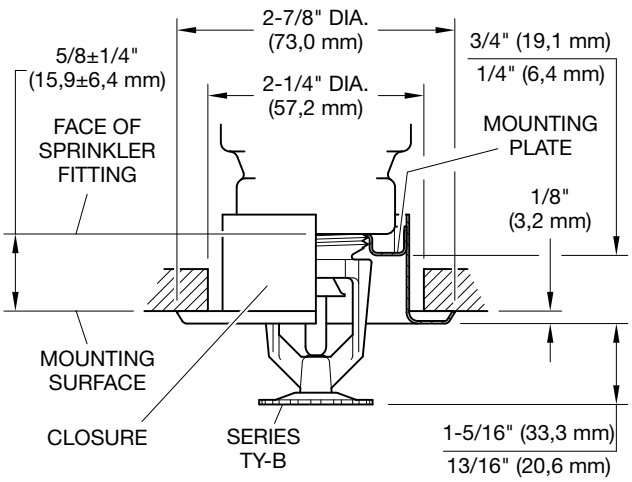


FIGURE 6
SERIES TY-B RECESSED PENDENT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 IN. TOTAL ADJUSTMENT STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 IN. NPT

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and VdS Approved
EAC Approved

Note: *For complete approval information, including corrosion-resistant status, see Tables A, B, and C.*

Maximum Working Pressure
See Table D

Discharge Coefficient
K=2.8 gpm/psi½ (40,3 Lpm/bar½)
K=5.6 gpm/psi½ (80,6 Lpm/bar½)
K=8.0 gpm/psi½ (115,2 Lpm/bar½)

Temperature Ratings
See Tables A, B and C

Finishes
Sprinkler: See Table E

Recessed Escutcheon: Signal or Pure White, Grey Aluminum, 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

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

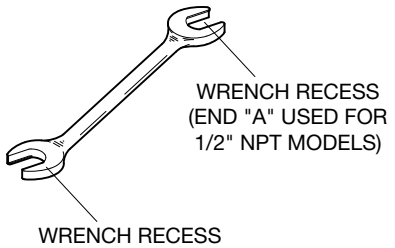


FIGURE 7
W-TYPE 6
SPRINKLER WRENCH

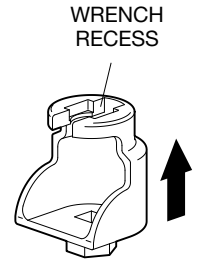


FIGURE 8
W-TYPE 7 RECESSED
SPRINKLER WRENCH

Installation

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

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

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

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

Step 1. Install pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

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, see Figure 7. For wax-coated sprinklers, use an 8 or 10 in. adjustable wrench. With reference to Figure 1 to 4, apply the W-Type 6 Recessed Sprinkler Wrench or an adjustable wrench, as applicable, to the sprinkler wrench flats.

Wax Coated Sprinklers
When installing wax-coated sprinklers with an adjustable wrench, take 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
After installation, complete the following:

- 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 in. 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 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.

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

Step 1. 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 2. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, see Figure 8. With reference to Figure 3 or 4, apply the W-Type 7 Recessed Sprinkler wrench to the sprinkler wrench flats.

Step 3. After the ceiling is installed or the finish coat is applied, slide on the Style 10 or 40 Closure over the Series TY-B Recessed Pendent Sprinkler and push the Closure over the Mounting Plate until its flange contacts the ceiling.

Care and Maintenance

The TYCO Series TY-B 2.8, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed 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.

K-Factor	Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish[4]					
				Natural Brass	Chrome Plated	Polyester[c]	Lead Coated	Wax Coated	Wax-Over-Lead Coated
2.8 1/2 in. NPT	Upright (TY1151) and Pendent (TY1251) Figure 1	135°F (57°C)	Orange	1, 2, 3			N/A[d]		
		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					

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. 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

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable
b. 150°F (66°C) maximum ceiling temperature
c. Frame and deflector only
d. Not Applicable (N/A)

TABLE A
SERIES TY-B 2.8 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

K-Factor	Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish[5]					
				Natural Brass	Chrome Plated	Polyester[c]	Lead Coated	Wax Coated	Wax-Over-Lead Coated
5.6 1/2 in. NPT	Upright (TY3151) Figure 2	135°F (57°C)	Orange	1, 2, 3, 4	N/A[d]	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	N/A[d]
		155°F (68°C)	Red		1, 2, 3, 4				1, 2, 3, 4
		175°F (79°C)	Yellow		N/A[d]				
		200°F (93°C)	Green						
		286°F (141°C)	Blue		1, 2, 3, 4			1[b], 2[b], 3[b], 4[b]	1[b], 2[b], 3[b], 4[b]
		360°F (182°C)	Mauve					N/A[d]	
	Pendent (TY3251) Figure 2	135°F (57°C)	Orange	1, 2, 3, 4			1, 2, 3, 4, 5	1, 2, 3, 4	N/A[d]
		155°F (68°C)	Red						1, 2, 3, 4
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue					1[b], 2[b], 3[b], 4[b]	1[b], 2[b], 3[b], 4[b]
		360°F (182°C)	Mauve					N/A[d]	
	Recessed Pendent (TY3251)[a] Figure 5	135°F (57°C)	Orange	1, 2, 3, 4			N/A[d]		
		155°F (68°C)	Red						
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue	1, 2, 4					

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. EAC Approved
5. 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

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable
b. 150°F (66°C) maximum ceiling temperature
c. Frame and deflector only
d. Not Applicable (N/A)

TABLE B
SERIES TY-B 5.6 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

K-Factor	Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish[9]					
				Natural Brass	Chrome Plated	Polyester[c]	Lead Coated	Wax Coated	Wax-Over-Lead Coated
8.0 3/4 in. NPT	Upright (TY4151) Figure 3	135°F (57°C)	Orange	1, 2, 3, 4, 6, 7, 8			1, 2, 5, 8	1, 2, 3, 8	1, 2, 8
		155°F (68°C)	Red						
		175°F (79°C)	Yellow						
		200°F (93°C)	Green						
		286°F (141°C)	Blue					1[b], 2[b], 3[b], 8[b]	1[b], 2[b], 3[b], 8[b]
		360°F (182°C)	Mauve					N/A[d]	
	Pendent (TY4251) Figure 3	135°F (57°C)	Orange	1, 2, 3, 4, 6, 7, 8			1, 2, 5, 8	1, 2, 3, 8	1, 2, 8
		155°F (68°C)	Red						
		175°F (79°C)	Yellow	1, 2, 4, 6, 7, 8				1, 2, 8	
		200°F (93°C)	Green	1, 2, 3, 4, 6, 7, 8				1, 2, 3, 8	
		286°F (141°C)	Blue					1[b], 2[b], 3[b], 8[b]	1[b], 2[b], 3[b], 8[b]
		360°F (182°C)	Mauve					N/A[d]	
	Recessed Pendent (TY4251)[a] Figure 6	135°F (57°C)	Orange	1, 2, 3, 4, 8			N/A[d]		
		155°F (68°C)	Red						
		175°F (79°C)	Yellow	1, 2, 4, 8					
		200°F (93°C)	Green	1, 2, 3, 4, 8					
		286°F (141°C)	Blue	1, 2, 8					
8.0 1/2 in. NPT	Upright (TY4851)) Figure 4	135°F (57°C)	Orange	1, 2, 3, 4, 6	1, 2, 3, 4, 6	1, 2, 3, 4, 6	N/A[d]		
		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		N/A[d]				
	Pendent (TY4951) Figure 4	135°F (57°C)	Orange	1, 2, 3, 4, 6			N/A[d]		
		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

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 Loss Prevention Certification Board (LPCB Ref. No. 007k/03)
5. Note not used
6. VdS Approved. (For details, contact Johnson Controls, 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. EAC Approved
9. 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

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable
b. 150°F (66°C) maximum ceiling temperature
c. Frame and deflector only
d. Not Applicable (N/A)

TABLE C
SERIES TY-B 8.0 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

K-Factor	Type	Sprinkler Finish					
		Natural Brass	Chrome Plated	Polyester[1]	Lead Coated	Wax Coated	Wax-Over-Lead Coated
2.8 1/2 in. NPT	**Upright (TY1151) and Pendent (TY1251)**	175 psi (12,1 bar)			N/A[3]		
5.6 1/2 in. NPT	**Upright (TY3151) and Pendent (TY3251)**	250 psi (17,2 bar)[2] or 175 psi (12,1 bar)					
	Recessed Pendent (TY3251)						
8.0 3/4 in. NPT	**Upright (TY4151) and Pendent (TY4251)**	175 psi (12,1 bar)					
	Recessed Pendent (TY4251)	175 psi (12,1 bar)			N/A[3]		
8.0 1/2 in. NPT	**Upright (TY4851) and Pendent (TY4951)**	175 psi (12,1 bar)					

NOTES
1. Frame and deflector only
2. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories, Inc. (UL) and the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL).
3. Not Applicable (N/A)

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

P/N 57 – XXX – X – XXX

		SIN
530	2.8K UPRIGHT (1/2 in. NPT)	TY1151
531	2.8K PENDENT (1/2 in. NPT)	TY1251
570	5.6K UPRIGHT (1/2 in. NPT)	TY3151
571	5.6K PENDENT (1/2 in. NPT)	TY3251
590	8.0K UPRIGHT (3/4 in. NPT)	TY4151
591	8.0K PENDENT (3/4 in. NPT)	TY4251[6]
560	8.0K UPRIGHT (1/2 in. NPT)	TY4851
561	8.0K PENDENT (1/2 in. NPT)	TY4951

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE (RAL9010)[1] POLYESTER
4	SIGNAL WHITE (RAL9003) POLYESTER
5	JET BLACK (RAL9005)[2] POLYESTER
6	WAX COATED 286°F (141°C) MAX
7	LEAD COATED
8	WAX-OVER-LEAD 286°F (141°C) MAX[4]
9	CHROME PLATED[5]

	TEMPERATURE RATING
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)
360	360°F (182°C)
000	OPEN[3]

NOTES
1. Eastern Hemisphere sales only
2. Available in only 8.0 K-factor, 155°F (68°C) or 200°F (93°C); requires lead time to manufacture
3. 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)
4. Wax-Over-Lead finish not available for TY3151 Upright or TY3251 Pendent 5.6K 1/2 in. NPT 135°F (57°C)
5. Chrome Plated finish not available for TY3151 Upright 5.6K 1/2 in. NPT 135°F (57°C) and 175°F (79°C) or for TY4851 Upright 8.0K 1/2 in. NPT 360°F (182°C)
6. TY4251 in 175°F (79°C) temperature rating not FM Approved, see Table C for all applicable Listings and Approvals

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

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. Replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. See the 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 such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

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

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 (See Table E)

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

* 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) Color-coded Wax Sticks 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.*

The wax used for 286°F (141°C) sprinklers is the same as for 200°F (93°C) sprinklers. Therefore, the 286°F (141°C) sprinkler is limited to the same maximum ceiling temperature as the 200°F (93°C) sprinkler which is 150°F (66°C).

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