

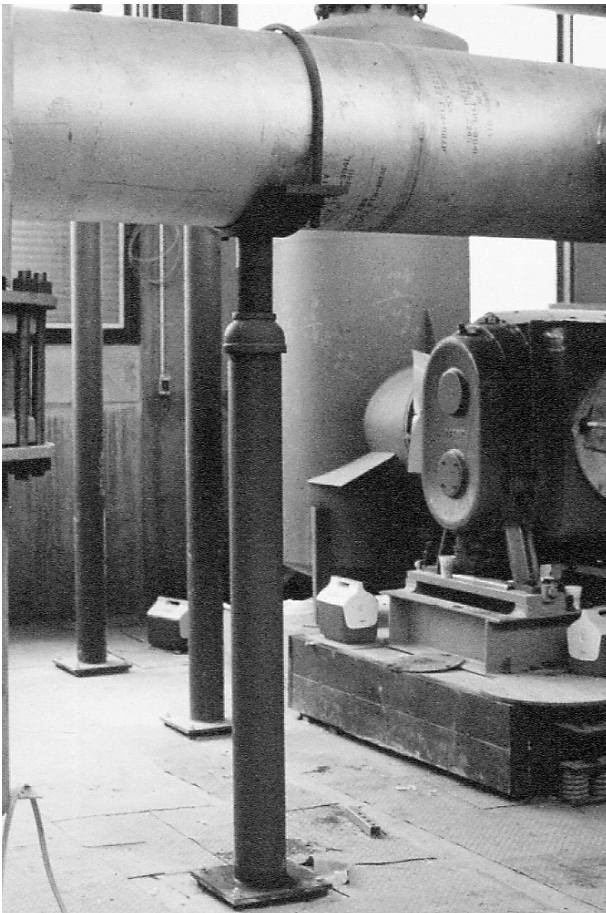
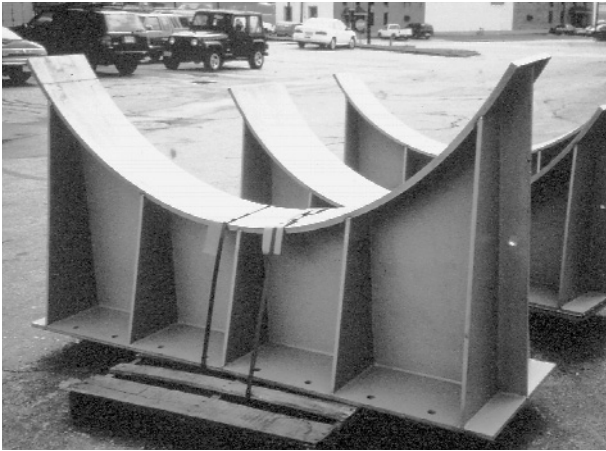
Catalog No. 6.4.1



PIPE SUPPORT HARDWARE



CARPENTER & PATERSON, INC.
DESIGNERS • ENGINEERS • MANUFACTURERS



Introduction

Since 1913 Carpenter & Paterson, Inc. has specialized in the manufacture and distribution of a complete line of pipe hangers and supports for commercial and industrial applications. Our designs are in accordance with ASME B31.1 and MSS-SP 58.

We have extensive capabilities to design, and fabricate support systems utilizing the latest technologies that will satisfy all customer requirements. Our sales and engineering group offer a full range of experience in the areas of product design and value engineering and are available to discuss your project needs.

Our supports have been specified and installed on major water treatment, pharmaceutical, process piping, petro-chemical, hospital, and school buildings as well as many other industrial projects throughout the world.

Carpenter & Paterson, Inc. products and the “Witch” trademark are synonymous in the pipe support industry for quality. Our mission is to support the mechanical industry with timely estimates, efficient designs, and full-line inventories that will allow us to meet our customers critical schedules.



PIPE ATTACHMENTS

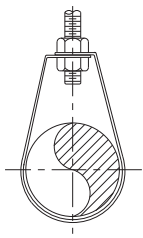


Figure 1A
Band Hanger
Page 11

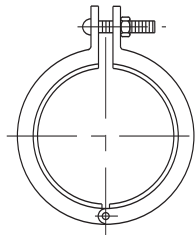


Figure 34
Hinge Hanger
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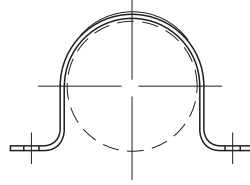
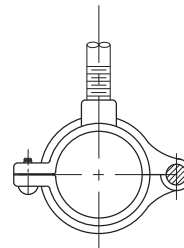


Figure 72
Pipe Clip
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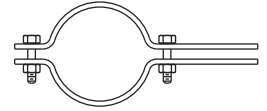
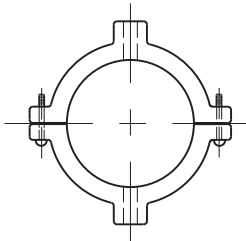
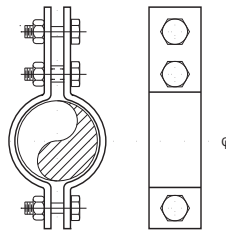


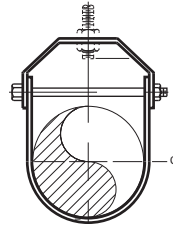
Figure 89
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Figures 90, 90PT
Split Ring Hanger,
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Figures 91, 91Z
Heavy Duty Three
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Figures 100, 100SS
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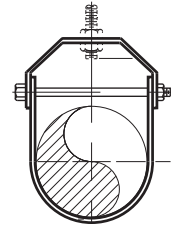


Figure 100DI
Clevis Hanger for
Ductile Iron Pipe
Page 24

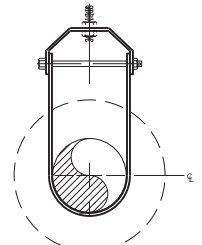


Figure 100EL
Elongated
Clevis Hanger
Page 25

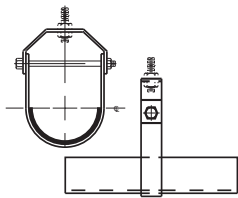


Figure 100SH
Refrigeration
Hanger and Shield
Page 26

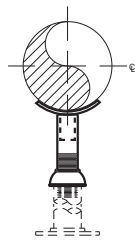


Figure 101
Adjustable
Pipe Support
Page 27

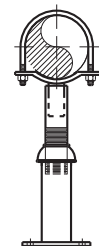


Figure 101U
Adjustable
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Page 28

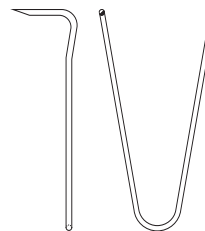


Figure 111
Wire Pipe Hook
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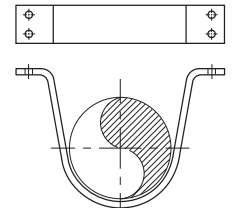


Figure 114
Short Clip
Page 29

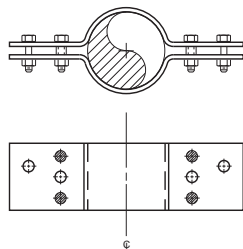


Figure 124
Riser Clamp
Page 30

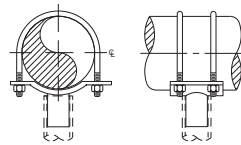


Figure 125
Pipe Saddle
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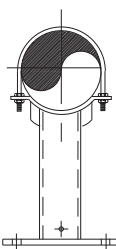


Figure 125SP
Floor Support
Page 32

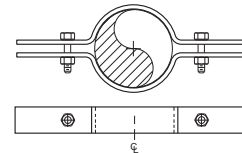


Figure 126
Extension
Riser Clamp
Page 32

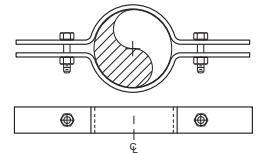


Figure 126LD
Plastic Pipe
Riser Clamp
Page 34

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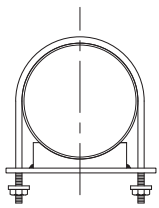


Figure 127
Anchor Chair
Page 34

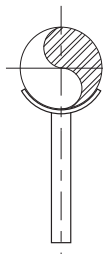


Figure 136
Pipe Support
Page 35

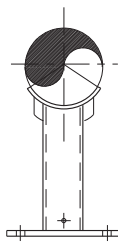


Figure 136SP
Floor Support
Page 32

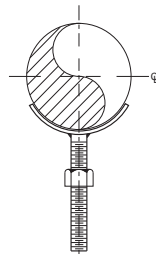


Figure 137
Adjustable
Pipe Support
Page 35

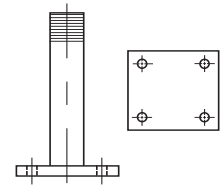


Figure 138
Threaded
Base Stand
Page 36

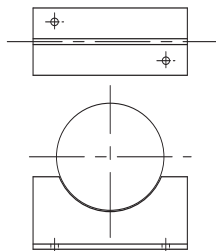


Figure 145
Pipe Chair
Page 37

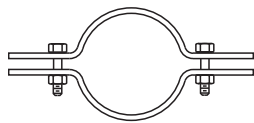


Figure 158
Ductile Iron
Pipe Clamp
Page 38

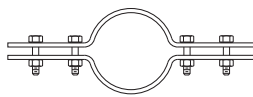
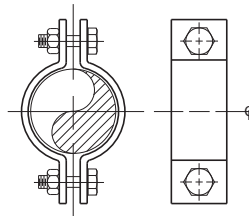


Figure 158DB
Double Bolt Ductile
Iron Pipe Clamp
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Figures 175, 175SP
Two Bolt
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Page 40

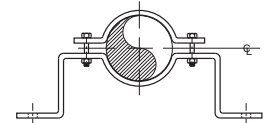


Figure 179
Offset Pipe Clamp
Page 39

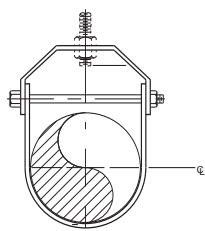


Figure 200
Light Duty
Clevis Hanger
Page 41

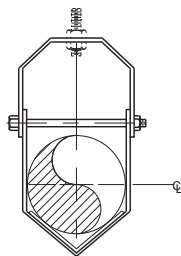


Figure 200V
Vee Clevis Hanger
Page 42

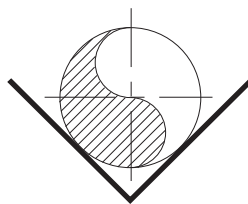


Figure 200VT
Vee Trough
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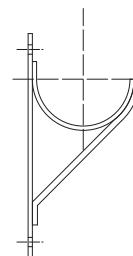


Figure 221
Wall Pipe Support
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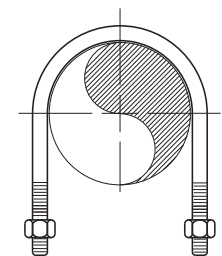


Figure 222
Short U-Bolt
Page 44

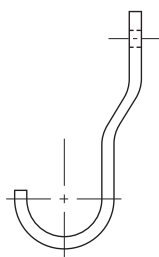


Figure 227
Return Line
Offset Hook
Page 45

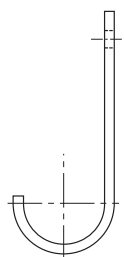


Figure 227S
Return Line Hook
Page 45

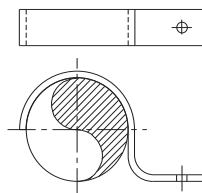


Figure 237S
One Hole
Pipe Clamp
Page 46

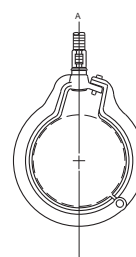


Figure 240
Adjustable Split
Swivel Hanger
Page 47

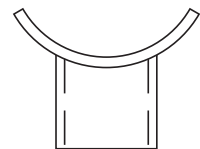


Figure 247
Pipe Support
Page 46

PIPE ATTACHMENTS

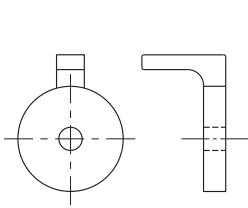


Figure 258
Underground Socket
Clamp Washer
Page 39

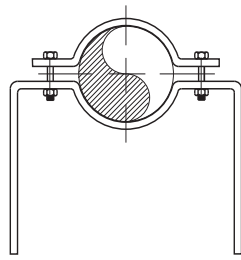


Figure 267
Extended Offset
Pipe Clamp
Page 48

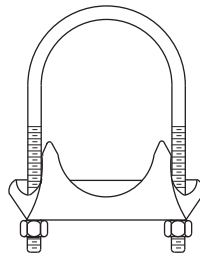
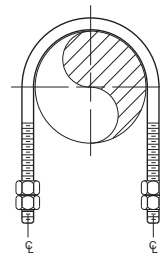


Figure 282
Right Angle
Beam Clamp
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Figures 283, 283SS
Standard U-Bolt
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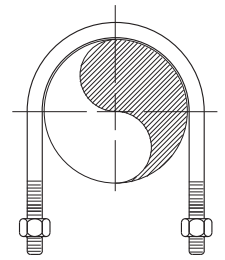


Figure 283L
Light Duty U-bolt
Page 51

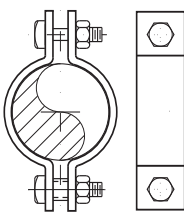


Figure 298
Heavy Duty Two
Bolt Pipe Clamp
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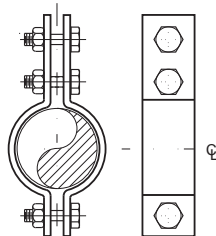


Figure 304
Three Bolt
Pipe Clamp
Page 53

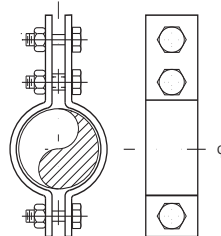


Figure 304Z
Alloy Three Bolt
Pipe Clamp
Page 54



Figure 371
Back-to-Back
Channel Assembly
Page 118

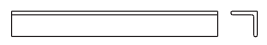


Figure 374
Angle Iron Support
Page 118

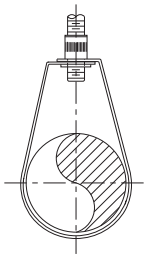


Figure 800
Adjustable
Swivel Ring
Page 55

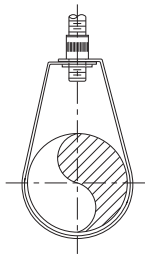


Figure 800FP
NFPA Swivel Ring
Page 57

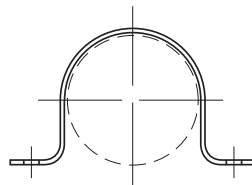


Figure C1108
Pipe Strap
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Figure DWV
Drain, Waste,
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Page 59

PIPE ROLLS

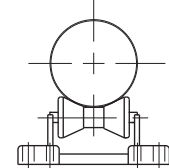
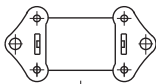


Figure 17
Chair and Roll
Page 60

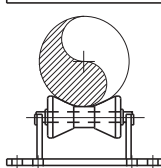
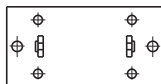


Figure 39
Chair and Roll
Page 61

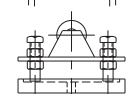
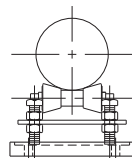


Figure 40
Adjustable Chair
and Roll
Page 63

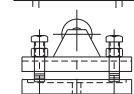
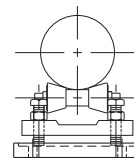


Figure 53
Adjustable Chair
and Roll
Page 65

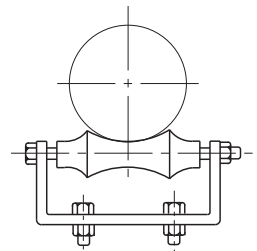


Figure 54
Roller Chair
Page 67

PIPE ROLLS

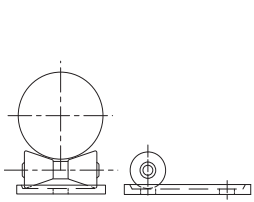


Figure 63
Roll and Plate
Page 68

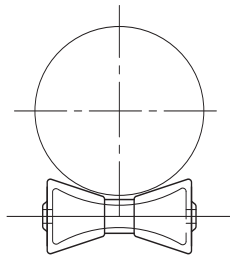


Figure 67
Pipe Roll
Page 69

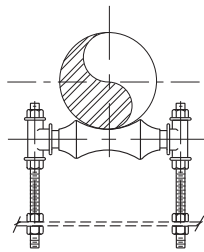


Figure 109
Adjustable
Roll Support
Page 70

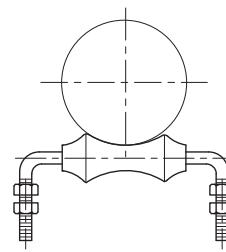


Figure 110
Roller Support
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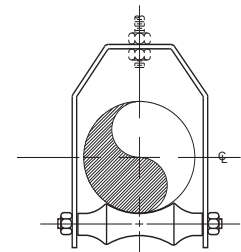


Figure 140
Harvard
Roll Hanger
Page 72

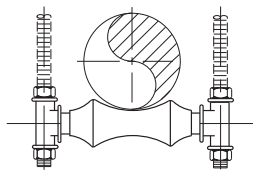


Figure 142
Adjustable
Roll Support
Page 74



Figure 173
Pipe Roll
Page 76

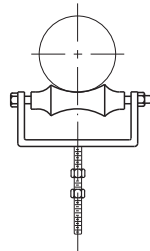


Figure 333
Roller Support
Page 77

PIPE SADDLES AND SHIELDS

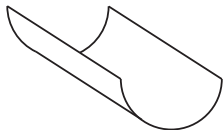


Figure 265GS
Insulation Shield
Page 78

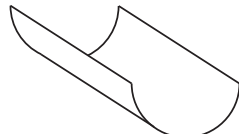


Figure 265P
Insulation Shield
Page 79

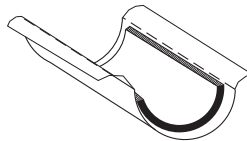


Figure 265 CVB
Iron Pipe Insulation
Shield
Page 80

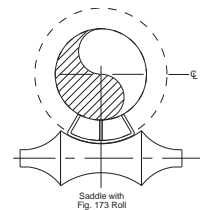


Figure 351 thru 357Z
Pipe Covering
Protection Saddles
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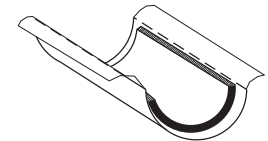


Figure 465 CVB
High Temperature
Page 85

BEAM CLAMPS

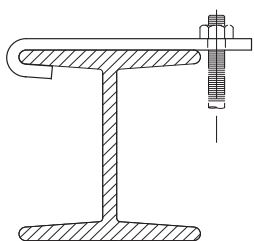
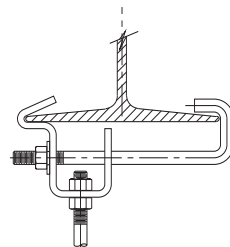


Figure 6
Top Beam Clamp
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Figures 14, 14A
Adjustable
Beam Clamp
Page 87

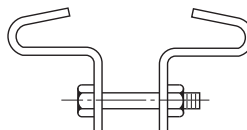


Figure 15
Beam Clamp
Page 88

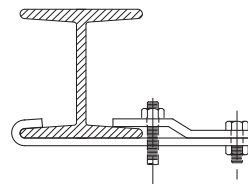


Figure 18
Top or Side
Beam Clamp
Page 89



Figure 31
J Beam Hook
Page 102

BEAM CLAMPS

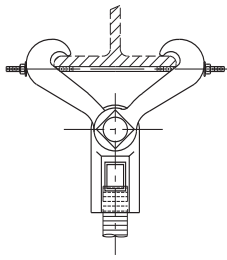


Figure 82
Adjustable
Beam Clamp
Page 90

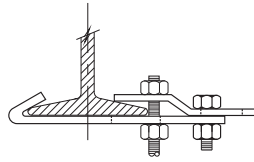


Figure 217
Adjustable
Side Beam Clamp
Page 93

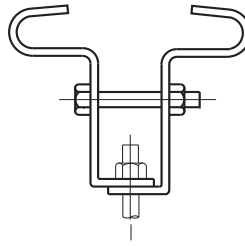


Figure 268
Beam Clamp
Page 94

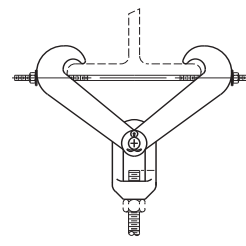


Figure 297
Steel Beam Clamp
with Eynut
Page 95

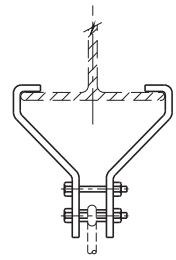


Figure 314
Extended
Beam Clamp
Page 96

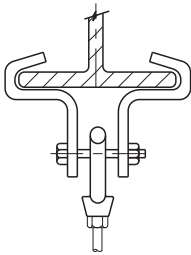


Figure 702
Beam Clamp with
Swing Nut
Page 97

C-CLAMPS

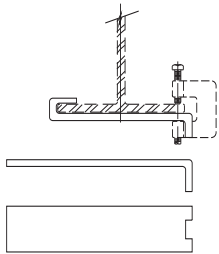
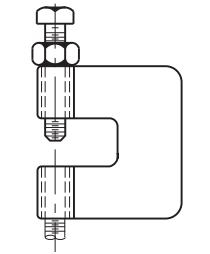


Figure 22
C-Clamp
Retaining Clip
Page 98



Figures 47, 47SS
C-Clamp
with Locking Nut
Page 99

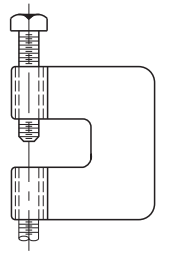


Figure 238
C-Clamp without
Locking Nut
Page 99

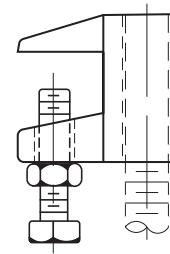


Figure 192
Top Beam Clamp
with Locking Nut
Page 91

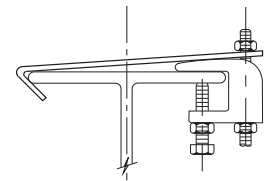


Figure 192RS
Top Beam Clamp
Retaining Clip
Page 91

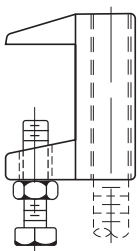


Figure 192W
Wide Mouth Top
Beam Clamp
Page 92

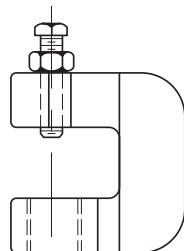


Figure 196
C-Clamp with
Locking Nut
Page 100

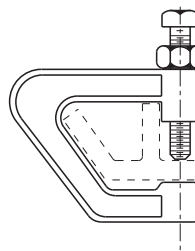


Figure 290
Purlin Clamp
Page 94

STRUCTURE ATTACHMENTS

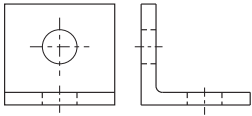


Figure 9
Angle knee
Page 101

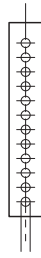


Figure 10
Extension Bar
Page 101

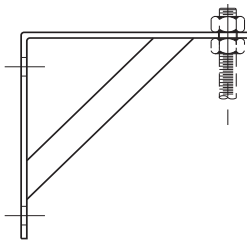


Figure 49
Wall Bracket
Page 102

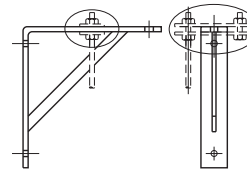


Figure 69
Light Welded
Steel Bracket
Page 103

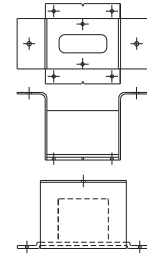


Figure 75 , 75N
Steel Concrete
Insert and Nut
Page 104

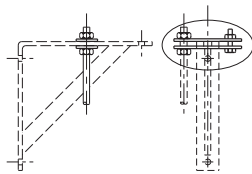


Figure 78
Steel Bracket Clip
Page 103

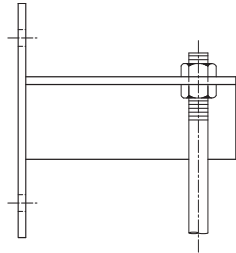


Figure 83
Bracket
Page 105

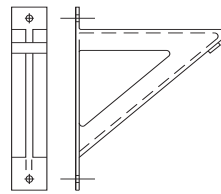
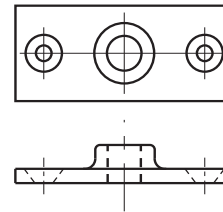


Figure 84
Medium Welded
Steel Bracket
Page 105



Figures
85E, 85B, 85SE
Single Plate
Page 106

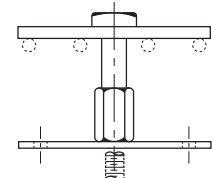


Figure 104F
Female Ceiling
Mount Bolt
Page 107

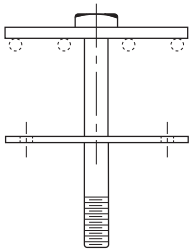


Figure 104M
Male Ceiling
Mount Bolt
Page 107

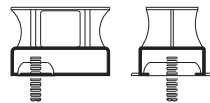


Figure 108, 108N
Malleable Concrete
Insert and Nut
Page 108

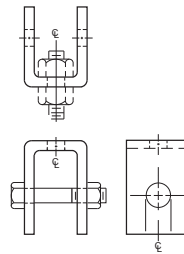


Figure 113A, 113B
Welded Beam
Attachment
Page 109

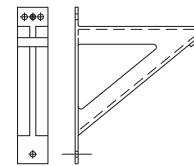


Figure 139
Heavy Welded
Steel Bracket
Page 110

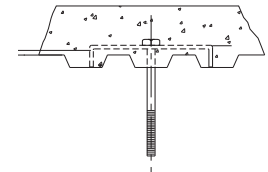


Figure 143
Metal Deck
Ceiling Bolt
Page 110

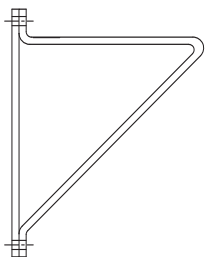


Figure 150
Steel Bracket
Page 111

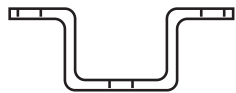


Figure 151
Ceiling Stirrup
Page 111

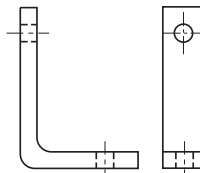


Figure 152
Return Line Angle
Page 112

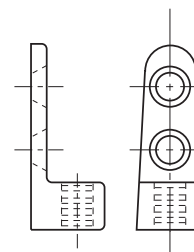


Figure 153, 153S
Side Beam
Connector
Page 112



Figure 177
Anchor Bolt
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STRUCTURE ATTACHMENTS

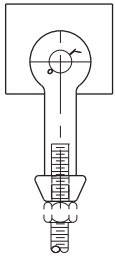


Figure 216
Welding Clevis
Attachment
Page 113

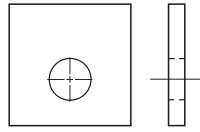


Figure 220
Welding Lug
Page 114

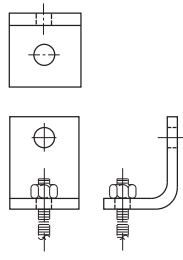


Figure 303
Side Beam
Angle Bracket
Page 115

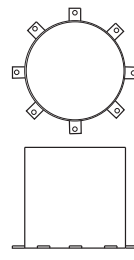


Figure 450
Pipe Sleeve
Page 136

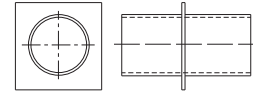


Figure 453
Waterproof
Pipe Sleeve
Page 137

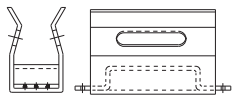


Figure 650
Steel Concrete Insert
Page 117

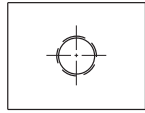


Figure 650N
Concrete Insert Nut
Page 117

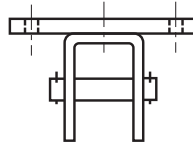


Figure 1020
Concrete
Attachment
Page 118

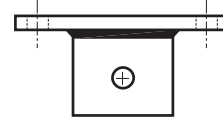


Figure 1022
Concrete Single
Plate Lug
Page 119

RODS AND ROD ATTACHMENTS

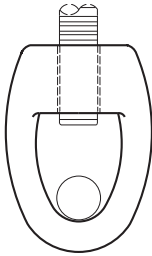
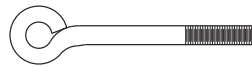


Figure 12
Eye Socket
Page 120



Figure 28
Lag Rod
Page 120



Figures 33, 33L
Machine Thread
Eye
Rod (Unwelded)
Page 121



Figure 38
Hanger Adjuster
Page 121



Figure 93, 93L
Welded Eyerod
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Figures 123, 123W
Steel Rod Coupling
Page 123



Figure 94, 94SS
All-Thread
Hanger Rod
Page 123



Figures 133, 133L
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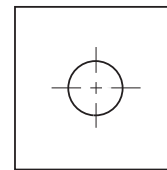


Figure 102
Light Duty Washer
Plate
Page 124



Figure 123R
Steel Reducing
Rod Coupling
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RODS AND ROD ATTACHMENTS

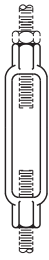


Figure 132
Turnbuckle
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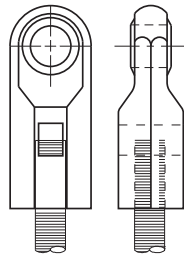
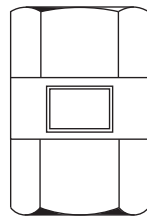


Figure 157
Extension Piece
Page 125



Figures 167, 167R
Malleable
Rod Coupling
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Figure 224
Round Hanger Rod
(Plain Ends)
Page 126

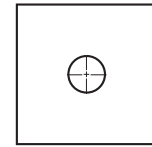
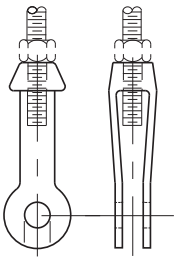
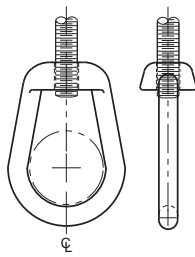


Figure 260
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Page 127



Figures 276, 276P
Forged Steel Clevis
Page 128



Figures 279, 279L
Forged Weldless
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Figures 306, 341
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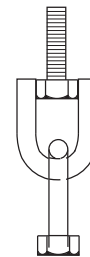


Figure 701
Male and Female
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Page 129

FASTENERS

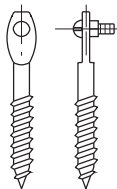


Figure 11
Flattened End
Lag Screw
Page 130

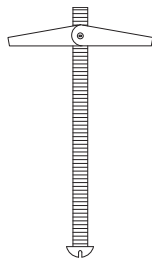


Figure 59
Toggle Bolt
Page 130



Figure 107
Steel Coach Screw
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Figure 162
Hex Head Bolt
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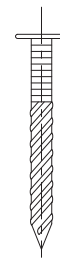
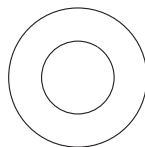


Figure 166
Steel Drive Screw
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Figures 165, 165H
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**Figures 103, 103E,
103G, 103S**
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Page 131



Figure 176
Lock Washer
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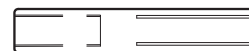


Figure 514
Drop-In Type
Concrete Anchor
Page 134

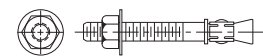


Figure 1309
Wedge Anchor
Page 135

PIPE GUIDES AND SLIDES

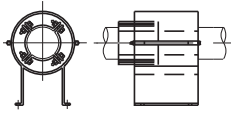


Figure 1006
Pipe Alignment
Guide
Page 138

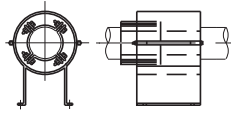


Figure 1007
Pipe Alignment
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Page 140

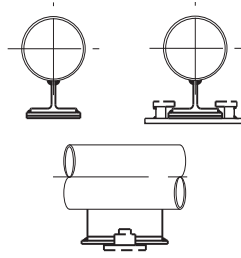


Figure 1010
Pipe Slide Assembly
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COPPER TUBING HANGERS

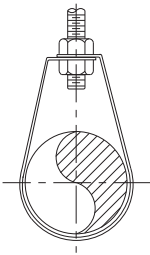


Figure 1A CT
Copper Tubing
Band Hanger
Page 12

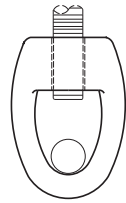


Figure 12CT
Eye Socket
Page 120

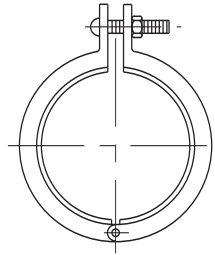


Figure 34CT
Hinge Hanger for
Copper Tubing
Page 13



Figure 38CT
Hanger Adjuster
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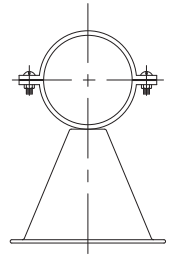


Figure 66CT
Stamped Steel
Hanger
Page 14

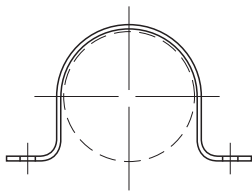


Figure 72CT
Copper Tubing
Pipe Clip
Page 15

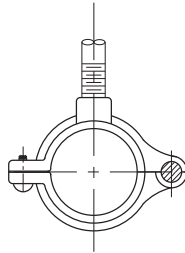


Figure 81CT, 81SCT
Copper Extension
Ring Hanger
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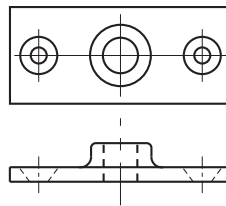


Figure 85CT, 85SCT
Single Plate
Page 106

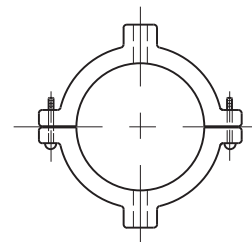


Figure 90CT
Split Ring Hanger,
Double Tapping
Page 19

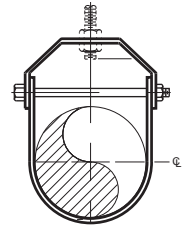


Figure 100CT
Copper Clevis
Hanger
Page 23

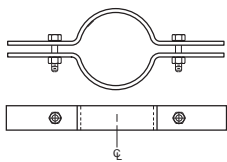


Figure 126CT
Copper Riser Clamp
Page 33

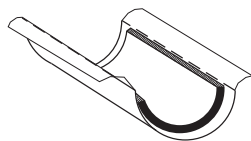


Figure 365 CVB
Copper Tubing
Insulation Shield
Page 80

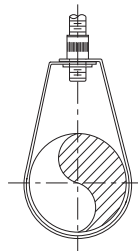
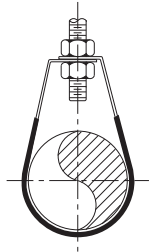
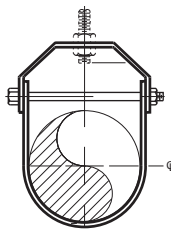


Figure 800CT
Copper Tubing
Swivel Ring
Page 56

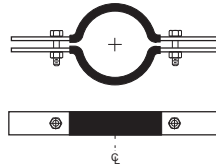
PVC COATED ATTACHMENTS



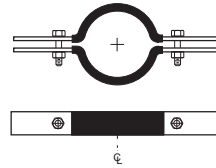
**Figure 1A PVC
PVC Band Hanger**
Page 11



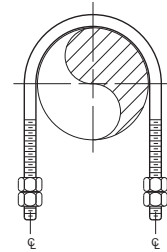
**Figure 100 PVC
PVC Clevis Hanger**
Page 22



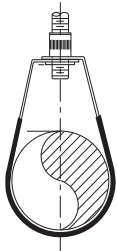
**Figure 126 PVC
PVC Coated
Riser Clamp**
Page 33



**Figure 126LD PVC
Plastic Pipe
Riser Clamp**
Page 34

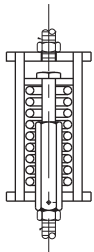


**Figure 283 PVC
PVC Coated
Standard U-Bolt**
Page 49

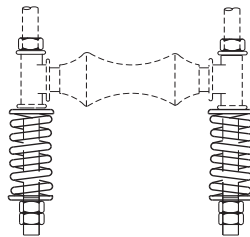


**Figure 800 PVC
PVC Coated
Adjustable Swivel Ring**
Page 58

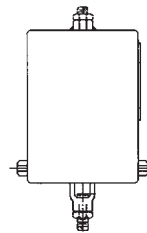
ENGINEERED PRODUCTS



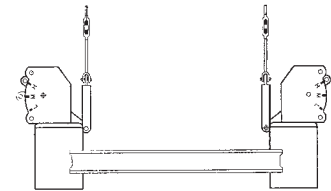
**Figure 399
Spring Hanger**
Page 136



**Figure 478
Cushion
Spring Assembly**
Page 137



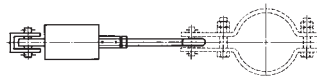
**Figures
910, 920, 940, 960
Variable Springs**
Upon Request



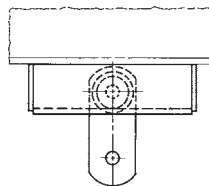
**Figures 880H, 880V
Constant Springs**
Upon Request



**Figure 2250
Rigid Struts**
Upon Request



**Figure 2301, 2302
Sway Brace Assemblies**
Upon Request



**Figure 7054
Horizontal Traveler**
Upon Request

BAND HANGER

Figure 1A

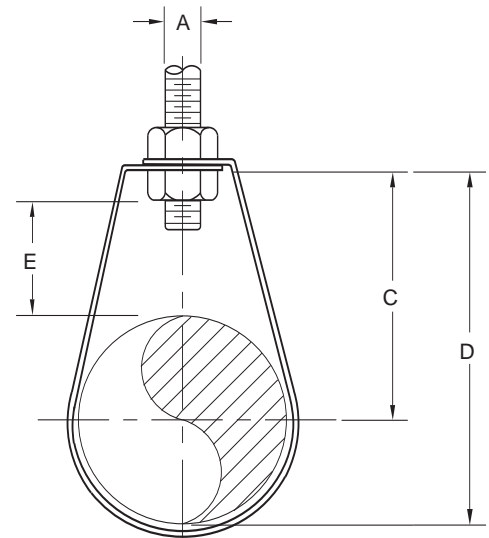
Designed to support non-insulated, stationary lines from above. The lower nut (not furnished) adjusts the pipe line to the proper elevation, while the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance. For copper tubing please see our Figure 1A CT. For plastic coated please see our Figure 1A PVC.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Compliance: Federal Specification A-A-1192A Type 7, MSS-SP-69 Type 7.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M1A.



PVC BAND HANGER

Figure 1A PVC

This product is designed to protect the pipe from coming into direct contact with the hanger by having the contact surface PVC coated. Install the same as a Figure 1A.

Material: Carbon Steel

Operating temperature: Should not exceed 140° F / 60° C.

Compliance: Federal Specification A-A-1192A Type 7, MSS-SP-69 Type 7.

Finish: Plain, Electro-Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M1A PVC. See Figure 1A for plain and electro-galvanized finishes. For Copper Tubing see Figure 1A CT.

FIGURE 1A – BAND HANGER

PIPE SIZE	MAXIMUM LOAD	ROD SIZE A	C	D	ADJ. E	WEIGHT EACH
½	610	⅜	2¼	2 ¹¹ / ₁₆	1⅜	0.13
15	2714	M10	57	68	35	0.06
¾	610	⅝	2½	2 ¹¹ / ₁₆	1½	0.13
20	2714	M10	54	68	29	0.06
1	610	⅝	2⅝	2 ¹³ / ₁₆	1⅞	0.14
25	2714	M10	54	71	27	0.06
1¼	610	⅝	2 ⁵ / ₁₆	3 ³ / ₁₆	1	0.16
32	2714	M10	59	81	25	0.07
1½	610	⅝	2 ⁷ / ₁₆	3 ⁷ / ₁₆	1 ¹ / ₁₆	0.18
40	2714	M10	62	87	27	0.08
2	610	⅝	2 ⁷ / ₈	4 ¹ / ₁₆	1 ³ / ₁₆	0.20
50	2714	M10	73	103	30	0.09
2½	970	½	3⅝	4 ⁷ / ₁₆	⅞	0.37
65	4315	M12	79	113	22	0.17
3	970	½	3¾	5½	1⅜	0.43
80	4315	M12	95	140	35	0.20
3½	970	½	3 ⁷ / ₈	5 ⁷ / ₈	1¼	0.47
90	4315	M12	98	149	32	0.21
4	1250	½	4¼	6½	1⅝	0.69
100	5560	M12	108	165	35	0.31
5	1250	½	4 ¹⁵ / ₁₆	7 ⁷ / ₈	1½	0.82
125	5560	M12	125	194	38	0.37
6	1600	¾	5 ¹⁵ / ₁₆	9¼	1 ¹¹ / ₁₆	1.50
150	7117	M20	151	235	43	0.68
8	1800	⅞	7 ¹⁵ / ₁₆	12¼	2½	1.89
200	8007	M22	202	311	64	0.86

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

COPPER TUBING BAND HANGER

Figure 1A CT

Designed to support non-insulated, copper tubing lines from above. Install the same as a Figure 1A.

Material: Carbon Steel.

Finish: Copper.

Compliance: Federal Specification A-A-1192A Type 7, MSS-SP-69 Type 7.

Ordering: Specify tubing size, and figure number. For Metric applications specify Figure M1A CT. See Figure 1A for plain and electro-galvanized finishes. For PVC Coating refer to Figure 1A PVC.

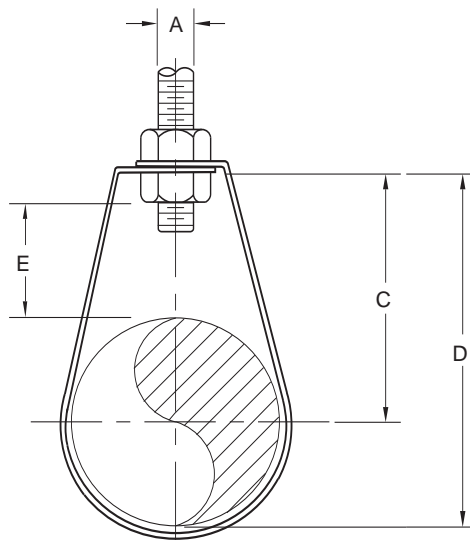


FIGURE 1A CT – COPPER TUBING BAND HANGER

TUBE SIZE	MAX LOAD	ROD SIZE A	C	D	ADJ. E	WEIGHT EACH
½	610	⅜	2⅞	2¾	1⅝	0.11
15	2714	M10	62	70	41	0.05
¾	610	⅜	2¾	2⅞	1⅝	0.11
20	2714	M10	70	68	33	0.05
1	610	⅜	2⅞	2⅞	1⅝	0.11
25	2714	M10	54	68	27	0.05
1¼	610	⅜	2⅞	2⅞	1⅝	0.12
32	2714	M10	54	71	24	0.05
1½	610	⅜	2⅞	3⅞	1⅝	0.14
40	2714	M10	60	87	27	0.06
2	610	⅜	2⅞	3⅞	1	0.16
50	2714	M10	65	92	25	0.07
2½	610	⅜	2⅞	4¼	1⅝	0.16
65	2714	M10	75	108	27	0.07
3	970	½	3¼	4⅞	1	0.38
80	4315	M12	83	122	25	0.17
3½	970	½	3⅞	5¼	1	0.42
90	4315	M12	87	133	25	0.19
4	1250	½	3¾	5⅞	1	0.45
100	5560	M12	95	151	25	0.20

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

HINGE HANGER

Figure 34

Designed to support non-insulated, stationary lines from above. The hinged design is easier to install making it ideal for retrofit needs. The Figure 38 Hanger Adjuster is commonly used to connect to this part. For Copper Tubing please see the Figure 34CT.

Material: Malleable Iron

Compliance: Federal Specification A-A-1192A Type 11, MSS-SP-69 Type 11.

Finish: Plain, Painted, Electro-Galvanized

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M34.

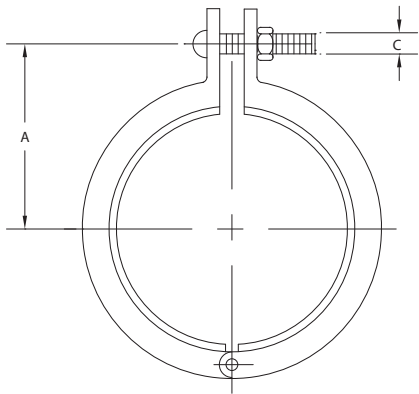


FIGURE 34 – HINGE HANGER

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
3/8	200	3/4	0.07
10	890	19	0.03
1/2	200	15/16	0.08
15	890	24	0.04
3/4	300	1 1/8	0.11
20	1335	29	0.05
1	300	1 1/4	0.12
25	1335	32	0.05
1 1/4	300	1 9/16	0.17
32	1335	40	0.08
1 1/2	300	1 11/16	0.20
40	1335	43	0.09
2	300	2 1/16	0.32
50	1335	52	0.15
2 1/2	450	2 1/4	0.43
65	2002	57	0.20
3	450	2 3/4	0.67
80	2002	70	0.30
3 1/2	450	3 1/8	0.86
90	2002	79	0.39
4	520	3 5/8	0.93
100	2313	92	0.42
5	520	4 1/2	1.52
125	2313	114	0.69
6	1300	5 7/16	2.64
150	5783	138	1.20
8	1800	6 3/8	3.84
200	8007	162	1.74

HINGE HANGER FOR COPPER TUBING

Figure 34CT

Designed to support non-insulated, stationary lines from above. The hinged design is easier to install making it ideal for retrofit needs. The Figure 38CT Hanger Adjuster is commonly used to connect to this part. For pipe sizes please see the Figure 34.

Material: Malleable Iron

Compliance: Federal Specification A-A-1192A Type 11, MSS-SP-69 Type 11.

Finish: Copper

Ordering: Specify tubing size and figure number. For Metric applications specify Figure M34CT.

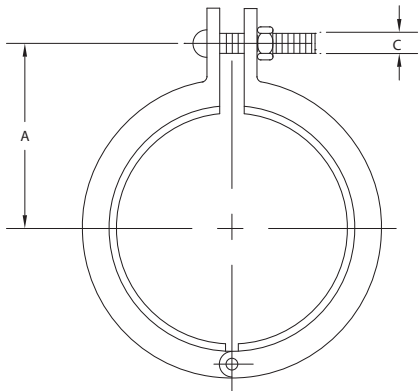


FIGURE 34CT – HINGE HANGER FOR COPPER TUBING

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
1/2	200	3/4	0.08
15	890	19	0.04
3/4	300	7/8	0.10
20	1335	22	0.05
1	300	1 1/8	0.12
25	1335	29	0.05
1 1/4	300	1 1/4	0.14
32	1335	32	0.06
1 1/2	300	1 3/8	0.18
40	1335	35	0.08
2	300	1 11/16	0.26
50	1335	43	0.12
2 1/2	450	1 15/16	0.38
65	2002	49	0.17
3	450	2 1/4	0.49
80	2002	57	0.22
3 1/2	450	2 5/8	0.64
90	2002	67	0.29
4	520	2 15/16	0.88
100	2313	75	0.40
5	1500	13 3/4	3.60
125	6673	349	1.63
6	1600	15 1/4	3.68
150	7117	387	1.67
8	2500	18 1/2	7.26
200	11121	470	3.29
10	2500	20 3/4	11.0
250	11121	527	4.99

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STAMPED STEEL HANGER

Figure 66CT

Our Figure 66CT Stamped Steel Hanger for copper tubing is a strong, neat, and light concealed screw hanger. It supports the tubing one inch from the back of the tube to the wall and has only two parts. It takes the place of rough unsightly looking hangers in a finish room and eliminates the use of ordinary pipe clips.

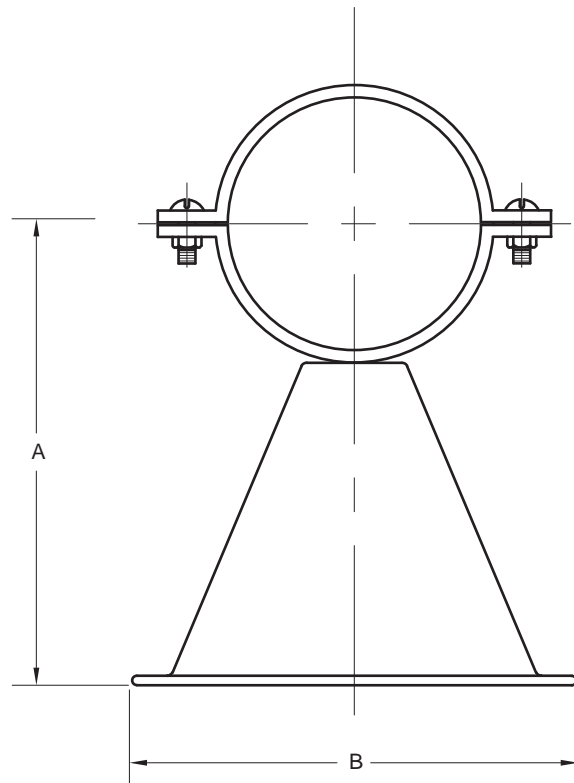
Material: Steel.

Finish: Copper.

Ordering: Specify tube size and figure number.

FIGURE 66CT – STAMPED STEEL HANGER

TUBE SIZE	A	B	WEIGHT EACH
3/8	1 1/8	1 1/8	0.075
10	29	41	0.03
1/2	1 3/16	1 1/8	0.075
15	30	41	0.03
3/4	1 5/16	1 1/8	0.08
20	33	41	0.04
1	1 7/16	1 1/8	0.085
25	37	41	0.04
1 1/4	1 9/16	1 1/8	0.09
32	40	41	0.04
1 1/2	1 1/4	1 5/8	0.06
40	32	41	0.03
2	1 3/4	1 5/8	0.07
50	44	41	0.03



DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE CLIP

Figure 72

The Figure 72 is designed to hold pipe flush to the mounting surface. A reinforcing bead through the center adds strength to the product. Our Figure 72CT is available for copper tubing lines.

Material: Carbon Steel.

Finish: Galvanized.

Ordering: Specify pipe size, and figure number.
For Metric applications Specify Figure M72.

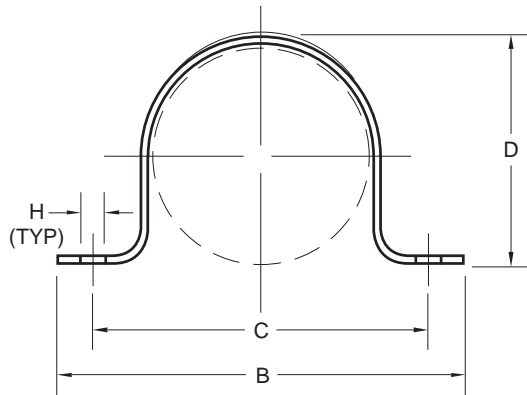


FIG. 72 – PIPE CLIP

PIPE SIZE	B	C	D	H	WGT. EACH
3/8	2 3/8	1 3/8	5/8	3/16	0.03
10	60	41	16	5	0.01
1/2	2 1/4	1 1/8	7/8	3/16	0.04
15	67	48	22	5	0.02
3/4	2 3/4	2	1	3/16	0.07
20	70	51	25	5	0.03
1	3 3/8	2 5/8	1 1/8	1/2	0.09
25	86	67	35	7	0.04
1 1/4	4 1/4	3 1/4	1 1/8	1/2	0.10
32	108	83	41	7	0.05
1 1/2	4 1/4	3 1/2	2	1/2	0.14
40	108	89	51	7	0.06
2	5	4 1/4	2 3/8	1/2	0.22
50	127	108	60	7	0.10
2 1/2	6 1/8	4 3/8	2 1/2	1 1/2	0.25
65	162	124	73	9	0.11
3	7 3/8	5 3/8	3 1/2	1 1/2	0.30
80	187	149	89	9	0.14
4	8 3/8	7 1/8	4 1/2	1 1/2	0.40
100	213	181	114	9	0.18
6	11 1/8	9 1/2	6 3/8	1 1/2	0.80
150	283	241	168	9	0.36

COPPER TUBING PIPE CLIP

Figure 72CT

The Figure 72CT is designed to hold copper tubing flush to the mounting surface. Our Figure 72 is available for steel piping lines.

Material: Carbon Steel.

Finish: Copper.

Ordering: Specify tubing size, and figure number.
For Metric applications Specify Figure M72CT.

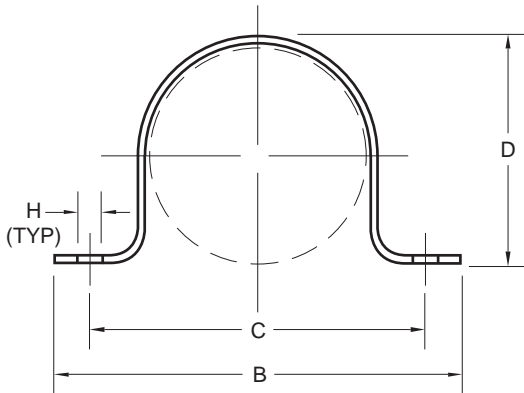


FIG. 72CT – COPPER TUBING PIPE CLIP

TUBING SIZE	B	C	D	H	WGT. EACH
3/8	2	1 3/8	1/2	3/16	0.019
10	51	35	13	5	0.009
1/2	2	1 3/8	5/8	3/16	0.020
15	51	35	16	5	0.009
3/4	2 1/4	1 1/4	7/8	3/16	0.022
20	60	44	22	5	0.010
1	3 1/2	2 1/4	1 1/8	3/16	0.025
25	89	70	29	5	0.011
1 1/4	3 3/4	3	1 1/8	3/16	0.031
32	95	76	35	5	0.014
1 1/2	3 3/4	3	1 3/8	7/16	0.063
40	98	76	41	11	0.029
2	4 1/2	3 3/8	2 1/8	7/16	0.075
50	114	92	54	11	0.034

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

EXTENSION RING HANGER

Figure 81 (Rod Tapped – Electro-Galvanized)

Figure 81BRT (Rod Tapped – Plain Finish)

Figure 81SG (Two Bolt, Rod Tapped, Domestic – Electro-Galvanized)

This split ring hanger is designed for the support of non-insulated stationary pipe lines. Also available in a two screw design. The Figure 85 or 85CT Ceiling Plate is normally used with this product.

Material: Malleable Iron, except Figure 81SG and 81SCT which are carbon steel.

Finish: Plain, Electro-Galvanized. For Copper Coating please see Figure 81CT or Figure 81SCT.

Compliance: Federal Specification A-A-1192A Type 12, MSS-SP-69 Type 12.

Ordering: Specify pipe size and figure number. For Metric applications specify Figure M81, M81BRT, M81PT, M81SG or 81SCT.

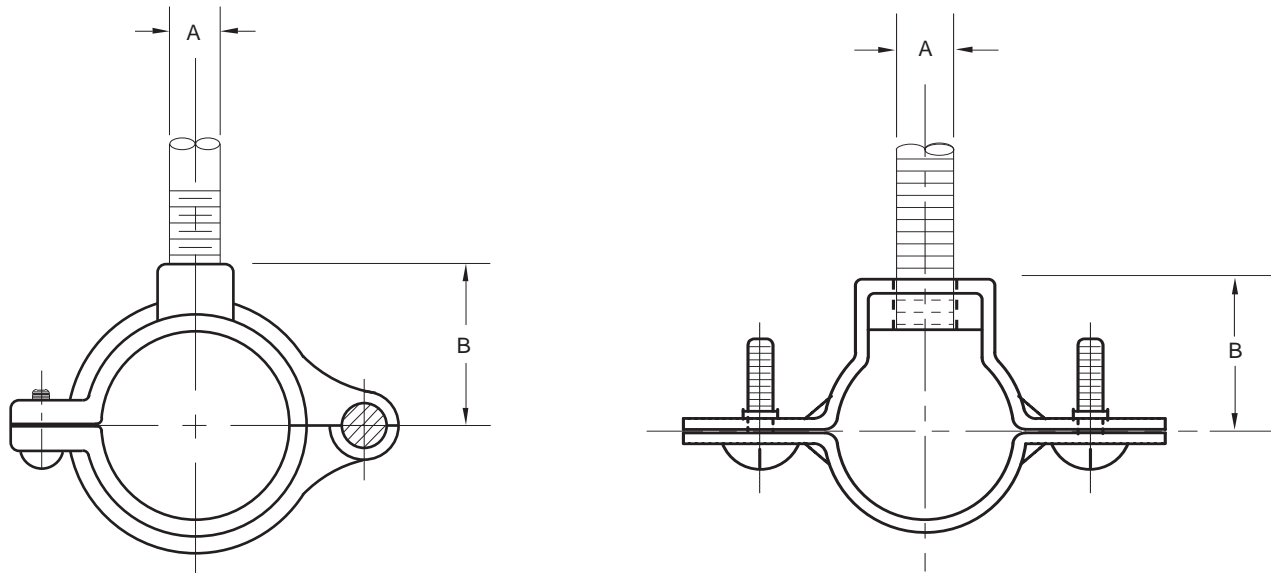


FIGURE 81 AND 81SG – EXTENSION HANGER RING

PIPE SIZE	MAX LOAD	PIPE SIZE A	ROD SIZE A	FIGURE 81 B	FIGURE 81SG B	WEIGHT EACH	
						FIG. 81	FIG. 81SG
3/8	180	1/4	3/8	13/16		0.16	
10	801	8	M10	21		0.07	
1/2	180	1/4	3/8	7/8	23/32	0.17	0.10
15	801	8	M10	22	18	0.08	0.05
3/4	180	1/4	3/8	1	13/16	0.20	0.11
20	801	8	M10	25	21	0.09	0.05
1	180	1/4	3/8	1 1/8	31/32	0.21	0.12
25	801	8	M10	29	25	0.10	0.05
1 1/4	180	1/4	3/8	1 1/16	1 1/8	0.29	0.13
32	801	8	M10	33	29	0.13	0.06
1 1/2	180	1/4	3/8	1 1/16	1 1/4	0.31	0.14
40	801	8	M10	37	32	0.14	0.06
2	180	1/4	3/8	1 11/16	1 1/2	0.35	0.16
50	801	8	M10	43	38	0.16	0.07
2 1/2	480	1/2	1/2	2 1/8		0.57	
65	2135	15	M12	54		0.26	
3	480	1/2	1/2	2 1/16		0.72	
80	2135	15	M12	62		0.33	
4	480	1/2	1/2	3 1/8		1.16	
100	2135	15	M12	81		0.53	

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

COPPER EXTENSION RING HANGER

Figure 81CT

Figure 81SCT (Domestic)

This split ring hanger is designed for the support of non-insulated copper tubing lines. The Figure 81CT is furnished tapped for bolt thread and is used with the Figure 85CT Ceiling Plate. Also available in a two bolt design.

Material: Malleable Iron. Figure 81SCT is Carbon Steel.

Finish: Copper. For Electro-Galvanizing please see Figure 81.

Compliance: Federal Specification A-A-1192A Type 12, MSS-SP-69 Type 12.

Ordering: Specify tube size and figure number. For Metric applications specify Figure M81CT or Figure M81SCT.

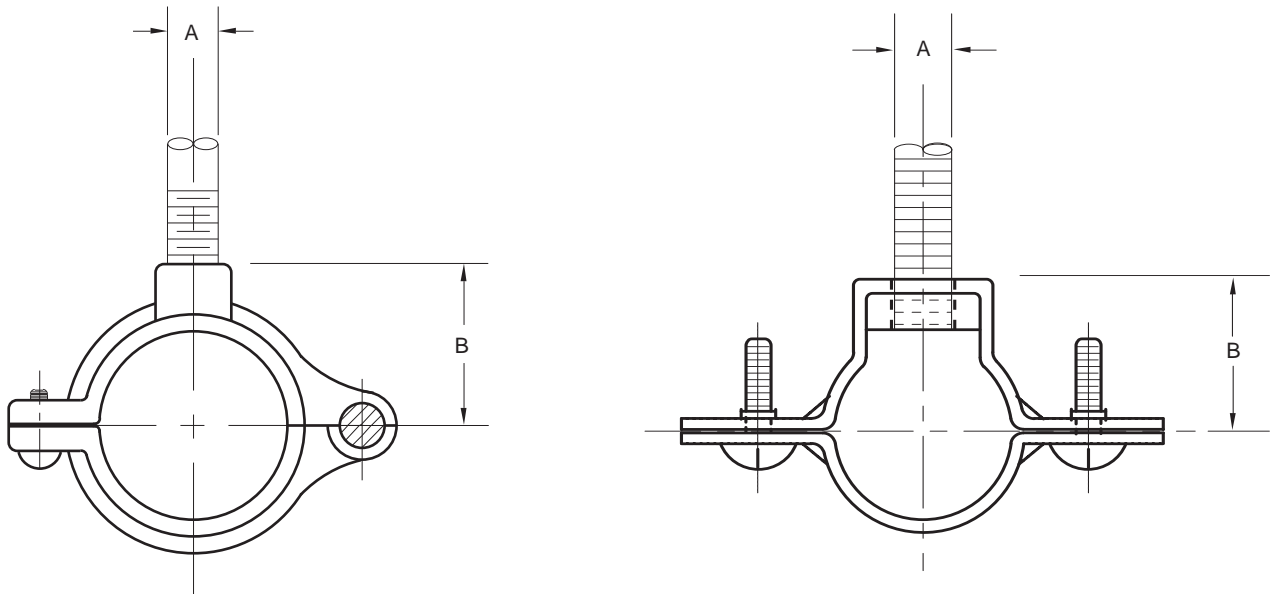


FIGURE 81CT AND 81SCT – COPPER EXTENSION HANGER RING

TUBE SIZE	MAX LOAD	ROD SIZE A	FIG. 81CT B	FIG 81SCT B	WEIGHT EACH	
					FIG. 81CT	FIG 81SCT
¼	180	⅜	⅝		0.06	
8	801	M10	16		0.03	
⅝	180	⅜	⅝		0.08	
10	801	M10	16		0.04	
½	180	⅜	¾	1½	0.08	0.09
15	801	M10	19	15	0.04	0.04
¾	180	⅜	⅞	2½	0.10	0.10
20	801	M10	22	18	0.05	0.05
1	180	⅜	1	2½	0.12	0.11
25	801	M10	25	21	0.05	0.05
1¼	180	⅜	1¼	1	0.14	0.12
32	801	M10	32	25	0.06	0.05
1½	180	⅜	1¼	1½	0.18	0.13
40	801	M10	32	28	0.08	0.06
2	180	⅜	1½	1½	0.24	0.15
50	801	M10	38	34	0.11	0.07
2½	480	½	2		0.38	
65	2135	15	51		0.17	
3	480	½	2¼		0.48	
80	2135	15	57		0.22	
4	480	½	2¼		0.68	
100	2135	15	70		0.31	

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

RISER CLAMP

Figure 89

The Figure 89 is normally used for the support of uninsulated vertical piping where no movement will occur. This product is not intended for use with hanger rods.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 8, MSS-SP-69 Type 8.

Load Rating: Up to 650° F (343° C).

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M89.

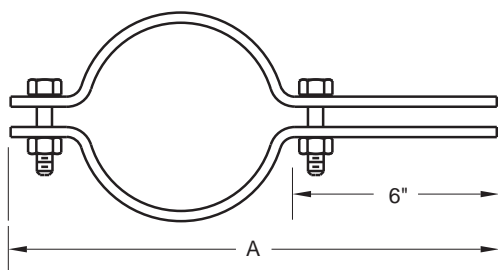


FIGURE 89 – RISER CLAMP

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
½	255	9¾	1.30
15	1134	238	0.59
¾	255	9¾	1.36
20	1134	238	0.62
1	255	9¾	1.38
25	1134	244	0.63
1¼	255	10	1.95
32	1134	254	0.88
1½	255	10¾	2.01
40	1134	264	0.91
2	255	10¾	2.17
50	1134	273	0.98
2½	390	11¼	2.29
65	1735	286	1.04
3	530	12	2.50
80	2358	305	1.13
4	810	13½	3.42
100	3603	343	1.55
5	1160	14½	5.10
125	5160	368	2.31
6	1570	15½	5.50
150	6984	394	2.49
8	2500	18½	10.0
200	11121	470	4.54
10	2500	20¾	11.4
250	11121	527	5.17
12	2700	22¾	17.6
300	12011	578	7.98
14	2700	24	19.25
350	12011	610	8.73
16	2900	26	32.5
400	12900	660	14.7
18	2900	28	33.8
450	12900	711	15.3
20	2900	30	35.0
500	12900	762	15.88

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FARENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

SPLIT RING HANGER – DOUBLE TAPPING

Figure 90 (Rod Tapped – Electro-galvanized)

Figure 90CT (Rod Tapped – Copper Finish)

This split ring hanger is designed for the support of non-insulated stationary pipe lines, one pipe line under the other, by means of a pipe nipple or threaded rods. The Figure 85 or 85CT Ceiling Plate is normally used with this product. The combined loads for all hangers used must not exceed the rating of the structural attachment.

Material: Malleable Iron.

Finish: Electro-galvanized. For Copper Coating please see Figure 90CT.

Ordering: Specify pipe size, bolt or pipe thread, and figure number. For Metric applications specify Figure M90.

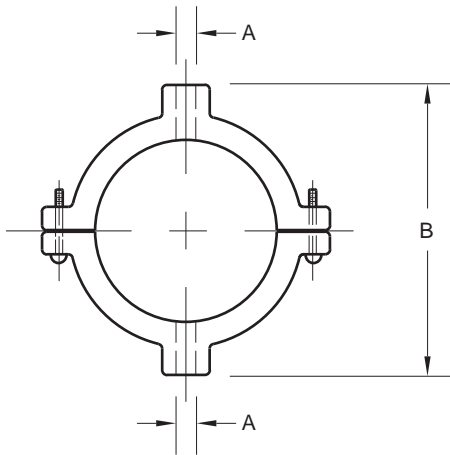


FIGURE 90 – SPLIT RING HANGER - DOUBLE TAPPING

PIPE SIZE	MAX LOAD	ROD SIZE	A		B	WEIGHT EACH
				BOLT SIZE		
3/8	180	1/4		3/8	1 1/4	0.16
10	801	8		M10	48	0.07
1/2	180	1/4		3/8	2	0.17
15	801	8		M10	51	0.08
3/4	180	1/4		3/8	2 1/4	0.20
20	801	8		M10	57	0.09
1	180	1/4		3/8	2 1/2	0.21
25	801	8		M10	64	0.10
1 1/4	180	1/4		3/8	2	0.29
32	801	8		M10	51	0.13
1 1/2	180	1/4		3/8	3 3/8	0.31
40	801	8		M10	79	0.14
2	180	1/4		3/8	3 3/8	0.35
50	801	8		M10	92	0.16
2 1/2	460	1/2		1/2	4 1/2	0.57
65	2046	15		M12	114	0.26
3	460	1/2		1/2	5 3/8	0.72
80	2046	15		M12	130	0.33
4	460	1/2		1/2	6 3/8	1.16
100	2046	15		M12	168	0.53

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

HEAVY DUTY THREE BOLT PIPE CLAMP

Figure 91

The Figure 91 is designed to accommodate higher loads than the Figure 304 for insulated piping. The spacer on the top inner bolt provides uniform space for the connecting eyerod or weldless eyenut.

Rated loads are for up to 750° F (399° C).

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 3, MSS-SP-69 Type 3, and BSPSS-BS3974.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, finish, and pipe size. For Metric applications specify Figure M91.

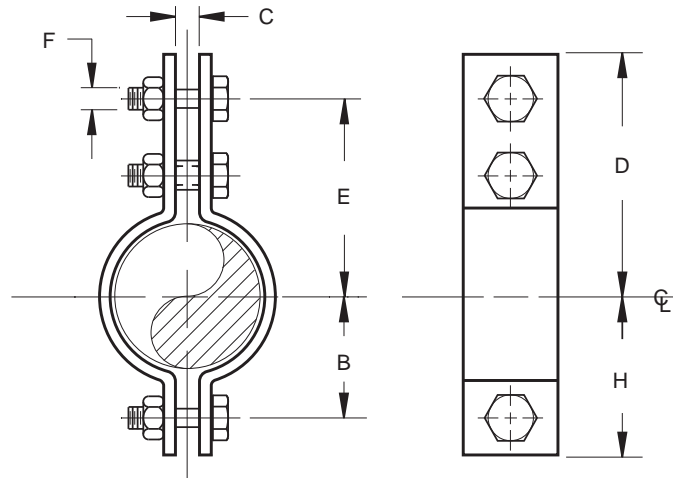


FIGURE 91 – HEAVY DUTY THREE BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD		B	C	D	TAKE OUT E	F	H	WEIGHT EACH
	650° F 343° C	750° F 399° C							
6	3500	3125	4 ³ / ₄	1 ³ / ₄	10 ¹ / ₄	9	1	6	14.26
150	15569	13901	121	44	260	229	M24	152	6.47
8	4800	4285	6	2	11 ³ / ₈	10 ¹ / ₈	1 ¹ / ₈	7 ¹ / ₄	22.20
200	21352	19061	152	51	289	257	M30	184	10.07
10	5500	4910	7 ¹ / ₄	2 ¹ / ₄	13 ¹ / ₈	11 ³ / ₈	1 ¹ / ₄	9	35.10
250	24466	21842	184	57	333	289	M30	229	15.92
12	7000	6250	8 ⁷ / ₈	2 ¹ / ₂	14 ⁷ / ₈	12 ⁷ / ₈	1 ¹ / ₂	10 ⁷ / ₈	58.09
300	31139	27802	225	64	378	327	M36	276	26.35
14	9500	8485	10	2 ¹ / ₂	15 ⁵ / ₈	13 ⁵ / ₈	1 ¹ / ₂	12	71.31
350	42260	37745	254	64	397	346	M36	305	32.35
16	10000	8930	10 ⁷ / ₈	3	17 ¹ / ₈	14 ⁷ / ₈	1 ³ / ₄	13 ¹ / ₈	105.77
400	44484	39724	276	76	435	378	M42	333	47.98
18	13800	12325	12 ¹ / ₂	3 ¹ / ₂	19 ³ / ₄	17 ¹ / ₄	2	15	153.73
450	61388	54827	318	89	502	438	M48	381	69.73
20	15300	13665	13 ¹ / ₂	3 ¹ / ₂	20 ³ / ₄	18 ¹ / ₄	2	16	176.40
500	68060	60787	343	89	527	464	M48	406	80.02
24	16300	14555	16	3 ¹ / ₂	23 ¹ / ₄	20 ¹ / ₄	2	19	237.02
600	72509	64746	406	89	591	514	M48	483	107.51
30	20500	18300	19 ⁷ / ₈	4 ¹ / ₄	32 ³ / ₄	28 ¹ / ₄	2 ¹ / ₄	24 ³ / ₈	388.37
750	91192	81406	505	108	832	718	M56	619	176.16
36	28000	.....	24 ⁵ / ₈	4 ¹ / ₂	40 ¹ / ₄	34 ³ / ₄	2 ³ / ₄	30 ¹ / ₈	678.00
900	124555	.....	625	114	1022	883	M72	765	307.54

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

HEAVY ALLOY THREE BOLT PIPE CLAMP

Figure 91Z

The Figure 91Z is designed to accommodate higher loads than the Figure 304Z for use on insulated alloy piping. The spacer on the top inner bolt provides uniform space for the connecting eyerod or weldless eyenut.

Temperature range: Above 750° F (399° C) to 1050° F (566° C).

Material: Chrome Molybdenum Steel ASTM A-387 Grade 22.

Compliance: Federal Specification A-A-1192A Type 3, MSS-SP-69 Type 3, and BSPSS-BS3974.

Finish: Plain.

Ordering: Specify figure number and pipe size. For Metric applications specify Figure M91Z.

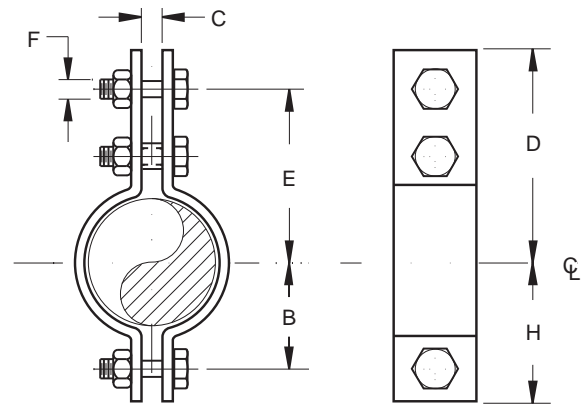


FIGURE 91Z – HEAVY ALLOY THREE BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD			B	C	D	E	F	H	WEIGHT EACH
	950° F 510° C	1000° F 538° C	1050° F 566° C							
6	7300	5200	3700	5¼	1¾	11	9	1½	7	28
150	32473	23132	16459	133	44	279	229	M36	178	13
8	7300	5200	3700	6⅝	1¾	12	10	1½	8½	33
200	32473	23132	16459	168	44	305	254	M36	216	15
10	10000	7200	5000	7⅞	2	14	12	1¾	10	53
250	44484	32028	22242	200	51	356	305	M42	254	24
12	10000	7200	5000	9⅜	2	15	13	1¾	11¼	65
300	44484	32028	22242	238	51	381	330	M42	286	29
14	11600	8300	6000	9⅞	2¼	16¼	14	1⅞	12	88
350	51601	36922	26690	251	57	413	356	M48	305	40
16	11600	8300	6000	11	2¼	17¼	15	1⅞	13	95
400	51601	36922	26690	279	57	438	381	M48	330	43
18	11600	8300	6000	12	2¼	18¼	16	1⅞	14	103
450	51601	36922	26690	305	57	464	406	M48	356	47
20	15000	10600	7500	13½	2¼	20½	18	2	15½	142
500	66726	47153	33363	343	57	521	457	M48	394	64
24	15000	13000	9000	15¾	2¼	23	20	2	18	213
600	66726	57829	40036	400	57	584	508	M48	457	97
30	15000	13000	9000	19	2¼	28	25	2	21½	300
750	66726	57829	40036	483	57	711	635	M48	546	136
36	15000	13000	9000	22	2¼	31	28	2	24½	340
900	66726	57829	40036	559	57	787	711	M48	622	154

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	MILLIMETERS	FAHRENHEIT	POUNDS	POUNDS
		CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

CLEVIS HANGER

Figure 100

Figure 100PVC

Figure 100SS

Designed to support non-insulated, stationary lines from above allowing for approximately 1" to 1½" of vertical adjustment after the pipe is in place. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Rated Loads are for up to 650°F (343°C) for Carbon Steel, Plain

Maximum Galvanized temperature is 450°F (232°C)

Maximum PVC temperature is 140°F (60°C).

Maximum Stainless Steel Loads are 0.80 times the stated loads below.

Materials: Carbon Steel, Stainless Steel

Compliance: Federal Specification WW-H-171E Type 1, A-A-1192A Type 1, ANSI/MSS SP-58 and SP-69 Type 1, BSPSS-BS3974, and U.L. listed and F.M. approved (Sizes ¾" through 8").

Finish: Plain, Painted, Hot-dip Galvanized, Electro-galvanized, PVC Plastic Coated, Stainless Steel

Ordering: Specify figure number, pipe size, and finish.

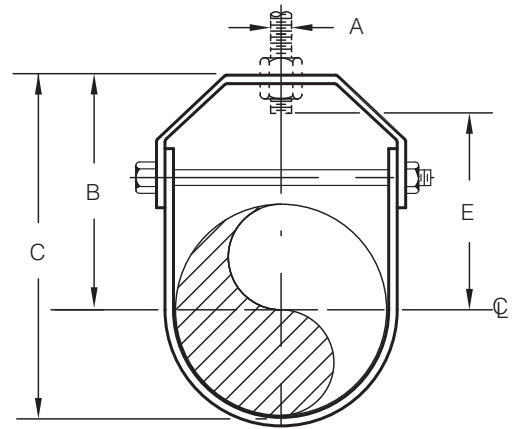


FIGURE 100 – CLEVIS HANGER

PIPE SIZE	MAXIMUM LOAD	A	B	C	ROD TAKE OUT E	WEIGHT EACH
½	610	⅜	2¼	3⅞	1⅞	0.27
15	2714	M10	70	79	48	0.12
¾	610	⅜	2⅞	2¾	1½	0.29
20	2714	M10	54	70	38	0.13
1	730	⅜	3	3¾	2¼	0.33
25	3247	M10	76	95	57	0.15
1 ¼	730	⅜	3⅞	4	2¼	0.36
32	3247	M10	79	102	57	0.16
1½	730	⅜	3¼	4¼	2⅜	0.42
40	3247	M10	83	108	60	0.19
2	730	⅜	3⅞	4⅞	3⅞	0.52
50	3247	M10	86	117	79	0.24
2½	1350	½	4⅞	5⅞	3⅞	0.61
65	6005	M12	105	143	79	0.28
3	1350	½	5	6⅞	4⅞	0.90
80	6005	M12	127	175	105	0.41
3½	1350	½	4½	6⅞	3⅞	0.99
90	6005	M12	114	168	92	0.45
4	1430	⅝	5⅞	7¾	4⅞	1.40
100	6361	M16	137	197	111	0.64
5	1430	⅝	6	8⅞	5	2.10
125	6361	M16	152	225	127	0.95
6	1940	¾	7	10½	5⅞	3.00
150	8630	M20	178	267	149	1.36
7	2000	¾	7⅞	11¾	6½	5.42
-	8897	M20	194	298	165	2.46
8	2000	¾	8½	12¾	6¾	4.50
200	8897	M20	216	324	171	2.04
10	3600	⅞	10	15⅞	8¼	9.10
250	16014	M20	254	391	210	4.13
12	3800	⅞	11⅞	17½	9¼	11.8
300	16904	M22	283	445	235	5.33
14	4200	1	12½	19½	10⅞	14.3
350	18683	M24 3	18	495	270	6.46
16	4600	1	15	23	13⅞	20.8
400	20463	M24	381	584	333	9.41
18	4800	1	15¾	24¾	13¾	23.0
450	21352	M24	400	629	349	10.4
20	4800	1¼	17⅞	27⅞	15¼	41.5
500	21352	M30	441	695	387	18.8
24	4800	1¼	19⅞	31⅞	17½	50.0
600	21352	M30	498	803	445	22.7
30	6000	1¼	24¾	40¾	21¾	68.1
750	26690	M30	629	1035	552	30.9
36	9500	1½	32⅞	50⅞	30	191
900	42260	M36	835	1292	762	86.6

COPPER CLEVIS HANGER

Figure 100CT

Designed to support non-insulated, stationary copper tubing lines from above, allowing for approximately 1" to 1½" of vertical adjustment after the tubing is in place. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 1, MSS-SP-69 Type 1 and BSPSS-BS3974. Rated Loads are for up to 650° F (343° C).

Finish: Copper.

Ordering: Specify tubing size, and figure number. For Metric applications specify Figure M100CT.

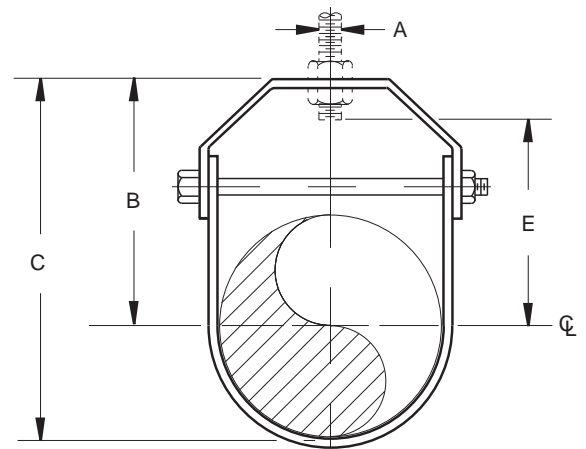


FIGURE 100CT – COPPER CLEVIS HANGER

TUBE SIZE	MAXIMUM LOAD	A	B	C	ROD TAKE OUT E	WEIGHT EACH
½	150	⅜	2⅝	3⅜	2½	0.16
15	667	M10	73	79	54	0.07
¾	250	⅜	2⅝	3	1⅞	0.16
20	1112	M10	67	76	48	0.07
1	250	⅜	2⅝	3⅜	1⅞	0.19
25	1112	M10	67	79	48	0.09
1¼	250	⅜	3⅝	3¾	2⅜	0.22
32	1112	M10	79	95	60	0.10
1½	250	⅜	3⅝	4⅞	2⅞	0.29
40	1112	M10	86	105	67	0.13
2	250	⅜	3⅝	4⅞	2⅞	0.32
50	1112	M10	86	111	67	0.15
2½	350	½	3⅝	4⅞	2⅞	0.72
65	1557	M12	92	124	67	0.33
3	350	½	3⅝	5⅞	2⅞	0.82
80	1557	M12	98	137	73	0.37
3½	350	½	4⅞	5⅞	3⅞	0.91
90	1557	M12	105	149	79	0.41
4	350	½	4⅞	6¼	3⅞	1.07
100	1557	M12	114	159	89	0.49
5	900	⅝	5	7¾	3⅞	1.76
125	4004	M16	127	197	98	0.80
6	900	⅝	5¼	8⅞	4⅞	1.92
150	4004	M16	4	225	117	0.87

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

CLEVIS HANGER FOR DUCTILE IRON AND A.W.W.A. CAST IRON PIPE

Figure 100DI

Designed to support non-insulated, stationary ductile iron and A.W.W.A. cast iron lines from above allowing for approximately 1" to 1½" of vertical adjustment after the pipe is in place. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel.

Compliance: MSS-SP-69 Type 1, A-A-1192A Type 1.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M100DI.

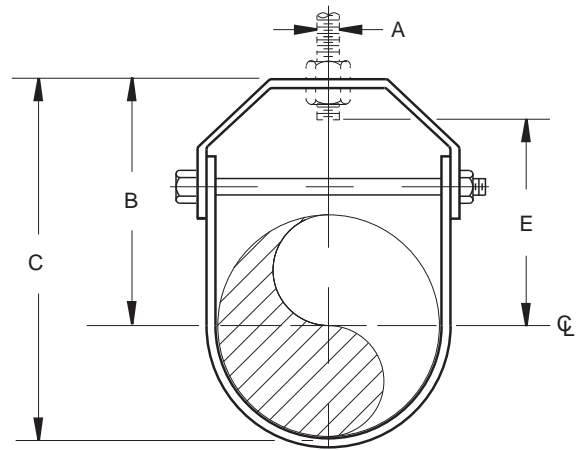


FIGURE 100DI – CLEVIS HANGER FOR DUCTILE IRON PIPE

PIPE SIZE	MAXIMUM LOAD	A	B	C	ROD TAKE OUT E	WEIGHT EACH
4	1430	5/8	5 3/4	8 3/8	4 3/8	2.08
150	6361	M16	146	206	111	0.94
6	1940	3/4	7	10 3/8	5 1/2	2.78
200	8630	M20	178	264	140	1.26
8	2000	3/4	9 3/4	13 3/4	7 3/4	4.47
250	8897	M20	235	349	197	2.03
10	3600	7/8	10 3/4	15 3/4	8 3/8	8.87
300	16014	M22	260	400	219	4.02
12	3800	7/8	12 3/8	19 1/4	11	12.0
350	16904	M22	321	489	279	5.46
14	4200	1	14 3/8	21 3/4	12 3/4	15.2
400	18683	M24	359	552	311	6.87
16	4800	1	14 3/8	23 3/8	13	23.6
450	21352	M24	378	600	330	10.7
18	4800	1	17 3/4	27 3/4	15 3/4	25.9
500	21352	M24	451	705	400	11.7
20	4800	1 1/4	18 3/8	29 1/2	16 1/2	44.3
600	21352	M30	476	749	419	20.1
24	4800	1 1/4	21 1/8	34 3/4	19 1/2	53.5
700	21352	M30	556	883	495	24.2

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ELONGATED CLEVIS HANGER

Figure 100EL

The 100EL is designed for the suspension of insulated stationary pipe lines. It will accommodate 2 inches (51mm) of insulation up to 1½” (40mm) pipe, and 4 inches (102mm) of insulation for pipe 2” (50mm) and larger.

Hanger locking nut above the clevis must be tightened securely to assure proper hanger performance. The nuts are not included.

Maximum Temperature: Plain 650°F (343°C), Galvanized 450°F (232°C)

Material: Carbon Steel

Finish: Plain, Painted, Electro-Galvanized, Hot-dip Galvanized

Approvals: Federal Specification A-A-1192A Type 1, MSS-SP-58 Type 1, and BSPSS-BS3974.

Ordering: Specify figure number, pipe size and finish.

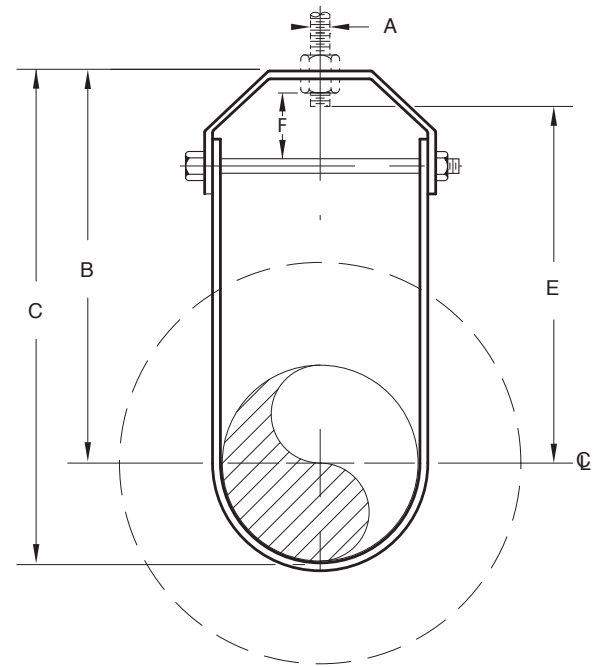


FIGURE 100EL – ELONGATED CLEVIS HANGER

PIPE SIZE	MAXIMUM LOAD	A	B	C	E	F	WEIGHT EACH
½	730	⅜	3¾	4¼	3½	⅝	0.66
15	3247	M10	95	108	89	16	0.30
¾	730	⅜	4¼	4⅞	3⅞	⅝	0.70
20	3247	M10	108	124	98	16	0.32
1	730	⅜	5½	5¾	4¾	1⅝	0.74
25	3247	M10	130	146	121	41	0.34
1¼	730	⅜	5⅝	6⅛	4⅞	1⅝	0.78
32	3247	M10	137	156	124	41	0.35
1½	730	⅜	5½	6⅜	5	1½	0.81
40	3247	M10	140	162	127	38	0.37
2	730	⅜	7⅝	8¾	7⅞	1⅝	0.88
50	3247	M10	194	222	181	41	0.40
2½	1350	½	7⅞	9¼	7¼	1⅝	1.83
65	6005	M12	200	235	184	29	0.83
3	1350	½	8⅛	9⅞	7½	1⅝	1.97
80	6005	M12	206	251	191	29	0.89
3½	1350	½	8⅜	10⅜	7¾	1¼	2.06
90	6005	M12	213	264	197	32	0.93
4	1430	⅝	9⅝	11⅞	8⅞	1¾	2.57
100	6361	M16	244	302	225	44	1.17
5	1430	⅝	10⅜	13⅜	9⅞	1⅞	3.00
125	6361	M16	264	333	244	48	1.36
6	1940	¾	10⅞	14⅞	10	1⅞	4.05
150	8630	M20	276	359	254	41	1.84
8	2000	¾	12⅝	16⅞	11⅞	2⅞	6.00
200	8897	M20	321	429	295	54	2.72
10	3600	⅞	13¼	18⅝	12⅞	2⅞	10.1
250	16014	M20	337	473	308	60	4.58
12	3800	⅞	15¼	22⅞	14⅞	2⅞	12.9
300	16904	M20	400	562	371	67	5.85

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

REFRIGERATION HANGER AND SHIELD

Figure 100SH

This hanger is a combination of the Figure 100 and Figure 265 where the protection shield is welded to the clevis hanger. Designed to support insulated, stationary lines from above and prevent crushing the insulation or breaking the vapor barrier. It allows for approximately 1" to 1½" of vertical adjustment after the pipe is in place. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 1, MSS-SP-69 Type 1 and BSPSS-BS3974.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify pipe size, insulation thickness, figure number, and finish. For Metric applications specify Figure M100SH.

Dimensional Data: See Figure 100 and Figure 265P.

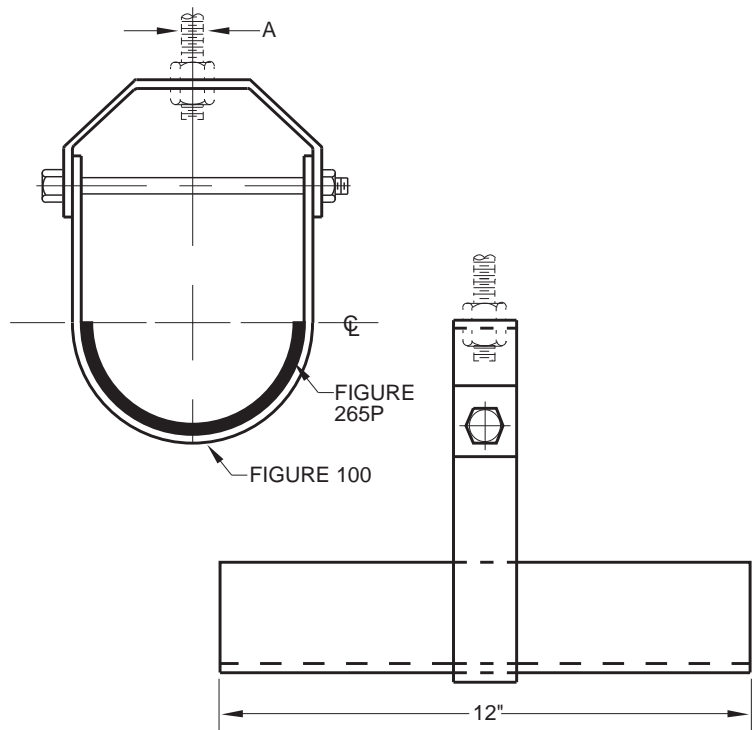


FIGURE 100SH - REFRIGERATION HANGER AND SHIELD

HANGER SIZE	ROD SIZE A	Insulation Thickness					
		½" Cov. 13 Cov. Bare Pipe Size	1" Cov. 25 Cov.	1½" Cov. 38 Cov.	2" Cov. 51 Cov.	2½" Cov. 64 Cov.	3" Cov. 76 Cov.
1½	¾	½					
40	M10	15					
2	¾	¾ - 1					
50	M10	20 - 25					
2½	½	1¼ - 1½	½				
65	M12	32 - 40	15				
3	½	2	¾ - 1				
80	M12	50	20 - 25				
3½	½	2½	1¼ - 1½	½ - ¾			
90	M12	65	32 - 40	15 - 20			
4	¾	3	2	1 - 1¼			
100	M16	80	50	25 - 32			
5	¾	3½ - 4	2½ - 3	1½ - 2	½ - 1¼		
125	M16	90 - 100	65 - 80	40 - 50	15 - 32		
6	¾	5	3½ - 4	2½ - 3	1½ - 2	½ - 1¼	
150	M20	125	90 - 100	65 - 80	40 - 50	15 - 32	
7	¾	6	5	3½ - 4	2½ - 3	1½ - 2	½ - 1¼
M20	150	125	90 - 100	65 - 80	40 - 50	15 - 32	
8	¾		6	5	3½ - 4	2½ - 3	1½ - 2
200	M20		150	125	90 - 100	65 - 80	40 - 50
10	¾	8	8	6	5 - 6	3½ - 4	2½ - 4
250	M22	200	200	150	125 - 150	90 - 100	65 - 100
12	¾	10	10	8	8	5 - 6	5 - 6
300	M22	250	250	200	200	125 - 150	125 - 150
14	1	12		10		8	
350	M24	300		250		200	
16	1	14	12 - 14	12	10	10	8
400	M24	350	300 - 350	300	250	250	200
18	1	16	16	14	12 - 14	12	10
450	M24	400	400	350	300 - 350	300	250
20	1¼			16	16	14	12 - 14
500	M30			400	400	350	300 - 350
24	1¼					16	16
600	M30					400	400

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

ADJUSTABLE PIPE SUPPORT

Figure 101

The Figure 101 is used for support of piping from below without welding to the pipe and consists of a steel saddle, nipple, and pipe reducer. It connects to a threaded pipe standard and base which is also available, ordered separately, as our Figure 138.

Rated loads are for up to 650° F (343° C).

Materials: Reducer is Cast Iron, Pipe saddle and nipple are carbon steel.

Compliance: Federal Specification A-A-1192A Type 39, MSS-SP-69 Type 39.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M101.

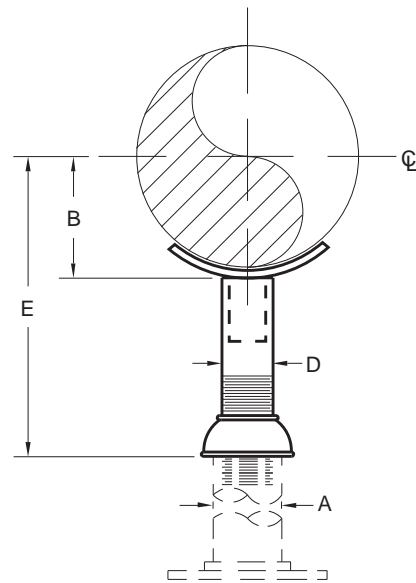


FIGURE 101 – ADJUSTABLE PIPE SUPPORT

PIPE SIZE	MAX LOAD	A	B	D	E MIN.	E MAX.	WEIGHT EACH
1½	5,000	2½	1¼	1½	8	13	4.75
40	22242	65	32	40	203	330	2.15
2	5,000	2½	1½	1½	8	13	4.80
50	22242	65	38	40	203	330	2.18
2½	5,000	2½	1¾	1½	8	13	4.90
65	22242	65	48	40	203	330	2.22
3	5,000	2½	2¼	1½	8¼	13¼	5.00
80	22242	65	54	40	210	337	2.27
4	7,000	3	2½	2½	9¼	14¼	9.30
100	31139	80	67	65	232	359	4.22
5	7,000	3	3¼	2½	9¼	14¼	9.65
125	31139	80	83	65	244	371	4.38
6	7,000	3	3¾	2½	10	15	11.70
150	31139	80	98	65	254	381	9.40
8	7,000	3	4¼	2½	11	16	12.90
200	31139	80	124	65	279	406	5.83
10	7,000	3	5¼	2½	12¼	17¼	14.10
250	31139	80	149	65	308	435	6.40
12	7,000	3	6¼	2½	13¼	18¼	15.30
300	31139	80	175	65	333	460	6.90
14	7,000	4	7¼	3	13	18	21.70
350	31139	100	191	80	330	457	9.84
16	7,000	4	8½	3	14¼	19¼	25.40
400	31139	100	219	80	359	486	11.50
18	7,000	6	9¼	4	15¼	20¼	39.30
450	31139	150	244	100	384	511	17.80
20	7,000	6	10¼	4	16¼	21¼	44.90
500	31139	150	270	100	410	537	20.40
24	10,000	6	12¼	4	18¼	23¼	54.30
600	44484	150	324	100	464	591	24.60
30	10,000	6	15¼	4	21¼	26¼	62.40
750	44484	150	400	100	540	667	28.30
36	10,000	6	18¼	4	24¼	29¼	70.20
900	44484	150	476	100	616	743	31.80

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

ADJUSTABLE FLOOR SUPPORT

Figure 101U

The Figure 101U is used for support of piping from below without welding where there is no axial or transverse movement. It connects to a threaded pipe standard and base. Made special to customer order.

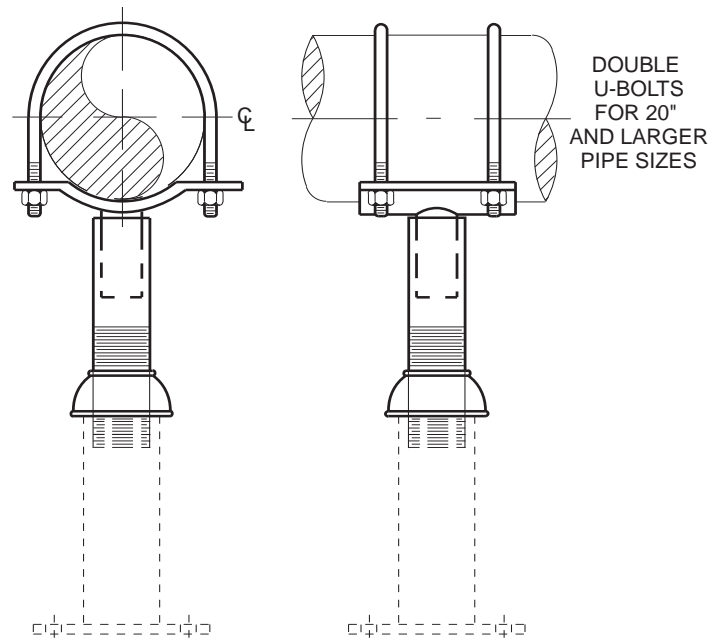
Rated loads are for up to 650°F (343°C).

Materials: Reducer is Cast Iron, Pipe saddle, nipple U-bolt are carbon steel.

Compliance: Federal Specification A-A-1192A (Type 38), MSS-SP-69 (Type 38).

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, load, overall height, figure number, finish, and base plate bolting if needed. For Metric applications specify Figure M101U.



WIRE PIPE HOOKS

Figure 111

The Wire Pipe Hook is made of special hard drawn wire, extra Heavy gauge. The driving head is bent so as to make it easy to drive. The point is cut to a sharp nail point which will penetrate either hard or soft wood without bending. It can be used on pipes in various orientations.

Material: Steel.

Finish: Electro-Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M111.

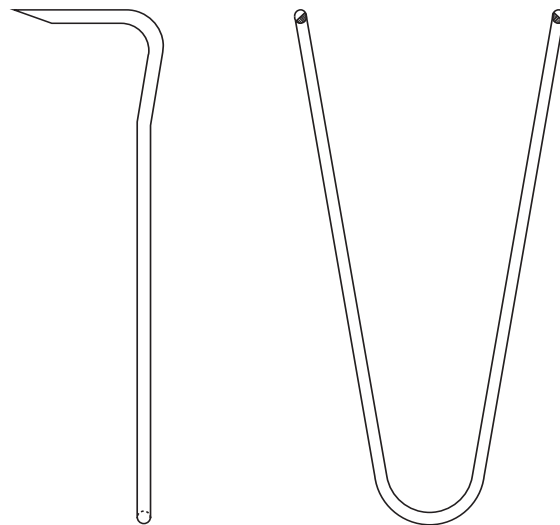


FIG. 111 – WIRE PIPE HOOKS

PIPE SIZE	WEIGHT PER 100 LENGTH OF HANGER				
	4	6	8	10	12
	102	152	203	254	305
½	0.06	0.08	0.10	0.12	0.14
15	0.03	0.04	0.05	0.05	0.06
¾	0.06	0.08	0.10	0.12	0.14
20	0.03	0.04	0.05	0.05	0.06
1	0.06	0.08	0.10	0.12	0.14
25	0.03	0.04	0.05	0.05	0.06
1¼	0.08	0.10	0.12	0.14	0.16
32	0.04	0.05	0.05	0.06	0.07
1½	0.08	0.10	0.12	0.14	0.16
40	0.04	0.05	0.05	0.06	0.07
2		0.10	0.12	0.14	0.16
50		0.05	0.05	0.06	0.07

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

SHORT CLIP

Figure 114

Sprinkler Clips are used where piping runs close to the ceilings or beams. Holes are drilled for No.18 wood screws and 1/4" bolts can be used on all sizes.

Material: Steel.

Compliance: Federal Specification A-A-1192A Type 26, MSS-SP-69 Type 26.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M114.

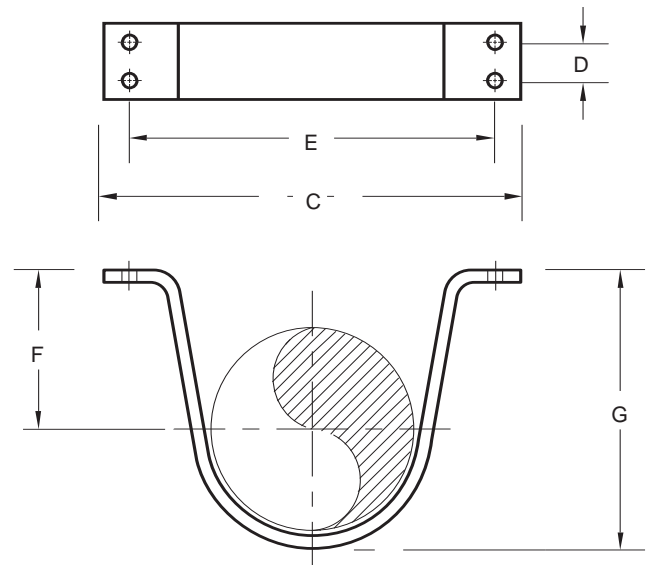


FIGURE 114 – SHORT CLIP

PIPE SIZE	MAX LOAD	C	D	E	F	G	WEIGHT EACH
1/2	300	3 3/8	1 1/4	2 3/4	1/2	1 1/8	0.20
15	1335	86	32	70	13	29	0.09
3/4	300	4 1/4	1 1/4	3	3/4	1 1/2	0.23
20	1335	108	32	76	19	38	0.10
1	300	4 1/2	1 1/4	3 1/4	3/4	1 5/8	0.26
25	1335	114	32	83	19	41	0.12
1 1/4	300	5	1 1/4	3 3/4	1 1/8	2 1/8	0.36
32	1335	127	32	95	29	54	0.16
1 1/2	300	5 1/2	1 1/4	4 1/4	1 1/4	2 1/2	0.54
40	1335	140	32	108	32	64	0.24
2	300	6	1 1/4	4 3/4	1 1/8	2 7/8	0.60
50	1335	152	32	121	35	73	0.27
2 1/2	500	6 1/2	1 1/2	5 1/4	1 3/4	3 3/8	1.40
65	2224	165	38	133	44	92	0.64
3	500	7 1/4	1 1/2	5 7/8	1 7/8	4	1.60
80	2224	181	38	149	48	102	0.73
4	500	8 1/4	1 1/2	7	2 1/2	5 1/2	1.90
100	2224	210	38	178	64	130	0.86

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FARENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

RISER CLAMP

Figure 124

This product is designed to support vertical piping by resting on shear lugs welded to the pipe. Shear lugs are not supplied.

The stated Maximum Loads are based upon the use of the clamp as a rigid support. Use of the clamp with springs units will double the given Maximum Loads. Rated loads are for up to 650° F (343° C).

Material: Carbon Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, finish, and pipe size. For Metric applications specify Figure M124.

NOTE: For your Special Riser Clamp requirements that are not covered by this product, please contact us to discuss your application.

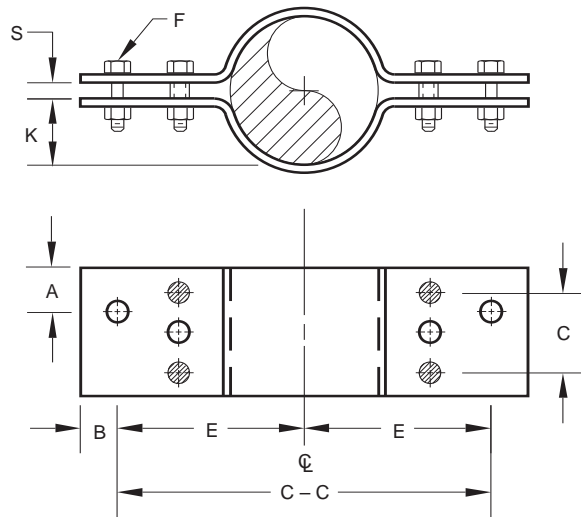


FIGURE 124 – RISER CLAMP

PIPE SIZE	MAX LOAD	A	B	C	C-C	E	F	K	S	WEIGHT EACH
2	900	1¼	2	-	18	9	¾	1¾	¾	17.5
50	4004	32	51	-	457	229	M10	5	19	7.9
2½	900	1¼	2	-	20	10	¾	1½	¾	19.1
65	4004	32	51	-	508	254	M10	27	19	8.7
3	1500	1½	2	-	20	10	½	1¾	¾	29.4
80	6673	38	51	-	508	254	M12	35	19	13.3
4	2200	1½	2	-	22	11	½	1⅞	¾	38.5
100	9786	38	51	-	559	279	M12	48	19	17.5
5	2200	¾	2	-	22	11	½	2¾	¾	43.2
125	9786	19	51	-	559	279	M12	60	19	19.6
6	3000	⅞	2	-	24	12	⅝	2¼	1	56.8
150	13345	22	51	-	610	305	M16	71	25	25.8
8	3000	⅞	2	-	27	13½	⅝	3¼	1	79.2
200	13345	22	51	-	686	343	M16	97	25	35.9
10	5500	1¼	2	-	30	15	⅞	4⅝	1½	143.3
250	24466	32	51	-	762	381	M22	117	38	65.0
12	7800	1⅜	2½	-	32	16	1	5½	1¾	183.7
300	34698	35	64	-	813	406	M24	140	44	83.3
14	7800	1⅜	2½	-	34	17	1	6⅛	1¾	194.5
350	34698	35	64	-	864	432	M24	156	44	88.2
16	9000	1½	2½	-	36	18	1⅛	7	2	224.7
400	40036	38	64	-	914	457	M30	178	51	101.9
18	9000	1½	2½	-	39	19½	1⅛	8	2	280.7
450	40036	38	64	-	991	495	M30	203	51	127.3
20	13500	1⅞	3	4	42	21	1⅜	8¾	2½	429.1
500	60053	48	76	102	1067	533	M36	222	64	194.6
24	13500	1⅞	3	4	45	22½	1⅜	10¾	2½	465.1
600	60053	48	76	102	1143	572	M36	273	64	211.0

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE SADDLE WITH YOKE

Figure 125

The Figure 125 is used for support of piping from below without welding to the pipe.

Rated loads are for up to 650 F (343 C). Maximum Galvanized Temperature is 450°F (232° C)

Material: Carbon Steel

Compliance: MSS-SP-58 Type 37, Federal Specification A-A-1192A Type 37 and BSPSS-BS3974

Finish: Plain, Painted, Galvanized

Ordering: Specify pipe size, figure number, and finish.

NOTE: The lower supporting pipe must be ordered separately. A Figure 138 Without Threads can be used. The stated Load of the Figure 125 is not applicable to the stanchion used or anyother method used to support the Figure 125.

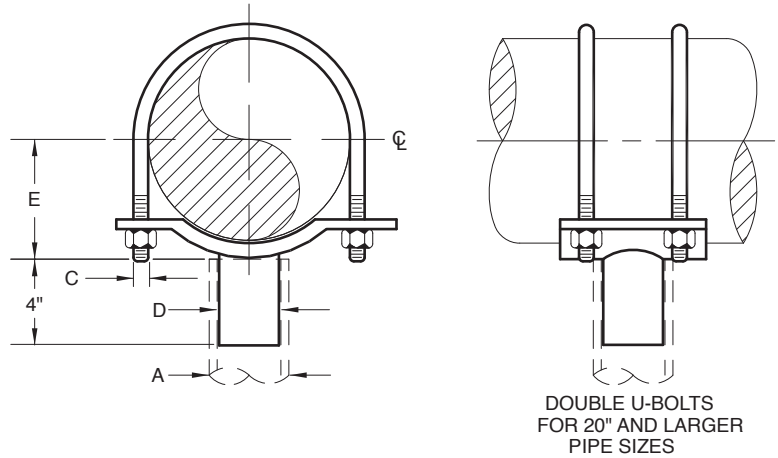


FIGURE 125 – PIPE SADDLE WITH YOKE

PIPE SIZE	MAXIMUM LOAD	SUPPORT PIPE A	C	STEM D	E	WEIGHT EACH
2	900	1½	⅜	1	1⅞	4.51
50	202	40	M10	25	37	2.05
2½	1200	2	½	1½	1⅞	4.85
65	270	65	M12	40	43	2.20
3	1200	2	½	1½	2	5.05
80	270	65	M12	40	51	2.29
4	1200	3	½	2½	2½	5.15
100	270	80	M12	65	64	2.34
5	1200	3	½	2½	3⅞	5.61
125	270	80	M12	65	78	2.54
6	1200	3	⅝	2½	3⅝	7.30
150	270	80	M16	65	92	3.31
8	1200	3	⅝	2½	4⅞	9.25
200	270	80	M16	65	119	4.20
10	1200	3	¾	2½	5⅝	13.75
250	270	80	M20	65	149	6.24
12	1200	3	⅞	2½	6⅞	15.50
300	270	80	M20	65	175	7.03
14	1500	4	⅞	3	7⅝	25.35
350	337	100	M20	80	194	11.50
16	1750	4	⅞	3	8⅝	30.80
400	393	100	M20	80	219	13.97
18	2000	4	1	3	9¾	37.64
450	450	100	M24	80	248	17.07
20	3500	6	(2)-1	5	10¾	75.35
500	787	150	(2)-M24	125	273	34.18
24	3500	6	(2)-1⅝	5	13	112.80
600	787	150	(2)-M30	125	330	51.17
30	3500	6	(2)-1⅝	5	16	137.30
750	787	150	(2)-M30	125	406	62.28
36	3500	8	(2)-1¼	6	19	210.15
900	787	200	(2)-M30	150	483	95.32

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

FLOOR SUPPORTS

Figure 125SP

Figure 136SP

Both Figure 125SP and 136SP are intended to support piping from below where there is no axial or transverse movement. Made special to customer design requirements, either may be furnished with holes in the base for bolting, or with no holes for welding.

Material: Carbon Steel, Stainless Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, pipe material, load, overall height, figure number, finish, and base plate bolting if needed.

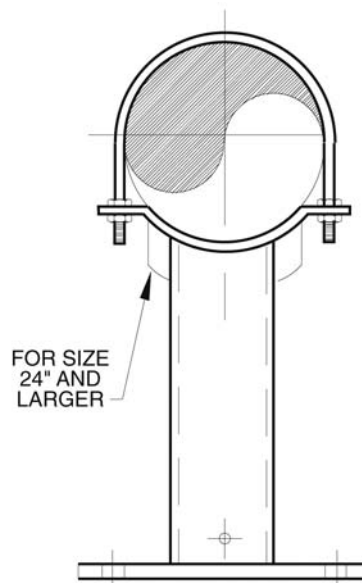


Figure 125SP

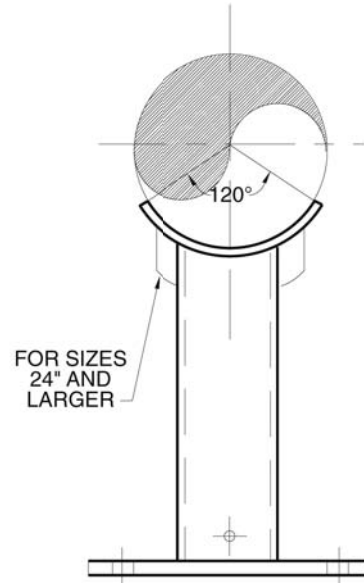


Figure 136SP

EXTENSION RISER CLAMP

Figure 126

The Figure 126 is designed for the support or steadying of vertical pipe risers. It is made of carbon steel and is designed to hold tight to the pipe, transmitting the load to the structure through the ears on each end. When possible the clamp should be placed under a coupling, hub, or lugs welded to the pipe.

NOTE: Bolt torque should be to industry standards. This product is not designed to be supported with rods. Use our Figure 124 when hanger rods are required.

Material: Carbon Steel

Compliance: Federal Specification MSS-SP-58 Type 8, A-A-1192A Type 8 and BSPSS-BS3974

Finish: Plain, Painted, Galvanized (450°F Maximum)

Ordering: Specify figure number, pipe size and finish.

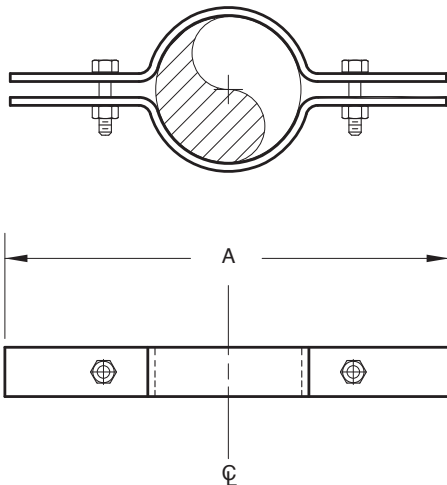


FIGURE 126 – EXTENSION RISER CLAMP

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
1/2	220	9	1.00
15	979	229	0.45
3/4	220	9 3/8	1.08
20	979	238	0.49
1	220	9 5/8	1.08
25	979	244	0.49
1 1/4	250	10	1.86
32	1112	254	0.84
1 1/2	250	10 1/4	1.22
40	1112	260	0.55
2	300	10 3/4	1.30
50	1335	6613	0.59
2 1/2	400	11 1/4	1.74
65	1779	286	0.79
3	500	12	1.98
80	2224	305	0.90
3 1/2	600	12 7/8	2.14
90	2669	327	0.97
4	750	13 5/8	2.28
100	3336	346	1.03
5	1500	13 3/4	3.60
125	6673	349	1.63
6	1600	15 1/4	3.68
150	7117	387	1.67
8	2500	18 1/2	7.26
200	11121	470	3.29
10	2500	20 3/4	11.0
250	11121	527	4.99
12	2700	22 3/4	15.9
300	12011	578	7.23
14	2700	24	17.4
350	12011	610	7.87
16	2900	26	29.7
400	12900	660	13.5
18	2900	28	31.6
450	12900	711	14.4
20	2900	30	34.8
500	12900	762	15.8
24	3200	34	52.0
600	14235	864	23.6

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

COPPER RISER CLAMP

Figure 126CT

The Figure 126CT is normally used for the support of uninsulated vertical tubing where no movement will occur. Please use our Figure 126 for carbon steel piping or Figure 126PVC for plastic coating requirements.

NOTE: This product is not designed to be supported with rods. Install using the maximum suggested torque values shown in the Technical Section of this catalog.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 8, MSS-SP-69 Type 8.

Finish: Copper.

Ordering: Specify tubing size and figure number. For Metric applications specify Figure M126CT.

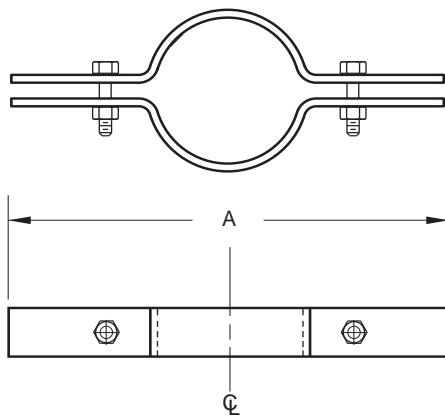


FIGURE 126CT – COPPER EXTENSION RISER CLAMP

TUBE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
½	220	9⅝	0.70
15	979	233	0.32
¾	220	9⅝	0.74
20	979	233	0.34
1	220	9½	0.75
25	979	241	0.34
1¼	220	9¾	0.77
32	979	248	0.35
1½	220	10⅞	0.80
40	979	257	0.36
2	220	10½	0.84
50	979	6532	0.38
2½	390	11	1.60
65	1735	279	0.73
3	530	11⅞	1.80
80	2358	295	0.82
3½	530	12¾	1.95
90	2358	321	0.88
4	530	13¾	2.04
100	2358	333	0.93
5	810	14	3.50
125	3603	356	1.59
6	1570	15	5.25
150	6984	381	2.38

PVC COATED RISER CLAMP

Figure 126PVC

The Figure 126PVC is normally used for the support of uninsulated vertical piping where no movement will occur. PVC coating the contact surface prevents galvanic corrosion with the pipe. Please use our Figure 126 for carbon steel piping or Figure 126CT for copper tubing requirements.

NOTE: This product is not designed to be supported with rods. Install using the maximum suggested torque values shown in the Technical Section of this catalog.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 8, MSS-SP-69 Type 8. Operating temperature should not exceed 1400° F / 600° C.

Finish: Polyvinyl Chloride

Ordering: Specify pipe size and figure number. For Metric applications Specify Figure M126PVC. A completely PVC coated Figure 126 is available upon request. (Bolts and nuts will not be PVC coated.)

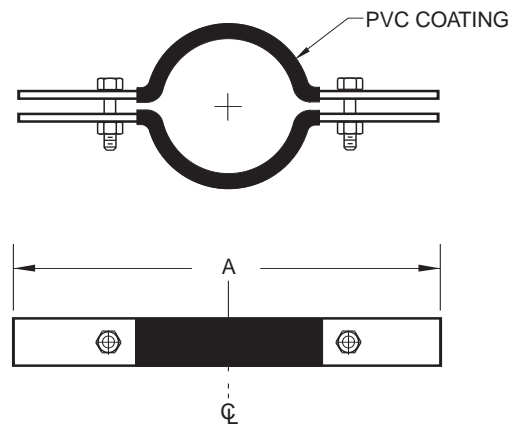


FIGURE 126PVC – PLASTIC COATED EXTENSION RISER CLAMP

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
½	225	9⅞	1.30
15	1001	238	0.59
¾	225	9⅞	1.36
20	1001	238	0.62
1	225	9⅞	1.38
25	1001	244	0.63
1¼	225	10	1.95
32	1001	254	0.88
1½	225	10⅞	2.01
40	1001	264	0.91
2	225	10¾	2.17
50	1001	6694	0.98
2½	390	11¼	2.29
65	1735	286	1.04
3	530	12	2.50
80	2358	305	1.13
4	810	13½	3.42
100	3603	343	1.55

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

PLASTIC PIPE RISER CLAMP

Figure 126LD

Figure 126LD PVC

The Figure 126LD is designed for the support or steadying of vertical PVC pipe risers for DWV applications. It is designed to hold tight to the pipe, transmitting the load to the structure through the ears on each end. When possible the clamp should be placed under a coupling, hub, or lugs welded to the pipe. For heavier loads please see our Figure 126. The Figure 126LD PVC is completely PVC coated.

NOTE: This product is not designed to be supported with rods.

Materials: Carbon Steel.

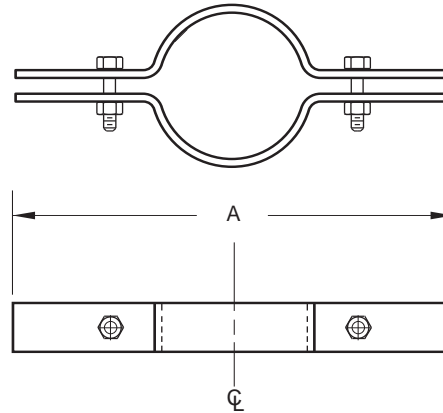
Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized, PVC.

Compliance: Federal Specification A-A-1192 Type 8, MSS-SP-69 (Type 8) and BSPSS-BS3974.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify M126LD or M126LD PVC.

FIGURE 126LD – RISER CLAMP
FIGURE 126LD – PVC RISER CLAMP

PIPE SIZE	MAXIMUM LOAD	A	WEIGHT EACH
1½	225	5¾	0.62
40	1001	146	0.28
2	225	6½	0.67
50	1001	3710	0.30
3	225	7¾	0.88
80	1001	184	0.40
4	225	8½	1.01
100	1001	216	0.46



ANCHOR CHAIR

Figure 127

The Figure 127 is composed of two plates, one notched for the correct pipe size and the other has holes punched for a U-bolt. Both pieces are welded together. The U-bolt has sufficient thread to allow for tightening to the pipe.

This anchor is used in conjunction with our Figure 84 and 139 Welded Steel Brackets. A square washer is set under the lips of angle iron sections of the Bracket and nuts tightened on the U-bolt to prevent movement of the anchor.

Made special to customer order.

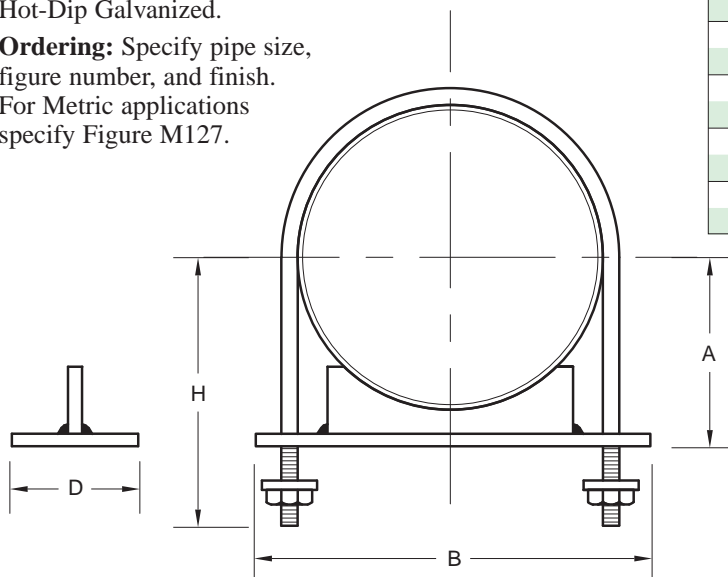
Material: Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M127.

FIG. 127 – ANCHOR CHAIR

PIPE SIZE	A	B	D	H	WEIGHT EACH
4	3	8	4	5	6.28
100	76	203	102	127	2.85
5	3¾	9¾	4	5¾	7.32
125	92	232	102	143	3.32
6	4⅞	10¼	5	6½	10.55
150	103	260	127	165	4.79
8	5⅞	12¼	5	7¾	15.25
200	135	311	127	197	6.92
10	6½	14½	5	9¼	21.30
250	165	368	127	235	9.66
12	7¾	16½	5	10¾	25.50
300	194	419	127	264	11.57
14	8½	18	5	11¼	31.50
350	216	457	127	286	14.29
16	9¾	20	5	12¾	40.00
400	244	508	127	314	18.14
18	10¾	22	6	13¾	49.50
450	276	559	152	346	22.45
20	12	24½	6	15	65.90
500	305	622	152	381	29.89
24	14	28½	6	17	81.00
600	356	724	152	432	36.74



PIPE SUPPORT

Figure 136

The Figure 136 is used in conjunction with a pipe standard and flange at the base to support piping from below. Both pipe standard and flange must be ordered separately.

Compliance: Federal Specification A-A-1192A Type 38, MSS-SP-69 Type 38.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications Specify Figure M136.

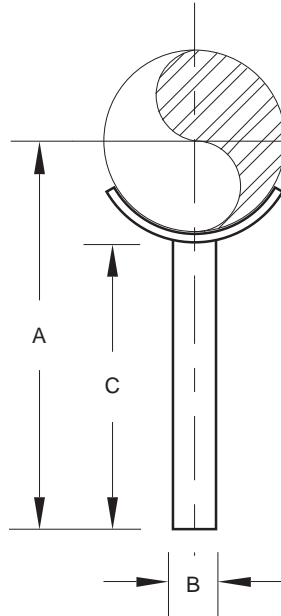


FIGURE 136 – PIPE SUPPORT

PIPE SIZE	A	SIZE B	ROD LENGTH C	WGT. SIZE
2	7 ⁷ / ₁₆	⁷ / ₈	6	1.57
50	192	M22	152	0.71
3	8 ¹ / ₂	⁷ / ₈	6	1.85
80	206	M22	152	0.84
4	8 ⁵ / ₈	1	6	2.70
100	219	M24	152	1.22
5	9 ¹³ / ₁₆	1	6	3.14
125	233	M24	152	1.42
6	9 ¹³ / ₁₆	1 ¹ / ₄	6	4.90
150	249	M30	152	2.22
8	10 ¹³ / ₁₆	1 ¹ / ₄	6	5.75
200	275	M30	152	2.61
10	11 ⁷ / ₈	1 ¹ / ₂	6	9.88
250	302	M36	152	4.48
12	12 ⁷ / ₈	1 ¹ / ₂	6	11.4
300	327	M36	152	5.17

ADJUSTABLE PIPE SUPPORT

Figure 137

Designed to support pipe from below, the Figure 137 is used in conjunction with flange or base mounted pipe column. The stem is threaded its full length and furnished with a nut to allow for vertical adjustment.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192 Type 49, and MSS SP-69 Type 49.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify figure number, finish and pipe size. For Metric applications specify M137.

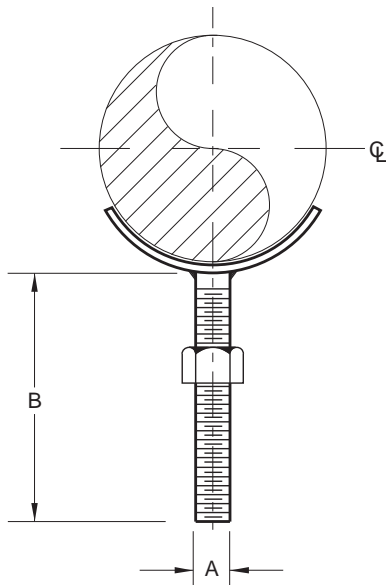


FIGURE 137 – ADJUSTABLE PIPE SUPPORT

PIPE SIZE	A	B	WEIGHT EACH
1	⁵ / ₈	8	0.70
25	M16	203	0.32
1 ¹ / ₂	⁵ / ₈	8	0.74
40	M16	203	0.34
2	⁵ / ₈	8	0.80
50	M16	203	0.36
2 ¹ / ₂	⁵ / ₈	8	0.84
65	M16	203	0.38
3	⁵ / ₈	8	1.02
80	M16	203	0.46
3 ¹ / ₂	⁵ / ₈	8	1.06
90	M16	203	0.48
4	⁷ / ₈	8	1.86
100	M22	203	0.84
5	⁷ / ₈	8	2.50
125	M22	203	1.13
6	1	8	2.98
160	M24	203	1.35
8	1	8	3.28
200	M24	203	1.49
10	1 ¹ / ₄	8	6.30
250	M30	203	2.86
12	1 ¹ / ₄	8	7.00
300	M30	203	3.18

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

THREADED BASE STAND

Figure 138

The Figure 138 is designed for use with our Figure 101 and Figure 125.

Materials: Carbon Steel.

Compliance: To Federal Specification A-A-1192A Types 36, 37, 38, MSS-SP-69 Types 36, 37, 38 when used with the appropriate Pipe Saddle type attachment.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, pipe size, height, and finish. For Metric applications specify Figure M138.

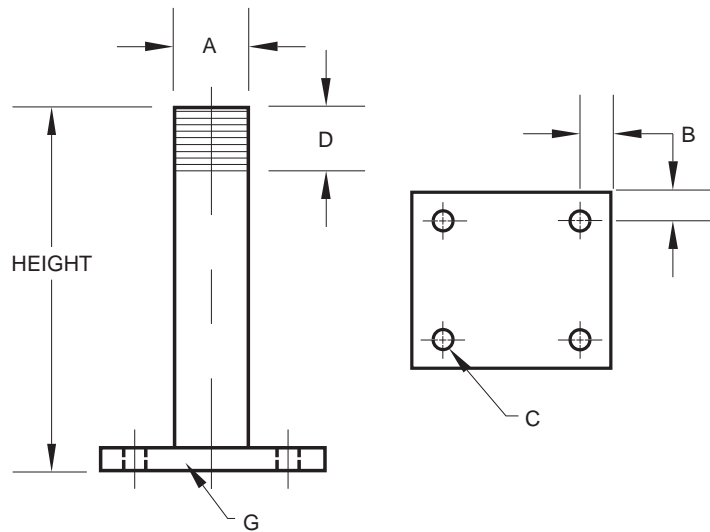


FIGURE 138 – THREADED BASE STAND

PIPE SIZE A	B	C	D	G	WEIGHT EACH
1	1	$\frac{1}{16}$	$1\frac{1}{2}$	$\frac{1}{4} \times 6 \times 6$	4.95
25	25	14	38	6 x 152 x 152	2.25
$1\frac{1}{4}$	1	$\frac{1}{16}$	$1\frac{1}{2}$	$\frac{1}{4} \times 6 \times 6$	5.83
32	25	14	38	6 x 152 x 152	2.64
$1\frac{1}{2}$	1	$\frac{1}{16}$	$1\frac{1}{2}$	$\frac{1}{4} \times 6 \times 6$	6.49
40	25	14	38	6 x 152 x 152	2.94
2	1	$\frac{1}{16}$	$1\frac{1}{2}$	$\frac{1}{4} \times 6 \times 6$	7.85
50	25	14	38	6 x 152 x 152	3.56
$2\frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{16}$	$1\frac{1}{2}$	$\frac{3}{8} \times 8 \times 8$	15.20
65	32	14	38	10 x 203 x 203	6.91
3	$1\frac{1}{2}$	$\frac{15}{16}$	$1\frac{1}{2}$	$\frac{3}{8} \times 12 \times 12$	26.20
80	40	21	38	10 x 305 x 305	11.90
4	$1\frac{1}{2}$	$\frac{15}{16}$	2	$\frac{1}{2} \times 12 \times 12$	35.90
100	40	24	51	13 x 305 x 305	16.30
6	$1\frac{1}{2}$	$1\frac{1}{8}$	2	$\frac{1}{2} \times 18 \times 18$	73.50
150	40	29	51	13 x 457 x 457	9.40

Weights are based upon a height "H" of 18"

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE CHAIR

Figure 145

Pipe Chairs are used to support piping in underground trenches or on top of piers above or below ground. This chair allows from 2½" inches to 4" inches clearance under pipeline.

Made special to customer order.

Material: Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M145.

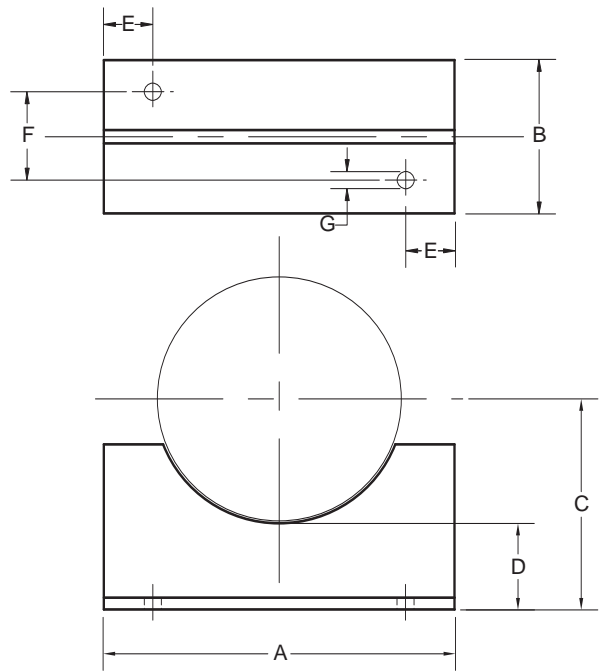


FIGURE 145 – PIPE CHAIR

PIPE SIZE	A	B	C	D	E	F	HOLE G	WEIGHT EACH
3	4¼	3⅞	4⅝	2⅞	¾	2½	⅞	2.75
80	108	79	110	65	19	54	11	1.25
4	6¼	3⅞	5⅝	3⅞	1⅝	2⅝	⅞	5.25
100	159	90	137	79	24	59	14	2.38
5	7½	4⅞	6⅞	3¾	1	2⅞	⅞	7.90
125	191	103	154	83	25	68	14	3.58
6	8⅜	4½	6⅞	3¾	1	3⅞	⅞	10.0
150	224	114	167	83	25	81	14	4.54
8	10¼	5½	7⅞	3⅞	1⅞	4	1⅞	16.3
200	273	140	202	92	33	102	17	7.37
10	13	6½	9⅞	3⅞	1¼	5	⅞	25.8
250	330	165	230	94	32	127	16	11.7
12	15	7⅞	10½	4⅞	1½	5⅞	1⅞	33.3
300	381	192	267	105	38	141	17	15.1

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

DUCTILE IRON PIPE CLAMP

Figure 158

The Figure 158 can be used to secure mechanical joint piping or socket fittings together to prevent separation under pressure either under or above ground, vertically or horizontally. If use in this fashion two (2) Figure 258 Socket Clamp Washers and Figure 133 Rods are also required, but must be ordered separately. The Figure 158 may also be used to support and guide vertical Ductile Iron pipe.

Materials: Carbon Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M158.

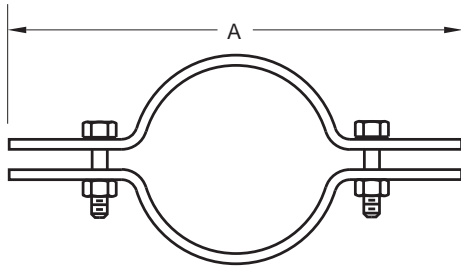


FIGURE 158 – UNDERGROUND PIPE CLAMP

PIPE SIZE	ACTUAL PIPE O.D.	A	WASHER SIZE	WEIGHT EACH
3	3.96	12 $\frac{3}{4}$	$\frac{3}{4}$	9.00
80	101	311	M20	4.08
4	4.8	13 $\frac{3}{4}$	$\frac{3}{4}$	9.00
100	122	349	M20	4.08
6	6.9	15 $\frac{3}{4}$	$\frac{1}{2}$	10.70
150	175	400	M20	9.40
8	9.05	18	$\frac{3}{4}$	12.20
200	230	457	M20	5.54
10	11.1	20 $\frac{3}{4}$	$\frac{3}{4}$	14.60
250	282	511	M20	6.64
12	13.2	22 $\frac{3}{4}$	$\frac{3}{4}$	16.60
300	335	581	M20	7.53
14	15.3	25 $\frac{1}{2}$	$\frac{1}{4}$	41.90
350	389	648	M30	18.99
16	17.4	28	$\frac{1}{4}$	61.90
400	442	711	M30	28.10
18	19.5	33	$\frac{1}{4}$	65.10
450	495	838	M30	29.50
20	21.6	35 $\frac{1}{2}$	$\frac{1}{2}$	92.20
500	549	902	M36	41.80
24	25.8	40 $\frac{1}{2}$	$\frac{1}{2}$	122.70
600	655	1029	M36	55.70
30	32	48	$\frac{1}{2}$	184.00
750	813	1219	M36	83.50

DOUBLE BOLT DUCTILE IRON PIPE CLAMP

Figure 158DB

The Figure 158DB can be used in the same manner as the Figure 158, except the overall length is longer.

Materials: Carbon Steel.

Compliance: NFPA Standard NFPA-24 for Outside Protection.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M158DB.

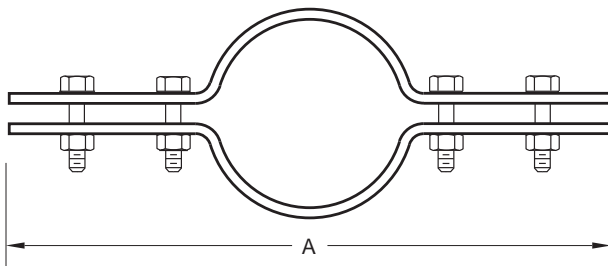


FIGURE 158DB – UNDERGROUND PIPE CLAMP

PIPE SIZE	ACTUAL PIPE O.D.	A	WASHER SIZE	WEIGHT EACH
3	3.96	13 $\frac{3}{4}$	$\frac{5}{8}$	9.50
80	101	340	M16	4.31
4	4.8	14 $\frac{3}{4}$	$\frac{5}{8}$	10.00
100	122	375	M16	4.54
6	6.9	17	$\frac{5}{8}$	12.00
150	175	432	M16	9.40
8	9.05	19 $\frac{1}{2}$	$\frac{5}{8}$	21.00
200	230	495	M16	9.53
10	11.1	23 $\frac{3}{4}$	$\frac{3}{4}$	24.00
250	282	591	M20	10.89
12	13.2	25 $\frac{1}{2}$	$\frac{7}{8}$	36.00
300	335	648	M22	16.33
14	15.3	28 $\frac{3}{4}$	$\frac{1}{4}$	48.60
350	389	718	M30	22.04
16	17.4	31 $\frac{1}{2}$	$\frac{1}{4}$	71.80
400	442	800	M30	32.50
18	19.5	35 $\frac{1}{4}$	$\frac{1}{4}$	85.30
450	495	895	M30	38.70
20	21.6	37 $\frac{3}{4}$	$\frac{1}{2}$	102.00
500	549	959	M36	46.30
24	25.8	44 $\frac{1}{2}$	$\frac{1}{2}$	136.60
600	655	1130	M36	62.00
30	32.0	53	$\frac{1}{4}$	204.00
750	813	1346	M42	93.00

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

UNDERGROUND SOCKET CLAMP WASHER

Figure 258

The Figure 258 is for use with our Figure 158 and Figure 158DB Underground Clamp. Two (2) Washers are required per clamp. When installed the lug bears against the bolt which prevents the washer from sliding off the clamp.

Material: Cast Iron.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M258.

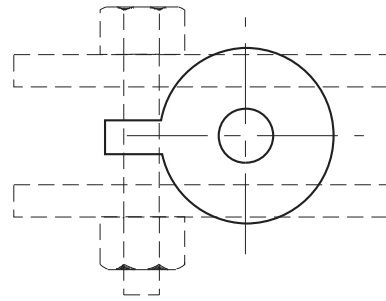
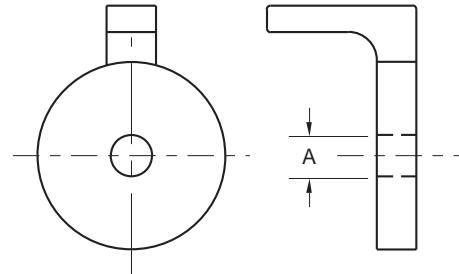


FIGURE 258 – UNDERGROUND SOCKET CLAMP WASHER

ROD SIZE A	USED WITH CLAMP SIZE	WEIGHT EACH
3/4	4" to 12"	1.25
M20	100 to 300	0.57
1 1/4	14" to 18"	2.85
M30	350 to 450	1.29
1 1/2	20" to 36"	7.06
M36	500 to 900	3.20



OFFSET PIPE CLAMP

Figure 179

The Offset Pipe Clamp is used on pipe lines running at a fixed distance from a wall or floor. The standard clearance is two inches (51mm) from the O.D. of pipe to the face of the surface. Non-standard clearances can be fabricated upon request.

Material: Carbon Steel.

Load Rating: Up to 650° F (343° C).

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M179.

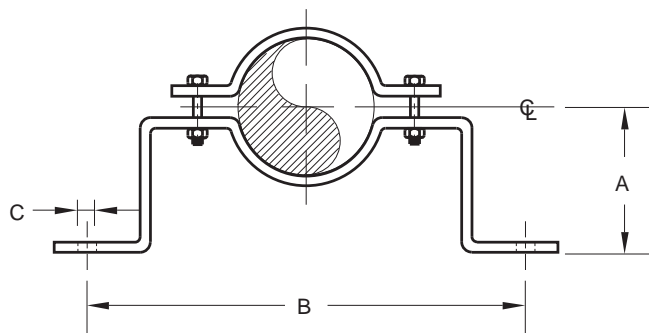


FIGURE 179 – OFFSET PIPE CLAMP

PIPE SIZE	MAX LOAD	A	B	C	WGT EACH
3/4	190	2 3/4	8 3/4	7/16	1.3
20	845	70	222	11	0.59
1	190	2 7/8	9 1/4	7/16	1.4
25	845	73	235	11	0.64
1 1/4	190	3 1/16	9 3/4	7/16	1.5
32	845	78	248	11	0.68
1 1/2	190	3 3/16	10	7/16	1.6
40	845	81	254	11	0.73
2	420	3 1/2	11 1/4	5/16	2.8
50	1868	89	286	14	1.27
2 1/2	420	3 3/4	11 3/4	5/16	2.9
65	1868	95	298	14	1.32
3	420	4 1/16	12 7/8	5/16	3.2
80	1868	103	327	14	1.45
4	610	4 3/16	13 7/8	5/16	4.2
100	2714	116	352	14	1.91
5	610	5 1/16	15 3/8	11/16	6.5
125	2714	129	397	17	2.95
6	870	5 5/8	16 3/4	11/16	7.2
150	3870	143	425	17	3.27
8	870	6 1/8	18 3/4	11/16	8.3
200	3870	168	476	17	3.76
10	1050	7 3/8	21 1/2	13/16	12.4
250	4671	187	546	21	5.62
12	1200	8 3/8	24 7/8	13/16	21.0
300	5338	213	632	21	9.53

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

TWO BOLT PIPE CLAMP

Figure 175
Figure 175SP

Designed to suspend cold or hot pipe lines where little or no insulation is required. The Figure 175 is usually used with a Figure 279 Weldless Eynut, or Figure 93 Welded EyeroD. See Figure 298 Heavy Duty Two Bolt Clamp when higher loads are required. We will also design to meet special requirements such as special pipe sizes, order Figure 175SP.

Rated Loads are for up to 750° F (399° C).

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 4, MSS-SP-69 Type 4 and BSPSS-BS3974.

Finish: Plain, Painted, Electro-Galv., Hot-Dip Galv.

Ordering: Specify figure number, finish and pipe size. Also, include any special requirements for Figure 175SP. For Metric applications specify Figure M175 or M175SP.

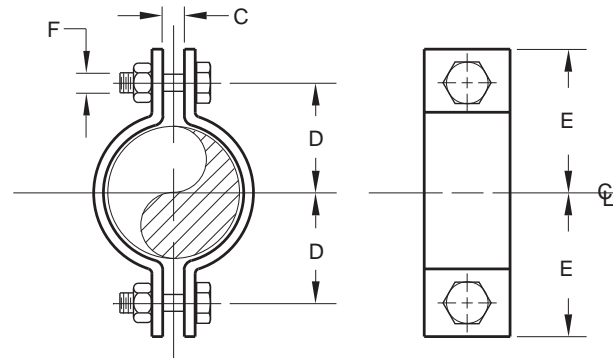


FIGURE 175 – TWO BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD		C	ROD TAKE OUT D	E	F	WEIGHT EACH
	650° F / 343° C	750° F / 343° C					
1/2	500	445	3/8	1 1/8	1 5/8	5/16	0.31
15	2224	1980	10	29	41	M8	0.14
3/4	500	445	3/8	1 1/4	1 3/4	5/16	0.35
20	2224	1980	10	32	44	M8	0.16
1	500	445	3/8	1 3/8	1 7/8	5/16	0.39
25	2224	1980	10	35	48	M8	0.18
1 1/4	500	445	3/8	1 5/8	2 1/8	5/16	0.40
32	2224	1980	10	41	54	M8	0.18
1 1/2	800	715	3/8	1 3/4	2 1/4	5/16	0.45
40	3559	3181	10	44	57	M8	0.20
2	1040	930	1/2	2 1/8	2 5/8	1/2	1.23
50	4626	4137	13	54	67	M12	0.56
2 1/2	1040	930	5/8	2 5/8	3 1/8	1/2	1.33
65	4626	4137	16	67	79	M12	0.60
3	1040	930	5/8	3	3 1/2	1/2	1.53
80	4626	4137	16	76	89	M12	0.69
4	1040	930	3/4	3 5/8	4 3/8	1/2	2.20
100	4626	4137	19	92	111	M12	1.00
5	1040	930	3/4	4 1/4	5	1/2	2.39
125	4626	4137	19	108	127	M12	1.08
6	1615	1440	7/8	5 1/4	6 1/4	1/2	5.87
150	7184	6406	22	133	159	M12	2.66
8	1615	1440	1	6 3/8	7 3/8	3/4	6.95
200	7184	6406	25	162	187	M20	3.15
10	2490	2220	1	7 5/8	8 3/4	7/8	14.39
250	11077	9875	25	194	222	M22	6.53
12	2490	2220	1	8 3/4	10 1/4	7/8	16.73
300	11077	9875	25	222	260	M22	7.59
14	2490	2220	1 1/8	9 1/4	10 5/8	7/8	21.26
350	11077	9875	29	235	270	M22	9.64
16	2490	2220	1 1/8	10 1/4	11 5/8	7/8	23.39
400	11077	9875	29	260	295	M22	10.61
18	3060	2730	1 1/4	11 5/8	13	1	32.96
450	13612	12144	32	295	330	M24	14.95
20	3060	2730	1 3/8	12 3/4	14 1/8	1 1/8	36.74
500	13612	12144	35	324	359	M30	16.67
24	3060	2730	1 1/2	15 1/4	16 7/8	1 1/4	52.96
600	13612	12144	38	387	429	M30	24.02
30	3500	3360	2	18 1/2	20 3/4	1 1/2	103.50
750	15569	14947	51	470	527	M36	46.95

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

LIGHT DUTY CLEVIS HANGER

Figure 200

Designed to support non-insulated, stationary lines from above allowing for approximately 1" to 1½" of vertical adjustment after the pipe is in place. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 1, MSS-SP-69 Type 1.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M200.

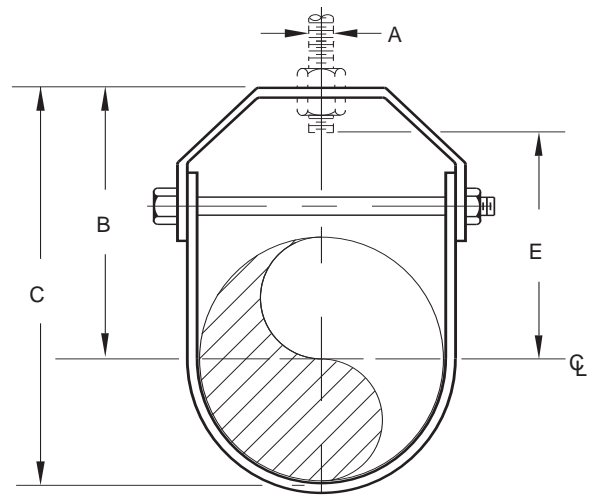


FIGURE 200 – LIGHT DUTY CLEVIS HANGER

PIPE SIZE	MAXIMUM LOAD	A	B	C	E	WEIGHT EACH
½	150	¾	1⅞	2¾	¾	0.27
15	667	M10	48	60	19	0.12
¾	250	¾	2¾	2⅞	1½	0.29
20	1112	M10	60	73	38	0.13
1	250	¾	2¾	3⅞	1⅞	0.33
25	1112	M10	60	79	41	0.15
1¼	250	¾	2⅞	3¼	2⅞	0.36
32	1112	M10	73	95	54	0.16
1½	250	¾	3	4	2¼	0.42
40	1112	M10	76	102	57	0.19
2	250	¾	3½	4¾	2¾	0.52
50	1112	M10	89	121	70	0.24
2½	350	½	4	5½	2⅞	0.81
65	1557	M12	102	140	73	0.37
3	350	½	4¼	6⅞	3¼	0.90
80	1557	M12	108	156	83	0.41
3½	350	½	4⅞	6½	3⅞	0.99
90	1557	M12	111	165	86	0.45
4	400	¾	5½	7⅞	4⅞	1.40
100	1779	M16	140	200	111	0.64

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

VEE CLEVIS HANGER

Figure 200V

Designed to support non-insulated, stationary, plastic lines from above. Used with Figure 200VT Vee Trough (not furnished). The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 1, MSS-SP-69 Type 1.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M200V.

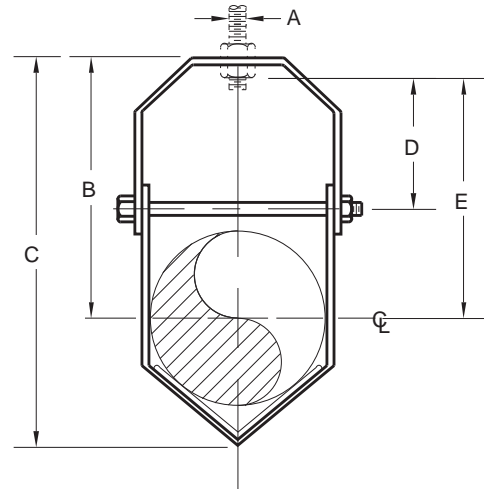


FIGURE 200V – VEE CLEVIS HANGER

SIZE	PIPE SIZE	MAXIMUM LOAD	A	B	C	D	E	WEIGHT EACH
1	½	150	¾	4¾	5½	1½	4⅞	0.38
1	15	667	M10	121	140	41	110	0.17
1	¾	150	¾	4⅞	5½	1½	4⅞	0.38
1	20	667	M10	116	140	41	105	0.17
1	1	150	¾	4¾	5½	1½	3⅞	0.38
1	25	667	M10	111	140	41	100	0.17
1	1¼	150	¾	4½	5½	1½	3⅞	0.38
1	32	667	M10	105	140	41	94	0.17
1	1½	150	¾	4	5½	1½	3⅞	0.38
1	40	667	M10	102	140	41	90	0.17
1	2	150	¾	3⅞	5½	1½	3¼	0.38
1	50	667	M10	94	140	41	83	0.17
2	2½	150	¾	6⅞	8¼	1¾	5⅞	1.15
2	65	667	M16	168	222	44	148	0.52
2	3	150	¾	6⅞	8¼	1¾	5⅞	1.15
2	80	667	M16	157	222	44	137	0.52
2	3½	150	¾	5⅞	8¼	1¾	5	1.15
2	90	667	M16	148	222	44	127	0.52
2	4	150	¾	5⅞	8¼	1¾	4⅞	1.15
2	100	667	M16	138	222	44	117	0.52

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

WALL PIPE SUPPORT

Figure 221

The Figure 221 is used to support steel or cast iron pipe close to walls, piers, or in a trench. These supports can be made to carry pipelines at various distances from the wall,

Also for Hot Water Tanks 12" inches to 36" inches in diameter. Prices furnished in accordance with customer specifications.

Made special to customer order.

Material: Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M221.

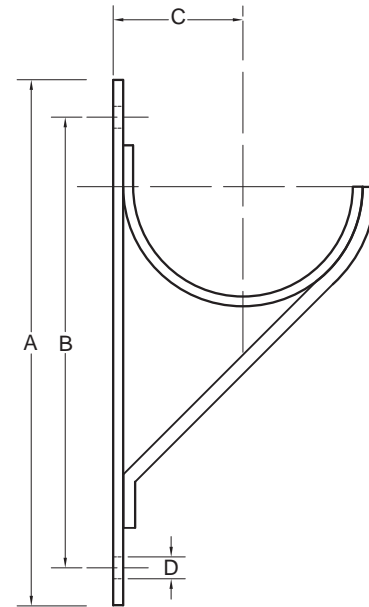


FIGURE 221 – WALL PIPE SUPPORT

PIPE SIZE	A	B	C	D	WEIGHT EACH
3	9 ¹ / ₈	7 ⁷ / ₈	2 ¹ / ₄	⁵ / ₁₆	2.39
80	232	200	57	14	1.08
4	10 ¹ / ₂	9 ¹ / ₄	2 ³ / ₈	⁵ / ₁₆	2.56
100	267	235	70	14	1.16
5	12 ³ / ₄	11 ¹ / ₄	3 ³ / ₁₆	⁵ / ₁₆	4.05
125	324	286	84	14	1.84
6	14	12 ¹ / ₂	3 ¹³ / ₁₆	⁵ / ₁₆	4.48
150	356	318	97	14	2.03
8	18	16	5 ⁵ / ₈	¹ / ₁₆	15.3
200	457	406	137	17	6.94
10	22	19 ¹ / ₂	6 ³ / ₈	¹ / ₁₆	23.4
250	559	495	162	17	10.6
12	24 ¹ / ₂	22	7 ³ / ₈	¹ / ₁₆	26.9
300	622	559	187	17	12.2

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

SHORT U-BOLT

Figure 222

The Figure 222 is recommended for use as a support for piping where the tangent lengths are too long to use a Figure 283. It is supplied with two hex nuts.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 2, MSS-SP69 Type 24, and BSPSS-BS3974.

Finish: Plain, Electro-Galvanized, or Hot-Dip Galvanized (Rod Size 1/4" cannot be Hot-Dip Galvanized).

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify M222.

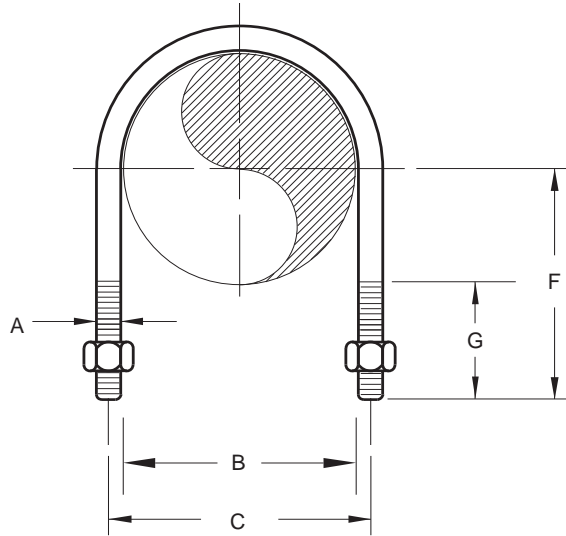


FIGURE 222 - SHORT U-BOLT

PIPE SIZE	MAX LOAD 650° F / 343° C	STOCK SIZE A	B	C	F	G	WEIGHT EACH
1/2	480	1/4	7/8	1 1/4	1 1/4	3/4	0.08
15	2135	M6	22	29	32	19	0.04
3/4	480	1/4	1 1/4	1 1/4	1 1/4	3/4	0.09
20	2135	M6	29	35	35	19	0.04
1	480	1/4	1 3/8	1 3/8	1 3/8	3/4	0.10
25	2135	M6	35	41	35	19	0.05
1 1/2	1200	3/8	7/8	1 1/4	1 1/4	3/4	0.08
15	5338	M10	22	32	32	19	0.04
3/4	1200	3/8	1 1/4	1 1/2	1 1/4	3/4	0.09
20	5338	M10	29	38	35	19	0.04
1	1200	3/8	1 3/8	1 3/8	1 3/8	3/4	0.10
25	5338	M10	35	44	35	19	0.05
1 1/4	1200	3/8	1 1/4	2 1/4	1 1/4	1	0.27
32	5338	M10	44	54	44	25	0.12
1 1/2	1200	3/8	2	2 3/8	1 1/4	1	0.30
40	5338	M10	51	60	48	25	0.14
2	1200	3/8	2 1/2	2 3/4	2 1/4	1	0.34
50	5338	M10	64	73	57	25	0.15
2 1/2	2200	1/2	3	3 1/2	2 3/4	1 1/4	0.72
65	9786	M12	76	89	67	32	0.33
3	2200	1/2	3 3/8	4 1/4	3 3/4	1 1/4	0.80
80	9786	M12	92	105	83	32	0.36
3 1/2	2200	1/2	4 1/4	4 3/4	3 1/2	1 1/4	0.95
90	9786	M12	105	117	89	32	0.43
4	2200	1/2	4 3/8	5 1/4	3 1/2	1 1/4	0.95
100	9786	M12	117	130	89	32	0.43
5	2200	1/2	5	6	4 1/4	1 1/4	1.13
125	9786	M12	143	156	108	32	0.51
6	3600	3/4	6 1/4	7 1/4	4 3/4	1 1/4	1.24
150	16014	M16	171	187	121	32	0.56
8	3600	3/4	8 3/4	9 3/4	5 3/4	1 1/4	2.10
200	16014	M16	222	238	137	32	0.95
10	5400	3/4	10 3/4	11 3/4	7	1 1/2	2.68
250	24021	M20	276	295	178	38	1.22
12	7500	3/4	12 3/4	13 3/4	7 3/4	1 1/2	3.20
300	33363	M22	327	349	200	38	1.45

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

RETURN LINE OFFSET HOOK

Figure 227

Designed to support light duty pipe lines with clearance requirements that run along walls or beams.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galv.

Ordering: Specify pipe size, and figure number. For Metric applications specify Figure M227.

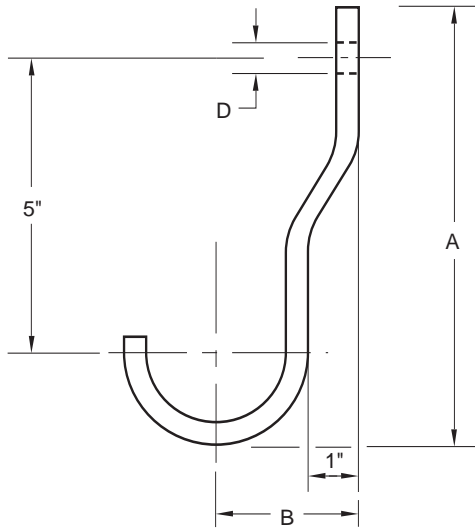


FIGURE 227 – RETURN LINE OFFSET HOOK

PIPE SIZE	MAX LOAD	A	B	D	WGT EACH
½	200	6 ⁵ / ₃₂	1 ⁵ / ₈	¹ / ₁₆	0.53
15	890	160	41	14	0.24
¾	200	6 ¹ / ₈	1 ¹¹ / ₁₆	¹ / ₁₆	0.55
20	890	156	43	14	0.25
1	200	6 ⁹ / ₁₆	1 ⁷ / ₈	¹ / ₁₆	0.81
25	890	167	48	14	0.37
1¼	200	6 ⁵ / ₈	2 ¹ / ₁₆	¹ / ₁₆	0.84
32	890	168	52	14	0.38
1½	200	6 ¹¹ / ₁₆	2 ³ / ₁₆	¹ / ₁₆	0.89
40	890	170	56	14	0.40
2	200	7 ³ / ₃₂	2 ⁵ / ₈	¹ / ₁₆	0.96
50	890	4315	67	14	0.44
2½	350	7 ¹⁵ / ₃₂	2 ¹¹ / ₁₆	¹ / ₁₆	1.26
65	1557	190	68	14	0.57
3	350	7 ⁷ / ₈	3	¹ / ₁₆	1.38
80	1557	194	76	14	0.63
3½	350	8 ¹ / ₃₂	3 ¹ / ₄	¹ / ₁₆	1.47
90	1557	204	83	14	0.67
4	450	8 ⁵ / ₁₆	3 ³ / ₈	¹ / ₁₆	2.39
100	2002	217	92	14	1.08
5	450	9	4 ³ / ₁₆	¹ / ₁₆	3.90
125	2002	229	106	14	1.77
6	450	9 ³ / ₈	4 ¹¹ / ₁₆	¹ / ₁₆	4.25
150	2002	238	119	14	1.93

RETURN LINE HOOK

Figure 227S

Designed to support light duty pipe lines that run next to walls or beams.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, and figure number. For Metric applications specify Figure M227S.

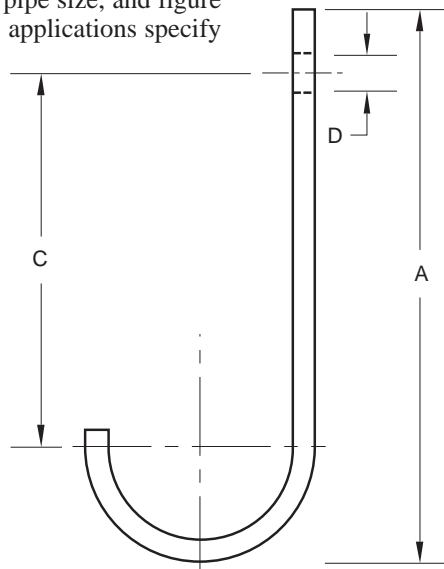


FIGURE 227S – RETURN LINE HOOK

PIPE SIZE	MAX LOAD	A	C	D	WGT EACH
½	200	6 ⁵ / ₃₂	5	¹ / ₁₆	0.51
15	890	160	127	14	0.23
¾	200	6 ¹ / ₈	5	¹ / ₁₆	0.53
20	890	156	127	14	0.24
1	200	6 ⁹ / ₁₆	5	¹ / ₁₆	0.80
25	890	167	127	14	0.36
1¼	200	6 ⁵ / ₈	5	¹ / ₁₆	0.83
32	890	168	127	14	0.38
1½	200	6 ¹¹ / ₁₆	5	¹ / ₁₆	0.87
40	890	170	127	14	0.39
2	200	7 ³ / ₃₂	5	¹ / ₁₆	0.93
50	890	4315	127	14	0.42
2½	350	7 ¹⁵ / ₃₂	5	¹ / ₁₆	1.16
65	1557	190	127	14	0.53
3	350	7 ⁷ / ₈	5	¹ / ₁₆	1.27
80	1557	194	127	14	0.58
3½	350	8 ¹ / ₃₂	5	¹ / ₁₆	1.37
90	1557	204	127	14	0.62
4	350	8 ⁵ / ₁₆	5	¹ / ₁₆	2.19
100	1557	217	127	14	0.99
5	450	9	5	¹ / ₁₆	3.50
125	2002	229	127	14	1.59
6	450	9 ³ / ₈	5	¹ / ₁₆	4.15
150	2002	238	127	14	1.88

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

ONE HOLE PIPE CLAMP

Figure 237

Designed to support light duty pipe lines that run next to walls or beams.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number and finish. For Metric applications specify Figure M237S.

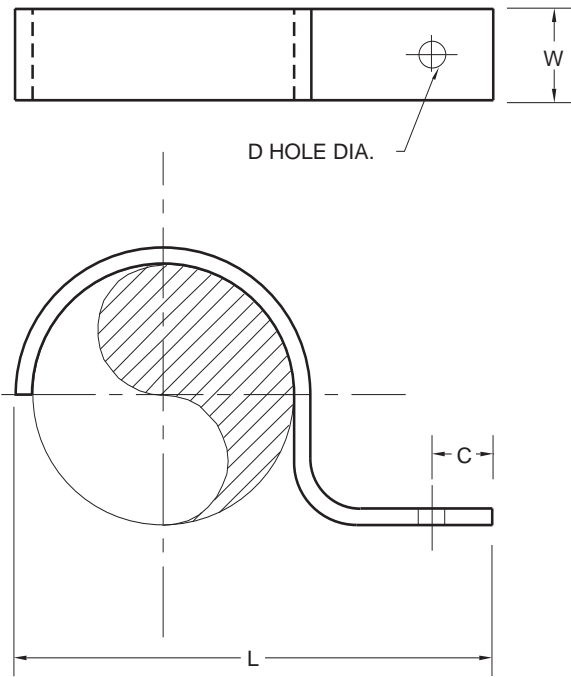


FIGURE 226 – ONE HOLE PIPE CLAMP

PIPE SIZE	C	D	L	W	WEIGHT EACH
1/2	7/8	5/32	2 5/8	3/4	0.05
15	22	7	67	19	0.02
3/4	1	5/32	3	1	0.06
20	25	7	76	25	0.02
1	1 1/4	5/32	3 1/4	1	0.09
25	29	7	83	25	0.04
1 1/4	7/8	11/32	3 1/2	1	0.12
32	22	9	89	25	0.05
1 1/2	1 1/4	13/32	4 1/2	1	0.16
40	32	10	114	25	0.07
2	1 1/4	13/32	6 5/8	1	0.24
50	32	10	168	25	0.11
2 1/2	1 1/2	3/16	6 5/8	1 1/4	0.50
65	38	14	168	32	0.23
3	1 1/2	3/16	6 1/2	1 1/4	0.69
80	38	14	165	32	0.31
4	1 1/2	3/16	8	1 1/4	1.40
100	38	14	203	32	0.64

PIPE SUPPORT

Figure 247

The Figure 247 is used in conjunction with a pipe stand and flange at the base to support piping from below. Both pipe stand and base must be ordered separately. Please see Figure 138.

Load Rating: Up to 650° F (343° C).

Compliance: Federal Specification A-A-1192A Type 38, MSS-SP-69 Type 38.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M247.

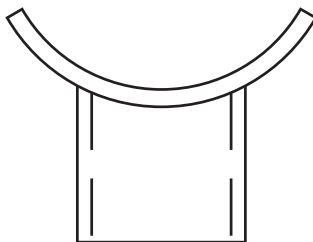


FIGURE 247 – PIPE SUPPORT

PIPE SIZE	COUPLING PIPE SIZE	WEIGHT EACH
2	1 1/4	1.35
50	32	0.61
3	1 1/2	2.45
80	40	1.11
4	2	3.63
100	50	1.65
5	2	4.30
125	50	1.95
6	2 1/2	7.03
150	65	3.19
8	2 1/2	8.53
200	65	3.87
10	3	13.00
250	80	5.91
12	3	15.10
300	80	6.84

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ADJUSTABLE SPLIT SWIVEL HANGER

Figure 240

Designed to support non-insulated, stationary lines from above. The hinged design is easier to install, making it ideal for retrofit needs. Vertical adjustment is achieved by turning the swivel. Pipe sizes 3/4" to 2" and 10 to 20 mm are available in the window cutout.

Material: Malleable Iron

Compliance: ASME B31-69 (Type 6)

Finish: Plain

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M240.

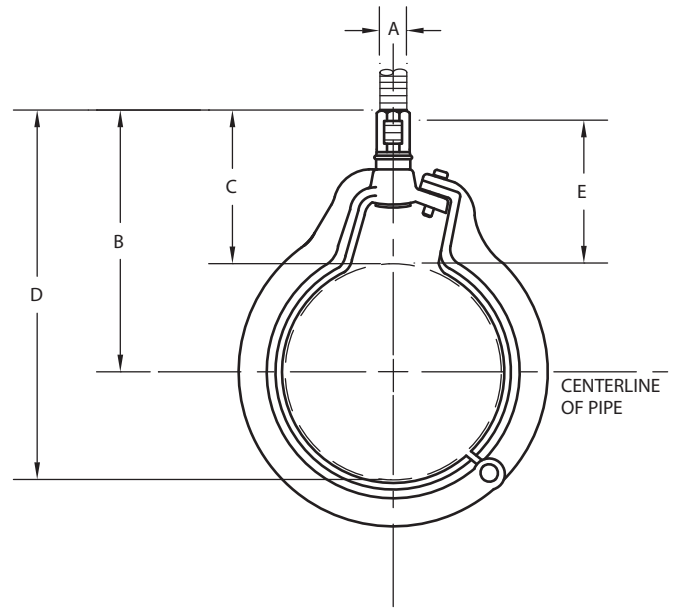


FIGURE 240 - ADJUSTABLE SWIVEL HANGER

PIPE SIZE	MAXIMUM LOAD	ROD SIZE	A	B	C	D	E	WEIGHT EACH
3/4	300	3/8	2 1/8	2 3/8	2 5/8	2	0.23	
20	1335	10	54	60	67	51	0.10	
1	300	3/8	2 3/8	2 1/4	3	1 3/4	0.25	
25	1335	10	60	57	76	44	0.11	
1 1/4	300	3/8	2 5/8	2 1/4	3 3/8	1 3/4	0.30	
32	1335	10	67	57	86	44	0.14	
1 1/2	300	3/8	2 3/4	2 1/4	3 3/4	1 3/4	0.32	
40	1335	10	70	57	95	44	0.15	
2	300	3/8	3 1/8	2 3/8	4 1/4	1 7/8	0.34	
50	1335	10	79	60	108	48	0.15	
2 1/2	500	1/2	4 3/8	2 1/8	5 3/4	1 7/8	0.65	
65	2224	13	111	54	146	48	0.29	
3	500	1/2	4 5/8	2 1/8	6 3/8	2	0.78	
80	2224	13	117	54	162	51	0.35	
3 1/2	500	1/2	5	2 1/4	7	2 7/8	0.85	
90	2224	13	127	57	178	73	0.39	
4	900	5/8	6	2 7/8	8 1/4	2 7/8	1.54	
100	4004	16	152	73	210	73	0.70	
5	900	5/8	6 3/4	3	9 1/2	3	2.00	
125	4004	16	171	76	241	76	0.91	
6	1300	3/4	7 3/4	3 3/8	11	3 1/2	3.20	
150	5783	19	197	86	279	89	1.45	
8	1800	7/8	9 3/4	4 3/8	14	3 7/8	5.00	
200	8007	22	248	111	356	98	2.27	

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

EXTENDED OFFSET PIPE CLAMP

Figure 267

Designed to attach directly to piping where the exact distance between the structure and the pipe cannot be determined until the piping is in place. The extended legs can be modified in the field to suit the location. Legs of longer lengths can be furnished on order.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M267.

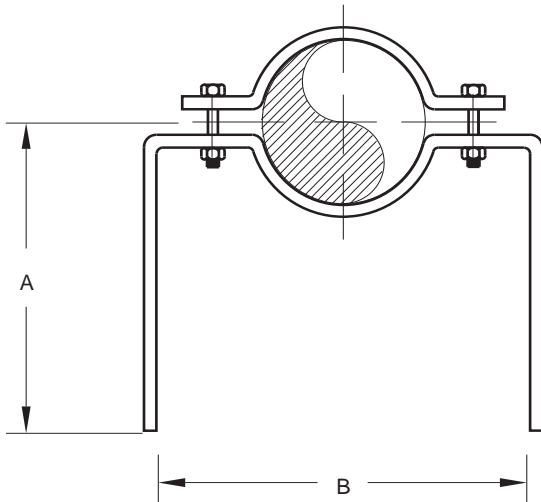


FIGURE 267 – EXTENDED PIPE CLAMP

PIPE SIZE	A	B	WEIGHT EACH
3/8	12	3 3/4	1.85
10	305	95	0.84
1/2	12	3 3/4	1.85
15	305	95	0.84
3/4	12	4 3/4	1.85
20	305	121	0.84
1	255	5 1/2	2.34
25	12	140	1.06
1 1/4	305	5 3/8	2.40
32	1356	149	1.09
1 1/2	12	6 3/8	2.45
40	305	156	1.11
2	12	7	3.13
50	305	178	1.42
2 1/2	12	7 1/2	4.21
65	305	191	1.91
3	12	7 7/8	4.47
80	305	200	2.03
4	12	10 1/2	4.90
100	305	267	2.22
5	12	12 1/4	4.90
125	305	311	2.22
6	12	13	5.32
150	305	330	2.41
8	12	15 1/4	11.20
200	305	387	5.06
10	12	18 3/4	13.50
250	305	464	6.12
12	12	20 3/4	22.00
300	305	527	110.00
14	12	21	35.00
350	305	533	15.90

RIGHT ANGLE BEAM CLAMP

Figure 282

The Figure 282 is used in attaching conduit or pipe at a right angle to a structural member.

Materials: Malleable iron body with carbon steel U-bolt and nuts.

Finish: Hot-Dip Galvanized

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M282.

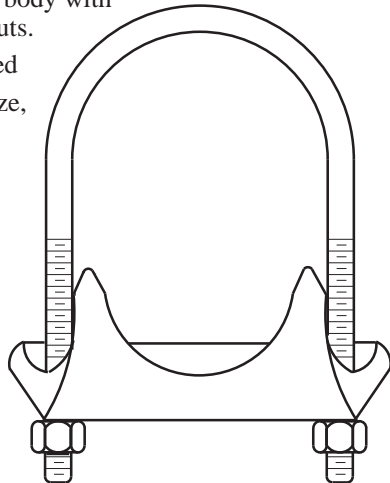


FIGURE 282 - RIGHT ANGLE BEAM CLAMP

PIPE SIZE	WEIGHT EACH
3/8	0.33
10	0.15
1/2	0.41
15	0.19
3/4	0.42
20	0.19
1	0.47
25	0.21
1 1/4	0.54
32	0.24
1 1/2	0.57
40	0.26
2	0.85
50	0.39
2 1/2	1.06
65	0.48
3	1.10
80	0.50
3 1/2	1.28
90	0.58
4	1.40
100	0.64

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STANDARD U-BOLT

Figure 283 Carbon Steel

Figure 283PVC PVC Coated

Figure 283SS Stainless Steel

Our standard U-Bolts are recommended for use as supports or guides for piping. They are supplied with four hex nuts.

The Figure 283PVC is for support of piping where contact with the pipe is not desired. Threads and nuts are not coated.

The Figure 283SS is recommended for support of stainless steel piping. Please specify the grade of stainless steel you require when ordering.

Load Ratings shown are for Carbon Steel. PVC coating should not exceed 140°F/60°C.

Materials: Carbon Steel, Stainless Steel

Compliance: Federal Specification WW-H-171 Type 24, MSS-SP 69 (Type 24), and BSPSS-BS3974.

Finish: Plain, Electro-Galvanized, Hot-Dip Galvanized (Rod Size 1/4" cannot be Hot-Dip Galvanized) Hot-dip galvanized U-Bolts will come with oversized hex nuts.

Maximum Stainless Steel Loads are 0.80 times the stated loads below.

Ordering: Specify pipe size, figure number, and finish.

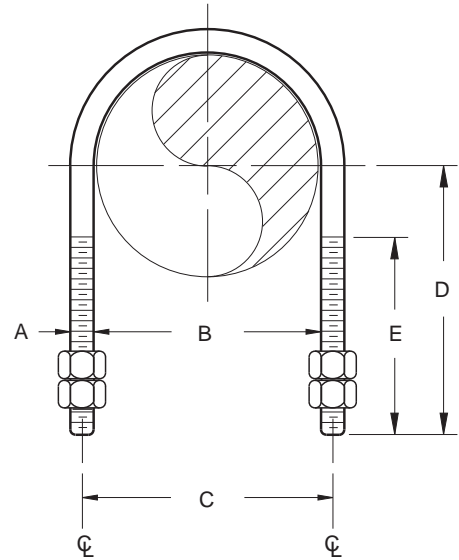


FIGURE 283 – STANDARD U-BOLT

PIPE SIZE	MAXIMUM LOAD		STOCK SIZE A	B	C	D	E	WEIGHT EACH
	650°F/343°C	750°F/399°C						
1/2	580	454	1/4	7/8	1 3/16	2 1/4	2 1/8	0.11
15	2580	2020	M6	22	30	57	54	0.05
3/4	580	454	1/4	1 1/8	1 3/8	2 3/4	2 1/8	0.12
20	2580	2020	M6	29	35	70	54	0.05
1	580	454	1/4	1 3/8	1 5/8	2 3/4	2 1/8	0.12
25	2580	2020	M6	35	41	70	54	0.05
1 1/2*	1200	1070	3/8	7/8	1 1/4	2 3/4	2 1/8	0.16
15*	5338	4760	M10	22	32	70	54	0.07
3/4*	1200	1070	3/8	1 1/8	1 1/2	2 3/4	2 1/8	0.16
20*	5338	4760	M10	29	38	70	54	0.07
1*	1200	1070	3/8	1 3/8	1 3/4	2 3/4	2 1/8	0.19
25*	5338	4760	M10	35	44	70	54	0.09
1 1/4	1460	1144	3/8	1 3/4	2 1/8	2 7/8	2 1/8	0.28
32	6495	5089	M10	44	54	73	54	0.13
1 1/2	1460	1144	3/8	2	2 3/8	3	2 1/2	0.30
40	6495	5089	M10	51	60	76	64	0.14
2	1460	1144	3/8	2 1/2	2 7/8	3 1/4	2 1/2	0.33
50	6495	5089	M10	64	73	83	64	0.15
2 1/2	2700	2114	1/2	3	3 1/2	3 3/4	3	0.70
65	12011	9404	M12	76	89	95	76	0.32
3	2700	2114	1/2	3 3/8	4 1/8	4	3	0.78
80	12011	9404	M12	92	105	102	76	0.35
3 1/2	2700	2114	1/2	4 1/8	4 3/8	4 1/2	3	0.84
90	12011	9404	M12	105	117	114	76	0.38
4	2700	2114	1/2	4 3/8	5 1/8	4 3/2	3	0.90
100	12011	9404	M12	117	130	114	76	0.41

* Made special to customer order

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

FIGURE 283 – STANDARD U-BOLT (CONT.)

PIPE SIZE	MAXIMUM LOAD		STOCK SIZE	B	C	D	E	WEIGHT EACH
	650°F/343°C	750°F/399°C						
5	2700	2114	1/2	5 5/8	6 1/8	5	3	1.04
125	12011	9404	M12	143	156	127	76	0.47
6	4320	3382	5/8	6 3/4	7 3/8	6 1/8	3 3/4	2.0
150	19217	15044	M16	171	187	156	95	0.91
8	4320	3382	5/8	8 3/4	9 3/8	7 1/8	3 3/4	2.3
200	19217	15044	M16	222	238	181	95	1.0
10	6460	5060	3/4	10 7/8	11 5/8	8 3/8	4	4.9
250	28737	22509	M20	276	295	213	102	2.2
12	9960	7016	7/8	12 7/8	13 3/4	9 5/8	4 1/4	7.7
300	44306	31210	M20	327	349	244	108	3.5
14	9960	7016	7/8	14 1/8	15	10 1/4	4 1/4	8.3
350	44306	31210	M20	359	381	260	108	3.8
16	9960	7016	7/8	16 1/8	17	11 1/4	4 1/4	9.2
400	44306	31210	M20	410	432	286	108	4.2
18	11800	8850	1	18 1/8	19 1/8	12 5/8	4 3/4	13.5
450	52491	39368	M24	460	486	321	121	6.1
20	11800	8850	1	20 1/8	21 1/8	13 5/8	4 3/4	14.6
500	52491	39368	M24	511	537	346	121	6.6
24	11800	8850	1	24 1/8	25 1/8	15 5/8	4 3/4	16.9
600	52491	39368	M24	613	638	397	121	7.7
28	11800	8850	1	28 1/8	29 1/8	17 5/8	4 3/4	18.0
700	52491	39368	M24	714	740	448	121	8.2
30	11800	8850	1	30 1/8	31 1/8	18 5/8	4 3/4	19.1
750	11800	39368	M24	765	791	473	121	8.7
36	11800	8850	1	36 1/8	37 1/8	21 5/8	4 3/4	23.2
900	52491	39368	M24	918	943	549	121	10.5

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

LIGHT DUTY U-BOLT

Figure 283L

The Figure 283L is recommended for the guiding, anchoring and supporting of conduit or light piping loads. Furnished with two (2) hex nuts.

Material: Carbon Steel

Compliance: Federal Specification A-A-1192A (Type 24), MSS-SP 69 (Type 24), and BSPSS-BS3974.

Finish: Plain, Electro-galvanized

Ordering: Specify pipe size, figure number, and finish.

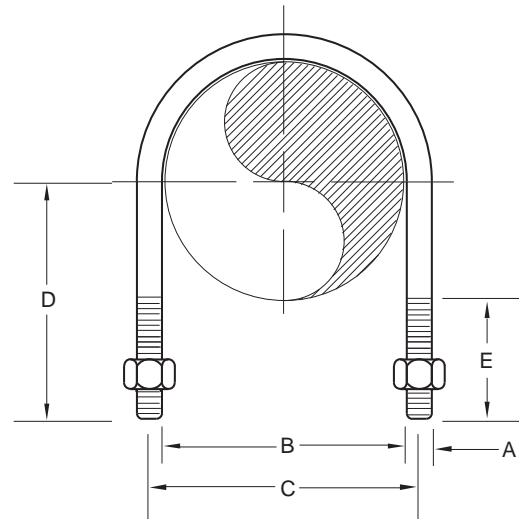


FIGURE 283L - LIGHT DUTY U-BOLT

PIPE SIZE	MAXIMUM LOAD	A	B	C	D	E	WEIGHT EACH
1/2	580	1/4	1	1 1/4	2	1 3/4	0.06
15	2580	M6	25	32	51	44	0.03
3/4	580	1/4	1 1/8	1 3/8	2 1/8	1 3/4	0.07
20	2580	M6	29	35	54	44	0.03
1	580	1/4	1 3/8	1 5/8	2 1/4	1 3/4	0.07
25	2580	M6	35	41	57	44	0.03
1 1/4	580	1/4	1 3/4	2	2 3/8	1 3/4	0.08
32	2580	M6	44	51	60	44	0.04
1 1/2	580	1/4	2	2 1/4	2 1/2	1 3/4	0.09
40	2580	M6	51	57	64	44	0.04
2	580	1/4	2 1/2	2 3/4	2 3/4	1 3/4	0.10
50	2580	M6	64	70	70	44	0.05
2 1/2	1460	3/8	3	3 3/8	3 1/8	2	0.28
65	6495	M10	76	86	79	51	0.13
3	1460	3/8	3 5/8	4	3 3/8	2	0.31
80	6495	M10	92	102	86	51	0.14
3 1/2	1460	3/8	4 1/8	4 1/2	3 5/8	2	0.35
90	6495	M10	105	114	92	51	0.16
4	1460	3/8	4 5/8	5	3 7/8	2	0.38
100	6495	M10	117	127	98	51	0.17
5	1460	3/8	5 5/8	6	4 5/8	2 1/4	0.45
125	6495	M10	143	152	117	57	0.20
6	2700	1/2	6 3/4	7 1/4	5 5/8	2 1/4	0.95
150	12011	M12	171	184	130	57	0.43
8	2700	1/2	8 3/4	9 1/4	6 5/8	2 1/4	1.2
200	12011	M12	222	235	156	57	0.54
10	4320	5/8	10 7/8	11 1/2	7 3/4	2 1/2	2.3
250	19217	M16	276	292	184	64	1.04

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

HEAVY DUTY TWO BOLT PIPE CLAMP

Figure 298

Designed to suspend heavy loads on cold or hot pipe lines where little or no insulation is required. The Figure 298 is usually used with a Figure 279 Weldless Eyerut or Figure 93 Welded Eyerod.

Rated Loads are for up to 750° F (399° C).

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 4, MSS-SP-69 Type 4 and BSPSS-BS3974.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, finish and pipe size. For Metric applications specify Figure M298.

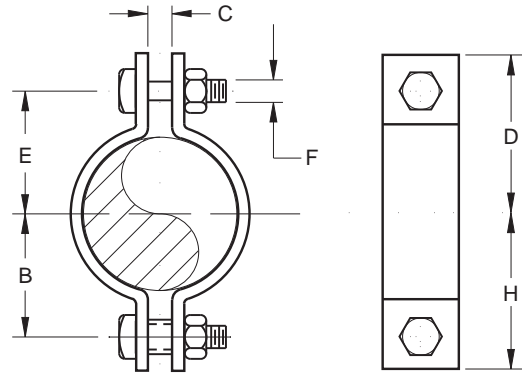


FIGURE 298 – HEAVY DUTY TWO BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD		B	C	D	E	F	H	WEIGHT EACH
	650° F 343° C	750° F 399° C							
2	3400	3000	2	3/4	3	2	5/8	3	2.1
50	15125	13345	51	19	76	51	M16	76	1.0
3	3550	3150	3 1/8	1	4	3 1/8	3/4	4	3.8
80	15792	14012	79	25	102	79	M20	102	1.7
4	3550	3150	3 3/4	1	4 7/8	3 3/4	7/8	4 7/8	6.5
100	15792	14012	95	25	124	95	M22	124	2.9
5	3550	3150	4 3/8	1	5 1/2	4 3/8	7/8	5 1/2	7.4
125	15792	14012	111	25	140	111	M22	140	3.4
6	4900	4350	5 3/8	1 1/8	6 3/4	5 3/8	1	6 3/4	14.0
150	21797	19351	137	29	171	137	M24	171	6.4
8	4900	4350	6 3/4	1 1/8	8 1/8	6 3/4	1	8 1/8	16.4
200	21797	19351	171	29	206	171	M24	206	7.4
10	6000	5400	7 5/8	1 1/4	9 1/8	7 3/4	1 1/4	9	25.3
250	26690	24021	194	32	232	197	M30	229	11.5
12	8700	7750	9 1/4	1 5/8	11 3/8	9 1/2	1 1/2	11 1/8	44.1
300	38701	34475	235	41	289	241	M36	283	20.0
14	9150	8150	9 3/4	1 5/8	11 7/8	10	1 1/2	11 5/8	58.8
350	40703	36254	248	41	302	254	M36	295	26.7
16	9150	8150	11	1 5/8	12 7/8	11	1 1/2	12 7/8	64.1
400	40703	36254	279	41	327	279	M36	327	29.1
18	13800	12280	14 1/2	3	17 1/4	14 1/2	2	17 1/4	126.3
450	61388	54626	368	76	438	368	M48	438	57.3
20	15300	13620	16	3	18 3/4	16	2	18 3/4	150.0
500	68060	60587	406	76	476	406	M48	476	68.0
24	16300	14500	18 1/2	3 1/4	21 1/2	18 1/2	2 1/4	21 1/2	210.5
600	72509	64502	470	83	546	470	M56	546	95.5
30	20500	18250	22 1/2	3 1/2	26	22 1/2	2 1/2	26	365.4
750	91192	81183	572	89	660	572	M64	660	165.7
36	28000	24900	26 1/2	3 1/2	30 1/4	26 1/2	2 3/4	30 1/4	575.1
900	124555	110765	673	89	768	673	M72	768	260.9

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

THREE BOLT PIPE CLAMP

Figure 304

The Figure 304 is designed for hot insulated pipe lines up to 750°F. The spacer on the top inner bolt provides uniform space for the connecting eyerod or weldless eyenut. See Figure 91 for higher load ratings. We can also design to meet any of your special clamp requirements.

Material: Carbon Steel

Compliance: MSS-SP-69 Type 3, Federal Specification: A-A-1192A Type 3, and BSPSS-BS3974.

Finish: Plain, Painted, Galvanized (450°F Maximum)

Ordering: Specify pipe size, figure number and finish.

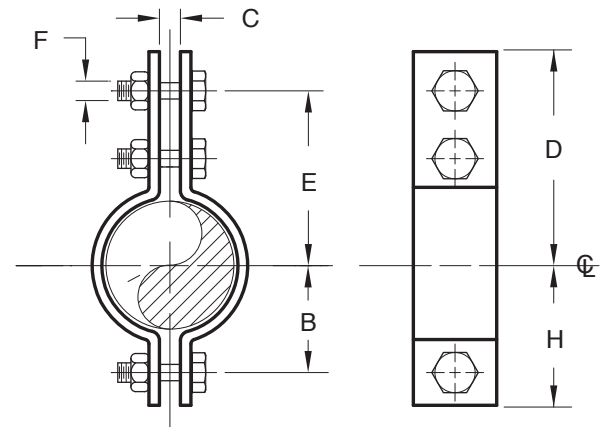


FIGURE 304 – THREE BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD		B	C	D	TAKE OUT E	F	H	WEIGHT EACH
	650°F/343°C	750°F/399°C							
1/2	950	845	1	5/8	2 7/8	2 1/4	3/8	1 5/8	0.61
15	4226	3759	25	16	73	57	M10	41	0.28
3/4	950	845	1 1/8	5/8	3 1/4	2 1/2	3/8	1 3/4	0.66
20	4226	3759	29	16	83	64	M10	44	0.30
1	950	845	1 1/2	5/8	3 3/4	2 1/2	3/8	2 1/8	0.69
25	4226	3759	38	16	95	64	M10	54	0.31
1 1/4	950	845	1 1/2	3/4	3 5/8	2 7/8	3/8	2 1/4	0.75
32	4226	3759	38	19	92	73	M10	57	0.34
1 1/2	1545	1380	1 3/4	1	4 7/8	4 1/8	5/8	2 3/8	2.14
40	6873	6139	44	25	124	105	M16	60	0.97
2	1545	1380	2 1/8	1 1/8	5 7/8	5 1/8	5/8	2 3/4	2.43
50	6873	6139	54	29	149	130	M16	70	1.10
2 1/2	1545	1380	2 1/4	1 1/8	6 1/8	5 3/8	5/8	3	2.92
65	6873	6139	57	29	156	137	M16	76	1.32
3	1545	1380	2 3/4	1 1/8	6 3/8	6	5/8	3 1/2	3.19
80	6873	6139	70	29	168	152	M16	89	1.45
4	2500	2230	3 3/8	1	7 7/8	6 1/2	3/4	4 1/2	7.12
100	11121	9920	86	25	194	165	M20	114	3.23
5	2500	2230	4	1 1/8	8 7/8	7	3/4	5 1/8	7.96
125	11121	9920	102	29	206	178	M20	130	3.61
6	2865	2555	4 3/4	1 1/4	9 7/8	8 3/4	7/8	6 1/8	11.9
150	12745	11366	121	32	244	210	M20	156	5.38
8	2865	2555	5 3/4	1 1/4	10 5/8	9 1/4	7/8	7 7/8	13.6
200	12745	11366	146	32	270	235	M20	181	6.16
10	3240	2890	6 7/8	1 1/4	12	10 1/2	1	8 3/4	21.3
250	14413	12856	175	32	305	267	M24	210	9.68
12	3240	2890	8 7/8	1 1/2	13	11 1/2	1	9 7/8	23.7
300	14413	12856	213	38	330	292	M24	251	10.7
14	4300	3835	9 7/8	2	14 3/8	12 3/4	1 1/4	10 3/4	38.8
350	19128	17060	232	51	365	324	M30	273	17.6
16	4300	3835	10	2	15 5/8	14	1 1/4	11 3/4	42.9
400	19128	17060	254	51	397	356	M30	298	19.5
18	4300	3835	11 5/8	2	16 3/4	15 1/8	1 1/4	13 1/4	46.4
450	19128	17060	295	51	425	384	M30	337	21.0
20	4500	4015	12 3/8	2	17 1/2	15 7/8	1 3/8	14	58.7
500	20018	17860	314	51	445	403	M36	356	26.6
24	5490	4900	14 3/4	2	19 7/8	17 7/8	1 1/2	16 3/8	89.3
600	24422	21797	375	51	505	454	M36	416	40.5
28	6000	5357	17 1/2	2 1/4	24 1/4	21 3/4	1 3/8	20	112
700	26690	23830	445	57	616	552	M36	508	50.8
30	7500	6690	18 1/2	1 1/2	26 3/8	23 3/8	1 1/2	21	141
750	33363	29760	470	38	670	594	M36	533	63.9
32	8250	7366	19 5/8	2 1/2	28	25	1 1/2	22 5/8	194
800	36699	32767	498	64	711	635	M36	575	88.0
34	9800	8750	21 1/2	3	31 1/4	27 3/4	1 3/4	25	249
850	43594	38923	546	76	794	705	M42	635	112.9
36	10500	9360	22 1/2	3	32 1/8	28 3/4	1 3/4	26	246
900	46708	41637	572	76	816	730	M42	660	112

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	MILLIMETERS	FAHRENHEIT CELSIUS	POUNDS NEWTONS	POUNDS KILOGRAMS

PIPE ATTACHMENTS

ALLOY THREE BOLT PIPE CLAMP

Figure 304Z

The Figure 304Z is designed for hot insulated pipelines. The spacer on the top inner bolt provides uniform space for the connecting eyerod or weldless eyenut. See Figure 91Z for higher load ratings.

Temperature range: above 750° F (399° C) to 1050° F (566° C).

Material: Chrome Molybdenum Steel, ASTM A-387 Grade 22.

Compliance: Federal Specification A-A-1192A Type 3, MSS-SP-69 Type 3 and BSPSS-BS3974.

Finish: Plain.

Ordering: Specify figure number, and pipe size. For Metric applications, specify Fig M304Z.

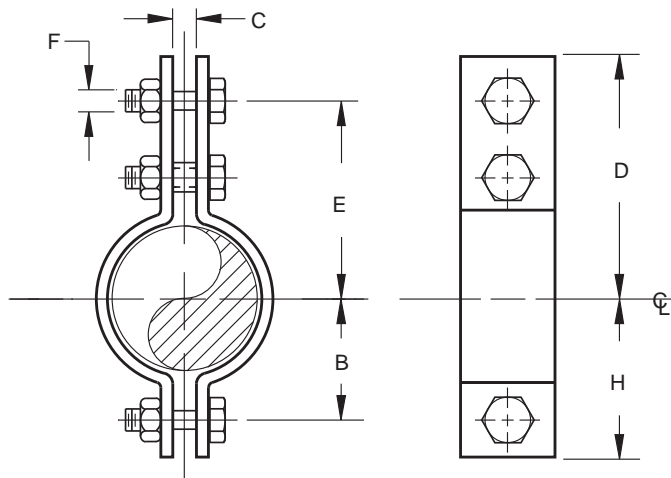


FIGURE 304Z – ALLOY THREE BOLT PIPE CLAMP

PIPE SIZE	MAXIMUM LOAD			B	C	D	TAKE OUT E	F	H	WEIGHT EACH
	950° F 510° C	1000° F 538° C	1050° F 566° C							
1½	1400	1000	700	1¾	1	47/8	47/8	5/8	2¾	2.48
40	6228	4448	3114	44	25	124	105	M16	60	1.12
2	1400	1000	700	2½	1	57/8	57/8	5/8	2¾	2.70
50	6228	4448	3114	54	25	149	130	M16	70	1.22
2½	1400	1000	700	2¼	1	61/8	5¾	5/8	3	2.76
65	6228	4448	3114	57	25	156	137	M16	76	1.25
3	1400	1000	700	2¾	1	6¾	6	5/8	3½	3.19
80	6228	4448	3114	70	25	171	152	M16	89	1.45
4	2300	1600	1100	3¾	1	75/8	6½	¾	4½	7.30
100	10231	7117	4893	86	25	194	165	M20	114	3.31
5	2300	1600	1100	4	1½	81/8	7	¾	5½	7.96
125	10231	7117	4893	102	29	206	178	M20	130	3.61
6	2600	1800	1300	4¾	1¼	10	85/8	7/8	61/8	12.26
150	11566	8007	5783	121	32	254	219	M22	156	5.56
8	2600	1800	1300	5¾	1¼	11	95/8	7/8	71/8	14.04
200	11566	8007	5783	146	32	279	244	M22	181	6.37
10	3000	2100	1500	67/8	1¼	12	10½	1	8¼	21.33
250	13345	9342	6673	175	32	305	267	M24	210	9.68
12	3000	2100	1500	83/8	1½	131/8	115/8	1	97/8	24.00
300	13345	9342	6673	213	38	333	295	M24	251	10.89
14	3900	2800	2000	91/8	2	141/8	12¾	1¼	10¾	38.78
350	17349	12456	8897	232	51	365	324	M30	273	17.59
16	3900	2800	2000	10	2	151/8	14	1¼	11¾	43.13
400	17349	12456	8897	254	51	397	356	M30	298	19.56
18	3900	2800	2000	115/8	2	16¾	151/8	1¼	13¼	47.78
450	17349	12456	8897	295	51	425	384	M30	337	21.67
20	5000	3200	2000	12¾	2	17½	157/8	1½	14	58.67
500	22242	14235	8897	314	51	445	403	M36	356	26.61
24	5500	3500	2700	14¾	1½	197/8	177/8	1½	16¾	90.82
600	24466	15569	12011	375	38	505	454	M36	416	41.20

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ADJUSTABLE SWIVEL RING

Figure 800

Designed for the support of non-insulated static pipe lines. The swivel nut is knurled to provide a gripping surface when adjusting the pipe elevation.

Compliance: Federal Specification A-A-1192A Type 10, MSS SP-69 Type 10, Underwriters Laboratory listed, and Factory Mutual approved (¾" through 8").

We also offer Swivel Ring hangers that are for Copper Tubing (Figure 800CT), PVC coated (Figure 800PVC), and for NFPA requirements (Figure 800FP), in this catalog.

Material: Carbon Steel.

Finish: Electro-Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M800.

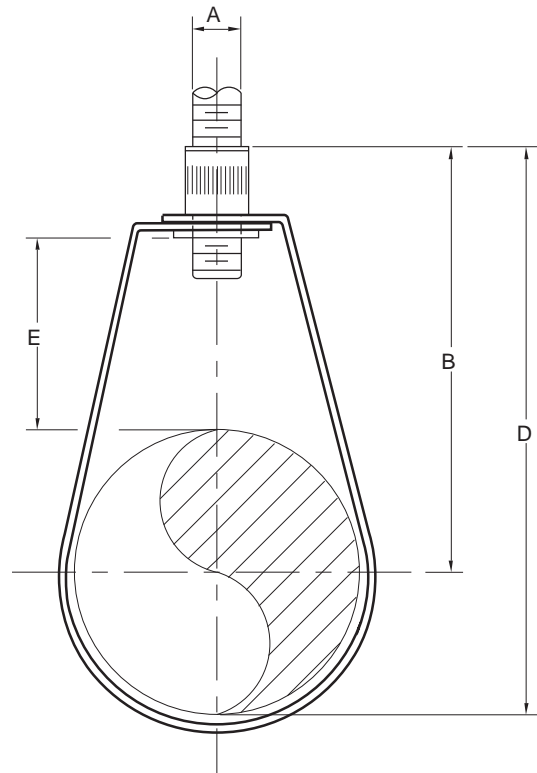


FIGURE 800 – ADJUSTABLE SWIVEL RING

PIPE SIZE	MAXIMUM LOAD	A	B	D	E	WEIGHT EACH
½	300	⅜	2¼	3⅞	1⅞	0.09
10	1335	M10	70	78	37	0.04
¾	300	⅜	2½	3⅞	1⅞	0.10
20	1335	M10	64	78	29	0.05
1	300	⅜	2½	3⅞	1	0.10
25	1335	M10	64	81	25	0.05
1¼	300	⅜	2⅝	3⅞	1⅞	0.10
32	1335	M10	71	90	27	0.05
1½	300	⅜	3⅞	3⅞	1⅞	0.11
40	1335	M10	79	98	27	0.05
2	300	⅜	3⅞	4⅞	1⅞	0.12
50	1335	M10	84	111	29	0.05
2½	600	½	3⅞	5⅞	1¼	0.32
65	2669	M12	94	130	32	0.15
3	600	½	4	5⅞	1⅞	0.35
80	2669	M12	102	149	29	0.16
3½	600	½	4⅞	6⅞	1⅞	0.39
90	2669	M12	110	168	38	0.18
4	1000	⅝	4⅞	7⅞	1¼	0.43
100	4448	M16	125	181	32	0.20
5	1000	⅝	5⅞	8⅞	1⅞	0.65
125	4448	M16	143	216	35	0.29
6	1250	¾	6⅞	10⅞	2	1.09
150	5560	M20	170	257	51	0.49
8	1800	⅞	8⅞	12⅞	2⅞	1.24
200	8007	M22	211	327	67	0.56

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

PIPE ATTACHMENTS

COPPER TUBING SWIVEL RING

Figure 800CT

Designed for the support of non-insulated static copper tubing lines. The swivel nut is knurled to provide a gripping surface when adjusting the tubing elevation.

Compliance: Federal Specification A-A-1192A Type 10, MSS SP-69 Type 10.

We also offer Swivel Ring hangers that are for carbon steel pipe (Figure 800), PVC coated (Figure 800PVC), and for NFPA requirements (Figure 800FP), in this catalog.

Material: Carbon Steel.

Finish: Copper.

Ordering: Specify copper tubing size and figure number. For Metric applications specify Figure M800CT.

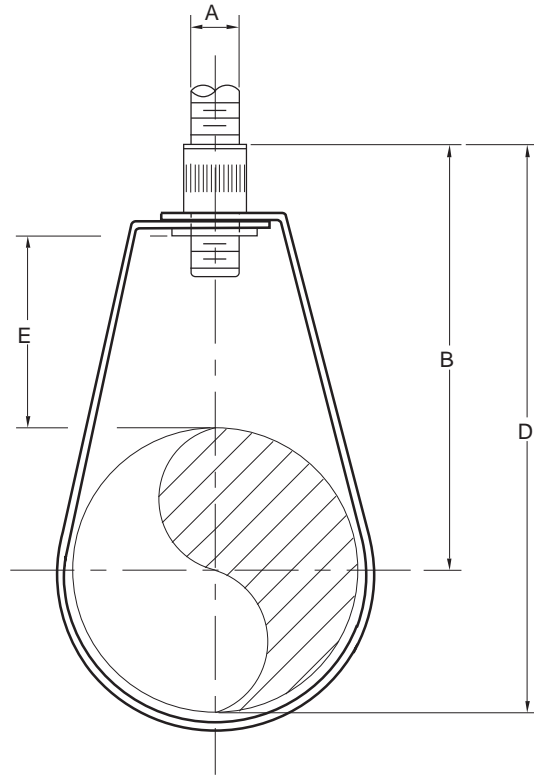


FIGURE 800CT - ADJUSTABLE SWIVEL RING

PIPE SIZE	MAXIMUM LOAD	A	B	D	E	WEIGHT EACH
½	300	⅜	2⅜	3¼	1 ¹¹ / ₁₆	0.11
15	1335	M10	60	83	43	0.05
¾	300	⅜	2⅜	3⅜	1⅜	0.11
20	1335	M10	60	79	35	0.05
1	300	⅜	2½	3⅜	1	0.11
25	1335	M10	64	79	25	0.05
1¼	300	⅜	2¾	3¼	1 ⁵ / ₁₆	0.13
32	1335	M10	70	83	24	0.06
1½	300	⅜	2 ⁵ / ₁₆	3⅝	1⅜	0.13
40	1335	M10	75	92	29	0.06
2	300	⅜	3 ⁷ / ₁₆	4¼	1 ¹ / ₁₆	0.15
50	1335	M10	84	105	27	0.07
2½	525	⅜	4	4⅝	1⅜	0.16
65	2335	M10	102	117	29	0.07
3	525	½	4 ¹ / ₁₆	5 ⁵ / ₁₆	1 ¹ / ₁₆	0.32
80	2335	M12	116	141	33	0.15
3½	525	½	4 ⁹ / ₁₆	5⅞	1⅜	0.35
90	2335	M12	116	149	29	0.16
4	650	½	5 ⁵ / ₁₆	6½	1 ³ / ₁₆	0.38
100	2891	M12	141	165	30	0.17
5	1000	½	6¼	8⅜	1⅜	0.58
125	4448	M12	159	213	41	0.26
6	1000	½	7 ⁷ / ₁₆	9 ¹³ / ₁₆	2¼	0.92
150	4448	M12	183	249	57	0.42

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

NFPA SWIVEL RING

Figure 800FP

Designed for the support of non-insulated static pipe lines. The swivel nut is knurled to provide a gripping surface when adjusting the tubing elevation and is tapped to the reduced rod standards of NFPA.

Compliance: Federal Specification A-A-1192A Type 10, MSS SP-69 Type 10, Underwriters Laboratory listed, and Factory Mutual approved (¾" through 8"), and NFPA standards.

We also offer Swivel Ring hangers that are for standard commercial pipe (Figure 800), copper tubing (Figure 800CT), and PVC coated (Figure 800PVC), in this catalog.

Material: Carbon Steel.

Finish: Electro-Galvanized.

Ordering: Specify pipe size, figure number and finish. For Metric applications specify Figure M800N.

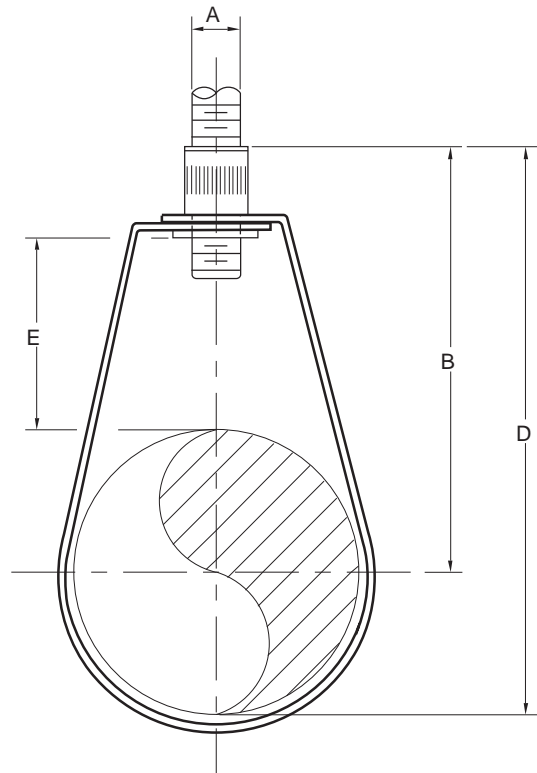


FIGURE 800FP – NFPA ADJUSTABLE SWIVEL RING

PIPE SIZE	MAXIMUM LOAD	A	B	D	E	WEIGHT EACH
½	300	⅜	2¾	3⅞	1⅞	0.09
10	1335	M10	70	78	37	0.04
¾	300	⅜	2½	3⅞	1¾	0.10
20	1335	M10	64	78	29	0.05
1	300	⅜	2½	3⅞	1	0.10
25	1335	M10	64	81	25	0.05
1¼	300	⅜	2⅝	3⅞	1⅞	0.10
32	1335	M10	71	90	27	0.05
1½	300	⅜	3	3⅞	1⅞	0.11
40	1335	M10	79	98	27	0.05
2	300	⅜	3⅝	4⅜	1½	0.12
50	1335	M10	84	111	29	0.05
2½	525	⅜	3⅞	5	1¼	0.25
65	2335	M10	94	127	32	0.11
3	525	⅜	3¾	5⅞	1½	0.30
80	2335	M10	95	141	29	0.14
3½	525	⅜	4⅝	6⅝	1½	0.33
90	2335	M10	110	160	38	0.15
4	650	⅜	4½	7	1¾	0.41
100	2891	M10	114	178	41	0.19
5	1000	½	5	8⅜	2¼	0.58
125	4448	M12	143	213	57	0.26
6	1000	½	6½	9⅜	2⅞	0.92
150	4448	M12	165	249	62	0.42
8	1000	½	7⅝	12¼	2¾	1.16
200	4448	M12	202	311	67	0.53

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ATTACHMENTS

PVC COATED ADJUSTABLE SWIVEL RING

Figure 800PVC

Designed for the support of non-insulated static pipe lines and to protect the pipe from coming into direct contact with the hanger by having the contact surface PVC coated.. The swivel nut is knurled to provide a gripping surface when adjusting the pipe elevation.

Compliance: Federal Specification A-A-1192A Type 10, MSS SP-69 Type 10, Underwriters Laboratory listed, and Factory Mutual approved (3/4" through 8").

We also offer Swivel Ring hangers that are for Copper Tubing (Figure 800CT) and for NFPA requirements (Figure 800FP) in this catalog.

Operating temperature should not exceed 140° F / 60° C.

Material: Carbon Steel.

Finish: Electro-Galvanized.

Ordering: Specify pipe size, and figure number.

For Metric applications specify Figure M800PVC.

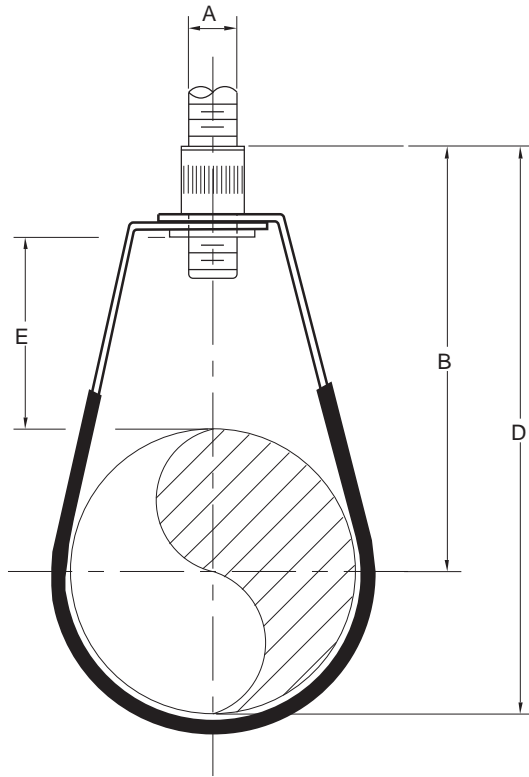


FIGURE 800PVC - PVC COATED ADJUSTABLE SWIVEL RING

PIPE SIZE	MAXIMUM LOAD	A	B	D	E	WEIGHT EACH
½	300	⅜	2¼	3⅙	1⅙	0.11
10	1335	M10	70	78	37	0.05
¾	300	⅜	2½	3⅙	1⅙	0.13
20	1335	M10	64	78	29	0.06
1	300	⅜	2½	3⅙	1	0.13
25	1335	M10	64	81	25	0.06
1¼	300	⅜	2⅞	3⅙	1⅙	0.15
32	1335	M10	71	90	27	0.07
1½	300	⅜	3⅝	3⅝	1⅙	0.17
40	1335	M10	79	98	27	0.08
2	300	⅜	3⅞	4⅝	1⅙	0.18
50	1335	M10	84	111	29	0.08
2½	600	½	3⅞	5⅝	1¼	0.34
65	2669	M12	94	130	32	0.15
3	600	½	4	5⅝	1⅙	0.39
80	2669	M12	102	149	29	0.18
3½	600	½	4⅞	6⅝	1½	0.42
90	2669	M12	110	168	38	0.19
4	1000	⅝	4⅞	7⅝	1¼	0.48
100	4448	M16	125	181	32	0.22
5	1000	⅝	5⅝	8½	1⅝	0.69
125	4448	M16	143	216	35	0.31
6	1250	¾	6⅞	10⅝	2	1.13
150	5560	M20	170	257	51	0.51
8	1800	⅞	8⅞	12⅝	2⅝	1.29
200	8007	M22	211	327	67	0.59

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE STRAP

Figure C1108

The Figure C1108 is designed hold piping flush to its mounting surface. This item may be bolted to a structure or channel strut, or welded into place.

Material: Carbon Steel.

Finish: Electro-Plated.

Ordering: Specify pipe size, figure number, and finish. For Metric applications Specify Figure MC1108.

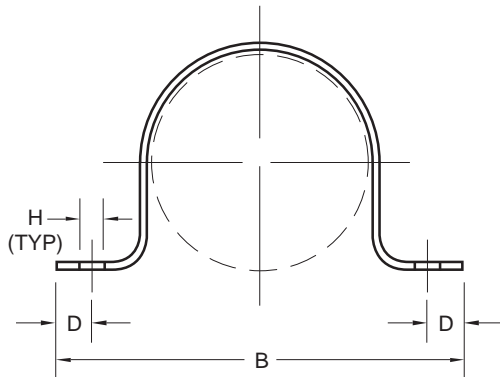


FIG. C1108 – PIPE STRAP

PIPE SIZE	MAX VERT LOAD	B	D	H	WGT EACH
1/2	300	2 13/16	7/16	5/32	0.20
15	1335	71	11	7	0.09
3/4	300	3 5/16	7/16	5/32	0.23
20	1335	84	11	7	0.10
1	300	3 11/16	7/16	5/32	0.28
25	1335	94	11	7	0.13
1 1/4	300	4	7/16	5/32	0.33
32	1335	102	11	7	0.15
1 1/2	300	4 1/8	7/16	5/32	0.36
40	1335	105	11	7	0.16
2	800	5 13/16	1 3/16	1 13/32	0.94
50	3559	148	21	10	0.43
2 1/2	800	6 5/16	1 3/16	1 13/32	1.11
65	3559	160	21	10	0.50
3	800	7	1 3/16	1 13/32	1.30
80	3559	178	21	10	0.59
3 1/2	800	7 7/8	1 3/16	1 13/32	1.49
90	3559	200	21	10	0.68
4	800	7 7/8	1 3/16	1 13/32	1.73
100	3559	200	21	10	0.78
5	800	9 1/16	1 3/16	1 13/32	1.83
125	3559	230	21	10	0.83
6	800	10 13/16	1 3/16	1 13/32	2.43
150	3559	275	21	10	1.10

DRAIN, WASTE, VENT CLAMP

Figure DWV

Designed to provide economical and quick way to support of non-insulated PVC drain, waste, and vent pipe lines with sufficient adjustment to most all application. Can be field adjusted to suit unique configurations.

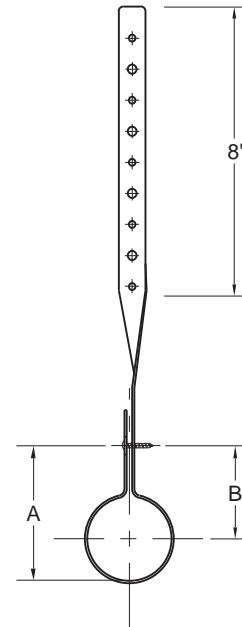
Material: Carbon Steel.

Finish: Galvanized.

Ordering: Specify pipe size and figure number. For Metric applications specify Figure MDWV.

FIGURE DWV

PIPE SIZE	A	B
1 1/2	3 1/2	2 1/2
40	89	64
2	4	2 7/8
50	102	73
3	5 1/2	3 3/4
80	140	95
4	6	3 3/4
100	152	95



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ROLLS

CHAIR AND ROLL

Figure 17

The Figure 17 is designed for longitudinal movement of pipe where vertical adjustment is not required.

Material: Cast Iron Pipe Roll and Chair with Carbon Steel Axle. Use a Figure 39 when a Carbon Steel Chair is required. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: Federal Specification A-A-1192A Type 44, MSS-SP-69 Type 44.

Finish: Plain, Painted, Hot-Dip Galvanized

For pipe with insulation and a pipe covering protection saddle the Figure 17 will have to be oversized to suit. Please see the Table on page 62 showing the correct sizing for insulated pipe.

Ordering: Specify chair number, figure number, and finish. For Metric applications specify Figure M17.

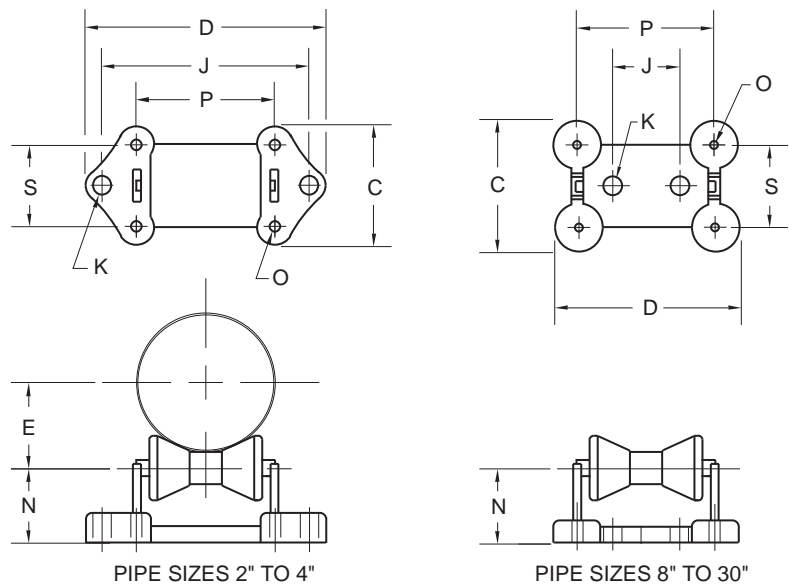


FIGURE 17 – CHAIR AND ROLL

CHAIR NO.	MAX LOAD	BARE PIPE SIZE	C	D	E	J	K	N	O	P	S	WGT. EA.
1A	390	2 2½ 3 3½	5¾	8½	1½ 1¾ 2½ 2¾	6½	1	2	7/16	3½	4/8	7.0
1A	1735	50 65 80 90	146	216	38 44 64 70	165	25	51	11	89	105	3.2
1	950	4 5 6	5¾	10⅞	2¾ 3⅞ 3⅞	8	1	2⅜	9/16	4¾	4/4	10.5
1	4226	100 125 150	146	257	70 86 98	203	25	60	14	121	108	4.8
2	2100	8 10	6⅞	8⅞	5⅞ 6¼	4	7/8	3¾	5/8	7	5	16.5
2	9342	200 250	175	225	130 159	102	22	95	16	178	127	7.5
3	3075	12 14	7⅞	11	7⅞ 8	5¾	7/8	4¾	9/16	9¼	6	26.8
3	13679	300 350	200	279	187 203	146	22	121	14	235	152	12.2
4	4980	16 18 20	8¾	12½	8⅞ 10 11	6¾	1	4⅞	¾	10¼	6½	40.5
4	22153	400 450 500	222	318	225 254 279	171	25	117	19	260	165	18.4
5	6100	24	8⅞	13¾	13	7½	1	4¾	13/16	11½	6¾	51.0
5	27135	600	225	349	330	191	25	121	21	292	171	23.1
6	7500	30	10¾	17¼	16¼	10	1	5⅞	1	14⅜	8	89.8
6	33363	750	273	438	413	254	25	143	25	365	203	40.7
7	12000	36 42	12	18¾	20 23⅞	12	1	5¾	15/16	17	9	152
7	53381	900 1050	305	476	508 587	305	25	146	33	432	229	68.9

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

CHAIR AND ROLL

Figure 39

The Figure 39 is designed for longitudinal movement of pipe where vertical adjustment is not required. Because the chair is made of steel, it can be either welded or bolted in position

Material: Carbon Steel Chair and Axle with Cast Iron Pipe Roll. Use a Figure 17 when a Cast Iron Chair is required. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: Federal Specification A-A-1192A Type 44, MSS-SP-69 Type 44.

Finish: Plain, Painted, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 39 will have to be oversized to suit. Please see the Table below showing the correct sizing for insulated pipe.

Ordering: Specify chair number, figure number, and finish. For Metric applications specify Figure M39.

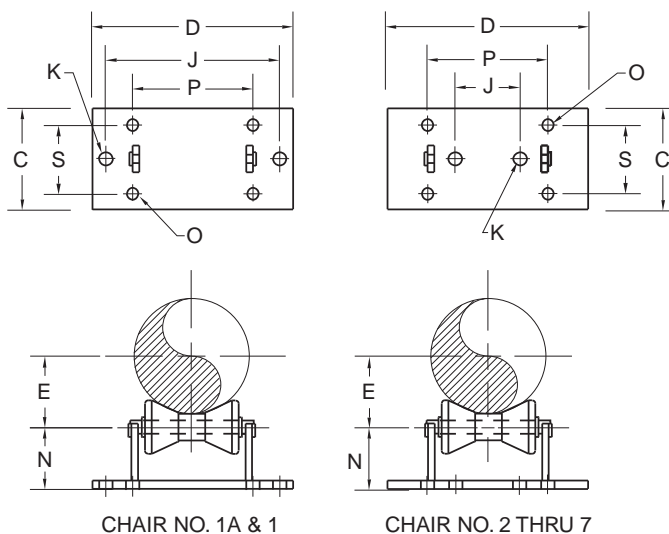


FIGURE 39 – CHAIR AND ROLL

CHAIR NO.	MAX LOAD	BARE PIPE SIZE	C	D	E	J	K	M	N	O	P	S	WGT. EA.
1A	390	2 2½ 3 3½	6	8½	1½ 1¾ 2½ 2¾	6½	1	¼	2	⅞	3½	4⅞	7.0
1A	1735	50 65 80 90	152	216	38 44 54 60	165	25	6	51	14	89	105	3.2
1	950	4 5 6	6	10⅞	2¾ 3⅜ 3⅞	8	1	¼	2⅜	⅞	4¾	4¼	10.5
1	4226	100 125 150	152	257	70 86 98	203	25	6	60	14	121	108	4.8
2	2100	8 10	7	9	5⅞ 6¼	4	1	⅜	3¾	1⅞	7	5	16.5
2	9342	200 250	178	229	130 159	102	25	10	95	17	178	127	7.5
3	3075	12 14	8	11	7⅞ 8	5¾	1	⅜	4¾	1⅞	9	6	26.8
3	13679	300 350	203	279	187 203	146	25	10	121	17	229	152	12.2
4	4980	16 18 20	9	12½	8⅞ 10 11	6¾	1	½	4¾	1⅞	10	6½	40.5
4	22153	400 450 500	229	318	225 254 279	171	25	13	121	21	254	165	18.4
5	6100	24	8⅞	13¾	13	7½	1	⅝	4⅞	1⅞	11½	6¾	51.0
5	27135	600	225	349	330	191	25	16	124	21	292	171	23.1
6	7500	30	11	17¼	16¼	10	1	⅝	5⅞	1⅞	14¼	8	89.8
6	33363	750	279	438	413	254	25	16	143	21	362	203	40.7
7	12000	36 42	12	20	20 23⅞	12	1	1	5⅞	1⅞	17	9	145
7	53381	900 1320	305	508	508 587	305	25	25	149	27	432	229	65.8

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

PIPE ROLLS

PIPE SIZE OF COVERING PROTECTION SADDLE TO BE USED WITH FIGURES 17 AND 39

CHAIR NUMBER	BARE PIPE SIZE	Fig. 351 1" Cov. 25	Fig. 352 1½" Cov. 38	Fig. 353 2" Cov. 51	Fig. 354 2½" Cov. 64	Fig. 355 3" Cov. 76	Fig. 356 4" Cov. 102
1A	2 2½ 3 3½	¾ to 3 20 to 80	¾ to 2½ 20 to 65	¾ to 1½ 20 to 40			
1	4 5 6	4 to 6 100 to 150	3 to 5 80 to 125	2 to 4 50 to 100	¾ to 1½ 20 to 40		
2	8 10	8 200	6 to 8 150 to 200	5 to 8 125 to 200	2 to 5 50 to 125	2 to 6 50 to 150	4 to 5 100 to 125
3	12 14	10 to 12 250 to 300	10 to 12 250 to 300	10 to 12 250 to 300	6 to 8 150 to 200	8 200	6 to 8 150 to 200
4	16 18 20	14 to 18 350 to 450	14 to 18 350 to 450	14 to 18 350 to 450	10 to 16 250 to 400	10 to 14 250 to 350	10 to 12 250 to 300
5	24 600	20 500	20 500	18 to 20 450 to 500	18 to 20 450 to 500	16 to 18 400 to 450	14 to 18 350 to 450
6	30 750	24 600	24 600	24 600	24 600	20 to 24 500 to 600	20 to 24 500 to 600
7	36 900	30 750	30 750	30 750	30 750	30 750	28 700
7	42 1050	40 1000	36 900	36 900	36 900	36 900	32 800

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ADJUSTABLE CHAIR AND ROLL

Figure 40

The Figure 40 is designed for longitudinal movement of pipe where vertical and lateral adjustment is required. Because the base plate is made of steel, it can be either welded or bolted in position. The correct height can be obtained by adjusting the screws at each corner. The correct lateral location can be achieved by sliding the chair on the ends of the adjusting screws. The Figure 40 may be used without the Base Plate to rest on customer provided flooring or structure.

Material: Carbon Steel Chair, Base, Axle and Adjusting Screws with Cast Iron Pipe Roll. Use a Figure 53 when a Cast Iron Chair and Base are required. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: Federal Specification A-A-1192A Type 46, MSS-SP-69 Type 46.

Finish: Plain, Painted, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 40 will have to be oversized to suit. Please see the Table below showing the correct sizing for insulated pipe.

Ordering: Specify chair number, figure number, and finish. For Metric applications specify Figure M40.

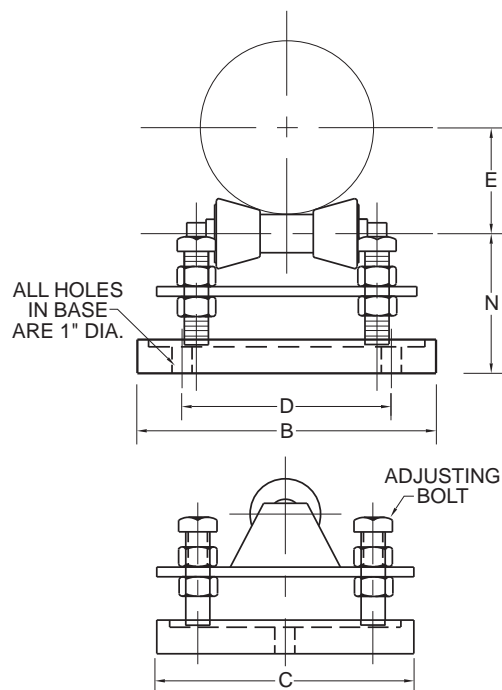


FIGURE 40 – ADJUSTABLE STEEL CHAIR AND ROLL

CHAIR NO.	MAX LOAD	BARE PIPE SIZE	B	C	D	E	N		WGT. EA.
							MIN.	MAX.	
1A	390	2 2½ 3 3½	6⅞	5½	3⅞	1¾ 2⅞ 2½ 2½	3	3⅞	15.5
1A	1735	50 65 80 90	175	140	98	44 54 64 64	76	98	7.0
1	950	4 5 6	8½	5¾	5⅞	2⅞ 3 3⅞	3⅞	4½	20.7
1	4226	100 125 150	216	146	130	73 76 98	86	114	9.4
2	2100	8 10	10⅝	6½	7⅞	5⅝ 6	4⅞	6⅝	34.3
2	9342	200 250	270	165	187	137 152	124	168	15.6
3	3075	12 14	12½	7¾	9½	7⅞ 8	5⅞	7⅞	50.6
3	13679	300 350	318	197	241	181 203	149	194	23.0
4	4980	16 18 20	14⅝	8⅝	11⅞	9¼ 10½ 11¼	5⅞	7¾	73.6
4	22153	400 450 500	371	219	283	235 267 286	149	197	33.4
5	6100	24	15¾	8⅝	12¼	13⅝	6⅞	8	88.7
5	27135	600	400	219	311	340	156	203	40.2
6	7500	30	19¼	10½	15¾	16⅞	7¼	10½	166
6	33363	750	489	267	400	429	184	267	75.3
7	12000	36	22½	12	16	20	8⅝	11¾	233
7	53381	900	572	305	406	508	213	298	106
7	12000	42	22½	12	16	23⅞	8⅝	11¾	233
7	53381	1050	572	305	406	587	213	298	106

PIPE ROLLS

PIPE SIZE OF COVERING PROTECTION SADDLE TO BE USED WITH FIGURE 40

CHAIR NUMBER	BARE PIPE SIZE	Fig. 351 1" Cov. 25	Fig. 352 1½" Cov. 38	Fig. 353 2" Cov. 51	Fig. 354 2½" Cov. 64	Fig. 355 3" Cov. 76	Fig. 356 4" Cov. 102
1A	2 2½ 3 3½	¾ to 3 20 TO 80	¾ to 2½ 20 to 65	¾ to 1½ 20 to 40			
1	4 5 6	4 to 6 100 to 150	3 to 5 80 to 125	2 to 4 50 to 100	¾ to 1½ 20 to 40		
2	8 10	8 200	6 to 8 150 to 200	5 to 8 125 to 200	2 to 5 50 to 125	2 to 6 50 to 150	4 to 5 100 to 125
3	12 14	10 to 12 250 to 300	10 to 12 250 to 300	10 250 to 300	6 to 8 150 to 200	8 200	6 to 8 150 to 200
4	16 18 20	14 to 18 350 to 450	14 to 18 350 to 450	12 to 18 350 to 450	10 to 16 250 to 400	10 to 14 250 to 350	10 to 12 250 to 300
5	24 600	20 500	20 500	18 to 20 450 to 500	18 to 20 450 to 500	16 to 18 400 to 450	14 to 18 350 to 450
6	30 750	24 600	24 600	24 600	24 600	20 to 24 500 to 600	20 to 24 500 to 600
7	36 900	30 750	30 750	30 750	30 750	30 750	28 700
7	42 1050	40 1000	36 900	36 900	36 900	36 900	32 800

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ADJUSTABLE CHAIR AND ROLL

Figure 53

The Figure 53 is designed for longitudinal movement of pipe where vertical and lateral adjustment is required. The correct height can be obtained by adjusting the screws at each corner. The correct lateral location can be achieved by sliding the chair on the ends of the adjusting screws. The Figure 53 may be used without the Base Plate to rest on customer provided flooring or structure.

Material: Cast Iron Chair and Roll. Carbon Steel Axle, Base, and Adjusting Screws. Use a Figure 40 when a Carbon Steel Chair is required. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: Federal Specification A-A-1192A Type 46, MSS-SP-69 Type 46.

Finish: Plain, Painted, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 53 will have to be oversized to suit. Please see the Table below showing the correct sizing for insulated pipe.

Ordering: Specify chair number, figure number, and finish. For Metric applications specify Figure M53.

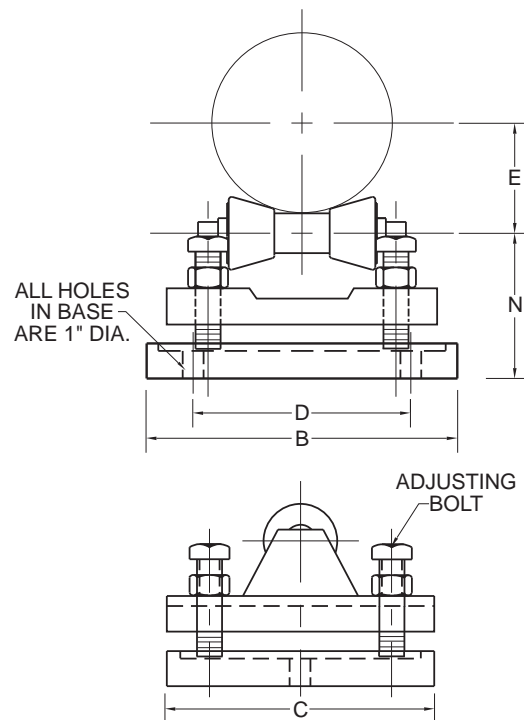


FIGURE 53 – ADJUSTABLE STEEL CHAIR AND ROLL

CHAIR NO.	MAX LOAD	BARE PIPE SIZE	B	C	D	E	N		WGT. EA.
							MIN.	MAX.	
1A	390	2 2½ 3 3½	6⅞	5½	3⅞	1¾ 2⅛ 2½ 2½	3	3⅞	15.5
1A	1735	50 65 80 90	175	140	98	44 54 64 64	76	98	7.0
1	950	4 5 6	8½	5¾	5⅞	2⅞ 3 3⅞	3⅞	4½	20.7
1	4226	100 125 150	206	146	130	73 76 98	86	114	9.4
2	2100	8 10	10⅝	7½	7⅞	5⅜ 6	4⅞	6⅝	34.3
2	9342	200 250	270	171	187	137 152	124	168	15.6
3	3075	12 14	12 1/2	8 1/4	9½	7⅞ 8	5⅞	7⅞	50.6
3	13679	300 350	333	203	241	181 203	149	194	23.0
4	4980	16 18 20	14⅝	9¼	11⅞	9¼ 10½ 11¼	5⅞	7¾	73.6
4	22153	400 450 500	371	219	283	235 267 286	149	197	33.4
5	6100	24	15¾	9¼	12¼	13⅜	6⅞	8	88.7
5	27135	600	400	219	311	340	156	203	40.2
6	7500	30	19¼	11½	15¾	16⅞	7¼	10½	166
6	33363	750	489	267	400	429	184	267	75.3
7	12000	36	22½	13	16	20	8⅜	11¾	233
7	53381	900	572	305	406	508	213	298	106
7	12000	42	22½	13	16	23⅞	8⅜	11¾	233
7	53381	1050	572	305	406	587	213	298	106

PIPE ROLLS

PIPE SIZE OF COVERING PROTECTION SADDLE TO BE USED WITH FIGURE 53

CHAIR NUMBER	BARE PIPE SIZE	Fig. 351 1" Cov. 25	Fig. 352 1½" Cov. 38	Fig. 353 2" Cov. 51	Fig. 354 2½" Cov. 64	Fig. 355 3" Cov. 76	Fig. 356 4" Cov. 102
1A	2 2½ 3 3½	¾ x 3 20 to 80	¾ to 2½ 20 to 65	¾ to 1½ 20 to 40			
1	4 5 6	4 to 6 100 to 150	3 to 5 80 to 125	2 to 4 50 to 100	¾ to 1½ 20 to 40		
2	8 10	8 200	6 to 8 150 to 200	5 to 8 125 to 200	2 to 5 50 to 125	2 to 6 50 to 150	4 to 5 100 to 125
3	12 14	10 to 12 250 to 300	10 to 12 250 to 300	10 to 12 250 to 300	6 to 8 150 to 200	8 200	6 to 8 150 to 200
4	16 18 20	14 to 18 350 to 450	14 to 18 350 to 450	14 to 16 350 to 400	10 to 16 250 to 400	10 to 14 250 to 350	10 to 12 250 to 300
5	24 600	20 500	20 500	18 to 20 450 to 500	18 to 20 450 to 500	16 to 18 400 to 450	14 to 18 350 to 450
6	30 750	24 600	24 600	24 600	24 600	20 to 24 500 to 600	20 to 24 500 to 600
7	36 900	30 750	30 750	30 750	30 750	30 750	28 700
7	42 1050	40 1000	36 900	36 900	36 900	36 900	32 800

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ROLLER CHAIR

Figure 54

The Figure 54 is designed for longitudinal movement of pipe where vertical adjustment is not required. Although two bolts are supplied for installation the chair can be alternatively welded in position

Material: Carbon Steel Chair and Axle with Cast Iron Pipe Roll. Use a Figure 17 when a Cast Iron Chair is required. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: A-A 1192A Type 44, MSS SP-69 Type 44.

Finish: Plain, Painted, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 54 will have to be oversized to suit. Please see the Table for the Figure 142 which shows the correct sizing for insulated pipe.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M54.

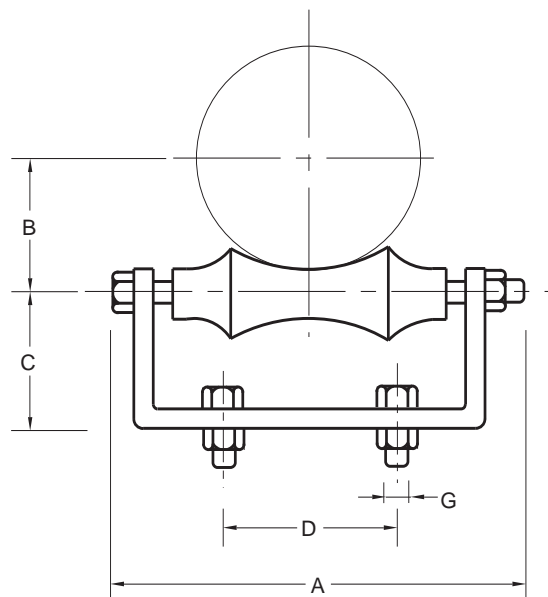


FIGURE 54 – ROLLER CHAIR

PIPE SIZE	MAX LOAD	A	B	C	D	BOLT SIZE G	WEIGHT EACH
2	300	4 $\frac{7}{8}$	1 $\frac{5}{8}$	1 $\frac{1}{2}$	2	$\frac{3}{8}$ x 1 $\frac{1}{2}$	1.10
50	1335	124	41	38	51	M10 x 38	0.50
2 $\frac{1}{2}$	600	4 $\frac{7}{8}$	2	1 $\frac{1}{8}$	2	$\frac{3}{8}$ x 1 $\frac{1}{2}$	1.40
65	2669	124	51	41	51	M10 x 38	0.64
3	600	6	2 $\frac{1}{4}$	1 $\frac{3}{4}$	2	$\frac{3}{8}$ x 1 $\frac{1}{2}$	1.60
80	2669	152	57	44	51	M10 x 38	0.73
3 $\frac{1}{2}$	600	6 $\frac{1}{2}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	2	$\frac{3}{8}$ x 1 $\frac{1}{2}$	2.60
90	2669	165	67	54	51	M10 x 38	1.18
4	700	7	2 $\frac{7}{8}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$ x 1 $\frac{1}{2}$	2.90
100	3114	178	73	60	64	M10 x 38	1.32
5	700	7 $\frac{7}{8}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$	3	$\frac{1}{2}$ x 2	3.90
125	3114	194	89	64	76	M12 x 51	1.77
6	1000	9 $\frac{3}{4}$	4	2 $\frac{3}{4}$	3 $\frac{3}{4}$	$\frac{1}{2}$ x 2	6.00
150	4448	248	102	70	83	M12 x 51	2.72
8	1300	11 $\frac{7}{8}$	5 $\frac{5}{8}$	3	4 $\frac{1}{2}$	$\frac{5}{8}$ x 2	9.00
200	5783	302	130	76	114	M16 x 51	4.08
10	1700	14 $\frac{1}{2}$	6 $\frac{3}{8}$	3 $\frac{3}{8}$	5	$\frac{3}{4}$ x 2 $\frac{1}{2}$	13.80
250	7562	368	162	92	127	M20 x 64	6.26
12	2300	16 $\frac{1}{4}$	7 $\frac{1}{2}$	4 $\frac{1}{4}$	6	$\frac{3}{4}$ x 2 $\frac{1}{2}$	18.90
300	10231	413	191	105	152	M20 x 64	8.57
14	3100	18 $\frac{1}{2}$	8 $\frac{3}{8}$	4 $\frac{3}{4}$	6 $\frac{1}{2}$	$\frac{3}{4}$ x 2 $\frac{1}{2}$	28.10
350	13790	470	213	121	165	M20 x 64	12.70
16	3900	20	9 $\frac{3}{8}$	5 $\frac{3}{8}$	10	$\frac{3}{4}$ x 2 1/2	34.90
400	17349	508	238	137	254	M20 x 76	15.80
18	4200	22 $\frac{3}{4}$	10 $\frac{1}{2}$	6	9 $\frac{1}{4}$	$\frac{3}{4}$ x 2 $\frac{1}{2}$	44.40
450	18683	578	267	152	235	M20 x 64	20.10
20	4500	25 $\frac{3}{8}$	11 $\frac{3}{8}$	6 $\frac{1}{2}$	10 $\frac{1}{4}$	$\frac{3}{4}$ x 2 $\frac{1}{2}$	56.30
500	20018	651	295	165	260	M20 x 64	25.60
24	6000	30	14	7 $\frac{1}{8}$	12 $\frac{1}{4}$	$\frac{7}{8}$ x 3 $\frac{1}{2}$	87.50
600	26690	762	356	200	311	M22 x 102	39.70

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ROLLS

ROLL AND PLATE

Figure 63

The plate is made of steel with holes for anchoring to piers. It is used for supporting pipe lines where vertical adjustment is not required.

Material: Steel Plate, Cast Iron Roll. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: A-A 1192A Type 45, MSS SP-69 Type 45.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify plate number and figure number.

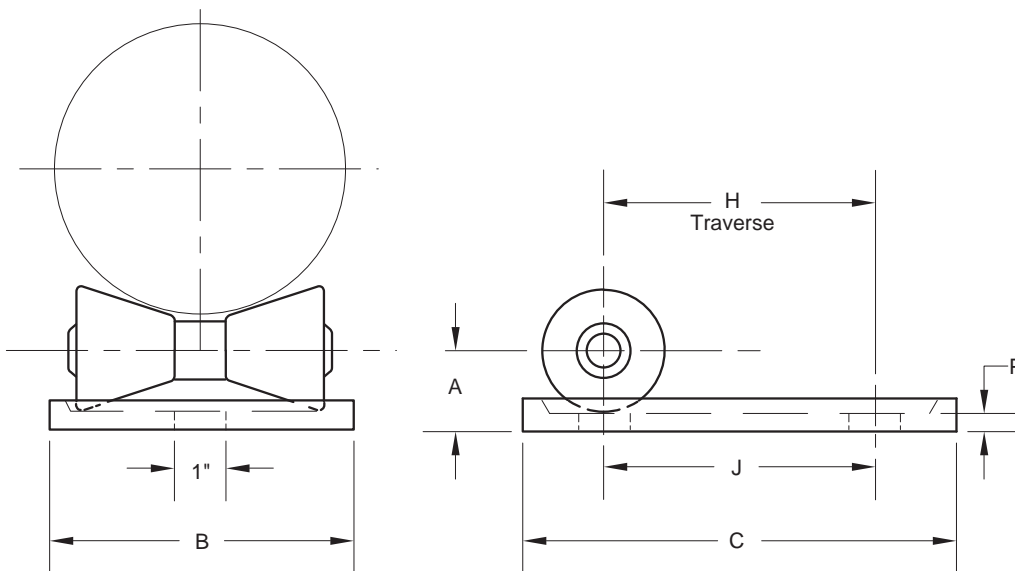


FIGURE 63 – ROLL AND PLATE

PLATE NO.	PIPE SIZES	MAXIMUM LOAD	A	B	C	H	J	P	WEIGHT EACH
1A	2-3 1/2	390	1 1/4	3 1/8	6 3/8	4 3/8	3 3/8	5/16	3.16
1A	50 - 80	177	32	79	162	111	98	8	1.43
1	4-6	950	1 3/8	4 1/8	7 3/8	5 1/4	4 3/4	5/16	4.75
1	100 - 150	431	35	105	187	133	121	8	2.15
2	8-10	2100	2	6 1/2	8 1/2	5 3/8	5 3/4	3/8	11.4
2	200 - 250	953	51	165	216	137	146	10	5.17
3	12-14	3075	2 1/2	8 3/8	9 3/8	6 1/4	6 1/2	3/8	21.9
3	300 - 350	1395	64	219	244	159	165	10	9.93
4	16-20	4980	2 3/4	9 3/8	10 3/8	7	7 1/2	1/2	28.2
4	400 - 500	2259	70	244	270	178	191	13	12.8
5	24	6100	2 7/8	10 3/4	11 3/4	8	8 1/2	5/8	38.9
5	600	2767	73	273	298	203	216	16	17.6
6	30	7500	3 3/8	13 1/2	13	8 1/2	9 1/2	5/8	59.0
6	750	3402	86	343	330	216	241	16	26.7

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ROLL

Figure 67

Our Figure 67 Pipe Roll is used with Figure 17, 39, 40, and 53 adjustable and non-adjustable chairs and rolls, also on various types of hangers and supports

This product is shown for conceptual special assembly design purposes only and is not sold as an individual product.

Material: Cast Iron.

Do not exceed 450° F / 232° C at the contact point to the roll.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify roll size and figure number. For Metric applications specify Figure M67.

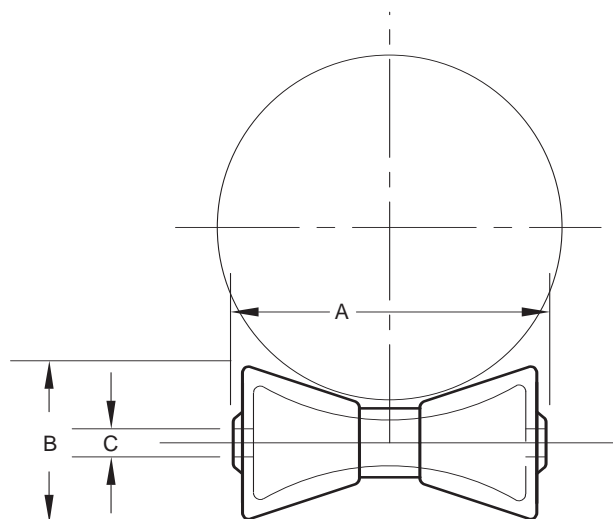


FIGURE 67 – PIPE ROLL

ROLL NO.	PIPE SIZES	A	B	ROD C	WEIGHT EACH
1A	2-3 1/2	2 1/16	1 7/8	1/2	1.02
1A	50 - 80	68	48	M12	0.46
1	4-6	3 3/4	2 1/16	1/2	1.26
1	100 - 150	95	52	M12	0.57
2	8-10	6	3 3/4	3/4	4.42
2	200 - 250	152	83	M20	2.00
3	12-14	8	4	7/8	8.82
3	300 - 350	203	102	M20	4.00
4	16-20	9 5/8	4 1/2	1 1/8	12.2
4	400 - 500	232	114	M30	5.53
5	24	10	4 7/16	1 3/8	14.5
5	600	254	113	M36	6.58
6	30	12 1/2	5 1/2	1 3/4	23.6
6	750	318	140	M42	10.7

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ROLLS

ADJUSTABLE ROLL SUPPORT

Figure 109

The Figure 109 is designed for longitudinal movement of pipe where vertical adjustment of up to six inches of is required. This part is normally used directly above the supporting structure.

Material: Cast Iron Pipe Roll and Sockets, Carbon Steel Axle, Continuous Thread Rods, and Hex Nuts. Do not exceed 450° F / 232° C at the contact point to the roll.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 109 will have to be oversized to suit. Please see the Table for the Figure 142 which shows the correct sizing for insulated pipe.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M109.

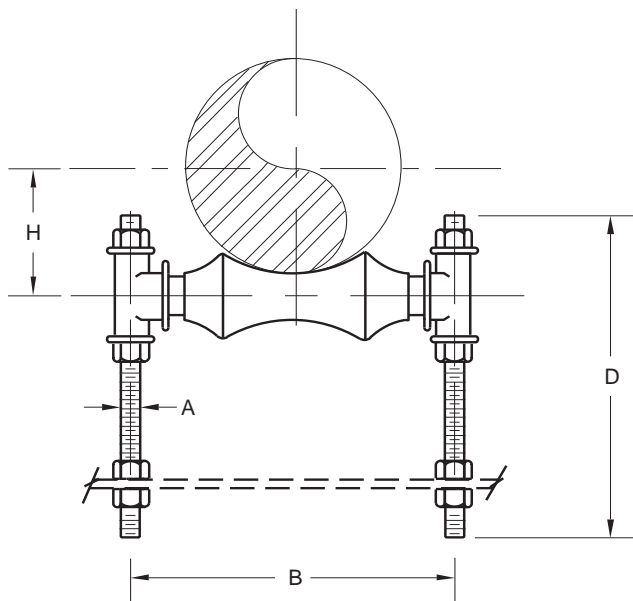


FIGURE 109 – ADJUSTABLE ROLL SUPPORT

PIPE SIZE	MAX LOAD	A	B	D	H	WGT. EACH
1¼	300	¾	3¾	7¼	1¼	1.08
32	1335	M10	86	184	32	0.49
1½	300	¾	3¾	7¼	1¾	1.11
40	1335	M10	92	184	35	0.50
2	300	¾	4¾	7¼	1½	1.65
50	1335	M10	105	184	41	0.75
2½	600	½	5½	8	2	2.72
65	2669	M12	140	203	51	1.23
3	600	½	6¾	8	2¼	2.72
80	2669	M12	156	203	57	1.23
3½	700	½	7¾	8	2½	2.72
90	3114	M12	181	203	67	1.23
4	700	¾	7¾	8½	2¾	3.91
100	3114	M16	181	216	73	1.77
5	700	¾	8¾	9	3½	4.63
125	3114	M16	213	229	89	2.10
6	1000	¾	9¾	9	4	7.07
150	4448	M20	244	229	102	3.21
8	1300	¾	12	10	5¾	11.40
200	5783	M22	305	254	130	5.15
10	1700	¾	14¾	11	6¾	13.70
250	7562	M22	359	279	162	6.22
12	2300	¾	16¾	12	7½	15.90
300	10231	M22	410	305	191	7.21
14	3075	1	17¾	12	8¾	28.70
350	13679	M24	451	305	213	13.00
16	3970	1	20½	18	9½	42.50
400	17660	M24	521	457	241	19.30
18	4200	1	22¾	18	10½	46.60
450	18683	M24	562	457	267	21.10
20	4550	1¼	24¾	18	11¾	66.20
500	20240	M30	613	457	295	30.00
24	6160	1½	28¾	24	14	102.50
600	27402	M36	733	610	356	46.50
30	7290	1½	35¾	24	17½	186.80
750	32429	M36	902	610	445	84.70

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

ROLLER SUPPORT

Figure 110

Figure 110 Roller Support is used on steam or hot water systems where pipe is to be supported in tunnels, trenches, structural brackets and frames. Adjustment is made by raising and lowering the top nut on the legs and locked into position by tightening the lower nut.

Material: Steel Axle, Cast Iron Roll.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M110.

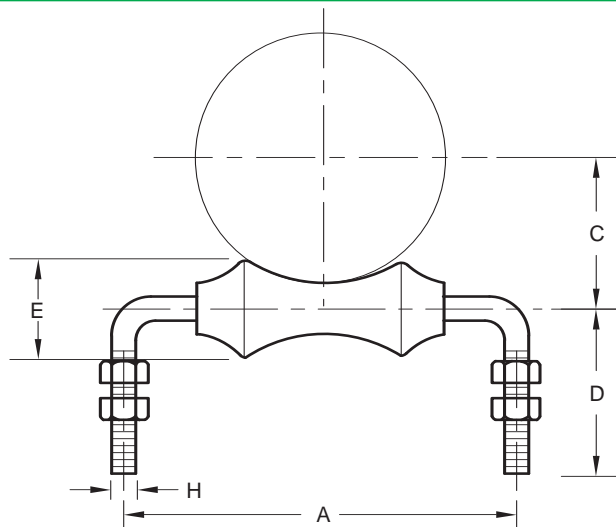


FIGURE 110 – ROLLER SUPPORT

PIPE SIZE	MAXIMUM LOAD	A	C	D	E	H	WEIGHT EACH
2	300	4½	1½	3¾	1⅜	¾	0.79
50	1335	114	41	95	30	M10	0.36
2½	600	5	1⅝	4½	1⅜	½	1.44
65	2669	127	33	114	35	M12	0.65
3	600	5½	2¼	4½	1⅞	½	1.62
80	2669	149	57	114	37	M12	0.73
3½	600	7	2⅝	4½	1⅞	½	1.64
90	2669	178	67	114	41	M12	0.74
4	700	7	2⅜	4½	1⅞	½	1.82
100	3114	178	71	114	43	M12	0.83
5	700	8½	3⅞	4½	2	¾	2.90
125	3114	216	87	114	51	M16	1.32
6	1000	10	4⅞	4 ½	2⅝	¾	4.66
150	4448	254	103	114	60	M20	2.11
8	1300	12	5½	5½	2¾	¾	7.29
200	5783	305	130	133	70	M22	3.31
10	1700	14	6¼	5½	3⅜	¾	10.23
250	7562	356	159	140	86	M22	4.64
12	2300	16	7⅞	6	3⅝	¾	12.27
300	10231	406	189	152	100	M22	5.57
14	3075	17	8¾	7	4¾	1	21.39
350	13679	432	222	178	121	M24	9.70
16	3075	19½	9⅞	8	5⅞	1	27.76
400	13679	495	240	203	129	M24	12.59

Figure 110 PIPE SIZE OF ROLL	PIPE SIZE OF COVERING PROTECTION SADDLE to be used with Figure 110 Roller Support					
	Figure 351 1" Cov. 25	Figure 352 1½" Cov. 38	Figure 353 2" Cov. 51	Figure 354 2½" Cov. 64	Figure 355 3" Cov. 76	Figure 356 4" Cov. 102
4"	2-1/2"-3"	2"-2-1/2"				
100	65 - 80	50 - 65				
5"	3-1/2"					
125	90					
6"	4"-5"	3"-3-1/2"	2"-2-1/2"			
150	100 - 125	80 - 90	50 - 65			
7"	6"	4"-5"	3"-4"	2"-2-1/2"	2"-2-1/2"	
200	150	100 - 125	80 - 100	50 - 65	50 - 65	
8"	8"	6"	5"	3"-3-1/2"	3"-3-1/2"	
200	200	150	125	80 - 90	80 - 90	
10"		8"	6"	4"-5"	4"-5"	
250		200	150	100 - 125	100 - 125	
12"	10"	10"	8"	6"	6"-8"	4"-6"
300	250	250	200	150	150 - 200	100 - 150
14"	12"	12"	10"	8"		
350	300	300	250	200		
16"	14"	14"	12"-14"	10"	8"	8"
400	350	350	300 - 350	250	200	200

PIPE ROLLS

HARVARD ROLL HANGER

Figure 140

Designed to support piping lines from above, allowing for vertical adjustment, and axial movement in the piping. The lower nut (not furnished) adjusts the pipe line to the proper elevation, the top nut (not furnished) prevents loosening due to vibration, and must be tightened securely to assure proper hanger performance.

Material: Carbon Steel frame with a Cast Iron Roll. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: A-A-1192A Type 43 and MSS-SP-69 Type 43.

Finish: Plain, Painted, and Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 140 will have to be oversized to suit. Please see the Table below showing the correct sizing for insulated pipe.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M140.

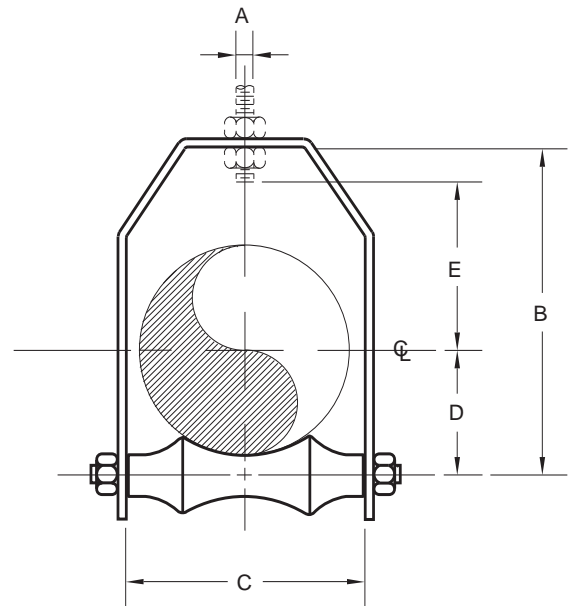


FIGURE 140 – HARVARD ROLL HANGER

PIPE SIZE	MAXIMUM LOAD	ROD SIZE A	B	C	D	E	G	WEIGHT EACH
2	150	½	4¼	2¾	1½	2¾	⅜ x 1¼	1.60
50	667	M12	108	70	41	67	5 x 32	0.73
2½	225	½	4¾	3¼	2	2¾	⅜ x 1¼	2.00
65	1001	M12	124	83	51	73	5 x 32	0.91
3	310	½	6¼	3¾	2¼	3¾	⅜ x 1¼	2.30
80	1379	M12	159	98	57	79	5 x 32	1.04
3½	390	½	6¾	4½	2¾	3¾	¼ x 1¼	2.50
90	1735	M12	175	114	67	89	6 x 32	1.13
4	475	¾	7½	4¾	2¾	3¾	¼ x 1½	4.00
100	2113	M16	191	124	73	92	6 x 38	1.81
5	685	¾	8¾	6¾	3½	4¾	¼ x 2	5.30
125	3047	M16	213	162	89	114	6 x 51	2.40
6	780	¾	9¾	7¾	4	5	¼ x 2	7.00
150	3470	M20	251	194	102	127	6 x 51	9.40
7	780	¾	11¾	8½	4¾	5¾	¼ x 2	9.40
175	3470	M20	283	216	121	133	6 x 51	4.26
8	780	¾	12¾	9¾	5¾	6¾	⅜ x 2	12.30
200	3470	M20	321	241	130	156	10 x 51	5.58
10	965	¾	15	11¼	6¾	7¾	⅜ x 2½	19.30
250	4293	M22	381	286	159	184	10 x 64	8.75
12	965	¾	17¾	13½	7½	8¾	½ x 2	23.10
300	4293	M22	435	343	191	213	13 x 51	10.50
14	1200	1	18¾	14¾	8¾	8¾	½ x 2½	35.50
350	5338	M24	467	371	213	222	13 x 64	16.10
16	1400	1	20½	17¼	9¾	9¾	½ x 2½	46.50
400	6228	M24	521	438	241	248	13 x 64	21.10
18	1400	1	23¾	19	10½	11½	½ x 3	57.00
450	6228	M24	587	483	267	292	13 x 76	25.90
20	1600	1¼	24½	21	11¾	12¼	⅜ x 3	75.90
500	7117	M30	622	533	295	311	16 x 76	34.40
24	1800	1½	29¾	24¾	14	15¾	⅜ x 3	119.30
600	8007	M36	759	629	356	400	16 x 76	54.10

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

Figure 140 PIPE SIZE OF ROLL	PIPE SIZE OF COVERING PROTECTION SADDLE to be used with Figure 140					
	Figure 351 1" Cov. 25	Figure 352 1½" Cov. 38	Figure 353 2" Cov. 51	Figure 354 2½" Cov. 64	Figure 355 3" Cov. 76	Figure 356 4" Cov. 100
2½	¾					
65	20					
3	1 to 1½					
80	25 to 40					
4	2 to 2½	1 to 1½				
100	50 to 65	25 to 40				
5	3 to 3½	2 to 2½	¾ to 1½			
125	80 to 90	50 to 65	20 to 40			
6	4	3 to 3½	2 to 2½	¾ to 1		
150	100	80 to 90	50 to 65	20 to 25		
7	5	4	3 to 3½	1¼ to 1½	2	
175	125	100	80 to 90	32 to 40	50	
8	6	5	4	2 to 3	2½	
200	150	125	100	50 to 80	65	
10	8	6	5 to 6	3½ to 5	3 to 4	
250	200	150	125 to 150	90 to 125	80 to 100	
12	10	8	8	6	5 to 6	
300	250	200	200	150	125 to 150	
14	12	10		8	5 to 6	
350	300	250		200	125 to 150	
16	14	12	10	10	8	8
400	350	300	250	250	200	200
18		14	12 to 14	12	10 to 12	10
450		350	300 to 350	300	250 to 300	250
20		16	16	14	14	12
500		400	400	350	350	300
24		18 to 20	18 to 20	18	18	16
600		450 to 500	450 to 500	450	450	400

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE ROLLS

ADJUSTABLE ROLL SUPPORT

Figure 142

The Figure 142 is designed for longitudinal movement of pipe where vertical adjustment is required. Although primarily used for support of the pipe, this component may also be placed over the pipe to act as a guide.

Material: Cast Iron Pipe Roll and Sockets with a Carbon Steel Axle. Do not exceed 450° F / 232° C at the contact point to the roll.

Compliance: A-A-1192A Type 42, MSS SP-69 Type 41.

Finish: Plain, Painted, Electro-Galv., Hot-Dip Galv.

For pipe with insulation and a pipe covering protection saddle the Figure 142 will have to be oversized to suit. Please see the Table below which shows the correct sizing for insulated pipe.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M142.

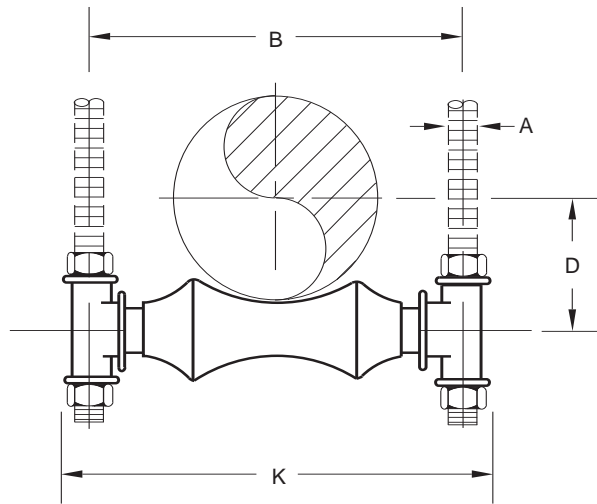


FIGURE 142 – ADJUSTABLE ROLL SUPPORT

PIPE SIZE	MAX LOAD	ROD SIZE A	B	D	K	WGT. EACH
1	600	3/8	3	1	4 1/2	0.45
25	2669	M10	76	25	105	0.20
1 1/2	600	3/8	3 3/8	1 1/4	4 1/2	0.48
32	2669	M10	86	32	114	0.22
1 1/2	600	3/8	3 5/8	1 3/8	4 3/4	0.51
40	2669	M10	92	35	121	0.23
2	600	3/8	4 1/8	1 1/2	5 1/4	0.57
50	2669	M10	105	41	133	0.26
2 1/2	600	1/2	5 1/2	2	7	1.48
65	2669	M12	140	51	178	0.67
3	700	1/2	6 1/8	2 1/4	7 3/8	1.48
80	3114	M12	156	57	194	0.67
4	700	3/4	7 1/8	2 3/8	8 3/8	1.78
100	3114	M16	181	73	219	0.81
5	700	3/4	8 3/8	3 1/2	9 3/8	2.42
125	3114	M16	213	89	251	1.10
6	1000	3/4	9 3/8	4	11 3/8	3.96
150	4448	M20	244	102	289	1.80
7	1200	3/4	10 3/8	4 3/8	12 1/2	5.99
175	5338	M20	273	121	318	2.72
8	1300	7/8	12	5 1/8	14	6.43
200	5783	M22	305	130	356	2.92
10	1700	7/8	14 3/8	6 1/4	16	8.45
250	7562	M22	359	159	406	3.83
12	2400	7/8	16 3/8	7 1/2	18	10.20
300	10676	M22	410	191	457	4.63
14	3100	1	17 3/8	8 3/8	20	20.90
350	13790	M24	451	213	508	9.48
16	3900	1	20 1/2	9 3/8	22 3/8	26.07
400	17349	M24	521	241	562	11.80
18	4200	1	22 3/8	10 1/2	24 3/8	36.59
450	18683	M24	562	267	619	16.60
20	4500	1 1/4	24 1/8	11 1/8	26 1/8	39.00
500	20018	M30	613	295	676	17.70
24	6100	1 1/2	28 3/8	14	32 3/8	66.90
600	27135	M36	733	356	816	30.30
30	7200	1 1/2	35 1/2	17 1/2	39 3/8	134.00
750	32028	M36	902	445	1013	60.80

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

Figure 142 PIPE SIZE OF ROLL	PIPE SIZE OF COVERING PROTECTION SADDLE to be used with Figure 142					
	Figure 351 1" Cov. 25	Figure 352 1½" Cov. 38	Figure 353 2" Cov. 51	Figure 354 2½" Cov. 64	Figure 355 3" Cov. 76	Figure 356 4" Cov. 102
2½	¾ to 1					
65	20 to 25					
3	1¼ to 1½	¾ to 1				
80	32 to 40	20 to 25				
4	2½ to 3	1½	¾ to 1			
100	65 to 80	40	20 to 25			
5	3½	2 to 2½	1¼ to 1½	¾ to 1		
125	90	50 to 65	32 to 40	20 to 25		
6	4 to 5	3 to 3½	2 to 2½	1¼ to 1½		
150	100 to 125	80 to 90	50 to 65	32 to 40		
7	6	4 to 5	3 to 4	2 to 2½	2 to 2½	
175	150	100 to 125	80 to 100	50 to 65	50 to 65	
8		6	5	3 to 3½	3 to 3½	
200		150	125	80 to 90	80 to 90	
10	8	8	6	4 to 5	4 to 5	
250	200	200	150	100 to 125	100 to 125	
12	10	10	8	6	6 to 8	4 to 6
300	250	250	200	150	150 to 200	100 to 150
14	12	12	10	8		
350	300	300	250	200		
16	14	14	12 to 14	10	10	8
400	350	350	300 to 350	250	250	200
18	16	16	16	12 to 14	12 to 14	10
450	400	400	400	300 to 400	300 to 400	250
20	18	18		16		12
500	450	450		400		300
24	20	20	18 to 20	18 to 20	16 to 20	14 to 18
600	500	500	450 to 500	450 to 500	400 to 450	350 to 450
30	24	24	24	24	24	20 to 24
750	600	600	600	600	600	500 to 600

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

PIPE ROLLS

PIPE ROLL

Figure 173

The Figure 173 is used in conjunction with our Figure 140, 142, and 333 Roll Hangers. The inside of the roll is cored. A special non-conductive roll is available upon request.

Material: Cast Iron.

Do not exceed 450° F / 232° C at the contact point to the roll.

Finish: Plain, Painted, Hot-Dip Galvanized.

Note: Not sold as an individual product.

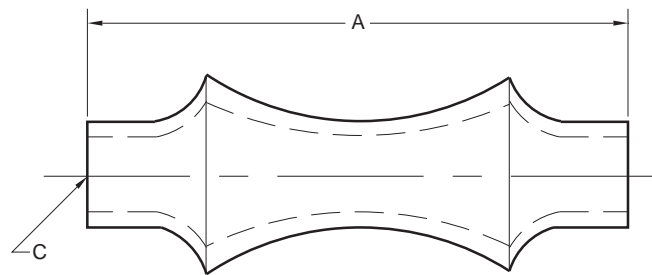


FIG. 173 – PIPE ROLL

PIPE SIZE	A	Roll Rod Diameter C	WEIGHT EACH
1	1½	¾	0.12
25	38	10	0.05
1¼	17½	¾	0.18
32	48	10	0.08
1½	2¼	¾	0.24
40	54	10	0.11
2	2¾	¾	0.34
50	73	10	0.15
2½	3¾	½	0.37
65	79	13	0.17
3	3¾	½	0.42
80	95	13	0.19
3½	4¾	½	0.68
90	111	13	0.31
4	4¾	½	0.90
100	121	13	0.41
5	5¾	¾	1.29
125	149	16	0.59
6	6¾	¾	1.8
150	171	16	0.82
7	8	¾	2.4
	203	19	1.09
8	8¾	¾	3.3
200	225	19	1.50
10	11	¾	4.8
250	279	22	2.18
12	13	¾	10.0
300	330	22	4.5
14	14¾	1	12.0
350	365	25	5.4
16	17	1¼	19.0
400	432	32	8.6
18	18¾	1¼	22.5
450	467	32	10.2
20	20¾	1¼	22.6
500	518	32	10.3
24	24¾	1½	43.7
600	616	38	19.8
30	30¾	1¾	98
750	768	44	44.5

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ROLLER SUPPORT

Figure 333

The Figure 333 is designed for axial movement of pipe where vertical adjustment is required. This part is normally used directly above the supporting structure.

Material: Cast Iron Pipe Roll, Carbon Steel Axle, Chair, and Hex Nuts. Do not exceed 450° F / 232° C at the contact point to the roll.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

For pipe with insulation and a pipe covering protection saddle the Figure 333 will have to be oversized to suit. Please see the Table for the Figure 142 which shows the correct sizing for insulated pipe.

Ordering: Specify pipe size, figure number, and finish. For Metric applications specify Figure M333.

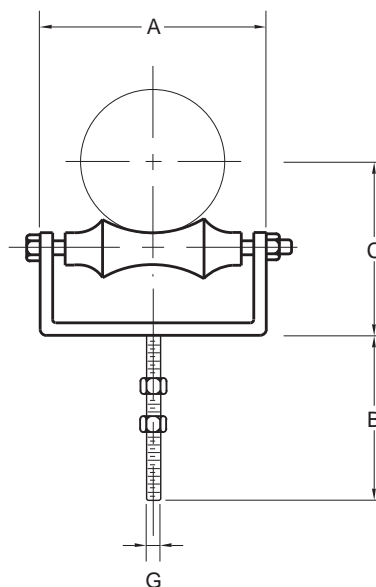


FIGURE 333 – ROLLER SUPPORT

PIPE SIZE	MAXIMUM LOAD	A	B	C	ROD G	WEIGHT EACH
2	400	2 $\frac{1}{8}$	6	2 $\frac{1}{8}$	$\frac{1}{2}$	2.09
50	1779	73	152	73	M12	0.95
2 $\frac{1}{2}$	400	3 $\frac{3}{8}$	6	3 $\frac{3}{8}$	$\frac{1}{2}$	2.43
65	1779	86	152	83	M12	1.10
3	400	4	6	3 $\frac{3}{8}$	$\frac{1}{2}$	2.65
80	1779	102	152	92	M12	1.20
3 $\frac{1}{2}$	400	4 $\frac{1}{2}$	6	4	$\frac{1}{2}$	2.72
90	1779	114	152	102	M12	1.23
4	600	5 $\frac{5}{8}$	6	4 $\frac{5}{16}$	$\frac{5}{8}$	3.43
100	2669	130	152	110	M16	1.56
5	600	6 $\frac{1}{8}$	6	5 $\frac{1}{16}$	$\frac{3}{4}$	4.26
125	2669	156	152	129	M16	1.93
6	900	7 $\frac{1}{4}$	6	6	$\frac{3}{4}$	7.71
150	4004	184	152	152	M20	3.50
8	900	9 $\frac{3}{8}$	6	7 $\frac{1}{4}$	$\frac{3}{4}$	9.93
200	4004	238	152	184	M20	4.50
10	1100	11 $\frac{1}{2}$	6	8 $\frac{13}{16}$	1	16.70
250	4893	292	152	224	M24	7.55
12	1100	13 $\frac{1}{2}$	6	10 $\frac{5}{16}$	1	19.30
300	4893	343	152	262	M24	8.77

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE SADDLES AND PIPE SHIELDS

INSULATION SHIELD

Figure 265GS

The Figure 265GS is designed to support insulated pipe and prevent crushing of the insulation at the point of support. This item is usually used with our Figure 100 Clevis Hanger.

Material: Carbon Steel.

Compliance: A-A 1192A Type 40, MSS SP-69 Type 40.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify hanger size, and figure number. For Metric applications specify Figure M265GS.

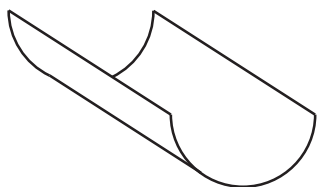


FIGURE 265GS – INSULATION SHIELD

INSIDE DIA.	CLEVIS HANGER SIZE	SHIELD GAUGE	LENGTH	WEIGHT EACH
2½	2	18	12	0.62
60	50	1	305	0.28
2¾	2½	18	12	0.76
73	65	1	305	0.34
3½	3	18	12	0.92
89	80	1	305	0.42
4	3½	18	12	1.04
102	90	1	305	0.47
4½	4	18	12	1.16
114	100	1	305	0.53
5	5	18	12	1.32
127	125	1	305	0.60
5½	6	18	12	1.46
143	150	1	305	0.66
6¾	6	16	12	2.30
168	150	1	305	1.04
7¾	7	16	12	2.70
194	175	1	305	1.22
8½	8	16	12	3.00
219	200	1	305	1.36
9¾	10	16	18	5.10
244	250	1	457	2.31
10¾	10	16	18	5.60
273	250	1	457	2.54
11¾	12	14	24	10.00
298	300	2	610	4.50
12¾	12	14	24	11.00
324	300	2	610	5.00
14	14	14	24	12.00
356	350	2	610	5.40
15	16	14	24	13.00
381	400	2	610	5.90
16	16	14	24	14.00
406	400	2	610	6.40
17	18	14	24	15.00
432	450	2	610	6.80
18	18	12	24	17.00
457	450	3	610	7.70
19	20	12	24	23.00
483	500	3	610	10.40
20	20	12	24	24.00
508	500	3	610	10.90
21	24	12	24	25.00
533	600	3	610	11.30
22	24	12	24	26.00
559	600	3	610	11.80
23	24	12	24	28.00
584	600	3	610	12.70
24	24	12	24	29.00
610	600	3	610	13.20
26	30	12	24	31.00
660	750	3	610	14.10
27	30	12	24	32.00
686	750	3	610	14.50
28	30	12	24	34.00
711	750	3	610	15.40

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

INSULATION SHIELD

Figure 265P

The Figure 265P is designed to protect the insulation and distribute the load at the hanger point. This item is usually used with our Figure 100 Clevis Hanger.

Material: Carbon Steel.

Compliance: A-A 1192A Type 40, MSS SP-69 Type 40.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify hanger size, and figure number. For Metric applications specify Figure M265P.

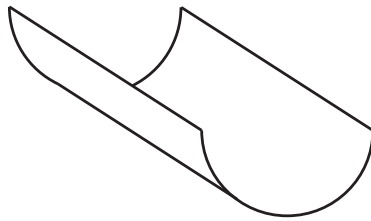


FIGURE 265P – INSULATION SHIELD

INSIDE DIAMETER	CLEVIS HANGER SIZE	LENGTH	WEIGHT EACH
2 $\frac{3}{8}$	2	12	0.62
60	50	305	0.28
2 $\frac{7}{8}$	2 $\frac{1}{2}$	12	0.76
73	65	305	0.34
3 $\frac{1}{2}$	3	12	0.92
89	80	305	0.42
4	3 $\frac{1}{2}$	12	1.04
102	90	305	0.47
4 $\frac{1}{2}$	4	12	1.16
114	100	305	0.53
5	5	12	1.32
127	125	305	0.60
5 $\frac{5}{8}$	5	12	1.46
143	125	305	0.66
6 $\frac{1}{8}$	6	12	1.58
168	150	305	0.72
7 $\frac{1}{8}$	7	12	1.74
194	175	305	0.79
8 $\frac{5}{8}$	8	12	2.02
219	200	305	0.92
9 $\frac{1}{8}$	10	12	2.28
244	250	305	1.03
10 $\frac{3}{4}$	10	12	2.54
273	250	305	1.15
11 $\frac{1}{4}$	12	12	2.84
298	300	305	1.29
12 $\frac{1}{4}$	12	12	4.18
324	300	305	1.90
14	14	12	4.58
356	350	305	2.08
15	16	12	4.90
381	400	305	2.22
16	16	12	5.20
406	400	305	2.36
17	18	12	5.53
432	450	305	2.51
18	18	12	6.20
457	450	305	2.81
19	20	12	6.50
483	500	305	2.95
20	20	12	7.25
508	500	305	3.29
21	24	12	7.30
533	600	305	3.31
22	24	12	7.60
559	600	305	3.45
23	24	12	7.75
584	600	305	3.52
24	24	12	8.00
610	600	305	3.63

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

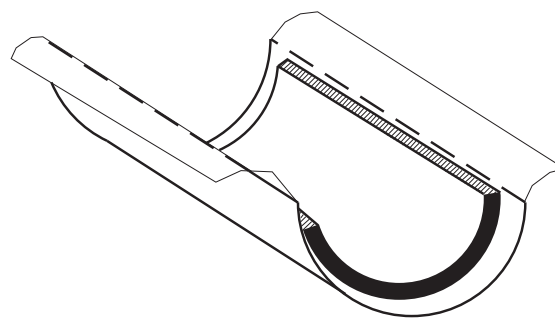
PIPE SADDLES AND PIPE SHIELDS

IRON PIPE INSULATION SHIELD

Figure 265 CVB

COPPER TUBING INSULATION SHIELD

Figure 365 CVB



Both the Figure 265 CVB and 365 CVB are designed to insulated the pipe and tubing for thermal efficiency as well as to provide a vapor barrier to prevent moisture condensation after installation. Both products are comprised of a poly-urethane insulation, an outer wrapper and a galvanized steel shield. Recommended for an operating temperature range of -200° F (-129° C) to +250° F (121° C).

Materials: Polyurethane, ASJ (Vapor Barrier), Carbon Steel.

Finish: Electro-Galvanized.

Ordering: Specify pipe/tubing size, covering thickness, and figure number. For Metric applications specify Figure M265CVB or M365CVB.

FIGURE 265 CVB – IRON PIPE SHIELD
FIGURE 365 CVB – COPPER TUBING SHIELD

PIPE SIZE	TUBING SIZE	SHIELD LENGTH	VAPOR BARRIER LENGTH	NOMINAL INSULATION THICKNESS WEIGHT			
				¾"	1"	1½"	2"
½	½	6	10	0.48	0.60	0.97	1.56
15	15	152	254	0.22	0.27	0.44	0.71
¾	¾	6	10	0.54	0.62	1.02	1.58
20	20	152	254	0.24	0.28	0.46	0.72
1	1	6	10	0.61	0.77	1.37	1.73
25	25	152	254	0.28	0.35	0.62	0.78
1¼	1¼	6	10	0.75	0.80	1.51	1.76
32	32	152	254	0.34	0.36	0.68	0.80
1½	1½	6	10	0.77	0.92	1.60	2.14
40	40	152	254	0.35	0.42	0.73	0.97
2	2	6	10	0.99	1.26	1.82	2.29
50	50	152	254	0.45	0.57	0.83	1.04
2½	2½	6	10	1.18	1.40	2.16	3.17
65	65	152	254	0.54	0.64	0.98	1.44
3	3	6	10	1.47	1.57	2.30	3.37
80	80	152	254	0.67	0.71	1.04	1.53
4	4	6	10	1.74	2.11	3.32	4.06
100	100	152	254	0.79	0.96	1.51	1.84
5	5	6	10	3.04	2.44	3.58	5.11
125	125	152	254	1.38	1.11	1.62	2.32
6	6	6	10	2.75	3.20	4.43	5.90
150	150	152	254	1.25	1.45	2.01	2.68
8		12	16	3.15	3.25	3.47	8.78
200		305	406	1.43	1.47	1.57	3.98
10		12	16	3.95	4.05	4.27	8.95
250		305	406	1.79	1.84	1.94	4.06
12		12	16	4.67	4.77	4.97	9.04
300		305	406	2.12	2.16	2.25	4.10
14		12	16	5.19	5.29	5.45	9.17
350		305	406	2.35	2.40	2.47	4.16
16		12	16	5.94	6.14	6.35	9.44
400		305	406	2.69	2.79	2.88	4.28
18		12	16	6.57	6.68	6.85	9.47
450		305	406	2.98	3.03	3.11	4.30
20		12	16	8.64	8.75	8.95	9.60
500		305	406	3.92	3.97	4.06	4.35

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE COVERING PROTECTION SADDLE

Figure 351 to 357Z

The Figure 351 to 357APCP saddles are used to protect the insulation against damage and keep heat loss to a minimum. They are designed for from 1" up to 5" of covering. All Saddles are 12" long with three tabs on each side for welding to pipe. Sizes 12" and larger have a welded in center rib.

Material: Carbon Steel (except Fig 356Z and 357Z which are Chrome Molybdenum Steel).

Compliance: Federal Specification A-A-1192A Type 39A or 39B, MSS-SP-69 Type 39A or 39B and BSPSS-BS3974.

Finish: Plain, Painted, Electro-Galv., Hot-Dip Galv.

Ordering: Specify figure number and pipe size. For Metric applications specify Figure M351 to M357Z.

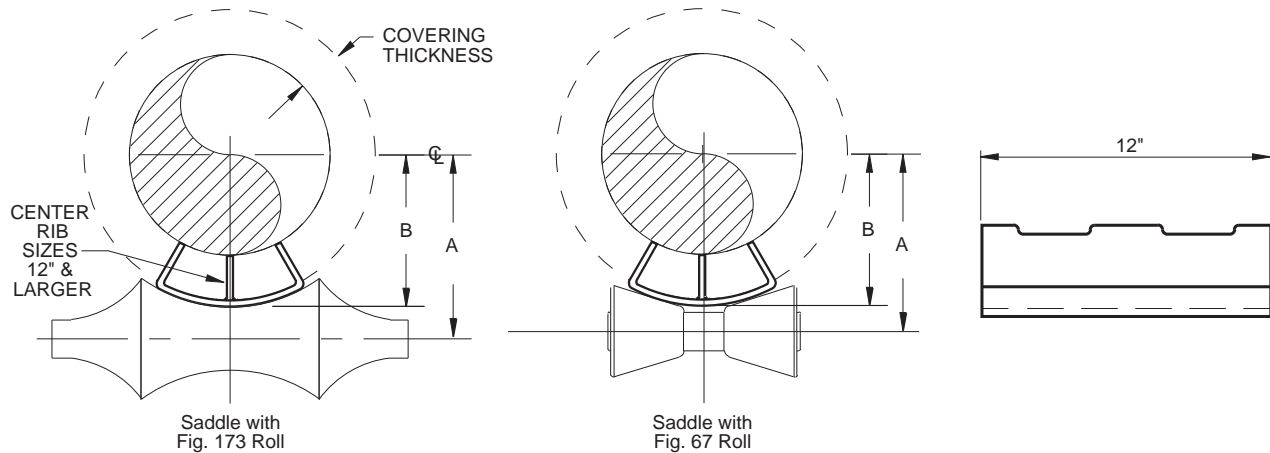


FIGURE 351 TO 357Z – PIPE COVERING PROTECTION SADDLE

PIPE SIZE	FIG. NO.	MAXIMUM COVERING THICKNESS	ACTUAL COVERING THICKNESS	MAX. LOAD	SADDLE WITH FIG. 173 ROLL			SADDLE WITH FIG. 67 ROLL			WEIGHT EACH
					ROLL SIZE	A	B	ROLL SIZE	A	B	
3/4 20	351	1	1 ⁵ / ₁₆	1200	2 ¹ / ₂	2 ¹ / ₈	1 ⁵ / ₈	2-3 ¹ / ₂	2 ⁵ / ₁₆	1 ⁵ / ₈	1.15
		25	24	5338	64	54	41	50-90	59	41	0.52
	352	1 ¹ / ₂	1 ¹ / ₂	1200	3	2 ⁵ / ₈	2 ¹ / ₈	2-3 ¹ / ₂	2 ¹¹ / ₁₆	2 ¹ / ₈	2.10
		38	38	5338	76	67	54	50-90	68	54	0.95
1 25	353	2	2	1200	4	3 ¹ / ₄	2 ⁵ / ₈	2-3 ¹ / ₂	3 ³ / ₈	2 ⁵ / ₈	2.63
		51	51	5338	100	83	67	50-90	86	67	1.19
	351	1	1 ¹ / ₁₆	1200	2 ¹ / ₄	2 ³ / ₄	1 ³ / ₄	2-3 ¹ / ₂	2 ⁷ / ₁₆	1 ³ / ₄	1.15
		25	27	5338	65	70	44	50-90	62	44	0.52
1 25	352	1 ¹ / ₂	1 ⁹ / ₁₆	1200	3	2 ⁷ / ₈	2 ³ / ₈	2-3 ¹ / ₂	2 ¹⁵ / ₁₆	2 ³ / ₈	2.10
		38	40	5338	80	73	60	50-90	75	60	0.95
	353	2	2 ¹ / ₈	1200	4	3 ³ / ₈	2 ³ / ₄	2-3 ¹ / ₂	3 ¹ / ₂	2 ³ / ₄	2.63
		51	54	5338	100	86	70	50-90	89	70	1.19
1 1/4 32	351	1	7/8	1200	3	2 1/2	2	2-3 1/2	2 9/16	2	1.25
		25	22	5338	80	64	51	50-90	65	51	0.57
	352	1 1/2	1 5/8	1200	3 1/2	3	2 1/2	2-3 1/2	3 3/16	2 1/2	2.10
		38	41	5338	90	76	64	50-90	81	64	0.95
	353	2	1 15/16	1200	5	3 5/8	3 1/16	2-3 1/2	3 11/16	3 1/16	2.63
		51	49	5338	125	92	78	50-90	94	78	1.19
1 1/2 40	354	2 1/2	2 1/2	1200	6	4 1/4	3 1/2	4-6	4 1/16	3 1/2	3.25
		64	64	5338	150	108	89	100-150	103	89	1.47
	351	1	1 1/16	1200	3	2 1/2	2	2-3 1/2	2 11/16	2	1.50
		25	27	5338	80	64	51	50-90	68	51	0.68
	352	1 1/2	1 9/16	1200	4	3 1/8	2 5/8	2-3 1/2	3 5/16	2 5/8	2.10
		38	40	5338	90	79	67	50-90	84	67	0.95
1 1/2 40	353	2	2 3/8	1800	5	4 1/8	3 3/8	2-3 1/2	3 3/4	3 3/8	3.10
		51	60	8007	125	105	86	50-90	95	86	1.41
	354	2 1/2	2 7/8	1800	6	4 5/8	3 7/8	4-6	4 3/16	3 7/8	3.75
		64	73	8007	152	117	98	100-150	106	98	1.70

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FARENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

PIPE SADDLES AND PIPE SHIELDS

FIGURE 351 TO 357Z – PIPE COVERING PROTECTION SADDLE

PIPE SIZE	FIG. NO.	MAXIMUM COVERING THICKNESS	ACTUAL COVERING THICKNESS	MAX. LOAD	SADDLE WITH FIG. 173 ROLL			SADDLE WITH FIG. 67 ROLL			WEIGHT EACH
					ROLL SIZE	A	B	ROLL SIZE	A	B	
2 50	351	1	1 ¹ / ₁₆	1200	3 ¹ / ₂	2 ⁷ / ₈	2 ³ / ₈	2-3 ¹ / ₂	2 ¹⁵ / ₁₆	2 ³ / ₈	1.63
		25	27	5338	80	73	60	50-90	75	60	0.74
	352	1 ¹ / ₂	1 ⁹ / ₁₆	1200	4	3 ¹ / ₈	2 ⁵ / ₈	2-3 ¹ / ₂	3 ⁵ / ₁₆	2 ⁵ / ₈	2.10
		38	40	5338	102	79	67	50-90	84	67	0.95
	353	2	2 ¹ / ₈	1800	6	4 ¹ / ₄	3 ¹ / ₂	4-6	3 ⁷ / ₈	3 ¹ / ₂	3.12
		51	54	8007	152	108	89	100-150	98	89	1.42
	354	2 ¹ / ₂	2 ⁵ / ₈	1800	7	4 ³ / ₄	4	4-6	4 ¹³ / ₁₆	4	3.63
		64	67	8007	178	121	102	100-150	122	102	1.65
	355	3	3 ¹ / ₁₆	1800	7	5 ¹ / ₄	4 ¹ / ₂	7-10	5 ⁵ / ₁₆	4 ¹ / ₂	4.40
		76	78	8007	178	133	114	180-255	135	114	2.00
2 ¹ / ₂ 65	351	1	1 ¹ / ₁₆	1200	4	3 ¹ / ₂	2 ⁷ / ₈	2-3 ¹ / ₂	3 ³ / ₁₆	2 ⁷ / ₈	1.75
		25	27	5338	102	89	73	50-90	90	73	0.79
	352	1 ¹ / ₂	1 ⁷ / ₈	1200	6	4 ¹ / ₂	3 ³ / ₈	2-3 ¹ / ₂	3 ³ / ₄	3 ³ / ₈	2.40
		38	48	5338	152	114	86	50-90	95	86	1.09
	353	2	2 ³ / ₈	1800	6	4 ⁵ / ₈	3 ⁷ / ₈	4-6	4 ³ / ₁₆	3 ⁷ / ₈	3.12
		51	60	8007	152	117	98	100-150	106	98	1.42
	354	2 ¹ / ₂	2 ⁷ / ₈	1800	7	5 ¹ / ₈	4 ³ / ₈	7-10	5 ¹ / ₁₆	4 ³ / ₈	3.63
		64	73	8007	178	130	111	180-255	129	111	1.65
	355	3	3 ³ / ₈	1800	7	5 ⁵ / ₈	4 ⁷ / ₈	7-10	5 ⁹ / ₁₆	4 ⁷ / ₈	4.40
		76	86	8007	178	143	124	180-255	141	124	2.00
3 80	351	1	1 ¹ / ₁₆	1200	4	3 ¹ / ₂	2 ⁷ / ₈	2-3 ¹ / ₂	3 ³ / ₁₆	2 ⁷ / ₈	1.75
		25	27	5338	102	89	73	50-90	90	73	0.79
	352	1 ¹ / ₂	1 ⁹ / ₁₆	1800	6	4 ¹ / ₂	3 ³ / ₄	4-6	4 ¹ / ₁₆	3 ³ / ₄	2.75
		38	40	8007	152	114	95	100-150	103	95	1.25
	353	2	2 ¹ / ₁₆	1800	7	4 ³ / ₄	4	4-6	4 ⁹ / ₁₆	4	3.50
		51	52	8007	178	121	102	100-150	116	102	1.59
	354	2 ¹ / ₂	2 ⁹ / ₁₆	1800	8	5 ³ / ₈	4 ⁵ / ₈	7-10	5 ³ / ₈	4 ⁵ / ₈	3.93
		64	65	8007	203	137	117	180-255	137	117	1.78
	355	3	3 ¹ / ₁₆	1800	8	5 ⁷ / ₈	5	7-10	6	5	4.40
		76	78	8007	203	149	127	180-255	152	127	2.00
4 100	351	1	1 ¹ / ₁₆	5000	6	4 ¹ / ₄	3 ¹ / ₂	4-6	4	3 ¹ / ₂	2.13
		25	27	22242	152	108	89	100-150	102	89	0.97
	352	1 ¹ / ₂	1 ⁹ / ₁₆	5000	7	4 ³ / ₄	4	4-6	4 ¹ / ₁₆	4	3.00
		38	40	22242	178	121	102	100-150	103	102	1.36
	353	2	2 ¹ / ₁₆	5000	7	5 ³ / ₈	4 ⁵ / ₈	4-6	5 ¹ / ₈	4 ⁵ / ₈	3.50
		51	52	22242	178	137	117	100-150	130	117	1.59
	354	2 ¹ / ₂	2 ⁹ / ₁₆	5000	10	6	5 ¹ / ₈	7-10	5 ⁷ / ₈	5 ¹ / ₈	3.93
		64	65	22242	254	152	130	180-255	149	130	1.78
	355	3	3 ¹ / ₈	5000	10	6 ⁵ / ₈	5 ³ / ₄	7-10	6 ³ / ₈	5 ³ / ₄	5.00
		76	79	22242	254	168	146	180-255	162	146	2.27
356	4	4 ¹ / ₈	5000	12	7 ³ / ₄	6 ¹ / ₂	7-10	7 ⁹ / ₁₆	6 ¹ / ₂	6.30	
	102	105	22242	305	197	165	180-255	192	165	2.86	
356Z	4	4 ¹ / ₁₆	5000	12	7 ³ / ₄	6 ¹ / ₂	7-10	7 ⁵ / ₈	6 ¹ / ₂	14.45	
	102	103	22242	305	197	165	180-255	194	165	6.55	
357Z	5 ¹ / ₂	5 ¹¹ / ₁₆	5000	16	9 ⁵ / ₈	8 ¹ / ₄	16	9 ¹ / ₂	8 ¹ / ₄	26.40	
	140	144	22242	406	244	210	180-255	241	210	11.98	
5 125	351	1	1 ¹ / ₁₆	1800	6	4 ⁷ / ₈	4 ¹ / ₈	4-6	4	4 ¹ / ₈	2.38
		25	27	8007	152	124	105	100-150	102	105	1.08
	352	1 ¹ / ₂	1 ⁹ / ₁₆	1800	7	5 ¹ / ₂	4 ³ / ₄	4-6	5 ³ / ₁₆	4 ³ / ₄	3.00
		38	40	8007	178	140	121	100-150	132	121	1.36
	353	2	2 ¹ / ₁₆	1800	8	6	5 ¹ / ₄	7-10	6	5 ¹ / ₄	3.62
		51	52	8007	203	152	133	180-255	152	133	1.64
	354	2 ¹ / ₂	2 ⁹ / ₁₆	1800	10	6 ⁵ / ₈	5 ³ / ₄	7-10	6 ⁷ / ₁₆	5 ³ / ₄	4.06
		64	65	8007	254	168	146	180-255	164	146	1.84
	355	3	3 ¹ / ₁₆	1800	10	7 ¹ / ₈	6 ¹ / ₄	7-10	7 ⁵ / ₃₂	6 ¹ / ₄	5.00
		76	78	8007	254	181	159	180-255	182	159	2.27
356	4	4 ¹ / ₄	1800	12	8 ¹ / ₄	7	7-10	8 ³ / ₃₂	7	6.30	
	102	108	8007	305	210	178	180-255	206	178	2.86	
356Z	4	4 ³ / ₁₆	5000	12	8 ³ / ₈	7 ¹ / ₈	7-10	8 ¹ / ₄	7 ¹ / ₈	14.95	
	102	106	22242	305	213	181	180-255	210	181	6.78	
357Z	5 ¹ / ₂	5 ¹¹ / ₁₆	5000	18	10 ³ / ₁₆	8 ³ / ₄	18	10 ³ / ₄	8 ³ / ₄	27.40	
	140	144	22242	457	259	222	180-255	273	222	12.43	

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

PIPE SADDLES AND PIPE SHIELDS

FIGURE 351 TO 357Z – PIPE COVERING PROTECTION SADDLE

PIPE SIZE	FIG. NO.	MAXIMUM COVERING THICKNESS	ACTUAL COVERING THICKNESS	MAX. LOAD	SADDLE WITH FIG. 173 ROLL			SADDLE WITH FIG. 67 ROLL			WEIGHT EACH
					ROLL SIZE	A	B	ROLL SIZE	A	B	
6 150	351	1	1	1800	7	5 ³ / ₈	4 ⁵ / ₈	4-6	5 ¹ / ₈	4 ⁵ / ₈	3.85
		25	27	8007	178	137	117	100-150	130	117	1.75
	352	1½	1½	1800	8	5 ⁷ / ₈	5	7-10	6 ³ / ₁₆	5	4.75
		38	38	8007	203	149	127	180-255	157	127	2.15
	353	2	2 ¹ / ₁₆	1800	10	6 ³ / ₈	5 ¹ / ₂	7-10	6 ¹ / ₂	5 ¹ / ₂	6.28
		51	52	8007	254	162	140	180-255	165	140	2.85
	354	2½	2 ⁹ / ₁₆	1800	12	7	6	12-15	7 ⁵ / ₈	6	7.09
		64	65	8007	305	178	152	305-380	194	152	3.22
	355	3	3 ¹ / ₁₆	1800	12	7 ³ / ₄	6 ¹ / ₂	7-10	7 ¹ / ₂	6 ¹ / ₂	8.10
		76	78	8007	305	197	165	180-255	191	165	3.67
356	4	4 ³ / ₁₆	1800	12	8 ⁷ / ₈	7 ⁵ / ₈	12-15	8 ¹³ / ₁₆	7 ⁵ / ₈	10.15	
	102	106	8007	305	225	194	305-380	224	194	4.60	
356Z	4	4 ¹ / ₈	7200	12	8 ⁷ / ₈	7 ⁷ / ₈	12-15	8 ⁷ / ₈	7 ⁷ / ₈	16.00	
	102	105	32028	305	225	200	305-381	225	200	7.26	
357Z	5½	5 ⁵ / ₈	7200	18	11 ⁹ / ₁₆	10	18	11 ¹ / ₂	10	27.50	
	140	143	32028	457	294	254	180-255	292	254	12.47	
8 200	351	1	1 ¹ / ₁₆	1800	10	7	6	7-10	6 ⁹ / ₁₆	6	5.05
		25	27	8007	254	178	152	180-255	167	152	2.29
	352	1½	1 ⁹ / ₁₆	1800	10	7	6	7-10	7 ³ / ₁₆	6	5.25
		38	40	8007	254	178	152	180-255	183	152	2.38
	353	2	2 ¹ / ₁₆	1800	12	7 ¹ / ₂	6 ¹ / ₂	7-10	7 ¹¹ / ₁₆	6 ¹ / ₂	7.00
		51	52	8007	305	191	165	180-255	195	165	3.18
	354	2½	2 ¹¹ / ₁₆	1800	14	8 ¹ / ₄	7	12-15	8 ¹¹ / ₁₆	7	7.55
		64	68	8007	356	210	178	305-380	221	178	3.42
	355	3	3 ³ / ₁₆	1800	12	8 ⁷ / ₈	7 ⁵ / ₈	12-15	8 ²⁷ / ₃₂	7 ⁵ / ₈	9.90
		76	81	8007	305	225	194	305-380	225	194	4.49
356	4	4 ³ / ₁₆	1800	16	10	8 ³ / ₄	12-15	9 ¹³ / ₁₆	8 ³ / ₄	10.13	
	102	106	8007	406	254	222	305-380	249	222	4.59	
356Z	4	4 ³ / ₁₆	7200	16	10	8 ³ / ₄	12-15	9 ⁷ / ₈	8 ³ / ₄	16.90	
	102	106	32028	406	254	222	305-380	251	222	7.67	
357Z	5½	5 ⁹ / ₁₆	7200	20	11 ¹³ / ₁₆	10 ¹ / ₄	20	11 ³ / ₄	10 ¹ / ₄	34.10	
	140	141	32028	508	300	260	180-255	298	260	15.47	
10 250	351	1	1	1800	10	8 ¹ / ₄	7 ¹ / ₄	7-10	6 ⁹ / ₁₆	7 ¹ / ₄	5.05
		25	25	8007	254	210	184	180-255	167	184	2.29
	352	1½	1 ⁵ / ₈	1800	10	8 ¹ / ₄	7 ¹ / ₄	7-10	7 ³ / ₁₆	7 ¹ / ₄	5.25
		38	41	8007	254	210	184	180-255	183	184	2.38
	353	2	2 ¹ / ₁₆	1800	12	9 ¹ / ₈	7 ⁷ / ₈	7-10	7 ¹¹ / ₁₆	7 ⁷ / ₈	7.0
		51	52	8007	305	252	200	180-255	195	200	3.18
	354	2½	2 ¹ / ₈	1800	16	9 ⁵ / ₈	8 ¹ / ₈	16-20	9 ¹¹ / ₁₆	8 ¹ / ₈	8.75
		64	54	8007	406	244	206	406-508	246	206	3.97
	355	3	3 ¹ / ₈	1800	16	10 ¹ / ₈	8 ⁷ / ₈	16-20	10 ³ / ₈	8 ⁷ / ₈	10.70
		76	79	8007	406	257	225	406-508	264	225	4.85
356	4	4 ¹ / ₈	1800	18	11 ¹ / ₈	9 ³ / ₄	16-20	11 ¹ / ₁₆	9 ³ / ₄	13.88	
	102	105	8007	457	283	248	406-508	281	248	6.30	
356Z	4	4 ¹ / ₁₆	7200	18	11 ¹ / ₈	9 ³ / ₄	16-20	11 ¹ / ₈	9 ³ / ₄	17.50	
	102	103	32028	457	283	248	406-508	283	248	7.94	
357Z	5½	5 ⁹ / ₁₆	7200	20	13 ¹ / ₈	11 ¹ / ₄	20	12 ⁵ / ₈	11 ¹ / ₄	36.60	
	140	141	32028	508	333	286	406-508	321	286	16.60	
12 300	351	1	1 ¹ / ₈	2500	14	9 ³ / ₈	8 ¹ / ₈	12-15	9 ¹ / ₄	8 ¹ / ₈	7.30
		25	29	11121	356	238	206	305-380	235	206	3.31
	352	1½	1 ⁵ / ₈	5000	14	9 ³ / ₈	8 ¹ / ₈	12-15	9 ⁷ / ₈	8 ¹ / ₈	7.35
		38	41	22242	356	356	238	305-380	251	206	3.33
	353	2	2 ¹ / ₈	5000	16	10	8 ⁵ / ₈	16-20	9 ¹⁵ / ₁₆	8 ⁵ / ₈	9.20
		51	54	22242	406	254	219	406-508	252	219	4.17
	354	2½	2 ¹ / ₈	5000	18	10 ¹ / ₂	9 ¹ / ₈	16-20	10 ⁹ / ₁₆	9 ¹ / ₈	10.04
		64	54	22242	457	267	232	406-508	268	232	4.55
	355	3	3 ¹ / ₈	5000	18	11 ¹ / ₄	9 ³ / ₄	16-20	11 ¹ / ₈	9 ³ / ₄	11.00
		76	79	22242	457	286	248	406-508	283	248	4.99
356	4	4 ¹ / ₈	5000	20	12 ¹ / ₄	10 ³ / ₄	16-20	12 ¹ / ₁₆	10 ³ / ₄	14.45	
	102	105	22242	508	311	273	406-508	306	273	6.55	
356Z	4	4 ¹ / ₈	11000	20	12 ¹ / ₄	10 ³ / ₄	16-20	12 ¹ / ₈	10 ³ / ₄	28.00	
	102	105	48932	508	311	273	406-508	308	273	12.70	
357Z	5½	5 ⁹ / ₁₆	11000	24	14 ¹ / ₄	12 ³ / ₈	24	13 ³ / ₄	12 ³ / ₈	36.60	
	140	141	48932	610	362	314	406-508	349	314	16.60	

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

PIPE SADDLES AND PIPE SHIELDS

FIGURE 351 TO 357Z – PIPE COVERING PROTECTION SADDLE

PIPE SIZE	FIG. NO.	MAXIMUM COVERING THICKNESS	ACTUAL COVERING THICKNESS	MAX. LOAD	SADDLE WITH FIG. 173 ROLL			SADDLE WITH FIG. 67 ROLL			WEIGHT EACH
					ROLL SIZE	A	B	ROLL SIZE	A	B	
14 350	352	1½	1½	5000	16	10¼	9	16-20	10¾	9	8.25
		38	38	22242	406	260	229	406-508	264	229	3.74
	353	2	2	5000	18	10¾	9¾	16-20	10¾	9¾	9.20
		51	51	22242	457	273	238	406-508	273	238	4.17
	354	2½	2½	5000	18	11¾	9¾	16-20	11¼	9¾	10.04
		64	54	22242	457	289	251	406-508	286	251	4.55
	355	3	3	5000	18	12	10½	16-20	11¾	10½	11.00
		76	76	22242	457	305	267	406-508	298	267	4.99
	356	4	4	5000	24	13¼	11¾	22-24	12¾	11¾	15.50
		102	102	22242	610	337	298	559-610	314	298	7.03
	356Z	4	4	11000	24	12¾	11¼	22-24	11¾	11¼	27.60
		102	102	48932	610	324	286	559-610	302	286	12.52
	357Z	5½	5½	11000	24	15	13¾	24	14½	13¾	36.60
		140	140	48932	610	381	333	559-610	368	333	16.60
16 400	352	1½	1½	5000	18	11½	9¾	16-20	11¼	9¾	8.25
		38	38	22242	457	283	248	406-508	286	248	3.74
	353	2	2	5000	20	11¾	10¼	16-20	11¾	10¼	9.20
		51	51	22242	508	298	260	406-508	295	260	4.17
	354	2½	2½	7200	20	12¼	10¾	16-20	12¼	10¾	13.69
		64	64	32028	508	311	273	406-508	311	273	6.21
	355	3	3	7200	24	12¾	11½	22-24	12¾	11½	14.65
		76	76	32028	610	327	283	559-610	327	283	6.65
	356	4	4	7200	24	14	12¼	22-24	13¾	12¼	15.50
		102	102	32028	610	356	311	559-610	344	311	7.03
	356Z	4	4	11000	24	14	12¼	22-24	13¾	12¼	30.10
		102	102	48932	610	356	311	559-610	346	311	13.65
	357Z	5½	5½	11000	30	16½	13¾	30	15¾	13¾	39.00
		140	140	48932	762	411	352	559-610	400	352	17.69
18 450	352	1½	1½	5000	20	12¼	10¾	16-20	12¼	10¾	9.35
		38	38	22242	508	311	273	406-508	311	273	4.24
	353	2	2	7200	24	13¾	11¾	22-24	12¾	11¾	12.00
		51	51	32028	610	333	295	559-610	314	295	5.44
	354	2½	2½	7200	24	13½	11¾	22-24	13	11¾	14.19
		64	64	32028	610	343	298	559-610	330	298	6.44
	355	3	3	7200	24	14	12¼	22-24	13½	12¼	15.25
		76	76	32028	610	356	311	559-610	343	311	6.92
	356	4	4	7200	24	15¾	13¾	22-24	14¾	13¾	21.00
		102	102	32028	610	330	346	559-610	371	346	9.53
	356Z	4	4	13200	24	15¾	13¾	22-24	14¾	13¾	40.30
		102	102	58719	610	384	340	559-610	365	340	18.28
	357Z	5½	5½	13200	30	17½	15	30	16¾	15	52.10
		140	140	58719	762	440	381	559-610	429	381	23.63
20 500	352	1½	1½	7200	24	13½	11¾	22-24	13	11¾	11.05
		38	38	32028	610	343	298	559-610	330	298	5.01
	353	2	2	7200	24	14	12¼	22-24	13½	12¼	12.40
		51	51	32028	610	356	311	559-610	343	311	5.62
	354	2½	2½	7200	24	14¾	12¾	22-24	14¾	12¾	14.19
		64	64	32028	610	371	327	559-610	359	327	6.44
	355	3	3	7200	24	15¼	13¾	26-30	14¾	13¾	15.25
		76	76	32028	610	387	349	660-762	378	349	6.92
	356	4	4	7200	30	16½	14¼	26-30	15¾	14¼	22.80
		102	102	32028	762	359	362	660-762	400	362	10.34
	356Z	4	4	13200	7	16¾	14¾	26-30	15¾	14¾	44.80
		102	102	58719	178	422	365	660-762	403	365	20.32
	357Z	5½	5½	13200	30	18½	16	30	17¾	16	52.10
		140	140	58719	762	465	406	660-762	454	406	23.63
24 600	352	1½	1½	7200	30	16¾	14¾	26-30	15¾	14¾	12.90
		38	38	32028	762	416	359	660-762	400	359	5.85
	353	2	2	7200	30	16¾	14¾	26-30	15¾	14¾	13.90
		51	51	32028	762	416	359	660-762	400	359	6.28
	354	2½	2½	7200	30	17	14¾	26-30	16¾	14¾	18.07
		64	64	32028	762	432	375	660-762	422	375	8.20
	355	3	3	7200	30	17½	15¼	26-30	17¾	15¼	19.35
		76	76	32028	762	445	387	660-762	435	387	8.78
	356	4	4	7200	30	18¾	16½	26-30	18	16½	23.10
		102	102	32028	762	422	419	660-762	457	419	10.48
	356Z	4	4	13200	30	18¾	16¾	26-30	18¾	16¾	45.40
		102	102	58719	762	479	422	660-762	460	422	20.59

HIGH TEMPERATURE PIPE INSULATION SHIELD

Figure 465 CVB

The Figure 465 CVB is designed to insulated the pipe for thermal efficiency. It is comprised of a calcium silicate insert resting on an outer wrapper and a galvanized steel shield. Recommended for an operating temperature range of +250° F (+121° C) to +1200° F (+648° C).

Materials: Calcium Silicate, ASJ (Outer Wrapper), and Carbon Steel.

Finish: Galvanized.

Ordering: Specify pipe size, covering thickness, and figure number. For Metric applications specify Figure M465CVB.

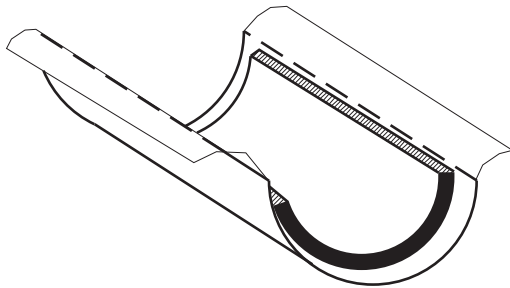


FIGURE 465 CVB – HIGH TEMPERATURE PIPE SHIELD

PIPE SIZE	LENGTH OF OUTER WRAP	NOMINAL INSULATION THICKNESS WEIGHT			
		¾"	1"	1½"	2"
½	10	0.50	0.60	1.00	1.56
15	254	0.23	0.27	0.45	0.71
¾	10	0.56	0.64	1.04	1.53
20	254	0.25	0.29	0.47	0.69
1	10	0.62	0.78	1.40	1.74
25	254	0.28	0.35	0.64	0.79
1¼	10	0.76	0.82	1.55	1.81
32	254	0.34	0.37	0.70	0.82
1½	10	0.78	0.94	1.65	2.15
40	254	0.35	0.43	0.75	0.98
2	10	0.90	1.29	1.88	2.33
50	254	0.41	0.59	0.85	1.06
2½	10	1.23	1.43	2.22	3.24
65	254	0.56	0.65	1.01	1.47
3	10	1.51	1.61	2.34	3.40
80	254	0.68	0.73	1.06	1.54
4	10	1.74	2.11	3.32	4.06
100	254	0.79	0.96	1.51	1.84
5	10	3.04	2.77	3.58	5.11
125	254	1.38	1.26	1.62	2.32
6	10	2.93	3.20	4.43	5.90
150	254	1.33	1.45	2.01	2.68
8	16	3.64	3.27	6.95	8.78
200	406	1.65	1.48	3.15	3.98
10	16	4.10	4.17	7.45	8.95
250	406	1.86	1.89	3.38	4.06
12	16	4.74	4.87	7.75	9.04
300	406	2.15	2.21	3.52	4.10
14	16	5.29	5.35	7.95	9.25
350	406	2.40	2.43	3.61	4.20
16	16	6.15	6.25	8.04	9.47
400	406	2.79	2.84	3.65	4.30
18	16	6.67	6.75	8.27	9.60
450	406	3.03	3.06	3.75	4.35
20	16	8.75	8.85	8.95	9.67
500	406	3.97	4.01	4.06	4.39

VEE TROUGH

Figure 200VT

Designed to be used primarily with the Figure 200V as a support for plastic or other piping where continuous support is required. Hangers should be placed to adequately support the ends.

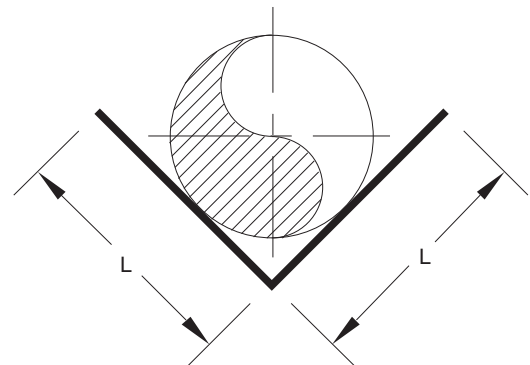
Material: Carbon Steel.

Finish: Pre-Galvanized.

Ordering: Specify size, and figure number. For Metric applications specify Figure M200VT.

FIGURE 200VT – VEE TROUGH

SIZE	PIPE SIZE	L	TROUGH LENGTH	WGT EACH
1	½" - 2"	1½	120	5.39
1	15 - 50	38	3048	2.44
2	2½" - 4"	3	120	10.78
2	65 - 100	76	3048	4.89



BEAM CLAMPS

TOP BEAM CLAMP

Figure 6

The Figure 6 is designed to support piping from top members of angle iron trusses or the top flange of I-beams.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify clip number, flange width, flange thickness, figure number, and finish. For Metric applications specify Figure M6.

Made special to customer order.

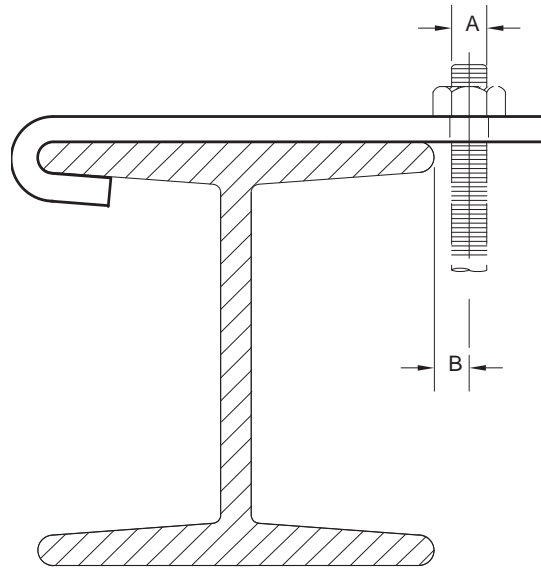


FIGURE 6 – TOP BEAM CLAMP

CLIP NO.	MAXIMUM LOAD	ROD SIZE	A	B	WEIGHT EACH WIDTH OF I BEAM FLANGE			
					4 102	6 152	8 203	12 305
1	300	$\frac{3}{8}$	$\frac{5}{16}$	0.46	0.59	0.73	0.99	
1	1335	M10	7.9	0.21	0.27	0.33	0.45	
2	500	$\frac{1}{2}$	$\frac{3}{8}$	0.62	0.80	0.97	1.33	
2	2224	M12	9.5	0.28	0.36	0.44	0.60	
3	700	$\frac{5}{8}$	$\frac{7}{16}$	1.05	1.34	1.62	2.21	
3	3114	M16	11.1	0.48	0.61	0.73	1.00	
4	1000	$\frac{3}{4}$	$\frac{1}{2}$	1.59	2.01	2.42	3.29	
4	4448	M20	12.7	0.72	0.91	1.10	1.49	
5	2000	$\frac{7}{8}$	$\frac{9}{16}$	2.77	3.51	4.22	5.64	
5	8897	M22	14.3	1.26	1.59	1.91	2.56	

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

ADJUSTABLE BEAM CLAMP

Figure 14
Figure 14A

The Figure 14 is designed to clamp to the bottom of flanged beams. After installation the unit is locked into position with a hex nut and lock washer. Figure 14A is designed for wider flange widths, please see table.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 27, MSS-SP-69 Type 27.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M14 or M14A.

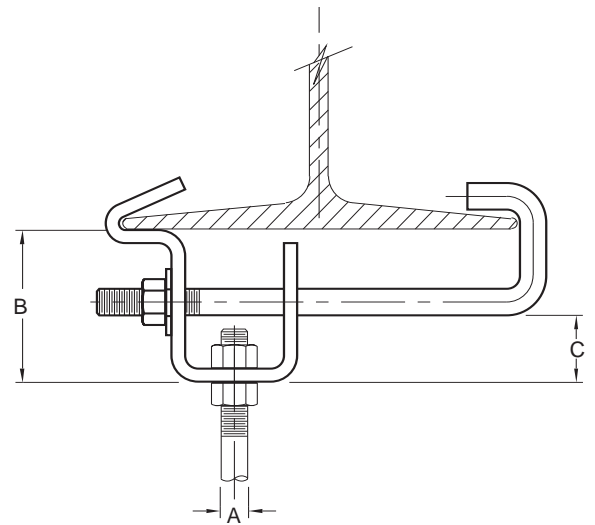


FIGURE 14 AND 14A – ADJUSTABLE BEAM CLAMP

ROD SIZE A	MAXIMUM LOAD	FLANGE WIDTH				B	C	WEIGHT EACH	
		FIGURE 14		FIGURE 14A				FIG. 14	FIG. 14A
		MIN.	MAX.	MIN.	MAX.				
3/8	300	3 1/2	8	8	16	2 3/4	1 1/4	0.96	2.56
M10	1335	89	203	203	406	70	32	0.44	1.16
1/2	700	3 1/2	8	8	16	2 3/4	1 1/4	1.42	3.48
M12	3114	89	203	203	406	70	32	0.64	1.58
5/8	1000	3 1/2	8	8	16	2 3/4	1 1/4	1.86	5.24
M16	4448	89	203	203	406	70	32	0.84	2.38
3/4	1300	6	8	8	16	3 3/4	1 1/2	4.22	7.18
M20	5783	152	203	203	406	95	38	1.91	3.26
7/8	1400	6	10	8	16	3 3/4	1 1/2	5.56	8.92
M22	6228	152	254	203	406	95	38	3.20	4.05
1	1500	7	14	8	16	3 3/4	1 1/2	7.74	11.32
M24	6673	178	356	203	406	95	38	3.51	5.13

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

BEAM CLAMPS

BEAM CLAMP

Figure 15

The Figure 15 is designed to attach to the bottom of flanged beams. Normally used with the Figure 93 Eye Rod or Figure 279 Eye Nut.

Material: Carbon Steel.

Compliance: Federal Specification A-A-1192A Type 21, MSS-SP-69 Type 21.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify clamp size, flange width, flange thickness, figure number, and finish. For Metric applications specify Figure M15.

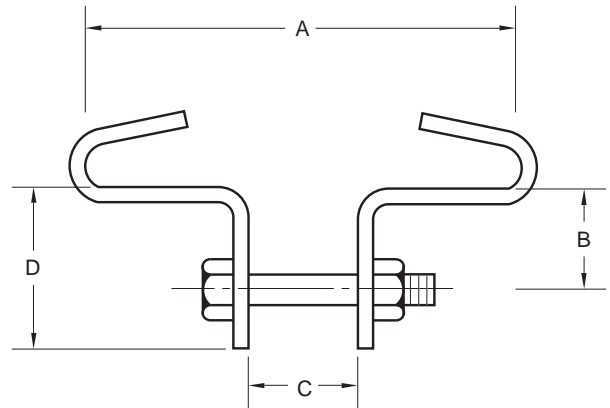


FIGURE 15 – BEAM CLAMP

CLAMP SIZE	MAX LOAD	B	C	D	BOLT SIZE
1	500	7/8	1/2	1 1/2	3/8
1	2224	22	13	38	M10
2	700	1 1/8	5/8	1 3/4	1/2
2	3114	29	16	44	M12
3	800	1 1/4	5/8	2	1/2
3	3559	32	16	51	M12
4	1000	1 3/8	3/4	2 1/2	5/8
4	4448	35	19	60	M16
5	3000	1 3/8	7/8	2 3/4	3/4
5	13345	41	22	67	M20
6	3000	2	1	3	7/8
6	13345	44	25	83	M22
7	5000	2 1/2	1 1/2	4 1/2	1
7	22242	54	29	105	M24

CLAMP SIZE	WEIGHT EACH BEAM WIDTH – DIMENSION “A”							
	2	3	4	5	6	7	8	10
1	0.52	0.62	0.78	0.88	0.95			
1	0.24	0.28	0.35	0.40	0.43			
2	0.74	0.82	1.09	1.21	1.31	1.39		
2	0.34	0.37	0.49	0.55	0.59	0.63		
3	1.26	1.49	1.89	2.12	2.29	2.45	2.69	
3	0.57	0.68	0.86	0.96	1.04	1.11	1.22	
4		2.32	2.85	3.18	3.39	3.60	3.92	
4		1.05	1.29	1.44	1.54	1.63	1.78	
5		3.40	4.08	4.52	4.80	5.10	5.51	6.23
5		1.54	1.85	2.05	2.18	2.31	2.50	2.83
6			6.00	6.45	7.00	7.40	7.90	8.80
6			2.72	2.93	3.18	3.36	3.58	3.99
7				11.95	12.75	13.55	14.35	15.95
7				5.42	5.78	6.15	6.51	7.23

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

TOP OR SIDE BEAM CLAMP

Figure 18

The Figure 18 clamp is made in two parts. When bolted together they prevent the movement of the clamp from its position. The supporting rod is installed close to the flange of the beam.

Material: Carbon Steel.

Compliance: Federal Spec. A-A-1192A Type 25, MSS-SP-69 Type 25.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify clamp number, width of flange, thickness of flange, figure number, and finish. For Metric applications specify Figure M18.

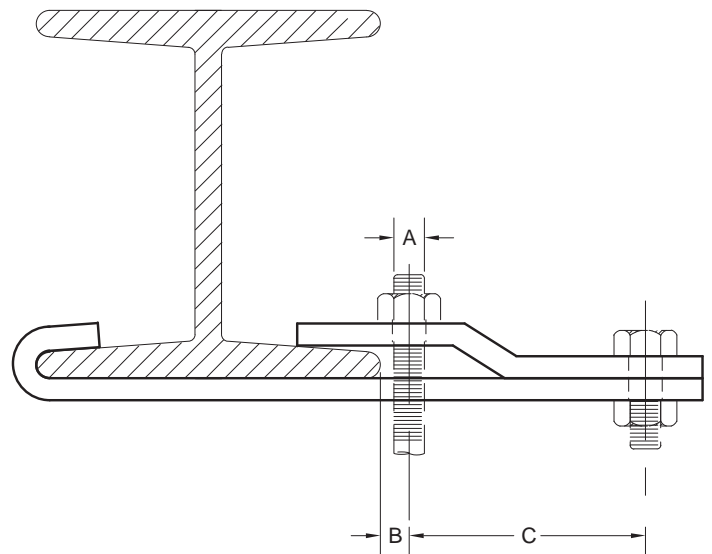


FIGURE 18 – TOP OR SIDE BEAM CLAMP

CLIP NO.	MAXIMUM LOAD	ROD SIZE A	B	C	WEIGHT EACH WIDTH OF I BEAM FLANGE			
					4 102	6 152	8 203	12 305
1	300	3/8	5/16	1 3/4	0.92	1.04	1.12	1.45
1	1335	M10	7.9	44	0.42	0.47	0.51	0.66
2	500	1/2	3/8	2 1/4	1.39	1.56	1.66	2.11
2	2224	M12	9.5	57	0.63	0.71	0.75	0.96
3	700	5/8	7/16	2 1/2	2.53	2.81	2.98	3.72
3	3114	M16	11.1	64	1.15	1.27	1.35	1.69
4	1000	3/4	1/2	2 3/4	3.90	4.32	4.57	5.62
4	4448	M20	12.7	70	1.77	1.96	2.07	2.55
5	2000	7/8	5/16	3 1/2	7.35	8.08	8.48	10.13
5	8897	M22	14.3	89	3.33	3.67	3.85	4.59

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

BEAM CLAMPS

ADJUSTABLE BEAM CLAMP

Figure 82

The Figure 82 is designed to attached to the bottom of flanged beams without requiring welding. Normally used with the Figure 157 Extension Piece (Not Furnished) up to a maximum $\frac{7}{8}$ " (M20) rod diameter. Loading is achieved through the clamp jaws while locking is accomplished by tightening the through-bolt located directly below the flange. Maximum flange thickness is 0.60 inches.

Material: Malleable Iron.

Compliance: Federal Specification A-A-1192A Type 30, MSS-SP-69 Type 30 when used with a Figure 157.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, and finish. Order Figure 157 separately, if required. For Metric applications specify Figure M82.

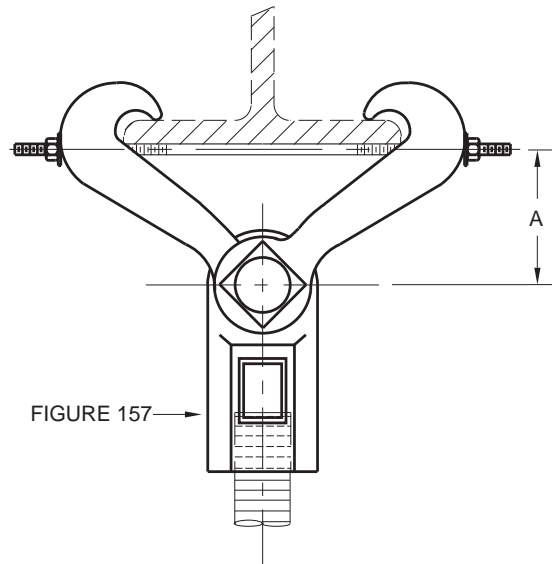


FIGURE 82 – ADJUSTABLE BEAM CLAMP

MAXIMUM ROD SIZE	MAXIMUM LOAD	ROD TAKE OUT BEAM FLANGE WIDTH – B						WEIGHT EACH
		2 60	3 76	4 101	5 127	6 152	7 177	
$\frac{3}{8}$	610	$3\frac{1}{2}$	$3\frac{1}{16}$	$3\frac{5}{16}$	$2\frac{15}{16}$	$2\frac{1}{16}$	$1\frac{1}{8}$	1.91
M10	2714	89	87	84	75	65	48	0.87
$\frac{1}{2}$	1130	$3\frac{1}{2}$	$3\frac{7}{16}$	$3\frac{3}{16}$	$2\frac{15}{16}$	$2\frac{9}{16}$	$1\frac{1}{8}$	2.11
M12	5027	89	87	84	75	65	48	0.96
$\frac{5}{8}$	1365	$3\frac{1}{2}$	$3\frac{1}{16}$	$3\frac{3}{16}$	$2\frac{15}{16}$	$2\frac{1}{16}$	$1\frac{1}{8}$	2.15
M16	6072	89	87	84	75	65	48	0.98
$\frac{3}{4}$	1365	$3\frac{1}{2}$	$3\frac{1}{16}$	$3\frac{3}{16}$	$2\frac{15}{16}$	$2\frac{1}{16}$	$1\frac{1}{8}$	2.36
M20	6072	89	87	84	75	65	48	1.07
$\frac{7}{8}$	1365	$3\frac{1}{2}$	$3\frac{7}{16}$	$3\frac{3}{16}$	$2\frac{15}{16}$	$2\frac{9}{16}$	$1\frac{1}{8}$	2.49
M20	6072	89	87	84	75	65	48	1.13

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

TOP BEAM CLAMP WITH LOCKING NUT

Figure 192

The Figure 192 is designed for roof installations with bar joist type construction as well as to be attached mechanically to the top or bottom flange of steel beams. A locking nut is provided and when properly tightened prevents loosening due to vibration. The full body tapping feature for the rod allows for extra adjustment after installation. A Figure 192RS Retaining Strap may also be required by various codes.

Install in accordance with MSS-SP69 set screw torque values. Maximum loads are based upon full thread engagement by the rod. When using a Retaining Strap the maximum allowable flange thickness is reduced by 1/8".

Material: Malleable Iron with Hardened Steel Cup Point Set Screw.

Compliance: MSS-SP-69 (Type 19), UL and FM rated for 3/8" and 1/2" only.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M192.

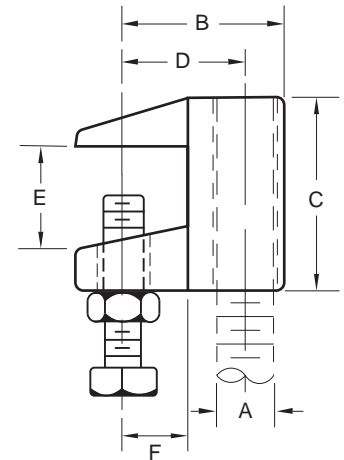


FIGURE 192 – TOP BEAM CLAMP

ROD SIZE A	MAXIMUM LOAD	MAXIMUM PIPE SIZE	B	C	D	E	F	WEIGHT EACH
3/8	400	4	1 1/8	1 1/2	1	3/4	1/2	0.33
M10	1779	100	41	38	25	19	13	0.15
1/2	500	8	1 11/16	1 1/2	1	3/4	1/2	0.34
M12	2224	200	43	38	25	19	13	0.15
5/8	600	8	1 1/8	1 1/2	1 1/16	3/4	5/8	0.39
M16	2669	200	48	38	27	19	16	0.18
3/4	800	8	2 3/8	1 3/4	1 1/16	3/4	5/8	0.63
M20	3559	200	60	44	33	19	16	0.29
7/8	1200	8	2 3/8	1 3/4	1 1/16	3/4	5/8	0.60
M20	5338	200	60	44	33	19	16	0.27

TOP BEAM CLAMP RETAINING CLIP

Figure 192RS

The Figure 192RS is designed for use with Figure 192 and Figure 192W Top Beam Clamp to prevent movement of the clamp due to vibration after installation. Available in up to 4 1/2", 6", 8", 10" and 14" lengths (Two inches should be added to beam flange width to determine length and select next largest strap length if between sizes.)

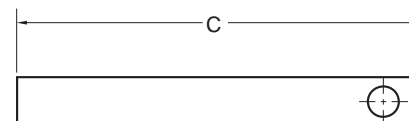
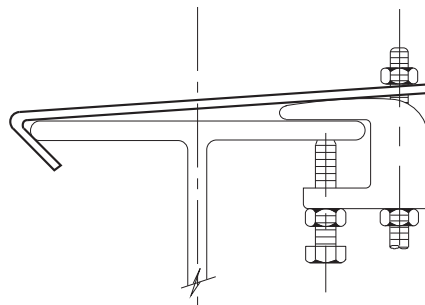
Material: Carbon Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, length, figure number, and finish. For Metric applications specify Figure M192RS.

FIGURE 192RS – TOP BEAM CLAMP RETAINING CLIP

ROD SIZE	WEIGHT EACH LENGTH – DIMENSION "C"				
	4 1/2	6	8	10	14
3/8	0.15	0.21	0.28	0.35	0.49
M10	0.07	0.10	0.13	0.16	0.22
1/2	0.15	0.21	0.28	0.35	0.49
M12	0.07	0.10	0.13	0.16	0.22
5/8	0.20	0.26	0.35	0.44	0.62
M16	0.09	0.12	0.16	0.20	0.28
3/4	0.20	0.26	0.35	0.44	0.62
M20	0.09	0.12	0.16	0.20	0.28
7/8	0.31	0.42	0.56	0.70	0.98
M20	0.14	0.19	0.25	0.32	0.44



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	MILLIMETERS	FAHRENHEIT	POUNDS	POUNDS
		CELSIUS	NEWTONS	KILOGRAMS

BEAM CLAMPS

WIDE MOUTH TOP BEAM CLAMP WITH LOCKING NUT

Figure 192W

The Figure 192W is designed for roof installations with bar joist type construction as well as to be attached mechanically to the top or bottom flange of steel beams. A locking nut is provided and when properly tightened prevents loosening due to vibration. The full body tapping feature for the rod allows for extra adjustment after installation. A Figure 192RS Retaining Strap may also be required by various codes.

Install in accordance with MSS-SP69 set screw torque values. Maximum loads are based upon full thread engagement by the rod. When using a Retaining Strap the maximum allowable flange thickness is reduced by $\frac{1}{8}$ ".

Material: Malleable Iron with Hardened Steel Cup Point Set Screw.

Compliance: MSS-SP-69 (Type 19).

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish.
For Metric applications specify Figure M192W.

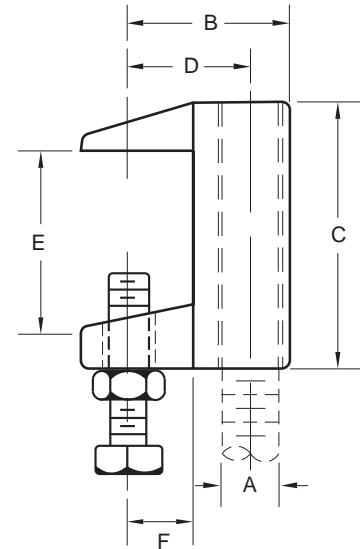


FIGURE 192W – WIDE MOUTH TOP BEAM CLAMP

ROD SIZE A	MAXIMUM LOAD	MAXIMUM PIPE SIZE	B	C	D	E	F	WEIGHT EACH
$\frac{3}{8}$	400	4	$1\frac{3}{8}$	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$\frac{1}{2}$	0.37
M10	1779	100	41	48	27	32	13	0.17
$\frac{1}{2}$	500	4	$1\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$\frac{1}{2}$	0.35
M12	2224	200	41	48	27	32	13	0.16
$\frac{5}{8}$	850	5	$2\frac{1}{4}$	$2\frac{5}{16}$	$1\frac{3}{8}$	$1\frac{1}{4}$	$\frac{3}{4}$	0.49
M16	3781	125	57	59	35	32	19	0.22
$\frac{3}{4}$	900	6	$2\frac{3}{8}$	$2\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{1}{4}$	$\frac{3}{4}$	0.87
M20	4004	150	60	60	35	32	19	0.39

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ADJUSTABLE SIDE BEAM CLAMP

Figure 217

The Figure 217 is designed to attach mechanically to a steel beam and allow a drop rod to be placed at or near the edge of the beam. Various beam flange widths and thicknesses can be accommodated.

Material: Carbon Steel.

Compliance: MSS-SP-69 Type 25.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galv.

Ordering: Specify size, figure number, and type. For Metric applications specify Figure M217.

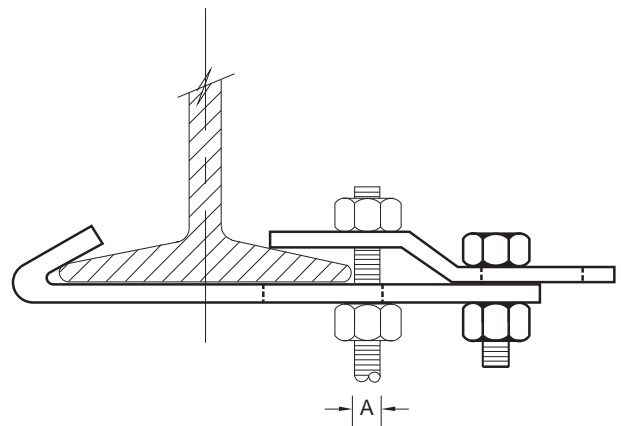


FIGURE 217 – ADJUSTABLE SIDE BEAM CLAMP

TYPE 1	A	MAXIMUM LOAD	MAXIMUM FLANGE THICKNESS	FLANGE WIDTH	WEIGHT EACH
Size 3	3/8	300	3/8	3 - 4 1/2	0.80
Size 76	M10	1335	M10	76 - 114	0.36
Size 4 3/8	3/8	300	3/8	4 3/8 - 6	1.06
Size 117	M10	1335	M10	117 - 152	0.48
Size 6 1/8	3/8	300	3/8	6 1/8 - 7 1/2	1.17
Size 156	M10	1335	M10	156 - 191	0.53
Size 7 3/8	3/8	300	3/8	7 3/8 - 9	1.28
Size 194	M10	1335	M10	194 - 229	0.58
TYPE 2					
Size 3	1/2	500	1/2	3 - 4 1/2	1.57
Size 76	M12	2224	M12	76 - 114	0.71
Size 4 3/8	1/2	500	1/2	4 3/8 - 6	1.84
Size 117	M12	2224	M12	117 - 152	0.83
Size 6 1/8	1/2	500	1/2	6 1/8 - 7 1/2	2.05
Size 156	M12	2224	M12	156 - 191	0.93
Size 7 3/8	1/2	500	1/2	7 3/8 - 9	2.23
Size 194	M12	2224	M12	194 - 229	1.01
TYPE 3					
Size 3	3/4	700	3/4	3 - 4 1/2	3.75
Size 76	M16	3114	M16	76 - 114	1.70
Size 4 3/8	3/4	700	3/4	4 3/8 - 6	4.19
Size 117	M16	3114	M16	117 - 152	1.90
Size 6 1/8	3/4	700	3/4	6 1/8 - 7 1/2	4.53
Size 156	M16	3114	M16	156 - 191	2.05
Size 7 3/8	3/4	700	3/4	7 3/8 - 9	5.11
Size 194	M16	3114	M16	194 - 229	2.32

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

BEAM CLAMPS

BEAM CLAMP

Figure 268

Designed to allow the connection of hanger rods to steel beams without welding. Vertical rod adjustment is approximately 2 inches after installation.

Material: Carbon Steel

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size, figure number, width of beam flange and finish. For Metric applications specify Figure M268.

Note: "A" minimum is 3".

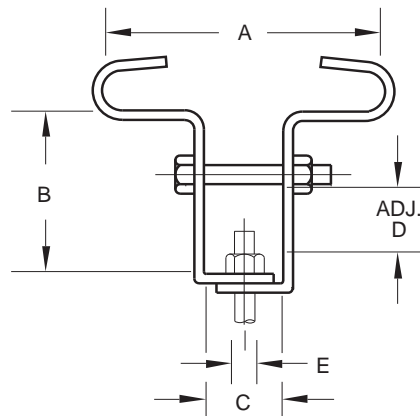


FIGURE 268 – BEAM CLAMP

SIZE	MAXIMUM LOAD	A (MIN.)	ROD SIZE E	B	C	ADJUSTMENT D	STEEL SIZE
1	700	3	½	4	2	2⅜	¼ x 1¼
1	3114	102	M15	102	51	71	6 x 32
2	1500	3	¾	4	2	2¾	⅜ x 2
2	6673	102	M20	102	51	70	10 x 51
3	2600	3	⅞	4	2	2¾	½ x 2
3	11566	102	M22	102	51	70	13 x 51
4	4300	4	1	5	2	3¼	½ x 2½
4	19128	114	M24	127	51	83	13 x 64
5	8000	4	1¼	5½	2½	3¼	⅝ x 4
5	35587	127	M30	140	64	83	16 x 102

PURLIN CLAMP

Figure 290

Designed to attach directly to steel purlins. Maximum Pipe Size is 4".

Material: Malleable Iron with hardened steel cup point set screw.

Finish: Plain, Electro-Galvanized.

Ordering: Specify figure number. For Metric applications specify Figure M290.

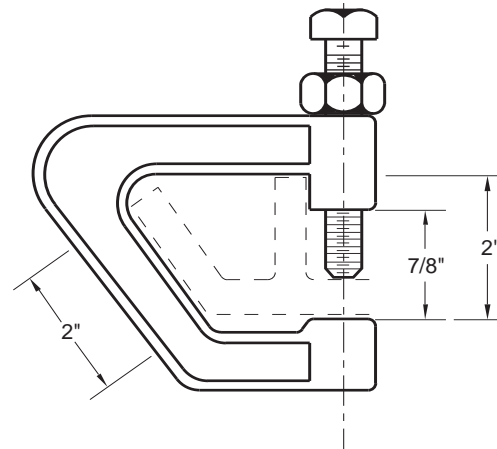


FIG. 290 – PURLIN CLAMP

ROD SIZE	MAXIMUM LOAD	WEIGHT EACH
¾	400	0.82
M10	1779	0.37

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STEEL BEAM CLAMP WITH WELDLESS EYENUT

Figure 297

The Figure 297 beam clamp with eyenut is used when welding to the structure is prohibited for supports where some movement is expected. The clamping effect is produced by the “ice tong” action of the arms and is locked in place by the through bolt located just under the beam flange.

Material: Carbon Steel with Forged Steel Eyenut.

Compliance: Federal Specification A-A-1192A Type 28, MSS-SP-69 Type 28 and BSPSS-BS3974.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify figure number, rod size, clamp number and finish. For Metric applications specify Figure M297.

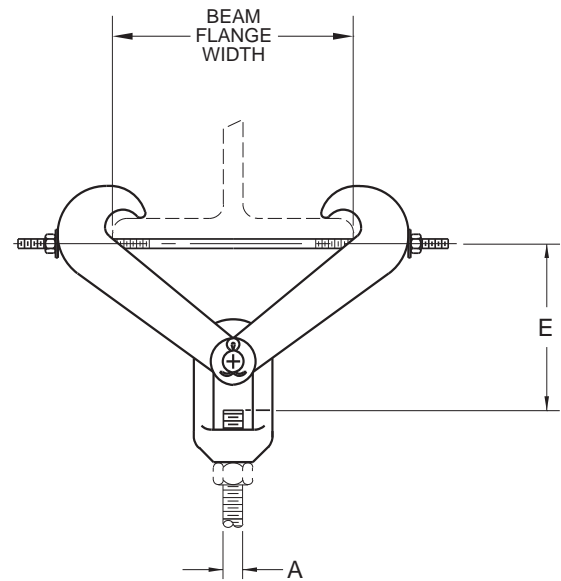


FIGURE 297 – STEEL BEAM CLAMP WITH WELDLESS EYENUT

CLAMP SIZE	MAXIMUM LOAD	MAXIMUM ROD SIZE A	BEAM WIDTH	BODY SIZE	MAXIMUM FLANGE THICKNESS	WEIGHT EACH
1	2710	3/4	3 - 8	A	0.6	5.5
	68834	M20	76 - 203		15	2.5
2	4960	1	3 - 8	A	0.6	5.5
	125984	M24	76 - 203		15	2.5
3	4960	1	4 - 11	B	0.6	9.0
	125984	M24	102 - 279		15	4.1
4	4960	1	4 - 12	C	1.03	29.0
	125984	M24	102 - 305		26	13.2
5	4960	1	11 - 15	D	1.03	33.3
	125984	M24	279 - 381		26	15.1
6	11500	1 1/2	4 - 12	C	1.03	29.0
	292100	M36	102 - 305		26	13.2
7	11500	1 1/2	11 - 15	D	1.03	33.3
	292100	M36	279 - 381		26	15.1
8	11500	2	4 - 12	C	1.03	29.0
	292100	M48	102 - 305		26	13.2

** Based on the allowable stresses shown in ANSI Code for Pressure Piping

CLAMP SIZE	BODY SIZE	ROD TAKEOUT "E" FOR WIDTH OF BEAM												
		3	4	5	6	7	8	9	10	11	12	13	14	15
1	A	5 5/16	5 1/8	5	4 13/16	4 3/8	3 15/16							
1	A	132	130	127	122	111	100							
2	A	5 5/16	5 1/8	5	4 13/16	4 3/8	3 15/16							
2	A	132	130	127	122	111	100							
3	B		8 1/4	8 1/8	8 1/8	7 7/8	7 3/4	7 1/2	7	6 1/2				
3	B		210	206	206	200	197	187	178	165				
4	C		8 5/8	8 1/8	8 1/2	8 3/8	8 1/8	7 7/8	7 3/8	7	6 3/4			
4	C		219	219	216	213	206	200	194	178	171			
5	D									9 1/2	9 1/4	8 7/8	8 3/8	7 7/8
5	D									241	235	225	213	200
6	C		8 5/8	8 1/8	8 1/2	8 3/8	8 1/8	7 7/8	7 3/8	7	6 3/4			
6	C		219	219	216	213	206	200	194	178	171			
7	D									9 3/4	9 1/2	9 1/8	8 3/4	8 1/8
7	D									248	241	232	222	206
8	C		11 5/8	11 1/2	11 1/2	11 3/8	11 1/8	10 7/8	10 3/4	10 1/2	10			
8	C		295	292	292	289	283	276	273	267	254			

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

BEAM CLAMPS

EXTENDED BEAM CLAMP

Figure 314

The Figure 314 is used where the supporting I beam is to be covered with fireproofing material. The bottom bolt has a spacer to allow for free movement of the connecting eyerod or weldless eyenut.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify clamp size, figure number, and finish. For Metric applications specify Figure M314.

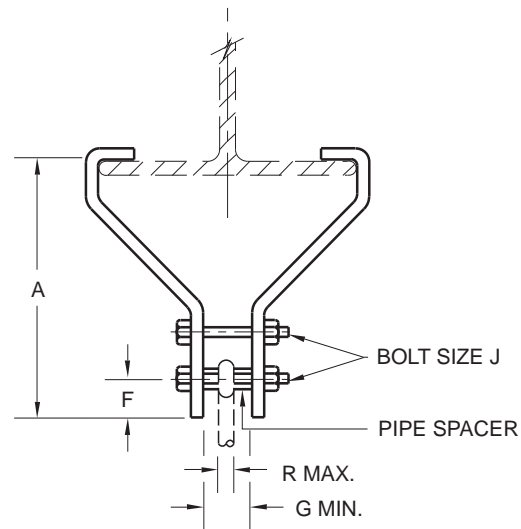


FIGURE 314 – EXTENDED BEAM CLAMP

NUMBER	MAXIMUM LOAD	FLANGE WIDTH	A	F	MINIMUM G	J	MAXIMUM R
1	1500	4	6 $\frac{5}{16}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$
1	6673	102	168	20.6	16	M16	13
2	1500	5 - 6	7 $\frac{7}{8}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$
2	6673	127 - 152	181	20.6	16	M16	13
3	1500	6 $\frac{1}{2}$ - 7 $\frac{1}{2}$	7 $\frac{7}{8}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$
3	6673	165 - 191	200	20.6	16	M16	13
4	1500	8 - 9	8 $\frac{7}{8}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$
4	6673	203 - 229	219	20.6	16	M16	13
5	1500	10 - 10 $\frac{1}{2}$	9 $\frac{7}{8}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$
5	6673	254 - 267	244	20.6	16	M16	13
6	3000	4	7 $\frac{1}{16}$	1 $\frac{15}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
6	13345	102	179	24	19	M20	16
7	3000	5 - 6	7 $\frac{1}{16}$	1 $\frac{15}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
7	13345	127 - 152	192	24	19	M20	16
8	3000	6 $\frac{1}{2}$ - 7 $\frac{1}{2}$	8 $\frac{7}{16}$	1 $\frac{15}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
8	13345	165 - 191	211	24	19	M20	16
9	3000	8 - 9	9 $\frac{1}{16}$	1 $\frac{15}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
9	13345	203 - 229	230	24	19	M20	16
10	3000	10 - 10 $\frac{1}{2}$	9 $\frac{13}{16}$	1 $\frac{15}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
10	13345	254 - 267	249	24	19	M20	16
11	6000	4	9 $\frac{3}{8}$	1 $\frac{1}{4}$	1	1 $\frac{1}{2}$	$\frac{7}{8}$
11	26690	102	238	32	25	M30	22
12	6000	5 - 6	9 $\frac{7}{8}$	1 $\frac{1}{4}$	1	1 $\frac{1}{2}$	$\frac{7}{8}$
12	26690	127 - 152	251	32	25	M30	22
13	6000	6 $\frac{1}{2}$ - 7 $\frac{1}{2}$	10 $\frac{3}{8}$	1 $\frac{1}{4}$	1	1 $\frac{1}{2}$	$\frac{7}{8}$
13	26690	165 - 191	270	32	25	M30	22
14	6000	8 - 9	11 $\frac{3}{8}$	1 $\frac{1}{4}$	1	1 $\frac{1}{2}$	$\frac{7}{8}$
14	26690	203 - 229	289	32	25	M30	22
15	6000	10 - 10 $\frac{1}{2}$	12 $\frac{1}{2}$	1 $\frac{1}{4}$	1	1 $\frac{1}{2}$	$\frac{7}{8}$
15	26690	254 - 267	308	32	25	M30	22

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

BEAM CLAMP WITH SWING NUT

Figure 702

Identical in design to the Figure 15 Beam Clamp, the Figure 702 comes with the addition of a right-hand tapped swing nut.

Compliance: Federal Specification A-A-1192A Type 21, MSS SP-69 Type 21.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify figure number, width of beam, thickness of flange, and type Number of clamp. For Metric applications specify Figure M702.

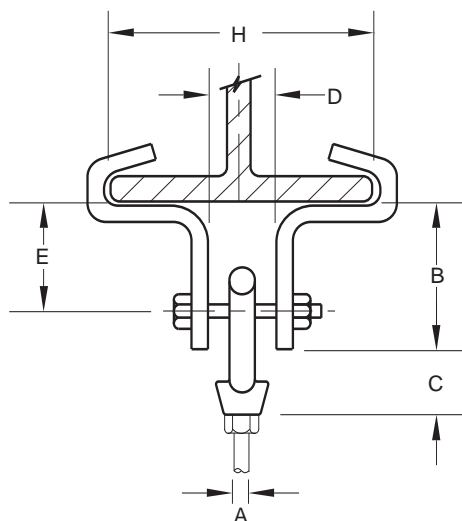


FIGURE 702 – BEAM CLAMP WITH SWING NUT

TYPE NUMBER	MAXIMUM LOAD	A	B	C	D	E
1	500	$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	1
1	2224	M10	41	19	16	25
2	1000	$\frac{1}{2}$	$1\frac{1}{4}$	1	$\frac{3}{4}$	$1\frac{1}{2}$
2	4448	M12	44	25	19	29
3	1500	$\frac{3}{8}$	2	$1\frac{1}{4}$	$\frac{7}{8}$	$1\frac{1}{4}$
3	6673	M16	51	32	22	32
4	2000	$\frac{3}{4}$	$2\frac{3}{8}$	$1\frac{1}{2}$	1	$1\frac{3}{8}$
4	8897	M20	60	38	25	35
5	3000	$\frac{7}{8}$	$2\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$
5	13345	M20	67	44	32	41
6	3250	1	$3\frac{1}{4}$	2	$1\frac{1}{4}$	$1\frac{3}{4}$
6	14457	M24	83	51	32	44

TYPE NUMBER	WEIGHT EACH DIMENSION H								
	3	4	5	6	7	8	9	10	12
1	0.69	0.79	0.90	0.95	1.15	1.30			
1	0.31	0.36	0.41	0.43	0.52	0.59			
2	1.13	1.25	1.41	1.50	1.64	1.73	1.83	1.93	
2	0.51	0.57	0.64	0.68	0.74	0.78	0.83	0.88	
3		2.44	2.67	2.84	3.06	3.28	3.40	3.58	
3		1.11	1.21	1.29	1.39	1.49	1.54	1.62	
4		3.67	4.00	4.21	4.58	4.80	5.07	5.27	
4		1.66	1.81	1.91	2.08	2.18	2.30	2.39	
5			5.83	6.11	6.43	6.81	7.17	7.46	8.23
5			2.64	2.77	2.92	3.09	3.25	3.38	3.73
6			9.55	9.97	10.61	11.104	11.57	12.00	13.19
6			4.33	4.52	4.81	5.04	5.25	5.44	5.98

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

C-CLAMPS

“C” CLAMP RETAINING CLIP

Figure 22

The Figure 22 is designed for use with Figure 238 and 193 “C” Clamps. to prevent movement of the “C” Clamp due to vibration after installation. Available in up to 4½", 6", 8", 10" and 14" lengths (One inch should be added to beam flange width to determine length; select next largest strap length if between standard lengths.) The Figure 196 ⅜" (M10) uses a Type 1, while all other sizes use a Type 2.

Type 1 is for Figure 238, ⅜" (M10), ½" (M12), ⅝" (M16), ¾" (M20) and 7/8" (M20) rod sizes.

Type 2 is for Figure 193, ½" (M12), ⅝" (M16) and ¾" (M20) rod sizes only.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod size, length, type, figure number, and finish. For Metric applications specify Figure M22.

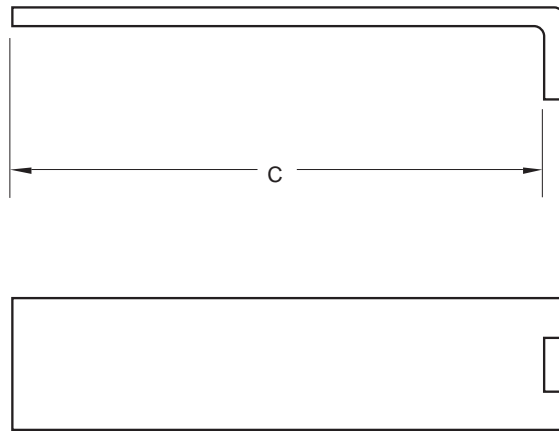
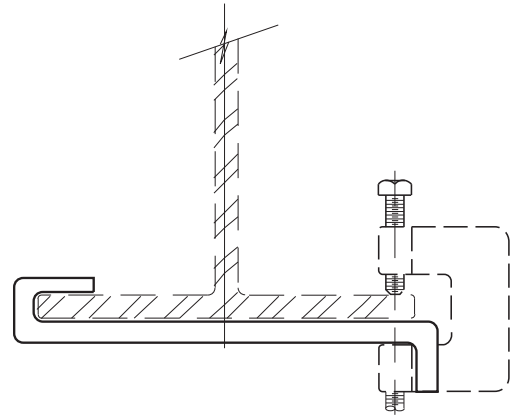


FIGURE 22 – “C” CLAMP RETAINING CLIP

CLIP SIZE	WEIGHT EACH LENGTH - DIMENSION “C”				
	4½	6	8	10	14
1	0.15	0.22	0.33	0.36	0.50
1	0.07	0.10	0.15	0.16	0.23
2	0.21	0.28	0.36	0.45	0.59
2	0.10	0.13	0.16	0.20	0.27

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

C-CLAMP WITH LOCKING NUT

Figure 47

Figure 47SS (Stainless Steel)

C-CLAMP WITHOUT LOCKING NUT

Figure 238

The Figure 47 is designed to attach to the bottom flange of a steel beam. A locking nut is provided and when tightened prevents loosening due to vibration.

The Figure 238 is identical to the Figure 47 and may require a Figure 22 Retaining Clip to prevent loosening due to vibration.

Install both Figure 47 and 238 in accordance with MSS-SP69 set screw torque values.

Maximum loads are based upon full thread engagement by the rod.

Some Codes require the use of a Figure 22 Retaining Clip on all C-Clamps. When using a Retaining Clip the maximum allowable flange thickness is reduced by 1/8".

Material: Carbon Steel with Hardened Steel Cup Point Set Screw. Stainless Type 304.

Compliance: Federal Specification A-A-1192A Type 23, MSS-SP-69 Type 23.

Finish: Plain, Painted, Electro-Galvanized. Figure 47SS (Sizes 3/8", 1/2", 5/8").

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M47 or Figure M238.

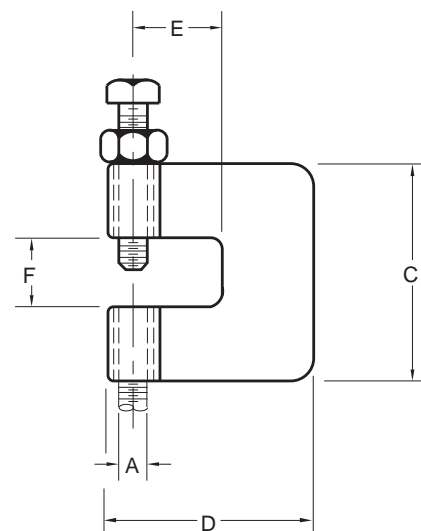


FIGURE 47 – C CLAMP WITH LOCKING NUT

ROD SIZE A	MAX LOAD	C	D	E	F	SET SCREW SIZE	WEIGHT EACH
3/8	400	2 3/4	2 1/4	7/8	3/4	3/8 x 1 1/2	0.38
M10	1779	60	57	22	19	10 x 38	0.17
1/2	500	2 3/4	2 3/4	7/8	3/4	1/2 x 1 1/2	0.38
M12	2224	60	60	22	19	13 x 38	0.17
5/8	600	2 3/4	2 3/4	3/4	3/4	5/8 x 1 1/2	0.68
M16	2669	60	60	19	19	16 x 38	0.31
3/4	800	2 3/4	2 1/4	3/4	3/4	3/4 x 1 1/2	0.79
M20	3559	60	57	19	19	19 x 38	0.36
7/8	1200	3	2 3/4	1 1/4	1	3/4 x 1 1/2	1.83
M20	5338	76	70	32	25	19 x 38	0.83

FIGURE 238 – C CLAMP WITHOUT LOCKING NUT

ROD SIZE A	MAX LOAD	C	D	E	F	SET SCREW SIZE	WEIGHT EACH
3/8	400	2 1/4	2 3/8	7/8	3/4	3/8 x 1 1/2	0.36
M10	1779	57	60	22	19	10 x 38	0.16
1/2	400	2 1/4	2 3/8	7/8	3/4	1/2 x 1 1/2	0.36
M12	1779	57	60	22	19	13 x 38	0.16
5/8	440	2 1/4	2 3/8	3/4	3/4	5/8 x 1 1/2	0.63
M16	1957	57	60	19	19	16 x 38	0.29
3/4	800	2 1/4	2 1/4	3/4	3/4	3/4 x 1 1/2	0.72
M20	3559	57	57	19	19	19 x 38	0.33
7/8	1200	3	2 3/4	1 1/4	1	3/4 x 1 1/2	1.65
M20	5338	76	70	32	25	19 x 38	0.75

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

C-CLAMPS

C-CLAMP WITH LOCKING NUT

Figure 196

The Figure 196 is designed to attach mechanically to the bottom flange of a steel beam and may require a Figure 22 Retaining Clip to prevent loosening due to vibration after installation.

Install Figure 196 in accordance with MSS-SP69 set screw torque values. Maximum loads are based upon full thread engagement by the rod. Some Codes require the use of a Figure 22 Retaining Clip on all C-Clamps. When using a Retaining Clip the maximum allowable flange thickness is reduced by 1/8".

Material: Malleable Iron with Hardened Steel Cup Point Set Screw.

Compliance: Federal Specification A-A-1192A Type 23, MSS-SP-69 Type 23.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M196.

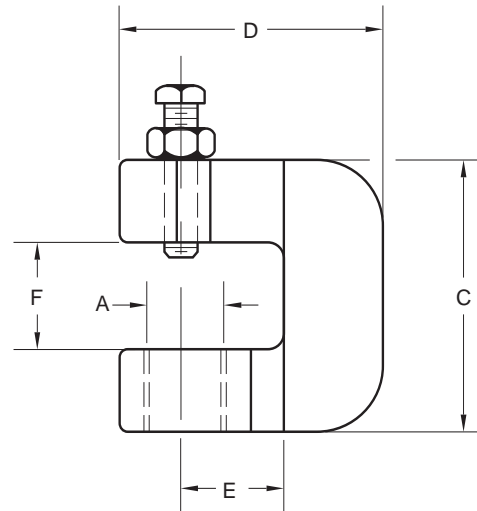


FIGURE 196 – C-CLAMP

ROD SIZE A	MAXIMUM LOAD	PIPE SIZES	C	D	E	F	WEIGHT EACH
3/8	400	1/2 to 2	1 3/4	1 3/4	3/8	3/4	0.33
M10	1779	15 to 50	44	44	16	19	0.15
1/2	400	2 1/2 to 3 1/2	1 3/4	1 3/4	3/8	3/4	0.39
M12	1779	65 to 90	44	44	16	19	0.18
5/8	440	4 to 5	2	2	3/4	3/4	0.46
M16	1957	100 to 125	51	51	19	19	0.21
3/4	500	6	2	2	3/4	3/4	0.52
M20	2224	150	51	51	19	19	0.24

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ANGLE KNEE

Figure 9

The Figure 9 is used in supporting pipe hangers to the side of joist, steel, or wood beams. It can be either bolted or welded to the structure.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Compliance: A-A-1192A Type 34 and MSS-SP-69 Type 34.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M9.

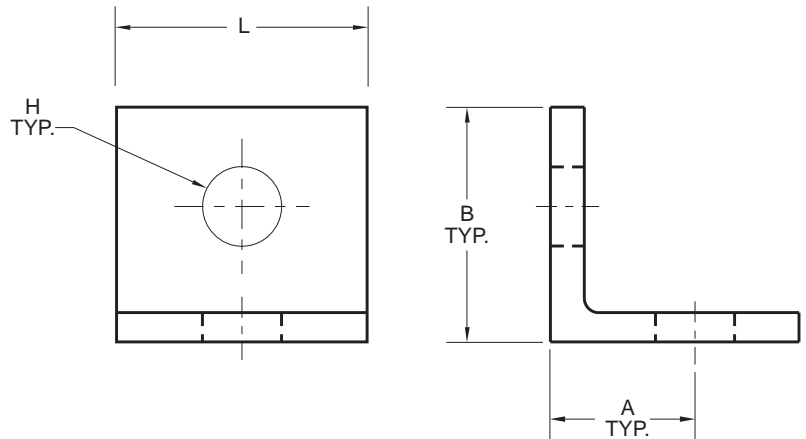


FIGURE 9 – ANGLE KNEE

SIZE	ROD SIZE	MAX. LOAD	A	B	H	L	WGT. EACH
A	3/8	150	1 1/2	2	7/16	2	0.53
A	M10	667	29	51	11	51	0.24
B	1/2	300	1 3/4	3	9/16	3	1.23
B	M12	1335	44	76	14	76	0.56
C	5/8	760	2 1/2	4	1 1/16	4	2.20
C	M16	3381	64	102	17	102	1.00

EXTENSION BAR

Figure 10

The Figure 10 is made of soft steel and can be easily cut with a cold chisel to any desired length, twisted, bent, or otherwise manipulated without breaking, yet retaining its strength.

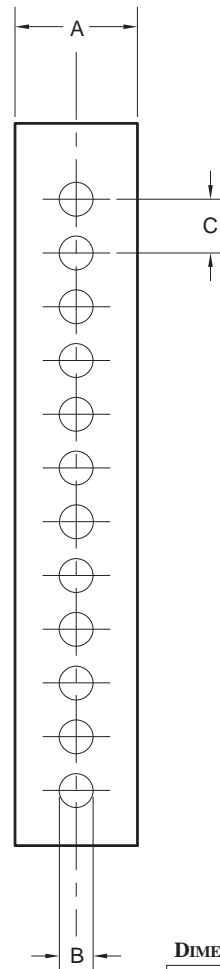
Furnished in ten, fifty, or one hundred foot rolls.

Finish: Plain.

Ordering: Specify size, length and figure number. For Metric applications specify Figure M10.

FIGURE 10 – EXTENSION BAR

SIZE	A	B	C	WEIGHT PER FT.
0	3/4	1/4	1/2	0.12
0	19	6	13	0.05
1	7/8	1/4	1/2	0.18
1	22	6	13	0.08
2	1	1/4	1/2	0.25
2	25	6	13	0.11



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

J BEAM HOOK

Figure 31

The Figure 31 is used in conjunction with our Figure 33 Machine Thread Eye Rod when it is necessary to support piping from the top flange of beam which allows the pipe to run close to the bottom of the beam where headroom is limited.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Length equals the distance from the end of the threaded end to the inside of the hook.

Ordering: Specify rod size, length, thickness of flange, figure number, and finish. Made special to customer order. For Metric applications specify Figure M31.

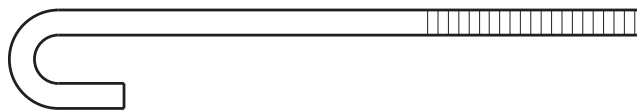


FIGURE 31 – J BEAM HOOK

SIZE	WEIGHT EACH RODWIDTH OF I BEAM FLANGE						
	4	5	6	7	8	10	12
A	102	127	152	178	203	254	305
$\frac{3}{8}$	0.19	0.22	0.25	0.28	0.32	0.38	0.44
M10	0.09	0.10	0.11	0.13	0.15	0.17	0.20
$\frac{1}{2}$	0.33	0.39	0.45	0.5	0.56	0.67	0.78
M12	0.15	0.18	0.20	0.23	0.25	0.30	0.35
$\frac{5}{8}$	0.52	0.61	0.70	0.78	0.87	1.02	1.22
M16	0.24	0.28	0.32	0.35	0.39	0.46	0.55
$\frac{3}{4}$	0.75	0.89	1.01	1.13	1.26	1.50	1.75
M20	0.34	0.40	0.46	0.51	0.57	0.68	0.79
$\frac{7}{8}$	1.02	1.20	1.36	1.53	1.71	2.04	2.39
M22	0.46	0.54	0.62	0.69	0.78	0.93	1.08

WALL BRACKET

Figure 49

The Figure 49 is designed for light duty applications.

Compliance: MSS-SP 69 Type 31.

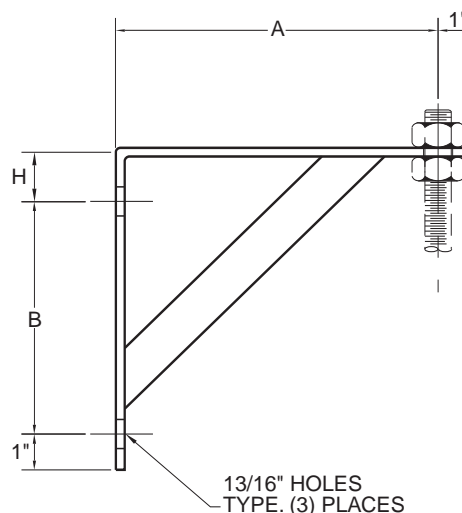
Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify size, figure number, and finish.

For Metric applications specify Figure M49.

FIGURE 49 – BRACKET

SIZE	MAX LOAD	ROD SIZE	A	B	H	WGT. EACH
1	500	$\frac{3}{8}$	9	8 $\frac{1}{4}$	1 $\frac{1}{4}$	3.12
1	2224	M10	229	210	32	1.42
2	500	$\frac{3}{8}$	13	12 $\frac{1}{4}$	1 $\frac{1}{4}$	4.60
2	2224	M10	330	311	32	2.09
3	500	$\frac{3}{8}$	19	18 $\frac{3}{8}$	1 $\frac{3}{8}$	13.47
3	2224	M10	483	460	35	6.11



DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

LIGHT WELDED STEEL BRACKET

Figure 69

The Figure 69 is designed to support up to 6" pipe. This bracket is for installation to walls as shown or inverted, and may require a backing plate. Holes for up to 3/4" rods are located at each end of the bracket to allow for use in either orientation. The Figure 78 Steel Bracket Clip can be attached to the Figure 69 to support piping 3 1/2" or smaller. Please see the Figure 79 for more information.

Compliance: A-A-1192A Type 31, MSS-SP 69 Type 31.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify size number, figure number, and finish. For Metric applications specify Figure M69 and M79 as required.

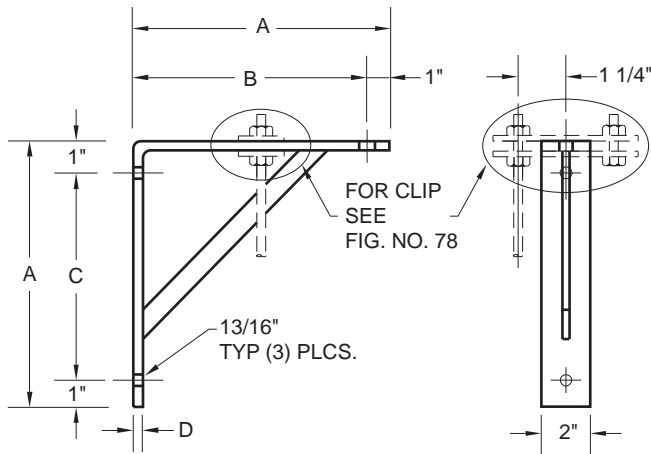


FIGURE 69 – LIGHT WELDED STEEL BRACKET

SIZE	MAX LOAD	A	B	C	WGT. EACH
1	750	9	8	6½	6.99
1	3336	229	203	165	3.17
2	750	13	12	10½	10.10
2	3336	330	305	267	4.60
3	750	19	18	16½	10.50
3	3336	483	457	419	4.74

STEEL BRACKET CLIP

Figure 78

The Figure 78 Clip can be used to support piping 3½" or smaller from the horizontal member of a Figure 69 Steel Bracket. The Clip is composed of two steel plates and one bolt and nut.

Material: Carbon Steel.

Finish: Plain, Hot-Dip Galvanized.

Ordering: Specify size number, figure number, and finish. For Metric applications Specify Figure M78.

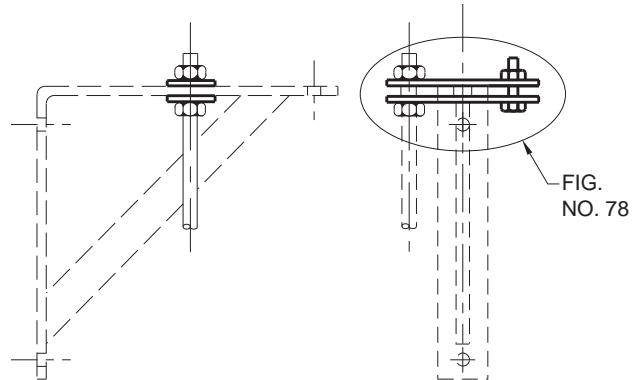


FIGURE 78 – STEEL BRACKET CLIP

SIZE	ROD SIZE	MAX LOAD	WEIGHT EACH
1	¾	610	0.80
1	M10	2714	0.36
2	½	750	1.24
2	M12	3336	0.56

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

STEEL CONCRETE INSERT

Figure 75

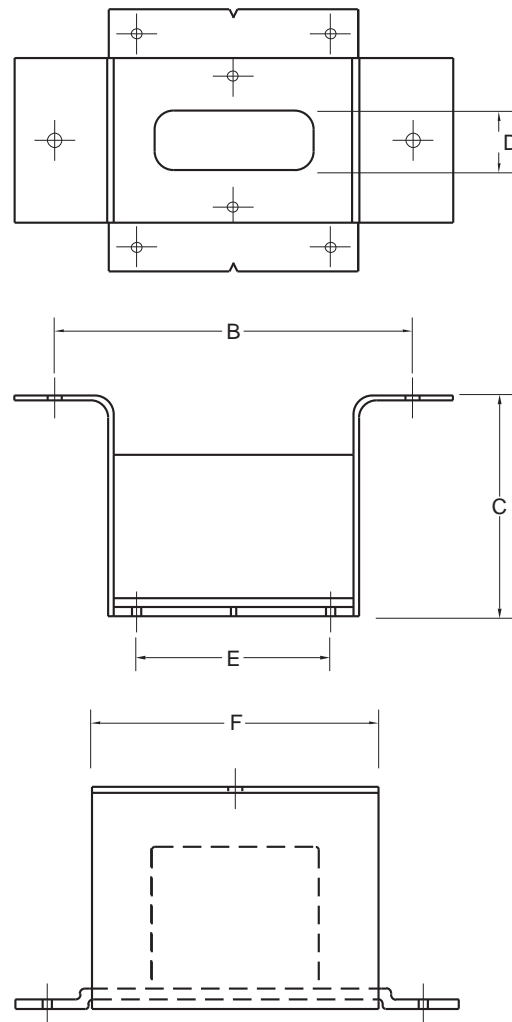
The Figure 75 is designed to provide an economical method of overhead rod support by being embedded in concrete. The insert is nailed in place prior to the concrete being poured. After the pour has cured the insert knock-out is removed, a Figure 75N Insert Nut installed, and the rod attached.

Material: Carbon Steel.

Compliance: Federal Specification WW-H-171 (Type 19), MSS-SP-69 Type 18.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. If an Insert Nut Figure 75N is required, it must be ordered separately by Figure number rod size and finish. For Metric applications specify Figure M75 and M75N.



CONCRETE INSERT NUT

Figure 75N

Designed for use with Figure 75 Steel Concrete Insert.

Finish: Plain, Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M75N.

**FIGURE 75 – STEEL CONCRETE INSERT
FIGURE 75N – CONCRETE INSERT NUT**

ROD SIZE	MAXIMUM LOAD	B	C	D	E	F	WEIGHT EACH	
							INSERT	NUT
3/8	600	3 3/8	1 1/8	7/8	1 1/2	2	0.44	0.10
M10	2669	79	41	22	38	51	0.20	0.05
1/2	600	3 3/8	1 1/8	7/8	1 1/2	2	0.44	0.14
M12	2669	79	41	22	38	51	0.20	0.06
5/8	600	3 3/8	1 1/8	7/8	1 1/2	2	0.44	0.16
M16	2669	79	41	22	38	51	0.20	0.07
3/4	600	3 3/8	1 1/8	7/8	1 1/2	2	0.44	0.17
M20	2669	79	41	22	38	51	0.20	0.08

Maximum Load Rating is dependant upon the selected nut size used.

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

BRACKET

Figure 83

This bracket is used on light duty applications. Dimension "B" can be changed upon request.

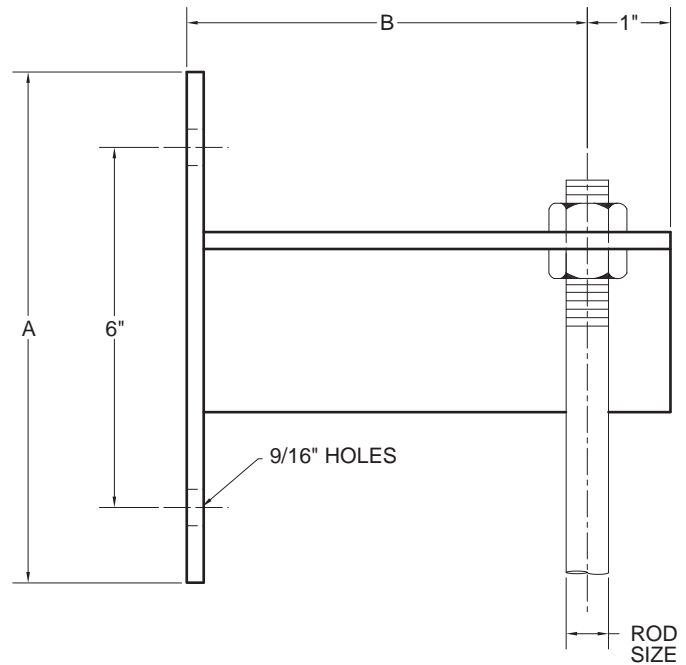
Material: Steel.

Finish: Plain, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify bracket size, figure number, and finish.

FIGURE 83 – BRACKET

SIZE	MAX. LOAD	A	B	MAX. ROD SIZE	WGT. EACH
1	610	8	4	½	2.7
1	2714	203	102	M12	1.2
2	610	8	6	½	3.2
2	2714	203	152	M12	1.5
3	610	8	9	½	4.4
3	2714	203	229	M12	2.0



MEDIUM WELDED STEEL BRACKET

Figure 84

The Figure 84 is designed to support pipe from either above or below. Slotted construction allows for drop rod use along the length of the bracket. This bracket is for bolted installation to walls and may require a backing plate. Special steel brackets can be fabricated to customers loads and/or dimensions.

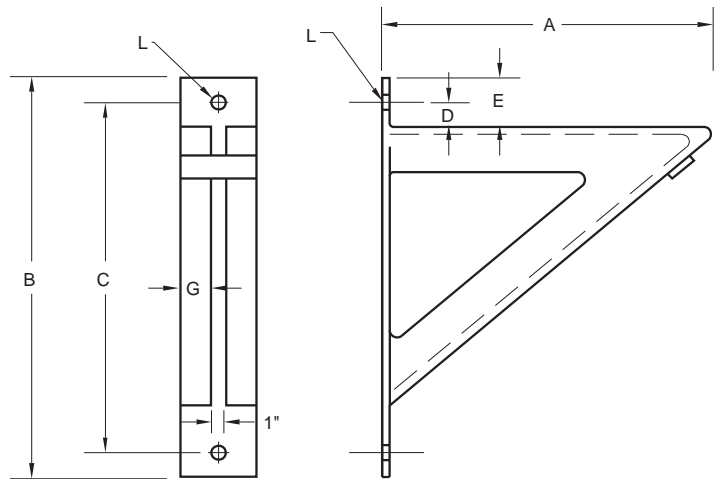
Compliance: A-A-1192A Type 32, MSS-SP 69 Type 32.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify size number, figure number, and finish. For Metric applications specify Figure M84.

FIGURE 84 – MEDIUM WELDED STEEL BRACKET

SIZE	MAX LOAD	A	B	C	D	E	G	L	WGT EACH
0	1500	12	18	15½	1¼	2½	1¼	1⅜	15.50
0	6673	305	457	394	32	64	32	21	7.03
1	1500	18	24	21½	1¼	2½	1½	1⅜	24.70
1	6673	457	610	546	32	64	38	21	11.20
2	1500	24	30	27½	1¼	2½	1½	1⅜	37.70
2	6673	610	762	699	32	64	38	21	17.10



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

SINGLE PLATE

Figure 85E (Rod Tapped – Electro-Galvanized)

Figure 85CT (Rod Tapped – Copper Finish)

Figure 85B (Rod Tapped – Plain Finish)

The Figure 85 is designed for attaching a rod to a wooden member. This part is normally used in conjunction with our Figure 81 Split Ring.

Material: Malleable Iron. Figure 85SE and 85SCT are Carbon Steel.

Ordering: Specify rod size and figure number. For metric applications specify Figure M85E, M85CT or M85B.

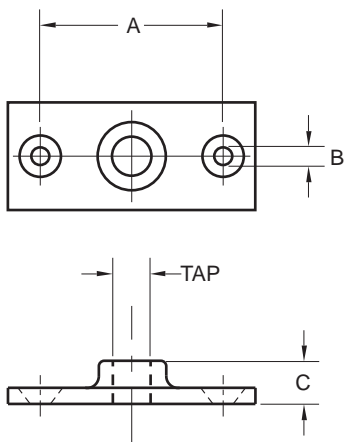


FIGURE 85E AND FIGURE 85B – SINGLE PLATE

ROD TAP	MAX LOAD	A	B	C	WGT. EACH
$\frac{3}{8}$	180	2	$\frac{1}{4}$	$\frac{1}{2}$	0.19
M10	801	51	6	13	0.09
$\frac{1}{2}$	180	2	$\frac{1}{4}$	$\frac{1}{2}$	0.18
M12	801	51	6	13	0.08

FIGURE 85CT – SINGLE PLATE

ROD TAP	MAX LOAD	A	B	C	WGT. EACH
$\frac{3}{8}$	180	2	$\frac{1}{4}$	$\frac{1}{2}$	0.19
M10	801	51	6	13	0.09
$\frac{1}{2}$	180	2	$\frac{1}{4}$	$\frac{1}{2}$	0.18
M12	801	51	6	13	0.08

SINGLE PLATE

Figure 85SE (Rod Tapped, Steel – Electro-Galvanized)

Figure 85SCT (Rod Tapped, Steel – Copper Finish)

The Figure 85 is designed for attaching a rod to a wooden member. This part is normally used in conjunction with our Figure 81 Split Ring.

Material: Carbon Steel.

Ordering: Specify rod size and figure number. For metric applications specify Figure M85SE or M85SCT.

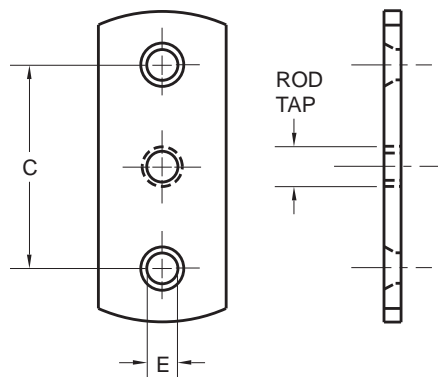


FIGURE 85SE AND FIGURE 85SCT – SINGLE PLATE

ROD TAP	MAX LOAD	C	E	WGT. EACH
$\frac{3}{8}$	180	$1\frac{1}{4}$	$\frac{1}{4}$	0.17
M10	801	44	6	0.08

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

FEMALE CEILING MOUNT BOLT

Figure 104F

The Figure 104F is designed for rod attachment directly into the ceiling from overhead poured concrete. Loads are based upon 3500 psi concrete and 80 psi bond stress.

Material: Carbon Steel, Stainless Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M104F.

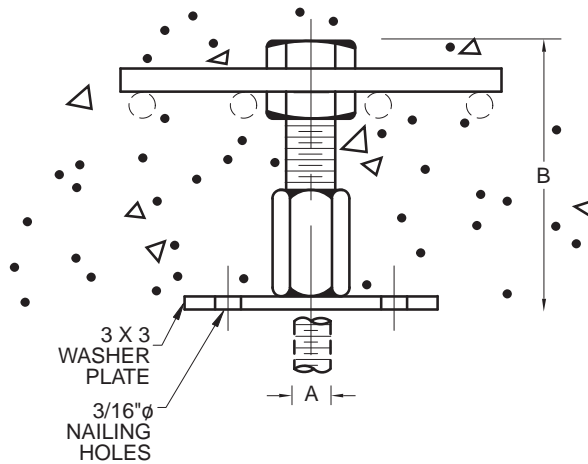


FIGURE 104F – FEMALE CEILING MOUNT BOLT

ROD SIZE A	MAX LOAD	B	WEIGHT EACH
3/8	610	4 1/2	0.80
M10	2714	105	0.36
1/2	1130	4 1/4	0.93
M12	5027	108	0.42
5/8	1810	4 5/16	1.56
M16	8052	125	0.71
3/4	2710	5 1/8	2.37
M20	12055	130	1.08
7/8	3770	6	3.55
M22	16770	152	1.61
1	4960	6 1/16	4.08
M24	22064	154	1.85
1 1/4	8000	7 3/8	7.30
M30	35587	187	3.31
1 1/2	11630	8 3/4	10.18
M36	51735	222	4.62

NOTE: Spacing of these items should not be less than twice Dimension B from the centerline.

Minimum distance from centerline to the edge of the concrete is Dimension B

MALE CEILING MOUNT BOLT

Figure 104M

The Figure 104M is designed for rod attachment using a rod coupling like our Figure 123 from overhead poured concrete ceilings. Loads are based upon 3500 psi concrete and 80 psi bond stress.

Material: Carbon Steel, Stainless Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M104M.

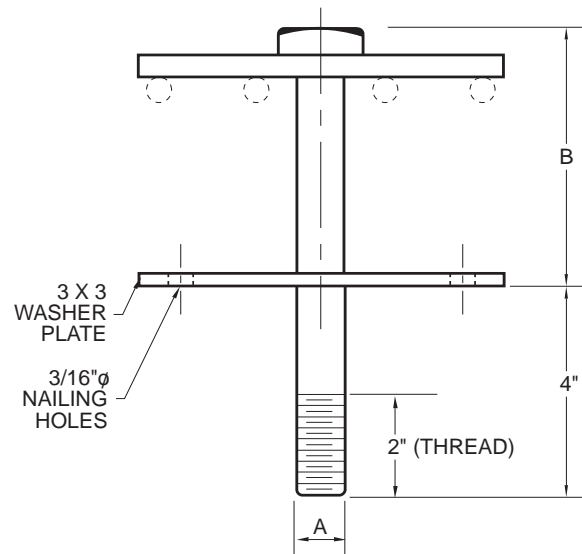


FIGURE 104M – MALE CEILING MOUNT BOLT

ROD SIZE A	MAX LOAD	B	WEIGHT EACH
3/8	610	4 1/2	0.90
M10	2714	114	0.41
1/2	1080	4 3/8	1.15
M12	4804	117	0.52
5/8	1600	5 1/8	1.91
M16	7117	143	0.87
3/4	1900	5 3/8	2.88
M20	8452	146	1.31
7/8	2500	6 1/4	4.15
M22	11121	171	1.88
1	2800	7	4.98
M24	12456	178	2.26
1 1/4	3700	8 1/4	8.04
M30	16459	210	3.65

NOTE: Spacing of these items should not be less than twice Dimension B from the centerline.

Minimum distance from centerline to the edge of the concrete is Dimension B

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

STRUCTURE ATTACHMENTS

MALLEABLE CONCRETE INSERT

Figure 108

CONCRETE INSERT NUT

Figure 108N

The Malleable Concrete Insert is used for supporting pipe lines up to 12" diameter and where it is desired to install the supporting rods after the insert has been set. Lateral adjustments of 1¹¹/₁₆ inches on rod sizes of 3/8 inch to 3/4 inches and 1 1/8 inches on 7/8 inch rod size. The nut is not included but can be ordered separately as our Figure 108N and furnished tapped for 3/8, 1/2, 5/8, 3/4, or 7/8 inch rod diameters.

Material: Malleable Iron

Compliance: A-A-1192A Type 18 and MSS-SP69 Type 18.

Finish: Figure 108: Plain, Electro-Galvanized, Hot-Dip Galvanized; Figure 108N: Plain, Electro-Galvanized.

Ordering: Specify figure number and finish for Figure 108. Specify rod tap size, figure number and finish for Figure 108N. For Metric applications specify Figure M108 and M108N.

FIGURE 108 – MALLEABLE CONCRETE INSERT

A	B	C	D	E	WGT. EACH
3 3/8	2 3/16	3 3/8	1 7/8	1 5/16	1.3
86	56	86	48	24	0.59

FIGURE 108N – CONCRETE INSERT NUT

SIZE	3/8	1/2	5/8	3/4	7/8
M10	M10	M12	M16	M20	M22
MAX. LOAD	610	1130	1140	1140	1140
WGT. EACH	0.20	0.21	0.20	0.22	0.21
EACH	0.09	0.10	0.09	0.10	0.10

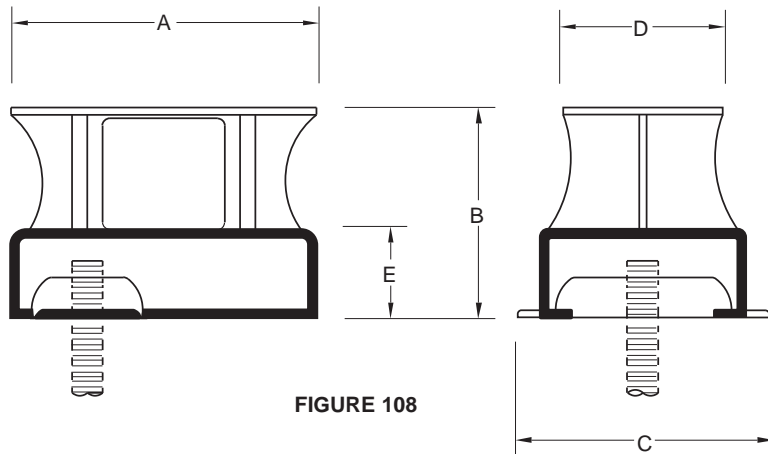


FIGURE 108

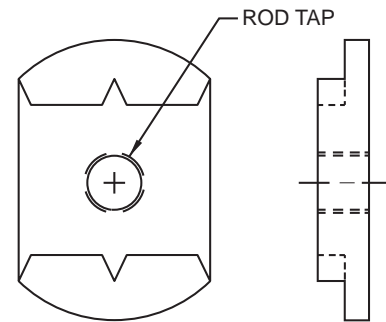


FIGURE 108N

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

WELDED BEAM ATTACHMENT

Figure 113A

Figure 113B

Fig. 113A is recommended for attachment to the bottom of beams when little or no pipe movement is expected.

Fig. 113B is recommended for attachment to the bottom of beams, when pipe movement is expected. Sizes 1" and smaller are typically supplied with a bolt and nut while Sizes 1 1/4" and larger are typically supplied with a pin and cotters.

Compliance: Federal Specification A-A-1192A Type 22, MSS SP-58 and SP-69 (Type 22) and BSPSS-BS3974

Material: Carbon Steel

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized

Note: The use of galvanized coatings at temperatures above 450° F is at the discretion of the customer.

Ordering: Specify figure number, rod size and finish.

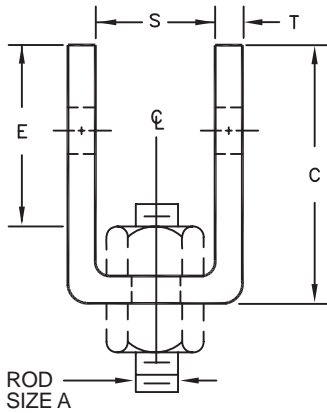


FIGURE 113A
FOR ROD SIZES 3/8"
THRU 1 1/4"

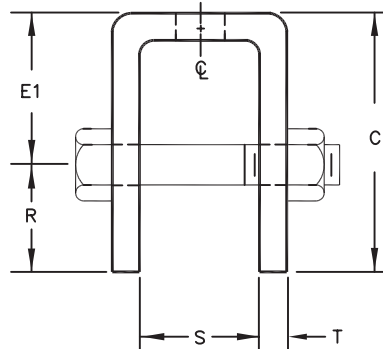


FIGURE 113B
FOR ROD SIZES 3/8"
THRU 1 1/4"

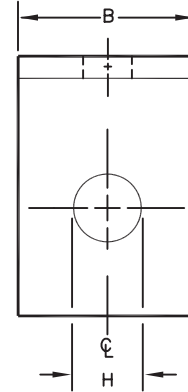


FIGURE 113B
FOR ROD SIZES 3/8"
THRU 1 1/4"

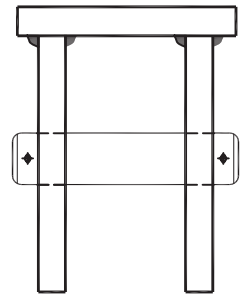


FIGURE 113B
FOR ROD SIZES 2"
THRU 3 1/2"

FIGURE 113 – WELDED BEAM ATTACHMENT

ROD SIZE	MAX. LOAD 650°F 343°C	BOLT OR PIN SIZE	B	C	ROD TAKEOUT		H	R	S	T	WEIGHT EACH	
					FIG 113A E	FIG 113B E1					FIG 113A W/O B&N	FIG 113B W/ B&N
3/8	730	1/2	2	2 7/8	1 7/8	2	9/16	7/8	1 1/4	1/4	0.96	1.20
M10	3247	M12	51	73	48	51	14	22	32	6	0.44	0.54
1/2	1350	5/8	2	2 7/8	1 3/4	2	1 1/16	7/8	1 1/4	1/4	0.96	1.20
M12	6005	M16	51	73	44	51	17	22	32	6	0.44	0.54
5/8	2160	3/4	2	2 7/8	1 3/4	2	1 3/16	7/8	1 1/4	1/4	0.96	1.60
M16	9609	M20	51	73	44	51	21	22	32	6	0.44	0.73
3/4	3230	7/8	2 1/2	3 3/8	1 7/8	2	1 5/16	1 1/8	2 7/8	3/8	1.90	2.80
M20	14368	M20	64	79	48	51	24	29	54	10	0.86	1.27
7/8	4480	1	2 1/2	4 1/4	2 5/8	3	1 1/8	1 1/4	2 7/8	3/8	2.50	3.90
M20	19929	M24	64	108	67	76	29	32	54	10	1.13	1.77
1	5900	1 1/8	3	4 1/2	3	3	1 1/4	1 1/2	3	1/2	4.30	6.30
M24	26246	M30	76	114	76	76	32	38	76	13	1.95	2.86
1 1/4	9500	1 3/8	4	5	2	3	1 1/2	2	2 1/2	5/8	8.10	10.2
M30	42260	M36	102	127	51	76	38	51	64	16	3.67	4.63
1 1/2	13800	1 5/8	5	6 1/2	2 1/2	4	1 3/4	2 1/2	3	3/4	15.6	19.0
M36	61388	M42	127	165	64	102	44	64	76	19	7.08	8.62
1 3/4	18600	1 7/8	5	7 3/4	2 3/4	5	2	2 3/4	3 3/4	3/4	18.7	24.2
M42	82740	M48	127	197	70	127	51	70	95	19	8.48	10.9
2	24600	2 1/4	6	8 3/4	3 1/4	5	2 3/8	3 1/4	3 1/2	1/2	N/A	30.6
M48	109431	M56	152	210	83	127	60	83	89	13	N/A	13.8
2 1/4	32300	2 1/2	6	9 1/2	3 1/2	6	2 5/8	3 1/2	3 1/2	5/8	N/A	36.8
M56	143683	M64	152	248	89	152	67	89	89	16	N/A	16.6
2 1/2	39800	2 1/2	6	9 3/4	3 1/2	6	2 7/8	3 3/4	3 3/4	5/8	N/A	39.7
M64	177046	M64	152	248	89	152	73	95	95	16	N/A	18.0
2 3/4	49400	3	6	9 3/4	N/A	5 3/4	3 1/8	4	3 3/4	5/8	N/A	39.7
M72	219751	M80X6	152	248	N/A	146	79	102	95	16	N/A	18.0
3	60100	3 1/4	7	10 1/4	N/A	6 1/4	3 3/8	4	3 3/4	5/8	N/A	49.0
M80	267349	M80	178	260	N/A	159	86	102	95	16	N/A	22.2
3 1/4	71900	3 1/2	7	11 1/2	N/A	7	3 5/8	4 1/2	4 1/4	3/4	N/A	67.6
M80	319840	M90X6	178	292	N/A	178	92	114	108	19	N/A	30.6
3 1/2	84700	3 3/4	8	12	N/A	7 1/2	3 7/8	4 1/2	4 1/4	3/4	N/A	79.3
M90	376779	M90-6	203	305	N/A	191	98	114	108	19	N/A	35.9

STRUCTURE ATTACHMENTS

HEAVY WELDED STEEL BRACKET

Figure 139

The Figure 139 is designed to support pipe from either above or below. Slotted construction allows for drop rod use along the length of the bracket. This bracket is for bolted installation to walls and may require a backing plate. Special steel brackets can be fabricated to customers loads and/or dimensions.

Compliance: A-A-1192A Type 33, MSS-SP 69 Type 33.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify size number, figure number, and finish. For Metric applications specify Figure M139.

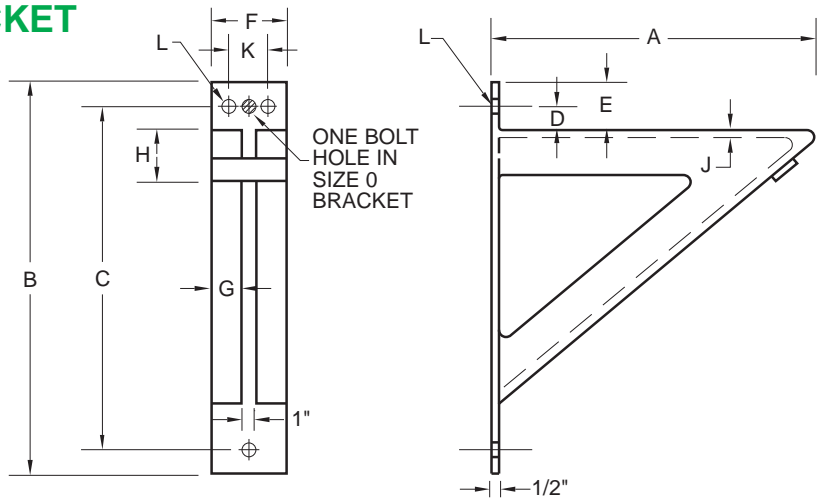


FIGURE 139 – HEAVY WELDED STEEL BRACKET

SIZE	MAX LOAD	A	B	C	D	E	F	G	H	J	K	L	WGT EACH
0	3000	12	18	15¼	1½	2¾	4½	1½	2	¼	NA	⅜	25.1
0	13345	305	457	387	38	70	114	38	51	6	NA	21	11.4
1	3000	18	24	21¾	1½	2¾	5	1½	2	¾	2¾	1⅜	44.8
1	13345	457	610	543	38	70	127	38	51	10	70	21	20.3
2	3000	24	30	27½	1½	2¾	5	1½	2½	¾	2½	1⅜	60.7
2	13345	610	762	699	38	70	127	38	64	10	64	27	27.5
3	3000	30	36	33¼	1¾	3	6	2	2½	¾	2½	1⅜	98.1
3	13345	762	914	845	41	76	152	51	64	10	64	27	44.5
4	3000	36	42	39	1½	3	6	2	3½	¾	3½	1⅜	129.4
4	13345	914	1067	991	38	76	152	51	89	10	89	27	58.7
5	3000	42	50	46	1½	3½	7	2½	3½	¾	3½	1⅜	177.2
5	13345	1067	1270	1168	38	89	178	64	89	10	89	27	80.4

METAL DECK CEILING BOLT

Figure 143

The Figure 143 Metal Deck Ceiling Bolts are used with our Figure 123. Rod Couplings ordered separately.

Made special to customer order.

Material: Steel

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify size, dimension “A”, figure number, and finish. For Metric applications specify Figure M143.

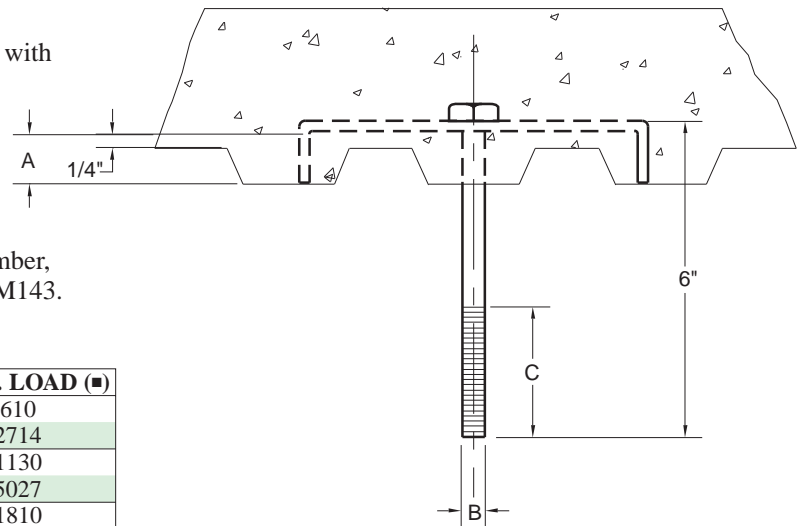


FIG. 143 – METAL DECK CEILING BOLT

SIZE NO.	B	C	A	MAX. LOAD (■)
1	¾	1		610
1	10	25		2714
2	½	1¼	S	1130
2	13	32	P	5027
3	¾	1½	E	1810
3	16	38	C	8052
4	¾	1¾	I	2710
4	19	44	F	12055
5	¾	2	Y	3770
5	22	51		16770
6	1	2¼		4960
6	25	57		22064

(■) Based on the rod size. customer to verify the strength of the deck.

STEEL BRACKET

Figure 150

The Figure 150 bracket is for light duty applications. Made special to customer order.

Material: Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M150.

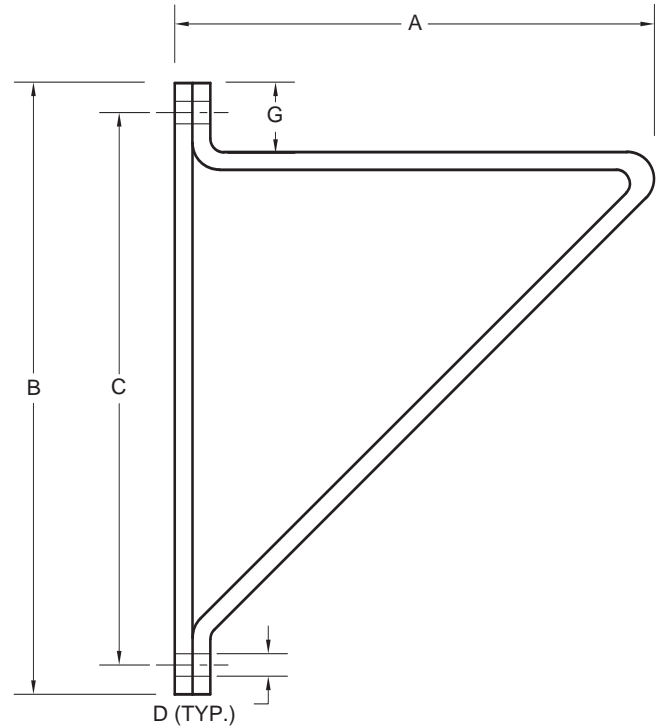


FIGURE 150 – STEEL BRACKET

SIZE NO.	A	B	C	D	G	WGT. EACH
1	12	18	12	$\frac{5}{16}$	3	18.3
1	305	457	305	14	76	8.30
2	18	24	18	$\frac{5}{16}$	3	30.4
2	457	610	457	14	76	13.8
3	24	30	24	$\frac{11}{16}$	3	45.8
3	610	762	610	17	76	20.8
4	30	36	30	$\frac{11}{16}$	3	63.6
4	762	914	762	17	76	28.8
5	36	42	36	$\frac{13}{16}$	3	93.8
5	914	1067	914	21	76	42.5

CEILING STIRRUP

Figure 151

The Figure 151 is designed for attaching a rod to a level ceiling or beam.

Material: Steel

Finish: Plain, Painted, Electro-galvanized, Hot-Dip Galvanized

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M151.

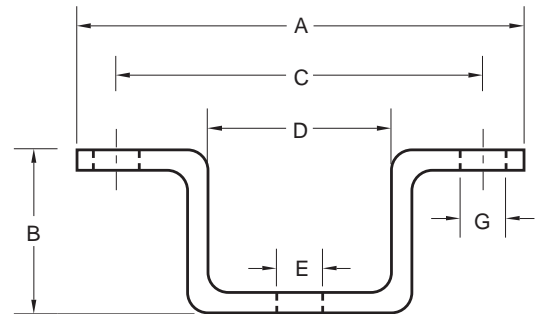


FIGURE 151

SIZE	MAXIMUM LOAD	A	B	C	D	E	G	WEIGHT EACH
1	600	5½	2	4½	2¼	$\frac{5}{16}$	$\frac{5}{16}$	0.76
1	2669	140	51	114	57	14	14	0.34
2	880	6	2½	4½	2½	$\frac{11}{16}$	$\frac{5}{16}$	1.36
2	3915	152	54	114	54	17	14	0.62

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

RETURN LINE ANGLE

Figure 152

The Figure 152 is designed for dropping a rod down from a wall connection. Two different distances from the wall to centerline of pipe are available depending upon the orientation of the angle.

Material: Steel.

Finish: Plain, Painted, Electro-galvanized, Hot-Dip Galvanized.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M152.

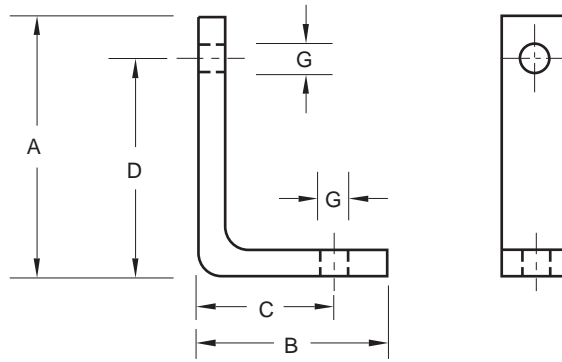


FIGURE 152 – RETURN LINE ANGLE

SIZE	MAXIMUM LOAD	A	B	C	D	G	WEIGHT EACH
1	180	3%	2%	2	3	$\frac{1}{16}$	0.53
1	801	92	67	51	76	14	0.24
2	180	4%	3%	3	4	$\frac{1}{16}$	0.71
2	801	117	92	76	102	14	0.32
3	390	3%	2%	2	3	$\frac{1}{16}$	0.92
3	1735	92	67	51	76	14	0.42
4	390	4%	3%	3	4	$\frac{1}{16}$	1.23
4	1735	117	92	76	102	14	0.56

SIDE BEAM CONNECTOR

Figure 153 (Rod Tapped – Electro-Galvanized or Painted)

Figure 153S (Rod Tapped, Steel – Electro-Galvanized) ($\frac{3}{8}$ " Size Only) Made in U.S.A.

The Figure 153 is designed for use on buildings of wood construction. They can be secured to the side of beams or joists by means of our Figure 166 Drive Screws (ordered separately).

Material: Malleable Iron, except Figure 153S which is carbon steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M153, M153S.

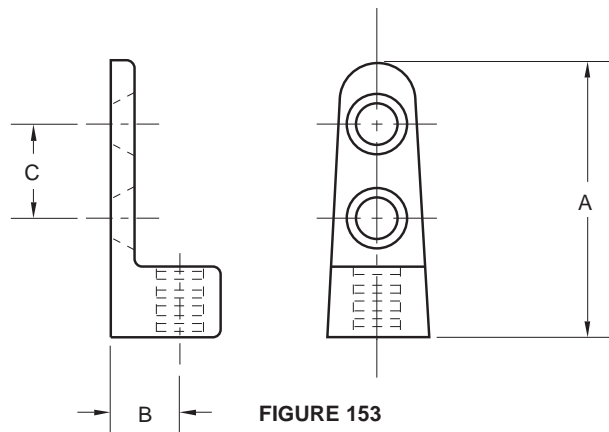


FIGURE 153

FIGURE 153 – SIDE BEAM CONNECTOR

SIZE	MAX LOAD	A	B	C	WGT. EACH
$\frac{3}{8}$ ROD	250	2 $\frac{3}{4}$	$\frac{1}{16}$	$\frac{3}{4}$	0.13
M10 ROD	1112	60	14	19	0.06
$\frac{1}{2}$ ROD	480	2 $\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	0.25
M12 ROD	2135	70	19	19	0.11
$\frac{1}{4}$ PIPE	250	2 $\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	0.25
M8 PIPE	1112	70	19	19	0.11

FIGURE 153S – SIDE BEAM CONNECTOR

SIZE	MAX LOAD	A	B	C	WGT. EACH
$\frac{3}{8}$ ROD	250	2 $\frac{1}{2}$	$\frac{1}{16}$	1	0.15
M10 ROD	1112	64	14	25	0.07

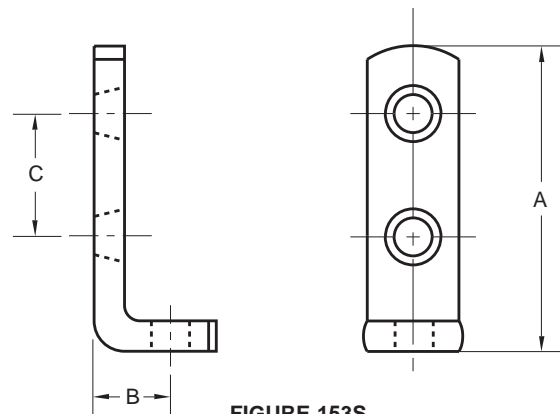


FIGURE 153S

ANCHOR BOLT

Figure 177

The Figure 177 is designed to be embedded into concrete. Made special to customer order. Are available in other diameters and lengths.

Material: Carbon Steel

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size, length, thread length “E”, figure number, and finish. For Metric applications specify Figure M177.

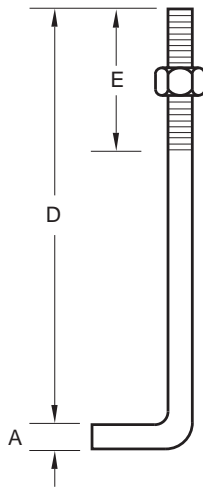


FIGURE 177 – ANCHOR BOLT

ROD SIZE A	WEIGHT EACH LENGTH - DIMENSION “D”			
	6	8	10	12
3/8	0.28	0.34	0.40	0.46
M10	0.13	0.15	0.18	0.21
1/2	0.52	0.63	0.74	0.85
M12	0.24	0.29	0.34	0.39
5/8	0.81	0.99	1.16	1.34
M16	0.37	0.45	0.53	0.61
3/4	1.19	1.44	1.69	1.94
M20	0.54	0.65	0.77	0.88
7/8	1.5	1.9	2.2	2.60
M22	0.68	0.86	1.00	1.18
1	2.0	2.4	2.9	3.30
M24	0.91	1.09	1.32	1.50

WELDING CLEVIS ATTACHMENT

Figure 216

The Figure 216 is an assembly of the Figure 220 and Figure 276P for ordering convenience.

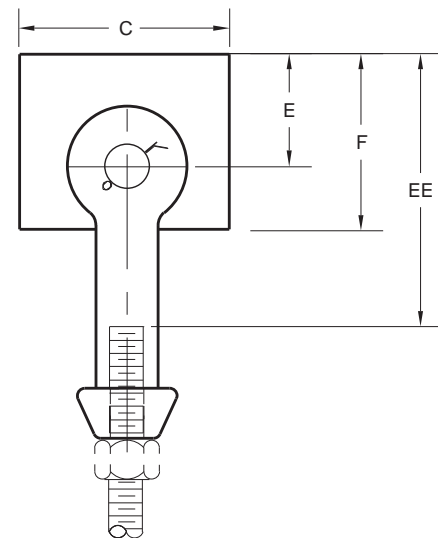
Material: Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M216.

FIGURE 216 – WELDING CLEVIS ATTACHMENT

ROD SIZE	C	E	EE	F	WGT. EACH
1/2	2 1/2	3	6 1/2	4 1/4	1.7
M12	64	76	165	108	0.7
3/8	2 1/2	3	6 1/2	4 1/4	1.6
M16	64	76	165	108	0.7
3/4	2 1/2	3	7	4 1/4	4.0
M20	64	76	178	108	1.8
7/8	2 1/2	3	7	4 1/4	4.4
M22	64	76	178	108	2.0
1	3	3	8	4 1/2	6.7
M24	76	76	203	114	3.0
1 1/4	4	4	9	6	9.2
M30	102	102	229	152	4.2
1 1/2	5	4 1/2	10 1/2	7	14.9
M36	127	114	267	178	6.8
1 3/4	5	4 1/2	10 1/2	7	19.2
M42	127	114	267	178	8.7
2	6	4 1/2	11 1/2	7 1/2	30.5
M48	152	114	292	191	13.8
2 1/4	6	4 1/2	12 1/2	7 1/2	42.7
M56	152	114	318	191	19.4
2 1/2	8	4 1/2	12 1/2	8 1/2	51.5
M64	203	114	318	216	23.4



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

WELDING LUG

Figure 220

The Figure 220 is to be welded to the underside of structural members for the support of Type C Variable Springs, and with the Figure 276P Forged Steel Clevis with Pin.

Material: Carbon Steel

Maximum Temperature: 650°F

Compliance: A-A-1192A (Type 57) and MSS SP-58 (Type 57)

Finish: Plain, Painted, and Hot-Dip Galvanized

Ordering: Specify figure number, size and finish.

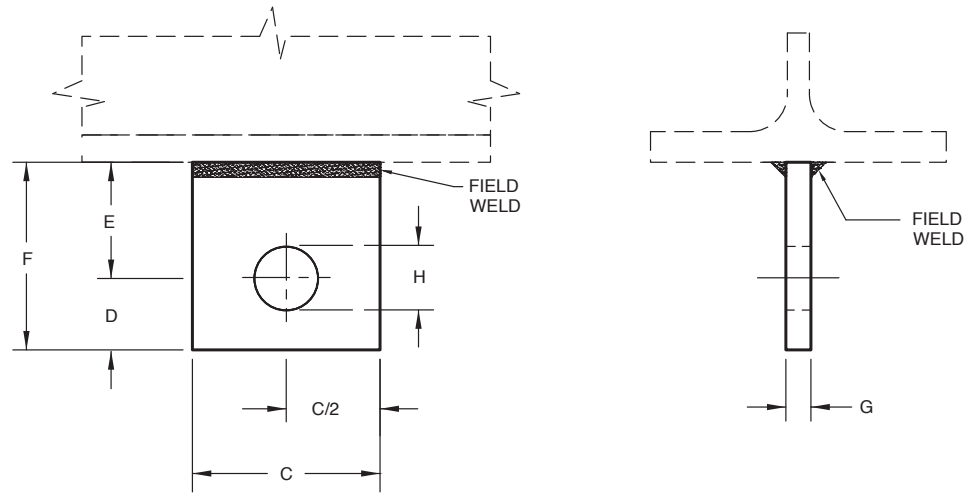


FIGURE 220 – WELDING LUG

SIZE	BOLT OR PIN SIZE	MAXIMUM LOAD	C	D	E	F	G	H	WEIGHT EACH
3/8	1/2	730	2 1/2	1 1/4	3	4 1/4	1/4	9/16	0.74
M10	M12	3247	64	32	76	108	6	14	0.34
1/2	5/8	1350	2 1/2	1 1/4	3	4 1/4	1/4	1 1/16	0.75
M12	M16	6005	64	32	76	108	6	17	0.34
5/8	3/4	2160	2 1/2	1 1/4	3	4 1/4	1/4	1 3/16	0.68
M16	M20	9609	64	32	76	108	6	21	0.31
3/4	7/8	3230	2 1/2	1 1/4	3	4 1/4	3/8	1 5/16	1.00
M20	M20	14368	64	32	76	108	10	24	0.45
7/8	1	4480	2 1/2	1 1/4	3	4 1/4	3/8	1 1/8	0.98
M20	M24	19929	64	32	76	108	10	29	0.44
1	1 1/8	5900	3	1 1/2	3	4 1/2	1/2	1 1/4	1.60
M24	M30	26246	76	38	76	114	13	32	0.73
1 1/4	1 3/8	9500	4	2	4	6	5/8	1 1/2	3.70
M30	M36	42260	102	51	102	152	16	38	1.68
1 1/2	1 5/8	13800	5	2 1/2	4 1/2	7	3/4	1 3/4	6.40
M36	M42	61388	127	64	114	178	19	44	2.90
1 3/4	1 7/8	18600	5	2 1/2	4 1/2	7	3/4	2	6.30
M42	M48	82740	127	64	114	178	19	51	2.86
2	2 1/4	24600	6	3	4 1/2	7 1/2	3/4	2 3/8	7.20
M48	M56	109431	152	76	114	191	19	60	3.27
2 1/4	2 1/2	32300	6	3	4 1/2	7 1/2	3/4	2 5/8	7.60
M56	M64	143683	152	76	114	191	19	67	3.45
2 1/2	2 3/4	39800	8	4	4 1/2	8 1/2	1	2 7/8	15.5
M64	M72	177046	203	102	114	216	25	73	7.03
2 3/4	3	49400	8	4	4 1/2	8 1/2	1	3 1/8	15.1
M72	M80	219751	203	102	114	216	25	79	6.85
3	3 1/4	60100	8	4	5	9	1	3 3/8	16.0
M80	M80	267349	203	102	127	229	25	86	7.26
3 1/4	3 1/2	71900	9	4 1/2	5	9 1/2	1	3 5/8	18.9
M80	M90	319840	229	114	127	241	25	92	8.57
3 1/2	3 3/4	84700	9	4 1/2	6	10 1/2	1 1/2	3 7/8	31.3
M90	M100	376779	229	114	152	267	38	98	14.20
3 3/4	4	98500	9	5	6	11	1 3/4	4 1/8	35.9
M95	M125	438167	229	127	152	279	44	105	16.28

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

SIDE BEAM ANGLE BRACKET

Figure 303

The Figure 303 is designed for use in supporting pipe hangers to the side of joist, steel, or wood beams. It can be either bolted or welded to the structure.

Material: Carbon Steel.

Compliance: A-A-1192A Type 34 and MSS-SP-69 Type 34.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M303.

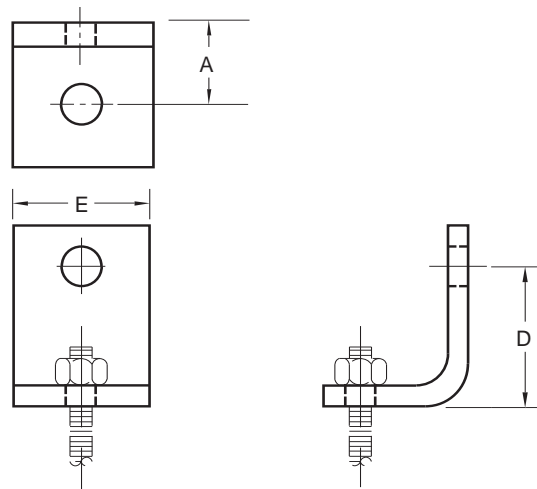


FIGURE 303 – SIDE BEAM BRACKET

ROD SIZE	MAXIMUM LOAD		A	D	E	WEIGHT EACH
	LAG SCREW	BOLT TO STEEL				
$\frac{3}{8}$	390	580	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	0.25
M10	1735	2580	22	32	32	0.11
$\frac{1}{2}$	640	960	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{1}{2}$	0.40
M12	2847	4270	30	41	38	0.18
$\frac{5}{8}$	760	1500	$1\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	0.70
M16	3381	6673	37	48	38	0.32
$\frac{3}{4}$	830	2500	$1\frac{11}{16}$	$2\frac{1}{8}$	2	1.07
M20	3692	11121	43	54	51	0.49
$\frac{7}{8}$	830	3600	2	$2\frac{1}{2}$	2	1.64
M22	3692	16014	51	64	51	0.74

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

STRUCTURE ATTACHMENTS

CHANNEL ASSEMBLY

Figure 371

The Figure 371 Channel Assembly is composed of two channels back to back with a spacer welded on each end. Washer plates are included and shipped loose.

Material: Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify channel size, rod diameter, dimension “A”, figure number, and finish. For Metric applications specify Figure M371. Made special to customer order.

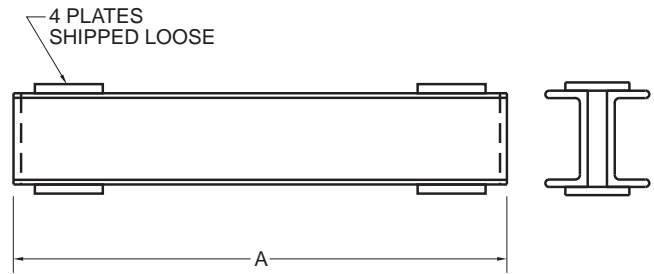


FIGURE 371 – CHANNEL ASSEMBLY

CHANNEL SIZE	ALLOWABLE CONCENTRATED LOAD AT CENTER OF SPAN F/S 5							
	12 305	18 457	24 610	30 762	36 914	42 1067	60 1524	72 1829
3C 4.1	10000	6800	5100	4100	3400	2900	2000	1700
	44484	30249	22687	18238	15125	12900	8897	7562
4C 5.4	17500	11600	8800	7000	5800	5000	3500	2900
	77847	51601	39146	31139	25801	22242	15569	12900
5C 6.7	27600	18400	13800	11000	9200	7900	5500	4600
	122776	81851	61388	48932	40925	35142	24466	20463
6C 8.2	39500	26300	19800	15800	13200	11300	7900	6600
	175712	116993	88078	70285	58719	50267	35142	29359
8C 11.5	74500	49600	37300	29800	24800	21300	14900	12400
	331406	220641	165925	132562	110320	94751	66281	55160
12C 20.7			98500	78800	65600	56300	39400	32800
			438167	350534	291815	250445	175267	145907

ANGLE IRON SUPPORT

Figure 374

The Figure 374 Angle Iron Support is used to form a trapeze when supporting more than one pipeline at the same time.

Material: Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify size of angle, dimension “A”, center to center of drop rods, size of drop rods, figure number and finish. Made special to customer order. For Metric applications specify Figure M374.

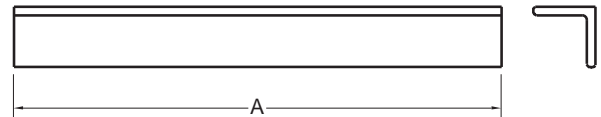


FIGURE 374 – ANGLE IRON SUPPORT

ANGLE SIZE	ALLOWABLE CONCENTRATED LOAD AT CENTER OF SPAN								
	6 152	12 305	18 457	24 610	30 762	36 914	42 1067	48 1219	72 1829
1 x 1 x ¼	670	330	220	160	130	100			
	2980	1468	979	712	578	445			
1½ x 1½ x ¼	1000	500	350	250	200				
	4448	2224	1557	1112	890				
2 x 2 x ¼	1940	1470	980	730	580	480	410	355	225
	8630	6539	4359	3247	2580	2135	1824	1579	1001
2 x 2 x ⅜	2750	1350	925	775	550				
	12233	6005	4115	3448	2447				
2½ x 2½ x ¼	1980	1800	1570	1170	935	775	660	575	370
	8808	8007	6984	5205	4159	3448	2936	2558	1646
3 x 3 x ¼	1840	1740	1640	1550	1370	1140	970	845	545
	8185	7740	7295	6895	6094	5071	4315	3759	2424
3 x 3 x ½		4350	2925	2175	1750				
		19351	13012	9675	7785				

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STEEL CONCRETE INSERT

Figure 650

Designed to provide a connection point for hanger rods in concrete the Figure 650 must installed in place prior to building concrete being poured. It can accommodate a large variety of rod sizes by selecting and ordering the Figure 650N separately. For lighter loads our Figure 75 is also available.

Compliance: Federal Specification A-A-1192A (Type 18), MSS SP-69 (Type 18).

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify figure number, and finish. For Metric applications specify Figure M650.

CONCRETE INSERT NUT

Figure 650N

Designed for use with Figure 650 Steel Concrete Insert.

Material: Carbon Steel.

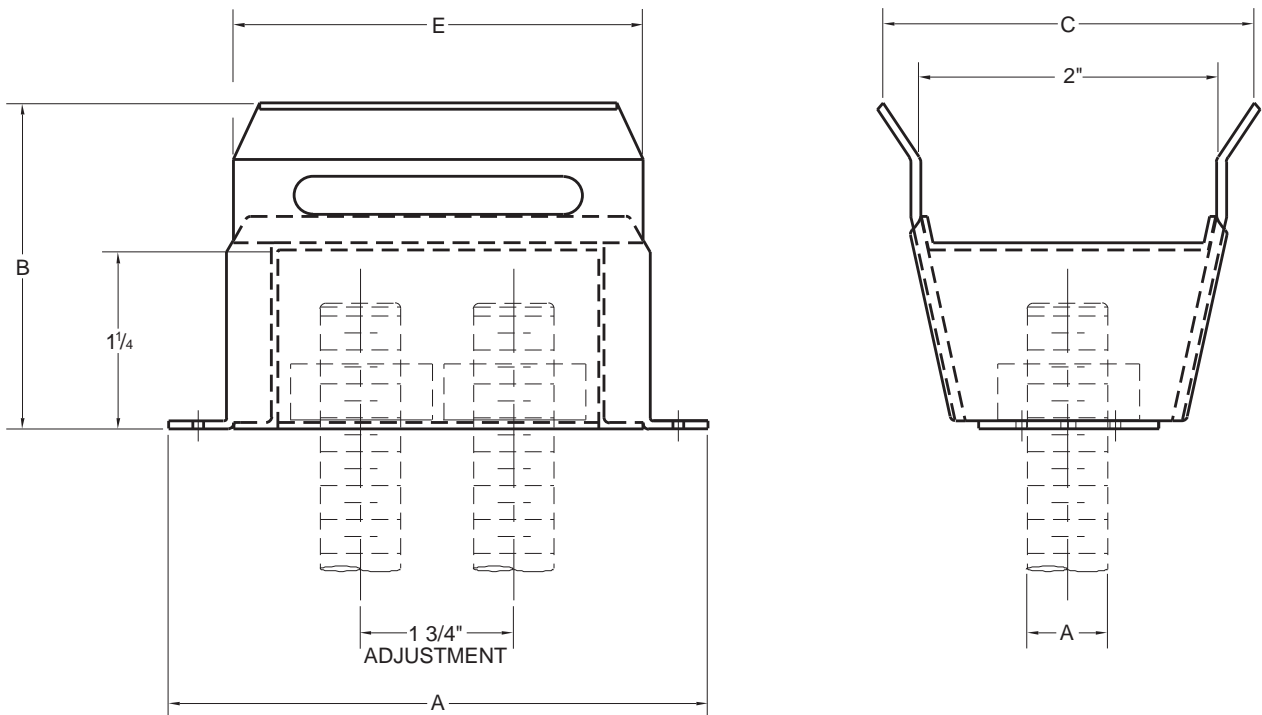
Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M650N.

**FIGURE 650 – STEEL CONCRETE INSERT
FIGURE 650N – CONCRETE INSERT NUT**

ROD SIZE	MAXIMUM LOAD	A	B	C	E	WEIGHT EACH	
						INSERT	NUT
3/8	610	4 3/8	2 5/16	3 3/8	3 3/8	0.82	0.13
M10	2714	111	59	79	79	0.37	0.06
1/2	1130	4 3/8	2 5/16	3 3/8	3 3/8	0.86	0.15
M12	5027	111	59	79	79	0.39	0.07
5/8	1200	4 3/8	2 5/16	3 3/8	3 3/8	0.89	0.19
M16	5338	111	59	79	79	0.40	0.09
3/4	1200	4 3/8	2 5/16	3 3/8	3 3/8	0.86	0.22
M20	5338	111	59	79	79	0.39	0.10
7/8	1200	4 3/8	2 7/16	2 15/16	3 3/8	0.93	0.24
M22	5338	105	56	75	79	0.42	0.11

Maximum Load Rating is dependant upon the selected nut size used.



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

STRUCTURE ATTACHMENTS

CONCRETE ATTACHMENT

Figure 1020

The Figure 1020 Type 1 is for attaching support assemblies to concrete structures where little or no movement is anticipated. Used with a Figure 133 Threaded Rod or Figure 94 All Thread Rod.

The Figure 1020 Type 2 is for attaching support assemblies to concrete structures where movement is anticipated. Used with a Fig 279 Weldless Eyerud or Figure 93 Welded Eyerud. A two-anchor pattern is used on sizes $\frac{3}{8}$ " thru $\frac{5}{8}$ " and all others use four anchors.

Material: Carbon Steel.

Finish: Plain, Painted, Hot-Dip Galvanized

Ordering: Specify figure number, type number, rod size and finish.

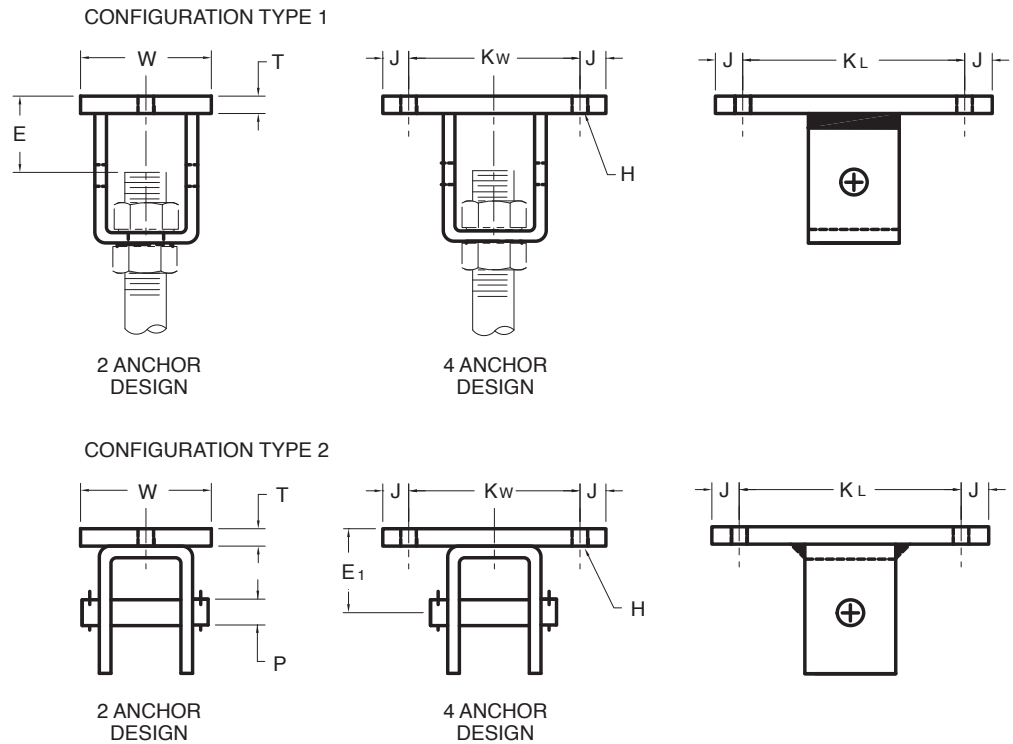


FIG. 1020 CONCRETE ATTACHMENT

ROD SIZE	MAX LOAD	E	E1	H*	P	J	K _L	K _W	T	W	D	WEIGHT EACH W/ PIN	WEIGHT EACH W/O PIN
$\frac{3}{8}$ M10	730 3247	$2\frac{1}{8}$ 54	$2\frac{1}{4}$ 57	$\frac{1}{2}$ 13	$\frac{1}{2}$ 13	1 25	4 102	N/A N/A	$\frac{1}{4}$ 6	5 127	4 102	2.8 1.8	2.7 1.2
$\frac{1}{2}$ M12	1350 6005	$2\frac{1}{8}$ 54	$2\frac{3}{8}$ 60	$\frac{5}{8}$ 16	$\frac{5}{8}$ 16	1 25	5 127	N/A N/A	$\frac{3}{8}$ 10	5 127	4 102	4.1 1.8	3.9 1.8
$\frac{5}{8}$ M16	2160 9609	$2\frac{1}{4}$ 57	$2\frac{1}{2}$ 64	$\frac{3}{4}$ 19	$\frac{3}{4}$ 19	1 25	6 152	N/A N/A	$\frac{1}{2}$ 13	5 127	4 102	5.8 2.6	5.5 2.5
$\frac{3}{4}$ M20	3230 14368	$2\frac{1}{8}$ 54	$2\frac{3}{8}$ 60	$\frac{5}{8}$ 16	$\frac{7}{8}$ 22	1 25	5 127	5 127	$\frac{3}{8}$ 10	5 127	N/A N/A	7.7 3.5	7.1 3.2
$\frac{7}{8}$ M20	4480 19929	$3\frac{3}{8}$ 86	$3\frac{5}{8}$ 92	$\frac{7}{8}$ 22	1 25	$1\frac{1}{4}$ 32	$6\frac{1}{2}$ 165	7 165	$\frac{5}{8}$ 16	5 127	N/A N/A	19.8 9.0	18.6 8.4
1 M24	5900 26246	$3\frac{3}{8}$ 86	$3\frac{5}{8}$ 92	$\frac{7}{8}$ 22	$1\frac{1}{8}$ 29	$1\frac{1}{4}$ 32	$6\frac{1}{2}$ 165	7 165	$\frac{5}{8}$ 16	6 152	N/A N/A	19.8 9.0	18.6 8.4
$1\frac{1}{4}$ M30	9500 42260	$3\frac{3}{8}$ 92	$3\frac{3}{4}$ 95	1 25	$1\frac{3}{8}$ 35	2 51	8 203	8 203	$\frac{3}{4}$ 19	6 152	N/A N/A	41.0 18.6	38.7 17.6
$1\frac{1}{2}$ M36	13800 61388	5 127	5 127	$1\frac{1}{8}$ 29	$1\frac{1}{8}$ 41	2 51	8 203	8 203	1 25	6 152	N/A N/A	60.0 27.2	56.4 25.6
$1\frac{3}{4}$ M42	18600 82740	$6\frac{1}{4}$ 159	$6\frac{1}{4}$ 159	$1\frac{3}{8}$ 35	2 51	2 51	10 254	10 254	$1\frac{1}{4}$ 32	7 178	N/A N/A	93.6 42.5	88.0 39.9
2 M48	24600 109431	$6\frac{1}{2}$ 165	$6\frac{1}{4}$ 159	$1\frac{3}{8}$ 35	$2\frac{1}{4}$ 57	2 51	10 254	10 254	$1\frac{1}{4}$ 32	7 178	N/A N/A	100.0 45.4	92.0 41.7

* Holes are $\frac{1}{8}$ " larger than recommended anchor bolt diameter to allow for installation tolerance.

Note: Load values are based upon the rod diameter only. Load values assume that concrete and anchors used are of sufficient strength to hold the load.

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

CONCRETE SINGLE LUG PLATE

Figure 1022

The Figure 1022 is for attachment to a concrete structure where movement is anticipated. A two-anchor pattern is used on sizes $\frac{3}{8}$ " thru $\frac{5}{8}$ " and all others use four anchors. Used with the Figure 276 forged steel clevis and Type "C" variable springs.

Material: Carbon Steel.

Finish: Plain, Painted, Hot-Dip Galvanized

Ordering: Specify figure number, type number, rod size and finish.

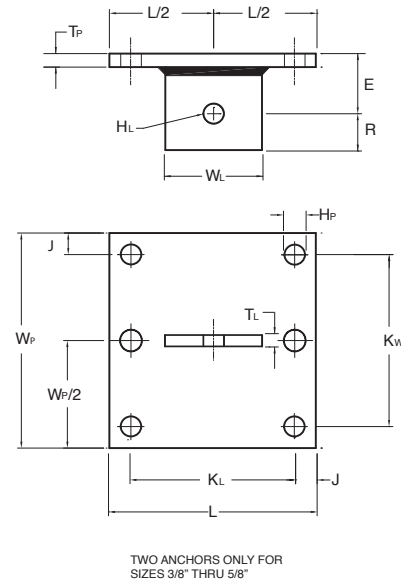


FIG. 1022 CONCRETE SINGLE LUG PLATE

ROD SIZE	MAX LOAD	E	H _L	H _P	J	K _L	K _W	L	R	T _P	T _L	W _P	W _L	WGT EACH
$\frac{3}{8}$	730	1 $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	1	4	-	6	1 $\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	4	2 $\frac{1}{2}$	11.6
M10	3247	44	13	13	25	102	-	152	32	6	6	102	64	5.3
$\frac{1}{2}$	1350	1 $\frac{7}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	1	5	-	7	1 $\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	4	2 $\frac{1}{2}$	11.6
M12	6005	48	16	16	25	127	-	178	32	10	6	102	64	5.3
$\frac{5}{8}$	2160	2	$\frac{3}{4}$	$\frac{3}{4}$	1	6	-	8	1 $\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	4	2 $\frac{1}{2}$	11.6
M16	9609	51	19	19	25	152	-	203	32	13	6	102	64	5.3
$\frac{3}{4}$	3230	2 $\frac{1}{4}$	$\frac{7}{8}$	$\frac{5}{8}$	1	5	5	7	1 $\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{8}$	7	2 $\frac{1}{2}$	12.0
M20	14368	57	22	16	25	127	127	178	32	13	10	178	64	5.4
$\frac{7}{8}$	4480	3	1	$\frac{7}{8}$	1	6 $\frac{1}{2}$	6 $\frac{1}{2}$	8 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{8}$	9	3	22.0
M20	19929	76	25	22	25	165	165	216	38	19	10	229	76	10.0
1	5900	3	1 $\frac{1}{8}$	$\frac{7}{8}$	1 $\frac{1}{4}$	8	8	10 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	9	3	31.9
M24	26246	76	29	22	32	203	203	267	38	19	13	229	76	14.5
1 $\frac{1}{4}$	9500	4	1 $\frac{3}{8}$	1	2	8	8	12	2	1	$\frac{5}{8}$	12	4	43.8
M30	42260	102	35	25	51	203	203	305	51	25	16	305	102	19.9
1 $\frac{1}{2}$	13800	4 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{1}{8}$	2	8	8	12	2 $\frac{1}{2}$	1	$\frac{3}{4}$	12	5	45.6
M36	61388	108	41	29	51	203	203	305	64	25	19	305	127	20.7
1 $\frac{3}{4}$	18600	4 $\frac{1}{2}$	1 $\frac{7}{8}$	1 $\frac{3}{8}$	2	8	8	12	2 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{3}{4}$	12	5	55.7
M42	82740	114	48	35	51	203	203	305	64	32	19	305	127	25.3
2	24600	5 $\frac{1}{4}$	2 $\frac{1}{4}$	1 $\frac{3}{8}$	2	8	8	12	3	1 $\frac{1}{4}$	$\frac{3}{4}$	12	6	58.2
M48	109431	133	57	35	51	203	203	305	76	32	19	305	152	26.4

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

RODS AND ROD ATTACHMENTS

EYE SOCKET

Figure 12

Figure 12CT (Copper Finish)

The Figure 12 is designed for attaching a rod to split ring type clamps. Figure 12CT is only available in 1/4", 3/8", and 1/2" rod sizes.

Material: Malleable Iron.

Compliance: Federal Specification WW-H-171E Type 16, MSS-SP-69 (Type 16).

Finish: Plain, Copper.

Ordering: Specify rod size and figure number. For Metric applications specify Figure M12 or M12CT.

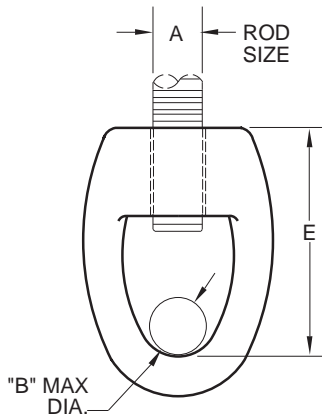


FIGURE 12 – EYE SOCKET

ROD SIZE A	MAX LOAD	MAX B	E	WEIGHT EACH
1/4	240	1/4	1 3/8	0.08
M6	1068	M6	35	0.04
3/8	610	1/4	1 3/8	0.08
M10	2714	M6	35	0.04
1/2	1000	1/4	1 1/16	0.11
M12	4448	M6	40	0.05
3/8	1400	3/8	1 3/4	0.22
M16	6228	M10	44	0.10
1/2	2200	1/2	2 1/4	0.30
M20	9786	M12	57	0.14
3/8	2300	1/2	2 1/16	0.32
M22	10231	M12	62	0.15

FIGURE 12CT – EYE SOCKET

ROD SIZE A	MAX LOAD	B	MAX SIZE C	WEIGHT EACH
1/4	240	1 3/8	1/4	0.08
M6	1068	35	M6	0.04
3/8	610	1 3/8	1/4	0.08
M10	2714	35	M6	0.04
1/2	1000	1 1/16	1/4	0.11
M12	4448	40	M6	0.05

LAG ROD

Figure 28

The Figure 28 is designed for a vertical rod connection to wood.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod diameter, rod length, figure number, and finish. For Metric applications specify M28.

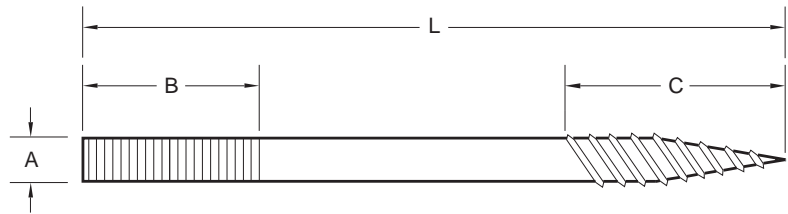


FIGURE 28 – LAG ROD

ROD SIZE A	MAXIMUM LOAD	MINIMUM LENGTH		WEIGHT EACH LENGTH - DIMENSION "L"				
		MACHINE B	COACH C	4	6	8	10	12
3/8	390	2 1/2	2	0.12	0.19	0.25	0.31	0.37
M10	1735	64	51	0.05	0.09	0.11	0.14	0.17
1/2	640	2 1/2	2	0.22	0.34	0.44	0.56	0.67
M12	2847	64	51	0.10	0.15	0.20	0.25	0.30

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

MACHINE THREAD EYE ROD

Figure 33 (Right Hand Threads)

Figure 33L (Left Hand Threads)

The Figure 33 is designed to permit swing in the attachment component due to pipe movement. The inside diameter of the eye is $\frac{3}{8}$ " larger than the rod diameter for rod sizes up to 1½" while the inside diameter for larger size rods will be $\frac{3}{4}$ " greater. The eye is not welded. The Figure 93 Welded Eye Rod is available for higher load requirements.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Temperature: 650° F / 343° C Maximum.

Ordering: Specify rod size, rod length, thread length, (if other than standard), figure number, and finish. For Metric applications specify M33 or M33L. Larger rod diameters are available upon request.

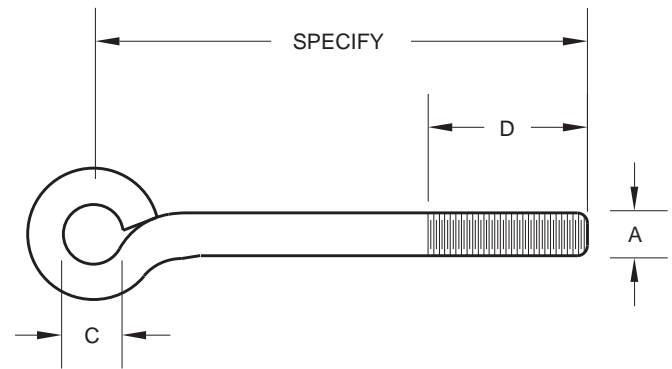


FIGURE 33 – MACHINE THREADED EYE ROD

A	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1¼	1½	1¾	2	2¼	2½
	M10	M12	M16	M20	M22	M24	M30	M36	M42	M48	M56	M64
C	$\frac{3}{4}$	$\frac{7}{8}$	1	1¼	1½	1¾	1¾	1¾	2½	2¾	3	3¼
	19	22	25	29	32	35	41	48	64	70	76	83
D	2½	2½	2½	3	3½	4	5	6	6	6	6	6
	64	64	64	76	89	102	127	152	152	152	152	152
LOAD AT	240	440	705	1050	1470	1940	3170	4650	6380	8280	10900	13400
650° F / 343° C	1068	1957	3136	4671	6539	8630	14101	20684	28380	36831	48485	59606

HANGER ADJUSTER

Figure 38

Figure 38CT (Copper Finish)

The Figure 38 is an economical alternative to using turnbuckles for vertical piping adjustment with our Figure 34 Hinge Hanger. Figure 38CT is available in 3/8" and 1/2" rod sizes only.

Material: Malleable Iron.

Compliance: Federal Specification A-A-1192A Type 15, MSS-SP-69 Type 15.

Finish: Plain, Copper.

Ordering: Specify rod size and figure number. For Metric applications specify Figure M38 or Figure M38CT.

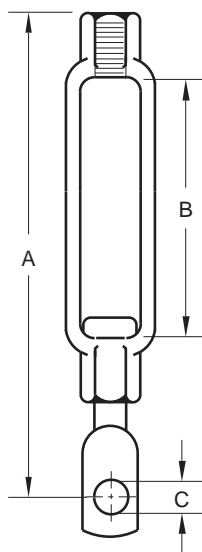


FIGURE 38 – HANGER ADJUSTER

ROD SIZE	MAX LOAD	A	B	C	WEIGHT EACH
$\frac{3}{8}$	230	2½	1¼	$\frac{7}{32}$	0.09
M6	1023	64	32	6	0.04
$\frac{1}{2}$	610	3 $\frac{13}{16}$	1¾	1 $\frac{13}{32}$	0.28
M10	2714	97	48	10	0.13
$\frac{1}{2}$	710	3 $\frac{13}{16}$	1 $\frac{13}{16}$	1 $\frac{13}{32}$	0.31
M12	3158	97	46	10	0.14
$\frac{3}{8}$	710	4¾	2 $\frac{7}{16}$	$\frac{1}{2}$	0.72
M16	3158	124	59	13	0.33
$\frac{3}{4}$	860	4 $\frac{13}{16}$	2 $\frac{7}{16}$	$\frac{9}{16}$	0.70
M20	3826	125	59	14	0.32

FIG. 38CT – HANGER ADJUSTER FOR COPPER TUBING

ROD SIZE	MAX LOAD	A	B	C	WEIGHT EACH
$\frac{3}{8}$	610	3 $\frac{13}{16}$	1¾	1 $\frac{13}{32}$	0.28
M10	2714	97	48	10	0.13
$\frac{1}{2}$	710	3 $\frac{13}{16}$	1 $\frac{13}{16}$	1 $\frac{13}{32}$	0.31
M12	3158	97	46	10	0.14

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

ROD AND ROD ATTACHMENTS

WELDED EYEROD

Figure 93 Right Hand Threads

Figure 93L Left Hand Threads

Welded Eye Rods are designed to permit swing in the attachment component due to pipe movement.

Material: Carbon Steel. Maximum Temperature is 750°F.

Finish: Plain, Painted, Electro-galvanized, Hot-dipped Galvanized

Ordering: Specify rod size, rod length, thread length (if other than standard), figure number, and finish.

Larger rod diameters over 2 ½", special rod materials, special eye dimensions, special thread pitch and thread lengths can be furnished upon request.

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

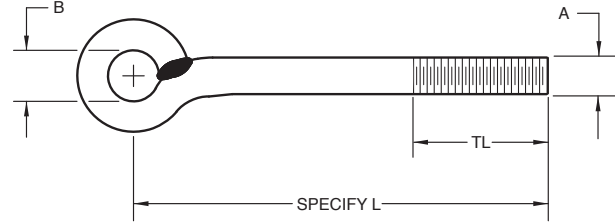


FIGURE 93, 93L – WELDED EYEROD

A	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
	M10	M12	M16	M20	M20	M24	M30	M36	M42	M48	M56	M64
B	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 5/8	1 7/8	2 1/2	2 3/4	3	3 1/4
	19	22	25	29	32	35	41	48	64	70	76	83
THREAD LENGTH (TL)	3	3	3	3	4	4	4	6	6	6	6	6
	76	76	76	76	102	102	102	152	152	152	152	152
L (min)	4 1/4	4 1/2	4 1/2	5 1/2	6 1/2	7 1/4	8 1/4	10	12	14	15 1/2	17
	108	114	114	140	165	184	210	254	305	356	394	432
LOAD AT 650°F/343°C	730	1350	2160	3230	4480	5900	9500	13800	18600	24600	32300	39800
	3247	6005	9608	14368	19928	26244	42258	61385	82737	109426	143677	177038
LOAD AT 750°F/399°C	572	1057	1692	2430	3508	4620	7440	10807	14566	19265	25295	31169
	2544	4702	7526	10809	15604	20551	33095	48072	64792	85695	112517	138646

STEEL REDUCING ROD COUPLING

Figure 123R

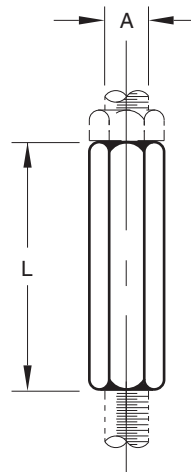
Figure 123R is used to reduce rod sizes. Coupling are made of carbon steel to step up or down one rod size.

Finish: Plain, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify rod size and figure number.

FIGURE 123R – REDUCING ROD COUPLING

ROD SIZE A	MAXIMUM LOAD	L	WEIGHT EACH
1/4 x 3/8	240	1	0.04
M6 x M10	1068	25	0.02
3/8 x 1/2	730	1 3/16	0.07
M10 x M12	3247	30	0.03
1/2 x 5/8	1350	1 3/16	0.12
M12 x M16	6005	30	0.05
5/8 x 3/4	1810	1 7/16	0.22
M16 x M20	8052	37	0.10
3/4 x 7/8	3230	1 11/16	0.42
M20 x M20	14368	43	0.19



DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STEEL ROD COUPLING

Figure 123

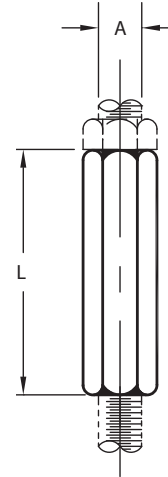
Figure 123 is used to connect rods up to 1½ inch diameter. The Rod Coupling is made of carbon steel and can be welded to the rod after assembly.

Finish: Plain, Electro-Galvanized, Hot-Dip Galvanized

Ordering: Specify figure number, finish and rod size.

FIGURE 123 – ROD COUPLING

ROD SIZE A	MAXIMUM LOAD	L	WEIGHT EACH
¼	240	1 ³ / ₁₆	0.02
M6	1068	21	0.01
⅜	730	1 ¹ / ₁₆	0.09
M10	3247	43	0.04
½	1350	1 ⁵ / ₈	0.11
M12	6005	41	0.05
⅝	2160	2 ¹ / ₁₆	0.18
M16	9609	52	0.08
¾	3230	2 ³ / ₁₆	0.29
M20	14368	56	0.13
7/8	4480	2 ⁷ / ₁₆	0.55
M20	19929	62	0.25
1	5900	2 ⁷ / ₁₆	0.55
M24	26246	62	0.25
1¼	9500	3	1.00
M30	42260	76	0.45
1½	13800	3½	1.90
M36	61388	89	0.86



ALL-THREAD HANGER ROD

Figure 94
Figure 94SS

This product has a standard rolled thread running its entire length. It is particularly useful when exact rod lengths are questionable.

Material: Figure 94 is made of carbon steel while Figure 94SS is available in either 304 or 316 stainless steel. Available in precut six, ten, and twelve foot lengths. Can be cut to suit customer need upon request. Rod Sizes above 1½” are available upon request as are special rod materials.

Finish: Plain, Electro-Galvanized, or Hot-Dip Galvanized

Ordering: Specify rod size, rod length, figure number, and finish.

Note: The use of galvanized coatings at temperatures above 450° F is at the discretion of the customer.

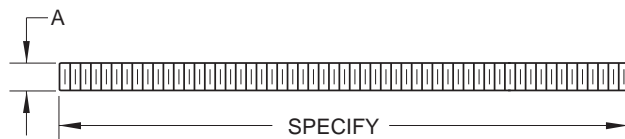


FIGURE 94 – ALL-THREAD HANGER ROD

DIAMETER A	MAXIMUM LOAD*	WEIGHT PER FOOT
¼	240	0.12
M6	1068	0.05
⅜	730	0.30
M10	3247	0.14
½	1350	0.53
M12	6005	0.24
⅝	2160	0.84
M16	9609	0.38
¾	3230	1.20
M20	14368	0.54
7/8	4480	1.70
M20	19929	0.77
1	5900	2.30
M24	26246	1.04
1¼	9500	3.60
M30	42260	1.63
1½	13800	5.10
M36	61388	2.31

* For carbon steel only. Maximum Load rating for stainless steel is 0.80 times the Maximum Load rating given.

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

ROD AND ROD ATTACHMENTS

MACHINE THREAD RODS

Figure 133 Right Hand Threads Both Ends

Figure 133L Right Hand and Left Hand Thread

Furnished with UNC threads this product is made from carbon steel.

Maximum Loads given are rated for up to 650°F (343°C.)

Material: Carbon Steel (Stainless Steel is Available)

Finish: Plain, Electro-galvanized, Hot-Dip Galvanized

Ordering: Specify material if other than carbon steel.

Figure number, finish, rod diameter, and length, and thread length; if other than standard.

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

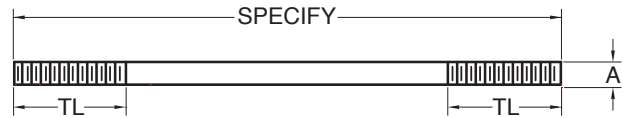


FIGURE 133, 133L – MACHINE THREAD RODS

A	$\frac{3}{8}$ M10	$\frac{1}{2}$ M12	$\frac{5}{8}$ M16	$\frac{3}{4}$ M20	$\frac{7}{8}$ M22	1 M24	$1\frac{1}{4}$ M30	$1\frac{1}{2}$ M36	$1\frac{3}{4}$ M42
THD. LGTH.	3 76	3 76	3 76	3 76	4 102	4 102	4 102	6 152	6 152
LOAD AT 650°F/343°C	730 3247	1350 6005	2160 9608	3230 14368	4480 19928	5900 26244	9500 42258	13800 61385	18600 82737

A	2 M48	$2\frac{1}{4}$ M56	$2\frac{1}{2}$ M64	$2\frac{3}{4}$ M72	3 M80	$3\frac{1}{4}$ M80	$3\frac{1}{2}$ M90	$3\frac{3}{4}$ M95	4 M100
THD. LGTH.	6 152	6 152	6 152	6 152	6 152	6 152	6 152	6 152	6 152
LOAD AT 650°F/343°C	24600 92078	32300 143677	39800 177038	49400 219741	60100 267337	71900 319826	84700 376763	98500 438148	114000 507095

LIGHT DUTY WASHER PLATE

Figure 102

The Figure 102 is a light duty alternative to our Figure 260. Primarily used at the ends of rods instead of rod washers to gain more bearing surface.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized, Hot-Dip Galvanized.

Ordering: Specify figure number, rod size and finish.

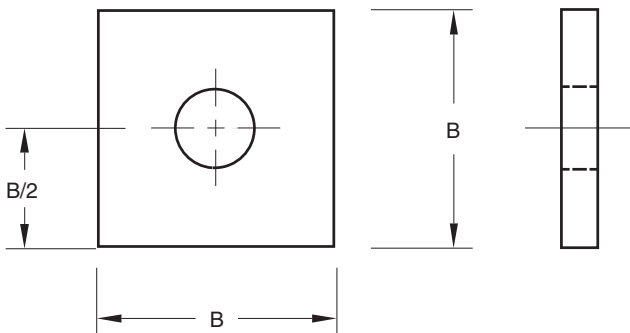


FIGURE 102 – LIGHT DUTY WASHER PLATE

B	ROD SIZE - WEIGHT EACH			
	$\frac{1}{8}$ 3	$\frac{3}{16}$ 5	$\frac{1}{4}$ 6	$\frac{3}{8}$ 10
2	0.14	0.21	0.28	0.42
51	0.06	0.10	0.13	0.19
$2\frac{1}{2}$	N/A	N/A	0.44	0.66
64	N/A	N/A	0.20	0.30
3	0.32	0.48	0.64	0.95
76	0.15	0.22	0.29	0.43
4	0.57	0.83	1.13	1.70
102	0.26	0.38	0.51	0.77
5	0.89	1.33	1.77	2.66
127	0.40	0.60	0.80	1.21
6	1.28	1.91	2.55	3.83
152	0.58	0.87	1.16	1.74

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

TURNBUCKLE

Figure 132

The Figure 132 is used to connect right and left hand threaded rods together and provide for adjustment.

Material: Forged Steel

Compliance: Federal Specification A-A-1192A Type 13, MSS-SP 58 Type 13, and BSPSS-BS3974.

Finish: Plain, Painted, Electro-Galvanized, Hot-dip Galvanized

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

Ordering: Specify figure number, finish and rod size. Larger rod sizes or openings are available upon request.

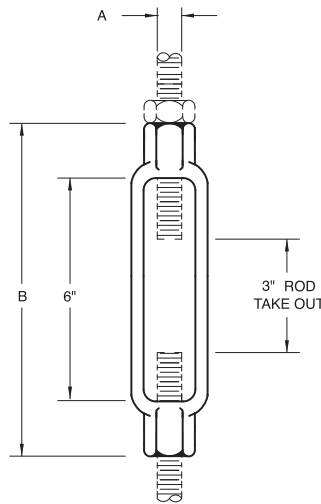


FIGURE 132 – TURNBUCKLE

ROD SIZE A	MAX. LOAD 650°F 343°C	B	WEIGHT EACH
3/8	730	7 7/8	0.30
M10	3247	181	0.14
1/2	1350	7 1/2	0.60
M12	6005	191	0.27
5/8	2160	7 7/8	1.00
M16	9609	200	0.45
3/4	3230	8 3/4	1.20
M20	14368	210	0.54
7/8	4480	8 5/8	1.90
M20	19929	219	0.86
1	5900	9	2.50
M24	26246	229	1.13
1 1/4	9500	9 3/8	3.80
M30	42260	232	1.72
1 1/2	13800	9 3/4	5.70
M36	61388	248	2.59
1 3/4	18600	10 3/8	8.20
M42	82740	264	3.72
2	24600	11	14.20
M48	109431	279	6.44
2 1/4	32300	12 7/8	27.00
M56	143683	327	12.25
2 1/2	39800	13 1/2	33.00
M64	177046	343	14.97

EXTENSION PIECE

Figure 157

The Figure 157 is designed for attaching rods to the Figure 82 Beam Clamp and similar types of attachments.

Material: Malleable Iron.

Maximum: Temperature: 450°F

Compliance: Federal Specification A-A-1192A Type 30, MSS-SP-58 Type 30 when used with a Figure 82.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. Order Figure 82 separately, if required.

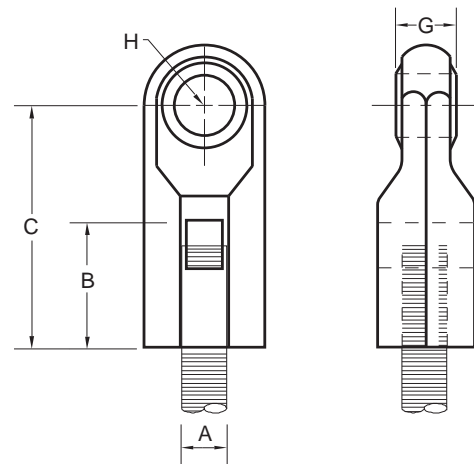


FIGURE 157 – EXTENSION PIECE

ROD SIZE A	MAXIMUM LOAD	B	C	G	H	WEIGHT EACH
3/8	610	1 1/4	2 1/8	1/2	1/2	0.20
M10	2714	32	54	13	13	0.09
1/2	1130	1 3/8	2 3/8	5/8	1/2	0.40
M12	5027	35	60	16	13	0.18
5/8	1810	1 1/2	2 1/2	5/8	1/2	0.44
M16	8052	38	64	16	13	0.20
3/4	2710	1 3/4	2 7/8	5/8	1/2	0.65
M20	12055	44	73	16	13	0.29
7/8	2950	1 7/8	3	3/4	9/16	0.78
M20	13123	48	76	19	14	0.35

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

RODS AND ROD ATTACHMENTS

MALLEABLE ROD COUPLING

Figure 167

REDUCING ROD COUPLING

Figure 167R

The Figure 167 is tapped with a straight bolt thread tap.

The Figure 167R is designed to reduce rod sizes. Couplings are made either to step up or down one rod size.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M67 or M167R.

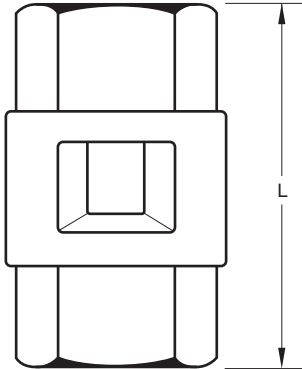


FIGURE 167 – MALLEABLE ROD COUPLING

ROD SIZE	MAXIMUM LOAD	L	WEIGHT EACH
¼	230	1⅜	0.10
M6	1023	35	0.05
⅜	610	1⅝	0.10
M10	2714	41	0.05
½	1130	2⅞	0.18
M12	5027	54	0.08
⅝	1810	2½	0.30
M16	8052	64	0.14
¾	2710	2⅞	0.44
M20	12055	67	0.20
⅞	3770	2¼	0.96
M22	16770	57	0.44
1	4960	2¾	0.94
M24	22064	70	0.43

FIGURE 167R – MALLEABLE REDUCING ROD COUPLING

ROD SIZE	MAXIMUM LOAD	L	WEIGHT EACH
⅝ x ¼	230	1⅜	0.10
M10 x M6	1023	41	0.05
½ x ⅜	610	2⅞	0.18
M12 x M10	2714	54	0.08
⅝ x ¾	1810	2½	0.44
M16 x M20	8052	64	0.20
¾ x ⅞	2710	2⅞	0.96
M20 x M22	12055	67	0.44

ROUND HANGER ROD

Figure 224

Unthreaded steel rod available in a variety of sizes for customer use. Available in up to 20 foot lengths.

Material: Low carbon steel.

Finish: Plain.

Ordering: Specify rod size, length, figure number, and finish. For Metric applications specify Figure M224.



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

WASHER PLATE

Figure 260

This product to be welded to back to back channels or angles for supporting pipe with rods or U-Bolts.

Sufficient contact surface to the supporting structure must be made to develop maximum load capacity.

Dimension "A" should not be exceeded.

Material: Carbon Steel

Finish: Plain, Painted, Electro-Galvanized Hot-Dip Galvanized

Ordering: Specify figure number, finish and rod size.

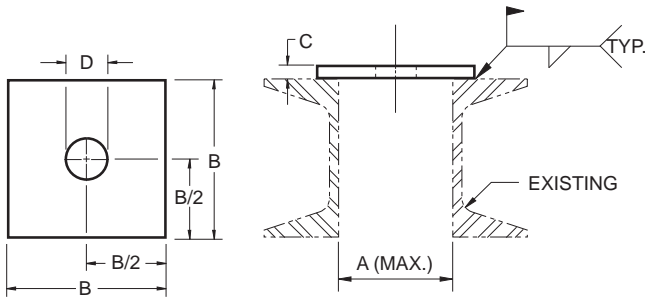


FIGURE 260 – ALL-THREAD HANGER ROD

ROD SIZE	MAX. LOAD	A	B	C	HOLE D	WEIGHT EACH
3/8	730	1 1/2	3	3/4	7/16	0.63
M10	3247	38	76	6	11	0.29
1/2	1350	1 1/2	3	3/4	9/16	0.61
M12	6005	38	76	6	14	0.28
5/8	2160	1 1/2	3	3/8	11/16	0.95
M16	9608	38	76	10	17	0.43
3/4	3230	2	4	3/8	13/16	1.60
M20	14368	51	102	10	21	0.73
7/8	4480	2	4	1/2	15/16	2.17
M20	19928	51	102	13	24	0.98
1	5900	2 1/2	4	1/2	17/16	2.15
M24	26244	64	102	13	27	0.98
1 1/4	9500	3	5	1/2	17/8	3.28
M30	42258	76	127	13	35	1.49
1 1/2	13800	3 1/2	5	5/8	17/8	4.05
M36	61385	89	127	16	41	1.84
1 3/4	18600	3 1/2	5	5/8	2	3.88
M42	82737	89	127	16	51	1.76
2	24600	4	6	3/4	2 1/4	4.47
M48	109426	102	152	19	57	2.03
2 1/4	32300	4	6	3/4	2 1/2	6.62
M56	143677	102	152	19	64	3.00
2 1/2	39800	4 1/2	6	3/4	2 3/4	6.40
M64	177038	114	152	19	70	2.90
2 3/4	49400	4 1/2	6	3/4	3	6.16
M72	219741	114	152	19	76	2.79
3	60100	4 1/2	6	3/4	3 1/4	5.89
M80	267337	114	152	19	83	2.67
3 1/4	71900	4 1/2	6	3/4	3 1/2	5.56
M80	319826	114	152	19	89	2.52
3 1/2	84700	5	7	3/4	3 3/4	8.07
M90	376763	127	178	19	95	3.66
3 3/4	98500	5	7	3/4	4	7.75
M95	438148	127	178	19	102	3.52

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS	
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS	

ROD AND ROD ATTACHMENTS

FORGED STEEL CLEVIS

Figure 276
Figure 276P

The Figure 276 is used to connect rod ends with structural steel welding lug plates or lugs welded to pipe. It provides a pivot point and adjustment. It can be supplied with a pin as Fig 276P.

Material: Forged Steel

Compliance: Federal Specification A-A-1192A Type 14, MSS-SP 58 Type 14, and BSPSS-BS3974.

Finish: Plain, Painted, Electro-galvanized, Hot-Dip Galvanized.

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

Ordering: Specify figure number, rod size, pin size, grip and finish.

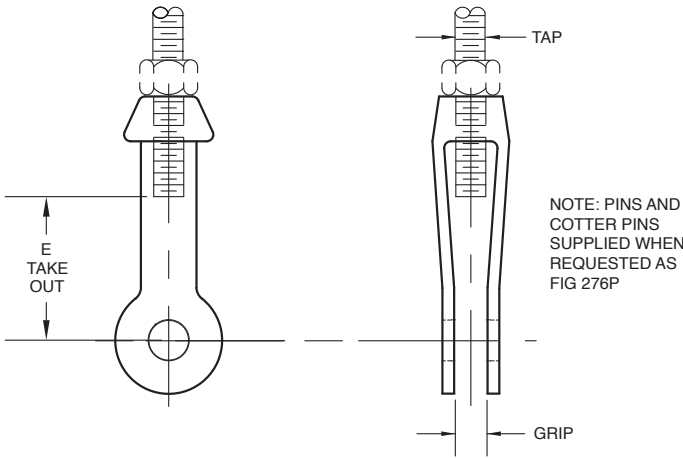


FIGURE 276 – FORGED STEEL CLEVIS

ROD SIZE	MAX. LOAD 650°F 343°C	PIN/ BOLT DIA.	E TAKE OUT	GRIP	276P WEIGHT EACH
3/8	730	1/2	3 1/2	1/2	1.00
M10	3247	M12	89	13	0.45
1/2	1350	5/8	3 1/2	5/8	0.90
M12	6005	M16	89	16	0.41
5/8	2160	3/4	3 1/2	5/8	0.90
M16	9608	M20	89	16	0.41
3/4	3230	7/8	4	3/4	3.00
M20	14368	M20	102	24	1.36
7/8	4480	1	4	7/8	3.40
M20	19928	M24	102	22	1.54
1	5900	1 1/8	5	1	5.10
M24	26244	M30	127	25	2.31
1 1/4	9500	1 3/8	5	1 1/4	5.50
M30	42258	M36	127	32	2.49
1 1/2	13800	1 5/8	6	1 1/2	8.50
M36	61385	M42	152	38	3.86
1 3/4	18600	1 7/8	6	1 1/2	12.90
M42	82737	M48	152	38	5.85
2	24600	2 1/4	7	2 1/2	23.30
M48	109426	M56	178	64	10.57
2 1/4	32300	2 1/2	8	2 1/2	35.10
M56	143677	M64	203	64	15.92
2 1/2	39800	2 3/4	8	2 1/2	36.00
M64	177038	M72	203	64	16.33

FORGED WELDLESS EYENUT

Figure 279
Figure 279L

The Figure 279 is used to connect rod ends with structural steel welded beam attachments or pipe clamps as a substitute for a welded eyerod. It provides a pivot point and adjustment. It can also be supplied tapped left hand as Fig 279L.

Material: Forged Steel

Compliance: Federal Specification A-A-1192A Type 17, MSS-SP 58 Type 17, and BSPSS-BS3974.

Finish: Plain, Painted, Electro-galvanized, Hot-Dip Galvanized

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

Ordering: Specify figure number, rod size and finish.

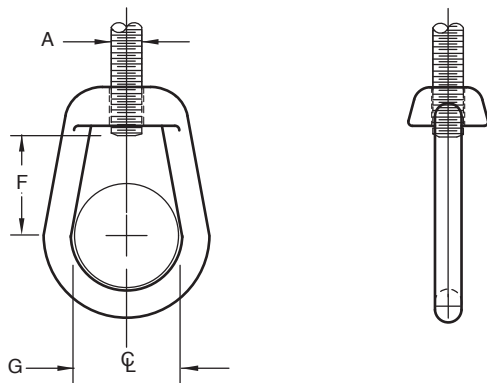


FIGURE 279 – FORGED WELDLESS EYENUT

ROD TAP A	MAX. LOAD 650°F 343°C	F	G	WEIGHT EACH
3/8	730	1	1 1/2	0.63
M10	3247	25	38	0.29
1/2	1350	1	1 1/2	0.63
M12	6005	25	38	0.29
5/8	2160	1	1 1/2	0.62
M16	9608	25	38	0.28
3/4	3230	1	1 1/2	0.60
M20	14368	25	38	0.27
7/8	4480	1 3/8	2	1.70
M20	19928	35	51	0.77
1	5900	1 3/4	2	1.70
M24	26244	44	51	0.77
1 1/4	9500	1 3/4	2 1/2	3.75
M30	42258	44	64	1.70
1 1/2	13800	1 3/4	2 1/2	3.50
M36	61385	44	64	1.59
1 3/4	18600	3 1/4	4	16.40
M42	82737	83	102	7.44
2	24600	3 1/4	4	15.90
M48	109426	83	102	7.21
2 1/4	32300	3 1/4	4	15.40
M56	143677	83	102	6.99
2 1/2	39800	3 1/4	4	14.90
M64	177038	83	102	6.76

LINKED EYE RODS

Figure 306 Eyes Not Welded

Figure 341 Welded Eyes

Linked Eye Rods allow for the movement of the lower rod where bending would be unacceptable. Unwelded eyes have a lower load rating.

The inside diameter of the eye is 3/8" larger than the rod diameter for rod sizes up to 1 1/2" while the inside diameter for larger size rods will be 3/4" greater. Both rods will normally be furnish right hand tapped to lengths shown for our Figure 93 unless ordered special.

Maximum Loads given are rated for up to 650°F (343°C.)

Material: Carbon Steel

Finish: Plain, Electro-galvanized, Hot-Dip Galvanized

Ordering: Specify rod diameter (A), overall length (B), length of each eyerod (D and C), and thread length (E) if other than standard, Figure Number and finish.

Note: The use of galvanized coatings at temperatures above 450°F is at the discretion of the customer.

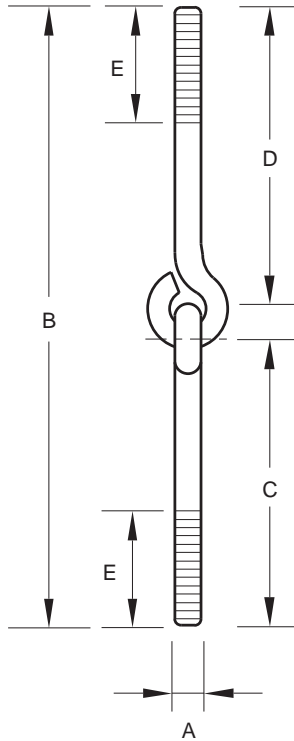


FIGURE 306 AND 341 – LINKED EYE RODS

ROD SIZE A	MAXIMUM LOAD	
	FIGURE 306	FIGURE 341
3/8	240	730
M10	1068	3247
1/2	440	1350
M12	1957	6005
5/8	705	2160
M16	3136	9609
3/4	1050	3230
M20	4671	14368
7/8	1470	4480
M20	6539	19929
1	1940	5900
M24	8630	26246
1 1/4	3120	9500
M30	13879	42260
1 1/2	4650	13800
M36	20685	61388
1 3/4	6380	18600
M42	28381	82740
2	8280	24600
M48	36833	109431
2 1/4	10900	32300
M56	48488	143683
2 1/2	13400	39800
M64	59609	177046

MALE AND FEMALE SWING ROD FITTING

Figure 701

The fitting is used when flexible movement of pipeline is required. The threaded stud portion can be installed into a concrete insert or bolted to flange of I beam, angle or channel. Made special to customer order.

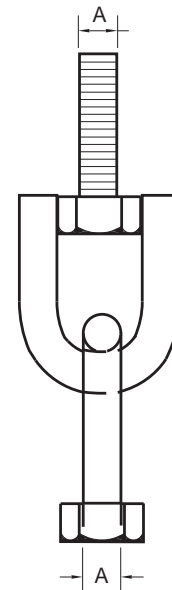
Material: Steel.

Finish: Plain.

Ordering: Specify size number, figure number.

FIGURE 701 – MALE AND FEMALE SWING ROD FITTING

SIZE NO.	A	WEIGHT EACH
1	3/8	0.25
1	M10	0.11
2	1/2	0.33
2	M12	0.15



DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

FASTENERS

FLATTENED END LAG SCREW

Figure 11

The Figure 11 is normally used with perforated extension bar to support light duty loads from wooden structures. Comes with bolt and nut.

Material: Carbon Steel.

Finish: Plain.

Ordering: Specify size, and figure number. For Metric applications specify Figure M11.

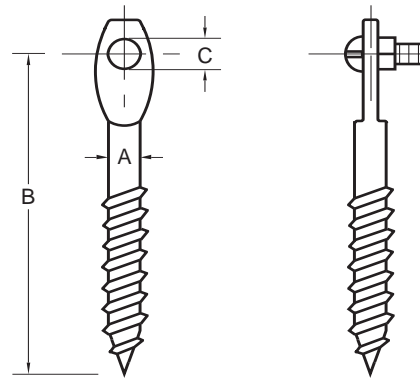


FIGURE 11 – FLATTENED END LAG SCREW

SIZE A	B	C	WEIGHT EACH
¼	3	⅜	0.04
M6	76	M5	0.02
⅜	3	¼	0.07
M8	76	M6	0.03
⅝	4	¼	0.10
M10	102	M6	0.05

TOGGLE BOLT

Figure 59

The spring toggle bolt is the most popular hollow wall fastener used today. The wings are fitted with coil springs that open when inserted into the wall. Gravity is not a factor making it possible to be used in any position.

Material: Steel.

Finish: Electro-Galvanized.

Ordering: Specify figure number, diameter, and length. For Metric applications specify Figure M59.

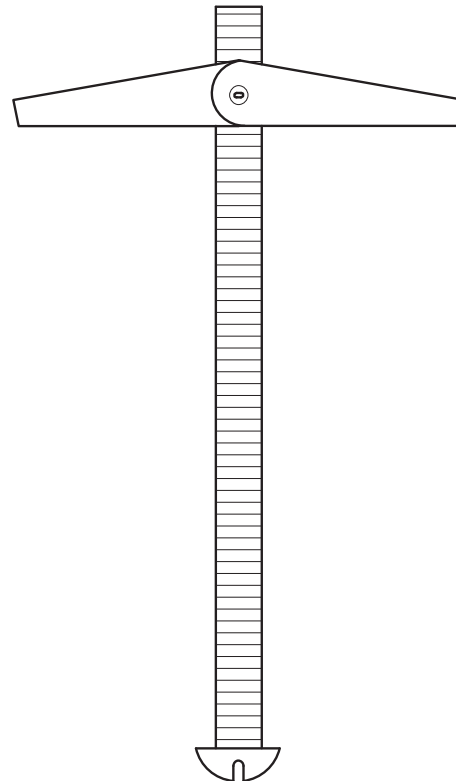


FIGURE 59 – TOGGLE BOLT

SIZE	DRILL SIZE	WEIGHT EACH
⅜ x 4	½	0.05
M5 x 102	M12	0.02
⅜ x 5	½	0.06
M5 x 127	M12	0.03
⅜ x 6	½	0.06
M5 x 153	M12	0.03
¼ x 4	⅝	0.08
M6 x 102	M16	0.04
¼ x 5	⅝	0.09
M6 x 127	M16	0.04
¼ x 6	⅝	0.10
M6 x 153	M1	0.05
⅝ x 4	⅞	0.19
M10 x 102	M20	0.09
⅝ x 5	⅞	0.22
M10 x 127	M20	0.10
⅝ x 6	⅞	0.24
M10 x 153	M20	0.11
½ x 4	1¼	0.32
M12 x 153	M30	0.15
½ x 5	1¼	0.35
M12 x 127	M30	0.16
½ x 6	1¼	0.40
M12 x 153	M30	0.18

ROUND WASHER

- Figure 103** (Carbon Steel – Plain)
- Figure 103E** (Carbon Steel – Electro-Galvanized)
- Figure 103G** (Carbon Steel – Hot-Dip Galvanized)
- Figure 103S** (Stainless Steel)

Compliance: United States Standard.

Material: Carbon Steel or Stainless Steel (ASTM 240 Type 304 or Type 316).

Finish: Plain, Electro-Plated, Hot-Dip Galvanized.

Ordering: Specify rod size, figure number, finish or grade of material. For Metric applications Specify Figure M103. Please see Figure 176 for Lock Washers, Fender Washers and Tooth Lock Washers are available upon request.

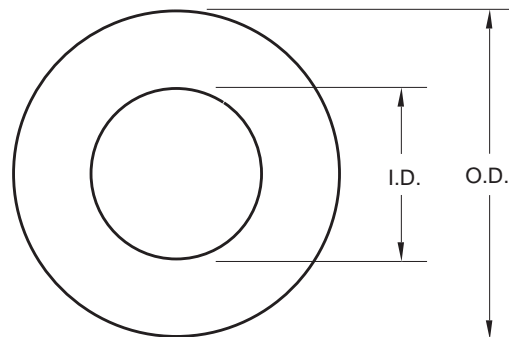


FIGURE 103 – ROUND WASHER

BOLT SIZE	$\frac{1}{4}$ M6	$\frac{3}{16}$ M8	$\frac{3}{8}$ M10	$\frac{7}{16}$ M12	$\frac{1}{2}$ M12	$\frac{9}{16}$ M14	$\frac{5}{8}$ M16
I.D.	$\frac{5}{16}$ 8	$\frac{3}{8}$ 10	$\frac{7}{16}$ 11	$\frac{1}{2}$ 13	$\frac{9}{16}$ 14	$\frac{5}{8}$ 16	$\frac{11}{16}$ 17
O.D.	1 19	1 25	1 25	$1\frac{1}{4}$ 32	$1\frac{3}{8}$ 35	$1\frac{1}{2}$ 38	$1\frac{3}{4}$ 44
WGT. EACH	0.01 0.04	0.02 0.09	0.02 0.09	0.03 0.13	0.04 0.18	0.06 0.27	0.08 0.36
BOLT SIZE	$\frac{3}{4}$ M20	$\frac{7}{8}$ M22	1 M24	$1\frac{1}{4}$ M30	$1\frac{1}{2}$ M30	$1\frac{3}{4}$ M36	$1\frac{1}{2}$ M36
I.D.	$\frac{13}{16}$ 21	$\frac{15}{16}$ 24	$1\frac{1}{16}$ 27	$1\frac{1}{4}$ 32	$1\frac{3}{8}$ 35	$1\frac{1}{2}$ 38	$1\frac{3}{8}$ 41
O.D.	2 51	$2\frac{1}{4}$ 57	$2\frac{1}{2}$ 64	$2\frac{3}{4}$ 70	3 76	$3\frac{1}{4}$ 83	$3\frac{1}{2}$ 89
WGT. EACH	0.11 0.49	0.15 0.67	0.19 0.85	0.22 0.98	0.26 1.16	0.32 1.42	0.38 1.69

STEEL COACH SCREWS

Figure 107

Figure 107 Coach Screws are normally used on our Figures 303, 337, and 340 brackets.

Material: Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify diameter, length, figure number, and finish.

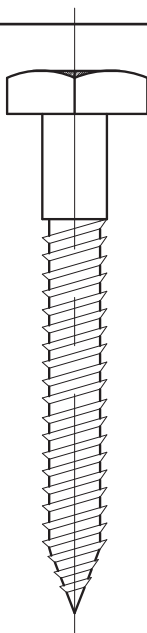


FIGURE 107 – STEEL COACH SCREW

LENGTH	WEIGHT EACH BY DIAMETER			
	$\frac{1}{4}$ 6	$\frac{3}{8}$ 10	$\frac{1}{2}$ 13	$\frac{5}{8}$ 16
$1\frac{1}{2}$	0.023	0.060		
38	0.010	0.027		
2	0.028	0.070	0.144	0.232
51	0.013	0.032	0.065	0.105
$2\frac{1}{2}$	0.033	0.083	0.162	0.270
64	0.015	0.038	0.073	0.122
3	0.039	0.098	0.186	0.310
76	0.018	0.044	0.084	0.141
$3\frac{1}{2}$	0.044	0.114	0.212	0.348
89	0.020	0.052	0.096	0.158
4	0.050	0.125	0.233	0.376
102	0.023	0.057	0.106	0.171
5	0.063	0.154	0.290	0.455
127	0.029	0.070	0.132	0.206
6	0.074	0.183	0.340	0.530
152	0.034	0.083	0.154	0.240

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

FASTENERS

STANDARD HEX NUT

Figure 165

HEAVY HEX NUT

Figure 165H

Material is an ASTM A-563 Grade A (Alloy and Stainless Steel grades are Available). Sizes 1 3/4" and larger are only available as a Figure 165H. RH tap will be furnished. LH tap are special order.

Finish: Plain, Electro-galvanized, Hot-Dip Galvanized

Ordering: Specify tap size, figure number, and finish.

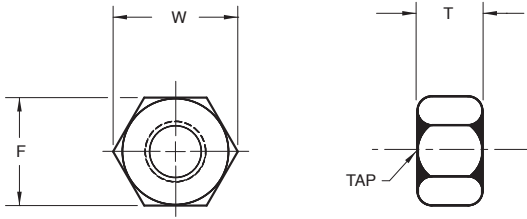


FIGURE 165 – STANDARD HEX NUT

FIGURE 165H – HEAVY HEX NUT

ROD SIZE	MAX LOAD	F	T	W	WEIGHT EACH
3/8	730	1 1/16	3/8	1 3/16	0.031
M10	3247	17	10	21	0.014
1/2	1350	7/8	1/2	1	0.065
M12	6005	22	13	25	0.029
5/8	2160	1 1/16	5/8	1 1/4	0.119
M16	9609	27	16	32	0.054
3/4	3230	1 1/4	3/4	1 1/16	0.193
M20	14368	32	19	37	0.088
7/8	4480	1 7/16	7/8	1 11/16	0.297
M20	19929	37	22	43	0.135
1	5900	1 3/8	1	1 7/8	0.425
M24	26246	41	25	48	0.193
1 1/4	9500	2	1 1/4	2 5/16	0.786
M30	42260	51	32	59	0.357
1 1/2	13800	2 3/8	1 1/2	2 3/4	1.31
M36	61388	60	38	70	0.594
1 3/4	18600	2 3/4	1 3/4	3 3/16	2.04
M42	82740	70	44	81	0.925
2	24600	3 3/8	2	3 5/8	2.99
M48	109431	79	51	92	1.36
2 1/4	32300	3 1/2	2 3/16	4 1/16	4.19
M56	143683	89	56	103	1.90
2 1/2	39800	3 7/8	2 7/16	4 1/2	5.64
M64	177046	98	62	114	2.56
2 3/4	49400	4 1/4	2 11/16	4 15/16	7.38
M72	219751	108	68	125	3.35
3	60100	4 5/8	2 15/16	5 5/16	9.50
M80	267349	117	75	135	4.31
3 1/4	71900	5	3 3/16	5 3/4	12.0
M80	319840	127	81	146	5.44
3 1/2	84700	5 3/8	3 7/16	6 3/16	15.3
M90	376779	137	87	157	6.94

HEX HEAD BOLT

Figure 162

Hex head bolt with UNC threads. Stocked for immediate shipment. Various lengths available.

Also available in alloy (A193B7), stainless steel (316 and 18-8), and high strength (A325).

Material: Low carbon steel

Finish: Plain, Electro-galvanized, Hot-dip Galvanized

Ordering: Specify diameter, length, thread length, figure number, and finish.

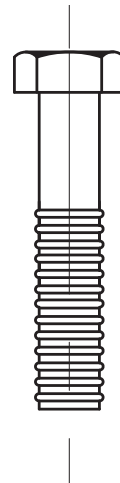


FIGURE 162 – HEX HEAD BOLT – WEIGHT PER 100

DIA. OF BOLT	LENGTH OF BOLT IN INCHES									
	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	5"
5/8	36	38	40	42	44	46	48	50	52	60
3/4	57	60	62	65	68	71	74	77	80	92
7/8	86	90	94	99	103	107	111	115	118	135
1	127	133	138	143	148	153	158	163	169	190

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

STEEL DRIVE SCREW

Figure 166

Drive Screws are normally used on our Figure 153 Side Beam Connector.

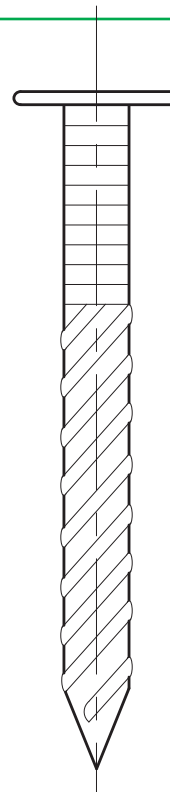
Material: Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify size, figure number, and finish. For Metric applications specify Figure M166.

FIGURE 166 – STEEL DRIVE SCREW

SIZE OF SCREW	WEIGHT EACH
1½" NO.12	0.015
2" NO.16	0.03



LOCK WASHER

Figure 176

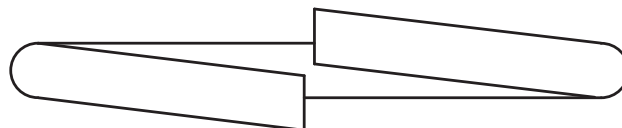
Material: Steel.

Finish: Plain, Electro-Galvanized.

Ordering: Specify rod size, figure number, and finish. For Metric applications specify Figure M176.

FIGURE 176 – LOCK WASHER

ROD SIZE	INSIDE DIAMETER	WIDTH OF STEEL	THICKNESS OF STEEL	WEIGHT EACH
¾	7/16	0.141	0.094	0.07
M10	11	4	2	0.03
½	9/16	0.171	0.125	0.15
M12	14	4	3	0.07
5/8	11/16	0.203	0.156	0.26
M16	17	5	4	0.12
¾	13/16	0.234	0.188	0.43
M20	21	6	5	0.20



DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES		FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS		CELSIUS	NEWTONS	KILOGRAMS

DROP-IN TYPE CONCRETE ANCHOR

Figure 514

The Figure 514 is used for bolting components to concrete structures. The shell is slotted and internally threaded with a pre-assembled integral expander plug .

WARNING: Recommended practices in sizing and application of concrete fasteners should be followed.

Material: Carbon Steel or Stainless Steel

Finish: Plated Zinc on Carbon Steel

Ordering: Specify bolt diameter, embedment depth and figure number. For Metric applications Specify Figure M514.

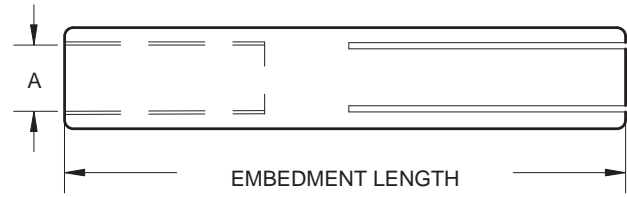


FIGURE 514 – DROP-IN TYPE CONCRETE ANCHOR

BOLT SIZE	4000 PSI CONCRETE SAFE WORKING LOAD		MINIMUM EMBEDMENT DEPTH	WGT
	TENSION	SHEAR		
¼"	590	300	1	0.03
M6	2625	1335	25	0.01
⅜"	950	625	1½	0.07
M10	4226	2780	41	0.03
½"	1460	875	2	0.12
M12	6495	3892	51	0.05
⅝"	2160	1385	2½	0.33
M16	9609	6161	64	0.15
¾"	2370	1920	3⅝	0.49
M20	10543	8541	81	0.22

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

WEDGE ANCHOR

Figure 1309

The Figure 1309 is used for bolting components to concrete structures. Allows for through drilling applications.

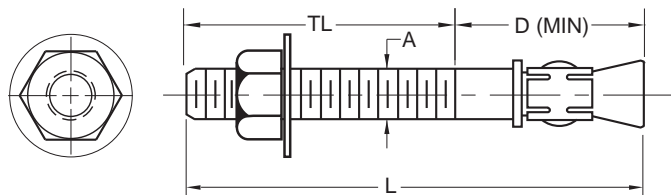
INSTALLATION: Drill holes in concrete deeper than the required embedment. Drive the bolt into the hole so that at least six threads are below the top surface of the fixture. Tighten the nut with the washer in place. The resistance will increase after the third or fourth turn.

NOTE: Loads listed are based on a safety factor of four when installed in accordance with manufacturer's recommendations. Contact us for higher loads are allowed due to increased embedment.

Material: High Tensile Steel. (Also available Galvanized or Stainless Steel).

Finish: Zinc Plated.

Ordering: Specify figure number, diameter and length. For Metric applications specify Figure M1309.



BOLT DIA.	4000 PSI CONCRETE SAFE WORKING LOAD		L	MIN. D(Embd)	MAX THCKNSS OF MAT'L TO BE FASTENED	T _L
	TENSION	SHEAR				
1/4 6	390 1735	450 2002	1 3/4	1 1/8 29	3/8	1 1/8 29
			44		10	
			2 1/4		7/8	
			57		22	
			3 1/4		1 7/8	
3/8 10	805 3581	1000 4448	2 1/4	1 1/2 38	3/8	1 1/2 38
			57		10	
			2 3/4		7/8	
			70		22	
			3		1 1/8	
1/2 13	1350 6005	1725 7673	2 3/4	2 1/4 57	1/8	2 1/4 57
			70		3	
			3 3/4		1	
			95		25	
			4 1/4		1 1/2	
5/8 16	2000 8897	3120 13879	5 1/2	2 3/4 70	2 3/4	2 3/4 70
			140		70	
			7		4 1/4	
			178		108	
			3 1/2		1/8	
3/4 19	2500 11121	4500 20018	89	3 1/4 83	3	1 1/2 38
			4 1/4		7/8	
			108		22	
			5		1 5/8	
			127		41	
7/8 22	3400 15125	6300 28025	6	3 3/4 95	2 5/8	2 1/2 64
			152		67	
			7		3 5/8	
			178		92	
			8 1/2		5 1/8	
1 25	5200 23132	7100 31584	10	4 1/2 114	130	2 1/2 64
			216		130	
			10		6	
			254		159	
			12		8	
1 1/4 32	6800 30249	11000 48932	305	6 140	168	3 1/2 89
			6		1 3/8	
			152		35	
			9		13	
			229		89	
1 1/4 32	6800 30249	11000 48932	12	6 140	6 1/2	3 1/2 89
			305		165	
			9		2 3/4	
1 1/4 32	6800 30249	11000 48932	229	6 140	70	3 1/2 89
			12		5 1/4	
			305		133	

PIPE SLEEVE

Figure 450

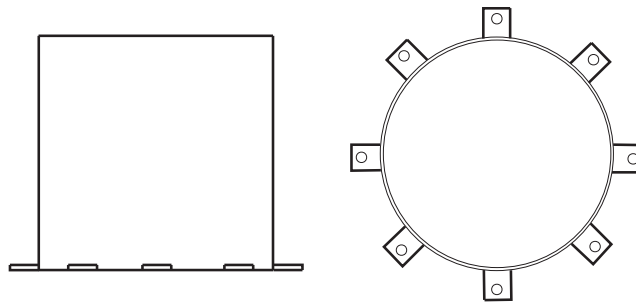
Used as a form to provide a penetration in walls for pipe or other services. Install by nailing to structure. Covers are available on request.

Other types of pipe sleeves e.g. waterproof, interlocking, etc. are available.

Material: Carbon Steel, 24 gauge, heavier gauges on request.

Finish: Hot-Dip Galvanized.

Ordering: Specify inside diameter, gauge thickness, length, and figure number.



SPRING HANGER

Figure 399

Designed to provide an economical means to support low pipe loads with vertical movement. In selecting the correct spring size consideration should be given to weight of pipe to be supported and its contents, insulation, concentrated loads, as well as the anticipated deflection. Please see our Engineered Spring Catalog for units requiring higher loads and/or greater movements.

Material: Carbon Steel.

Finish: Plain, Painted, Electro-Galvanized.

Ordering: Specify spring size, figure number, and finish. For Metric applications specify Figure M399.

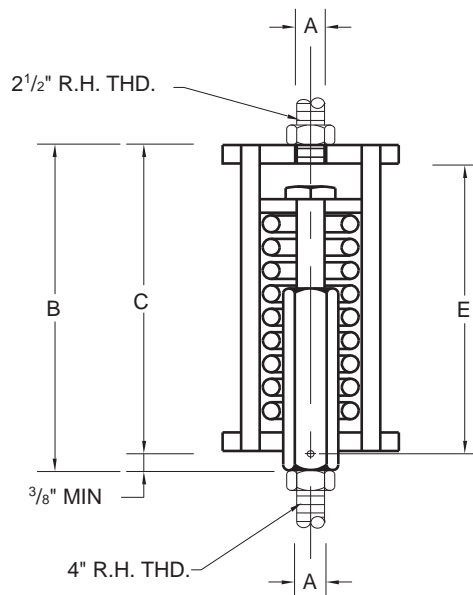


FIGURE 399 – SPRING HANGER

SPRING NO.	MAX. LOAD	MAX. DEFLECTION	SPRING DEFLECTION	A	B		C	E	WEIGHT EACH
					MIN.	MAX.			
1	52	2	26 lbs./in.	3/8	4 1/2	6 1/2	4 3/8	3 3/4	1.60
1	231	51	4.5 N/mm	M10	114	165	105	95	0.73
2	115	1 1/4	66 lbs./in.	3/8	4 1/2	6 1/4	4 3/8	3 3/4	2.38
2	512	44	11.6 N/mm	M10	114	159	105	95	1.08
3	163	1 1/8	87 lbs./in.	1/2	5 5/8	7 3/4	5 1/2	5	2.87
3	725	48	15.1 N/mm	M12	149	197	140	127	1.30
4	266	1 1/4	152 lbs./in.	1/2	5 5/8	7 7/8	5 1/2	5	3.50
4	1183	44	26.8 N/mm	M12	149	194	140	127	1.59
5	400	2	200 lbs./in.	3/8	6 3/8	8 3/8	6 3/8	5 1/4	6.80
5	1779	51	34.9 N/mm	M16	171	222	162	146	3.08
6	600	2 1/2	240 lbs./in.	3/4	8 3/8	10 7/8	8	7 3/8	9.82
6	2669	64	41.7 N/mm	M20	213	276	203	187	4.45

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

WATERPROOF PIPE SLEEVE

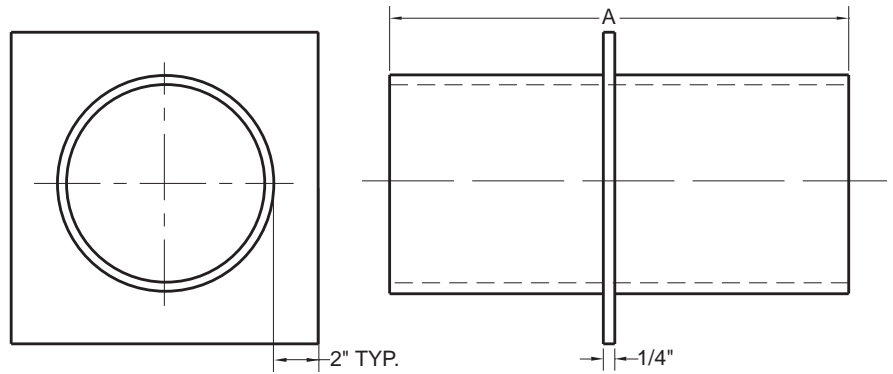
Figure 453

The Figure 453 is designed for floor and ceiling penetrations through concrete. Pipes, and conduits can be placed within the sleeve for easy through access. Sleeves are normally furnished as schedule 40 pipe up to 12" NPS, standard wall up to 20" NPS, and rolled plate for larger sizes.

Material: Steel.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify sleeve diameter, dimension A, figure number, and finish. For Metric applications specify Figure M453.



CUSHION SPRING ASSEMBLY

Figure 478

Designed to provide an economical method to support piping with both vertical and axial movement as well as absorbing vibration normally found in piping systems.

Comprised of two spring coils and four steel caps the Cushion Spring Assembly is used in conjunction with our Figure 142 Two Rod Roll Hanger and drop rods, both must be ordered separately. The Figure 478 can also be used for insulated piping provided the correct saddle has been ordered from this catalog.

In selecting the correct spring size consideration should be given to weight of pipe to be supported and its contents, concentrated loads, as well as the anticipated deflection.

Material: Carbon Steel.

Finish: Plain, Painted.

Ordering: Specify drop rod diameter, spring number, figure number, and finish. For Metric applications specify Figure M478.

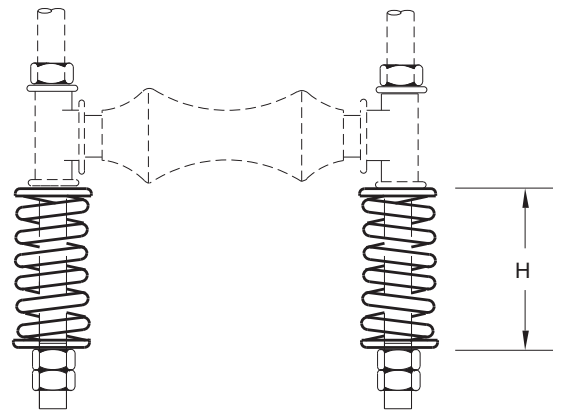


FIGURE 478 – CUSHION SPRING ASSEMBLY

SPRING NUMBER	MAXIMUM LOAD	MAXIMUM DEFLECTION	SPRING DEFLECTION	ROD SIZE	MAXIMUM ROD SIZE	H	WEIGHT EACH
1	535	1¼	428 lbs./in.	¾	¾	6¼	4.5
1	2380	32	74 N/mm	M10	M20	159	2.0
2	1500	1¼	1200 lbs./in.	½	¾	5½	14.0
2	6673	32	208 N/mm	M12	M20	143	6.4
3	3750	1¼	3000 lbs./in.	7/8	1½	8¾	22.0
3	13345	32	417 N/mm	M22	M36	225	10.0

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ALIGNMENT GUIDE

Figure 1006

Designed to maintain the axial alignment of piping as it expands and contracts during operation. It is most typically installed adjacent to expansion joints and at reasonable distances between the expansion joint and the anchor point. Our Figures 1007, and 1010 also offer alternative means for your piping alignment needs.

Note: Guides are not designed to carry dead weight loads. Maximum temperature is 750°F.

Material: Carbon Steel.

Finish: Plain, Painted, Galvanized.

Ordering: Specify guide size, pipe size, insulation thickness, figure number, and finish. For Metric applications specify Figure M1006.

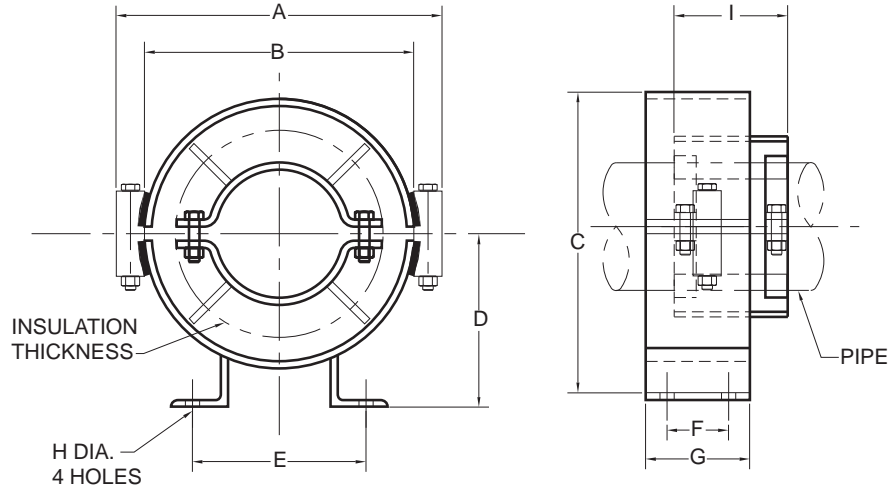


FIGURE 1006 – PIPE ALIGNMENT GUIDE

SIZE NUMBER	A	B	C	D	E	F	G	H	WEIGHT EACH
1	6 $\frac{3}{4}$	4 $\frac{1}{2}$	5 $\frac{5}{8}$	3 $\frac{3}{8}$	5	1 $\frac{1}{2}$	3	$\frac{3}{8}$	5.8
1	171	114	137	79	127	38	76	16	2.6
2	7 $\frac{1}{4}$	5 $\frac{5}{8}$	6 $\frac{3}{8}$	3 $\frac{1}{2}$	6 $\frac{1}{4}$	1 $\frac{1}{2}$	3	$\frac{3}{8}$	7.2
2	184	143	162	89	159	38	76	16	3.3
3	8 $\frac{3}{8}$	6 $\frac{3}{8}$	7 $\frac{3}{8}$	4	6 $\frac{1}{4}$	1 $\frac{1}{2}$	3	$\frac{3}{8}$	8.2
3	213	168	187	102	171	38	76	16	3.7
4	10 $\frac{3}{8}$	8 $\frac{3}{8}$	9 $\frac{3}{8}$	5	7 $\frac{3}{8}$	1 $\frac{1}{2}$	3	$\frac{3}{8}$	10.6
4	264	219	238	127	187	38	76	16	4.8
5	12 $\frac{3}{8}$	10 $\frac{3}{8}$	11 $\frac{3}{8}$	6 $\frac{1}{4}$	7 $\frac{3}{8}$	2	4	$\frac{3}{8}$	15.6
5	308	273	295	159	187	51	102	16	7.1
6	14 $\frac{3}{8}$	12 $\frac{3}{8}$	13 $\frac{3}{8}$	7 $\frac{1}{4}$	8	2	4	$\frac{3}{8}$	19.5
6	378	324	346	184	203	51	102	16	8.8
7	16 $\frac{3}{8}$	14 $\frac{3}{8}$	15 $\frac{3}{8}$	8 $\frac{1}{2}$	9 $\frac{3}{8}$	2	4	$\frac{3}{4}$	26.8
7	429	375	403	216	248	51	102	19	12.2
8	18 $\frac{3}{8}$	16 $\frac{3}{8}$	17 $\frac{3}{8}$	9 $\frac{1}{2}$	10 $\frac{3}{8}$	4	6	$\frac{3}{4}$	35.6
8	479	425	454	241	260	102	152	19	16.1
9	21 $\frac{3}{8}$	19	20	10 $\frac{1}{2}$	11 $\frac{1}{4}$	4	6	$\frac{3}{4}$	44.2
9	550	483	508	267	286	102	152	19	20.0
10	23 $\frac{3}{8}$	21	22	11 $\frac{1}{2}$	14 $\frac{3}{8}$	4	6	$\frac{7}{8}$	52.6
10	600	533	559	292	359	102	152	22	23.9
11	25 $\frac{3}{8}$	23	24	12 $\frac{1}{2}$	14 $\frac{3}{8}$	4	6	$\frac{7}{8}$	66.3
11	651	584	610	318	375	102	152	22	30.1
12	28 $\frac{3}{8}$	25 $\frac{3}{8}$	26 $\frac{3}{8}$	13 $\frac{3}{8}$	15 $\frac{3}{8}$	4	6	1	79.7
12	721	654	676	349	403	102	152	25	36.2
13	32 $\frac{3}{8}$	29 $\frac{3}{8}$	30 $\frac{3}{8}$	15 $\frac{3}{8}$	16 $\frac{3}{8}$	5 $\frac{1}{2}$	8	1	106.3
13	816	749	775	400	416	140	203	25	48.2
14	36 $\frac{3}{8}$	33 $\frac{3}{8}$	34 $\frac{3}{8}$	17 $\frac{3}{8}$	17 $\frac{3}{8}$	5 $\frac{1}{2}$	8	1	116.8
14	918	851	876	451	435	140	203	25	53.0

PIPE SIZE	DIM. I	MAX. MVT
1" to 6"	4	4
25 to 150	102	102
8" to 16"	6	6
200 to 400	152	152
18" to 24"	8	8
450 to 600	203	203

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

Please use the following chart for selecting the correct size.

FIGURE 1006 – PIPE ALIGNMENT GUIDE

SIZE NUMBER	THICKNESS OF INSULATION					
	1 25	1½ 38	2 51	2½ 64	3 76	4 102
1	1					
1	25					
2	1¼ - 2	1				
2	32 to 50	25				
3	2½	1¼ - 2	1			
3	65	32 to 50	25			
4	3 - 4	2½ - 3½	1¼ - 2½	1 - 2	1	
4	80 to 100	65 to 90	32 to 65	25 to 50	25	
5	5 - 6	4 - 5	3 - 4	2½ - 3½	1¼ - 2½	1
5	125 to 150	100 to 125	80 to 100	65 to 90	32 to 65	25
6		6	5 - 6	4 - 5	3 - 4	1¼ - 2½
6		150	125 to 150	100 to 125	80 to 100	32 to 65
7		8	8	6	5 - 6	3 - 4
7		200	200	150	125 to 150	80 to 100
8		10	10	8	8	5 - 6
8		250	250	200	200	125 to 150
9		12	12	10	10	8
9		300	300	250	250	200
10			14	12 - 14	12	10
10			350	300 to 350	300	250
11			16	16	14	12
11			400	400	350	300
12					16 - 18	14 - 16
12					400 to 450	350 to 400
13					20	18 - 20
13					500	450 to 500
14					24	24
14					600	600

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE ALIGNMENT GUIDE

Figure 1007

Designed to maintain the axial alignment of piping as it expands and contracts during operation. It is most typically installed adjacent to expansion joints and at reasonable distances between the expansion joint and the anchor point. Our Figures 1006 and 1010 also offer alternative means for your piping alignment needs.

Note: Guides are not designed to carry dead weight loads. Maximum temperature is 750°F.

Material: Carbon Steel.

Finish: Plain, Painted, Galvanized.

Ordering: Specify guide size, pipe size, insulation thickness, figure number, and finish. For Metric applications specify Figure M1007.

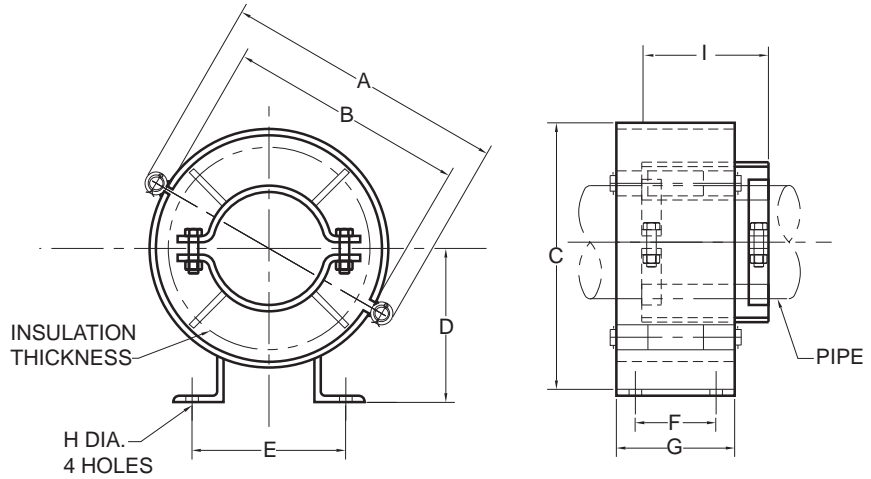


FIGURE 1007 – PIPE ALIGNMENT GUIDE

SIZE NUMBER	A	B	C	D	E	F	G	H	WEIGHT EACH
1	5 $\frac{1}{4}$	4 $\frac{1}{2}$	5 $\frac{3}{8}$	3 $\frac{3}{8}$	5	2 $\frac{1}{2}$	4	$\frac{3}{8}$	9.5
1	149	114	6	79	127	64	102	16	4.3
2	7	5 $\frac{3}{8}$	6 $\frac{3}{8}$	3 $\frac{1}{2}$	6 $\frac{1}{4}$	2 $\frac{1}{2}$	4	$\frac{3}{8}$	12.0
2	178	143	162	89	159	64	102	16	5.4
3	8	6 $\frac{3}{8}$	7 $\frac{3}{8}$	4	6 $\frac{1}{4}$	2 $\frac{1}{2}$	4	$\frac{3}{8}$	13.2
3	203	168	187	102	171	64	102	16	6.0
4	10 $\frac{3}{8}$	8 $\frac{3}{8}$	9 $\frac{3}{8}$	5	7 $\frac{3}{8}$	2 $\frac{1}{2}$	4	$\frac{3}{8}$	16.3
4	264	219	238	127	187	64	102	16	7.4
5	12 $\frac{1}{2}$	10 $\frac{3}{4}$	11 $\frac{1}{8}$	6 $\frac{1}{4}$	7 $\frac{3}{8}$	4	6	$\frac{3}{8}$	26.0
5	318	273	295	159	187	102	152	16	11.8
6	14 $\frac{3}{8}$	12 $\frac{3}{4}$	13 $\frac{3}{8}$	7 $\frac{1}{4}$	8	4	6	$\frac{3}{8}$	32.3
6	378	324	346	184	203	102	152	16	14.7
7	16 $\frac{3}{8}$	14 $\frac{3}{4}$	15 $\frac{3}{8}$	8 $\frac{1}{2}$	9 $\frac{3}{4}$	5 $\frac{1}{2}$	8	$\frac{3}{4}$	48.2
7	429	375	403	216	248	140	203	19	21.9
8	18 $\frac{3}{8}$	16 $\frac{3}{4}$	17 $\frac{3}{8}$	9 $\frac{1}{2}$	10 $\frac{3}{4}$	5 $\frac{1}{2}$	8	$\frac{3}{4}$	57.0
8	479	425	454	241	260	140	203	19	25.9
9	21 $\frac{3}{8}$	19	20	10 $\frac{1}{2}$	11 $\frac{1}{4}$	5 $\frac{1}{2}$	8	$\frac{3}{4}$	72.1
9	549	483	508	267	286	140	203	19	32.7
10	23 $\frac{3}{8}$	21	22	11 $\frac{1}{2}$	14 $\frac{1}{8}$	5 $\frac{1}{2}$	8	$\frac{7}{8}$	84.5
10	600	533	559	292	359	140	203	22	38.3
11	25 $\frac{3}{8}$	23	24	12 $\frac{1}{2}$	14 $\frac{1}{4}$	5 $\frac{1}{2}$	8	$\frac{7}{8}$	103.2
11	651	584	610	318	375	140	203	22	46.8
12	28 $\frac{3}{8}$	25 $\frac{3}{4}$	26 $\frac{3}{8}$	13 $\frac{3}{4}$	15 $\frac{1}{8}$	5 $\frac{1}{2}$	8	1	129.1
12	727	654	676	349	403	140	203	25	58.6
13	32 $\frac{3}{8}$	29 $\frac{3}{4}$	30 $\frac{3}{8}$	15 $\frac{1}{4}$	16 $\frac{1}{8}$	5 $\frac{1}{2}$	8	1	153.3
13	816	749	775	400	416	140	203	25	69.5
14	36 $\frac{3}{8}$	33 $\frac{3}{4}$	34 $\frac{3}{8}$	17 $\frac{1}{4}$	17 $\frac{1}{8}$	5 $\frac{1}{2}$	8	1	140.0
14	918	851	876	451	435	140	203	25	63.5

PIPE SIZE	DIM. I	MAX. MVT
1" to 6"	6	6
25 to 150	152	152
8" to 16"	8	8
200 to 400	203	203
18" to 24"	10	10
450 to 600	254	254

DIMENSIONS		TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT		POUNDS	POUNDS
MILLIMETERS	CELSIUS		NEWTONS	KILOGRAMS

Please use the following Chart for selecting the correct size.

FIGURE 1007 – PIPE ALIGNMENT GUIDE

SIZE NUMBER	THICKNESS OF INSULATION					
	1 25	1½ 38	2 51	2½ 64	3 76	4 102
1	1					
1	25					
2	1¼ - 2	1				
2	32 to 50	25				
3	2½	1¼ - 2	1			
3	65	32 to 50	25			
4	3 - 4	2½ - 3½	1¼ - 2½	1 - 2	1	
4	80 to 100	65 to 90	32 to 65	25 to 50	25	
5	5 - 6	4 - 5	3 - 4	2½ - 3½	1¼ - 2½	1
5	125 to 150	100 to 125	80 to 100	65 to 90	32 to 65	25
6		6	5 - 6	4 - 5	3 - 4	1¼ - 2½
6		150	125 to 150	100 to 125	80 to 100	32 to 65
7		8	8	6	5 - 6	3 - 4
7		200	200	150	125 to 150	80 to 100
8		10	10	8	8	5 - 6
8		250	250	200	200	125 to 150
9		12	12	10	10	8
9		300	300	250	250	200
10			14	12 - 14	12	10
10			350	300 to 350	300	250
11			16	16	14	12
11			400	400	350	300
12					16 - 18	14 - 16
12					400 to 450	350 to 400
13					20	18 - 20
13					500	450 to 500
14					24	24
14					600	600

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

PIPE SLIDE ASSEMBLY

Figure 1010

Designed to be welded directly to the pipe to allow for support from below and allow for horizontal movement with a low coefficient of friction.

The assembly consists of a carbon steel tee with a polished stainless bottom which rests on a PTFE (glass filled teflon) plate, bonded to a carbon steel plate. The base plate configuration will vary with the Type selected.

Maximum temperature: 200° F at the sliding surface

Greater height dimensions, longer transverse and longitudinal movements, and other customer requirements can be supplied upon request.

Compliance: MSS SP-69 Type 35.

Material: Carbon Steel, Stainless Steel, PTFE.

Finish: Plain, Painted, Hot-Dip Galvanized.

Ordering: Specify pipe size, figure number, travel, and type. For Metric applications specify Figure M1010.

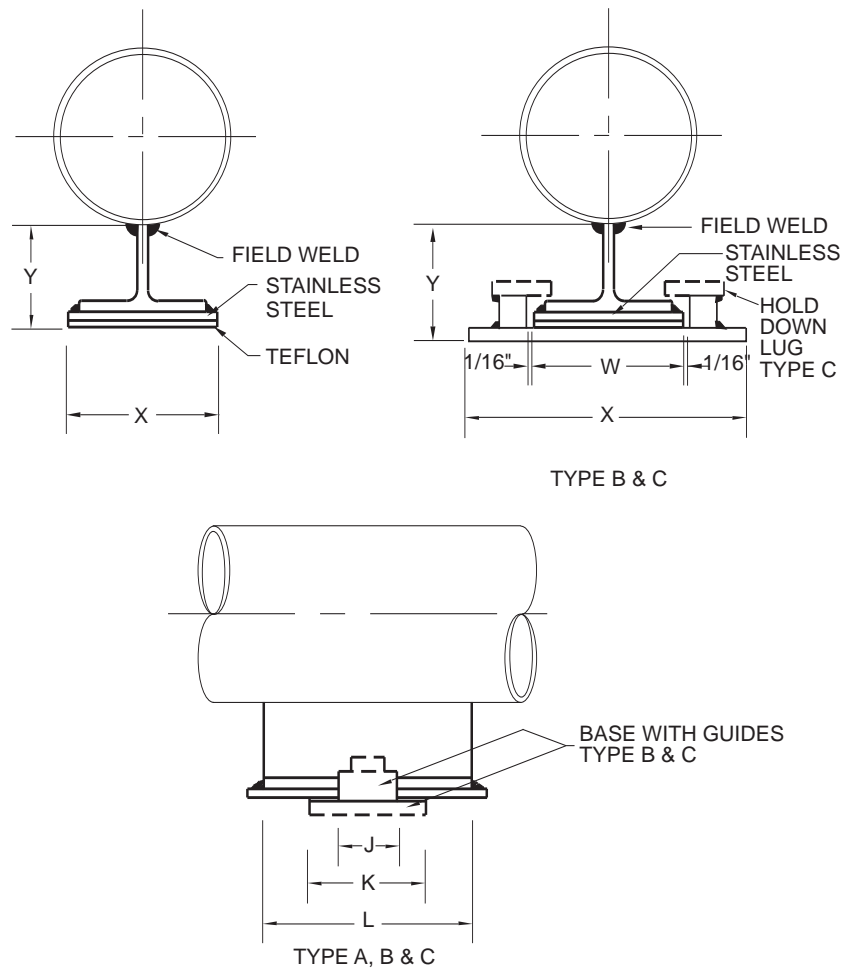


FIGURE 1010 – PIPE SLIDE ASSEMBLY

PIPE SIZE	MAX LOAD*	TRAVEL	Y		L TYPES A, B, C	K TYPES A, B, C	W TYPES A, B, C	X		WEIGHT EACH**
			TYPE A	TYPE B & C				TYPE A	TYPE B & C	
UP TO 8"	7000	5	3 3/4	4 1/4	8 1/2	4	3 1/2	3 1/2	6	7
		10			13 1/2					10
		15			18 1/2					13
		20			23 1/2					17
UP TO 200	31139	127	95	108	216	102	89	89	152	3.2
		254			343					4.5
		381			470					5.9
		508			597					7.7
10" TO 24"	13500	5	3 3/4	4 1/4	10 1/2	6	4 1/2	4 1/2	7	11
		10			15 1/2					15
		15			20 1/2					19
		20			25 1/2					23
250 TO 600	60053	127	95	108	267	152	114	114	178	5.0
		254			394					6.8
		381			521					8.6
		508			648					10.4

* Based upon 500 psi / 35.2 Kg per sq. cm. pressure on the PTFE

** Weight Each for Type A Only.

DIMENSIONS	TEMPERATURE	LOADS	WEIGHT
INCHES	FAHRENHEIT	POUNDS	POUNDS
MILLIMETERS	CELSIUS	NEWTONS	KILOGRAMS

REFERENCE DATA – METRIC CONVERSION CHART

	TO CONVERT FROM	TO	MULTIPLY BY
Angle	degree	radian (rad)	1.745329×10^{-2}
	radian (rad)	degree	5.729578×10^{-1}
Area	foot ²	square meter (m ²)	9.290304×10^{-2}
	inch ²	square meter (m ²)	6.451600×10^{-4}
	circular mil	square meter (m ²)	5.067075×10^{-10}
	square centimeter (cm ²)	square inch (in ²)	1.550003×10^{-1}
	square meter (m ²)	foot ²	1.076391×10^{-1}
	square meter (m ²)	inch ²	1.550003×10^{-3}
	square meter (m ²)	circular mil	1.973525×10^{-9}
Bending Moment of Torque	lbf•ft	newton meter (N•m)	1.355818
	lbf•in	newton meter (N•m)	1.129848×10^{-1}
	N•m	lbf•ft	7.375621×10^{-1}
	N•m	lbf•in	8.850748
Force	pounds-force (lbf)	newtons (N)	4.448222
Length	foot (ft)	meter (m)	3.048000×10^{-1}
	inch (in)	meter (m)	2.540000×10^{-2}
	mil	meter (m)	2.540000×10^{-5}
	inch (in)	micrometer (µm)	2.540000×10^{-4}
	meter (m)	foot (ft)	3.280840
	meter (m)	inch (in)	3.937008×10^{-1}
	meter (m)	mil	3.937008×10^{-4}
	micrometer (µm)	Inch (in)	3.937008×10^{-5}
Mass	ounce (avoirdupois)	kilogram (kg)	2.834952×10^{-2}
	pound (avoirdupois)	kilogram (kg)	4.535924×10^{-1}
	ton (short, 2000 lb)	kilogram (kg)	9.071847×10^{-2}
	ton (long, 2240 lb)	kilogram (kg)	1.016047×10^{-3}
	kilogram (kg)	ounce (avoirdupois)	3.527396×10^{-1}
	kilogram (kg)	pound (avoirdupois)	2.204622
	kilogram (kg)	ton (short, 2000 lb)	1.102311×10^{-3}
	kilogram (kg)	ton (long, 2240 lb)	9.842064×10^{-4}
Mass Per Unit Length	lb/ft	kilogram per meter (kg/m)	1.488164
	lb/in	kilogram per meter (kg/m)	1.785797×10^{-1}
	kg/m	lb/ft	6.719689×10^{-1}
	kg/m	lb/in	5.599741×10^{-2}
Mass Per Unit Volume	lb/ft ³	kilogram per cubic meter (kg/m ³)	1.601846×10^{-1}
	lb/in ³	kilogram per cubic meter (kg/m ³)	2.767990×10^{-4}
	kg/m ³	lb/ft ³	6.242797×10^{-2}
	kg/m ³	lb/in ³	3.612730×10^{-5}
	lbs/ft ³	lbs/in ³	1.728000×10^{-3}
Mass Per Area Unit	lb/ft ²	kilogram per square meter (kg/m ²)	4882428
	kg/m ²	pound per square foot (lb/ft ²)	2.048161×10^{-1}
Pressure or Stress	lbf/in ² (psi)	pascal (Pa)	6.894757×10^{-3}
	kip/in ² (ksi)	pascal (Pa)	6.894757×10^{-6}
	lbf/in ² (psi)	megapascals (MPa)	6.894757×10^{-3}
	pascal (Pa)	pound force per sq. inch (psi)	1.450377×10^{-4}
	pascal (Pa)	kip per sq. inch (ksi)	1.450377×10^{-7}
	megapascals (MPa)	lbf/in ² (psi)	1.450377×10^{-2}
Section Properties	section modulus S (in ³)	S (m ³)	1.638706×10^{-5}
	section modulus S (M ³)	S (in ³)	6.102374×10^{-4}
	moment of inertia I (in ⁴)	I (m ⁴)	4.162314×10^{-7}
	moment of inertia I (M ⁴)	I (in ⁴)	2.402510×10^{-6}
	modulus of elasticity E (psi)	E (Pa)	6.894757×10^{-3}
	modulus of elasticity E (Pa)	E (psi)	1.450377×10^{-4}
Temperature	degree Fahrenheit	degree Celsius	$t^{\circ C} = (t^{\circ F} - 32) / 1.8$
	degree Celsius	degree Fahrenheit	$t^{\circ F} = 1.8 t^{\circ C} + 32$
Volume	foot ³	cubic meter (m ³)	2.831685×10^{-2}
	inch ³	cubic meter (m ³)	1.638706×10^{-2}
	cubic centimeter (cm ³)	cubic inch (in ³)	6.102374×10^{-2}
	cubic meter (m ³)	foot ³	3.531466×10^{-1}
	cubic meter (m ³)	inch ³	6.102376×10^{-4}
	gallon (U.S. liquid)	cubic meter (m ³)	3.785412×10^{-3}

ASME ABBREVIATIONS

AISC	= American Institute of Steel Construction
AISI	= American Iron & Steel Institute
ANSI	= American National Standards Institute
ASTM	= American Society for Testing & Materials
AWWA	= American Water Works Association
Dia.	= Diameter
Ft.	= Feet
Ga	= Gauge
I.D.	= Inside Diameter
In.	= Inch
Lbs.	= Pounds
Max.	= Maximum
Min.	= Minimum
MSS	= Manufacturers' Standardization Society
NFPA	= National Fire Protection Association
O.D.	= Outside Diameter
Oz.	= Ounces
psi	= Pounds Per Square Inch
PVC	= Poly Vinyl Chloride
UNC	= Unified Course Threads
UNCR	= Unified Course Threads (Rounded Root)

METRIC SYMBOLS

cm	= centimeter
kg	= kilogram
kN	= kilonewton
m	= meter
µm	= micrometer
mm	= millimeter
MPa	= megapascal
N	= newton
Nm	= newton-meter
Pa	= pascal

TECHNICAL INFORMATION

PIPE WEIGHTS FOR STANDARD AND HEAVY WEIGHT PIPE

PIPE DATA					PIPE WEIGHT			
Nominal Pipe Size	Pipe Schedule	Outside Dia.		Wall Th'k	w/ Gas, Air, Steam		w/ Water	
		in	mm	in	lbs/ft	N/m	lbs/ft	N/m
½"	Std / 40	0.840	22	0.109	0.9	12	1.0	14
(15mm)	XS / 80			0.147	1.1	16	1.2	17
¾"	Std / 40	1.050	28	0.113	1.1	17	1.4	20
(20mm)	XS / 80			0.154	1.5	22	1.7	24
1"	Std / 40	1.315	34	0.133	1.7	25	2.1	30
(25mm)	XS / 80			0.179	2.2	32	2.5	36
1¼"	Std / 40	1.660	42	0.140	2.3	33	2.9	43
(32mm)	XS / 80			0.191	3.0	44	3.6	52
1½"	Std / 40	1.900	48	0.145	2.7	40	3.6	53
(40mm)	XS / 80			0.200	3.6	53	4.4	64
2"	Std / 40	2.375	60	0.154	3.7	53	5.1	75
(50mm)	XS / 80			0.218	5.0	73	6.3	92
2½"	Std / 40	2.875	75	0.203	5.8	85	7.9	115
(65mm)	XS / 80			0.276	7.7	112	9.5	139
3"	Std / 40	3.500	89	0.216	7.6	111	11	157
(80mm)	XS / 80			0.300	10	150	13	191
3½"	Std / 40	4.000	102	0.226	9.1	133	13	195
(90mm)	XS / 80			0.318	13	182	16	239
4"	Std / 40	4.500	114	0.237	11	157	16	238
(100mm)	XS / 80			0.337	15	219	20	291
5"	Std / 40	5.563	141	0.258	15	213	23	340
(125mm)	XS / 80			0.375	21	303	29	418
6"	Std / 40	6.625	168	0.280	19	277	31	460
(150mm)	XS / 80			0.432	29	417	40	582
8"	Std / 40	8.625	219	0.322	29	417	50	733
(200mm)	XS / 80			0.500	43	633	63	922
10"	Std / 40	10.75	273	0.365	40	591	75	1090
(250mm)	XS / 60			0.500	55	799	87	1271
12"	Std	12.75	235	0.375	50	723	99	1439
(300mm)	XS			0.500	65	955	112	1641
14"	Std / 30	14.00	355.6	0.375	55	796	114	1669
(350mm)	XS			0.500	72	1052	130	1892
16"	Std / 30	16.00	406.4	0.375	63	913	142	2069
(400mm)	XS / 40			0.500	83	1208	159	2326
18"	Std	18.00	457.2	0.375	71	1030	172	2509
(450mm)	XS			0.500	93	1364	192	2800
20"	Std / 20	20.00	508.0	0.375	79	1147	205	2988
(500mm)	XS / 30			0.500	104	1520	227	3313
24"	Std / 20	24.00	609.6	0.375	95	1381	279	4067
(600mm)	XS			0.500	125	1831	306	4460
30"	Std	30.00	762.0	0.375	119	1731	410	5983
(750mm)	XS / 20			0.500	158	2299	444	6478
36"	Std	36.00	914.4	0.375	143	2082	566	8256
(900mm)	XS / 20			0.500	190	2766	607	8853
42"	Std	42.00	1066.8	0.375	167	2433	746	10888
(1050mm)	XS / 20			0.500	222	3234	794	11587

Pipe Weights are based on Carbon Steel pipe

AMERICAN WATER WORKS ASSOCIATION - DUCTILE IRON PIPE DATA

BASED UPON AWWA C108-70 CLASS 53

NOMINAL PIPE SIZE		O.D. SIZE		WALL THICKNESS		WEIGHT OF PIPE		WEIGHT OF PIPE FILLED WITH WATER	
in.	mm	in.	mm	in.	mm	Lbs./Ft.	Kg/m	Lbs./Ft.	Kg/m
3	100	3.96	100.6	0.31	7.9	11.2	16.7	15.0	22.3
4	150	4.80	121.9	0.32	8.1	14.2	21.1	20.1	29.9
6	200	6.90	175.3	0.34	8.6	22.0	32.7	35.1	52.2
8	250	9.05	229.9	0.36	9.1	31.0	46.1	54.0	80.4
10	300	11.1	281.9	0.38	9.7	40.4	60.1	76.8	114.3
12	350	13.2	335.3	0.40	10.2	50.7	75.5	103.0	153.3
14	400	15.3	388.6	0.42	10.7	62.4	92.9	133.5	198.7
16	450	17.4	442.0	0.43	10.9	72.8	108.3	165.9	246.9
18	500	19.5	495.3	0.44	11.2	83.6	124.4	201.5	299.9
20	600	21.6	548.6	0.45	11.4	95.2	141.7	241.0	358.7
24	700	25.8	655.3	0.47	11.9	119.2	177.4	329.4	490.2
30	800	32.0	812.8	0.51	13.0	161.3	240.0	487.8	725.9
36	900	38.3	972.8	0.58	14.7	219.5	326.7	688.8	1025.1
42	1000	44.5	1130.3	0.65	16.5	285.2	424.4	920.1	1369.3
48	1200	50.8	1290.3	0.72	18.3	360.3	536.2	1189.2	1769.8
54	1400	57.6	1450.3	0.81	20.6	455.0	677.1	1502.2	2235.6

Note: Add flange weight for flanged ductile iron pipe

CAST IRON PIPE DATA

MECHANICAL JOINT PIPE CLASS 150

NOMINAL PIPE SIZE		O.D. SIZE		WALL THICKNESS		WEIGHT OF PIPE		WEIGHT OF PIPE FILLED WITH WATER	
in.	mm	in.	mm	in.	mm	Lbs./Ft.	Kg/m	Lbs./Ft.	Kg/m
3	100	3.96	100.6	0.32	8.1	12.9	19.2	16.6	24.7
4	150	4.80	121.9	0.35	8.9	16.4	24.4	22.1	32.9
6	200	6.90	175.3	0.38	9.7	25.7	38.2	38.5	57.3
8	250	9.05	229.9	0.41	10.4	36.7	54.6	59.8	89.0
10	300	11.1	281.9	0.44	11.2	48.7	72.5	84.2	125.3
12	350	13.2	335.3	0.48	12.2	62.9	93.6	113.9	169.5
14	400	15.3	388.6	0.51	13.0	78.8	117.3	148.1	220.4
16	450	17.4	442.0	0.54	13.7	95.0	141.4	185.3	275.8
18	500	19.5	495.3	0.58	14.7	114.7	170.7	228.7	340.4
20	600	21.6	548.6	0.62	15.7	135.9	202.2	277.4	412.8
24	700	25.8	655.3	0.73	18.5	190.4	283.4	391.4	582.5
30	800	32.0	812.8	0.85	21.6	277.3	412.7	589.3	877.0
36	900	38.3	972.8	0.94	23.9	368.9	549.0	817.9	1217.2
42	1000	44.5	1130.3	1.05	26.7	479.1	713.0	1091.1	1623.8
48	1200	50.8	1290.3	1.14	29.0	595.2	885.8	1398.2	2080.8

Note: Add flange weight for flanged cast iron pipe

TECHNICAL INFORMATION

NO-HUB CAST IRON PIPE DATA

BASED UPON CAST IRON SOIL PIPE INSTITUTE STANDARDS 301-72, TABLE 1

NOMINAL PIPE SIZE:		O.D. SIZE		WALL THICKNESS		WEIGHT OF PIPE		WEIGHT OF PIPE FILLED W/WATER		
in.	mm	in.	mm	in.	mm	Lbs./Ft.	Kg/m	Lbs./Ft.	Kg/m	
1½"	40	1.9	48.3	0.16	4.1	2.7	4.0	6.2	9.2	3.73
2"	50	2.35	59.7	0.16	4.1	3.6	5.4	8.6	12.8	5.72
3"	80	3.35	85.1	0.16	4.1	5.2	7.7	13.5	20.1	12.80
4"	100	4.38	111.3	0.19	4.8	7.4	11.0	20.2	30.1	23.10
5"	125	5.30	134.6	0.19	4.8	9.6	14.3	27.5	40.9	35.50
6"	150	6.30	160.0	0.19	4.8	11.0	16.4	34.0	50.6	51.00
8"	200	8.38	212.9	0.23	5.8	18.0	26.8	57.5	85.6	69.30

DECIMAL EQUIVALENTS

DECIMALS OF AN INCH & EQUIVALENT MILLIMETERS

FRACTION	DECIMAL	MM	FRACTION	DECIMAL	MM	FRACTION	DECIMAL	MM	FRACTION	DECIMAL	MM
1/32	0.0313	0.794	5/32	0.2813	7.144	17/32	0.5313	13.494	25/32	0.7813	19.844
1/16	0.0625	1.588	3/16	0.3125	7.938	1/6	0.5625	14.288	13/16	0.8125	20.638
3/32	0.0938	2.381	11/32	0.3438	8.731	19/32	0.5938	15.081	27/32	0.8438	21.431
1/8	0.1250	3.175	3/8	0.3750	9.525	5/8	0.6250	15.875	7/8	0.8750	22.225
5/32	0.1563	3.969	13/32	0.4063	10.319	21/32	0.6563	16.669	29/32	0.9063	23.019
3/16	0.1875	4.763	7/16	0.4375	11.113	11/16	0.6875	17.463	15/16	0.9375	23.813
7/32	0.2188	5.556	15/32	0.4688	11.906	23/32	0.7188	18.256	31/32	0.9688	24.606
1/4	0.2500	6.350	1/2	0.5000	12.700	3/4	0.7500	19.050	1	1.0000	25.400

ELECTRICAL CONDUIT SIZES

NOMINAL CONDUIT SIZE	ELECTRICAL METALLIC CONDUIT O.D.	INTERMEDIATE METALLIC CONDUIT O.D.	STEEL RIGID CONDUIT O.D.
1/2	0.706	0.815	0.840
3/4	0.922	1.029	1.050
1	1.163	1.290	1.315
1¼	1.510	1.638	1.660
1½	1.740	1.863	1.900
2	2.197	2.360	2.375
2½	2.875	2.857	2.875
3	3.500	3.476	3.500
3½	4.000	3.971	4.000
4	4.500	4.466	4.500
5			5.563
6			6.625

MAXIMUM RECOMMENDED BOLT TORQUE FOR FIGURE 126

BOLT SIZE		MAXIMUM TORQUE VALUE FOOT-POUNDS
1/4	M6	6
3/8	M10	21
1/2	M12	46
5/8	M16	100
3/4	M20	150
7/8	M22	190
1	M24	280

Bolts are ASTM A307, Nuts are ASTM A563

COPPER TUBING DATA - TYPE L

NOMINAL TUBING SIZE		O.D. SIZE		WALL THICKNESS		WEIGHT OF TUBING		WEIGHT OF TUBING FILLED WITH WATER	
in.	mm	in.	mm	in.	mm	Lbs./Ft.	Kg/m	Lbs./Ft.	Kg/m
¼	8	0.375	9.5	0.030	0.8	0.13	0.19	0.15	0.22
⅜	10	0.500	12.7	0.035	0.9	0.20	0.29	0.26	0.39
½	15	0.625	15.9	0.040	1.0	0.29	0.42	0.38	0.57
⅝	18	0.750	19.1	0.042	1.1	0.36	0.54	0.51	0.76
¾	20	0.875	22.2	0.045	1.1	0.46	0.68	0.66	0.98
1	25	1.125	28.6	0.050	1.3	0.66	0.97	1.01	1.50
1¼	32	1.375	34.9	0.055	1.4	0.88	1.32	1.42	2.11
1½	40	1.625	41.3	0.060	1.5	1.14	1.70	1.91	2.84
2	50	2.125	54.0	0.070	1.8	1.75	2.60	3.09	4.60
2½	65	2.625	66.7	0.080	2.0	2.48	3.69	4.54	6.76
3	80	3.125	79.4	0.090	2.3	3.33	4.96	6.28	9.35
3½	90	3.625	92.1	0.100	2.5	4.29	6.38	8.28	12.32
4	100	4.125	104.8	0.110	2.8	5.38	8.01	10.57	15.73
5	125	5.125	130.2	0.125	3.2	7.61	11.30	15.69	23.35
6	150	6.125	155.6	0.140	3.6	10.20	15.20	21.81	32.46
8	200	8.125	206.4	0.200	5.1	19.26	28.70	39.49	58.77
10	250	10.125	257.2	0.250	6.4	20.10	29.90	61.69	91.81
12	300	12.125	308.0	0.280	7.1	40.40	60.10	85.83	127.73

COPPER TUBING DATA - TYPE K

NOMINAL TUBING SIZE		O.D. SIZE		WALL THICKNESS		WEIGHT OF TUBING		WEIGHT OF TUBING FILLED WITH WATER	
in.	mm	in.	mm	in.	mm	Lbs./Ft.	Kg/m	Lbs./Ft.	Kg/m
¼	8	0.375	9.5	0.035	0.9	0.14	0.21	0.17	0.25
⅜	10	0.500	12.7	0.049	1.2	0.27	0.40	0.32	0.48
½	15	0.625	15.9	0.049	1.2	0.34	0.51	0.43	0.64
⅝	18	0.750	19.1	0.049	1.2	0.42	0.63	0.56	0.83
¾	20	0.875	22.2	0.065	1.7	0.64	0.95	0.83	1.24
1	25	1.125	28.6	0.065	1.7	0.84	1.25	1.18	1.76
1¼	32	1.375	34.9	0.065	1.7	1.04	1.55	1.57	2.34
1½	40	1.625	41.3	0.072	1.8	1.36	2.02	2.10	3.13
2	50	2.125	54.0	0.083	2.1	2.06	3.07	3.37	5.02
2½	65	2.625	66.7	0.095	2.4	2.92	4.35	4.92	7.32
3	80	3.125	79.4	0.109	2.8	4.00	5.95	6.96	10.36
3½	90	3.625	92.1	0.120	3.0	5.12	7.62	9.02	13.42
4	100	4.125	104.8	0.134	3.4	6.51	9.69	11.57	17.22
5	125	5.125	130.2	0.160	4.1	9.67	14.4	17.67	26.30
6	150	6.125	155.6	0.192	4.9	13.87	20.6	25.07	37.31
8	200	8.125	206.4	0.271	6.9	25.90	38.5	45.40	67.56
10	250	10.125	257.2	0.338	8.6	40.30	60.0	70.72	105.25
12	300	12.125	308.0	0.405	10.3	57.80	86.0	101.48	151.02

TECHNICAL INFORMATION

PIPE WEIGHTS FOR PVC AND CPVC PIPE – TYPES I & II

PIPE DATA					PVC PIPE WEIGHT				CPVC PIPE WEIGHT			
Nominal Pipe Size	Pipe Schedule	Outside Dia.		Wall Th'k	w/ Gas, Air		w/ Water		w/ Gas, Air		w/ Water	
		in	mm	in	lbs/ft	N/m	lbs/ft	N/m	lbs/ft	N/m	lbs/ft	N/m
1/8" (3mm)	40	0.405	10	0.068	0.05	0.7	0.07	1.0				
	80			0.095	0.06	0.9	0.08	1.1				
1/4" (6mm)	40	0.54	14	0.088	0.08	1.2	0.13	1.9	0.09	1.3	0.13	2.0
	80			0.119	0.10	1.5	0.13	2.0	0.12	1.7	0.14	2.1
3/8" (10mm)	40	0.675	17	0.091	0.11	1.6	0.19	2.8	0.12	1.8	0.20	3.0
	80			0.126	0.14	2.1	0.20	3.0	0.16	2.3	0.22	3.2
1/2" (15mm)	40	0.840	22	0.109	0.17	2.4	0.30	4.4	0.19	2.7	0.31	4.6
	80			0.147	0.21	3.1	0.31	4.6	0.24	3.5	0.33	4.8
	120			0.170	0.24	3.4	0.32	4.7				
3/4" (20mm)	40	1.050	28	0.113	0.22	3.2	0.45	6.6	0.25	3.6	0.47	6.9
	80			0.154	0.29	4.2	0.47	6.9	0.32	4.7	0.50	7.3
	120			0.170	0.31	4.5	0.48	7.0				
1" (25mm)	40	1.315	34	0.133	0.33	4.8	0.70	10	0.37	5.4	0.73	11
	80			0.179	0.42	6.2	0.74	11	0.47	6.9	0.77	11
	120			0.200	0.46	6.8	0.75	11				
1 1/4" (32mm)	40	1.660	42	0.140	0.44	6.5	1.1	16	0.50	7.2	1.1	16
	80			0.191	0.58	8.5	1.1	17	0.65	9.5	1.2	17
	120			0.215	0.65	9.5	1.2	17				
1 1/2" (40mm)	40	1.900	48	0.145	0.53	7.8	1.4	21	0.60	8.7	1.5	21
	80			0.200	0.71	10	1.5	22	0.79	12	1.5	22
	120			0.225	0.79	11	1.5	22				
2" (50mm)	40	2.375	60	0.154	0.72	10	2.2	32	0.80	12	2.2	33
	80			0.218	0.98	14	2.3	33	1.1	16	2.3	34
	120			0.250	1.1	16	2.3	34				
2 1/2" (65mm)	40	2.875	75	0.203	1.1	17	3.2	47	1.3	18	3.3	48
	80			0.276	1.5	22	3.3	49	1.7	24	3.5	50
	120			0.300	1.6	24	3.4	49				
3" (80mm)	40	3.500	89	0.216	1.5	22	4.7	68	1.7	24	4.8	70
	80			0.300	2.0	29	4.9	71	2.2	33	5.0	73
	120			0.350	2.3	34	5.0	73				
3 1/2" (90mm)	40	4.000	102	0.226	1.8	26	6.1	89	2.0	29	6.2	91
	80			0.318	2.5	36	6.3	92	2.7	40	6.5	95
4" (100mm)	40	4.500	114	0.237	2.1	31	7.6	111	2.4	34	7.8	114
	80			0.337	2.9	43	7.9	116	3.3	48	8.2	119
	120			0.437	3.7	54	8.2	120				
5" (125mm)	40	5.563	141	0.258	2.9	42	12	168				
	80			0.375	4.1	60	12	175				
6" (150mm)	40	6.625	168	0.280	3.7	54	16	237	4.2	61	17	242
	80			0.432	5.6	82	17	247	6.3	91	17	253
	120			0.562	7.1	104	17	254				
8" (200mm)	40	8.625	219	0.322	5.6	82	27	398	6.3	91	28	405
	80			0.500	8.5	124	28	413	9.5	139	29	423
10" (250mm)	40	10.75	273	0.365	8.0	116	42	615	8.9	130	43	624
	80			0.593	13	184	44	639	14	206	45	654
12" (300mm)	40	12.75	235	0.406	11	153	59	862	12	171	60	874
	80			0.687	17	254	61	897	19	283	63	917
14" (350mm)	40	14.00	355.6	0.437	12	182	71	1038				
	80			0.750	21	304	74	1081				
16" (400mm)	40	16.00	406.4	0.500	16	238	93	1356				
	80			0.843	27	391	97	1409				
18" (450mm)	40	18.00	457.2	0.562	22	328	119	1743				
	80			0.937	34	489	122	1781				
20" (500mm)	40	20.00	508.0	0.593	27	388	147	2146				
	80			1.031	42	618	152	2217				
24" (600mm)	40	24.00	609.6	0.687	37	542	211	3086				
	80			1.218	60	879	219	3189				

PVC and CPVC pipe weights are based on the "average I.D."

USEFUL WEIGHT FORMULAS

PIPE

$$\text{Weight (lb/ft)} = 10.68 \times T \times (D - T) \times F$$

PIPE CONTENTS

$$\text{Weight (lb/ft)} = 0.3405 \times G \times (D - 2T)^2$$

LEGEND

- D = Outside Diameter (inches)
- F = Material Weight Factor
- G = Specific Gravity of Pipe Contents
Normally 1.0 for water, 0 for air and steam.
- L = Length (inches)
- T = Pipe Wall, Plate, or Bar Thickness (inches)
- W = Width (inches)

PLATE AND BAR

$$\text{Weight (lb)} = 0.2833 \times T \times W \times L \times F$$

ROUND ROD

$$\text{Weight (lb/ft)} = 2.67D^2$$

MATERIAL WEIGHT FACTORS

Carbon Steel & Cr-Mo	1.00
Aluminum	0.35
Brass	1.12
Cast Iron	0.91
Copper	1.14
Ferritic stainless steel	0.95
Austenitic stainless steel	1.02
Wrought iron	0.98

CALCULATING OF PIPING INSULATION WEIGHT

The weight per foot of insulation is calculated by using the weight factor "X" from the table below and multiplying by the insulation density (lbs/cu-ft).

EXAMPLE: A 16" pipe with 3½" of insulation is found to have a weight factor of 1.49 (from table below). With an insulation density of 11 lb/cu-ft, the calculation for insulation weight is 1.49 x 11 = 16.39

INSULATION WEIGHT FACTOR – X

NOMINAL PIPE SIZE	NOMINAL INSULATION THICKNESS											
	1"	1½"	2	"2½"	3"	3½"	4"	4½"	5"	5½"	6"	
1	.057	.10	.16	.23	.31	.40						
1¼	.051	.12	.15	.22	.30	.39						
1½	.066	.11	.21	.29	.38	.48						
2	.080	.14	.21	.29	.37	.47	.59					
2½	.091	.19	.27	.36	.46	.58	.70	.83				
3	.10	.17	.25	.34	.44	.56	.68	.81				
3½	.15	.23	.31	.41	.54	.66	.78	...	.97			
4	.13	.21	.30	.39	.51	.63	.77	.96	1.10			
5	.15	.24	.34	.45	.58	.71	.88	1.04	1.20			
6	.17	.27	.38	.51	.64	.83	.97	1.13	1.34			
8		.34	.47	.66	.80	.97	1.17	1.36	1.56	1.75		
10		.43	.59	.75	.93	1.12	1.32	1.54	1.76	1.99		
12		.50	.68	.88	1.07	1.28	1.52	1.74	1.99	2.24	2.50	
14		.51	.70	.90	1.11	1.34	1.57	1.81	2.07	2.34	2.62	
16		.57	.78	1.01	1.24	1.49	1.74	2.01	2.29	2.58	2.88	
18		.64	.87	1.12	1.37	1.64	1.92	2.21	2.51	2.82	3.14	
20		.70	.96	1.23	1.50	1.79	2.09	2.40	2.73	3.06	3.40	
24		.83	1.13	1.44	1.77	2.10	2.44	2.80	3.16	3.54	3.92	

General Formula: For pipe sizes not shown in the table above (special O.D. pipe, etc.), use the following formula to determine the insulation weight:

$$\text{Insulation Weight: (lb/ft)} = 0.0218 \times I \times T \times (T + D)$$

- Where:** I = Insulation density (lb/cu-ft)
- T = Insulation thickness (inches)
- D = Outside diameter of pipe (inches)

TECHNICAL INFORMATION

MAXIMUM HORIZONTAL HANGER SPACING

PER MSS-SP69 AND ANSI B31.1

NOMINAL PIPE SIZE OR TUBE DIAMETER	STANDARD WEIGHT STEEL PIPE SERVICE (FEET/METERS)		COPPER TUBING SERVICE (FEET/METERS)	
	WATER	VAPOR	WATER	VAPOR
	1/4	7	8	5	5
8	2.13	2.44	1.52	1.52
3/8	7	8	5	6
10	2.13	2.44	1.52	1.83
1/2	7	8	5	6
15	2.13	2.44	1.52	1.83
3/4	7	9	5	7
20	2.13	2.74	1.52	2.13
1	7	9	6	8
25	2.13	2.74	1.83	2.44
1 1/4	7	9	7	9
32	2.13	2.74	2.13	2.74
1 1/2	9	12	8	10
40	2.74	3.66	2.44	3.05
2	10	13	8	11
50	3.05	3.96	2.44	3.35
2 1/2	11	14	9	13
65	3.35	4.27	2.74	3.96
3	12	15	10	14
80	3.66	4.57	3.05	4.27
3 1/2	13	16	11	15
90	3.96	4.88	3.35	4.57
4	14	17	12	16
100	4.27	5.18	3.66	4.88
5	16	19	13	18
125	4.88	5.79	3.96	5.49
6	17	21	14	20
150	5.18	6.40	4.27	6.10
8	19	24	16	23
200	5.79	7.32	4.88	7.01
10	22	26	18	25
250	6.71	7.92	5.49	7.62
12	23	30	19	28
300	7.01	9.14	5.79	8.53
14	25	32		
350	7.62	9.75		
16	27	35		
400	8.23	10.67		
18	28	37		
450	8.53	11.28		
20	30	39		
500	9.14	11.89		
24	32	42		
600	9.75	12.80		
30	33	44		
750	10.06	13.41		

LOAD CHART FOR THREADED ROD

MATERIALS: ASTM A36, A575 GR. 1020 OR A576 GR 1020

NOMINAL ROD DIAMETER	MAXIMUM SAFE ROD LOAD ROD TEMPERATURE		WEIGHT PER FOOT METER	ROOT AREA IN. ² MM ²
	650°F	750°F		
	349°C	399°C		
1/4	240	210	0.167	0.027
M6	1068	934	0.248	0.017
3/8	730	572	0.360	0.068
M10	3247	2544	0.536	0.044
1/2	1350	1057	0.668	0.126
M12	6005	4702	0.994	0.081
5/8	2160	1692	1.04	0.202
M16	9609	7527	1.55	0.130
3/4	3230	2530	1.50	0.302
M20	14368	11254	2.23	0.195
7/8	4480	3508	2.04	0.419
M20	19929	15605	3.04	0.270
1	5900	4620	2.67	0.552
M24	26246	20552	3.97	0.356
1 1/4	9500	7440	3.38	0.889
M30	42260	33096	5.03	0.574
1 1/2	13800	10807	4.17	1.293
M36	61388	48074	6.20	0.834
1 3/4	18600	14566	6.01	1.744
M42	82740	64795	8.94	1.125
2	24600	19265	8.18	2.300
M48	109431	85698	12.17	1.484
2 1/4	32300	25295	10.68	3.023
M56	143683	112522	15.89	1.950
2 1/2	39800	31169	13.52	3.716
M64	177046	138652	20.12	2.398
2 3/4	49400	38687	16.69	4.619
M72	219751	172095	24.83	2.980
3	60100	47066	20.19	5.621
M80	267349	209368	30.04	3.627

GAUGE THICKNESS

GAUGE	MINIMUM	NOMINAL
3	0.215	0.239
3	5.461	6.071
7	0.167	0.179
7	4.242	4.547
11	0.108	0.120
11	2.743	3.048
12	0.093	0.105
12	2.362	2.667
13	0.080	0.090
13	2.032	2.286
14	0.066	0.075
14	1.676	1.905
16	0.053	0.060
16	1.346	1.524
18	0.042	0.048
18	1.067	1.219

TECHNICAL INFORMATION

THERMAL EXPANSION OF PIPE MATERIALS

DIMENSIONS

INCHES PER FOOT
MILLIMETERS PER METER

TEMPERATURE	CARBON STEEL THROUGH 3% CR MO	ALLOY STEELS THROUGH 9% CR MO	STAINLESS STEELS (304, 316, 347)	COPPER	BRASS	ALUMINUM
0	-0.0051		-0.0078	-0.0079	-0.0081	-0.0104
-17.8	-0.4250		-0.6500	-0.6583	-0.6750	-0.8666
50	-0.0015		-0.0022	-0.0022	-0.0023	-0.0030
10.0	-0.1250		-0.1833	-0.1833	-0.1917	-0.2500
70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0023	0.0022	0.0034	0.0034	0.0035	0.0046
37.8	0.1917	0.1833	0.2833	0.2833	0.2917	0.3833
150	0.0061	0.0058	0.0090	0.0091	0.0093	0.0123
65.6	0.5083	0.4833	0.7500	0.7583	0.7750	1.0250
200	0.0099	0.0094	0.0146	0.0151	0.0152	0.0200
93.3	0.8250	0.7833	1.2166	1.2583	1.2666	1.6666
250	0.0141	0.0132	0.0203	0.0208	0.0214	0.0283
121	1.1750	1.1000	1.6916	1.7333	1.7833	2.3582
300	0.0182	0.0171	0.0261	0.0267	0.0276	0.0366
149	1.5166	1.4249	2.1749	2.2249	2.2999	3.0499
350	0.0226	0.0210	0.0321	0.0327	0.0340	0.0452
177	1.8833	1.7499	2.6749	2.7249	2.8332	3.7665
400	0.0270	0.0250	0.0380	0.0388	0.0405	0.0539
204	2.2499	2.0833	3.1665	3.2332	3.3749	4.4915
450	0.0316	0.0292	0.0440	0.0449	0.0472	0.0628
232	2.6332	2.4332	3.6665	3.7415	3.9332	5.2331
500	0.0362	0.0335	0.0501	0.0512	0.0540	0.0717
260	3.0165	2.7916	4.1748	4.2665	4.4998	5.9748
550	0.0411	0.0379	0.0562	0.0574	0.0610	0.0810
288	3.4249	3.1582	4.6831	4.7831	5.0831	6.7497
600	0.0460	0.0424	0.0624	0.0639	0.0680	0.0903
316	3.8332	3.5332	5.1998	5.3248	5.6664	7.5247
650	0.0512	0.0469	0.0687	0.0703	0.0753	
343	4.2665	3.9082	5.7248	5.8581	6.2747	
700	0.0563	0.0514	0.0750	0.0768	0.0826	
371	4.6915	4.2832	6.2498	6.3997	6.8831	
750	0.0617	0.0562	0.0815	0.0834	0.0902	
399	5.1415	4.6831	6.7914	6.9497	7.5164	
800	0.0670	0.0610	0.0880	0.0900	0.0978	
427	5.5831	5.0831	7.3330	7.4997	8.1497	
850	0.0726	0.0658	0.0946	0.0967	0.1056	
454	6.0498	5.4831	7.8830	8.0580	8.7996	
900	0.0781	0.0707	0.1012	0.1037	0.1135	
482	6.5081	5.8914	8.4330	8.6413	9.4580	
950	0.0835	0.0756	0.1080	0.1105	0.1216	
510	6.9581	6.2997	8.9996	9.2080	10.1329	
1000	0.0889	0.0806	0.1148	0.1175	0.1298	
538	7.4080	6.7164	9.5663	9.7913	10.8162	
1050	0.0946	0.0855	0.1216			
566	7.8830	7.1247	10.1329			
1100	0.1004	0.0905	0.1284			
593	8.3663	7.5414	10.6996			

COMMON STRUCTURAL SHAPES USED FOR PIPE SUPPORTS

STRUCTURAL SHAPE	SIZE	WEIGHT PER FOOT	DEPTH IN	FLANGE WIDTH IN	THICKNESS IN	SECTION MODULUS IN ³
ANGLE	L 1½ x 1½ x ¼	2.3	1½	1½	¼	0.13
	L 2 x 2 x ¼	3.2	2	2	¼	0.25
	L 2½ x 2½ x ¼	4.1	2½	2½	¼	0.38
	L 3 x 3 x ¼	4.9	3	3	¼	0.58
	L 3 x 3 x ⅜	7.2	3	3	⅜	0.83
	L 3 x 3 x ½	9.4	3	3	½	1.07
	L 3½ x 3½ x ⅜	8.5	3½	3½	⅜	1.15
	L 4 x 4 x ⅜	9.8	4	4	⅜	1.52
	L 4 x 4 x ½	12.8	4	4	½	1.97
	L 5 x 5 x ½	16.2	5	5	½	3.16
	L 6 x 6 x ½	19.6	6	6	½	4.61
	L 6 x 6 x ¾	28.7	6	6	¾	6.66
CHANNEL	C 3 x 4.1	4.1	3	1⅜	¼	1.10
	C 4 x 5.4	5.4	4	1⅜	⅜ ₁₆	1.93
	C 5 x 6.7	6.7	5	1¾	⅜ ₁₆	3.00
	C 6 x 8.2	8.2	6	1⅞	⅜ ₁₆	4.38
	C 8 x 11.5	11.5	8	2¼	⅜ ₈	8.14
	C 10 x 15.3	15.3	10	2⅝	⅞ ₁₆	13.50
	C 12 x 20.7	20.7	12	3	½	21.50
	C 15 x 33.9	33.9	15	3⅜	⅝ ₈	42.00
	SQUARE TUBING	ST 2 x 2 x ¼	5.4	2	2	¼	0.77
ST 3 x 3 x ¼		8.8	3	3	¼	2.10
ST 4 x 4 x ¼		12.2	4	4	¼	4.11
ST 4 x 4 x ⅜		17.3	4	4	⅜	5.35
ST 4 x 4 x ½		21.6	4	4	½	6.13
ST 6 x 6 x ¼		19.0	6	6	¼	10.10
ST 6 x 6 x ⅜		27.5	6	6	⅜	13.90
ST 6 x 6 x ½		35.2	6	6	½	16.80
ST 8 x 8 x ¼		25.8	8	8	¼	18.80
ST 8 x 8 x ⅜		38.9	8	8	⅜	26.40
ST 8 x 8 x ½		48.9	8	8	½	32.90
I-BEAM		S 4 x 7.7	7.7	4	2⅝	⅜ ₁₆	3.04
	W 4 x 13	13.0	4⅞	4	⅜ ₈	5.46
	W 6 x 12	12.0	6	4	¼	7.31
	W 6 x 15	15.0	6	6	¼	9.72
	W 6 x 20	20.0	6¼	6	⅜ ₈	13.40
	W 8 x 18	18.0	8⅞	5¼	⅜ ₁₆	15.20
	W 8 x 24	24.0	7⅞	6½	⅜ ₈	20.90
	W 8 x 31	31.0	8	8	⅞ ₁₆	27.50
	W 10 x 22	22.0	10⅞	5¾	⅜ ₈	23.20
	W 10 x 33	33.0	9¾	8	⅞ ₁₆	35.00
	W 12 x 26	26.0	12¼	6½	⅜ ₈	33.40
	W 12 x 40	40.0	12	8	½	51.90

Note: Flange thickness for I-Beam and Channel is the “mean” thickness

TECHNICAL INFORMATION

WELDING

BASIC WELDING SYMBOLS AND THEIR LOCATION SIGNIFICANCE

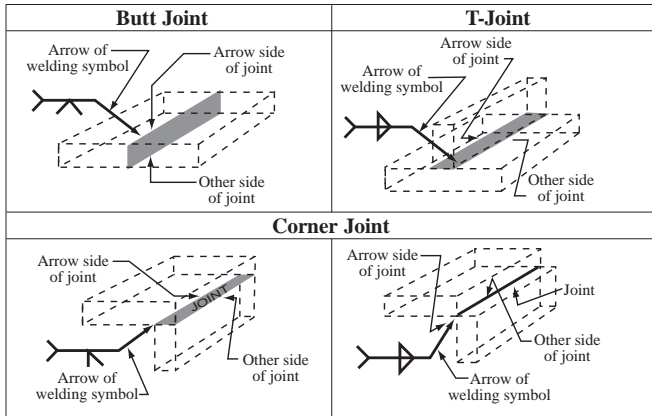
Location Significance	Fillet	Plug or Slot	Spot or Projection	Seam	Back or backing	Surfacing	Edge	Flange	Corner
Arrow side									
Other side						not used			
Both sides		not used	not used	not used	not used	not used	not used	not used	not used
No arrow side or other side significance	not used	not used			not used	not used	not used	not used	not used

SUPPLEMENTARY SYMBOLS USED WITH WELDING SYMBOLS

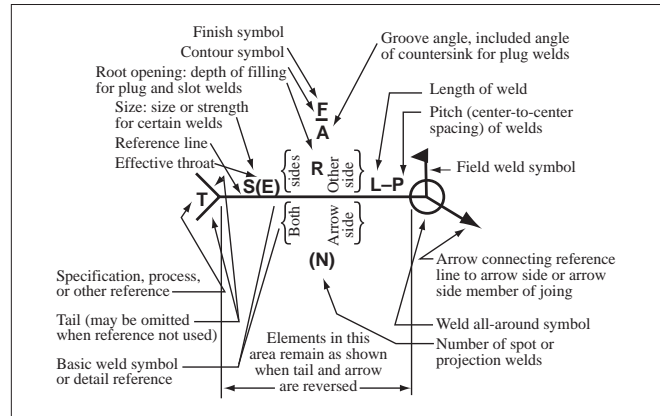
Flush Contour Symbol		Convex Contour Symbol			
Flush contour symbol indicates face of weld to be made flush. When used without a finish symbol, indicates weld to be welded flush without subsequent finishing.		Convex contour symbol indicates face of weld to be finished to convex contour.			
Finish symbol (user's standard) indicates method of obtaining specified contour but not degree of finish.		Finish symbol (user's standard) indicates method of obtaining specified contour but not degree of finish.			
Weld-All-Around Symbol		Melt-Thru Symbol		Field Weld Symbol	
	Weld all-around symbol indicates that weld extends completely around the joint		Melt-thru symbol is not dimensioned (except height) Any applicable weld symbol		Field weld symbol indicates that weld is to be made at a place other than that of initial construction

BASIC JOINTS –

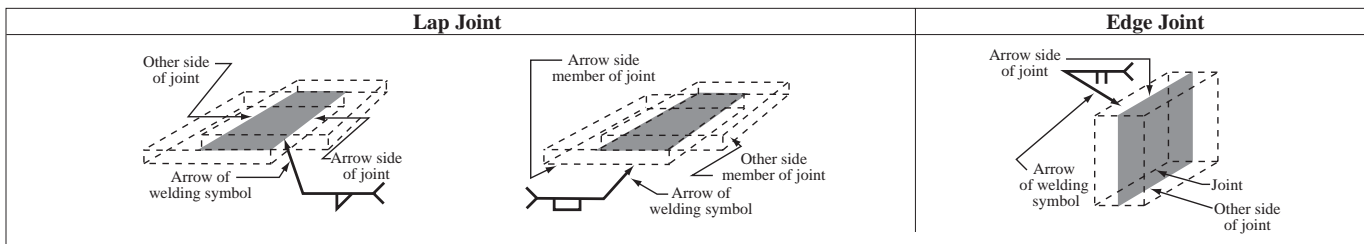
Identification of arrow side and other side of joint



LOCATION OF ELEMENTS OF A WELDING SYMBOL



ARROW SIDE AND OTHER SIDE MEMBER OF JOINT



DESIGNATION OF WELDING AND ALLIED PROCESSES BY LETTERS

AAC.....air carbon arc cutting	B.....brazing	CW.....cold welding	ESW.....electroslag welding	FOC.....chemical flux cutting
AAW.....air acetylene welding	BB.....block brazing	DB.....dip brazing	EXW.....explosion welding	FOW.....forge welding
ABD.....adhesive bonding	BMAW.....bare metal arc welding	DFB.....diffusion brazing	FB.....furnace brazing	FRW.....friction welding
AB.....arc brazing	CAC.....carbon arc cutting	DFW.....diffusion welding	FCAW.....flux cored arc welding	FS.....furnace soldering
AC.....arc cutting	CAW.....carbon arc welding	DS.....dip soldering	FCAW-EG.....flux cored arc welding-electrogas	FW.....flash welding
AHW.....atomic hydrogen welding	CAW-G.....gas carbon arc welding	EASP.....electric arc spraying	FLB.....flow brazing	GMAC.....gas metal arc cutting
AOC.....oxygen arc cutting	CAW-S.....shielded carbon arc welding	EBC.....electron beam cutting	FLOW.....flow welding	GMAW.....gas metal arc welding
AW.....arc welding	CAW-T.....twin carbon arc welding	EBW.....electron beam welding	FLSP.....flame spraying	GMAW-EG.....gas metal arc welding-electrogas

COMPONENT TYPES

FIGURE NUMBER:	MSS-SP-69	WW-H-171	FIGURE NUMBER:	MSS-SP-69	WW-H-171
1A	7	7	126LD	8	8
1A CT	7	7	126LD PVC	8	8
12	16	16	126PVC	8	8
12CT	16	16	132	13	15
14	27	54	136	38	38
15	21	21	128	36, 37, 38	36, 37, 38, 39
17	44	45	140	43	33
34	11	11	142	41	42
34CT	11	11	157	30	30
38	15	15	175	4	4
38CT	15	15	175SP	4	4
39	44	45	192	19	—
40	46	47	192W	19	—
47	23	23	193	23	23
47SS	23	23	196	23	23
238	23	23	200	1	12
238SS	23	23	200VT	1	12
49	13	—	217	25	—
53	46	47	222	24	24
54	44	46	240	6	—
63	45	46	247	38	38
69	31	32	265GS	40	41
81	12	25	265P	40	41
81CT	12	25	276	14	14
81BRT	12	35	276P	14	14
81PT	12	35	279	17	17
81SG	12	35	279L	17	17
81SCT	12	35	283	24	24
82	30	30	283PVC	24	24
84	32	33	283SP	24	24
89	8	8	283SS	24	24
91	3	3	297	28	28
91Z	3	3	298	4	4
100	1	1	303	34	35
100PVC	1	1	304	3	3
100SS	1	1	304SP	3	3
100CI	1	1	304Z	3	3
100CT	1	12	337	34	35
100EL	1	1	351 to 357Z	39A or 39B	40A or 40B
100SH	1	1	650	18	19
101	39	39	702	21	21
113A	22	22	800	10	10
113B	22	22	800CT	10	10
125	37	38	800N	10	10
126	8	8	800PVC	10	10
126CT	8	8	1010	35	—

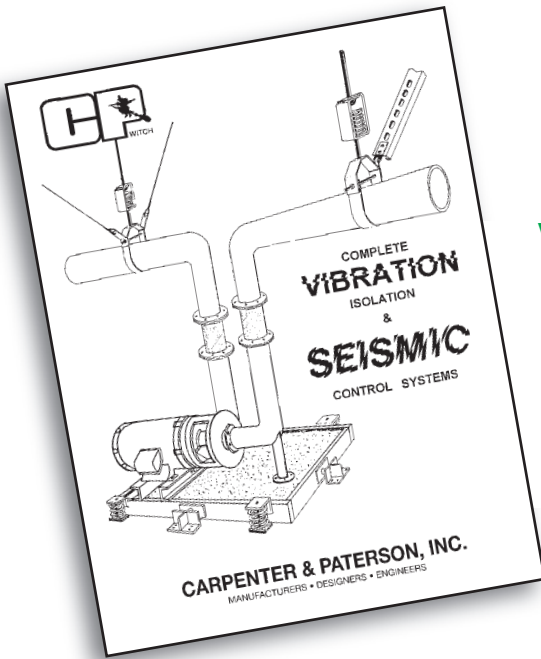
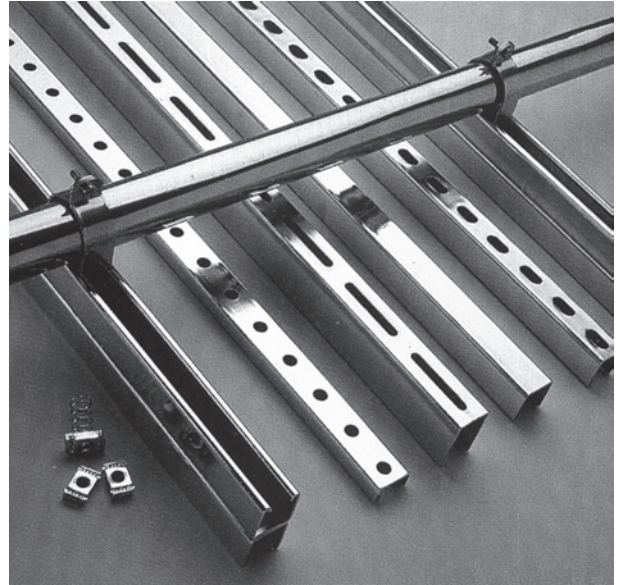
SPECIALITIES

MULTI-STRUT METAL FRAMING SYSTEM

Standard channel, combination channel and concrete insert channel available in standard lengths or cut to suit. Stocked pre-galvanized, painted, or plain; stainless steel upon request. Pipe clips, channel nuts, and a variety of fittings that readily attach to the channel are also available.

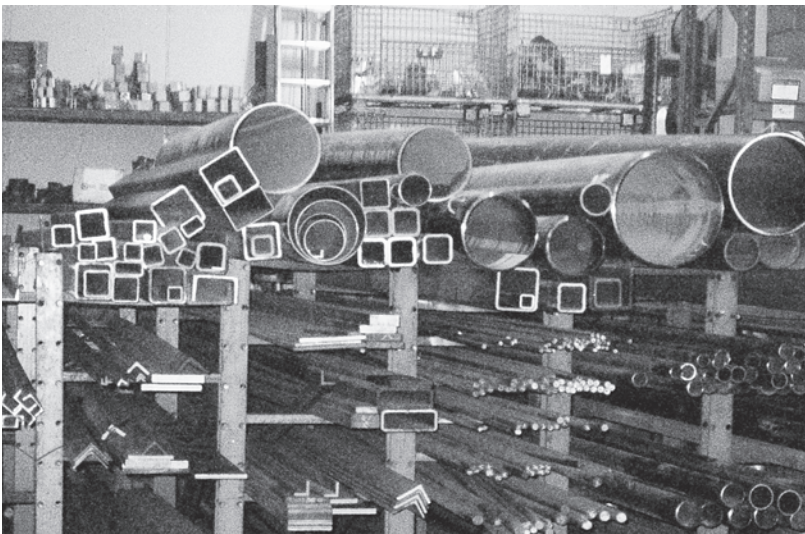
NON-METALLIC FRAMING SYSTEM

Fiberglass channel and fittings are available in both polyester and vinyl ester finishes. Non-metallic structural shapes are also available upon request.



VIBRATION ISOLATION AND SEISMIC CONTROL

Spring and neoprene hanger isolators, housed and free-standing to provide shock and vibration isolation on equipment. Equipment bases, Inertia bases and Isolation Rails are also available. Seismic control braces to help preserve the safety and operation of plant systems during a seismic event. Please ask for our Seismic Brochure.



STRUCTURAL STEEL

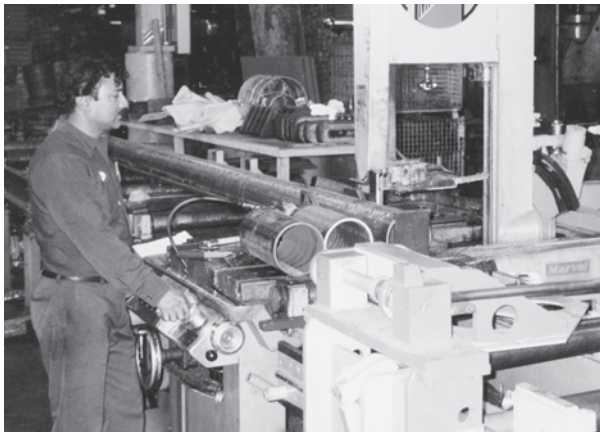
We stock the most popular sizes of angle, channel, I beams, wide flange, steel bars and rods for your ordering convenience.

FASTENERS

We stock hex bolts, studs, nuts, in carbon and stainless steel as well as lag bolts, tek screws, concrete anchors, adhesive tubes and cartridges. Sammy Super Screws and accessories.

ENGINEERING

We maintain an engineering department to design pipe hangers and supports for typical and special applications including seismic, wind, and snow loading. Our engineers utilize contemporary CAD and computer piping stress analysis programs when needed to meet customer requirements. Registered Professional Engineers are on staff.



PIPE SLEEVES

Wall and floor sleeves with or without waterproof stops made from plain or galvanized pipe as well as galvanized sheet metal sleeves made to customer order. Plastic “crete” sleeves. Rubber mechanical seal material is available.

ENGINEERED PRODUCTS

Variable springs, constant springs, sway braces and travelers, to handle any application.

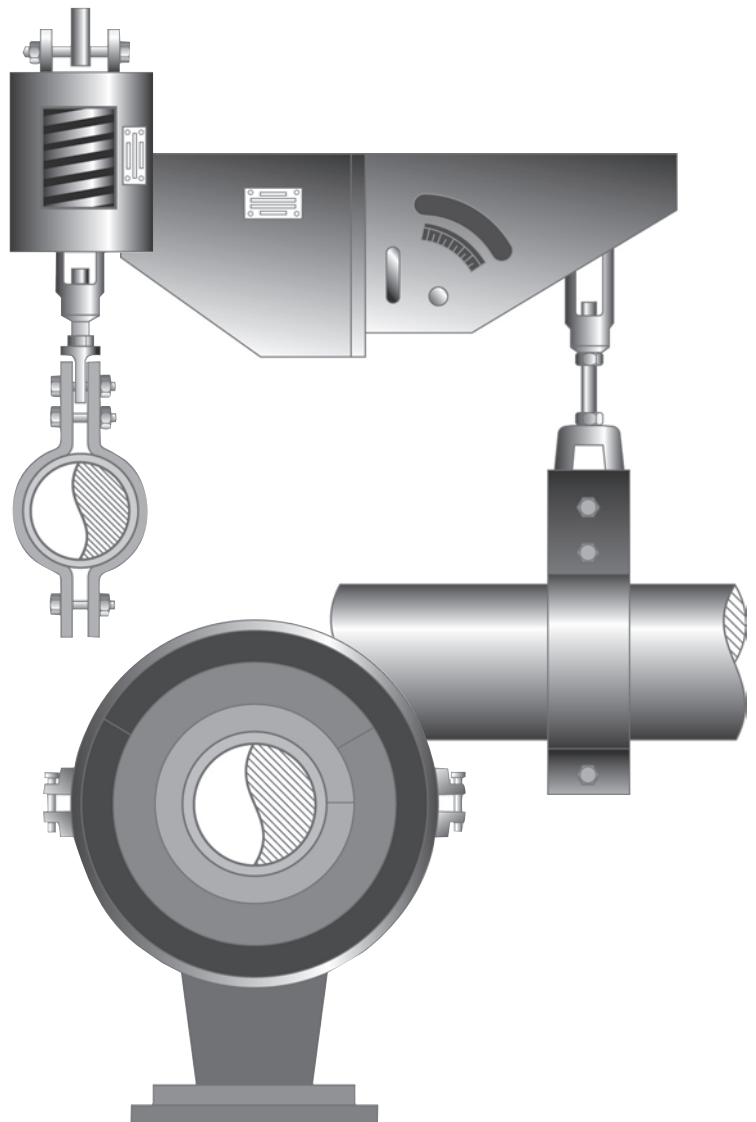
PRE-INSULATED HANGERS

Calcium silicate and rigid urethane foam in various densities, vapor barriers, saddles and shields provide a full variety of combinations to suit customer applications. Pre-insulated slides and guides with PTFE and graphite are also supplied.



STRUCTURAL STEEL FABRICATION

Complete fabrication services to meet your support needs in carbon steel, alloy steel, stainless, aluminum, hastaloy, or any other requirement.



INDEX BY PRODUCT NAME

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1. **PRICES & DESIGNS:** Prices and designs are subject to change without notice. All prices are F.O.B. point of shipment, unless otherwise stated.

2. **DELIVERY:** Seller will make every effort to complete delivery of products as indicated on seller's acceptance of an order, but seller assumes no responsibility or liability, and will accept no backcharge for loss or damage due to delay or inability to deliver caused by acts of God, war, labor difficulties, accident, delays of carriers, contractors or suppliers, inability to obtain materials, shortages of fuel and energy, or and other causes of any kind beyond the control of seller. Under no circumstances shall seller be liable for any special or consequential damages or for loss, damage, or expenses directly or indirectly arising from delays or failure to give notice of delay.

3. **SHIPMENTS:** All products shipped will be carefully examined, counted, and packed. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of shipment. Claims for products damaged or lost in transit should be made on the carrier as seller's responsibility ceases and the title passes on delivery to the carrier.

4. **FREIGHT:** All prices are F.O.B. point of shipment. On shipments weighing 2000 pounds or more, rail freight or motor freight at the lowest published rate is allowed to all US rail points or all US highway points listed in published tariffs (Hawaii and Alaska excluded).

5. **RETURNS:** Seller cannot accept the return of any product unless its written permission has been first obtained. Credit will be allowed on the basis of the price charged for the merchandise less a standard handling charge of twenty percent (20%) and less any freight charges allowed or paid by seller. Material not in first class salable condition will be subject to the total cost of reconditioning. Special or non-standard products are not subject to cancellation or return except on such terms as seller may specify upon application.

6. **PRODUCT APPLICATION:** Seller's products are indented for installation and service as illustrated or described in seller's catalog. Seller shall not be responsible for any losses or damage sustained by the buyer or any other person as a result of misapplication.

Buyer shall defend, indemnify and save seller harmless from any and all liability or alleged liability, expenses, including legal fees arising from personal injuries including death or damage to property caused by reason of improper and/or negligent installation of pipe hangers designed and fabricated by seller.

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8. **TAXES:** The amount of taxes applicable to the sale of material or services shall be added to the purchase price and shall be paid by buyer unless buyer provides seller with an exemption certificate acceptable to the taxing authorities.

9. **PRICING INFORMATION:** Orders of any size will be accepted. However, orders less than \$150.00 will be subject to a \$25.00 handling charge in addition to the cost of the material and freight, if ant. Prices are subject to change without notice. We are not responsible for typographical errors.

10. **TERMS:** Net thirty (30) days; 1-1/2% per month service charge (18% per annum) will be charged on all delinquent accounts plus court costs and attorney fees.

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