



# **Penn** **MACHINE** *Since 1931*

**Quality • Service • Partnership**



## **PRODUCT CATALOG**







## Quality • Service • Partnership

### Mission Statement

It is the policy of Pennsylvania Machine Works to consistently improve customer satisfaction; and earn a reputation for providing world class quality products and services, produced and delivered in a safe, timely, and efficient manner.



Since the first Penn Forged Pipe Fitting was produced in 1931, the global piping industry has undergone dynamic growth. New materials, more severe operating environments, and entirely new concepts in process design have required increasing flexibility on the part of piping component manufacturers.

At the same time, quality and value added services have become a manufacturer's hallmark. The petrochemical, power generation, nuclear, cryogenic, shipbuilding, paper mill, and related industries have demanded continuously improved standards of excellence as well as partnering opportunities to expand their core systems to better serve their customers.

The focus of Penn Machine has been to continuously improve in meeting the needs of our most demanding customers. In pursuing our improvement goals, all of Penn Machine's forged stainless steel products are electropolished. Electropolishing removes the free iron from the product's surface and exposes the more corrosion resistant layer of Chromium, allowing the product to withstand some of the most corrosive environments. All stainless steel and alloy steel products are 100 percent Positive Material Identified (PMI) to assure that our end users receive the correct material grade 100 percent of the time. This inspection is supplied as part of our standard process to prevent a catastrophic accident in the field.

Penn Machine believes that value added services are needed to improve cost reduction activities in our supply chain. We offer product training, NAFTA forms, Canadian CRN numbers, facility directions, online order tracking, and manufacturer's test reports directly on our website at [www.pennusa.com](http://www.pennusa.com).

Penn Machine's custom labeling of boxed quantity products enables customers to ship our products from their inventory with their own name, logo, and address. We can even provide labels with the customer's part number and UPC bar code to help scan and inventory products faster, thus reducing our customer's receiving process costs.

We guarantee that Penn Forged Pipe Fittings will be the industry benchmark. The complete line of Penn Forged carbon, stainless, alloy, and nonferrous pipe fittings described in this catalog are manufactured for those piping applications where quality cannot be compromised. We invite your most demanding specifications and look forward to supplying you a world class quality product with value added features that stay with our product long after it is shipped from any of our facilities.

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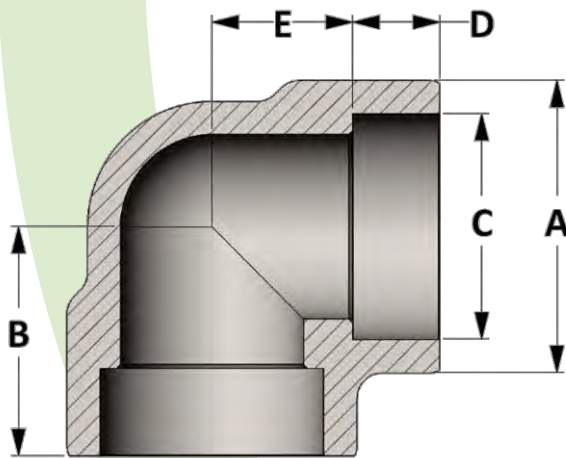
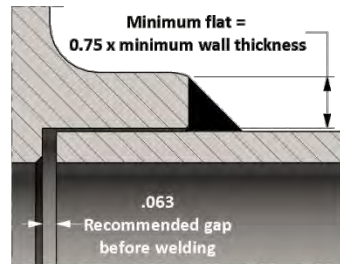
# Socket Weld 90° Elbow

**Specification:** ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in Class 3000 & 6000 • 1/8" - 3-1/2" in Class 9000  
Also available in CL 10,000 and reducing pipe sizes and tube sizes

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

**CLASS 3000 – Figure No. 13001**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	5.875
B	0.875	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	1.375	1.125	1.566
E	0.438	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.625
LBS	0.20	0.17	0.24	0.48	0.68	1.06	1.72	2.33	3.88	7.34	11.61	22.47

**CLASS 6000 – Figure No. 16001**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875
B	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	0.875	1.000	1.250	1.563
E	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.500	2.625
LBS	0.37	0.32	0.60	0.92	1.52	2.42	3.18	6.23	7.27	12.06	21.16	27.21

**CLASS 9000 – Figure No. 19001**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	3.625	4.313	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.000	3.375	4.188	---
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
D	0.438	0.500	0.500	0.500	0.625	0.750	1.000	1.000	0.875	1.000	1.313	---
E	0.531	0.625	0.813	1.000	1.125	1.250	1.375	1.500	2.125	2.375	2.875	---
LBS	0.41	0.70	1.12	1.73	2.91	4.15	6.79	8.96	12.39	19.78	42.20	---





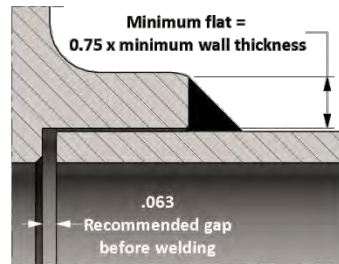
# Socket Weld 45° Elbow

**Specification:** ASME B16.11

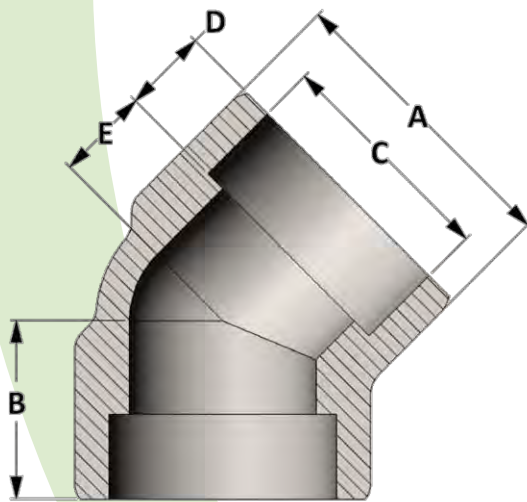
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in Class 3000 & 6000 • 1/8" - 3-1/2" in Class 9000  
Also available in CL 10,000 and in reducing pipe sizes and tube sizes

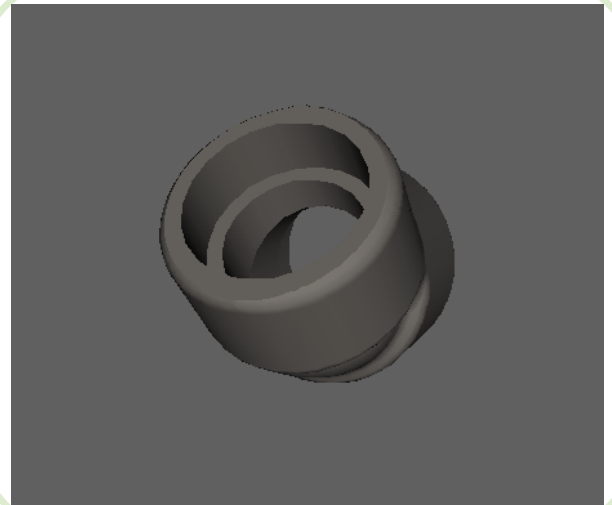
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 13003

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	4.000	4.750	5.875
B	0.750	0.750	0.750	0.875	1.000	1.125	1.313	1.375	1.688	2.063	2.500	3.125
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.438	0.500	0.563	0.625	0.563	0.688	0.938	1.250	1.500
E	0.313	0.313	0.313	0.438	0.500	0.563	0.688	0.813	1.000	1.125	1.250	1.625
LBS	0.26	0.24	0.18	0.40	0.55	0.89	1.23	1.76	3.02	7.62	12.49	19.34

CLASS 6000 – Figure No. 16003

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875
B	0.750	0.750	0.875	1.000	1.125	1.313	1.375	1.688	1.781	2.063	2.500	3.125
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.500	0.563	0.625	0.563	0.688	0.656	0.813	1.125	1.500
E	0.313	0.313	0.438	0.500	0.563	0.688	0.813	1.000	1.125	1.250	1.375	1.625
LBS	0.25	0.24	0.48	0.74	1.25	2.03	2.17	4.60	5.11	8.37	12.02	21.76

CLASS 9000 – Figure No. 19003

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	---
B	0.750	0.875	1.000	1.125	1.313	1.375	1.688	1.781	2.063	2.500	3.125	---
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
D	0.438	0.500	0.500	0.500	0.563	0.563	0.813	0.781	0.938	1.000	1.250	---
E	0.313	0.375	0.563	0.625	0.750	0.813	0.875	1.000	1.125	1.500	1.875	---
LBS	0.33	0.56	0.85	1.41	2.28	3.04	5.23	6.51	10.44	18.75	32.85	---



# Socket Weld Street Elbow

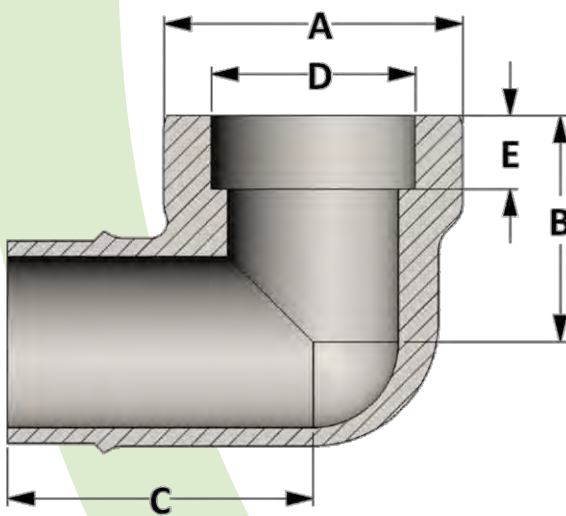
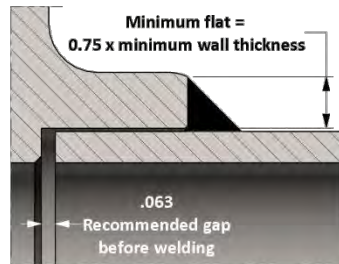
**Specification:** Socket Weld ends per ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

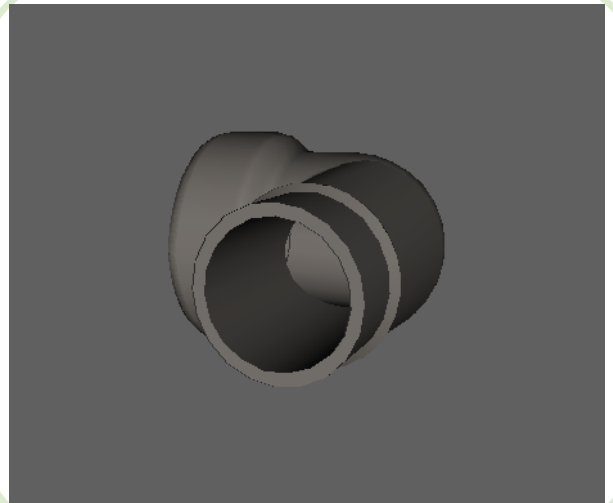
**Sizes:** 1/8" - 2" in Class 3000 • 1/8" - 1-1/2" in Class 6000  
Also available in reducing pipe sizes and tube sizes

Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160

## Welding Gap and Minimum Flat Dimension For Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

**CLASS 3000 – Figure No. 13005**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.000	1.313	1.500	1.750	2.000	2.438	2.750	3.313
B	0.875	0.875	1.125	1.250	1.375	1.750	2.000	2.125	2.500
C	1.250	1.250	1.500	1.688	1.875	2.250	2.625	2.875	3.313
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410
E	0.438	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875
LBS	0.21	0.19	0.39	0.55	0.85	1.40	2.05	2.55	4.30

**CLASS 6000 – Figure No. 16005**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.313	1.500	1.750	2.000	2.438	2.750	3.313	---
B	0.875	1.125	1.250	1.375	1.750	2.000	2.125	2.500	---
C	1.250	1.500	1.688	1.875	2.250	2.625	2.875	3.313	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	---
E	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	---
LBS	0.23	0.45	0.67	1.02	1.80	2.90	3.55	6.57	---



# Threaded 90° Elbow

**Specification:** ASME B16.11

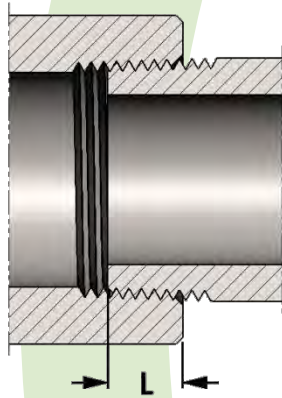
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 2000 and CL 3000 • 1/8" - 3-1/2" in CL 6000  
Also available in CL 9000 and CL 10,000 and in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

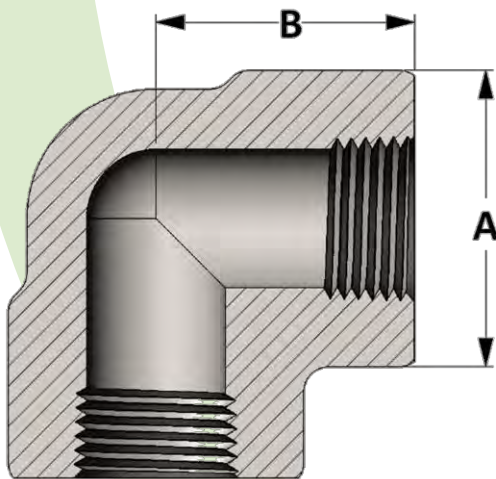
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH



SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 2000 – Figure No. 02001												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	---	5.875
B	0.875	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	---	4.188
LBS	0.20	0.18	0.25	0.51	0.73	1.07	1.63	2.31	3.61	7.60	11.93	---	24.05

PIPE SIZE	CLASS 3000 – Figure No. 03001												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875
B	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188
LBS	0.20	0.33	0.61	0.92	1.47	2.33	2.98	5.72	6.53	11.03	18.83	29.37	24.05

PIPE SIZE	CLASS 6000 – Figure No. 06001												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188	---
LBS	0.35	0.65	1.79	3.18	2.75	7.42	6.45	16.80	19.08	24.90	37.70	31.10	---





# Threaded 45° Elbow

**Specification:** ASME B16.11

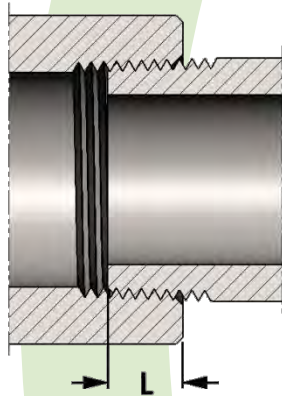
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 2000 and CL 3000 • 1/8" - 3-1/2" in CL 6000  
Also available in CL 9000 and CL 10,000 and in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

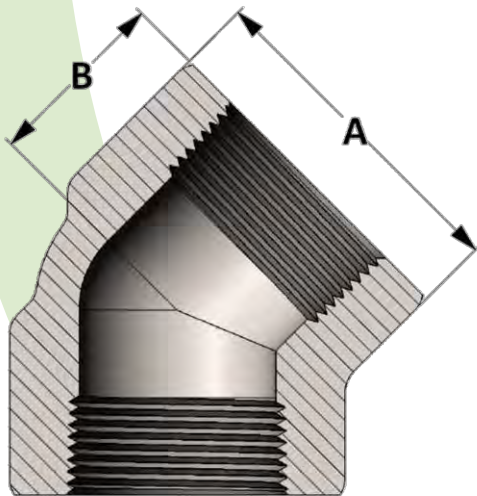
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH

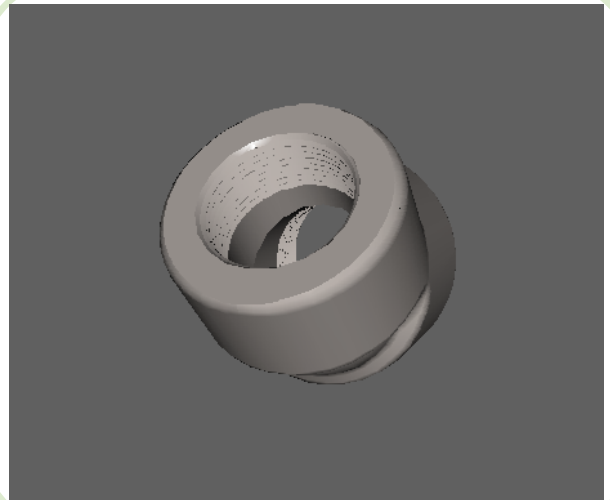


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 2000 – Figure No. 02003												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	4.000	4.750	---	5.875
B	0.750	0.750	0.750	0.875	1.000	1.125	1.313	1.375	1.688	2.063	2.500	---	3.125
LBS	0.29	0.29	0.21	0.42	0.60	0.97	1.35	1.83	3.08	7.80	13.52	---	19.35

PIPE SIZE	CLASS 3000 – Figure No. 03003												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875
B	0.750	0.750	0.875	1.000	1.125	1.313	1.375	1.688	1.781	2.063	2.500	3.125	3.125
LBS	0.29	0.25	0.50	0.76	1.23	1.87	2.29	4.40	4.62	7.84	13.52	24.70	19.35

PIPE SIZE	CLASS 6000 – Figure No. 06003												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875	---
B	0.750	0.875	1.000	1.125	1.313	1.375	1.688	1.781	2.063	2.500	3.125	3.125	---
LBS	0.28	0.57	0.86	1.41	2.25	2.81	5.25	6.16	10.04	15.56	32.42	28.72	---



# Threaded Street Elbow

**Specification:** ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2" in CL 3000 • 1/8" - 1-1/2" in CL 6000

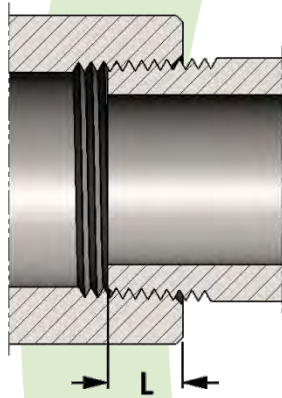
Also available in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.

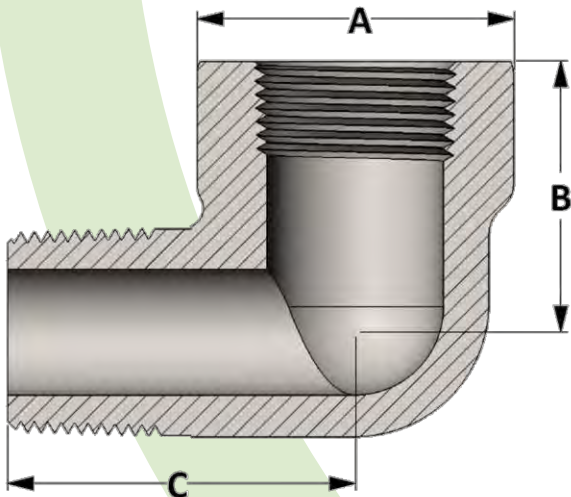
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

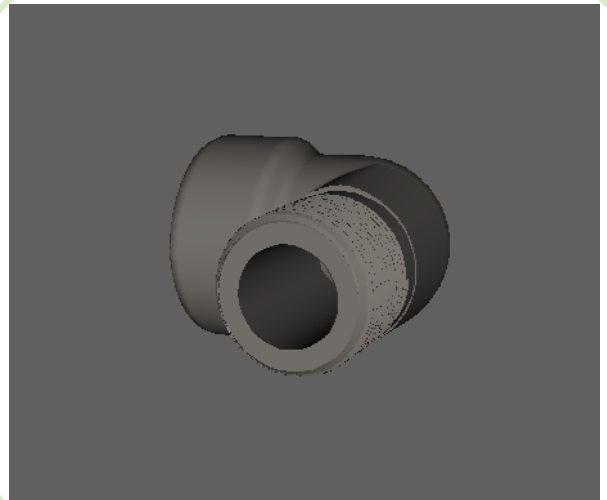


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

**CLASS 3000 – Figure No. 03005**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.000	1.313	1.500	1.750	2.000	2.438	2.750	3.313
B	0.875	0.875	1.125	1.250	1.375	1.750	2.000	2.125	2.500
C	1.250	1.250	1.500	1.688	1.875	2.250	2.625	2.875	3.313
LBS	0.22	0.20	0.45	0.59	0.89	1.33	2.45	3.04	4.84

**CLASS 6000 – Figure No. 06005**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.313	1.500	1.750	2.000	2.438	2.750	3.313	---
B	0.875	1.125	1.250	1.375	1.750	2.000	2.125	2.500	---
C	1.250	1.500	1.688	1.875	2.250	2.625	2.875	3.313	---
LBS	0.22	0.44	0.99	1.06	1.74	3.16	3.94	6.47	---

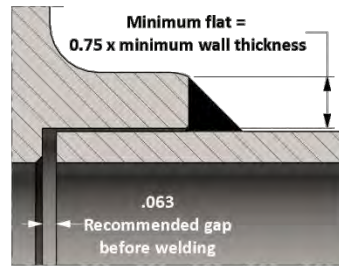


# Leg 90° Elbow

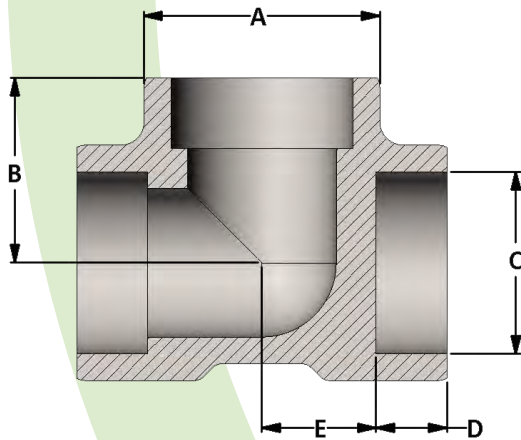
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in Class 3000 & 6000 • 1/8" - 3-1/2" in Class 9000  
Also available in Threaded and Butt weld End Connections

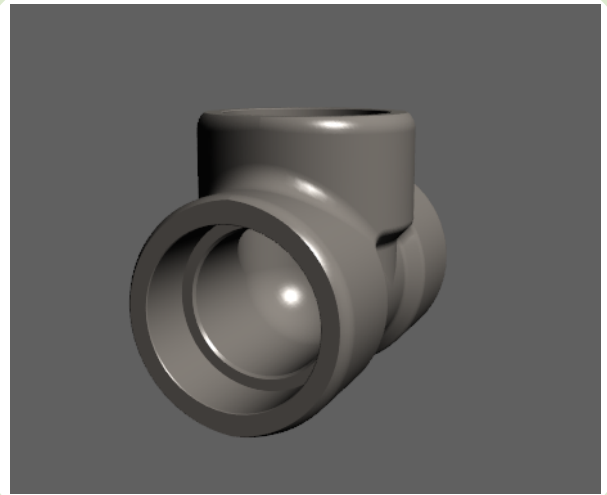
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 13240

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	5.875
B	0.875	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	1.375	1.125	1.566
E	0.438	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.625
LBS	0.26	0.23	0.33	0.65	0.94	1.40	2.20	3.29	5.05	9.50	14.25	29.25

CLASS 6000 – Figure No. 16240

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875
B	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	0.875	1.000	1.250	1.563
E	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.500	2.625
LBS	0.45	0.42	0.85	1.22	1.98	3.20	4.32	8.59	9.35	16.09	26.54	33.63

CLASS 9000 – Figure No. 19240

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	3.625	4.313	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.000	3.375	4.188	---
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
D	0.438	0.500	0.500	0.500	0.625	0.750	1.000	1.000	0.875	1.000	1.313	---
E	0.531	0.625	0.813	1.000	1.125	1.250	1.375	1.500	2.125	2.375	2.875	---
LBS	0.55	0.92	1.39	2.40	3.95	5.84	8.03	11.53	16.93	25.03	51.36	---





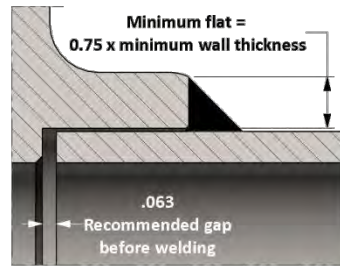
# Socket Weld Tee

**Specification:** ASME B16.11

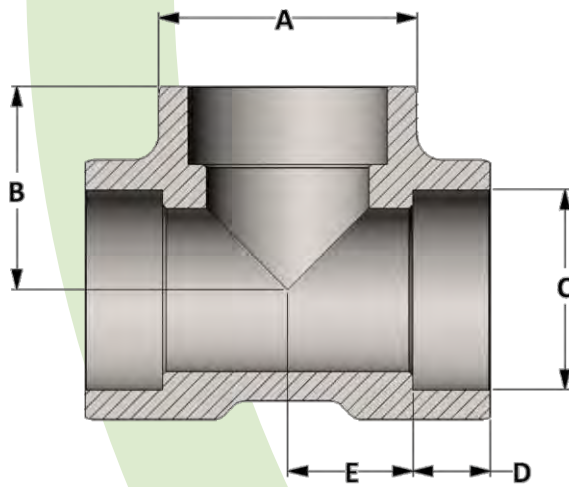
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in Class 3000 & 6000 • 1/8" - 3-1/2" in Class 9000  
Also available in CL 10,000 and in reducing pipe sizes and tube sizes

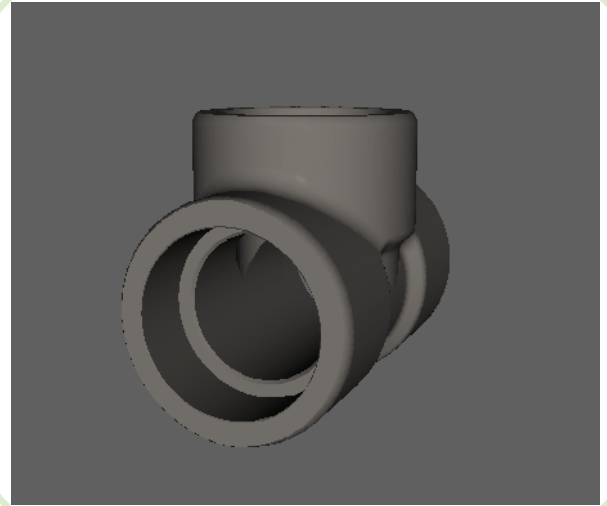
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 13002

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	5.875
B	0.875	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	1.375	1.125	1.566
E	0.438	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.625
LBS	0.25	0.22	0.31	0.62	0.88	1.30	2.00	2.99	4.60	8.49	13.85	27.14

CLASS 6000 – Figure No. 16002

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875
B	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	0.875	1.000	1.250	1.563
E	0.438	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.500	2.625
LBS	0.44	0.41	0.81	1.18	1.93	3.10	4.22	7.59	8.70	15.09	25.24	32.51

CLASS 9000 – Figure No. 19002

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	3.625	4.313	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.000	3.375	4.188	---
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
D	0.438	0.500	0.500	0.500	0.625	0.750	1.000	1.000	0.875	1.000	1.313	---
E	0.531	0.625	0.813	1.000	1.125	1.250	1.375	1.500	2.125	2.375	2.875	---
LBS	0.54	0.90	1.37	2.33	3.81	5.41	7.63	10.88	15.48	23.32	49.77	---



# Threaded Tee

**Specification:** ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

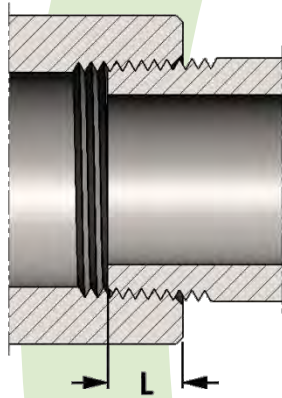
**Sizes:** 1/8" - 4" in CL 2000 and CL 3000 • 1/8" - 3-1/2" in CL 6000

Also available in CL 9000 and CL 10,000 in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

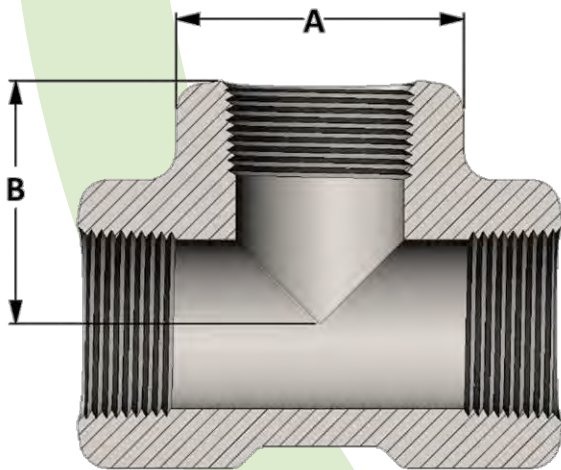
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH

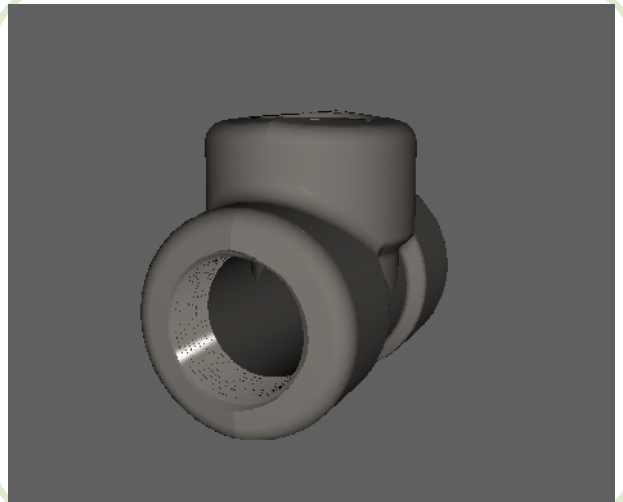


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 2000 – Figure No. 02002												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	---	5.875
B	0.875	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	---	4.188
LBS	0.31	0.24	0.37	0.67	0.91	1.38	1.96	3.10	4.98	9.31	13.32	---	28.02

PIPE SIZE	CLASS 3000 – Figure No. 03002												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875
B	0.875	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188
LBS	0.31	0.45	0.78	1.20	1.87	2.95	3.92	7.35	7.58	14.61	22.82	36.19	28.02

PIPE SIZE	CLASS 6000 – Figure No. 06002												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188	---
LBS	0.44	0.91	1.36	2.21	3.57	5.11	8.25	10.46	17.54	30.65	49.80	38.23	---



# Butt Weld Tee

**Specification:** Dimensions per ASME B16.9  
Weld bevels per ASME B16.25

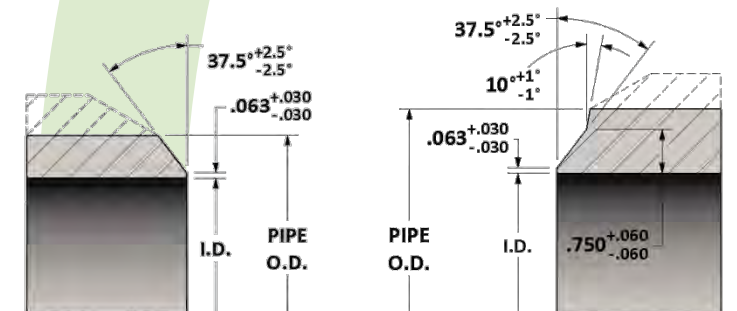
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" – 4" in all Schedules

Also available in reducing sizes starting at 1/8" and in other requirements such as special wall thickness

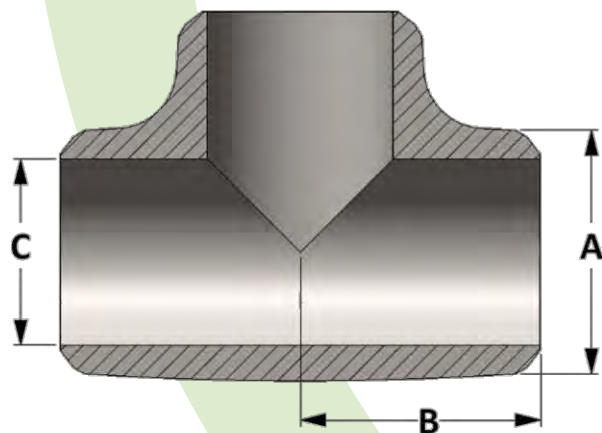
All butt weld tees have been proof tested according to B16.9

## Butt Weld Ends Details

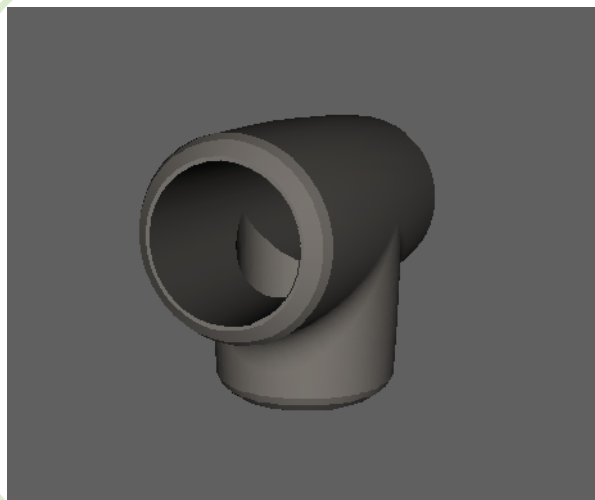


Weld bevels for wall thickness below 0.880"

Weld bevels for wall thickness above 0.880"



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	A	B	STD/S40		XH/S80		S160		XXH	
			C	LBS	C	LBS	C	LBS	C	LBS
1/2	0.875	1.000	0.622	0.24	0.546	0.28	0.464	0.32	0.252	0.38
3/4	1.063	1.120	0.824	0.34	0.742	0.41	0.612	0.50	0.434	0.59
1	1.375	1.500	1.049	0.71	0.957	0.85	0.815	1.04	0.599	1.24
1-1/4	1.660	1.880	1.380	1.17	1.278	1.43	1.160	1.70	0.896	2.18
1-1/2	1.900	2.250	1.610	1.71	1.500	2.11	1.338	2.65	1.100	3.28
2	2.375	2.500	2.067	2.43	1.939	3.08	1.689	4.21	1.503	4.91
2-1/2	2.875	3.000	2.469	5.83	2.323	6.88	2.125	8.17	1.771	10.08
3	3.500	3.380	3.068	8.46	2.900	10.12	2.624	12.59	2.300	15.004
4	4.500	4.120	4.026	14.33	3.826	17.48	3.438	22.97	3.152	26.49





# Cushion Tee

**Specification:** Weld bevels per ASME B16.25

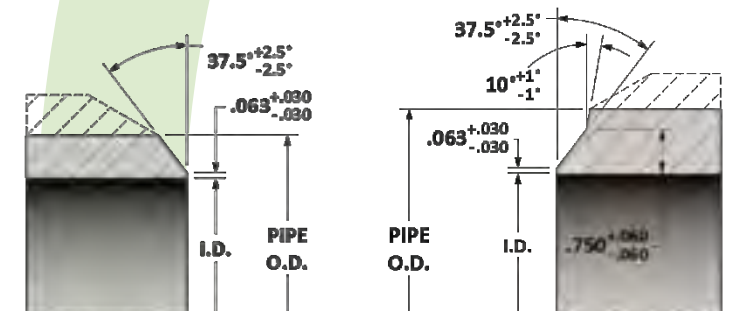
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" – 4" in all Schedules

Also available in reducing sizes starting at 1/8" and in other requirements such as special wall thickness

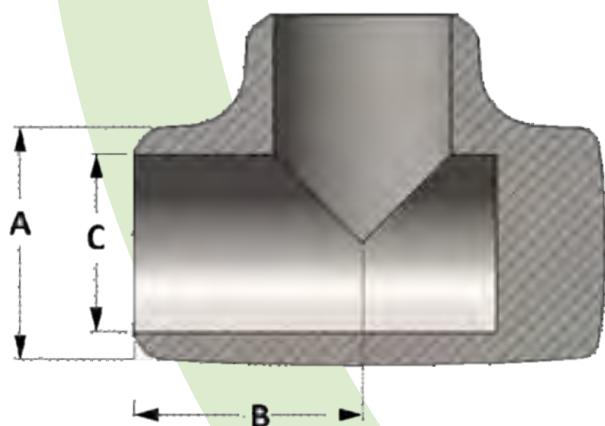
All butt weld tees have been proof tested according to B16.9

## Butt Weld Ends Details

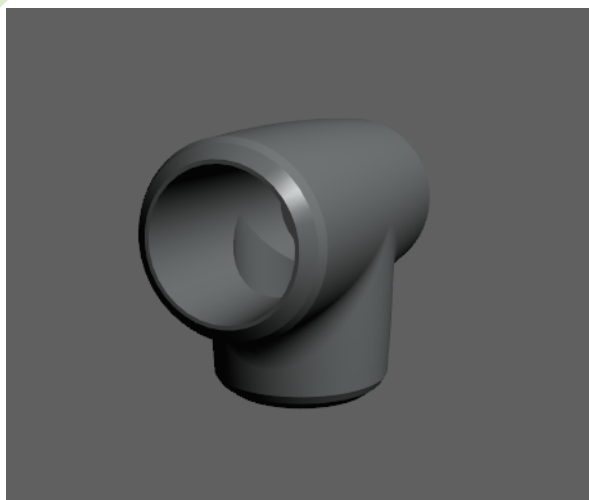


Weld bevels for wall thickness below 0.880"

Weld bevels for wall thickness above 0.880"



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	A	B	STD/S40		XH/S80		S160		XXH	
			C	LBS	C	LBS	C	LBS	C	LBS
1/2	0.875	1.000	0.622	0.28	0.546	0.32	0.464	0.40	0.252	0.42
3/4	1.063	1.120	0.824	0.38	0.742	0.45	0.612	0.55	0.434	0.62
1	1.375	1.500	1.049	0.79	0.957	0.85	0.815	1.15	0.599	1.35
1-1/4	1.660	1.880	1.380	1.26	1.278	1.31	1.160	1.95	0.896	2.35
1-1/2	1.900	2.250	1.610	1.85	1.500	1.95	1.338	2.85	1.100	3.12
2	2.375	2.500	2.067	2.66	1.939	2.81	1.689	4.68	1.503	5.10
2-1/2	2.875	3.000	2.469	6.10	2.323	6.50	2.125	8.98	1.771	10.62
3	3.500	3.380	3.068	9.05	2.900	9.75	2.624	13.45	2.300	15.75
4	4.500	4.120	4.026	15.25	3.826	18.50	3.438	23.75	3.152	27.49



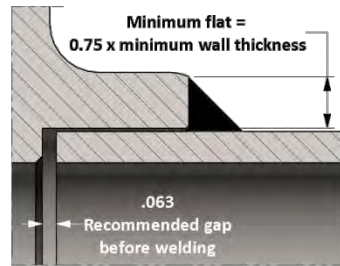
# Socket Weld Cross

**Specification:** ASME B16.11

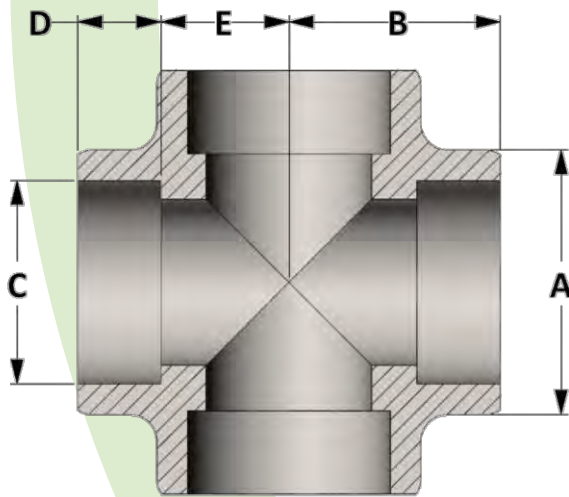
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in Class 3000 & 6000 • 1/8" - 3-1/2" in Class 9000  
Also available CL 10,000 and in reducing pipe sizes and tube sizes

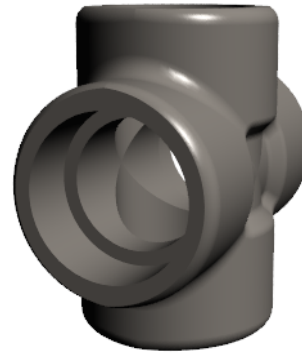
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 13004

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	5.875
B	0.969	0.969	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	1.625	1.125	1.566
E	0.531	0.531	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.625
LBS	0.47	0.40	0.35	0.73	0.96	1.53	2.32	3.59	5.50	14.97	17.56	30.84

CLASS 6000 – Figure No. 16004

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875
B	0.969	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
D	0.438	0.438	0.500	0.563	0.625	0.688	0.750	0.875	0.875	1.000	1.250	1.563
E	0.531	0.531	0.625	0.750	0.875	1.063	1.250	1.500	1.625	2.250	2.500	2.625
LBS	0.65	0.62	0.98	1.35	2.29	3.67	5.20	9.26	9.03	18.28	29.07	38.28

CLASS 9000 – Figure No. 19004

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	3.625	4.313	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.000	3.375	4.188	---
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
D	0.438	0.500	0.500	0.500	0.625	0.750	1.000	1.000	0.875	1.000	1.313	---
E	0.531	0.625	0.813	1.000	1.125	1.250	1.375	1.500	2.125	2.375	2.875	---
LBS	0.66	1.11	1.71	2.78	4.89	6.35	10.27	12.62	25.41	26.50	60.35	---



# Threaded Cross

**Specification:** ASME B16.11

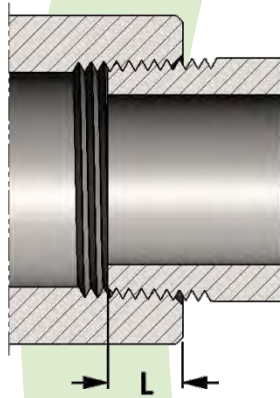
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 2000 and CL 3000 • 1/8" - 3-1/2" in CL 6000  
Also available in CL 9000 and CL 10,000 and in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

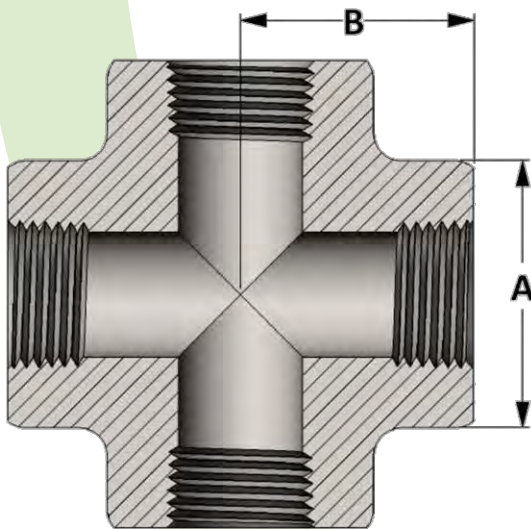
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH

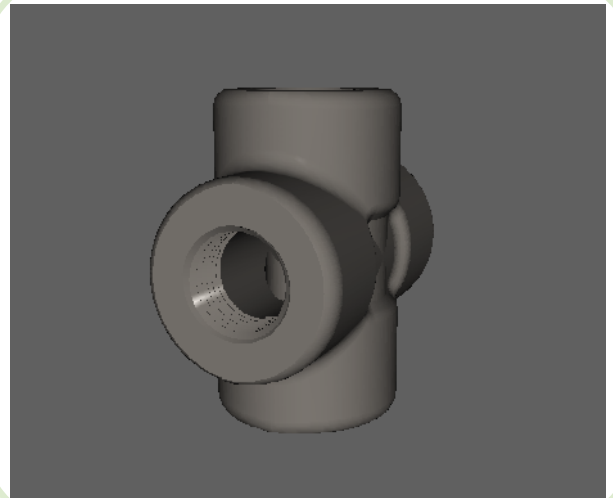


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 2000 – Figure No. 02004												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.625	4.313	---	5.875
B	0.969	0.969	0.969	1.125	1.313	1.500	1.750	2.000	2.375	3.000	3.375	---	4.188
LBS	0.54	0.52	0.40	0.84	1.20	1.67	2.48	3.41	5.51	16.66	27.90	---	33.28

PIPE SIZE	CLASS 3000 – Figure No. 03004												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875
B	0.969	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188
LBS	0.54	0.52	1.02	1.54	2.27	3.68	4.98	8.68	8.57	16.66	27.89	45.06	33.28

PIPE SIZE	CLASS 6000 – Figure No. 06004												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.063	1.313	1.500	1.813	2.188	2.500	3.000	3.313	4.000	4.750	5.875	5.875	---
B	0.969	1.125	1.313	1.500	1.750	2.000	2.375	2.500	3.250	3.750	4.188	4.188	---
LBS	0.54	1.14	1.71	2.67	4.38	5.92	10.15	11.65	21.71	36.85	54.83	45.06	---

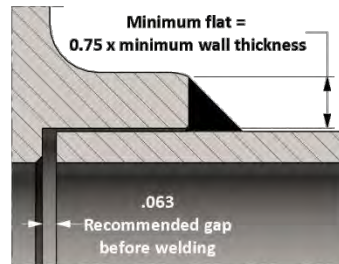


# Socket Weld Lateral

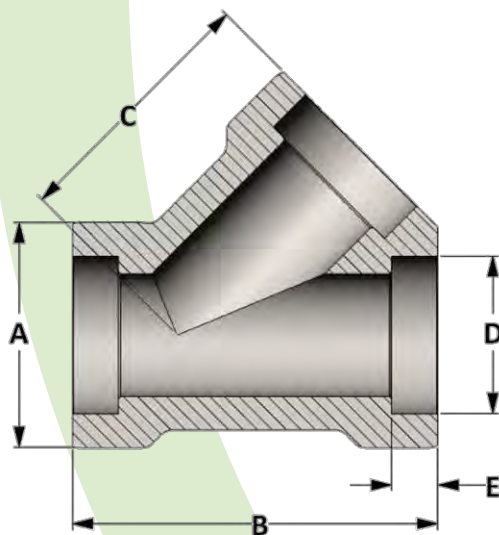
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2-1/2" in Class 3000 & 6000 • 1/2" - 2" in Class 9000  
Also available in CL 10,000 and reducing pipe sizes and tube sizes

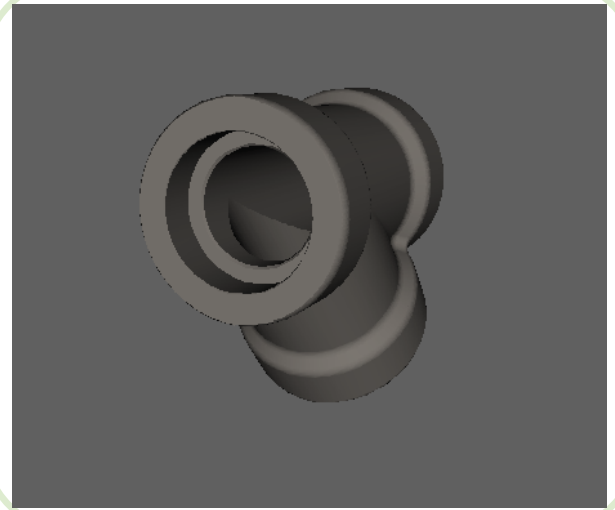
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 13006

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.500	1.500	1.500	1.500	1.750	2.000	2.438	2.750	3.313	4.000
B	2.469	2.469	2.469	2.469	2.969	3.469	3.969	4.469	5.969	7.469
C	1.750	1.750	1.750	1.750	2.125	2.500	2.813	3.188	4.375	5.313
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910
E	0.468	0.468	0.468	0.468	0.593	0.593	0.593	0.593	0.718	0.718
LBS	1.30	1.21	1.09	0.94	1.47	2.23	3.31	4.89	9.68	18.65

CLASS 6000 – Figure No. 16006

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.500	1.500	1.500	1.500	1.750	2.000	2.438	2.750	3.313	4.000
B	2.469	2.469	2.469	2.469	2.969	3.469	3.969	4.469	5.969	7.469
C	1.750	1.750	1.750	1.750	2.125	2.500	2.813	3.188	4.375	5.313
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910
E	0.468	0.468	0.468	0.468	0.593	0.593	0.593	0.593	0.718	0.718
LBS	1.32	1.26	1.17	1.04	1.66	2.70	3.84	5.57	11.63	21.86

CLASS 9000 – Figure No. 19006

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	---	---	---	1.750	2.000	2.438	2.750	3.313	4.000	---
B	---	---	---	2.969	3.469	3.969	4.469	5.969	7.469	---
C	---	---	---	2.125	2.500	2.813	3.188	4.375	5.313	---
D	---	---	---	0.859	1.071	1.335	1.682	1.922	2.410	---
E	---	---	---	0.468	0.593	0.593	0.593	0.593	0.718	---
LBS	---	---	---	2.17	3.34	4.91	7.25	15.63	27.93	---





# Threaded Lateral

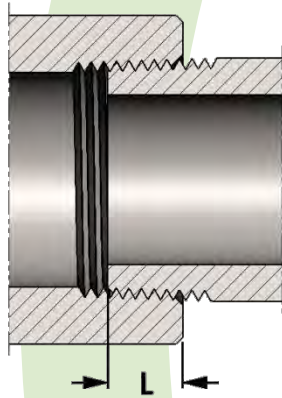
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2-1/2" in CL 3000 • 1/8" - 2" in CL 6000  
Also available in CL 9000 and in reducing pipe sizes

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

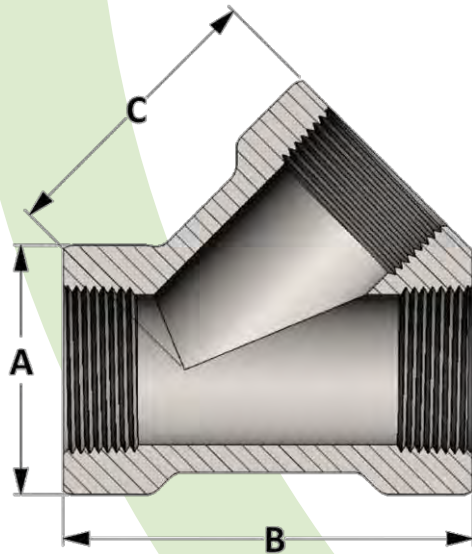
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

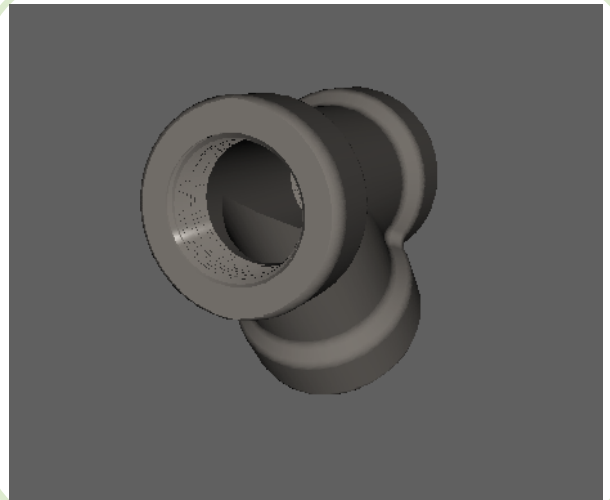


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

CLASS 3000 – Figure No. 03006

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.500	1.500	1.500	1.500	1.750	2.000	2.438	2.750	3.313	4.000
B	2.500	2.500	2.500	2.500	3.000	3.500	4.000	4.500	6.000	7.500
C	1.750	1.750	1.750	1.750	2.125	2.500	2.813	3.188	4.375	5.313
LBS	1.27	1.27	1.12	0.95	1.51	2.21	2.45	4.72	9.41	18.69

CLASS 6000 – Figure No. 06006

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.500	1.500	1.500	1.750	2.000	2.438	2.750	3.313	4.000	---
B	2.500	2.500	2.500	3.000	3.500	4.000	4.500	6.000	7.500	---
C	1.750	1.750	1.750	2.125	2.500	2.813	3.188	4.375	5.313	---
LBS	1.31	1.31	1.18	1.84	2.75	4.54	5.73	11.84	16.80	---



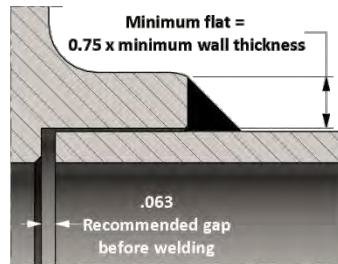
# Socket Weld Coupling

**Specification:** ASME B16.11

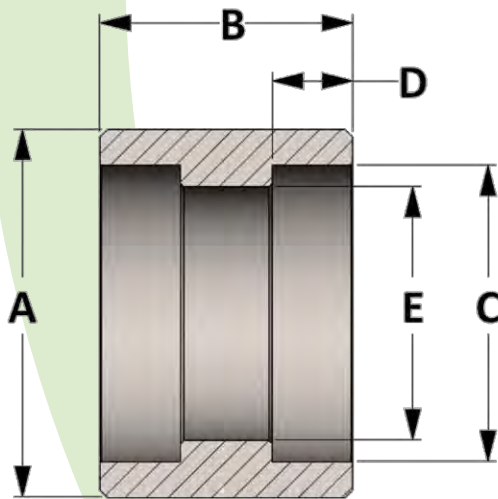
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

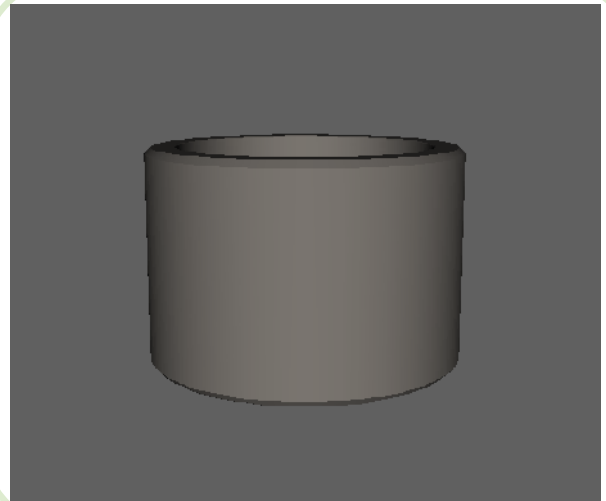
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model

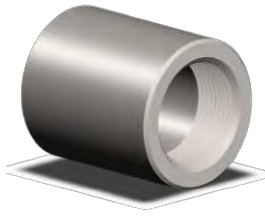


All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13007												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	1.125	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.269	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
LBS	0.01	0.12	0.17	0.25	0.39	0.58	0.90	1.01	1.74	2.51	3.34	5.26	5.55

PIPE SIZE	CLASS 6000 – Figure No. 16007												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	1.125	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.046	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.157	0.250	0.359	0.466	0.614	0.815	1.160	1.338	1.689	2.125	2.625	2.728	3.438
LBS	0.18	0.16	0.29	0.52	0.45	0.90	1.61	1.60	3.92	6.36	7.06	11.65	10.10

PIPE SIZE	CLASS 9000 – Figure No. 19007												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	1.125	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.031	0.064	0.171	0.252	0.434	0.599	0.896	1.100	1.503	1.771	2.300	2.728	3.438
LBS	0.21	0.33	0.46	0.76	1.00	1.69	1.90	2.10	4.05	6.40	12.10	14.62	16.21



# Threaded Coupling

**Specification:** ASME B16.11 for Class 3000 and 6000 only

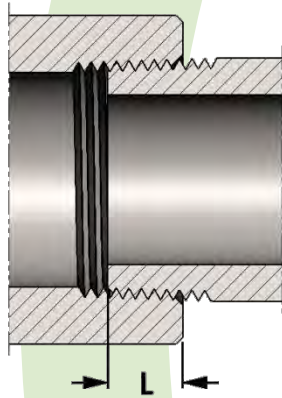
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 and 1/8" - 8" in CL 6000  
Also available in 1/8" - 8" in 150 # and 1/8" - 4" in CL 9000  
And in special lengths

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

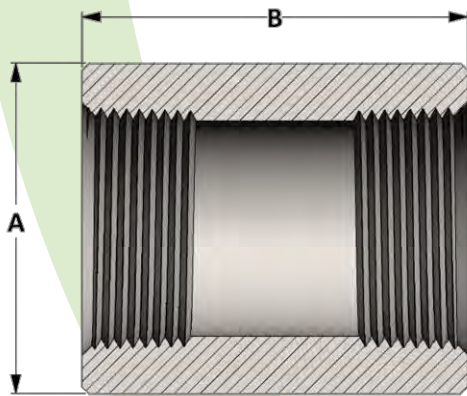
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH



SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03007												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.625	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	1.250	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	0.08	0.10	0.14	0.29	0.42	0.83	1.58	2.16	2.99	4.75	6.51	7.93	12.37

PIPE SIZE	CLASS 6000 – Figure No. 06007												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	1.250	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	0.18	0.23	0.40	0.69	0.95	1.90	2.27	4.11	6.17	9.25	13.65	18.53	22.13



# Socket Weld x Threaded Coupling

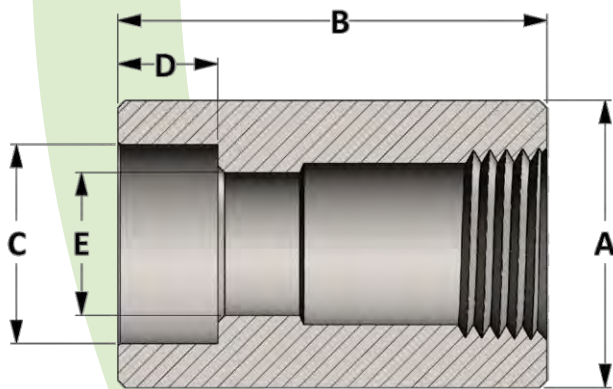
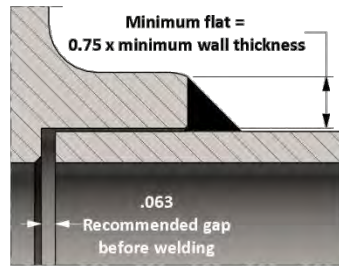
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 6" in CL 3000 • 1/4" - 6" in CL 6000 • 1/4" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 30060											
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
LBS	0.16	0.25	0.41	0.57	0.83	1.62	2.18	3.03	4.89	6.95	11.72	12.77

PIPE SIZE	CLASS 6000 – Figure No. 60060											
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.046	4.545
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.250	0.359	0.466	0.614	0.815	1.160	1.338	1.689	2.125	2.625	2.728	3.438
LBS	0.26	0.40	0.70	0.93	1.96	2.38	4.30	4.10	10.29	16.22	26.89	23.89

PIPE SIZE	CLASS 9000 – Figure No. 90060											
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.064	0.171	0.252	0.434	0.599	0.896	1.100	1.503	1.771	2.300	2.728	3.438
LBS	0.42	0.92	1.05	1.89	2.93	3.57	7.26	6.67	11.58	20.14	23.84	27.47



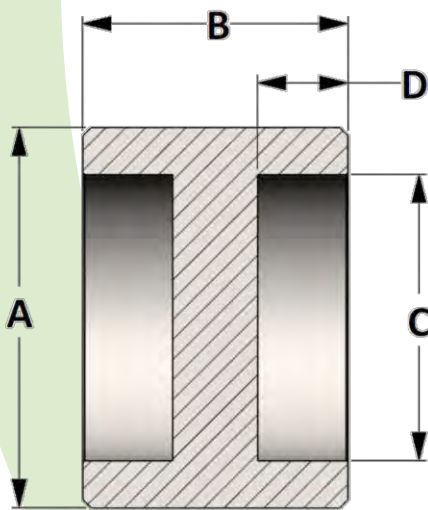
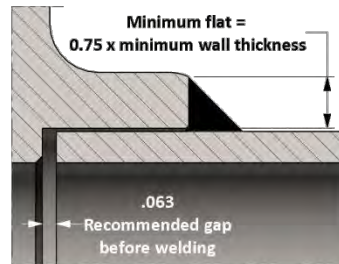


# Blind Coupling

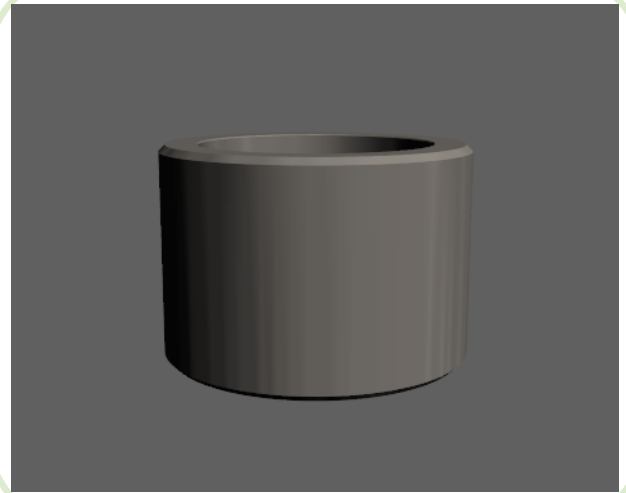
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available in tube sizes and special lengths

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13159												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.11	0.13	0.19	0.29	0.45	0.72	1.09	1.30	2.44	3.57	4.90	7.22	8.41

PIPE SIZE	CLASS 6000 – Figure No. 16159												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.046	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.16	0.19	0.30	0.48	0.71	0.97	1.51	1.76	4.35	5.83	7.84	12.90	11.38

PIPE SIZE	CLASS 9000 – Figure No. 19159												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.22	0.33	0.67	0.71	1.01	1.76	1.97	2.26	4.35	6.84	10.26	12.90	14.60

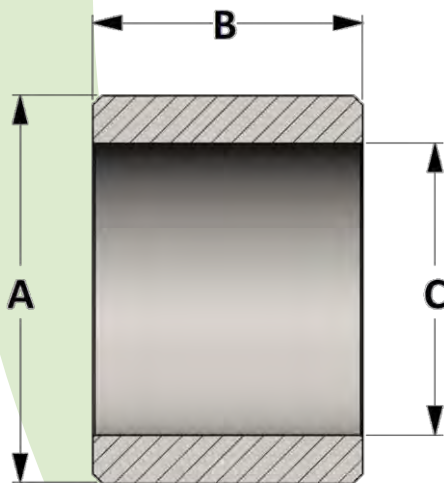
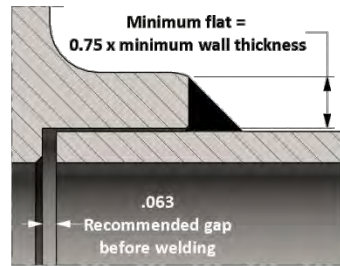


# Slip Coupling

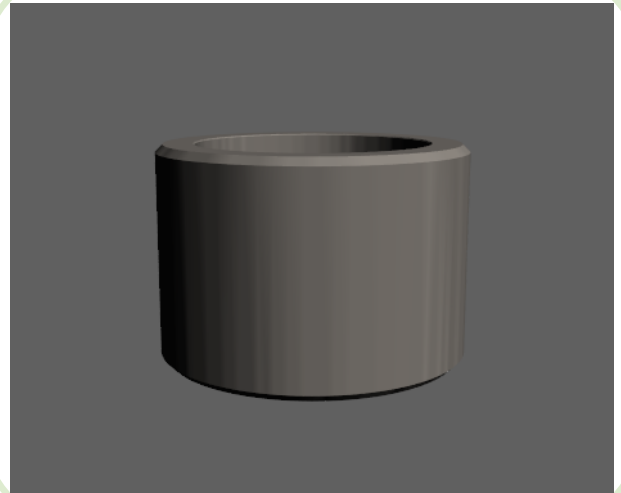
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available in tube sizes and special lengths

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13025												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
LBS	0.10	0.11	0.16	0.23	0.35	0.52	0.78	0.89	1.47	2.15	2.81	4.49	4.95

PIPE SIZE	CLASS 6000 – Figure No. 16025												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.046	4.545
LBS	0.15	0.17	0.27	0.42	0.61	0.77	1.19	1.35	3.37	4.41	5.75	10.17	7.92

PIPE SIZE	CLASS 9000 – Figure No. 19025												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	1.125	1.125	1.125	1.250	1.437	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
LBS	0.21	0.31	0.65	0.65	0.91	1.56	1.65	1.85	3.37	5.42	8.17	10.17	11.14



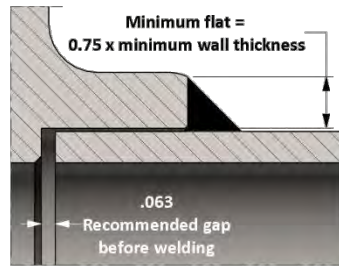
# Socket Weld Half Coupling

**Specification:** ASME B16.11

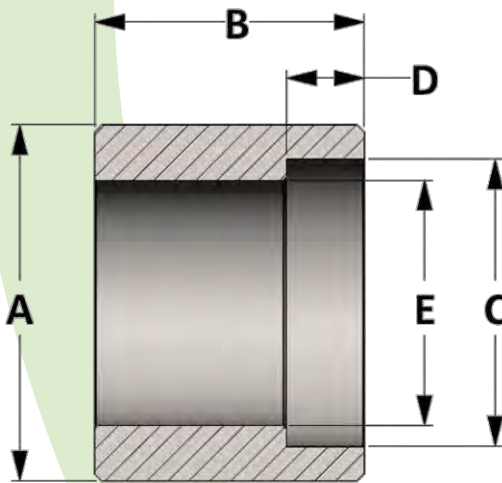
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

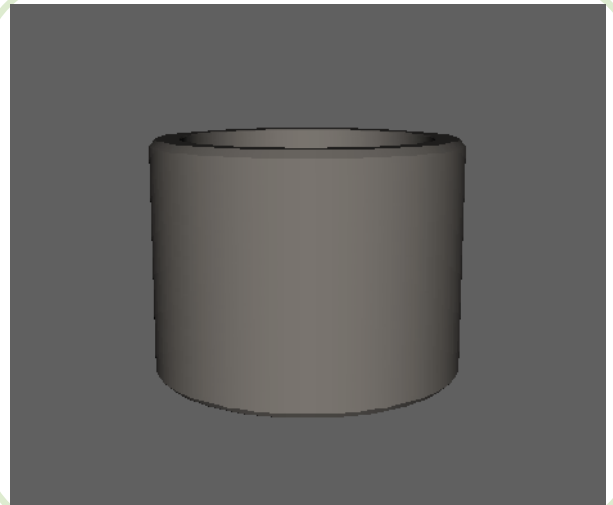
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13009												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	1.050	1.050	1.112	1.302	1.456	1.636	1.706	1.766	2.261	2.331	2.391	2.646	2.646
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.269	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
LBS	0.09	0.11	0.14	0.28	0.40	0.65	1.05	1.23	2.05	4.32	5.72	7.49	9.84

PIPE SIZE	CLASS 6000 – Figure No. 16009												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	1.050	1.050	1.112	1.302	1.456	1.636	1.706	1.766	2.261	2.331	2.391	2.646	2.646
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.046	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.157	0.250	0.359	0.466	0.614	0.815	1.160	1.338	1.689	2.125	2.625	2.728	3.438
LBS	0.16	0.16	0.29	0.54	0.70	1.10	1.61	3.02	4.71	7.35	10.14	13.37	18.35

PIPE SIZE	CLASS 9000 – Figure No. 19009												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	1.050	1.050	1.112	1.302	1.456	1.636	1.706	1.766	2.261	2.331	2.391	2.646	2.646
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
E	0.031	0.064	0.171	0.252	0.434	0.599	0.896	1.100	1.503	1.771	2.300	2.728	3.438
LBS	0.21	0.33	0.70	0.84	1.12	4.15	3.14	4.95	5.10	8.30	13.77	15.19	16.29



# Threaded Half Coupling

**Specification:** ASME B16.11 for Class 3000 and 6000 only

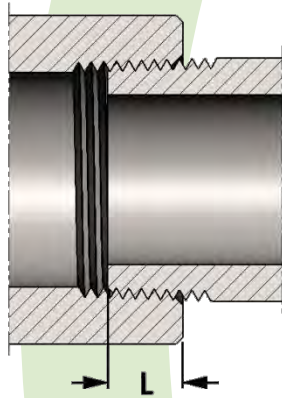
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 and 1/8" - 8" in CL 6000  
Also available in 1/8" - 8" in 150 # and 1/8" - 4" in CL 9000  
And in special lengths

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

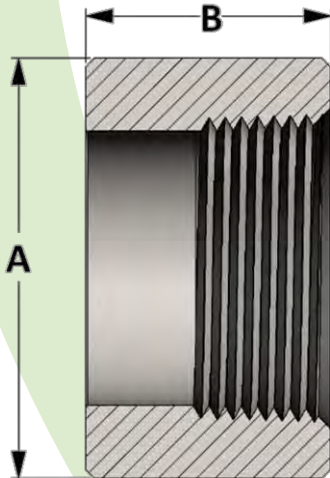
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

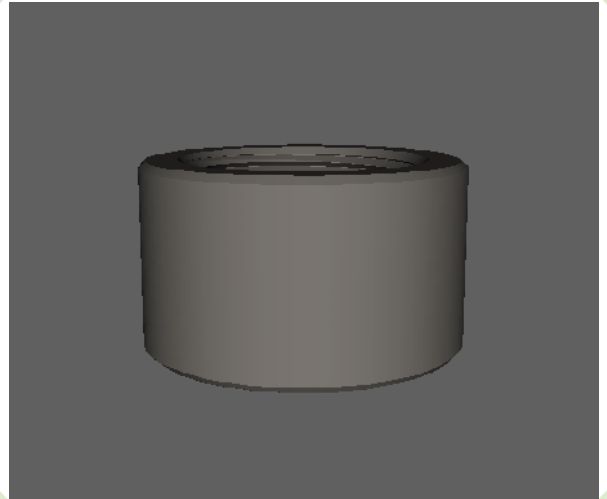


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03009												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.625	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	0.625	0.688	0.750	0.938	1.000	1.188	1.313	1.563	1.688	1.813	2.125	2.250	2.375
LBS	0.04	0.05	0.11	0.15	0.21	0.41	0.79	1.09	1.53	2.38	3.33	4.02	6.16

PIPE SIZE	CLASS 6000 – Figure No. 06009												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	0.625	0.688	0.750	0.938	1.000	1.188	1.313	1.563	1.688	1.813	2.125	2.250	2.375
LBS	0.15	0.17	0.20	0.35	0.48	0.95	2.02	2.55	3.80	5.20	7.54	9.69	15.19





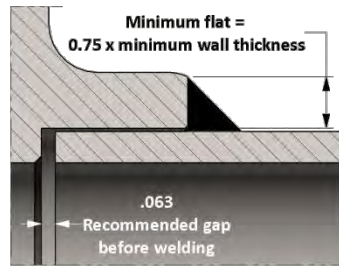
# Socket Weld Reducer

**Specification:** ASME B16.11

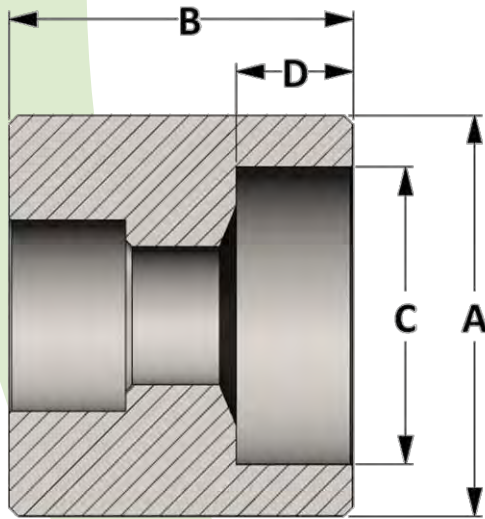
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 • 1/4" - 6" in CL 6000 • 1/4" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

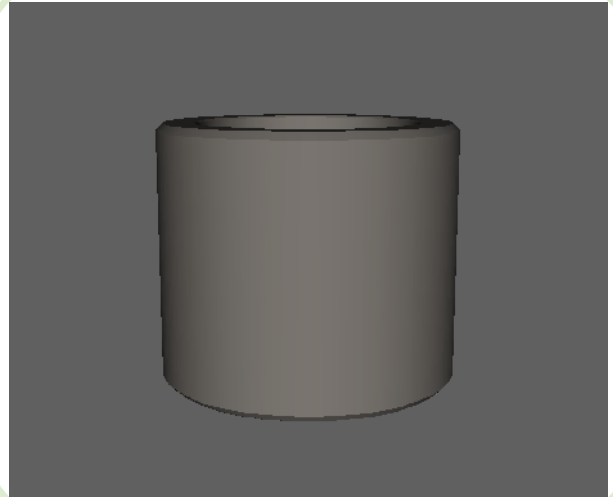
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel  
Waterway of reducer is determined by schedule of small end

PIPE SIZE	CLASS 3000 – Figure No. 13008												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.14	0.21	0.33	0.55	0.89	1.39	1.70	3.09	4.60	6.51	9.79	11.72

PIPE SIZE	CLASS 6000 – Figure No. 16008												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.20	0.32	0.53	0.82	1.15	1.81	2.16	5.13	6.99	9.57	15.58	14.82

PIPE SIZE	CLASS 9000 – Figure No. 19008												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.250	1.500	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.34	0.55	0.76	1.12	1.93	2.26	2.65	5.02	7.90	11.88	15.48	17.92



# Threaded Reducer

**Specification:** ASME B16.11 for Class 3000 and 6000 only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 and 1/4" - 8" in CL 6000

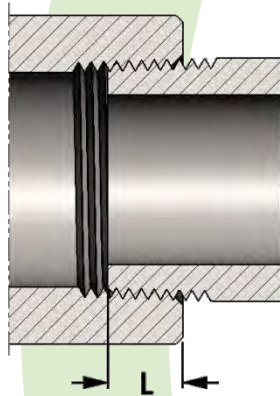
Also available in 1/4" - 4" in CL 9000

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.

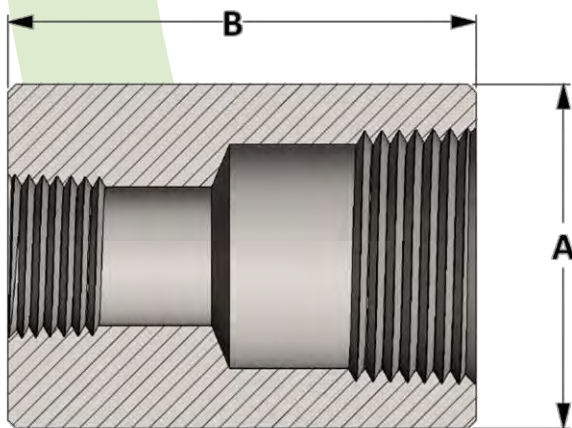
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

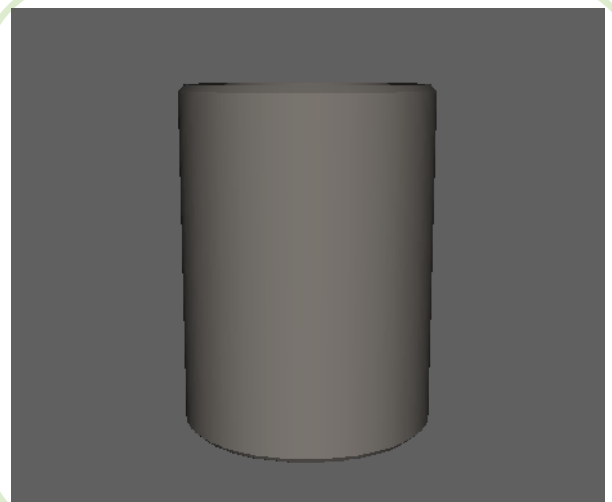


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03008												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.12	0.18	0.39	0.61	1.22	2.20	3.22	4.69	7.62	11.44	14.91	21.85

PIPE SIZE	CLASS 6000 – Figure No. 06008												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.26	0.45	0.79	1.13	2.27	2.89	5.13	7.78	11.57	17.97	25.36	31.11



# Socket Weld x Threaded Reducer

**Specification:** ASME B16.11 for Class 3000 and 6000 only

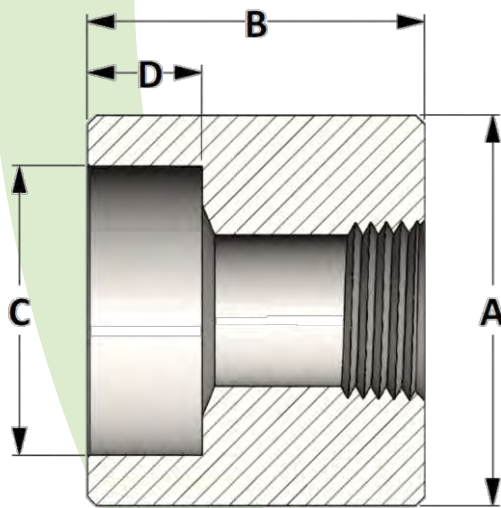
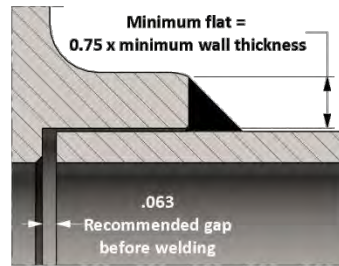
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 • 1/4" - 6" in CL 6000 • 1/4" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, and special lengths

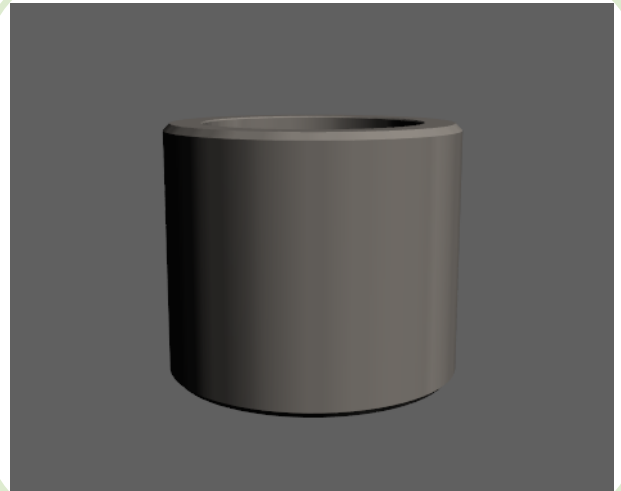
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel  
Waterway of reducer is determined by schedule of small end.

PIPE SIZE	CLASS 3000 – Figure No. 13061												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.14	0.21	0.33	0.55	0.89	1.39	1.70	3.09	4.60	6.51	9.79	11.72

PIPE SIZE	CLASS 6000 – Figure No. 16061												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.20	0.32	0.53	0.82	1.15	1.81	2.16	5.13	6.99	9.57	15.58	14.82

PIPE SIZE	CLASS 9000 – Figure No. 19061												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.250	1.500	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.34	0.55	0.76	1.12	1.93	2.26	2.65	5.02	7.90	11.88	15.48	17.92



# Threaded x Socket Weld Reducer

**Specification:** ASME B16.11 for Class 3000 and 6000 only

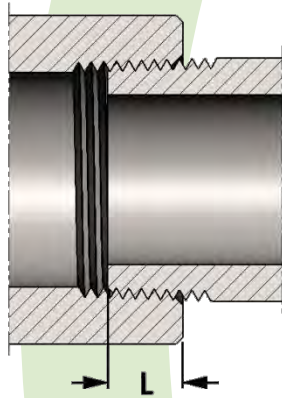
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 and 1/4" - 8" in CL 6000

Also available in 1/4" - 4" in CL 9000

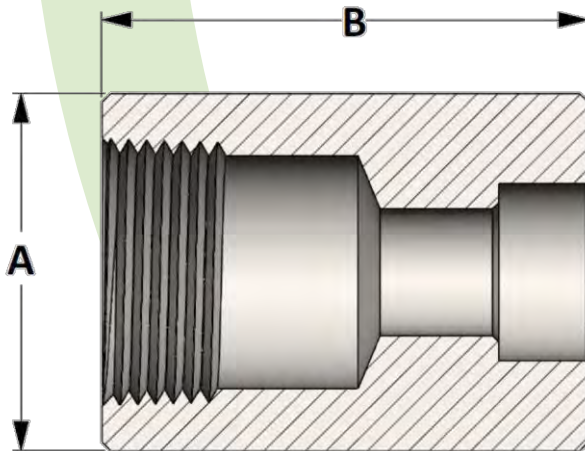
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

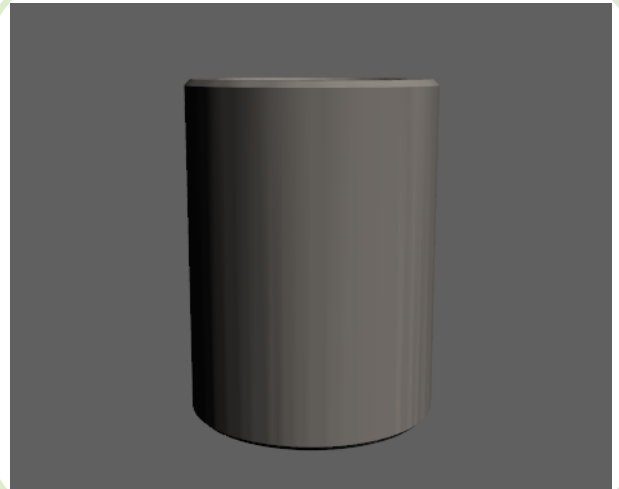


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03060												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.12	0.18	0.39	0.61	1.22	2.20	3.22	4.69	7.62	11.44	14.91	21.85

PIPE SIZE	CLASS 6000 – Figure No. 06060												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.26	0.45	0.79	1.13	2.27	2.89	5.13	7.78	11.57	17.97	25.36	31.11





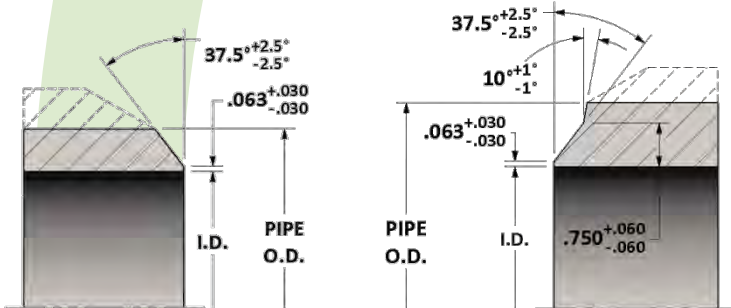
# Butt Weld Reducer

**Specification:** Dimensions per ASME B16.9  
Weld levels per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

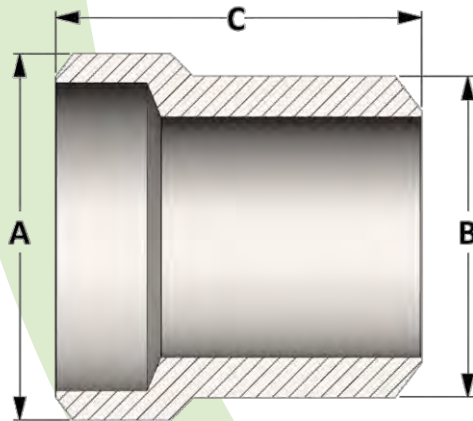
**Sizes:** 1/4" - 8" in S40/STD, S80/XH, S160 & XXH  
Also available in special pipe schedules and split schedules

## Butt Weld Ends Details



Weld levels for wall thickness below 0.880"

Weld levels for wall thickness above 0.880"



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
1/2	1/4	0.840	0.540	1.500	0.09	0.12	0.14	0.17
	3/8	0.840	0.675	1.500	0.09	0.13	0.15	0.19
3/4	1/4	1.050	0.540	1.500	0.13	0.18	0.21	0.25
	3/8	1.050	0.675	1.500	0.13	0.18	0.21	0.26
	1/2	1.050	0.840	1.500	0.13	0.18	0.22	0.28
	3/8	1.315	0.540	2.000	0.23	0.31	0.37	0.48
1	3/8	1.315	0.675	2.000	0.23	0.31	0.37	0.49
	1/2	1.315	0.840	2.000	0.24	0.32	0.39	0.51
	3/4	1.315	1.050	2.000	0.25	0.33	0.42	0.54
	1/4	1.660	0.540	2.000	0.35	0.48	0.54	0.66
1-1/4	3/8	1.660	0.675	2.000	0.34	0.47	0.54	0.67
	1/2	1.660	0.840	2.000	0.35	0.48	0.55	0.69
	3/4	1.660	1.050	2.000	0.34	0.47	0.57	0.71
	1	1.660	1.315	2.000	0.36	0.48	0.60	0.78
1-1/2	3/8	1.900	0.675	2.500	0.50	0.68	0.79	1.04
	1/2	1.900	0.840	2.500	0.51	0.68	0.81	1.07
	3/4	1.900	1.050	2.500	0.50	0.68	0.84	1.09
	1	1.900	1.315	2.500	0.52	0.70	0.88	1.16
	1-1/4	1.900	1.660	2.500	0.54	0.72	0.92	1.25
	3/4	2.375	1.050	3.000	0.94	1.25	1.55	1.78
2	1	2.375	1.315	3.000	0.94	1.25	1.58	1.85
	1-1/4	2.375	1.660	3.000	0.91	1.23	1.57	1.94
	1-1/2	2.375	1.900	3.000	0.90	1.22	1.63	2.02

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
2-1/2	3/4	2.875	1.050	3.500	1.55	2.00	2.32	2.97
	1	2.875	1.315	3.500	1.54	2.00	2.36	3.05
	1-1/4	2.875	1.660	3.500	1.50	1.97	2.34	3.12
	1-1/2	2.875	1.900	3.500	1.47	1.95	2.41	3.18
	2	2.875	2.375	3.500	1.44	1.95	2.64	3.36
	1	3.500	1.315	3.500	2.32	2.97	3.52	4.39
3	1-1/4	3.500	1.660	3.500	2.22	2.89	3.45	4.40
	1-1/2	3.500	1.900	3.500	2.15	2.83	3.47	4.41
	2	3.500	2.375	3.500	2.03	2.73	3.58	4.48
	2-1/2	3.500	2.875	4.000	2.14	2.86	3.70	4.93
3-1/2	1-1/2	4.000	1.900	4.000	3.00	3.90	---	5.93
	2	4.000	2.375	4.000	2.83	3.77	---	6.01
	2-1/2	4.000	2.875	4.000	2.93	3.91	---	6.52
	3	4.000	3.500	4.000	2.91	3.97	---	7.01
4	1-1/2	4.500	1.900	4.500	3.91	5.03	6.57	7.90
	2	4.500	2.375	4.500	3.67	4.82	6.56	7.83
	2-1/2	4.500	2.875	4.500	3.66	4.85	6.48	8.15
	3	4.500	3.500	4.500	3.50	4.75	6.65	8.34
	3-1/2	4.500	4.000	4.500	3.47	4.79	---	8.64
	3	6.625	3.500	5.500	9.83	12.28	17.34	20.52
6	3-1/2	6.625	4.000	5.500	8.96	11.97	---	20.53
	4	6.625	4.500	5.500	8.61	11.75	17.46	20.69
	5	6.625	5.563	5.500	8.22	11.72	18.42	21.54



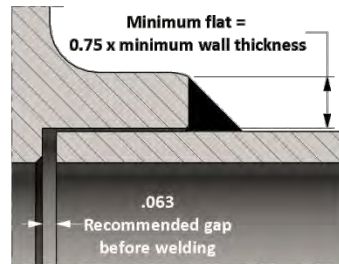
# Socket Weld Eccentric Reducer

**Specification:** ASME B16.11

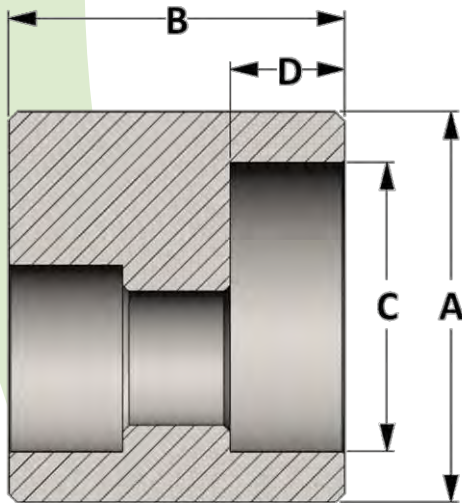
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 • 1/4" - 6" in CL 6000 • 1/4" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

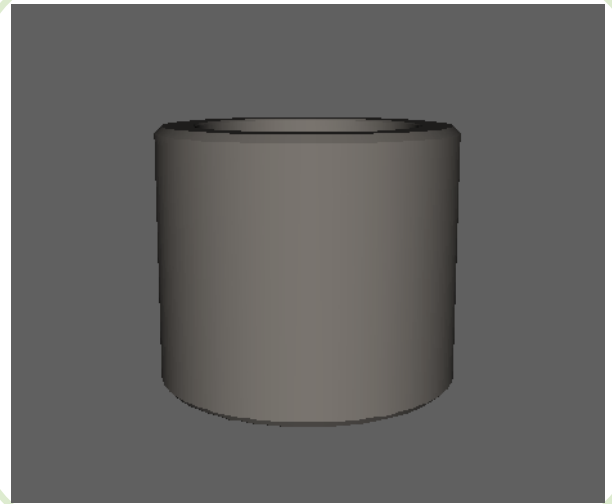
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel  
Waterway of reducer is determined by schedule of small end

PIPE SIZE	CLASS 3000 – Figure No. 13024												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.14	0.21	0.33	0.55	0.89	1.39	1.70	3.09	4.60	6.51	9.79	11.72

PIPE SIZE	CLASS 6000 – Figure No. 16024												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.20	0.32	0.53	0.82	1.15	1.81	2.16	5.13	6.99	9.57	15.58	14.82

PIPE SIZE	CLASS 9000 – Figure No. 19024												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.250	1.500	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	---	1.125	1.125	1.250	1.438	1.563	1.563	1.563	2.063	2.063	2.063	2.313	2.313
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	---	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	---	0.34	0.55	0.76	1.12	1.93	2.26	2.65	5.02	7.90	11.88	15.48	17.92



# Threaded Eccentric Reducer

**Specification:** ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 12" in CL 3000 and 1/4" - 8" in CL 6000

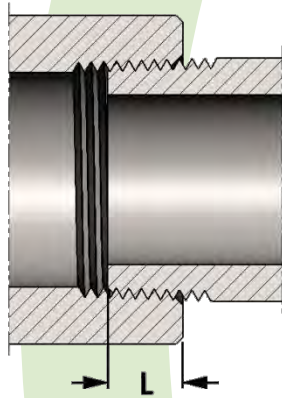
Also available in 1/4" - 4" in CL 9000

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.

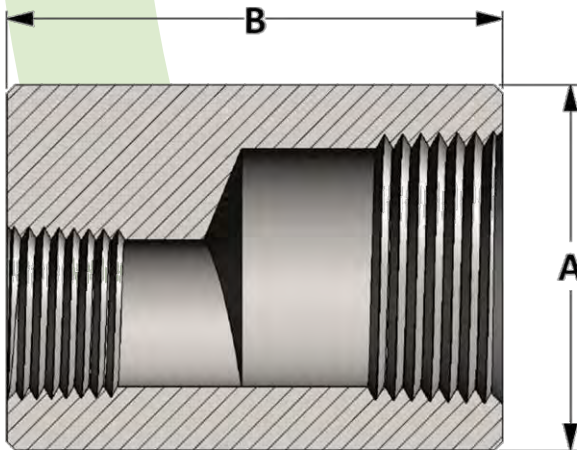
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH



SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03024												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.12	0.18	0.39	0.61	1.22	2.20	3.22	4.69	7.62	11.44	14.91	21.85

PIPE SIZE	CLASS 6000 – Figure No. 06024												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	---	1.375	1.500	1.875	2.000	2.375	2.625	3.125	3.375	3.625	4.250	4.500	4.750
LBS	---	0.26	0.45	0.79	1.13	2.27	2.89	5.13	7.78	11.57	17.97	25.36	31.11



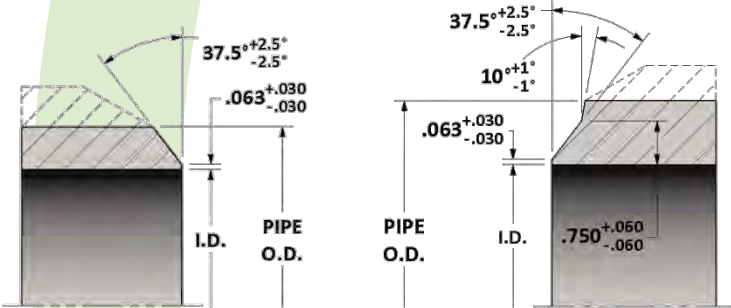
# Butt Weld Eccentric Reducer

**Specification:** Dimensions per ASME B16.9  
Weld levels per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

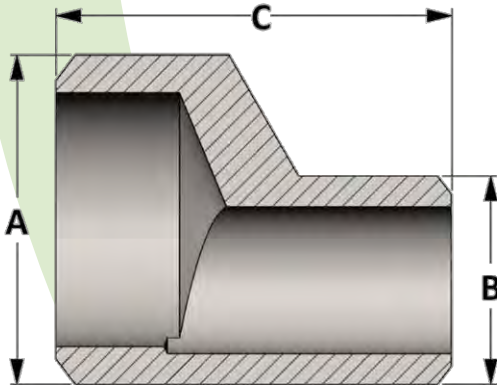
**Sizes:** 1/4" - 8" in S40/STD, S80/XH, S160 & XXH  
Also available in special pipe schedules and split schedules

## Butt Weld Ends Details

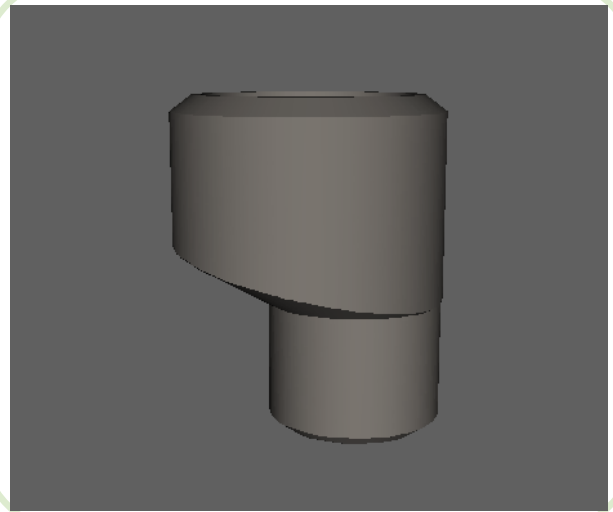


Weld levels for wall  
thickness below 0.880"

Weld levels for wall  
thickness above 0.880"



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
1/2	1/4	0.840	0.540	1.500	0.09	0.10	0.15	---
	3/8	0.840	0.675	1.500	0.09	0.09	0.15	0.18
3/4	1/4	1.050	0.540	1.500	0.15	0.15	0.20	---
	3/8	1.050	0.675	1.500	0.14	0.14	0.21	0.25
1	1/2	1.050	0.840	1.500	0.14	0.14	0.22	0.28
	1/4	1.315	0.540	2.000	0.30	0.27	0.37	---
	3/8	1.315	0.675	2.000	0.28	0.27	0.37	0.48
	1/2	1.315	0.840	2.000	0.27	0.27	0.38	0.50
1-1/4	3/4	1.315	1.050	2.000	0.26	0.26	0.41	0.54
	1/4	1.660	0.540	2.000	0.40	0.45	0.57	---
	3/8	1.660	0.675	2.000	0.39	0.43	0.56	0.70
	1/2	1.660	0.840	2.000	0.37	0.42	0.56	0.71
1-1/2	3/4	1.660	1.050	2.000	0.36	0.39	0.57	0.73
	1	1.660	1.315	2.000	0.36	0.39	0.60	0.78
	3/8	1.900	0.675	2.500	0.65	0.65	0.88	---
	1/2	1.900	0.840	2.500	0.63	0.64	0.87	1.14
2	3/4	1.900	1.050	2.500	0.60	0.60	0.88	1.14
	1	1.900	1.315	2.500	0.58	0.59	0.91	1.19
	1-1/4	1.900	1.660	2.500	0.56	0.56	0.92	1.26
	3/4	2.375	1.050	3.000	1.05	1.05	1.68	2.03
2	1	2.375	1.315	3.000	1.01	1.01	1.66	2.05
	1-1/4	2.375	1.660	3.000	0.95	0.95	1.61	2.07
	1-1/2	2.375	1.900	3.000	0.92	0.92	1.66	2.10

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
2-1/2	3/4	2.875	1.050	3.500	1.79	2.00	2.59	3.25
	1	2.875	1.315	3.500	1.73	1.91	2.59	3.27
	1-1/4	2.875	1.660	3.500	1.61	1.76	2.47	3.26
	1-1/2	2.875	1.900	3.500	1.54	1.68	2.50	3.28
3	2	2.875	2.375	3.500	1.46	1.53	2.68	3.40
	1	3.500	1.315	3.500	2.74	3.03	4.15	4.85
	1-1/4	3.500	1.660	3.500	2.52	2.79	3.93	4.74
	1-1/2	3.500	1.900	3.500	2.39	2.63	3.86	4.68
3-1/2	2	3.500	2.375	3.500	2.15	2.33	3.83	4.61
	2-1/2	3.500	2.875	4.000	2.18	2.30	3.82	5.00
	1-1/2	4.000	1.900	4.000	3.44	3.79	---	6.45
	2	4.000	2.375	4.000	3.11	3.39	---	6.33
4	2-1/2	4.000	2.875	4.000	3.07	3.29	---	6.23
	3	4.000	3.500	4.000	2.95	3.06	---	7.09
	1-1/2	4.500	1.900	4.500	4.68	4.68	7.02	8.11
	2	4.500	2.375	4.500	4.18	4.18	6.80	7.85
6	2-1/2	4.500	2.875	4.500	3.98	3.98	6.57	8.10
	3	4.500	3.500	4.500	3.63	3.63	6.64	8.24
	3-1/2	4.500	4.000	4.500	3.51	3.51	---	8.57
	3	6.625	3.500	5.500	12.76	12.76	20.28	22.18
6	3-1/2	6.625	4.000	5.500	11.68	11.67	---	21.71
	4	6.625	4.500	5.500	10.72	10.72	19.48	21.48
	5	6.625	5.563	5.500	9.18	9.18	19.76	21.75





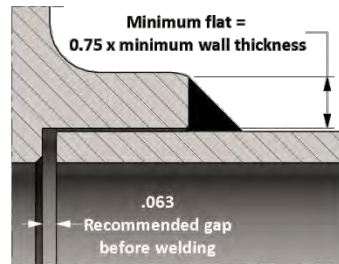
# Socket Weld Cap

**Specification:** ASME B16.11

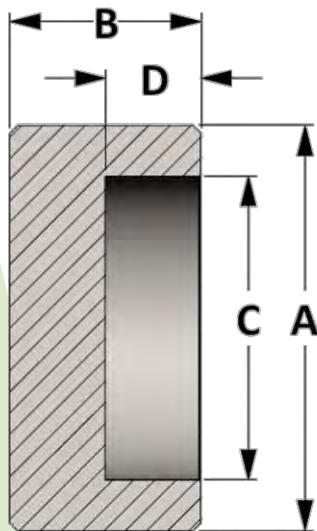
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available in tube sizes, special pipe schedules/class rating, orifice holes, and special lengths

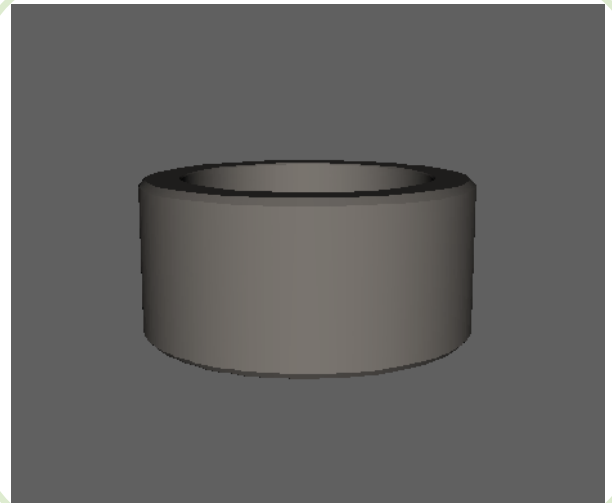
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13010												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000	3.625	4.313	5.000	5.500
B	0.688	0.688	0.688	0.813	0.938	1.063	1.063	1.125	1.313	1.438	1.625	1.875	1.875
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.05	0.09	0.13	0.34	0.35	0.52	1.01	1.13	2.03	2.79	4.43	7.54	7.86

PIPE SIZE	CLASS 6000 – Figure No. 16010												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625	4.250	5.000	6.000	6.000
B	0.750	0.750	0.813	0.813	1.000	1.125	1.125	1.188	1.500	1.563	1.688	1.813	2.000
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.13	0.17	0.27	0.43	0.58	0.80	1.08	1.60	3.69	5.10	7.71	11.62	12.36

PIPE SIZE	CLASS 9000 – Figure No. 19010												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.000	1.250	1.750	1.750	2.000	2.500	2.750	3.000	3.625	4.500	5.500	6.000	6.500
B	0.813	0.875	0.938	1.063	1.188	1.250	1.250	1.375	1.563	1.750	2.000	2.125	2.125
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
D	0.438	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656	0.656	0.656	0.781	0.781
LBS	0.16	0.27	0.40	0.74	0.90	1.55	1.80	2.35	3.85	10.96	11.57	14.11	16.30



# Threaded Cap

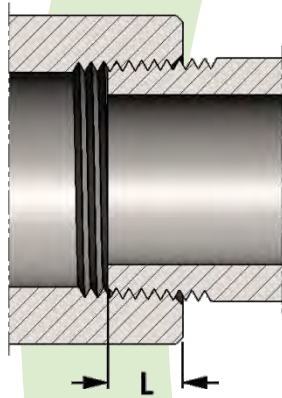
**Specification:** ASME B16.11

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 and 1/8" - 8" in CL 6000  
Also available in 1/8 - 8" in 150 # and 1/8" - 4" in CL 9000

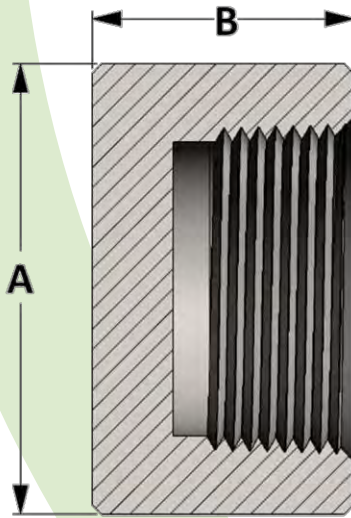
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)  
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

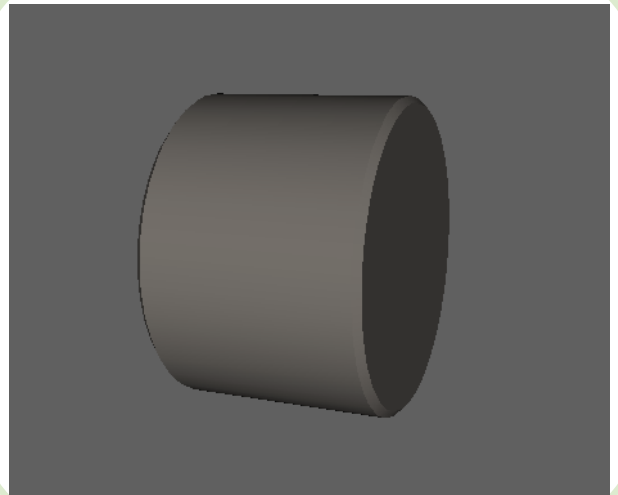


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03010												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.625	0.750	0.875	1.125	1.375	1.750	2.250	2.500	3.000	3.625	4.250	4.750	5.500
B	0.750	1.000	1.000	1.250	1.438	1.625	1.750	1.750	1.875	2.375	2.563	2.625	2.687
LBS	0.50	0.08	0.11	0.23	0.38	0.70	1.28	1.58	2.25	4.22	6.38	7.09	11.13

PIPE SIZE	CLASS 6000 – Figure No. 06010												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	5.750	6.250
B	0.875	1.062	1.062	1.312	1.500	1.688	1.813	1.875	2.000	2.500	2.688	2.875	2.938
LBS	0.13	0.19	0.34	0.55	0.78	1.62	1.91	3.07	4.53	7.37	11.32	13.50	23.01



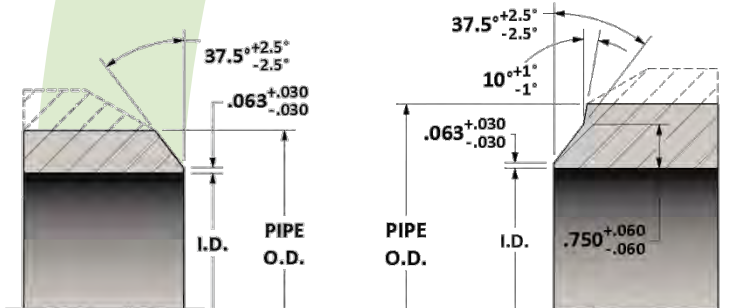
# Butt Weld Cap

**Specification:** Dimensions per ASME B16.9  
Weld bevels per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

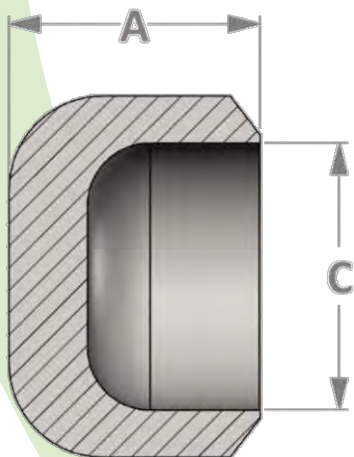
**Sizes:** 1/8" – 4" in all Schedules  
Also available in other requirements such as special wall thickness

## Butt Weld Ends Details

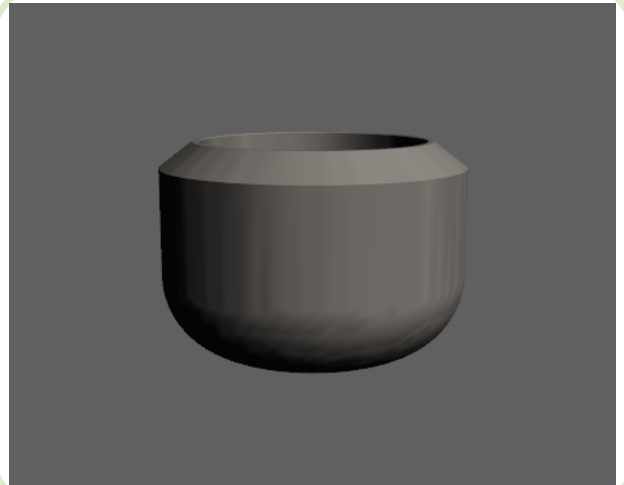


Weld bevels for wall thickness below 0.880"

Weld bevels for wall thickness above 0.880"



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD/S40 – Figure No. 45010			XH/S80 – Figure No. 48010			S160 – Figure No. 52010			XXH – Figure No. 53010		
	A	C	LBS	A	C	LBS	A	C	LBS	A	C	LBS
1/2	1.000	0.622	0.09	1.000	0.546	0.11	1.000	0.464	0.13	1.000	0.252	0.16
3/4	1.000	0.824	0.11	1.000	0.742	0.16	1.000	0.612	0.19	1.000	0.434	0.23
1	1.500	1.049	0.30	1.500	0.957	0.35	1.500	0.815	0.43	1.500	0.599	0.54
1-1/4	1.500	1.380	0.37	1.500	1.278	0.47	1.500	1.160	0.58	1.500	0.896	0.76
1-1/2	1.500	1.610	0.48	1.500	1.500	0.63	1.500	1.338	0.78	1.500	1.100	0.97
2	1.500	2.067	0.63	1.500	1.939	0.83	1.750	1.689	1.37	1.750	1.503	1.55
2-1/2	1.500	2.469	1.11	1.500	2.323	1.34	2.000	2.125	2.17	2.000	1.771	2.77
3	2.000	3.068	1.79	2.000	2.900	2.33	3.000	2.624	4.45	3.000	2.300	5.51
4	2.500	4.026	3.23	2.500	3.826	4.38	3.000	3.438	7.22	3.000	3.152	8.72

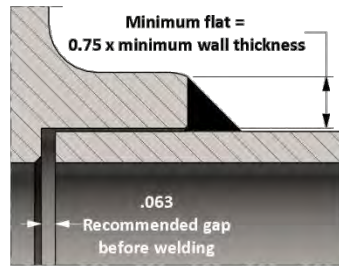


# Socket Weld Plug

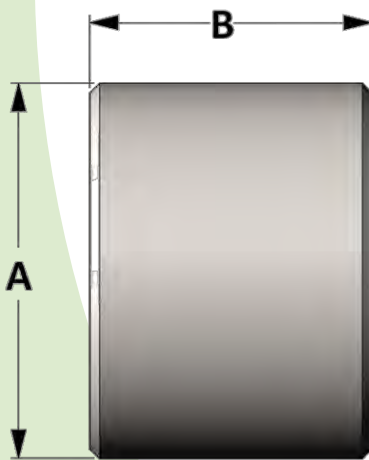
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 12" in CL 3000 • 1/8" - 6" in CL 6000 • 1/8" - 4" in CL 9000  
Also available as Bull Plugs as per MSS-SP95 and in special lengths

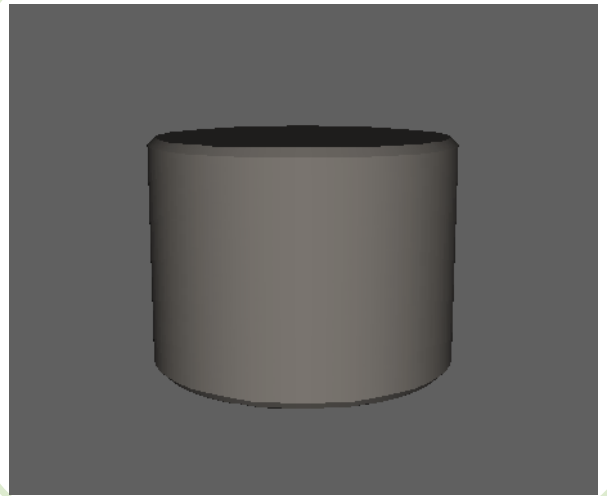
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13021												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.405	0.540	0.675	0.840	1.05	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500
B	1.125	1.125	1.125	1.125	1.125	1.125	1.250	1.313	1.500	2.125	2.125	2.500	3.000
LBS	0.04	0.07	0.11	0.18	0.27	0.43	0.76	1.04	1.87	3.89	5.76	3.46	13.44

PIPE SIZE	CLASS 6000 – Figure No. 16021												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.405	0.540	0.675	0.840	1.05	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500
B	1.125	1.125	1.125	1.250	1.313	1.313	1.375	1.563	1.625	2.250	2.250	2.625	3.250
LBS	0.04	0.07	0.11	0.20	0.32	0.50	0.84	1.25	2.03	4.12	6.10	9.30	14.57

PIPE SIZE	CLASS 9000 – Figure No. 19021												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.405	0.540	0.675	0.840	1.05	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500
B	1.250	1.250	1.250	1.250	1.375	1.500	1.750	1.875	2.000	2.625	2.625	3.000	3.625
LBS	0.04	0.08	0.13	0.20	0.34	0.57	1.07	1.50	2.50	4.870	7.10	10.62	16.24



# Round Head Plug

**Specification:** ASME B16.11 for 1/8" - 4" only

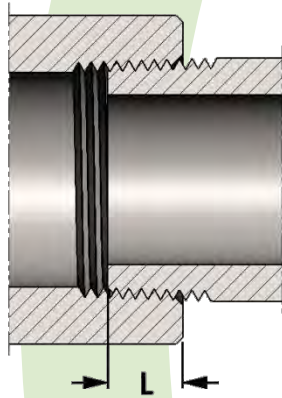
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

Also available as Bull Plugs as per MSS-SP95 and in special lengths

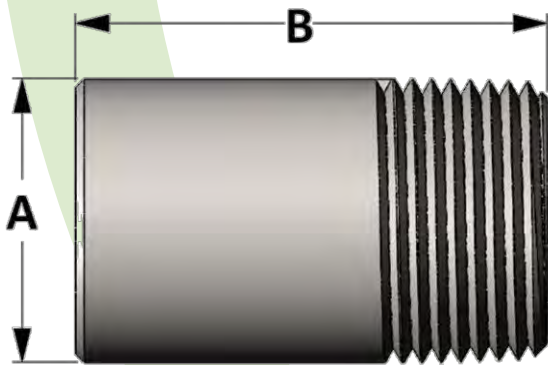
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP

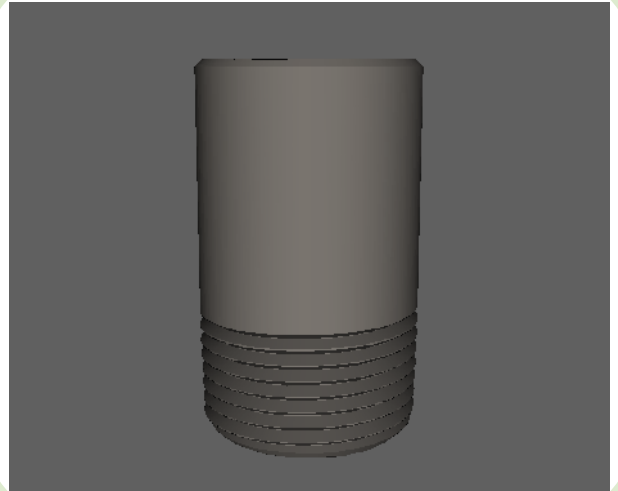


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06015														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	0.405	0.540	0.675	0.840	1.050	1.312	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625
B	1.380	1.625	1.625	1.750	1.750	2.000	2.000	2.000	2.500	2.750	2.750	3.000	3.000	5.500	5.500
LBS	0.05	0.10	0.16	0.25	0.40	0.72	1.17	1.64	3.04	5.13	7.19	10.34	13.25	37.67	53.43





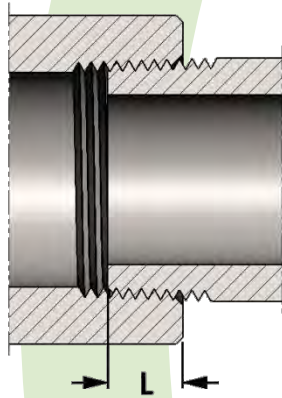
# Bull Plug

**Specification:** MSS-SP95

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

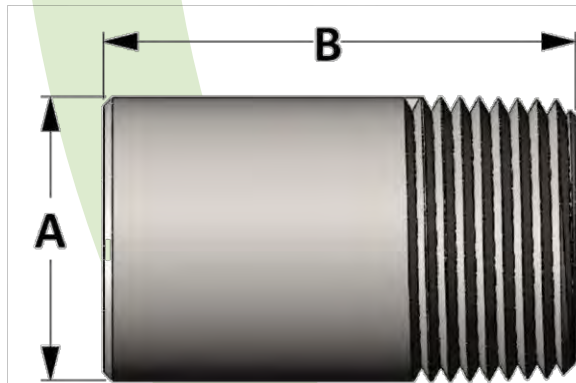
**Sizes:** 1/8" - 8"  
Also available as Hex

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)  
Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP



SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06192														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	0.405	0.540	0.675	0.840	1.050	1.312	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625
B	2.000	2.000	2.250	2.500	2.750	3.000	3.250	3.500	4.000	5.000	6.000	6.500	7.000	8.500	10.000
LBS	0.07	0.13	0.23	0.39	0.68	1.15	1.99	2.82	5.03	9.22	16.39	23.20	31.62	58.67	97.89



# Square Head Plug

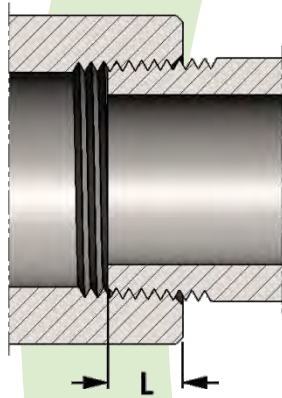
**Specification:** ASME B16.11 for 1/8" - 4" only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

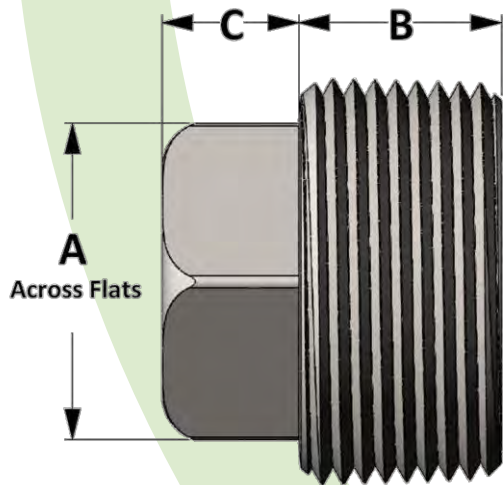
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP

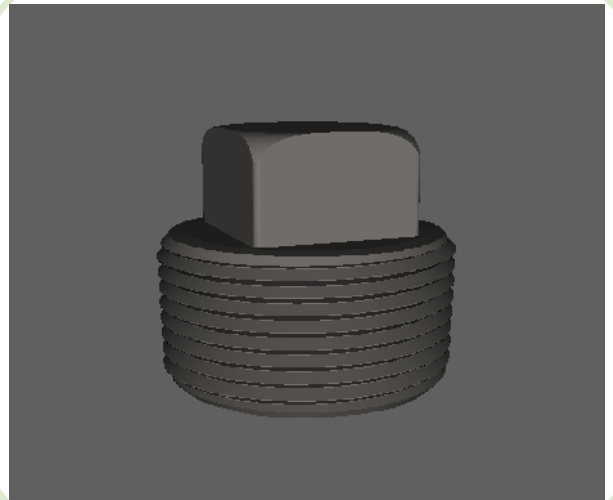


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06013														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	0.281	0.380	0.440	0.563	0.625	0.813	0.940	1.125	1.313	1.500	1.690	1.875	2.500	3.250	4.250
B	0.380	0.440	0.500	0.563	0.625	0.750	0.813	0.813	0.880	1.063	1.125	1.187	1.250	1.875	2.000
C	0.250	0.250	0.313	0.380	0.440	0.500	0.563	0.625	0.690	0.750	0.813	0.875	1.000	1.625	1.875
LBS	0.02	0.03	0.06	0.11	0.18	0.35	0.60	0.82	1.36	2.21	3.47	4.73	8.64	17.12	28.41



# Countersunk Head Plug

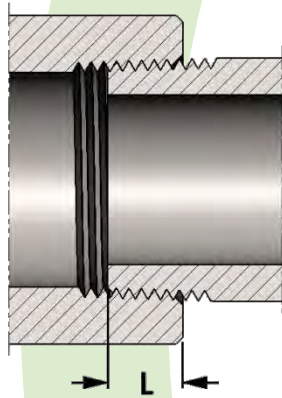
**Specification:** ASME B16.11 for 1/8" - 4" only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

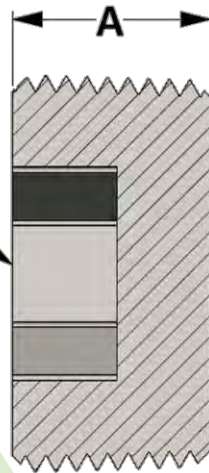
Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP



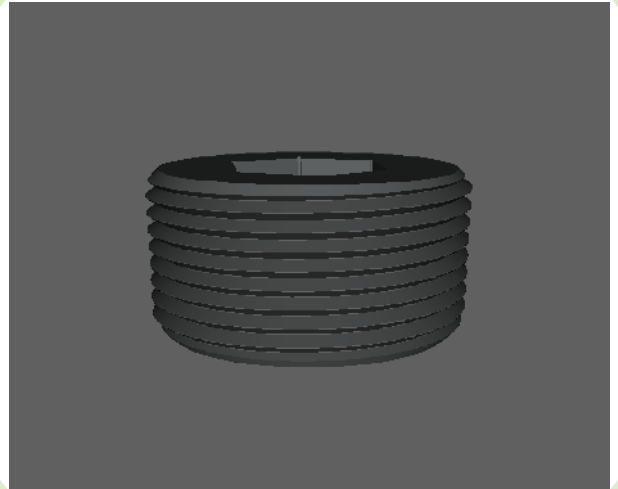
SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**

Countersunk available  
as Hexagon or Square



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06019 for Square Countersunk • Figure No. 06020 for Hexagon Countersunk													
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	6
A	0.375	0.440	0.500	0.562	0.630	0.750	0.812	0.830	0.880	1.070	1.130	1.187	1.250	1.500
LBS	0.01	0.02	0.03	0.06	0.10	0.48	0.38	0.46	0.84	1.63	2.40	4.11	5.07	13.81



# Hexagon Head Plug

**Specification:** ASME B16.11 for 1/8" - 4" only

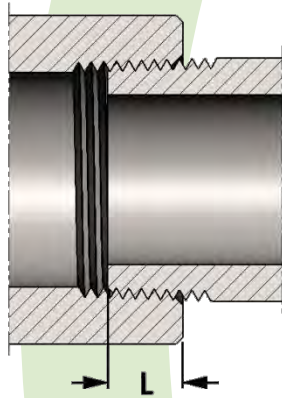
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

Also available in special lengths

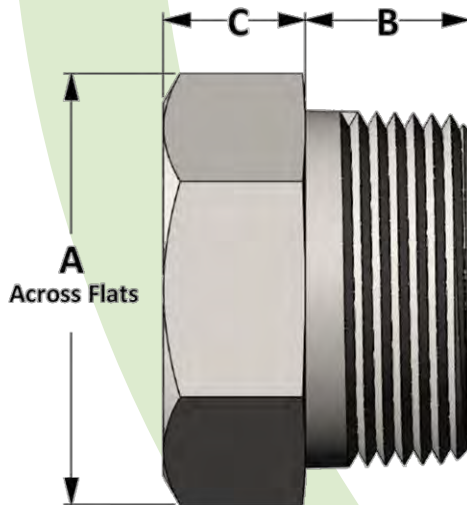
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP

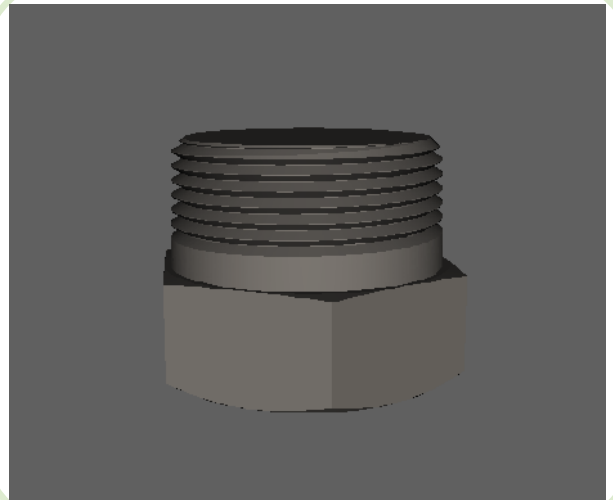


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06014														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	0.437	0.625	0.688	0.875	1.062	1.375	1.750	2.000	2.500	3.000	3.625	4.250	4.750	5.750	6.750
B	0.438	0.500	0.563	0.688	0.750	0.875	0.875	0.938	1.000	1.188	1.375	1.500	1.500	1.500	1.750
C	0.250	0.250	0.313	0.313	0.380	0.380	0.563	0.625	0.690	0.750	0.813	1.000	1.000	0.750	0.750
LBS	0.30	0.05	0.09	0.16	0.27	0.48	0.95	1.32	2.23	3.81	4.75	8.28	12.22	15.61	24.87

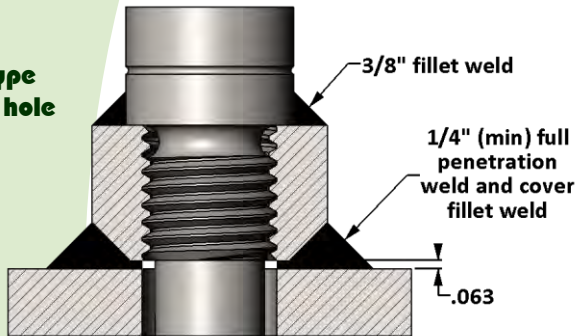


# Radiographic Plug and Boss

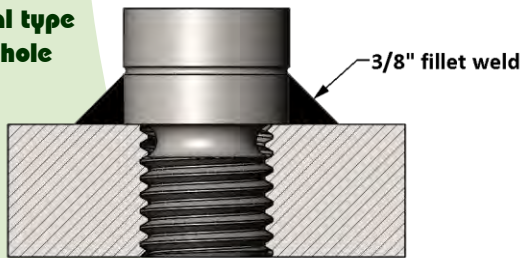
**Specification:** PFI Standard ES-16

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

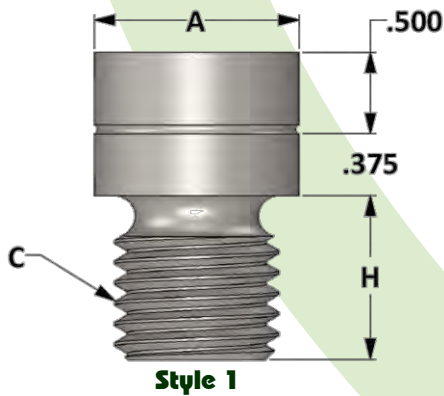
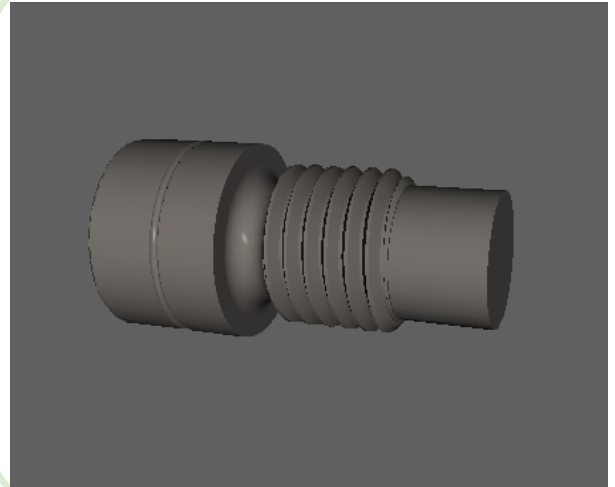
## Boss type Access hole



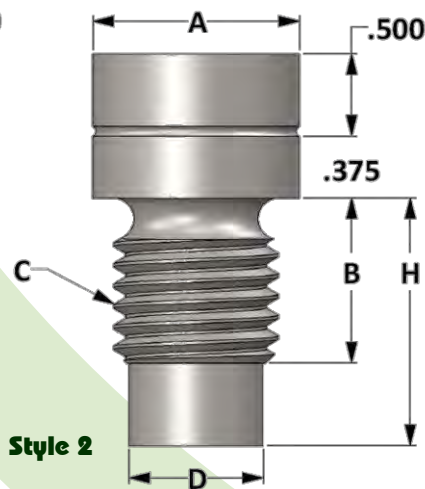
## Integral type Access hole



Active  
**3D**  
Model



**Style 1**



**Style 2**



All dimensions are in inches

PIPE WALL THICKNESS	RADIOGRAPHIC PLUG – Figure No. 06186					
	< 5/8" without boss	< 5/8" with boss	5/8" ≥ 1-3/8"	1-3/8" ≥ 3"	3" ≥ 5"	> 5"
STYLE	1	2	1	2	2	2
A	1.250	1.250	1.250	1.250	1.750	2.250
B	---	1.000	---	1.250	1.500	2.000
C	1" – 8 UNC – 3A	1" – 8 UNC – 3A	1" – 8 UNC – 3A	1" – 8 UNC – 3A	1-1/2" – 6 UNC – 3A	2" – 4-1/2" UNC – 3A
D	---	0.812	---	0.812	1.234	1.656
H	0.625	Specified by user				





# Hexagon Head Bushing

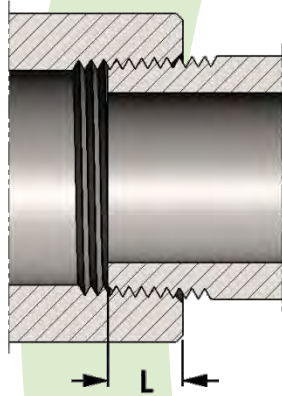
**Specification:** ASME B16.11 for 1/8" - 4" only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

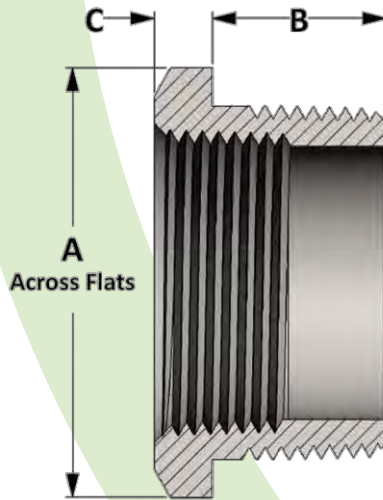
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP  
And in any combination

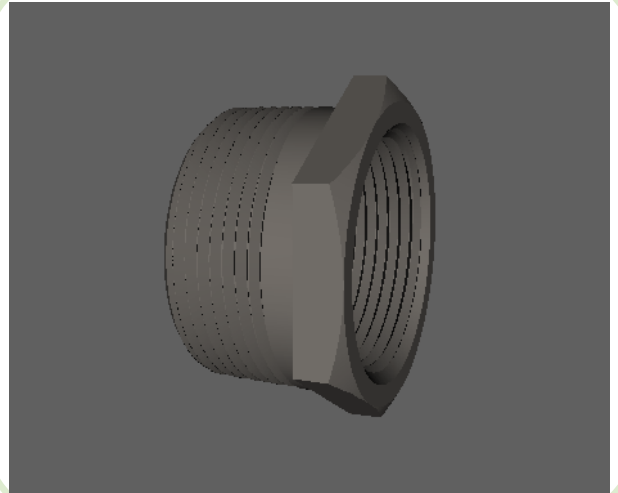


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06011														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	---	0.625	0.688	0.875	1.063	1.375	1.750	2.000	2.500	3.000	3.625	4.250	4.750	5.750	6.750
B	---	0.500	0.563	0.688	0.750	0.875	0.875	0.938	1.000	1.188	1.375	1.500	1.500	1.500	1.513
C	---	0.125	0.160	0.190	0.220	0.250	0.281	0.313	0.344	0.500	0.500	0.625	0.625	0.750	0.750
LBS	---	0.02	0.04	0.06	0.11	0.19	0.39	0.63	0.79	1.19	2.56	5.50	7.06	9.32	13.15



# Flush Bushing

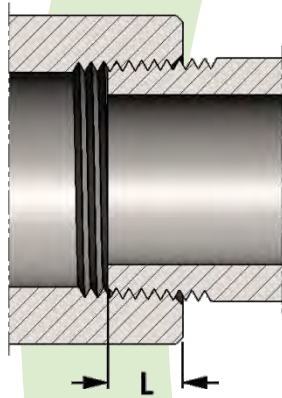
**Specification:** ASME B16.11 for 1/8" - 4" only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 8"

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, BSPT, BSPP  
And in any combination

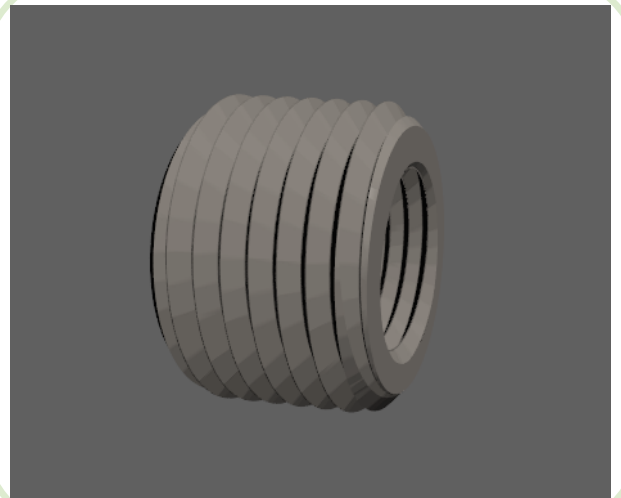


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

PIPE SIZE	Figure No. 06012														
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
A	---	0.438	0.500	0.563	0.625	0.750	0.813	0.813	0.875	1.063	1.125	1.188	1.250	1.250	1.375
LBS	---	0.01	0.02	0.03	0.05	0.09	0.17	0.31	0.37	0.52	0.90	0.92	2.125	2.41	4.60



# Socket Weld Union

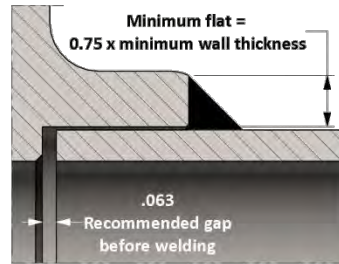
**Specification:** MSS-SP83 for 1/8"-3" Class 3000 only

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

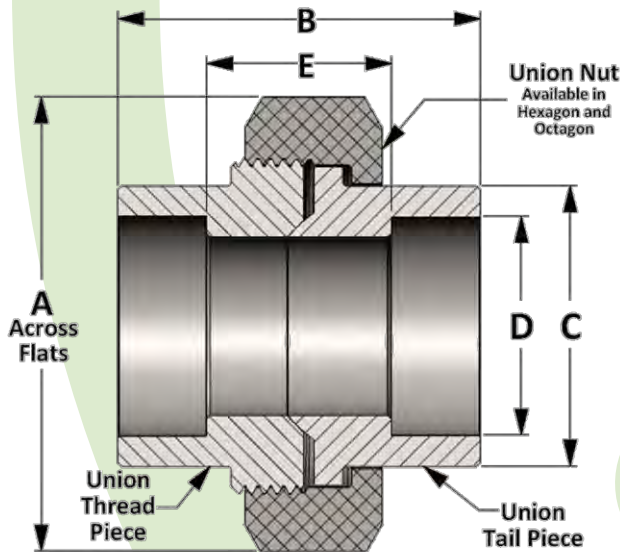
**Sizes:** 1/8"- 4" in CL 3000 • 1/8"- 3" in CL 6000 • 1/8"- 2-1/2" in CL 9000

Also available in reducing pipe sizes and tube sizes

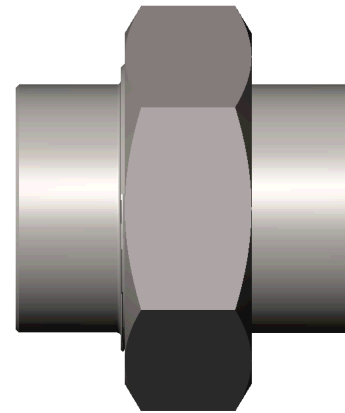
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



**Animated Model**



All dimensions are in inches • Weights are based in Carbon Steel

CLASS 3000 – FIGURE NO. 13017

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.375	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688	6.875
B	1.688	1.688	1.813	1.938	2.250	2.438	2.813	3.000	3.375	4.031	4.313	8.000
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
E	0.813	0.813	0.938	0.938	1.125	1.188	1.438	1.500	1.625	2.250	2.313	5.000
LBS	0.40	0.38	0.52	0.73	1.19	1.66	2.66	3.42	5.36	9.12	12.58	17.50

CLASS 6000 – FIGURE NO. 16017

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688	6.875	---
B	1.688	1.813	1.938	2.250	2.438	2.813	3.000	3.375	4.031	4.313	8.000	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	---
E	0.813	0.813	0.938	0.938	1.125	1.188	1.438	1.500	1.625	2.250	5.750	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	40.891	---

CLASS 9000 – FIGURE NO. 19017

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	1.750	2.000	2.250	2.563	3.063	3.688	4.313	5.000	5.750	6.875	---	---
B	2.500	2.563	2.938	3.250	3.750	4.000	4.625	4.813	5.563	6.25	---	---
C	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	---	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	---	---
E	1.720	1.688	1.938	2.000	2.375	2.375	3.000	2.938	3.188	3.750	---	---
LBS	0.89	1.045	1.955	3.29	5.34	7.99	12.73	18.34	26.36	37.07	---	---



# Threaded Union

**Specification:** MSS-SP83 for 1/8"-3" Class 3000 only

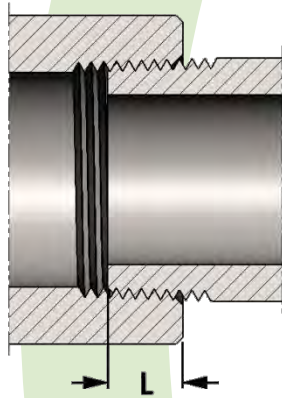
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 3000 • 1/8" - 3" in CL 6000 • 1/8" - 2-1/2" in CL 9000

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

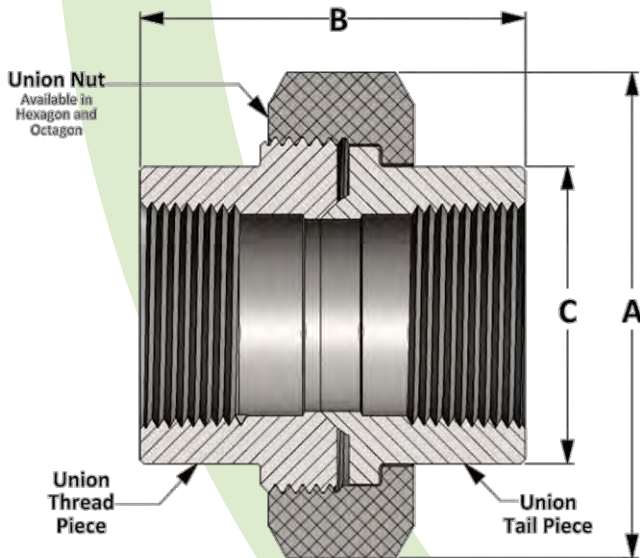
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH

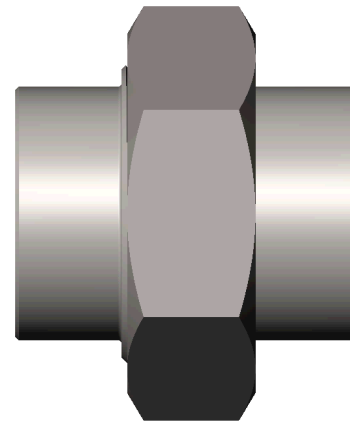


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Animated  
Model**

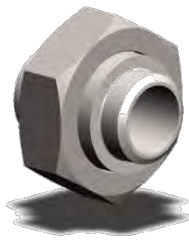


All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03017												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	6.875
B	1.625	1.625	1.750	2.000	2.313	2.500	2.813	3.000	3.438	4.000	4.375	8.000	8.000
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	5.415
LBS	0.45	0.40	0.65	0.77	1.19	1.73	2.74	3.60	5.51	8.90	12.61	36.92	17.50

PIPE SIZE	CLASS 6000 – Figure No. 06017												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	---	---
B	1.625	1.750	2.000	2.313	2.500	2.813	3.000	3.438	4.000	4.375	8.000	---	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	---	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	41.16	---	---

PIPE SIZE	CLASS 9000 – Figure No. 09017												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	---	---	---
B	2.500	2.563	3.000	3.156	3.625	4.000	4.500	4.875	6.000	6.313	---	---	---
C	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	---	---	---
LBS	1.18	1.67	1.95	3.12	5.61	8.08	13.23	18.34	28.21	45.86	---	---	---



# Butt Weld Union

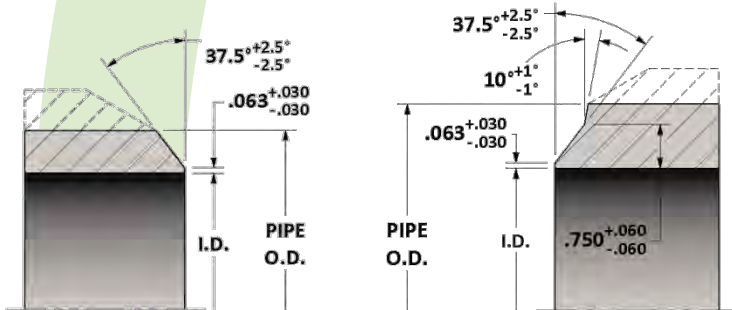
**Specification:** Weld bevels per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" – 4" in all Schedules

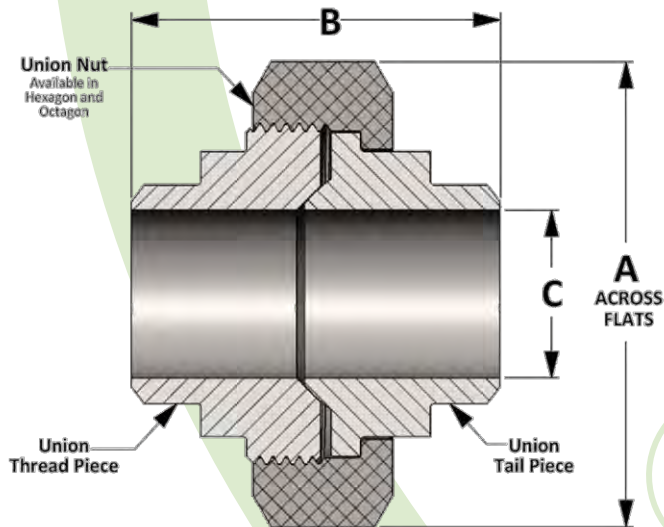
Also available in reducing sizes starting at 1/4" and in other requirements such as special wall thickness

## Butt Weld Ends Details

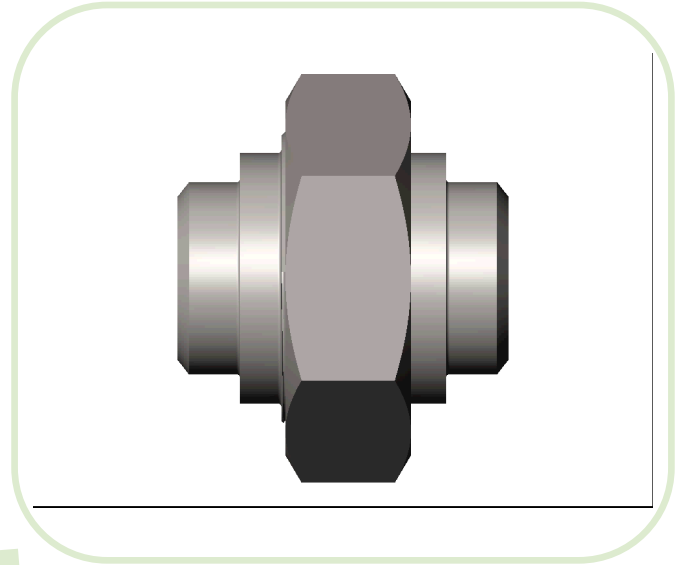


Weld bevels for wall thickness below 0.880"

Weld bevels for wall thickness above 0.880"



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	A	B	STD/S40		XH/S80		S160		XXH	
			C	LBS	C	LBS	C	LBS	C	LBS
1/8	1.375	1.688	0.269	0.37	0.215	0.38	0.157	0.39	0.025	0.39
1/4	1.375	1.688	0.364	0.38	0.302	0.38	0.250	0.39	0.064	0.40
3/8	1.625	1.813	0.493	0.55	0.423	0.58	0.359	0.60	0.171	0.62
1/2	1.812	1.938	0.622	0.72	0.546	0.75	0.464	0.78	0.252	0.83
3/4	2.250	2.250	0.824	1.25	0.742	1.31	0.612	1.39	0.434	1.45
1	2.562	2.438	1.049	1.70	0.957	1.79	0.815	1.91	0.599	2.02
1-1/4	3.062	2.813	1.380	2.61	1.278	2.76	1.160	2.91	0.896	3.16
1-1/2	3.437	3.000	1.610	3.37	1.500	3.57	1.338	3.83	1.100	4.12
2	4.062	3.375	2.067	5.07	1.939	5.43	1.689	6.01	1.503	6.34
2-1/2	4.875	4.031	2.469	8.65	2.323	9.21	2.125	9.86	1.771	10.74
3	5.687	4.313	3.068	11.82	2.900	12.70	2.624	13.93	2.300	15.05
4	6.875	8.000	4.026	29.20	3.826	31.84	3.438	36.40	3.152	39.22





# Male x Female Threaded Union

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 3000 • 1/8" - 3" in CL 6000 • 1/8" - 2-1/2" in CL 9000

**Threads:** American National Standard Taper Pipe Threads

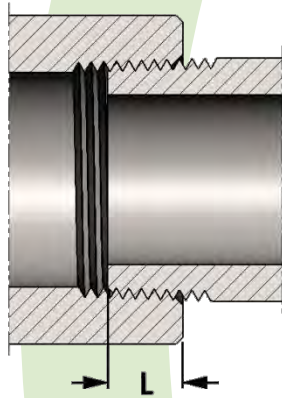
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT,

SAE, BSPT, BSPP and in any combination.

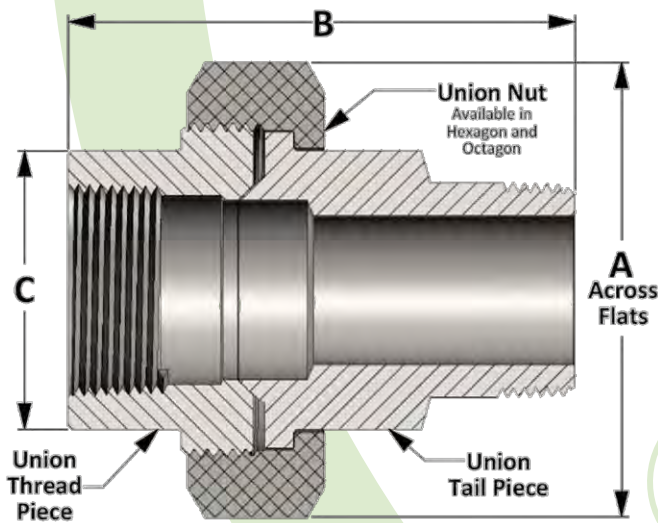
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 2000	S80/XH
Class 3000	S160
Class 6000	XXH

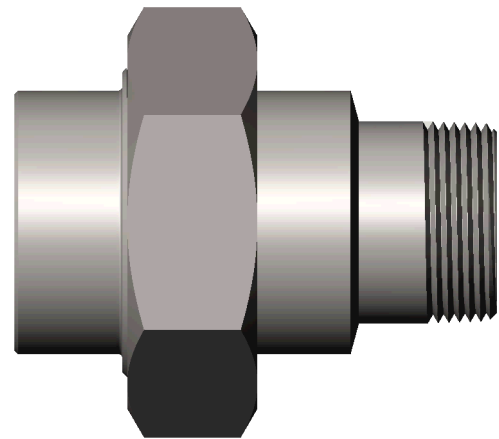


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Animated  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03032												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	6.875
B	2.500	2.500	2.719	3.000	3.438	3.750	4.125	4.313	4.875	5.375	5.813	9.406	9.406
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	5.415
LBS	0.41	0.45	0.61	0.88	1.47	2.11	3.10	4.19	6.78	10.81	15.02	30.54	34.19

PIPE SIZE	CLASS 6000 – Figure No. 06032												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	---	---
B	2.500	2.719	3.000	3.438	3.750	4.125	4.313	4.875	5.375	5.813	9.406	---	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	---	---
LBS	0.44	0.71	1.02	1.60	2.45	3.70	4.77	7.99	15.44	19.63	46.96	---	---

PIPE SIZE	CLASS 9000 – Figure No. 09032												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	---	---	---
B	2.719	3.000	3.438	3.750	4.125	4.313	4.875	5.375	5.813	9.406	---	---	---
C	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000	---	---	---
LBS	0.83	1.23	1.77	2.90	4.72	6.36	10.60	16.25	23.99	46.78	---	---	---



# Threaded Union 90° Elbow

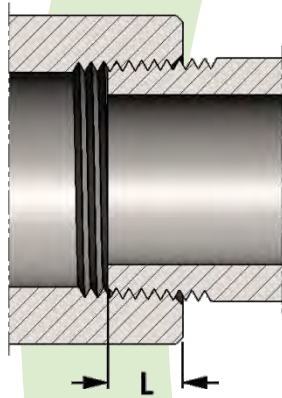
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 3" in CL 3000

Also available in CL 2000, CL 6000, CL 9000 and CL 10,000 and in reducing pipe sizes.

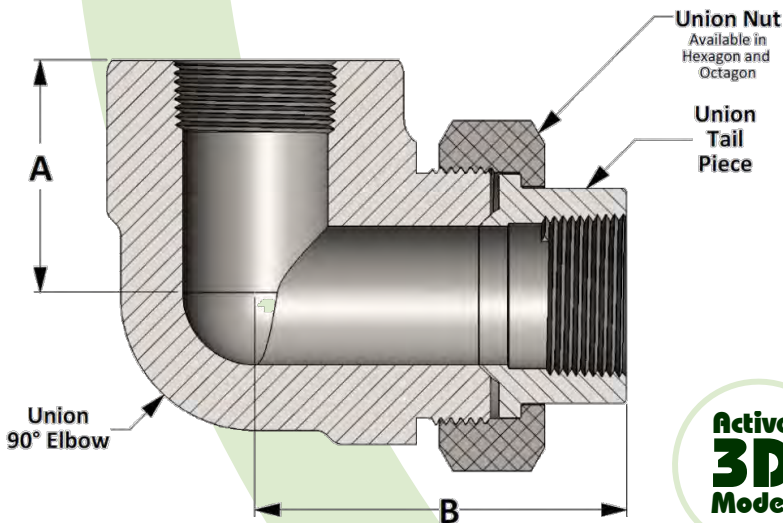
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

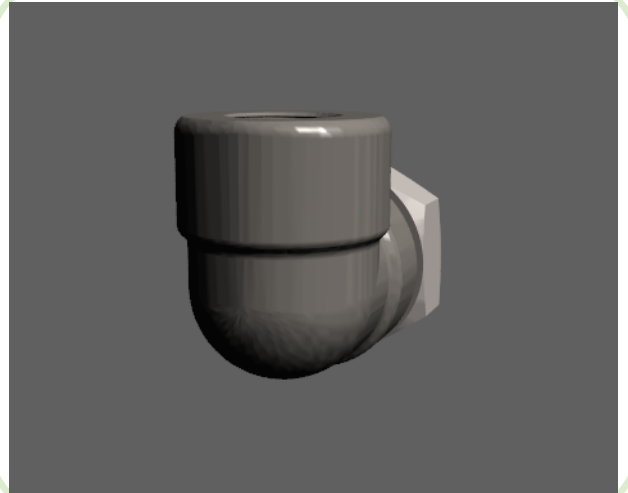


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	Class 3000 - Figure No. 03341										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.125	1.125	1.125	1.313	1.500	1.750	2.375	2.375	3.000	3.750	4.188
B	1.938	1.938	2.031	2.281	2.563	2.969	3.813	3.813	4.750	5.866	6.406
LBS	0.96	0.94	0.98	1.30	1.90	3.00	3.88	6.63	8.13	22.50	27.20



# Male x Female Union 90° Elbow

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

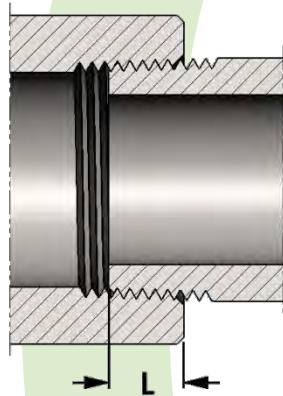
**Sizes:** 1/8" - 3" in CL 3000

Also available in CL 2000, CL 6000, CL 9000 and CL 10,000 and in reducing pipe sizes.

**Threads:** American National Standard Taper Pipe Threads NPT (ANSI/ASME B1.20.1-1983)

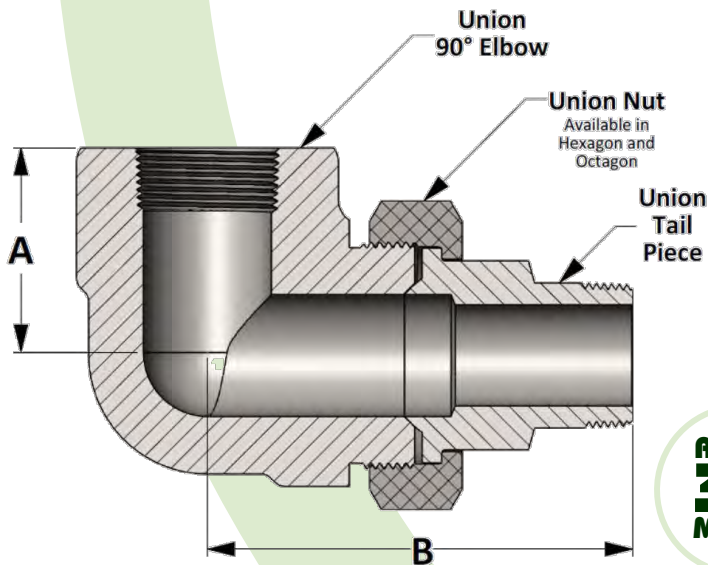
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination. Left hand threads available upon request.

Also available in Socket Weld and in a combination of Threaded and Socket Weld

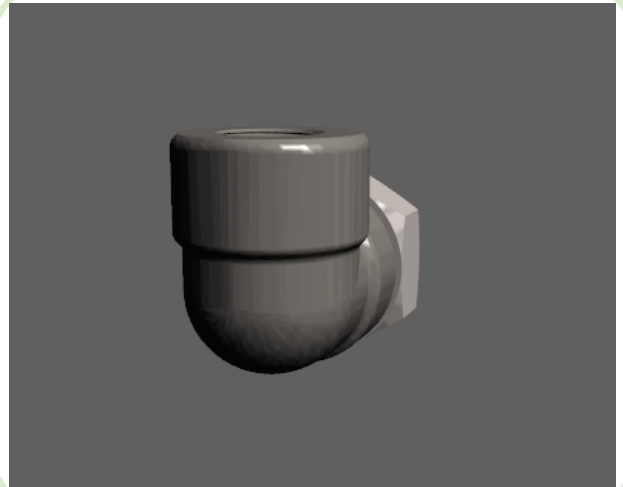


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

Class 3000 - Figure No. 03058											
PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.125	1.125	1.125	1.313	1.500	1.750	2.375	2.375	3.000	3.750	4.188
B	2.625	2.625	2.875	3.218	3.563	4.093	4.875	4.968	6.000	6.688	7.843
LBS	0.96	0.94	0.98	1.30	1.90	3.00	3.88	6.63	8.13	22.50	27.20



# Male x Female Union Tee

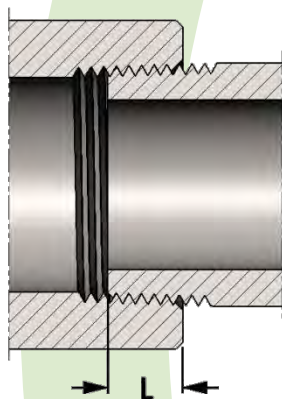
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 3" in CL 3000

Also available in CL 2000, CL 6000, CL 9000 and CL 10,000 and in reducing pipe sizes.

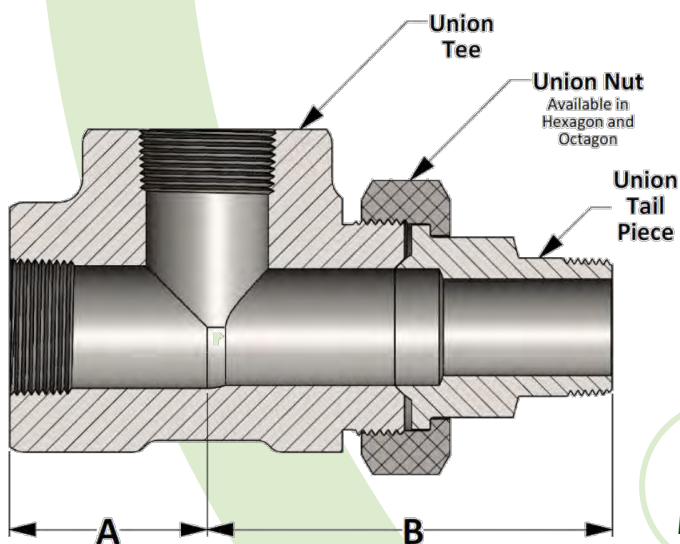
**Threads:** American National Standard Taper Pipe Threads NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination. Left hand threads available upon request.

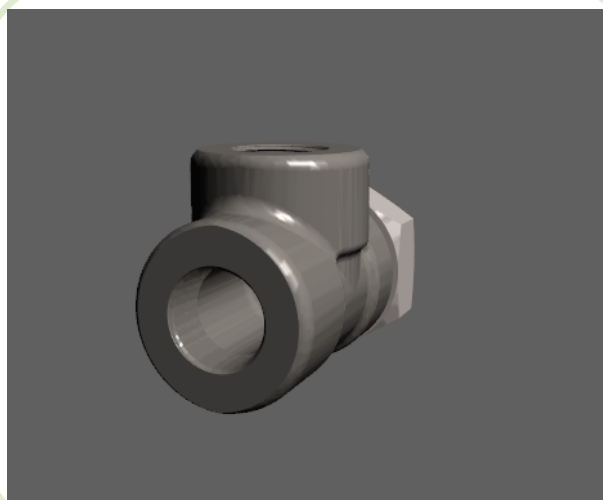


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

Class 3000 – Figure No. 03078											
PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.125	1.125	1.125	1.313	1.500	1.750	2.375	2.375	3.000	3.750	4.188
B	2.625	2.625	2.875	3.218	3.563	4.093	4.875	4.969	6.000	6.688	7.843
LBS	1.15	1.13	1.18	1.56	2.28	3.60	4.66	7.90	9.20	27.30	32.30





# Threaded Union Tee

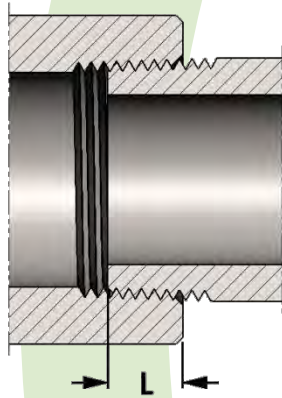
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 3" in CL 3000

Also available in CL 2000, CL 6000, CL 9000 and CL 10,000 and in reducing pipe sizes.

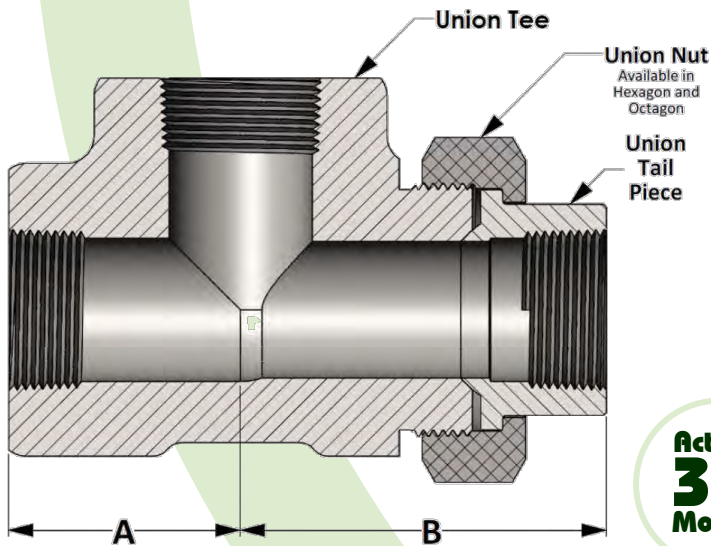
**Threads:** American National Standard Taper Pipe Threads NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination. Left hand threads available upon request.

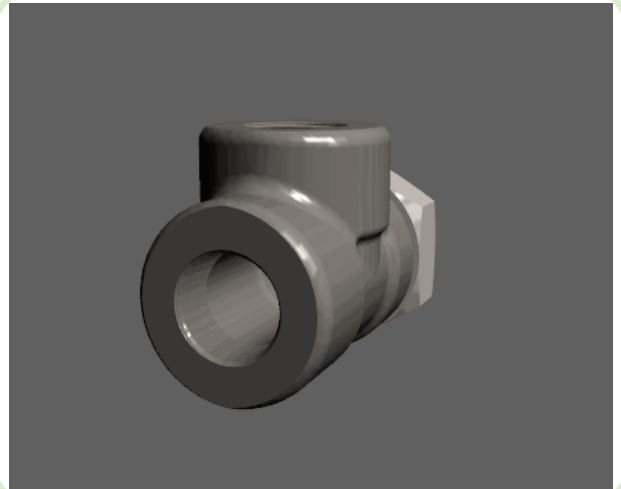


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	Class 3000 – Figure No. 03078										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.125	1.125	1.125	1.313	1.500	1.750	2.375	2.375	3.000	3.750	4.188
B	1.938	1.938	2.031	2.281	2.563	2.969	3.813	3.813	4.750	5.866	6.406
LBS	1.15	1.13	1.18	1.56	2.28	3.60	4.66	7.90	9.20	27.30	32.30





# Socket Weld O-Ring Union

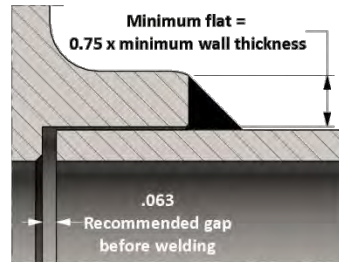
**Specification:** O-Ring groove per AS 568 B

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

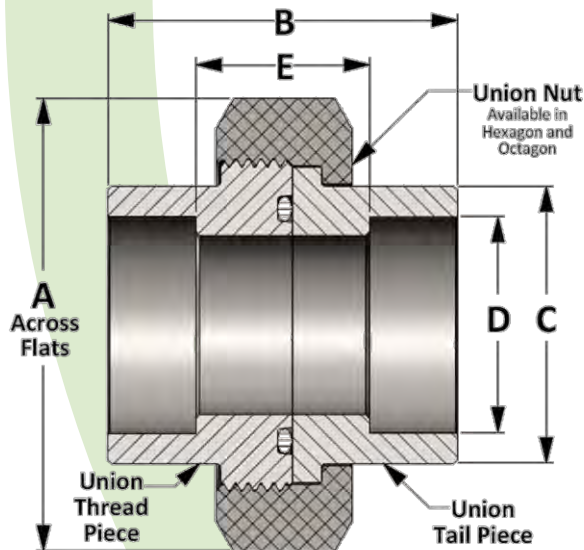
**O-Ring Material:** Available in Buna, Viton, or Teflon. Durometer hardness corresponds to pressure class.

**Sizes:** 1/8" - 3" in CL 3000 • 1/8" - 2-1/2" in CL 6000  
Also available in reducing pipe sizes and tube sizes

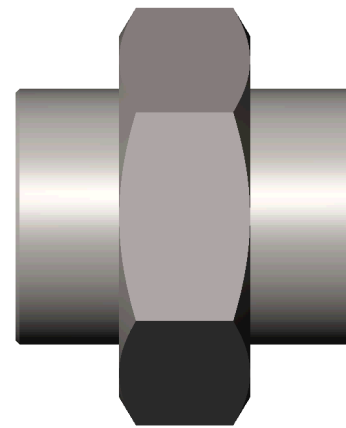
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160



**Animated  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

CLASS 3000 – FIGURE NO. 13035

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688
B	1.625	1.625	1.781	1.906	2.218	2.406	2.718	2.968	3.343	3.906	4.218
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
E	0.813	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218
LBS	0.40	0.38	0.52	0.73	1.19	1.66	2.66	3.42	5.36	9.12	12.58

CLASS 6000 – FIGURE NO. 16035

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688	---
B	1.625	1.781	1.906	2.218	2.406	2.718	2.968	3.343	3.906	4.218	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	---
E	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	---



# Threaded O-Ring Union

**Specification:** O-Ring groove per AS 568 B

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

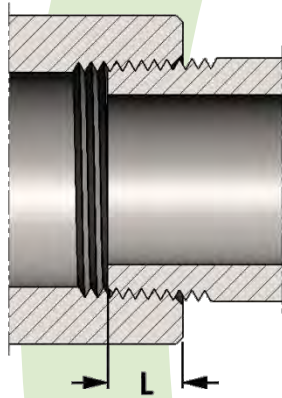
**O-Ring Material:** Available in Buna, Viton, or Teflon. Durometer hardness corresponds to pressure class.

**Sizes:** 1/8" - 3" in CL 3000 • 1/8" - 2-1/2" in CL 6000

**Threads:** American National Standard Taper Pipe Threads NPT (ANSI/ASME B1.20.1-1983)

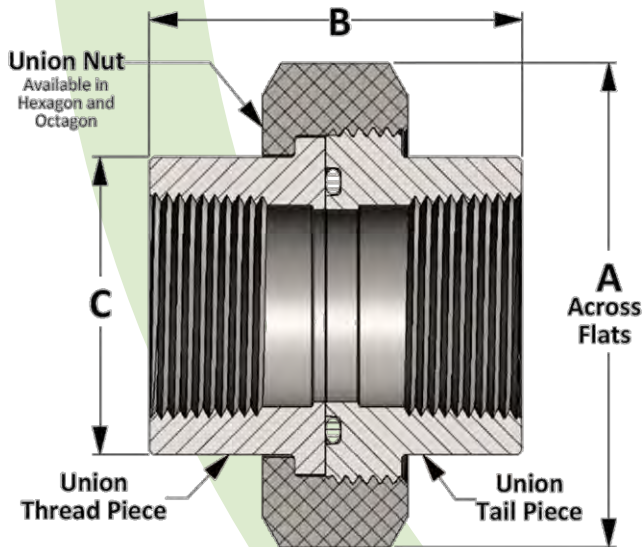
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination. Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

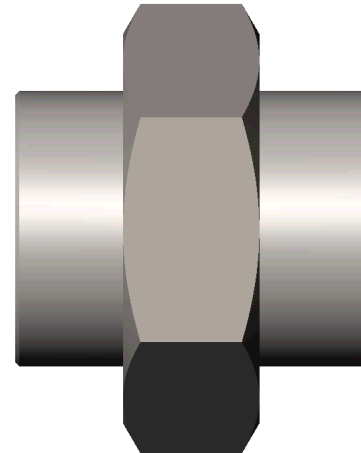


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Animated  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

**CLASS 3000 – Figure No. 03035**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688
B	1.625	1.625	1.781	1.906	2.218	2.406	2.718	2.968	3.343	3.906	4.218
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
LBS	0.45	0.40	0.65	0.77	1.19	1.73	2.74	3.60	5.51	8.90	12.61

**CLASS 6000 – Figure No. 06035**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	---
B	1.625	1.781	1.906	2.218	2.406	2.718	2.968	3.343	3.906	4.218	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	---



# Socket Weld Orifice Union

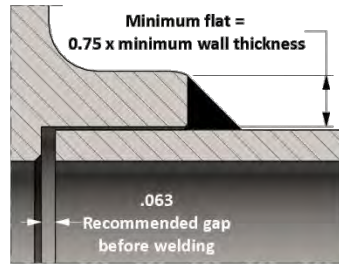
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Orifice Plate:** Available as tabbed or un-tabbed.  
Orifice hole per customer request.

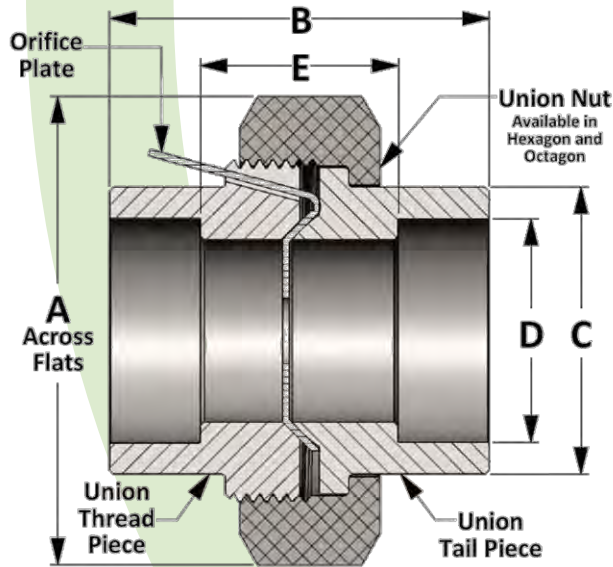
See our flow rate chart for orifice union hole sizes

**Sizes:** 1/8" - 3" in CL 3000 • 1/8" - 2-1/2" in CL 6000  
Also available in reducing pipe sizes and tube sizes

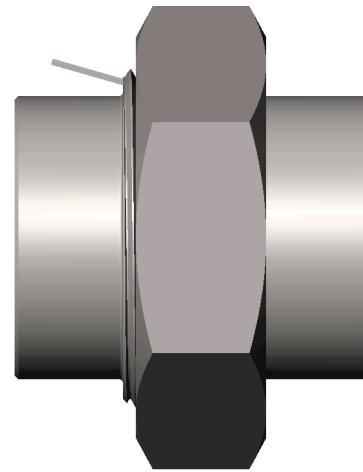
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160



**Animated  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

CLASS 3000 – FIGURE NO. 13030

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688
B	1.725	1.725	1.881	2.006	2.318	2.506	2.818	3.068	3.443	4.006	4.318
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
E	0.813	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218
LBS	0.40	0.38	0.52	0.73	1.19	1.66	2.66	3.42	5.36	9.12	12.58

CLASS 6000 – FIGURE NO. 16030

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688	---
B	1.725	1.881	2.006	2.318	2.506	2.818	3.068	3.443	4.006	4.318	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	---
E	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	---



# Threaded Orifice Union

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Orifice Plate:** Available as tabbed or un-tabbed.  
Orifice hole per customer request.

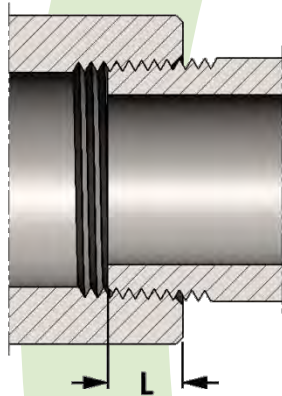
See our flow rate chart for orifice union hole sizes

**Sizes:** 1/8" - 4" in CL 3000 • 1/8" - 3" in CL 6000

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

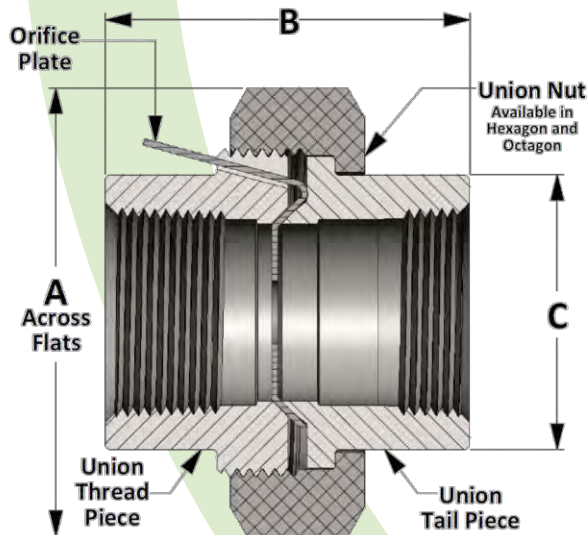
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

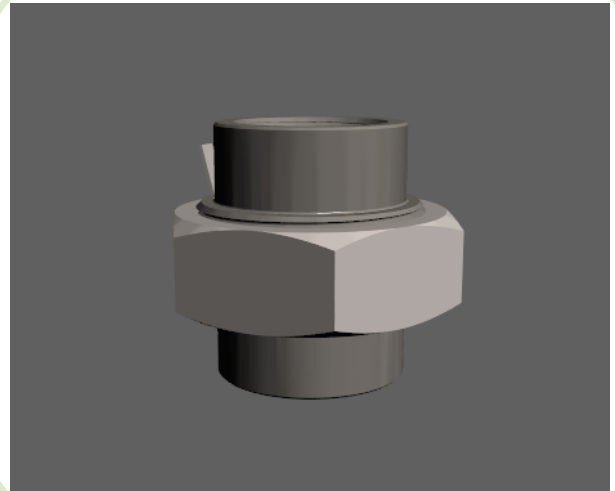


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03030												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	6.875
B	1.625	1.625	1.750	2.000	2.313	2.500	2.813	3.000	3.438	4.000	4.375	8.000	8.000
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	5.415
LBS	0.45	0.40	0.65	0.77	1.19	1.73	2.74	3.60	5.51	8.90	12.61	36.92	17.50

PIPE SIZE	CLASS 6000 – Figure No. 06030												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	6.875	---	---
B	1.625	1.750	2.000	2.313	2.500	2.813	3.000	3.438	4.000	4.375	8.000	---	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	5.415	---	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	41.16	---	---





# Socket Weld Di - Electric Union

**Specification:** O-Ring groove per AS 568 B

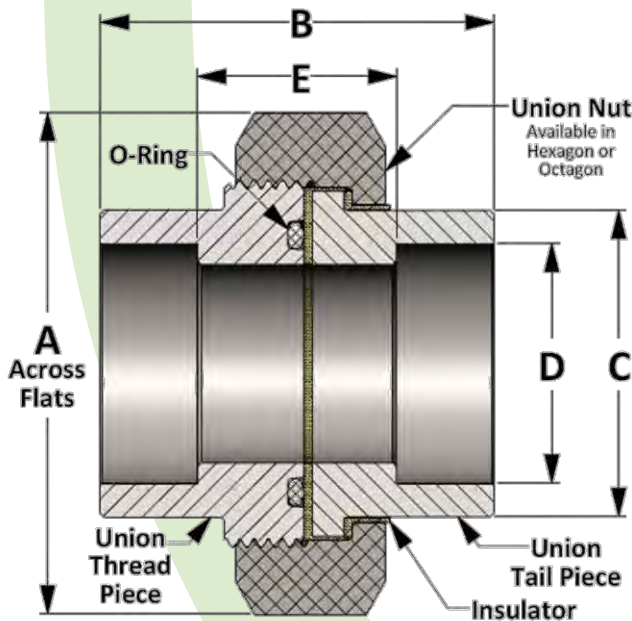
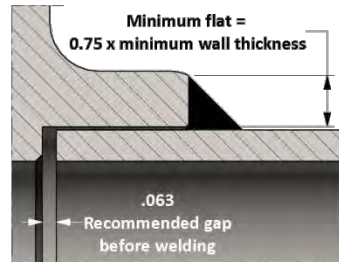
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**O-Ring Material:** Available in Buna, Viton, or Teflon. Durometer hardness corresponds to pressure class.

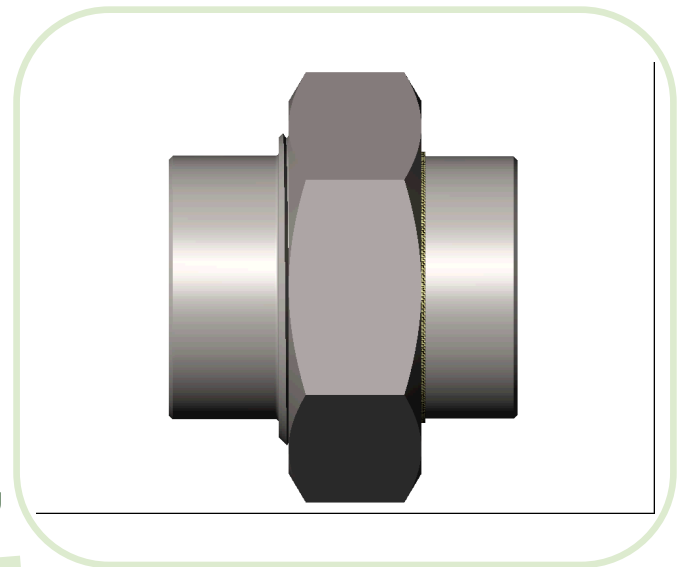
**Insulator:** Two pieces of canvas based phenolic shaped to prevent flow of electric charge, thus eliminating galvanic corrosion.

**Sizes:** 1/8" - 3" in CL 3000 • 1/8" - 2-1/2" in CL 6000  
Also available in reducing pipe sizes and tube sizes

## Welding Gap and Minimum Flat Dimension For Socket Weld Fittings



**Animated  
Model**



All dimensions are in inches • Weights are based in Carbon Steel

CLASS 3000 – FIGURE NO. 13039

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688
B	1.688	1.688	1.843	1.968	2.250	2.468	2.781	3.031	3.406	3.968	4.281
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
E	0.813	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218
LBS	0.40	0.38	0.52	0.73	1.19	1.66	2.66	3.42	5.36	9.12	12.58

CLASS 6000 – FIGURE NO. 16039

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.625	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688	---
B	1.688	1.843	1.968	2.250	2.468	2.781	3.031	3.406	3.968	4.281	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
D	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	---
E	0.813	0.906	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	---





# Threaded Di - Electric Union

**Specification:** O-Ring groove per AS 568 B

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**O-Ring Material:** Available in Buna, Viton, or Teflon. Durometer hardness corresponds to pressure class.

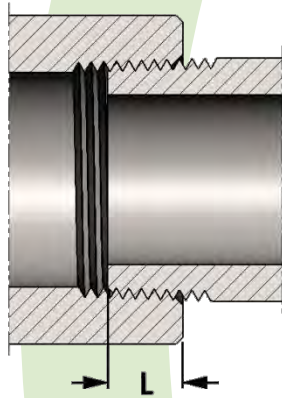
**Insulator:** Two pieces of canvas based phenolic shaped to prevent flow of electric charge, thus eliminating galvanic corrosion.

**Sizes:** 1/8" - 3" in CL 3000 • 1/8" - 2-1/2" in CL 6000

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

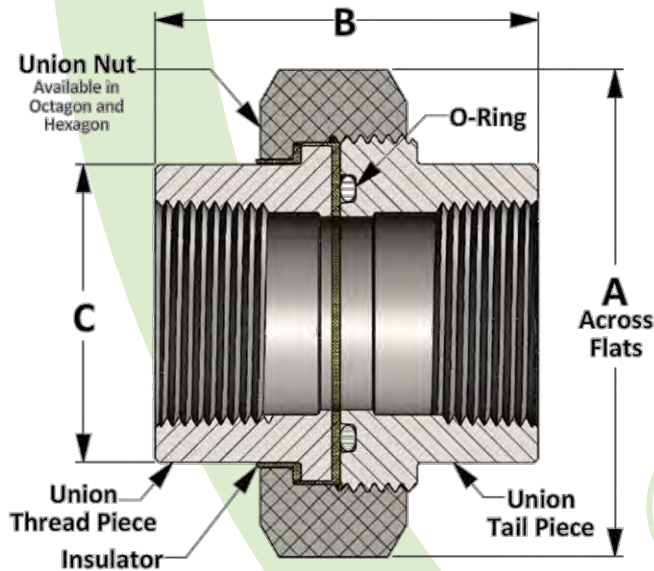
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

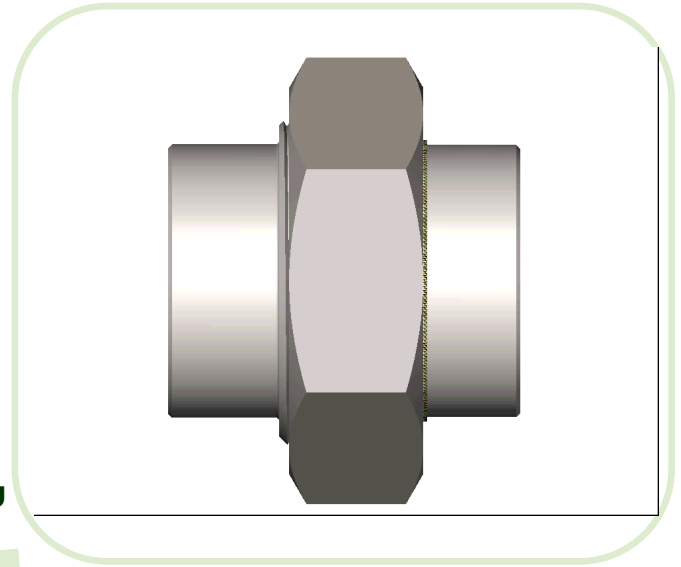


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Animated  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

**CLASS 3000 – Figure No. 03039**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688
B	1.688	1.688	1.843	1.968	2.250	2.468	2.781	3.031	3.406	3.968	4.281
C	0.865	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
LBS	0.45	0.40	0.65	0.77	1.19	1.73	2.74	3.60	5.51	8.90	12.61

**CLASS 6000 – Figure No. 06039**

PIPE SIZE	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.375	1.625	1.813	2.25	2.563	3.063	3.438	4.063	4.875	5.688	---
B	1.688	1.843	1.968	2.250	2.468	2.781	3.031	3.406	3.968	4.281	---
C	0.865	1.025	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
LBS	0.48	0.56	0.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	---

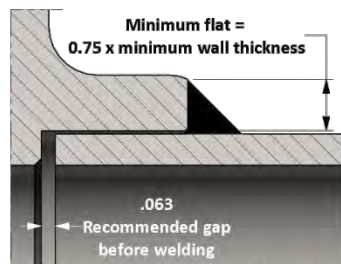


# Socket Weld Lug Nut Union

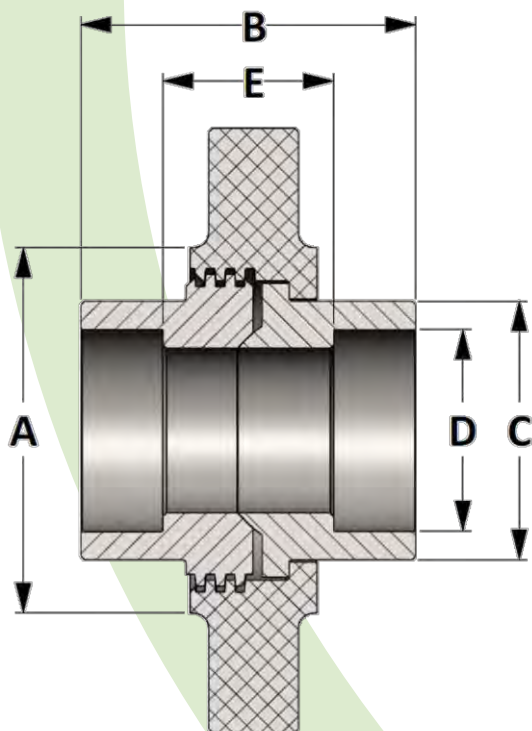
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" - 3" in CL 3000 • 1/2" - 2-1/2" in CL 6000  
Also available in reducing pipe sizes and tube sizes

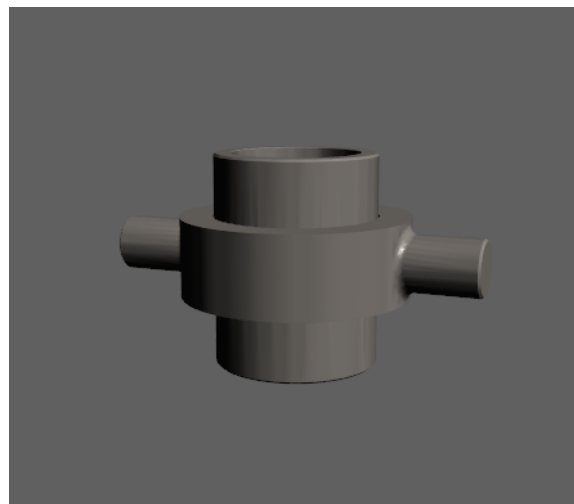
## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160



Active  
**3D**  
Model



All dimensions are in inches • Weights are based in Carbon Steel

CLASS 3000 – FIGURE NO. 13267

PIPE SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	1.813	2.250	2.562	3.063	3.438	4.063	4.875	5.688
B	2.006	2.318	2.506	2.818	3.068	3.443	4.006	4.318
C	1.235	1.465	1.795	2.165	2.425	2.965	3.615	4.305
D	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
E	0.906	1.094	1.156	1.344	1.468	1.593	2.156	2.218
LBS	0.96	1.61	2.17	3.33	4.36	7.22	12.57	17.12

CLASS 6000 – FIGURE NO. 16267

PIPE SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	2.250	2.562	3.063	3.438	4.063	4.875	5.688	---
B	2.318	2.506	2.818	3.068	3.443	4.006	4.318	---
C	1.465	1.795	2.165	2.425	2.965	3.615	4.305	---
D	0.859	1.071	1.335	1.682	1.922	2.410	2.910	---
E	1.094	1.156	1.344	1.468	1.593	2.156	2.218	---
LBS	1.80	2.52	3.95	5.00	8.83	14.65	21.19	---



# Pipe Nipple

**Specification:** ASTM A733

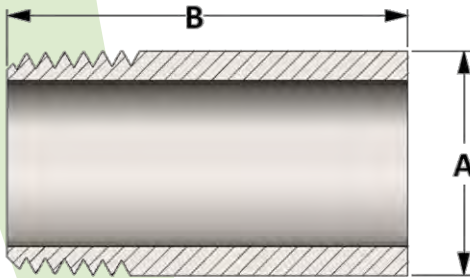
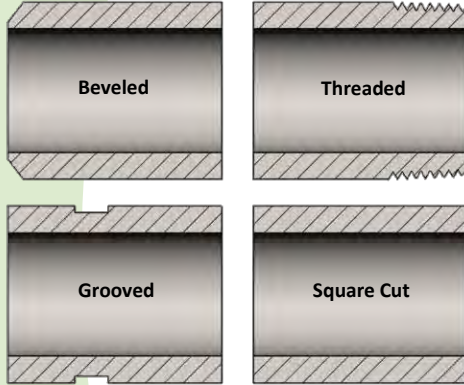
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 8" in S40/STD, S80/XH, S160 & XXH

Also available in special pipe schedules and custom lengths.  
Lengths which are shorter than Close length are not recommended for pressure application.

## End Preparations



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size	A	B										
		Close	Short	Standard Lengths								
1/8	0.405	0.750	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1/4	0.540	0.875	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
3/8	0.675	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1/2	0.840	1.125	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
3/4	1.050	1.375	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1	1.315	1.500	2.000	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1-1/4	1.660	1.625	2.000	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1-1/2	1.900	1.750	2.000	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
2	2.375	2.000	2.500	---	---	3.000	3.500	4.000	4.500	5.000	5.500	6.000
2-1/2	2.875	2.500	3.000	---	---	---	---	4.000	4.500	5.000	5.500	6.000
3	3.500	2.625	3.000	---	---	---	---	4.000	4.500	5.000	5.500	6.000
3-1/2	4.000	2.750	4.000	---	---	---	---	---	4.500	5.000	5.500	6.000
4	4.500	2.875	4.000	---	---	---	---	---	4.500	5.000	5.500	6.000
5	5.563	3.000	4.500	---	---	---	---	---	---	5.000	5.500	6.000
6	6.625	3.125	4.500	---	---	---	---	---	---	5.000	5.500	6.000



# Hex Nipple

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

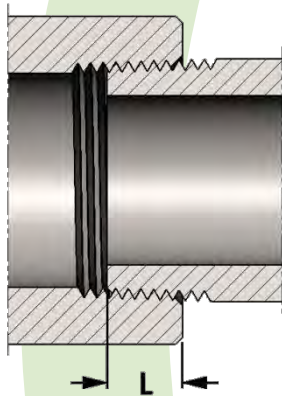
**Sizes:** 1/8" - 4" in S40/STD, S80/XH, S160 & XXH

Also available in reducing pipe sizes, special pipe schedules and custom lengths.

**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

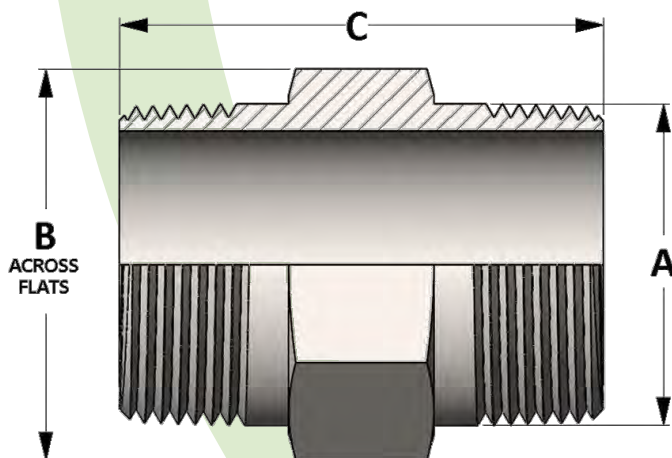
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, BSPT, BSPP and in any combination.

Left hand threads available upon request.

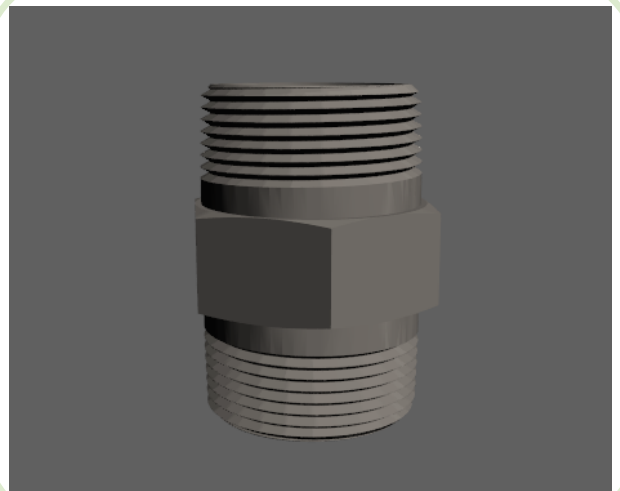


SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size	A	B	C								
			Standard Lengths								
1/8	0.405	0.438	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1/4	0.540	0.625	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
3/8	0.675	0.688	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1/2	0.840	0.875	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
3/4	1.050	1.063	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1	1.315	1.375	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1-1/4	1.660	1.750	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
1-1/2	1.900	2.000	---	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000
2	2.375	2.500	---	---	3.000	3.500	4.000	4.500	5.000	5.500	6.000
2-1/2	2.875	3.000	---	---	---	---	4.000	4.500	5.000	5.500	6.000
3	3.500	3.625	---	---	---	---	4.000	4.500	5.000	5.500	6.000
4	4.500	4.750	---	---	---	---	---	4.500	5.000	5.500	6.000



# Concentric Swage Nipple

**Specification:** MSS SP-95

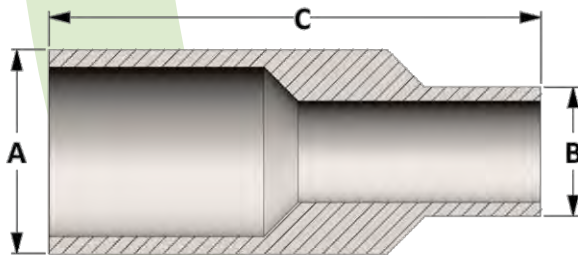
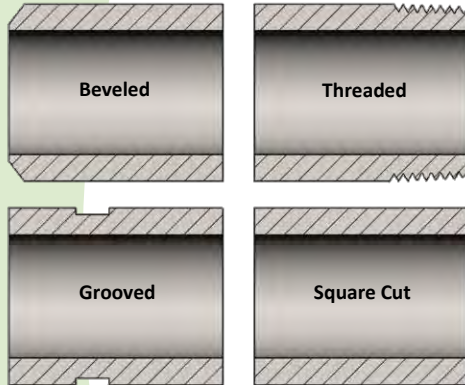
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

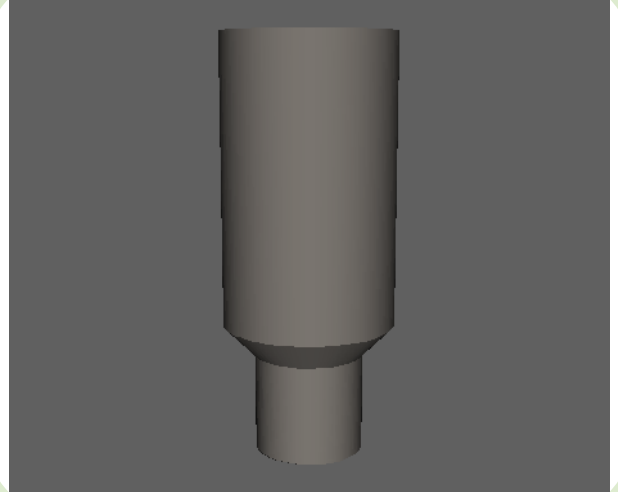
**Sizes:** 1/4" - 8" in S40/STD, S80/XH, S160 & XXH

Also available in special pipe schedules and split schedules

## End Preparations



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size	Dimensions			Weights			
	A	B	C	STD	XH	S160	XXH
1/4	1/8	0.540	0.405	2.250	0.07	0.09	0.10
3/8	1/8	0.675	0.405	2.500	0.11	0.14	0.16
	1/4	0.675	0.540	2.500	0.12	0.15	0.17
1/2	1/8	0.840	0.405	2.750	0.19	0.22	0.26
	1/4	0.840	0.540	2.750	0.19	0.23	0.26
3/4	3/8	0.840	0.675	2.750	0.19	0.23	0.27
	1/8	1.050	0.405	3.000	0.38	0.43	0.50
	1/4	1.050	0.540	3.000	0.38	0.43	0.51
	3/8	1.050	0.675	3.000	0.36	0.43	0.52
1	1/2	1.050	0.840	3.000	0.35	0.44	0.53
	1/8	1.315	0.405	3.500	0.58	0.65	0.76
	1/4	1.315	0.540	3.500	0.57	0.66	0.76
	3/8	1.315	0.675	3.500	0.56	0.65	0.76
1-1/4	1/2	1.315	0.840	3.500	0.55	0.65	0.78
	3/4	1.315	1.050	3.500	0.51	0.63	0.79
	1/8	1.660	0.405	4.000	1.00	1.13	1.27
	1/4	1.660	0.540	4.000	1.00	1.14	1.28
1-1/2	3/8	1.660	0.675	4.000	0.98	1.13	1.28
	1/2	1.660	0.840	4.000	0.96	1.12	1.28
	3/4	1.660	1.050	4.000	0.92	1.09	1.29
	1	1.660	1.315	4.000	0.87	1.07	1.30
2	1/8	1.900	0.405	4.500	1.34	1.53	1.78
	1/4	1.900	0.540	4.500	1.34	1.53	1.78
	3/8	1.900	0.675	4.500	1.32	1.53	1.79
	1/2	1.900	0.840	4.500	1.31	1.53	1.80
2-1/2	3/4	1.900	1.050	4.500	1.27	1.50	1.82
	1	1.900	1.315	4.500	1.22	1.48	1.83
	1-1/4	1.900	1.660	4.500	1.11	1.41	1.78
	1-1/2	1.900	1.660	4.500	1.11	1.41	1.78

Pipe Size	Dimensions			Weights			
	A	B	C	STD	XH	S160	XXH
2	1/2	2.375	0.840	6.500	2.73	3.22	4.05
	3/4	2.375	1.050	6.500	2.67	3.18	4.06
	1	2.375	1.315	6.500	2.60	3.14	4.06
	1-1/4	2.375	1.660	6.500	2.44	3.03	3.95
2-1/2	1-1/2	2.375	1.900	6.500	2.30	2.93	3.96
	3/4	2.875	1.050	7.000	3.98	4.75	5.71
	1	2.875	1.315	7.000	3.93	4.72	5.72
	1-1/4	2.875	1.660	7.000	3.81	4.64	5.66
3	1-1/2	2.875	1.900	7.000	3.70	4.57	5.68
	2	2.875	2.375	7.000	3.44	4.40	5.78
	1	3.500	1.315	8.000	6.86	8.01	9.74
	1-1/4	3.500	1.660	8.000	6.65	7.86	9.61
3-1/2	1-1/2	3.500	1.900	8.000	6.47	7.73	9.59
	2	3.500	2.375	8.000	6.03	7.41	9.60
	2-1/2	3.500	2.875	8.000	5.78	7.30	9.46
	1-1/2	4.000	1.900	8.000	8.36	9.91	---
4	2	4.000	2.375	8.000	7.90	9.56	---
	2-1/2	4.000	2.875	8.000	7.59	9.38	---
	3	4.000	3.500	8.000	6.79	8.81	---
	1-1/2	4.500	1.900	9.000	14.42	16.38	19.75
5	2	4.500	2.375	9.000	13.56	15.66	19.40
	2-1/2	4.500	2.875	9.000	12.80	15.06	18.75
	3	4.500	3.500	9.000	11.22	13.76	18.03
	3-1/2	4.500	4.000	9.000	9.72	12.53	---
6	3	6.625	3.500	12.00	28.00	34.08	44.36
	3-1/2	6.625	4.000	12.00	26.90	33.28	---
	4	6.625	4.500	12.00	25.68	32.40	44.21
	5	6.625	5.563	12.00	22.55	30.21	44.35





# Eccentric Swage Nipple

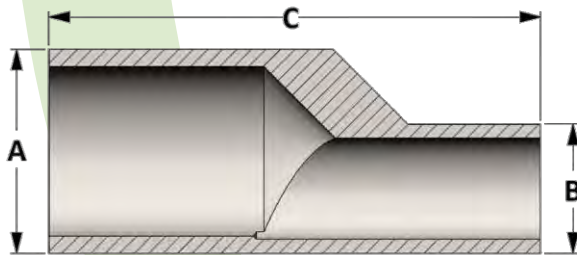
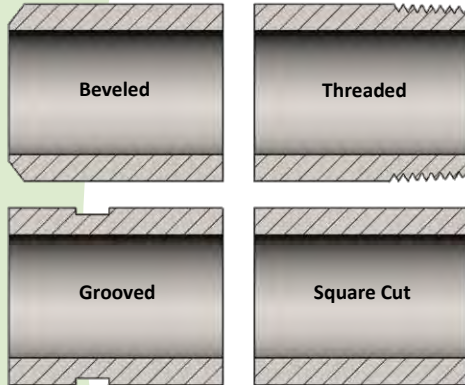
**Specification:** MSS SP-95

Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

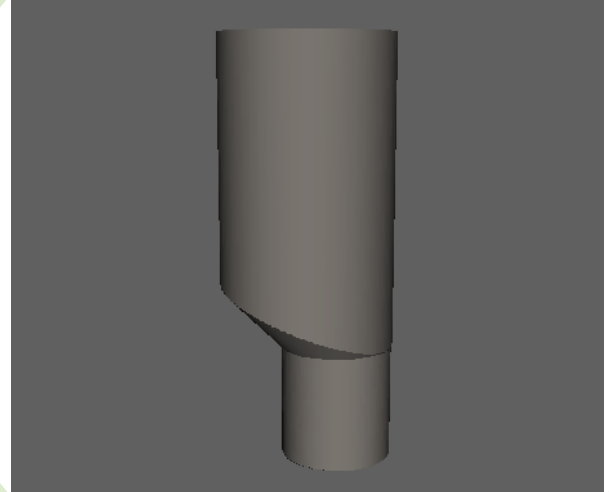
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 8" in S40/STD, S80/XH, S160 & XXH  
Also available in special pipe schedules and split schedules

## End Preparations



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
1/4	1/8	0.540	0.405	2.250	0.08	0.10	0.11	---
	3/8	0.675	0.405	2.500	0.13	0.15	0.18	---
1/2	1/4	0.675	0.540	2.500	0.13	0.16	0.19	0.22
	3/8	0.840	0.405	2.750	0.21	0.25	0.28	0.35
3/4	1/2	0.840	0.675	2.750	0.20	0.24	0.29	0.36
	3/8	1.050	0.405	3.000	0.32	0.37	0.44	---
1	1/4	1.050	0.540	3.000	0.31	0.37	0.44	---
	3/8	1.050	0.675	3.000	0.30	0.36	0.45	0.54
1-1/4	1/2	1.050	0.840	3.000	0.29	0.37	0.45	0.57
	3/8	1.315	0.405	3.500	0.61	0.69	0.80	---
1-1/2	1/4	1.315	0.540	3.500	0.59	0.68	0.79	---
	3/8	1.315	0.675	3.500	0.56	0.67	0.78	0.93
2	1/2	1.315	0.840	3.500	0.54	0.64	0.77	0.95
	3/4	1.315	1.050	3.500	0.48	0.60	0.76	0.94
2-1/2	1/8	1.660	0.405	4.000	0.97	1.11	1.25	---
	1/4	1.660	0.540	4.000	0.95	1.09	1.24	---
3	3/8	1.660	0.675	4.000	0.91	1.06	1.23	1.51
	1/2	1.660	0.840	4.000	0.88	1.04	1.21	1.52
3-1/2	3/4	1.660	1.050	4.000	0.83	1.00	1.21	1.53
	1	1.660	1.315	4.000	0.80	1.00	1.24	1.61
4	1/8	1.900	0.405	4.500	1.38	1.57	---	---
	1/4	1.900	0.540	4.500	1.34	1.55	1.81	---
4-1/2	3/8	1.900	0.675	4.500	1.30	1.51	1.79	2.13
	1/2	1.900	0.840	4.500	1.25	1.48	1.76	2.13
5	3/4	1.900	1.050	4.500	1.18	1.42	1.74	2.13
	1	1.900	1.315	4.500	1.13	1.39	1.75	2.19
6	1-1/4	1.900	1.660	4.500	1.05	1.36	1.72	2.19

Pipe Size		Dimensions			Weights			
		A	B	C	STD	XH	S160	XXH
2	1/2	2.375	0.840	6.500	2.55	3.06	3.90	4.51
	3/4	2.375	1.050	6.500	2.43	2.98	3.85	4.48
2-1/2	1	2.375	1.315	6.500	2.33	2.88	3.81	4.50
	1-1/4	2.375	1.660	6.500	2.18	2.77	3.71	4.53
3	1-1/2	2.375	1.900	6.500	2.09	2.73	3.76	4.61
	3/4	2.875	1.050	7.000	3.45	4.23	5.22	6.71
3-1/2	1	2.875	1.315	7.000	3.32	4.13	5.16	6.71
	1-1/4	2.875	1.660	7.000	3.16	4.01	5.04	6.70
4	1-1/2	2.875	1.900	7.000	3.09	3.96	5.09	6.76
	2	2.875	2.375	7.000	3.02	3.99	5.38	7.03
4-1/2	1	3.500	1.315	8.000	6.01	7.20	8.98	10.86
	1-1/4	3.500	1.660	8.000	5.65	6.88	8.66	10.72
5	1-1/2	3.500	1.900	8.000	5.41	6.70	8.59	10.65
	2	3.500	2.375	8.000	5.03	6.42	8.64	10.67
5-1/2	2-1/2	3.500	2.875	8.000	5.07	6.60	8.77	11.43
	1-1/2	4.000	1.900	8.000	7.23	8.82	---	13.65
6	2	4.000	2.375	8.000	6.63	8.32	---	13.39
	2-1/2	4.000	2.875	8.000	6.43	8.24	---	13.84
6-1/2	3	4.000	3.500	8.000	6.10	8.14	---	14.39
	1-1/2	4.500	1.900	9.000	9.76	11.79	15.25	17.83
7	2	4.500	2.375	9.000	8.98	11.13	14.96	17.50
	2-1/2	4.500	2.875	9.000	8.69	10.98	14.71	18.00
8	3	4.500	3.500	9.000	8.19	10.75	15.05	18.52
	3-1/2	4.500	4.000	9.000	8.00	10.83	---	19.35
9	3	6.625	3.500	12.00	27.91	34.08	44.58	50.69
	3-1/2	6.625	4.000	12.00	25.94	32.39	---	49.77
10	4	6.625	4.500	12.00	24.16	30.93	42.90	49.26
	5	6.625	5.563	12.00	20.96	28.63	42.87	49.45

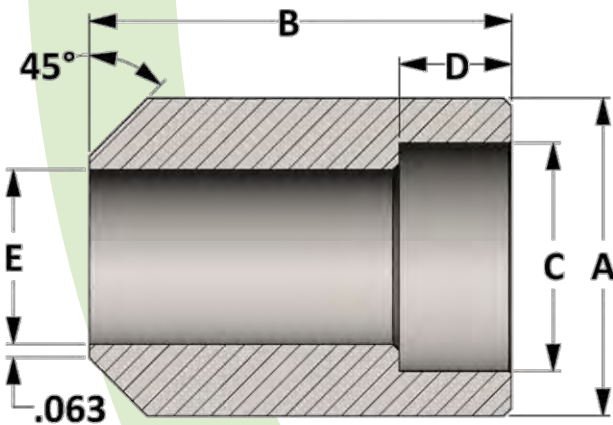
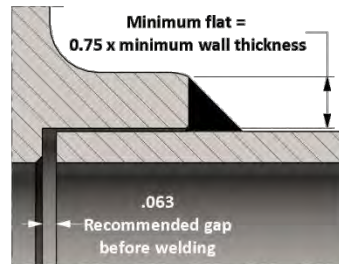


# Socket Weld Boss

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2" in CL 3000 and CL 6000 • 1/2" - 2" in CL 9000  
Also available in special pipe schedules/class rating, and special lengths

## Welding Gap and Minimum Flat Dimension for Socket Weld Fittings



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13022							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656
E	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067
LBS	0.20	0.25	0.45	0.60	0.80	1.10	1.35	1.60

PIPE SIZE	CLASS 6000 – Figure No. 16022							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656
E	0.250	0.359	0.466	0.614	0.815	1.160	1.338	1.689
LBS	0.27	0.45	0.72	0.91	1.41	1.58	2.17	2.76

PIPE SIZE	CLASS 9000 – Figure No. 19022							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	---	---	1.750	2.000	2.500	2.750	3.000	3.625
B	---	---	2.000	2.000	2.000	2.000	2.000	2.250
C	---	---	0.859	1.071	1.335	1.682	1.922	2.410
D	---	---	0.438	0.531	0.531	0.531	0.531	0.656
E	---	---	0.252	0.434	0.599	0.896	1.100	1.503
LBS	---	---	0.99	1.43	1.66	2.19	2.83	4.19



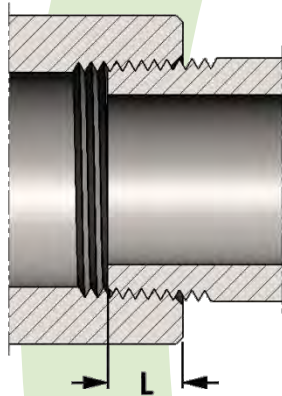
# Threaded Boss

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2" in CL 3000 and in CL 6000  
Also available in special lengths

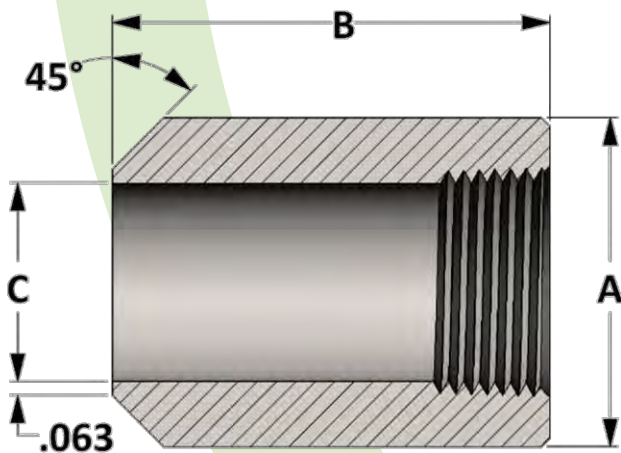
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)  
Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

Threaded Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH



SIZE	L	SIZE	L
1/8	0.273	2	0.697
1/4	0.395	2-1/2	0.933
3/8	0.407	3	1.016
1/2	0.534	3-1/2	1.071
3/4	0.553	4	1.094
1	0.661	5	1.187
1-1/4	0.681	6	1.208
1-1/2	0.681	8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03022							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188
LBS	0.19	0.25	0.45	0.60	0.73	1.17	1.36	1.67

PIPE SIZE	CLASS 6000 – Figure No. 06022							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188
LBS	0.24	0.40	0.65	0.82	1.35	1.63	2.22	2.88

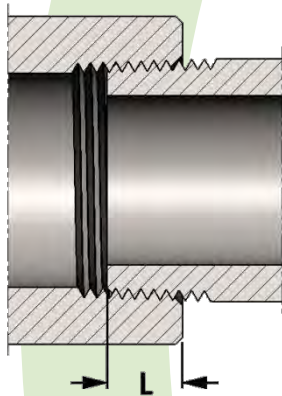


# Combination Boss

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 2" in CL 3000 and CL 6000 • 1/2" - 2" in CL 9000  
Also available in special pipe schedules/class rating, and special lengths

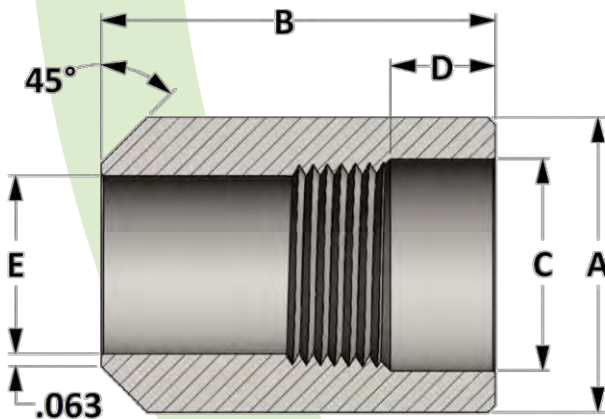
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)  
Also available in other thread forms: NPTF, NPSC, NPSM, NGT,  
Left hand threads available upon request.



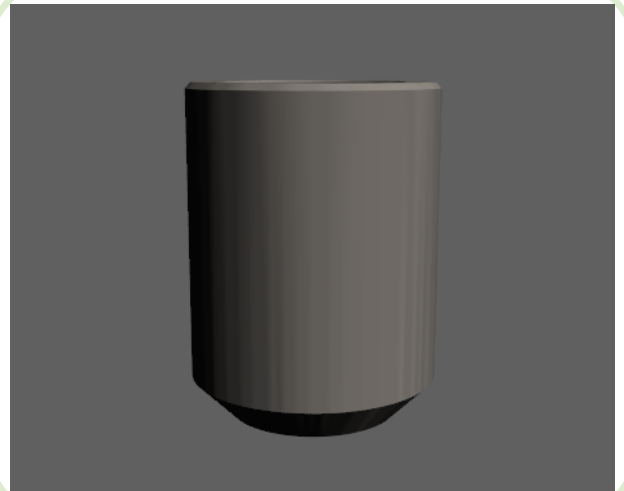
SIZE	L
1/8	0.273
1/4	0.395
3/8	0.407
1/2	0.534
3/4	0.553
1	0.661
1-1/4	0.681
1-1/2	0.681

SIZE	L
2	0.697
2-1/2	0.933
3	1.016
3-1/2	1.071
4	1.094
5	1.187
6	1.208
8	1.313

**Length of thread  
screwed into fitting**



**Active  
3D  
Model**



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 30131							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	0.875	1.063	1.250	1.500	1.813	2.250	2.500	3.000
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656
E	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188
LBS	0.20	0.25	0.45	0.60	0.80	1.10	1.35	1.60

PIPE SIZE	CLASS 6000 – Figure No. 60131							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	1.000	1.250	1.500	1.750	2.000	2.500	2.750	3.625
B	1.625	1.750	2.000	2.000	2.000	2.000	2.000	2.000
C	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410
D	0.438	0.438	0.438	0.531	0.531	0.531	0.531	0.656
E	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188
LBS	0.27	0.45	0.72	0.91	1.41	1.58	2.17	2.76

PIPE SIZE	CLASS 9000 – Figure No. 90131							
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
A	---	---	1.750	2.000	2.500	2.750	3.000	3.625
B	---	---	2.000	2.000	2.000	2.000	2.000	2.250
C	---	---	0.859	1.071	1.335	1.682	1.922	2.410
D	---	---	0.438	0.531	0.531	0.531	0.531	0.656
E	---	---	0.703	0.906	1.141	1.468	1.688	2.188
LBS	---	---	0.99	1.43	1.66	2.19	2.83	4.19



# Socket Weld Couplet

**Specification:** ASME B31.1 & ASME BPVC Sec 8 Div 1

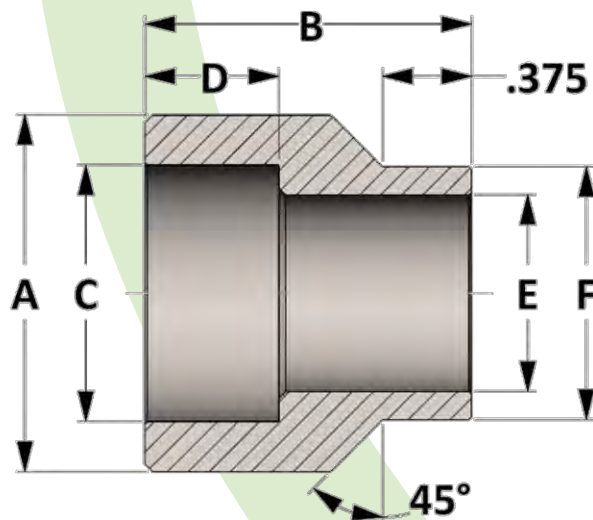
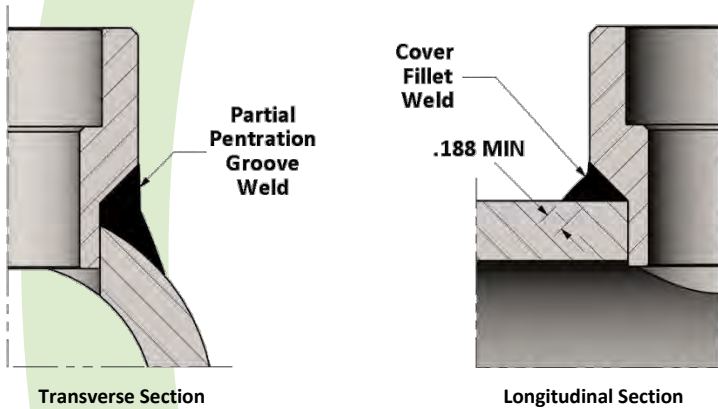
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 3" in CL 3000 • 1/8" - 3" in CL 6000

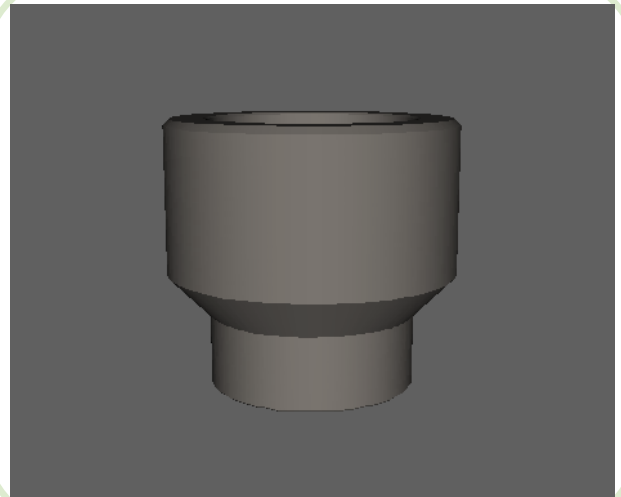
Also available in special pipe schedules/class rating, and special lengths

Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13018										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	---	0.938	1.063	1.312	1.500	1.813	2.188	2.500	3.000	3.625	4.250
B	---	1.188	1.188	1.312	1.375	1.688	1.875	2.000	2.250	2.500	2.750
C	---	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
D	---	0.438	0.438	0.438	0.563	0.563	0.563	0.563	0.688	0.688	0.688
E	---	0.359	0.500	0.625	0.828	1.047	1.375	1.609	2.063	2.469	3.063
F	---	0.688	0.812	0.938	1.063	1.312	1.688	1.938	2.438	2.875	3.500
LBS	---	0.14	0.16	0.28	0.29	0.56	0.93	1.24	1.79	2.92	3.98

PIPE SIZE	CLASS 6000 – Figure No. 16018										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000
B	1.188	1.188	1.188	1.312	1.375	1.688	1.875	2.000	2.250	2.500	2.750
C	0.426	0.560	0.693	0.859	1.071	1.335	1.682	1.922	2.410	2.910	3.365
D	0.438	0.438	0.438	0.438	0.563	0.563	0.563	0.563	0.688	0.688	0.688
E	0.157	0.250	0.359	0.466	0.614	0.815	1.160	1.338	1.689	2.125	2.625
F	0.688	0.688	0.812	0.938	1.063	1.312	1.688	1.938	2.438	2.875	3.500
LBS	0.12	0.16	0.30	0.34	0.43	0.92	1.19	2.91	2.89	4.52	6.83





# Threaded Couplet

**Specification:** ASME B31.1 & ASME BPVC Sec 8 Div 1

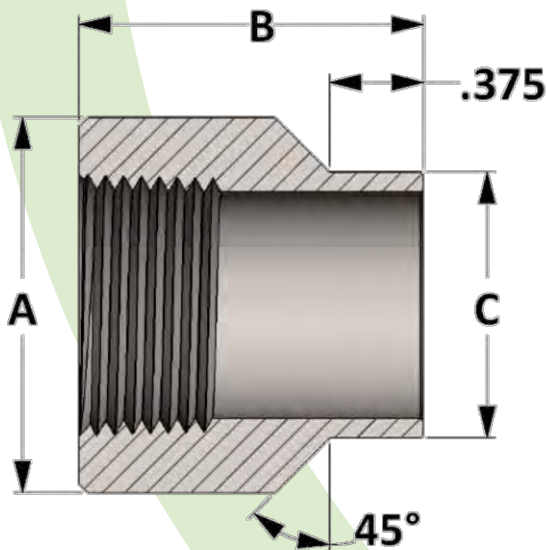
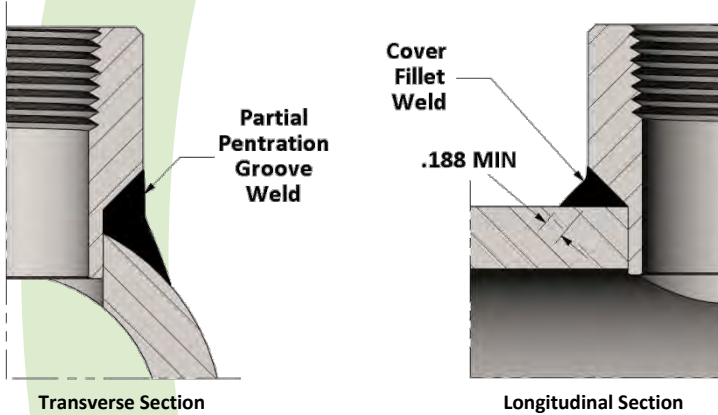
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" - 3" in CL 3000 • 1/8" - 3" in CL 6000

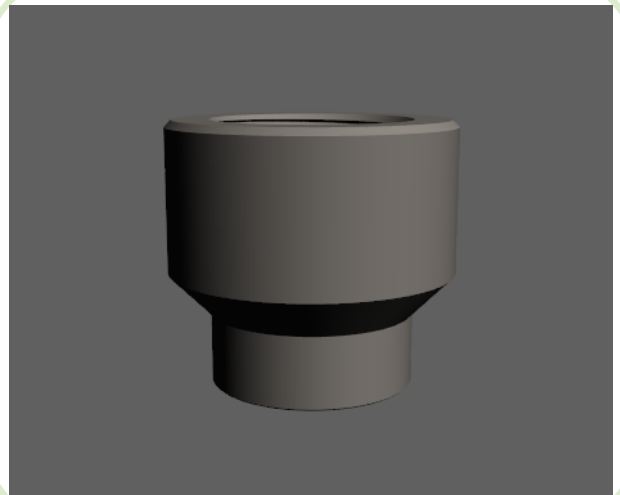
Also available in special pipe schedules/class rating, and special lengths

Socket Weld Pressure Class	Pipe Schedule
Class 3000	S160
Class 6000	XXH

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03018										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	---	0.938	1.063	1.312	1.500	1.813	2.188	2.500	3.000	3.625	4.250
B	---	1.188	1.188	1.312	1.375	1.688	1.875	2.000	2.250	2.500	2.750
C	---	0.688	0.812	0.938	1.063	1.312	1.688	1.938	2.438	2.875	3.500
LBS	---	0.14	0.16	0.28	0.29	0.56	0.93	1.24	1.79	2.92	3.98

PIPE SIZE	CLASS 6000 – Figure No. 06018										
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
A	0.875	1.000	1.250	1.500	1.750	2.250	2.500	3.000	3.625	4.250	5.000
B	1.188	1.188	1.188	1.312	1.375	1.688	1.875	2.000	2.250	2.500	2.750
C	0.563	0.688	0.812	0.938	1.063	1.312	1.688	1.938	2.438	2.875	3.500
LBS	0.12	0.16	0.30	0.34	0.43	0.92	1.19	2.91	2.89	4.52	6.83



# Combination Couplet

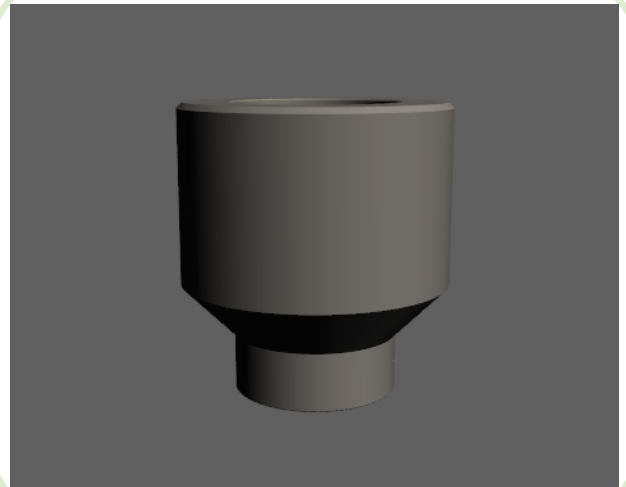
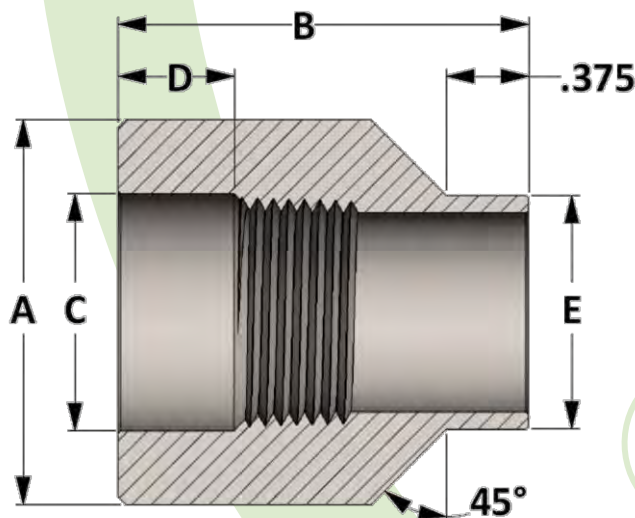
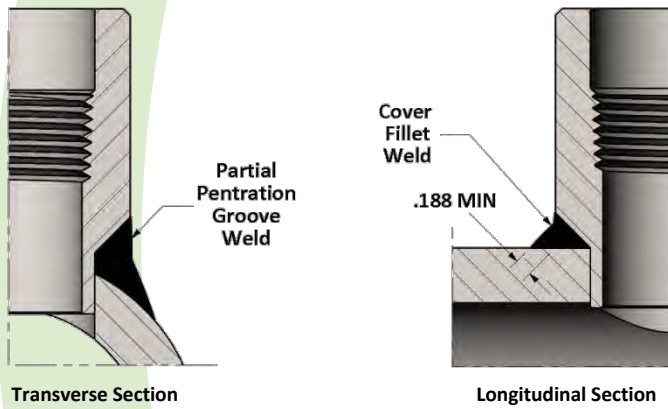
**Specification:** ASME B31.1 & ASME BPVC Sec 8 Div 1

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" - 2-1/2" in CL 3000 • 1/2" - 2" in CL 6000

Also available in special pipe schedules/class rating, and special lengths

## Welding onto Header Pipe



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	Class 3000 – Figure No. 30166						
	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.312	1.500	1.813	2.188	2.500	3.125	3.625
B	1.688	1.875	2.188	2.375	2.500	2.875	3.000
C	0.855	1.065	1.330	1.675	1.915	2.405	2.920
D	0.438	0.563	0.563	0.563	0.563	0.688	0.688
E	0.938	1.062	1.312	1.688	1.938	2.438	2.875
LBS	0.34	0.43	0.72	1.08	1.48	2.54	3.41

PIPE SIZE	Class 6000 – Figure No. 60166						
	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
A	1.500	1.750	2.250	2.500	3.000	3.625	---
B	1.688	1.875	2.188	2.375	2.500	2.875	---
C	0.855	1.065	1.330	1.675	1.915	2.405	---
D	0.438	0.563	0.563	0.563	0.563	0.688	---
E	0.938	1.062	1.312	1.688	1.938	2.438	---
LBS	0.47	0.65	1.29	1.62	2.53	4.05	---



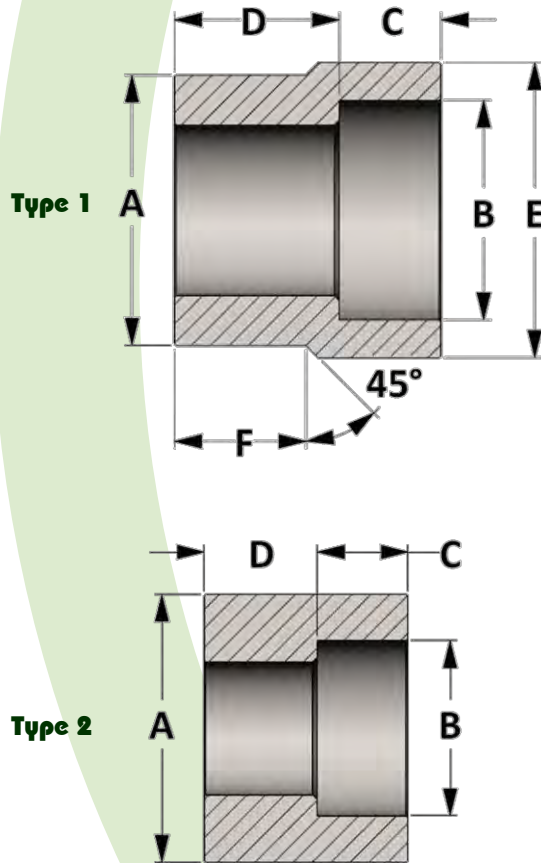
# Socket Weld Reducing Insert

**Specification:** MSS – SP79 except for 1/8" and all Class 9000  
Socket weld ends per ASME B16.11

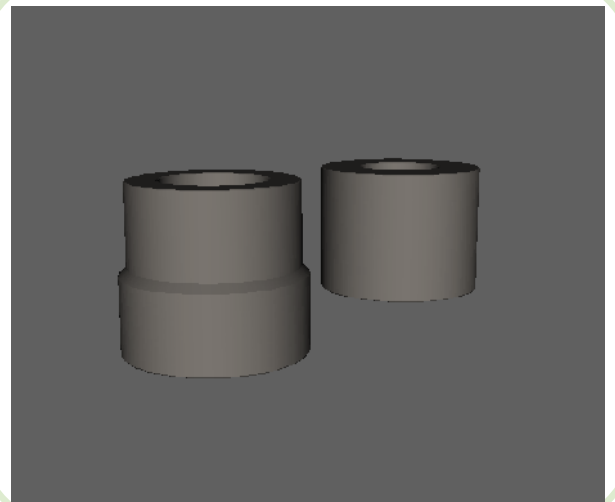
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 4" in CL 3000, CL 6000 and CL 9000  
Also available in tube sizes and special pipe schedules/class rating.

Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model



All dimensions are in inches

Pipe Size		CLASS 3000 – Figure No. 13016						
	TYPE	A	B	C	D	E	F	
1/4	1/8	1	0.540	0.426	0.438	0.750	0.750	0.563
3/8	1/8	1	0.675	0.426	0.438	0.750	0.750	0.563
	1/4	1	0.675	0.560	0.438	0.750	0.875	0.563
1/2	1/8	2	0.840	0.426	0.438	0.813	---	---
	1/4	1	0.840	0.560	0.438	0.813	0.875	0.625
	3/8	1	0.840	0.693	0.438	0.813	1.063	0.625
3/4	1/8	2	1.050	0.426	0.438	0.688	---	---
	1/4	2	1.050	0.560	0.438	0.688	---	---
	3/8	2	1.050	0.693	0.438	0.625	---	---
	1/2	1	1.050	0.859	0.500	0.875	1.250	0.688
1	1/4	2	1.315	0.560	0.438	0.750	---	---
	3/8	2	1.315	0.693	0.438	0.688	---	---
	1/2	2	1.315	0.859	0.500	0.625	---	---
	3/4	1	1.315	1.071	0.563	0.938	1.500	0.750
1-1/4	3/8	2	1.660	0.693	0.438	0.813	---	---
	1/2	2	1.660	0.859	0.500	0.750	---	---
	3/4	2	1.660	1.071	0.563	0.688	---	---
	1	1	1.660	1.335	0.625	1.000	1.813	0.813
1-1/2	3/8	2	1.900	0.693	0.438	0.880	---	---
	1/2	2	1.900	0.859	0.500	0.813	---	---
	3/4	2	1.900	1.071	0.563	0.750	---	---
	1	2	1.900	1.335	0.625	0.688	---	---
	1-1/4	1	1.900	1.682	0.688	1.125	2.250	0.875

Pipe Size		CLASS 3000 – Figure No. 13016						
	TYPE	A	B	C	D	E	F	
2	1/2	2	2.375	0.859	0.500	1.000	---	---
	3/4	2	2.375	1.071	0.563	0.938	---	---
	1	2	2.375	1.335	0.625	0.875	---	---
	1-1/4	2	2.375	1.682	0.688	0.813	---	---
2-1/2	1-1/2	1	2.375	1.922	0.750	1.250	2.500	1.000
	3/4	2	2.875	1.071	0.563	1.563	---	---
	1	2	2.875	1.335	0.625	1.500	---	---
	1-1/4	2	2.875	1.682	0.688	1.438	---	---
	1-1/2	2	2.875	1.922	0.750	1.375	---	---
	2	1	2.875	2.410	0.875	1.813	3.000	1.500
3	3/4	2	3.500	1.071	0.563	1.312	---	---
	1	2	3.500	1.335	0.625	1.250	---	---
	1-1/4	2	3.500	1.682	0.688	1.188	---	---
	1-1/2	2	3.500	1.922	0.750	1.125	---	---
	2	2	3.500	2.410	0.875	1.000	---	---
	2-1/2	1	3.500	2.910	0.875	1.500	3.625	1.250
4	3/4	2	4.500	1.071	0.563	1.813	---	---
	1	2	4.500	1.335	0.625	1.750	---	---
	1-1/4	2	4.500	1.682	0.688	1.688	---	---
	1-1/2	2	4.500	1.922	0.750	1.625	---	---
	2	2	4.500	2.410	0.875	1.500	---	---
	2-1/2	2	4.500	2.910	0.875	1.500	---	---
	3	2	4.500	3.536	1.063	1.313	---	---



# Socket Weld Reducing Insert Contd.

Pipe Size		CLASS 6000 – Figure No. 16016						
		TYPE	A	B	C	D	E	F
1/4	1/8	1	0.540	0.426	0.438	0.813	0.875	0.625
	3/8	1	0.675	0.426	0.438	0.813	1.063	0.625
3/8	1/4	1	0.675	0.560	0.438	0.813	0.875	0.625
	1/8	1	0.840	0.426	0.438	0.813	0.875	0.625
	1/4	1	0.840	0.560	0.438	0.813	1.000	0.625
1/2	3/8	1	0.840	0.693	0.438	0.875	1.313	0.625
	1/8	2	1.050	0.426	0.438	0.875	---	---
	1/4	2	1.050	0.560	0.438	0.875	---	---
3/4	3/8	1	1.050	0.693	0.438	0.875	1.313	0.750
	1/2	1	1.050	0.859	0.500	1.000	1.500	0.750
	1/4	2	1.315	0.560	0.438	0.938	---	---
	3/8	2	1.315	0.693	0.438	0.875	---	---
1	1/2	1	1.315	0.859	0.500	1.125	1.500	0.813
	3/4	1	1.315	1.071	0.563	1.125	1.750	0.813
	3/8	2	1.660	0.693	0.438	0.940	---	---
	1/2	2	1.660	0.859	0.500	0.875	---	---
1-1/4	3/4	2	1.660	1.071	0.563	0.813	---	---
	1	1	1.660	1.335	0.625	1.188	2.250	0.875
	3/8	2	1.900	0.693	0.438	1.125	---	---
	1/2	2	1.900	0.859	0.500	1.063	---	---
1-1/2	3/4	2	1.900	1.071	0.563	1.000	---	---
	1	1	1.900	1.335	0.625	1.156	2.250	1.000
	1-1/4	1	1.900	1.682	0.688	1.375	2.500	1.000

Pipe Size		CLASS 6000 – Figure No. 16016						
		TYPE	A	B	C	D	E	F
2	1/2	2	2.375	0.859	0.500	1.125	---	---
	3/4	2	2.375	1.071	0.563	1.063	---	---
	1	2	2.375	1.335	0.625	1.000	---	---
	1-1/4	2	2.375	1.682	0.688	0.938	---	---
2-1/2	1-1/2	1	2.375	1.922	0.750	1.531	3.000	1.125
	3/4	2	2.875	1.071	0.563	1.500	---	---
	1	2	2.875	1.335	0.625	1.500	---	---
	1-1/4	2	2.875	1.682	0.688	1.438	---	---
	1-1/2	2	2.875	1.922	0.750	1.375	---	---
	2	1	2.875	2.410	0.875	1.688	3.625	1.250
3	3/4	2	3.500	1.071	0.563	1.688	---	---
	1	2	3.500	1.335	0.625	1.625	---	---
	1-1/4	2	3.500	1.682	0.688	1.250	---	---
	1-1/2	2	3.500	1.922	0.750	1.250	---	---
	2	2	3.500	2.410	0.875	1.250	---	---
	2-1/2	1	3.500	2.910	0.875	2.250	4.250	1.750
4	3/4	2	4.500	1.071	0.563	2.312	---	---
	1	2	4.500	1.335	0.625	2.250	---	---
	1-1/4	2	4.500	1.682	0.688	2.188	---	---
	1-1/2	2	4.500	1.922	0.750	2.125	---	---
	2	2	4.500	2.410	0.875	2.000	---	---
	2-1/2	2	4.500	2.910	0.875	2.000	---	---
	3	1	4.500	3.536	1.000	2.563	4.750	1.750

Pipe Size		CLASS 9000 – Figure No. 19016						
		TYPE	A	B	C	D	E	F
1/4	1/8	1	0.540	0.426	0.438	0.875	1.000	0.500
	3/8	1	0.675	0.426	0.438	0.875	1.000	0.563
3/8	1/4	1	0.675	0.560	0.438	1.000	1.250	0.563
	1/8	1	0.840	0.426	0.438	0.875	1.000	0.625
	1/4	1	0.840	0.560	0.438	1.000	1.250	0.625
1/2	3/8	1	0.840	0.693	0.438	1.125	1.500	0.625
	1/8	2	1.050	0.426	0.438	1.250	---	---
	1/4	1	1.050	0.560	0.438	1.000	1.250	0.688
3/4	3/8	1	1.050	0.693	0.438	1.063	1.500	0.688
	1/2	1	1.050	0.859	0.500	1.188	1.750	0.688
	1/4	2	1.315	0.560	0.438	1.375	---	---
	3/8	1	1.315	0.693	0.438	1.000	1.500	0.750
1	1/2	1	1.315	0.859	0.500	1.188	1.750	0.750
	3/4	1	1.315	1.071	0.563	1.313	2.250	0.750
	3/8	2	1.660	0.693	0.438	1.375	---	---
	1/2	2	1.660	0.859	0.500	1.313	---	---
1-1/4	3/4	1	1.660	1.071	0.563	1.188	2.250	0.813
	1	1	1.660	1.335	0.625	1.375	2.500	0.813
	3/8	2	1.900	0.693	0.438	1.500	---	---
	1/2	2	1.900	0.859	0.500	1.438	---	---
1-1/2	3/4	2	1.900	1.071	0.563	1.375	---	---
	1	1	1.900	1.335	0.625	1.313	2.500	0.875
	1-1/4	1	1.900	1.682	0.688	1.625	3.000	0.875

Pipe Size		CLASS 9000 – Figure No. 19016						
		TYPE	A	B	C	D	E	F
2	1/2	2	2.375	0.859	0.500	1.563	---	---
	3/4	2	2.375	1.071	0.563	1.500	---	---
	1	2	2.375	1.335	0.625	1.438	---	---
	1-1/4	1	2.375	1.682	0.688	1.500	3.000	1.000
2-1/2	1-1/2	1	2.375	1.922	0.750	1.625	3.625	1.000
	3/4	2	2.875	1.071	0.563	1.750	---	---
	1	2	2.875	1.335	0.625	1.688	---	---
	1-1/4	2	2.875	1.682	0.688	1.625	---	---
	1-1/2	1	2.875	1.922	0.750	1.438	3.625	1.063
	2	1	2.875	2.410	0.875	1.750	4.250	1.063
3	3/4	2	3.500	1.071	0.563	1.875	---	---
	1	2	3.500	1.335	0.625	1.813	---	---
	1-1/4	2	3.500	1.682	0.688	1.750	---	---
	1-1/2	2	3.500	1.922	0.750	1.688	---	---
	2	1	3.500	2.410	0.875	1.500	4.250	1.125
	2-1/2	1	3.500	2.910	0.938	1.938	5.000	1.125
4	3/4	2	4.500	1.071	0.563	2.063	---	---
	1	2	4.500	1.335	0.625	2.000	---	---
	1-1/4	2	4.500	1.682	0.688	1.938	---	---
	1-1/2	2	4.500	1.922	0.750	1.875	---	---
	2	2	4.500	2.410	0.875	1.750	---	---
	2-1/2	2	4.500	2.910	0.938	1.688	---	---
	3	1	4.500	3.536	1.000	2.000	5.500	1.250



# Stub End

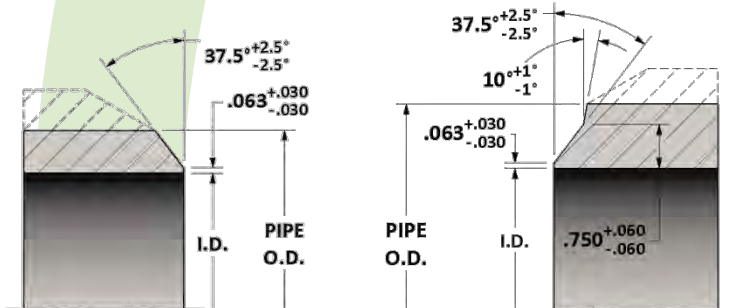
**Specification:** Dimensions per ASME B16.9 and MSS-SP43  
Weld bevels per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" – 24" in all Schedules

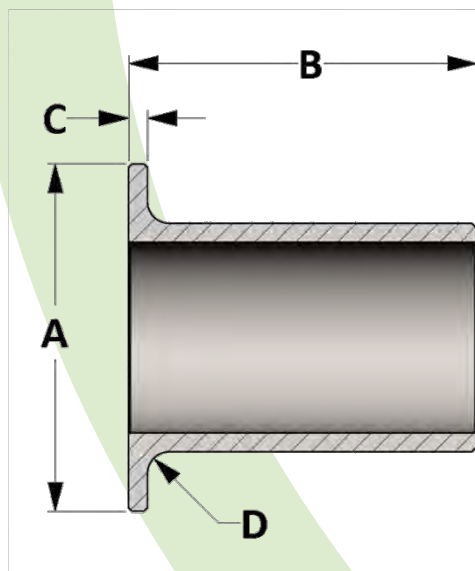
\*Type 1/Type 2 or Short/Long must be specified by the customer  
C dimension is equal to the schedule wall thickness

## Butt Weld Ends Details



Weld bevels for wall thickness below 0.880"

Weld bevels for wall thickness above 0.880"



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	A	B16.9 & SP43 Type A	MSS SP43 Type B	S10				STD/S40				XH/S80			
				ASME B16.9 MSS-SP43 Short Pattern		ASME B16.9 Long Pattern		ASME B16.9 MSS-SP43 Short Pattern		ASME B16.9 Long Pattern		ASME B16.9 MSS-SP43 Short Pattern		ASME B16.9 Long Pattern	
				B	LBS	B	LBS	B	LBS	B	LBS	B	LBS	B	LBS
1/2	1.375	0.125	0.030	2.000	0.13	3.000	0.19	2.000	0.17	3.000	0.24	2.000	0.22	3.000	0.31
3/4	1.688	0.125	0.030	2.000	0.18	3.000	0.25	2.000	0.23	3.000	0.33	2.000	0.31	3.000	0.43
1	2.000	0.125	0.003	2.000	0.29	4.000	0.52	2.000	0.35	4.000	0.63	2.000	0.45	4.000	0.82
1-1/4	2.500	0.188	0.030	2.000	0.39	4.000	0.69	2.000	0.49	4.000	0.87	2.000	0.65	4.000	1.15
1-1/2	2.875	0.250	0.030	2.000	0.46	4.000	0.81	2.000	0.60	4.000	1.06	2.000	0.81	4.000	1.42
2	3.625	0.313	0.030	2.500	0.73	6.000	1.50	2.500	1.02	6.000	2.09	2.500	1.41	6.000	2.88
2-1/2	4.125	0.313	0.030	2.500	0.97	6.000	2.00	2.500	1.61	6.000	3.30	2.500	2.14	6.000	4.38
3	5.000	0.375	0.030	2.500	1.25	6.000	2.51	2.500	2.20	6.000	4.41	2.500	2.99	6.000	5.99
4	6.188	0.488	0.030	3.000	1.89	6.000	3.30	3.000	3.66	6.000	6.36	3.000	5.11	6.000	8.87





# Exotic Alloy Flange

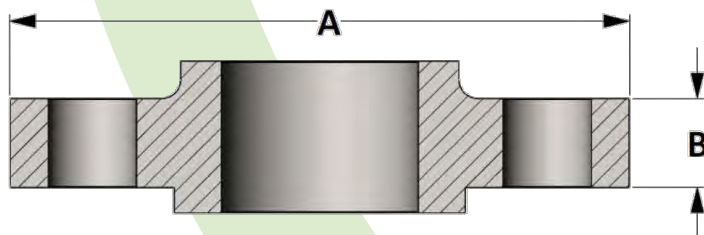
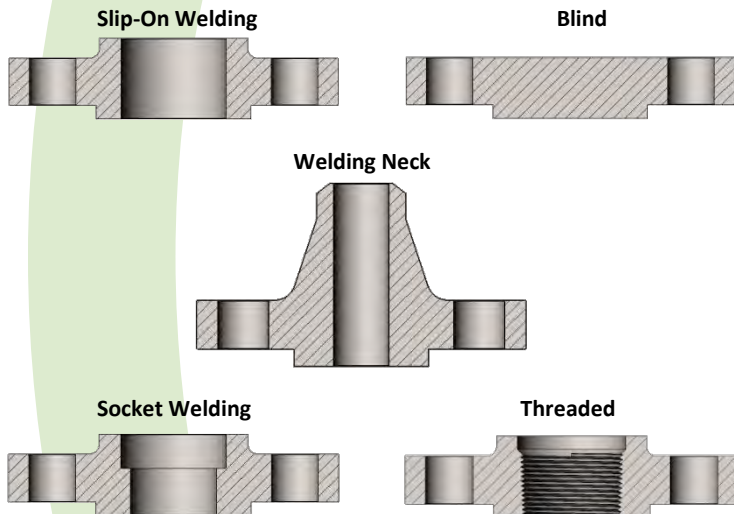
**Specification:** ASME B16.5  
Also available in API 6A

**Material:** Available in all Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

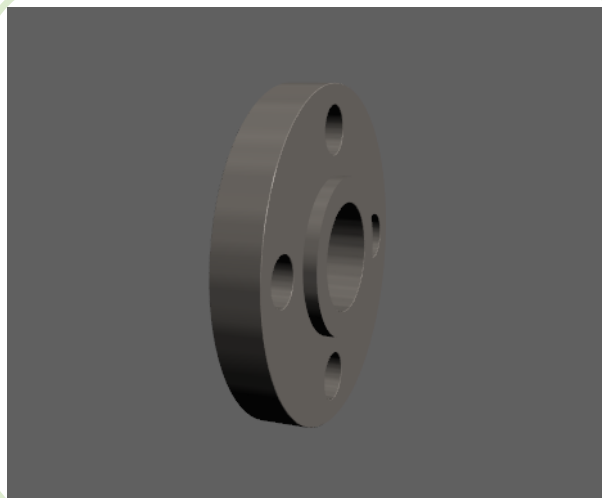
**Sizes:** 1/2" – 24" in CL 150, 300, 400, 600, 900, 1500  
and 1/2" – 12 in CL 2500  
also available in reducing pipe sizes.

Available as raised face or ring type joint (RTJ).  
Flange facing can be smooth, serrated concentric, or serrated spiral.

## Types of Flanges



**Active  
3D  
Model**



All dimensions are in inches

PIPE SIZE	CL 150		CL 300		CL 600		CL 1500		CL 2500	
	A	B	A	B	A	B	A	B	A	B
1/2	3.500	0.375	3.750	0.500	3.750	0.563	4.750	0.875	5.250	1.188
3/4	3.875	0.438	4.625	0.563	4.625	0.625	5.125	1.000	5.500	1.250
1	4.250	0.500	4.875	0.625	4.875	0.688	5.875	1.125	6.250	1.375
1-1/4	4.625	0.563	5.250	0.688	5.250	0.813	6.250	1.125	7.250	1.500
1-1/2	5.000	0.625	6.125	0.750	6.125	0.875	7.000	1.125	8.000	1.750
2	6.000	0.688	6.500	0.813	6.500	1.000	8.500	1.500	9.250	2.000
2-1/2	7.000	0.813	7.750	0.938	7.500	1.125	9.625	1.625	10.500	2.250
3	7.500	0.875	8.250	1.063	8.250	1.125	10.500	1.875	12.000	2.625
3-1/2	8.500	0.875	9.000	1.125	9.000	1.375	---	---	---	---
4	9.000	0.875	10.000	1.188	10.750	1.500	12.250	2.125	14.000	3.000



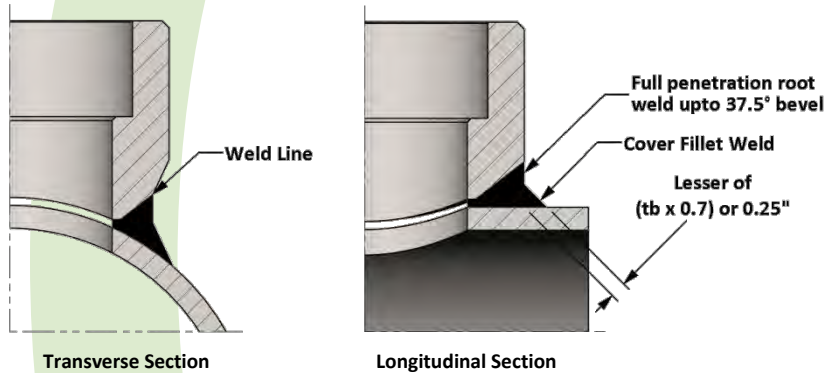
# Socket Weld Outlet

**Specification:** ASME B31.1 & MSS-SP97  
Also in ASME B31.3 and ASME BPVC Sec 1 & Sec 8 Div 2

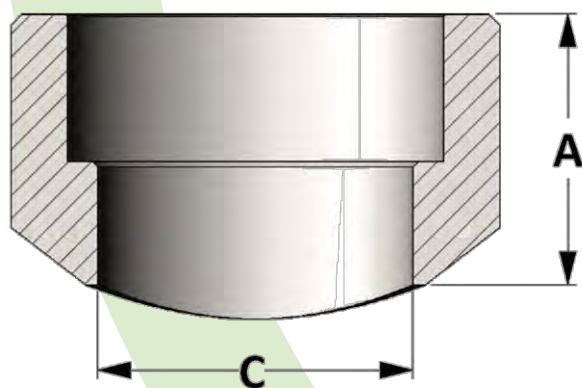
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 6" in Class 3000 and 6000  
1/2" - 4" in class 9000

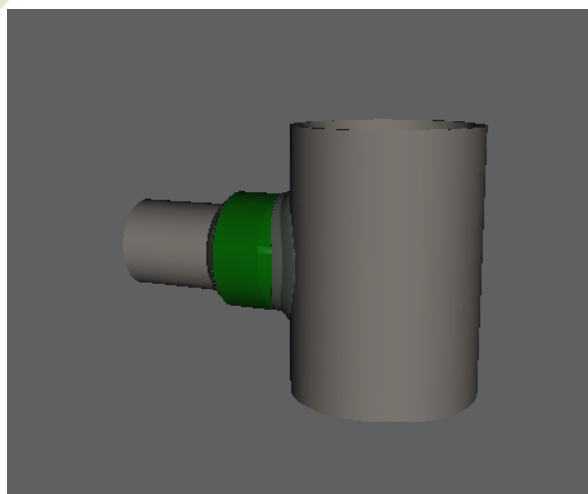
## Welding onto Header Pipe



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.750	0.813	1.000	1.063	1.313	1.313	1.375	1.500	1.813	2.000	2.125	2.250
C	0.269	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
LBS	0.07	0.12	0.16	0.27	0.36	0.59	0.84	1.00	1.53	2.66	3.72	4.40	7.05

PIPE SIZE	CLASS 6000 – Figure No. 16502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.125	1.125	1.125	1.250	1.438	1.563	1.625	1.688	2.063	2.688	2.688	---	3.313
C	0.157	0.250	0.359	0.464	0.612	0.815	1.160	1.338	1.687	2.125	2.624	---	3.438
LBS	0.15	0.30	0.30	0.48	0.81	1.30	1.54	1.97	5.01	6.19	7.36	---	14.02

PIPE SIZE	CLASS 9000 – Figure No. 19502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	---	---	1.250	1.469	1.625	1.750	1.768	2.000	2.438	2.750	---	3.313
C	---	---	---	0.252	0.434	0.599	0.896	1.100	1.503	1.771	2.300	---	3.152
LBS	---	---	---	0.55	0.80	1.40	1.88	2.10	3.35	6.48	11.11	---	17.69



# Threaded Outlet

**Specification:** ASME B31.1 & MSS-SP97

Also in ASME B31.3 and ASME BPVC Sec I & Sec VIII Div 2

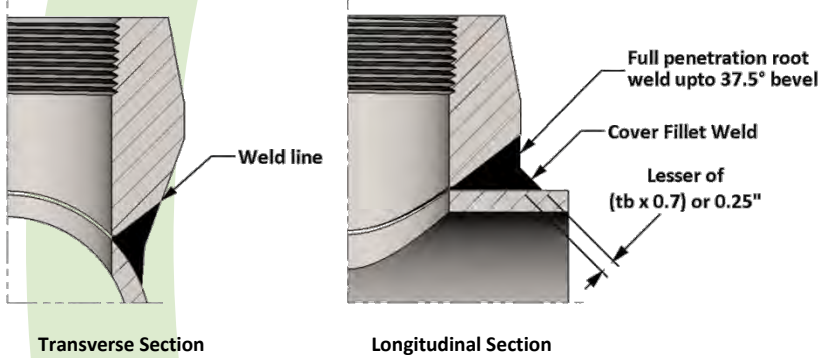
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 6" in Class 3000 and 6000  
Also available in class 9000

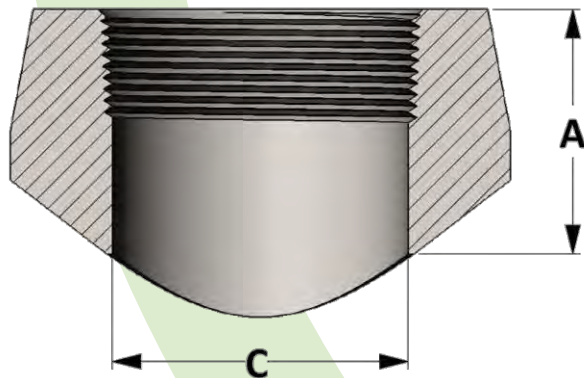
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

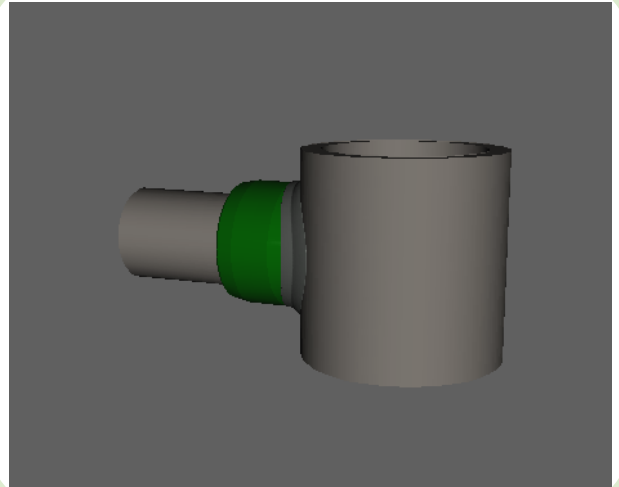
## Welding onto Header Pipe



Threaded Pressure Class	Pipe Schedule
Class 3000	XH
Class 6000	S160



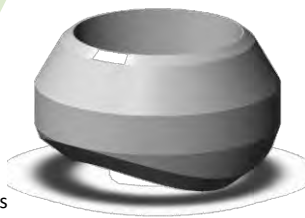
Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.750	0.813	1.000	1.063	1.313	1.313	1.375	1.500	1.813	2.000	2.125	2.250
C	0.328	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188	2.563	3.188	3.688	4.188
LBS	0.07	0.12	0.16	0.21	0.36	0.59	0.84	1.00	1.72	2.90	4.24	4.40	6.91

PIPE SIZE	CLASS 6000 – Figure No. 06502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.125	1.125	1.125	1.250	1.438	1.563	1.625	1.688	2.063	2.688	2.688	---	3.313
C	0.328	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188	2.563	3.188	---	4.188
LBS	0.15	0.21	0.28	0.42	0.59	1.02	1.60	1.98	3.06	6.35	10.12	---	19.72



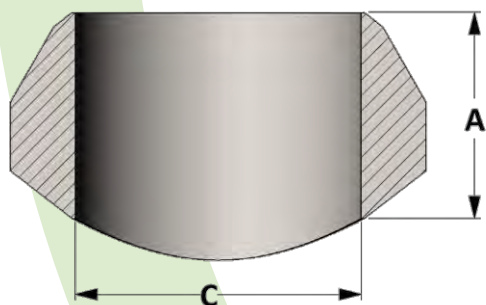
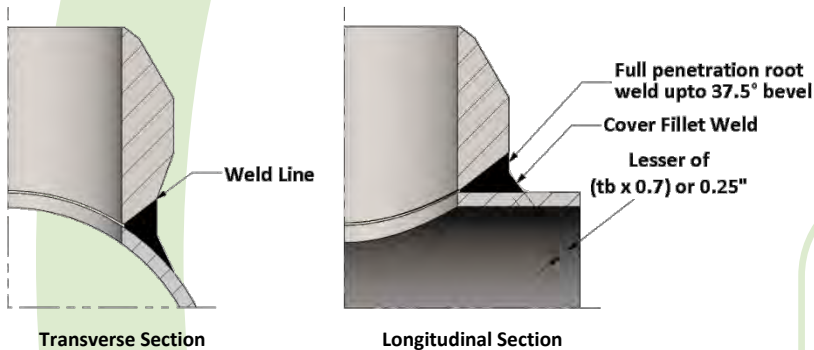
# Butt Weld Outlet

**Specification:** ASME B31.1 & MSS-SP97  
Also in ASME B31.3, ASME B31.8, and  
ASME BPVC Sec I & Sec VIII Div 2

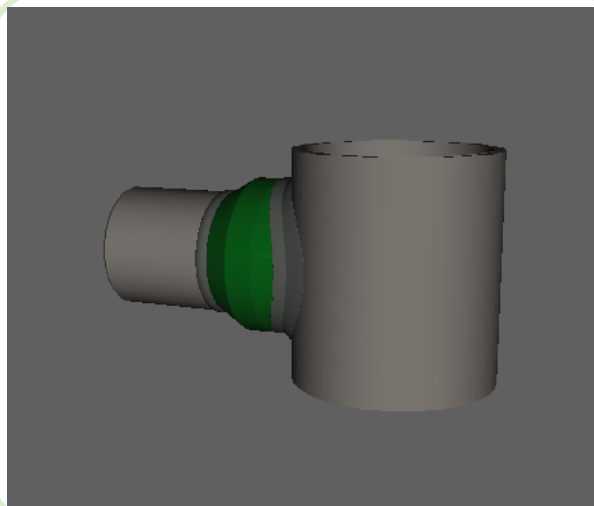
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" – 72" in all Schedules  
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD – Figure No. 45502			XH – Figure No. 48502			S160 – Figure No. 52502			XXH – Figure No. 53502		
	A	C	LBS	A	C	LBS	A	C	LBS	A	C	LBS
1/8	0.625	0.269	0.08	0.625	0.215	0.10	1.000	0.157	0.12	---	---	---
1/4	0.625	0.364	0.08	0.625	0.302	0.08	1.125	0.250	0.15	---	---	---
3/8	0.750	0.493	0.15	0.750	0.423	0.15	1.125	0.359	0.20	---	---	---
1/2	0.750	0.622	0.18	0.750	0.546	0.20	1.125	0.466	0.23	1.125	0.252	0.23
3/4	0.875	0.824	0.25	0.875	0.742	0.31	1.250	0.614	0.65	1.250	0.434	0.65
1	1.063	1.049	0.50	1.063	0.957	0.55	1.500	0.815	0.78	1.500	0.599	0.78
1-1/4	1.250	1.380	0.80	1.250	1.278	0.90	1.750	1.160	1.16	1.750	0.896	1.16
1-1/2	1.313	1.610	1.00	1.313	1.500	1.10	2.000	1.338	1.60	2.000	1.100	1.60
2	1.500	2.067	1.75	1.500	1.939	1.75	2.188	1.689	1.95	2.188	1.503	1.95
2-1/2	1.625	2.469	2.50	1.625	2.323	2.28	2.438	2.125	3.02	2.438	1.771	3.02
3	1.750	3.068	3.82	1.750	2.900	3.50	2.875	2.624	5.75	2.875	23.00	5.75
3-1/2	1.875	3.548	5.10	1.875	3.364	4.75	---	---	---	---	---	---
4	2.000	4.026	6.20	2.000	3.826	5.00	3.438	3.438	9.56	3.438	3.152	9.56
5	2.250	5.047	8.00	2.250	4.813	8.50	3.688	4.313	12.65	3.688	4.063	12.65
6	2.375	6.065	11.50	3.063	5.761	15.00	4.125	5.189	25.25	4.125	4.897	25.25
8	2.750	7.981	22.00	3.875	7.625	35.00	The "A" dimension corresponds to the size and schedule of the Header pipe and is available upon request.			The "A" dimension corresponds to the size and schedule of the Header pipe and is available upon request.		
10	3.063	10.020	37.00	3.688	9.750	46.00						
12	3.375	12.000	44.00	4.063	11.750	63.00						
14	3.500	13.250	63.00	3.938	13.000	72.00						
16	3.688	15.250	76.00	4.188	15.000	102.00						
18	3.813	17.250	100.00	4.375	17.000	130.00						
20	4.000	19.250	112.00	4.688	19.000	163.00						
24	4.563	23.250	210.00	5.500	23.000	271.00						
26	4.688	25.250	245.00	5.750	25.000	325.00						
30	5.375	29.250	375.00	---	---	---						
36	5.375	35.250	498.00	---	---	---						
48	5.813	47.250	1125.00	---	---	---						



# Elbow Outlet

**Specification:** MSS-SP97 & ASME B31.1

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2

Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

Socket Weld ends per B16.11

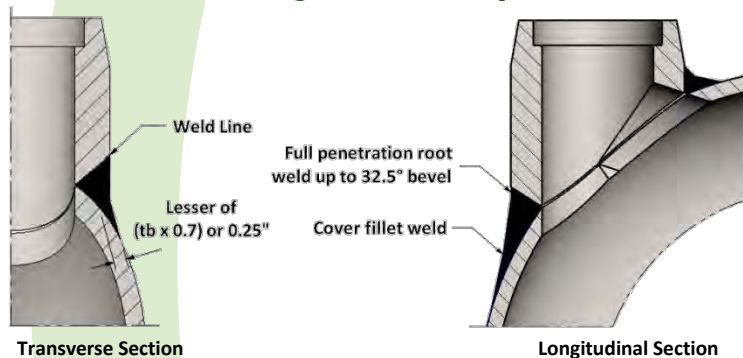
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" – 36" in all Schedules • 1/4" – 4" in Class 3000 & Class 6000

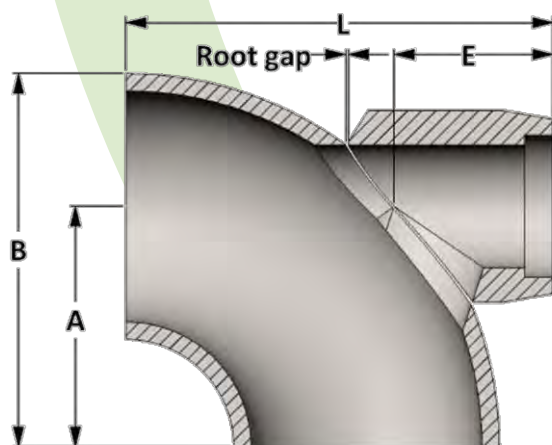
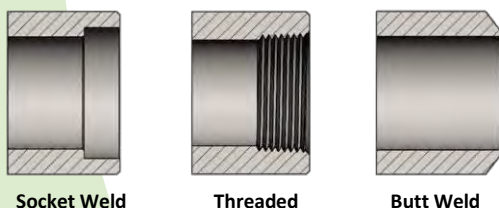
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

Elbow Outlets suited for short elbow radii & 3D elbows are available upon request.

## Welding onto Header Pipe



## End Preparations



Active  
**3D**  
Model



## Equation for overall length

$$L = E + \sqrt{B^2 - A^2} + \text{Root gap}$$

All dimensions are in inches • Weights are based on Carbon Steel

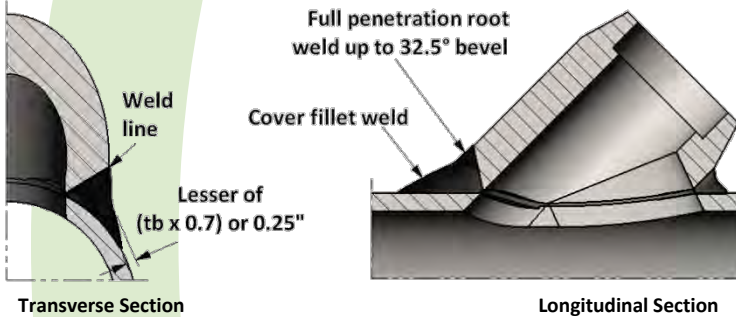
PIPE SIZE	STD / S40		XH / S80		Class 3000		Class 6000	
	E	LBS	E	LBS	E	LBS	E	LBS
1/4	1.625	0.21	1.625	0.25	1.593	0.23	1.813	0.54
3/8	1.625	0.29	1.625	0.31	1.625	0.37	1.813	0.82
1/2	1.625	0.40	1.625	0.45	1.625	0.45	2.125	1.00
3/4	1.875	0.75	1.875	0.90	1.875	0.70	2.438	1.40
1	2.250	1.25	2.250	1.40	2.250	1.35	2.781	2.55
1-1/4	2.500	1.84	2.500	1.99	2.500	2.00	3.000	3.40
1-1/2	2.688	2.05	2.688	2.25	2.688	2.60	3.313	5.55
2	3.125	3.60	3.125	3.95	3.125	4.85	4.063	9.38
2-1/2	3.438	4.36	3.438	4.92	3.438	5.50	5.125	17.99
3	3.906	6.50	3.906	7.46	4.375	10.60	---	---
4	4.750	13.50	4.750	13.91	5.125	16.34	---	---
6	6.375	32.52	7.063	40.60	---	---	---	---
8	7.750	53.38	9.125	88.04	---	---	---	---
10	9.188	99.00	10.500	157.41	---	---	---	---
12	10.875	167.37	12.063	261.47	---	---	---	---



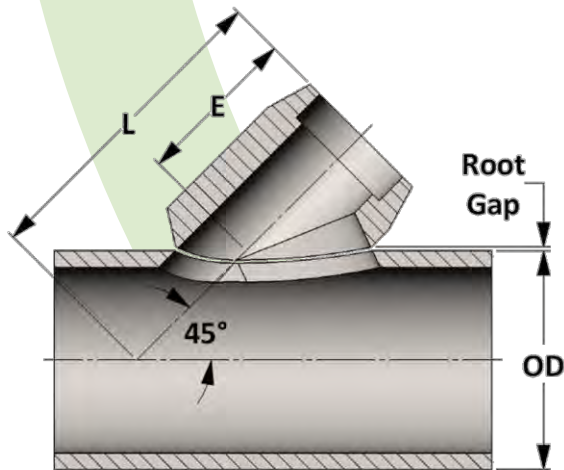
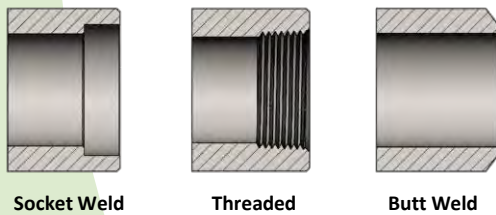


# Lateral Outlet

## Welding onto Header Pipe



## End Preparations



Active  
3D  
Model



## Equation for center to face

$$L = E + 1.414(OD/2 + \text{Root Gap})$$

All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD / S40		XH / S80		Class 3000		Class 6000	
	E	LBS	E	LBS	E	LBS	E	LBS
1/4	1.625	0.21	1.625	0.25	1.593	0.23	1.813	0.54
3/8	1.625	0.29	1.625	0.31	1.625	0.37	1.813	0.82
1/2	1.625	0.40	1.625	0.45	1.625	0.45	2.125	1.00
3/4	1.875	0.75	1.875	0.90	1.875	0.70	2.438	1.40
1	2.250	1.25	2.250	1.40	2.250	1.35	2.781	2.55
1-1/4	2.500	1.84	2.500	1.99	2.500	2.00	3.000	3.40
1-1/2	2.688	2.05	2.688	2.25	2.688	2.60	3.313	5.55
2	3.125	3.60	3.125	3.95	3.125	4.85	4.063	9.38
2-1/2	3.438	4.36	3.438	4.92	3.438	5.50	5.125	17.99
3	3.906	6.50	3.906	7.46	4.375	10.60	---	---
4	4.750	13.50	4.750	13.91	5.125	16.34	---	---
6	6.375	32.52	7.063	40.60	---	---	---	---
8	7.750	53.38	9.125	88.04	---	---	---	---
10	9.188	99.00	10.500	157.41	---	---	---	---
12	10.875	167.37	12.063	261.47	---	---	---	---



# Nipple Outlet

**Specification:** ASME B31.1

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2  
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

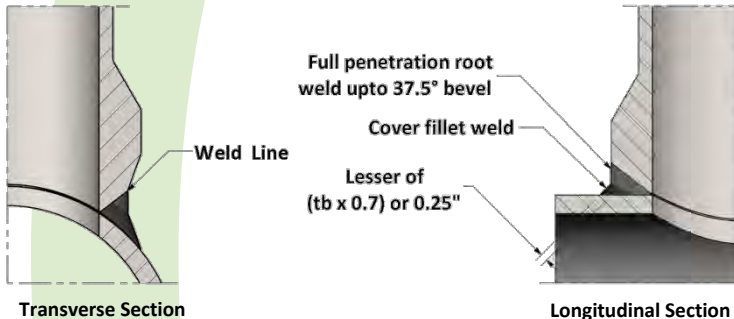
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" – 6" in all Schedules

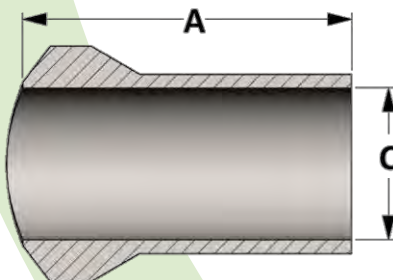
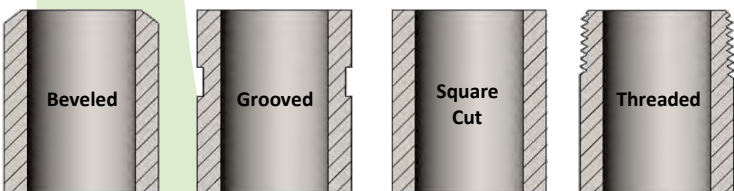
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

Available in standard lengths and **in any length the customer desires**

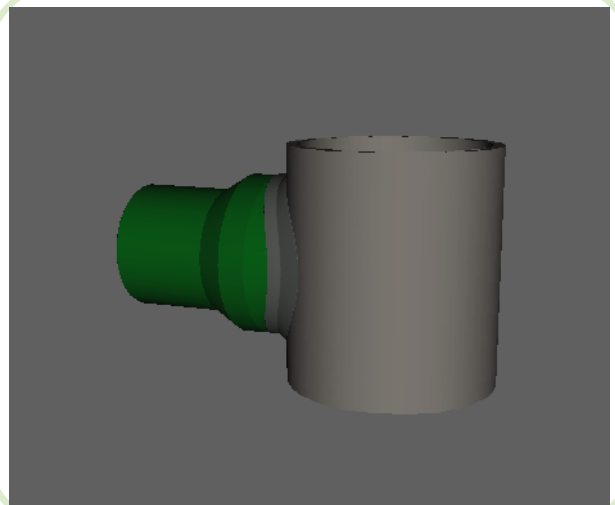
## Welding onto Header Pipe



## End Preparations



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD – Figure No. 45535			XH – Figure No. 48535			S160 – Figure No. 52535			XXH – Figure No. 53535		
	A	C	LBS	A	C	LBS	A	C	LBS	A	C	LBS
1/2	3.500	0.622	0.33	3.500	0.546	0.39	3.500	0.466	0.55	3.500	0.252	0.57
3/4	3.500	0.824	0.44	3.500	0.742	0.53	3.500	0.614	0.82	3.500	0.434	0.83
1	3.500	1.049	0.70	3.500	0.957	0.81	3.500	0.815	1.32	3.500	0.599	1.39
1-1/4	3.500	1.380	1.036	3.500	1.278	1.22	3.500	1.160	1.83	3.500	0.896	1.86
1-1/2	3.500	1.610	1.23	3.500	1.500	1.45	3.500	1.338	2.73	3.500	1.100	2.37
2	3.500	2.067	1.72	3.500	1.939	2.08	3.500	1.689	3.71	3.500	1.503	3.57

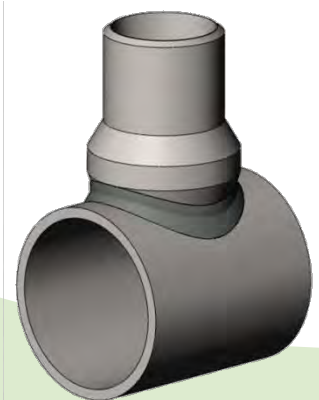
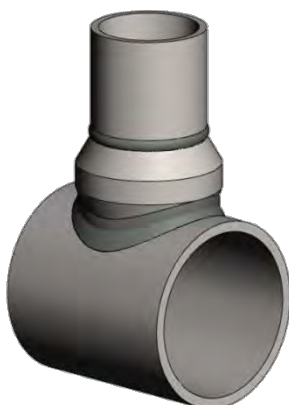
## Advantages of a Nipple Outlet

### Nipple & Branch Connection

- Two fittings
- Two MTR's
- Two welds
- Rough Transition
- More labor

### Nipple Outlet

- One fitting
- One MTR
- One weld
- Smooth Transition
- Less labor





# Braze On Outlet

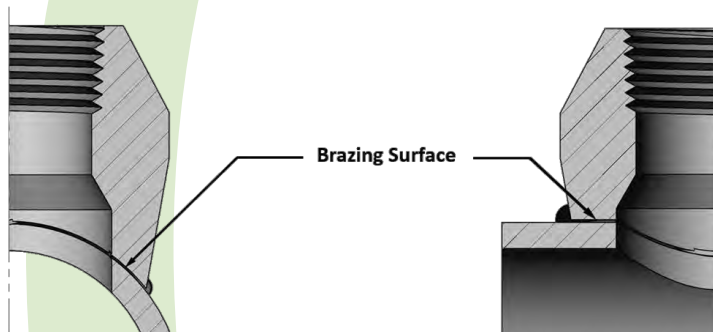
**Specification:** MIL-F-1183

**Material:** Available in all Bronze Alloys certified to ASTM, ASME and Military Standards

**Sizes:** 1/4" – 4" in all Pipe Schedules • 1/4" – 4" in Tube K, L, M

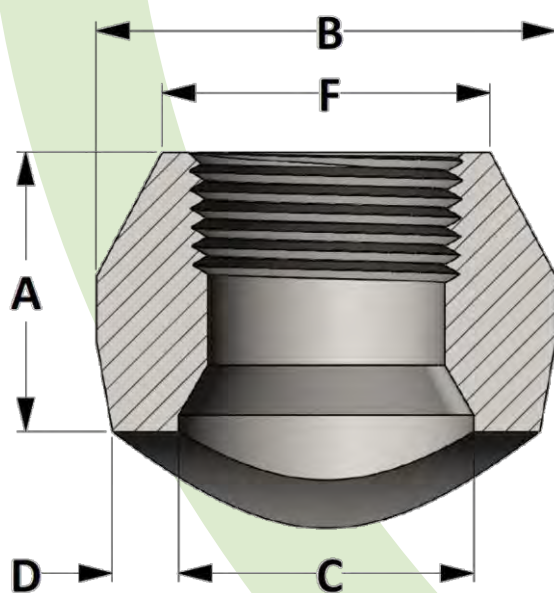
Available as Socket Weld or Threaded

## Brazing onto Header Pipe

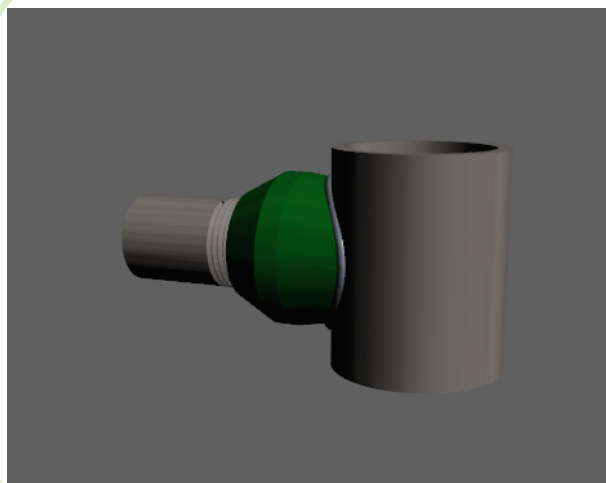


Transverse Section

Longitudinal Section



Active  
**3D**  
Model



All dimensions are in inches

PIPE SIZE	For Tubing Type K, L AND M										
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.688	0.813	0.813	1.000	1.063	1.250	1.313	1.375	1.500	1.813	2.125
B	1.000	1.250	1.250	1.438	1.750	2.125	2.563	2.875	3.500	4.125	5.500
C	0.563	0.750	0.750	0.875	1.125	1.438	1.750	2.000	2.563	3.000	4.313
D	0.188	0.190	0.190	0.220	0.240	0.270	0.300	0.330	0.360	0.384	0.437
F	0.700	0.855	0.855	1.020	1.250	1.535	1.900	2.160	2.675	3.215	4.400

PIPE SIZE	For IPS Pipe										
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.688	0.813	1.000	1.063	1.250	1.313	1.375	1.500	1.813	2.000	2.250
B	1.000	1.250	1.438	1.750	2.125	2.563	2.875	3.500	4.125	4.813	6.000
C	0.563	0.750	0.875	1.125	1.438	1.750	2.000	2.563	3.000	3.688	4.750
D	0.188	0.190	0.220	0.240	0.270	0.300	0.330	0.360	0.384	0.442	0.476
F	0.700	0.855	1.020	1.250	1.535	1.900	2.160	2.675	3.215	3.880	4.940



# Insert Outlet

**Specification:** ASME B31.3

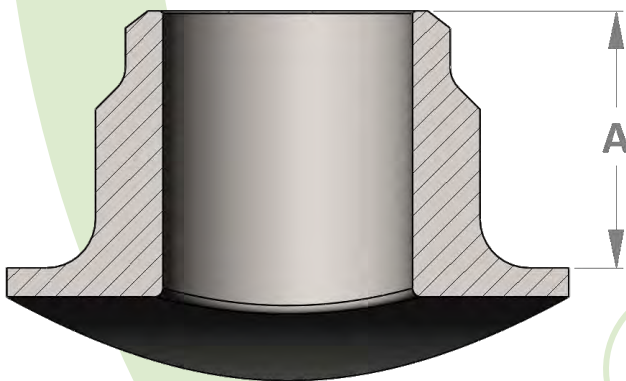
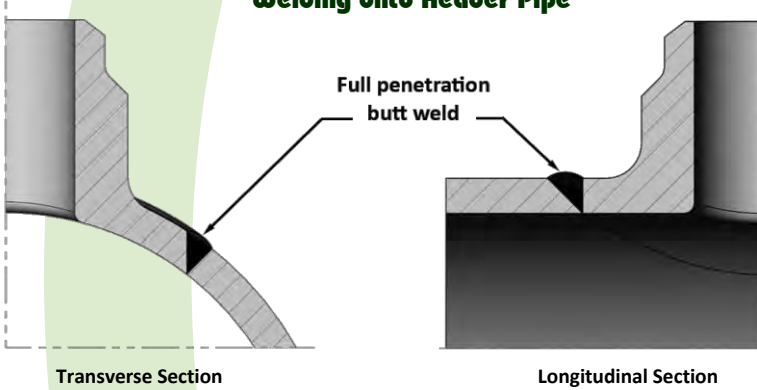
Also in ASME B31.1 and ASME BPVC Sec 1 & Sec 8 Div 2

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

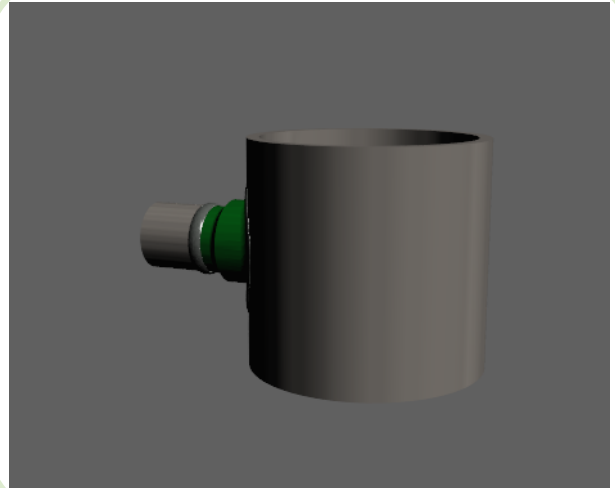
**Sizes:** 1/8" - 30" in all Schedules  
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness

Also available as socket weld and threaded

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches

PIPE SIZE	STD – Figure No. 45641 / XH – Figure No. 48641												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.625	0.625	0.750	0.750	0.875	1.063	1.250	1.500	1.500	1.625	1.750	1.875	2.000

An insert welded outlet is a type of integrally reinforced branch connection used to facilitate radiography, one of many non-destructive tests (NDT) used to inspect welds. This type of NDT uses Gamma or X-rays to penetrate material. The rays are then passed through film on the opposite side. The exposed film is examined as a negative and displays the internal features. The thickness of the weld is shown through lighter or darker areas on the film.







# Flanged Nipple Outlet

**Specification:** ASME B31.1 & ASME B16.5

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2  
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

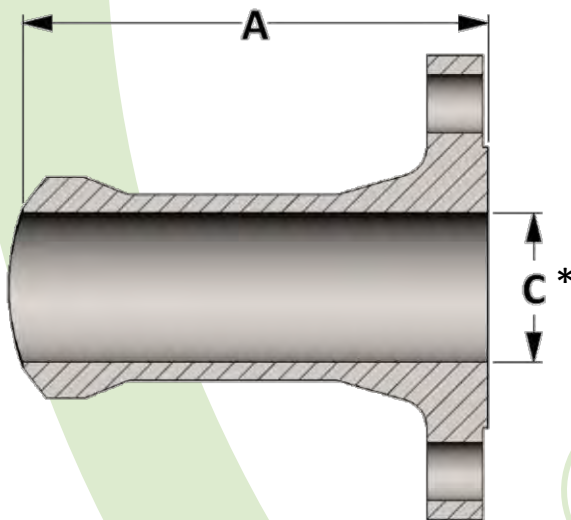
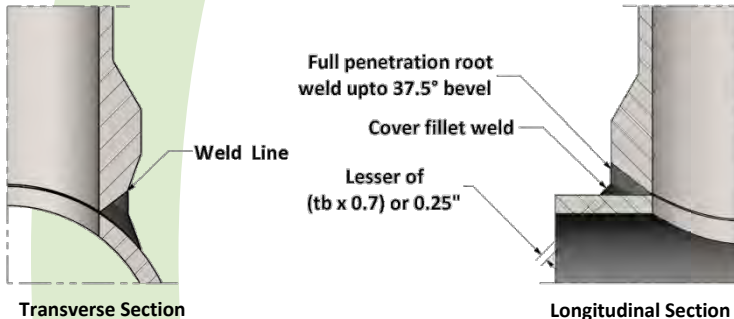
**Sizes:** 1/2" – 6" in all Schedules

Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

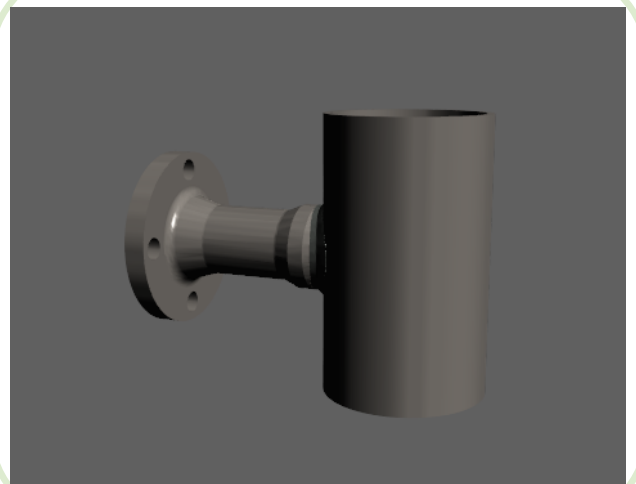
Available in standard lengths and **in any length the customer desires**

\* C dimension/waterway must be specified by the customer

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	150#		300#		600#		1500#		2500#	
	A	C	A	C	A	C	A	C	A	C
1/2	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
3/4	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1-1/4	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1-1/2	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
2	5.906	---	5.906	---	5.906	---	5.906	---	6.496	---

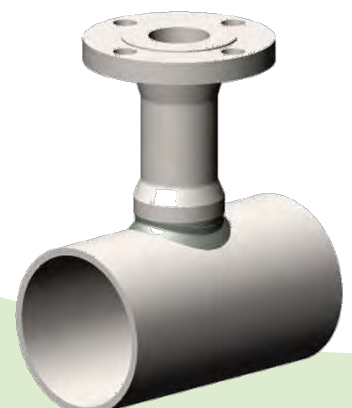
## Advantages of a Nipple Outlet

### Flange, Nipple & Branch Connection

- Three fittings
- Three MTR's
- Three welds
- Rough Transition
- More labor

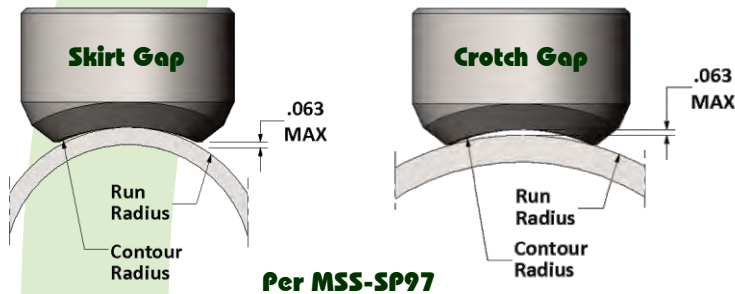
### Flanged Nipple Outlet

- One fitting
- One MTR
- One weld
- Smooth Transition
- Less labor





# Run Consolidations for Outlets

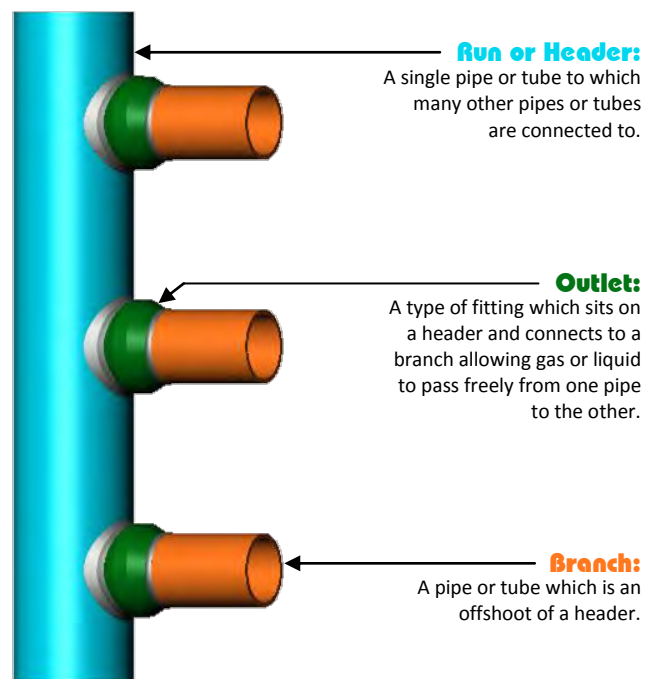
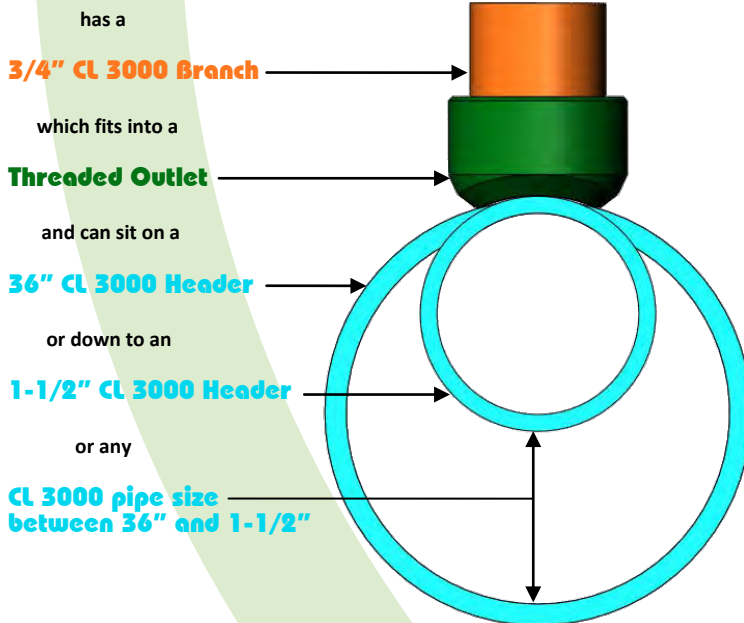


**What does Consolidation mean in the Piping Industry?**  
Consolidations are the merging of run pipes, which the outlet sits upon. The contour of the outlet will have a certain radius which is in between the largest and smallest radius of the run pipe consolidation. Therefore, the outlet will not sit precisely on any of the pipes within the consolidation. This is acceptable, as long as the gap distance between the top of the run pipe and the bottom of the outlet, at the center or the end, does not exceed 1/16" as per MSS-SP97 (see image on left).

**Why are Consolidations good for you?**  
Creating outlets to sit on a number of different pipe sizes rather than one specific size is beneficial to you for a few reasons. It gives a single, versatile product that simplifies your purchase as well as inventory when the project demands a variety of pipe sizes.

**Are you unfamiliar with piping terminology?**

## Example: 36" - 1-1/2" x 3/4" Class 3000 Threaded Outlet



## CL 3000 THREADED OUTLET • CL 3000 SOCKET WELD OUTLET STD/S40 BUTT WELD OUTLET • XH/S80 BUTT WELD OUTLET

BRANCH SIZE	RUN CONSOLIDATION									
1/8	36 - 1/8	FLAT								
1/4	3/8 - 1/4	36 - 1/2	FLAT							
3/8	1/2 - 3/8	36 - 3/4	FLAT							
1/2	1/2	36 - 3/4	FLAT							
3/4	1-1/4 - 3/4	36 - 1-1/2	FLAT							
1	1	2-1/2 - 1-1/4	36 - 3	FLAT						
1-1/4	1-1/2 - 1-1/4	3-1/2 - 2	36 - 4	FLAT						
1-1/2	1-1/2	2-1/2 - 2	5 - 3	36 - 6	FLAT					
2	2	3-1/2 - 2-1/2	6 - 4	36 - 8	FLAT					
2-1/2	2-1/2	3-1/2 - 3	5 - 4	8 - 6	36 - 10	FLAT				
3	3	4 - 3-1/2	6 - 5	14 - 8	38 - 16	FLAT				
3-1/2	3-1/2	4	5	8 - 6	14 - 10	36 - 16	52 - 38	FLAT		
4	4	5	6	10 - 8	18 - 12	36 - 20	68 - 38	FLAT		
5	5	6	8	10	14 - 12	22 - 16	36 - 24	114 - 38	FLAT	
6	6	8	10	14 - 12	18 - 16	24 - 20	36 - 26	56 - 38	156 - 60	FLAT

# Run Consolidations for Outlets Cont'd

## CL 6000 THREADED OUTLET • CL 6000 SOCKET WELD OUTLET S160 BUTT WELD OUTLET • XXH BUTTWELD OUTLET

BRANCH SIZE	RUN CONSOLIDATION							
1/8	36 - 1/8	FLAT						
1/4	36 - 1/4	FLAT						
3/8	36 - 3/8	FLAT						
1/2	1/2	36 - 3/4	FLAT					
3/4	1 - 3/4	36 - 1-1/4	FLAT					
1	1	2-1/2 - 1-1/4	36 - 3	FLAT				
1-1/4	1-1/4	4 - 1-1/2	36 - 5	FLAT				
1-1/2	1-1/2	2-1/2 - 2	5 - 3	36 - 6	FLAT			
2	2	3-1/2 - 2-1/2	6 - 4	36 - 8	FLAT			
2-1/2	3 - 2-1/2	5 - 3-1/2	18 - 6	36 - 20	FLAT			
3	3-1/2 - 3	5 - 4	10 - 6	26 - 12	36 - 28	FLAT		
4	4	5	8 - 6	14 - 10	36 - 16	46 - 38	FLAT	
5	5	6	10 - 8	18 - 12	36 - 20	72 - 38	FLAT	
6	6	8	10	14 - 12	20 - 16	36 - 22	102 - 38	FLAT

## CL 3000 & 6000 THREADED ELBOW OUTLET CL 3000 & 6000 SOCKET WELD ELBOW OUTLET STD, XH, S160 & XXH BUTTWELD ELBOW OUTLET

BRANCH SIZE	RUN
1/4	36 - 1-1/4
3/8	36 - 1-1/4
1/2	36 - 1-1/4
3/4	36 - 1-1/4
1	36 - 2
1-1/4	36 - 2
1-1/2	36 - 2
2	36 - 3

## CL 3000 THREADED LATERAL OUTLET CL 3000 SOCKET WELD LATERAL OUTLET STD & XH BUTTWELD LATERAL OUTLET

BRANCH SIZE	RUN CONSOLIDATION		
1/4	2-1/2 - 1-1/4	12 - 3	
3/8	2-1/2 - 1-1/4	12 - 3	
1/2	2-1/2 - 1-1/4	12 - 3	
3/4	1-1/2 - 1-1/4	5 - 2	12 - 6
1	2-1/2 - 2	5 - 3	12 - 6
1-1/4	2-1/2 - 2	5 - 3	12 - 6
1-1/2	2-1/2 - 2	5 - 3	12 - 6
2	5 - 4	8 - 6	12 - 10

## CL 6000 THREADED LATERAL OUTLET CL 6000 SOCKET WELD LATERAL OUTLET S160 & XXH BUTTWELD LATERAL OUTLET

BRANCH SIZE	RUN CONSOLIDATION		
1/4	2-1/2 - 1-1/4	12 - 3	
3/8	2-1/2 - 1-1/4	12 - 3	
1/2	1-1/2 - 1-1/4	5 - 2	12 - 6
3/4	2-1/2 - 2	5 - 3	12 - 6
1	2-1/2 - 2	5 - 3	12 - 6
1-1/4	2-1/2 - 2	5 - 3	12 - 6
1-1/2	5 - 4	8 - 6	12 - 10

# Terms and Conditions of Sale

**1. ACCEPTANCE OF ORDER:** All Orders are subject to Pennsylvania Machine Works, Inc. (Seller) credit department approval prior to acceptance by Pennsylvania Machine Works, Inc. No terms or conditions of Purchaser's order contrary to Seller's terms and conditions shall be binding upon the Seller. Seller's offer shall automatically terminate thirty (30) days after date of offer, unless accepted prior to that date. No assignment of Purchaser's rights may be made without the prior, written consent of the Seller.

**2. PRICES:** All quoted prices and other terms of sale and payment, are subject to change by the Seller without prior notice and, unless otherwise stipulated by the Seller, are understood to be FOB Seller's factory, and Purchaser shall thereupon assume all risks of loss. All prices are exclusive of sales, use, privilege, excise, or other taxes or custom duties. Stenographic or clerical errors are subject to correction.

**3. PAYMENT TERMS:** All accounts are payable in U.S. funds, free of exchange, collection, or any other charges. No deductions may be made from invoice without prior approval of the Seller. Payment not received within thirty (30) days shall bear interest at the rate of 1-1/2% per month until paid. If, in the sole discretion of Seller, the financial condition of the Purchaser at any time so requires, Seller retains the right to require full or partial payment in advance. Unless otherwise specifically noted, the amount of any federal, state or local sales, use, occupancy, excise tax, or other tax of any nature, for which Seller is legally liable, either intentionally or through failure of payment by Purchaser, shall be added or be in addition to the price quoted and Purchaser agrees to pay the same to Seller.

**4. SPECIALS/DRAWINGS:** If an item is not shown on the price list, it is considered to be a "special" and is subject to quotation. If a "special" requires a drawing, said drawing must be approved, in writing, by Purchaser before fabrication begins. Any changes in drawings must have the prior approval of Seller. In the event of cancellation, Seller shall be compensated for material and labor already expended. When Seller manufactures a product according to customer supplied drawings, that Purchaser, at its expense, shall indemnify, defend and hold harmless against all claims or losses that arise from any suit that alleges that the Seller infringed the rights Purchaser or any third party. Seller's only express warranty is that the product will conform to Purchaser's specifications, subject to reasonable tolerances.

**5. CANCELLATIONS AND SUSPENSIONS:** Purchaser may cancel this order or contract, or delay work or delivery, only upon receipt of written notification by Seller and with Seller's prior consent, and upon agreement to pay Seller's adjustment charge. Orders for "special" products (usually "price on application items") may be changed and/or cancelled only upon receipt of written instructions by Seller and with Seller's prior consent and Purchaser shall make payment to Seller for material used or acquired and work already performed.

**6. DELIVERY:** Delivery or shipment date specified is Seller's best estimate and Seller shall not be liable for any incidental, special, indirect, or consequential damages due to delay in deliveries resulting from any cause. Claims for shortages must be made in writing within ten days after receipt of shipment. All damaged UPS/FedEx boxes must be retained to file a claim. Materials slated to be in stock are subject to prior sales. Seller reserves the right to make partial shipments from time to time, and to render invoices therefore, which shall be due and payable as provided in said invoices and the paragraph entitled "Payment Terms". If the Purchaser becomes overdue in any such partial payment, Seller shall be entitled to suspend work and/or avail itself other legal remedies.

**7. RETURN OF MATERIALS:** Only unused standard list items normally stocked may be returned, and only with prior written authorization number from Seller. Such returns shall be within a reasonable time not exceeding one year from date of sale of product. Any goods returned are subject to inspection and a handling charge plus freight in both directions and charges for any reconditioning, unless otherwise specified in writing by Seller.

**8. PRODUCT WARRANTY/LIABILITY:** Seller warrants products manufactured by the Seller to be free of defects in material and workmanship, under normal use and proper operation, for a period of one (1) year from date of the shipment from Seller's factory. Products and components purchased from other manufacturers are warranted only to the extent of the manufacturer's warranty to the Seller. SELLER MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED OTHER THAN AS SPECIFICALLY STATED HEREIN, AND THERE ARE NO WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND WARRANTIES SPECIFICALLY STATED HEREIN. This warranty does not apply if the failure is due to any cause other than a manufacturing defect, or if the product was modified or changed without prior written

approval from the Seller. Claims by Purchaser due to product failure are limited exclusively to the right of replacement of such defective product, or repayment of the sale price. In no case shall Seller be liable to the Purchaser or any third party for any direct, indirect, special, incidental, punitive, consequential, or special damages. The foregoing warranty shall not apply: (1) to any use of a Product in aircraft or aerospace applications (Prohibited Application), (2) if a Product was not used as recommended and in accordance with approved installation and operating practices, (3) if the failure of a Product results from any cause other than a manufacturing defect, including by not limited to damage due to corrosive, abrasive, or other wear normally to be expected in the use of the Product, (4) if the Product was modified or changed (unless written approval was given in advance by Seller, and (5) if Purchaser fails to deliver written notice of such defect to Seller during the Warranty Period.

**9. EXCLUSIONS:** Do not use Sellers Products in aircraft or aerospace applications. Purchaser assumes all risk of loss that arise from or relate to any use of Product in a Prohibited Application, and Purchaser shall, at its expense, indemnify, defend and hold Seller harmless against all claims or losses (including legal and accounting fees) that arise from or relate to the use of any Product in a Prohibited Application.

**10. WAIVER OF RIGHTS:** The failure of Seller to exercise any of the above rights under this agreement for a breach shall not to be deemed to be a waiver of such rights or future rights.

**11. GOVERNING LAW/CONSENT TO JURISDICTION:** This contract shall be construed in accordance with, and governed by, the laws of the Commonwealth of Pennsylvania without regard to the conflict-of-law doctrines of any jurisdiction. Purchaser agrees that any action or proceeding against it may be commenced, at Seller's sole option, in any county in the Commonwealth, in state or federal court, or submitted to binding arbitration under the rules of the American Arbitration Association. Purchaser waives personal service of process and agrees that a summons and complaint commencing an action in any court shall be properly served, if served by registered or certified mail to Purchaser's address as reflected in the books or record of Seller.

**12. DIES, TOOLS AND PATTERNS:** Dies, tools and patterns used by Seller to produce any Product (collectively, the "Material") shall be and remain the exclusive property of Seller. Payment by Purchaser of any preparation charge with respect to such Material shall not give Purchaser any right, title or interest in or to such Material. Seller shall not be responsible for retention of dies or patterns on which no orders are received for two years or more.

**13. PURCHASER'S REMEDIES:** Purchaser's remedies with respect to any Product furnished by Seller hereunder that is found not to be in conformity with the terms and conditions of the contract because of breach of contract, breach of express or implied warranty, negligence shall be limited exclusively to the right of replacement of such defective Product or, at the option of Seller, repayment of the sale price for the particular Product that gives rise to the claim. Seller shall have no liability to Purchaser or to any other person, in tort, contract or otherwise, for claims, losses, damages or injuries arising out of this purchase or use of any Product, except for the return by Seller of an amount not in excess of the payments made by Purchaser to Seller for the particular Products giving rise to Purchaser's claim. IN NO EVENT SHALL COMPANY BE LIABLE TO PURCHASER OR ANY THIRD PARTY FOR ANY CONSEQUENTIAL OR SPECIAL DAMAGES FOR LOSS OF GOOD WILL, WORK STOPPAGE, LOSS OF WORK PRODUCT, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, DIRECT OR INDIRECT, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSSES.

**14. OTHER:** This Agreement, together with these Terms and Conditions, constitute the entire understanding between the parties with respect to the subject matter hereof and supersede any and all prior understandings, statements, warranties, representations, and agreements, oral and writer, relating hereto. Neither party shall be liable to the other under this Agreement if delayed or prevented from performance by causes beyond its control including, but not limited to, fires, floods, strikes, acts of God, war, insurrection, governmental restrictions, or other causes of a like or different nature. No change, alteration, modification, or addition to this Agreement shall be effective unless in writing and properly executed by the parties hereto. The contract shall be subject to the terms and conditions contained or referred to in Seller's Price Schedule, quotation or order acknowledgments and in no others whatsoever. In the event of any discrepancy or inconsistency between the Terms and Conditions and any other purchase order or acceptance form used by Purchaser in connection herewith, the terms of this Agreement shall govern, and such purchase order or acceptance form shall not amend, modify or add to the terms of this Agreement.



**Quality • Service • Partnership**

## **REGIONAL OFFICES**

### **Pennsylvania Machine Works, Inc.**

201 Bethel Avenue, Aston, PA 19014

Tel: 610-497-3300

Fax: 610-497-3325

Toll Free: 1-800-736-6872

### **US Drop Forge, Co.**

1366 Auburn Road, Woolwich Township, NJ 08085

Tel: 856-467-0500

Fax: 856-467-4598

### **Texas PMW, Inc.**

315 North Wayside Drive, Houston, TX 77020

Tel: 713-679-7900

Fax: 713-679-7920