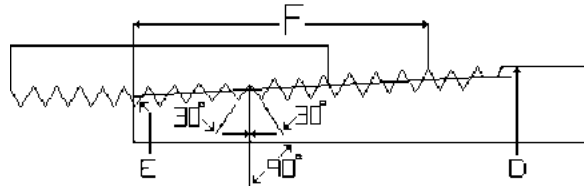




PIPE FITTINGS

Pipe Thread Standards For Taper Thread Fittings

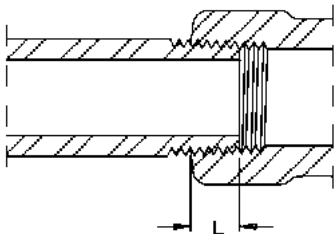


ASME STANDARD, B1.20.1* TAPER PIPE THREAD DIMENSIONS**

Nominal Pipe Size	Number Of Threads Per Inch	Outside Diameter Of Pipe D	Pitch Diameter At Beginning Of External Thread E	Length Of Effective Thread, External F
1/8"	27	.405	.36531	.2639
1/4"	18	.540	.47739	.2639
3/8"	18	.675	.61201	.4078
1/2"	14	.840	.75843	.5337
3/4"	14	1.050	.96768	.5457
1"	11-1/2	1.315	1.21363	.6828
1-1/4"	11-1/2	1.660	1.55713	.7068
1-1/2"	11-1/2	1.900	1.7609	.7235
2"	11-1/2	2.375	2.26902	.7565
2-1/2"	8	2.875	2.71953	1.1375
3"	8	3.500	3.34062	1.2000
3-1/2"	8	4.000	3.83750	1.2500
4"	8	4.500	4.33438	1.3000

* For more information on the complete ASME specification consult your Penn machine representative.

** ALL DIMENSIONS ARE IN INCHES.



LENGTH OF THREAD SCREWED INTO FITTINGS

SIZE	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
L	5/16	3/8	7/16	1/2	9/16	11/16	11/16	3/4	3/4	15/16	1	1-1/16	1-1/8	1-3/16	1-3/16
DN	6	8	10	15	20	25	32	40	50	65	80	90	100	125	150
L	8	9.5	11	13	14	17.5	17.5	19	19	24	25	27	29	30	30

DIMENSIONS GIVEN DO NOT ALLOW FOR VARIATION IN TAPPING AND THREADING



PIPE FITTINGS

PENN Forged Threaded Pipe Fittings

ASME B16.11-1996

AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.

MACHINED FROM SOLID FORGINGS

90° ELBOW		CLASS 2000													
Nominal Pipe Size		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	
Dimension A		7/8	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3	3-3/8	—	4-3/16	
Dimension B		7/8	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/8	4-5/16	—	5-7/8	
Approx. Wt.		.20	.18	.25	.51	.73	1.07	1.63	2.31	3.61	7.60	11.93	—	24.05	
		CLASS 3000													
Nominal Pipe Size		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	
Dimension A		7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16	4-3/16	
Dimension B		7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	
Approx. Wt.		.20	.33	.61	.92	1.47	2.33	2.98	5.72	6.53	11.03	18.83	29.37	24.05	
		CLASS 6000													
Nominal Pipe Size		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	
Dimension A		31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16	4-3/16	—	
Dimension B		1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	—	
Approx. Wt.		.35	.68	.95	1.72	2.76	3.79	6.66	8.39	13.74	23.24	36.22	32.60	—	
TEE		CLASS 2000													
Nominal Pipe Size		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	
Dimension A		7/8	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3	3-3/8	—	4-3/16	
Dimension B		7/8	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/8	4-5/16	—	5-7/8	
Approx. Wt.		.31	.24	.37	.67	.91	1.38	1.96	3.10	4.98	9.31	13.32	—	28.02	
		CLASS 3000													
Nominal Pipe Size		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	
Dimension A		7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16	4-3/16	
Dimension B		7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	
Approx. Wt.		.31	.45	.78	1.20	1.87	2.95	3.92	7.35	7.58	14.61	22.82	36.19	28.02	
		CLASS 6000													
Nominal Pipe Size		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	
Dimension A		31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16	4-3/16	—	
Dimension B		1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	—	
Approx. Wt.		.44	.91	1.36	2.21	3.57	5.11	8.25	10.46	17.54	30.65	49.50	40.88	—	
45° ELBOW		CLASS 2000													
Nominal Pipe Size		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	
Dimension A		3/4	3/4	3/4	7/8	1	1-1/8	1-5/16	1-3/8	1-11/16	2-1/16	2-1/2	—	3-1/8	
Dimension B		1-1/16	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	4	4-3/4	—	5-7/8	
Approx. Wt.		.29	.29	.21	.42	.60	.97	1.35	1.83	3.08	7.84	13.52	—	19.35	
		CLASS 3000													
Nominal Pipe Size		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	
Dimension A		3/4	3/4	7/8	1	1-1/8	1-5/16	1-3/8	1-11/16	1-25/32	2-1/16	2-1/2	3-1/8	3-1/8	
Dimension B		1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	
Approx. Wt.		.29	.25	.50	.76	1.23	1.87	2.29	4.6	4.58	7.84	13.52	24.70	19.35	
		CLASS 6000													
Nominal Pipe Size		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	
Dimension A		3/4	7/8	1	1-1/8	1-5/16	1-3/8	1-11/16	1-25/32	2-1/16	2-1/2	3-1/8	3-1/8	—	
Dimension B		1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	5-7/8	—	
Approx. Wt.		.28	.57	.86	1.41	2.25	2.81	5.28	6.16	10.04	15.63	30.54	28.72	—	

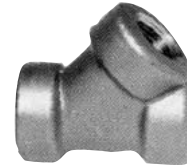


PIPE FITTINGS

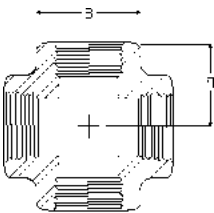
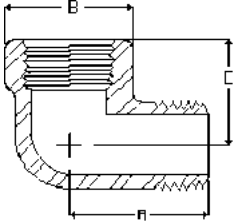
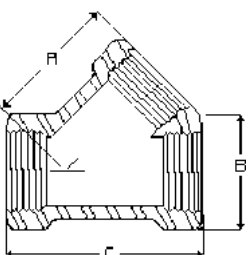
PENN Forged Threaded Pipe Fittings

ASME B16.11-1996

AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



MACHINED FROM SOLID FORGINGS

CROSS	CLASS 2000												
	Nominal 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
 <p>CLASS 2000 FIGURE NO. 02004 CLASS 3000 FIGURE NO. 03004 CLASS 6000 FIGURE NO. 06004</p>	Dimension A	31/32	31/32	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3-1/4	3-3/4	4-3/16
	Dimension B	1-1/16	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	4	4-3/4	5-7/8
	Approx. Wt.	.54	.52	.40	.84	1.20	1.67	2.48	3.41	5.51	16.66	27.90	33.28
	CLASS 3000												
 <p>CLASS 2000 FIGURE NO. 03005 CLASS 6000 FIGURE NO. 06005</p>	Nominal 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
	Dimension A	31/32	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16
	Dimension B	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8
	Approx. Wt.	.54	.52	1.02	1.54	2.27	3.68	4.98	8.68	8.57	16.66	27.90	32.28
 <p>CLASS 2000 FIGURE NO. 03006 CLASS 6000 FIGURE NO. 06006</p>	CLASS 6000												
	Nominal 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
	Dimension A	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16	—
	Dimension B	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8	—
Approx. Wt.	.54	1.14	1.71	2.67	4.38	5.92	10.15	11.65	21.71	36.85	54.83	—	
STREET ELBOW	CLASS 3000												
	Nominal 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
	Dimension A	1-1/4	1-1/4	1-1/2	1-11/16	1-7/8	2-1/4	2-5/8	2-7/8	3-5/16	—	—	—
	Dimension B	1	1	1-5/16	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	—	—	—
Dimension C	7/8	7/8	1-1/8	1-1/4	1-3/8	1-3/4	2	2-1/8	2-1/2	—	—	—	
Approx. Wt.	.22	.20	.45	.59	.89	1.33	2.45	3.04	4.84	—	—	—	
LATERAL	CLASS 6000												
	Nominal 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
	Dimension A	1-1/4	1-1/2	1-11/16	1-7/8	2-1/4	2-5/8	2-7/8	3-5/16	—	—	—	—
	Dimension B	1	1-5/16	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	—	—	—	—
Dimension C	7/8	1-1/8	1-1/4	1-3/8	1-3/4	2	2-1/8	2-1/2	—	—	—	—	
Approx. Wt.	.22	.44	.99	1.06	1.74	3.16	3.94	6.47	—	—	—	—	
LATERAL	CLASS 3000												
	Nominal 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
	Dimension A	1-3/4	1-3/4	1-3/4	1-3/4	2-1/8	2-1/2	2-13/16	3-3/16	4-3/8	5-5/16	—	—
	Dimension B	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	4	—	—
Dimension C	2-1/2	2-1/2	2-1/2	2-1/2	3	3-1/2	4	4-1/2	6	7-1/2	—	—	
Approx. Wt.	1.27	1.27	1.12	.95	1.51	2.21	3.40	4.72	9.41	15.60	—	—	
LATERAL	CLASS 6000												
	Nominal 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
	Dimension A	1-3/4	1-3/4	1-3/4	2-1/8	2-1/2	2-13/16	3-3/16	4-3/8	5-5/16	—	—	—
	Dimension B	1-1/2	1-1/2	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	4	—	—	—
Dimension C	2-1/2	2-1/2	2-1/2	3	3-1/2	4	4-1/2	6	7-1/2	—	—	—	
Approx. Wt.	1.31	1.31	1.18	1.84	3.10	4.54	5.73	11.84	16.80	—	—	—	

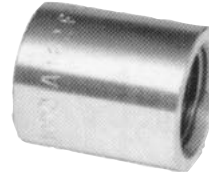
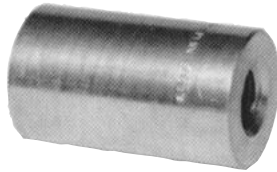


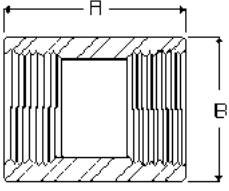
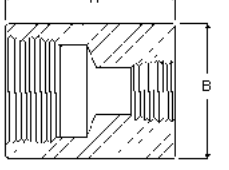
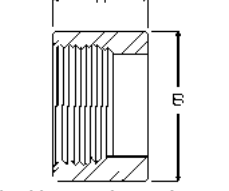
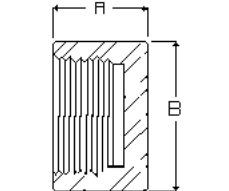

PIPE FITTINGS

PENN Forged Threaded Pipe Fittings

ASME B16.11-1996

AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



 COUPLING CLASS 3000 FIGURE NO. 03007 CLASS 6000 FIGURE NO. 06007		CLASS 3000													
		Nominal Pipe Size	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
Dimension A		1-1/4	1-3/8	1-1/2	1-7/8	2	2-3/8	2-5/8	3-1/8	3-3/8	3-5/8	4-1/4	4-1/2	4-3/4	
Dimension B		5/8	3/4	7/8	1-1/8	1-3/8	1-3/4	2-1/4	2-1/2	3	3-5/8	4-1/4	4-3/4	5-1/2	
Approx. Wt.		.08	.10	.14	.29	.42	.83	1.58	2.16	2.99	4.75	6.51	7.93	12.37	
 REDUCER CLASS 3000 FIGURE NO. 03008 CLASS 6000 FIGURE NO. 06008		CLASS 3000													
		Nominal Pipe Size	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
Dimension A		—	1-3/8	1-1/2	1-7/8	2	2-3/8	2-5/8	3-1/8	3-3/8	3-5/8	4-1/4	4-1/2	4-3/4	
Dimension B		—	3/4	7/8	1-1/8	1-3/8	1-3/4	2-1/4	2-1/2	3	3-5/8	4-1/4	4-3/4	5-1/2	
Approx. Wt.		—	.11	.16	.32	.50	.98	1.87	2.41	3.71	5.92	10.13	11.98	14.71	
 HALF COUPLING CLASS 3000 FIGURE NO. 03009 CLASS 6000 FIGURE NO. 06009		CLASS 3000													
		Nominal Pipe Size	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
Dimension A		5/8	11/16	3/4	15/16	1	1-3/16	1-5/16	1-9/16	1-11/16	1-13/16	2-1/8	2-1/4	2-3/8	
Dimension B		5/8	3/4	7/8	1-1/8	1-3/8	1-3/4	2-1/4	2-1/2	3	3-5/8	4-1/4	4-3/4	5-1/2	
Approx. Wt.		.04	.05	.11	.15	.21	.41	.79	1.09	1.53	2.38	3.33	4.02	6.16	
 CAP CLASS 3000 FIGURE NO. 03010 CLASS 6000 FIGURE NO. 06010		CLASS 3000													
		Nominal Pipe Size	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
Dimension A		3/4	1	1	1-1/4	1-7/16	1-5/8	1-3/4	1-3/4	1-7/8	2-3/8	2-9/16	2-5/8	2-11/16	
Dimension B		5/8	3/4	7/8	1-1/8	1-3/8	1-3/4	2-1/4	2-1/2	3	3-5/8	4-1/4	4-3/4	5-1/2	
Approx. Wt.		.05	.08	.11	.23	.38	.70	1.28	1.58	2.25	4.22	6.38	7.09	11.13	
 CAP CLASS 3000 FIGURE NO. 03010 CLASS 6000 FIGURE NO. 06010		CLASS 6000													
		Nominal Pipe Size	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
Dimension A		7/8	1-1/16	1-1/16	1-5/16	1-1/2	1-11/16	1-13/16	1-7/8	2	2-1/2	2-11/16	2-7/8	2-15/16	
Dimension B		7/8	1	1-1/4	1-1/2	1-3/4	2-1/4	2-1/2	3	3-5/8	4-1/4	5	5-3/4	6-1/4	
Approx. Wt.		.13	.19	.34	.55	.78	1.62	1.91	3.07	4.53	7.37	11.32	13.50	23.01	



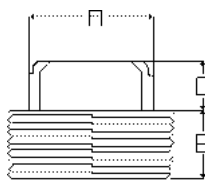
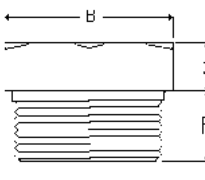
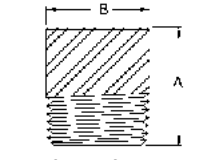
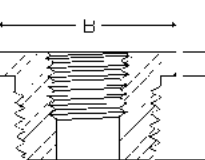

PIPE FITTINGS

PENN Forged Threaded Pipe Fittings

ASME B16.11-1996

AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



 <p>FIGURE NO. 06013</p>	<p style="text-align: center;">SQUARE HEAD PLUG</p> <table border="1"> <thead> <tr> <th>Nominal Pipe Size</th> <th>1/8</th> <th>1/4</th> <th>3/8</th> <th>1/2</th> <th>3/4</th> <th>1</th> <th>1-1/4</th> <th>1-1/2</th> <th>2</th> <th>2-1/2</th> <th>3</th> <th>3-1/2</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Dimension A</td> <td>3/8</td> <td>7/16</td> <td>1/2</td> <td>9/16</td> <td>5/8</td> <td>3/4</td> <td>13/16</td> <td>13/16</td> <td>7/8</td> <td>1-1/16</td> <td>1-1/8</td> <td>1-3/16</td> <td>1-1/4</td> <td>1-7/8</td> <td>2</td> </tr> <tr> <td>Dimension B</td> <td>9/32</td> <td>3/8</td> <td>7/16</td> <td>9/16</td> <td>5/8</td> <td>13/16</td> <td>15/16</td> <td>1-1/8</td> <td>1-5/16</td> <td>1-1/2</td> <td>1-11/16</td> <td>1-7/8</td> <td>2-1/2</td> <td>3-1/4</td> <td>4-1/4</td> </tr> <tr> <td>Dimension C</td> <td>1/4</td> <td>1/4</td> <td>5/16</td> <td>3/8</td> <td>7/16</td> <td>1/2</td> <td>9/16</td> <td>5/8</td> <td>11/16</td> <td>3/4</td> <td>13/16</td> <td>7/8</td> <td>1</td> <td>1-5/8</td> <td>1-7/8</td> </tr> <tr> <td>Approx. Wt.</td> <td>.02</td> <td>.03</td> <td>.06</td> <td>.11</td> <td>.18</td> <td>.35</td> <td>.60</td> <td>.82</td> <td>1.36</td> <td>2.21</td> <td>3.47</td> <td>4.73</td> <td>8.64</td> <td>16.93</td> <td>27.92</td> </tr> </tbody> </table>	Nominal Pipe Size	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	Dimension A	3/8	7/16	1/2	9/16	5/8	3/4	13/16	13/16	7/8	1-1/16	1-1/8	1-3/16	1-1/4	1-7/8	2	Dimension B	9/32	3/8	7/16	9/16	5/8	13/16	15/16	1-1/8	1-5/16	1-1/2	1-11/16	1-7/8	2-1/2	3-1/4	4-1/4	Dimension C	1/4	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	1	1-5/8	1-7/8	Approx. Wt.	.02	.03	.06	.11	.18	.35	.60	.82	1.36	2.21	3.47	4.73	8.64	16.93	27.92
Nominal Pipe Size	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																																																																		
Dimension A	3/8	7/16	1/2	9/16	5/8	3/4	13/16	13/16	7/8	1-1/16	1-1/8	1-3/16	1-1/4	1-7/8	2																																																																		
Dimension B	9/32	3/8	7/16	9/16	5/8	13/16	15/16	1-1/8	1-5/16	1-1/2	1-11/16	1-7/8	2-1/2	3-1/4	4-1/4																																																																		
Dimension C	1/4	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	1	1-5/8	1-7/8																																																																		
Approx. Wt.	.02	.03	.06	.11	.18	.35	.60	.82	1.36	2.21	3.47	4.73	8.64	16.93	27.92																																																																		
 <p>FIGURE NO. 06014</p>	<p style="text-align: center;">HEXAGON HEAD PLUG</p> <table border="1"> <thead> <tr> <th>Nominal Pipe Size</th> <th>1/8</th> <th>1/4</th> <th>3/8</th> <th>1/2</th> <th>3/4</th> <th>1</th> <th>1-1/4</th> <th>1-1/2</th> <th>2</th> <th>2-1/2</th> <th>3</th> <th>3-1/2</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Dimension A</td> <td>7/16</td> <td>1/2</td> <td>9/16</td> <td>11/16</td> <td>3/4</td> <td>7/8</td> <td>7/8</td> <td>15/16</td> <td>1</td> <td>1-3/16</td> <td>1-3/8</td> <td>1-1/2</td> <td>1-1/2</td> <td>1-1/2</td> <td>1-3/4</td> </tr> <tr> <td>Dimension B</td> <td>7/16</td> <td>5/8</td> <td>11/16</td> <td>7/8</td> <td>1-1/16</td> <td>1-3/8</td> <td>1-3/4</td> <td>2</td> <td>2-1/2</td> <td>3</td> <td>3-5/8</td> <td>4-1/4</td> <td>4-3/4</td> <td>5-3/4</td> <td>6-3/4</td> </tr> <tr> <td>Dimension C</td> <td>1/4</td> <td>1/4</td> <td>5/16</td> <td>5/16</td> <td>3/8</td> <td>3/8</td> <td>9/16</td> <td>5/8</td> <td>11/16</td> <td>3/4</td> <td>13/16</td> <td>1</td> <td>1</td> <td>3/4</td> <td>3/4</td> </tr> <tr> <td>Approx. Wt.</td> <td>.03</td> <td>.05</td> <td>.09</td> <td>.16</td> <td>.27</td> <td>.48</td> <td>.95</td> <td>1.32</td> <td>2.23</td> <td>3.81</td> <td>4.75</td> <td>8.37</td> <td>13.00</td> <td>15.61</td> <td>22.32</td> </tr> </tbody> </table>	Nominal Pipe Size	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	Dimension A	7/16	1/2	9/16	11/16	3/4	7/8	7/8	15/16	1	1-3/16	1-3/8	1-1/2	1-1/2	1-1/2	1-3/4	Dimension B	7/16	5/8	11/16	7/8	1-1/16	1-3/8	1-3/4	2	2-1/2	3	3-5/8	4-1/4	4-3/4	5-3/4	6-3/4	Dimension C	1/4	1/4	5/16	5/16	3/8	3/8	9/16	5/8	11/16	3/4	13/16	1	1	3/4	3/4	Approx. Wt.	.03	.05	.09	.16	.27	.48	.95	1.32	2.23	3.81	4.75	8.37	13.00	15.61	22.32
Nominal Pipe Size	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																																																																		
Dimension A	7/16	1/2	9/16	11/16	3/4	7/8	7/8	15/16	1	1-3/16	1-3/8	1-1/2	1-1/2	1-1/2	1-3/4																																																																		
Dimension B	7/16	5/8	11/16	7/8	1-1/16	1-3/8	1-3/4	2	2-1/2	3	3-5/8	4-1/4	4-3/4	5-3/4	6-3/4																																																																		
Dimension C	1/4	1/4	5/16	5/16	3/8	3/8	9/16	5/8	11/16	3/4	13/16	1	1	3/4	3/4																																																																		
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 <p>FIGURE NO. 06015</p>	<p style="text-align: center;">ROUND HEAD PLUG</p> <table border="1"> <thead> <tr> <th>Nominal Pipe Size</th> <th>1/8</th> <th>1/4</th> <th>3/8</th> <th>1/2</th> <th>3/4</th> <th>1</th> <th>1-1/4</th> <th>1-1/2</th> <th>2</th> <th>2-1/2</th> <th>3</th> <th>3-1/2</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Dimension A</td> <td>1-3/8</td> <td>1-5/8</td> <td>1-5/8</td> <td>1-3/4</td> <td>1-3/4</td> <td>2</td> <td>2</td> <td>2</td> <td>2-1/2</td> <td>2-3/4</td> <td>2-3/4</td> <td>3</td> <td>3</td> <td>5-1/2</td> <td>5-1/2</td> </tr> <tr> <td>Dimension B</td> <td>13/32</td> <td>35/64</td> <td>11/16</td> <td>27/32</td> <td>1-1/16</td> <td>1-5/16</td> <td>1-11/16</td> <td>1-29/32</td> <td>2-3/8</td> <td>2-7/8</td> <td>3-1/2</td> <td>4</td> <td>4-1/2</td> <td>5-5/8</td> <td>6-5/8</td> </tr> <tr> <td>Approx. Wt.</td> <td>.05</td> <td>.10</td> <td>.16</td> <td>.25</td> <td>.40</td> <td>.72</td> <td>1.17</td> <td>1.64</td> <td>3.04</td> <td>5.13</td> <td>7.19</td> <td>10.34</td> <td>13.25</td> <td>16.81</td> <td>24.11</td> </tr> </tbody> </table>	Nominal Pipe Size	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	Dimension A	1-3/8	1-5/8	1-5/8	1-3/4	1-3/4	2	2	2	2-1/2	2-3/4	2-3/4	3	3	5-1/2	5-1/2	Dimension B	13/32	35/64	11/16	27/32	1-1/16	1-5/16	1-11/16	1-29/32	2-3/8	2-7/8	3-1/2	4	4-1/2	5-5/8	6-5/8	Approx. Wt.	.05	.10	.16	.25	.40	.72	1.17	1.64	3.04	5.13	7.19	10.34	13.25	16.81	24.11																
Nominal Pipe Size	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																																																																		
Dimension A	1-3/8	1-5/8	1-5/8	1-3/4	1-3/4	2	2	2	2-1/2	2-3/4	2-3/4	3	3	5-1/2	5-1/2																																																																		
Dimension B	13/32	35/64	11/16	27/32	1-1/16	1-5/16	1-11/16	1-29/32	2-3/8	2-7/8	3-1/2	4	4-1/2	5-5/8	6-5/8																																																																		
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Nominal Pipe Size	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																																																																		
Dimension A	—	1/2	9/16	11/16	3/4	7/8	7/8	15/16	1	1-3/16	1-3/8	1-1/2	1-1/2	1-1/2	1-3/4																																																																		
Dimension B	—	5/8	11/16	7/8	1-1/16	1-3/8	1-3/4	2	2-1/2	3	3-5/8	4-1/4	4-3/4	5-3/4	6-3/4																																																																		
Dimension C	—	1/8	5/32	3/16	7/32	1/4	9/32	5/16	11/32	1/2	1/2	5/8	5/8	3/4	3/4																																																																		
Approx. Wt.	—	.02	.04	.06	.11	.19	.39	.63	.79	1.19	2.56	5.50	7.06	9.32	13.15																																																																		
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Nominal Pipe Size	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																																																																		
Dimension A	—	7/16	1/2	9/16	5/8	3/4	13/16	13/16	7/8	1-1/16	1-1/8	1-3/16	1-1/4	1-1/4	1-3/8																																																																		
Approx. Wt.	—	.01	.02	.03	.05	.09	.17	.31	.37	.52	.90	.92	2.15	2.41	4.60																																																																		



PIPE FITTINGS

PENN Forged Socket Welding Pipe Fittings

ASME B16.11-1996

CLASS 3000 FITTINGS FOR USE WITH SCH 40 & SCH 80 PIPE
AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



MACHINED FROM SOLID FORGINGS

90° ELBOW		CLASS 3000—For use with Sch 40 & Sch 80 Pipe											
<p>FIGURE NO. 13001</p>	Nominal 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
	Dimension A	7/8	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3	3-3/8	4-3/16
	Dimension B	7/8	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/8	4-5/16	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1-3/8	1-1/8	1-9/16
	Dimension E	7/16	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-5/8
	Approx. Wt.	.20	.17	.24	.48	.68	1.06	1.72	2.33	3.88	7.34	11.61	22.47
TEE		CLASS 3000—For use with Sch 40 & Sch 80 Pipe											
<p>FIGURE NO. 13002</p>	Nominal 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
	Dimension A	7/8	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3	3-3/8	4-3/16
	Dimension B	7/8	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/8	4-5/16	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1-3/8	1-1/8	1-9/16
	Dimension E	7/16	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-5/8
	Approx. Wt.	.25	.22	.31	.62	.88	1.30	2.00	2.99	4.60	8.49	13.85	27.14
45° ELBOW		CLASS 3000—For use with Sch 40 & Sch 80 Pipe											
<p>FIGURE NO. 13003</p>	Nominal 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
	Dimension A	3/4	3/4	3/4	7/8	1	1-1/8	1-5/16	1-3/8	1-11/16	2-1/16	2-1/2	3-1/8
	Dimension B	1-1/16	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	7/16	7/16	1/2	9/16	5/8	9/16	11/16	15/16	1-1/4	1-1/2
	Dimension E	5/16	5/16	5/16	7/16	1/2	9/16	11/16	13/16	1	1-1/8	1-1/4	1-5/8
	Approx. Wt.	.26	.24	.18	.40	.55	.89	1.23	1.76	3.02	7.62	12.49	19.34
CROSS		CLASS 3000—For use with Sch 40 & Sch 80 Pipe											
<p>FIGURE NO. 13004</p>	Nominal 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
	Dimension A	31/32	31/32	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	3-1/4	3-3/4	4-3/16
	Dimension B	1-1/16	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	17/32	17/32	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1-5/8	1-1/2	1-9/16
	Dimension E	7/16	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-5/8
	Approx. Wt.	.47	.40	.35	.73	.96	1.53	2.32	3.59	5.50	14.98	17.56	30.84
LATERAL		CLASS 3000—For use with Sch 40 & Sch 80 Pipe											
<p>FIGURE NO. 13006</p>	Nominal 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
	Dimension A	2-1/2	2-1/2	2-1/2	2-1/2	3	3-1/2	4	4-1/2	6	7-1/2	—	—
	Dimension B	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	4	—	—
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	—	—
	Dimension D	13/32	13/32	13/32	13/32	17/32	17/32	17/32	17/32	21/32	21/32	—	—
	Dimension E	1-3/4	1-3/4	1-3/4	1-3/4	2-1/8	2-1/2	2-13/16	3-3/16	4-3/8	5-5/16	—	—
	Approx. Wt.	1.25	1.21	1.09	.94	1.47	2.23	3.31	4.89	9.68	18.33	—	—



PIPE FITTINGS

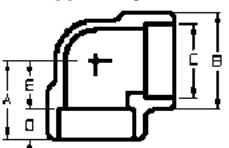
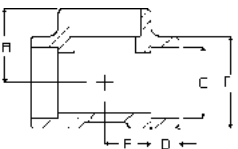
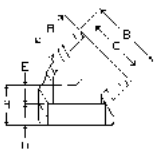
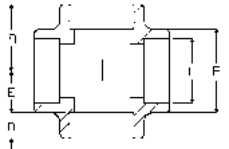
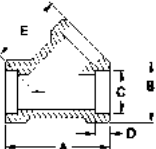
PENN Forged Socket Welding Pipe Fittings

ASME B16.11-1996

CLASS 6000 FITTINGS FOR USE WITH SCH 160 PIPE
AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



MACHINED FROM SOLID FORGINGS

90° ELBOW		CLASS 6000—For use with Sch 160 Pipe											
 <p>FIGURE NO. 16001</p>	Nominal 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
	Dimension A	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16
	Dimension B	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	1/2	9/16	5/8	11/16	3/4	7/8	7/8	1	1-1/4	1-9/16
	Dimension E	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-1/2	2-5/8
	Approx. Wt.	.37	.32	.60	.92	1.52	2.42	3.18	6.23	7.27	12.06	21.16	27.21
TEE		CLASS 6000—For use with Sch 160 Pipe											
 <p>FIGURE NO. 16002</p>	Nominal 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
	Dimension A	7/8	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16
	Dimension B	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	1/2	9/16	5/8	11/16	3/4	7/8	7/8	1	1-1/4	1-9/16
	Dimension E	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-1/2	2-5/8
	Approx. Wt.	.44	.41	.81	1.18	1.93	3.10	4.22	7.59	8.70	15.09	25.24	32.51
45° ELBOW		CLASS 6000—For use with Sch 160 Pipe											
 <p>FIGURE NO. 16003</p>	Nominal 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
	Dimension A	3/4	3/4	7/8	1	1-1/8	1-5/16	1-3/8	1-11/16	1-25/32	2-1/16	2-1/2	3-1/8
	Dimension B	7/8	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	7/16	7/16	7/16	1/2	9/16	5/8	9/16	11/16	21/32	13/16	1-1/8	1-1/2
	Dimension E	5/16	5/16	7/16	1/2	9/16	11/16	13/16	1	1-1/8	1-1/4	1-3/8	1-5/8
	Approx. Wt.	.25	.24	.48	.74	1.25	2.03	2.17	2.39	5.11	8.37	12.02	21.76
CROSS		CLASS 6000—For use with Sch 160 Pipe											
 <p>FIGURE NO. 16004</p>	Nominal 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
	Dimension A	31/32	31/32	1-1/8	1-5/16	1-1/2	1-3/4	2	2-3/8	2-1/2	3-1/4	3-3/4	4-3/16
	Dimension B	1-1/16	1-1/16	1-5/16	1-1/2	1-13/16	2-3/16	2-1/2	3	3-5/16	4	4-3/4	5-7/8
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.545
	Dimension D	17/32	7/16	1/2	9/16	5/8	11/16	3/4	7/8	7/8	1	1-1/4	1-9/16
	Dimension E	7/16	17/32	5/8	3/4	7/8	1-1/16	1-1/4	1-1/2	1-5/8	2-1/4	2-1/2	2-5/8
	Approx. Wt.	.50	1.12	1.55	1.35	2.29	3.67	5.20	9.26	9.03	18.28	29.07	38.28
LATERAL		CLASS 6000—For use with Sch 160 Pipe											
 <p>FIGURE NO. 16006</p>	Nominal 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
	Dimension A	2-1/2	2-1/2	2-1/2	2-1/2	3	3-1/2	4	4-1/2	6	7-1/2	—	—
	Dimension B	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4	2	2-7/16	2-3/4	3-5/16	4	—	—
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	—	—
	Dimension D	13/32	13/32	13/32	13/32	17/32	17/32	17/32	17/32	21/32	21/32	—	—
	Dimension E	1-3/4	1-3/4	1-3/4	1-3/4	2-1/8	2-1/2	2-13/16	3-3/16	4-3/8	5-5/16	—	—
	Approx. Wt.	1.45	1.31	1.18	1.04	1.66	2.70	3.84	5.57	11.63	19.10	—	—

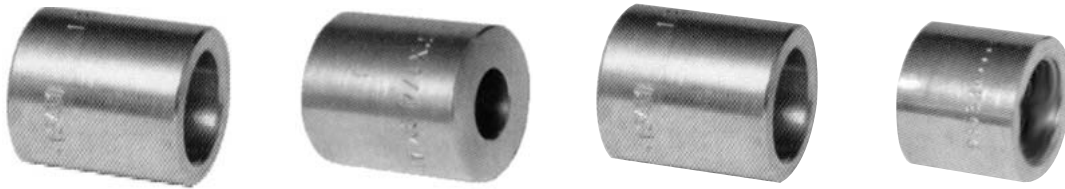


PIPE FITTINGS

PENN Forged Socket Welding Pipe Fittings

ASME B16.11-1996

CLASS 3000 FITTINGS FOR USE WITH SCH 40 & SCH 80 PIPE
AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



COUPLING		Nominal Pipe Size	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
 Class 3000—Figure No. 13007 Class 6000—Figure No. 16007 Class 9000—Figure No. 19007	CLASS 3000 SCH 40 AND SCH 80	Dimension A	1-1/8	1-1/8	1-1/8	1-1/4	1-7/16	1-9/16	1-9/16	1-9/16	2-1/16	2-1/16	2-1/16	2-5/16	2-5/16
		Dimension B	3/4	7/8	1-1/16	1-1/4	1-1/2	1-13/16	2-1/4	2-1/2	3	3-5/8	4-1/4	5	5-1/2
		Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545
		Dimension D	7/16	7/16	7/16	7/16	17/32	17/32	17/32	17/32	21/32	21/32	21/32	25/32	25/32
		Dimension E	.269	.364	.493	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
		Dimension F	1-1/8	1-1/8	1-1/8	1-5/16	1-15/32	1-21/32	1-23/32	1-25/32	2-9/32	2-11/32	2-17/32	2-21/32	2-21/32
		Approx. Wt.	.09	.11	.14	.28	.40	.65	1.05	1.23	2.05	3.12	3.83	6.67	7.13
 Class 3000—Figure No. 13008 Class 6000—Figure No. 16008 Class 9000—Figure No. 19008	CLASS 6000 SCH 160	Dimension A	1-1/8	1-1/8	1-1/8	1-1/4	1-7/16	1-9/16	1-9/16	1-9/16	2-1/16	2-1/16	2-1/16	—	2-5/16
		Dimension B	7/8	1	1-1/4	1-1/2	1-3/4	2	2-1/2	2-3/4	3-5/8	4-1/4	5	—	6
		Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	—	4.545
		Dimension D	7/16	7/16	7/16	7/16	17/32	17/32	17/32	17/32	21/32	21/32	21/32	—	25/32
		Dimension E	.157	.250	.359	.466	.614	.815	1.160	1.338	1.689	2.125	2.625	—	3.438
		Dimension F	1-1/8	1-1/8	1-1/8	1-5/16	1-15/32	1-21/32	1-23/32	1-25/32	2-9/32	2-11/32	2-17/32	—	2-21/32
		Approx. Wt.	.18	.16	.29	.08	.12	1.08	1.61	2.58	4.74	6.36	7.06	—	18.35
WATERWAY BORE OF REDUCER IS DETERMINED BY SCHEDULE OF SMALL END															
CLASS 3000 SCH 40 AND SCH 80	Dimension A	11/16	11/16	11/16	13/16	15/16	1-1/16	1-1/16	1-1/8	1-5/16	1-7/16	1-5/8	1-7/8	1-7/8	
	Dimension B	3/4	7/8	1-1/16	1-1/4	1-1/2	1-13/16	2-1/4	2-1/2	3	3-5/8	4-1/4	5	5-1/2	
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	4.036	4.545	
	Dimension D	7/16	7/16	7/16	7/16	17/32	17/32	17/32	17/32	21/32	21/32	21/32	25/32	25/32	
	Approx. Wt.	.05	.09	.13	.34	.35	.52	1.01	1.13	2.03	2.79	4.43	6.83	7.86	
CLASS 6000 SCH 160	Dimension A	3/4	3/4	13/16	13/16	1	1-1/8	1-1/8	1-3/16	1-3/16	1-9/16	1-11/16	—	2	
	Dimension B	7/8	1	1-1/4	1-1/2	1-3/4	2	2-1/2	2-3/4	3-5/8	4-1/4	5	—	6	
	Dimension C	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536	—	4.545	
	Dimension D	7/16	7/16	7/16	7/16	17/32	17/32	17/32	17/32	21/32	21/32	21/32	—	25/32	
	Approx. Wt.	.13	.17	.27	.43	.58	1.18	1.41	2.16	3.69	5.24	7.71	—	14.94	



PIPE FITTINGS



TYPE 1

PENN Forged Socket Welding Pipe Reducer Inserts

MSS STANDARD PRACTICE, SP-79

AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS STEELS,
ALLOY STEELS, AND NON-FERROUS METALS.



TYPE 2

CLASS 9000					
For use with Sch XXH Pipe					
Nominal Pipe Sizes	Insert Type	DIMENSIONS			
		A	B	E	F
1/4 x 1/8	1	7/16	7/8	1	1/2
3/8 x 1/4	1	7/16	1	1-1/4	9/16
3/8 x 1/8	1	7/16	7/8	1	9/16
1/2 x 3/8	1	7/16	1-1/8	1-1/2	5/8
1/2 x 1/4	1	7/16	1	1-1/4	5/8
1/2 x 1/8	1	7/16	7/8	1	5/8
3/4 x 1/2	1	1/2	1-3/16	1-3/4	11/16
3/4 x 3/8	1	7/16	1-1/16	1-1/2	11/16
3/4 x 1/4	1	7/16	1	1-1/4	11/16
3/4 x 1/8	2	7/16	1-1/4	—	—
1 x 3/4	1	9/16	1-5/16	2-1/4	3/4
1 x 1/2	1	1/2	1-3/16	1-3/4	3/4
1 x 3/8	1	7/16	1	1-1/2	3/4
1 x 1/4	2	7/16	1-3/8	—	—
1-1/4 x 1	1	5/8	1-3/8	2-1/2	13/16
1-1/4 x 3/4	1	9/16	1-3/16	2-1/4	13/16
1-1/4 x 1/2	2	1/2	1-5/16	—	—
1-1/2 x 1-1/4	1	11/16	1-5/8	3	7/8
1-1/2 x 1	1	5/8	1-5/16	2-1/2	7/8
1-1/2 x 3/4	2	9/16	1-3/8	—	—
1-1/2 x 1/2	2	1/2	1-7/16	—	—

CLASS 9000					
For use with Sch XXH Pipe					
Nominal Pipe Sizes	Insert Type	DIMENSIONS			
		A	B	E	F
2 x 1-1/2	1	3/4	1-5/8	3-5/8	1
2 x 1-1/4	1	11/16	1-1/2	3	1
2 x 1	2	5/8	1-7/16	—	—
2 x 3/4	2	9/16	1-1/2	—	—
2 x 1/2	2	1/2	1-9/16	—	—
2-1/2 x 2	1	7/8	1-3/4	4-1/4	1-1/16
2-1/2 x 1-1/2	1	3/4	1-7/16	3-5/8	1-1/16
2-1/2 x 1-1/4	2	11/16	1-5/8	—	—
2-1/2 x 1	2	5/8	1-11/16	—	—
3 x 2-1/2	1	15/16	1-15/16	5	1-1/8
3 x 2	1	7/8	1-1/2	4-1/4	1-1/8
3 x 1-1/2	2	3/4	1-11/16	—	—
3 x 1-1/4	2	11/16	1-3/4	—	—
3 x 1	2	5/8	1-13/16	—	—
4 x 3	1	1	2	5-1/2	1-1/4
4 x 2-1/2	2	15/16	1-11/16	—	—
4 x 2	2	7/8	1-3/4	—	—
4 x 1-1/2	2	3/4	1-7/8	—	—
4 x 1-1/4	2	11/16	1-15/16	—	—
4 x 1	2	5/8	2	—	—



PIPE FITTINGS

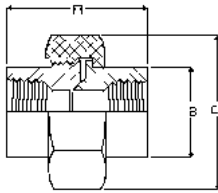
Forged Unions — Union Elbows — Union Tees

THREADED and SOCKET WELD

IN ACCORDANCE WITH MSS STANDARD PRACTICE, SP-83*

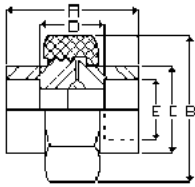
(*—SP-83 FOR 3000 CLASS ONLY)

MSS THREADED UNION



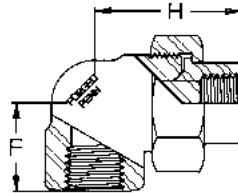
CLASS 3000 FIGURE NO. 03017
CLASS 6000 FIGURE NO. 06017

MSS SOCKET-WELD UNION



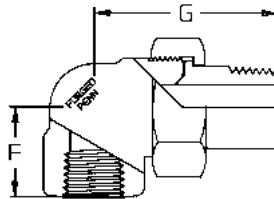
CLASS 3000 FIGURE NO. 13017
CLASS 6000 FIGURE NO. 16017

FEMALE THREADED UNION ELBOW



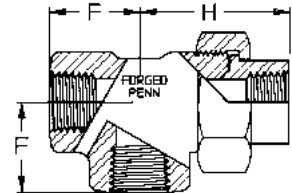
CLASS 3000 FIGURE NO. 30059
CLASS 6000 FIGURE NO. 60059

MALE THREADED UNION ELBOW



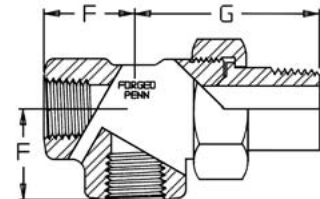
CLASS 3000 FIGURE NO. 30058
CLASS 6000 FIGURE NO. 60058

FEMALE THREADED UNION TEE



CLASS 3000 FIGURE NO. 30017
CLASS 6000 FIGURE NO. 60017

MALE THREADED UNION TEE



CLASS 3000 FIGURE NO. 30017
CLASS 6000 FIGURE NO. 60017

CLASS 3000											
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
Dimension A	1-11/16	1-11/16	1-13/16	1-15/16	2-1/4	2-7/16	2-13/16	3	3-3/8	4-1/32	4-5/16
Dimension B	55/64	55/64	1-1/32	1-15/64	1-15/32	1-51/64	2-11/64	2-7/16	2-31/32	3-39/64	4-5/16
Dimension C*	1-3/8	1-3/8	1-5/8	1-13/16	2-1/4	2-9/16	3-1/16	3-7/16	4-1/16	4-7/8	5-11/16
Dimension D	13/16	13/16	15/16	15/16	1-1/8	1-3/16	1-7/16	1-1/2	1-5/8	2-1/4	2-5/16
Dimension E	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	3.536
Dimension F	1-1/8	1-1/8	1-1/8	1-5/16	1-1/2	1-3/4	2-3/8	2-3/8	3	3-3/4	4-3/16
Dimension G	2-5/8	2-5/8	2-7/8	3-7/32	3-9/16	4-3/32	4-7/8	4-31/32	6	6-11/16	7-27/32
Dimension H	1-15/16	1-15/16	2-1/32	2-9/32	2-9/16	2-31/32	3-13/16	3-13/16	4-3/4	5-11/16	6-13/32
Wt. of Union	.40	.38	.52	.73	1.19	1.66	2.66	3.42	5.36	9.12	12.58
Wt. of Union Elbow	.96	.94	.98	1.30	1.90	3.00	3.88	6.63	8.13	22.50	27.20
Wt. of Union Tee	1.15	1.13	1.18	1.56	2.28	3.60	4.66	7.90	9.20	27.30	32.30

CLASS 6000											
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
Dimension A	1-11/16	1-13/16	1-15/16	2-1/4	2-7/16	2-13/16	3	3-3/8	4-1/32	4-5/16	—
Dimension B	55/64	1-1/32	1-15/64	1-15/32	1-51/64	2-11/64	2-7/16	2-31/32	3-39/64	4-5/16	—
Dimension C*	1-3/8	1-5/8	1-13/16	2-1/4	2-9/16	3-1/16	3-7/16	4-1/16	4-7/8	5-11/16	—
Dimension D	13/16	13/16	15/16	15/16	1-1/8	1-3/16	1-7/16	1-1/2	1-5/8	2-1/4	—
Dimension E	.426	.560	.693	.859	1.071	1.335	1.682	1.922	2.410	2.910	—
Wt. of Union	.48	.56	.75	1.35	2.01	3.17	3.92	6.60	10.12	14.00	—

*C dimension is across octagon or hexagon flats.

Union Elbows and Tees can be furnished with any combination of union outlets.

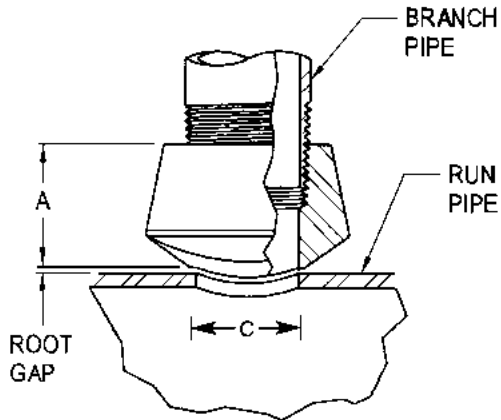
AVAILABLE IN A COMPLETE RANGE OF CARBON, STAINLESS, ALLOY STEELS, AND NON-FERROUS METALS.

ANY COMBINATION OF THREADED AND SOCKET WELD ENDS CAN BE FURNISHED. (MALE x FEMALE, ETC.)



PIPE FITTINGS

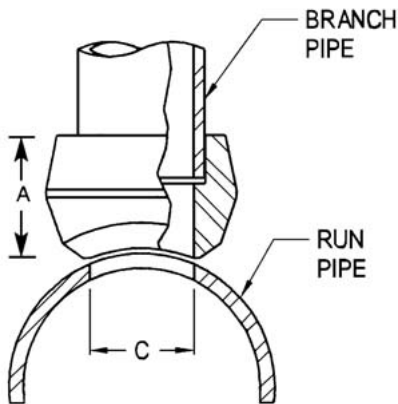
Threaded Outlets



For Class 3000 – Figure No. 03502
For Class 6000 – Figure No. 06502

Outlet Size	Dimensions					
	Class 3000			Class 6000		
NPS	A	C	Weight	A	C	Weight
1/8	3/4	.328	0.09	1-1/8	.157	0.15
1/4	3/4	.438	0.12	1-1/8	.250	0.30
3/8	13/16	.563	0.16	1-1/8	.359	0.30
1/2	1	.703	0.21	1-1/4	.464	0.42
3/4	1-1/16	.906	0.36	1-7/16	.612	0.71
1	1-5/16	1.141	0.59	1-9/16	.815	1.25
1-1/4	1-5/16	1.469	0.84	1-5/8	1.160	1.53
1-1/2	1-3/8	1.688	1.00	1-11/16	1.338	1.91
2	1-1/2	2.188	1.72	2-1/16	1.687	4.83
2-1/2	1-13/16	2.563	2.90	2-11/16	2.125	6.19
3	2	3.188	4.24	2-11/16	2.624	7.36
3-1/2	2-1/8	3.688	4.40	—	—	—
4	2-1/4	4.188	6.91	3-5/16	3.438	14.02
5	2-5/8	5.275	9.46	3-11/16	4.313	20.03
6	2-11/16	6.313	14.03	4-1/8	5.187	29.36

Socket-Weld Outlets



For Class 3000 – Figure No. 13502
For Class 6000 – Figure No. 16502

Outlet Size	Dimensions					
	Class 3000			Class 6000		
NPS	A	C	Weight	A	C	Weight
1/8	3/4	.269	0.07	1-1/8	.157	0.15
1/4	3/4	.364	0.12	1-1/8	.250	0.30
3/8	13/16	.493	0.16	1-1/8	.359	0.30
1/2	1	.622	0.27	1-1/4	.464	0.48
3/4	1-1/16	.824	0.36	1-7/16	.612	0.81
1	1-5/16	1.049	0.59	1-9/16	.815	1.30
1-1/4	1-5/16	1.380	0.84	1-5/8	1.160	1.54
1-1/2	1-3/8	1.610	1.00	1-11/16	1.338	1.97
2	1-1/2	2.067	1.53	2-1/16	1.687	5.01
2-1/2	1-13/16	2.469	2.66	2-11/16	2.125	6.19
3	2	3.068	3.72	2-11/16	2.624	7.36
3-1/2	2-1/8	3.548	4.40	—	—	—
4	2-1/4	4.026	7.05	3-5/16	3.438	14.02
5	2-5/8	5.047	9.46	3-11/16	4.313	20.03
6	2-11/16	6.065	14.03	4-1/8	5.187	29.36

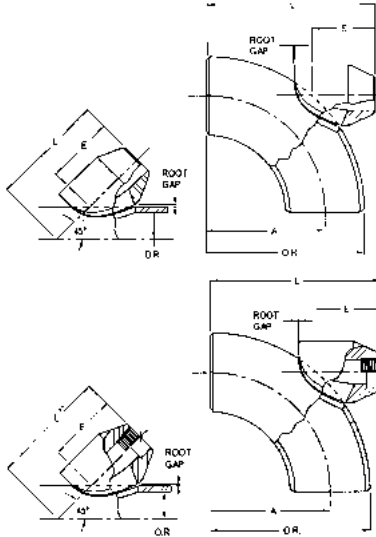


PIPE FITTINGS

Lateral and Elbow Connections**

(**For 90 Degree Long Radius Pipe Elbows)

For Standard—Figure No. 45510
For XH—Figure No. 48510



or Standard—Figure No. 45520
For XH—Figure No. 48520

*L = E + 1.414 (O.R. is the outside radius)
**L = E + √O.R.² - A²

3000 & 6000 TD & Sw also available

Outlet Size NPS	Dimensions		
	E		
	Standard	Extra Heavy	Weight
1/4	1-5/8	1-5/8	0.49
3/8	1-5/8	1-5/8	0.50
1/2	1-5/8	1-5/8	0.52
3/4	1-7/8	1-7/8	1.00
1	2-1/4	2-1/4	1.26
1-1/4	2-1/2	2-1/2	1.39
1-1/2	2-11/16	2-11/16	1.53
2	3-1/8	3-1/8	2.76
2-1/2	3-7/16	3-7/16	4.70
3	3-7/8	3-7/8	6.54
4	4-3/4	4-3/4	12.31
6	6-1/4	7-1/16	24.25
8	7-3/4	8-7/8	60.00
10	9-3/16	9-15/16	90.50
12	10-1/2	11-7/16	121.00

Heavy Wall Butt-Weld Outlets

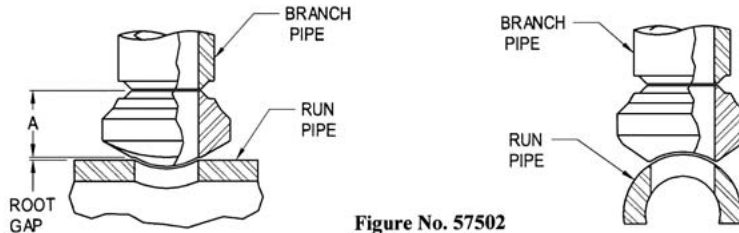


Figure No. 57502

Outlet Size NPS	"A" Dimension									
	Run Wall Nominal Thickness									
	3/4	1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-3/4	3
3	2-7/8	3-1/4	3-3/8	3-5/8	4-1/8	4-9/16	5	5-1/2	5-7/8	6-1/16
3-1/2	3-1/8	3-1/4	3-7/16	3-3/4	4-3/16	4-5/8	5-1/16	5-9/16	6	6-5/16
4	3-5/16	3-3/8	3-1/2	3-7/8	4-5/16	4-3/4	5-3/16	5-5/8	6-1/8	6-9/16
5	3-3/4	3-3/4	4	4-1/4	4-3/4	5-1/4	5-3/4	6-1/4	6-5/8	7-3/16
6	4-1/8	4-3/8	4-1/2	4-11/16	5-1/4	5-3/4	6-1/4	6-3/4	7-1/4	7-13/16
8	4-3/16	4-5/8	4-7/8	5-3/16	5-3/4	6-3/8	6-15/16	7-1/2	8-1/8	8-11/16
10	4-1/4	4-7/8	5	5-5/16	5-15/16	6-9/16	7-3/16	7-13/16	8-7/16	9-1/16
12	4-3/8	5-1/8	5-3/8	5-11/16	6-5/16	6-15/16	7-9/16	8-3/16	8-13/16	9-7/16
14	4-1/2	5-1/4	5-1/2	5-13/16	6-5/16	6-15/16	7-9/16	8-3/16	8-13/16	9-7/16
16	4-11/16	5-7/8	6	6-7/16	6-5/8	7-1/4	7-7/8	8-1/2	9-1/8	9-3/4
18	5-1/8	6-1/2	6-1/2	6-1/2	6-13/16	7-7/16	8-1/4	8-13/16	9-7/16	10-1/16
20	5-5/8	6-3/4	7	7-9/16	7-13/16	8-1/8	8-11/16	9-1/4	9-15/16	10-1/2
24	6-1/2	7-5/8	8	8-3/4	9	9-13/16	10-1/2	11	12-9/16	10-11/16

DIMENSIONS IN INCHES



PIPE FITTINGS

Braze-On Outlet

For tubing type K, L, and M tubing high silicon bronze ASTM B283 2" and smaller MIL-B-16541 201/2" and larger

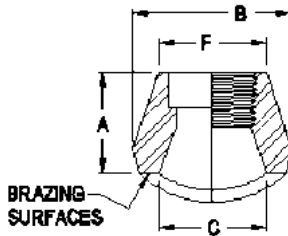


Figure No. 00591

Outlet Size NPS	Dimensions				
	A	B	C	Brazing Surface	F-Min MIL-F-1183
1/4	11/16	1	9/16	0.188	0.700
3/8	13/16	1-1/4	3/4	0.190	0.855
1/2	13/16	1-1/4	3/4	0.190	0.855
3/4	1	1-7/16	7/8	0.220	1.020
1	1-1/16	1-3/4	1-1/8	0.240	1.250
1-1/4	1-1/4	2-1/8	1-7/16	0.270	1.535
1-1/2	1-5/16	2-9/16	1-3/4	0.300	1.900
2	1-3/8	2-7/8	2	0.330	2.160
2-1/2	1-1/2	3-1/2	2-9/16	0.360	2.675
3	1-13/16	4-1/8	3	0.384	3.215
4	2-1/8	5-1/2	4-5/16	0.437	4.400

For IPS pipe high silicon bronze ASTM B283 2" and smaller MIL-B-16541 2-1/2" and smaller

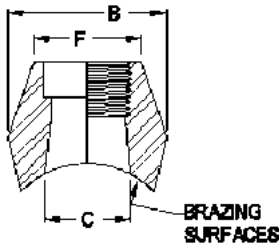
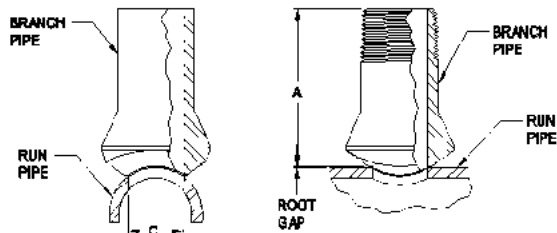


Figure No. 00591

Outlet Size NPS	Dimensions				
	A	B	C	Brazing Surface	F-Min MIL-F-1183
1/4	11/16	1	9/16	0.188	0.700
3/8	13/16	1-1/4	3/4	0.190	0.855
1/2	1	1-7/16	7/8	0.220	1.020
3/4	1-1/16	1-3/4	1-1/8	0.240	1.250
1	1-1/4	2-1/8	1-7/16	0.270	1.535
1-1/4	1-5/16	2-9/16	1-3/4	0.300	1.900
1-1/2	1-3/8	2-7/8	2	0.330	2.160
2	1-1/2	3-1/2	2-9/16	0.360	2.675
2-1/2	1-13/16	4-1/8	3	0.384	3.215
3	2	4-13/16	3-11/16	0.442	3.880
4	2-1/4	6	4-3/4	0.476	4.940
5	2-5/8	7-1/16	5-9/16	0.656	6.163

Nipple Outlet Plain End and Threaded



For Standard—Figure No. 45535
For XH—Figure No. 48535

Outlet Size Inches	Plain & Threaded			
	A	C		Weight
		STD	XH	
1/2	3-1/2	0.938	0.562	0.500
3/4	3-1/2	1.188	0.750	0.700
1	3-1/2	1.438	1.000	0.980
1-1/4	3-1/2	1.750	1.312	1.500
1-1/2	3-1/2	2.000	1.500	2.000
2	3-1/2	2.563	1.687	2.500

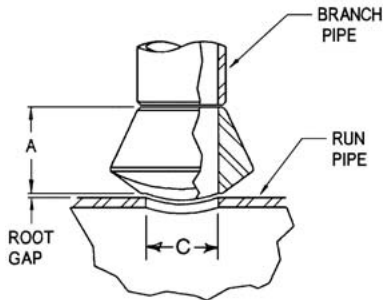
*Other lengths available upon request.

DIMENSIONS IN INCHES
WEIGHTS IN POUNDS



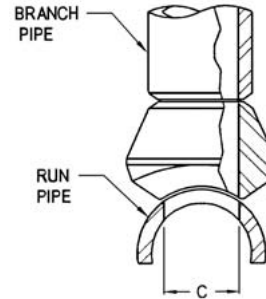
PIPE FITTINGS

Standard and Extra Heavy Butt-Weld Outlet



For Standard—Figure No. 45502
For Extra Heavy—Figure No. 48502

Schedule 160 and Double Extra Heavy Butt-Weld Outlet



For Schedule 160—Figure No. 52502
For XXH—Figure No. 53502

Outlet Size Inches	Dimensions									
	Standard			Extra Heavy			SCH160		XXH	
	A	C	Weight	A	C	Weight	A	C	C	Weight
1/8	5/8	.269	.08	5/8	.215	.10				
1/4	5/8	.364	.08	5/8	.302	.08				
3/8	3/4	.493	.15	3/4	.423	.15				
1/2	3/4	.622	.18	3/4	.546	.20	1-1/8	.466	.252	.23
3/4	7/8	.824	.25	7/8	.742	.31	1-1/4	.614	.434	.65
1	1-1/16	1.049	.50	1-1/16	.957	.55	1-1/2	.815	.599	.78
1-1/4	1-1/4	1.380	.80	1-1/4	1.278	.90	1-3/4	1.160	.896	1.16
1-1/2	1-5/16	1.610	1.00	1-5/16	1.500	1.10	2	1.338	1.100	1.60
2	1-1/2	2.067	1.75	1-1/2	1.939	1.75	2-3/16	1.689	1.503	1.95
2-1/2	1-5/8	2.469	2.50	1-5/8	2.323	2.28	2-7/16	2.125	1.771	3.02
3	1-3/4	3.068	3.82	1-3/4	2.900	3.50	2-7/8	2.624	2.300	5.75
3-1/2	1-7/8	3.548	5.10	1-7/8	3.364	4.75				
4	2	4.026	6.20	2	3.826	5.00	3-7/16	3.438	3.152	9.56
5	2-1/4	5.047	8.00	2-1/4	4.813	8.50	3-11/16	4.313	4.063	12.65
6	2-3/8	6.065	11.50	3-1/16	5.761	15.00	4-1/8	5.189	4.897	25.25
8	2-3/4	7.981	22.00	3-7/8	7.625	35.00	*			
10	3-1/16	10.020	37.00	3-11/16	9.750	46.00	*			
12	3-3/8	12.000	44.00	4-1/16	11.750	63.00	*			
14	3-1/2	13.250	63.00	3-15/16	13.000	72.00	*			
16	3-11/16	15.250	76.00	4-3/16	15.000	102.00	*			
18	3-13/16	17.250	100.00	4-3/8	17.000	130.00	*			
20	4	19.250	112.00	4-11/16	19.000	163.00	*			
24	4-9/16	23.250	210.00	5-1/2	23.000	271.00	*			
26	4-11/16	25.250	245.00	5-3/4	25.000	325.00	*			
30	5-3/8	29.250	375.00				*			
36	5-3/8	35.250	498.00				*			
48	5-13/16	47.250	1125.00				*			