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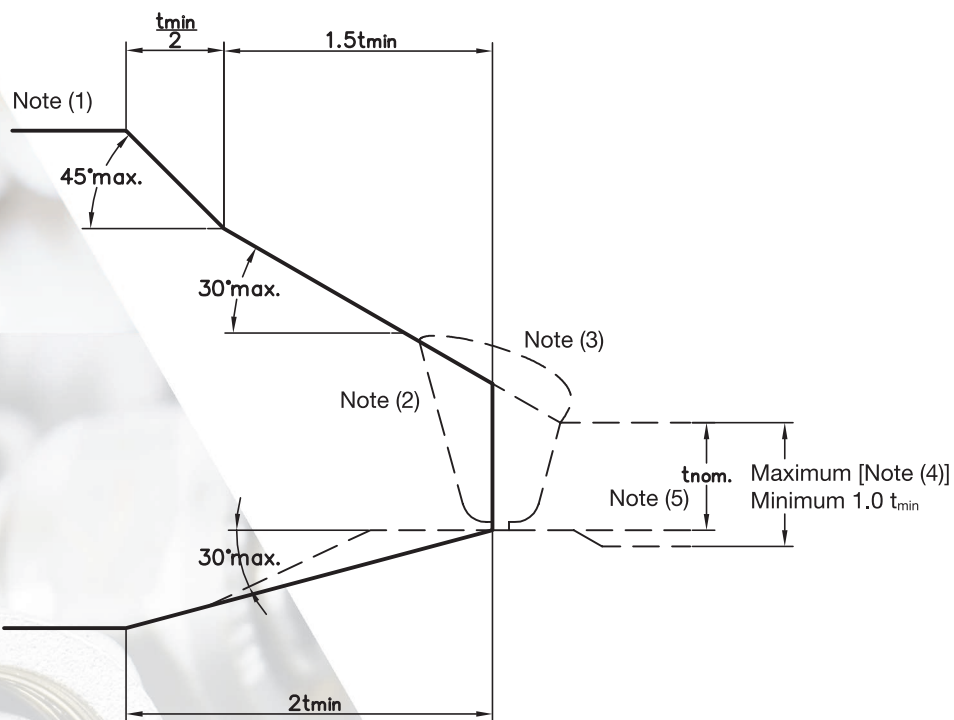
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**PIPES, FITTINGS & FLANGES.**

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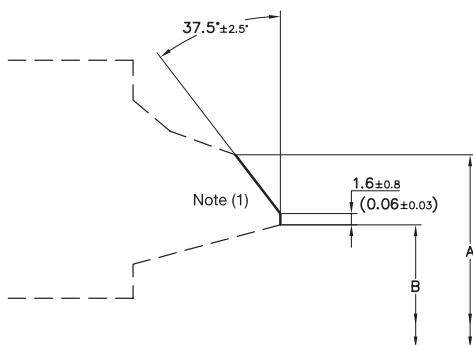
Fig. 1 - Maximum Envelope for Welding End Transitions



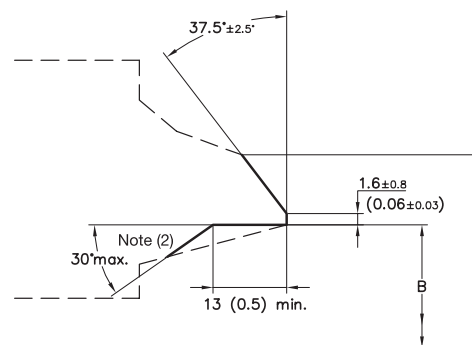
Notes:

- 1 - Where transitions using maximum slope do not intersect inside or outside surface, as shown by phantom outlines, maximum slopes shown or alternate radii shall be used.
- 2 - Weld bevel shown is for illustration only.
- 3 - The weld reinforcement permitted by applicable code may lie outside the maximum envelope.
- 4 - The maximum thickness at the end of the components is:
  - (a) the greater of  $t_{min} + 4 \text{ mm}$  (0.16 in.) or  $1.15t_{min}$  when ordered on a minimum wall basis
  - (b) the greater of  $t_{min} + 4 \text{ mm}$  (0.16 in.) or  $1.10t_{min}$  when ordered on a nominal wall basis
- 5 - The value of  $t_{min}$  is whichever of the following is applicable:
  - (a) the minimum ordered wall thickness of the pipe to include pipe that is purchased to a nominal wall thickness with an undertolerance other than 12.5%
  - (b) 0.875 times the nominal wall thickness of pipe ordered to a pipe schedule wall thickness that has an undertolerance of 12.5%
  - (c) the minimum ordered wall thickness of the cylindrical welding end of a component or fitting (or the thinner of the two) when the joint is between two components

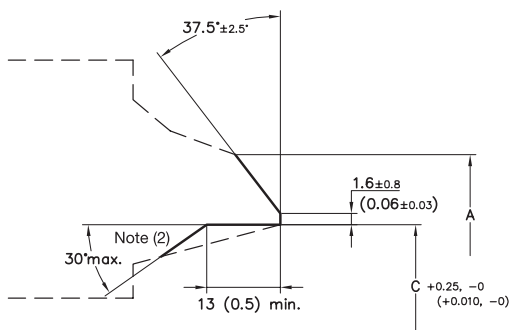
**Fig. 2 - Bevels for Wall Thickness Over 3 mm (0.12 in.) to 22 mm (0.88.), inclusive**



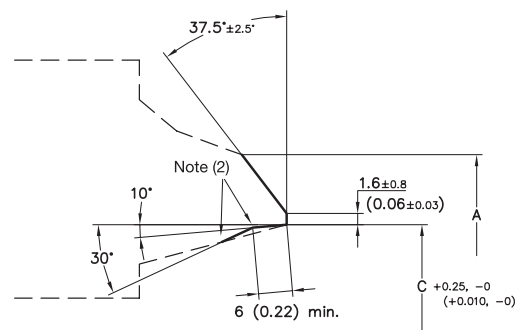
(a) Welding End Detail for Joint Without Backing Ring



(b) Welding End Detail for Joint Using Split Rectangular Backing Ring



(c) Welding End Detail for Joint Using Continuous Rectangular Backing Ring



(d) Welding End Detail for Joint Using Continuous Tapered Backing Ring

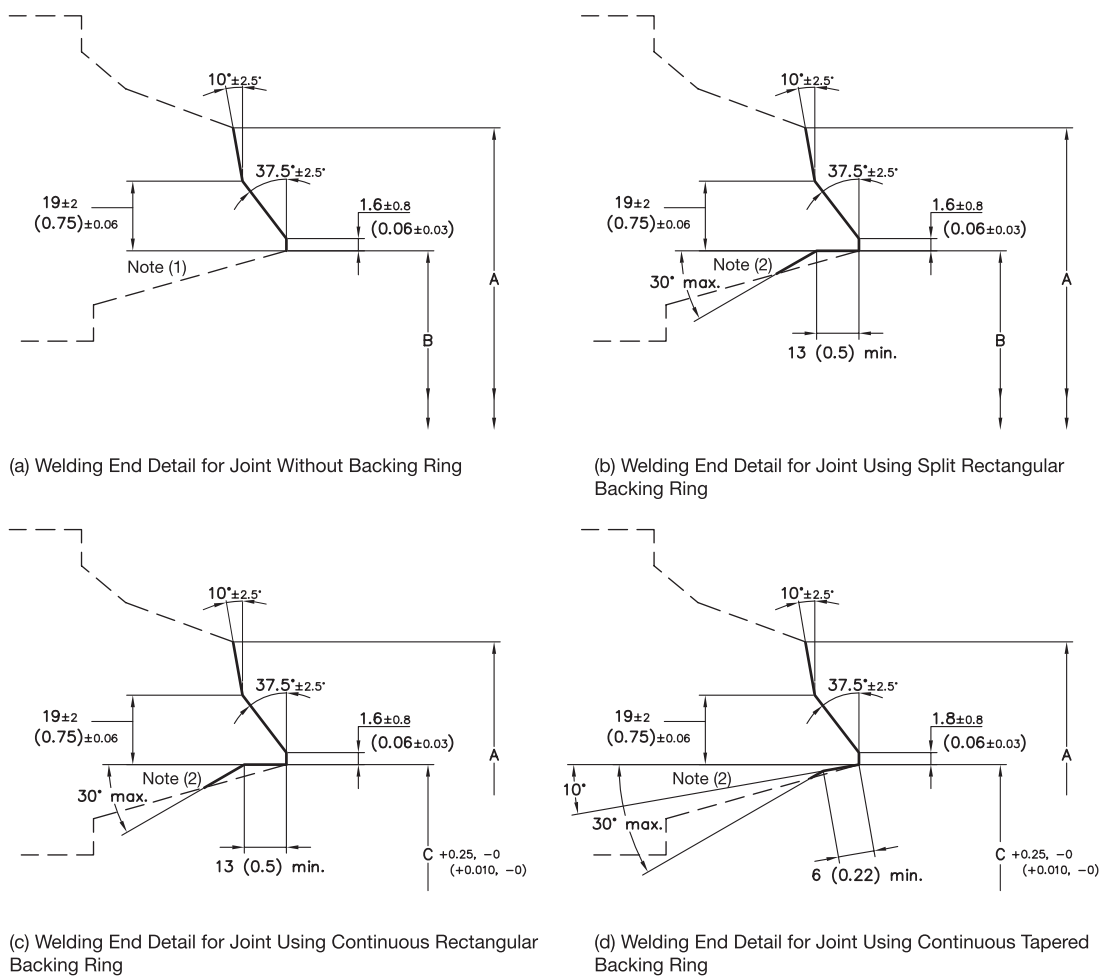
**GENERAL NOTES:**

- (a) Broken lines denote maximum envelope for transitions from welding bevel and root face into body component. See Fig. 1 for details.
- (b) See section 5 for tolerances other than those given in these illustrations.
- (c) Purchase order must specify contour of any backing ring to be used.
- (d) Linear dimensions are in millimeters with inch values in parentheses.

**Notes:**

- 1 - Internal surface may be as-formed or machined for dimension B at root face. Contour within the envelope shall be in accordance with section 2.
- 2 - Intersection should be slightly rounded

**Fig. 3 - Weld Bevel Details for Wall Thickness Over 22 mm (0.88 in.)**



**GENERAL NOTES:**

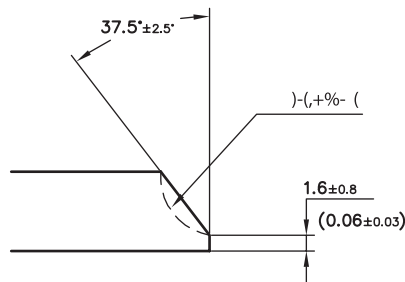
- (a) Broken lines denote maximum envelope for transitions from welding bevel and root face into body component. See Fig.1 for details.
- (b) See section 5 of the standard for tolerances other than those given in these illustrations.
- (c) Purchase order must specify contour of any backing ring to be used.
- (d) Linear dimensions are in millimeters with inch values in parentheses.

**Notes:**

- 1 - Internal surface may be as-formed or machined for dimension B at root face. Contour within the envelope shall be in accordance with section 2.
- 2 - Intersections should be slightly rounded.



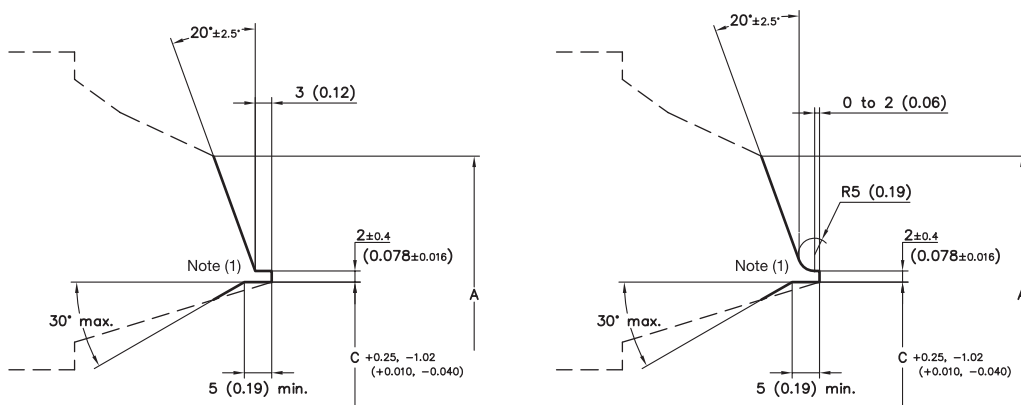
**Fig. 4 - Weld Bevel Details for GTAW Root Pass**  
[Wall Thickness Over 3 mm (0.12 in.) to 10 mm (0.38 in.), inclusive]



**GENERAL NOTES:**

- (a) This detail applies for gas tungsten arc welding (GTAW) of the root pass where nominal wall thickness is over 3 mm (0.12 in.) to 10 mm (0.38 in.), inclusive.
- (b) Linear dimensions are in millimeters with inch values in parentheses.

**Fig. 5 - Weld Bevel Details for GTAW Root Pass**  
[Wall Thickness Over 10 mm (0.38 in.) to 25 mm (1.0 in.), inclusive]



**GENERAL NOTES:**

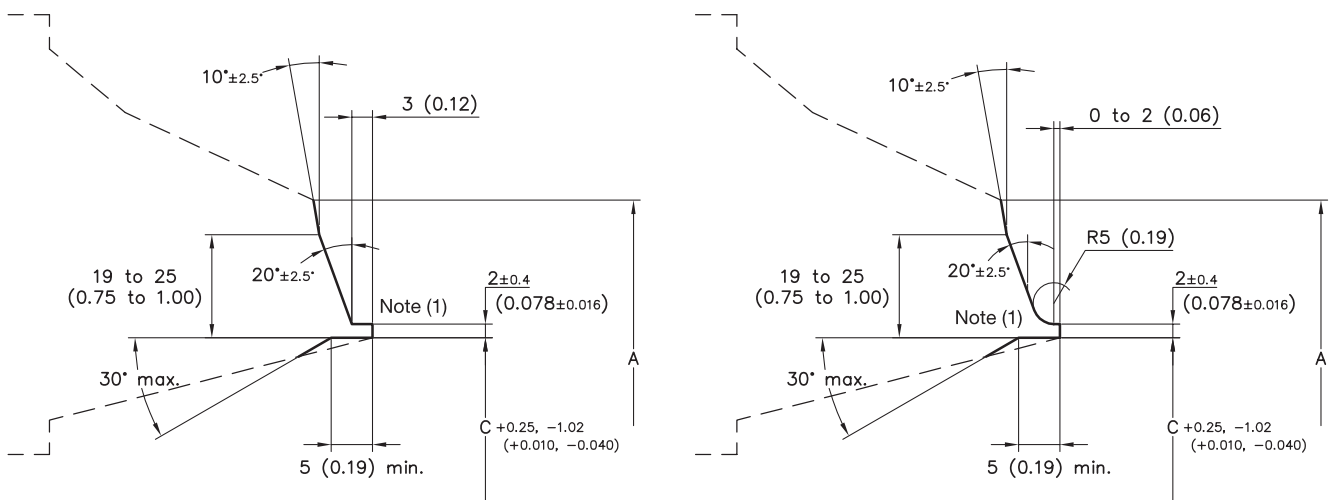
- (a) This detail applies for gas tungsten arc welding (GTAW) of the root pass where nominal wall thickness is over 10 mm (0.38 in.) to 25 mm (1.0 in.), inclusive.
- (b) Broken lines denote maximum envelope for transitions from welding groove and land into body of component. See Fig. 1 for details.
- (c) See section 5 for tolerances other than those given in these illustrations.
- (d) Linear dimensions are in millimeters with inch values in parentheses.

**Note:**

- 1 - Inside corners should be slightly rounded.



**Fig. 6 - Weld Bevel Details for GTAW Root Pass**  
**[Wall Thickness Over 25 mm (1.0 in.)]**



**GENERAL NOTES:**

- (a) This detail applies for gas tungsten arc welding (GTAW) of the root pass where nominal wall thickness is greater than 25 mm (1.0 in.).
- (b) Broken lines denote maximum envelope for transitions from welding groove and land into body of component. See Fig. 1 for details.
- (c) See section 5 of the standard for tolerances other than those given in these illustrations.
- (d) Linear dimensions are in millimeters with inch values in parentheses.

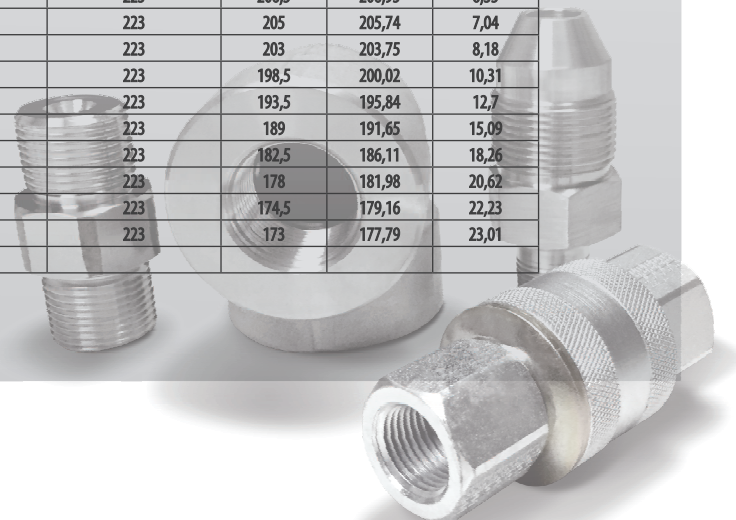
**Note:**

- 1 - Inside corners should be slightly rounded.



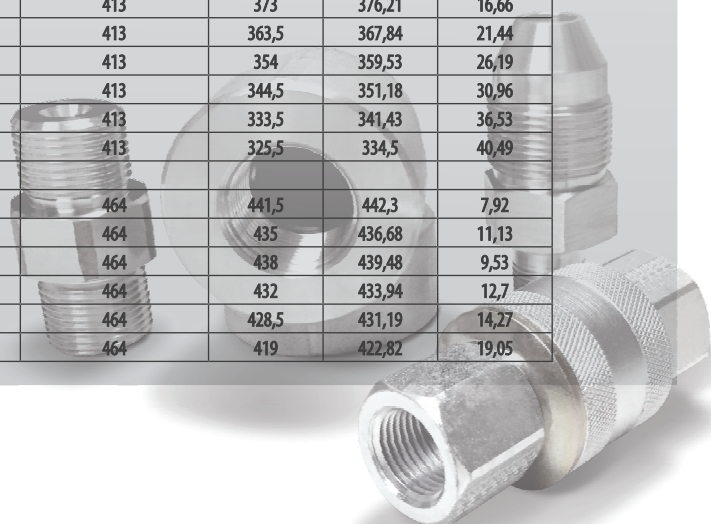


Nominal pipe size (NPS)	Schedule n.	Wrought or fabricated components, A	Cast components, A	B	C	T
2 1/2	30	73	75	63,5	63,6	4,78
	40	73	75	62,5	62,93	5,16
	80	73	75	59	59,69	7,01
	160	73	75	54	55,28	9,53
	XXS	73	75	45	47,43	14,02
3	30	88,9	91	79,5	79,5	4,78
	40	88,9	91	78	78,25	5,49
	480	88,9	91	73,5	74,53	7,62
	160	88,9	91	66,5	68,38	11,13
	XXS	88,9	91	58,5	61,19	15,24
3 1/2	30	101,6	105	92	92,2	4,78
	40	101,6	105	90	90,52	5,74
	80	101,6	105	85,5	86,42	8,08
4	30	114,3	117	104,5	104,9	4,78
	40	114,3	117	102	102,73	6,02
	80	114,3	117	97	98,28	8,56
	120	114,3	117	92	93,78	11,13
	160	114,3	117	87,5	89,65	13,49
	XXS	114,3	117	80	83,3	17,12
5	40	141,3	144	128	128,8	6,55
	80	141,3	144	122	123,58	9,53
	120	141,3	144	116	118,04	12,7
	160	141,3	144	109,5	112,47	15,88
	XXS	141,3	144	103	106,92	19,05
6	40	168,3	172	154	154,82	7,11
	80	168,3	172	146,5	148,06	10,97
	120	168,3	172	140	142,29	14,27
	160	168,3	172	132	135,31	18,26
	XXS	168,3	172	124,5	128,85	21,95
8	20	219,1	223	206,5	206,95	6,35
	30	219,1	223	205	205,74	7,04
	40	219,1	223	203	203,75	8,18
	60	219,1	223	198,5	200,02	10,31
	80	219,1	223	193,5	195,84	12,7
	100	219,1	223	189	191,65	15,09
	120	219,1	223	182,5	186,11	18,26
	140	219,1	223	178	181,98	20,62
	XXS	219,1	223	174,5	179,16	22,23
	160	219,1	223	173	177,79	23,01





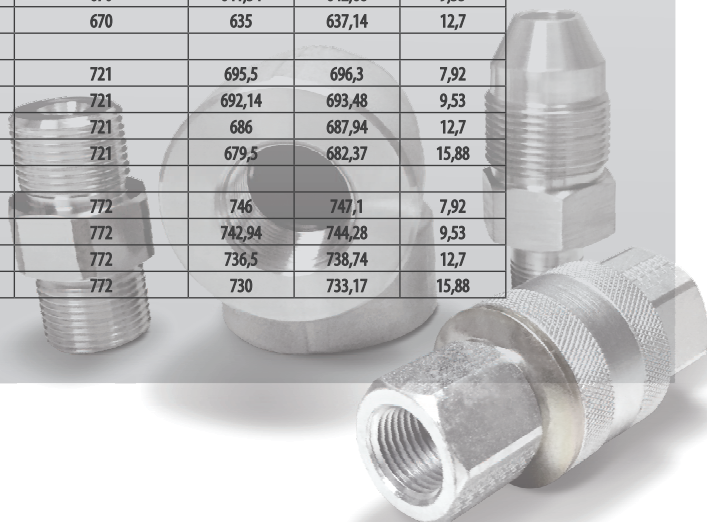
Nominal pipe size (NPS)	Schedule n.	Wrought or fabricated components, A	Cast components, A	B	C	T	
10	20	273	278	260,5	260,85	6,35	
	30	273	278	257,5	258,31	7,8	
	40	273	278	254,5	255,74	9,27	
	60	273	278	247,5	249,74	12,7	
	80	273	278	243	245,55	15,09	
	100	273	278	236,5	240,01	18,26	
	120	273	278	230	234,44	21,44	
	140	273	278	222	227,51	25,4	
	160	273	278	216	221,95	28,58	
12	20	323,8	329	311	311,65	6,35	
	30	323,8	329	307	308,1	8,38	
	STD	323,8	329	305	306,08	9,53	
	40	323,8	329	303	304,72	10,31	
	XS	323,8	329	298,5	300,54	12,7	
	60	323,8	329	295	297,79	14,27	
	80	323,8	329	289	292,17	17,48	
	100	323,8	329	281	285,24	21,44	
	120	323,8	329	273	278,31	25,4	
	140	323,8	329	266,5	272,75	28,58	
	160	323,8	329	257	264,45	33,32	
	14	20	355,6	362	340	340,7	7,92
		STD	355,6	362	336,5	337,88	9,53
40		355,6	362	333,5	335,08	11,13	
XS		355,6	362	330	332,34	12,7	
60		355,6	362	325,5	328,15	15,09	
80		355,6	362	317,5	321,22	19,05	
100		355,6	362	308	312,86	23,83	
120		355,6	362	300	305,93	27,79	
140		355,6	362	292	299	31,75	
160		355,6	362	284	292,07	35,71	
16		20	406,4	413	390,5	391,5	7,92
	STD	406,4	413	387	388,68	9,53	
	40	406,4	413	381	383,14	12,7	
	60	406,4	413	373	376,21	16,66	
	80	406,4	413	363,5	367,84	21,44	
	100	406,4	413	354	359,53	26,19	
	120	406,4	413	344,5	351,18	30,96	
	140	406,4	413	333,5	341,43	36,53	
	160	406,4	413	325,5	334,5	40,49	
	18	20	457,2	464	441,5	442,3	7,92
30		457,2	464	435	436,68	11,13	
STD		457,2	464	438	439,48	9,53	
XS		457,2	464	432	433,94	12,7	
40		457,2	464	428,5	431,19	14,27	
60		457,2	464	419	422,82	19,05	







Nominal pipe size (NPS)	Schedule n.	Wrought or fabricated components, A	Cast components, A	B	C	T
	80	457,2	464	409,5	414,46	23,83
	100	457,2	464	398,5	404,78	29,36
	120	457,2	464	387,5	395,03	34,93
	140	457,2	464	378	386,77	39,67
	160	457,2	464	366,5	376,99	45,24
20	STD	508	516	489	490,28	9,53
	XS	508	516	482,5	484,74	12,7
	40	508	516	478	480,55	15,09
	60	508	516	467	470,88	20,62
	80	508	516	455,5	461,13	26,19
	100	508	516	443	450,02	32,54
	120	508	516	432	440,29	38,1
	140	508	516	419	429,17	44,45
	160	508	516	408	419,44	50,01
22	STD	558,8	567	539	541,08	9,53
	XS	558,8	567	533	535,54	12,7
	60	558,8	567	514	518,86	22,23
	80	558,8	567	501	507,75	28,58
	100	558,8	567	488,5	496,63	34,93
	120	558,8	567	476	485,52	41,28
	140	558,8	567	463	474,41	47,63
	160	558,8	567	450,5	463,3	53,98
24	STD	609,6	619	590,5	591,88	9,53
	XS	609,6	619	584	586,34	12,7
	30	609,6	619	581	583,59	14,27
	40	609,6	619	574,5	577,97	17,48
	60	609,6	619	560,5	565,49	24,61
	80	609,6	619	547,5	554,38	30,96
	100	609,6	619	532	540,49	38,89
	120	609,6	619	517,5	528,03	46,02
	140	609,6	619	505	516,91	52,37
	160	609,6	619	490,5	504,37	59,54
26	10	660,4	670	645,5	645,5	7,92
	STD	660,4	670	641,34	642,68	9,53
	20	660,4	670	635	637,14	12,7
28	10	711,2	721	695,5	696,3	7,92
	STD	711,2	721	692,14	693,48	9,53
	20	711,2	721	686	687,94	12,7
	30	711,2	721	679,5	682,37	15,88
30	10	762	772	746	747,1	7,92
	STD	762	772	742,94	744,28	9,53
	20	762	772	736,5	738,74	12,7
	30	762	772	730	733,17	15,88





Nominal pipe size (NPS)	Schedule n.	Wrought or fabricated components, A	Cast components, A	B	C	T
32	10	812,8	825	797	797,9	7,92
	STD	812,8	825	793,74	795,08	9,53
	20	812,8	825	787,5	789,54	12,7
	30	812,8	825	781	783,97	15,88
	40	812,8	825	778	781,17	17,48
34	10	863,6	876	848	848,7	7,92
	STD	863,6	876	844,54	845,88	9,53
	20	863,6	876	838	840,34	12,7
	30	863,6	876	832	834,77	15,88
	40	863,6	876	828,5	831,97	17,48
36	10	914,4	927	898,5	899,5	7,92
	STD	914,4	927	895,34	896,68	9,53
	20	914,4	927	889	891,14	12,7
	30	914,4	927	882,5	885,57	15,88
	40	914,4	927	876,5	880,02	19,05
38	STD	965,2	978	946	947,48	9,53
	XS	965,2	978	940	941,94	12,7
40	STD	1016	1029	997	998,28	9,53
	XS	1016	1029	990,5	992,74	12,7
42	STD	1066,8	1079	1047,5	1049,08	9,53
	XS	1066,8	1079	1041,5	1043,54	12,7
44	STD	1117,6	1130	1098,5	1099,88	9,53
	XS	1117,6	1130	1092	1094,34	12,7
46	STD	1168,4	1181	1149,5	1150,68	9,53
	XS	1168,4	1181	1143	1145,14	12,7
48	STD	1219,2	1232	1200	1201,48	9,53
	XS	1219,2	1232	1194	1195,94	12,7

The values, unless otherwise indicated, are to be considered in millimeters



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