

## Standard Specifications Roll and Cut Groove for Steel Pipe And Other IPS Pipe

### General Description

Grooved pipes and fittings provide an economical and efficient method of joining pipe in mechanical building services.

The grooved piping system joins together two pipe ends by using a coupling that is seated in grooves at the end of each pipe. When the coupling is assembled, the coupling keys engage the grooves around the circumference of both pipes, providing a secure connection.

There are two types of grooving: roll grooving and cut grooving. Roll grooving uses a special machine that rotates the end of a pipe through a roll set, displacing the metal and forming a groove on the outside surface of the pipe. Roll grooving is limited to use with pipe having a hardness value of HB180 or less. Roll grooving can be accomplished on carbon steel, stainless steel, copper, and aluminum. However, care must be taken to use the proper equipment and roll sets (which may vary with piping material) to create the groove. Consult the grooving machine manual or roll set instructions for further information. If necessary, contact GRINNELL for assistance.

Cut grooving is performed by turning the pipe on a lathe, removing metal from the outside surface of the pipe to create the groove. Cut grooving is intended to be used with Schedule 30 and heavier wall pipe. Refer to Figure 2, "T" Minimum Wall Inches (mm).

### Technical Data

- The maximum allowable tolerances for IPS Pipe from square cut ends are:

1 in. to 3 in. (DN25 to DN80)  
0.030 in. (0,76 mm)

4 in. to 6 in. (DN100 to DN150)  
0.045 in. (1,14 mm)

8 in. to 24 in. (DN200 to DN600)  
0.060 in. (1,52 mm)

26 in. to 42 in. (DN650 to DN1050)  
0.125 in. (3,18 mm)

- Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, and rust that would prevent a positive seal.
- Groove Diameter "C" must be uniform depth around the circumference of the pipe.
- Groove Depth "D" is a reference dimension of the distance from the pipe outer surface to the groove bottom, with regards to groove concentricity about the pipe. This dimension is a reference only. The actual dimension "C" must be maintained.
- Minimum Wall Thickness "T" is the minimum pipe wall thickness that should be roll or cut grooved.
- Maximum allowable pipe end flare diameter is measured at the pipe end diameter. (Roll Grooved Pipe only)

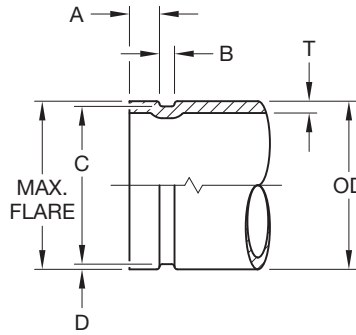


**10**  
**YEAR**  
**LIMITED**  
**WARRANTY**

For warranty terms and conditions, visit  
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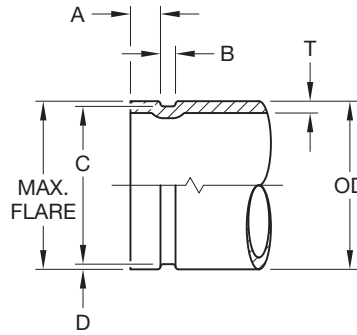
#### IMPORTANT

Refer to Technical Data Sheet G1100 for warnings pertaining to regulatory and health information.



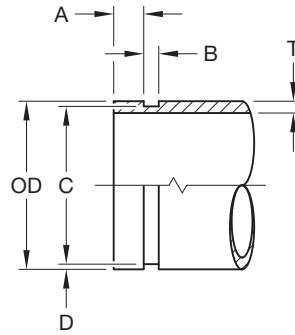
Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches mm			A ±0.030 ±0.76mm Inches mm	B ±0.030 ±0.76mm Inches mm	C Groove Diameter Inches mm		D Nominal Groove Depth Inches mm	T Minimum Wall Inches mm	Maximum Allow Flare Diameter Inches mm
	O.D. Inches mm	Tolerance				Actual	Tol. +0.000			
		+	-							
1 25	1.315 33,7	0.028 0,41	0.015 0,68	0.625 15,88	0.281 7,14	1.190 30,23	-0.015 -0,38	0.063 1,60	0.065 1,65	1.43 36,3
1-1/4 32	1.660 42,4	0.029 0,50	0.016 0,64	0.625 15,88	0.281 7,14	1.535 38,99	-0.015 -0,38	0.063 1,60	0.065 1,65	1.77 44,96
1-1/2 40	1.900 48,3	0.019 0,48	0.019 0,48	0.625 15,88	0.281 7,14	1.775 45,09	-0.015 -0,38	0.063 1,60	0.065 1,65	2.01 51,05
2 50	2.375 60,3	0.024 0,61	0.024 0,61	0.625 15,88	0.344 8,74	2.250 57,15	-0.015 -0,38	0.063 1,60	0.065 1,65	2.48 62,99
2-1/2 65	2.875 73,0	0.029 0,74	0.029 0,74	0.625 15,88	0.344 8,74	2.720 69,09	-0.018 -0,46	0.078 1,98	0.083 2,11	2.98 75,69
76,1mm 65	3.000 76,1	0.030 0,76	0.030 0,76	0.625 15,88	0.344 8,74	2.845 72,26	-0.018 -0,46	0.076 1,93	0.083 2,11	3.10 78,74
3 80	3.500 88,9	0.035 0,89	0.031 0,79	0.625 15,88	0.344 8,74	3.344 84,94	-0.018 -0,46	0.078 1,98	0.083 2,11	3.60 91,44
108,0mm 100	4.250 108,0	0.043 1,09	0.031 0,79	0.625 15,88	0.344 8,74	4.084 103,73	-0.020 -0,51	0.083 2,11	0.083 2,11	4.35 110,49
4 100	4.500 114,3	0.045 1,14	0.031 0,79	0.625 15,88	0.344 8,74	4.334 110,08	-0.020 -0,51	0.083 2,11	0.083 2,11	4.60 116,84
133,4mm 125	5.250 133,4	0.053 1,35	0.031 0,79	0.625 15,88	0.344 8,74	5.084 129,13	-0.022 -0,56	0.083 2,11	0.109 2,77	5.35 135,89
139,7mm 125	5.500 139,7	0.056 1,42	0.031 0,79	0.625 15,88	0.344 8,74	5.334 135,48	-0.022 -0,56	0.083 2,11	0.109 2,77	5.60 142,24
5 125	5.563 141,3	0.056 1,42	0.031 0,79	0.625 15,88	0.344 8,74	5.395 137,03	-0.022 -0,56	0.084 2,13	0.109 2,77	5.66 143,76
159,0mm 150	6.250 159,0	0.063 1,60	0.031 0,79	0.625 15,88	0.344 8,74	6.084 154,53	-0.030 -0,76	0.084 2,13	0.109 2,77	6.35 161,29
165,1mm 150	6.500 165,1	0.063 1,60	0.031 0,79	0.625 15,88	0.344 8,74	6.330 160,78	-0.022 -0,56	0.085 2,16	0.109 2,77	6.60 167,64
6 150	6.625 168,3	0.063 1,60	0.031 0,79	0.625 15,88	0.344 8,74	6.455 163,96	-0.022 -0,56	0.085 2,16	0.109 2,77	6.73 170,94

**FIGURE 1 (1 OF 2)**  
**STANDARD ROLL GROOVE**  
**STEEL PIPE SPECIFICATIONS**



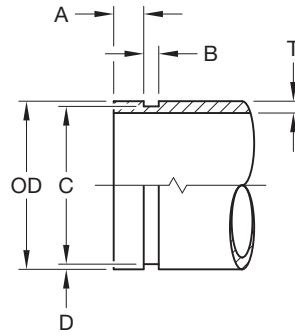
Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		A ±0.030 ±0.76mm Inches mm	B ±0.030 ±0.76mm Inches mm	C Groove Diameter Inches mm		D Nominal Groove Depth Inches mm	T Minimum Wall Inches mm	Maximum Allow Flare Diameter Inches mm	
	O.D. Inches mm	Tolerance			Actual	Tol. +0.000				
		+								-
216.3m 200	8.516 216,3	0.063 1,60	0.031 0,79	0.750 19,05	0.469 11,91	8.331 211,61	-0.025 -0,64	0.092 2,34	0.109 2,77	8.69 220,73
8 200	8.625 219,1	0.063 1,60	0.031 0,79	0.750 19,05	0.469 11,91	8.441 214,40	-0.025 -0,64	0.092 2,34	0.109 2,77	8.80 223,52
10 250	10.750 273,0	0.063 1,60	0.031 0,79	0.750 19,05	0.469 11,91	10.562 268,27	-0.027 -0,69	0.092 2,34	0.134 3,40	10.92 277,37
12 300	12.750 323,9	0.063 1,60	0.031 0,79	0.750 19,05	0.469 11,91	12.531 318,19	-0.030 -0,76	0.109 2,77	0.156 3,96	12.92 328,17
14 350	14.000 355,6	0.063 1,60	0.031 0,79	0.938 23,83	0.469 11,91	13.781 350,04	-0.030 -0,76	0.109 2,77	0.156 3,96	14.10 358,14
16 400	16.000 406,4	0.063 1,60	0.031 0,79	0.938 23,83	0.469 11,91	15.781 400,84	-0.030 -0,76	0.109 2,77	0.165 4,19	16.10 408,94
18 450	18.000 457,2	0.063 1,60	0.031 0,79	1.000 25,40	0.469 11,91	17.781 451,64	-0.030 -0,76	0.109 2,77	0.165 4,19	18.16 461,26
20 500	20.000 508,0	0.063 1,60	0.031 0,79	1.000 25,40	0.469 11,91	19.781 502,44	-0.030 -0,76	0.109 2,77	0.188 4,78	20.16 512,06
24 600	24.000 609,6	0.063 1,60	0.031 0,79	1.000 25,40	0.500 12,70	23.656 600,86	-0.030 -0,76	0.172 4,37	0.218 5,54	24.20 614,68

**FIGURE 1 (2 OF 2)  
STANDARD ROLL GROOVE  
STEEL PIPE SPECIFICATIONS**



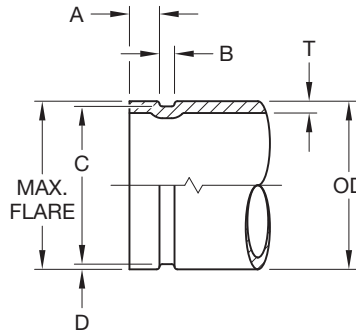
Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches mm		A $\pm 0.030$ $\pm 0.76$ mm Inches mm	B $\pm 0.030$ $\pm 0.76$ mm Inches mm	C Groove Diameter Inches mm		D Nominal Groove Depth Inches mm	T Minimum Wall Inches mm	
	O.D. Inches mm	Tolerance			Actual	Tol. +0.000			
		+							-
1 25	1.315 33,7	0.028 0,41	0.015 0,68	0.625 15,88	0.313 7,95	1.190 30,23	-0.015 -0,38	0.063 1,60	0.133 3,38
1-1/4 32	1.660 42,4	0.029 0,50	0.016 0,64	0.625 15,88	0.313 7,95	1.535 38,99	-0.015 -0,38	0.063 1,60	0.140 3,56
1-1/2 40	1.900 48,3	0.019 0,48	0.019 0,48	0.625 15,88	0.313 7,95	1.775 45,09	-0.015 -0,38	0.063 1,60	0.145 3,68
2 50	2.375 60,3	0.024 0,61	0.024 0,61	0.625 15,88	0.313 7,95	2.250 57,15	-0.015 -0,38	0.063 1,60	0.154 3,91
2-1/2 65	2.875 73,0	0.029 0,74	0.029 0,74	0.625 15,88	0.313 7,95	2.720 69,09	-0.018 -0,46	0.078 1,98	0.188 4,78
76,1mm 65	3.000 76,1	0.030 0,76	0.030 0,76	0.625 15,88	0.313 7,95	2.845 72,26	-0.018 -0,46	0.076 1,93	0.188 4,78
3 80	3.500 88,9	0.035 0,89	0.031 0,79	0.625 15,88	0.313 7,95	3.344 84,94	-0.018 -0,46	0.078 1,98	0.188 4,78
108,0mm 100	4.250 108,0	0.042 1,07	0.031 0,79	0.625 15,88	0.375 9,53	4.084 103,73	-0.020 -0,51	0.083 2,11	0.203 5,16
4 100	4.500 114,3	0.045 1,14	0.031 0,79	0.625 15,88	0.375 9,53	4.334 110,08	-0.020 -0,51	0.083 2,11	0.203 5,16
133,4mm 125	5.250 133,4	0.052 1,35	0.031 0,79	0.625 15,88	0.375 9,53	5.084 129,13	-0.020 -0,51	0.083 2,11	0.203 5,16
139,7mm 125	5.500 139,7	0.056 1,42	0.031 0,79	0.625 15,88	0.375 9,53	5.334 135,48	-0.022 -0,56	0.083 2,11	0.203 5,16
5 125	5.563 141,3	0.056 1,42	0.031 0,79	0.625 15,88	0.375 9,53	5.395 137,03	-0.022 -0,56	0.084 2,13	0.203 5,16
159,0mm 150	6.250 159,0	0.063 1,60	0.031 0,79	0.625 15,88	0.375 9,53	6.084 154,53	-0.022 -0,56	0.083 2,11	0.219 5,56
165,1mm 150	6.500 165,1	0.063 1,60	0.031 0,79	0.625 15,88	0.375 9,53	6.330 160,78	-0.022 -0,56	0.085 2,16	0.219 5,56
6 150	6.625 168,3	0.063 1,60	0.031 0,79	0.625 15,88	0.375 9,53	6.455 163,96	-0.022 -0,56	0.085 2,16	0.219 5,56

**FIGURE 2 (1 OF 2)**  
**STANDARD CUT GROOVE**  
**STEEL PIPE SPECIFICATIONS**



Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches mm		A ±0.030 ±0.76mm Inches mm	B ±0.030 ±0.76mm Inches mm	C Groove Diameter Inches mm		D Nominal Groove Depth Inches mm	T Minimum Wall Inches mm	
	O.D. Inches mm	Tolerance			Actual	Tol. +0.000			
		+							-
216,3mm 200	8.516 216,3	0.063 1,60	0.031 0,79	0.750 19,05	0.438 11,13	8.331 211,61	-0.025 -0,64	0.092 2,34	0.238 6,05
8 200	8.625 219,1	0.063 1,60	0.031 0,79	0.750 19,05	0.438 11,13	8.441 214,40	-0.025 -0,64	0.092 2,34	0.238 6,05
10 250	10.750 273,0	0.063 1,60	0.031 0,79	0.750 19,05	0.500 12,70	10.562 268,27	-0.027 -0,69	0.092 2,34	0.238 6,05
12 300	12.750 323,9	0.063 1,60	0.031 0,79	0.750 19,05	0.500 12,70	12.531 318,19	-0.030 -0,76	0.109 2,77	0.279 7,09
14 350	14.000 355,6	0.063 1,60	0.031 0,79	0.938 23,83	0.500 12,70	13.781 350,04	-0.030 -0,76	0.109 2,77	0.281 7,14
16 400	16.000 406,4	0.063 1,60	0.031 0,79	0.938 23,83	0.500 12,70	15.781 400,84	-0.030 -0,76	0.109 2,77	0.312 7,92
18 450	18.000 457,2	0.063 1,60	0.031 0,79	1.000 25,40	0.500 12,70	17.781 451,64	-0.030 -0,76	0.109 2,77	0.312 7,92
20 500	20.000 508,0	0.063 1,60	0.031 0,79	1.000 25,40	0.500 12,70	19.781 502,44	-0.030 -0,76	0.109 2,77	0.312 7,92
24 600	24.000 609,6	0.063 1,60	0.031 0,79	1.000 25,40	0.562 14,27	23.656 600,86	-0.030 -0,76	0.172 4,37	0.375 9,53

**FIGURE 2 (2 OF 2)  
STANDARD CUT GROOVE  
STEEL PIPE SPECIFICATIONS**



Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches mm		A ±0.03 (±0.8) Inches mm	B ±0.03 (±0.8) Inches mm	C +0, -0.063 (+0, -1.6) Inches mm	D Nominal Groove Depth Inches mm	T Pipe Wall Thickness Roll Grooved Inches mm	T Minimum Pipe Wall Thickness Cut Grooved Inches mm	Maximum Allow Flare Diameter Inches mm	
	O.D. Inches mm	Tolerance								
		+								-
26 650	26.0 660,4	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	25.500 647,7	0.250 6,4	0.375 9,5	0.625 15,9	26.2 665,5
28 700	28.0 711,2	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	27.500 698,5	0.250 6,4	0.375 9,5	0.625 15,9	28.2 716,3
30 750	30.0 762,0	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	29.500 749,3	0.250 6,4	0.375 9,5	0.625 15,9	30.2 767,1
32 800	32.0 812,8	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	31.500 800,1	0.250 6,4	0.375 9,5	0.625 15,9	32.2 817,9
36 900	36.0 914,4	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	35.500 901,7	0.250 6,4	0.375 9,5	0.625 15,9	36.2 919,5
40 1000	40.0 1016,0	0,093 2,36	0,031 0,79	1.75 44,5	0.625 15,9	39.500 1003,3	0.250 6,4	0.375 9,5	0.625 15,9	40.4 1026,2
42 1050	42.0 1066,8	0,093 2,36	0,031 0,79	2.00 50,8	0.625 15,9	41.500 1054,1	0.250 6,4	0.375 9,5	0.625 15,9	42.2 1071,9

**FIGURE 3**  
**STANDARD ROLL GROOVE**  
**LARGE DIAMETER IPS PIPE SPECIFICATIONS**