

	TECHNICAL DATA	PIPE END PREPARATION GUIDE
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The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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CHECK PIPE OUTER DIAMETER

Check to ensure that the pipe to be prepared has the proper OD and wall thickness for the intended service. While VGS fittings are normally identified by the nominal size, always check the actual OD of the pipe and fittings to be connected, as in some markets it is customary to refer to different OD pipes with the same nominal size.

For example: The nominal size 2-1/2" (65 mm) is referred to 2.875" (73 mm) pipe OD in IPS and 3" (76 mm) pipe OD in AS, BS, DIN (ISO), JIS or KS pipes.



- IPS** - United States Standard (Inch)
- AS** - Australian Standard (Metric)
- BS** - British Standard (Metric)
- DIN** - German Standard (Metric)
- JIS** - Japanese Industrial Standard (Metric)
- KS** - Korean Standard (Metric)

The latest VGS® Technical Data
can be accessed at
<http://www.vikinggroupinc.com>.
Scan to visit our Mobile website:



<http://vikinggroup.mobi/p/46374>

Pipe OD			
Sizes - Inches		Sizes - Millimeters	
Nominal Size	Actual Size	Nominal Size	Actual Size
1/2	0.840	15	21.3
3/4	1.050	20	26.37
1	1.315	25	33.4
1 1/4	1.660	32	42.2
1 1/2	1.900	40	48.3
2	2.375	50	60.3
2 1/2	2.875	65	73.0
3 OD	3.000	65	76.1
3	3.500	80	88.9
3 1/2	4.000	90	101.6
4 1/4 OD	4.250	100	108.0
4	4.500	100	114.3
5	5.563	125	141.3
5 1/4 OD	5.250	125	133.0
5 1/2 OD	5.500	125	139.7
6 1/4 OD	6.250	150	159.0
6 1/2 OD	6.500	150	165.1
6	6.625	150	168.3
8 J/K	8.516	200	216.3*
8	8.625	200	219.1
10 J/K	10.528	250	267.4*
10	10.750	250	273.0
12 J/K	12.539	300	318.5*
12	12.750	300	323.9

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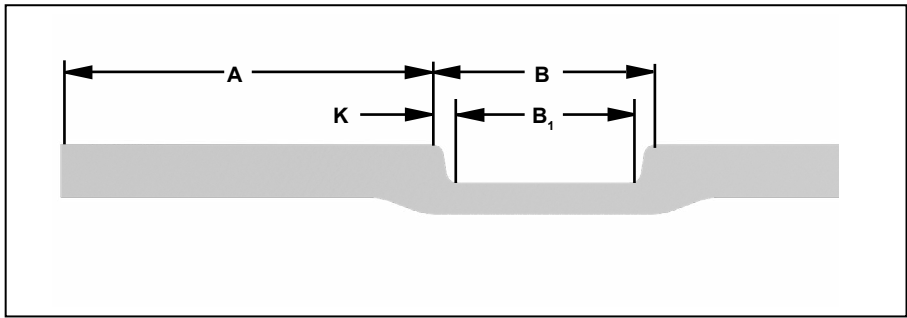
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WHAT PIPE CAN BE ROLL OR CUT GROOVED?

VGS grooved piping systems require a roll or cut-groove to be applied to the pipe ends being connected. The groove dimensions and configurations may vary depending on several factors including pipe material, wall thickness and desired working pressures. Roll grooving is the most common practice and can be performed in the fabrication shop or in the field on the job site. Cut grooving on the other hand is primarily performed at the factory or fabrication shop, as cut grooving machines are not as common or portable as roll grooving machines. All roll and cut grooves must meet the specifications and requirements of ANSI/AWWA C606 (latest edition) and ISO/FDIS 6182-12. For other pipe sizes not specified in ANSI/AWWA C606 (latest edition) and ISO/FDIS 6182-12, refer to the relative groove specifications shown in this manual or the VGS product catalog. When grooving pipe, it is preferable to start with plain-end pipe, although in some cases the use of beveled pipe is acceptable providing that the wall thickness is standard or thinner and the bevel is $37\ 1/2^\circ \pm 2\ 1/2^\circ$ (ANSI B16.25). Spiral welded pipe may also be used as long as the welding beads are removed from all of the sealing and seating surfaces.

Roll & Cut-Grooving Applications		
Pipe Materials	Roll Groove	Cut Groove
Carbon Steel Pipe	Standard wall, Sch. 40 (12" and below), 30, 20, 10, 7, 5, BS1387 Medium & Light, JIS SGP	Sch. 80, 40 Sch. 30 8" - 12" BS1387 Medium & Heavy, JIS SGP

GENERAL NOTES FOR ROLL GROOVE DIMENSIONS



Roll Groove Dimensions				
Pipe Size in mm	A in mm	B in mm	B1 Min in mm	K Max in mm
1" - 1 1/2" 25 - 40	0.625 ± 1/16" 15.9 ± v0.8	0.281 ± 1/16" 7.1 ± 0.8	0.161" 4.1	0.059" 1.5
2" - 6" 50 - 150	0.625 15.9 ± 0.8	0.344 ± 1-16" 8.7 ± 0.8	0.185" 4.7	0.079 2.0
8" - 12" 200 - 300	0.75 ± 1/16" 19.0 ± 0.8	0.469 ± 1/16" 11.9 ± 0.8	0.311" 7.9	0.079" 2.0

Note: The K dimensions begins where the pipe OD starts reducing and ends at the contact point with the groove ground.

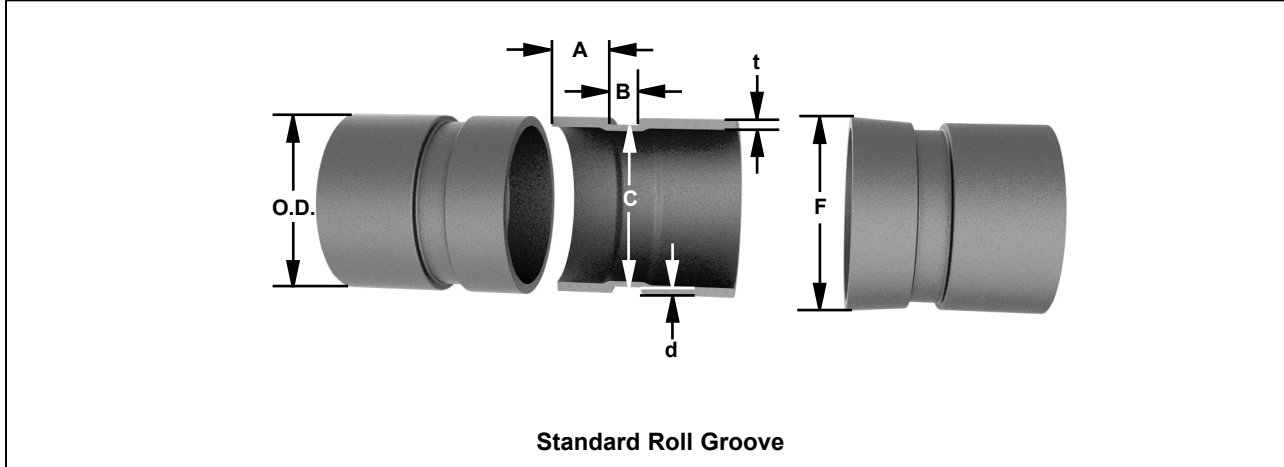


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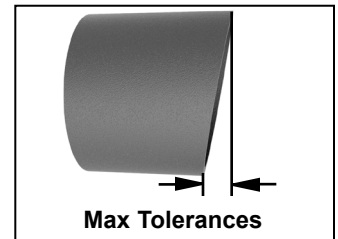
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Nominal Size: VGS couplings and fittings are identified by the nominal IPS pipe size in inches or nominal diameter of pipe (DN) in millimeters.

OD: Pipe ends must be square cut. The maximum allowable tolerances from square ends is 0.03"(0.8 mm) for sizes up to 3 1/2", 0.045" (1.2 mm) for 4" thru 6" and 0.060"(1.6 mm) for sizes 8" and above.

Gasket Seating Surface ("A" Dimension): The exterior surface of the gasket seating area shall be free from any indentations, projections, roll marks or other harmful surface defects such as loose paint, scale, dirt, chips, grease and rust.



Groove Width ("B" Dimension): is to be measured between vertical flanks of the groove side walls. The corners of the groove may be rounded as long as the 'K' and "B1" values are within the maximum allowed tolerances as shown below.

To achieve optimum joint performance the "K" dimension should be as small as possible. When processing a roll groove the machine operator should manage the feed pressure of the upper roll set so as to achieve the best possible groove profile.

To check: Use a ruler to ensure that the "B1" and "K" dimensions are within the above listed tolerance dimensions.

Groove Diameter ("C" Dimension): The groove diameters are average values. The groove must be of uniform depth around the entire pipe circumference.

Minimum Wall Thickness ("t" Dimension): The "t" is the minimum allowable wall thickness that may be roll-grooved.

Groove Depth ("d" Dimension): The values listed in the Groove Specification tables are for reference only and a slightly deeper groove may be acceptable. However, a shallower groove is never acceptable as it may lead to joint failure.

Flare Diameter ("F" Dimension): The pipe end that may flare when roll grooved shall measure within this limit when measured at the extreme end of the pipe.

Refer to pages 4 - 5 for groove specification tables.



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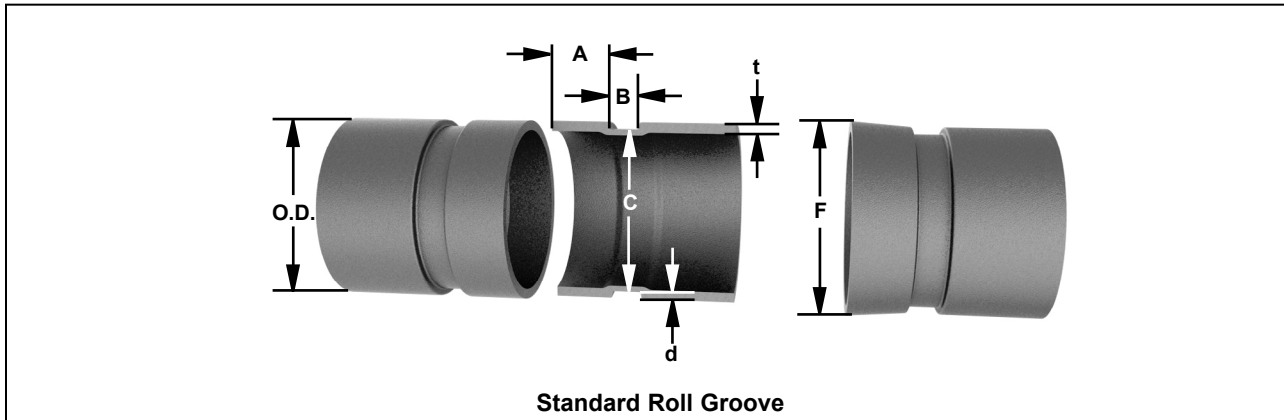
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STANDARD ROLL GROOVE SPECIFICATIONS

For ANSI B36.10 and Other IPS Pipe



Standard Roll Groove

Standard Roll Groove Specifications

Nominal Size in/mm	Pipe OD		A ±0.030 ±0.76	B ±0.030 ±0.76	C +0.000 +0.00	Min Wall t in/mm	Groove Depth d (ref.) in/mm	Max Allowed Flare Dia. F in/mm
	Basic in/mm	Tolerance						
3/4 20	1.050 27	+0.010 -0.010 +0.25 -0.25	0.625 15.88	0.281 7.14	0.938 - 0.015 23.83 - 0.38	0.065 1.65	0.056 1.42	1.15 29.2
1 25	1.315 33	+0.013 -0.013 +0.33 -0.33	0.625 15.88	0.281 7.14	1.190 - 0.015 30.23 - 0.38	0.065 1.65	0.063 1.60	1.43 36.3
1 1/4 32	1.660 42	+0.016 -0.016 +0.41 -0.41	0.625 15.88	0.281 7.14	1.535 - 0.015 38.99 - 0.38	0.065 1.65	0.063 1.60	1.77 45.0
1 1/2 40	1.900 48	+0.019 -0.019 +0.48 -0.48	0.625 15.88	0.281 7.14	1.775 - 0.015 45.09 - 0.38	0.065 1.65	0.063 1.60	2.01 51.1
2 50	2.375 60	+0.024 -0.024 +0.61 -0.61	0.625 15.88	0.344 8.74	2.250 - 0.015 57.15 - 0.38	0.065 1.65	0.063 1.60	2.48 63.0
2 1/2 65	2.875 73	+0.029 -0.029 +0.74 -0.74	0.625 15.88	0.344 8.74	2.720 - 0.018 69.09 - 0.46	0.083 2.11	0.078 1.98	2.98 75.7
3 80	3.500 89	+0.035 -0.31 +0.89 -0.79	0.625 15.88	0.344 8.74	3.344 - 0.018 84.94 - 0.46	0.083 2.11	0.078 1.98	3.60 91.4
3 1/2 90	4.000 102	+0.040 -0.031 +1.02 -0.79	0.625 15.88	0.344 8.74	38.34 - 0.020 97.38 - 0.51	0.083 2.11	0.083 2.11	4.10 104.1
4 100	4.500 114	+0.045 -0.031 +1.14 -0.79	0.625 15.88	0.344 8.74	4.334 - 0.020 110.08 - 0.51	0.083 2.11	0.083 2.11	4.60 116.8
5 125	5.563 141	+0.056 -0.031 +1.42 -0.79	0.625 15.88	0.344 8.74	5.395 - 0.022 137.03 - 0.56	0.109 2.77	0.083 2.11	5.66 143.8
6 150	6.625 168	+0.063 -0.031 +1.60 -0.79	0.625 15.88	0.344 8.74	6.455 - 0.022 163.96 - 0.56	0.109 2.77	0.085 2.16	6.73 170.9
8 200	8.625 219	+0.063 -0.031 +1.60 -0.79	0.750 19.05	0.469 11.91	8.441 - 0.025 214.40 - 0.64	0.109 2.77	0.092 2.34	8.80 223.5
10 250	10.750 273	+0.063 -0.031 +1.60 -0.79	0.750 19.05	0.469 11.91	10.562 - 0.027 268.27 - 0.69	0.134 3.40	0.094 2.39	10.92 277.4
12 300	12.750 324	+0.063 -0.031 +1.60 -0.79	0.750 19.05	0.469 11.91	12.531 - 0.030 318.29 - 0.76	0.156 3.96	0.109 2.77	12.92 328.2



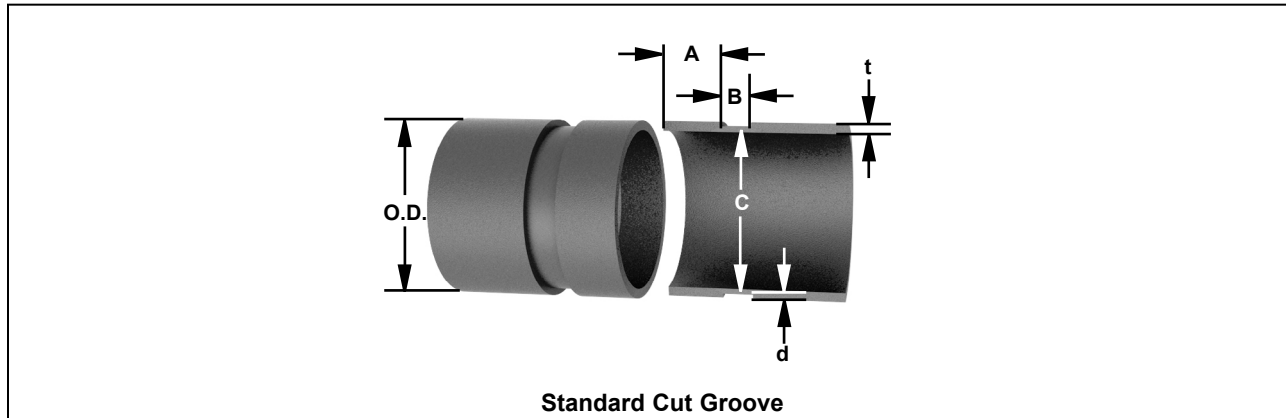
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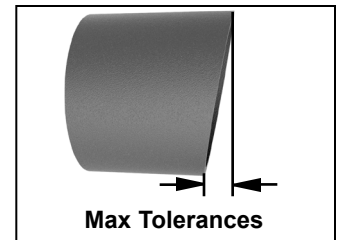
GENERAL NOTES FOR CUT GROOVE DIMENSIONS



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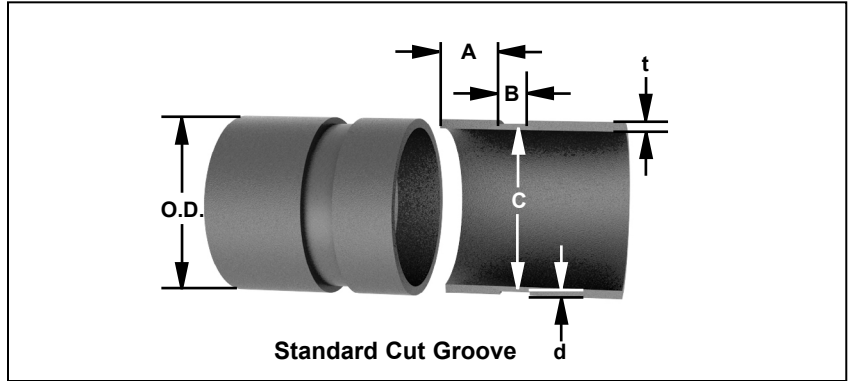
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For IPS / BS / DIN(ISO) / AS / JIS / KS Pipe



Standard Cut Groove Specifications								
Nominal Size in/mm	Pipe OD		A ±0.031 ±0.79	B ±0.031 ±0.79	C +0.000 +0.00	Min Wall t in/mm	Groove Depth d (ref.) in/mm	
	Basic in/mm	Tolerance						
3/4	1.050	+0.010 -0.010	0.625	0.313	0.938-0.015	0.113	0.056	
20	27	+0.25 -0.25	16	8	23.83-0.38	2.87	1.42	
1	1.315	+0.013 -0.013	0.625	0.313	1.190-0.015	0.133	0.063	
25	33	+0.33 -0.33	16	8	30.23-0.38	3.38	1.6	
1 1/4	1.660	+0.016 -0.016	0.625	0.313	1.535-0.015	0.14	0.063	
32	42	+0.41 -0.41	16	8	38.99-0.38	3.56	1.6	
1 1/2	1.900	+0.019 -0.019	0.625	0.313	1.775-0.015	0.145	0.063	
40	48	+0.48 -0.48	16	8	45.09-0.38	3.68	1.6	
2	2.375	+0.024 -0.024	0.625	0.313	2.250-0.015	0.154	0.063	
50	60	+0.61 -0.61	16	8	57.15-0.38	3.91	1.6	
2 1/2	2.875	+0.029 -0.029	0.625	0.313	2.720-0.018	0.188	0.078	
65	73	+0.74 -0.74	16	8	69.09-0.46	4.78	1.98	
2 1/2	3.000	+0.030 -0.030	0.625	0.313	2.845-0.018	0.188	0.076	
65	76	+0.76 -0.76	16	8	72.26-0.46	4.78	1.93	
3	3.500	+0.035 -0.031	0.625	0.313	3.344-0.018	0.188	0.078	
80	89	+0.89 -0.79	16	8	84.94-0.46	4.78	1.98	
3 1/2	4.000	+0.040 -0.031	0.625	0.313	3.834-0.020	0.188	0.078	
90	102	+1.02 -0.79	16	8	97.38-0.51	4.78	1.98	
4	4.250	+0.042 -0.031	0.625	0.375	4.084-0.020	0.203	0.083	
100	108.0	+1.07 -0.79	16	10	103.73-0.51	5.16	2.11	
4	4.500	+0.045 -0.031	0.625	0.375	4.334-0.020	0.203	0.083	
100	114	+1.14 -0.79	16	10	110.08-0.51	5.16	2.11	
5	5.250	+0.052 -0.031	0.625	0.375	5.084-0.020	0.203	0.076	
125	133.0	+1.32 -0.79	16	10	129.13-0.51	5.16	1.93	
5	5.500	+0.055 -0.031	0.625	0.375	5.334-0.020	0.203	0.083	
125	140	+1.42 -0.79	16	10	135.48-0.51	5.16	2.11	
5	5.563	+0.055 -0.031	0.625	0.375	5.395-0.022	0.203	0.083	
125	141	+1.42 -0.79	16	10	137.03-0.56	5.16	2.11	
6	6.250	+0.063 -0.031	0.625	0.375	6.080-0.022	0.219	0.087	
150	159	+1.60 -0.79	16	10	154.50-0.56	5.56	2.2	
6	6.500	+0.063 -0.031	0.625	0.375	6.330-0.022	0.219	0.085	
150	165	+1.60 -0.79	16	10	160.80-0.56	5.56	2.16	
6	6.625	+0.063 -0.031	0.625	0.375	6.455-0.022	0.219	0.085	
150	168	+1.60 -0.79	16	10	163.96-0.56	5.56	2.16	
8	8.516	+0.063 -0.031	0.75	0.438	8.331-0.025	0.238	0.092	
200	216	+1.60 -0.79	19	11	211.60-0.64	6.05	2.34	
8	8.625	+0.063 -0.031	0.75	0.438	8.441-0.025	0.238	0.092	
200	219	+1.60 -0.79	19	11	214.40-0.64	6.05	2.34	
10	10.528	+0.063 -0.031	0.75	0.5	10.339-0.027	0.25	0.094	
250	267	+1.60 -0.79	19	13	262.60-0.69	6.35	2.39	
10	10.750	+0.063 -0.031	0.75	0.5	10.562-0.027	0.25	0.094	
250	273	+1.60 -0.79	19	13	268.27-0.69	6.35	2.39	
12	12.539	+0.063 -0.031	0.75	0.5	12.319-0.030	0.279	0.109	
300	319	+1.60 -0.79	19	13	312.90-0.76	7.09	2.77	
12	12.750	+0.063 -0.031	0.75	0.5	12.531-0.030	0.279	0.109	
300	324	+1.60 -0.79	19	13	318.29-0.76	7.09	2.77	