Grooved Piping Systems

Installation Instructions

To ensure correct installation and operation of your **Groovjoint** grooved piping system, please read this manual carefully before installation, assembly or use. Keep this manual on hand for future reference.

INTRODUCTION

Thank you for selecting a **Groovjoint** product. This manual covers the proper installation and assembly procedures for your **Groovjoint** grooved piping system. To ensure the proper installation, assembly and performance of the product, read this manual thoroughly before the installation of any product and keep this manual on hand for future reference.

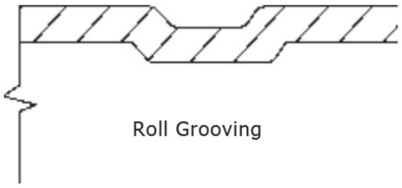
Groovjoint grooved couplings, flanges and grooved end fittings are manufactured for use with standard roll or cut grooves as specified in ANSI/AWWA C606 (latest edition).

General Notes

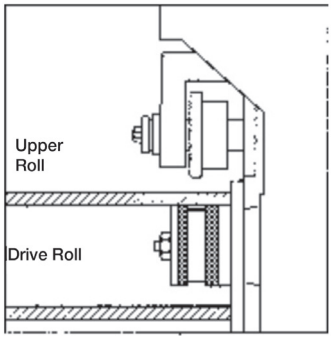
1. Always read this installation manual before installing any product.
2. Always depressurize and drain the piping system before attempting disassembly, adjustment or removal of any piping component.
3. Designers must know and understand all relevant building and or piping standards, codes and other specifications. It is the responsibility of the designer to select and or specify the appropriate products for the intended use and service.
4. Always refer to the maximum pressure rating and range of service temperatures allowed for the **Groovoint** products and ensure that they are used within these limitations.
5. Special attention is required for selection of suitable rubber gaskets for the intended service.
6. All information and data contained herein supersedes all previous published data. **Groovjoint** LLC reserves the right to change product designs and or specifications without notice and or obligation.

ABOUT ROLL-GROOVING

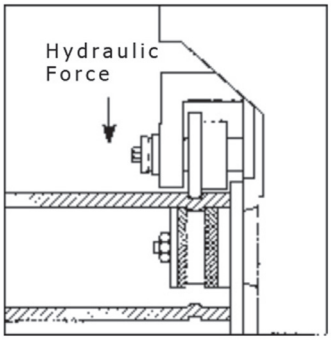
Roll grooving is the process of displacing pipe material without removing any of the material itself. Roll grooving is ideal for lightwall and schedule 40 pipe for sizes up thru 42" depending on the equipment used.



Because roll grooving removes no material from the pipe, the integrity of the pipe is not altered. The inside protrusion of a roll groove is very slight and smooth at its entry and exit points. To groove this pipe, the end is placed between a set of rollers designed for the size of pipe being grooved and then pressure is applied while the pipe is turning. Care must be taken to use the proper equipment for the piping material being used. **ALWAYS USE DIES THAT ARE DESIGNED TO ROLL GROOVE STAINLESS STEEL LIGHTWEIGHT PIPE.**



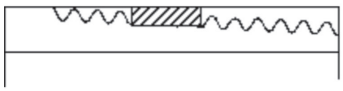
Pipe end is placed between the roll set (upper roll & drive roll)



A groove is processed as the roll set is compressed and rotated

ABOUT CUT-GROOVING

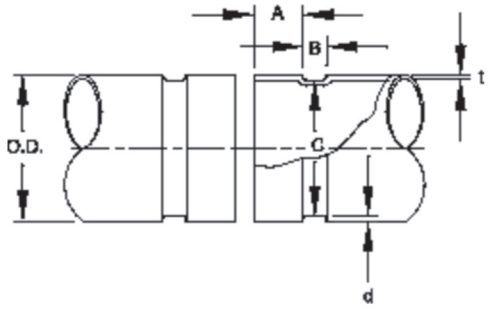
The cut grooving process actually removes material from the pipe OD to form a groove. Thus cut grooving is intended for use with standard and heavier wall pipe. Most all pipes which are designed to be threaded can be cut grooved, as the depth of a cut groove is typically less than that of a standard thread. Please refer to the minimum wall thickness shown in the published standard cut groove specifications.



Depth of Cut Groove vs Threadad

GROOVE DIMENSIONS

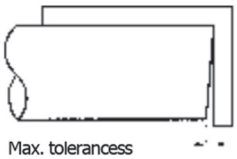
General Notes for Roll Groove Dimensions



Standard Roll Groove

Nominal Size: Groovjoint couplings and fittings are identified by the nominal IPS pipe size in inches.

O.D: 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.

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

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

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.

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.

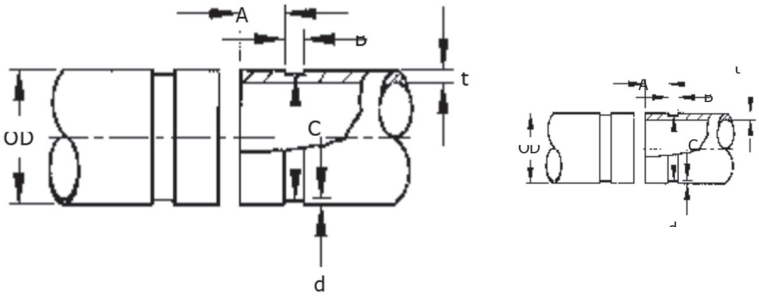
Flare Diameter ("F" Dimension): The pipe end that may flare when roll grooved shall measure within this limit when measured at the extreme end of the pipe.

Standard Roll Groove Specifications

For ANSI B36.10 & Other IPS Pipe

Nominal Size mm/in	Pipe OD			A ±0 .76 ±0 .030	B ±0 .76 ±0 .030	C +0 .00 +0 .000	Min . Wall t mm/in	Groove Depth d (ref .) mm/in	Max . Allowed Flare Dia . F mm/in	Nominal Size mm/in
	Basic mm/in	Tolerance								
20	26.7	+0.25	-0.25	15.88	7.14	23.83 - 0.38	1.65	1.42	29.2	20
3/4	1.050	+0.010	-0.010	0.625	0.281	0.938 - 0.015	0.065	0.056	1.15	3/4
25	33.4	+0.33	-0.33	15.88	7.14	30.23 - 0.38	1.65	1.60	36.3	25
1	1.315	+0.013	-0.013	0.625	0.281	1.190 - 0.015	0.065	0.063	1.43	1
32	42.2	+0.41	-0.41	15.88	7.14	38.99 - 0.38	1.65	1.60	45.0	32
1-1/4	1.660	+0.016	-0.016	0.625	0.281	1.535 - 0.015	0.065	0.063	1.77	1-1/4
40	48.3	+0.48	-0.48	15.88	7.14	45.09 -0.38	1.65	1.60	51.1	40
1-1/2	19.00	+0.019	-0.019	0.625	0.281	1.775 - 0.015	0.065	0.063	2.01	1-1/2
50	60.3	+0.61	-0.61	15.88	8.74	57.15 - 0.38	1.65	1.60	63.0	50
2	2.375	+0.024	-0.024	0.625	0.344	2.250 - 0.015	0.065	0.063	2.48	2
65	73.0	+0.74	-0.74	15.88	8.74	69.09 - 0.46	2.11	1.98	75.7	65
2-1/2	2.875	+0.029	-0.029	0.625	.0344	2.720 - 0.018	0.083	0.078	2.98	2-1/2
80	88.9	+0.89	-0.79	15.88	8.74	84.94 - 0.46	2.11	1.98	91.4	80
3	3.500	+0.035	-0.031	0.625	0.344	3.344 - 0.018	0.083	0.078	3.60	3
90	101.6	+1.02	-0.79	15.88	8.74	97.38 - 0.51	2.11	2.11	104.1	90
3-1/2	4.000	+0.040	-0.031	0.625	0.344	38.34 - 0.020	0.083	0.083	4.10	3-1/2
100	114.3	+1.14	-0.79	15.88	8.74	110.08 - 0.51	2.11	2.11	116.8	100
4	4.500	+0.045	-0.031	0.625	0.344	4.334 - 0.020	0.083	0.083	4.60	4
125	141.3	+1.42	-0.79	15.88	8.74	137.03 - 0.56	2.77	2.11	143.8	125
5	5.563	+0.056	-0.031	0.625	0.344	5.395 - 0.022	0.109	0.083	5.66	5
150	168.3	+1.60	-0.79	15.88	8.74	163.96 - 0.56	2.77	2.16	170.9	150
6	6.625	+0.063	-0.031	0.625	0.344	6.455 - 0.022	0.109	0.085	6.73	6
200	219.1	+1.60	-0.79	19.05	11.91	214.40 - 0.64	2.77	2.34	223.5	200
8	8.625	+0.063	-0.031	0.750	0.469	8.441 - 0.025	0.109	0.092	8.80	8
250	273.0	+1.60	-0.79	19.05	11.91	268.27 - 0.69	3.40	2.39	277.4	250
10	10.750	+0.063	-0.031	0.750	0.469	10.562 - 0.027	0.134	0.094	10.92	10
300	323.9	+1.60	-0.79	19.05	11.91	318.29 - 0.76	3.96	2.77	328.2	300
12	12.750	+0.063	-0.031	0.750	0.469	12.531 - 0.030	0.156	0.109	12.92	12
350	355.6	+1.60	-0.79	23.83	11.91	350.04 - 0.76	3.96	2.77	358.10	350
14	14.000	+0.063	-0.031	0.938	0.469	13.781 - 0.030	0.156	0.109	14.10	14
400	406.4	+1.60	-0.79	23.83	11.91	400.84 - 0.76	4.19	2.77	408.9	400
16	16.000	+0.063	-0.031	0.938	0.469	15.781 - 0.030	0.165	0.109	16.10	16
450	457.2	+1.60	-0.79	25.40	11.91	451.64 - 0.76	4.19	2.77	461.3	450
18	18.000	+0.063	-0.031	1.000	0.469	17.781 - 0.030	0.165	0.109	18.16	18
500	508.0	+1.60	-0.79	25.40	11.91	502.44 - 0.76	4.78	2.77	512.1	500
20	20.000	+0.063	-0.031	1.000	0.469	19.781 - 0.030	0.188	0.109	20.16	20
550	558.8	+1.60	-0.79	25.40	12.70	550.06 - 0.76	4.78	4.37	563.9	550
22	22.000	+0.063	-0.031	1.000	0.500	21.656 - 0.030	0.188	0.172	22.20	22
600	609.6	+1.60	-0.79	25.40	12.70	600.86 - 0.76	4.78	4.37	614.7	600
24	24.000	+0.063	-0.031	1.000	0.500	23.656 - 0.030	0.188	0.172	24.20	24

General Notes for Cut Groove Dimensions



Standard Cut Groove

Nominal Size: Groovjoint couplings and fittings are identified by the nominal IPS pipe size in inches.

O.D: Pipe ends must be square cut. The Maximum allowable tolerances from square of end 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.

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Groove Width ("B" Dimension): The groove width is to be measured between vertical flanks of the groove side walls.

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 cut-grooved.

Groove Depth ("d" Dimension): The values listed in the Groove Specification tables are for reference only and a slightly deeper groove may be accept

Standard Cut Groove Specifications

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

Nominal Size mm/in	Pipe OD			A ±0 .79 ±0 .031	B ±0 .79 ±0 .031	C +0 .00 +0 .000	Min . Wall t mm/in	Groove Depth d (ref .) mm/in	Nominal Size mm/in
	Basic mm/in	Tolerance							
20	26.7	+0.25	-0.25	15.88	7.95	23.83 - 0.38	2.87	1.42	20
3/4	1.050	+0.010	-0.010	0.625	0.313	0.938 - 0.015	0.113	0.056	3/4
25	33.4	+0.33	-0.33	15.88	7.95	30.23 - 0.38	3.38	1.60	25
1	1.315	+0.013	-0.013	0.625	0.313	1.190 - 0.015	0.133	0.063	1
32	42.2	+0.41	-0.41	15.88	7.95	38.99 - 0.38	3.56	1.60	32
1-1/4	1.660	+0.016	-0.016	0.625	0.313	1.535 - 0.015	0.140	0.063	1-1/4
40	48.3	+0.48	-0.48	15.88	7.14	45.09 -0.38	3.68	1.60	40
1-1/2	19.00	+0.019	-0.019	0.625	0.281	1.775 - 0.015	0.145	0.063	1-1/2
50	60.3	+0.61	-0.61	15.88	8.74	57.15 - 0.38	3.91	1.60	50
2	2.375	+0.024	-0.024	0.625	0.344	2.250 - 0.015	0.154	0.063	2
65	73.0	+0.74	-0.74	15.88	8.74	69.09 - 0.46	4.78	1.98	65
2-1/2	2.875	+0.029	-0.029	0.625	.0344	2.720 - 0.018	0.188	0.078	2-1/2
65	76.1	+0.76	-0.76	15.88	8.74	72.26 - 0.46	4.78	1.93	65
2-1/2	3.000	+0.030	-0.030	0.625	.0344	2.845 - 0.018	0.188	0.076	2-1/2
80	88.9	+0.89	-0.79	15.88	8.74	84.94 - 0.46	4.78	1.98	80
3	3.500	+0.035	-0.031	0.625	0.344	3.344 - 0.018	0.188	0.078	3
90	101.6	+1.02	-0.79	15.88	8.74	97.38 - 0.51	4.78	2.11	90
3-1/2	4.000	+0.040	-0.031	0.625	0.344	38.34 - 0.020	0.188	0.083	3-1/2
100	108.0	+1.07	-0.79	15.88	8.74	103.73 - 0.51	5.16	2.11	100
4	4.250	+0.042	-0.031	0.625	0.344	4.084 - 0.020	0.203	0.083	4
100	114.3	+1.14	-0.79	15.88	8.74	110.08 - 0.51	5.16	2.11	100
4	4.500	+0.045	-0.031	0.625	0.344	4.334 - 0.020	0.203	0.083	4
125	133.0	+1.32	-0.79	15.88	8.74	129.13 - 0.51	5.16	1.93	125
5	5.250	+0.052	-0.031	0.625	0.344	5.084 - 0.020	0.203	0.076	5
125	139.7	+1.42	-0.79	15.88	8.74	135.48 - 0.51	5.16	2.11	125
5	5.500	+0.055	-0.031	0.625	0.344	5.334 - 0.020	0.203	0.083	5
125	141.3	+1.42	-0.79	15.88	8.74	137.03 - 0.56	5.16	2.11	125
5	5.563	+0.056	-0.031	0.625	0.344	5.395 - 0.022	0.203	0.083	5
150	159.0	+1.60	-0.79	15.88	8.74	154.50 - 0.56	5.56	2.20	150
6	6.250	+0.063	-0.031	0.625	0.344	6.080 - 0.022	0.219	0.087	6
150	165.1	+1.60	-0.79	15.88	8.74	160.80 - 0.56	5.56	2.16	150
6	6.500	+0.063	-0.031	0.625	0.344	6.330 - 0.022	0.219	0.085	6
150	168.3	+1.60	-0.79	15.88	8.74	163.96 - 0.56	5.56	2.16	150
6	6.625	+0.063	-0.031	0.625	0.344	6.455 - 0.022	0.219	0.085	6
200	216.3	+1.60	-0.79	19.05	11.91	211.60 - 0.64	6.05	2.34	200A
8	8.516	+0.063	-0.031	0.750	0.469	8.331 - 0.025	0.238	0.092	8
200	219.1	+1.60	-0.79	19.05	11.91	214.40 - 0.64	6.05	2.34	200
8	8.625	+0.063	-0.031	0.750	0.469	8.441 - 0.025	0.238	0.092	8
250	267.4	+1.60	-0.79	19.05	11.91	262.60 - 0.69	6.35	2.39	250A
10	10.528	+0.063	-0.031	0.750	0.469	10.339 - 0.027	0.250	0.094	10
250	273.0	+1.60	-0.79	19.05	11.91	268.27 - 0.69	6.35	2.39	250
10	10.750	+0.063	-0.031	0.750	0.469	10.562 - 0.027	0.250	0.094	10
300	318.5	+1.60	-0.79	19.05	11.91	312.90 - 0.76	7.09	2.77	300A
12	12.539	+0.063	-0.031	0.750	0.469	12.319 - 0.030	0.279	0.109	12
300	323.9	+1.60	-0.79	19.05	11.91	318.29 - 0.76	7.09	2.77	300
12	12.750	+0.063	-0.031	0.750	0.469	12.531 - 0.030	0.279	0.109	12
350	355.6	+1.60	-0.79	23.83	11.91	350.04 - 0.76	7.14	2.77	350
14	14.000	+0.063	-0.031	0.938	0.469	13.781 - 0.030	0.281	0.109	14
400	406.4	+1.60	-0.79	23.83	11.91	400.84 - 0.76	7.92	2.77	400
16	16.000	+0.063	-0.031	0.938	0.469	15.781 - 0.030	0.312	0.109	16
450	457.2	+1.60	-0.79	25.40	11.91	451.64 - 0.76	7.92	2.77	450
18	18.000	+0.063	-0.031	1.000	0.469	17.781 - 0.030	0.312	0.109	18
500	508.0	+1.60	-0.79	25.40	11.91	502.44 - 0.76	7.92	2.77	500
20	20.000	+0.063	-0.031	1.000	0.469	19.781 - 0.030	0.312	0.109	20
550	558.8	+1.60	-0.79	25.40	12.70	550.06 - 0.76	9.53	4.37	550
22	22.000	+0.063	-0.031	1.000	0.500	21.656 - 0.030	0.375	0.172	22
600	609.6	+1.60	-0.79	25.40	12.70	600.86 - 0.76	9.53	4.37	600
24	24.000	+0.063	-0.031	1.000	0.500	23.656 - 0.030	0.375	0.172	24

BOLTS & NUTS

Bolt Torque for Proper Assembly of Couplings

Groovjoint pipe couplings are always supplied with factory bolts and nuts. Always use factory supplied bolts and nuts for assembly of **Groovjoint** pipe couplings. Shown below are required torque ranges for proper installation with factory supplied bolts and nuts. These are not maximum torques, though never exceed the listed torque values by more than 25%, as excessive torque could lead to bolt or joint failure. Always tighten nuts evenly and equally by alternating sides to prevent the gasket from being pinched. Pinching of gasket may cause an immediate or delayed leak.

These torque range values can be used for setting the torque on power drivers.

Stainless Steel Track Bolts

Bolt Size		Torque Range	
mm	inch	N - m	Lbs - ft
M8	5/16	8 - 15	6 - 11
M10	3/8	17 - 25	12 - 18
M12	1/2	35 - 60	25 - 45
M16	5/8	68 - 100	50 - 75
M20	3/4	85 - 200	65 - 150
M22	7/8	145 - 235	105 - 175

Model 15XF Deflection Degree

Maximum deflection of 1° for sizes:

1-1/2", 2", 2-1/2", 3" and 4".

Model 15XF Stainless Steel Coupling is UL Listed in accordance with the requirements of UL 213.

Model 15X Stainless Steel Coupling has not been qualified in accordance with the UL 213 flexible coupling requirements for seismic applications

RUBBER GASKETS

Grades and Recommended Services

Groovjoint gaskets are engineered and designed to meet and exceed standards such as ASTM D2000, AWWA C606, NSF 61. Independent laboratory testing confirms this. Our continual research, development and testing are designed to advance the elastomer field and to develop new and better solutions for our ever changing industry.

Chemical resistance is primarily determined by the grade and or the compound of the gasket. The color coding identifies the gasket grade and or compound. Always verify that the gasket selected is correct for the intended service.

Service temperature is controlled by factors including the gasket compound, fluid medium (air, water, oils, etc.), and continuity (continuous or intermittent) of service. Under no circumstances should gaskets be exposed to temperatures above or below their individual ratings.

EPDM Gaskets

Compound	Grade	Color Code	Recommended Services	Maximum Temp.
EPDM	E	Green Stripe*	Good for cold & hot water up to +230°F (+110°C). Also good for services for water with acid, water with chlorine, deionized water, seawater and waste water, dilute acids, oil-free air, and many chemicals. **Not recommended for petroleum oils, mineral oils, solvents, and aromatic hydrocarbons.**	-30°F (-34°C) to +230°F (+110°C)

INSTALLATION INSTRUCTIONS – GROOVED COUPLINGS

Gasket Installation – Preliminary Steps

1. **INSPECT PIPE ENDS:** For optimum sealing by the gasket, the exterior surface of the pipe ends must be free from any indentations, projections, roll marks or other harmful surface defects such as loose paint, scale, dirt, chips, grease and rust.
2. **CHECK GASKET:** Verify the gasket supplied is correct for the intended service. Color code identifies gasket grade.
3. **LUBRICATE GASKET:** To help insert pipe and mount couplings smoothly without pinching, apply a thin layer of Lubricant to the sealing lips of the gasket and as well as to the exterior of the gasket.
4. **INSTALL GASKET:** Install the gasket over one end of the pipe so that the pipe end is exposed. No part of the gasket should overhang this end of the pipe.
5. **BRING THE MATING PIPE TOGETHER:** Bring together and align the two pipe ends to be joined. Slide the gasket over the ends and center it between the grooves of the pipe to be joined. No part of the gasket should protrude into the groove of either pipe.
6. **ASSEMBLE COUPLING:** For a "swing-over" assembly loosely install one bolt and nut on one side of the coupling. For a standard assembly start with the two housings separated.
7. **INSTALL COUPLING HALVES:** For a "swing-over" installation, place one of the coupling halves around the bottom side of the gasket and swing over the other coupling half into position over the top side of the gasket. For a standard installation install the coupling halves one at a time. In both cases make sure the coupling keys are engaged in the grooves.
8. **INSERT BOLT & NUT:** Insert the remaining bolt and apply the nut hand-tight. Make sure that the oval neck of the bolt engages into the bolt hole of the housing.

CAUTION

NOTE: As the coupling bolts are tightened, the angled bolt pads slide in opposite directions causing the coupling keys to tightly grip the pipe, while at the same time the pipe grooves are forced outward against the coupling keys. The bolt pads should always maintain metal-to-metal contact.