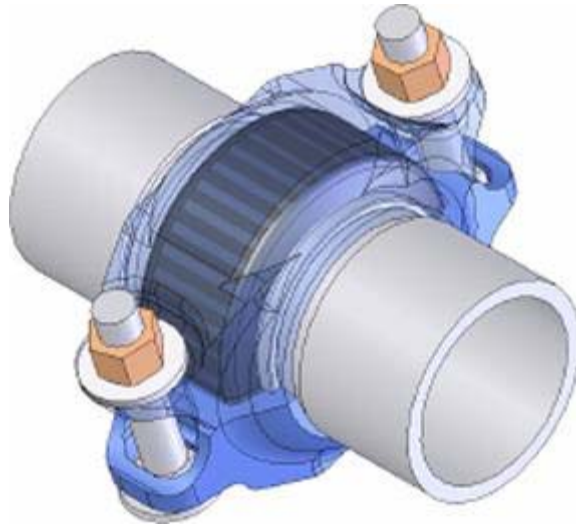




PIEDMONT PACIFIC CORPORATION



INSTALLATION MANUAL FOR STAINLESS STEEL, GROOVE-END, FLEXIBLE COUPLINGS

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INTRODUCTION:

This manual contains instructions for the installation of Piedmont Pacific grooved-end pipe couplings in low, medium and high pressure systems. This information will ensure the long life and safe installation of the couplings.

Please read this manual thoroughly before installation and operation and keep it for future reference.

Piedmont Pacific flexible couplings are designed to provide safe and reliable service. Therefore, operational personnel must exercise good judgment and proper safety practices to avoid damage to the equipment and surrounding areas, and to prevent injuries.

DESIGN CONSIDERATIONS:

Piedmont grooved-end pipe couplings are designed for use with pipe grooved in accordance with Piedmont cut or rolled groove specifications. Piedmont groove specifications are attached and can also be found on the Piedmont Pacific Corporation website at www.piedmontpacific.com (additional specifications). Piedmont fittings are not intended for use with plain-end pipe.

<p>Note: Piedmont cut and rolled groove specifications are in accordance with AWWA C606-97 (American Water Works Association) standards.</p>

A complete coupling consists of coupling housings, nuts, bolts and gasket as it can be seen in Drawing section. The coupling housing contains and compresses the gasket, which effects proper sealing of the joint. Piedmont Pacific gaskets are designed for a tight seal in low, medium and high pressure industrial applications.

GENERAL CONDITIONS:

PIPE ENDS:

The pipe must be in accordance with Piedmont cut or rolled groove specifications and free of indentations, projections, and other imperfections. Flame-cut pipe ends are not allowed.

LUBRICATION:

Gaskets for Piedmont couplings must **always** be lubricated for proper assembly. For Reverse Osmosis systems, Piedmont recommends the use of simple glycerine (available from chemical supply houses or drug stores), generously applied as a lubricant, since it is harmless to RO membranes

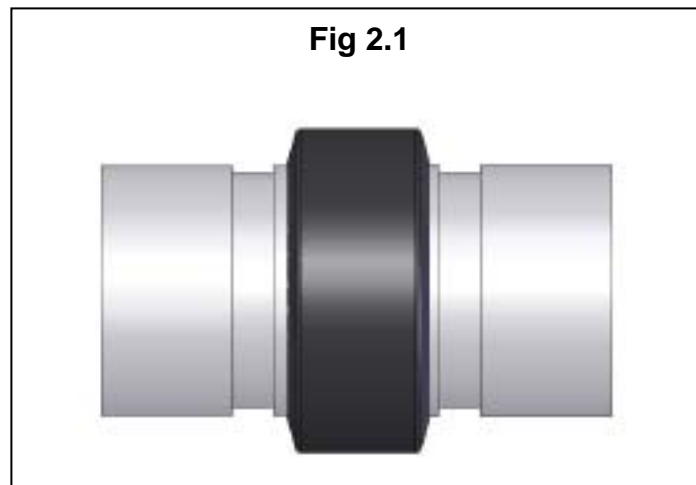
Note: Non-water soluble lubricants such as grease, oil, wax and vegetable oils are not recommended. These lubricants may damage RO membranes. Refer to membrane manufacturer to compatibility with other lubricant material.

Liberal lubrication of the rubber gasket and/or all metal mating surfaces is necessary to prevent pinching of the gasket upon closure of the coupling. For correct fit, especially in high-pressure systems, it is necessary that the gasket be properly seated within the coupling and that unnecessary stretching of the gasket be avoided.

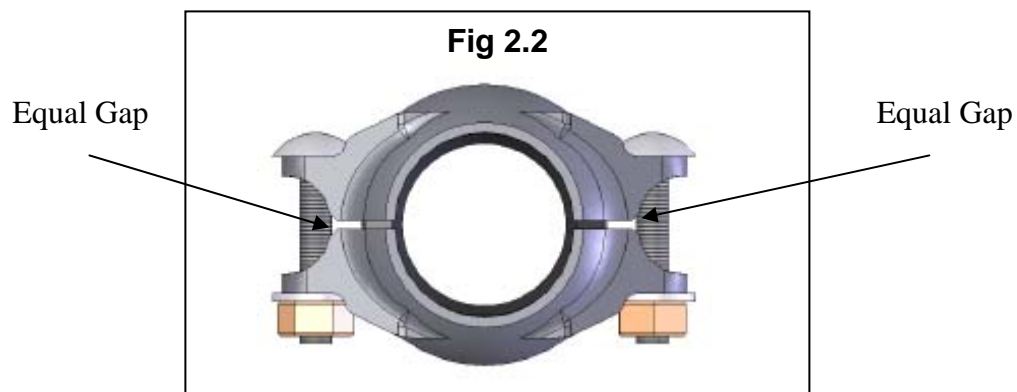
Note: Liberal lubrication of both the inner surface of the coupling and outer surfaces of the gasket aids in seating the gasket.

INSTALLATION:

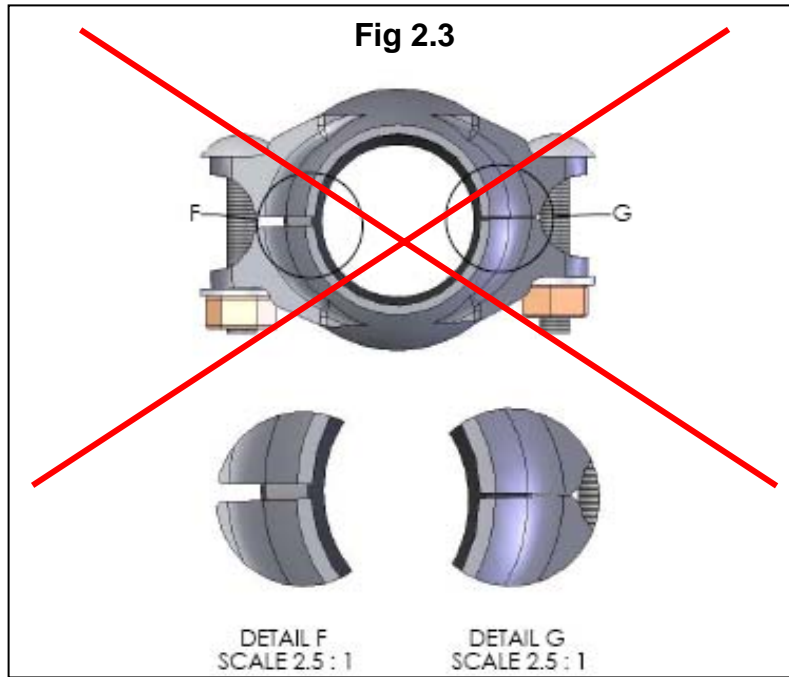
1. Liberally apply lubricant to the gasket.
2. Place the gasket over one pipe end.
3. Align the two pipe ends and slide the gasket to center of the joint such that no portion of the gasket extends into the groove on either side.
4. At this point both pipes are connected through the gasket as shown in Fig 2.1



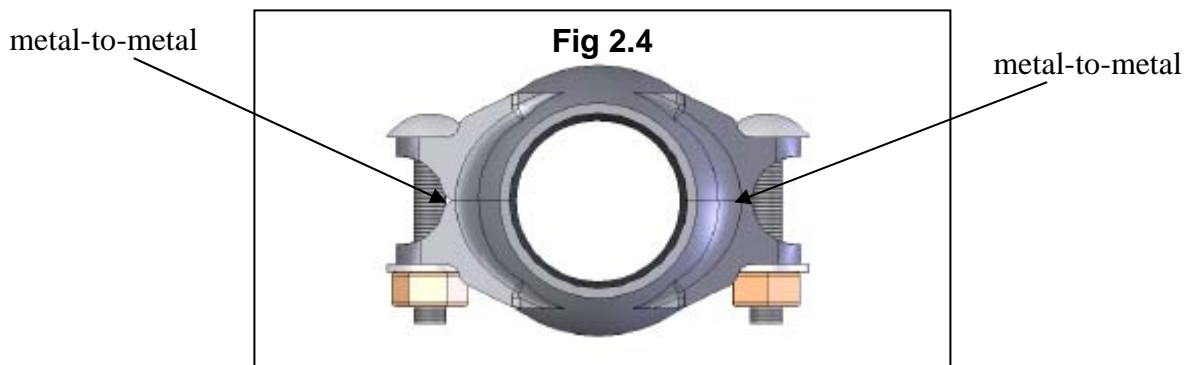
5. Liberally apply lubricant to the inner coupling surfaces.
6. Fit the two coupling halves over the lubricated gasket
7. Insert the bolts through the coupling ears, then place the washers (only style D), and finger tighten the nuts.
8. Couplings halves should fit snugly and evenly over the gasket such that the gap on each side is approximately equal. As shown in Fig 2.2



Note: Do not tighten couplings unevenly. Uneven tightening, particularly with large sizes and with insufficient lubricant, can result in pinched and/or leaking gaskets. As shown in Fig 2.3



9. Tighten nuts alternately and equally until housings are firmly together, (metal-to-metal). As shown in Fig 2.4



Note: If SS nuts are used with SS bolts, commercial anti-seize compound should be applied to the bolt threads.

Note: Piedmont couplings with silicon-bronze nuts do not require anti-seize compound

10. Once housings are firmly together, excessive tightening is not required except as a precaution against loosening resulting from vibration.

DISASSEMBLY:

Piping systems must always be depressurized prior to removal of any Piedmont coupling.

Note: Failure to depressurize prior to disassembly could result in serious personal injury and/or damage to property.

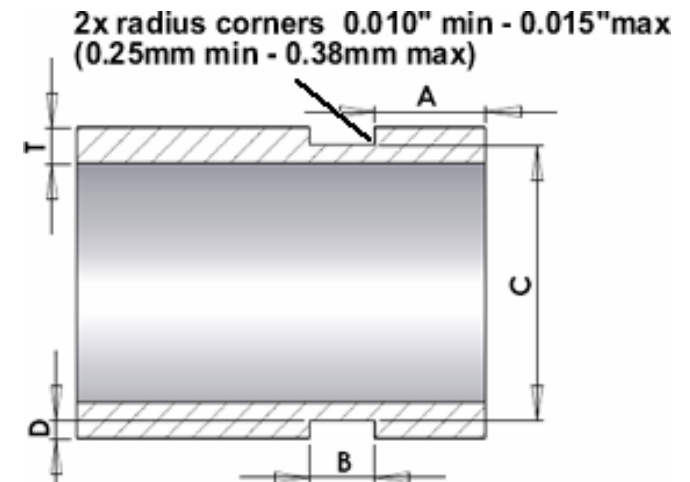
Piedmont Pacific cut groove pipe standards

Table 1.1 (Cut groove specifications in English units).

STANDARD CUT GROOVE PIPE SPECIFICATION FOR FLEXIBLE COUPLINGS									
Nominal Size	Tolerance for outer diameter of pipe			Gasket Seat "A"	Groove Width "B"	Groove Dia C		Groove Depth "D" (info.)	Min. Wall Thickness "T"
inches.	Basic OD inches.	Tol(+) inches.	Tol(-) inches.	Tol (+/-0.031) inches.	Tol (+0.031, - 0.000) inches.	Basic inches.	Tol (+0.00) inches.	inches.	inches.
3/4	1.050	0.010	0.010	0.625	0.313	0.938	-0.015	0.056	0.113
1	1.315	0.013	0.013	0.625	0.313	1.190	-0.015	0.063	0.133
1-1/4	1.660	0.016	0.016	0.625	0.313	1.535	-0.015	0.063	0.140
1-1/2	1.900	0.019	0.019	0.625	0.313	1.775	-0.015	0.063	0.145
2	2.375	0.024	0.024	0.625	0.313	2.250	-0.015	0.063	0.154
2-1/2	2.875	0.029	0.029	0.625	0.313	2.720	-0.018	0.078	0.188
3	3.500	0.035	0.031	0.625	0.313	3.344	-0.018	0.078	0.188
4	4.500	0.045	0.031	0.625	0.375	4.334	-0.020	0.083	0.203
6	6.625	0.062	0.031	0.625	0.375	6.455	-0.022	0.085	0.219
8	8.625	0.062	0.031	0.750	0.438	8.441	-0.022	0.092	0.238
10	10.750	0.062	0.031	0.750	0.500	10.562	-0.027	0.094	0.250
12	12.750	0.062	0.031	0.750	0.500	12.531	-0.030	0.109	0.279

Table 1.2 (Cut groove specifications in International units).

STANDARD CUT GROOVE PIPE SPECIFICATION FOR FLEXIBLE COUPLINGS									
Nominal Size	Tolerance for outer diameter of pipe			Gasket Seat "A"	Groove Width "B"	Groove Dia C		Groove Depth "D" (info.)	Min. Wall Thickness "T"
inches.	Basic OD mm.	Tol(+) mm.	Tol(-) mm.	Tol (+/-0.78) mm.	Tol (+0.78, -0.00) mm.	Basic mm.	Tol (+0.000) mm.	mm.	mm.
3/4	26.70	0.25	0.25	15.88	7.95	23.83	-0.38	1.42	2.87
1	33.40	0.33	0.33	15.88	7.95	30.23	-0.38	1.60	3.38
1-1/4	42.20	0.41	0.41	15.88	7.95	38.99	-0.38	1.60	3.56
1-1/2	48.30	0.48	0.48	15.88	7.95	45.09	-0.38	1.60	3.68
2	60.30	0.61	0.61	15.88	7.95	57.15	-0.38	1.60	3.91
2-1/2	73.00	0.74	0.74	15.88	7.95	69.09	-0.46	1.98	4.78
3	88.90	0.89	0.79	15.88	7.95	84.94	-0.46	1.98	4.78
4	114.30	1.14	0.79	15.88	9.53	110.08	-0.51	2.11	5.16
6	168.30	1.60	0.79	15.88	9.53	163.96	-0.56	2.16	5.56
8	219.10	1.60	0.79	19.05	11.13	214.40	-0.64	2.34	6.05
10	273.00	1.60	0.79	19.05	12.70	268.28	-0.69	2.39	6.35
12	323.90	1.60	0.79	19.05	12.70	318.29	-0.76	2.77	7.09



Column Notes:

Gasket seat 'A': must be smooth and free of indentations, roll marks, scratches, imperfections and projections from the end of the pipe to the groove in order to provide a proper sealing surface. Dimension 'A' to be measured from square-cut end of pipe. Beveled end pipe not recommended.

Groove Width "B": The bottom of the groove to be free of dirt, chips etc. that may interfere with coupling assembly. See radius notes on drawing above.

Groove Depth "D": must be of uniform depth for the entire pipe circumference and must be maintained within the 'C' dimension tolerance listed.

Min . Wall Thickness "T": For information only. Actual dimensions must be per groove diameter 'C'.

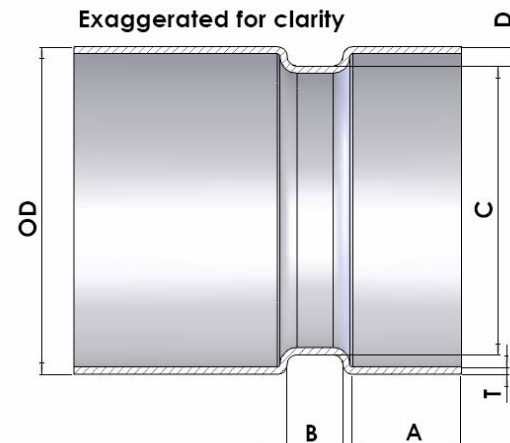
Notes:

1. Pipe ends to be square cut and shall be neat and free from imperfections that may affect durability, operability and safety.
2. Metal shall be free from fins, burrs and sharp/rough edges, flame cutting is not permitted.
3. Break all corners 0.01 - 0.03 in. chamfer unless otherwise specified.
4. In the event of a conflict between these notes and references cited in the drawings, except for detail specifications, these notes shall take precedence.

Piedmont Pacific roll groove pipe standards

Table 1.3 (Roll groove specifications in English Units).

STANDARD ROLLED GROOVE PIPE SPECIFICATION FOR FLEXIBLE COUPLINGS									
Nominal Size	Tolerance for outer diameter of pipe			Gasket Seat "A"	Groove Width "B"	Groove Dia C		Groove Depth "D" (info.)	Min. Wall Thickness "T"
inches.	Basic OD inches.	Tol(+) inches.	Tol(-) inches.	Tol (+0.015, -0.015) inches.	Tol (+0.030, - 0.015) inches.	Basic inches.	Tol (+0.000) inches.	inches.	inches.
3/4	1.050	0.010	0.010	0.625	0.313	0.938	-0.015	0.056	0.065
1	1.315	0.013	0.013	0.625	0.313	1.190	-0.015	0.063	0.065
1-1/4	1.660	0.016	0.016	0.625	0.313	1.535	-0.015	0.063	0.065
1-1/2	1.900	0.016	0.016	0.625	0.313	1.775	-0.015	0.063	0.065
2	2.375	0.024	0.016	0.625	0.313	2.250	-0.015	0.063	0.065
2-1/2	2.875	0.029	0.016	0.625	0.313	2.720	-0.015	0.078	0.083
3	3.500	0.030	0.018	0.625	0.313	3.344	-0.015	0.078	0.083
4	4.500	0.035	0.020	0.625	0.375	4.334	-0.015	0.083	0.083
6	6.625	0.050	0.024	0.625	0.375	6.455	-0.015	0.085	0.109
8	8.625	0.050	0.024	0.750	0.438	8.441	-0.020	0.092	0.109
10	10.750	0.060	0.025	0.750	0.500	10.562	-0.025	0.094	0.134
12	12.750	0.060	0.025	0.750	0.500	12.531	-0.025	0.109	0.156



Column Notes:

Gasket seat 'A': must be smooth and free of indentations, roll marks, scratches, imperfections and projections from the end of the pipe to the groove in order to provide a proper sealing surface. Dimension 'A' to be measured from square-cut end of pipe. Beveled end pipe not recommended.

Groove Width "B": The bottom of the groove to be free of dirt, chips etc. that may interfere with coupling assembly. See radius notes on drawing above.

Groove Depth "D": must be of uniform depth for the entire pipe circumference and must be maintained within the 'C' dimension tolerance listed.

Min . Wall Thickness "T": For information only. Actual dimensions must be per groove diameter 'C'.

Notes:

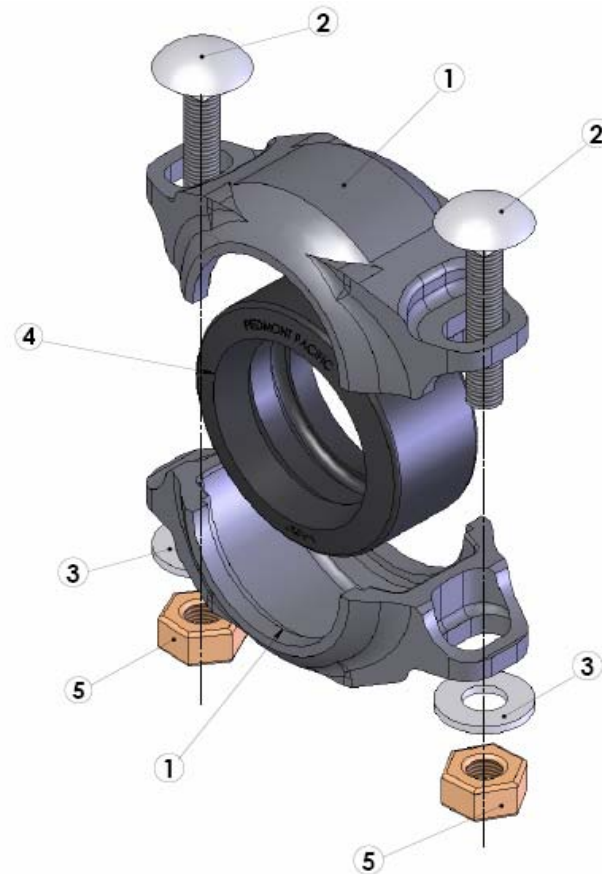
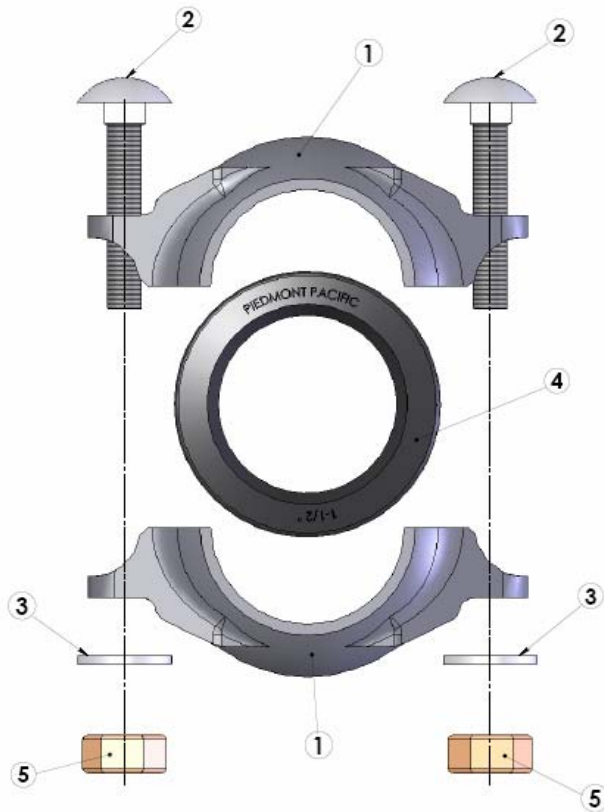
- 1 In the event of a conflict between these notes and references cited in the drawings, except for detail specifications, these notes shall take precedence.
- 2 Metal shall be free from fins, burrs and sharp/rough edges, flame cutting is not permitted.
3. Pipe ends to be square cut and shall be neat and free from imperfections that may affect durability, operability and safety

Table 1.4 (Roll groove specifications in International units).

STANDARD ROLLED GROOVE PIPE SPECIFICATION FOR FLEXIBLE COUPLINGS									
Nominal Size	Tolerance for outer diameter of pipe			Gasket Seat "A"	Groove Width "B"	Groove Dia C		Groove Depth "D" (info.)	Min. Wall Thickness "T"
inches.	Basic OD mm.	Tol(+) mm.	Tol(-) mm.	Tol (+0.38, -0.76) mm.	Tol (+0.76, -0.38) mm.	Basic mm.	Tol (+0.00) mm.	mm.	mm.
3/4	26.70	0.25	0.25	15.88	7.95	23.83	-0.38	1.42	1.65
1	33.40	0.33	0.33	15.88	7.95	30.23	-0.38	1.60	1.65
1-1/4	42.20	0.41	0.41	15.88	7.95	38.99	-0.38	1.60	1.65
1-1/2	48.30	0.41	0.41	15.88	7.95	45.09	-0.38	1.60	1.65
2	60.30	0.61	0.41	15.88	7.95	57.15	-0.38	1.60	1.65
2-1/2	73.00	0.74	0.41	15.88	7.95	69.09	-0.38	1.98	2.11
3	88.90	0.76	0.46	15.88	7.95	84.94	-0.38	1.98	2.11
4	114.30	0.89	0.51	15.88	9.53	110.08	-0.38	2.11	2.11
6	168.30	1.27	0.61	15.88	9.53	163.96	-0.38	2.16	2.77
8	219.10	1.27	0.61	19.05	11.13	214.40	-0.51	2.34	2.77
10	273.00	1.52	0.64	19.05	12.70	268.27	-0.64	2.39	3.40
12	323.90	1.52	0.64	19.05	12.70	318.29	-0.64	2.77	3.96

Assembly drawing

BILL OF MATERIALS		
ITEM No.	DESCRIPTION	MATERIAL
1	Housing	SuperDuplex (CE8MN) or SS 316 (CF8M)
2	Round Head Square Neck Carriage Bolt	SS 316
3	Flat washer (optional)	SS 316
4	EPDM flexible coupling gasket	EPDM
5	Hexagonal Heavy nut	SS 316 or Silicon Bronze



Nut and bolt combinations for Piedmont Pacific couplings

BOLT SIZES				
Coupling size	Style K	Style B	Style D	Style S
inches.	inches.	inches.	inches.	inches.
3/4	5/16	---	3/8	3/8
1	---	3/8	3/8	3/8
1-1/4	5/16	3/8	3/8	3/8
1-1/2	5/16	3/8	3/8	3/8
2	5/16	3/8	1/2 x 2-1/2	1/2 x 2-1/2
2-1/2	3/8	1/2 x 2-1/2	1/2 x 2-1/2	1/2 X 3
3	3/8	1/2 x 2-1/2	1/2 x 2-1/2	1/2 X 3
4	1/2 x 3	5/8 x 3-1/4	5/8 x 3-1/4	5/8 x 3-1/4
5	3/4	---	---	
6	1/2 X 4	3/4	3/4	3/4
8	5/8 X 5	---	7/8	7/8
10	5/8 X 5	---	1	---
12	5/8 X 5	---	1	---
16	1	---	---	---