

# PLIDCO®

The Pipe Line Development Company

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## PLIDCO® CLAMP+RING INSTALLATION INSTRUCTIONS

### !! WARNING !!

IMPROPER SELECTION OR USE OF THIS PRODUCT CAN RESULT IN EXPLOSION, FIRE, DEATH, PERSONAL INJURY, PROPERTY DAMAGE OR HARM TO THE ENVIRONMENT.

Do not use or select a Plidco Clamp+Ring until all aspects of the application are thoroughly analyzed. Do not use the Plidco Clamp+Ring until you read and understand these installation instructions. Every effort has been made to securely package this product prior to shipment. If you have any questions, or encounter any difficulties using this product, please contact:

**PLIDCO "DEPARTMENT  
100" at 440-871-5700  
toll free U.S. & Canada  
800-848-3333  
READ CAREFULLY**

The person in charge of the installation must be familiar with these instructions and communicate them to all personnel involved.

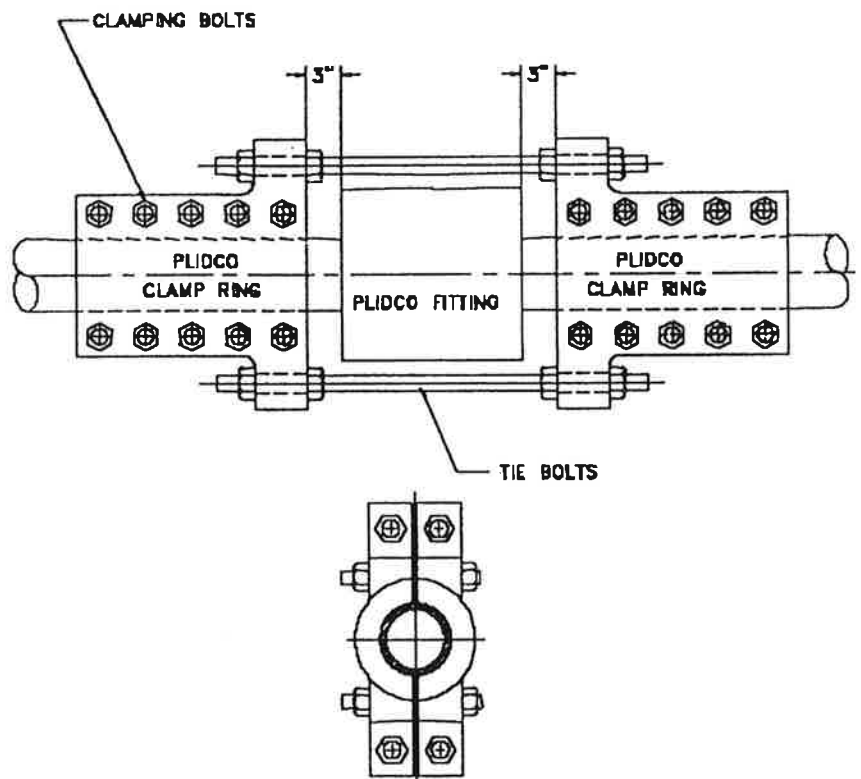
### **SAFETY CHECK LIST**

- Read and follow these instructions carefully. Follow your company's safety policy and applicable codes and standards.
- Do not exceed the maximum end restraint indicated on the label of the Plidco Clamp+Ring. A Plidco Clamp+Ring is designed for a specific, longitudinal end restraint in units of force. Verify the maximum end restraint indicated on the label is sufficient to resist your combination of hydrostatic, dynamic, external and thermal induced forces.
- Do not exceed the maximum temperature indicated on the label of the Plidco Clamp+Ring. The maximum

temperature indicated on the label refers only to the selection of an allowable stress used in the design of the Plidco Clamp+Ring. It does not imply the Plidco Clamp+Ring is capable of resisting thermal forces associated with raising the temperature of the pipeline to the maximum temperature indicated on the label. Please refer to "design end restraint" described earlier. If necessary, please consult Plidco Department 100 for further detail.

- If the pipeline has been shut down, repressuring should be done with extreme caution. Repressuring should be accomplished slowly and steadily without surges, which could vibrate the pipeline and fitting. Industry codes and standards are a good source of information on this subject. Do not exceed the maximum end restraint indicated on the label as described earlier. Personnel should not be allowed near the installation until the Plidco Clamp+Ring has been proven.

### **CLAMP+RING COMPONENTS**



## PIPE PREPARATION

1. Remove all coatings, rust and scale from the pipe surface where the Plidco Clamp+Ring will contact the pipe.
2. Survey the outside of the pipe to confirm a circular cross section, particularly in the area of the clamping sections. This area should be a smooth curved surface without indentations or flat spots that could adversely affect proper gripping.
3. A ring gauge should be used for submerged pipelines where visibility is limited. Plidco has available ring gauges that can accurately survey the cross sectional shape of the pipe. Information is available upon request.
4. The bolting force generated when assembling the two halves is capable of reshaping minor out-of-round pipe. Maximum allowable ovality is approximately 5%, depending on the pipe wall thickness. Flat spots are very difficult to reshape and the bolting force should not be relied on to correct flattened or indented areas.
5. Clean and lubricate all Plidco Clamp+Ring studbolts and nuts. Prove free and easy nut running prior to installation.

## INSTALLATION

Careless handling can damage the Clamp+Ring. Lifting devices such as chains, cables or lift truck forks should not contact the clamping sections.

1. Assemble the Plidco Clamp+Ring loosely on the pipe, centered over the repair fitting, making certain the yellow painted ends are matched. There should be approximately three (3) inches between the Plidco Clamp+Ring and the repair fitting. See Clamp+Ring Components.
2. With the tie studbolt lugs in alignment, insert the tie studbolts. Hand tighten a nut on each side of the lugs.
3. All clamping studbolts and nuts should be uniformly torqued as indicated in the Plidco Torque Chart. The best results are obtained by maintaining an equal gap between the sidebars while tightening the studbolts. The sidebars will be gapped approximately 1/4 to 1/2 inch.
4. The tie studbolt nuts need only be snug. A high pre-stress on the tie studbolts is undesirable.

5. To complete assembly, the clamping studbolts should be rechecked at the recommended torque. An increase in torque on one studbolt can cause a decrease in torque on neighboring studbolts.

## FIELD TESTING

The Plidco Clamp+Ring is capable of being field tested up to 1- 1/2 times its maximum end restraint indicated on the label of the Plidco Clamp+Ring. Your

combination of hydrostatic, dynamic, external and thermal induced forces anticipated during testing must be considered. Please refer to "design end restraint" described in Safety Check List. If necessary, please consult Plidco Department 100 for further detail.

## STORAGE

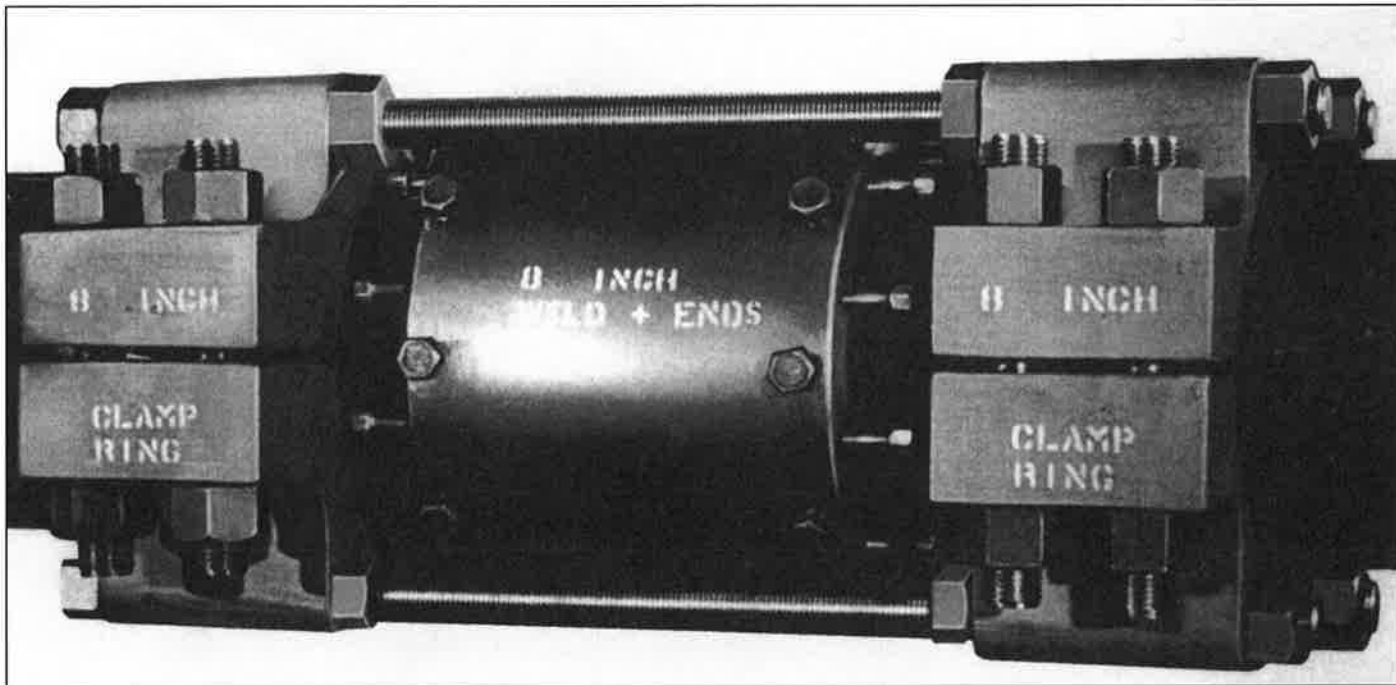
Plidco Clamp+Rings should be stored in a dry environment to prevent any unpainted surfaces from rusting.

## PLIDCO TORQUE CHART

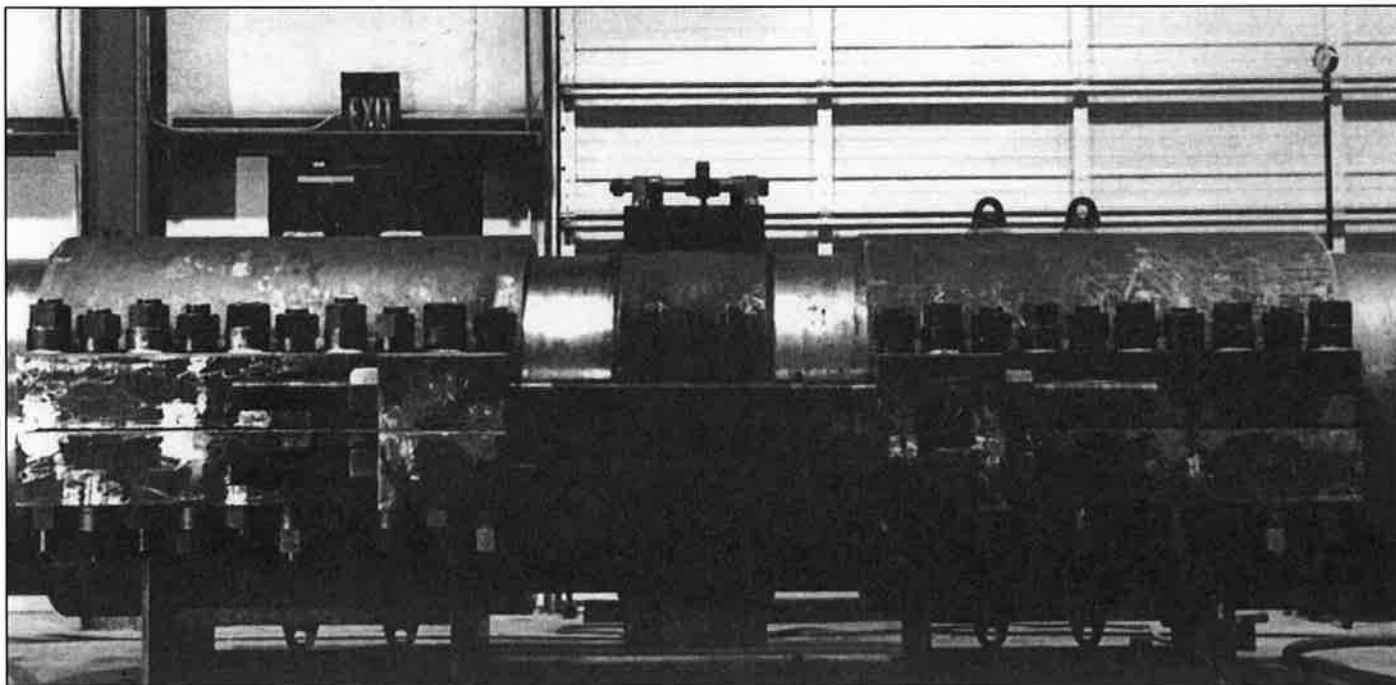
Nominal diameter of studbolts (inches)	Wrench opening across flats	Clamping Studbolt Torque Values *			
		0.08 C <sub>f</sub>		0.15 C <sub>f</sub>	
		ft-lbs	Nm	ft-lbs	Nm
<b>52,500 psi pre-stress</b>					
5/8-11	1-1/16	70	95	118	160
3/4-10	1-1/4	120	162	206	280
7/8-9	1-7/16	192	259	328	446
1-8	1-5/8	284	385	490	664
1-1/8-8	1-13/16	414	561	719	975
1-1/4-8	2	576	782	1008	1368
1-3/8-8	2-3/16	777	1055	1368	1855
1-1/2-8	2-3/8	1019	1382	1800	2441
1-5/8-8	2-9/16	1296	1758	2302	3121
1-3/4-8	2-3/4	1643	2226	2928	3969
1-7/8-8	2-15/16	2033	2758	3633	4927
2-8	3-1/8	2478	3360	4444	6025
2-1/4-8	3-1/2	3560	4826	6412	8694
2-1/2-8	3-7/8	4914	6664	8886	12048
<b>47,500 psi pre-stress</b>					
2-3/4-8	4-1/4	5947	8064	10787	14628
3-8	4-5/8	7816	10598	14218	19280
3-1/4-8	5	9966	13514	18170	24639
3-1/2-8	5-3/8	12478	16921	22794	30908
3-3/4-8	5-3/4	15380	20856	28140	38157
4-8	6-1/8	18699	25355	34262	46460
<b>37,500 psi pre-stress</b>					
4-1/4-8	6-1/2	17735	24050	32540	44123
4-1/2-8	6-7/8	21082	28586	38723	52508
4-3/4-8	7-1/4	24822	33659	45643	61891
5-8	7-5/8	28983	39302	53344	72334
5-1/4-8	8	33585	45539	61864	83887
5-1/2-8	8-3/8	38647	52405	71245	96609
5-3/4-8	8-3/4	44195	59929	81529	110556
6-8	9-1/8	50249	68139	92761	125783

Studbolts: ASTM A193 Grade B7 - Nuts: ASTM A194 Grade 2H

\* When C<sub>f</sub> (coefficient of friction) equals 0.08, it is assumed the studbolts and nuts are clean, free running, free of obvious flaws and lubricated with a high grade graphite-oil thread lubricant. When C<sub>f</sub> equals 0.15, it is assumed the studbolts and nuts are clean, free running, free of obvious flaws and lubricated with a lightweight machine oil. The torque values are safe minimums and represent approximately the studbolt pre-stress values listed in the table.



8" Plidco Clamp+Ring with 8" Plidco Weld+Ends Coupling



48" Plidco Clamp+Ring, designed for 1200 psig working pressure, under test with a 48" Plidco Split+Sleeve

Plidco Clamp+Rings, used with Weld+Ends, Split+Sleeves or other Plidco fittings, where excessive end-pull or compression loadings are encountered, may be used temporarily prior to welding or permanently.