



PLIDCO® CLAMP/STRONGBACK INSTALLATION INSTRUCTIONS

LANGUAGES:

CLICK ON LANGUAGE DESIRED

ENGLISH

PLIDCO®

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!! WARNING!!

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

Do not use or select a PLIDCO Clamp/Strongback until all aspects of the application are thoroughly analyzed. Do not use the PLIDCO Clamp/Strongback until you read and understand these installation instructions. If you have any questions, or encounter any difficulties using this product, please contact: PLIDCO 440-871-5700

READ CAREFULLY

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

Safety Check List

- Read and follow these instructions carefully. Follow your company's safety policy and applicable codes and standards
- Whenever a PLIDCO product is modified in any form, including adding a vent, by anyone other than the Engineering and Manufacturing Departments of The Pipe Line Development Company, the product warranty is voided. Products that are field modified do not have the benefit of the material traceability, procedural documentation, quality inspection and experienced workmanship that are employed by The Pipe Line Development Company.
- Observe the maximum load and temperature on the label of the PLIDCO product.
- During the *Pipe Preparation* and *Installation* procedures, those installing the PLIDCO Clamp/Strongback must wear, at minimum, Z87+ safety eyewear and steel toe safety footwear.
- Verify the tightness of all threaded connections.
- If the pipeline has been shut down, re-pressuring should be done with extreme caution. Re-pressuring should be accomplished slowly and steadily without surges that could vibrate the pipeline and fitting. Industry codes and standards are a good source of information on this subject.

Pipe Preparation

1. Remove all coatings, rust and scale from the pipe surface where the PLIDCO Clamp/Strongback will contact the pipe. A brush off surface, as noted in SSPC-SP17 / NACE No.4 ISO Sa 1, is preferred. The cleaner pipe surface will ensure more uniform clamping of the fitting to the pipe.
2. A PLIDCO Clamp/Strongback is capable of clamping on out-of-round pipe up to approximately 5% ovality. This is based on the ability of the bolting to reshape the pipe. For very thick wall pipe the bolting may not be able to reshape the pipe. Badly out-of-round pipe may require additional evaluation.
3. A PLIDCO Clamp/Strongback is not capable of reshaping flattened or dented pipe.
4. PLIDCO manufactures an Ovality Gauge that can measure the cross-sectional shape of the pipe. This is particularly useful for submerged pipelines where visibility may be limited.

Installation

Careless handling can damage the bearing area of the clamp. Lifting devices such as chains, cables or lift truck forks should be kept away from the clamping surface.

Figure 1 shows labeled parts of the PLIDCO Clamp/Strongback.

1. Clean and lubricate all studbolts and nuts, and prove free and easy nut running prior to the installation.
2. Assemble the PLIDCO Clamp/Strongback around the pipe directly adjacent to the repair fitting the clamp is securing. Ensure the PLIDCO Clamp/Strongback is oriented such that the PLIDCO Clamp/Strongback will resist axial loads applied to the fitting (ex. For vertical installation of a PLIDCO Split+Sleeve, place the clamp directly below the Split+Sleeve to resist the gravitational axial load).

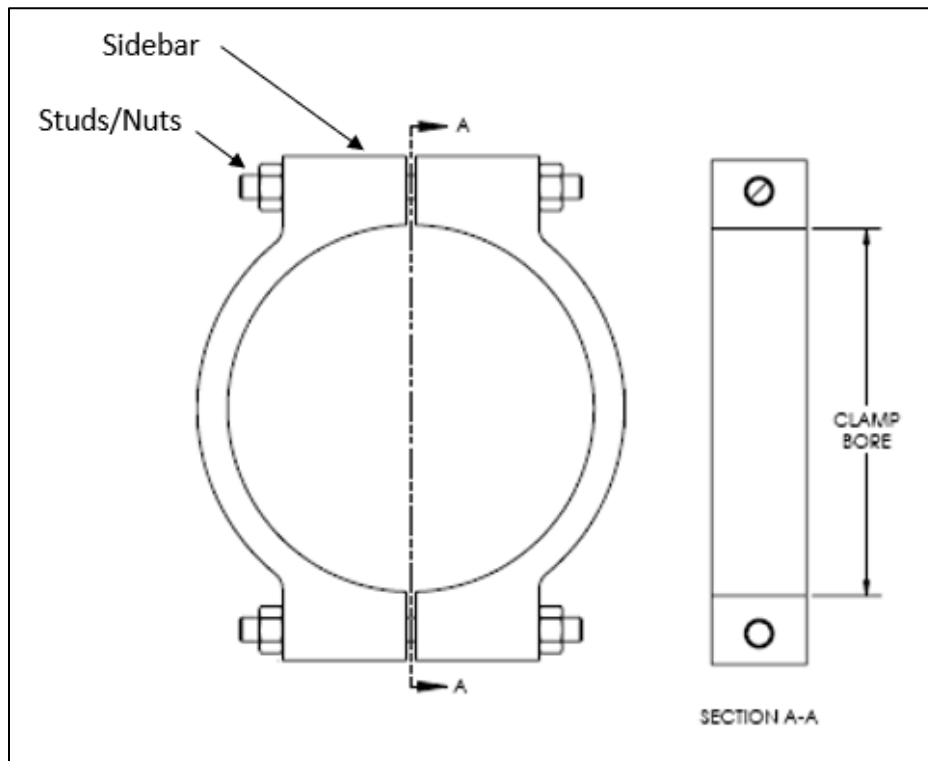


Figure 1

3. Torque the studbolts and nuts of the clamping sections uniformly, as indicated by the Torque Values in the *PLIDCO Torque Chart for Clamp/Strongback* located on page 4. The best results are obtained by alternating the tightening of each nut maintaining an equal gap between the side bars.
4. To complete assembly, **ALL** studbolts should be rechecked at the recommended torque.

Re-pressuring

If the pipeline has been shut down, re-pressuring should be done with extreme caution. Re-pressuring should be accomplished slowly and steadily without surges that could vibrate the pipeline or produce a sudden impact load. Industry codes and standards are a good source of information on this subject.

Storage Instructions

PLIDCO Clamp/Strongbacks should be stored in a dry environment to prevent the unpainted surfaces from rusting. Storage temperatures should not exceed 120°F (49°C). It is best to exclude contamination, light, ozones and radiation

Traceability

PLIDCO Clamp/Strongbacks, as most PLIDCO products, have a unique serial number by which the fitting is fully traceable

Recommended Inspection Schedule

1. After the pipeline is re-pressurized and field tested (see *Re-pressuring and Field Testing* for precautions) the torque values should be checked again 4 hours after installation. Then, the torque values should be checked again 24 hours after that.
2. It is recommended that if the product is not being welded, that torque striping be applied from the nuts to the sidebar of the PLIDCO Clamp/Strongback so any loosening of the bolts can be visually seen during an inspection.
3. 6 months after installation it is recommended that a visual inspection occurs that checks for visible signs of bolt/nut loosening, and general wear or corrosion.
4. After the 6-month inspection occurs, a yearly visual inspection is recommended that checks for visible signs of bolt/nut loosening, and general wear or corrosion.

PLIDCO Torque Chart for Clamp/Strongback

Nominal Diameter of Studbolt (inches) (Note 2)	Wrench Opening Across Flats (inches)	Torque Values for Clamping Section (Note 1)	
		0.15 C _r	
		ft-lbs	Nm
		52,500 psi pre-stress	
5/8--11	1-1/16	118	160
3/4--10	1-1/4	206	280
7/8--9	1-7/16	328	446
1--8	1-5/8	490	664
1-1/8--8	1-13/16	719	975
1-1/4--8	2	1008	1368
1-3/8--8	2-3/16	1368	1855
1-1/2--8	2-3/8	1800	2441
1-5/8--8	2-9/16	2302	3121
1-3/4--8	2-3/4	2928	3969
1-7/8--8	2-15/16	3633	4927
2--8	3-1/8	4444	6025
2-1/4--8	3-1/2	6412	8694
2-1/2--8	3-7/8	8886	12048
		47,500 psi pre-stress	
2-3/4--8	4-1/4	10787	14628
3--8	4-5/8	14218	19280
3-1/4--8	5	18170	24639
3-1/2--8	5-3/8	22794	30908
3-3/4--8	5-3/4	28140	38157
4--8	6-1/8	34262	46460
		37,500 psi pre-stress	
4-1/4--8	6-1/2	32540	44123
4-1/2--8	6-7/8	38723	52508
4-3/4--8	7-1/4	45643	61891
5--8	7-5/8	53344	72334
5-1/4--8	8	61864	83887
5-1/2--8	8-3/8	71245	96609
5-3/4--8	8-3/4	81529	110556
6--8	9-1/8	92761	125783

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

- Note 1: The torque values listed are residual torque value. This is the torque value and residual stress after bolt relaxation. The studs and nuts must be clean, free running, free of obvious flaws. The values listed assume that the nuts are properly lubricated with a lubricant having an approximate coefficient of friction (μ) 0.15 or k factor of 0.19 such as light weight machine oil. If a lower coefficient of friction lubricant is used, such as graphite, please contact PLIDCO's Engineering department for appropriate torque values.
- Note 2: The second number is the pitch, which is shown in number of threads per inch.
- Note 3: Use the pre-stress value shown for the applicable studbolt size if bolt tensioners are to be used and follow the bolt tensioner manufacturer's instructions.
- Note 4: This chart is also to be used for all PTFE (Teflon) coated studs.