PLIDCO®

PLIDCO® WELD+CAP
INSTALLATION INSTRUCTIONS

LANGUAGES:
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ENGLISH

SPANISH

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PLIDCO® WELD+CAP INSTALLATION INSTRUCTIONS

!! 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 Weld+Cap until all aspects of the application are thoroughly analyzed. Do not use the PLIDCO Weld+Cap until you read and understand these installation instructions. If you have any questions, or encounter any difficulties using this product, please contact PLIDCO.

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 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 allowable operating pressure (MAOP) and temperature on the label of the PLIDCO product. Do not exceed the MAOP or temperature as indicated on the unit.
- ❑ When repairing an active leak, extreme care must be taken to guard personnel. Severe injury or death could result.
- ❑ During the *Installation* procedure, those installing the PLIDCO product must wear, at minimum, Z87+ safety eyewear and steel toe safety footwear.
- ❑ 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. Except for testing purposes, do not exceed the design pressure of the PLIDCO product. Personnel should not be allowed near the repair until the seal has been proven.

Installation

Standard PLIDCO Weld+Caps are designed to be used in conjunction with PLIDCO Smith+Clamps. The ends are contoured to fit around the draw band of the Smith+Clamp. The following installation instructions are written with that in mind. However, PLIDCO Weld+Caps can be fabricated to cover vents, valves, or other various pipeline components or anomalies.

1. It is recommended to wait at least 1 hour after installing the Smith+Clamp prior to installing the Weld+Cap. This is to allow for any relaxation of the seals and hardware. Re-torque the Smith+Clamp force screw and draw bolts prior to starting to weld the Weld+Cap especially if a large amount of time has passed.

2. Remove the pipe plug from the PLIDCO Weld+Cap before welding. This eliminates pressure build-up inside the Weld+Cap while welding. (See Figure 1)

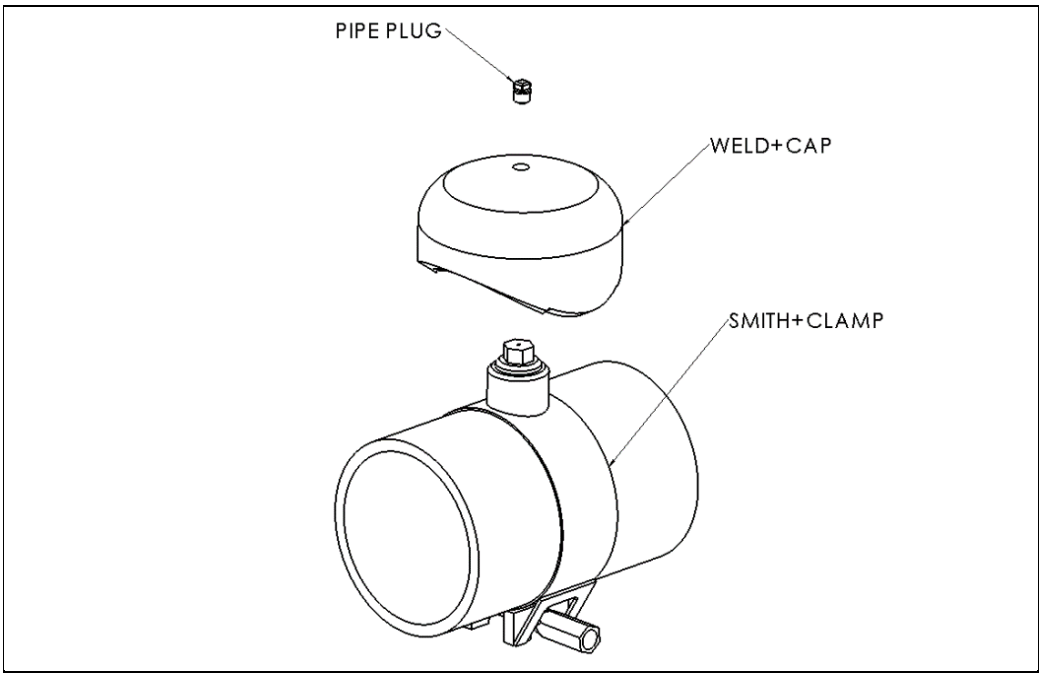

Figure 1

3. Align the Weld+Cap over the PLIDCO Smith+Clamp. The Weld+Cap is contoured to fit over the band and provide an equal weld gap (see Figure 2).

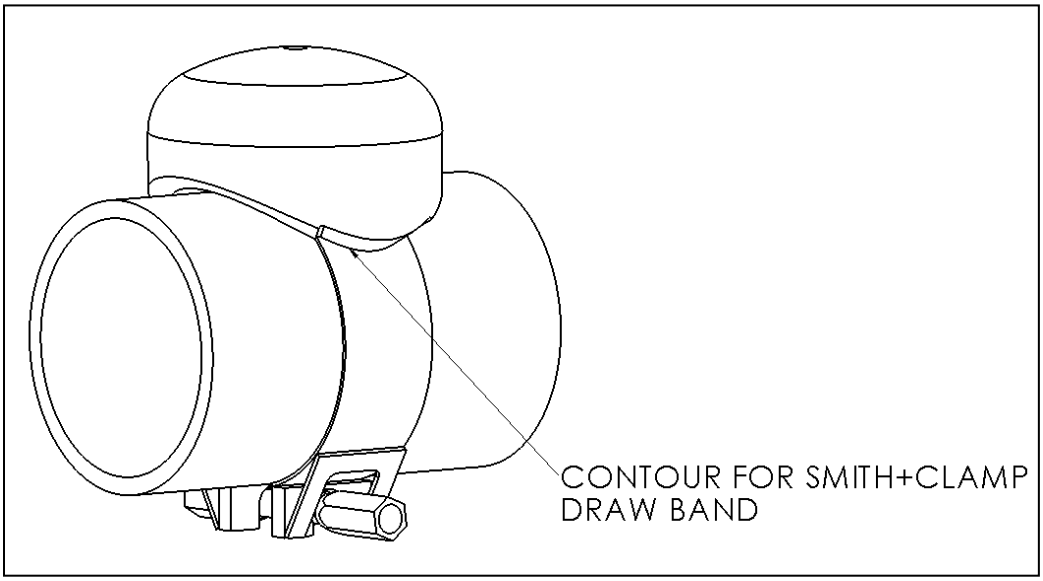

Figure 2

4. Mark or scribe the area where Weld+Cap will be welded to the pipe.
5. Remove all paint or pipe coatings in and around the location where the Weld+Cap will be welded to the pipe.
6. Tac-weld the Weld+Cap to the pipe line with a 1/16”-1/8” root gap as shown in figure 3.

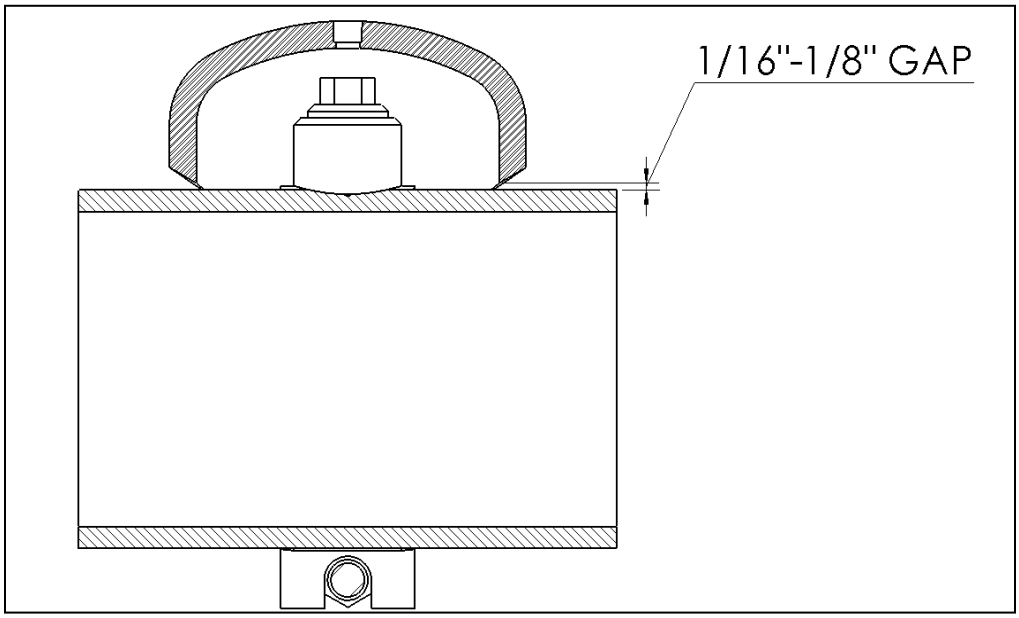

Figure 3

7. Weld the Weld+Cap to the draw band and the pipe by filling up approximately half the groove all the way around the Weld+Cap as shown in Figure 4.

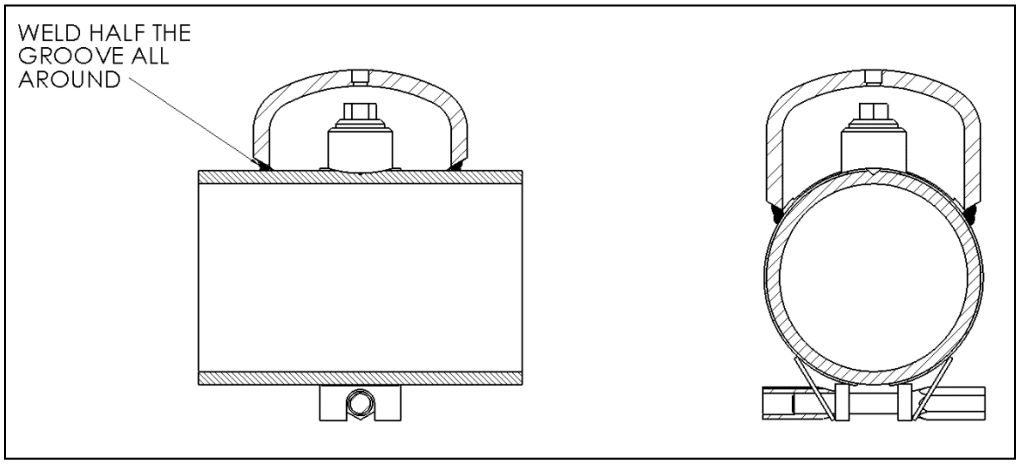

Figure 4

8. Notch and break the draw band near the weld using a chisel or cut off with a grinder as shown in Figure 5.

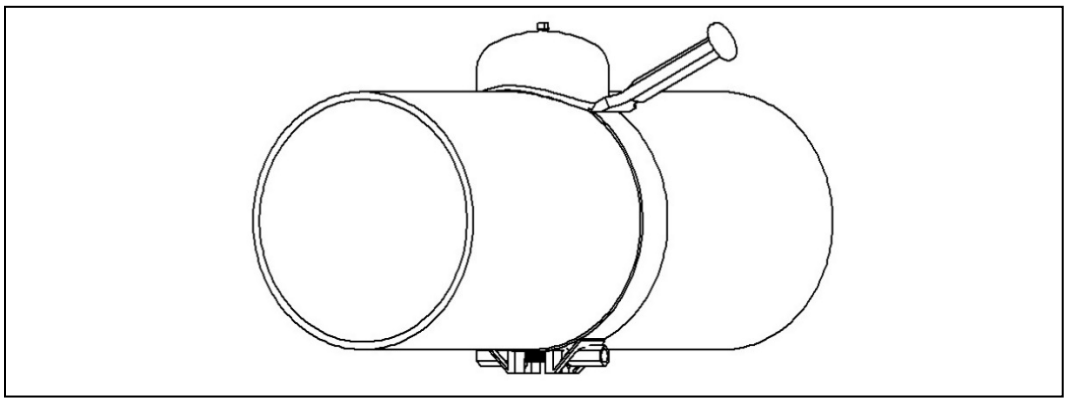

Figure 5

9. To complete, weld the draw band to the pipe at the break and continue the bevel weld all around the weld cap and add approximately ¼" (6.4mm) fillet weld reinforcement.

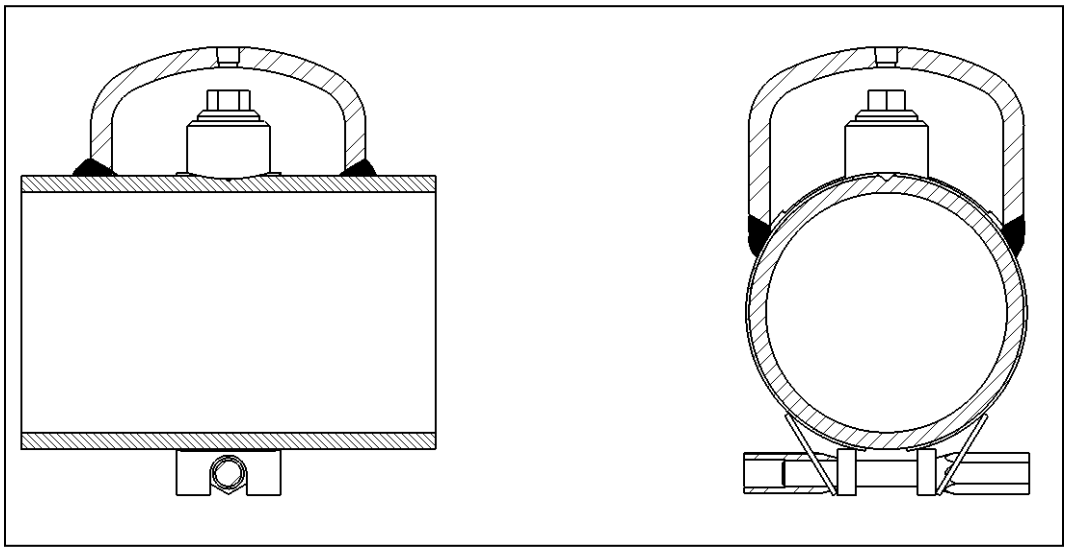

Figure 6

10. After welding completely, the PLIDCO Weld+Cap can be pressure tested through the vent hole to verify a leak free joint. See the section on Re-pressuring and Field Testing.
11. Insert the pipe plug in the vent hole and seal weld if required.

Re-pressuring and Field Testing

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.

Except for testing purposes, do not exceed the design pressure of the PLIDCO fitting. The PLIDCO fitting is designed to be tested up to 1½ times its design pressure. However, PLIDCO recommends following API Recommended Practice 2201, Procedures for Welding or Hot Tapping on Equipment in Service, Section 6.5. The test pressure should be at least equal to operating pressure of the line or vessel, but not to exceed internal pressure by 10%. This is meant to avoid possible internal collapse of the pipe or vessel wall. However, if prevailing conditions could cause collapse of the pipe or pressure walls, the test pressure may be reduced. (See API Standard 510 Section 5.8 for pressure testing precautions.) Personnel should not be allowed near the repair until the seal has been proven.

Field Welding Considerations

!! **WARNING**!!

Failure to follow field welding instructions could result in explosion, fire, death, personal injury, property damage and/or harm to the environment.

All of the aspects for in-service welding of PLIDCO Weld+Caps are not addressed by this document. ASME PCC-2, API 1104 Appendix B, ASME Section IX, PRCI L52047, PRCI Hot Tap® Model, and other industry information pertaining to in-service welding must be considered when planning in-service welding. Refer to IP-019, Welding Considerations for addition information.

It is recommended that the pipeline should be full and under flow.

Welders and weld procedures should be qualified in accordance with API Standard 1104, *Welding of Pipelines and Related Facilities*, Appendix B, *In-Service Welding*. We strongly recommend the use of a low hydrogen welding process such as GMAW or SMAW using low hydrogen electrodes (E-XX18) because of their high resistance to moisture pick-up and hydrogen cracking. SMAW electrodes must be absolutely dry.

Use weld material with equal or greater tensile strength than the pipe. Carefully control the size and shape of the circumferential fillet welds. Strive for a concave faced fillet weld, with streamlined blending into both members; avoid notches and undercuts. The smoother and more streamlined the weld, the greater the resistance to fatigue failure. The worst possible shape would be a heavy reinforced convex weld with an undercut. Improper weld shape can lead to rapid fatigue failure, which can cause leakage, rupture or an explosion with attendant serious consequences.

It is very important that the field welding procedure closely follow the essential variables of the qualified weld procedure so that the quality of the field weld is represented by the mechanical tests performed for the procedure qualification.

PLIDCO not recommend the use of thermal blankets for pre-heating. Thermal blankets can generate hot spots and reduce the ability of the PLIDCO Weld+Cap to dissipate welding heat in the vicinity of the seal cone of the Smith+Clamp. We recommend a small torch, such as a cutting torch, being careful not to aim the flame directly into the gap between the PLIDCO Weld+Cap and the pipe towards the seal cone. The flame from a preheat torch is helpful in burning off oils and other contaminates. Do not use a large torch, commonly called a rosebud, because of the difficulty controlling the size of the area being preheated.

Monitor the heat generated by welding or preheating, by using temperature crayons or probe thermometers. If the heat generated approaches the temperature limit of the seal cone material of the Smith+Clamp, which is indicated on the label, welding should be paused or sequenced to another part of the fitting so that the affected area has a chance to cool.

Recommended Inspection Schedule

1. After the pipeline is re-pressurized and field tested (see *Re-pressuring and Field Testing* for precautions), PLIDCO recommends performing a Magnetic particle Inspection for all bevel and fillets weld approximately 24 hours after welding.
2. 6 months after installation it is recommended that a visual inspection occurs that checks for visible signs of leakage, and general wear or corrosion.
3. After the 6-month inspection occurs, a yearly visual inspection is recommended that checks for visible signs of leakage, and general wear or corrosion.

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