

PLIDCO®

THE PIPE LINE DEVELOPMENT COMPANY

Westlake, Ohio U.S.A. • +1 440-871-5700 • www.plidco.com



PIPELINE REPAIR & MAINTENANCE PRODUCTS

EXPERIENCE

- We stand behind our quality products with over 65 years of experience.
- Our products have been used successfully by companies worldwide.
- Available to supervise the installation of our products.
- Can analyze customer needs and design custom fittings with our in-house engineering department.
- Unparalleled experience in the industry.

PRODUCTS

- Fittings are versatile and easy to install by end user maintenance personnel.
- Fittings can be welded with the line in operation.
- Products carry serial numbers and are traceable to a Material Certificate.
- Fittings are available with a wide choice of seal materials that are compatible with the product in the line.
- Elastomer seals carry batch numbers and are traceable to a Material Test Report.
- Split products come with steel GirderRing that prevents displacement and damage to seals during installation.

QUALITY

- Split products are hydrostatically tested in accordance with API standards and connectors get a 100% dimensional check.
- Elastomer compounds, other types of seal materials and manufacturing processes are tightly controlled to provide high quality components.
- ISO 9001:2008 certified.

MANUFACTURING

- Fittings are designed using ASME Section VIII and meet the intent of API 6H/6X standards to include bolt induced bending stresses.
- Welders and weld procedures are qualified per ASME section IX.
- A large inventory is readily available for immediate shipment 24 hours a day; 7 days a week.
- Components are manufactured with state of the art multi axis machinery and robotic welding equipment to provide consistent products.
- ANSYS[®], MATHCAD[®], and Solidworks[®] design software are used for accuracy and to interface with machinery.
- Around the clock manufacturing is available to produce emergency fittings.



PLIDCO[®]

“WORKING TOGETHER TO MAKE
HAZARDOUS PIPING SAFER” SINCE 1949

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THE BEGINNING OF A GREAT THING!

The Pipe Line Development Company (PLIDCO®), is a United States, family owned business founded on October 1, 1949 by Joseph B. and Berneice K. Smith. Their innovative idea was to make quality fittings that would avoid or minimize costly shut-downs, saving the customer time and money. PLIDCO® fittings have been used for on-shore and off-shore repairs and in hazardous non-weld areas. Applications include oil, gas, water, steam, slurry and other piping lines.

THE FACTORY

PLIDCO® is the leading supplier of quality pipeline repair and maintenance fittings in the world and is proud to have a proven record spanning over 6 decades. The company headquarters in Westlake, Ohio houses a large manufacturing, warehouse and office facility. The factory is equipped with standard fabrication and machine tools plus special equipment required to manufacture high pressure fittings.

QUALITY

Since the first day The Pipe Line Development Company began in 1949, quality has played a leading role in the manufacturing process of its fittings. Each fitting is designed and manufactured following a strict quality control program as well as applicable industrial codes.

In August of 2001 PLIDCO® received its ISO 9001 certification for its quality administration system. The certification was achieved by undergoing a comprehensive audit of its manufacturing process, operations and documentation systems. With this certification and state of mind, PLIDCO® requires continuous improvement in its quality management activities for better processes and products now and into the future.

HOW WE BENEFIT THE INDUSTRY

Pipelines need to be maintained and eventually repaired to prevent or stop leaks caused by corrosion, cracks, holes, third party damage and other factors. PLIDCO® can solve those maintenance and repair needs by supplying high quality fittings that can be safely installed by end user maintenance personnel. Bolt on fittings can be installed and welded, if required, while the line is in use; preventing downtime and saving millions of dollars. When downtime is unavoidable, PLIDCO® couplings allow replacement of damaged sections in a safe, easy and timely manner. PLIDCO® engineering staff has the knowledge to design custom products to meet specific customer requirements. When there is a pipeline maintenance or repair need, PLIDCO® has a safe, high quality solution.





PLIDCO® SPLIT+SLEEVE

PLIDCO® Split+Sleeves are repair fittings that can be used to permanently seal leaks caused by corrosion or third party damage on-shore and off-shore. These fittings are easy and safe to install and can be welded while the line is in service.

Standard working pressure is 1,000 psig with higher working pressures available. The PLIDCO® Split+Sleeve is hydrotested to 1.5 times its working pressure and is designed using ASME Section VIII and meet the intent of API 6H/6X. Standard stock includes API pipe sizes 1½” to 48”. Higher working pressure, longer lengths and other sizes are available upon request.

Benefits:

- Can be used for temporary or permanent repair.
- Can be seal welded for a permanent repair while the line is in service.
- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- Design includes bolt induced bending stresses.
- Body and seal gland design has over 65 years of proven success.
- Wide range of seal materials in stock.
- PLIDCO® Split+Sleeves used for temporary repair can be reconditioned and used again.
- Operator Qualification training is available.



PLIDCO® OVALITY+GAUGE

The PLIDCO® Ovality+Gauge accurately measures the outside surface of a pipe, particularly during conditions of limited visibility. A circular cross section, free of any indentations or flat spots that would adversely affect the sealing properties of a PLIDCO® fitting, can be confirmed using the PLIDCO® Ovality+Gauge. Although PLIDCO® split fittings are capable of reshaping pipe that is 5% out of round or oval, it is necessary to know the exact configuration for orientation of the split line during installation. This measurement is accomplished by taking six diametric readings around the pipe, revealing flat spots and dents.

Benefits:

- Full encirclement, hinged device with adjustable gauging screws.
- Measures exact configuration of pipe on six planes.
- Each PLIDCO® Ovality+Gauge can measure multiple pipe diameters: 8” to 18”; 20” to 30”, 32” to 40”, 42” to 48”.
- Easy to use





PLIDCO® SPLIT+REPAIR ELL / TEE / CROSS

PLIDCO® Split+Repair Ells, Tees and Crosses function the same way as the PLIDCO® Split+Sleeve. These fittings are available for long radius, short radius, screwed and socket welded applications. PLIDCO® Split+Repair products can be manufactured for any angle, pipe size, and working pressure upon request.

Benefits:

- Fast and easy to install.
- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- Appropriate seal material will be recommended based upon line product information.
- PLIDCO® Split+Repair products are available in pressures of 1,000 psig and higher.
- Integrated clamp ends are available to counteract hydrostatic forces.
- PLIDCO® Split+Repair products can be seal welded for a permanent repair while the line is in service.
- PLIDCO® Split+Repair products used for temporary repairs can be reconditioned and used again.



Tee



Ell



Cross



PLIDCO® SMITH+CLAMP™

The PLIDCO® Smith+Clamp™ is used to locate and seal pit-hole leaks in high pressure pipelines. Simply place the Smith+Clamp™ on the pipe, insert the draw-bolt at the bottom of the clamp to hold it in place and use the pilot pin to find and guide the sealing cone into the pit-hole. Tighten the draw bolt and the force screw to complete the seal. For permanent repairs of sizes 4 inch and larger add a PLIDCO® Weld+Cap as listed below.

Benefits:

- Lightweight and cost effective.
- Can find leaks in pipelines that may not be visible.
- Force screw requires minimum force to seal leak.
- The cones' direct pressure on the leak reduces the danger of caving in badly corroded pipe.
- Safe and easy installation.
- Operator Qualification training is available.



PLIDCO® WELD+CAP

PLIDCO® Weld+Caps used with PLIDCO® Smith+Clamps™ make a fast, safe and permanent welded repair while the pipeline is in operation. PLIDCO® Weld+Caps meet D.O.T. requirements and the latest ASME Section VIII specifications. This product is for PLIDCO® Smith+Clamp™ sizes 4 inch and larger.

Benefits:

- Safe, easy and fast permanent repair.
- Can be welded while pipeline is in flow.
- Meets D.O.T. requirements for permanent repair on sizes 4 inch and larger.



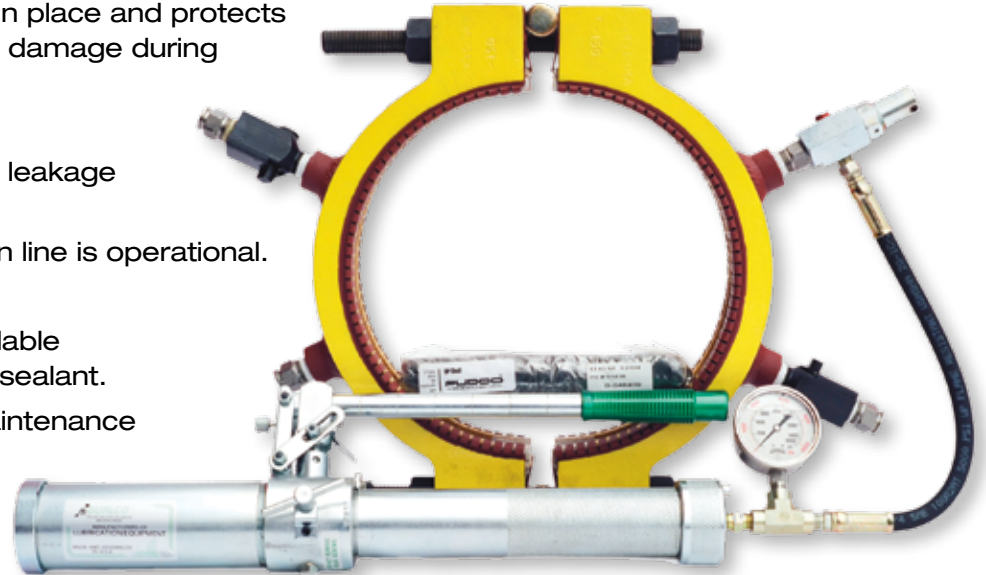


PLIDCO® FLANGE+REPAIR RING

The PLIDCO® Flange+Repair Ring fits over the leaking flange to create a seal around the circumference. The ring comes with button-head fittings, which allows sealant to be pumped in for a complete seal around studs and nuts.

Benefits:

- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- No drilling required.
- Sealant is injected to prevent leakage at flange bolts.
- Installation can be done when line is operational.
- Safe and easy installation.
- Complete repair kits are available that include sealant gun and sealant.
- Can easily be installed by maintenance personnel.
- Can be reconditioned and used again.
- Operator Qualification training is available.

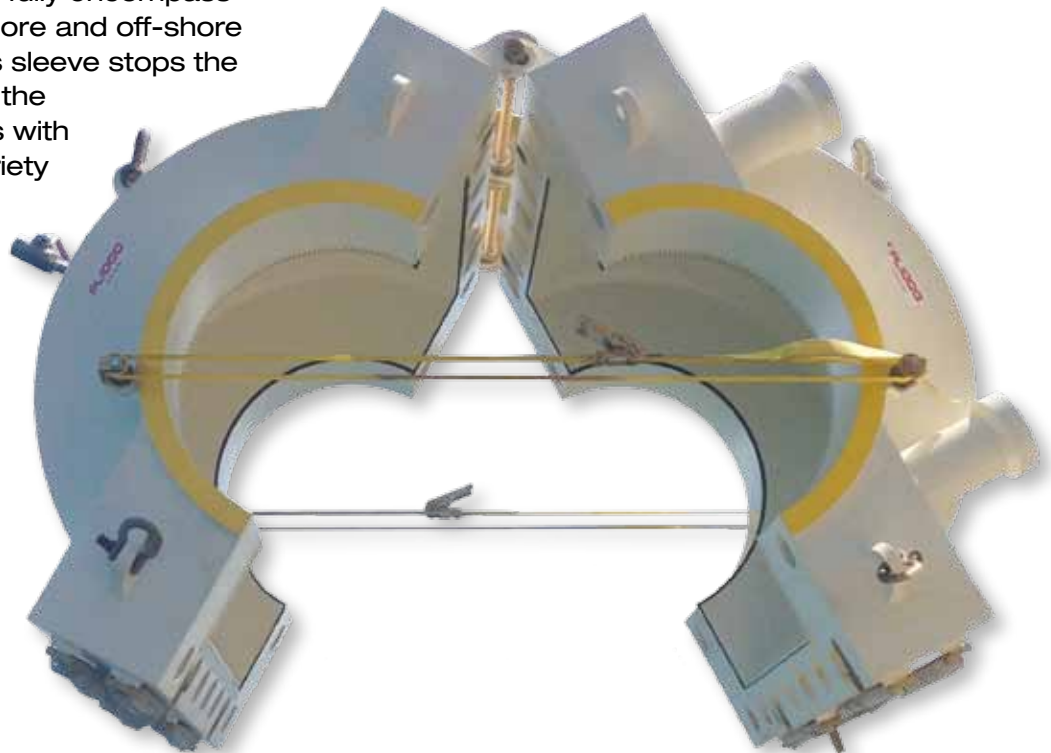


PLIDCO® FLANGE REPAIR SPLIT+SLEEVE

Used to seal and fully encompass flanges for on-shore and off-shore applications. This sleeve stops the leaking flanges by sealing on the pipe beyond the flange welds with the ability to cover a wide variety of flange types and classes.

Benefits:

- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- Covers a wide range of flange types and classes.
- A variety of seal materials are available.
- Used for on-shore and off-shore applications.
- Safe and easy installation.





PLIDCO® WELD+ENDS® COUPLINGS

PLIDCO® Weld+Ends® are safety welding couplings used to quickly join pipe so that flow can be resumed immediately keeping downtime to a minimum. These couplings are used for both on-shore and off-shore applications. No special preparation of pipe ends is needed to install PLIDCO® Weld+Ends®.

Benefits:

- Welding is optional.
- Join pipe with no need to purge.
- Can be welded onto pipe safely while line is in flow.
- Double row of clamping screws are available upon request for excessive end pull loads.
- Various types of seal materials available.
- Safe and easy installation.
- Operator Qualification training is available.
- PLIDCO® Clamp+Rings can be used with Welds+Ends® when excessive end pull is a factor.



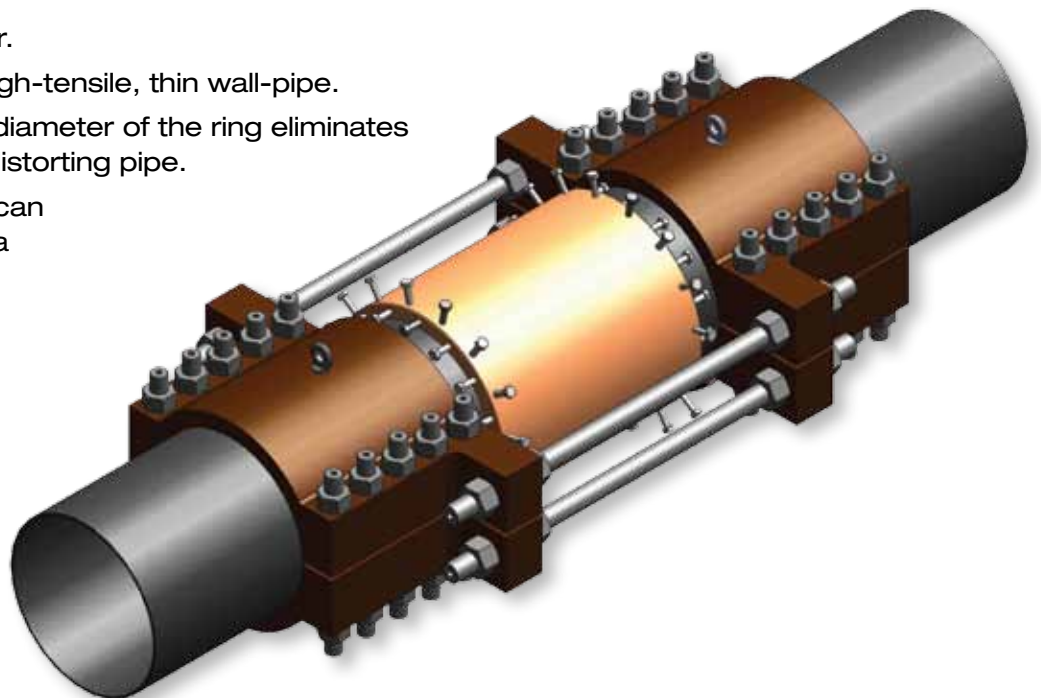
PLIDCO® CLAMP+RINGS

PLIDCO® Clamp+Rings are used with PLIDCO® Weld+Ends®, Split+Sleeves, or other fittings where excessive end-pull or compression loadings are encountered. They may be used permanently, or temporarily, and are reusable.

The PLIDCO® Clamp+Rings are constructed to achieve tremendous gripping power. Carefully designed, the PLIDCO® Clamp+Rings eliminate the danger of caving in or distorting pipelines.

Benefits:

- Extreme gripping power.
- Especially useful with high-tensile, thin wall-pipe.
- Precision-bored inside diameter of the ring eliminates danger of caving in or distorting pipe.
- PLIDCO® Clamp+Rings can be repeatedly used as a maintenance tool.





PLIDCO® POWER+GRIP CONNECTOR

The PLIDCO® Power+Grip is designed for safe, easy and reliable replacement of underwater risers, connection of off-shore systems, pipeline spool piece repair, pipeline reroutes and abandonments, structural repairs and valve or tee installation. The integrated grips are designed for powerful structural attachment to the pipe. The diver friendly PLIDCO® Power+Grip is designed in compliance with ASME Section VIII Div. 1 and NACE options are available upon request.

Benefits:

- No welding.
- Minimal pipe end preparation for installation.
- Double row of packing and test port to prove seal integrity without pressurizing the pipe.
- Fully mechanical and accepts external loading.
- Offers a generous end gap adjustment of 1/2 the pipe diameter.
- Accepts oversized and undersized pipe tolerance.
- Seal and grip actuations work independently.
- Power+Grip can be removed, reconditioned by PLIDCO®, returned to the customer and re-used.



PLIDCO® RISER WELD+ENDS®

The PLIDCO® Riser Weld+Ends® are an easy way to replace underwater risers on off-shore gas and oil lines without the need to weld.

This fitting consists of additional clamp and thrust screws to provide a secure seal for high pressure and to resist extreme end-pull.

The PLIDCO® Riser Weld+Ends® are socket welded at the surface to the new replacement riser then lowered into the water. The diver then cuts the old riser, places the new fitting over the cut pipe and tightens the screws to complete the installation creating a leakproof seal.

Benefits:

- Safe and easy to install.
- No underwater welding needed.
- Quick and easy way to replace a section of pipe.
- Keeps downtime to a minimum.





PLIDCO® TAP+ENCLOSURE

The PLIDCO® Tap+Enclosure is available in three styles: Domed Split Bolt-on, Domed Weld-On, Domed Split Weld-On. These fittings are designed to cover illegal tapping equipment.

The Split Bolt-On is designed to ASME Section VIII and meets the intent of API 6H/6X; The Domed Weld-On and the Split Weld-On are designed to ASME Section VIII.

Benefits:

- When welded the repair is permanent.
- Quick installation.
- Safe repair.
- Custom designed based on temperature, pressure and size required.



Domed Split Bolt-On

Domed Weld-On

Domed Split Weld-On



PLIDCO® HOT TAPPING+SADDLE

PLIDCO® Hot Tapping+Saddle allows you to tap into a pressurized line without welding, to make branch connections or for plugging operations. Special designs are available and can be custom built for your specific needs and specifications.

Available with full size branches, in any range of sizes and pressures with threaded, welded or flanged outlets.

Benefits:

- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- All sizes and pressures are available with full size branches.
- Available in threaded, welded or flanged outlets.
- Can be used in hazardous areas where welding is not permitted.
- Custom designed to your specifications.
- A large selection of seal material is available to accommodate a wide variety of pipeline products and temperatures.
- Clamp+Rings or integrated clamp ends are available to eliminate movement or rotation during plugging operations.
- Safe and easy installation.



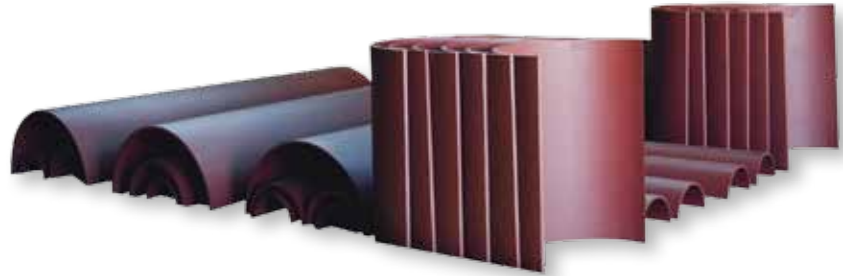


PLIDCO® SOLE+MATES™

PLIDCO® Sole+Mates™ are designed to reinforce non-leaking, weakened, dented or damaged pipelines. PLIDCO® Sole+Mates™ conform to ASME B31.4 and B31.8 and the U.S. Department of Transportation requirements. Longitudinal butt-welding is required for all applications and back-up strips are furnished. For pressure containing applications, the sleeve must be fully seal-welded to the pipeline.

Benefits:

- Safe repair method.
- Supplied for any specified pressure wall thickness and class location.
- Supplied in various lengths and materials as specified.



PLIDCO® SHEAR+PLUG™

The PLIDCO® Shear+Plug™ offers a safe and reliable method to provide 100% isolation of high pressure, high temperature or otherwise hazardous piping at an excellent value (when compared to a shut-down). The PLIDCO® Shear+Plug™ solves high pressure/high temperature line plugging problems by providing metal-to-metal contact and a channel into which sealant can be injected. The PLIDCO® Shear+Plug™ is offered in sizes up to 18 inches and standard units are available for ASME B.16.5 pressure rating.

A double action hydraulic cylinder accomplishes the shear through, positions the sealing blind plate and also retracts it. No shell cutter is used to enter the pipe. The complete one piece coupon is pushed into the receptacle housing for easy, complete retrieval.

Benefits:

- One of a kind PLIDCO® innovation to isolate high pressure pipelines.
- Resists high temperature and high pressure.
- No shell cutter is used to enter pipe.
- Cuts one piece retrievable coupon.
- The PLIDCO® Shear+Plug™ is impervious to flow rate, making it ideal for boiler feed applications.





PLIDCO® FLANGE

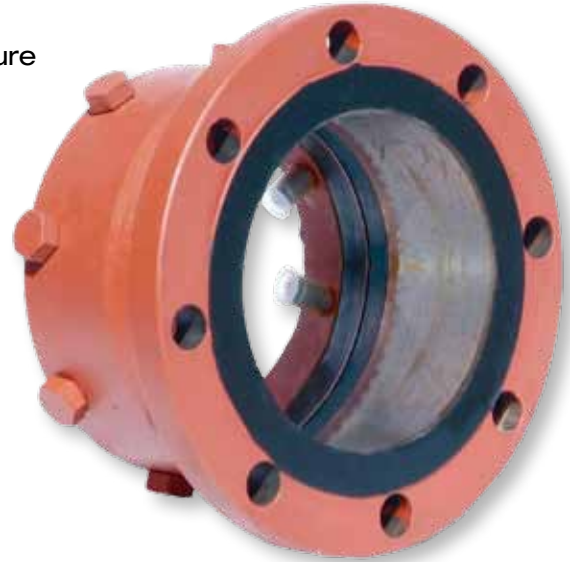
Useful for hundreds of applications, particularly for making tie-in connections for prefabricated expansion and rework projects, PLIDCO® Flanges are easy and safe to install even in hard to reach places such as high overhead piping, conduits and tunnels, tight manifolds or in hazardous locations.

PLIDCO® Flanges are available in all pipe sizes and pressure ratings.

No special pipe preparation is needed. Cut the pipe, slide the PLIDCO® Flange on and tighten the bolts to the specified torque for a complete installation.

Benefits:

- Mechanical fitting, useful in non-weld areas.
- Easy flange bolt alignment.
- Can be used with a blind flange for capping pipe ends and flushing during abandonment.
- Welding is optional.
- Large variety of seal materials available.
- Safe and easy.
- PLIDCO® Flanges can be reconditioned and used again.



PLIDCO® CLAMP+SLEEVE

PLIDCO® Clamp+Sleeves can be used to couple pipe, seal pipe leaks and reinforce badly damaged pipe. PLIDCO® Clamp+Sleeves are designed to grip the outside wall of a pipe to counteract end-pull and unusual axial stresses often encountered in off-shore installations.

Benefits:

- Steel GirderRing holds seals in place and protects them from displacement and damage during installation.
- Can be designed for welding or non-welding applications.
- Metal spray to increase gripping power without gouging outside diameter of pipe.
- Safe and easy installation under pressure.
- Sleeve can be reconditioned and used again.



CUSTOM REPAIR FITTINGS

Developing and fabricating custom fittings for specific conditions is an important part of our business. We welcome the opportunity to devise a solution for any problem involving pipeline repair and maintenance.

Your assurance of a successful solution is our policy of a money-back guarantee. If the correct information is given, it is installed according to our instructions and it does not do the job, your money will be refunded.

SEAL MATERIAL

It is very important for seals to be compatible with the product flowing through the pipeline. PLIDCO® offers a wide variety of seal material to ensure that we are fully capable to aid your emergency pipeline needs quickly, safely and with minimal or no downtime.

If there is any doubt as to the proper seal material for your pipeline, please contact us for our recommendations.

SEALANTS

We offer a variety of sealants for various applications. Our program includes testing a variety of sealants in different applications so that we will be able to recommend the proper one for a specific use. Please contact us for further information.

PLIDCO® SPECIAL COATINGS AND OPTIONS

Coatings

Fittings: Coatings other than the standard primer are available. The most common options are marine epoxy or coal tar coating. Other coatings may be quoted on application.

Studs and Nuts: Special plating and coatings for studs and nuts are available to provide maximum corrosion resistance in harsh environments.

Most Common Options

Hinges: Hinges are recommended on large diameter, extra long and heavy sleeves for easier handling and faster installation.

Sling Closure: Nylon straps are used to pull two halves of heavy split fittings together in conjunction with hinges. Commonly used on subsea fittings for ease of installation and to decrease installation time. The slings act as a shock absorber and closure device which align the halves for easier insertion of the stud bolts.

Vents: Used to equalize or purge water out of the annulus area between the sleeve and pipe in underwater applications. Other uses include the ability to vent the product while installing a sleeve on a live pipeline, to be used for tapping in a branch connection and/or injecting sealant.

Sacrificial Anodes: To protect a fitting from corrosion, anodes may be attached to fittings. Anodes have an average life of twenty years.

Numerous other options are available including, but not limited to, clamping elements, double row seals or clamp screws, sealant cocks, button head fittings, special storage protection and more.

PLIDCO® RESEARCH & DEVELOPMENT, ENGINEERING, SALES AND SERVICE

We continually work to improve existing fittings and develop new products to better meet the needs of our customers. Our state-of-the-art R&D and engineering departments are staffed by skilled specialists backed by the latest equipment and technology, all to help solve customer issues and improve production.

Our experienced and knowledgeable sales staff is available to answer any pipeline repair or maintenance questions you may have. The sales departments computerized inventory system allows us to check product availability in seconds. We will let you know exactly what is in stock and when we will have it on your dock.

Due to the use of our products in many emergency situations, we offer Emergency Service 24-hours/7 days a week. Let a PLIDCO® certified technician do your next installation. Our personnel are highly trained and experienced in dealing with critical repairs, and we are committed to working together to make hazardous piping safer.

PLIDCO® TESTING

All equipment used for testing and inspection is regularly calibrated. Where applicable, all certified standards used in equipment calibration are traceable to the National Bureau of Standards.



In-process inspection and production testing are also an important part of our quality program and include radiographic testing, hydrostatic testing and stress analysis when required. Our goal is to insure the ultimate in product integrity.

We take pride in our testing ability and equipment. It assures that our customers receive a dependable, high quality product each time they place an order.

PRODUCT WARRANTY

1. Products manufactured by The Pipe Line Development Company, are warranted free from defects in material and workmanship for a period of one (1) year from date of shipment from factory. The warranty on components not manufactured by PLIDCO® shall not exceed the warranty of the component manufacturer.
2. This Warranty shall not apply to any product or component which has been repaired or altered by anyone other than PLIDCO®, or has become defective due to misuse, negligence or casualty, or has been operated or maintained contrary to PLIDCO®'s printed instructions.

Full product warranty available upon request and with purchase.

PLIDCO® TRAINING

Train maintenance personnel to install & re-pack PLIDCO® products



Flange+Repair Ring Training



Split+Sleeve Training



Smith+Clamp™ Training



Weld+Ends® Training

PLIDCO® Operator Qualification Training

PLIDCO® offers a fee-based OQ training program, which conforms with DOT requirements, to certify personnel to install PLIDCO® pipeline repair products. Each product training program takes approximately 3 hours and class size is limited to a maximum of 20 people. Certification is available for Split+Sleeve, Weld+Ends®, Smith+Clamp™, and the Flange+Repair Ring. Choose one or choose them all.

The ASME B31Q-2006 courses covers the following:

- Step-by-step explanation of the installation instructions.
- Live demonstration on installing a product on a pressurized test stand.
- Review of the DOT Learn Modules to prepare for the exam.
- Question and answer session.
- Detailed power point presentation.
- Hands-on training allowing participants to become comfortable in a controlled environment.
- Written exam and certificate.

PLIDCO® has over 65 years of experience in the pipeline repair and maintenance industry. Let us help train you to safely repair leaks with the highest quality repair fittings on the market. Together we can continue to make hazardous piping safer. Contact a PLIDCO® representative for information on pricing and to schedule an operator qualification training course.

PLIDCO® Re-Packing Class

Packing material, that is used to create the seal in PLIDCO® fittings must be replaced, depending upon how long it has been stored or after it has been used and removed from the line. It also may need to be replaced if the fitting was purchased with one type of packing but it has been determined that another would be better suited for the application. Maintenance personnel should be properly trained by PLIDCO® staff before changing the packing.

The course covers the following:

- Testing the packing to determine if it needs replaced.
- Relieving the GirderRing.
- Removing the packing.
- Inspecting grooves for corrosion, deburr sharp edges.

- Inspecting welds on GirderRings for cracking.
- The basics of determining the right packing per application.
- Inserting new packing and cutting to proper length.
- Bending the GirderRing back down to retain the packing.
- Inspecting the joints where circumferential and longitudinal packings meet.



Relieving the GirderRing



Installing the circumferential and longitudinal packing



The PLIDCO® Pipeline Museum



Joseph B. Smith wanted to preserve and exhibit the history of pipelines and the contributions they have made to civilizations all over the world. That is why he thought it valuable to create The PLIDCO® Pipeline Museum located in Westlake, Ohio.

Most think of pipelines carrying crude oil, slurry, gasoline, steam, chemicals and water. These modern pipelines are commonly made of some type of metal or plastic. Imagine bamboo pipe to transmit natural gas in China as early as 400 BC. Or aqueducts made of wood by the Romans in 312 BC. Without these ancient pipelines, PLIDCO® would not be manufacturing pipeline repair and maintenance fittings today.

The PLIDCO® Pipeline Museum has pipe on display from ancient Rome as well as a section of the 48" Alyeska Pipeline. There are antique pipe tongs, pipeline artifacts, repair fittings from various companies, pictures, articles and other memorabilia including a large collection of logos and road crossing markers from around the world. The Smith family is happy to accept materials to continue the growth of Joe's museum vision. Tours are available by appointment. Please come visit and browse next time you are in Westlake, Ohio.

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