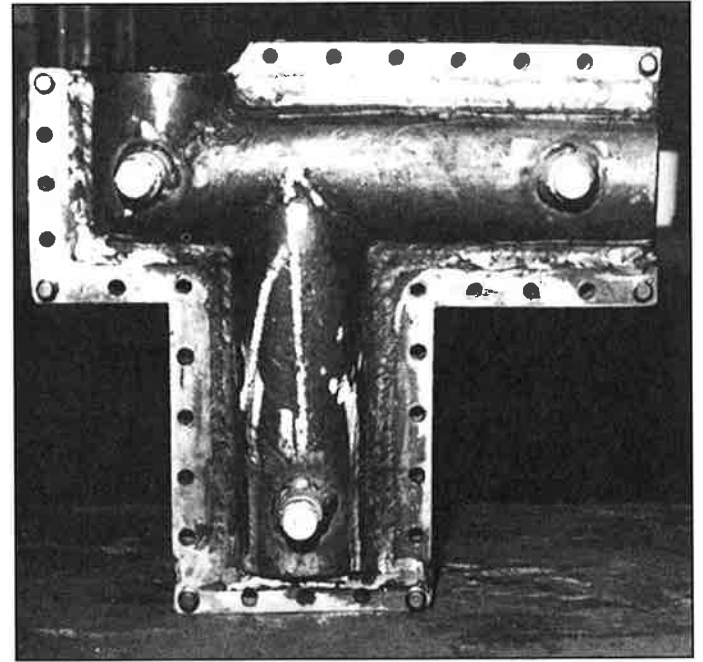
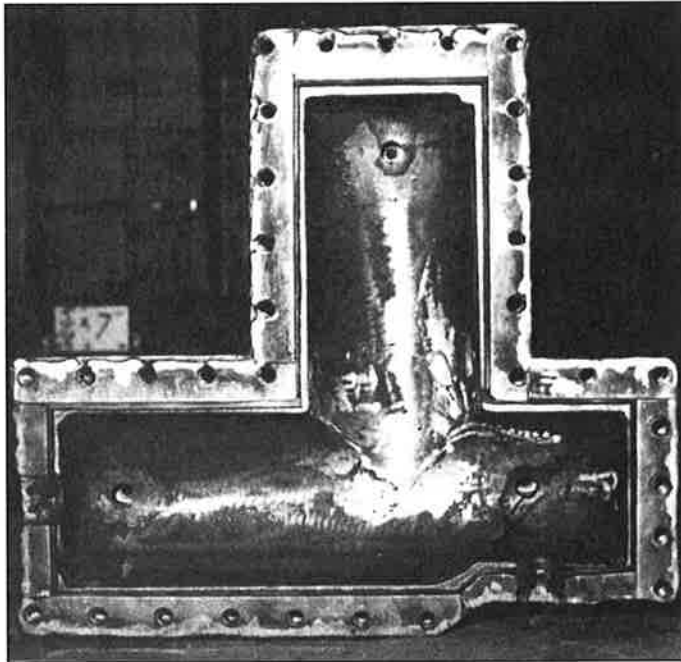
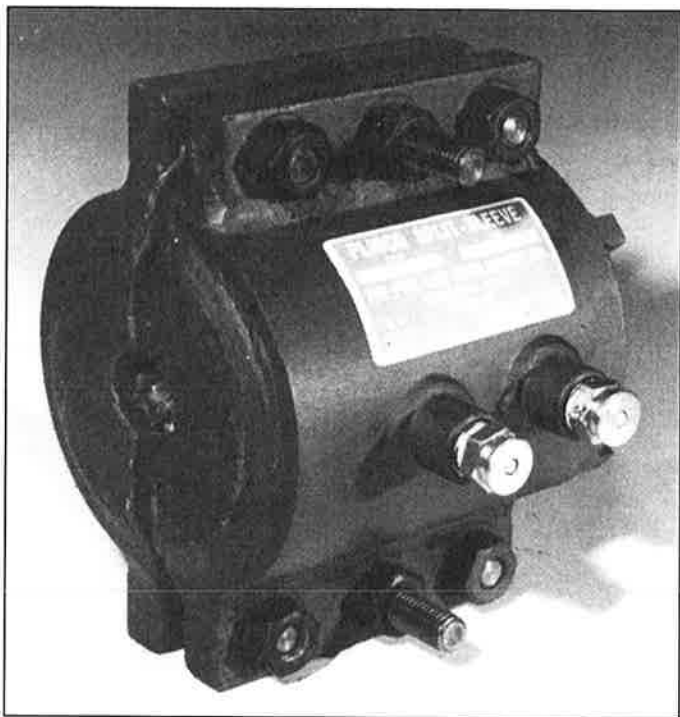


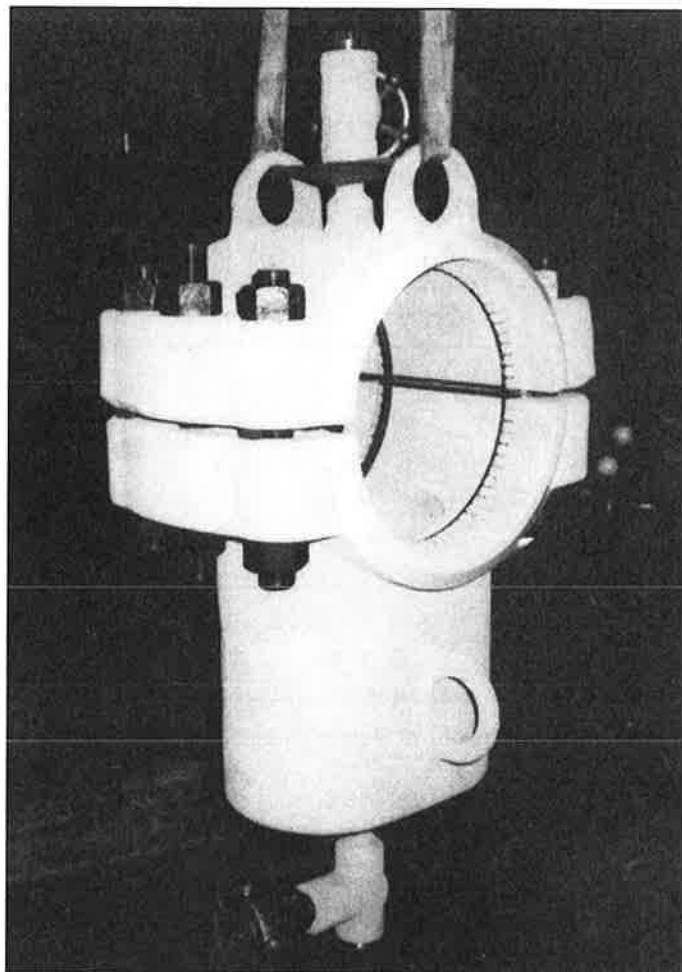
Plidco Special Split-Oversleeve to seal off a leaking 1-1/2" "Y" valve, operating at 450° F., 450 psi working pressure.



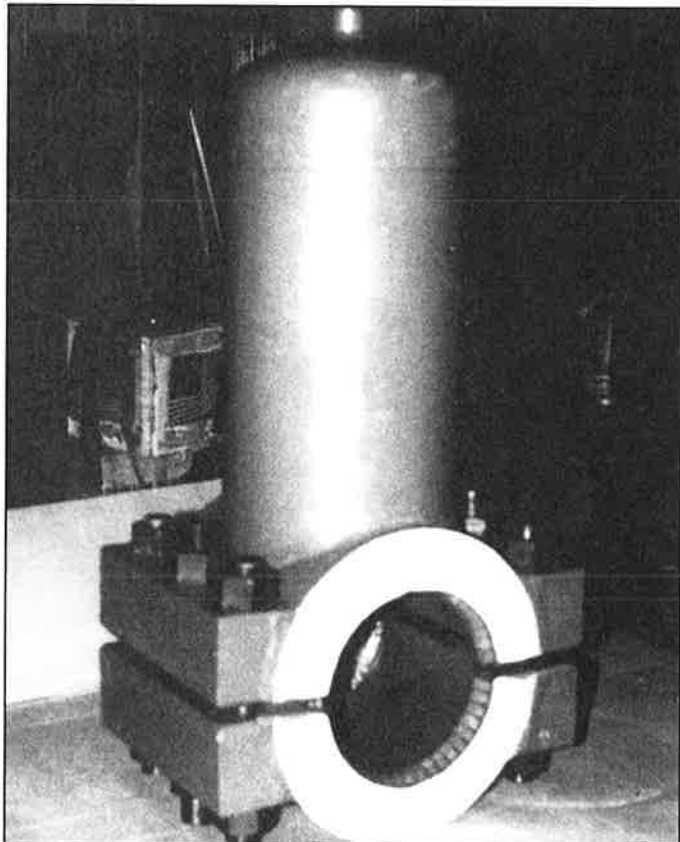
Plidco Special Split-Oversleeve to seal off a leaking 1/2" union, a 90° ell and a gate valve, operating at 450° F., 450 psi working pressure.



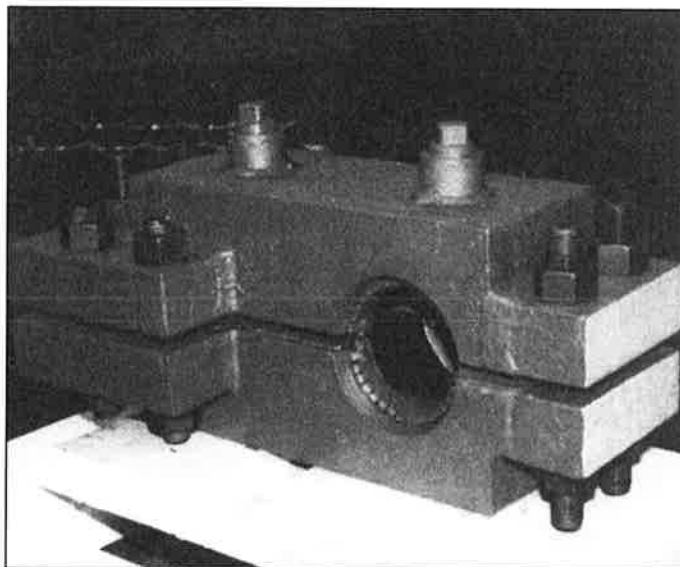
Plidco Special Oversleeve, 3/4" 300# Combination Flange+Repair Ring and Split+Sleeve.



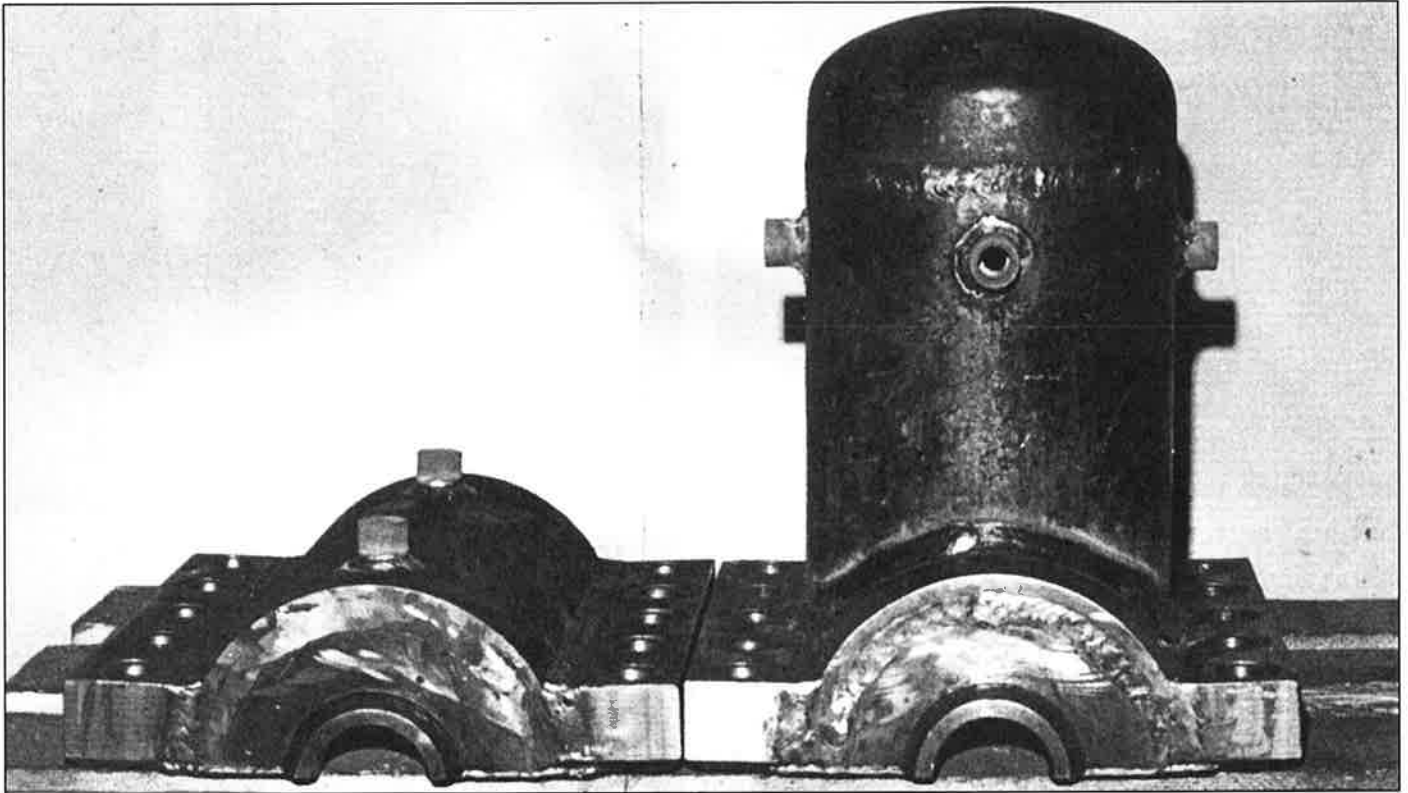
12" Special Oversleeve to encompass a 1" branch with valve, designed for 1440 psig working pressure.



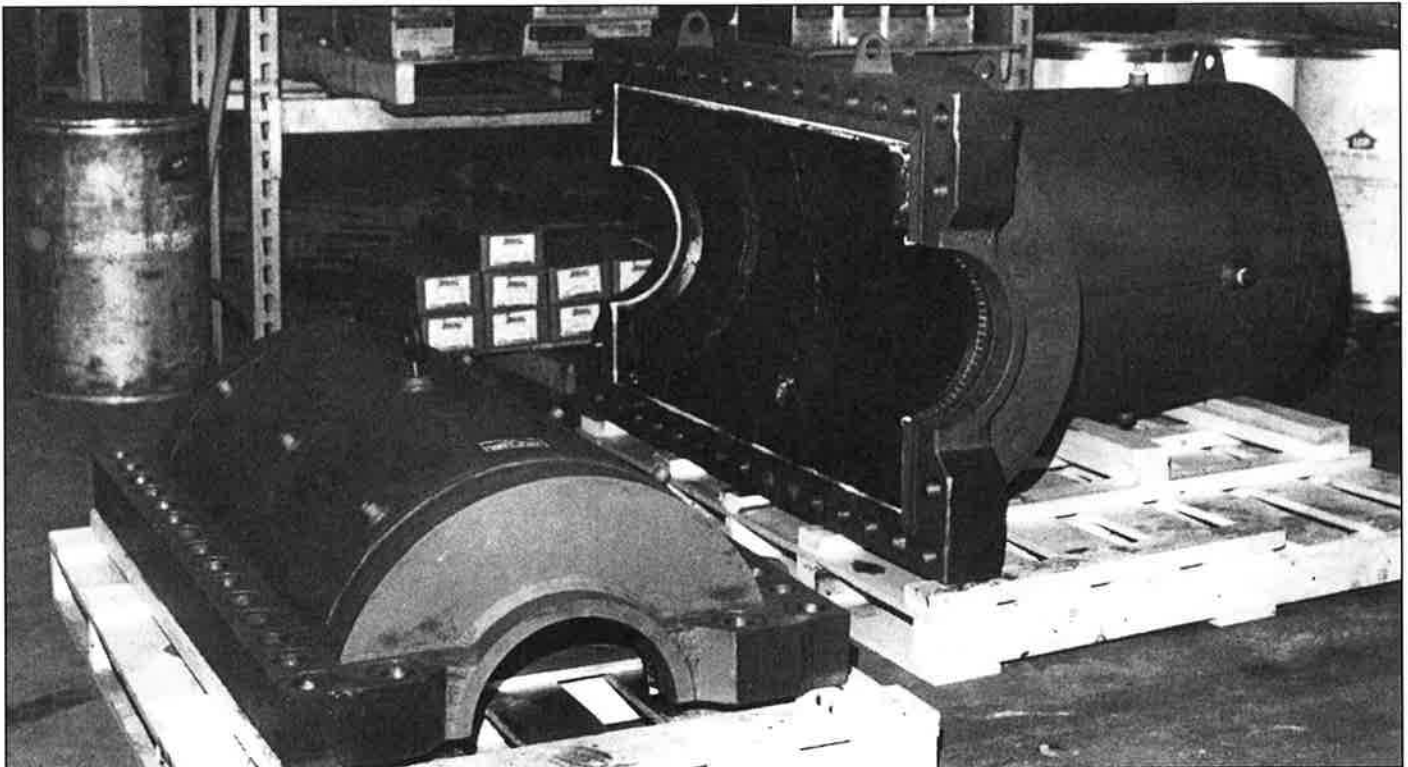
6" Special Plidco Valve Oversleeve with a 4" domed branch, designed for 1000 psig working pressure.



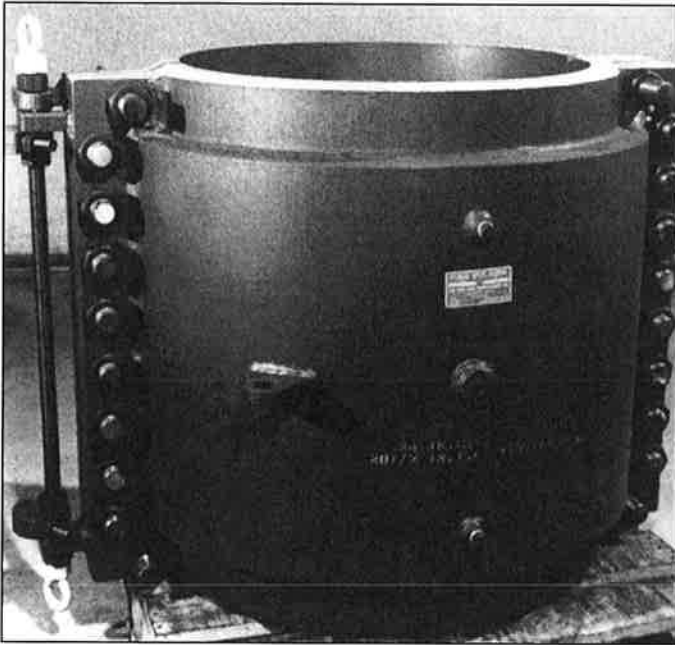
3" Special Plidco Valve Oversleeve designed for 720 psig working pressure.



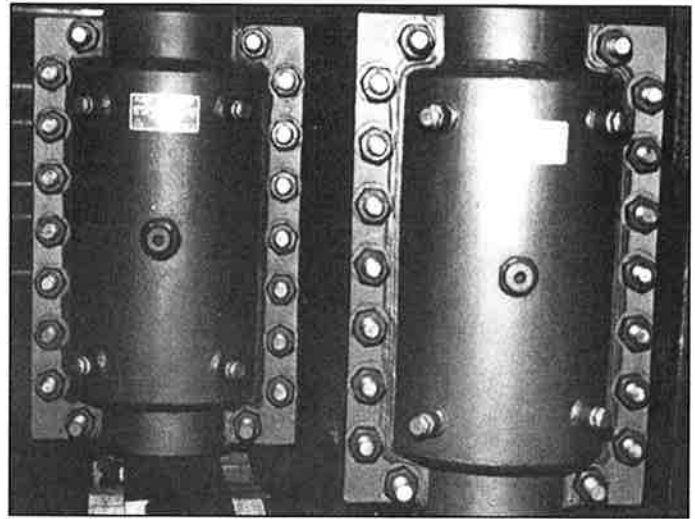
Plidco Special Oversleeve for a 2" 150# valve operating at 250 psig working pressure, steam service, it completely enclosed leaking valve.



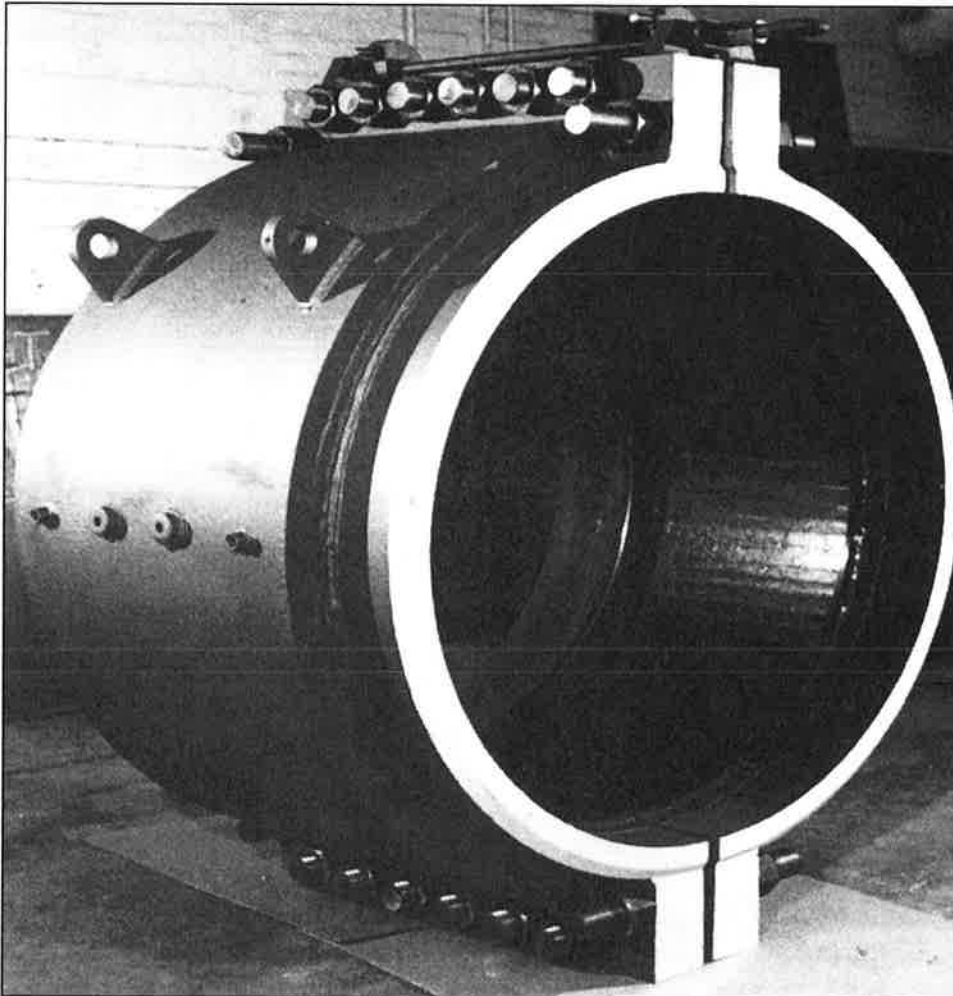
Plidco Special Oversleeve to enclose a 12" 600# gate valve operating at 650 psi working pressure, 750° F. superheated steam. The company seal welded the entire fitting.



24" Plidco Oversleeve, 29-1/2" inside diameter.  
Equipped with hinges for easier installation.

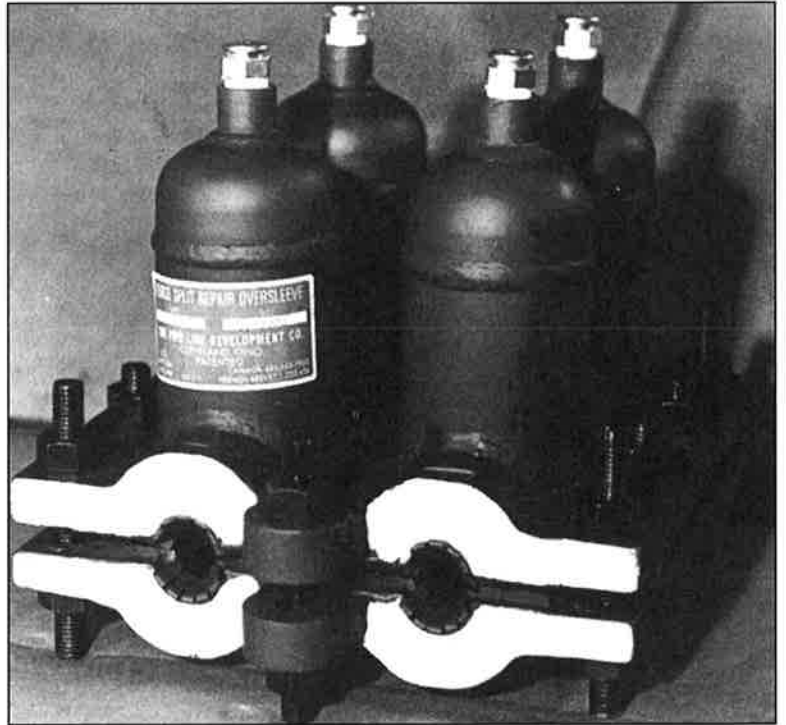


6" X 24" long Special Plidco Split-Oversleeve with  
buttonhead fittings.

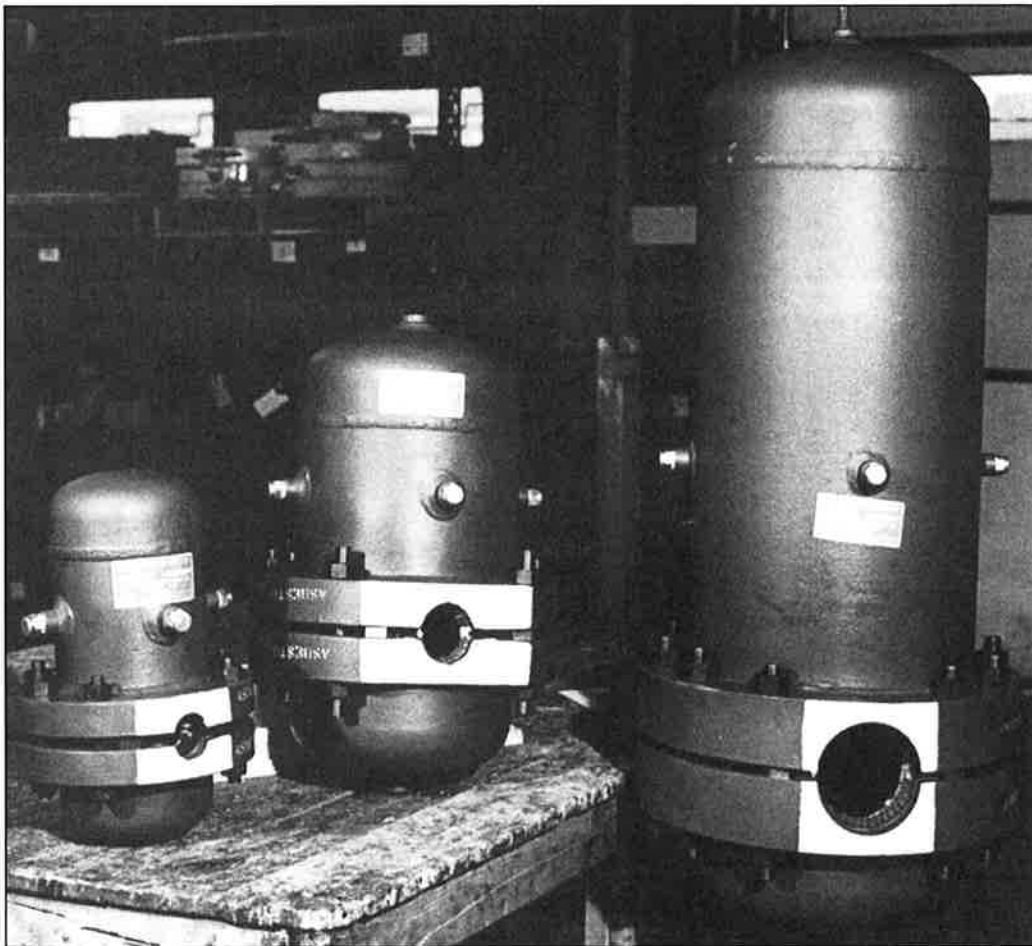


48" Plidco Oversleeve, 54-1/2" inside diameter, with hinges.



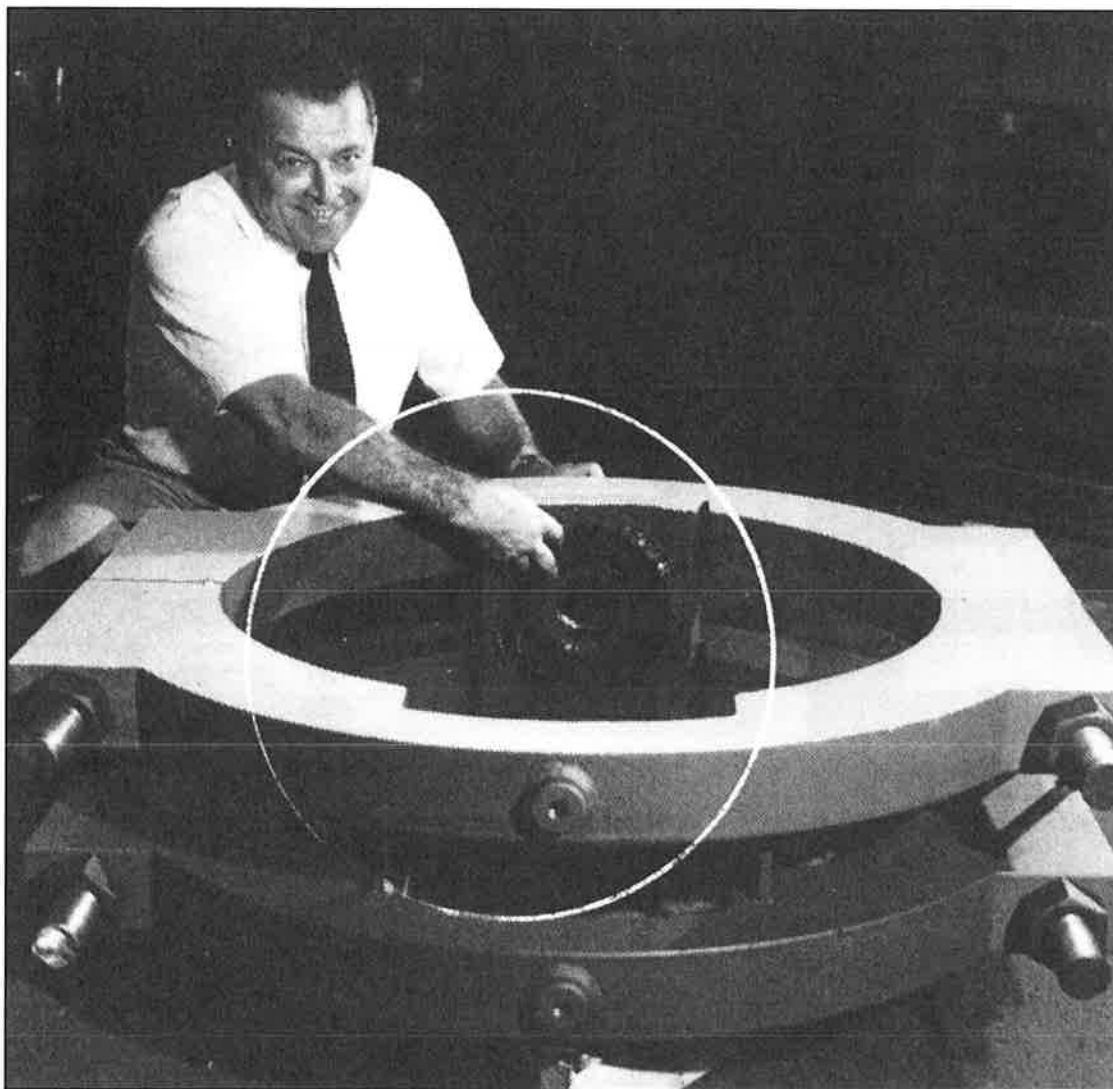


Special Plidco Valve Oversleeve to encapsulate a 3/4" valve and a bank of four 3/4" valves, operating at 293°C. (559°F)



Special Plidco Valve Oversleeve to encapsulate 34mm, 60.5mm and 114.3mm valves, operating at 275 psig.

## SPECIAL PLIDCO® REPAIR CLAMP FOR LEAKING WELLHEAD

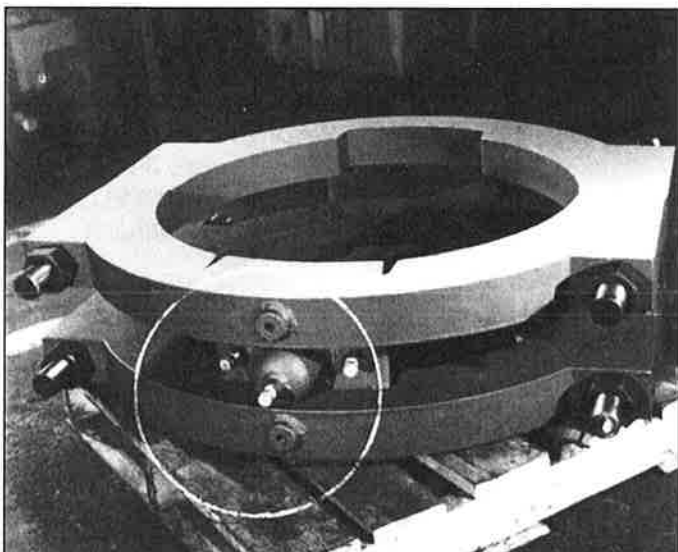


Designed to seal around leaking nipple on a wellhead located in an ethylene storage field.

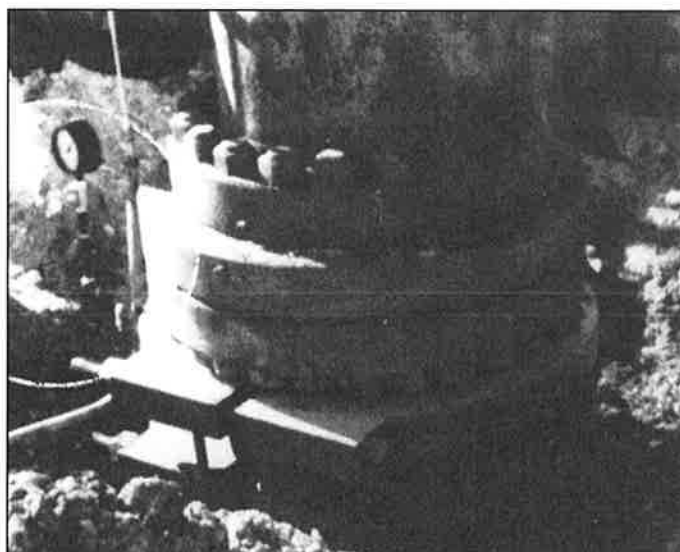
Designed for 1600 psig working pressure.

The special dome construction has a double row of packing. Sealant was injected between packing, allowing for monitoring of leak in the dome.

Pointing out the dome with a double row of packing to enclose the nipple.



Dome construction and buttonhead fittings for injecting sealant.



Completed installation showing gauge used to check the leak.



# PIPELINE & GAS JOURNAL

ENERGY CONSTRUCTION, TRANSPORTATION & DISTRIBUTION

## 3Rs REPORT

- *Petro Pipelines*
- *On-Line REpairs*
- *Timely AMR*



## Utility Retains Customer Goodwill By Repairing Gas Leak On-Stream

# Gas Leak Repairs Without Shutdown

---

**3Rs Report**  
by P&GJ Staff

---

A leak in a gas transmission pipeline is a problem at any time for a gas utility company.

When it is a bitterly cold winter day, with a forecast for dropping temperatures, shutting down a pipeline serving a large metropolitan area presents a major problem. Making the repairs without interrupting service to customers becomes a key concern.

**Leaking line.** Such an incident occurred in a suburb of Cleveland in February 1989.

The East Ohio Gas Co. was called by a customer reporting the odor of gas around the road intersection. The utility dispatched a construction crew to investigate.

Upon excavating the site, they found a leak on a 20-in. trans-

mission line where a 4-in. welded tee connection with a reinforcing pad had recently been installed. The 4-in. connection led to side gate and pressure reducing station. The line was operating at 450 psi.

East Ohio Gas had to decide how to make repairs without disrupting service. Based upon the weather forecast and load projections, it was decided that only a small window of opportunity existed for making repairs.

Line flow could be interrupted during the early morning hours, repairs made and flow returned in time for the anticipated morning service demands.

The time frame was tight and the potential risk of service disruption high if problems were encountered while cutting out the defective area. Accordingly, it was determined that the gas leak could be safely vented to the atmosphere while alternative solutions were considered.

The excavation was filled with a vent pipe in place and a 24-hr surveillance of the site was initiated.

**Repair options.** The gas utility company then considered the options available for repairing the leak.

They could shut down the line during the minimal demand



The protective coating was removed from the leaking 20-in. main, using non-ferrous hammers to reduce the danger of sparks, prior to installation of the special repair fitting.

The special repair fitting was fabricated by PLIDCO in just 3 days from completion of drawings to hydrostatic testing of the completed unit.



period, cut out the defective part and replace it. Or the connection could be encapsulated with a special fitting without shutting down the line.

These preliminary options were predicated upon the need to maintain gas flow to East Ohio Gas customers in the communities served by the pipeline.

The advantage offered by encapsulation included:

- No need to shut down the line completely.
- No need to cut out and replace the damaged pipe.
- Safety, reliability and expedience of the installation.

Utility supervisors decided to contact The Pipe Line Development Co., Cleveland, regarding the feasibility of fabricating a special fitting to repair the leak.

**Special fitting.** Representatives from PLIDCO met with East Ohio Gas personnel to explore possible solutions.

Precise measurements were taken at the site and further discussions led to a recommendation for repairing the line with a PLIDCO Split Repair + Tee fitting.

The special 20-in. by 20-in. by 4-in., 450-psig PLIDCO Split + Repair Tee was to be designed on a premium plant time basis, under the company's around-the-clock emergency service. The design requirements were:

*(Continued)*



Leaking gas was safely vented to the atmosphere via this pipe as East Ohio Gas officials pondered the repair options available.



Contractor crew tightens the bolts on the special PLIDCO repair fitting with a torque wrench to ensure proper sealing of the leaking 20-in. main.



The completed installation of the special repair fitting encapsulated the leaking section of 20-in. main without requiring the line to be taken out of service.

- The fitting has to be weldable after installation.
- The fitting had to encapsulate the reinforcing pad at the 4-in. to 20-in. intersection.
- The fitting needed clearance to allow for welding between the fitting and a valve located approximately 12 in. from the 20-in. main.

PLIDCO design engineers immediately began work on the drawings. With the completed drawings and a bill of materials, a tight production schedule was developed, with delivery promised in 3 to 5 days.

Fabrication began immediately. The material was formed, welded, stress-relieved in-house and machined. The finished fitting was then hydrostatically tested to 685 psi. The manufacturing process took just 3 days.

By working around the clock, the factory had the fitting ready for delivery and met their most expedient deadline.

Meanwhile, weather conditions deteriorated and it became mandatory to continue maintaining gas service to customers. Installation of the fitting had to be postponed for 2 days until Sunday, when the system load was projected to be low.

On that day, a contractor for the utility had the necessary manpower and equipment at the repair site. The East Ohio Gas response team also was present. The appropriate municipal officials were briefed and police officers were on hand to control traffic around the site.

The gas distribution system was designed for 450 psi but was reduced to 250 psi during repairs. Gas flow in the main was cut to about 9 MMcf/d from a normal 28 MMcf/d.

**Repairs.** Installation of the fitting took approximately 3.5 hr.

After carefully excavating the site, the coating on the 20-in.

main was removed, using non-ferrous hammers to reduce the danger of sparks, and the applicable areas were cleaned.

The cleaned areas where the seals of the fitting were to be placed were lubricated with oil to ensure a tight, leakproof seal for the repair sleeve.

The lower half of the fitting was set in place under the pipe and supported by a hydraulic jack. The top half was lowered into position and the halves bolted together by two studs with nuts on the tee side of the fitting and by five studs on the back side.

After the halves were secured, a torque wrench was used to tighten all studs and nuts to the recommended torque.

**Welding.** In order to make the repair permanent, the installation was welded.

First, the circumferential ends of the 20-in. sides of the fitting were fillet welded to the pipe. An alternating welding pattern was used to preclude any heat build-up that might damage the fitting's seal and to reduce stresses during welding.

Fillet welds were then made on the 4-in. branch. The fitting's side bars, studs and nuts were seal-welded.

After welding, soap tests were conducted. Magnetic particle inspection was performed to confirm weld integrity.

**Advantages.** This was the first time East Ohio Gas had used this type of PLIDCO fitting.

The gas company found several advantages. Among them were the safety, reliability and simplicity of installation, economy and the option of using the fitting as a mechanical repair or a welded repair.

A critical repair project like this has the potential to cause disruptions in service. Thanks to the teamwork and dedication of everyone involved, East Ohio service was maintained. **P&GJ**



SPECIFY THE PRODUCT WITH THE **PLUS**

# PLIDCO®

**THE PIPE LINE DEVELOPMENT COMPANY**

870 Canterbury Rd., Cleveland, OH 44145 U.S.A • Phone: 440-871-5700 • Fax: 440-871-9577 • [www.plidco.com](http://www.plidco.com) • E-mail: [pipeline@plidco.com](mailto:pipeline@plidco.com)

*All rights reserved. No part of this publication may be reproduced without express permission of the publisher.*