



## *Technical Bulletin*

### Working Together: Lokring™ & Welding

Lokring fittings are the most advanced fluid and gas transfer connectors on the market today. The connections use a patented, elastic strain pre-load (ESP®) technology to connect small diameter piping without threading, welding or brazing. Hence, the fittings are extremely effective solutions for jobs where hot work poses high safety risks for workers, as well as for jobs that require quick and easy installments. It is our hope that we can work with other areas of the industry to determine when and where Lokring fittings offer the safest, securest and most efficient procedure and connection for the job.

#### WHO are we and WHAT markets do we serve??

Since the first installations in early 1989, Lokring Technology Corporation has become a major supplier of high performance fluid fittings to the process chemical, marine, plastic lined pipe, railroad and automotive markets in North America, Europe and Asia. The fittings are designed for field fabrication, for rapid repair, for installation in tight access areas and for tie-ins of shop-fabricated piping. Our certifications and technical approvals include:

- |                                  |                                       |
|----------------------------------|---------------------------------------|
| ➤ ANSI/ASME B31.1, B31.3, B31.5  | ➤ API-607 Rev 4 Fire Test             |
| ➤ Lloyds Register #98-00070      | ➤ ASTM-F1387 NAVSEA                   |
| ➤ CRN #0A0481 927805T            | ➤ Association American Railroad (AAR) |
| ➤ Hartford Boiler CSA-B51-95     | ➤ U.S Coast Guard and ABS             |
| ➤ NFPA 30                        | ➤ American Bureau of Shipping         |
| ➤ California Air Resources Board | ➤ ANSI B16.34                         |

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Lokring Tech Bulletin When Why Where to use Lokring (11-07-07).doc

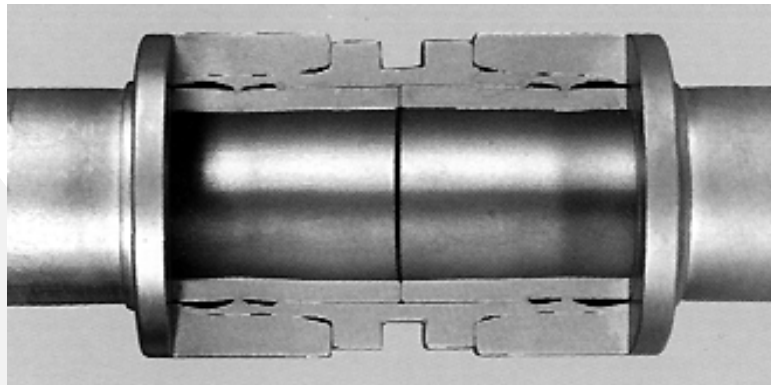


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#### **HOW do Lokring connections work?**

During installation, the axial movement of the driver over the fitting body swages the body onto the pipe surface, compressing the pipe wall first elastically and then plastically. The pipe wall resists this swaging action, generating high unit compressive loads at the contact points between narrow sealing lands inside the fitting body and pipe surface. These contact stresses are sufficiently high to plastically yield the pipe surface under the sealing lands, forming a 360-degree permanent seal between the pipe and fitting body. The driver, which experiences a small increase in diameter (elastic strain) during installation, exerts an elastic, radial pre-load on the metallic seals. This ESP® (Elastic Strain Pre-load) technology never permanently deforms the swage rings, leaving a constant "spring load" on the joint for the life of it. There is an inherent tendency for tensile, compressive and hoop forces/stresses to remain in state of equilibrium because of the elastic nature associated with the fittings.

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#### **WHEN and WHERE should Lokring fittings be used?**

- ☑ in confined spaces
- ☑ in all types of weather conditions
- ☑ underwater
- ☑ on small projects
- ☑ on jobs where flammable or explosive conditions may exist
- ☑ on jobs where plant downtime is costly and problematic
- ☑ on jobs that require working with medical gas systems
- ☑ for quick and easy repair/rework
- ☑ to free up ASME-certified welders for large bore pipe or pressure vessel welding





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#### **WHY should Lokring connections be used?**

##### SAFETY

- no hazardous materials are used, created or in need of displacement during and/or after the process
- safer transportation, storing, placing and treatment of gas cylinders
- reduced oil and grease hazards
- no chance of installers being burned by sparks, slag, spatter and arc rays
- no possibility of workers inhaling gas or fumes such as cadmium, manganese, lead, chromium, nickel, zinc oxide or ammonia
- no potential electric shock since fittings can be installed in a system that's not or cannot be thoroughly drained
- scaffold requirements are reduced and, in effect, scaffold related injuries

##### COST & EFFICIENCY

- less MSDS safety requirements are needed, thus reducing the cost of protective gear and the possibility of forgetting to implement a health standard which could lead to fines or lawsuits
- fittings have an extremely low rejection rate (> .01%)
- fittings have a minimal rework rate (> 1/10 of 1%)
- no rework of damaged or misaligned spools is necessary
- no need to monitor flanges
- fittings require a lower composite crew rate
- 50-60 fittings can be installed in a single shift
- overhead costs, such as permits, fire boxes, system soaking, etc. are eliminated
- equipment and supplies costs including blank flanges and nozzles, cranes, NDTs, electric cables, etc. are eliminated