




**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	1 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

**REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

**1. SCOPE**

This specification covers the following weldable leak repair devices for steel pipe:

- Threaded, tapered plug in diameters 3/8", 5/8", 13/16" and 1" that can be forced into a hole in the pipe to control a leak by turning with a wrench. The plug is then welded to the pipe. A weld cap is welded over the plug as a canopy (see Appendix A).
- Bolt-on clamp in sizes 1/2" to 24" that centers a plug over a small hole in the pipe. The plug is used to seal the hole using a force screw. The clamp is then welded to the pipe and covered with a weld-on canopy to complete the repair (see Appendix B).
- Bolt-on, full encirclement sleeves in sizes 1-1/2" to 24" that may be welded to the pipe (see Appendix C).
- All leak repair devices covered by this specification when installed as a single component may be installed without a pressure test.

**2. APPLICABLE DOCUMENTS**


- 2.1 American National Standards Institute (ANSI) B-16.11, "Specification for Forged Steel Fittings, Socket Welding and Threaded."
- 2.2 American Petroleum Institute (API) 1104.
- 2.3 ASTM International (ASTM) A-36, "Specification for Carbon Structural Steel."
- 2.4 ASTM International (ASTM) A-105, "Specification for Carbon Steel Forgings for Piping Applications."
- 2.5 ASTM International (ASTM) A-106M-10, (Oct. 2010), "Specification for Seamless Carbon Steel Pipe for High-Temperature Service."
- 2.6 ASTM International (ASTM) A-193, "Specification for Alloy Steel and Stainless Steel Bolting Materials for High-Temperature Services."
- 2.7 ASTM International (ASTM) A-194, "Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service."
- 2.8 ASTM International (ASTM) A-216, "Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service."



# **SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

## **MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	2 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

### **REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

## **2. APPLICABLE DOCUMENTS (Cont'd)**

- 2.9 ASTM International (ASTM) A-234, "Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures."
- 2.10 ASTM International (ASTM) A-350, "Standard Specification for Carbon Low-Alloy Steel Forgings Requiring Notch Toughness Testing for Pipeline Components."
- 2.11 United States Department of Transportation (DOT), Code of Federal Regulations (CFR), Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."

**NOTE:** Unless otherwise specified, the editions of the above documents incorporated by DOT 49 CFR 192 are applicable. Documents not incorporated by DOT 49 CFR 192 will be the most recent edition.

## **3. TERMINOLOGY**

### **3.1 General**


- 3.1.1 "Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.
- 3.1.2 The terms "approved," "as approved," "satisfactory," "as directed," "or equal" or other similar terms wherever used in this specification and other related documents will mean "as determined by Southwest Gas," unless specifically stated otherwise.
- 3.1.3 "Product Information Package" or "PIP" wherever used in this specification and other related documents will mean the required technical product information that a manufacturer must submit to Southwest to determine if the product is suitable for use by Southwest, unless specifically stated otherwise.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	3 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

**REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

**4. MATERIALS AND MANUFACTURING**

- 4.1 The bolt-on clamps covered by this specification will be constructed with bands made from ASTM A-36, C-1008, C-1009, C-1010 or other approved steel. The weld cap canopy will be made from ASTM A-105 or ASTM A-234 steel.
- 4.2 The bolt-on, full encirclement sleeves covered by this specification will be made from ASTM A-106, ASTM A-216, ASTM A-350 or other approved steel.
- 4.3 The bolt-on, full encirclement sleeves covered by this specification will have vent holes in a size specified on the purchase order. The vent will contain a plug manufactured in accordance with ANSI B-16.11.
- 4.4 The bolt-on, full encirclement sleeves covered by this specification will be at least 4 inches in length.
- 4.5 The bolt-on, full encirclement sleeves covered by this specification will be pressure tested to a pressure at least 1.5 times the pressure rating. Alternately, a prototype of the fitting must have been pressure tested to a pressure at least 1.5 times the pressure rating as approved by Southwest Gas.
- 4.6 The threaded, tapered plugs covered by this specification will be manufactured using steel manufactured in accordance with an approved specification.
- 4.7 The bolt-on, full encirclement sleeves covered by this specification will have bolts manufactured in accordance with ASTM A-193, Grade B7. Nuts will be manufactured in accordance with ASTM A-194, Grade 2H.
- 4.8 For components intended to be welded in the field, the maximum carbon equivalency (CE) value for weldable component material will be 0.43. Any fittings welded at the manufacturer's plant will have a CE of 0.46 or less. The International Institute of Welding (IIW) formula found in ASTM A-105 & A-106 will be used to determine the CE.

**5. PERFORMANCE REQUIREMENTS**


- 5.1 The bolt-on sleeves covered by this specification will not leak when installed on a leaking pipeline at pressures up to and including the rated operating pressure when installed using the instructions provided by the manufacturer.
- 5.2 All repair fittings covered by this specification will be weldable to steel pipe using Southwest Gas welding procedures in accordance with API 1104.
- 5.3 The bolts and nuts will be of sufficient strength to withstand the rated working pressure and all other anticipated stresses.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	4 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

**REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

**5. PERFORMANCE REQUIREMENTS (Cont'd)**

5.4 The threads on the threaded tapered plug will allow the plug to be installed in a hole in a pipe by turning with a wrench and hold the plug in place until welding is complete.

**6. DIMENSIONS AND TOLERANCES**

6.1 Dimensions are listed in the appropriate appendix.

6.2 Tolerances will be sufficient to allow the proper performance of the repair fitting.

**7. INSPECTION**

7.1 Successful review of the Product Information Package (PIP) as well as any future reference by SWG to the Seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found and will not relieve the Seller from meeting all the requirements of this specification.

7.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems referenced in this specification that are sold to SWG.

7.3 SWG will make appropriate inspections and tests of any and all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material, which fails to conform to this specification. Any such rejection may take place at the manufacturer's facility; the supplier's warehouse or any subsequent delivery location, before or after Southwest assumes possession. Notice of the rejection will be made promptly to the supplier by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.


7.4 Any changes in the manufacturing of previously-approved leak repair devices, covered under this document, for sale to SWG must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved supplier.**



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	5 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

**REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

**8. CERTIFICATION**

The manufacturer's or supplier's certification will be furnished to Southwest. This certification will state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that all requirements have been met. When requested or specified in the purchase order or contract, a report of test results will be provided.

Upon the request of Southwest, the certification of an independent third party indicating conformance to the specification may be considered at Southwest's expense.

**9. MATERIAL SAFETY DATA SHEETS**

In accordance with law, the Seller will supply Material Safety Data Sheets for all applicable items supplied under this specification to the following:

- 1) The Receiving Location
- 2) Engineering Staff
- 3) Southwest Gas Corporation  
Corporate Safety  
Mail Station LVA-120  
P.O. Box 98510  
Las Vegas, NV 89193-8510

**10. PRODUCT MARKING**

Each full encirclement sleeve will have the following markings on the sleeve:

- The product name
- Manufacturer
- Size
- Material specification and grade
- Pressure rating

**11. PACKAGING**


All products covered in this specification will be packaged to prevent damage during shipping.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

<b>Section No:</b>	MS K-1
<b>Page No.:</b>	6 of 10
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/20/15

**REPAIR FITTINGS**

Leak Repair Devices, Weldable

---

**12. STOCK CLASSIFICATION DESCRIPTION**

PLUG, REPAIR, TAPERED, THREADED, \_\_\_\_\_ (SIZE), MANUFACTURER.

PLUG, CANOPY, REPAIR, \_\_\_\_\_ (SIZE), BUNA-N PACKING CONE MANUFACTURER.

CLAMP, REPAIR, \_\_\_\_\_ (SIZE), BUNA-N PACKING CONE MANUFACTURER.