



SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

Section No:	MS B-16
Page No.:	1 of 21
Issue Date:	03/01/16
Superseded Date:	02/13/15

PIPE FITTINGS

Steel Weld Reinforcement and Repair Fittings

1. SCOPE

This specification covers the following fabricated, steel weld fittings:

- Full encirclement weld and leak repair sleeves.
- Repair and abandonment canopies.
- Branch connection reinforcement pads, saddles, full encirclement saddles and full encirclement hot tap fittings.

2. APPLICABLE DOCUMENTS

- 2.1 American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.
- 2.2 ASTM International (ASTM) A-36, "Specification for Carbon Structural Steel."
- 2.3 ASTM International (ASTM) A-53M-10 (Oct. 2010), "Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless."
- 2.4 ASTM International (ASTM) A-105, "Specification for Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Services."
- 2.5 ASTM International (ASTM) A-106M-10 (Oct. 2010), "Specification for Seamless Carbon Steel Pipe for High Temperature Services."
- 2.6 American Petroleum Institute (API) Specification 5L, "Specification for Line Pipe."
- 2.7 American Petroleum Institute (API) Specification 1104, "Welding of Pipelines and Related Facilities."
- 2.8 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.



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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.

4. MATERIALS AND MANUFACTURE

- 4.1 All fabricated reinforcement and repair fittings will be manufactured from materials conforming with the requirements of ASTM A-36, ASTM A-53, ASTM A-105, ASTM A-106, API 5L or other approved material.
- 4.2 All fabricated reinforcement and repair fittings will be manufactured by forging, casting or from pipe. Any welding will be in accordance with API 1104 or the ASME Boiler and Pressure Vessel Code.
- 4.3 Weld reinforcement sleeves, repair sleeves, repair canopies and full encirclement hot tap fittings will be provided with a pressure rating computed using a 0.4 design factor for all fittings intended to contain gas pressure, the manufacturer will certify that a prototype of the fitting has been tested to at least 1.5 times the pressure rating and that all fittings are manufactured with an equivalent design and manufactured in accordance with a quality control program insuring equivalent quality for each fitting.



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4. MATERIALS AND MANUFACTURE (Cont'd)

- 4.4 The maximum carbon equivalency (CE) value will be 0.43. The International Institute of Welding (IIW) formula found in API 5L will be used to determine the CE.
- 4.5 The following is the Southwest Gas Corporation requirements for prototype testing:
 - One fitting of a particular type and design may be used to represent fittings from 1/2 to 2 times the size of fittings of same type.
 - A fitting of a particular material grade and/or wall thickness may represent fittings of another material grade and/or wall thickness if the design is essentially the same and only the material grade and/or wall thickness are varied. Manufacturers must be able to verify the tensile strength used in accordance with the applicable material standard.
 - Fitting type differentiation will be approved by Southwest Gas.

5. PERFORMANCE REQUIREMENTS

- 5.1 Repair sleeves, repair canopies and full encirclement hot tap fittings will not leak after installation and when subjected to natural gas at a pressure 1.5 times the pressure rating or the designated maximum test pressure.
- 5.2 Each fitting will be weldable using Southwest Gas welding procedures in accordance with API 1104 or qualified welding procedures provided by the manufacturer.

6. DIMENSIONS AND TOLERANCES

- 6.1 Dimensions are listed in the appropriate Appendix.
- 6.2 All tolerances will allow welding of fittings in accordance with paragraph 5.2.



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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. Southwest 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 materials, products or systems described in this material specification for sale to SWG, must be approved by SWG's Engineering Staff. **Failure to obtain Southwest's approval may be cause for rejection and disqualification as an approved supplier.**

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.



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9. SAFETY DATA SHEETS

In accordance with law, the Seller will supply 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 fitting will be marked with the following:

- Manufacturer's name or trademark.
- Material Identification: The material shall be identified in accordance with the marking requirements of the applicable ASTM specifications.

11. PACKAGING AND PACKAGE MARKING

11.1 All fittings will be packaged in a manner to prevent damage during transportation and storage.

11.2 The packaging will be marked with the following:

- Manufacturer's name or trademark
- Manufacturer's part name or number
- Size
- The fitting class
- Material identification



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12. STOCK CLASSIFICATION DESCRIPTION

SLEEVE, WELD, REINFORCING, _____ INCH OD (SIZE), _____ INCH (LENGTH), PREQUALIFIED, (SWG MS B-16).

CANOPY, WELD, _____ OD (PIPE SIZE), _____ (ENCLOSURE LENGTH), PREQUALIFIED.

PAD, BRANCH REINFORCEMENT, _____ INCH (HEADER SIZE), _____ (BRANCH SIZE).

SADDLE, BRANCH REINFORCEMENT, _____ INCH (HEADER SIZE), _____ (BRANCH SIZE).

SADDLE, FULL ENCIRCLEMENT, BRANCH REINFORCEMENT, _____ INCH (HEADER SIZE), _____ (BRANCH SIZE).

HOT TAP FITTING, FULL ENCIRCLEMENT, WELD OUTLET, _____ INCH (HEADER SIZE), _____ (BRANCH SIZE).

HOT TAP FITTING, FULL ENCIRCLEMENT, FLANGE OUTLET, _____ INCH (HEADER SIZE), _____ (BRANCH SIZE).