



SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

| | |
|-------------------------|----------|
| Section No: | MS B-8 |
| Page No.: | 1 of 13 |
| Issue Date: | 10/05/18 |
| Superseded Date: | 12/11/15 |

PIPE FITTINGS

Swage Nipples and Bull Plugs

1. SCOPE

This specification covers carbon steel swage nipples, nominal pipe size 1/4" through nominal pipe size 4", and threaded bull plugs (hollow or solid male closures), nominal pipe size 1/8" through nominal pipe size 12". Concentric reducing swage nipples are covered. Swage nipples may be threaded, butt weld or socket weld.

Swage nipples and bull plugs covered by this specification, when installed as a single component, may be installed without an installation pressure test.

2. APPLICABLE DOCUMENTS

- 2.1 American National Standards Institute (ANSI) B-1.20.1, "NPT American National Standard Taper Pipe Thread."
- 2.2 American National Standards Institute (ANSI) B-16.25, "Butt-welding Ends."
- 2.3 American National Standards Institute (ANSI) Z-55.1 "Finishes for Industrial Apparatus and Equipment."
- 2.4 ASTM International (ASTM) A-234, "Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service."
- 2.5 ASTM International (ASTM) A-420, "Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service."
- 2.6 Manufactured Standardization Society (MSS) Standard Practice (SP) 95, "Swage Nipples and Bull Plugs."
- 2.7 Title 49, Code of Federal Regulations, Part 192, "Transportation of Natural and Other Gas by Pipelines Minimum Safety Standards" (49 CFR 192).

NOTE: Unless otherwise specified, the editions of the document incorporated in whole or in part by 49 CFR 192 are applicable. The above documents, and parts of documents (including annexes), not incorporated by 49 CFR 192 are incorporated by this Material Specification and will be the most recent edition. In the event a conflict exists between the applicable documents and/or this Material Specification, the requirements of 49 CFR 192 shall govern, and in the event of all other conflicts, the more stringent requirement shall govern. 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 SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

4. MATERIALS AND MANUFACTURING

- 4.1 The steel for swage nipples and bull plugs shall consist of forgings, round or hex bars or seamless pipe or tubing which conform to the requirements of ASTM A-234 and A-420.
- 4.2 The allowable working pressure for the fittings designed in accordance with MSS SP 95 shall be calculated as for straight seamless pipe made from the same wall thickness and material.
- 4.3 Pipe ends may be threaded, beveled for butt-welding, square cut (plain) for socket welding or any combination of these.
- 4.4 Threaded ends shall be in accordance with ANSI B-1.20.1.
- 4.5 Butt welding ends shall be in accordance with ANSI B-16.25.
- 4.6 Fittings supplied under this specification shall be in accordance with surface quality requirements of ASTM A-234 and A-420.
- 4.7 Unless otherwise specified, all swage nipples and bull plugs shall be coated with an Industrial Gray Coating No. 49 per ANSI Z-55.1. The paint system used will be one of the systems listed on Tables B-8.1 and B-8.2 or a pre-approved equivalent.



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4. MATERIALS AND MANUFACTURING (Cont'd)

| APPROVED PAINT SYSTEMS | | | | |
|-------------------------------|--|--|------------------------------------|---|
| SYSTEM NUMBER | SURFACE PREPARATION | PRIMER COAT | INTERMEDIATE COAT | FINISH COAT |
| 1 | Solvent Cleaning (SSPC-SP 1) THEN Near White Blast Cleaning (SSPC-SP 10) | High-Build Polyamide Epoxy, DFT 4.0 to 5.0 Mils. | None | Aliphatic Polyurethane DFT 2.0 to 3.0 Mils. |
| 2 | Solvent Cleaning (SSPC-SP 1) THEN Near White Blast Cleaning (SSPC-SP 10) | Modified Alkyd, Inhibited, Chromate and Lead-Free, DFT 2.0 Mils. | Alkyd Enamel, DFT 1.5 to 2.0 Mils. | Alkyd Enamel, DFT 1.5 to 2.0 Mils. |
| 3 | Solvent Cleaning (SSPC-SP 1) THEN Near White Blast Cleaning (SSPC-SP 10) | Aluminum Flake Epoxy Mastic, DFT 4.0 to 5.0 Mils. | None | Aliphatic Polyurethane DFT 2.0 to 3.0 Mils. |

TABLE B-8.1



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4. MATERIALS AND MANUFACTURING (Cont'd)

| APPROVED PAINT SYSTEMS MANUFACTURER'S PART NUMBERS | | | | |
|---|-----------------------|-----------------------------|----------------------------|---------------|
| SYSTEM NUMBER | CARBOLINE | SHERWIN WILLIAMS | RUSTOLEUM | KRYLON |
| 1 ¹ | 801834 | B58 T 104 B65 W 300 Ser. | 9100 Series 9400 Series | |
| 2 ¹ | GP-818 Subsil B | B50 HZ 1 B56 Series | 76697686 | 69100871 |
| 3 ¹ | Carbomastic 15 834 | B62 S 100 B65 W 300 Ser. | | |
| NOTE: ¹ For each paint system, the top part number is for the primer and the bottom part number is for the topcoat. | | | | |

TABLE B-8.2



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5. PERFORMANCE REQUIREMENTS

- 5.1 Threaded ends will not leak when installed in accordance with Southwest's joining procedure.
- 5.2 Butt and socket welding ends will be weldable using Southwest's welding procedures.

6. DIMENSIONS AND TOLERANCES

- 6.1 Bull plug size is identified by the "nominal pipe size" (NPS).
- 6.2 Swage nipples are identified with large end sizes listed first, followed by the small end size.
- 6.3 The dimensions of swage nipples are shown in Appendix A, dimensions for bull plugs are shown on Appendix B and tolerances for swage nipples and bull plugs are shown on Appendix C.

7. INSPECTION

- 7.1 Successful review of the Product Information Package (PIP), as well as any future reference by Southwest 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 manufacturing and testing of all swage nipples and bull plugs 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 its 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 rejection will be made promptly thereafter by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.



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7. INSPECTION (Cont'd)

7.4 No changes will be made in the manufacturing of previously approved materials, products or systems described in this document, for sale to Southwest, without prior approval by Southwest'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.

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 shall have the prescribed information stamped or otherwise suitably marked in accordance with the following:

- Manufacturer's name or trademark
- Material grade in accordance with the appropriate ASTM fittings specification
- Schedule number or nominal wall thickness designation
- Heat Identification
- Size



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11. PACKAGING

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

12. STOCK CLASSIFICATION DESCRIPTION

NIPPLE, SWAGE, STEEL, X H, _____-INCH x _____-INCH, THREADED, CONCENTRIC, _____ (GRAY COATED OR BARE), MSS SP-95, ASTM A-234 OR A-420.

PLUG, BULL, _____-INCH, STEEL, THREADED, _____ (GRAY COATED OR BARE), MSS SP-95.



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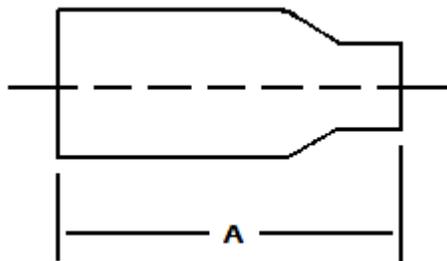
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PIPE FITTINGS

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APPENDIX A

SWAGE NIPPLES



| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 1/4 x 1/8 | 0.540 | 0.405 | 2.25 |
| 3/8 x 1/8 | 0.675 | 0.405 | 2.50 |
| 3/8 x 1/4 | 0.675 | 0.540 | 2.50 |
| 1/2 x 1/8 | 0.840 | 0.405 | 2.75 |
| 1/2 x 1/4 | 0.840 | 0.540 | 2.75 |
| 1/2 x 3/8 | 0.840 | 0.675 | 2.75 |
| 3/4 x 1/8 | 1.050 | 0.405 | 3.00 |
| 3/4 x 1/4 | 1.050 | 0.540 | 3.00 |
| 3/4 x 3/8 | 1.050 | 0.675 | 3.00 |
| 3/4 x 1/2 | 1.050 | 0.840 | 3.00 |

| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 1 x 1/8 | 1.315 | 0.405 | 3.50 |
| 1 x 1/4 | 1.315 | 0.540 | 3.50 |
| 1 x 3/8 | 1.315 | 0.675 | 3.50 |
| 1 x 1/2 | 1.315 | 0.840 | 3.50 |
| 1 x 3/4 | 1.315 | 1.050 | 3.50 |
| 1-1/4x1/8 | 1.660 | 0.405 | 4.00 |
| 1-1/4x1/4 | 1.660 | 0.540 | 4.00 |
| 1-1/4x3/8 | 1.660 | 0.675 | 4.00 |
| 1-1/4x1/2 | 1.660 | 0.840 | 4.00 |
| 1-1/4x3/4 | 1.660 | 1.050 | 4.00 |

TABLE B-8.3



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Swage Nipples and Bull Plugs

APPENDIX A

(Cont'd)

SWAGE NIPPLES

| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 1-1/4 x 1 | 1.660 | 1.315 | 4.00 |
| 1-1/2x1/8 | 1.900 | 0.405 | 4.50 |
| 1-1/2x1/4 | 1.900 | 0.540 | 4.50 |
| 1-1/2x3/8 | 1.900 | 0.675 | 4.50 |
| 1-1/2x1/2 | 1.900 | 0.840 | 4.50 |
| 1-1/2x3/4 | 1.900 | 1.050 | 4.50 |
| 1-1/2 x 1 | 1.900 | 1.315 | 4.50 |
| 1-1/2x1-1/4 | 1.900 | 1.660 | 4.50 |
| 2 x 1/8 | 2.375 | 0.405 | 6.50 |
| 2 x 1/4 | 2.375 | 0.540 | 6.50 |
| 2 x 3/8 | 2.375 | 0.675 | 6.50 |
| 2 x 1/2 | 2.375 | 0.840 | 6.50 |
| 2 x 3/4 | 2.375 | 1.050 | 6.50 |
| 2 x 1 | 2.375 | 1.315 | 6.50 |
| 2 x 1-1/4 | 2.375 | 1.660 | 6.50 |
| 2 x 1-1/2 | 2.375 | 1.900 | 6.50 |

| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 2-1/2x1/8 | 2.875 | 0.405 | 7.00 |
| 2-1/2x1/4 | 2.875 | 0.540 | 7.00 |
| 2-1/2x3/8 | 2.875 | 0.675 | 7.00 |
| 2-1/2x1/2 | 2.875 | 0.840 | 7.00 |
| 2-1/2x3/4 | 2.875 | 1.050 | 7.00 |
| 2-1/2 x 1 | 2.875 | 1.315 | 7.00 |
| 2-1/2x1-1/4 | 2.875 | 1.660 | 7.00 |
| 2-1/2x1-1/2 | 2.875 | 1.900 | 7.00 |
| 2-1/2 x 2 | 2.875 | 2.375 | 7.00 |
| 3 x 1/8 | 3.500 | 0.405 | 8.00 |
| 3 x 1/4 | 3.500 | 0.540 | 8.00 |
| 3 x 3/8 | 3.500 | 0.675 | 8.00 |
| 3 x 1/2 | 3.500 | 0.840 | 8.00 |
| 3 x 3/4 | 3.500 | 1.050 | 8.00 |
| 3 x 1 | 3.500 | 1.315 | 8.00 |
| 3 x 1-1/4 | 3.500 | 1.660 | 8.00 |

TABLE B-8.3

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Swage Nipples and Bull Plugs

APPENDIX A

(Cont'd)

SWAGE NIPPLES

| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 3 x 1-1/2 | 3.500 | 1.900 | 8.00 |
| 3 x 2 | 3.500 | 2.375 | 8.00 |
| 3 x 2-1/2 | 3.500 | 2.875 | 8.00 |
| 3-1/2 x 1/8 | 4.000 | 0.405 | 8.00 |
| 3-1/2 x 1/4 | 4.000 | 0.540 | 8.00 |
| 3-1/2 x 3/8 | 4.000 | 0.675 | 8.00 |
| 3-1/2 x 1/2 | 4.000 | 0.840 | 8.00 |
| 3-1/2 x 3/4 | 4.000 | 1.050 | 8.00 |
| 3-1/2 x 1 | 4.000 | 1.315 | 8.00 |
| 3-1/2x1-1/4 | 4.000 | 1.660 | 8.00 |
| 3-1/2x1-1/2 | 4.000 | 1.900 | 8.00 |
| 3-1/2 x 2 | 4.000 | 2.375 | 8.00 |
| 3-1/2x2-1/2 | 4.000 | 2.875 | 8.00 |
| 3-1/2 x 3 | 4.000 | 3.500 | 8.00 |

| Dimensions are in inches | | | |
|--------------------------|------------------|-----------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | | End-to-End "A" |
| | Large End | Small End | |
| 4 x 1/4 | 4.500 | 0.540 | 9.00 |
| 4 x 3/8 | 4.500 | 0.675 | 9.00 |
| 4 x 1/2 | 4.500 | 0.840 | 9.00 |
| 4 x 3/4 | 4.500 | 1.050 | 9.00 |
| 4 x 1 | 4.500 | 1.315 | 9.00 |
| 4 x 1-1/4 | 4.500 | 1.660 | 9.00 |
| 4 x 1-1/2 | 4.500 | 1.900 | 9.00 |
| 4 x 2 | 4.500 | 2.375 | 9.00 |
| 4 x 2-1/2 | 4.500 | 2.875 | 9.00 |
| 4 x 3 | 4.500 | 3.500 | 9.00 |
| 4 x 3-1/2 | 4.500 | 4.000 | 9.00 |
| | | | |
| | | | |
| | | | |

TABLE B-8.3

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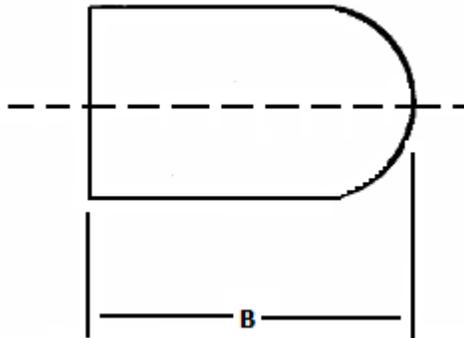
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Swage Nipples and Bull Plugs

APPENDIX B

BULL PLUGS



| Dimensions are in inches | | |
|--------------------------|------------------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | End-to-End "B" |
| 1/8 | 0.405 | 2.00 |
| 1/4 | 0.540 | 2.00 |
| 3/8 | 0.675 | 2.25 |
| 1/2 | 0.840 | 2.50 |
| 3/4 | 1.050 | 2.75 |
| 1 | 1.315 | 3.00 |
| 1-1/4 | 1.660 | 3.25 |
| 1-1/2 | 1.900 | 3.50 |
| 2 | 2.375 | 40.00 |

| Dimensions are in inches | | |
|--------------------------|------------------|----------------|
| Nominal Pipe Size (NPS) | Outside Diameter | End-to-End "A" |
| 2-1/2 | 2.875 | 5.00 |
| 3 | 3.500 | 6.00 |
| 3-1/2 | 4.000 | 6.50 |
| 4 | 4.500 | 7.00 |
| 5 | 5.563 | 8.50 |
| 6 | 6.625 | 10.00 |
| 8 | 8.625 | 11.00 |
| 10 | 10.750 | 13.00 |
| 12 | 12.750 | 14.00 |

TABLE B-8.4



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APPENDIX C

SWAGE NIPPLE AND BULL PLUG TOLERANCES

| Nominal Pipe Size (NPS) (Inches) | Overall Length (Inches) | Outside Diameter at End | | Wall Thickness (see Note) |
|-------------------------------------|----------------------------|-----------------------------|-----------------------------------|--|
| | | Square Cut Ends (Inches) | Other End Connections (Inches) | |
| 1/8 – 3/8 | ± 0.060 | + 0.015 ! 0.030 | ± 0.030 | Not less than 87.5% of nominal wall thickness |
| 1/2 – 1-1/2 | ± 0.060 | + 0.015 ! 0.030 | + 0.060 ! 0.030 | |
| 2 – 2-1/2 | ± 0.120 | ± 0.030 | + 0.060 ! 0.030 | |
| 3 – 4 | ± 0.120 | ± 0.030 | ± 0.060 | |
| 5 – 6 | ± 0.190 | + 0.090 ! 0.060 | + 0.090 ! 0.060 | |
| 8 – 12 | ± 0.250 | + 0.160 ! 0.120 | + 0.160 ! 0.120 | |

NOTE: Prior to threading or grooving.

TABLE B-8.5