




SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

Section No:	MS D-4
Page No.:	1 of 8
Issue Date:	03/01/16
Superseded Date:	02/18/15

VALVES AND STOPS

Needle, Steel

1. SCOPE

This specification covers carbon steel needle valves in sizes 1/8" NPT to 1/2" NPT with a minimum pressure rating of 5000 psig for hard seat and 3000 psig for soft seat. Needle valves covered by this specification are for use in instrument control piping and compressed natural gas (CNG) manifolds.

All needle valves covered by this specification, when installed as a single component, may be installed without an installation pressure test. When a pressure test is required during installation, the test pressure will not exceed the manufacture's maximum service pressure rating shown in Section 13, Approved Manufacturers, of this document.

2. APPLICABLE DOCUMENTS


- 2.1 American National Standards Institute (ANSI) B2.1, "Pipe Threads (Except Dry Seal)."
- 2.2 American National Standards Institute (ANSI) B16.3, "Malleable Iron Threaded Fittings."
- 2.3 ASTM International (ASTM) A105, "Specification for Forgings, Carbon Steel, for Piping Components."
- 2.4 ASTM International (ASTM) A108, "Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality."
- 2.5 ASTM International (ASTM) A182, "Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service."
- 2.6 ASTM International (ASTM) A479, "Specification for Stainless and Heat-Resisting Steel Wire, Bars, and Shapes for Use in Boilers and Other Pressure Vessels."
- 2.7 ASTM International (ASTM) A582, "Specification for Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled and Cold-Finished."
- 2.8 ASTM International (ASTM) D2000, "Classification System for Rubber Products in Automotive Applications."
- 2.9 United States Department of Transportation (DOT), Code of Federal Regulations, Title 49, Part 19, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards."



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2. APPLICABLE DOCUMENTS (Cont'd)

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 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 All materials used in the needle valves will be compatible with natural gas.
- 4.2 Needle valves will utilize stem packing to prevent leakage through the stem. The stem seal packing will be Teflon, Buna-N or Viton and will be specified on the purchase order. O-rings will conform to ASTM D 2000 and be of sufficient durometer to prevent any detrimental deformation.
- 4.3 The valve will use a screwed bonnet design.
- 4.4 The needle valve may have a metal to metal seat (hard seat) or soft seat compatible with natural gas to obtain a bubble tight seal.
- 4.5 Needle valves may be either straight or angled (90°) pattern.



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4. MATERIALS AND MANUFACTURING (Cont'd)

4.6 The needle valve body, bonnet and handwheel will be made with one of the following materials in accordance with the specified ASTM standard:

MATERIAL	ASTM STANDARD
Forged Carbon Steel	A 105
Carbon Steel Bar Stock	A 108 Grade 12 L14
AISI Type 303 SS	A 582
AISI Type 316 SS	A 479
AISI Type 316 Forged SS	A 182

4.7 The valve stem will be made with one of the following materials in accordance with the specified ASTM standard:

MATERIAL	ASTM STANDARD
AISI Type 303 SS	A 582
AISI Type 316 SS	A 479
AISI Type 316 Forged SS	A 182
AISI Type 416 SS	A 582

4.8 All needle valve body, handwheel and carbon or forged steel components exposed to the atmosphere will have a protective coating approved by Southwest to prevent corrosion. Cadmium or chromium platings are approved coatings.

4.9 Stainless steel components will be plated with chrome or silver where galling between similar metals may be a problem.

4.10 Pipe threads will be 1/8", 1/4", 3/8" or 1/2" NPT female or male and will conform to ANSI B2.1. Threads will be countersunk or chamfered in accordance with ANSI B16.3, Paragraph 7.2, to prevent damage to the threads when making a connection.


4.11 The handle may be either a "tee" or "wheel" design.



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5. PERFORMANCE REQUIREMENTS

- 5.1 The needle valve will be rated at a minimum of 5000 psig at 140°F for hard seats and 3000 psig at 140°F for soft seats.
- 5.2 The needle valve will close in a clockwise direction and open in a counterclockwise direction.
- 5.3 All needle valves must be available with a compatible locking or tamper proof device. When locked with a padlock or barrel lock, valve operation must be prevented.
- 5.4 The valve will not leak at the stem or bonnet connection and will have a bubble tight shutoff at normal operating pressures and during an air seat test at 80 psig. The valve will require a maximum torque of 10 foot-pounds applied to the stem to obtain the bubble tight seal.
- 5.5 The valve will meet all the requirements of DOT 49 CFR 192.

6. DIMENSIONS AND TOLERANCES

The valve covered by this specification will have a maximum overall height of four inches (4") for straight pattern and five inches (5") for angle pattern.

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 right 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 manufacturer's facility; 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.



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7. INSPECTION (Cont'd)

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 SWG's approval may be cause for rejection and disqualification as an approved supplier.**

8. CERTIFICATION

The manufacturer's or supplier's certification shall be supplied to Southwest. This certification shall state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that the 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-530
P.O. Box 98510
Las Vegas, NV 89193-8510

10. PRODUCT MARKING

10.1 All valves will be marked in such a manner that the markings will remain permanently with the valve (i.e. stamped).

10.2 Valves will be marked with the manufacture's name or symbol, model number, and service pressure rating.


10.3 Valves will have the direction of flow marked on the valve body. Bi-directional valves will be marked accordingly.



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11. PACKAGING AND PACKAGE MARKING

Threads of needle valves will be free of paint and epoxy. Male threads will have thread protectors. Valves will be adequately sealed to prevent contamination, corrosion and possible damage that may occur during transit or storage.

12. STOCK CLASSIFICATION DESCRIPTION

VALVE, NEEDLE; ___ INCH, ___ X ___ ENDS (F X F, F X M); ___ PATTERN; ___ PSIG SERVICE PRESS. ___ SEAT (SOFT SEAT SPEC. MATERIAL); ___ PACKING.