



**SOUTHWEST GAS CORPORATION**

**ENGINEERING STAFF**

***MATERIAL SPECIFICATION***

<b>Section No.:</b>	MS F-23
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<b>Issue Date:</b>	05/09/16
<b>Superseded Date:</b>	12/28/15

*Prepared By:* Engineering Staff 

*Approved By:* Jerome T. Schmitz 

**REGULATORS**

Regulator Stations, Pre-Fabricated

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**1. SCOPE**

This specification covers supplier-provided pre-fabricated regulator stations in all sizes. All pre-fabricated regulator stations covered by this specification are pre-tested at the factory and may be installed as a single component without pressure testing.

**2. APPLICABLE DOCUMENTS**

- 2.1 American National Standards Institute (ANSI) B-1.20.1, "Pipe Threads, General Purpose (Inch)."
- 2.2 American Petroleum Institute (API) Standard 1104, "Welding Pipelines and Related Facilities."
- 2.3 ASTM International (ASTM) A-53, "Standard Specification for Welded and Seamless Steel Pipe."
- 2.4 ASTM International (ASTM) A-106, "Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service."
- 2.5 ASTM International (ASTM) G-6, "Standard Test Method for Abrasion Resistance of Pipeline Coatings."
- 2.6 Southwest Gas Corporation Design Standard (DS) C-3, "Materials Approved For Use: Pipe Coatings."
- 2.7 Southwest Gas Corporation Material Specification (MS) A-1, "Pipe & Tubing: Pipe, Line, API Specification 5L."
- 2.8 Southwest Gas Corporation Material Specification (MS) A-5, "Pipe & Tubing: Tubing, Stainless Steel."
- 2.9 Southwest Gas Corporation Material Specification (MS) A-9, "Pipe & Tubing: Pipe, Steel, ASTM A-106, Grade B."
- 2.10 Southwest Gas Corporation Material Specification (MS) B-1, "Pipe Fittings: Flanges, Steel."



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

- 2.11 Southwest Gas Corporation Material Specification (MS) B-2, "Pipe Fittings: Fittings, Butt-Welded Steel."
- 2.12 Southwest Gas Corporation Material Specification (MS) B-3, "Pipe Fittings: Fittings, Forged Steel, Socket Weld."
- 2.13 Southwest Gas Corporation Material Specification (MS) B-4, "Pipe Fittings: Pipe Nipples, Threaded and Weld End."
- 2.14 Southwest Gas Corporation Material Specification (MS) B-7, "Pipe Fittings: Forged Branch Outlet Fittings."
- 2.15 Southwest Gas Corporation Material Specification (MS) B-8, "Pipe Fittings: Swage Nipples and Bull Plugs."
- 2.16 Southwest Gas Corporation Material Specification (MS) B-10, "Pipe Fittings: Forged Steel, Threaded."
- 2.17 Southwest Gas Corporation Material Specification (MS) H-1, "Gaskets and Sealants: Gaskets, Non-Insulating and Insulating."
- 2.18 Southwest Gas Corporation Material Specification (MS) H-6. "Gaskets and Sealants: Pipe Thread Compound."
- 2.19 Southwest Gas Corporation Material Specification (MS) N-1, "Bolts, Nuts and Hardware: Stud Bolts and Nuts, Machine Bolts and Nuts, Steel."
- 2.20 Southwest Gas Corporation Material Specification (MS) O-32, "Miscellaneous: Epoxy Polyamide Primer."



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

- 2.21 Southwest Gas Corporation Operations Manual, Welding Procedures.
- 2.22 Southwest Gas Corporation Operations Manual, Threaded and Flanged Joints Procedures.
- 2.23 United States Department of Transportation (DOT), Code of Federal Regulations, 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 "Holidays," as defined by ASTM G-6, will mean small faults or pinholes which permit current drainage through protective coating on steel pipe.
- 3.1.4 The terms "pipe" or "tubing" will mean "pipe and tubing" unless specifically stated otherwise.
- 3.1.5 "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.



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**3. TERMINOLOGY (Cont'd)**

3.1.6 "By Agreement" will mean an additional written requirement approved by Southwest and the Manufacturer that exceed the requirements of this document.

**4. MATERIALS AND MANUFACTURING**

4.1 Materials and manufacture of the regulator assemblies are to be in accordance with the design drawing provided by Southwest. Southwest Engineering Staff approval is required for any substitutions. (See below)

<b>M.S. #</b>	<b>Description</b>	<b>Designated Use</b>
A-1	Pipe, Line, API Specification 5L	Station piping
A-4	Pipe, Line, ASTM A-53	Miscellaneous piping including, but not limited to control and gauge piping
A-5	Tubing, Stainless Steel	Control piping
A-9	Pipe, Line, ASTM A-106, Grade B	Underground buried control piping
B-1	Flanges, Steel	Flanged connections
B-2	Fittings, Butt-Welded, Steel	To be used with station piping
B-3	Fittings, Forged Steel, Socket Weld	With station and/or control piping
B-4	Pipe Nipples, Threaded and Weld End	Station piping and/or control piping
B-7	Forged Branch Outlet Fittings	Gauge and control piping taps
B-8	Pipe Fittings, Swage Nipples and Bull Plugs	Station piping, gauge and control line taps
B-10	Fittings, Forged Steel, Threaded	Control piping
D-3	Valves, Ball, Steel or Ductile Iron	Valves
G-2	Filters	Station and pilot regulator filters
H-1	Gaskets, Non-Insulating and Insulating	Flanged connections
H-6	Pipe Thread Compound	Threaded connections
N-1	Bolts, Nuts and Hardware	Flanged connections
O-32	Epoxy Polyamide Primer	Primer to paint the pre-fabricated assembly

**TABLE F-23.1**



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**4. MATERIALS AND MANUFACTURING (Cont'd)**

- 4.2 Unless otherwise specified on the purchase order, pre-fabrication for above-ground stations consists of only that portion from the inlet riser vertical piping to the outlet riser vertical piping. The riser length will extend 5 feet (1.524 m) from the centerline of the bypass to the bottom of the riser and the weld end will be capped with an end cap. For below-ground regulator station designs, pre-fabrication consists of that portion contained inside of the vault plus enough inlet piping and outlet piping to extend 2 feet (0.6096 m) beyond the wall of the vault as indicated on the design drawing.
- 4.3 Station and pilot regulators are specific to each regulator station design. No substitutions are permitted without written approval from SWG.
- 4.4 Steel piping will meet the requirements of SWG MS A-1 for API 5L pipe or MS A-9 for ASTM A-106 pipe.
- 4.5 Steel piping used for pipe nipples will meet the requirements of SWG MS B-4 using ASTM A-106, ASTM A-53 or API 5L pipe as indicated in MS B-4.
- 4.6 Stainless steel tubing, when supplied as directed by the individual purchase order, will meet the requirements of SWG MS A-5.
- 4.7 Steel flanges purchased to this specification will be manufactured, as a minimum, in accordance with SWG MS B-1. Materials shall be limited to ASTM A-105 and A-181.
- 4.8 Butt-welded steel ells, tees, reducers or caps will meet the requirements of SWG MS B-2.
- 4.9 Socket-weld steel couplings, half-couplings, ells, tees, crosses, caps and reducer inserts will meet the requirements of SWG MS B-3.
- 4.10 Forged branch outlet fittings, commonly referred to as "thread-o-lets," shall meet the requirements of SWG MS B-7. Installation on spools and other fittings shall be perpendicular to the fitting at the location specified.
- 4.11 Steel swage nipples and bull plugs will meet the requirements of SWG MS B-8.



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**4. MATERIALS AND MANUFACTURING (Cont'd)**

- 4.12 Steel threaded fittings used in control piping applications will meet the requirements of MS B-10.
- 4.13 Gaskets used in the pre-fabrication of the regulator stations will meet the requirements of SWG MS H-1.
- 4.14 Stud bolts and nuts and machine bolts and nuts will meet the requirements of SWG MS N-1.
- 4.15 Pipe thread compound and tape used on threaded connections will meet the requirements of SWG MS H-6.
- 4.16 Flanges are to be aligned perpendicularly to the pipe and bolt holes will have standard horizontal alignment.
- 4.17 Assembly of the stations, including threaded and flanged joints, will be in accordance with the Southwest Operations Manual.
- 4.18 Thread design will be in accordance with ANSI B-1.20.1.
- 4.19 The assembly will be primer coated in accordance with SWG DS C-3 and MS O-32.
- 4.20 Stainless steel tubing used for control lines normally is not a part of the pre-fabricated assembly. If stainless steel tubing is provided, it must meet Southwest MS A-5.
- 4.21 Manufacturer welders must be qualified and requalified in accordance with API 1104. All welding must be inspected during the manufacturing process in accordance with API 1104.
- 4.22 Upon request, Manufacturer shall provide Southwest with all applicable Procedure Qualification Record(s) (PQR) and Welding Procedure Specification(s) (WPS).
- 4.2.3 Upon request, Manufacturer shall provide Southwest with all applicable Welder Qualification test records.
- 4.24 Upon agreement between supplier and Southwest, necessary stabilizing hardware may be specified, which may include, but not limited to stakes, angle iron or straps.
- 4.25 Additional "By Agreement" requirements may exceed the minimum requirements of this documents.



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**5. PERFORMANCE REQUIREMENTS**

- 5.1 The pre-fabricated regulator stations manufactured under this specification will be pre-tested by the manufacturer to Southwest requirements. Each assembled design must be tested to a minimum of 1.5 times the design maximum operating pressure of the weakest link for a minimum period of four hours or as specified on the purchase order, whichever is longer. Attention must be given to not exceed the maximum test pressure limitations of each fitting. Testing documentation must be recorded on a test chart and be included with each shipment. The minimum information required on the test documentation is the following:
- The operating company's name (i.e., Southwest Gas)
  - The signature of the person who conducts the pressure test
  - The name of the pre-fabrication company
  - The minimum and maximum test pressure
  - The test duration
  - The test results, including the resolution of deficiencies
- 5.2 The coating on the pipe will be tested by the manufacturer and approved by SWG.

**6. DIMENSIONS AND TOLERANCE**

Regulator assembly designs will be provided by Southwest to the supplier on or before placement of orders.

**7. INSPECTION**

- 7.1 Successful review of the 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.



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**7. INSPECTION (Cont'd)**

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 SWG 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 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 furnished to SWG. This certification shall state that all pre-fabricated regulator station assemblies 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) Southwest Gas Engineering Staff
- 3) Southwest Gas Corporation  
Staff Safety  
Mail Station LVA-120  
P.O. Box 98510  
Las Vegas, NV 89193-8510



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**10. PRODUCT MARKING**

A numbering and marking system must be developed by the manufacturer and approved by Southwest to be able to match testing documentation to each pre-fabricated regulator station assembly.

**11. PACKAGING AND PACKAGE MARKING**

All pre-fabricated regulator station assemblies will be packaged in a manner to prevent damage during transportation and storage. As-builts, including the testing documentation, shall be included with each assembly.

**12. STOCK CLASSIFICATION DESCRIPTION**

REGULATOR, ASSEMBLY, \_\_\_\_\_ INCH, (MANUFACTURER AND/OR MODEL NUMBER), (SWG DRAWING NUMBER IN PARENTHESES), PRE-FABRICATED.