



# **SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

## **MATERIAL SPECIFICATION**

<b>Section No:</b>	MS M-3
<b>Page No.:</b>	1 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

**Prepared By:** Engineering Staff 

**Approved By:** Jerome T. Schmitz 

### **METERS**

#### **Turbine Meters**

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#### **1. SCOPE**

This specification covers turbine meters in ANSI Class ratings of 125, 150, 300 and 600. The standard meters included are: 4-inch, 6-inch, 8-inch and 12-inch.

#### **2. APPLICABLE DOCUMENTS**

- 2.1 AGA Report #7, "Measurement of Fuel Gas by Gas Turbine Meters."
- 2.2 ANSI (American National Standards Institute) B16.1-1998, "Cast Iron Pipe Flanges and Flanged Fittings."
- 2.3 ANSI (American National Standards Institute) B16.5-1996, "Pipe Flanges and Flanged Fittings."
- 2.4 ANSI (American National Standards Institute) Z55.1-1967, "Gray Finishes for Industrial Apparatus and Equipment."
- 2.5 ASME (American Standard of Mechanical Engineers) MFC-4M, 1986, "Measurement of Gas Flow by Turbine Meters."
- 2.6 ISO 7005-1, "Steel Flanges", 1992.
- 2.7 ISO 7005-2, "Cast Iron Flanges", 1988.
- 2.8 ISO 9951, "Measurement of Gas Flow in Closed Conduits", 1993.
- 2.9 OIML Recommendation R-6, "General Provisions for Gas Volume Meters", 2004.
- 2.10 OIML Recommendation R-32, "Turbine Gas Meters", 2004.
- 2.11 Sensus Auto Adjust II Turbo-Meter, M-1073, Revision 8.
- 2.12 Singer Company-Bulletin 330.4, "The American Gas Turbine Meter."
- 2.13 Singer Company-Bulletin 300T., "12GT – 150M Turbine Gas Meter."
- 2.14 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.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

<b>Section No:</b>	MS M-3
<b>Page No.:</b>	2 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

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**METERS**

Turbine Meters

---

**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**

The meters shall conform to the American Gas Association, AGA Report, and “Measurement of Fuel Gas by Gas Turbine Meters” and to the following specifications:

4.1 Connections

The inlet and outlet connections shall be flanged to mate with ANSI B16.1 Class 125 flanges, ANSI B16.5 Class 150, Class 300 and Class 600 flanges for all meters 4-inch through 8-inch, all 12-inch meters shall be flanged to mate with ANSI B16.5 Class 150, Class 300 and Class 600 flanges.

4.2 Index

4.2.1 4-Inch and 6-Inch Meters:

The index shall have six reading circles and a 100 foot proving hand.

4.2.2 8-Inch and 12-Inch Meters:

The index shall have six reading circles and a 1000 foot proving hand.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

***MATERIAL SPECIFICATION***

<b>Section No:</b>	MS M-3
<b>Page No.:</b>	3 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

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**METERS**

Turbine Meters

---

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

4.3 Exterior Finish

The external components of the meter shall be made of or protected by, materials resistant to attack by atmosphere, weather or sunlight and of agents used in meter repair and cleaning. The exteriors shall be capable of meeting or exceeding exterior performance requirements in ANSI B109.4.

**5. PERFORMANCE REQUIREMENTS**

5.1 Pressure Tests:

5.1.1 Case-Strength tested to at least 150% of maximum working pressure.

5.1.2 Assembled-Leak tested to at least the maximum working pressure.

5.2 Check Proof:

5.2.1 The turbine meters shall be proof tested in the plant. The check proof shall consist of a transfer test based on a standard meter on two check points covering the entire flow range of the meter. The variation shall not exceed  $\pm 1\%$  of the performance curve at the test points.



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## **MATERIAL SPECIFICATION**

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<b>Section No:</b>	MS M-3
<b>Page No.:</b>	4 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

### **METERS**

Turbine Meters

---

## **6. INSPECTION**

- 6.1 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.
- 6.2 SWG retains the option to inspect the manufacture and testing of any and all materials, products or systems supplied to SWG under this specification at the manufacturer's facility.
- 6.3 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 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.
- 6.4 Any changes in the manufacturing of previously approved products, 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.**

## **7. CERTIFICATION**

The manufacturer's or supplier's certification shall be furnished to Southwest. This certification shall state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that 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.



**SOUTHWEST GAS CORPORATION**

® ENGINEERING STAFF

**MATERIAL SPECIFICATION**

<b>Section No:</b>	MS M-3
<b>Page No.:</b>	5 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

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**METERS**

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---

**8. 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

**9. PRODUCT MARKING**

9.1 The manufacturer shall prepare a list showing the check proof settings at two check points covering the entire flow range for each meter identified by the manufacturer's meter number. The list shall show:

- SWG's Purchase Order Number
- The Test Location
- The Test Date

9.2 One copy of the list shall be attached to the packing slip and a duplicate copy of the list shall be sent to the shipping address shown on the SWG's Purchase Order.

**10. PACKAGING AND PACKAGE MARKING**

All products covered in this specification will be packaged in a manner to prevent damage during transportation and storage.



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<b>Section No:</b>	MS M-3
<b>Page No.:</b>	6 of 7
<b>Issue Date:</b>	03/01/16
<b>Superseded Date:</b>	02/25/15

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Turbine Meters

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**11. STOCK CLASSIFICATION DESCRIPTION**

METER, \_\_\_\_\_ INCH, TURBINE, ANSI \_\_\_\_\_, \_\_\_\_\_ PSIG.