



SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

Section No:	MS M-23
Page No.:	1 of 15
Issue Date:	03/01/16
Superseded Date:	02/25/15

METERS

Ultrasonic Meters

1. SCOPE

This specification covers ultrasonic meters, in-line and clamp-on, in ANSI Class ratings of 150, 300, 600 and 900. The standard meters sizes are: 4-inch, 6-inch, 8-inch and 12-inch.

2. APPLICABLE DOCUMENTS

- 2.1 American Gas Association (AGA) Report #9, "Measurement of Fuel Gas by Multipath Ultrasonic Meters."
- 2.2 American National Standards Institute (ANSI) B16.1-1998, "Cast Iron Pipe Flanges and Flanged Fittings."
- 2.3 American National Standards Institute (ANSI) B16.5-1996, "Pipe Flanges and Flanged Fittings."
- 2.4 American National Standards Institute (ANSI) Z55.1-1967, "Gray Finishes for Industrial Apparatus and Equipment."
- 2.5 ISO 7005-1, "Steel Flanges", 1992.
- 2.6 ISO 7005-2, "Cast Iron Flanges", 1988.
- 2.7 ISO 17089, "Measurements of Fluid Flow in Closed Conduits-Ultrasonic Meters for Gas", 2010.
- 2.8 OIML Recommendation R-6,"General Provisions for Gas Volume Meters", 2004.
- 2.9 OIML Recommendation R-137-1, "Gas Meters".
- 2.10 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

Section No:	MS M-23
Page No.:	2 of 15
Issue Date:	03/01/16
Superseded Date:	02/25/15

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

METERS

Ultrasonic 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

- 4.1 All Ultrasonic Meter materials and manufacturing must abide by the regulations as indicated in American Gas Association (AGA) Report #9.
- 4.2 A minimum of 3 transducer sets is required for each meter unless approved by Southwest Gas Corporation Engineering Staff.
- 4.3 At a minimum the Ultrasonic Meter shall operate over a flowing gas temperature range of -4 to 140 F.
- 4.4 The Ultrasonic Meter shall have a way to address acoustic noise from pressure regulators and control valves to eliminate transit time measurements.
- 4.5 Southwest Gas can specify if the transducers shall be able to be replaced without depressurizing the meter run.



SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

Section No:	MS M-23
Page No.:	3 of 15
Issue Date:	03/01/16
Superseded Date:	02/25/15

METERS

Ultrasonic Meters

5. PERFORMANCE REQUIREMENTS

- 5.1 All Ultrasonic Meters will follow the performance requirements as indicated in American Gas Association (AGA) Report #9.
- 5.2 Southwest Gas can request that the flanges directly up and downstream of the meter be dowelled to ensure exact positioning upon reassembly in the field.
- 5.3 American Gas Association (AGA) Report #9-7.2.4, "Internal Surface". It has been shown that surface roughness of 250 μ inch Ra or less (i.e. smoother) can be advantageous in minimizing contamination build up.

6. INSPECTIONS

- 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.**



SOUTHWEST GAS CORPORATION

® ENGINEERING STAFF

MATERIAL SPECIFICATION

Section No:	MS M-23
Page No.:	4 of 15
Issue Date:	03/01/16
Superseded Date:	02/25/15

Prepared By: Engineering Staff 

Approved By: Jerome T. Schmitz 

METERS

Ultrasonic Meters

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.

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 will indicate:

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



SOUTHWEST GAS CORPORATION
 ENGINEERING STAFF
MATERIAL SPECIFICATION

Section No:	MS M-23
Page No.:	5 of 15
Issue Date:	03/01/16
Superseded Date:	02/25/15

Prepared By: Engineering Staff 
Approved By: Jerome T. Schmitz 

METERS
 Ultrasonic Meters

9. PRODUCT MARKING (Cont'd)

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.

11. STOCK CLASSIFICATION DESCRIPTION

METER, ULTRASONIC, NOMINAL PIPE SIZE, _____ INCH, _____ CONNECTION FLANGE CLASS.

METER, ULTRASONIC, MODEL _____, CONNECTION TYPE (CHAIN, STRAP-ON, MAGNET) _____.

METER, ULTRASONIC, NOMINAL PIPE SIZE, _____ INCH, _____ PATH, _____ CLASS.