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* INCH-POUND *

GG-M-2802
July 15, 1993

SUPERSEDING
MIL-M-18294D
16 November 1987

FEDERAL SPECIFICATION

METERS, FLUID QUANTITY VOLUMETRIC

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers volumetric meters comprising: (1) measuring elements that meter the fluid in successive and individual quantities, and (2) registering elements that indicate the total fluid quantity passing through the meter since the last reading.

1.2 Classification. Unless otherwise specified (see 6.2), meters covered by this specification are classified by type, indicating fluid for which meter is designed, and style, indicating type of metering action, in accordance with the following, and by size in accordance with table I.

Type C - Condensate usage
Type F - Fuel usage
Type G - Gas usage
Type W - Water usage

Style A - Oscillating piston or nutational disk
Style B - Bellows or diaphragm
Style C - Rotating drum

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* Beneficial comments (recommendations, additions, deletions) and any *
* pertinent data which may be of use in improving this document should be *
* addressed to: Commanding Officer (Code 156), Naval Construction Battalion *
* Center, 621 Pleasant Valley Road, Port Hueneme, CA 93043-4300, by using *
* the Standardization Document Improvement Proposal (DD Form 1426) appearing *
* at the end of this document or by letter. *

FSC 6680

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Federal Specification

PPP-B-601 - Boxes, Wood, Cleated-Plywood

Federal Standard

FED-STD-123 - Marking for Shipment (Civil Agencies)

Military Specifications

MIL-P-116 - Preservation, Methods of
MIL-V-173 - Varnish, Moisture and Fungus Resistant (for Treatment of Communications, Electronics and Associated Equipment)
MIL-L-19140 - Lumber & Plywood, Fire Retardant Treated

Military Standards

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads
MIL-STD-2073/2 - Packaging Requirement Codes

(Copies of specifications, standards, handbooks, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS shall be the issue of the non-Government documents which is current on the date of the solicitation (see 6.2).

American National Standards Institute, Inc. (ANSI)

B1.1 - Unified Inch Screw Threads
B1.20.3 - Dryseal Pipe Threads (Inch)
B31.1 - Power Piping
B109.1 - Diaphragm Type Gas Displacement Meters (500 Cubic Feet Per Hour Capacity and Under)
B109.2 - Diaphragm Type Gas Displacement Meters (over 500 Cubic Feet Per Hour Capacity)
B109.3 - Rotary Type Gas Displacement Meters

(Application for copies should be addressed to the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.)

ASTM

D3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The meter(s) shall consist of a volumetric-type measure drum, or a fixed displacement device, and a mechanically actuated registering element. The assembly that comprises the meter(s) shall be equipped for installation in a specified piping system. The fluid shall be measured by isolating the flow either in a predetermined volume space or in a fixed displacement mechanism, such as a piston assembly, nutational disk assembly, bellows, or diaphragm assembly (see table I). Meter parts in contact with the measured fluid shall be composed of material that will not chemically react with the fluid. When specified (see 6.2), meters (except gas meters) shall be equipped with a resettable counter, which shall be either part of the registering or integrating element or provided as a separate unit, shall indicate the accumulated fluid quantity that has passed through the meter since the last reading. Meter parts shall be readily accessible for maintenance and replacement, and shall be arranged to operate without vibration within the accuracy requirements contained herein.

TABLE I. Meter characteristics.
(Actual range of operating conditions shall be as specified in 6.2.)

Meter size	Nutational disk/oscillating piston GPM range				Bellows or diaphragm CFH range		Rotating drum PPH range
	Water			Fuel	Gas		Condensate
	(150 psi maximum working pressure)				Capacity 40 ozs. inlet	Maximum working psig	Atmospheric pressure
	100oF	180oF	250oF	150oF	CFH		300oF(max)
1	2-20	2-8	2-5	7-15	175-350	5-10	2-250
2	5-50	5-20	5-13	8-24	400	25	0-500
3	10-100	8-36	8-23	22-50	750-10000	100	0-750
4	16-160	12-52	12-32	28-80			0-1500
5	25-300	18-80	18-50	70-150			0-3000
6	60-500	40-200	40-120	120-250			0-6500
7	100-1000	80-400	80-240	140-660			0-12000

3.1.1 System of measurement. The dimensions used in this specification are not intended to preclude the use of the metric system of measurement in the fabrication and production of the material, individual parts, and the finished product; provided form, fit, and function requirements are satisfied.

3.2 First article. When specified (see 6.2), the contractor shall furnish a meter of each classification required for first article inspection and approval (see 4.2.1 and 6.5).

3.3 Standard commercial product. The meter shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product, shall be included in the meter being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.4 Design. The liquid meter(s) shall be designed to operate without leakage or damage to any part at maximum working pressure of 150 pound-force per square inch (psi). The gas meter(s) shall be designed to meet or exceed the requirements detailed in ANSI B109.1, B109.2, or B109.3 as appropriate for the meter type and capacity. The meter(s) shall be designed for continuous operation, ease of installation and service in the field, constructed to prevent parts from working loose in service, and elimination of conditions hazardous to personnel and detrimental to the equipment. Screw-threads shall be in the inch system and shall conform to ANSI B1.1. Pipe threads shall be in the inch system and shall conform to ANSI B1.20.3. Instrument piping shall conform to ANSI B31.1. The meter(s) shall be designed for the fluid properties and system conditions specified (see 4.5.1 and 6.2). Adequate provisions shall be furnished to prevent corrosive liquid, air, foreign particles, or condensation

from entering the indicating circuit of the instrument. When the operating temperature of steam or service liquid exceeds 240 degrees Fahrenheit (oF), condensation pots shall be provided where suitable.

3.5 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specified.

3.5.1 Dissimilar metals. Contact between dissimilar metals likely to cause deterioration of parts by galvanic corrosion shall be avoided. When such contact cannot be avoided, joints between dissimilar metals shall be protected against galvanic corrosion by plating, coating, insulation, gaskets, or other suitable means. Bolts, nuts, pins, screws, and other fastenings shall be the same material as the metals joined, or shall be cathodic to the metals joined.

3.6 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.7 Construction. The meter(s) shall be constructed to maintain accuracy of indication and to resist wear and corrosion. Materials for construction of pressure-containing parts shall be selected in accordance with the system fluid and the system operating temperature and pressure. Moving parts shall be properly alined, balanced, and lubricated. Interior parts, seals, and packings shall be accessible for service. Provisions for mounting either in the pipeline or on a pedestal shall be as specified (see 6.2). When specified (see 6.2), protection from meter overrange and reverse flow shall be furnished. A drain for fluid-containing components shall be provided. Construction shall be such that the measuring element or fixed displacement device shall cover the specified range without need for replacement.

3.8 Performance. The meter(s) shall be of the style listed in 1.2 and the size listed in table I and shall operate in accordance with the requirements as specified herein.

3.8.1 Accuracy. The liquid meter(s) shall have an accuracy of +/-0.5 percent over the full linear range; +/-0.25 percent over a reduced range. Accuracy of gas meters shall be +/-1 percent over the full linear range.

3.9 Components. The meter(s) shall consist of the following: (1) accessory equipment as specified (see 6.2), (2) additional apparatus normally furnished with this type of meter(s), and (3) the components specified in 3.9.1 through 3.9.8.

3.9.1 Casing. As specified (see 6.2), the outer casing material shall be bronze, aluminum, cast iron protected by suitable noncorrosive treatment, or steel that has been coated for purposes of corrosion-resistance. The case shall be dust-tight and designed for easy removal of interior parts. The gas meter casing shall be gas-tight and meet the requirements of ANSI B109.1 and B109.2.

3.9.2 Measuring chamber, drum, or bellows. The measuring chamber, drum, or bellows shall be designed to maintain a constant volume displacement or constant volumetric measurement with each cycle of the meter. The measuring equipment shall be constructed of corrosion-resistant material and shall have a high resistance to temperature change or to deterioration resulting from moisture. The sensitivity or accuracy of the measuring component shall not be adversely affected by slight distortion of the outer casing. The bellows shall be pliable and gas-tight. The chamber or drum shall be balanced to prevent misalinement. When the fluid is specified for measurement under variable temperature conditions, means shall be provided to compensate for variations in fluid density or viscosity. Transmission of the metered action shall be accomplished directly by mechanical means, with minimum friction and lost motion.

3.9.3 Fixed displacement measuring device. Piston or disk-type metering elements shall be supported and alined to prevent distortion. Moving parts shall be kept to a minimum. The device shall be designed to provide and maintain accuracy (see 3.8.1). Provisions for correction of variances in fluid temperatures and reversal of flow, when applicable, shall be furnished. The element shall be constructed of material that is inherently capable of resisting corrosion. Piston nutations or oscillations shall be kept to a metering action, with minimum friction and lost motions, shall be accomplished by direct mechanical means.

3.9.4 Register. When specified (see 6.2), a direct-reading, adjustable (except gas meters) register or index shall be furnished. Materials shall be selected to resist corrosion. The register shall be graduated in the units specified, of the single or multiple dial type as applicable, and calibrated at center scale unless otherwise specified (see 6.2). The readable portion of the register shall show the entire operating range within the accuracy requirements of 3.8.1. The operating mechanism shall be designed for minimum lost motion, pressure drop, or friction and shall be encased in a dust-proof housing. The scale shall be clearly visible at a distance of 10 feet. Normal system variations or slight distortion of the housing shall not be subjected to undue strain as a result of the action of the transmitting mechanism.

3.9.5 Totalizer. A combined register-totalizer or a separate integrator shall be furnished, as specified (see 6.2). Materials shall be resistant to deterioration resulting from moisture or fog on the dial glass. The counter shall clearly indicate the cumulative metering actions. When specified (see 6.2), a water escape hole shall be provided in the housing. Slight distortion of the housing shall not cause the totalizer to fail. When specified (see 6.2), a record of the accumulated flow rate may be prepared by means of an electrically activated recorder. The total digit wheels to be provided shall be based on the time interval between readings, as specified (see 6.2), and the size meter selected.

3.9.6 Piping. Unless otherwise specified (see 6.2), the meter(s) shall be furnished complete with integral piping for accessory equipment and for installation into the required pipeline. When specified (see 6.2), a system strainer shall be supplied.

3.9.7 Bearings. Bearings provided in any of the meter(s) components shall be of the antifriction type, lifetime-lubricated, and designed for long life and resistance to wear. Bearing selection shall be based on the accuracy of fit required, ease of replacement, and the ability to maintain true alinement.

3.9.8 Air eliminator. When specified (see 6.2), an air eliminator shall be furnished.

3.10 Tamper-proofing. When specified (see 6.2), a tamperproof seal shall be provided.

3.11 Fastening devices. All screws, pins, bolts, and similar parts shall be installed with means for preventing loss of tightness. When subject to removal or adjustment such parts shall not be swaged, peened, staked, or otherwise permanently deformed.

3.12 Surface finish. Surfaces of castings, forgings, molded parts, and welded parts shall be cleaned and made free of sand, dirt, sprues, scale, flux, or other extraneous materials. External surfaces shall be smooth and all edges shall be either rounded or beveled. Measuring surfaces shall be finely ground to a degree consistent with the intended meter accuracy.

3.13 Treatment and painting. Unless otherwise specified (see 6.2), the meter shall be treated and painted in accordance with the manufacturer's standard practice. All surfaces of the meter other than corrosion-resisting steel shall be protected against corrosion and present a neat appearance.

3.14 Electrical equipment. When furnished (see 6.2), electrical components shall not cause malfunction of the meter(s) in normal variations of voltage and frequency.

3.14.1 Fungus resistance. When specified (see 6.2), electrical components and circuit elements, including terminal and circuit connections, shall be coated with varnish conforming to MIL-V-173, except that:

a. Components and elements inherently inert to fungi or in hermetically sealed enclosures need not be coated
b. Current-carrying contact surfaces, such as relay contact points, shall not be coated

3.15 Gearing. Gears shall be properly mounted, fully meshed, and balanced to provide smooth, vibration-free operation over the intended range.

3.16 Freeze protection. When specified (see 6.2), meter(s) (except gas meters) shall be furnished with a freeze-protective device, designed to yield to break under normal freezing conditions in order to reduce damage to other meter parts.

3.17 Identification marking. Identification shall be permanently and legibly marked directly on the meter or on a corrosion-resisting metal plate securely attached to the meter at the source of manufacturer. Identification shall include the item name, the part or identifying number, the manufacturer's model number and serial number, and the manufacturer's name or a trademark to be readily identifiable to the manufacturer.

3.18 Repair parts and service. Replacement or repair parts and service for the standard commercial product provided under this specification shall be available from the manufacturer, through commercial parts distribution, or service organizations.

3.19 Instruction manual. The contractor shall furnish manufacturer's standard manuals normally furnished in commercial practice for each meter specified in the contract.

3.20 Workmanship.

3.20.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure uniformity of size and shape.

3.20.2 Bolted connections. Boltholes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.20.3 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and of uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.20.4 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.20.5 Castings. All castings shall be sound and free from patching, misplaced coring, warping, or any other defect which reduces the casting's ability to perform its intended function.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified

in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2.1)
b. Quality conformance inspection (see 4.2.2)

4.2.1 First article inspection. The first article inspection shall be performed on one meter of each classification specified when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.4 and the tests of 4.5. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall be performed on the sample meter(s) and shall include the examination of 4.4, the tests of 4.5, and the preparation for delivery inspection of 4.6.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. The unit of product shall be one complete meter. All meters of the same classification offered for delivery at one time shall be considered a lot for the purpose of inspection. Guidance for inspection level and Acceptable Quality Level (AQL) is provided in 6.4.

4.4 Examination. Each meter shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or

presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection. Each meter shall be examined for defects listed in table II.

TABLE II. Classification of defects.

Classification	Defects	Requirement paragraph
Major:		
101	Style and size not as specified.	1.2 & table I
102	Missing, broken, or improper parts.	3.1
103	Meters operating with vibration.	3.1
104	Meters not rated in accordance with system requirements.	Table I & 3.3
105	Materials not as specified.	3.5
106	Like parts not interchangeable.	3.6
107	Wearing parts not accessible for service.	3.7
108	No drain for fluid-containing parts.	3.7
109	Failure to maintain accurate indication.	3.8.1
110	Components not as specified.	3.9
111	Improper piping connections.	3.9.6
112	Bearing selection not as specified.	3.9.7
113	Loose unbalanced gears.	3.15
114	Deformed, broken, or loose fastenings.	3.20
115	Defective castings or forgings.	3.20.5
Minor:		
201	Surface finish not as specified.	3.12
202	Painted surface scratched or uncovered.	3.13
203	Identification marking not as specified.	3.17

4.5 Tests.

4.5.1 Registration test. The sample meter(s) shall meet the applicable tests of referenced standards and be tested for accuracy of indication at the low, mid, and high flow range. The meter(s) shall be factory calibrated prior to test. Test fluid operating conditions shall be in accordance with the specified conditions (3.4 and 6.2). When facilities are not available to test the meter under the system operating conditions, simulation of these conditions may be accomplished, providing the test results are corrected to reflect the specified fluid properties and environmental conditions existing at the measurement source. When tested under simulated conditions, the contractor shall make available a certified test report acceptable to the contracting officer indicating that the meter(s) conform to the requirements of this specification. Failure of the meter(s) to meet the accuracy of 3.8.1 shall be cause for rejection.

4.5.2 Leak test. Each sample meter(s) shall withstand an internal pressure equal to 1.5 times the maximum working pressure without damage to the components or impairment of the registration. Failure of the meter(s) to meet this test shall be cause for rejection.

4.5.3 Component test. Instrument piping shall be tested in accordance with ANSI B31.1. Electrical component testing shall be based on the requirements of ANSI C39.4. Failure of the meter(s) to pass the tests or to meet the applicable requirements shall be cause for rejection.

4.6 Preparation for delivery inspection. The preservation, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

5. PREPARATION FOR DELIVERY

5.1 Preservation. Preservation shall be level A or commercial as specified (see 6.2).

5.1.1 Level A. Each meter shall be preserved in accordance with MIL-P-116, method III. Threaded and flanged openings into the meter shall be protected with caps, plugs, or tape.

5.1.2 Commercial. Material shall be packaged in accordance ASTM D3951.

5.2 Packing. Packing shall be level A, or commercial as specified (see 6.2).

5.2.1 Level A. The meters shall be packed in boxes conforming to PPP-B-601, overseas type. The contents shall be cushioned, blocked, and braced to prevent movement inside the containers or damage of meters.

5.2.2 Commercial. Material shall be packed in accordance with ASTM D3951.

5.3 Fire retardant packaging materials. Unless otherwise specified (see 6.2), the outermost, rigid, unit container shall be constructed of fire-retardant materials for all items going aboard Navy ships. Approved fire retardant unit containers are listed in MIL-STD-2073-2. All wood box unit containers specified for use in packaging items shall be made from non-leachable fire retardant treated lumber and plywood per MIL-L-19140.

5.4 Palletization. Material shall be palletized in accordance with MIL-STD-147 when the following criteria are met:

a. Load to consist of four or more unskidded containers
b. Load shall utilize a minimum of 80 percent of the pallet base

5.5 Marking.

5.5.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.5.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

6. NOTES

6.1 Intended use. Meter(s) except for those used for gas and condensate service, are intended for operation in feed water and distributing systems where water flow of 1,000 gallons per minute (gpm) at temperatures up to 250oF at 150 psi or in fuel feeding where oil flow of 660 gpm at 150 psi and 150oF are normally encountered. Gas meters are used in systems designed for maximum working pressures at 100 psi and flow rates up to 10,000 cubic feet per hour. Condensate meters are used to measure condensate flow at atmospheric pressure at rates up to 12,000 pounds per hour at 300oF.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification
b. Type, style, and size meter required (see 1.2 and table I)
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2)
d. When a resettable counter is required to indicate the accumulated fluid quantity since the last reading (see 3.1)
e. When first article is required for inspection and approval (see 3.2, 4.2.1, and 6.5)
f. Density and viscosity of fluid to be metered, system operating temperature, and pressure and flow range (see 3.1, 3.4, and 4.5.1)
g. Whether pipe or pedestal mounting is required, and if meter overrange and reverse flow protection is required (see 3.7)
h. Accessory equipment required, such as gages and alarms (see 3.9)
i. Type of casing material required (see 3.9.1)
j. When register is required, units required, dial type, and calibration if other than specified (see 3.9.4)
k. Type of totalizer required, when a water escape hole is required in the housing, when the accumulated flow rate may be prepared by an electrical recorder; time intervals between readings (see 3.9.5)
l. Piping connections required, and strainer if required (see 3.9.6)
m. When an air eliminator is required (see 3.9.8)
n. When meter shall be tamper-proof (see 3.10)
o. Treatment and painting if different (see 3.13)
p. When electrical components are required; input characteristics and electrical connections (see 3.14)
q. When fungus-proofing is required (see 3.14.1)
r. When freeze protection is required (see 3.16)
s. Level of preservation and level of packing required (see 5.1 and 5.2)
t. Material for unit container if different (see 5.3)

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 are invoked and the DD Form 1423 is not used, the data shall be delivered by the contractor in accordance with the contract or purchase order requirements.

6.4 Sampling procedures.

6.4.1 Sampling for examination. Recommended inspection level is II and Acceptable Quality Level is 2.5 percent for major defects and 4.0 percent for minor defects (see 4.3).

6.4.2 Sampling for tests. Recommended inspection level is II and Acceptable Quality Level is 2.5 percent defective (see 4.3).

6.5 First article. When a first article inspection is required, the item will be tested and should be a first production item or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.6 Part or Identifying Number (PIN). The PIN to be used for meters acquired to this specification are created as follows:

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                                      GG-M-2802       X  X  X  X
Federal Specification Number -------------*           *  *  *  *
Counter code (R=Resettable, N=Non-Resettable) ---------*  *  *  *
Size (see table I) ----------------------------------------*  *  *
Style (see 1.2) -------------------------------------------*  *
Type (see 1.2) --------------------------------------------------*
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6.7 Options. Overall accuracy of the meters specified is governed by the type of metering action, method of transmitting this action, and the position arranged for a particular system application. Condensate meters, designed essentially to measure the operating medium by isolating fixed liquid quantities, are not suited to maintain a pressure and should be limited to measuring low-viscosity liquids. The other meters shall be operated in systems that will be completely filled with fluid and have a back pressure above atmospheric. In certain applications, these meters will require installation with a two- or three-valve bypass piping arrangement.

6.8 Supersession data. This specification replaces military specification MIL-M-18294D dated 16 November 1987.

6.9 Classification cross reference. Classifications used in this specification (see 1.2) are identical to those found in the superseded military specification, MIL-M-18294D.

6.10 Subject term (key word) list.

Condensate
Fuel
Gas
Water

MILITARY INTERESTS:

Custodians

Army - CE
Navy - YD

Review Activity

DLA - GS

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY

Navy - YD

(Project 6680-0232)