

INCH-POUND

MIL-PRF-12125G

6 March 1996

SUPERSEDING

MIL-V-12125F(ME)

21 December 1989

PERFORMANCE SPECIFICATION

VALVE, GATE: QUICK-OPENING, CLASS 125
CAST IRON, WITH POSITION LOCK

This specification is approved for use by all Department and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers 125-pound (56.7 kilograms (kg)) class rating, cast-iron, bronze-trimmed, position-locked, quick-opening gate valves.

1.2 Classification. Valves are of the following styles and sizes, as specified in table I (see 6.2):

TABLE I. Styles and sizes.

Style	Size - inches (millimeters (mm))			
A - Threaded	2 (51)	2.5 (64)	3 (76)	4 (102)
B - Flanged	2 (51)	2.5 (64)	3 (76)	4 (102)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A

FSC 4820

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2. APPLICABLE DOCUMENTS

2.1 **General.** The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 **Non-Government publications.** The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI B16.1 - Cast-Iron Pipe Flanges and Flanged Fittings (DoD Adopted).
- ANSI/ASQC Z1.4 - Sampling Procedures & Tables For Inspection by Attributes (DoD Adopted).
- ANSI/SAE AS478 - Identification Marking Methods (DoD Adopted).
- ANSI/ASME B1.1 - Unified Inch Screw Threads (UN and UNR-Thread Form) (DoD Adopted).

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM A47 - Standard Specification for Ferritic Malleable Iron Castings (DoD Adopted).
- ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings (DoD Adopted).
- ASTM A197 - Standard Specification for Cupola Malleable Iron (DoD Adopted).
- ASTM A536 - Standard Specification for Ductile Iron Castings (DoD Adopted).
- ASTM B21 - Standard Specification for Naval Brass Rod, Bar, and Shapes (DoD Adopted).
- ASTM B61 - Standard Specification for Steam or Valve Bronze Castings (DoD Adopted).

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- ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings (DoD Adopted).
- ASTM B138 - Standard Specification for Manganese Bronze Rod, Bar, and Shapes (DoD Adopted).
- ASTM B140 - Standard Specification for Copper-Zinc-Lead (Leaded Red Brass or Hardware Bronze) Rod, Bar, and Shapes (DoD Adopted).
- ASTM B371 - Standard Specification for Copper-Zinc-Silicon Alloy Rod (DoD Adopted).
- ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications (DoD Adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- SAE J1086 - Numbering Metals and Alloys Recommended Practice (DoD Adopted).

(Application for copies should be addressed to Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Material. Material shall be as specified herein. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification (see 4.4.1).

3.2.1 Material deterioration prevention and control. The valves shall be fabricated from compatible materials, inherently corrosion resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable

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operating and storage environments to which the valves may be exposed. The selected materials and processes shall meet all of the performance and environmental specifications herein (see 4.4.1).

3.2.1.1 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion (see 4.4.1).

3.2.1.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials shall be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs (see 4.4.1).

3.3 Design and construction. Unless otherwise specified herein, the valve shall conform to the manufacturer's design and construction (see 4.4.2). As a minimum the following overall requirements shall be incorporated:

- a. Quick opening.
- b. Sliding-spindle gate with:
 1. Solid wedge.
 2. Single or double disk; Actuated by a lever mechanism.
 3. Lever mechanism shall lock the valve open in any desired position.
- c. Area of flow through the valve shall not be less than the area of the nominal pipe size of the valve.
- d. Exception to c; for valves with seat rings having lugs for insertion and removal of rings, the area shall not be reduced by more than 30 percent (%).
- e. The disk shall not jam and internal parts shall not be damaged by rapid and/or forceful lever operation.

3.3.1 Valve body and bonnet. The valve body and bonnet shall be cast iron conforming to ASTM A126, class B or C. The joint between the body and bonnet shall be flanged, gasketed, and bolted. Saddle-type U-bolts shall not be used to secure the bonnet. Yokes shall be cast integrally with the bonnet or flange connected to the bonnet. Disk guides shall be cast integrally with the body and formed to support disks in all positions (see 4.4.1 & 4.4.2).

3.3.2 External working parts. External working parts shall be malleable iron conforming to ASTM A47, ductile iron conforming to ASTM A536, grade 65-45-12, or cupola malleable iron conforming to ASTM A197 (see 4.4.1 & 4.4.2).

3.3.3 Seat rings. Seat rings shall be bronze conforming to either ASTM B61 or ASTM B62. The seat rings shall be secured in the body by threaded connections to permit removal and replacement of the rings (see 4.4.1 & 4.4.2).

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3.3.4 Disks. Disks shall be bronze conforming to either ASTM B61 or ASTM B62 or shall consist of a cast-iron disk faced with bronze disk rings. The disk rings shall be bronze conforming to ASTM B61 or ASTM B62 and shall be permanently secured to the disk by rolling into accurately machined, dovetailed slots or by equivalent means. Disks shall be equipped with integral guides to mate with guides cast in the body (see 4.4.1 & 4.4.2).

3.3.5 Stems. Stems shall be any copper alloy listed in table II: (see 4.4.1 & 4.4.2)

TABLE II. Stem materials.

ASTM specification.	UNS number 1/
B21	C46400, C48200
B61	C92200
B62	C83600
B138	C67500
B140	C31600, C32000
B371	C69400, C69700
B584	C86400, C86700, C87400, C87500, C87600

1/ Unified Numbering System (UNS) designation for wrought and cast copper alloys, in accordance with SAE HS1086.

3.4 Working and hydrostatic pressure. Valves shall withstand a working pressure of not less than 200 pounds per square inch (psi) 1378.8 (kiloPascals (kPa)) for water, oil, or gas at temperatures up to 150°F ±5°F (65.6°C ±15°C), and a hydrostatic shell pressure test of not less than 350 psi (2413 kPa). Leakage shall not exceed 10 cubic centimeters (cc) per hour per inch (25.4 mm) of diameter (see 4.4.3.1).

3.5 Style A - threaded. The inlets and outlets of style A valves shall have internal NPT threads in accordance with ANSI/ASME B1.1. The threads shall be concentric with the axis of the port, and variations in alignment shall not exceed 0.062 inch (1.6 mm) per foot (0.3 meters (m)). Threads shall be chamfered at the valve inlet and outlet near the major diameter of the thread at an angle of 45 degrees with the axis of the thread. The chamfer shall be concentric with the thread (see 4.4.2).

3.6 Style B - flanged. Flanged valves shall be faced and drilled in accordance with ANSI B16.1 (see 4.4.2).

3.7 Human factors engineering (HFE). A force of not more than 20 pounds [9.1 kilograms (kg)], using one hand, shall be required to open or close the valve at maximum operating pressure. The valve shall be labeled "OPEN" and "CLOSE" with a double headed arrow indicating direction (see 4.4.1 & 4.4.2).

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3.8 Treatment and painting. The outside portions of the valve normally painted shall be cleaned, treated, and painted in accordance with the manufacturers standard practice for gate valves, unless otherwise specified (see 6.2) the top coat color shall be camouflage green (see 4.4.2).

3.9 Identification marking. Unless otherwise specified (see 6.2), the valves as a minimum shall be identified and marked with the following (see 4.4.2):

- a. Manufacturer and Part No.
- b. Manufacturer Serial No.
- c. Specification No.
- d. Working Pressure.

3.10 Workmanship. The valve shall be cleaned of loose metal chips and other foreign material before and after final assembly. Burrs, sharp edges and excess flash on cast parts shall be removed. Threaded parts shall be smooth and free of metal chips and burrs (see 4.4.2).

4. VERIFICATION

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

- a. First article valve inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article valve inspection.

4.2.1 Examination. The first article valve shall be examined as specified in 4.4.2. Presence of any defects shall be cause for rejection.

4.2.2 Test. The first article valve shall be tested as specified in 4.4.3. Failure of the test shall be cause for rejection.

4.3 Conformance inspection.

4.3.1 Sampling. Sampling for examination and test shall conform to ANSI/ASQC Z1.4.

4.3.2 Examination.

4.3.2.1 Individual. Each valve shall be examined for the critical defects specified in 4.4.2. Presence of any defects shall be cause for rejection.

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4.3.2.2 Samples. Samples selected in accordance with 4.3.1 shall be examined as specified in 4.4.2. Evidence of any defect shall be cause for rejection.

4.3.3 Test.

4.3.3.1 Samples. Samples selected in accordance with 4.3.1 shall be tested as specified in 4.4.3. Failure of any test shall be cause for rejection.

4.4 Method of inspection.

4.4.1 Materials and design. Conformance to 3.2 through 3.10 shall be determined by inspection of contractor records providing proof or certification that materials and design conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.4.2 Examinations. Conformance to 3.2 through 3.10 shall be determined by examination for the defects listed in table III. Examination shall be visual, tactile or by measurement with SIE.

TABLE III. Classification of defects.

Category	Defect	Method of examination
Major:		
101	Materials not as specified (see 3.2).	Visual
102	Materials not resistant to corrosion and deterioration, or treated to be resistant to corrosion and deterioration for the applicable storage and operating environments (see 3.2.1).	Visual
103	Dissimilar metals as defined are not effectively insulated from each other, to meet all of this specifications performance (see 3.2.1.1).	Visual
104	Used, rebuilt or remanufactured components, pieces, or parts incorporated in the valves (see 3.2.1.2).	Visual
105	Locking mechanism not as specified (see 3.3).	SIE 1/
106	Flow passage not as specified (see 3.3).	Visual
107	Valve body and bonnet not as specified (see 3.3.1).	SIE
108	External working parts not as specified (see 3.3.2).	SIE
109	Seat rings not as specified (see 3.3.3).	Visual
110	Disks not as specified (see 3.3.4).	Visual
111	Stems not as specified (see 3.3.5).	Visual
112	Holes in casting (see 3.5).	Visual

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TABLE III. Classification of defects - Continued.

Category	Defect	Method of examination
<u>Major:</u>		
113	Style not as specified (see 3.5 and 3.6).	Visual
114	Threads or flanges not as specified (see 3.5 and 3.6).	SIE
115	Human factors engineering not as specified (see 3.7).	SIE & Visual
116	Treatment, painting, or color not as specified (see 3.8).	Visual
117	Identification marking missing, incomplete not as specified (see 3.9).	Visual
118	Workmanship not as specified (see 3.10).	SIE & Visual

1/ = Standard Inspection Equipment.

4.4.3 Test.

4.4.3.1 Operation and hydrostatic pressure. To check conformance to 3.4, the operation and hydrostatic pressure test shall be performed as follows:

- a. Apply a hydrostatic pressure of not less than 350 psi (2413 kPa) at 150°F ±5°F (65.6°C ±3°C) to the valve with both ends blanked and the gate in the open position.
- b. Relieve the pressure, close the gate and apply a hydrostatic pressure of not less than 200 psi (1379 kPa) at 150°F ±5°F to one side of the valve with the other side open to the atmosphere.
- c. Open the valve approximately halfway and lock the lever mechanism.
- d. Unlock the lever mechanism and rapidly open and close the valve 10 times.
- e. Relieve the pressure, disconnect the pressure line and attach it to the other side of the valve.
- f. Apply a hydrostatic pressure of not less than 200 psi at 150°F ±5°F to one side of the valve with the other side open to the atmosphere. Nonconformance to 3.4 shall constitute failure of this test.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within

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the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

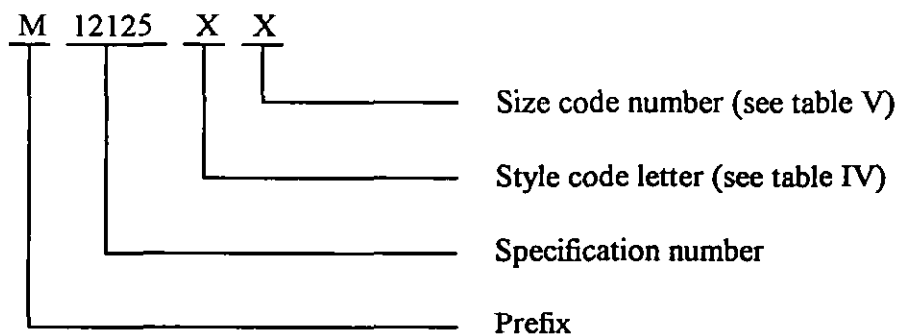
(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The valves are intended for use principally in water purification equipment.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Style and size required (see 1.2).
- c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2).
- d. When a first article is required for inspection and approval, and number of valves required (see 3.1).
- e. Color required (see 3.8).
- f. When identification marking other than specified is required (see 3.9).
- g. Packaging requirements (see 5.1).
- h. Specification part number required (see 6.3).

6.3 Part or identification number. The specification part number of the valves covered by this specification will be designated in the following form (see 3.9 and 6.2):



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6.3.1 Style code letter (see table IV).TABLE IV. Style code letter.

Style	Description
A	Threaded
B	Flanged

6.3.2 Size code number. The valve size will be designated by the following code numbers (see table V).

TABLE V. Size code number.

Code number	Size
1	2 inches
2	2.5 inches
3	3 inches
4	4 inches

EX: M12125A4 - Specification part number for a valve made to a specification MIL-PRF-12125, threaded and 4 inches in diameter.

6.4 Subject term (key word) listing.

Bronze trimmed
Purification water
Shell pressure
Yokes

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army - AT
Navy - CG

Preparing Activity:
Army - AT

(Project 4820-0690)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-12125G	2. DOCUMENT DATE (YYMMDD) 960306
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3. DOCUMENT TITLE

Valve Gate: Quick-Opening, Class 125, Cast Iron, With Position Lock

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*
5. REASON FOR RECOMMENDATION

6. SUBMITTER:		
a. NAME <i>(Last, First, Middle Initial)</i>	b. ORGANIZATION	
c. ADDRESS <i>(Include Zip Code)</i>	d. TELEPHONE <i>(Include Area Code)</i> (1) Commercial	7. DATE SUBMITTED (YYMMDD)
	(2) AUTOVON <i>(If applicable)</i>	
8. PREPARING ACTIVITY		
a. NAME	b. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (810) 574-8745	(2) AUTOVON 786-8745
c. ADDRESS <i>(Include Zip Code)</i> Commander U.S. Army Tank-automotive and Armaments Command, ATIN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	