

INCH-POUND

MIL-PRF-12125H

27 April 2011

SUPERSEDING

MIL-PRF-12125G

6 March 1996

## 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 (Metric class PN10) 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):

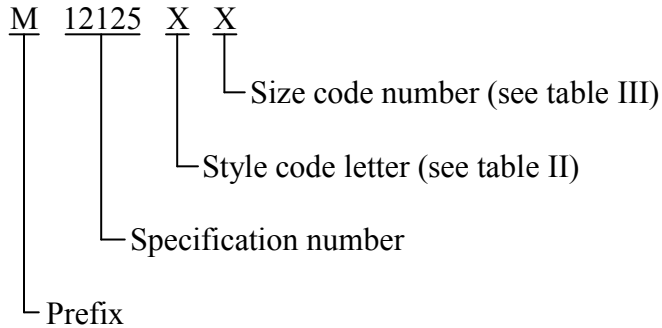
TABLE I. Styles and sizes.

Style	Size - inches (in.)			
A - Threaded	2	2.5	3	4
B - Flanged	2	2.5	3	4

Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or emailed to [DAMI\\_STANDARDIZATION@conus.army.mil](mailto:DAMI_STANDARDIZATION@conus.army.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

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1.3 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):



1.3.1 Style code letter (see table II).

TABLE II. Style code letter.

Style	Description
A	Threaded
B	Flanged

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

TABLE III. Size code number.

Code number	Size (in.)
1	2
2	2.5
3	3
4	4

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

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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 of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

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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 these documents are those cited in the solicitation or contract (see 6.2).

### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI/ASQC Z1.4 - Sampling Procedures and Tables For Inspection by Attributes
- ANSI/SAE AS478 - Identification Marking Methods
- ANSI/ASME B1.1 - Unified Inch Screw Threads (UN and UNR Thread Form)

(Copies of these documents are available from [www.ansi.org](http://www.ansi.org) or ANSI Customer Service Department, 25 W. 43rd Street, 4th Floor, New York, NY 10036.)

### AMERICAN SOCIETY OF MECHANICAL ENGINEERS

- ASME B16.1 - Cast-Iron Pipe Flanges and Flanged Fittings

(Copies of these documents are available online at <http://www.asme.org> or from American Society of Mechanical Engineers, Orders/Inquiries, P.O. Box 2300, Fairfield, NJ 07007-2300.)

### ASTM INTERNATIONAL

- ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings
- ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
- ASTM A197/A197M - Standard Specification for Cupola Malleable Iron
- ASTM A536 - Standard Specification for Ductile Iron Castings
- ASTM B21/B21M - Standard Specification for Naval Brass Rod, Bar, and Shapes
- ASTM B61 - Standard Specification for Steam or Valve Bronze Castings
- ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings

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- ASTM B140/B140M - Standard Specification for Copper-Zinc-Lead (Leaded Red Brass or Hardware Bronze) Rod, Bar, and Shapes
- ASTM B371 - Standard Specification for Copper-Zinc-Silicon Alloy Rod
- ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications

(Copies of these documents are available from [www.astm.org](http://www.astm.org) or ASTM International, P.O. Box C700, West Conshohocken, PA 19428-2959.)

## SAE INTERNATIONAL

- SAE HS1086 - Numbering Metals and Alloys Recommended Practice
- SAE J461 - Wrought and Cast Copper Alloys

(Copies of these documents are available from [www.sae.org](http://www.sae.org) or SAE Customer Service, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.3 Order of precedence. Unless otherwise noted herein or in the contract, 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 and 4.4.2).

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 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 and 4.4.2).

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 and 4.4.2).

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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 and 4.4.2).

3.3 Design and construction. Unless otherwise specified herein, the valve shall conform to the manufacturer's design and construction (see 4.4.1 and 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 and 4.4.2).

3.3.2 External working parts. External working parts shall be malleable iron conforming to ASTM A47/A47M, ductile iron conforming to ASTM A536, grade 65-45-12, or cupola malleable iron conforming to ASTM A197/A197M (see 4.4.1 and 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 and 4.4.2).

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 and 4.4.2).

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

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TABLE IV. Stem materials.

Specification	UNS number <u>1/</u>
ASTM B21/B21M	C46400, C48200
ASTM B61	C92200
ASTM B62	C83600
ASTM B140/B140M	C31600, C32000
ASTM B371	C69400, C69700
ASTM B584	C86400, C86700, C87400, C87500, C87600
SAE J461	C67500

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) (1380 kilopascals (kPa)) for water, oil, or gas at temperatures up to 150±5 °F (65 ± 3 °C), and a hydrostatic shell pressure test of not less than 350 psi (2410 kPa). Leakage shall not exceed .6 cubic inches (in<sup>3</sup>) (10 cubic centimeters (cc)) per hour per inch (25.4 mm) of diameter (see 4.4.1, 4.4.2 and 4.4.3.1).

3.5 Style A - threaded. The inlets and outlets of style A valves shall have internal NPT (FNPT) 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 in. (1.6 mm) per foot. 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 4.4.1 and 4.4.2).

3.6 Style B - flanged. Flanged valves shall be faced and drilled in accordance with ASME B16.1 (see 4.4.1 and 4.4.2).

3.7 Human factors engineering (HFE). A force of not more than 20 pounds (lb) [10 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 and 4.4.2).

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 4.4.1 and 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 4.4.1 and 4.4.2):

- a. Manufacturer and Part No. (see 1.3)
- b. Manufacturer Serial No.
- c. Specification No.

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### 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 4.4.1 and 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.

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

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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 V. Examination shall be visual, tactile or by measurement with SIE.

TABLE V. Classification of defects.

Category	Defect	Method of examination
<u>Major:</u>		
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 requirements (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
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 and Visual
116	Treatment, painting, or color not as specified (see 3.8).	Visual
117	Identification marking missing, incomplete, or not as specified (see 3.9).	Visual
118	Workmanship not as specified (see 3.10).	SIE and Visual

1/ SIE = 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:



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- a. Apply a hydrostatic pressure of not less than 350 psi (2410 kPa) at  $150 \pm 5$  °F ( $65 \pm 3$  °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 (1380 kPa) at  $150 \pm 5$  °F ( $65 \pm 3$  °C) 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 (1380 kPa) at  $150 \pm 5$  °F ( $65 \pm 3$  °C) 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 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 should specify the following:

- a. Title, number, and date of the specification.
- b. Style and size required (see 1.2).
- c. 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 1.3).

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6.3 Subject term (key word) listing.

Bronze trimmed  
Purification water  
Shell pressure  
Yokes

6.4 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 4820-2011-002)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.