

**INCH-POUND**

**MIL-PRF-13803F**

**2 January 1996**

**SUPERSEDING**

**MIL-V-13803E(ME)**

**4 December 1989**

## PERFORMANCE SPECIFICATION

### VALVE, GATE: DOUBLE-DISK, CAST-IRON OR STEEL

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

#### 1. SCOPE

1.1 Scope. This specification covers various sizes and classes of cast-iron and steel, double-disk gate valves for liquid or gaseous petroleum products.

1.2 Classification. Gate valves are of the following sizes, classes, end connection, gearing and seat material, as specified (see 6.2):

Sizes

2-inch

4-inch

6-inch

8-inch

12-inch

16-inch

20-inch

24-inch

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. 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.

## MIL-PRF-13803F

<u>Classes</u>	<u>Type of end connections</u>	<u>Type of gearing</u>	<u>Type of seat material</u>
125	Flanged	Spur	See table III
150	Threaded	Beveled	
250	Beveled		
300			
400			
600			

## 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 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 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this documents to the extent specified herein. Unless otherwise specified, the issues of these documents are 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).

## SPECIFICATIONS

### FEDERAL

P-D-680 - Dry Cleaning Solvent.

### DEPARTMENT OF DEFENSE

MIL-T-704 - Treatment and Painting of Materiel

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

## MIL-PRF-13803F

2.3 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, documents cited 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, 25, 125, 250, and 800 lb (DoD Adopted). |
| ANSI B16.5     | - Pipe Flanges and Flanged Fittings.   |
| ANSI B16.10    | - Face-to-Face and End-to-End Dimensions of Ferrous Valves (DoD Adopted).              |
| ANSI B16.25    | - Butt-Welding Ends.   |
| ANSI B18.2.1   | - Square and Hex Bolts and Screws, Inch Series Hex Screws (DoD Adopted).               |
| ANSI B18.2.2   | - Square and Hex Nuts.   |
| ANSI/ASQC Z1.4 | - Sampling Procedures and Tables for Inspection by Attributes (DoD Adopted).           |
| ANSI/SAE AS478 | - Identification Marking Methods (DoD Adopted).  |

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

## AMERICAN PETROLEUM INSTITUTE (API)

- |             |   |
|-------------|---|
| API SPEC 5B | - Specification for Threading, Gaging and Thread Inspection of Casing, Tubing, and Line Pipe Threads. |
| API SPEC 6D | - Specification for Pipeline Valves, (Gate, Plug, Ball and Check Valves).                             |

(Applications for copies should be addressed to the American Petroleum Institute, Division of Production, 1220 L Street N.W., Washington, D.C. 20005.)

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- |           |   |
|-----------|---|
| ASTM A193 | - Alloy-Steel and Stainless Bolting Materials for High-Temperature Service. |
| ASTM A307 | - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.                |
| ASTM E10  | - Brinell Hardness of Metallic Materials, Test Method for.                  |

## MIL-PRF-13803F

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

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-25	- Standard Marking System for Valves, Fittings, Flanges and Unions (DoD Adopted).
MSS SP-45	- Bypass and Drain Connections (DoD Adopted).
MSS SP-61	- Pressure Testing of Steel Valves (DoD Adopted).
MSS SP-70	- Cast-Iron Gate Valves, Flanged and Threaded Ends (DoD Adopted).

(Application for copies should be addressed to the Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street NE, Vienna, VA 22180.)

2.4 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 Description. The gate valves shall be double-disk type and shall consist of body, bonnet, gate and seat, and end connections, with additional handwheels or operating gears as specified herein.

3.2 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3 (see 6.3).

3.3 Materials. Materials shall be as specified herein and in the referenced industrial standards. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification. Used, rebuilt or remanufactured components, pieces, and parts shall not be incorporated in the valves.

3.3.1 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.

3.3.1.1 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion.

## MIL-PRF-13803F

3.3.1.2 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, and shall make information available upon request to the contracting officer or designated representative (see 3.1 and 3.7.)

3.3.2 Recovered materials. Recycled, recovered, or environmentally preferable materials should 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.

3.4 Design and fabrication. Valves shall conform to table I, and shall be designed for the applicable working and hydrostatic pressures shown in table I. Valve design shall conform to requirements of the American National Standards Institute (ANSI) in table I. The 6-, 8-, and 12-inch valves shall pass a brush-type pipeline cleaner that results in low resistance and continuous non-turbulent, laminar flow for liquids and gaseous petroleum products of this specification. Flow lines through the valves shall have smooth transitional surfaces.

TABLE I. Working pressure, material and hydrostatic pressure.

Class	Max working pressure @ 100°F (37.8°C)		Material	Hydrostatic		ANSI (For drilling and facing)
	psi	(kPa)		Pressure test body psi (kPa)	Seal psi (kPa)	
125	175	(1206)	Cast iron	350 (2412)	175	B16.1
150	275	(1896)	Steel	425 (2930)	300 (2068)	B16.5
250	500	(3447)	Cast iron	1000 (6895)	500	B16.1
300	720	(4964)	Steel	1000	800 (5515)	B16.5
400	960	(6618)	Steel	1450 (9996)	1060 (7308)	B16.5
600	1440	(9927)	Steel	2175 (14 994)	1600 (11 030)	B16.5

3.4.1 End connections. Valve ends shall be flanged, threaded, or beveled for welding, as specified (see 6.2), and shall conform to 3.4.1.2, 3.4.1.3, or 3.4.1.4, respectively.

3.4.1.2 End flanges. End flanges shall be integral with the valve body and shall be faced and drilled in conformance to the applicable standards specified in table I. When specified (see 6.2), companion flanges shall be provided.

3.4.1.2.1 End flange gaskets. When specified (see 6.2), end flange gaskets shall be required.

## MIL-PRF-13803F

3.4.1.2.2 End flange bolting. When specified (see 6.2), end flange bolting shall be required. Bolts shall have regular, unfinished hexagon heads. Bolt dimensions shall conform to ANSI B18.2.1. Material for bolts or bolt studs for the steel gate valves, classes 125 through 300 shall conform to ASTM A307, grade B; classes 400 through 600 shall conform to ASTM A193, grade B7. When bolts are furnished, the hexagon nuts shall conform to ANSI B18.2.2.

3.4.1.3 Threaded ends. Threaded ends shall not be furnished on valves with end connections larger than 4 inches. When specified (see 6.2), threaded ends shall be internal American Standard taper pipe threads conforming to API SPEC 5B.

3.4.1.4 Welded ends. When specified (see 6.2), beveled ends for welding shall be furnished on steel valves only. Beveling shall conform to ANSI B16.25.

3.4.2 Stems. Unless otherwise specified (see 6.2 and 6.4), valves shall be the rising stem type.

3.4.3 Handwheels. Unless otherwise specified (see 6.2), handwheels shall be furnished. Handwheels shall be spoked-type only. Handwheels shall be sized such that the force required to open and close the valve when at maximum working pressure does not exceed 35 pounds (156 Newtons (N)).

3.4.4 Gears. When specified (see 6.2), spur or beveled gearing shall be furnished.

3.4.5 Bosses. When specified (see 6.2), the valve shall be furnished with two bosses on one side of the body and one boss on the bonnet. Bosses shall be drilled, tapped, and plugged in conformance to MSS SP-45.

3.4.6 Valve distortion and leakage. When subjected to the hydrostatic pressures specified in table I, the valve bodies and bonnets shall not leak or show permanent distortion. Leakage tolerances for the valve seat shall conform to MSS SP-61 for steel valves and MSS SP-70 for cast iron valves. Duration of hydrostatic testing shall conform to table II.

TABLE II. Duration of hydrostatic testing.

Valve size (Inches)	Body test (Minutes)	Seat test (minutes)
2, 4	2	2
6, 8	5	5
12, 16	15	10
20, 24	30	15

## MIL-PRF-13803F

3.4.7 End-to-end dimensions. End-to-end dimensions shall conform to ANSI B16.10.

3.4.8 Steel gate valves. Steel gate valves shall be either cast or forged steel conforming to API SPEC 6D, and as specified herein.

3.4.9 Seating material. Unless otherwise specified (see 6.2), seating material shall be equivalent to that shown in table III. Where seating material is keyed or rolled in, welded on, threaded in, or deposited on the seat rings or disks, material for the seat rings and disks shall have a strength of not less than that of the body material. There shall be a difference in hardness of not less than 50 Brinell points between mating surfaces to minimize galling, except for designation 3 seating material, in which case no difference in hardness is required.

TABLE III. Suggested seating material for steel gate valves.

Designation	Seating material
1	11.5- to 13.5-percent chromium steel.
2	18-8 chromium-nickel alloy steel.
3	Hard-facing nonferrous alloy consisting of cobalt, chromium, and other minor elements having a Brinell hardness of not less than 350.
4	Combination trim. Copper-nickel alloy for one surface (seat rings, disk, or disk rings); other surfaces 11.5- to 13.5-percent chromium steel.
5	One surface to be high strength, low-alloy steel, heat-treated to a Brinell hardness between 225 and 275 and chrome-plated. The other surface to have hard facing.

3.4.10 Cast-iron gate valves. Cast-iron gate valves shall conform to MSS SP-70 and as specified herein. Seating surfaces other than bronze or designation 3 in table III shall have a difference in hardness of not less than 50 Brinell points to minimize galling.

3.5 Weather protection. When specified (see 6.2), a removable, steel weathertight covering shall be furnished to protect the valve stem. When specified (see 6.2), a cast-iron or steel housing shall be provided for the gearing.

## MIL-PRF-13803F

3.6 Functional marking. Valves shall be provided with double-ended arrows showing the direction of operations and labeled at each end to indicate the functional result (e.g. "open" and "close").

3.7 Treatment and painting. All external parts of the valve normally painted shall be treated and painted in accordance with 4.5.2.3.

3.8 Other design requirements. Additional specific interface and design requirements relating to class and size variation combinations shall be furnished by the contracting officer (see 6.2).

3.9 Identification marking. Valve identification marking shall conform to ANSI/SAE AS478. When specified (see 6.2), special marking shall conform to MSS SP-25.

3.10 Workmanship. Workmanship shall conform to API SPEC 6D for steel valves and MSS SP-70 for cast-iron valves.

#### 4. VERIFICATION

4.1 Component and material inspection. The contractor is responsible for ensuring that components and materials used are manufactured, examined, and tested as specified in referenced specifications and standards, as applicable.

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

- a. First article inspection (see 4.3).
- b. Conformance inspection (see 4.4).
- c. Inspection comparison (see 4.5).

#### 4.3 First article inspection.

4.3.1 First article examination. The first article shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 First article test. The first article shall be tested as specified in 4.5.2. Failure of any test shall be cause for rejection.

#### 4.4 Conformance inspection.

4.4.1 Sampling. Sampling for examination and tests shall conform to ANSI/ASQC Z1.4.



## MIL-PRF-13803F

4.4.2 Examination. Samples selected as specified in 4.4.1 shall be examined as specified in 4.5.1, as applicable.

4.4.3 Tests. Samples selected as specified in 4.4.1 shall be tested as specified in 4.5.2.1.1 and 4.5.2.1.2.

4.4.3.1 Comparison tests. When first article inspection is specified, the Government may select valves at any time during the contract production period and subject these valves to the examination specified in 4.5.1 and the tests specified in 4.5.2 to determine that the quality of the selected valves is equal to the quality standards established during first article inspection. The inspection will be performed by the Government at a site selected by the Government. Valves will be selected at random from those which have been accepted by the Government and will not include the previously inspected first article valves.

4.4.3.1.1 Inspection failure. Failure of any valves when inspected as specified in 4.5 may be considered cause for refusal by the Government to continue acceptance of valves until objective evidence furnished by the contractor reveals that corrective action has been taken to eliminate the condition which caused the rejection.

#### 4.5 Inspection procedure.

4.5.1 Inspection. The valve shall be examined as specified in table IV for the following defects:

TABLE IV. Classification of defects.

Category	Defect	Method of examination
<u>Major:</u>		
101	Valve not as described (see 3.1).	Visual
102	Materials not as specified (see 3.3).	SIE <u>1/</u>
103	Materials not resistant to corrosion and deterioration, or treated to be resistant to corrosion and deterioration for the applicable storage and operating environments (see 3.3.1).	SIE and Visual
104	Dissimilar metals are not effectively insulated from each other (see 3.3.1.1).	Visual
105	Contractor does not have documentation available for identification of material, material finishes, or treatment (see 3.3.1.2).	Visual
106	Used, rebuilt, or remanufactured components, pieces, or parts incorporated in the valves (see 3.3).	Visual

## MIL-PRF-13803F

TABLE IV. Classification of defects - Continued.

Category	Defect	Method of examination
107	Design and fabrication not as specified (see 3.4).	Visual
108	The 6-, 8-, or 12-inch valve does not pass brush-type pipeline cleaner (see 3.4).	SIE
109	Flow lines not streamlined as specified (see 3.4).	Visual
110	End connections not as specified (see 3.4.1).	Visual
111	End flanges not as specified (see 3.4.1.2).	Visual
112	End flange gaskets not as specified (see 3.4.1.2.1).	Visual
113	End flange bolting not as specified (see 3.4.1.2.2).	Visual
114	Threaded ends not as specified (see 3.4.1.3).	Visual
115	Welded ends not as specified (see 3.4.1.4).	Visual
116	Gears not as specified (see 3.4.4).	Visual
117	Bosses missing or not as specified (see 3.4.5).	SIE
118	Dimensions not as specified (see 3.4.7).	Visual
119	Steel gate valves not as specified (see 3.4.8).	Visual
120	Seating material not as specified (see 3.4.9 and 3.4.10).	Visual
121	Cast-iron gate valves not as specified (see 3.4.10).	Visual
122	Workmanship not as specified (see 3.10).	Visual
123	Treatment and painting not as specified (see 3.7).	Visual
124	Color not as specified (see 3.7).	Visual
<u>Minor:</u>		
201	Stems not as specified (see 3.4.2).	Visual
202	Handwheels not as specified (see 3.4.3).	Visual
203	Protective covering missing when specified (see 3.5)	Visual
204	Functional marking not as specified (see 3.6).	Visual
205	Identification marking missing, incomplete or not legible (see 3.9).	Visual

1/ SIE = Standard Inspection Equipment

#### 4.5.2 Tests.

4.5.2.1 Hydrostatic tests. The valve shall be subjected to the following hydrostatic tests. The test fluid shall be water or a solvent conforming to P-D-680, type I (Stoddard Solvent). Nonconformance to 3.4.6 shall constitute failure of this test.

## MIL-PRF-13803F

4.5.2.1.1 Gate valve body. The gate valve body shall be subjected to the following test:

- a. Blank both ends of valve with gate in open position.
- b. Raise test fluid in body to applicable hydrostatic pressure shown in table I.
- c. Hold pressure for duration specified in table II.
- d. Examine valve for leakage or distortion of valve body and bonnet. Evidence of leakage or permanent distortion of the body or bonnet shall constitute failure of this test.

4.5.2.1.2 Gate valve seat. The gate valve seat shall be subjected to the following test:

- a. With gate in closed position, raise test fluid pressure between the gates to the applicable hydrostatic pressure shown in table I. Opposite sides of gates shall be open to atmosphere.
- b. Hold pressure for duration specified in table II.
- c. Examine both seats for leakage.
- d. Depressurize test fluid and examine both seats for permanent distortion. Leakage in excess of tolerances specified in MSS SP-61 for steel valves and MSS SP-70 for cast-iron valves, or permanent distortion of the gate valve seat, shall constitute failure of this test.

4.5.2.2 Hardness of seating material. Except when designations 2, 3, and bronze seating is used, mating surfaces shall be tested for hardness in accordance with ASTM E10. Nonconformance to 3.4.9 shall constitute failure of this test.

4.5.2.3 Treatment and painting. All external parts of the valve normally painted shall be treated and painted to conform to MIL-T-704, type G, with the top coat color of camouflage green 383 (see 3.7).

## 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 material 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.

## MIL-PRF-13803F

## 6. NOTES

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

6.1 Intended use. The gate valves are intended for use in high-pressure pipelines carrying liquid or gaseous petroleum products.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Size, class, detail design, and definitive specification part number of valves required (see 1.2 and 3.8).
- c. Issue of DoDISS to be cited in the solicitation and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
- d. When a first article is not required see 3.2).
- e. Type of end connection required (see 3.4.1).
- f. When companion flanges are required (see 3.4.1.2).
- g. When end flange gaskets are required (see 3.4.1.2.1).
- h. When end flange bolting is required (see 3.4.1.2.2).
- i. When threaded ends are required (see 3.4.1.3).
- j. When welding ends are required (see 3.4.1.4).
- k. When rising stem is not required (see 3.4.2).
- l. When handwheels are not required (see 3.4.3).
- m. When spur or beveled gearing is required (see 3.4.4).
- n. When bosses are required (see 3.4.5).
- o. If seating material should be other than as specified (see 3.4.9).
- p. When weather protection for valve stem is required (see 3.5).
- q. When housing for gearing is required (see 3.5).
- r. Any special marking (see 3.9).
- s. Lubricant requirement (see 4.5.2).
- t. Packaging requirements (see 5.1).
- u. PIN number (6.7).

6.3 First article. When a first article inspection is required, the item(s) should be a preproduction model. The first article should consist of one or more units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of the first article test results and disposition of the first articles. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government

## MIL-PRF-13803F

approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

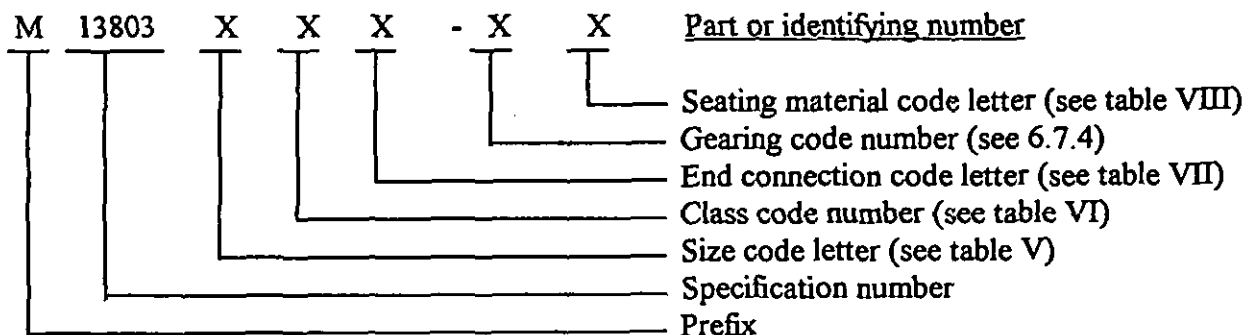
6.4 Nonrising stems. Valves with nonrising stems should be ordered for use only when the installation location is too constricted to allow use of valves with rising stems (see 3.4.2).

6.5 Subject term (key word) listing.

High-pressure  
Liquid petroleum  
Pipelines

6.6 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.

6.7 Part or identifying number. The PINs for the valves covered by this specification are designated in the following form (see 6.2):



Example: M13803-D2A1B is the definitive specification part number for 8-inch (D), 150-class (2), cast-iron or steel double-disk gate valves (M13803) with flanged ends (A), spur gearing (1), and 18-8 chromium-nickel alloy steel seating material (B).

## MIL-PRF-13803F

6.7.1 Size code. See table V.

TABLE V. Size code.

Code	Size	Description
A	2	2-inch
B	4	4-inch
C	6	6-inch
D	8	8-inch
E	12	12-inch
F	16	16-inch
G	20	20-inch
H	24	24-inch

6.7.2 Class code. See table VI.

TABLE VI. Class code.

Code	Class
1	125
2	150
3	250
4	300
5	400
6	600

6.7.3 End connections code. See table VII.

TABLE VII. End connection code.

Code	End connection
A	Flanged
B	Threaded
C	Beveled

6.7.4 Gearing code. Gearing is designated as "1" for spur gearing or "2" for beveled gearing.

## MIL-PRF-13803F

6.7.5 Seating material code. See table VIII.

TABLE VIII. Seating material code.

Code	Designation	Seating material
A	1	11.5-to 13.5-percent chromium steel
B	2	18-8 chromium-nickel alloy steel
C	3	See table III
D	4	See table III
E	5	See table III

Custodian:  
Army - AT

Preparing activity:  
Army - AT

Review activity:  
DLA - CS

(Project 4820-0689)

# 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. FSC 4820

**I RECOMMEND A CHANGE:**

1. DOCUMENT NUMBER  
MIL-PRF-13803F

2. DOCUMENT DATE (YYMMDD)  
960102

**3. DOCUMENT TITLE**

VALVE, GATE: DOUBLE-DISK, CAST-IRON OR STEEL

**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 (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)  
(1) Commercial  
(2) AUTOVON  
(if applicable)

7. DATE SUBMITTED  
(YYMMDD)

**8. PREPARING ACTIVITY**

a. NAME

b. TELEPHONE (Include Area Code)  
(1) Commercial  
(810) 574-8745  
(2) AUTOVON  
786-8745

c. ADDRESS (Include Zip Code) Commander  
U.S. Army Tank-automotive and Armaments  
Command, ATTN: 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