

WW-V-35C  
31 July 1985  
SUPERSEDING  
WW-V-35B  
20 June 1973

## FEDERAL SPECIFICATION

### VALVE, BALL

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers ball valves for general service.

1.2 Classification. Ball valves shall be of the following types, composition, styles, end connections, class, and size, as specified (see 6.2 and 6.4).

##### 1.2.1 Types.

- II - Stationary seat ring and floating ball
- III - Stationary seat ring and floating ball, spring loaded
- IV - Stationary seat ring and trunnion-mounted ball

##### 1.2.2 Composition (valve body).

- BZ - Bronze
- SS - Stainless steel
- CS - Carbon steel
- DI - Ductile iron

##### 1.2.3 Styles.

- 1 - Valve design which permits inspection and repair of seats and seals without removing the valve body, or valve ends, from the line.
- 2 - Valve design which permits inspection for seat leakage without removing the valve from the line (block and bleed-type seats with body drain).
- 3 - Valve design which requires the entire valve to be removed from the line for either inspection or repair.

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

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#### 1.2.4 End connections.

- a. Threaded, compositions BZ, SS, CS, and DI, sizes up to 6 inches.
- b. Flanged, compositions BZ, SS, CS, and DI, all sizes.
- c. Soldered, composition BZ, sizes up to 6 inches.
- d. Welding ends, compositions SS, and CS, all sizes.
- e. Flared, composition BZ, sizes up to 1 inch.

#### 1.2.5 Classes (primary service pressure ratings).

Class 125 (125 pounds per square inch gage (psig)).  
Class 150 (150 psig).  
Class 250 (250 psig).  
Class 300 (300 psig).  
Class 400 (400 psig).  
Class 600 (600 psig).  
Class 900 (900 psig).

#### 1.2.6 Sizes (nominal pipe sizes in inches).

1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4 thru 36 in 2-inch increments.

### 2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

#### Military Specification:

MIL-V-3 - Valves, Fittings, and Flanges (Except for Systems Indicated Herein); Packaging of.

#### Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

(Copies of military specifications and standards required by contractors in connection with specific acquisition functions should be obtained from the procuring activity or as directed by the contracting officer.)

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specification documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American National Standards Institute, Inc. (ANSI):

- B2.1 - Pipe Threads (Except Dryseal).
- B16.5 - Steel Pipe Flanges and Flanged Fittings.
- B16.18 - Cast Bronze Solder-Joint Pressure Fittings.
- B16.22 - Wrought Copper and Bronze Solder-Joint Pressure Fittings.
- B16.25 - Butt-Welding Ends for Pipe, Valves, Flanges and Fittings.
- B70.1 - Refrigeration Flare-Type Fittings.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

Manufacturers Standardization Society of the Valve and Fittings Industry:

MSS SP-72 - General Purpose Ball Valves.

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

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

### 3. REQUIREMENTS

3.1 Standard commercial product. The valves 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 valves 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.

3.2 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 are allowed under this specification unless otherwise specified.

3.2.1 Composition. Unless otherwise specified (see 6.2), composition of materials (see 1.2.2 and 6.2), shall conform to MSS SP-72.

3.3 Design and construction. Unless otherwise specified (see 6.2), the design and construction of the valves shall conform to MSS SP-72.

3.3.1 End connections. End connections shall meet the following requirements.

- a. Threaded. Threaded ends shall be internally threaded and shall conform to ANSI B2.1.
- b. Flanged. Flanged end connections shall conform to ANSI B16.5.
- c. Soldered. End connections for soldering shall conform to ANSI B16.18 for cast valves and to ANSI B16.22 for wrought valves.
- d. Welded. Welded end joints designs shall conform to ANSI B16.25.
- e. Flared. Flared type fittings shall conform to ANSI B70.1.

3.4 Marking. Unless otherwise specified (see 6.2), marking shall be in accordance with MSS SP-72.

3.5 Workmanship. Castings shall be free of cracks or hot tears and excessive surface porosity. Forging shall be free of cracks. Parting line on castings, and flash line on forgings, shall be ground flush. Surfaces of valves shall be smooth and clean both inside and outside.

#### 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 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. Sampling for examination. Sampling shall be in accordance with MIL-STD-105. Examination shall be based on inspection level S-3.

4.3 Examination. Each valve shall be examined for compliance with the requirements specified in section 3 and table I of this specification. The Acceptable Quality Level shall be 1.0 percent defective for major defects and 2.5 percent for minor defects, in accordance with MIL-STD-105. And 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.

TABLE I. Classification of defects.

Classification	Defects	Requirement paragraph
Major:		
101	Type not as specified.	1.2 and 3.3
102	Composition not as specified.	1.2 and 3.2.1
103	Style not as specified.	1.2 and 3.3
104	End connections not as specified.	1.2 and 3.3.1
105	Pressure rating not as specified.	1.2 and 6.3
106	Porosity visible on surface of cast bodies.	3.5
107	Cracks in valve body.	3.5
Minor:		
201	Marking not as specified.	3.4
202	Parting and flash lines not smooth.	3.5

4.4 Tests. Each valve shall be tested in accordance with MSS SP-72.

4.5 Packaging inspection. The preservation, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

## 5. PACKAGING

5.1 Preservation, packing, and marking. Preservation, packing, and marking shall be in accordance with the requirements of MIL-V-3, with the level of preservation and the level of packing as specified (see 6.2).

## 6. NOTES

6.1 Intended use. Valves covered by this specification are intended for use in piping systems for general service.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in acquisition documents:

- a. Title, number, and date of this specification.
- b. Type, composition, style, end connections, class, and size (see 1.2 and 6.3).
- c. When composition is other than specified (see 3.2.1).
- d. When design and construction are other than specified (see 3.3).
- e. When marking is other than specified (see 3.4).
- f. Level of preservation, packaging, and packing (see 5.1).

## 6.3 Cross-reference of classification:

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## 1.2.2 Classes

## 1.2.2 Composition (valve body).

A - Copper alloy  
 C - Corrosion resisting steel  
 D - Carbon steel  
 E - Nodular cast iron  
 F - Malleable cast iron

BZ - Bronze  
 SS - Stainless steel  
 CS - Carbon steel  
 DI - Ductile iron  
 DI - Ductile iron

WW-C-35A

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Type I - Floating seat ring.  
 Type II - Floating seat ring and ball.  
 Type III - Floating seat ring and ball,  
 spring-loaded.

(Added)

Deleted.  
 Type II - Stationary seat ring  
 and floating ball.  
 Type III - Stationary seat ring  
 and floating ball.  
 Type IV - Stationary seat ring  
 and trunnion mounted  
 ball.

## MILITARY INTEREST:

## CIVIL AGENCY COORDINATING ACTIVITIES:

## Custodian:

GSA - FSS  
 HEW - FEC  
 PCD

Navy - YD

## Review Activity:

## PREPARING ACTIVITY:

DLA - CS

Navy - YD

DOD project 4820-0434

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.