INCH-POUND
MIL-V-1189D(SH)
15 December 1987
SUPERSEDING
MIL-V-1189C(SHIPS)
25 August 1958
(See 6.8)

MILITARY SPECIFICATION

VALVE, GATE, BRONZE

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification describes gate valves for use in water, oil, gas, or steam services on shipboard.

1.2 Classification. Gate valves shall be of the following types and classes (see 6.2.1):

Type I - Rising stem, outside screw and yoke.

Class 1 - (See 6.6)

Class 2 - For working pressures not greater than 250 pounds per square inch (lb/in^2), 2-1/2 to 12 inches nominal pipe size (nps) (water, oil, gas or steam).

Class 3 - For working pressures 251 to 400 lb/in^2, 2-1/2 to 12 inches nps (water, oil, gas, or steam).

Class 4 - For working pressures not greater than 50 lb/in^2, 14 to 46 inches nps (seawater).

Type II - Non-rising stem, for working pressures not greater than 50 lb/in^2, 14 to 46 inches nps (seawater).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 4820

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.

SPECIFICATIONS

FEDERAL

HH-P-46	- Packing; Asbestos, Sheet, Compressed.
QQ-N-281	- Nickel-Copper Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections.
QQ-N-286	- Nickel-Copper-Aluminum Alloy, Wrought (UNS NO5500).
QQ-N-288	- Nickel-Copper Alloy and Nickel-Copper-Silicon Alloy Castings.
QQ-C-390	- Copper Alloy Castings (Including Cast Bar).
QQ-C-591	- Copper-Silicon, Copper-Zinc-Silicon, and Copper-Nickel-Silicon Alloys: Rod, Wire, Shapes, Forgings, and Flat Products (Flat Wire, Strip, Sheet, Bar, and Plate).

MILITARY

MIL-V-3	- Valves, Fittings, and Flanges (Except for Systems Indicated Herein); Packaging of.
MIL-S-901	- Shock Tests, H.I. (High-Impact); Shipboard Machinery, Equipment and Systems, Requirements for.
MIL-G-1149	- Gasket Materials, Synthetic Rubber, 50 and 65 Durometer Hardness.
MIL-P-15024	- Plates, Tags and Bands for Identification of Equipment.
MIL-P-15024/5	- Plates, Identification.
MIL-F-20042	- Flanges, Pipe and Bulkhead, Bronze (Silver Brazing).
MIL-G-22050	- Gasket and Packing Material, Rubber, for Use with Polar Fluids, Steam, and Air at Moderately High Temperatures.
MIL-B-24480	- Bronze, Nickel-Aluminum (UNS No. C95800) Castings for Seawater Service.
MIL-P-24503	- Packing Material, Graphitic, Corrugated Ribbon or Textured Tape and Preformed Ring.
DOD-G-24508	- Grease, High Performance, Multipurpose. (Metric)
DOD-V-24657	- Valve Actuator, Direct Coupled, Gear Driven Electrically Powered for Naval Shipboard Propulsion and Auxiliary Systems. (Metric)
MIL-R-83248	- Rubber, Fluorocarbon Elastomer, High Temperature, Fluid, and Compression Set Resistant.

STANDARDS

FEDERAL

FED-STD-H28 - Screw-Thread Standards for Federal Services.

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-167-1 - Mechanical Vibrations of Shipboard Equipment (Type I - Environmental and Type II - Internally Excited).
MIL-STD-278 - Welding and Casting Standard.

2.1.2 Other Government drawings and publications. The following other Government drawings and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DRAWINGS

NAVAL SEA SYSTEMS COMMAND (NAVSEA)

NAVSHIPS 803-1385620 - Handwheels for Valves.
NAVSHIPS 803-2177917 - Valves, Bronze, Flanged, Gate 250 PSI WOG.

PUBLICATION

NAVSEA 0900-LP-001-7000 - Fabrication and Inspection of Brazed Piping Systems.

(Copies of specifications, standards, drawings, and publications 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 documents not listed in the DoDISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B 61 - Standard Specification for Steam or Valve Bronze Castings. (DoD adopted)
B 98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes. (DoD adopted)
B 148 - Standard Specification for Aluminum-Bronze Sand Castings. (DoD adopted)
B 164 - Standard Specification for Nickel-Copper Alloy Rod, Bar, and Wire. (DoD adopted)
B 584 - 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, 1916 Race Street, Philadelphia, PA 19103.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

B1.1 - Unified Inch Screw Threads (UN and UNR Thread Form). (DoD adopted)
B18.2.1 - Square and Hex Bolts and Screws Inch Series. (DoD adopted)
B18.2.2 - Square and Hex Nuts. (DoD adopted)

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

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

HSJ 1086 - Metals and Alloys in the Unified Numbering System. (DoD adopted)
AMS 4676 - Alloy Bars and Forgings, Corrosion Resistant 66.5 Ni-3.0Al-0.62 Ti-28Cu.
AMS 4892 - Alloy Castings, Sand and Centrifugal, Corrosion and Heat Resistant 66Ni - 29Cu - 4.0Si As Cast.

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

(Nongovernment 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 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.3 and 6.3).

3.2 Materials. Unless otherwise specified (see 6.2.1), valve materials shall be in accordance with table I. Alternate materials may be considered in lieu of those specified in table I provided they are approved by the agency concerned. When specified in the contract or order, a certificate of compliance shall be prepared (see 6.2.2).

TABLE I. List of materials.

Name of part	Materials	Specification or standard	Remarks
Body bonnet yoke packing gland	Valve bronze	QQ-C-390, ASTM B 61 (UNS C92200) For sizes under 16 inches only.	See notes 1 and 2
	Nickel aluminum bronze	MIL-B-24480, ASTM B 148 alloy 958 (UNS C95800) All sizes	See notes 1, 2, 3 and 4
Threaded fasteners	Silicon bronze	QQ-C-591, ASTM B 98 (UNS C 65100)	ANSI B18.2.1 and ANSI B18.2.2 See note 1
	Nickel-copper alloy	QQ-N-281, ASTM B 164 (UNS N04400)	
Stem seat ring disc	Nickel aluminum bronze	MIL-B-24480, ASTM B 148 alloy 958 (UNS C95800)	See notes 1, 2, 3 and 4
	Wrought nickel-copper alloy	QQ-N-281, ASTM B 164 (UNS N 04400) QQ-N-286, AMS 4676 (UNS N05500)	
	Cast nickel-copper alloy	QQ-N-288 COMP. D, AMS 4892 (UNS N04019)	
Yoke bushing	Manganese bronze	ASTM B 584 (UNS C86500)	Operating nut
Bonnet gasket	Compressed sheet Rubber sheet Fluorocarbon	HH-P-46 class 1 MIL-G-1149 class 2 MIL-R-83248 type II, class 1	For oil service
	Ethylene propylene rubber	MIL-G-22050	For steam or water service
Stem packing	Teflon Graphitic	Commercial MIL-P-24503	Except seawater
Handwheel	Aluminum alloy	Drawing 803-1385620	

1. Table I contains the commercial and military specifications and standards, and in addition, contains the corresponding DoD adopted SAE HSJ 1086 Unified Numbering System (UNS) designation. Reference to a specific UNS designation will permit the use of any one of the many alloy specifications and standards listed in SAE HSJ 1086 for that UNS number.

2. Valves for seawater service shall be provided with nickel-copper alloy trim, such as discs, seats, stem guides as applicable.

3. For valves where low permeability (nonmagnetic) material is required, QQ-N-286 shall be used for valve trim.

4. Temper anneal at 1350 ± 50 degrees Fahrenheit (°F) for 6 hours. Required for seawater service (see ASTM B 148).

3.2.1 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable 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 specifically specified.

3.3 Service ratings. Service ratings shall be as specified in table II.

TABLE II. Service ratings.

Type	Class	NPS (inches)	Pressure max (lb/in^2) gauge	Temperature max °F
I	1	Obsolete		
	2	2-1/2 to 12 inclusive 250 lb/in^2 max	See Drawing 803-2177917	
	3	2-1/2 to 12 inclusive 400 lb/in^2 max	400	[1]150
			360	200
			320	250
			280	300
			240	350
			200	400
			150	425
I	4	14 to 46 inclusive	50	[1]150
II	--	14 to 46 inclusive	50	[1]150

[1] The service pressure rating at temperatures below 150°F shall be the same as the rating shown for 150°F. Valves used at lower temperatures shall conform to the requirements of the applicable condition under which they are used.

3.3.1 Type 1, class 2 valves. Type 1, class 2 valves shall be constructed in accordance with Drawing 803-2177917.

3.4 Construction. Construction of the valves shall be as specified in 3.4.1 through 3.4.18.

3.4.1 Walls and bodies. The walls of valve bodies and bonnets shall be curved surfaces. Flat surfaces shall not be permitted. Ribbing shall be provided as necessary to prevent distortion. Provisions shall be made on type II valves so that the valve body and bonnet may be assembled in one relative position only.

3.4.2 Packing. Valves shall be constructed so that the valve stem may be packed when the valve is in the fully opened position (backseated) with the maximum working pressure in the valve.

3.4.3 Flanges. Valves shall have flanged ends. Flanges shall be in accordance with MIL-F-20042 for pressure rating and drilling. Drilled holes shall straddle and be equally spaced from the vertical centerline and from each other. Where special drilling is required, flanges may be supplied blank or drilled special as specified (see 6.2.1).

3.4.4 Spot facing. Flanges shall be spot faced or finished on the back parallel to the flange face within 1 degree for the bolt heads and nuts. The spot face shall not cut more than 1/32 inch below the minimum plate thickness. Eccentricity of the spot face diameter with the bolt hole shall be minimized to provide facing for the bolt head. The diameter for spot facing shall be equal to or greater than 110 percent of the bolt head corner to corner dimension. Rims need not be finished provided they are cast smooth and true.

3.4.5 Flow area. When the valve is fully open, there shall be an unobstructed flow. The area at any point within the valve in the line of flow shall be not less than that of the bore of the valve (see 3.9.1 and 3.9.2).

3.4.6 Disc guide ribs. The valves shall be provided with disc guide ribs in the body which shall maintain alignment of the gate during operation. The ribs shall be accurately machined unless they are cast smooth and true.

3.4.7 Bonnets. Bonnets for all valves shall be flanged. The bonnets shall be bolted with the bolt studs threaded the full length and fitted with a nut at each end or bolted with headed bolts having a nut at one end. Bonnet flange shape shall be either circular or elliptical.

3.4.8 Stuffing boxes. Stuffing boxes shall be of a depth approximating the stuffing box bore and shall have not less than four full rings of square packing.

3.4.9 Threads. Each stem shall be threaded with National ACME form threads for valve operation in accordance with FED-STD-H28 or ANSI B1.1. Handwheel hold downthreads shall be in accordance with FED-STD-H28. The valve shall close when facing the handwheel and the handwheel is turned in the clockwise direction.

3.4.10 Valve handwheels. Handwheel sizes shall be in accordance with 3.9.1 and 3.9.2. Tangential forces shall be not more than the values specified in table III.

TABLE III. Maximum allowable tangential force to seat valve based on valve handwheel size.

Handwheel diameter (inches)	Tangential force (pounds)
2	90
3	98
4	106
5	112

TABLE III. Maximum allowable tangential force to seat valve based on valve handwheel size. - Continued

Handwheel diameter (inches)	Tangential force (pounds)
6	118
7	121
8	124
9	127
10	130
11	133
12	135
14	138
16	141
18	144
21	147
24	150
27	150
30	150
36	150

3.4.11 Thread lubricant. ACME form threads shall be lubricated with grease in accordance with DOD-G-24508.

3.4.12 Operating torque. Valves 14 inches and larger shall incorporate ball or roller bearings in order to reduce operating torques.

3.4.13 Valve discs. Valve discs shall be wedge type, double faced, one piece, either of solid cast or forged nickel-copper alloy or Ni-Al bronze with an insert of nickel-copper alloy (cast, forged, or sheet) securely silver brazed to the disc to form the seating surface. Fabrication and inspection of the silver brazing shall be in accordance with NAVSEA 0900-LP-001-7000. The finished thickness of the disc shall be as specified in table IV.

TABLE IV. Finished thickness of disc.

Valve size (inches)	Minimum disc thickness (inches)
2-1/2 to 6	1/8
7 to 12	5/32
14 to 22	3/16
24 to 30	1/4
32 to 46	3/8

3.4.14 Electric valve actuators. When specified (see 6.2.1), type I, class 4 and type II valves shall be compatible with electric valve actuators in accordance with DOD-V-24657. Valves may have ball or roller bearings when used with actuators.

3.4.15 Discs. Discs for type II valves shall be self-draining.

3.4.16 Welding. Weld repair and inspection of nickel aluminum bronze castings shall be in accordance with MIL-STD-278.

3.4.17 Valve indicator. Type II valves shall be provided with an indicator to show gate position, open, closed and intermediate positions.

3.4.18 Valve operation. Valves shall operate in excess of 2,000 cycles (see 4.6.4).

3.5 Shock resistance. Valves shall withstand high impact shock in accordance with grade A, hull-bulkhead mounted principal unit, complete assembly, class 1, type A as specified in MIL-S-901.

3.6 Vibration. Valves provided in accordance with this specification shall pass the vibration requirements as specified in MIL-STD-167-1 or have a history of satisfactory shipboard performance.

3.7 Seat leakage. Each valve shall be tested for seat tightness. Test fluid shall be as specified in 4.6.1. External forces or moments shall not be applied during tests. Valves shall be seated using the values listed in table III as the maximum allowable seating force applied to the handwheel. Test shall be so conducted that all seat leakage will be measured. Permissible seat leakage is 10 cubic centimeters (cm^3) per hour of water or condensate per inch of nps.

3.8 Body marking and identification plates. Body marking and identification plates shall be as specified in 3.8.1 and 3.8.2.

3.8.1 Body marking. The following markings shall be integrally cast on the valve body:

(a) Manufacturer's name or trademark.
(b) Valve size in inches.
(c) Valve pressure rating in lb/in^2.
(d) MIL-V-1189.

3.8.2 Identification plate. Valves shall be provided with a permanently attached identification plate in accordance with MIL-P-15024 and MIL-P-15024/5 type A, B, C, or D. The identification plate shall contain the following:

(a) Manufacturer's name or trademark.
(b) Size of valve in inches and rating in lb/in^2, type and class.
(c) Body and bonnet material composition.
(d) Valve trim material (stem, disc, seat).
(e) Manufacturer's identification number (Federal Supply Code of Manufacturers (FSCM)).
(f) MIL-V-1189.
(g) Component identification number (CID) (if known).
(h) Contract number.
(i) Functional group code (FGC) number (if known).

3.9 Valve dimensions and weights. Valve dimensions and weights shall be as specified in 3.9.1 and 3.9.2.

3.9.1 Type I, class 3 valves. Dimensions and weights for type I, class 3 valves shall be as specified in table V for direct handwheel to stem actuated valves.

TABLE V. Dimensions and weights of type I, class 3 valves.

Valve size and bore diameter (inches)	Face to face (inches)	Maximum height to top (inches)	Maximum handwheel diameter (inches)	Maximum weight (pounds)
2-1/2	8	15	9	47
3	8-1/2	16	10	60
[1] 3-1/2	9	17	11	75
4	9-1/2	18-1/2	11	85
[1] 4-1/2	10	20	12	100
5	10-1/4	21-1/2	12	115
[1] 5-1/2	10-1/2	23	14	135
6	10-3/4	24-1/2	16	160
[1] 6-1/2	11	20	18	185
[1] 7	11-1/4	27-1/2	18	210
[1] 7-1/2	11-1/2	29	18	245
8	11-3/4	30-1/2	21	280
[1] 8-1/2	12	32	21	320
[1] 9	12-1/2	33-1/2	21	390
[1] 9-1/2	13	35	21	460
10	13-1/2	30-1/2	21	550
12	14-1/2	39-1/2	22	662

[1] For replacement purposes on old construction only. Not to be used on new construction.

3.9.2 Type I, class 4 and type II valves. Type I, class 4, and type II valve dimensions and weights shall be in accordance with table VI for direct handwheel to stem actuated valves.

TABLE VI. Dimensions and weights for type I, class 4, and type II valves.

Valve size and bore diameter (inches)	Face to face (inches)	Maximum height to top (inches)	Maximum handwheel diameter (inches)	Maximum weight (pounds)
14	11-1/2	42	18	1650
16	11-1/2	46	18	1700
18	12	50	18	1750
20	12	54	18	1850
22	12-1/2	56	21	1950
24	12-1/2	62	21	2150
[1] 25	13	63	21	2250
26	13	65	24	2350

See footnote at end of table.

TABLE VI. Dimensions and weights for type I, class 4, and type II valves. - Continued

Valve size and bore diameter (inches)	Face to face (inches)	Maximum[3] height to top (inches)	Maximum handwheel diameter (inches)	Maximum weight (pounds)
[1] 27	13	67	24	2450
28	13-1/2	70	24	2600
[1] 29	13-1/2	72	24	2750
30	14	74	24	2900
32	15	78	24	3200
34	15	84	24	3600
36	15	87	24	4000
38	16	91	24	4400
40	17	94	24	4800
[2] 42	16	175	30	5000
46	17	195	33	6500

[1] For replacement purposes only. Not to be used for new construction.
[2] Sizes 42 inches and larger shall be as approved.
[3] Centerline of the run of the valve to the top of the stem protector.

3.10 Drawings. When specified in the contract or purchase order, drawings shall be prepared (see 6.2.2).

3.11 Special tools. Valves shall be constructed so that special tools shall not be required for installation and maintenance. Special tools are defined as those tools not listed in the Federal Supply Catalog (copies of this catalog may be consulted in the office of the Defense Contract Administration Services Management Area (DCASMA)).

3.12 Workmanship. Parts shall be free of adhering sand, hard spots, excessive shrinkage, cracks or scale. Castings shall be smooth and well cleaned both inside and out, and all fins and roughness shall be removed. Unacceptable visual surface discontinuities shall be removed and their removal shall be verified by visual examination of the resultant cavities. Castings shall not be repaired, plugged, impregnated, brazed, burned in or peened except as approved.

3.13 Technical manuals. Technical manuals (including technical repair standards) shall be prepared and delivered as specified in the Technical Manual Contract Requirements (TMCR) and contract or order (see data requirements in section 6). The TMCR is an exhibit or attachment to a contract specifying technical manual product development and delivery requirements, and/or management data development requirements.

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 Inspection system. When specified in the contract or order an inspection system program plan shall be prepared (see 6.2.2).

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

(a) First article inspection (see 4.3).
(b) Quality conformance inspection (see 4.4).

4.3 First article inspection. First article inspection shall consist of the examinations and tests specified in 4.5 through 4.6.7. First article tests shall be monitored by a Government representative. Valve test sites shall be as specified in table VII. One valve of each type and class shall be subjected to first article inspection.

TABLE VII. Valve test sizes.

Size tested (inches)	Approves these sizes (inches)
4	2½ to 4, inclusive
8	5 to 8, inclusive
10	9 to 10
over 10	Each size shall be tested

4.3.1 First article inspection report. When specified in the contract or purchase order, a first article inspection report shall be prepared (see 6.2.2).

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examination and tests specified in 4.5 and 4.6.6. Quality conformance inspection shall be performed on every lot of valves acquired under this specification.

4.4.1 Sampling. Sampling shall be as specified in 4.4.1.2.

4.4.1.1 Lot. A lot shall consist of all valves of the same type, class, and size offered for delivery at one time for purpose of examination and tests.

4.4.1.2 Sampling for visual and dimensional examination. Sample valves shall be selected at random from each lot of completely finished valves in accordance with MIL-STD-105 at inspection level II, except for lots of 180 and under, in which the size of samples shall be as specified in table VIII.

TABLE VIII. Sampling for visual and dimensional examination.

Lot size	Sample size	Acceptance number (defective)	Rejection number (defective)
2 to 8	2	0	1
9 to 15	7	0	1
16 to 25	10	0	1
26 to 65	15	0	1
66 to 180	25	0	2

4.5 Examinations. Examinations shall be as specified in 4.5.1 and 4.5.2.

4.5.1 Examinations of materials. Materials used in the manufacture of valves shall be examined to determine conformance to 3.2 and table I, as applicable.

4.5.2 Visual and dimensional examination. Each sample valve shall be examined by the inspector to determine conformance to all requirements of this specification not involving tests. Each sample valve that fails to meet these requirements shall be rejected. If the number of nonconforming valves in any sample exceeds the acceptance number for that sample size, the entire lot represented by the sample shall be rejected. Rejected lots may be resubmitted for examination only after the contractor has inspected an additional sample (same sample size) of the remaining uninspected valves. Acceptance number for this second sampling shall be the same as the first. Failure of this second examination shall require the contractor to examine all remaining uninspected valves at the same acceptance number. Failure of this examination shall be cause for rejection.

4.6 Tests. Tests shall be as specified in 4.6.1 through 4.6.7.

4.6.1 Shock. The valve shall be subjected to the grade A shock test in accordance with MIL-S-901 to determine conformance to 3.5. Valves shall be hydrostatically pressurized internally to the test pressure specified in table IX with the valve in the full open position and in the full closed position and pressurized on the inlet side. Testing medium shall be clean tap water with no additive other than cutting oil at temperature not less than 40 or exceeding 150°F. Momentary malfunction at the time of impact blow shall be permitted. Permanent deformation, misalignment or functional impairments shall be cause for rejection. Permissible seat leakage shall be as specified in 3.7.

TABLE IX. Test pressures in lb/in^2.

Type	Class	Hydrostatic	
		Strength and porosity	Tightness on seat
I	3	600	400
	4	75	50
II	-	75	50

4.6.2 Vibration. The valve shall be subjected to the type I vibration test in accordance with MIL-STD-167-1 to determine conformance to 3.6.

4.6.3 Valve actuators. When valves are provided with electric actuators, the test requirements of DOD-V-24657 shall be accomplished.

4.6.4 Operational test. Valves shall be cycled a minimum of 2,000 times pressurized to the valve design pressure. During the test there will be a differential pressure equal to the valve design pressure existing across the valve at the beginning of each opening cycle. The torque required to open the valve shall be recorded at the start of the test and after every 100 cycles. Seat tightness test in accordance with 4.6.5.3 shall be performed at the start of the test, again after 1,000 cycles and after 2,000 cycles. Test media shall be as specified in 4.6.1. There shall be a flow of water through the valve when it is open. The quantity of flow will depend upon the test facility. Valves shall open against a differential pressure equal to at least 90 percent of the rated pressure specified in 3.3. The time of closure for each cycle shall not exceed 35 seconds. Before the test and after each 500 cycles, seat leakage shall be measured in accordance with 4.6.5.3, and the torque required to open the valve shall be recorded. The maximum tangential force applied to the handwheel to open the valve shall be in accordance with the values specified in table III.

4.6.5 Hydrostatic pressure and seat leakage. Hydrostatic pressure and seat leakage tests shall be as specified in 4.6.5.1 through 4.6.5.5. /

4.6.5.1 Test conditions. Each valve in a lot shall be hydrostatically tested for structural integrity and seat leakage using commercially available tap water at temperatures not less that 40°F and not more than 150°F, and shall contain no additives other than cutting oil. Test fixtures shall be adjusted to permit valve body expansion and elongation caused by internal pressure.

4.6.5.2 Hydrostatic pressure test method. Each valve shall be hydrostatically pressurized to the pressure specified in table IX. The valve shall be in the open position, but not backseated. Pressure shall be maintained until a thorough visual inspection has been conducted but not less that 1 minute. Any weeping or leakage during pressurizing or permanent deformation after pressurizing shall be cause for rejection.

4.6.5.3 Hydrostatic seat tightness test. Each valve shall be tested with the disc in the shut position by pressurizing each side with the side opposite the pressure open for inspection in each case. The valve shall be seated using

the force as specified in table III as the maximum allowable handwheel rim force. Test pressure as specified in table IX shall be maintained until a visual inspection has been conducted. If no leakage occurs after 1 minute, test may be discontinued. If leakage does occur, the test shall be continued for sufficient time to accurately determine the rate of leakage. Leakage shall not exceed that specified in 3.7.

4.6.5.4 Steam test. Two leak tests shall be conducted using steam at 150 and 50 lb/in^2 gauge saturated steam. The tests shall be conducted for main seats following the procedure outlined in 4.6.5.3. The leakage rate shall not exceed the values listed in 3.7. Valves shall be cycled 25 times with seat leakage measurements taken before and after cycling.

4.6.5.5 Seat leakage. The test pressures specified in table IX shall be used to determine seat leakage. Seat leakage rates shall not exceed those specified in 3.7.

4.6.6 Silver brazing. Silver brazing shall be inspected in accordance with NAVSEA 0900-LP-001-7000 to determine conformance to 3.4.13.

4.6.7 Repair by welding. Repairs shall be made using procedures and welder qualifications in accordance with 3.4.16. Weld repairs shall be inspected in accordance with MIL-STD-278.

4.7 Test reports. When specified in the contract or purchase order, test reports shall be prepared (see 6.2.2).

4.8 Inspection of packaging. Sample packages and packs, and the inspection of the preservation-packaging, packing, and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

4.9 Technical manuals. Technical manual quality assurance management data shall be prepared and delivered as specified in the TMCR and contract or order (see data requirements in section 6).

5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the packaging requirements of referenced documents listed in section 2, see 6.5.)

5.1 Preservation-packaging, packing and marking. Valves shall be individually preserved-packaged level A or C, packed level A, B, or C as specified (see 6.2.1) and marked in accordance with MIL-V-3.

5.2 Cushioning, dunnage, and wrapping materials. Cushioning, dunnage, and wrapping materials shall be as specified in 5.2.1 through 5.2.3.

5.2.1 Level A preservation-packaging and levels A and B packing. Use of all types of loose-fill materials for packaging and packing applications such as cushioning, filler, or dunnage is prohibited for materials destined for shipboard installation or stowage.

5.2.2 Fire resistance. Cushioning, filler, dunnage, and wrapping materials selected shall have properties (characteristics) resistant to fire.

5.2.3 Level C preservation-packaging and packing. When loose fill type materials are used for packaging and packing applications such as cushioning, filler, and dunnage, all containers (unit, intermediate, and shipping) shall be marked or labeled with the following information:

"CAUTION

Contents cushioned and so forth, with loose-fill material. Not to be taken aboard ship. Remove and discard loose-fill material before shipboard stowage. If required, recushion with cellulosic material, bound fiber, fiberboard, or transparent flexible cellular material."

5.3 Technical manuals. Two (2) copies of the current operation/maintenance technical manual(s) shall be packaged with each system or equipment. Technical manual packaging shall be as specified (see 6.2.1).

6. NOTES

6.1 Intended use. Type I, classes 2 and 3 valves are intended to be used primarily for water, oil, gas and steam service. Type I, class 4 and type II valves are intended for use on seawater services as main injection and overboard discharge valves.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

(a) Title, number and date of this specification.
(b) Type, class and size (see 1.2).
(c) Quantity.
(d) When first article inspection is required (see 3.1).
(e) Material composition (see table I).
(f) Flange drilling (see 3.4.3).
(g) When valve actuator is required (see 3.4.14).
(h) Seat leakage, if other than as specified (see 3.7).
(i) CID and FGC number, if known (see 3.8.2).
(j) Level of preservation-packing and packaging required (see 5.1).
(k) Whether technical manuals are required (see 3.13 and 5.3).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below 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 (CDRL), incorporated into the contract. When the provisions of DoD FAR Supplement, Part 27, Sub-Part 27.475-1 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or

purchase order requirements. Technical manuals (including Technical Repair Standards (TRS)) shall be acquired under separate CLINs or subCLINs. Technical manual products (i.e., manuscript copy, preliminary copy, reproducible copy, etc.) shall be developed and delivered as specified in the Technical Manual Contract Requirements (TMCR) exhibit(s) to the contract. CDRLs and DIDs shall not be used for technical manual product acquisition. Technical manual management data (plans, reports, etc.) shall be acquired under a separate data CLIN, but delivery shall continue to be specified on CDRLs and DIDs. Deliverable data required by this specification are cited in the following paragraphs.

Paragraph no.	Data requirement title	Applicable DID no.	Option
3.2	Certificate of compliance	DI-E-2121	---
3.10	Drawings, engineering and associated lists	DI-E-7031	Level 3
4.1.2	Inspection system program plan	DI-R-4803	7027 2398
4.3.1	First article inspection report	DI-T-4902	---
4.7	Reports, test	DI-T-2072	10.1.b

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5010.12-L., AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in sections 3, 4, or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 First article. When a first article inspection is required, the item should be a first article sample. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations 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 approval is presently appropriate for the pending contract.

6.4 Provisioning. Provisioning Technical Documentation (PTD), spare parts, and repair parts should be furnished as specified in the contract.

6.4.1 When ordering spare parts or repair parts for the equipment covered by this specification, the contract should state that such spare parts and repair parts should meet the same requirements and quality assurance provisions as the parts used in the manufacture of the equipment. Packaging for such parts should also be specified.

6.5 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.6 Classification. Type I, class 1 valves are obsolete.

6.7 Subject term (key word) listing.

Bonnets
Electric actuators
Flanges
Handwheels
Seat rings
Stuffing boxes

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

Preparing activity:
Navy - SH
(Project 4820-N504)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-V-1189D(SH)	VALVE, GATE, BRONZE

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
	☐ USER
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ MANUFACTURER
	☐ OTHER *(Specify)*:

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.