

MIL-V-3C

8 MARCH 1960

SUPERSEDING

MIL-P-3B

27 JULY 1956

MILITARY SPECIFICATION

**VALVES, FITTINGS, AND FLANGES
(EXCEPT FOR SYSTEMS INDICATED HEREIN);
PACKAGING OF**

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers the requirements for the cleaning, preservation, packaging, packing and marking of hardware valves such as globe valves, angle valves, check valves, cross valves, cylinder valves, gate valves, and associated fittings and flanges for shipment and storage except for valves or fittings intended for use in oxygen and hydrogen peroxide systems and all other fluid and pneumatic systems with cleanliness requirement standards higher than specified herein.

2. APPLICABLE DOCUMENTS

2.1 The following specifications and standards, of the issue in effect on date of invitation for bids, form a part of this specification:

SPECIFICATIONS**FEDERAL**

UU-T-116 — Tape; Paper Gummed, Water-Resistant.

PPP-B-566 — Boxes, Folding, Paperboard.

PPP-B-585 — Boxes, Wood, Wire-bound.

PPP-B-591 — Boxes, Fiberboard, Wood-Cleated.

PPP-B-601 — Boxes, Wood, Cleated-Plywood.

PPP-B-621 — Boxes, Wood, Nailed and Lock-Corner.

PPP-B-636 — Boxes, Fiber.

PPP-B-645 — Boxes, Folding, Fiberboard, Heavy Duty.

PPP-B-665 — Boxes; Paperboard, Metal Stayed (Including Stay Material).

PPP-B-676 — Boxes, Set-Up, Paperboard.

PPP-T-60 — Tape; Pressure-Sensitive Adhesive, Waterproof—for Packaging and Sealing.

PPP-T-76 — Tape, Pressure-Sensitive Adhesive, Paper, Water Resistant.

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JAN-P-160 — Packaging and Packing for Overseas Shipment General Specification.

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- MIL-C-104 — Crates, Wood; Lumber and Plywood Sheathed, Nailed and Bolted.
- MIL-P-116 — Preservation, Methods of.
- MIL-B-121 — Barrier - Material, Greaseproofed, Waterproofed, Flexible.
- MIL-C-132 — Crate, Wood, Open; Maximum Capacity 2,500 Pounds.
- MIL-P-149 — Plastic Coating Compound, Strippable (Hot Dipping).
- MIL-C-3774 — Crates, Open, Wood (2,500 to 10,000 Lb).
- MIL-B-10377 — Box: Wood - Cleated, Veneer, Paper Overlaid.
- MIL-L-10547 — Liners, Case, Waterproof.
- MIL-C-16173 — Corrosion Preventive Compound, Solvent Cutback, Cold Application.

STANDARDS**MILITARY**

- MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 — Marking for Shipment and Storage.

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

2.2 Other publications. The following document forms a part of this specification. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

OFFICIAL CLASSIFICATION COMMITTEE**Uniform Freight Classification Rules.**

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York 16, New York.)

3. REQUIREMENTS

3.1 Cleaning, drying, preservation, and packaging (See 6.2).

3.1.1 Level A.

3.1.1.1 *Cleaning and drying.* Valves, fittings, and flanges shall be cleaned and dried in accordance with any of the applicable procedures and processes of Specification MIL-P-116.

3.1.1.2 *Preservation.*

3.1.1.2.1 *Valves of ferrous or aluminum construction.* Valves of ferrous or aluminum construction shall be preserved by method I of Specification MIL-P-116. Internal ferrous or aluminum surfaces shall be sprayed or flushed with preservative type P-2, P-3, P-7, P-8, P-9, or P-10 of Specification MIL-P-116, as specified (see 6.2). Unless otherwise specified (see 6.2), valves intended for operation in steam or water systems shall be sprayed or flushed internally with preservative type P-3 of Specification MIL-P-116. External surfaces of movable parts shall be coated with preservative type P-2 or P-7 of Specification MIL-P-116. When removal of the preservative film can be readily accomplished without damage to the item or where removal of the preservative is not required in order to place the item in use, external unpainted, unplated or otherwise unprotected surfaces shall be coated with preservative type P-1 of Specification MIL-P-116. When specified (see 6.2), preservative compound conforming to grade 4 of Specification MIL-C-16173 may be used. When the specific type of preservative is not specified in the contract or order for internal preservation of valves not intended for operation in steam or water, the selection from the preservatives specified shall be at the option of the contractor.

3.1.1.2.2 *Valves of nonferrous (except aluminum) construction.* Unless otherwise specified (see 6.2), valves of nonferrous (except

aluminum (see 3.1.1.2.1)) construction shall be protected by method III of Specification MIL-P-116. Contact preservatives will not be required.

3.1.1.2.3 Fittings and flanges. Unless otherwise specified (see 6.2), fittings and flanges shall be preserved as specified in 3.1.1.2.1 for preservation of external surfaces or in accordance with 3.1.1.2.2 as applicable for the materials used in construction. Fittings and flanges which are plated or coated to provide protection equivalent to method I of Specification MIL-P-116 will not require a contact preservative and shall be packaged in accordance with method III of Specification MIL-P-116.

3.1.1.3 Removal of packing material. When specified (see 6.2), valves having stems of ferrous materials except preset, automatic or relief valves, shall have the packing removed prior to cleaning and the application of preservative compounds. The required packing material shall be separately packaged in accordance with method IC-1 of Specification MIL-P-116. The bag containing the packing materials shall be securely fastened to the individual valve by taping or tying and the valve shall be marked with precautionary information requiring the installation of the packing material prior to placing the valve in use.

3.1.1.4 Packaging.

3.1.1.4.1 Valves which are not wrapped or boxed as a part of the packaging procedure shall have all ports or other openings to the interior of the valve sealed with plastic, metal or wood caps or plugs or flange covers to prevent entrance of dust or other foreign materials. When metal or wood flange covers, or metal or wood plugs are used, barrier material conforming to grade A of Specification MIL-B-121 shall be inserted between the plug or flange cover and the valve port or opening. Metal plugs or flange covers when used, shall be protected against corrosion by painting or by the use of type P-1 preserva-

tive compound of Specification MIL-P-116. When specified (see 6.2) preservative compound conforming to grade 4 of Specification MIL-C-16173 may be used.

3.1.1.4.2 Care shall be taken to insure that external moving parts are cushioned and protected from damage. Male threads of air-tested fittings shall be protected with paperboard sleeves, plastic caps or sleeves, or metal caps, or as an alternate, may be protected by dipping in material conforming to grade 2 of Specification MIL-C-149 where this material can be readily removed. Surfaces of plugs, seals, or other types of protectors shall be neutral and acid free as defined in Specification MIL-B-121, and shall be greaseproof when in contact with preservative compounds.

3.1.1.4.3 Exterior surfaces of valves, fittings, or flanges coated with soft film preservatives shall be wrapped with greaseproof barrier material in accordance with Specification MIL-P-116. No overwrapping with greaseproof material will be required for surfaces coated with type P-1 preservative of Specification MIL-P-116 or grade 4 preservative compound of Specification MIL-C-16173. Barrier material shall be secured in place with pressure-sensitive tape conforming to Specification PPP-T-60.

3.1.1.4.4 Valves, fittings and flanges weighing 20 pounds or less. Unless otherwise specified (see 6.2), or as specified in 3.1.1.4.4.1, valves, fittings and flanges weighing 20 pounds or less shall be packaged in commercial quantities in paperboard folding, set-up or metal stayed boxes or fiber boxes conforming to Specification PPP-B-566, PPP-B-676, PPP-B-665 and PPP-B-626 respectively, at the option of the supplier. Box closure shall be as specified in the applicable box specification or appendix thereto. The gross weight of paperboard boxes shall not exceed 10 pounds; fiber boxes shall not exceed 20 pounds.

3.1.1.4.4.1 Army use only. When level A packing is specified (see 6.2) only fiber boxes

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specified in 3.1.1.4.4 shall be used. All corner and edge seams and manufacturer's joints shall be sealed with tape conforming to Specification UU-T-116 or PPP-T-76.

3.1.1.4.5 Valves, fittings, and flanges weighing more than 20 pounds. Unless otherwise specified (see 6.2), packaging in unit containers will not be required for valves, fittings, and flanges weighing more than 20 pounds. Valves, fittings, and flanges weighing more than 20 pounds shall be packed directly into shipping containers as specified in 3.2.1, 3.2.2, or 3.2.3, as applicable with the selection of shipping container at the option of the contractor.

3.1.2 Level C. Cleaning, preservation, and packaging shall be in accordance with the supplier's commercial practice.

3.2 Packing. (See 6.2).**3.2.1 Level A.**

3.2.1.1 Valves, fittings, and flanges weighing 20 pounds or less. Valves, fittings and flanges weighing 20 pounds or less, packaged as specified (see 6.2) shall be packed in close fitting overseas type wood-cleated fiberboard, wood-cleated plywood, wood-cleated veneer paper overlaid, nailed wood, wire-bound wood, fiber or heavy duty fiberboard boxes conforming to Specification PPP-B-591, PPP-B-601, MIL-B-10377, PPP-B-621 (class 2), PPP-B-585 (class 3), PPP-B-636 (class 3), and PPP-B-645 respectively, at the option of the supplier. Case liners for boxes conforming to Specification PPP-B-636 or PPP-B-645 may be omitted provided all center and edge seams and manufacturer's joints of the boxes are sealed with minimum 1½ inch wide tape conforming to Specification PPP-T-76. When specified (see 6.2), tape shall conform to type III, class 1 of Specification PPP-T-69 and be of minimum 2 inch width. Boxes shall be closed and strapped in accordance with the applicable box specification or appendix therein. Flat steel strapping shall be type I, class B. The gross weight of

wood or wood-cleated boxes shall not exceed 200 pounds. Fiber boxes shall not exceed the weight limitations of the applicable fiber box specifications.

3.2.1.2 Valves weighing more than 20 pounds. Valves weighing more than 20 pounds shall be packed in close fitting overseas type wood-cleated plywood, wire-bound wood, nailed wood, or heavy duty fiberboard boxes, or sheathed crates conforming to Specification PPP-B-601, PPP-B-585 (class 3), PPP-B-621 (class 2), PPP-B-645 and MIL-C-104 respectively, at the option of the supplier. Handwheels may be left on or removed in accordance with the manufacturer's commercial practice. When removed, the handwheel shall be either packaged separately and packed within the same container with the valve, or tightly and securely wired or strapped to the valve. The stem end shall be protected, as necessary, with a metal or plastic nipple or wood block and nut and washer. When a wood block is used, the stem shall be wrapped with barrier material conforming to Specification MIL-B-121 prior to applying the wooden block. Boxes exceeding 200 pounds gross weight shall be modified by the addition of minimum of two nominal 2 by 4 inch wood skids placed flat at right angles to the long dimension. Ends of skids shall be beveled full depth at a 45 degree angle. Sheathed crates shall be used for shipment of valves weighing more than 500 pounds. When specified (see 6.2) valves weighing more than 500 pounds may be packed in unshathed crates conforming to Specification MIL-C-132. Sealing of fiber boxes shall be as specified in 3.2.1.1.

3.2.1.3 Fittings and flanges weighing more than 20 pounds. Fittings and flanges weighing more than 20 pounds shall be packed as specified in 3.2.1.2 except that flanges that can be effectively packed by bundling may be stacked and securely bolted in bundles face to face, or hub to hub, with flanged face out and with outer flange faces fully protected by wood, pressed wood, metal or similar flange covers bolted to the face. When wood

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or metal flange covers are used, greaseproof barrier material conforming to grade A of Specification MIL-B-121 shall be inserted between the flange face and the flange cover. When metal covers are used, they shall be painted or protected against corrosion with a preservative compound as specified in 3.1.1.4.1. Fittings weighing over 50 pounds, except butt welding or silver brazing fittings which do not require packing for physical protection, shall have flange faces of fittings protected in the same manner as flanges. Soil pipe, or cast-iron water pipe fittings and flanges in bolted bundles may be shipped unpacked or may be packed on pallets to facilitate handling.

3.2.1.4 Caseloaders. Sealed case liners conforming to Specification MIL-L-10547 and appendix thereto shall be provided when shipping container contents include unpackaged items, interior containers, identification markings or labeling, or cushioning materials not otherwise protected against water, any of which are subject to damage or deterioration from the effects of water.

3.2.2 Level B.

3.2.2.1 Valves, fittings, and flanges weighing 20 pounds or less. Valves, fittings, and flanges weighing 20 pounds or less, packaged as specified (see 6.2) shall be packed in close-fitting domestic type wood-cleated fiberboard, wood-cleated plywood, nailed wood, wire-bound wood, wood-cleated veneer paper overlaid or heavy duty fiberboard boxes conforming to Specification PPP-B-591, PPP-B-601, PPP-B-585 (class 1 or 2), PPP-B-621 (class 1), MIL-B-10877 and PPP-B-645 respectively, or in fiber boxes conforming to class 2 of Specification PPP-B-636, at the option of the supplier. Box closures shall be as specified in the applicable box specification or appendix thereto. The gross weight of wood or wood-cleated boxes shall not exceed 200 pounds; fiber or fiberboard boxes shall not exceed the weight limitations of the applicable box specification.

3.2.2.2 Valves weighing more than 20 pounds. Valves weighing more than 20 pounds shall be packed in close fitting domestic type wood cleated plywood, wire-bound, nailed wood, or heavy duty fiberboard boxes or un-sheathed crates conforming to Specification PPP-B-601, PPP-B-585, (class 1 or 2), PPP-B-621, PPP-B-645, MIL-C-132 and MIL-C-3774, respectively at the option of the contractor. Handwheels may be left on or removed from the stems in accordance with the manufacturer's commercial practice. When removed, the handwheel shall be either packed separately and included within the same container with the valve, or tightly and securely wired or strapped to the valve. The stem end shall be protected, as necessary, with a metal or plastic nipple or wood block and nut and washer. When a wood block is used, the stem shall be wrapped in barrier material conforming to Specification MIL-B-121 prior to applying the block. Boxes exceeding 200 pounds gross weight shall be modified by the addition of a minimum of two nominal 2 by 4-inch skids placed flat at right angles to the long dimension. Ends of skids shall be beveled full depth at a 45 degree angle. Unsheathed crates shall be used for shipment of valves weighing more than 500 pounds.

3.2.2.3 Fittings and flanges weighing more than 20 pounds. Fittings and flanges weighing more than 20 pounds shall be packed as specified in 3.2.2.2 except that flanges that can be effectively packed by bundling may be stacked and securely bolted in bundles face to face or hub to hub with flanged face out and with outer flange faces fully protected by wood, pressed wood, metal or similar flange covers bolted to the face. When wood or wood product flange covers are used, greaseproof barrier material conforming to grade A of Specification MIL-B-121 shall be inserted between the flange face and the wood flange cover. When metal covers are used, they shall be painted or otherwise suitably protected against corrosion with a preservative compound as specified in 3.1.1.4.1. Fittings weighing over 50 pounds, except

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butt welding or silver brazing fittings which do not require packing for physical protection, shall have flange faces of fittings protected in the same manner as flanges. Soil pipe cast-iron water pipe fittings and flanges in bolted bundles may be shipped unpacked or may be packed on pallets to facilitate handling.

3.2.3 Anchoring, blocking, bracing and cushioning. Anchoring, blocking, bracing and cushioning of the container contents shall be in accordance with Specification JAN-P-100 and the appendix to Specification MIL-C-104.

3.2.4 Level C. Valves, fittings, and flanges, preserved and packaged as specified (see 6.2), shall be packed in a manner to insure safe delivery and acceptance at destination. Containers shall comply with the Uniform Freight Classification Rules or other carrier regulations applicable to the mode of transportation.

3.3 Marking. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with Standard MIL-STD-129.

3.4 Workmanship. All operations and processes involved in accomplishing the cleaning, preservation, packaging, packing and marking requirements specified herein shall be in accordance with the highest grade practice associated with this type of work.

4. QUALITY ASSURANCE PROVISIONS

4.1 Unless otherwise specified herein the supplier is responsible for the performance of all inspection requirements prior to submission for Government inspection and acceptance. Except as otherwise specified, the supplier may utilize his own facilities or those of any commercial laboratory acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order.

4.2 Materials. All materials to be used in the packaging of the valves, fittings and flanges, shall be subjected, at the place of packaging to the examinations and tests specified for acceptance in the material specification; or certified examination and test reports shall be furnished which show that the materials as supplied conform to the requirements of the material specification.

4.3 Inspection of preparation for delivery. The preservation, packaging, packing, and marking of the valves, fittings, and flanges shall be examined to determine conformance with the requirements of this specification. Sample items and packages shall be selected and inspected in accordance with Specification MIL-P-116 to verify conformance to all the preservation and packaging requirements specified herein. Examination of packing and marking requirements not covered by referenced specifications shall be in accordance with Standard MIL-STD-105, using an A.Q.L. of 4.0 percent defective at inspection level 1.

5. PREPARATION FOR DELIVERY

5.1 See section 3.

6. NOTES

6.1 Intended use. This specification is primarily intended for mechanical valves, fittings, and flanges not installed as a component of equipment, and is not intended to provide complete delivery requirements for valves having hydraulic or electric actuating mechanisms or controls. Sufficient information is provided for preservation of the basic valve. Additional information or special requirements may be required for peculiar types of valves.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number and date of this specification.

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- (b) Levels of cleaning, drying, preservation, packaging and packing required (see 3.1 and 3.2).
- (c) Type of preservative for internal and external surfaces (see 3.1.1.2.1 and 3.1.1.2.3).
- (d) When grade 4 compound of Specification MIL-C-16173 may be used (see 3.1.1.2.1 and 3.1.1.4.1).
- (e) When protection other than method III of Specification MIL-P-116 may be used (see 3.1.1.2.2).
- (f) When removal of packing is required (see 3.1.1.3).
- (g) When other than commercial quantities should be packaged (see 3.1.1.4.4).
- (h) When level A packing is specified for Army use (see 3.1.1.4.4.1).
- (i) Whether packaging in unit containers is required (see 3.1.1.4.5).
- (j) When tape conforming to Specification PPP-T-60 is required (see 3.2.1.1).
- (k) When valves may be packed in un-sheathed crates (see 3.2.1.2).

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Custodians:

Army—Corps of Engineers
Navy—Bureau of Ships
Air Force

Preparing activity:

Navy—Bureau of Ships
(Project 4820-0004)

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 1-9-7004
INSTRUCTIONS		
This sheet is to be filled out by personnel within Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).		
SPECIFICATION		
ORGANIZATION (of exhibitor)		CITY AND STATE
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? a. GIVE PARAGRAPH NUMBER AND WORDING.		
b. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO. IF "YES", IN WHAT WAY?		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity)		DATE

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