

**MIL-V-6129A****15 JUNE 1964****SUPERSEDING****MIL-V-6129****18 MAY 1950**

**MILITARY SPECIFICATION**

**VALVE, CHECK; VACUUM AND**

**PRESSURE SYSTEM**

*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 one type of air check valve.
- \* **2. APPLICABLE DOCUMENTS**
- \* **2.1.** The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:
- \*SPECIFICATIONS**
- FEDERAL**
- PPP-B-636 — Box, Fiberboard.
- MILITARY**
- MIL-P-116 — Preservation, Methods of.
- MIL-C-5501 — Caps and Plugs, Protective, Dust and Moisture Seal.
- MIL-S-7742 — Screw - Threads; Standard, Optimum. Selected Series, General Specification For.
- MIL-P-7936 — Parts and Equipment, Procedures for Packaging of.
- MIL-D-70327 — Drawings, Engineering and Associated Lists.
- \*STANDARDS**
- MILITARY**
- MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 — Marking for Shipment and Storage.
- MIL-STD-130 — Identification Marking of U. S. Military Property.
- MIL-STD-143 — Specifications and Standards Order of Precedence for The Selection of.
- MS28050 — Valve, Check, Low Pressure, Internal Threads.

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**MIL-V-6129A****MS33586 — Metals, Definition of Dissimilar.**

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

**3. REQUIREMENTS**

\* **3.1. Selection of specifications and standards.** Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with Standard MIL-STD-148.

\* **3.2 Materials.** Materials shall conform to applicable specifications and shall be as specified herein and on applicable drawings. Materials which are not covered by specifications, or which are not specifically described herein, shall be of the best quality, of the lightest practicable weight, and suitable for the purpose intended.

\* **3.2.1 Metal parts.** All metal parts shall be of corrosion resistant material or treated in a manner to render them adequately resistant to corrosion. The use of magnesium or its alloys is prohibited.

\* **3.2.1.1 Dissimilar metals.** Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other. Dissimilar metals are defined in Standard MS33586.

**3.2.2 Nonmagnetic materials.** Nonmagnetic materials shall be used for all parts of the valve except where magnetic materials are essential.

\* **3.2.3 Protective treatment.** When materials are used in the construction of the air check valve that are subject to deterioration when exposed to environmental conditions likely to occur during service usage, they shall be protected against such deteri-

oration in a manner that will in no way prevent compliance with the performance requirements of this specification. Protective coating which might crack, chip or scale during normal service life or under extremes of environmental conditions shall not be used.

\* **3.3 Design and construction.** The design and construction of the air check valve shall be in accordance with Standard MS28050 with the applicable drawings specified in the contract or order (see 6.2). The flapper hinge shall be provided with a spring having sufficient force to return the flapper to its closed position, when the valve is held in any position with no air flow. The air check valve shall be designed so that no parts will work loose in service. It shall be built to withstand the strains, jars, vibrations and such other conditions as are incidental to shipping, storage, installation, and service.

\* **3.3.1 Threads.** Only Class 3 straight threads conforming to Specification MIL-S-7742 shall be used.

\* **3.3.2 Locking.** The screws and nuts used in assembling the air check valve shall be locked in place. Lock washers shall not be used.

\* **3.4 Performance.** The air check valve shall meet the performance requirements of this specification and shall show no damage after being subjected to the Quality Conformance Tests set forth in 4.3.

\* **3.5 Interchangeability.** All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable. The drawing number requirements of Specification MIL-D-70327 shall govern changes in the manufacturer's part number.

\* **3.6 Weight.** The weight of the air check valve shall not exceed the value specified on Standard MS28050.

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- \* **3.7 Markings.** Markings shall be durable to withstand usage encountered in service.
- \* **3.7.1** Direction of flow shall be indicated by arrows in two places approximately 180 degrees apart as shown in the drawings.
- \* **3.8 Identification of product.** The air check valve shall be marked for identification in accordance with Standard MIL-STD-130.
- \* **3.9 Workmanship.** The air check valve shall be uniform in quality and shall be free from irregularities, defects or foreign matter which could adversely affect safety, performance, reliability, or durability.
- \* **4. QUALITY ASSURANCE PROVISIONS**
- \* **4.1 Responsibility for inspection.** Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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.
- \* **4.2 Classification of inspection.** All the inspections of the air check valve shall be classified as quality conformance inspection.
- \* **4.3 Quality conformance inspection.** The quality conformance inspection shall consist of individual inspection and sampling tests.
- \* **4.3.1 Individual inspection.** Each air check valve on the contract or order shall be subjected to the following inspection in the order listed. Any air check valve containing a defect or failing to pass any of these tests shall be rejected.
- (a) Examination ..... (4.5.1)
- (b) Leakage ..... (4.5.5)
- \* **4.3.2 Sampling inspection.** A random sample shall be selected from each inspection lot in accordance with Standard MIL-STD-105 at inspection level S2 and shall be subject to the following tests. If a sample fails to pass any of these tests, the lot represented by that sample shall be rejected. The tests shall be performed in the order listed. The valves should be examined after each test for signs of deterioration or impending failures.
- (a) Deterioration ..... (4.5.2)
- (b) Durability ..... (4.5.3)
- (c) Pressure Drop ..... (4.5.4)
- (d) Leakage ..... (4.5.2)
- (e) Magnetic Effect ..... (4.5.6)
- \* **4.3.2.1 Inspection lot.** All air check valves of the same size offered for delivery at one time shall be considered a lot for purposes of inspection.
- \* **4.4 Test condition.** Unless otherwise specified, tests shall be conducted at ambient temperature of  $77 \pm 18^\circ$  F and at an ambient barometric pressure of 28 to 32 inches of mercury.
- \* **4.5 Inspection methods.**
- \* **4.5.1 Examination.** The air check valve shall be thoroughly examined to determine conformance with this specification and applicable drawings with respect to all the requirements not covered by tests.
- \* **4.5.1.1** The air check valve shall be examined to ascertain that the preparation for delivery conforms to this specification.
- \* **4.5.2 Deterioration.**

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\* 4.5.2.1 The air check valve shall be immersed in tap water for a 12 hour period. All internal parts of the air check valve shall be in contact with the fluid during the immersion. After the test there shall be no evidence of deleterious effects to any part of the air check valve.

\* 4.5.2.2 The air check valve shall be immersed in commercial kerosene for a 12 hour period. All internal parts of the air check valve shall be in contact with the fluid during the immersion. After the test there shall be no evidence of deleterious effects to any part of the air check valve.

\* 4.5.3 *Durability.* The valve shall be opened and closed 2000 times. After the test there shall be no evidence of malfunction, mechanical failure or deformation.

\* 4.5.4 *Pressure drop.* The air check valve shall be tested for pressure drop with its axis in a horizontal position and again

with its axis in a vertical position, with the inlet port down. The pressure drop through the air check valve shall be determined at the applicable maximum air flow specified in Table I. The pressure drop of the air check valve shall not exceed the applicable maximum permissible pressure drop specified in Table I.

**4.5.5 Leakage.**

\* 4.5.5.1 *Inlet port.* The air check valve shall be tested for leakage with a vacuum applied to the inlet port in such a way as to hold the flapper closed. The pressure required to close the flapper shall be noted. The leakage rate shall be determined with a suitable air-flow meter connected between the outlet port and the atmosphere to measure the air-flow into the valve. The leakage rate shall not exceed the applicable specified maximum permissible leakage rate in Table I. The flapper shall close under a differential pressure of 24 inches of water.

TABLE I

*Performance Tolerances*

Size of Valve		Rating <sup>1</sup> Maximum Air Flow	Maximum Permissible Pressure Drop	Maximum Permissible Leakage Rate
Dash NO	Tube OD	cfm of free air under std sea level conditions	Inches Water	cfm of free air under std sea level conditions
-4	1/4	0.50	3.75	0.10
-6	3/8	2.00	3.75	0.10
-8	1/2	5.00	3.75	0.10
-10	5/8	10.00	4.25	0.10
-10	1	20.00	4.75	0.10

<sup>1</sup> Rating is based on air-flow which produces a pressure drop of 0.10 inch of mercury in 1 foot of length of tubing size OD (Standard MS28950) by 0.038 Wall Thickness.

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\* **4.5.5.2 Outlet port.** The valve shall be tested for leakage with a vacuum applied to the outlet port and with the inlet port plugged. A vacuum of 10 inches of mercury shall be applied to the outlet port and then pinched off. The change in manometer level shall not exceed 0.20 inch of mercury in 10 seconds.

\* **4.5.6 Magnetic effect.** The magnetic property of the valve shall be determined in terms of the deflection of a free magnet, approximately 1½ inches long, in a magnetic field with a horizontal intensity of 0.18 Gauss. The valve shall be held magnetically east or west of and 5 inches from the center of the magnet. The deflection of the compass shall be noted. The deflection shall not exceed 5 degrees. (An aircraft compass with compensating magnets removed therefrom may be used as the free magnet for this test.)

## 5. PREPARATION FOR DELIVERY.

\* **5.1** The valve shall be prepared for delivery in accordance with Specification MIL-P-7936. Preservation for Level A shall be in accordance with Specification MIL-P-116, Method 1C-3, without the use of contact preservatives and without cleaning by immersion in solvent.

\* **5.1.1 Plugs.** Ports shall be sealed by closures conforming to Specification MIL-C-5501.

\* **5.2 Packing.** Packing shall be in accordance with Specification MIL-P-7936, Level A, B or C as specified in the contract or order (see 6.2). Exterior containers shall contain identical quantities and as far as practical shall have the minimum cube and tare consistent with the protection required.

\* **5.2.1 Level A.** Air check valves packaged as in 5.1 shall be packed in snug fitting fiberboard containers conforming to Specification PPP-B-636, Class 2. Containers

shall be closed and sealed as specified in the appendix of Specification PPP-B-636.

\* **5.2.2 Level B.** Air check valves packaged as in 5.1 shall be packed in snug fitting fiberboard containers conforming to Specification PPP-B-636, Class 1. Containers shall be closed and sealed as specified in appendix of Specification PPP-B-636.

\* **5.3 Marking and labeling.** Marking shall conform to MIL-STD-129.

## 6. NOTES

**6.1 Intended use.** The valves covered by this specification are intended for use in connection with vacuum and pressure systems to limit the air-flow to only one direction.

\* **6.2 Ordering data.** Procurement documents should specify the following:

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

(b) Selection of applicable levels of preservation, packaging and packing required.

(c) Quantity and size of valve required.

(d) Samples subjected to destructive tests are not to be considered or shipped as part of the contract or order.

\* **6.3** The outside margins of this specification have been marked to indicate where changes (deletion, additions, etc.) from the previous issue have been made. This has been done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content as written irrespective of the marginal notations and relationship to the last previous issue.

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**Custodian:**

Navy--WP

Air Force--11

**Review Interest:**

Navy--WP

Air Force--11

**Preparing Activity:**

Navy--WP

DOD Project No. 4820-0039