

MILITARY SPECIFICATION

VALVE, AIR VENT, AUTOMATIC, HYDRAULIC, LOW PRESSURE
TYPE II SYSTEMS, GENERAL SPECIFICATION FOR

This specification is approved for use by the Naval Air 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 covers automatic hydraulic air vent valves for use in Type II aircraft hydraulic systems with system pressurized reservoirs.

1.2 Classification. Automatic, hydraulic air vent valves shall be furnished in the classes as listed below:

<u>Class</u>	<u>Actuation Method</u>
I	Mechanical by hydraulic reservoir pressure
II	Electrical by the presence of air

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document 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).

Beneficial comments (recommendations, addition, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Air Warfare Center Aircraft Division Lakehurst, Systems Requirements Department, Code SR3, Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

SPECIFICATIONS

FEDERAL

PPP-B-566	Boxes, Folding , Paperboard
PPP-B-601	Boxes, Wood, Cleated Plywood
PPP-B-636	Boxes, Shipping, Fiberboard
PPP-B-676	Boxes, Setup
QQ-P-35	Passivation Treatments for Corrosion Resistant Steel

MILITARY

MIL-P-116	Preservation, Methods of
MIL-H-5440	Hydraulic Systems, Aircraft, Types I and II, Design and Installation Requirements For
MIL-C-5501	Cap and Plugs, Protective, Dust and Moisture Seal
MIL-H-5606	Hydraulic Fluid, Petroleum Base, Aircraft, Missile and Ordnance
MIL-H-6083	Hydraulic Fluid, Petroleum Base, For Preservation and Operation
MIL-A-8625	Anodic Coatings, For Aluminum and Aluminum Alloys
MIL-H-8775	Hydraulic System Components, Aircraft and Missiles, General Specification for
MIL-S-8879	Screw Threads, Controlled Radius Root With Increased Minor Diameter, General Specification for
MIL-T-31000	Technical Data Packages, General Specification For
MIL-H-46170	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base
MIL-F-81836	Filter and Disposable Element, Fluid Pressure, Hydraulic, 3 Micron Absolute
MIL-H-83282	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric, NATO Code No. H-537

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-810	Environmental Test Methods and Engineering Guidelines
MIL-STD-889	Dissimilar Metals
MIL-STD-2073-1	DoD Materiel Procedures for Development and Application of Packaging Requirements

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

2.2 Non-Government publications. The following document forms 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, the Issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

SOCIETY OF AUTOMOTIVE ENGINEERS

ARP 1383	Impulse Testing of Hydraulic Actuators, Valves, Pressure Containers and Similar Fluid System Components
----------	---

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

(Non-Government standards and other publications are normally available from the organizations that prepare or 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 document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), 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 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.4.

3.2 General specification. The requirements of MIL-H-8775 apply as requirements of this specification.

3.3 Materials. Materials shall be as specified herein and in referenced specifications and standards. Materials shall be free of defects which adversely affect performance of the finished product.

3.3.1 Compatibility. The automatic air vent valve shall be constructed of materials that will not adversely affect or be affected by hydraulic fluid conforming to MIL-H-83282 and MIL-H-46170.

3.3.2 Metals. Metals shall be of a corrosion resistant type or shall be treated to resist corrosion when exposed to climatic and environmental conditions encountered during the service life of the equipment. The use of any protective coating that will crack, chip, or scale with age or extremes of climate and environmental conditions shall be avoided.

3.3.3 Aluminum alloy parts. Aluminum alloy parts exposed to the environment shall be anodized in accordance with MIL-A-8892.

3.3.4 Steel parts. Steel parts shall have a minimum chrome content of 12 percent to prevent corrosion. Corrosion resistant steel parts shall be passivated in accordance with QQ-P-35.

3.3.5 Fungus-proof materials. Materials which are not nutrients for fungus shall be used to the greatest extent. In cases where materials that are nutrients for fungus must be used, such materials shall be treated with a fungicidal agent as approved by the procuring activity.

3.3.6 Dissimilar metals. Combinations of all automatic air vent valve parts and hydraulic tubing as specified in MIL-H-5440 shall be compatible as specified in MIL-STD-889.

3.4 Design. Automatic air vent valves specified under this specification shall be capable of releasing undissolved air from hydraulic system while at the same time preventing oil from leaking out of the system. The valve shall be capable of operating with the air vent valve outlet in the range of positions from vertical to 80 degrees from the vertical position in any direction. Venting of air may be continuous upon system pressurization or intermittent based upon system pressurization and depressurization. Detailed operating requirements and pressure levels shall be as listed in the applicable military specification sheet.

3.4.1 Joints. The automatic air vent valve design shall incorporate the minimum number of external joints. Consideration shall be given to bonding any valve housing joints by permanent methods. Screw threads shall conform to MIL-S-8879.

3.4.2 Lockwire. Lockwire holes shall be provided as specified in the military specification sheet. All threaded screws and joints shall be locked as specified in MIL-H-8775.

3.4.3 Temperature. The automatic air vent valve shall be capable of operating at temperatures from -40° to 275°F as specified in the applicable military specification sheet.

3.4.4 Maximum oil leakage. The maximum oil leakage allowed from the automatic air vent valve outlet in any condition of failure of the internal mechanism shall not be greater than 1500 ml per hour. This maximum oil leakage rate shall be calculated by the manufacturer using an oil temperature of 240°F and the maximum reservoir pressure as specified on the applicable military specification sheet. The detailed calculations with any assumptions shall be submitted with the first article test report as evidence of conformance. The oil leakage may also be measured by actual test using the same conditions as required for the calculation method. A description of the failure mode and method of generating the failure shall be included in the test report.

3.5 Performance. The automatic air vent valves shall pass the tests specified in 4.4.

3.6 Interchangeability. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. Changes in manufacturer's part numbers shall be governed by the drawing number requirements as specified in MIL-T-31000. The manufacturer's part number and drawing number shall be the same.

3.7 Identification of product. Each automatic air vent valve shall be clearly and permanently identified by steel stamping or by a permanently attached nameplate conforming to MIL-STD-130. The following information shall be provided:

Valve, Air Vent, Mechanical (For Class I pressure actuated) or
Valve, Air Vent, Electrical (For Class II air actuated types)
M29592/YY-ZZ (Insert slash sheet number and dash size)
Manufacturer's Number
Manufacturer's S/N
Manufacturer's Name

3.8 Workmanship. Workmanship shall be of such quality as to assure that automatic air vent valves furnished under this specification are free of defects that compromise, limit, or reduce performance or intended use. The automatic air vent valves shall be neat and free of burrs, rust, scratches, chips and sharp edges. Where dimensions and tolerances may affect interchangeability, they shall be limited accordingly.

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 (examinations and tests) 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall 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 ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract.

Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.3 General. The quality assurance provisions shall be in accordance with MIL-H-8775, and as specified herein.

4.4 First article inspection. When a first article is required (see 3.1, 6.2 and 6.3), it shall be examined as specified in 4.7.1 and tested for performance as specified in 4.7.2 through 4.7.13.

4.4.1 Test samples. For first article inspection, two test specimens shall be selected for testing. The first sample shall be subjected to all tests and the second sample held as a back-up to confirm any failures that may occur. The test specimens shall not have been subjected to any testing prior to submittal, except for the individual inspections (see 4.5.1). The specimens shall be assembled of parts which conform to manufacturer's drawings and have nominal tolerances typical in a production lot.

4.4.2 Tests. The first article tests shall consist of the tests specified in Table I conducted in the order as specified.

4.5 Quality conformance inspections. Quality conformance inspections shall consist of the following:

- a. Individual inspection (see 4.5.1)
- b. Sampling tests (see 4.5.2)

4.5.1 Individual inspections. The individual inspection shall consist of the following:

- a. Examination of product (see 4.7.1)
- b. Proof pressure (see 4.7.3)
- c. Functional (see 4.7.4)
- d. Reverse air flow (see 4.7.6)

4.5.2 Sampling tests. Samples shall be selected from each inspection lot (see 4.5.2.1) in accordance with MIL-STD-105 using special inspection level S-1 with no rejects allowed. The sample automatic air vent valve shall be unpacked and the inspections specified in 4.5.1, the rapid rate of pressure rise test (4.7.5), and the oil expulsion test (4.7.8) shall be conducted.

TABLE I. First article tests

Order of Tests	Title of Test	Para. Ref.
1	Examination of product	4.7.1
2	Fluid immersion	4.7.2
3	Proof pressure	4.7.3
4	Functional	4.7.4
	a. Opening and air venting	4.7.4.1
	b. Closing and oil shut off	4.7.4.2
	c. Adverse attitude	4.7.4.3
5	Rapid rate of pressure rise	4.7.5
6	Reverse air flow	4.7.6
7	Extreme temperature	4.7.7
	a. Low temperature performance	4.7.7.1
	b. High temperature performance	4.7.7.2
8	Oil expulsion	4.7.8
9	Endurance	4.7.9
10	Pressure surge	4.7.10
11	Vibration	4.7.11
12	Housing torque	4.7.12
13	Burst	4.7.13

4.5.2.1 Inspection lot. For purposes of quality conformance inspection, a lot shall be defined as all units of products manufactured under essentially the same conditions and offered for acceptance at one time.

4.5.3 Failure of sampling test. When an automatic air vent valve fails to pass a sampling test, the entire lot represented by the sample shall be rejected. The lot represented by the unsatisfactory sample shall not be resubmitted until approval of resubmission has been issued by the procuring agency (see 6.3).

4.6 Test conditions.

4.6.1 Test fluid. Unless otherwise specified (see 6.2), the hydraulic fluid used for all tests shall conform to MIL-H-83282. For quality conformance tests, hydraulic fluid conforming to MIL-H-6083, MIL-H-5606, or MIL-H-46170 may be used.

4.6.2 Test fluid temperature. Unless otherwise specified in 4.7, the actual temperature of the test fluid shall be maintained at 65°F to 95°F through the duration of the test.

4.6.3 Environmental temperature. Unless otherwise specified in 4.7, tests shall be conducted at a room temperature of 65° to 95°F measured within 12 inches of the sample.

4.6.4 Test sample position. Unless otherwise specified in 4.7, the test specimen shall be mounted in an upright position with the air vent valve port on top of the automatic air vent valve in a vertical position.

4.7 Test methods. Either Class I or Class II automatic air vent valve test procedures shall be conducted as required.

4.7.1 Examination of product. Examine each automatic air vent valve for conformance to the applicable military specification sheet and to the requirements of MIL-H-8775.

4.7.2 Fluid immersion. The automatic air vent valve shall be immersed in hydraulic fluid conforming to MIL-H-83282 for 72 hours, at a fluid temperature of 270° to 275°F prior to conducting the first article tests specified herein. All internal and external parts of the automatic air vent valve shall be in contact with the fluid during the immersion test. After the 72 hour soak period, the automatic air vent valve shall be subjected to the next test immediately or remain in the fluid at room temperature until ready for the next test.

4.7.3 Proof pressure. The automatic air vent valve shall be removed from the hydraulic fluid and the external surfaces shall be wiped dry and cleaned of any residual fluid. A proof pressure of 150 percent of the maximum operating pressure, as specified in the applicable military specification sheet, shall be applied to the automatic air vent valve inlet while the automatic air vent valve is stabilized at a fluid and environmental temperature of 270° to 275°F. The air vent valve port shall be open to the atmosphere during this test. The rate of pressure rise shall not exceed 25,000 psi/rein. The fluid pressure shall be applied for 5 minutes. There shall be no external leakage indicated by wetness on a dry wiping towel applied to the external surfaces except for vented fluid from the outlet not exceeding the quantity specified on the specification sheet for one cycle. There shall be no evidence of permanent deformation. For quality conformance testing, proof pressure shall be applied at a fluid and environmental temperature of 65° to 95°F and held for two minutes. There shall be no visible external leakage as indicated by wetness on a dry wiping towel applied to the external surfaces except for oil

expelled from the outlet port during one cycle, within the specified limit on the applicable military specification sheet. There shall be no structural failure permanent deformation.

4.7.4 Functional.

4.7.4.1 Opening and air venting. (Class I only). Perform the functional test with the automatic air vent valve installed in a test circuit similar to Figure 1. The selector valve shall be set to the air side of the reservoir. Slowly increase the air pressure until air bubbles are observed in the air trap. The automatic air vent valve shall open and vent air as indicated by bubbles in the water beaker prior to reaching the minimum reservoir pressure, as indicated in the applicable military specification sheet. With the pressure adjusted to the minimum reservoir pressure, the minimum air flow rate shall be as specified in the applicable military specification sheet. Continue increasing the air pressure until the maximum reservoir pressure, as specified on the applicable military specification sheet, plus 5 psi is reached. Air shall continue to flow without interruption as indicated by air bubbles in the water beaker.

4.7.4.2 Closing and oil shut off. (Class I only). At the completion of 4.7.4.1, the air pressure shall be adjusted to the minimum reservoir pressure (on the applicable military specification sheet) minus 10 psi. The selector valve shall be set to the oil side of the reservoir and oil introduced into the air vent valve as the residual air in the test apparatus is vented through the automatic air vent valve. The automatic air vent valve shall close and prevent hydraulic fluid expulsion within the prescribed rate (see applicable military specification sheet for the maximum oil expulsion rate). The selector valve and vent valve shall be adjusted to drain the oil from the automatic air vent valve and tubing leading to it. The air pressure shall be readjusted to the maximum hydraulic pressure plus 5 psi. The procedure shall be repeated at this pressure and the automatic air vent valve shall vent air and close, preventing oil from being expelled above the prescribed limit.

4.7.4.3 Adverse attitude. (Class I only). The automatic air vent valve shall be mounted at an angle of 80 degrees from the vertical. The opening and air venting test (4.7.4.1) and the closing and oil shut-off test (4.7.4.2) shall be repeated with no failure.

4.7.5 Rapid rate of pressure rise. (Class I only). With the automatic air vent valve mounted in a test circuit similar to Figure 1, and the initial air pressure at 0 psig, set the selector valve to the air side of the reservoir. Increase the air pressure rapidly at a rate of rise between 100 and 200 psi per second until the maximum reservoir pressure (on the applicable military specification sheet) plus 5 psi is reached. Manual or automatic pressure control may be used providing the required rate of rise is maintained and verified by an electronic recording device. The automatic air vent valve shall continue to vent air without interruption or premature shut off. This test shall be repeated 10 times without failure.

4.7.6 Reverse air flow. A hose shall be connected to the inlet to the automatic air vent valve and the opposite end of the hose placed in a beaker of water open to the atmosphere. A suitable source of clean, dry air or nitrogen shall be connected to the air vent port. The air pressure shall be adjusted to 7 ± 2 psi. There shall be no reverse air flow through the valve as indicated by bubbles in the beaker of water.

4.7.7 Extreme temperature.

4.7.7.1 Low temperature performance. (Class I only). With the test apparatus as described on Figure 1 in an environmental chamber, the automatic air vent valve and test fluid shall be cold soaked for 24 hours at -40°F. The test procedure of 4.7.4.2 shall be repeated. The valve shall close and prevent hydraulic fluid expulsion within the prescribed rate (see military specification sheet for the maximum oil expulsion rate).

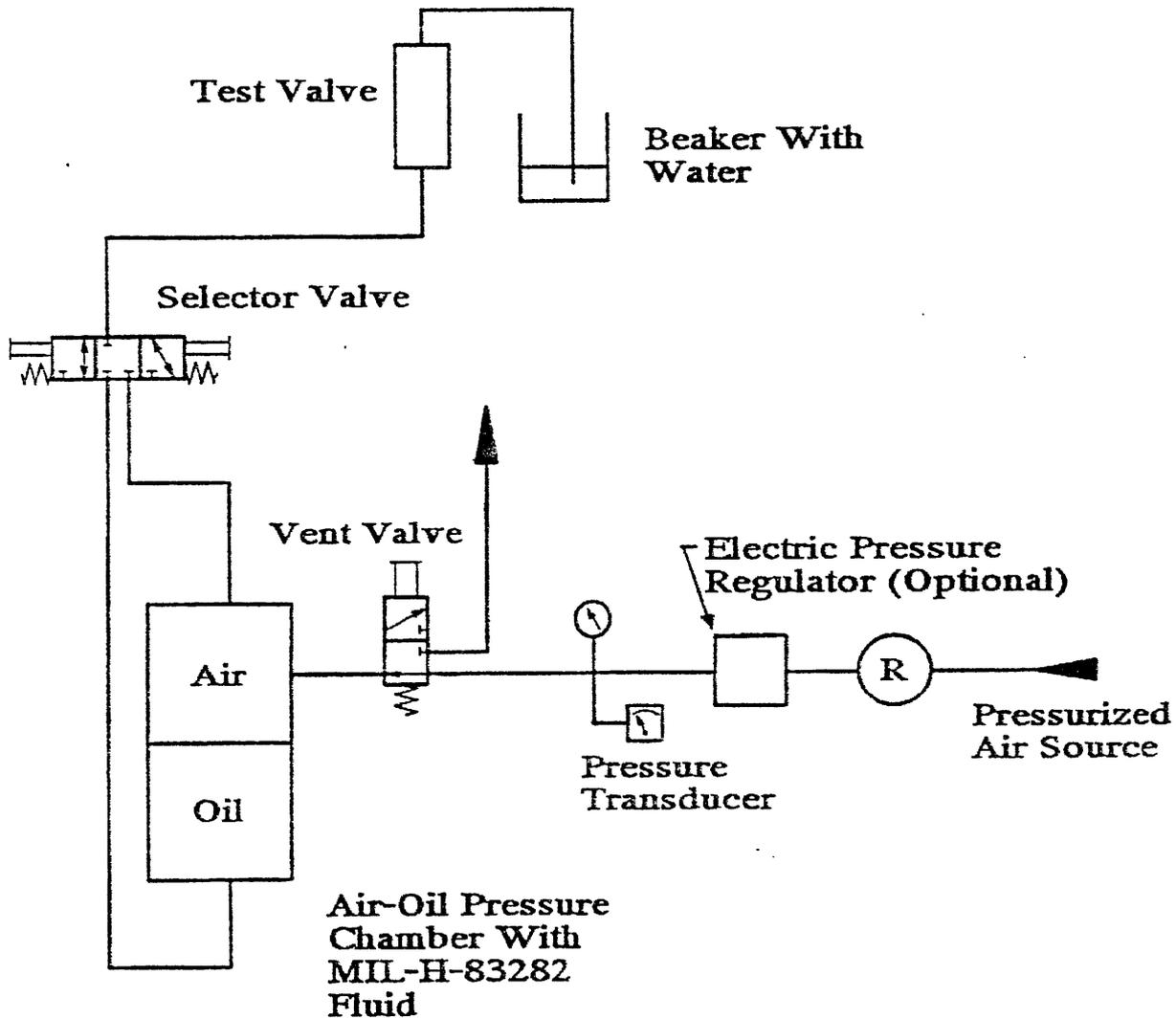


FIGURE 1. Test circuit.

4.7.7.2 High temperature performance. (Class I-only). With the test apparatus of Figure 1 in an environmental chamber, the automatic air vent valve and test fluid shall be hot soaked for 24 hours at 130°F. With the valve at 130°F, the test procedures of 4.7.4.1 and 4.7.4.2 shall be repeated. The valve shall continue to vent air during the opening and air venting test and shall close during the closing and oil shut-off test. After closing there shall be no oil expulsion.

4.7.8 Oil expulsion. (Class I only). Using the test apparatus on Figure 1 at a temperature of 65° to 95°F, the air pressure shall be adjusted to the minimum operating reservoir pressure as specified in the applicable military specification sheet. The selector valve shall be opened and oil under pressure ported to the air vent valve. After oil shut off, the automatic air valve shall then be vented to the atmosphere using the selector valve and the vent valve. This procedure shall be repeated for 100 pressure actuation cycles and the oil expelled from the air outlet collected in the beaker. The cycle rate shall not exceed 5 cycles per minute and the maximum rate of pressure rise shall not exceed 30 psi per second. The average expulsion rate per cycle, as specified in the applicable military specification sheet, shall not be exceeded.

4.7.9 Endurance. The procedure for the oil expulsion test (4.7.8) shall be repeated for a total of 50,000 cycles at room temperature. The cycle rate shall be between 10 and 20 cycles per minute except for the last 100 cycles. For the last 100 cycles the cycle rate shall be 5 cycles per minute or less and the rate of pressure rise at 30 psi per second or less at room temperature. The expulsion rate for the final 100 cycles shall be determined and shall not exceed the value specified in the applicable military specification sheet. The functional tests of 4.7.4 shall be repeated without failure, premature air shut off, or excessive oil expulsion.

4.7.10 Pressure surge. The test valve shall be pressure surge tested in accordance with ARP 1383 with the valve mounted in a test apparatus and the outlet port plugged. The automatic air vent valve shall be subjected to 50,000 pressure surge cycles, at an environmental and fluid temperature as specified in Table II. The maximum peak pressure shall be 150 percent of the maximum reservoir operating pressure as specified on the applicable military specification sheet. Cycling shall be performed at a rate of 300 cycles per minute (cpm) maximum. There shall be no evidence of external leakage or structural failure during the performance of this test. The actual pressure surge pattern shall be recorded.

4.7.11 Vibration. The automatic air vent valve shall be vibration tested in accordance with MIL-STD-810. All tests shall be performed along two axes, the axis parallel to the direction of flow and the axis perpendicular to the direction of flow. Both sinusoidal and broad band random tests are required. The automatic air vent valve shall be pressurized with oil at the minimum reservoir pressure specified on the applicable military specification sheet and shall be mounted on a resonant-free test fixture similar to Figure 2. The input and output accelerometers shall both be mounted on the fixture with the latter as close as possible to the test valve. Tolerances of the vibration characteristics shall be:

Amplitude	± 10 %
Frequency	± 2 %
Acceleration	± 10 %

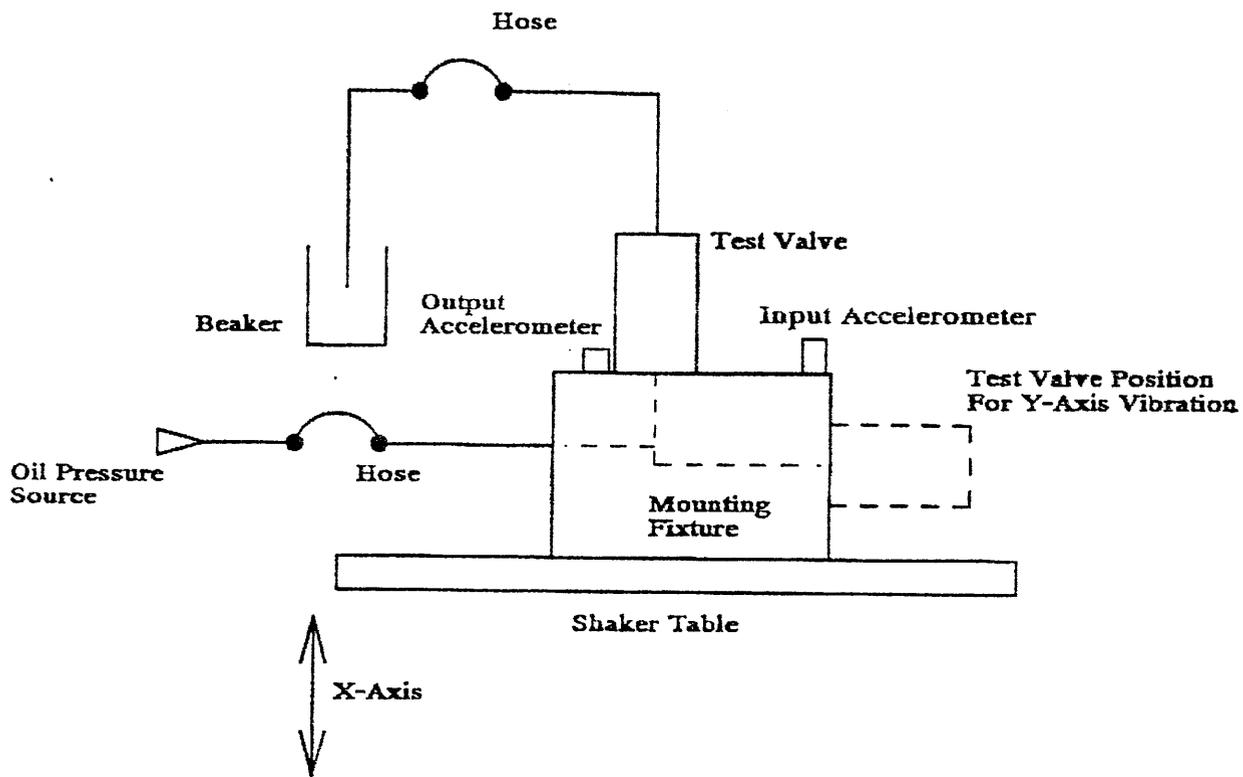


FIGURE 2. Vibration test fixture.

TABLE II. Pressure surge test temperature

Test Temperature	No. Cycles
90°F ±10°F	20,000
225°F ±10°F	20,000
275°F ±10°F	10,000

4.7.11.1 Sinusoidal excitation. For the following tests the vibration Input accelerometer shall be mounted on the fixture close to the mounting point of the valve. A second accelerometer shall be mounted directly on the test item for monitoring resonant frequencies. The acceleration, frequency, and displacement shall be as shown on Figure 3.

4.7.11.1.1 Resonance search. Resonant frequencies of the automatic air vent valve shall be determined along each axis by slowly sweeping through the frequency range of 5 to 2000 Hz logarithmically. The applied vibration shall be at reduced levels (0.5g) but with sufficient amplitude to excite the test item. A resonant frequency shall be considered to be any natural frequency with an amplification factor of 1.5 or greater of the output response relative to the input level. The resonant frequencies shall be recorded.

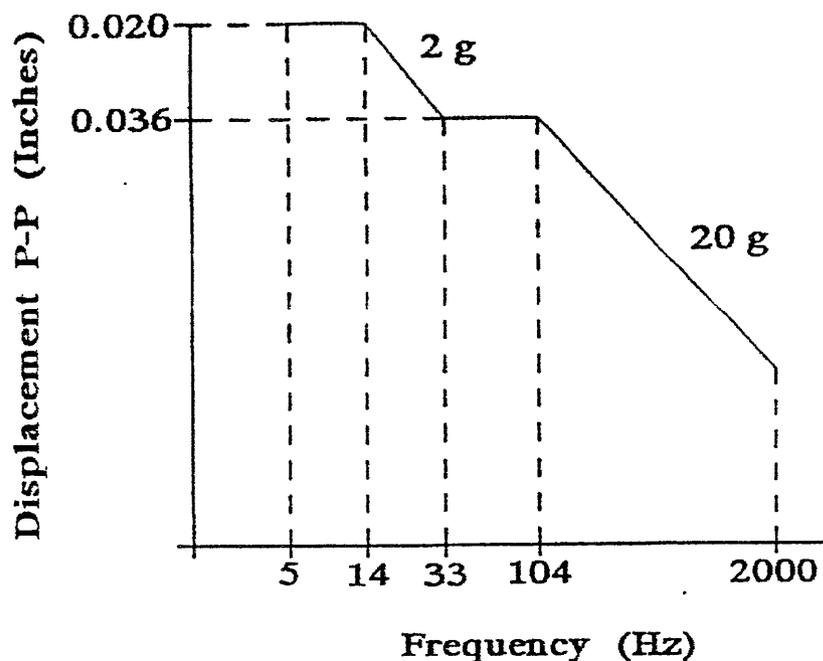


FIGURE 3. Sinusoidal excitation amplitude.

4.7.11.1.2 Resonance dwell. The automatic air vent valve shall be vibrated along each axis at the four most severe resonant frequencies based on the results of the resonant search. Dwell time shall be 30 minutes at each frequency and the amplitude shall be as shown on Figure 3. The dwells may be performed simultaneously. If a change occurs in the resonant frequency during the test, its time of occurrence shall be recorded, and the frequency shall be immediately adjusted to maintain the peak resonant condition. The final resonant frequency shall be recorded.

4.7.11.1.3 Cycling. The automatic air vent valve shall be vibrated along each axis for 3 hours. The cycling time shall be 3 hours minus the total resonance dwell time. The test levels are shown on Figure 3 and the frequency shall be swept over the range of 5 to 2000 Hz, logarithmically. Sweep time for the 5 to 2000 to 5 Hz cycle shall be 20 minutes.

4.7.11.2 Random excitation. Random excitation shall be applied for 1 hour along each axis conforming to MIL-STD-810, Method 514, Section I, Category 5 - Jet aircraft and tactical missiles and the curve shown in this document on Figure 4.

4.7.11.3 Test inspections. During the sinusoidal and random excitation testing, the automatic air vent valve under test shall be continuously monitored for signs of oil leakage. Oil leakage in excess of one drop during any of the individual vibration procedures shall be considered a failure. Following the vibration test, the valve shall be subjected to the functional test 4.7.4 without failure.

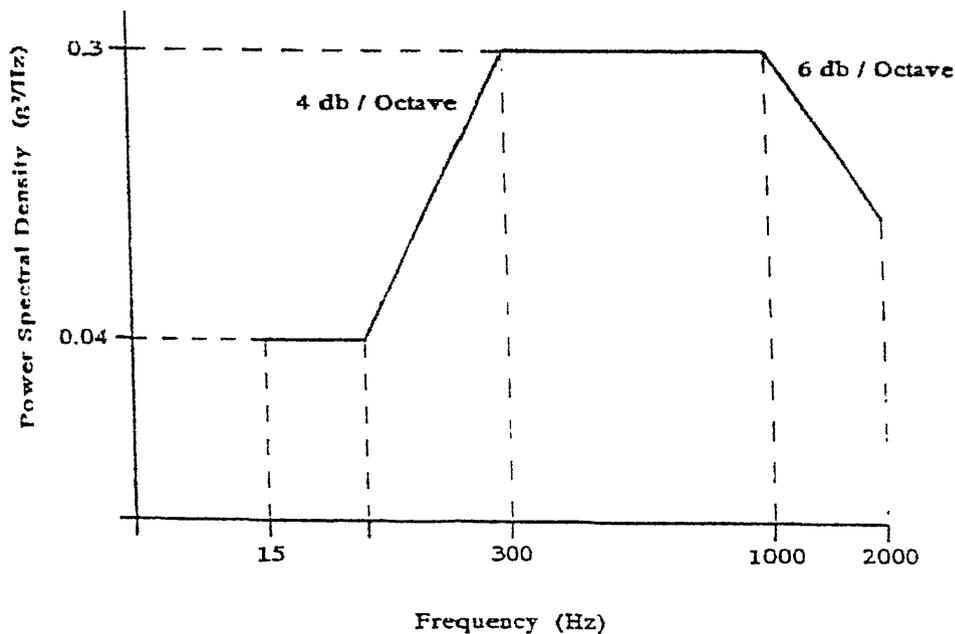


FIGURE 4. Random vibration spectrum.

4.7.12 Housing torque. This test shall be completed if required in the applicable military specification sheet. With the valve installed in a manifold and lockwired in place, a strap wrench shall be applied to the valve body and the torque, as specified in the applicable military specification sheet, shall be applied to the valve, both in a clockwise and a counterclockwise direction. There shall be no structural failure, distortion, or permanent deformation of the housing or end fittings. The valve shall be subjected to the functional test (4.7.4) and the room temperature proof pressure test (4.7.3) following the torque application.

4.7.13 Burst pressure. The automatic air vent valve and its environment shall be maintained at 270° to 275°F during this test. The outlet of the automatic air vent valve shall be capped. Pressure shall be applied to the inlet port of the valve at a maximum rate of increase of 1,000 psi per minute until the specified burst pressure of 300 psi is reached. The pressure shall be held for 5 minutes. The automatic air vent valve shall have no leakage in the form of drops, moisture, or wetness on any exterior surface. There shall be no rupture of internal or external parts.

5. PACKAGING

5.1 Preservations and packaging. Preservation and packaging shall be in accordance with MIL-STD-2073-1, level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Prior to preservation, the automatic air vent valve shall be cleaned ultrasonically (or by equivalent method) until free from all metal chips, grip, dirt, and other foreign matter. The cleaning method utilized shall not have deleterious effects on any material. Care shall be taken after cleaning to insure that the valve is not contaminated prior to or during preservation or packaging.

5.1.1.2 Preservation. The automatic air vent shall be flushed and filled 80 to 90 percent with hydraulic fluid conforming to MIL-H-46170, filtered through a filter assembly conforming to MIL-F-81836 and sealed with closures conforming to MIL-C-5501.

5.1.1.3 Packaging. The automatic air vent valve shall be packed in accordance with MIL-P-116, Method IC1 and placed in a fiberboard box in accordance with PW-B-636, conforming to W6s or W6C.

5.1.2 Level C. Valves shall be clean and preserved as for Level A and packaged in a manner to prevent deterioration and damage during handling and shipment from the supply source to the first receiving activity for immediate use.

5.2 Packing. Valve packages per 5.1, shall be packed Level A or C as specified (see 6.2).

5.2.1 Level A. Valves shall be packed in wood-cleated plywood boxes conforming to PPP-B-601, Grade A. Gross weight of each box shall not exceed 200 pounds.

5.2.2 Level C. Valves shall be packed in a manner to assure carrier acceptance and safe delivery to destination.

5.3 Marking. In addition to special requirements of the contract or order, interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129, and include the following:

M29592/YY-ZZ (Insert slash sheet number and dash size)
Month and year of manufacture
Class and size

6. NOTES

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

6.1 Intended use. The air vent valve is intended for use in aircraft hydraulic systems where operating temperatures and pressures are within the limits specified in the applicable military specification sheet. The automatic air vent valve is intended to be mounted on or connected as close as possible to the hydraulic reservoir.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number and date of the specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 201.1).
- c. When first article inspection is required (see 3.1, 4.4 and 6.4).
- d. Test fluid if other than MIL-H-83282.

e. Selection of applicable level of cleaning, preservation, packaging and packing required (See 5).

6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID'S) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
4.4	DI-NDTI-80809A	Test/Inspection Reports	
4.5.4	DI-R-5299C	Failure Analysis and Corrective Action Report	Blocks 9 & 10 N/A. Use contractor format

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSCL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a first article sample, a first production item, or a standard production item from the contractor's current inventory and the number of items to be tested as specified in 4.4. The contracting officer should also 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 required 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. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.5 Subject term (key word) listing.
Capillary tube
Gas discharge

Preparing Activity:
Navy - AS

(Project No. 1650-N169)