INCH-POUND

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PERFORMANCE SPECIFICATION

VALVE ASSEMBLY, SEAL

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for a seal valve assembly which serves as a sealing valve for a nitrogen receiver. The seal valve assembly consists of a seal valve and a filter cartridge assembly.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements' documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division, Code 414100B120-3, Highway 547, 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.

AMSC N/A FSC 4820

2.2.1 Specification, standards, and handbooks. The following specifications, standards, and handbooks 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).

SPECIFICATIONS

FEDERAL

BB-N-411	-	Nitrogen, Technical

DEPARTMENT OF DEFENSE

MIL-C-5501/3	-	Cap and Plug, Protective, Dust and Moisture Seal
MIL-V-23254	-	Valve, Control
MIL-R-81202	-	Receiver Assembly, Nitrogen, for LAU-7 Series Launchers

STANDARDS

FEDERAL

FED-STD-H28	-	Screw-Thread Standards For Federal Services

DEPARTMENT OF DEFENSE

MIL-STD-130	-	Identification Marking of U.S. Military Property
MIL-STD-810	-	Environmental Test Methods and Engineering Guidelines
MS28782	-	Retainer, Packing, Back-up, Teflon
MS33649	-	Boss, Fluid Connection - Internal Straight Thread

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

2.3 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).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME-B46.1 - Surface Texture (DoD adopted)

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017-2392.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, 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 in accordance with 4.2.

3.2 Materials. Materials shall be compatible with the nitrogen gas and shall meet the performance requirements of this specification.

3.2.1 Metal parts. All parts shall be of corrosion-resistant material or treated in such a manner as to render them resistant to corrosion. Unless protected against electrolytic corrosion, dissimilar metals shall not be used in close contact with each other.

3.2.2 Protective treatment. Materials used in construction of the seal valve shall be protected against deterioration when exposed to any environmental conditions which will occur during service life. Protective coating shall not crack, chip, or scale during normal service life, or under extremes of environmental conditions.

3.3 Standard parts. Standard parts shall be used wherever possible.

3.4 Design. The seal valve assembly shall provide a positive closure to a receiver, containing air or nitrogen at a pressure of 3,800 ±100 psig. The inlet port of the seal valve assembly shall mate with a receiver conforming to MIL-R-81202 and the outlet port shall mate with a control valve conforming to MIL-V-23254. The seal valve assembly shall operate within a temperature range of -65°F to 250°F (-54°C to 121°C). The seal valve assembly shall include, but not be limited to, a seal valve and a filter cartridge assembly.

3.4.1 Seal valve assembly. The seal valve assembly and integral components shall conform to figure 1 through figure 10 to ensure proper interface with the receiver.

3.4.1.1 Fitting valve seal. The valve seal fitting shall conform to figure 2 to ensure proper interface with the seal valve assembly. One fitting assembly shall be supplied and assembled in each seal valve port. The seal valve shall be repairable. The poppet "O" ring and mechanical filter if used shall be replaceable using hand tools. The dimensions of the O ring shall be in accordance with figure 4.

3.4.2 Filter cartridge assembly. The filter cartridge assembly shall consist of one barrel assembly inserted into the fitting assembly to ensure proper interface with the seal valve.

3.4.2.1 Barrel filter. The barrel filter shall conform to figure 3 to ensure proper interface with the filter cartridge assembly and the seal valve. The filter shall have 10 micron filtration capacity or equivalent which shall filter all gas passing through the barrel filter assembly.

3.4.3 Threads. All threads shall be in accordance with FED-STD-H28.

3.5 Performance. The seal valve shall meet all the inspection requirements specified in tables I and II.

3.5.1 Visual examination and dimensional inspection.

3.5.1.1 Visual examination. The seal valve assembly shall conform to the requirements of this specification when visually examined as specified in 4.5.1.1.

3.5.1.2 Dimensional inspection. The dimension of the seal valve assembly shall be in accordance with 3.4.1 when dimensionally inspected as specified in 4.5.1.2.

3.5.2 Proof pressure. The seal valve assembly shall not show any evidence of material failure, when tested as specified in 4.5.2.

3.5.3 Leakage. The seal valve assembly leakage shall be not greater than 0.2cc per minute at any pressure between 200 and 3,800 psig, when tested as specified in 4.5.3.

3.5.4 Operating pressure. When the control valve is actuated to open, the seal valve assembly shall allow a burst of gas through the control valve, when tested as specified in 4.5.4.

3.5.5 Pressure drop. The seal valve assembly shall have a pressure drop not greater than 50 psig at a flow of 1cubic foot per minute (cfm) [{28.3 liter per minute (lpm)}], when tested as specified in 4.5.5.

3.5.6 High temperature. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.6.

3.5.7 Low temperature. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.7.

3.5.8 Thermal shock. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.8.

3.5.9 Salt fog. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.9.

3.5.10 Humidity. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.10.

3.5.11 Vibration. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.11.

3.5.12 Shock. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.12.

3.5.13 Service life. The seal valve assembly shall not show any evidence of mechanical or material failure and shall meet the leakage and operating pressure requirements (see 3.5.3 and 3.5.4), when tested as specified in 4.5.13.

3.5.14 Burst pressure. The seal valve assembly shall not show any evidence of permanent deformation when tested as specified in 4.5.14.

3.6 Interchangeability. All parts having the same part number shall be functionally and dimensionally interchangeable.

3.7 Cleanliness. The seal valve assembly and all internal parts shall be free of water, oils, grease, and any foreign matter.

3.8 Identification of product. The seal valve assembly shall be marked for identification in accordance with MIL-STD-130, except the Federal Stock Number shall be omitted to ensure the seal valve assembly is properly and legibly identified as required.

3.9 Workmanship. The seal valve assembly shall be uniform in quality and shall be free from irregularities and defects which could affect safety, performance, reliability, or durability.

4. VERIFICATION

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

a. First article inspection (see 4.2).

b. Conformance inspection (see 4.3).

4.2 First article inspection. First article inspection shall consist of all the examinations and tests specified in table I (listed sequence mandatory).

4.2.1 First article samples. Unless otherwise specified in the contract, after the award of the contract or order, the manufacturer shall submit four complete seal valve assemblies (samples A through D in table I). The samples shall be representative of the design and constructions, workmanship, integral components and materials to be used for production. When a manufacturer is in continuous production of these units from contract to contract, submission of further first article samples on the new contract may be waived at the discretion of the acquiring activity (see 6.2). Approval of the first article samples or the waiving of first article inspection does not preclude the requirements of submitting samples to the conformance inspection. The first article inspection samples shall be furnished to the Government as directed by the contracting officer (see 6.2).

4.3 Conformance inspection. Conformance inspection shall be as specified in table II (listed sequence mandatory). All samples shall be subjected to Group 1 tests followed by Group 2 tests. Any redesign or modification of the contractor's standard valve to comply with specified requirements, or any redesign or modification following failure to meet the specified requirements shall be approved by the acquisition activity prior to retesting the sample. This element of inspection shall pass all visual examinations and dimensional requirements. Noncompliance with any specified requirements or presence of one or more critical defects shall constitute cause for rejection of the lot.

4.3.1 Sampling.

4.3.1.1 Inspection lot. An inspection lot size shall be expressed in units of seal valve assemblies made essentially under the same conditions and from the same materials and components. The sample unit shall be one seal valve assembly.

TABLE I. First article inspection.

Test	Test requirement paragraph	Test method paragraph	Sample 1/			
			A	B	C	D
Visual examination	3.5.1.1	4.5.1.1	1	1	1	1
Dimensional check	3.5.1.2	4.5.1.2	2	2	2	2
Proof pressure	3.5.2	4.5.2	3	3	3	3
Leakage	3.5.3	4.5.3	4	4	4	4
Operating pressure	3.5.4	4.5.4	5	5	5	5
Pressure drop	3.5.5	4.5.5	6	6	6	6
High temperature	3.5.6	4.5.6	7	X	7	X
Low temperature	3.5.7	4.5.7	8	X	8	X
Thermal shock	3.5.8	4.5.8	X	7	X	7
Salt fog	3.5.9	4.5.9	X	8	X	8
Humidity	3.5.10	4.5.10	X	9	X	9
Vibration	3.5.11	4.5.11	9	X	9	X
Shock	3.5.12	4.5.12	10	X	10	X
Service life, pressure	3.5.13	4.5.13.1	X	10	X	X
Service life, mechanical	3.5.13	4.5.13.2	X	X	X	10
Burst pressure	3.5.14	4.5.14	11	X	11	X

1/ Test sequence is denoted by the numbers in the sample columns. An X denotes test not required.

4.3.1.2 Sampling for tests and examination. Sampling for tests and examination of seal valve assemblies shall be on a lot by lot basis and the sample size determined by lot size as specified in table III.

4.4 Test conditions.

4.4.1 Temperature and humidity. Unless otherwise specified in the contract, tests shall be conducted at a room temperature of 77±18°F (25±10°C) and a relative humidity within a range of room ambient to 95 percent.

4.4.2 Temperature stabilization. All parts of the test item shall be stabilized at the specified temperature ±5°F (±2.8°C) indicated prior to conducting any operational tests. Unless otherwise specified specifically herein, temperature stabilization has been attained when the indicated temperature of the surface of the largest mass of the test item does not change more than ±5°F (±2.8°C) in a period of one hour.

TABLE II. Conformance inspection.

Tests	Requirement paragraph	Test method paragraph	Sample 1/			
GROUP 1			ALL SAMPLES			
Visual examination	3.5.1.1	4.5.1.1	1			
Dimensional check	3.5.1.2	4.5.1.2	2			
Proof pressure	3.5.2	4.5.2.1	3			
Leakage	3.5.3	4.5.3	4			
Operating pressure	3.5.4	4.5.4	5			
Pressure drop	3.5.5	4.5.5	6			
GROUP 2 2/			A	B	C	D
High temperature	3.5.6	4.5.6	1	X	1	X
Low temperature	3.5.7	4.5.7	2	X	2	X
Thermal shock	3.5.8	4.5.8	X	1	X	1
Salt fog	3.5.9	4.5.9	X	2	X	2
Humidity	3.5.10	4.5.10	X	3	X	3
Vibration	3.5.11	4.5.11	3	X	3	X
Shock	3.5.12	4.5.12	4	X	4	X
Service life, pressure 3/	3.5.13	4.5.13.1	X	4	X	X
Service life, mechanical 3/	3.5.13	4.5.13.2	X	X	X	4
Burst pressure	3.5.14	4.5.14	5	X	5	X

1/ Test sequence is denoted by the number in the sample columns. An X denotes tests are not required.
2/ If the sample lot is greater than four, the acquiring activity shall specify test sequence for all units exceeding four (see 6.2).
3/ If the sample lot consists of only two units, both life tests shall be performed on one unit.

4.4.3 Gas. Unless otherwise specified in the contract, the gas used for tests shall be oil-free nitrogen, 99.95 percent pure, conforming to BB-N-411, Type I, Grade A, Class 1.

TABLE III. Lot and sample size (conformance inspection).

Lot size	Sample size
100 or less	2
101 to 300	3
301 to 500	4
501 or more	4 1/

1/ Plus 1 for each addition of 500 or fraction thereof

4.4.4 Test fixture. The test fixture shall be mated with the seal valve assembly inlet by simulating the interface connection between the seal valve assembly and the nitrogen receiver

per MIL-R-81202. The test fixture shall provide an operating pressure of 3,800 ±100 psig to the seal valve assembly inlet. The seal valve shall be connected to a test fixture and the outlet port of the seal valve shall be mated with an operational control valve MIL-V-23254. The seal valve shall connect the control valve with 50 ±5 inch-pounds clockwise torque. Unless otherwise specified herein, the test fixture shall be used for all tests of 4.5.2 through 4.5.14.

4.4.5 Installation Torque. The torque required for installation of seal valve to the receiver assembly or test fixture shall be 400 ±25 inch-pounds. The torque required for installation of filter cartridge assembly to the seal valve shall be 250 to 275 inch-pounds.

4.4.6 Flow measurements. All volume and flow measurements shall be corrected to normal temperature and barometric pressure (NTP) conditions when comparison of volume and flow data is required. NTP conditions are 29.92 inches (760 millimeters) of mercury and 70°F (21.1°C).

4.5 Methods of inspection.

4.5.1 Visual examination and dimensional inspection.

4.5.1.1 Visual examination. The seal valve assembly shall be visually examined for critical defects listed in table IV and shall pass the requirements specified in 3.5.1.1.

4.5.1.2 Dimensional inspection. The seal valve assembly shall be dimensionally inspected for conformance to the requirements of 3.5.1.2.

TABLE IV. Classification of defects for visual examination of the seal valve assembly.

Critical	Minor
101. Material imperfections - foreign matter embedded.	201. Marking - missing, insufficient, incorrect, not legible, or not permanent.
102. Surface - contains water, hydrocarbons, and foreign matter or cracks, nicks, or other flaws.	
103. Any missing component, or component malformed, fractured, or damaged.	
104. Any loose component or component not securely retained.	
105. Incorrect assembling or improper positioning of components.	
106. Any malfunctioning part or part that works with difficulty.	
107. Faulty workmanship or other irregularities.	

4.5.2 Proof pressure. The seal valve assembly shall be subjected to the following conditions:

a. Inlet port pressurized to 5,500 ±100 psig for a minimum of three minutes with the seal valve not mated to the control valve.

b. Inlet port pressurized to 5,500 ±100 psig for a minimum of three minutes with the seal valve mated to the closed control valve.

The seal valve assembly shall meet the proof pressure requirements specified in 3.5.2.

4.5.3 Leakage. The seal valve assembly shall be checked for leakage with its inlet port pressurized to each of the following pressures for a minimum of three minutes. The outlet port shall not be mated to the control valve.

a. 200 psig

b. 1,000 psig

c. 2,200 psig

d. 3,000 psig

e. 3,800 psig

The test shall be repeated with the seal valve mated to the closed control valve. The seal valve shall meet the leakage requirements specified in 3.5.3.

4.5.4 Operating pressure. The inlet of the seal valve assembly shall be pressurized to 3,800 ±100 psig. The seal valve shall then be mated to a functional control valve (see 4.4.4). The control valve shall be actuated electrically from closed to open and back to close. The seal valve assembly shall meet the operating pressure requirements specified in 3.5.4.

4.5.5 Pressure drop. The seal valve assembly shall be mated to the test fixture (see 4.4.4). With the inlet maintained at a pressure of 3,000 ±100 psig and a flow of 28.3 lpm (1 cfm) the total pressure drop shall be determined. The system test pressure drop shall be determined and subtracted from the total pressure drop. The resultant differential pressure shall meet the pressure drop requirements specified in 3.5.5.

4.5.6 High temperature. The seal valve shall be subjected to the high temperature test in accordance with MIL-STD-810, Method 501.3, Procedure I, except the temperature shall be 250°F (121°C). The seal valve assembly shall be mated to the test fixtures (see 4.4.4). While at test temperature conditions, the inlet shall be pressurized to and maintained at 3,600 to 3,800

psig. The control valve shall be closed. At the completion of the test, the seal valve assembly shall be visually inspected and shall meet the high temperature requirements specified in 3.5.6. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and the operating pressure tests (see 4.5.3 and 4.5.4).

4.5.7 Low temperature. The seal valve assembly shall be subjected to the low temperature test in accordance with MIL-STD-810, Method 502.3, Procedure I for a period of 4 hours. The storage temperature shall be -65°F (-54°C). The seal valve assembly shall be mated to the test fixtures (see 4.4.4). While at test temperature conditions, the inlet shall be pressurized to 3,800 ±100 psig. The control valve shall be closed. At the completion of the test, the seal valve assembly shall be visually inspected and shall meet the low temperature requirements specified in 3.5.7. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and the operating pressure tests (see 4.5.3 and 4.5.4).

4.5.8 Thermal shock. The seal valve assembly shall be subjected to the temperature shock test in accordance with MIL-STD-810, Method 503.3, Procedure I. The seal valve shall be mated to the test fixtures (see 4.4.4). Before the seal valve being subjected to the test temperature conditions, the inlet shall be pressurized to 3,000 ±100 psig with the control valve closed. At the completion of the test, the seal valve assembly shall be visually inspected and shall meet the requirements specified in 3.5.8. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.9 Salt fog. The seal valve assembly shall be subjected to the salt fog test in accordance with MIL-STD-810, Method 509.3, Procedure I except the duration shall be 50 hours. The seal valve assembly shall be mated to the test fixtures (see 4.4.4) except the outlet shall be sealed with a protective cap conforming to MIL-C-5501/3. While at test conditions, the inlet shall be pressurized to 225 ±25 psig. At the completion of the test, the seal valve shall be visually inspected and shall meet the salt fog requirements specified in 3.5.9. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.10 Humidity. The seal valve assembly shall be subjected to the humidity test in accordance with MIL-STD-810, Method 507.3, Procedure I except the four 24-hour cycles shall be substituted for the ten 24-hour cycles. The seal valve assembly shall be mated to the test fixtures (see 4.4.4) except the outlet shall be sealed with a protective cap conforming to MIL-C-5501/3. While at test conditions, the inlet shall be pressurized to 225 ±25 psig. At the completion of the test, the seal valve shall be visually inspected and shall meet the requirements specified in 3.5.10. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.11 Vibration. The seal valve assembly shall be subjected to the following vibration tests.

4.5.11.1 General. The vibration tests specified herein shall be performed in each of three mutually perpendicular axes in the order listed below (see 4.5.11.2 to 4.5.11.5). All testing shall be performed in one axis prior to testing in the next axis. The seal valve assembly shall be checked for proper operation after each test (see 3.5.4).

4.5.11.2 Seal valve assembly operation. The seal valve assembly shall be mated to the test fixtures (see 4.4.4), with the control valve closed. While subjected to vibration, the inlet of the seal valve assembly shall be pressurized to 3,000 ±100 psig. After each axis of vibration is completed, the seal valve assembly shall be visually inspected and shall meet the requirements specified in 3.5.11. The seal valve assembly shall then be subjected to and shall meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.11.3 Mounting techniques. The seal valve assembly shall be attached to the vibration exciter table by means of the fixture described in 4.4.4. The control valve shall be closed. The vibration input shall be measured on the fixture at a point adjacent to the mounting point of the seal valve.

4.5.11.4 Sinusoidal test level. The seal valve assembly shall be subjected to sinusoidal vibration along each of three mutually perpendicular axes. The frequency shall be ±2 percent and the amplitude shall be ±5 percent. The test shall consist of sweeping for 60 minutes in each axis from 5 to 2,000 Hz at one octave per minute in accordance with table V.

TABLE V. Sinusoidal test level.

Frequency	Displacement or acceleration
5 - 20 Hz	0.100 inch 1/
20 - 33 Hz	±2.0 g's
33 - 74 Hz	0.036 inch 1/
74 - 2,000 Hz	±10.0 g's

1/ = Double amplitude

4.5.11.5 Random test level. The seal valve assembly shall be subjected to a random vibration along each of three mutually perpendicular axes. The instantaneous random vibration acceleration peaks shall be limited to three times the root mean square (rms) acceleration level. The power spectral density (PSD) of the test control signal shall not deviate from the specified requirements by more than +100,-50 percent (±3 dB) between 20 Hz and 2,000 Hz, except that deviations as large as +300,-75 percent (±6 dB) shall be allowed over a cumulative bandwidth of 100 Hz, maximum, between 500 and 2,000 Hz.

Tolerance levels in terms of dB are defined as:

$$dB = 10 \log \frac{W_1}{W_0}$$

Where W_1 is measured acceleration PSD in g^2/Hz and

W_0 defines the specified level in g^2/Hz.

Confirmation of these tolerances shall be made by use of an analysis system providing statistical accuracy corresponding to a bandwidth-time constant product, BT = 50, minimum. Specific analyzer characteristics shall be as specified below or equivalent.

a. On-line, contiguous filter, equalization and analysis system having a bandwidth B = 50 Hz maximum.

b. Swept frequency analysis systems characterized as follows:

(1) Constant bandwidth analyzer.

(a) Filter bandwidth as follows:

B = 20 Hz, maximum between 20 and 200 Hz.

B = 50 Hz, maximum between 200 and 2,000 Hz.

(b) Analyzer averaging time = T = 2RC = 1 second, minimum, where T = true averaging time and RC = analyzer time constant.

(c) Analysis sweep rate (linear) = S = $\frac{B}{4RC}$ or $\frac{B^2}{8}$ Hz per sec, whichever is smaller.

(2) Constant percentage bandwidth analyzer.

(a) Filter bandwidth = pf_c = one third octave minimum ($0.23f_c$) where p = percentage and f_c = analyzer center frequency.

(b) Analyzer averaging time $T = \frac{50}{Pf_C}$, minimum.

(c) Analysis sweep rate (logarithmic) $S = \frac{\mathbf{Pf_C}}{\mathbf{4RC}}$, or $\frac{\left(\mathbf{Pf_C}\right)^2}{8}$ Hz per second, whichever is smaller.

c. Digital power spectral density analysis systems employing quantization techniques shall provide accuracy corresponding to the above approach. The random vibration test levels shall be a flat spectrum in the range of 20 to 2,000 Hz at a PSD level of $0.02g^2$/Hz with an overall test level of 6.3 g's rms. The test time shall be 40 minutes in each of the three mutually perpendicular axes. The analysis shall be as shown in table VI.

TABLE VI. Vibration analysis.

Bandwidth	Analysis filter
20 - 200 Hz	20 Hz filter
200-2,000 Hz	50 Hz filter

The analysis shall yield a statistical accuracy of 120 degrees of freedom.

4.5.12 Shock. The seal valve assembly shall be subjected to the shock test in accordance with MIL-STD-810, Method 516.4, Procedure I, figure 516.4-2, except the acceleration shall be 25 g's and shall reach peak value in not more than 0.600 second and not less than 0.015 second. The seal valve assembly shall be mated to the test fixtures (see 4.4.4). While subjected to the shock pulse, the inlet shall be pressurized to 3,000 ±100 psig with the control valve assembly closed. At the completion of the test, the seal valve assembly shall be visually inspected and shall meet the requirements specified in 3.5.12. The seal valve assembly shall then be subjected to and meet the requirements of the proof pressure, leakage, operating pressure, and pressure drop tests (see 4.5.2 through 4.5.5).

4.5.13 Service life. The seal valve assembly shall be subjected to the following life tests:

4.5.13.1 Service life, pressure. The seal valve assembly shall be subjected to the following service life test performed hydrostatically. The seal valve assembly shall be mated to the test fixtures (see 4.4.4), except the outlet shall not be mated with the control valve. The inlet shall be pressurized to 4,000 ±250 psig.

a. A total of 500 cycles. One cycle shall consist of the following:

(1) Pressurize the inlet of the seal valve assembly to 225 ±50 psig.

(2) Increase pressure uniformly to 4,000 ±250 psig.

(3) Exhaust uniformly to 225 ±50 psig.

b. A total of 4,000 cycles. One cycle shall consist of the following:

(1) Pressurize seal valve assembly inlet to 2,500 ±150 psig.

(2) Increase pressure uniformly to 3,500 ±200 psig.

(3) Exhaust uniformly to 2,500 ±150 psig.

c. A total of 500 cycles. One cycle shall consist of the following:

(1) Pressurize seal valve assembly inlet to 225 ±50 psig.

(2) Increase pressure uniformly to 4,000 ±250 psig.

(3) Exhaust uniformly to 225 ±50 psig.

At the completion of the test the seal valve assembly shall be visually inspected and shall meet the requirements specified in 3.5.13. The seal valve assembly shall then be subjected to and meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.13.2 Service life, mechanical. The seal valve assembly shall be subjected to the following mechanical life test. The seal valve assembly shall be mated to the test fixtures (see 4.4.4) except the outlet shall not be mated with the control valve. The inlet shall be pressurized to 3,000 ±100 psig. The seal valve assembly shall then be subjected to 150 cycles with the control valve. One cycle shall consist of the following:

a. Mate the control valve to the seal valve.

b. Open the control valve and verify flow.

c. Close the control valve and disconnect from the seal valve.

At the completion of test, the seal valve shall be visually inspected and shall meet the requirements specified in 3.5.13. The seal valve assembly shall then be subjected to and meet the requirements of the leakage and operating pressure tests (see 4.5.3 and 4.5.4).

4.5.14 Burst pressure. The seal valve assembly shall be subjected to the following tests:

a. Pressurize the inlet port hydrostatically to 6,700 ±100 psig for three minutes with the seal valve not mated to the control valve.

b. Pressurize the inlet port hydrostatically to 6,700 ±100 psig for three minutes with the seal valve mated to the closed control valve.

The seal valve assembly shall meet the burst pressure requirements specified in 3.5.14.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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 seal valve assembly covered by this specification is military unique because it is used in a nitrogen receiver for LAU-7 series launcher weapons only and has no commercial application. It is capable of operating within a temperature range of -65°F to 250°F (-54°C to 121°C).

6.2 Acquisition requirements. Acquisition documents must specify the following:

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

b. For procuring filter cartridge assembly only (see 3.4.2), the supplier must perform and meet all the test requirements specified for the seal valve assembly which include filter cartridge.

c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).

d. Whether first article inspection is waived (see 4.2.1).

e. Name and address of the first article inspection laboratory and the name of the Government activity responsible for conducting the first article inspection program (see 4.2.1).

f. Test sequence for units exceeding a sample lot of 4 units (see table II).

g. Packaging (see 5.1).

6.3 Dissimilar metals. The requirements in MIL-STD-889 are recommended for protecting joined dissimilar metals.

6.4 O ring material. Rubber fluorocarbon elastomer high temperature resistant per MIL-R-83248/1 has been used successfully in the past.

6.5 Previous procurement. The seal valve assembly per Drawing 58A164D859 and cartridge assembly per Drawing 58A164C170 are used in the previous procurement.

6.6 Subject term (key word) listing.

Filter
High pressure
Mechanical
Nitrogen
Receiver

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to previous issue, due to the extensiveness of the changes.

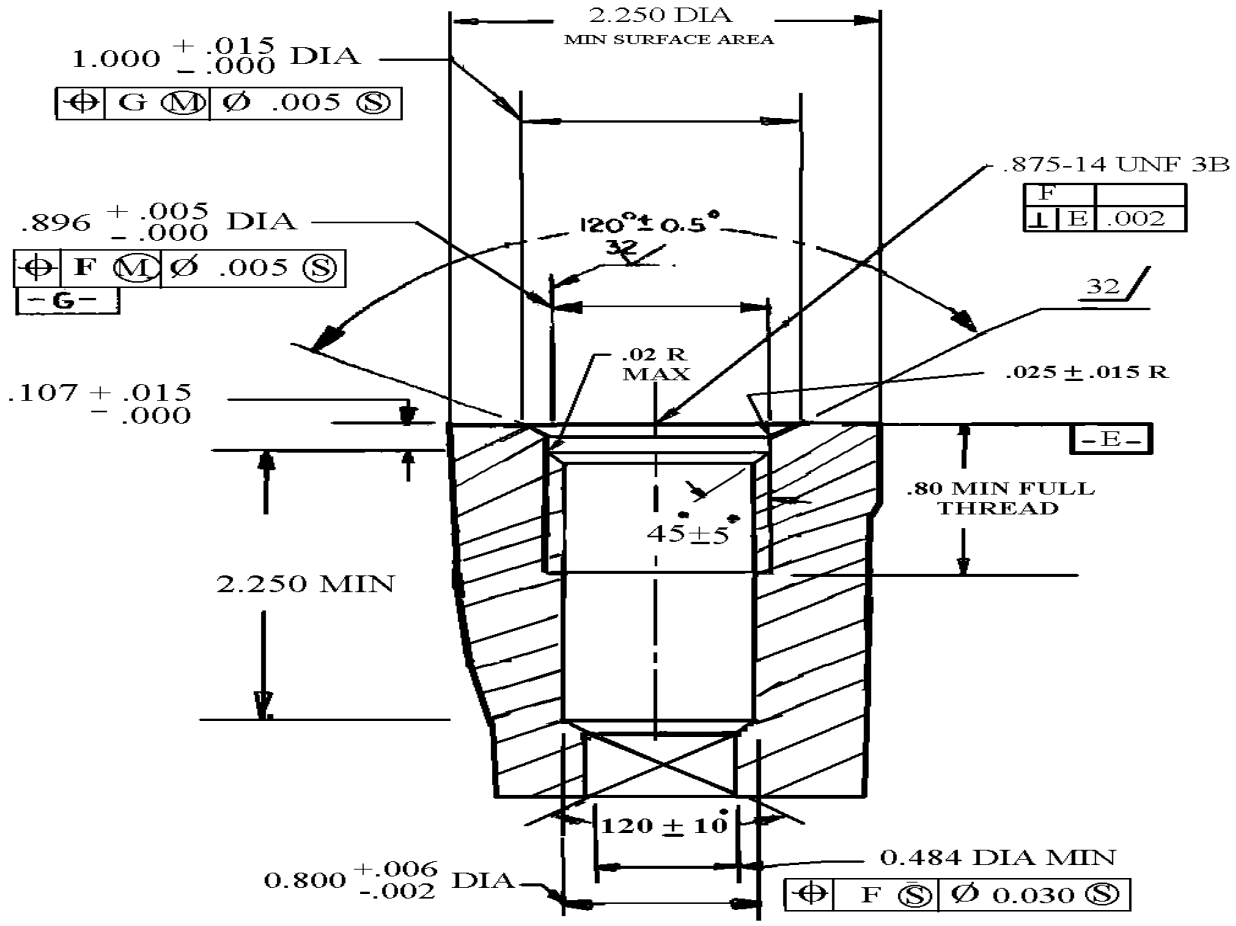
CONCLUDING MATERIAL

Custodians:
Army - AV
Navy - AS
Air Force - 99

Review activities
DLA - CC
Navy - MC

Preparing activity:
Navy - AS

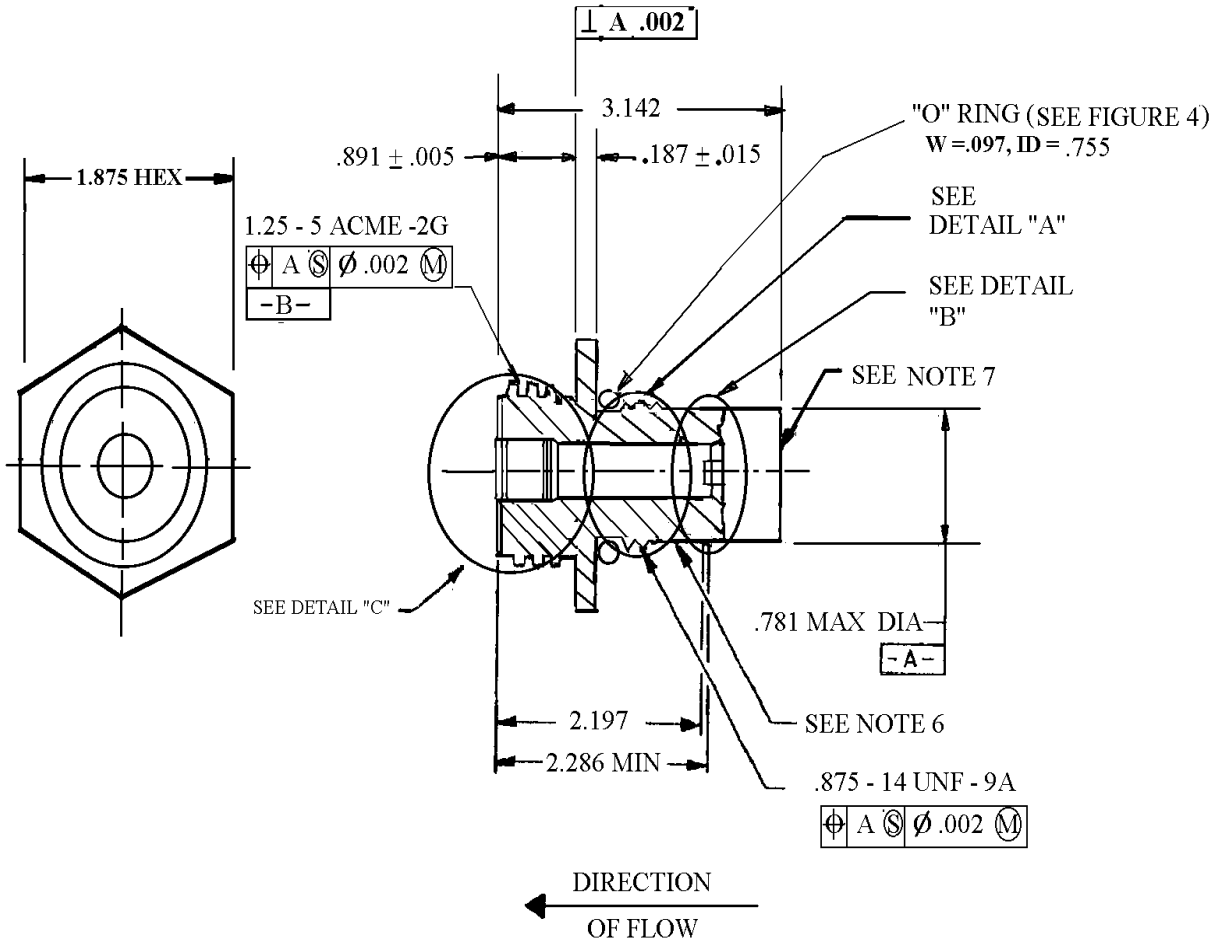
(Project 4820-0736)



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances: decimals ± 010 and angles ± 2°.
3. Unless otherwise specified on the drawing, all machined surfaces shall be 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to 0.015 inch maximum.
6. Testing shall be done with the valve installed in a port.
7. Port is functionally interchangeable with MS33649-10.

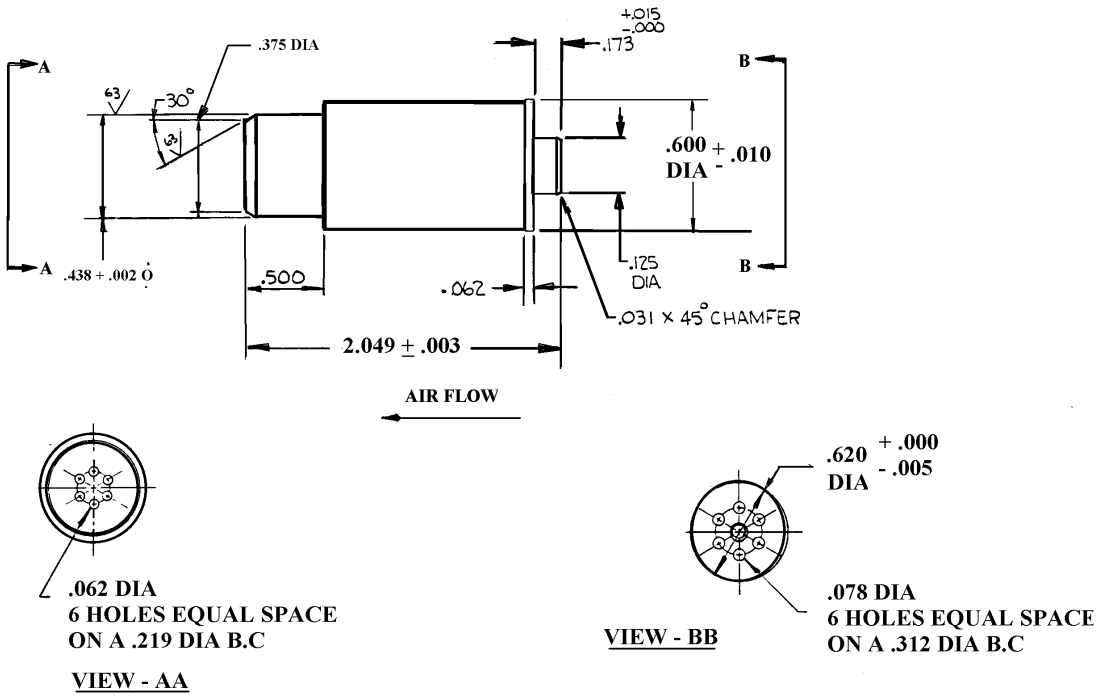
FIGURE 1. Port for testing seal valve assembly.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances: decimals ±.010 and angles ± 2°.
3. Unless otherwise specified on the drawing, all machined surfaces shall be 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges. Edges may be broken to .015 inch maximum.
5. One fitting assembly shall be supplied and installed in each seal valve port. Torque the fitting assembly to 20 ± 10 inch pounds.
6. The valve shall be marked with manufacturer's name and part number.
7. The seal valve shall have 10 micron filter on the upstream side of the valve which shall filter all gas passing through the valve.

FIGURE 2. Valve seal.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances: decimals ± .010, angles ± 2°.
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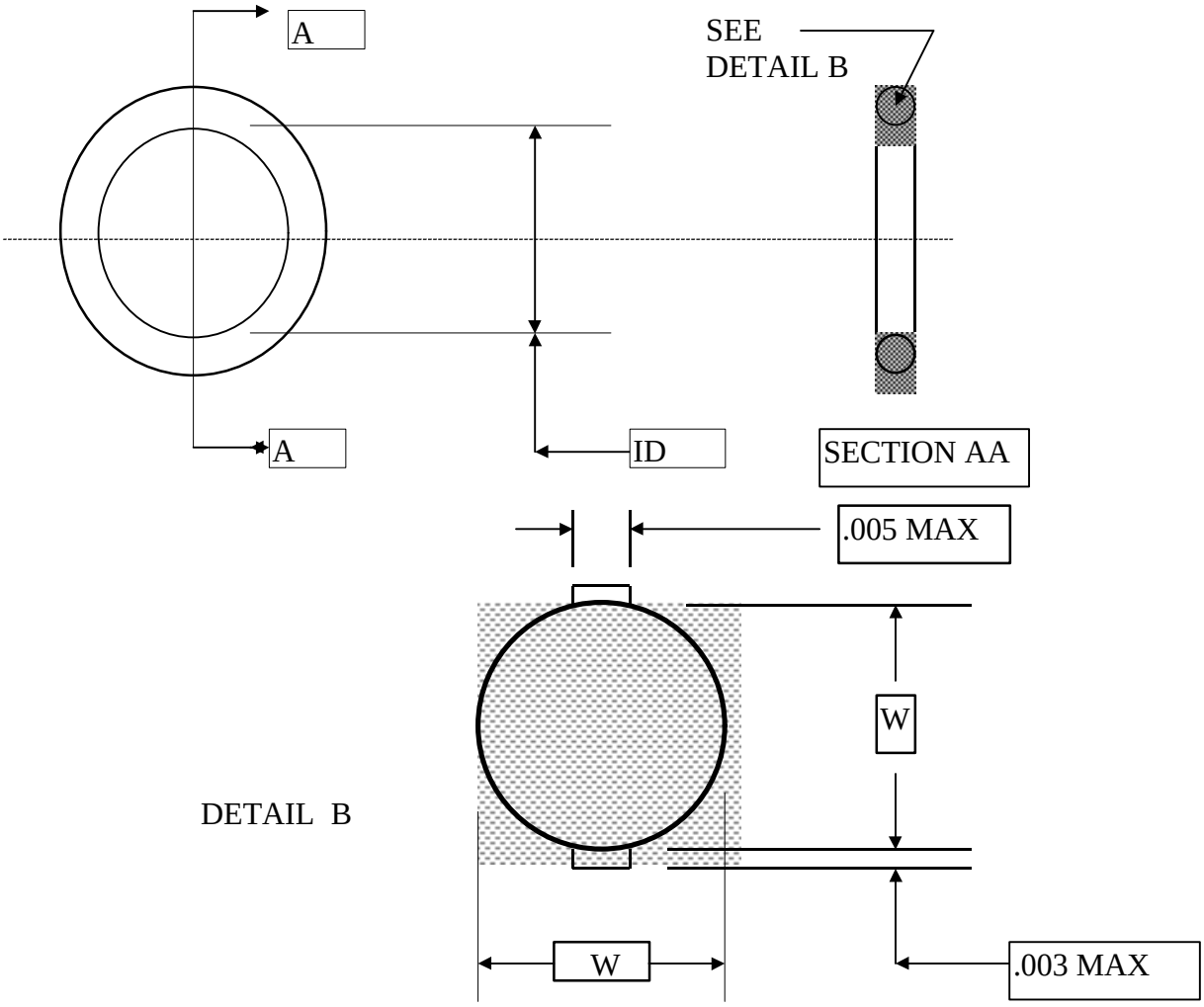
4. Remove all burrs and sharp edges.
5. Edges may be broken to .015 inch maximum.

FIGURE 3. Barrel assembly filter.

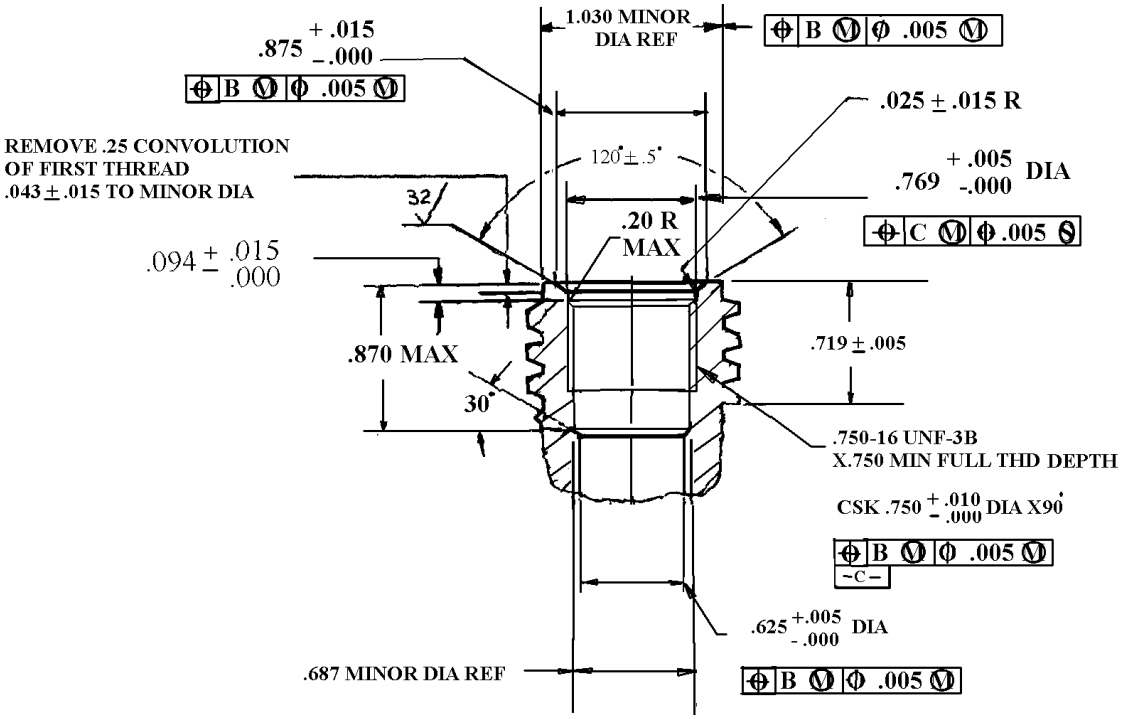


W	ID
.087 ± .003	.644 ± .009
.070 ± .003	.176 ± .006
.070 ± .003	.426 ± .007
.097 ± .003	.755 ± .009

Notes:

1. O ring shall be free of cuts, nicks, flaws, or other surface irregularities.
2. O ring shall be compatible with nitrogen fluid and capable to operate at -65°F and + 275°F temperatures and shall have compression set resistance.
3. Tolerances as shown on the drawing.

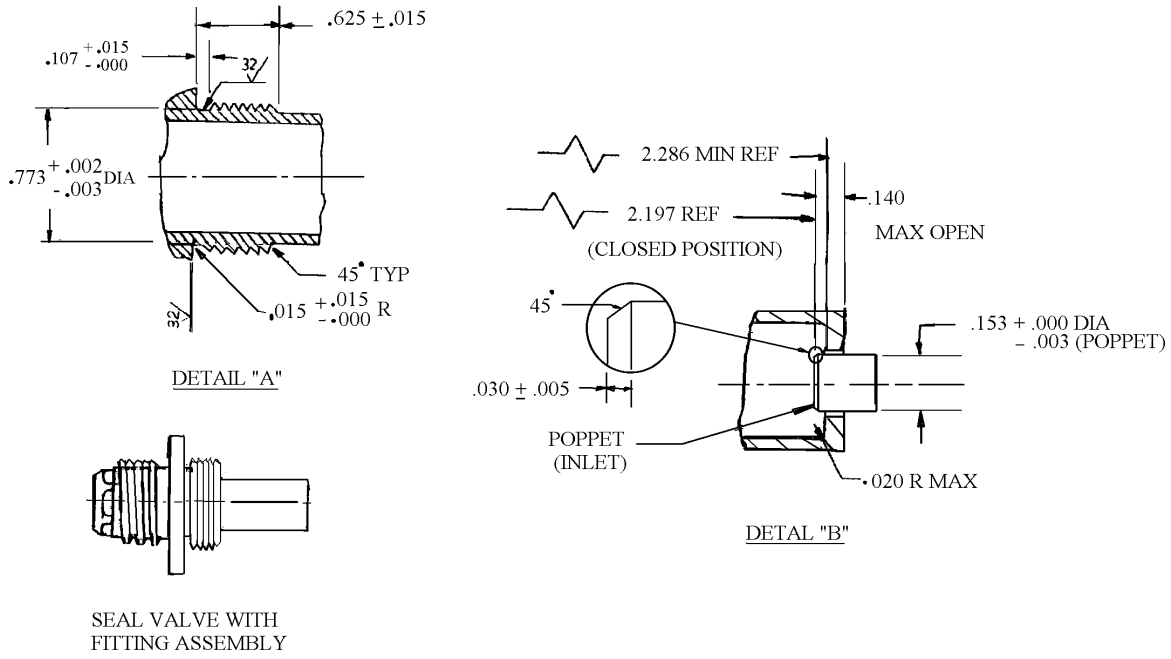
FIGURE 4. "O" ring dimensions.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances decimals ± .010 and angles ± 2°.
3. Unless otherwise specified on the drawing, all machined surfaces shall be 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to 0.015 inch maximum.

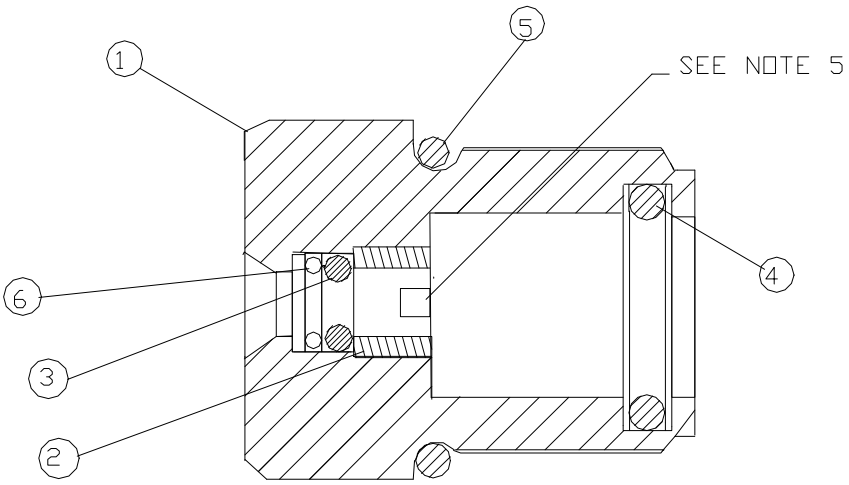
FIGURE 5. Detail C valve seal.



Note:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances decimals ± .010 and angles ± 2°.
3. Unless otherwise specified on the drawing, All machined surfaces shall be 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to .015 inch maximum.
6. Finish passivate or similar process to protect materials from corrosion.
7. The poppet seal shall have a minimum travel of 0.14 inch from its fully closed position.
8. When unpressurized and fully closed, the poppet shall be pre-loaded at 10 ± 1 lbs. When poppet is open 0.14 inch, it shall exert a load of less than 20 lbs.
9. The poppet shall be of solid construction. When open, gas shall pass around its periphery.

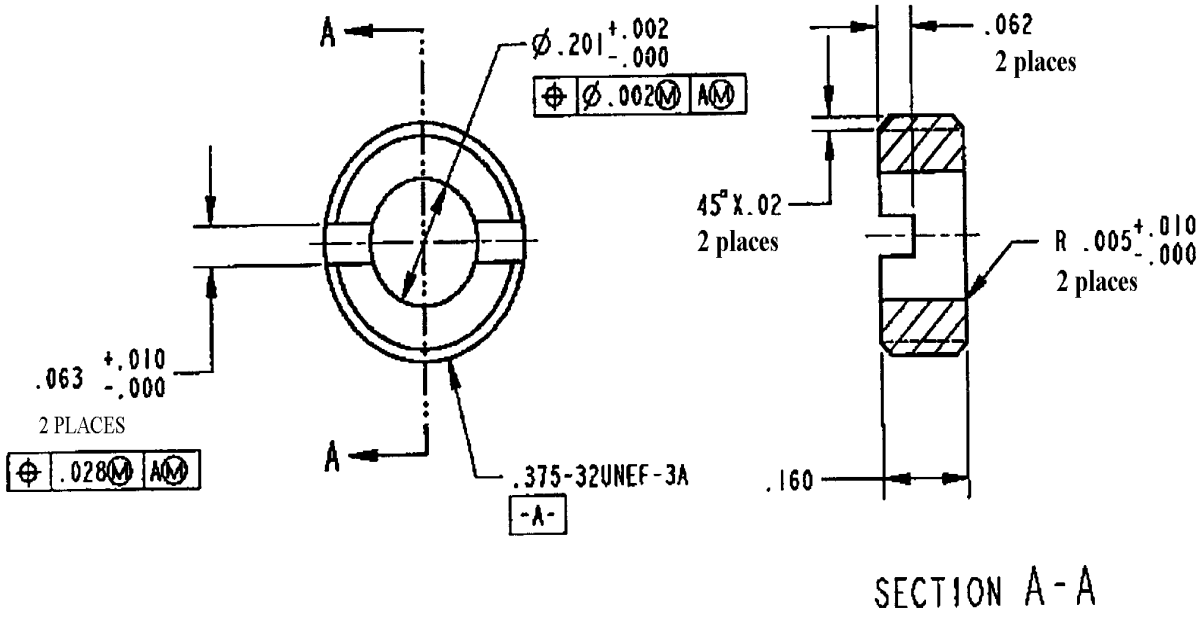
FIGURE 6. Details A and B valve seal.



Notes:

1. Fitting assembly consists of.
    1. Fitting.
    2. Insert (see figure 8).
    3. O ring W = .070, ID= .176 (see figure 4).
    4. O ring W = .070, ID= .426 (see figure 4).
    5. O ring W = .087, ID= .644 (see figure 4).
    6. Retainer packing per MS28782-3.
2. Dimersions are in inches, tolerance: decimals ± .010 and angles ± 2°.
3. All machined surfaces shall be smooth to 125 micro inches R_a per ANSI-B46.1.
4. Remove all burrs and sharp edges. Edges may be broken to 0.15 inch maximum.
5. Stake fitting at location of slot as shown (see figure 8) two places.

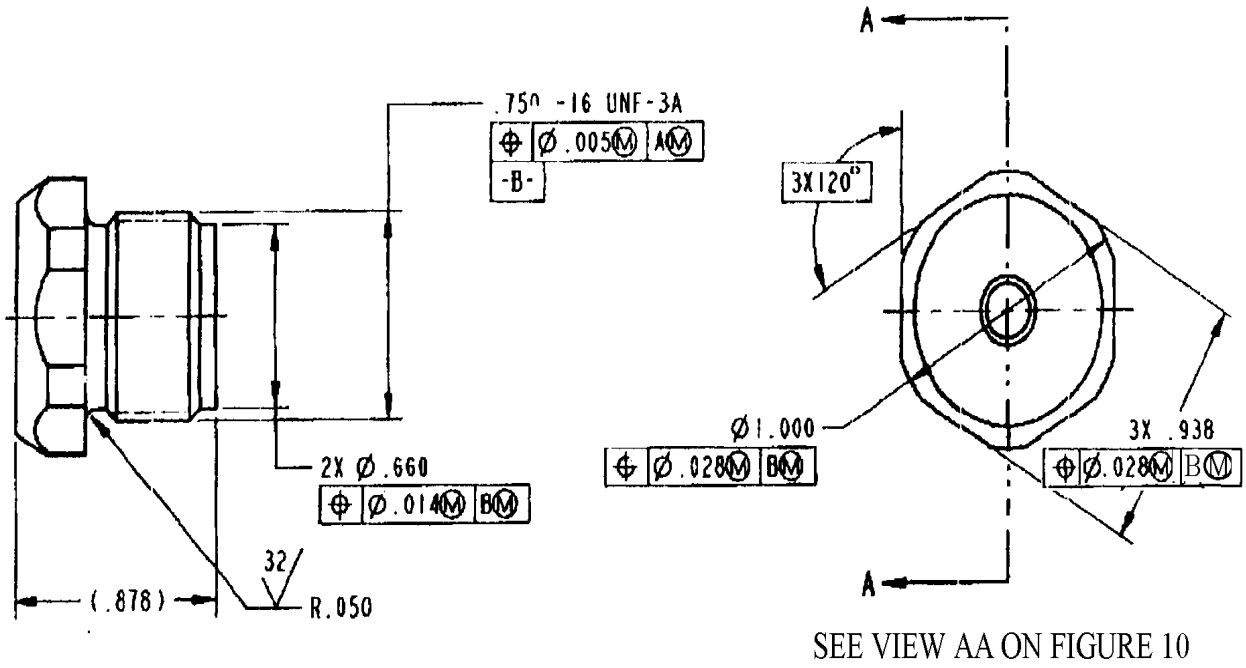
FIGURE 7. Fitting assembly.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances decimals ± .010 and angles ± 2°.
3. All machined surfaces shall be smooth to 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to 0.015 inch maximum.

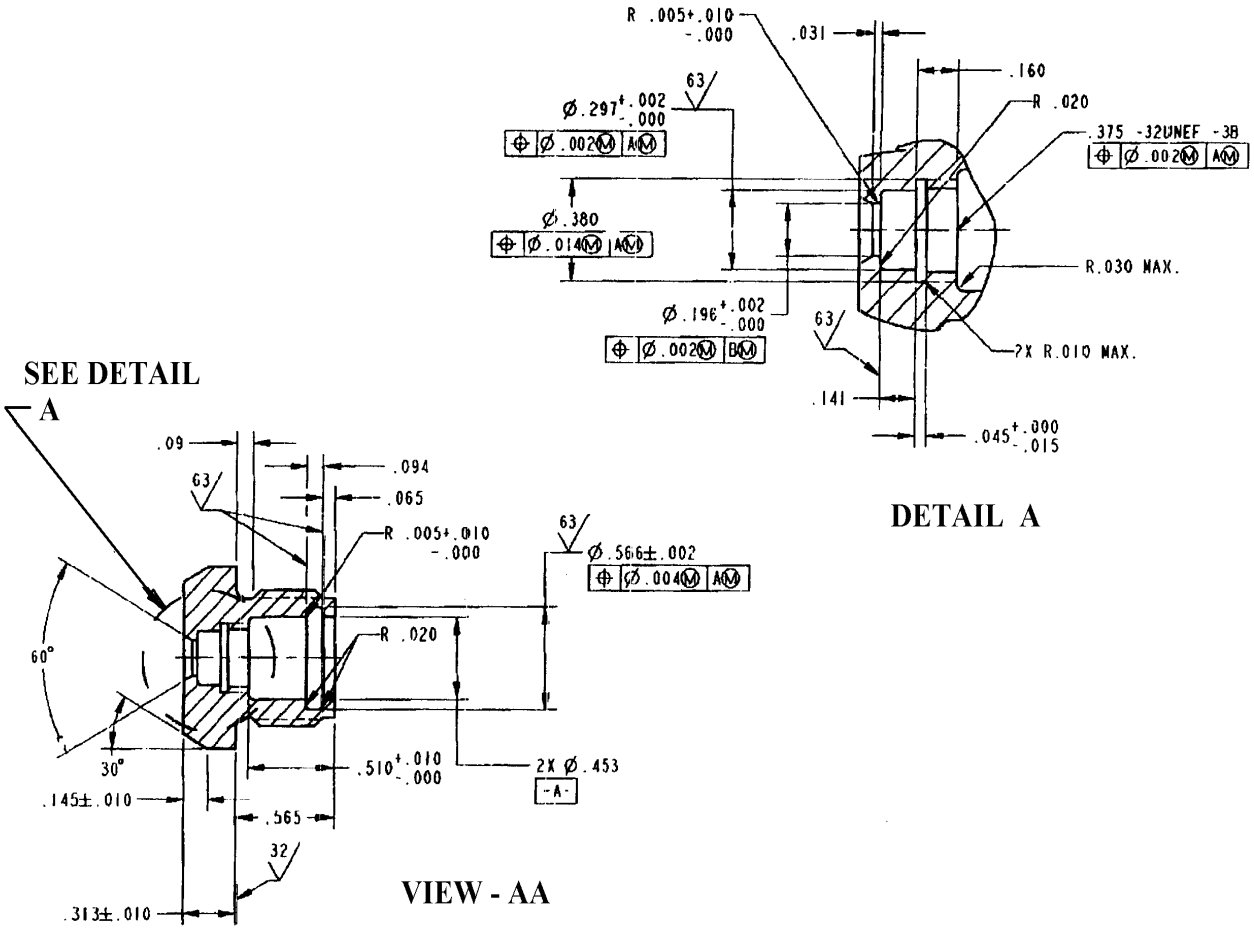
FIGURE 8. Insert fitting assembly.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances decimals ± .010 and angles ± 2°.
3. All machined surfaces shall be smooth to 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to 0.015 inch maximum.

FIGURE 9. Fitting dimensions detail.



Notes:

1. Dimensions are in inches.
2. Unless otherwise specified on the drawing, tolerances: decimals ± .010 and angles ± 2°.
3. All machined surfaces shall be smooth to 125 micro inches R_a per ASME-B46.1.
4. Remove all burrs and sharp edges.
5. Edges may be broken to 0.015 inch maximum.

FIGURE 10. Fitting sectional view AA.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.
   NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-23256C	2. DOCUMENT DATE (*YYMMDD*) 1998 February 16

3. DOCUMENT TITLE
VALVE ASSEMBLY SEAL

4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (*Last, First, Middle Initial*)	b. ORGANIZATION	
c. ADDRESS (*Include Zip Code*)	d. TELEPHONE (*Include Area Code*) (1) Commercial: (2) DSN: (*If Applicable*)	7. DATE SUBMITTED (*YYMMDD*)

8. PREPARING ACTIVITY

a. NAME COMMANDER NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION	b. TELEPHONE NUMBER (*Include Area Code*) (1) Commercial: (732) 323-2947 (2) DSN: 624-2947
c. ADDRESS (*Include Zip Code*) CODE 414100B120-3 HIGHWAY 547 LAKEHURST, NJ 08733-5100	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office, 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 DSN 289-2340