

MIL-B-62284(AT)
16 June 1983
SUPERSEDING
M60PD-B-62284A(AT)
24 June 1982
MIL-B-46707A(MO)
5 May 1964

MILITARY SPECIFICATION
BLOWER ASSEMBLY, AIR CLEANER

This specification is approved for use by US Army Tank-Automotive Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a 1/10 horsepower continuous duty motor directly coupled to a 60 standard cubic feet per minute (scfm) blower, operating from an 18 to 30 Volts direct current (vdc) power source.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

QQ-S-635 - Steel Plate, Carbon.

MILITARY

MIL-R-3065 - Rubber, Fabricated Parts.
MIL-E-52798 - Enamel, Alkyd, Camouflage.
MIL-E-52835 - Enamel, Modified Alkyd, Camouflage,
Lusterless.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: DRSTA-GSS, Warren, MI 48090, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

MIL-B-62284(AT)

STANDARDS

FEDERAL

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

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-130 - Identification Marking of US Military Property.
- MIL-STD-193 - Painting Procedures, Tactical Vehicles (Tracked and Wheeled).
- MIL-STD-202 - Test Methods of Electronic and Electrical Component Parts.
- MIL-STD-417 - Classification Systems and Tests for Solid Elastomer Materials.
- MIL-STD-454 - Standard General Requirements for Electronic Equipment.
- MIL-STD-461 - Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference.
- MIL-STD-462 - Electromagnetic Interference Characteristics, Measurement of.
- MIL-STD-810 - Environmental Test Methods.
- MIL-STD-889 - Dissimilar Metals.
- MIL-STD-1275 - Characteristics of 28 Volt dc Electrical Systems in Military Vehicles.
- MS35338 - Washers, Lock-Spring Helical, Regular (Medium) Series (in./mm.).
- MS90728 - Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Alloy Steel, Grade B, Cadmium Plated, UNC-2A, Plain and Self-Locking.

2.1.2 Other Government documents, drawings, and publications- The following documents, drawings, and publications form a part of this specification to the extent specified herein.

DRAWINGS

ARMY

- 10905010 - Blower, Air Cleaner.
- 12251898 - Pad, Rubber.
- 12251905 - Strap, Blower Motor.
- 12251912 - Support, Blower Motor.

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

MIL-B-62284(AT)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
ASTM A514 - High Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
(ASHRAE)
Standard 51-75

(Application for copies should be addressed to the American Society of Heating, Refrigeration and Air Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329.)

AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)
Bulletin 210 - Method of Testing Fans.

(Application for copies should be addressed to the Air Movement and Control Association, 30 W. University Drive, Arlington Heights, IL 60004.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Preproduction. When specified (see 6.2), the contractor shall furnish sample blowers for preproduction inspection and approval (see 4.4.1 and 6.3). Preproduction samples shall be inspected by the contractor under the surveillance of the Government to determine conformance to the requirements of this specification. Preproduction samples shall be fully representative of blowers to be supplied from production tooling and facilities.

3.2 Initial production blower. Unless otherwise specified (see 6.2), initial production blowers, fully representative of blowers proposed to be furnished under the contract, shall be furnished. Blowers shall be examined and tested to determine conformance to all requirements of this specification. If submitted blowers meet all

MIL-B-62284(AT)

requirements of this specification, no modifications shall be applied to subsequent blowers to be produced under the contract without prior approval of the Government.

3.3 Materials. Materials shall be as specified herein and in referenced specifications, standards and drawings. Material shall be free of defects which adversely affect performance or serviceability of the finished product (see 6.5).

3.4 Design and construction. Blowers shall conform to drawing 10905010 and applicable component drawings and Military standards.

3.4.1 Weight. The blower assembly, without mounting hardware, shall have a maximum weight of 8 pounds.

3.4.2 Dissimilar metals. Dissimilar metals shall not be used in intimate contact unless suitably protected against electrolytic corrosion. This restriction does not apply to continuous plating, cast inserts, or potted assemblies. Dissimilar metals are defined in MIL-STD-889. A certificate of compliance shall be provided.

3.4.3 Fungistatic materials. All non-metallic materials shall be inherently fungistatic or treated to resist fungus growth except when used for components of potted or otherwise moisture sealed assemblies. A certificate of conformance shall be provided attesting that the blower is constructed of materials that will not support fungus growth.

3.4.4 Standards of manufacture. Unless otherwise specified (see 6.2), and where applicable, the blower assembly shall be in accordance with the following requirements of MIL-STD-454:

<u>Number</u>	<u>Subject</u>
2	Capacitors
3	Flammable materials
6	Bearings
9	Workmanship
11	Insulating materials (Class II)
12	Fastener hardware
15	Ferrous alloys, corrosion resistant
19	Terminals
21	Castings
23	Adhesives
24	Welds, resistance, electrical, interconnect
26	Arc-resistant materials
59	Brazing

3.4.5 Threaded parts. Screw threads, of the form, number per inch, and class specified on the applicable drawing, military standard, or figure, shall be in accordance with the applicable sections of FED-STD-H28.

MIL-B-62284(AT)

3.4.6 Interchangeability. All similar parts, including repair parts, of the blower assembly furnished on the same order or built to the same drawings, shall be strictly interchangeable without the necessity of further machining, selective assembly or hand fitting of any kind. A certificate of compliance shall be provided.

3.5 Performance.

3.5.1 Operating characteristics. The blower shall have the following operating characteristics (see 4.6.1):

- a. Rated voltage - 24 ± 0.5 Vdc.
- b. Blower load current- 8 amps (max.) with 0 inch of water at blower inlet and outlet.
- c. Blower load speed - 11,500 rpm ± 10 percent with 0 inch of water at blower inlet and outlet.

3.5.2 Air flow. The blower shall meet the minimum airflow requirements of figure 1 (see 4.6.2).

3.5.3 Electrical characteristics.

3.5.3.1 Dielectric strength. There shall be no puncture of solid insulation, no continuing sparkover, no breakdown of dielectric material and no damage to the insulation sufficient to cause failure of the blower when the blower is subjected to 500 volts root mean square (vrms) at 60 Hertz (Hz) (see 4.6.3).

3.5.3.2 Insulation resistance. The insulation resistance of the motor windings shall be not less than 50 megohms when tested at 500 vdc (see 4.6.4).

3.5.3.3 Transient voltage. The blower shall operate from a source voltage meeting the requirements of MIL-STD-1275 as modified by figures 2 and 3. The blower shall not be damaged when subjected to a source voltage with reverse polarity (see 4.6.5).

3.5.3.4 Starting current. The blower starting current transient shall not exceed 60 amperes and shall drop to 10 amperes, or less, within 1 second after application of input voltage. The blower shall meet these starting requirements when operating from a 24 ± 0.5 vdc power source which has an impedance of $0.13 \pm .01$ ohms (see 4.6.6).

MIL-B-62284(AT)

3.5.4 Endurance. The blower shall evidence no performance degradation after 800 hours of operation in accordance with the endurance life cycle shown in figure 4. Random vibration shall be applied at an acceleration level of $.003 G \pm 2$ db between the frequencies of 10 and 500 Hz (see 4.6.7).

3.5.5 Environmental conditions.

3.5.5.1 Temperature. The blower shall meet the performance requirements specified herein at any temperature within the range of 185°F to minus 65°F. The blower shall not be damaged by storage conditions ranging from minus 65° to 185°F (see 4.6.8.1 and 4.6.8.2).

3.5.5.2 Vibration. The blower shall be capable of withstanding the vibration profile of figure 6 for a period of 120 minutes (including up to 4 resonance dwells of 20 minutes each) in each of the three mutually perpendicular axes as shown in figure 7 (see 4.6.9).

3.5.5.3 Shock (non-operating).

3.5.5.3.1 Basic intensity. The blower shall be capable of withstanding exposure to three (3) half sine wave shock pulses of 40 ± 4 gravity units (g's) for a duration of 18 ± 3 milliseconds (ins) applied in both directions along three mutually perpendicular axes as shown in figure 7 (see 4.6.10.1).

3.5.5.3.2 High intensity. The blower shall be capable of withstanding three half sine wave shock pulses of 100 ± 10 g's for a duration of 1.0 ± 0.2 ms applied in both directions along the three mutually perpendicular axes (see 4.6.10.2).

3.5.5.4 Waterproofness. The assembly shall be capable of withstanding 6 pounds per square inch differential (psid) air pressure while submerged in clear water for five (5) minutes without evidence of leakage. The assembly shall be submerged with the inlet and outlet not capped. The assembly shall not be operated during submersion (see 4.6.11).

3.5.5.5 Dust. The assembly shall be capable of operating as specified herein during the AC coarse dust test for 50 hours. The dust particle size and distribution by weight shall be as follows (see 4.6.12):

<u>Dust size (microns)</u>	<u>Percent dust of total weight</u>
0- 5	12 ± 2
5- 10	12 ± 3
10 - 20	14 ± 3
20 - 40	23 ± 3
40 - 80	30 ± 3
80 - 200	9 ± 3

MIL-B-62284(AT)

3.5.5.6 Humidity. The assembly shall meet the requirements specified herein during and after exposure to humidity conditions up to 100 percent relative humidity (see 4.6.13).

3.5.5.7 Corrosion. The assembly shall be capable of operating as specified herein after exposure to a 5 percent sodium chloride atomized spray for 48 hours minimum (see 4.6.14).

3.5.6 Electromagnetic interference. The blower shall meet the requirements of MIL-STD-461 for radiated emissions (RE02) and conducted emissions (CE01 and CE04) (see 4.6.15).

3.6 Painting. Component parts which require painting shall be prepared and painted in accordance with MIL-STD-193 and MIL-E-52798 or MIL-E-52835. Exterior color shall be forest green.

3.7 Marking. Blowers shall be marked in accordance with MIL-STD-130 and the applicable drawing.

3.8 Workmanship. Workmanship shall be in accordance with MIL-STD-454, requirement 9.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Inspection equipment. Unless otherwise specified in the contract (see 6.2), the supplier is responsible for the provision and maintenance of all inspection and test equipment necessary to assure that supplies and services conform to contract requirements. Commercial, modified commercial, or supplier designated inspection equipment or measuring set-ups must be capable of repetitive measurement to an accuracy of 10 percent of the component tolerance.

4.1.2 Materials. The contractor's inspection records shall be examined to determine contractor conformance to 3.3.

MIL-B-62284(AT)

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

- a. Preproduction inspection (see 4.4.1).
- b. Initial production inspection (see 4.4.2).
- c. Quality conformance inspection (see 4.5).

4.3 Test methods and procedures. 1/

4.3.1 Environment. Unless otherwise specified (see 6.2), all tests shall be conducted under the following conditions:

Air temperature	77° + 18°F
Barometric pressure	28.5 (+2.0, -4.5) inches of mercury
Relative humidity	50 + 30 percent
Voltage:	24.0 + 0.5 Vdc

- 1/ Perform the dielectric strength of 4.6.3 and the insulation resistance test of 4.6.4 prior to final assembly. For acceptance, objective evidence shall be provided attesting that the assembly has met insulation resistance and dielectric strength requirements.

4.4 Preproduction and initial production.

4.4.1 Preproduction inspection. Six production samples (see 3.1) shall be inspected, at a location approved by the Government, to determine conformance to the requirements of this specification. Inspection shall consist of examination as specified in 4.5.2 and all tests specified in table II.

4.4.1.1 Preproduction inspection failure. Failure to pass any examination or test shall be cause for cessation of inspection and refusal to grant preproduction approval until corrective action taken by the contractor has been approved by the Government.

4.4.2 Initial production inspection. On beginning production, six assemblies shall be selected from the first ten assemblies produced, and shall undergo, and shall pass, initial production inspection (see 3.2).

4.4.2.1 Initial production test. To determine compliance with Section 3 (inclusive), assemblies will be examined as specified in 4.5.2 and tested as specified in table II. Inspections will be performed by the Government and will require no more than 90 days.

4.4.2.2 Failure. Failure of blowers to conform to requirements during, or after, initial production test, shall be cause for rejection of blowers. The Government may refuse to accept further production

MIL-B-62284(AT)

blowers until evidence is provided by the contractor that corrective action has been taken. Defects found during, or after, tests shall be evidence that blowers previously accepted are similarly defective, unless information to the contrary is provided by the contractor, and approved by the Government. All defects shall be corrected by the contractor at no cost to the Government*

4.5 Quality conformance inspection.

4.5.1 Sampling.

4.5.1.1 Lot formation. A lot shall consist of all assemblies from an identifiable production period, from one manufacturer, submitted at one time for acceptance

4.5.1.2 Sampling for examination. Samples for quality conformance shall be selected in accordance with MIL-STD-105. Before sampling may be initiated, the contractor shall 100 percent inspect a minimum of 20 assemblies to establish a process average (see 6.4), to enable normal sampling in accordance with MIL-STD-105.

4.5.1.3 Sampling for acceptance testing. Each assembly from each lot (see 4.5.1.1) shall undergo acceptance tests.

4.5.2 Examinations. Blowers shall be examined for conformance to applicable drawings and this specification. Examinations shall be performed against the classification of defects and with the acceptable quality levels (AQLs) specified in 4.5.2.1 and table I.

4.5.2.1 Acceptable quality level. Each sample selected in accordance with 4.5.1.2 shall be examined for conformance to the following acceptable quality levels (AQLs), on the basis of percent defective:

<u>Classification</u>	<u>AQL</u>
Major	2.5
Minor	4.0

4.5.2.2 Classification of defects. For examination purposes, defects shall be classified as specified in table I.

MIL-B-62284(AT)

TABLE I. Classification of defects.

Category	Defect	Method of inspection
Major:		
101	Dimensions affecting interchangeability, not within tolerance (see 3.4).	SIE 2/
102	Improper weight (see 3.4.1).	SIE
103	Improper protection against electrolytic corrosion of dissimilar metals (see 3.4.2).	Visual
104	Improper adherence to standards of manufacture (see 3.4.4).	Visual
105	Improper threads (see 3.4.5).	Visual/gage
106	Improper marking (see 3.7).	Visual
107	Improper workmanship affecting interchangeability (see 3.8).	Visual
Minor:		
201	Dimensions not affecting interchangeability, not within tolerance (see 3.4).	SIE
202	Paint: incomplete coverage, improper color (see 3.6).	Visual
203	Improper workmanship affecting appearance (see 3.8).	Visual

2/ SIE = Standard Inspection Equipment.

4.5.3 Classification of tests. Classification of tests shall be as follows:

- a. Acceptance tests (see 4.5.4).
- b. Control tests (see 4.5.5).

4.5.4 Acceptance tests.

4.5.4.1 Examination samples. Samples selected as specified in 4.5.1.2 shall be examined as specified in 4.5.2.

4.5.4.2 Test procedure. Each assembly selected in accordance with 4.5.1.3 shall be subjected to all acceptance tests specified in table II.

4.5.4.3 Failure. Any assembly that fails to pass any acceptance test, or exhibits defects in excess of AQL specified, shall be rejected. Rejected units may be reworked or repaired and resubmitted for acceptance testing.

4.5.5 Control tests. Blowers for control tests shall be selected in accordance with 4.5.5.1 or 4.5.5.1.1, as applicable, and subjected to the tests specified in table II.

MIL-B-62284(AT)

4.5.5.1 Frequency (1/50). One blower shall be selected from each lot of 50 assemblies consecutively produced except that not more than one blower shall be selected in a one (1) month period, nor less than one test in a three (3) month period.

4.5.5.1.1 Frequency (1/200 and 1/600). One blower shall be selected from each lot of 200 or 600 assemblies (frequency specified in table II), consecutively produced except that not more than one shall be selected in a three (3) month period, nor less than one test in a six (6) month period.

4.5.5.1.2 Test failure (all frequencies). Failure of the blower to meet the specified control tests shall be considered cause for rejection of the production quantity represented. When cause for failure is determined, necessary corrections shall be made and proven by testing three randomly selected blowers from that production quantity. One of three blowers shall be subjected to all specified tests. Control test verification for the two remaining blowers shall be limited to the parameters directly related to the failure cause and the parameters affected by the corrective action taken.

4.6 Methods of inspection.

4.6.1 Operating characteristics. To determine conformance to 3.5.1, the operating test shall consist of connecting the blower to a variable dc power source and measuring load current, load speed and speed range.

4.6.2 Airflow. To determine conformance to 3.5.2, the airflow test shall be accomplished utilizing a suitable proportioned, air inlet duct in accordance with the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 51-75, and Air Movement and Control Association (AMCA) Bulletin 210-74, Method of Testing Fans, and with a flow measuring device with calibration traceable to National Bureau of Standards. Airflow shall be computed in SCFM.

4.6.3 Dielectric strength. To determine conformance to 3.5.3.1, the dielectric strength test shall be performed prior to final assembly on the armature and field windings separately in accordance with MIL-STD-202, method 301. Apply 500 vrms at a frequency of 60 Hz for a period of 60 seconds. Verify that there is no puncture of solid insulation, no continuing sparkover, and no breakdown of dielectric material.

4.6.4 Insulation resistance. To determine conformance to 3.5.3.2, insulation resistance shall be measured prior to final assembly on the armature and field circuit in accordance with MIL-STD-202, method 302, condition B. Verify that the resistance is not less than 50 megohms for the field circuit and for the armature circuit including the insulated brush holders.

MIL-B-62284(AT)

TABLE II. Classification of tests.

Title	Requirements	Preproduction/ initial production tests		Acceptance tests		Control tests	
				100 percent	1/50	1/200	1/600
Operating characteristics	3.5.1	4.6.1		4.6.1			
Air flow	3.5.2	4.6.2			4.6.2		
Dielectric strength	3.5.3.1	4.6.3					
Insulation resistance	3.5.3.2	4.6.4		4.6.4			
Transient voltage	3.5.3.3	4.6.5			4.6.5		
Starting current	3.5.3.4	4.6.6		4.6.6			
Endurance	3.5.4	4.6.7					4.6.7.1
Temperature, high	3.5.5.1	4.6.8.1					4.6.8.1
Temperature, low	3.5.5.1	4.6.8.2					4.6.8.2
Vibration	3.5.5.2	4.6.9					4.6.9.1
Shock (non-operating)	3.5.5.3						
Basic intensity	3.5.5.3.1	4.6.10.1					4.6.10.1.1
High intensity	3.5.5.3.2	4.6.10.2					4.6.10.2.1
Waterproofness	3.5.5.4	4.6.11					
Dust	3.5.5.5	4.6.12					
Humidity	3.5.5.6	4.6.13					
Corrosion	3.5.5.7	4.6.14					
Electromagnetic interference	3.5.6	4.6.15					
				4.6.11			

MIL-B-62284(AT)

4.6.5 Transient voltage. To determine conformance to 3.5.3.3, operate the blower from the indicated nominal operating voltage while applying the transient voltage for the time period designated. Repeat each test pulse every six (6) seconds for one (1) minute.

<u>Nominal operating voltage</u> (volts dc)	<u>Blower voltage with transient voltage</u> (volts dc)	<u>Transient voltage time</u> (milliseconds,ms)
+30	+40	50
+34	+70	700
+26	+14	20
+18	+4	50

Operate the blower from a +24 Vdc power source and apply a negative voltage for 2 minutes, so that the net voltage at the blower is -30 Vdc. After the above tests, the blower shall be subjected to the performance tests of 4.6.1 and 4.6.2.

4.6.6 Starting current. To determine conformance to 3.5.3.4, the starting current test shall be performed utilizing a power source having an effective impedance of $.13 + .01$ ohm. Verify that starting current does not exceed 60 amperes and drops to 10 amperes or less within 1 second after application of input voltage.

4.6.7 Endurance. To determine conformance to 3.5.4, the blower shall be mounted as shown in figure 8, or equivalent, and subjected to endurance testing as shown:

- a. Subject the blower to the performance tests of 4.6.1, 4.6.2, 4.6.5 and 4.6.6.
- b. Place the blower in a vibration/temperature chamber such that the assembly can be vibrated in the "Y" axis (see figure 7).
- c. Subject the blower to the endurance profile delineated in figure 4. The duty cycle shall be 9.75 minutes "ON" and 0.25 minutes "OFF" during the blower "ON" time (see figure 4) and high temperature/dust cycling (see figure 9).
- d. Random vibration shall be at an acceleration level of $.003 G^2/Hz \pm 2$ db between the frequencies of 10 and 500 Hz. Roll off shall be 15 db/octave below 10 Hz and -50 db/octave above 500 Hz.
- e. After endurance testing, return the blower to room temperature and subject it to the performance tests of 4.6.1, 4.6.2, 4.6.5 and 4.6.6.

MIL-B-62284(AT)

4.6.7.1 Control test (endurance). 3/ To determine conformance to 3.5.4, the assembly shall be subjected to an endurance test of 400 hours. Testing shall be conducted as specified in 4.6.7, except that the profile shall be as shown in figure 10. Subsequent to the 400 hour endurance test, the assembly shall be subjected to the performance tests of 4.6.1, 4.6.2, 4.6.5 and 4.6.6 and inspected for brush wear as follows:

- a. Each brush shall be inspected for excessive residue and freedom of movement within the holder.
- b. Each brush shall be examined for excessive brush wear which shall be no more than 30 percent of the usable brush length. The usable brush length is defined as the length of brush that can be used while maintaining proper brush pressure and without wearing into the pigtail.

3/ Assemblies subjected to endurance testing shall not be used for any other purposes and shall be indelibly marked "DO NOT USE."

4.6.8 Environmental.

4.6.8.1 High temperature. To determine conformance to 3.5.5.1, subject the blower to the high temperature test specified in MIL-STD-810, method 501, procedure II, except the temperature of step 4 shall be **185°F**. At the conclusion of step 6, and while still at **185°F**, subject the blower to the starting current test of 4.6.6. Operate the blower for one hour and subject the blower to the performance tests of 4.6.1 while at 185°F ambient. Return the blower to room temperature and allow to stabilize prior to performing the tests of 4.6.1, 4.6.2 and 4.6.6.

4.6.8.2 Low temperature. To determine conformance to 3.5.5.1, subject the blower to the low temperature test specified in MIL-STD-810, method 502, procedure I. Maintain the storage temperature at minus 65°F for a period of 12 hours minimum. At the conclusion of this time, and while still at minus 65°F, subject the blower to the starting current test of 4.6.6. Operate the blower for one hour and subject the blower to the performance tests of 4.6.1. Return the blower to room temperature and allow to stabilize prior to performing the tests of 4.6.1, 4.6.2 and 4.6.6.

4.6.9 Vibration. To determine conformance to 3.5.5.2, the blower shall be mounted to the assembly shown in figure 8, or equivalent, and subjected to the vibration test specified in MIL-STD-810, method 514, procedure VIII, except as follows:

MIL-B-62284(AT)

- a. Test level shall be the vibration curve shown in figure 6. Time schedule shall be 60 minutes in each axis as shown in figure 7, including up to 4 resonance dwells of 10 minutes each.
- b. Connections and instrumentation shall be attached to the assembly to permit operating and testing as specified in c through f.
- c. Conduct resonance frequency search, along each axis at room temperature, and with the input power applied over the frequency range of 5 to 500 Hz. Up to four resonant frequencies shall be identified (the four most severe resonant frequencies if more than four are present) in each axis for the resonance dwell test.
- d. Place the blower in a 185°F ambient temperature chamber and conduct sinusoidal cycling and resonance dwell tests as specified. Temperature test levels and time schedule shall be as identified in "a" above. The blower shall be operated on continuous duty at full load speed. Full load speed shall be obtained by adjustment of the line voltage to $24 + 0.5$ Vdc. Verify that intermittent operation does not occur.
- e. Repeat the test described in "d" above except the ambient temperature shall be minus 65°F.
- f. After vibration, return the blower to room temperature and subject it to the performance tests of 4.6.1 and 4.6.2.

4.6.9.1 Control test (vibration). The test shall be the same as 4.6.9, except the temperature shall be $77^{\circ} + 18^{\circ}\text{F}$ and the time schedule shall be 60 minutes per axis, including 2 minutes dwell time at each resonance.

4.6.10 Shock.

4.6.10.1 Basic intensity. To determine conformance to 3.5.5.3.1, the blower shall be mounted to the assembly shown in figure 8, or equivalent, and subjected to the shock test specified in MIL-STD-810, method 516, procedure 1. Apply three half sine wave shock pulses in both directions along the three axes as shown in figure 7. Peak amplitude shall be $40 + 4$ g's with a time duration of $18 + 3$ msec measured at the 10 percent amplitude points. At the conclusion of this test, subject the blower to the performance tests of 4.6.1 and 4.6.2.

4.6.10.1.1 Control test (basic intensity). This test shall be the same as 4.6.10.1, except the shock level shall be limited to $30 + 3$ g's.

MIL-B-62284(AT)

4.6.10.2 High intensity. To determine conformance to 3.5.5.3.2, the blower shall be mounted to the assembly shown in figure 8, or equivalent, and subjected to the shock test specified in MIL-STD-810, method 516, procedure IV. Apply three half sine wave shock pulses in both directions along the three axes as shown in figure 7. Peak amplitude shall be $100 + 10$ g's with a time duration of $1.0 + 0.2$ msec measured at the 10 percent amplitude points. At the conclusion of this test, subject the blower to the performance tests of 4.6.1 and 4.6.2.

4.6.10.2.1 Control test (high intensity). This test shall be the same as 4.6.10.2, except the shock level shall be limited to $75 + 7.5$ g's.

4.6.11 Waterproofness. To determine conformance to 3.5.5.4, the blower inlet and outlet shall not be capped. The blower shall be submerged in water at room temperature and a pressure differential of 6 psi developed such that the blower internal air pressure exceeds the external pressure. The pressure differential shall be maintained for a five (5) minute period without evidence of leakage. Bubbles which are the result of entrapped air on exterior surfaces of the blower shall not be considered a leak. At the conclusion of this test, subject the blower to performance tests of 4.6.1 and 4.6.2.

4.6.12 Dust. To determine conformance to 3.5.5.5, the assembly shall be subjected to 50 hours of dust exposure as delineated in figures 4 and 9. The assembly shall be oriented so that the inlet is exposed to the dust stream. This test shall be conducted in conjunction with the endurance test of 4.6.7.

4.6.13 Humidity. To determine conformance to 3.5.5.6, the blower shall be placed in a humidity chamber and subjected to the test specified in MIL-STD-810, method 507, procedure II. At the conclusion of this test, subject the blower to the performance tests of 4.6.1 and 4.6.2.

4.6.14 Corrosion (salt fog). To determine conformance to 3.5.5.7, the blower shall be subjected to the corrosion resistance test specified in MIL-STD-810, method 509, procedure I. At the conclusion of this test, subject the blower to the performance tests of 4.6.1 and 4.6.2.

4.6.15 Electromagnetic interference. To determine conformance to 3.5.6, the blower shall be subjected to the electromagnetic interference tests specified in MIL-STD-462 for radiated emission (RE02) and conducted emission (CE01 and CE04).

MIL-B-62284(AT)

4.7 Preparation for delivery. The assembly shall be inspected by the supplier prior to shipment to ensure conformance to the preservation, packaging, packing and marking requirements in Section 5. Sampling inspections shall be limited to those characteristics that can be determined by visual examination.

5. PACKAGING

5.1 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking for the desired level of protection shall be in accordance with the applicable packaging standard or packaging data sheet specified by the procuring activity (see 6.2).

6. NOTES

6.1 Intended use. The air cleaner blower assembly is intended for use primarily in the M60 series tracked vehicle air cleaner system.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Whether preproduction samples shall be furnished (see 3.1).
- c. Whether initial production units shall not be furnished (see 3.2).
- d. Whether standards of manufacture shall be other than as specified (see 3.4.4).
- e. Whether responsibility for inspection equipment shall be other than as specified (see 4.1.1).
- f. If inspection conditions shall be other than as specified (see 4.3.1).
- g. Selection of applicable level and packaging standard or packaging data sheet (see 5.1).

6.3 Preproduction. When a preproduction sample inspection is required, the item will be tested as specified in 4.4.1. The preproduction samples should consist of six units. The contracting officer should include specific instructions in all acquisition documents regarding arrangements for examination, tests and approval of the preproduction samples (see 3.1).

6.4 Process average. Sampling may be initiated if the process average value for the first twenty assemblies inspected is less than the AQL specified in the classification of defects for major and minor defects.

$$\text{Process average} = \frac{\text{Number of defects}}{\text{Number of assemblies inspected}} \times 100$$

MIL-B-62284(AT)

If the computed process average exceeds the specified AQL, 100 percent inspection shall be performed and continued until such time that the process average for twenty consecutive assemblies is less than the specified AQL.

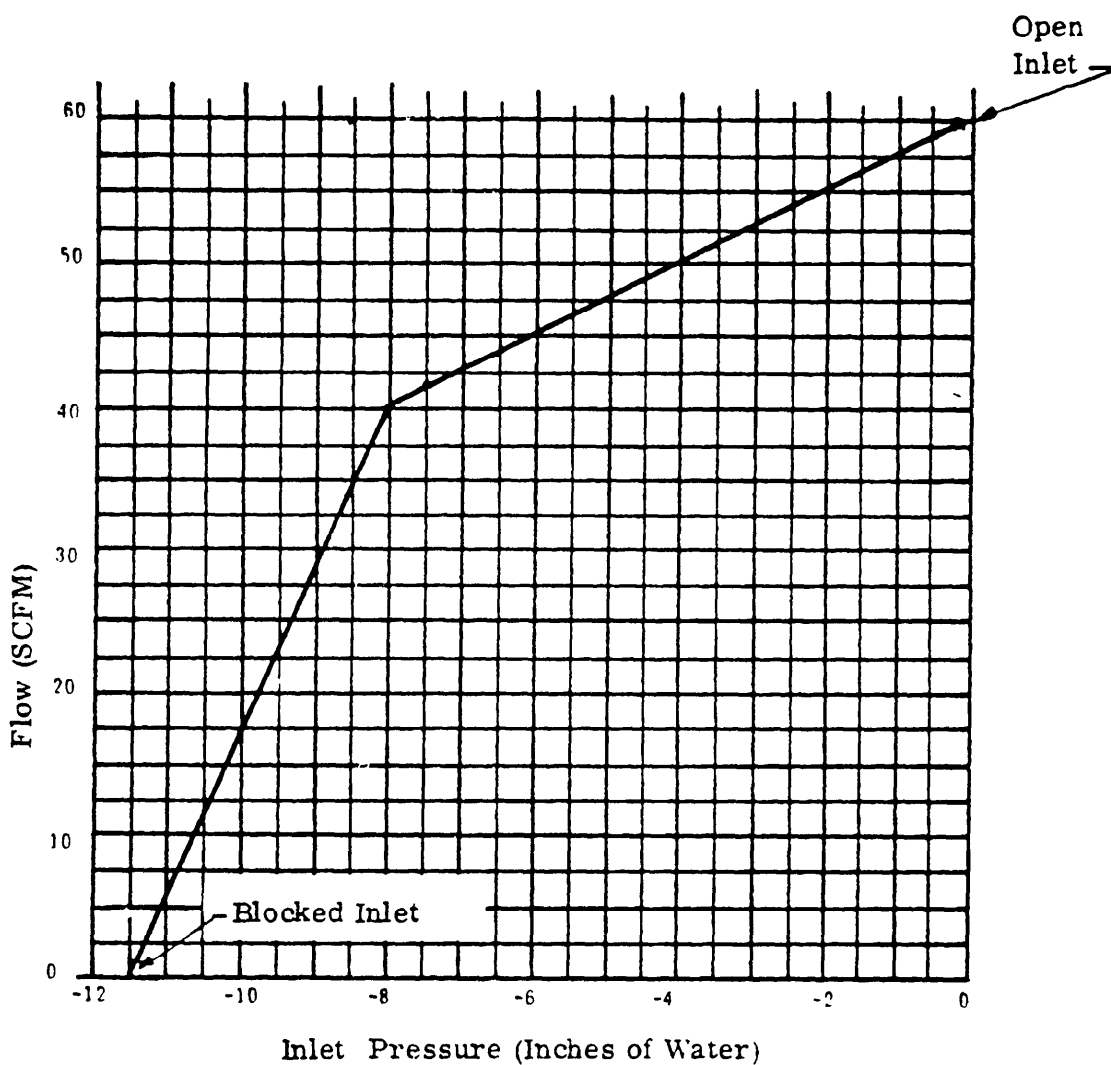
6.5 Recycled materials. The use of recycled materials which meet the requirements of the applicable material specifications without jeopardizing the intended use of the item shall be encouraged (see 3.2).

Custodian:
Army - AT

Preparing activity:
Army - AT

Project No. 2940-A124

MIL-B-62284(AT)



- NOTE: 1. Minimum of three points are required for air flow tests.
2. Tests to be conducted at 24.0 ± 0.5 volts

FIGURE 1. Minimum air flow

MIL-B-62284(AT)

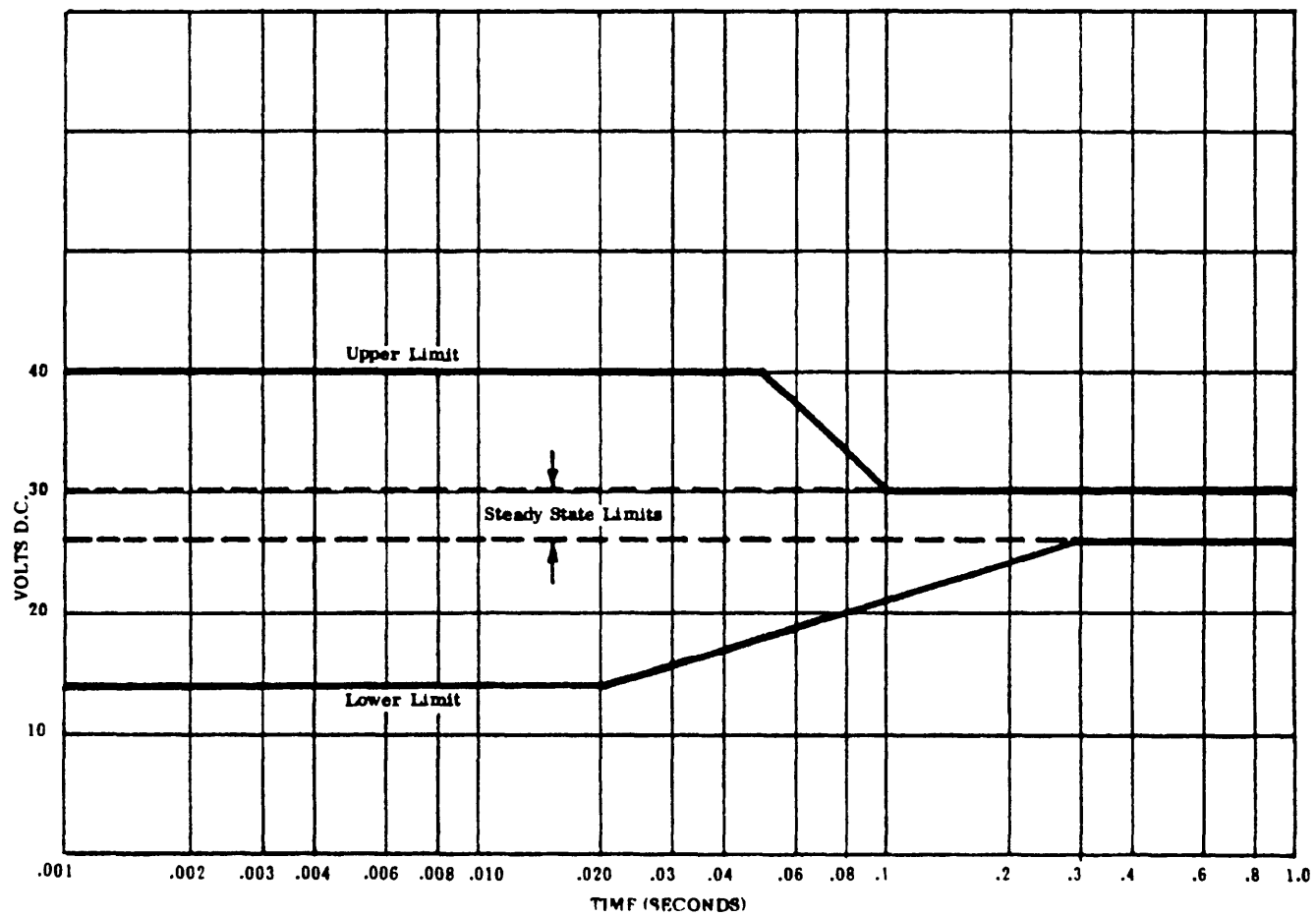


FIGURE 2. Voltage limits loci of surges for fault free operation

MIL-B-62284(AT)

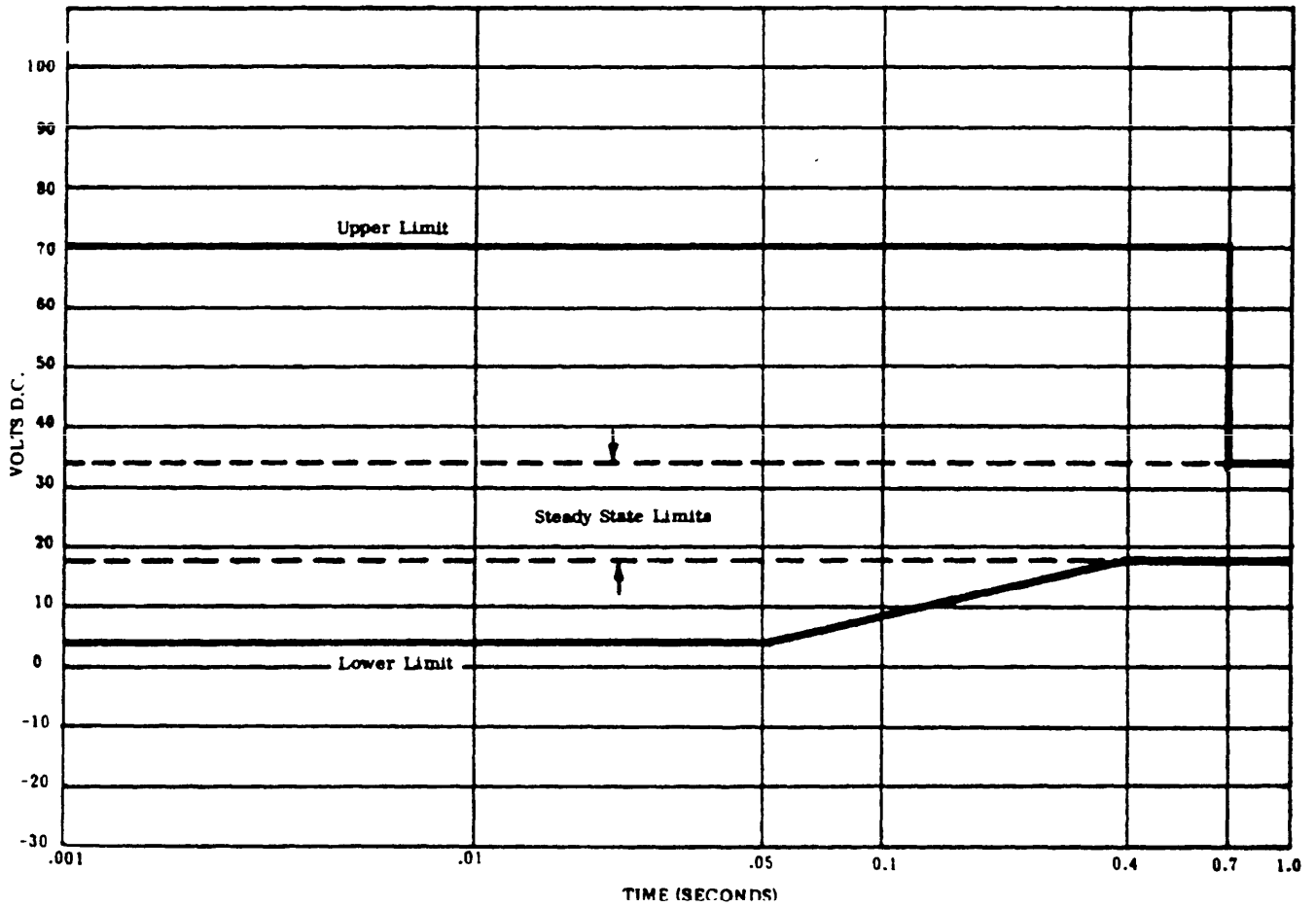
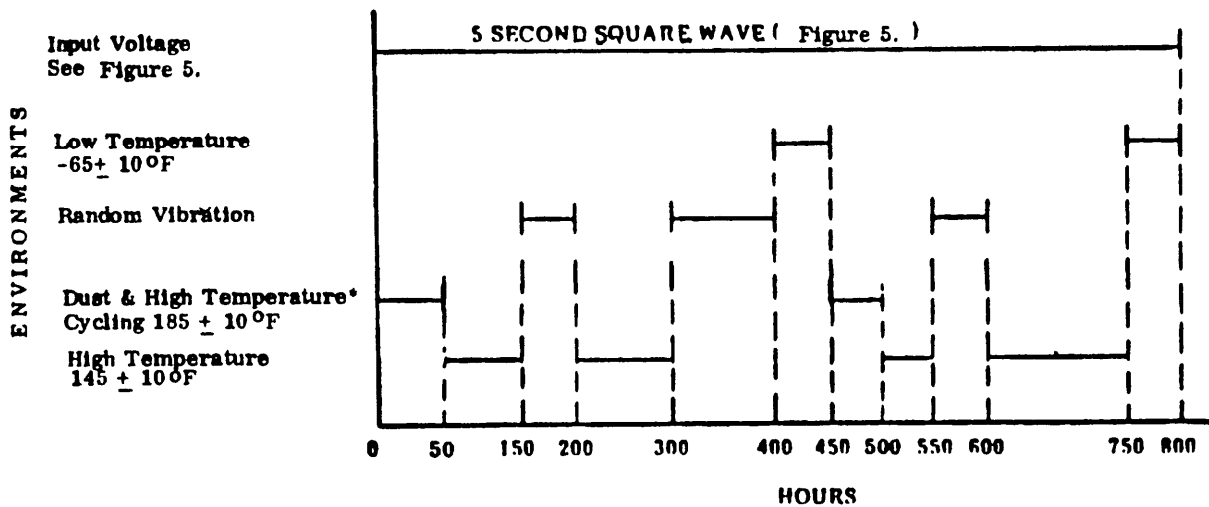


FIGURE 3. Voltage limits loci of surges for single fault condition



* See Figure 9.

FIGURE 4. 800 hour endurance life cycle

MIL-B-62284(AT)

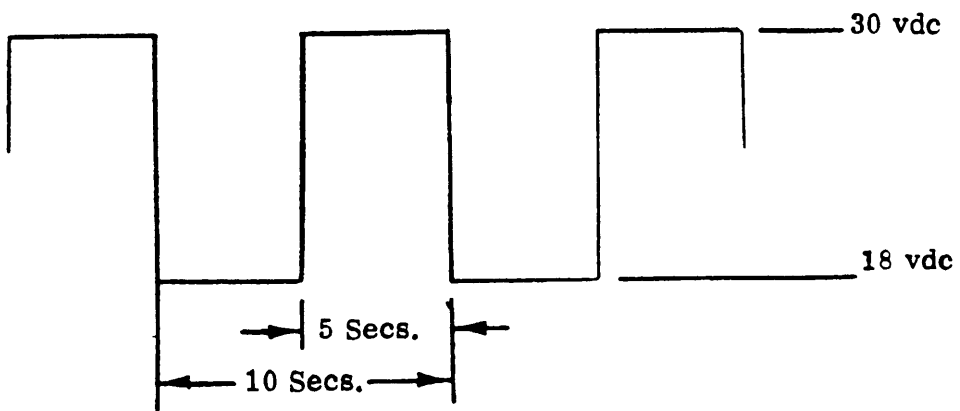


FIGURE 5. Supply voltage characteristics

MIL-B-62284(AT)

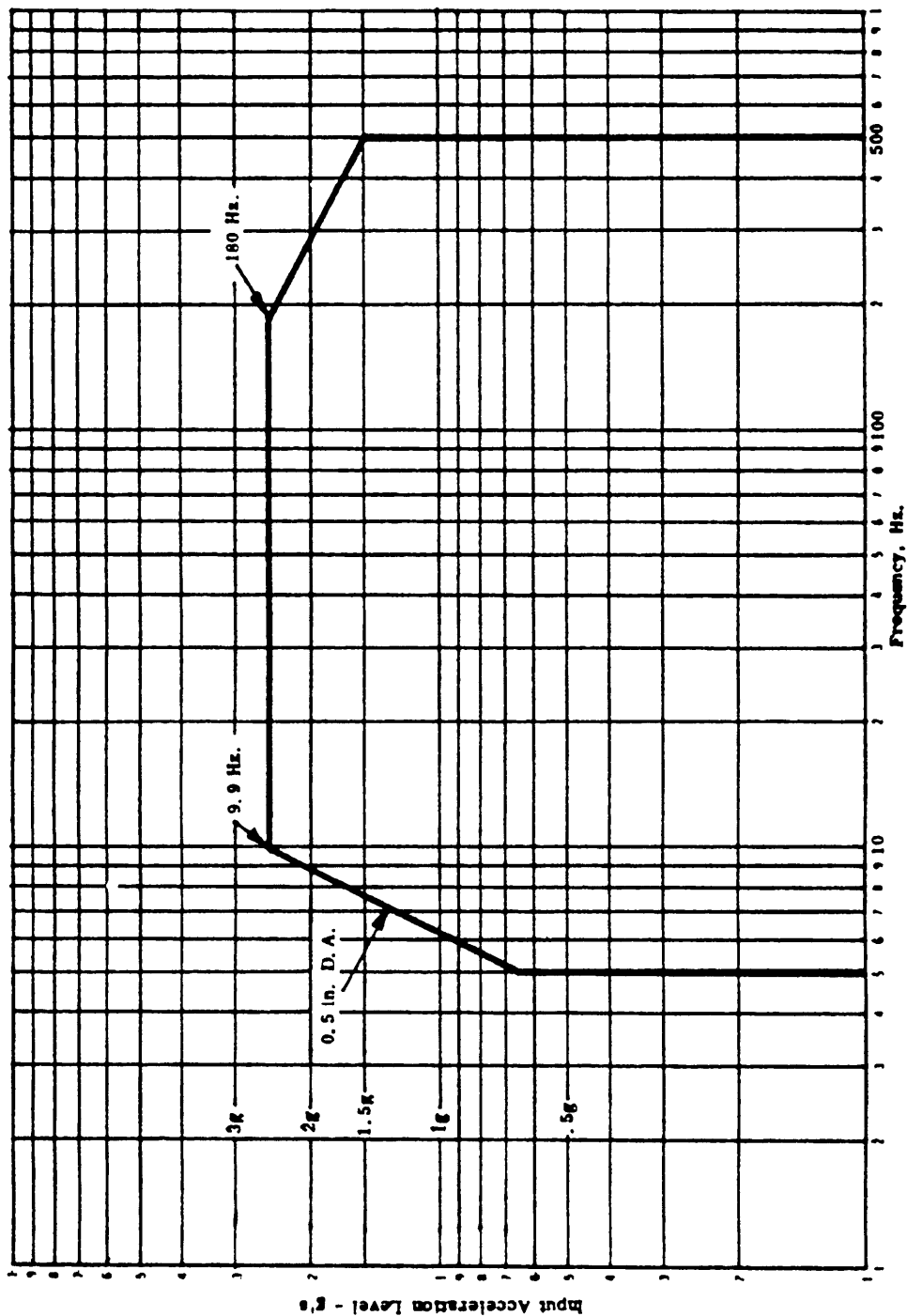


FIGURE 6. Vibration profile

MIL-B-62284(AT)

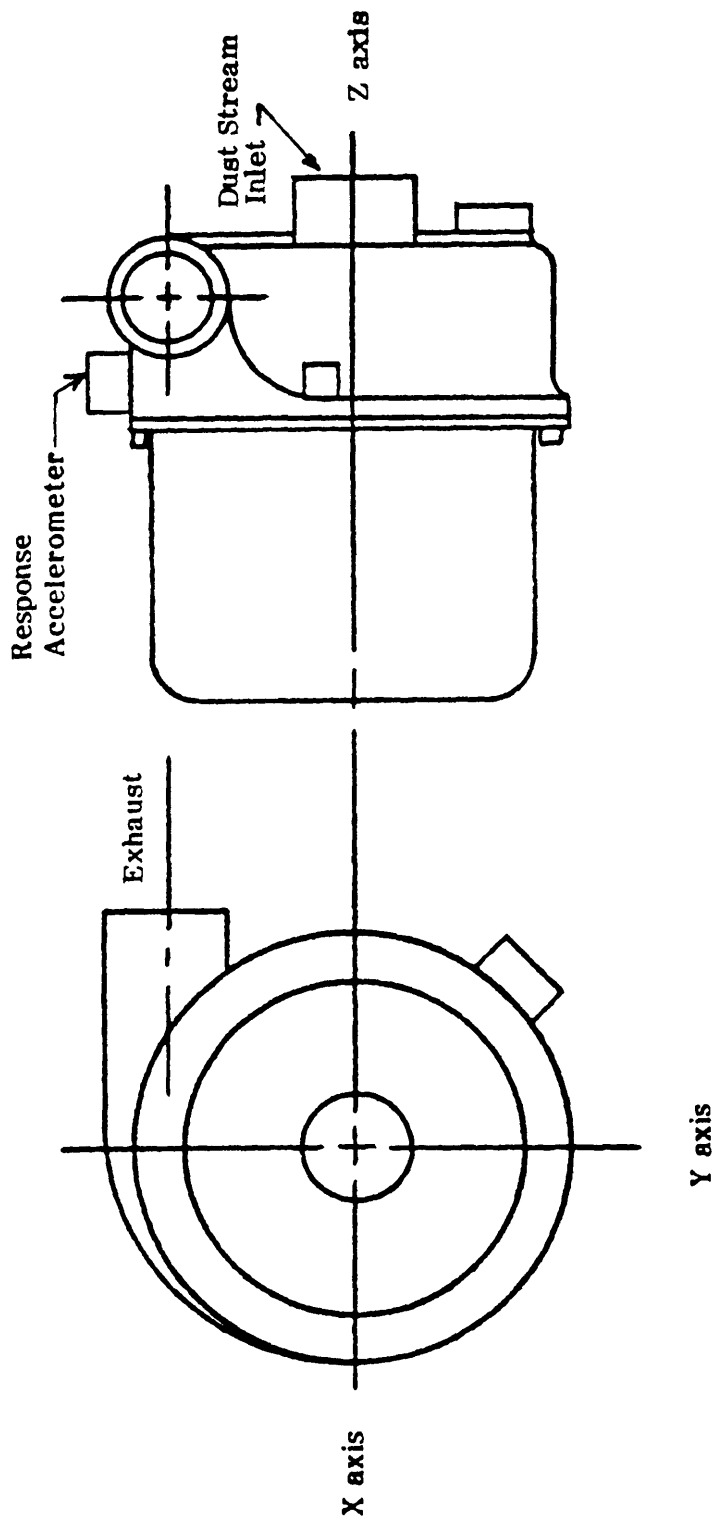


FIGURE 7. Axis identification

MIL-B-62284(AT)

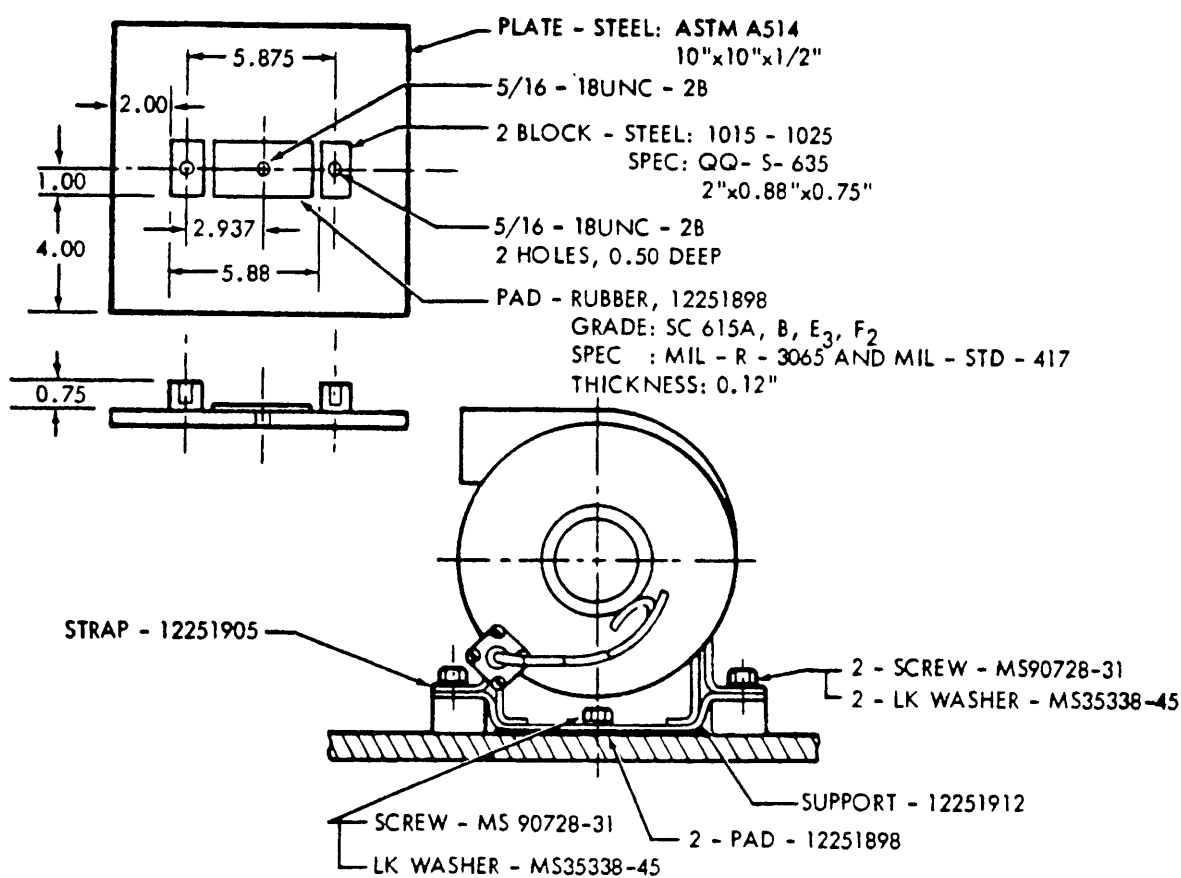
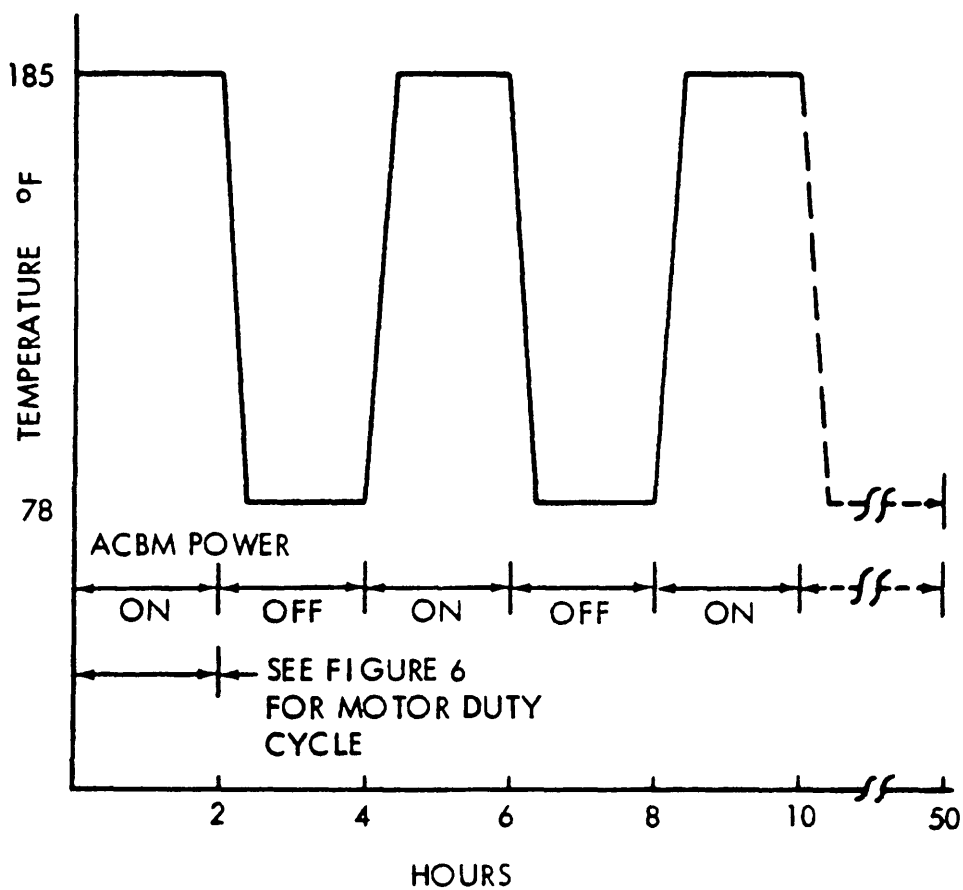


FIGURE 8. Blower assembly test mount

MIL-B-62284(AT)



Dust feed rate during motor ON time shall be
 0.25 ± 0.025 grams/min/ft³ (10 X zero visibility)

FIGURE 9. High temperature/dust cycle during endurance life cycle test

MIL-B-62284(AT)

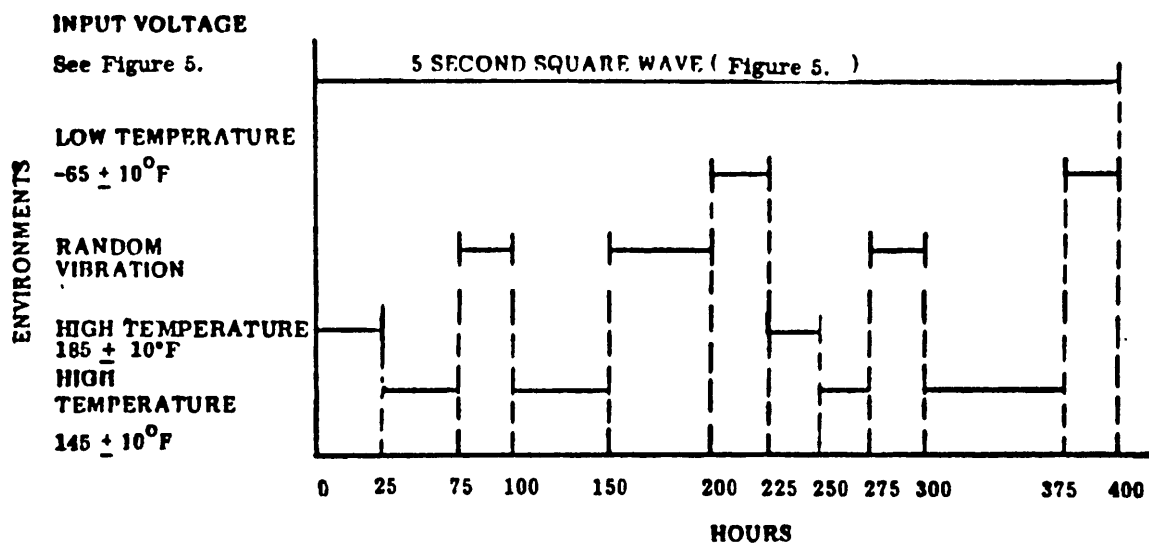


FIGURE 10. 400 hour control life cycle

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification 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.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE ARMY



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO 12062 WASHINGTON D C

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE ARMY

Commanding General
US Army Tank Automotive Command
ATTN: DRSTA-GSS
Warren, MI 48090

