

MIL-E-23001/3D(AS)

25 July 1975

Superseding
MIL-E-23001/3C(AS)
21 December 1973

MILITARY SPECIFICATION SHEET

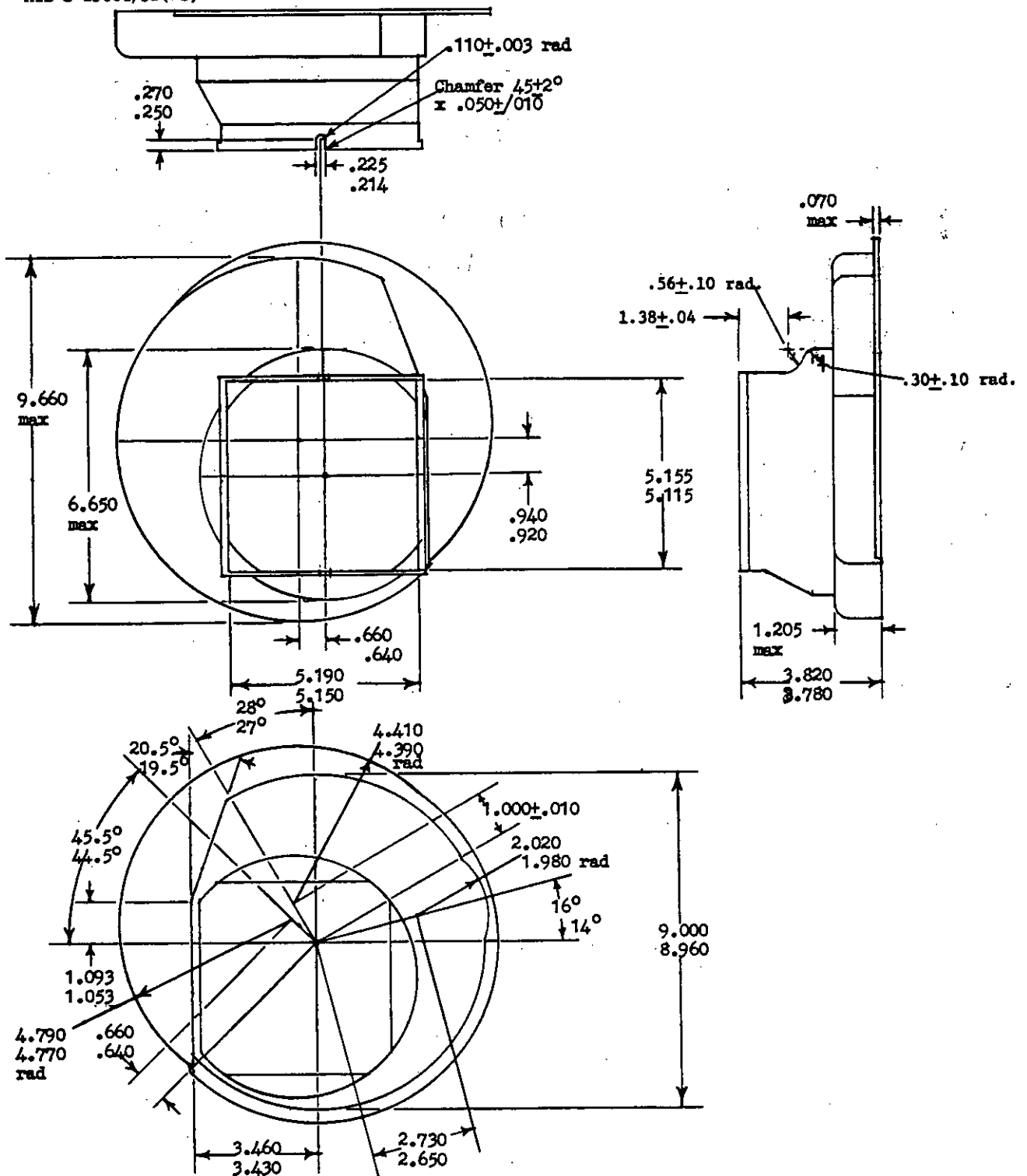
ELECTRIC GENERATING SYSTEM, AIRCRAFT, VSCF,
20 KVA, 115/200 VOLT, 3-PHASE, 400 Hz

1. **SCOPE.** This specification sheet covers a 20 KVA variable-speed constant-frequency 115/200 volt, 3-phase, 400 Hz electric power generating system for use on A-4M aircraft.
2. **MILITARY PART NUMBER.** The military part number of each system shall be for Configuration "A" (M23001/3-1), Configuration "B" (M23001/3-2).
3. **DIMENSIONS.** The dimensions of each part shall be as shown on sheet 2, 3, 6, 7, 11, and 12 as applicable. All dimensions are in inches. Tolerance is ± 0.030 unless otherwise specified on all linear dimensions except locations of electric receptacles, on which tolerance is ± 0.060 unless otherwise specified. Tolerance is $\pm 1^\circ$ unless otherwise specified on all angular dimensions. All recurrent dimensions are typical. Where only maximum or minimum dimensions are shown, the part need not have the shape shown, but the part, including all protrusions, shall be contained within the outline shown. All pilot and quick-attach detach interface diameters shall have concentricity not to exceed 0.002 F.I.R.
4. **GENERATOR MOUNTING PLATE AND QUICK-ATTACH-DETACH CLAMPS.** The generator mounting plate and quick-attach-detach clamp are in accordance to MS 14165/10.
5. **GENERATOR AIR ADAPTER.** The generator air adapter (Page 3 of this Specification) shall mate with generator air boot (Douglas P/N 5829859-1) as installed on A-4M aircraft and shall be securely attached to the generator package. It shall be possible to install the generator package and adapter in an A-4M aircraft individually. An anti-abrasive gasket shall be attached to the generator air adapter (P/N M23001/3-9) to provide a seal with generator air boot (Douglas P/N 5829859-1). The package is to be demonstrated by a mock-up on an A-4M aircraft and is subject to NAVAIR approval.

FSN 6115

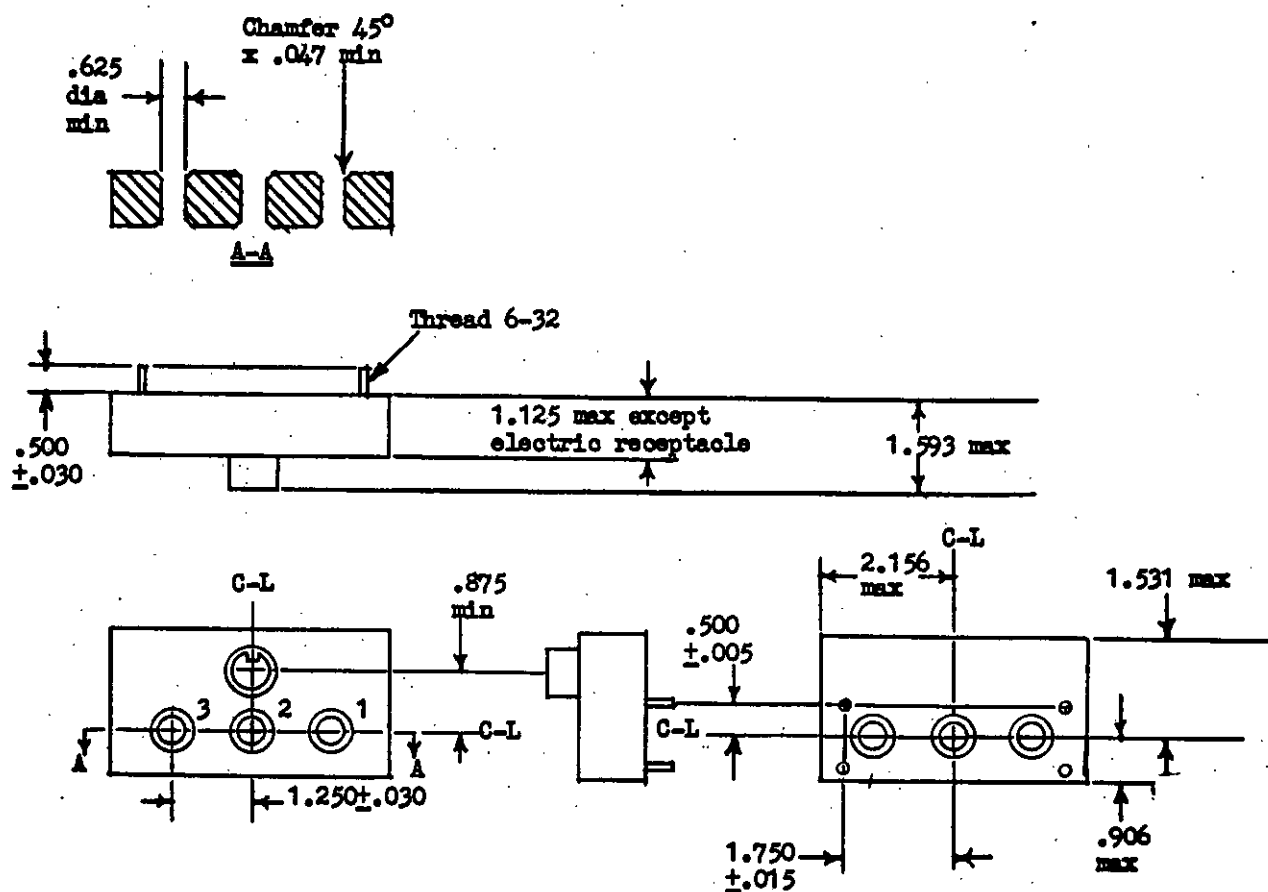
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Generator Air Adapter
Part Number M23001/3-9

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ELECTRIC RECEPTACLE. MS3112E-10-68

MAXIMUM WEIGHT. 0.75 pounds.

Bendix 2B91-1A or Equivalent.

CURRENT TRANSFORMER
P/N M21480/16-5

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CONFIGURATION "A" NOTES

1. PARTS. Each system shall consist of the following system components:

- 1.1 Generator Package (Generator P/N M23001/3-1-1; Converter P/N M23001/3-1-7)
- 1.2 Generator Mounting Plate with mounting clamp* (P/N M 14165/10-1 and M 14165/10-2 respectively).
- 1.3 Generator Air Adapter M23001/3-9
- 1.4 Jumper Plug M23001/3-1-4
- 1.5 Current Transformer* M21480/16-5

*If required for retrofit of system with existing Constant Speed Drive and Generator System, these parts not required.

2. GENERATOR PACKAGE.

- 2.1 DRIVE SHAFT. In accordance with requirements of AND 10266 except as noted on generator drawing, page 6 of this specification.
- 2.2 SHEAR SECTION. 2,500 \pm 250 inch-pounds.
- 2.3 ELECTRIC RECEPTACLES. (Located on pages 6 and 8 of this specification)
 - 1 - MS3112E-10-6SW
 - 2 - MS3112E-10-6S
- 2.4 MAXIMUM WEIGHT. 96 pounds.
- 2.5 MAXIMUM OVERHUNG MOMENT. 825 inch-pounds.
- 2.6 INPUT SHAFT SPEED RANGE. 3100-11,100 RPM.
- 2.7 INTERCHANGEABILITY OF GENERATOR. The generator package must mount to the pad without modification to the A-4M aircraft, except as outlined in this detail specification.

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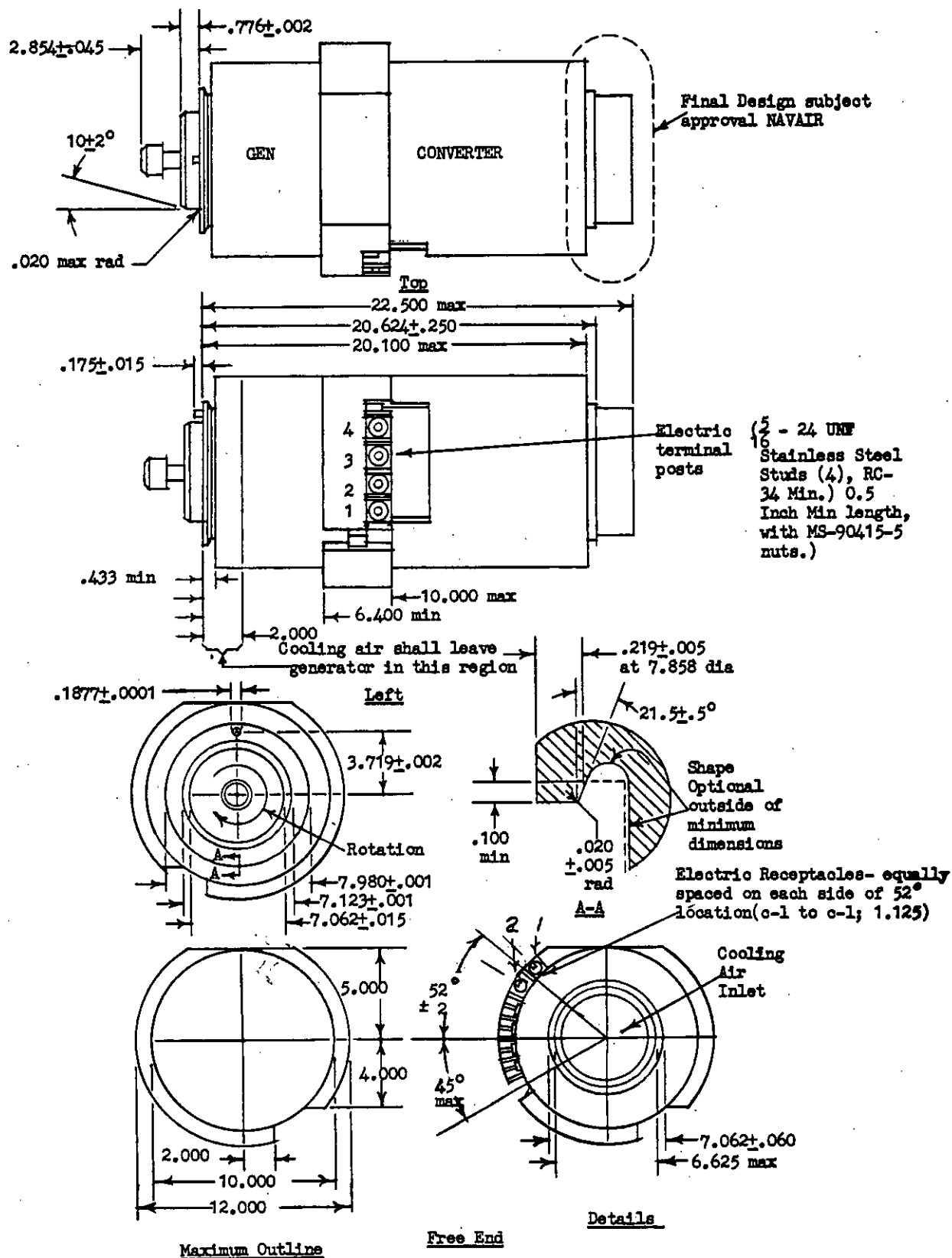
3. JUMPER PLUG

3.1 ELECTRIC RECEPTACLE: (Located on pages 7 and 8 of this specification) MS3112E-18-32P.

3.2 MAXIMUM WEIGHT. 1 pound.

4. ELECTRICAL CONNECTIONS. Locations of all external electric receptacles and terminal block shall be compatible to present A-4M aircraft without modification, except as outlined in this specification. Final design shall be subject to approval by NAVAIR (AIR-5364).

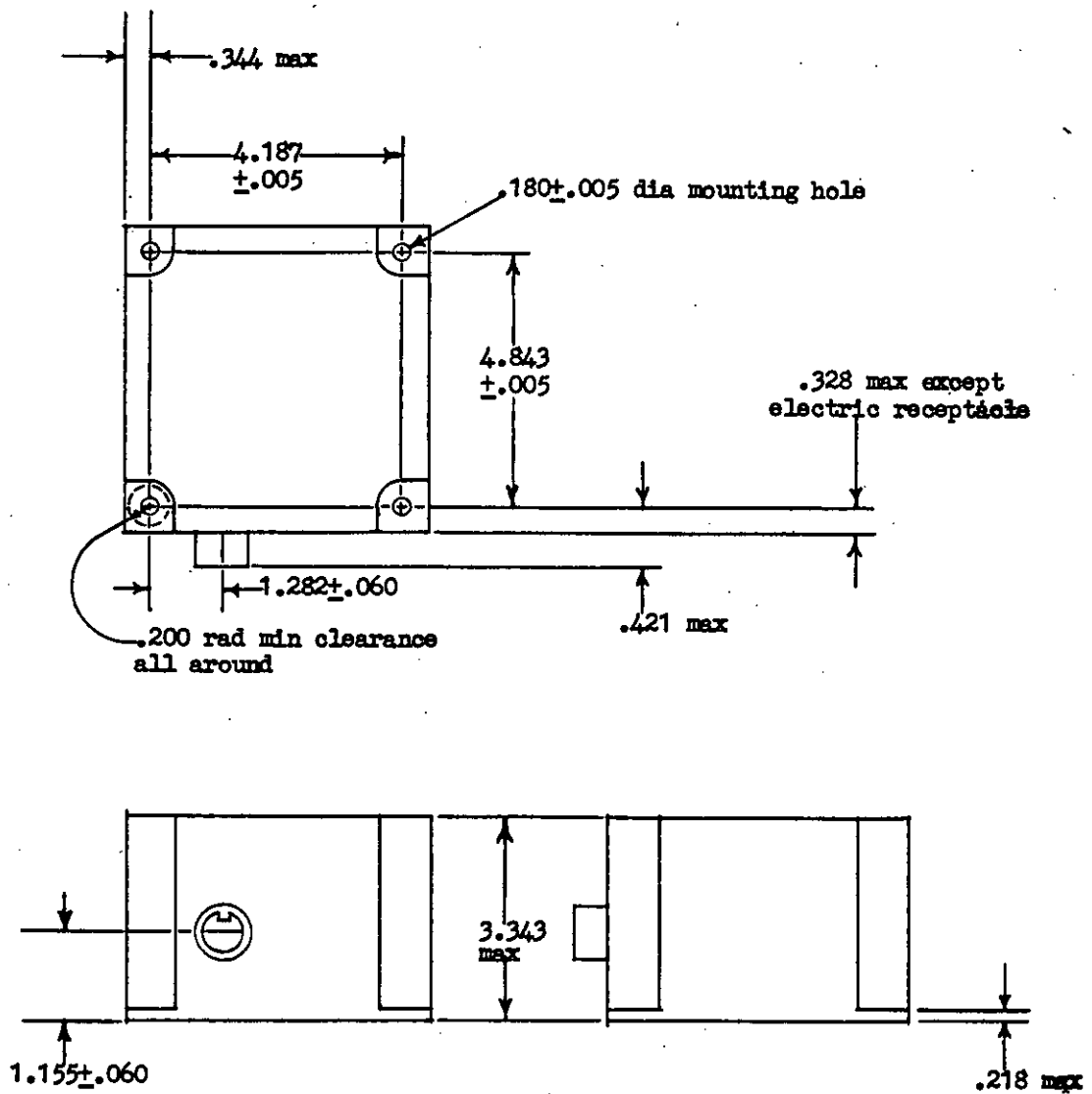
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GENERATOR PACKAGE
 (Generator P/N M23001/3-1-1;
 Converter P/N M23001/3-1-7)

Configuration "A"

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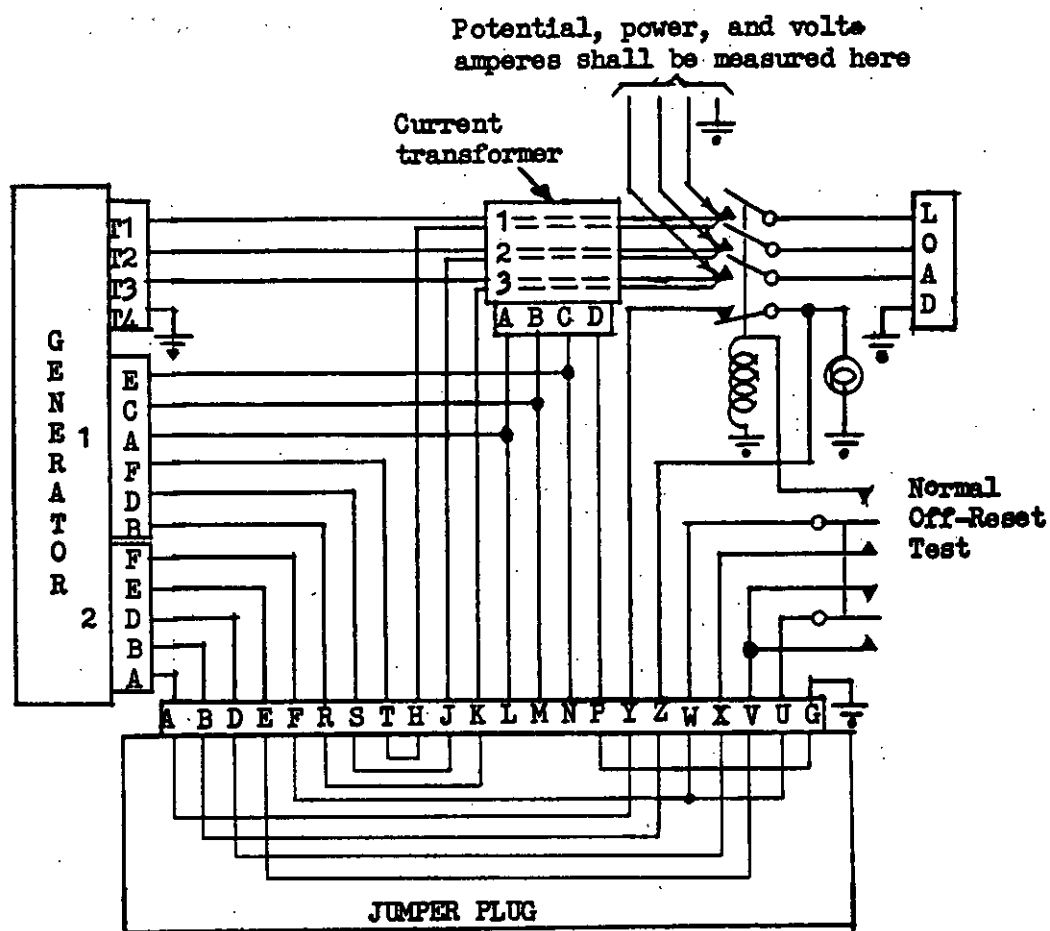
MAXIMUM WEIGHT. 1 Pound

JUMPER PLUG
P/N 23001/3-1-4

CONFIGURATION "A"

NOTE: Configuration optional
all extremities to remain
within above envelope.

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Electrical Interface Diagram

CONFIGURATION "A"

CONFIGURATION "B" NOTES

1. PARTS. Each system shall consist of the following system components:

- 1.1 Generator Package M23001/3-2-1
- 1.2 Generator Mounting Plate with Mounting Clamp* (P/N M14165/10-1, and M14165/10-2 respectively)
- 1.3 Converter M23001/3-2-7
- 1.4 Current Transformer* M21480/16-5
- 1.5 Generator Air Adapter M23001/3-9

* If required for retrofit of system with Constant Speed Drive and Generating System, these parts not required.

2. GENERATOR PACKAGE.

- 2.1 DRIVE SHAFT. In accordance with requirements of AND 10266 except as noted on generator drawing page 11 of this specification.
- 2.2 SHEAR SECTION. 2,500 \pm 250 inch-pounds.
- 2.3 ELECTRIC RECEPTACLES. (Located on pages 11 and 13 of this specification)
 - 1. MS3102 R24-10S or equivalent.
 - 2. MB3723-OTR-1412N.
- 2.4 MAXIMUM WEIGHT. 73 pounds including all coolants and lubricants.
- 2.5 MAXIMUM OVERHUNG MOMENT. 600 inch-pounds including all coolants and lubricants.
- 2.6 INPUT SHAFT SPEED RANGE. 3100-11,100 RPM
- 2.7 INTERCHANGEABILITY OF GENERATOR. The generator package must mount to the engine pad without modification to the A-4M aircraft except as outlined in this detailed specification.
- 2.8 LUBRICATION. When fluid is used for either lubrication or cooling, the total loss of fluid shall not exceed 1cc per hour with mating electrical connectors attached or 2cc per hour without mating electrical connectors attached under any of the operating or static conditions covered in this specification.

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- 2.9 OVERTEMPERATURE WARNING. When fluid is used for cooling the generator package, a thermally activated switch integral to the generator package shall be provided to indicate overtemperature. Thermal sensor location and temperature setting shall be subject to NAVAIR (AIR-5364) approval.

3. CONVERTER.

- 3.1.1 MOUNTING HOOKS. Each converter shall include two mounting hooks which are in accordance with NAS 622 CT3 for heavy load hooks, installed on the converter as shown.

- 3.2 ELECTRIC RECEPTACLES. (Located on pages 12 and 13 of this specification)

1. MS3102R-24-10P
2. MS3112E-16-26P
3. MS3102R-32-17S
4. MS3112E-14-12P

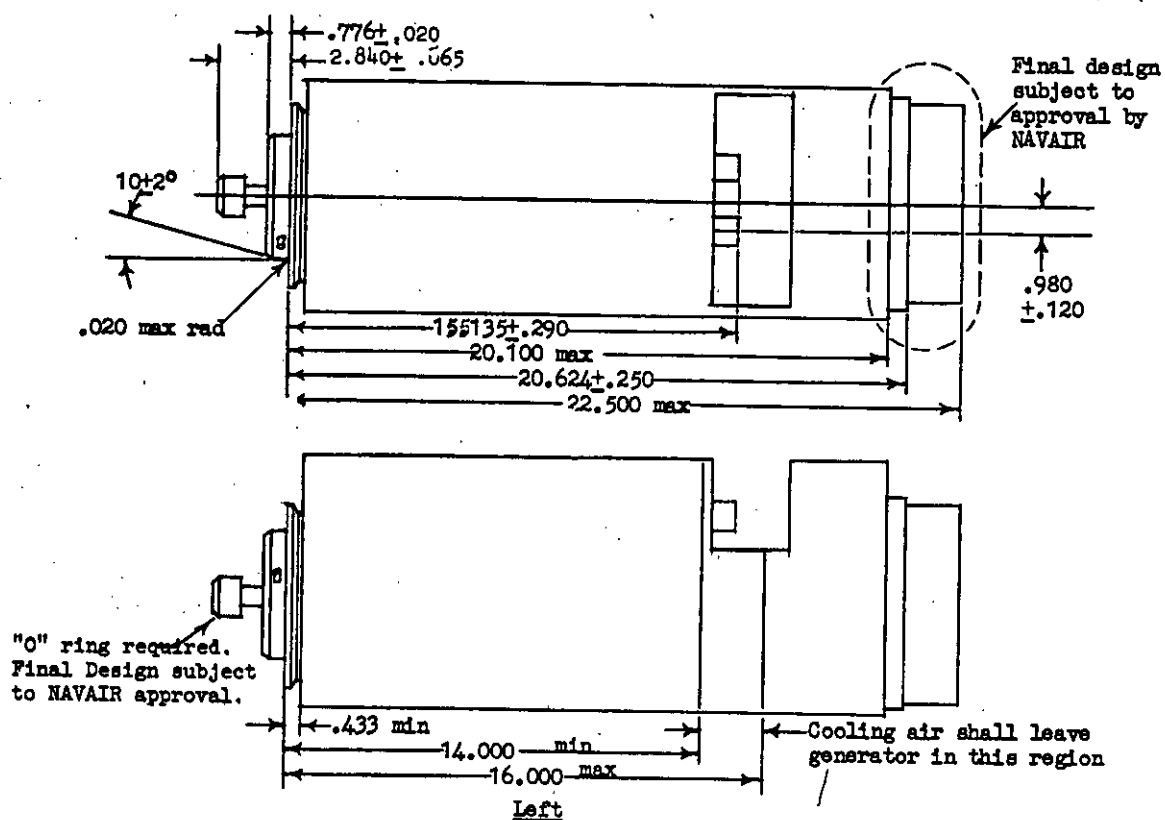
- 3.3 MAXIMUM WEIGHT. 38 pounds.

- 3.4 MOUNTING. The converter shall be mounted by means of the three mounting pin holes, the four mounting bolt holes, and two mounting hooks, as shown on page 12 of this specification.

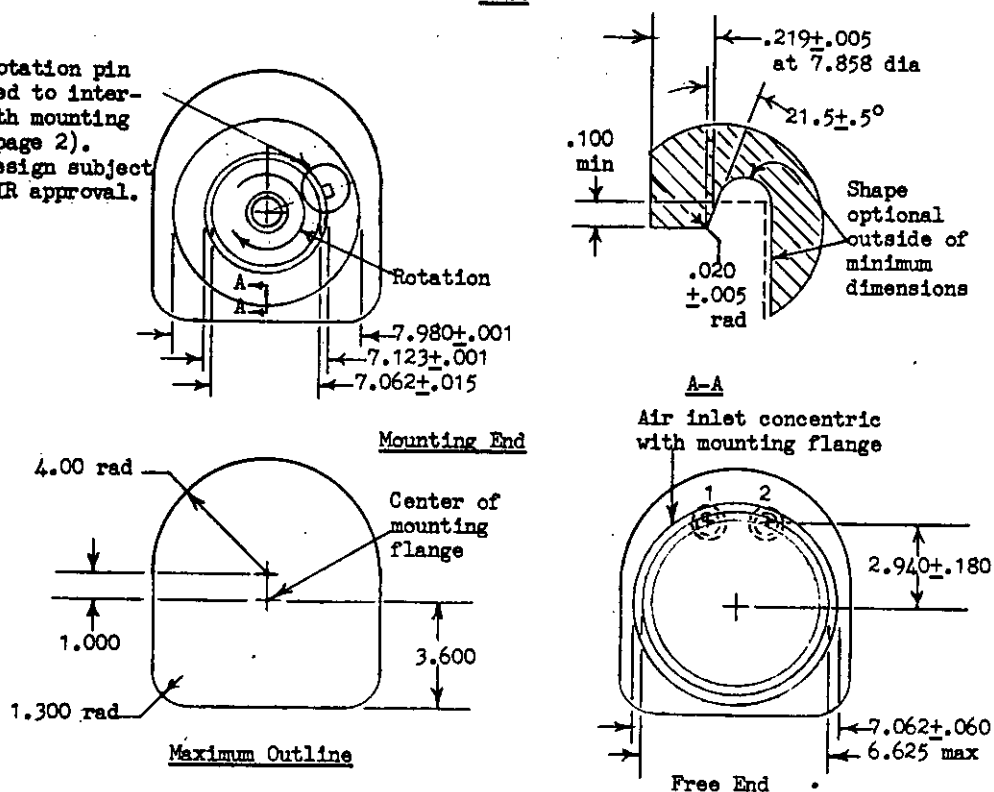
4. SYSTEM CAPACITY. The generator shall be sized for a feeder resistance of 0.008 ohm minimum to 0.1 ohm maximum between the output connectors of the generator and the input connectors of the converter. This requirement shall be in addition to the requirements of 3.2, System Capacity (rating) of this specification.

5. ELECTRICAL CONNECTIONS. Locations of all external electric receptacles shall be compatible with A-4M aircraft. Final design shall preclude any rubbing or chafing of feeder lines against generator housing. Final design shall be subject to approval by NAVAIR (AIR-5364).

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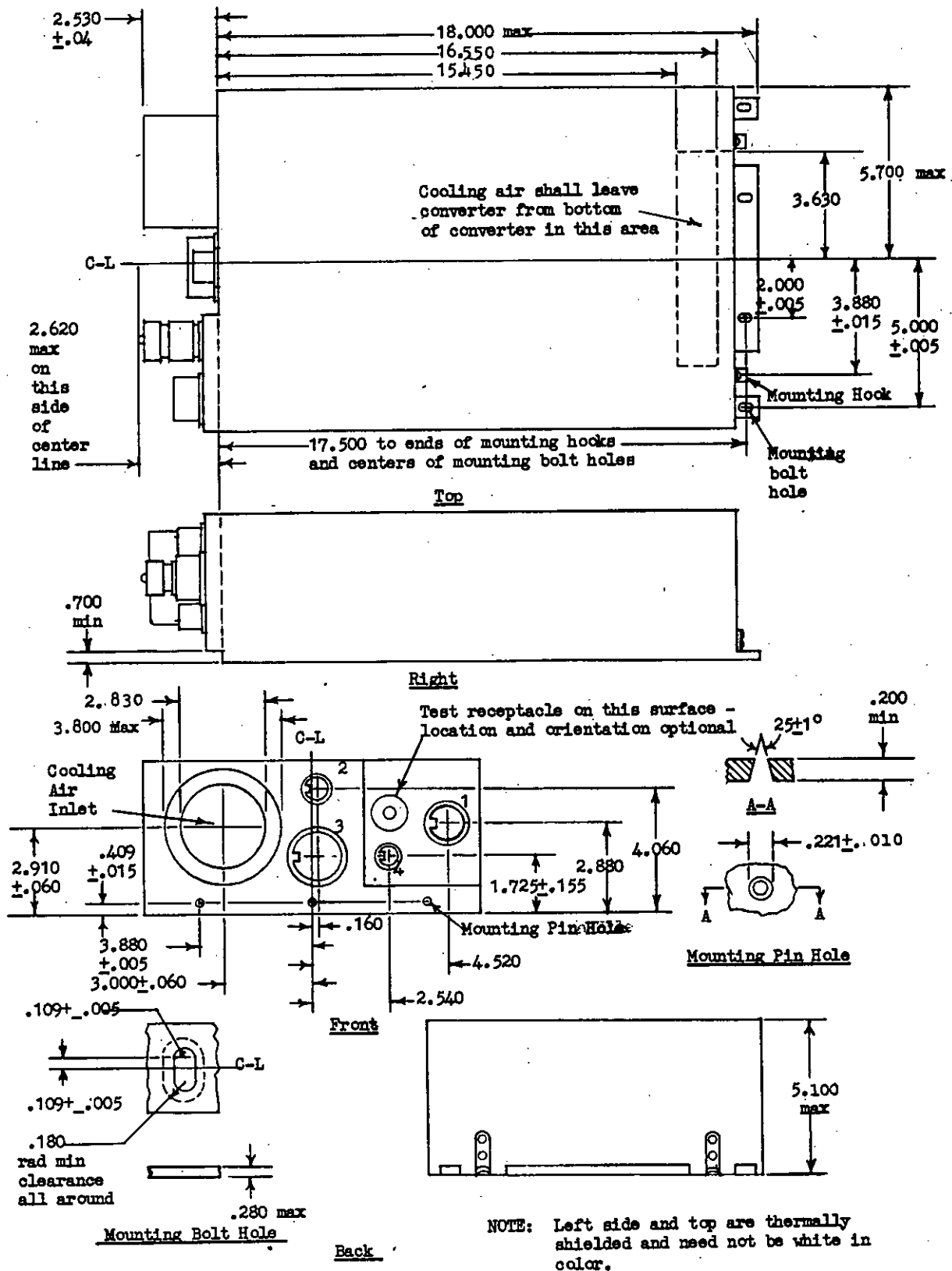


Anti-rotation pin required to interface with mounting plate (page 2). Final design subject to NAVAIR approval.



GENERATOR P/N M23001/3-2-1
Configuration "B"

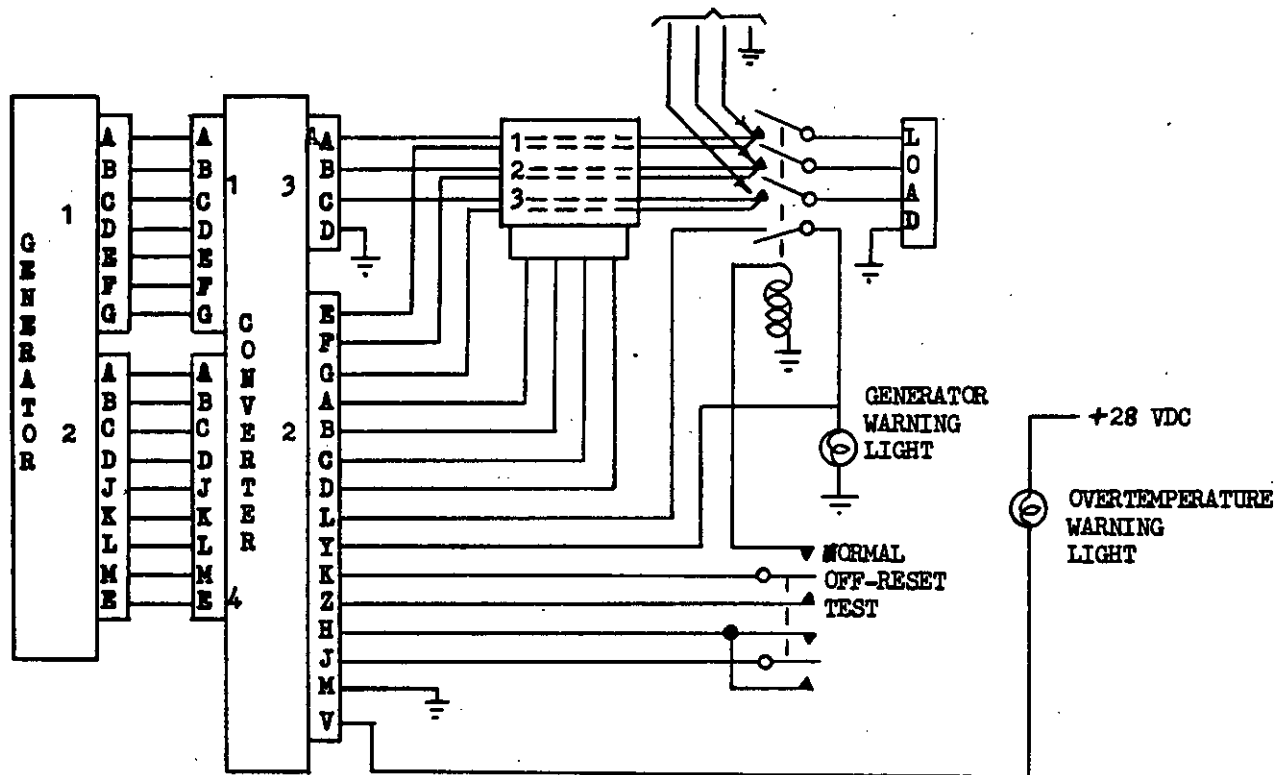
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CONVERTER P/N M23001/3-2-7

CONFIGURATION "B"

Potential, power, and volt-
amperes shall be measured here



ELECTRICAL INTERFACE DIAGRAM

CONFIGURATION "B"

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SPECIFICATION. The system shall conform to MIL-E-23001 issue in effect at the date of the invitation of bid modified as follows: (Initial numbers refer to paragraphs of the specification)

- 3.2 SYSTEM CAPACITY (Rating).** Delete: "The length, configuration, and impedance of all feeders with which these ratings must be met shall be as defined in the detailed specification or drawing."
Add: "The system shall be sized for a five (5) volt drop in each feeder at rated load between the frequency changer unit terminals and the point of regulation."
- 3.2.1 CONTINUOUS CAPACITY.** Delete and Add: The system shall be capable of delivering 20 KVA continuously at a load power factor range of 0.75 lagging to 0.95 lagging over the generator operating speed range.
- 3.2.2 OVERLOAD CAPACITY.** Delete and Add: The system shall be capable of delivering 150% rated load current, at any power factor from 0.75 lagging to 0.95 lagging over the generator operating speed range of 3600 to 11,100 RPM for five (5) minutes. It shall also be capable of delivering 200% rated load current, at any power factor from 0.75 lagging to 0.95 lagging over the generator operating speed range of 3600 to 11,100 RPM for five (5) seconds. The system shall be capable of delivering 150% overload for five (5) minutes and 200% overload for five (5) seconds based on a system rating of 15 KVA, at any power factor from 0.75 lagging to 0.95 lagging over the generator operating speed range of 3100 to 3600 RPM.
- 3.2.4 SHORT CIRCUIT CAPACITY.** Delete and Add: The system shall produce a minimum of 300 percent of rated load current on at least one phase of a single phase, two phase, or three phase line-to-line and line-to-neutral short circuit for five (5) seconds.
- 3.3.1.1 VOLTAGE REGULATION.** Delete and Add: Under all environmental conditions and speed ranges, as specified herein; the steady state line-to-neutral voltage shall remain within the limits given in Figure 1.

Transient voltages shall not exceed the ceiling voltage, and shall remain within the limits of figure 1 after the first 2.5 milliseconds of the transient except as described below. These requirements shall be met over the entire generator speed range for all balanced loads from no load to loads as defined by paragraphs 3.2.1 and 3.2.2 and for unbalanced loads within the rating of the system above 3800 RPM, where the differences in the per phase load currents do not exceed one-third of the phase current rating. For unbalanced loads and the generator below 3800 RPM the three phase voltages shall remain within the limit for 1.5 per unit loads and the difference between high and low phases shall not exceed three (3) volts. Upon removal of short circuits, the voltage shall remain within the limits of figure 1. The system voltage will not exceed 190 volts line-to-neutral. The system recovery time shall not exceed 200 milliseconds with the application of loads above 150% of rated load and with a generator RPM greater than 10,600 and voltage shall remain within steady-state limits of figure 1 thereafter.

3.3.1.2 VOLTAGE MODULATION. Delete: "3.5" and Add: "3.9 (1.2%)".

3.3.2.1 FREQUENCY REGULATION. Class (3) shall apply.

3.3.2.2 FREQUENCY MODULATION. Delete and Add: The true frequency modulation as defined in 6.2.8 and 6.2.11 shall be less than $\pm 0.6\%$ for system loads up to 1.5 per unit load.

3.3.3 WAVEFORM. Applicable except delete: "3 percent", "shall not be less than 4 percent", and "10 percent" and Add: "3.5 percent", "shall not exceed 4.5 percent", and "20 percent" respectively. Add: "Below 3600 RPM from no load to full load total extraneous frequency content shall not exceed 5.5 percent".

3.3.4 EFFICIENCY. Add: The system efficiency shall be greater than 70% at 3100 RPM, 65% at 7100 RPM, and 60% at 11,100 RPM from .75 to .95 power factor.

Delete paragraph 3.3.5 and Add: 3.3.5 PHASE DISPLACEMENT. The phase angle between any two phases shall not exceed $120^{\circ} \pm 1.50^{\circ}$ with balanced loads and $120^{\circ} \pm 3^{\circ}$ with unbalanced loads. This requirement applies to all loads up to rated loads as defined by Paragraph 3.3.1.1 except that with a generator speed above 10,300 RPM and with unbalanced loads the angle shall not exceed $120^{\circ} \pm 4^{\circ}$.

3.3.6 PARALLEL OPERATION. Delete.

3.3.8 INTEGRAL CONTROL POWER. Add: The system shall provide external control power having the following characteristics: minimum volts DC 18, maximum volts DC 30; ripple, 2 volts peak to peak, maximum; Rated Load 40 to 700 ohms, continuous capacity.

3.3.9 RADIO NOISE. Delete "class number ID" and Add: "Class IIIB".

3.3.10 ACOUSTICAL NOISE. Delete.

3.4.1.1 ACCEPTABLE DESIGN. Applicable except Add: Liquid cooled generators for purposes of maintenance and servicing shall provide: a fluid level indicator, for the replenishment of cooling liquid, replacement indicator of filter element, and replacement of filter element (disposable type). Locations are optional but shall be located such that they are readily accessible with generator properly mounted in A-4M aircraft. Final design shall be subject to approval by NAVAIR (AIR-5364).

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3.4.1.2.1 TEMPERATURE AND ALTITUDE. Delete and Add: Cooling fluid when used shall conform to MIL-L-23699.

(1) Generator Package - Cooling air shall be supplied to the generator within the temperature ranges of figure 8 from 0 to 50,000 feet attitude. During the 100 hour Flight Service Evaluation Test (4.5.22) the generator will receive air direct from existing blast air ducting on the aircraft with no modification to the aircraft ducting other than that shown herein. During laboratory tests required by this specification blast air will be delivered to the generator shall have a differential pressure across the generator package of 4 inches of water minimum.

(2) Converter - The air flow and temperature for cooling shall be as indicated in figure 9 during laboratory tests. During the 100 hour Flight Service Evaluation Test (4.5.22) the converter will receive air direct from blast air ducting on the aircraft (A-4M as modified by ECP-A4-PN51 for VSCF). A fan shall be included in the converter for cooling during ground operation (Altitude: Sea Level to 5000 feet. Air inlet temperature: -40°C to 50°C continuously, 50°C to 60°C 30 minutes, 60°C to 70°C 15 minutes). An inlet duct to simulate the duct on the aircraft shall be used when demonstrating compliance with the cooling requirements of this specification. The compartment ambient temperature shall not exceed 125°C or be lower than -55°C .

Both configurations under this specification shall be capable of starting in ambient temperature down to -40°C and operating continuously down to -55°C . The starting and operational requirements of this paragraph shall apply to all test requirements of Section 4 of this specification.

3.4.1.13 Delete and Add: SLIDE WIRE DEVICES. Slide wire devices using clamp or set screw type contacts shall not be used.

3.4.1.14 LIFE. Delete "5000" and "10,000"; and Add: "700" and "1500" respectively.

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3.4.1.11 THREADED PARTS. Add: All elements externally screwed into the generator package (screws, bolts, caps, filters, fittings, etc.) are to be screwed into a solid steel member and are to be secured from "backing-out" by safety wire. Coiled members are not to be used. Cadmium plated screws are not to be used. Minimum bolt size is $\frac{1}{4}$ " in areas high stress (i.e. gearbox - generator housing interface, generator-pump housing interface).

3.4.1.16 OPERATING POSITION. Delete and Add: The generator shall be capable of operating according to the requirements of this specification when exposed to the following conditions for the intervals specified. The current transformer may be mounted in any position. The converter shall meet the requirements of this specification operated in the following defined standard position and shall operate satisfactorily within the flight envelope of the A-4M aircraft. The standard position is such that the right side (as shown on page 13 of MIL-E-23001/3D of the converter is down. Standard position of generator shall be with axis of generator shaft horizontal to aircraft fore-to-aft center line and anti-torque pin vertical.

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- 3.4.1.16.1 CRUISE. Continuous operation mounted with the anti-drive end high and the axis of rotation at 6-1/2 degrees from horizontal.
- 3.4.1.16.2 STABILITY CONTROL. Continuous operation mounted with axis of rotation horizontal and generator package rotated about the axis of rotation up to 20 degrees in either direction.
- 3.4.1.16.3 TURN/DIVE. 60 seconds mounted with the anti-drive end low and the axis of rotation inclined up to 90 degrees from horizontal with up to 10 degrees rotation of drive-generator package about the axis of rotation in either direction.
- 3.4.1.16.4 TURN/CLIMB. 5 minutes with the anti-drive end high and the axis of rotation inclined up to 45 degrees from horizontal with up to 10 degrees rotation of the generator package about the axis of rotation in either direction.
- 3.4.1.16.5 ZOOM. 60 seconds mounted with the anti-drive end high and the axis of rotation inclined up to 90 degrees from horizontal with up to 10 degrees rotation of the generator package about the axis of rotation in either direction.
- 3.4.1.16.6 45-seconds under a zero "G" acceleration load.
- 3.4.1.16.7 30-seconds under a negative one "G" acceleration load.
- 3.4.1.19 PROVISIONS FOR MAINTAINABILITY. Delete and Add: Built in test capability and provisions for test points shall be in accordance with Specification AR-10 Paragraph 3.5.2 and 3.5.4.
- 3.4.1.19.1 COMPATIBILITY WITH VAST. Delete.
- 3.4.2.3 OVERSPEED. Delete: "110 percent of the maximum rated input speed" and Add: "12,100 RPM".
- 3.4.2.7 INPUT SHAFT DISCONNECT. Add to last sentence: "under any operating condition."
- 3.4.2.9 EFFECTS OF FLUIDS. Add: "JP-5 fuel".
- 3.4.3.1.2 UNDERVOLTAGE. Delete "100" and Add: "90".
- 3.4.3.1.3 UNDER FREQUENCY. Delete: "0.5", "1.0", and "385" and Add: "0.1", "0.5", and "380" respectively. At temperature below -40°, the dropout limit shall be 375 Hz.

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3.4.3.1.4 OVER FREQUENCY. Delete: "0.5", "1.0", and "415"; Add: "0.1", "0.5", and "420" respectively.

3.4.3.1.5 FEEDER FAULT. Delete and Add: When the differential rms current in a fault exceeds 45 percent of the respective rated feeder current in Zone 1 and 35 percent of rated feeder current in Zone 2.

Zone 1 - From the generator neutral within the generator to the high frequency current transformers on the high frequency feeders within the converter.

Zone 2 - From the low frequency feeder current transformer within the converter to the current transformer assembly located near the main line contactor on the converter side of the contactor.

3.4.3.1.6 EXTRANEIOUS FREQUENCY CONTENT. Delete: "5" and "6"; Add: "3.5" and "5" respectively.

3.4.3.1.7 SYMMETRICAL COMPONENT VOLTAGE CONTENT. Delete "5" and "6"; Add: "3.5" and "5" respectively.

3.4.3.1.8 GENERATOR UNDERSPEED. Add: Above -25°C the system shall come on-line when the generator input pad exceeds 3100 RPM. Between -25°C and -40°C the system shall come on-line at 3200 RPM. After initial pickup the system shall remain energized at pad speed of 3100 RPM over the entire temperature range.

3.4.3.1.9 DIRECT CURRENT VOLTAGE CONTENT. Delete and Add: When the D.C. content on any phase exceeds figure 7 of this specification, Maximum continuous D.C. content 0.1 volts D.C,

Add: 3.4.3.4 BURN-IN. As required by 4.5.23.

Add: 3.4.3.5 EFFECTS OF FLUIDS. Paragraph 3.4.2.9 applicable to blast cooled system components.

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Add: 3.5.1.4 CASTINGS. Castings shall be classified and inspected to design requirements in accordance with MIL-C-6021. All castings containing reinforced threaded holes shall be classified Class 1B, Grade A in areas within three radii of the hole centerline for the depth of the hole.

4.2.1.1.1 QUALIFICATION TEST SAMPLE. Delete "Sample No. 1" in two places and substitute "Sample No. 1 and No. 2".

4.2.3 QUALIFICATION VERIFICATION OF PRODUCTION SYSTEMS. Delete "150", and "151"; Add: "50" and "51" respectively.

4.2.6 DISASSEMBLY AND INSPECTION. Delete and Add: At the conclusion of the qualification tests, the components shall be disassembled. Fastener removal torques shall be measured and recorded. Components shall be inspected for cracks, dimensional stability, wear and evidence of overheating. All components shall be examined using florescent penetrant.

Add: 4.2.7 TEST COMPLETION. Satisfactory completion of the tests require that the components be operating satisfactorily at the end of the tests and that disassembly and inspection as specified in 4.2.6 reveal no cracks, wear or corrosion or dimensionally non-conforming parts.

4.5.4 LOAD TRANSIENTS. Delete: Paragraph b.

4.5.5 VOLTAGE AND FREQUENCY REGULATION. Delete the fourth sentence and Add: The phase displacement shall meet the requirements of paragraph 3.3.5. The torque shall be measured to determine conformance to Paragraph 3.3.7.

4.5.10.2 POWER FACTOR. Delete: "Unity" and Add: "0.95".

4.5.14 Applicable except delete: "2000" and Add: "700". The entire endurance test shall be run at sea level and room ambient with cooling as specified herein. The system shall be shut down for a minimum of four hours between cycles.

4.5.16.1.1 GENERATOR. Delete and Add: The generator shall meet the requirements of 4.5.16.1.2 as modified by this specification. (generator air adapter not required during vibration test).

4.5.16.1.2 CONTROL COMPONENTS. Applicable except delete "10 G" and Add: "5 G".

4.5.16.2 ACCEPTANCE TEST. Applicable except delete "10G" and Add: "5G". Add: Each system component of the first system shall be vibrated along the X-axis; each system component of the second system, along the Y-axis; each system component of the third system, along the Z-axis; of the fourth system along the X-axis; and etc.

4.5.18 SALT SPRAY. Add: Any component utilizing blast air specifically ducted from exterior of aircraft to provide cooling shall be required to meet the requirements of paragraph 4.5.18.2 or 4.5.18.2.1.

4.5.18.2c Delete: "16.66" and Add: "8.33".

Add: 4.5.18.2.1 BLAST COOLED CONVERTERS. Blast cooled converters shall be required to meet the requirements of paragraph 4.5.18.2.c with the following exceptions (all tests conducted at no load):

a. 8.33 milliliters per minute of synthetic sea water shall be introduced with the cooling air for the first 2 hours of each cycle.

b. Flushing for 10 minutes with 760 milliliters of water will not be required. The contractor shall specify, at his option, flush of unit with fresh water after each four (4) hour cycle with the converter non operational.

4.5.19 SAND AND DUST. The high velocity shall be $2,300 \pm 500$ feet per minute.

4.5.22 FLIGHT SERVICE EVALUATION. In the first sentence, change "two systems" to "one system".

Add the following paragraph:

4.5.23 BURN-IN. A 80 hour burn-in shall be performed on each system as follows: The converter portion of the system shall be burned-in in conformance with the cycle of Figure 2 of MIL-STD-781B where: -

A = 4 Hours (The system shall not be operated during 2 of 4 cycles)

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B = 4 Hours

C = 4 Hours (The system shall not be operated during 2 of the 4 cycles)

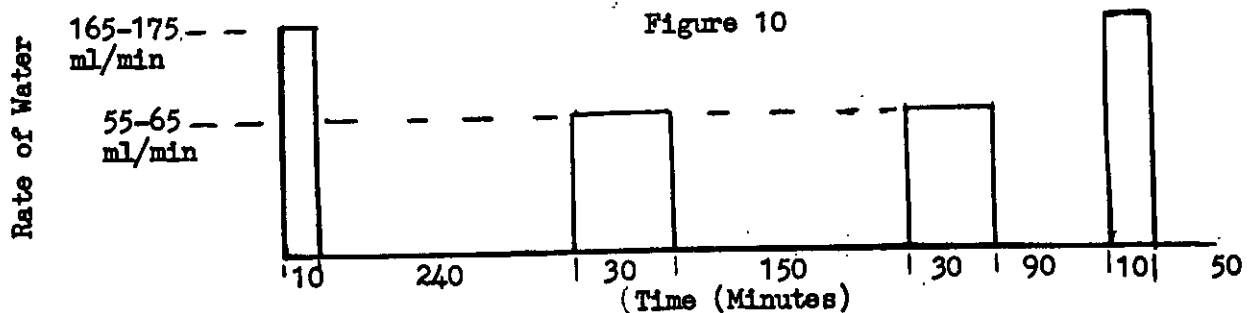
D = 4 Hours

High Temperature is 71°C.

Low Temperature is 55°C.

The equipment shall be vibrated in accordance with Paragraph 5.3.2 of MIL-STD-781B. Five cycles of the above shall be performed.

Add: 4.5.24 WATER INGESTION. Blast cooled converters shall be required to meet the requirements of 4.5.5.1.b following the water ingestion test. The converter shall be required to complete a minimum of 10 consecutive hours with the generator speed maintained at 9100 RPM and converter operating at no load. The flow of blast air shall be between 5-20 lb/min. Water ingestion shall be as shown in figure 10 below:



Add: 4.5.25 FLUID FOAMING. After the generator package has been run for 3 hours at a fluid temperature of 300°F (Input RPM: 1 hour at 3100; 1 hour at 11,100; 1 hour at 10,500). A sample of oil shall be examined for foaming in accordance with ASTM Standard test method D892. The foaming tendency and foam stability shall not exceed the following limits:

<u>Temperature</u>	<u>Foam at End of 5 Minutes Aeration</u>	<u>Foam Volume after a 1 Minute Period</u>
75°F(24°C)	25 milliliters (ml)	None
200°F(98°C)	25 ml	None
75°F(after the 200°F test)	25 ml	None

Complete foam collapse is adjudged to be that point at which no more than a single row of bubbles remain around the cylinder wall and the air inlet tube. If this ring of bubbles around the cylinder wall contains segments having two or more layers of bubbles and the difference in height of the foam in the ring is not greater than 10 ml., complete foam collapse is adjudged to be that point at which a break occurs in the ring of bubbles without subsequent reforming of the ring.

The three hour run at 300°F may be repeated until the above foaming test is successfully completed.

6.2.15 GENERATOR OR GENERATOR PACKAGE. Consists of all components integral with the generator excluding generator mounting plate with generator mounting clamp and generator air adapter.

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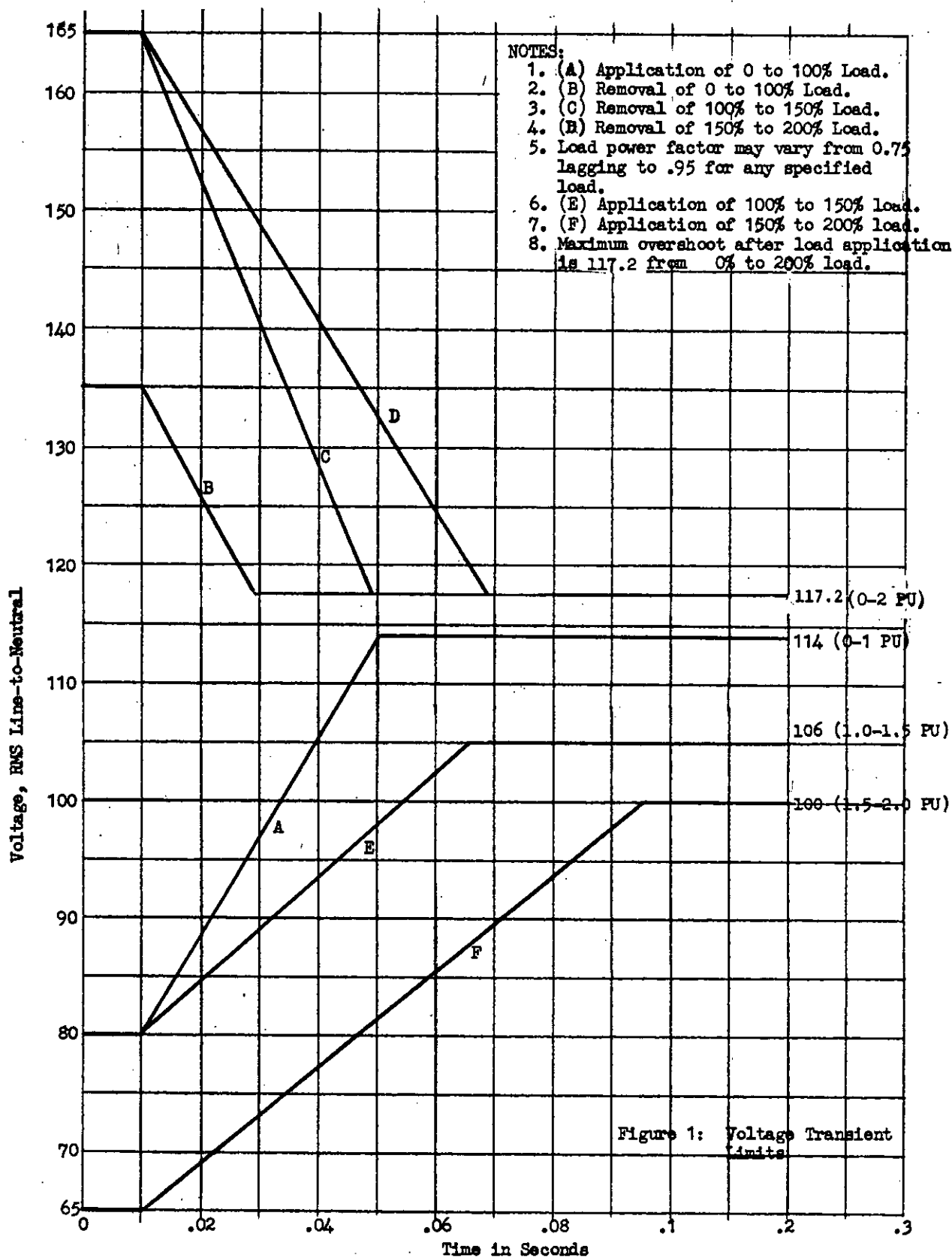
Delete Table I Test Programs on Page 32 and Add:

TABLE 1 TEST PROGRAMS. Replace with the following new Table 1.TABLE 1 - TEST PROGRAMS

Test	Paragraph No.	Acceptance Test	Qualification Tests		
			Test System No. 1	Test System No. 2	Test Systems No. 3
Examination of Product	4.5.1.1		X	X	
	4.5.1.2	X			
Dielectric Strength	4.5.2.1		X	X	
	4.5.2.2	X			
Heating and Overload	4.5.3		X		
	4.5.4		X		
Load Transients	4.5.5		X		
	4.5.5.1a(1), b(1), c(1)	X			
Voltage and Frequency Regulation	4.5.6			X	
	4.5.7		X		
Radio Interference	4.5.8		X		
	4.5.9		X		
Efficiency	4.5.9.1 (only)	X			
	4.5.11.1	X	X		
Heat Rejection	4.5.11.2.1		X		
	4.5.11.2.2	X			
Voltage Modulation Frequency	4.5.13	X	X		
	4.5.14	X		X	
Modulation and Wave Form	4.5.15		X		
	4.5.16.1		X(3)		
Operation of Manual Control	4.5.16.2				
	4.5.18	X	X(1)		X(1)
Protective Devices	4.5.23				
	4.5.24	X	X(2)		X(2)
Overspeed	4.5.25	X(4)			
Performance and Endurance					
Shock					
Vibration					
Salt Spray					
Flight Service Evaluation					
Burn-In					
Water Ingestion					
Fluid Foaming					

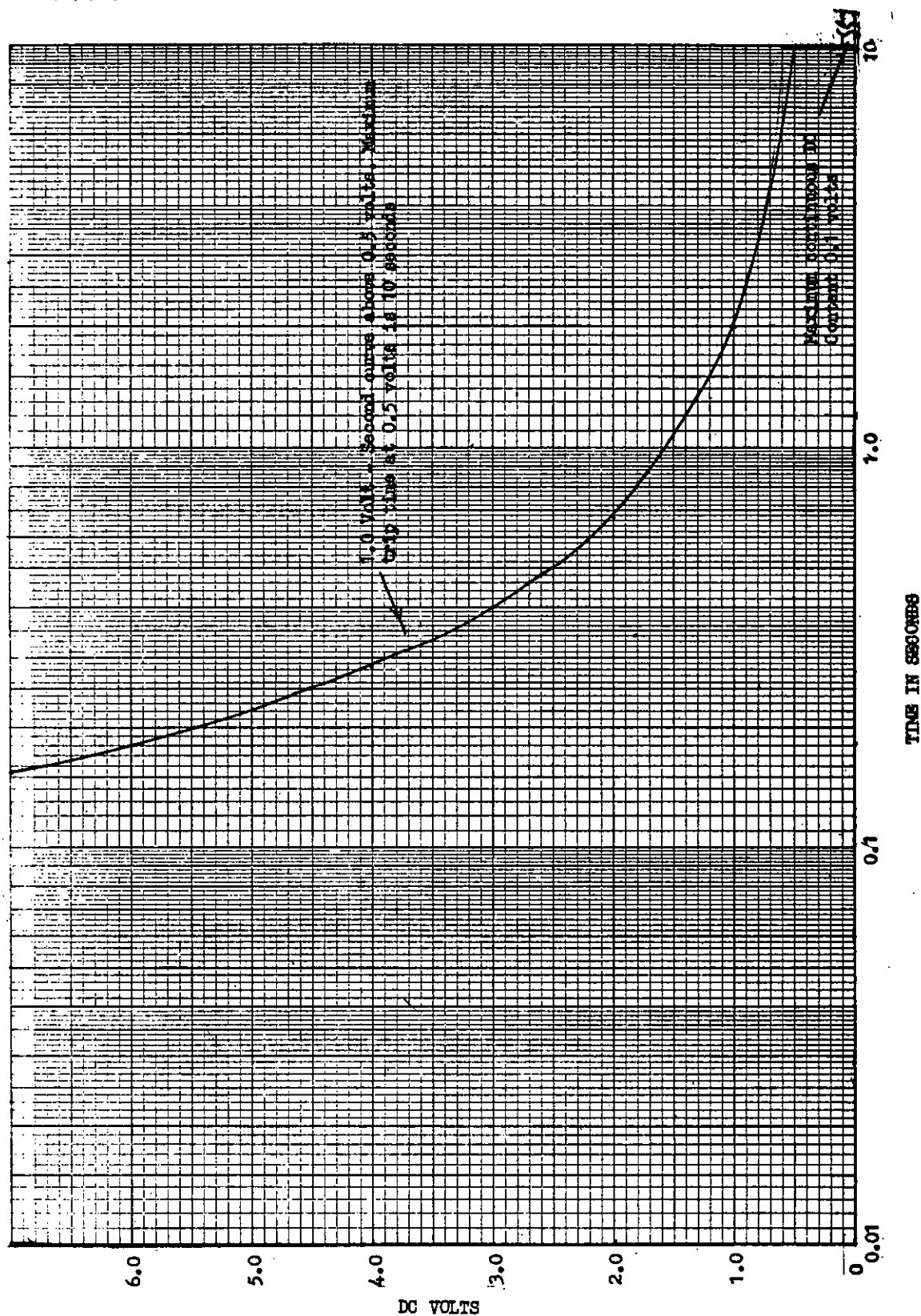
Notes: (1) Salt spray may be conducted on system numbers 1 or 3.
 (2) Must be conducted on the same system which undergoes the testing of 4.5.18 salt spray.
 (3) Generator Air Adapter not required for generator vibration.
 (4) Required on all liquid cooled generator packages.

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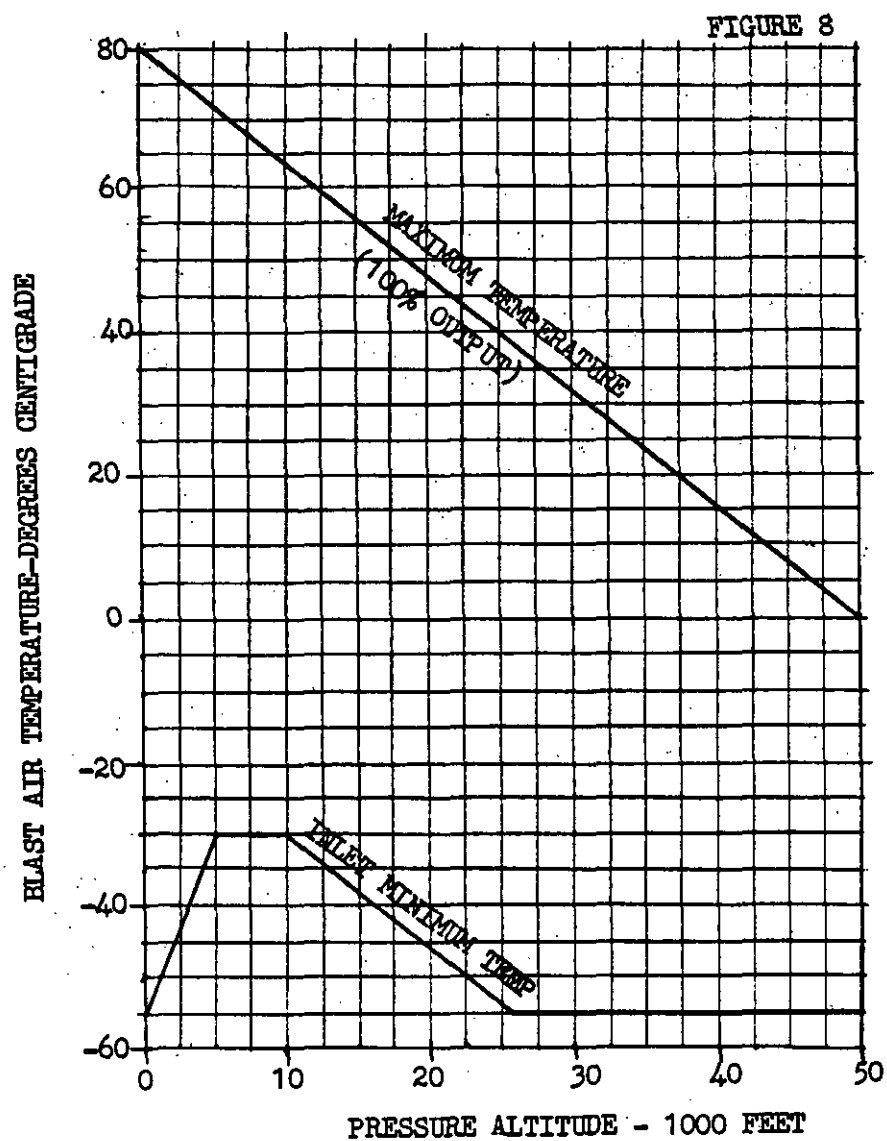
Delete Figure 1: Voltage Transient Limits and
 Add: Figure 1: Voltage Transient Limits of this specification.

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Delete: Figure 7: D.C. VOLTAGE CONTENT PROTECTION; and Add: Figure 7 - DC Voltage Content Protection (of this specification).

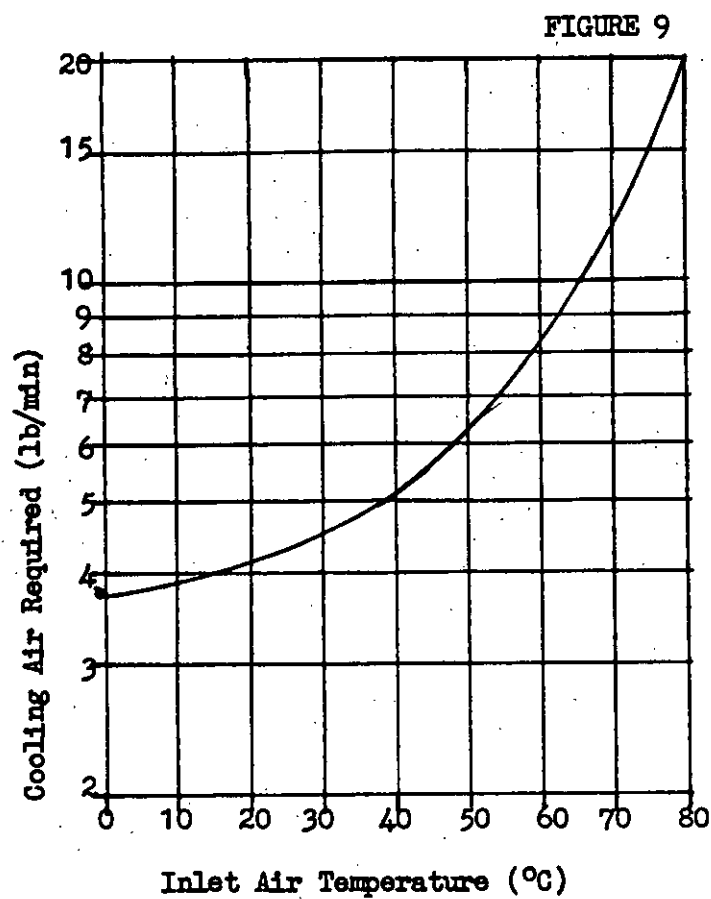
MIL-23001/3D (AS)



PRESSURE ALTITUDE IS MEASURED AT EQUIPMENT EXIT.

AIR TEMPERATURE IS MEASURED AT EQUIPMENT INLET.

MIL-E-23001/3D(AS)



COOLING AIR REQUIREMENT VS INLET AIR TEMPERATURE

Project No 6115-N363

