

GENERATORS - 12 VOLT

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Revised

1. PURPOSE: To specify minimum requirements for 12 volt generators to be used on aircraft engines.

2. SCOPE: This specification covers engine driven generators.

3. GENERAL REQUIREMENTS:

3.1 Materials and Workmanship:

3.1.1 Materials: Materials shall be of a quality which experience and/or tests have demonstrated to be suitable and dependable for use in generators of the automotive type.

3.1.2 Workmanship: Workmanship shall be consistent with high grade automotive electrical equipment manufacturing practice.

3.2 Identification: The following information shall be legibly and permanently marked on the unit or attached thereto:

- (a) SAE Specification AS 214.
- (b) Voltage.
- (c) Manufacturer's Part Number.
- (d) Manufacturer's Serial Number or Date of Manufacture.
- (e) Manufacturer's Name and/or Trade Mark.

3.3 Environmental Conditions:

3.3.1 Temperature: The unit shall function and not be adversely affected by operating in an ambient temperature of -20 F to +140 F. Tests must be run to determine amount of ventilation required to prevent overheating.

3.3.2 Humidity: The unit shall operate and not be adversely affected when exposed to a relative humidity up to and including 95% at a temperature of approximately 90 F.

3.3.3 Altitude: The unit shall operate and not be adversely affected when subjected to a pressure range equivalent to -1000 feet to +15000 feet standard altitude.

3.3.4 Vibration: The unit shall function and not be adversely affected by vibration of the engine. This shall be determined by a type test on the engine.

4. DETAIL REQUIREMENTS:

4.1 Mounting: Mounting shall be as specified by the engine manufacturer.

4.2 Ventilation: Where tests indicate that the maximum permissible operating temperature will be exceeded, provisions shall be made for a blast tube or fan to provide ventilation.

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5. TEST CONDITIONS:

- 5.1 Room Temperature: Room temperature shall be considered for purposes of these specifications as approximately 75 F (24 C).
- 5.2 Voltage: All tests shall be made using the SAE standard voltage curve shown on page 62 of 1946 SAE Handbook.

6. PERFORMANCE:

- 6.1 Output: The output of the unit shall meet the performance curve of the manufacturer.
- 6.2 Field Resistance: The resistance of the field shall be sufficiently high to limit the field current to a value which can be handled by the type of generator control unit to be used.
- 6.3 Dielectric: The unit shall be subjected to a dielectric test of 500 volts at 60 cycles applied between the terminals and ground. The grounded brush shall be insulated from the commutator for this test.
7. QUALIFICATION TESTS: As many units as necessary to demonstrate that all units will comply with requirements of this section shall be subjected to the following additional tests.
- 7.1 Heat Run: The generator shall be driven at rated speed with full rated output of the generator. (Rated speed shall be the speed at which generator is driven at cruising RPM of the engine.) Using recommended ventilation, the temperature of the commutator shall not exceed 260 F (127 C).
- 7.2 Vibration: The unit must be capable of withstanding a type test of 100 hours on the engine without failure or damage.
- 7.3 Humidity: The unit shall be operated under the conditions specified in 3.3.2 for 10 hours without being adversely affected.

