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Superseding AS404B

Electric Tachometer: Magnetic Drag (Indicator & Generator)

FOREWORD

Changes in this Revision are format/editorial only.

1. SCOPE:

This Aeronautical Standard covers magnetic drag tachometers with or without built-in synchrosopes.

1.1 Purpose:

To specify minimum requirements for Electric Tachometers primarily for use in reciprocating engine powered civil transport aircraft, the operation of which may subject the instruments to the environmental conditions specified in Section 3.3.

2. REFERENCES:

NACA Report 1235

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 aircraft instruments.

3.1.2 Workmanship: Workmanship shall be consistent with high-grade aircraft instrument manufacturing practice.

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3.2 Identification:

The following information shall be legibly and permanently marked on the instrument or attached thereto:

- a. Name of Instrument
- b. SAE AS404C
- c. Manufacturer's Part Number.
- d. Manufacturer's Serial number or date of manufacture.
- e. Manufacturer's name and/or trade mark.
- f. Range.

3.3 Environmental Conditions:

The following conditions have been established as minimum design requirements. Tests shall be conducted as specified in Sections 5, 6 and 7.

- 3.3.1 Temperature: When installed in accordance with the instrument manufacturer's instructions, the instrument shall function over the range of ambient temperatures shown in Column A below and shall not be adversely affected by exposure to the range of temperatures shown in Column B below:

TABLE 1

<u>Instrument Location</u>	<u>A</u>	<u>B</u>
Powerplant Accessory Compartment	-30 to 70 °C	-65 to 100 °C
Heated Areas (temperature controlled)	-30 to 50 °C	-65 to 70 °C

- 3.3.2 Humidity: The instrument shall function and shall not be adversely affected when exposed to any relative humidity in the range from 0 to 95% at a temperature of approximately 32 °C.

- 3.3.3 Vibration: When installed in accordance with the instrument manufacturer's instructions, the instrument shall function and shall not be adversely affected when subjected to vibrations of the following characteristics:

TABLE 2

<u>Inst. Location in Airframe</u>	<u>Cycles Per Second</u>	<u>Maximum Double Amplitude (Inches)</u>	<u>Maximum Acceleration</u>
Power Plant Mounted	5-150	.100	20 g
Fuselage	5-500	.036	5 g
Panel or Rack (Vibration Isolated)	5-50	.020	1.5 g

- 3.3.4 Altitude: The instrument shall function and shall not be adversely affected when subjected to a pressure and temperature range equivalent to -1000 to 40,000 feet standard altitude, per NACA Report 1235, except as limited by the application of paragraph 3.3.1. The instrument shall not be adversely affected following exposure to an ambient pressure of 50 in Hg absolute.

3.4 Radio Interference:

The instrument shall not be the source of objectionable interference, under operating conditions at any frequencies used on aircraft either by radiation or feed-back, in electronic equipment installed in the same aircraft as the instrument.

3.5 Magnetic Effect:

The magnetic effect of the indicator shall not adversely affect the operation of other instruments installed in the same aircraft.

4. DETAIL REQUIREMENTS:

4.1 Indicator:

- 4.1.1 Indication: Engine speed shall be indicated by means of one or more moving pointers or dials. Relative movement of the pointer with respect to the dial shall be clockwise for increasing RPM.
- 4.1.2 Dial Visibility: The pointers and all dial markings shall be visible from any point within the frustum of a cone whose side makes an angle of not less than 30° with the perpendicular to the dial and whose small diameter is the aperture of the instrument case. The distance between the dial and the cover glass shall be a practical minimum and shall not exceed 0.200 inch.