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COMPASS, MAGNETIC, NON-STABILIZED TYPE
(FOR TURBINE-POWERED, SUBSONIC AIRCRAFT)

FOREWORD

Changes in the revision are format/editorial only.

1. SCOPE:

This SAE Aerospace Standard (AS) covers a direct reading magnetic compass.

1.1 Purpose:

This document establishes the essential minimum safe-performance standards for non-stabilized magnetic direction instruments, primarily for use with turbine-powered, subsonic, transport aircraft that may subject the instruments to the environmental conditions specified in paragraph 3.3.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and 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.

2.1 NTIS Publications:

Available from NTIS, Springfield, VA 22161.

NACA Report 1235

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SAE AS443 Revision A

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.

3.2 Identification:

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

- a. Name of instrument
- b. SAE AS443A
- c. Manufacturer's part number
- d. Manufacturer's serial number or date of manufacture
- e. Manufacturer's name and/or trademark

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 temperature shown in Column A below and shall not be affected adversely by exposure to the range of temperature shown in Column B below.

TABLE 1

Instrument Location	A	B
Pressurized areas	-30 to 70 °C	-65 to 70 °C

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- 3.3.2 Altitude: When installed in accordance with the instrument manufacturer's instructions, the instruments shall function from sea level conditions up to the altitudes and temperatures listed below. (Altitude pressure values are per NACA Report 1235.) The instrument shall not be affected adversely following exposure to extremes in ambient pressure of 50 to 3 inches Hg absolute, respectively:

TABLE 2

Instrument Location	Altitude	Temperature
Pressurized areas	15,000 feet	50 °C

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

TABLE 3

Instrument Location	Frequency (cps)	Maximum Double Amplitude (inches)	Maximum Acceleration (g)
Instrument Panel	5-30	0.020	-
	30-1000		0.25

- 3.3.4 Humidity: The instrument shall function and shall not be affected adversely by exposure to any relative humidity in the 0 to 95% range at a temperature of approximately 70 °C.

4. DETAIL REQUIREMENTS:

4.1 Display Marking:

- 4.1.1 Finish: Unless specified otherwise by the user, matte white material shall be applied to all graduations, numerals, and indicating means. Non-functional surfaces and markings shall be durable dull black.
- 4.1.2 Indicating Method: The method of indication shall employ a horizontal compass card with fixed lubber's line. Graduations move to the right for right turns.
- 4.1.3 Graduations: The instrument shall be provided with graduations at intervals not to exceed 5 degrees, with major graduations every 10 degrees and with numerical markings at intervals not greater than 30 degrees. The 0, 90, 180, and 270-degree cardinal headings may be marked N, E, S, and W, respectively; or in numerical marking the last digit (0) may be omitted.