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AEROSPACE RECOMMENDED PRACTICE

ARP 489A

LEADS, SHIELDED, HIGH TENSION, DETACHABLE SPARK PLUG

Issued 3-15-56
Revised 6-1-62

1. SCOPE AND CLASSIFICATION

1.1 Scope: This specification establishes the requirements for shielded, detachable high tension spark plug leads for reciprocating engines.

1.2 Classification: The leads shall be of the following grades for use in the stipulated temperature range:

Grade - A 250 to -35F

Grade - B 450 to -65F

2. APPLICABLE DOCUMENTS

The following documents are applicable to the extent stated herein:

AS 293 Spark Plug - Spring Contact for High Voltage

ARP 457 Ferrule - High Altitude Spark Plug Lead

MIL-C-3702 Cable, Power, Electrical-Ignition, High Tension

MIL-E-25111(ASG) Engines, Aircraft, Reciprocating, Qualification Tests for

MIL-I-6181B Interference Limits, Tests and Design Requirements, Aircraft, Electrical and Electronic Equipment

MS 33586(ASG) Metals, Definition of Dissimilar

3. REQUIREMENTS:

3.1 Materials: Materials shall be of the best quality and of the lightest practicable weight suitable for the purpose intended.

3.1.1 Metals: All metals used in the shielded detachable leads shall be of a corrosion resistant type or shall be suitably protected to resist corrosion during normal service life. These metals shall be adequate for the temperatures encountered for the particular classification.

3.1.1.1 Dissimilar Metals: Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other. Dissimilar metals are defined in Drawing MS 33586.

3.1.2 Non-Metallic Materials: All Non-Metallic Materials used in the shielded detachable leads shall be oil, gasoline, age, and weather resistant and must be adequate for the temperatures encountered for the particular classification.

3.1.3 Protective Covering: The flexible metal shielding of the detachable leads may be provided with a suitable oil, gasoline, age and weather resistant covering. The covering must provide adequate protection against chafing and abrasion and must withstand the temperature requirements of the applicable grade without adverse affects or restriction of the lead performance.

Section 3.1 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report, in formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

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- 3.1.4 Cable: Cables shall conform to the specific grade of MIL-C-3702 as required by the applicable lead classification.
- 3.1.5 Miscellaneous Insulation: All insulating materials other than cable shall be adequate for the particular lead classification.
- 3.2 Design: The detachable leads shall provide satisfactory radio interference suppression per MIL-I-6181 and mechanical protection to the enclosed cable.
- 3.2.1 Construction: The detachable leads shall be constructed of flexible braided conduit or other suitable construction, meeting the requirements of the specification. The soldered, brazed, crimped, swaged, or other type joints shall be suitable for the particular grade of lead specified.
- 3.2.2 Terminal Connectors: The leads shall be constructed with Ferrules, High Altitude Spark Plug Lead, in accordance with ARP 457 unless otherwise specified.
- 3.2.3 Terminals: Terminals, sleeves, springs, and eyelets shall conform to the requirements of Drawing AS 293 and the particular grade classification, unless otherwise specified.
- 3.3 Marking: Each ignition lead shall be durable and legibly marked at a convenient location or on a metal tag permanently secured to the assembly. Information to be incorporated shall include the manufacturer's name and part number. In addition, Grade A leads shall show manufacturing cable date code.
- 3.4 Workmanship: All details of workmanship shall be in accordance with high grade practice suitable for aircraft ignition components.
- 3.5 Performance: Leads shall satisfy the requirements specified in Section 4.
4. INSPECTION AND QUALIFICATION TESTS:
- 4.1 Test Classifications: The inspection and testing of shielded detachable spark plug leads shall be classified as follows:
- 4.1.1 Qualification Tests: Qualification tests are those tests accomplished on samples submitted for qualification as a satisfactory product.
- 4.1.2 Inspection Tests: Inspection tests are those tests accomplished on detachable leads manufactured and submitted towards fulfillment of a contract or purchase order.