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SURFACE VEHICLE STANDARD

SAE J1294

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Superseded by J1294 APR80

IGNITION DISTRIBUTORS—MARINE

***Foreword*—**This Document has not changed other than to put it into the new SAE Technical Standards Board Format. This included adding References as Section 2 and changing Definitions to Section 3.

***1. Scope*—**This SAE Recommended Practice covers distributors used on marine engines.

1.1 Purpose—To provide recommendations and guidelines for the evaluation, design, and testing of distributors to be used on marine engines.

2. References

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J378c—Marine Engine Wiring
SAE J548c—Spark Plugs
SAE J557 JAN68—High Tension Ignition Cable
SAE J1128 NOV75—Low Tension Primary Cable
SAE J1171 SEP77—External Ignition Protection of Marine Electrical Devices
SAE J1191 JUN78—High Tension Ignition Cable Assemblies—Marine

2.1.2 FEDERAL PUBLICATION—Available from the Superintendent of Documents, U. S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

U.S. Coast Guard Standard 33 CFR 183, Subpart I, Section 183.410 (Ignition Protection)

3. Definitions

3.1 External Ignition Protection (EIP)—The ability to prevent the ignition of a combustible mixture surrounding the distributor when a combustible mixture within the distributor is ignited.

3.2 Wire—The combination of a conductor surrounded by insulation.

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4. ***General—***The three elements required to create a fire or explosion are often present in marine engine compartments. They are: an enclosure, a fuel, and a source of ignition. Compliance with this document will minimize the possibility of a distributor used on a marine engine acting as a source of ignition and assure conformance to the U.S. Coast Guard Standard 33 CFR 183, Subpart 1, Section 183.410 (Ignition Protection).

5. ***Distributor Enclosure***

5.1 The distributor shall meet the requirements of SAE Recommended Practice J1171 (September, 1977), External Ignition Protection of Marine Electrical Devices. Openings for the purpose of draining, ventilating, timing, and vacuum advancing must be carefully evaluated and tested to determine their ability to quench an internal combustion of propane and air. Removable covers, plugs, plates, etc., should be avoided due to the possibility of their becoming dislodged, lost, or discarded. Gaskets may be used if secured to one of the mating surfaces.

5.2 The fit of distributor cap to bowl and distributor bowl drain holes must be carefully evaluated. A drain at the bottom of the bowl is recommended. A safe drain configuration will depend on the size and length of the flame path through the drain. Smaller openings and longer flame paths provide the greatest assurance of EIP.

5.3 Flame suppressor screening can provide ventilation without loss of EIP. The screened area, the screen mesh, and the number of layers of screening can be varied to provide a safe ventilation method. Screening shall be securely held in place and of corrosion resistant composition such as brass or stainless steel. If the distributor housing is painted or otherwise coated, the function of the screening must not be impaired.

5.4 Timing adjustment openings are not recommended.

5.5 If used, vacuum advance mechanisms shall be enclosed and tightly fitted or gasketed to the distributor housing.

6. ***Insulation and Wire Size***

6.1 The available voltage which exists at a distributor is fully capable of igniting a mixture of gasoline and air. The voltage must be contained within the insulation system of the distributor towers, wires, and nipples.

6.2 Tower nipples and secondary cable insulation must meet the requirements of SAE J1191 (June, 1978) and SAE J557 (January, 1968). Distributor cap material must meet the tests described in the Appendix.

6.3 All single exposed low voltage leads 180 mm (7 in) or longer in length must be SAE No. 16 gauge minimum, multiple wires enclosed in a sheath of loom may be 18 gauge. Those under 180 mm (7 in) must be SAE No. 18 gauge minimum. All exposed low voltage leads must meet SAE J378c (June, 1978) and SAE J1128 (November 1975).

7. ***Tower Connections***

7.1 Terminal connections and nipples which are initially secure have the greatest potential of remaining in place during service.

7.2 See Figures 1 and 2 for tower configurations. Tower cable terminations and nipples shall be in accordance with SAE J1191 (June, 1978). A locking tower terminal configuration is required. Tower connections must be of nonferrous material. Nipples must be designed so that they do not touch the cap at base of tower before seating.

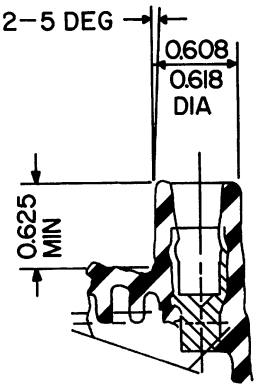

FIGURE 1—TYPICAL TOWER CONFIGURATION

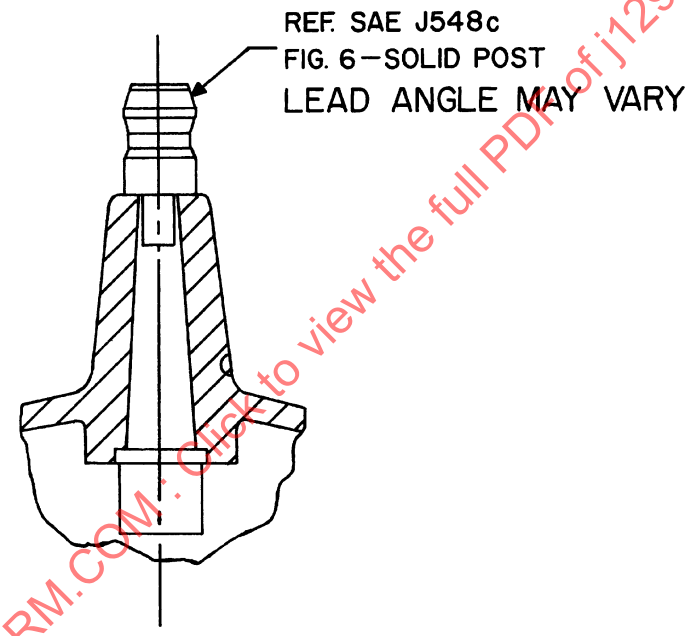

FIGURE 2—TYPICAL TOWER CONFIGURATION

7.3 New tower connections must meet a minimum of 26.7 N (6 lb) pull-off force along the tower axis when installed without nipples.

8. Notes

8.1 **Marginal Indicia—**The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE MARINE ELECTRICAL SYSTEMS SUBCOMMITTEE OF THE
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APPENDIX A

A.1 Distributor Cap Tests

A.1.1 Arc Resistance Test

A.1.1.1 The high voltage test source shall be arranged approximately as shown in Figure A1. The cap shall be set up as shown in Figure A2. Average secondary spark current should be 1.5 mA ± 0.1 mA.

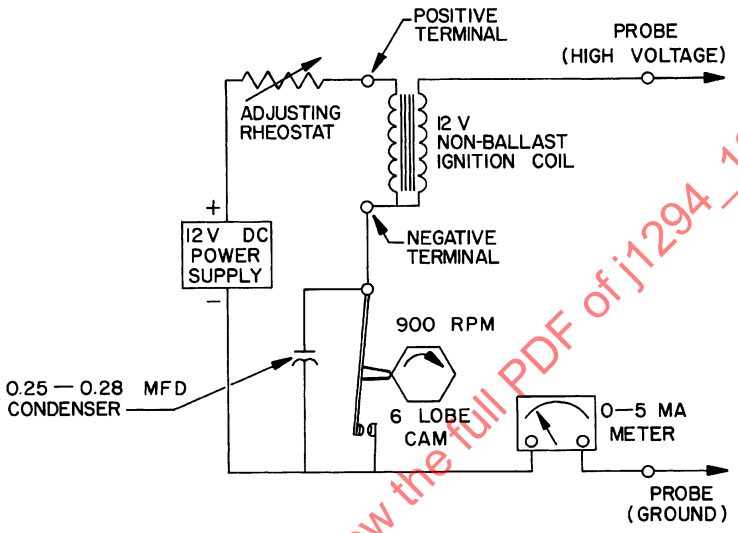

FIGURE A1—HIGH VOLTAGE SOURCE

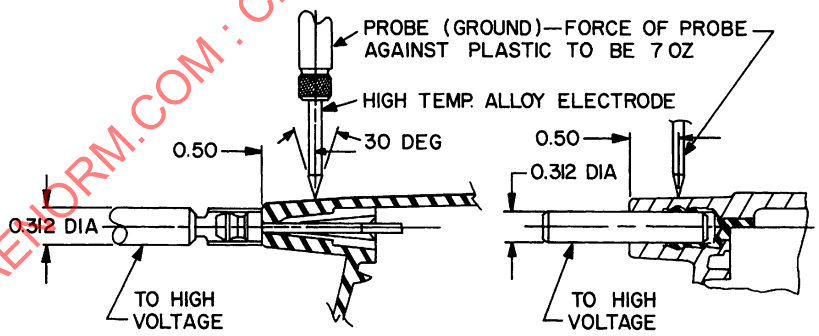

FIGURE A2—