

SURFACE VEHICLE RECOMMENDED PRACTICE

J1171™

SEP2016

Issued 1977-09
Revised 1982-08
Reaffirmed 2016-09

Superseding J1171 MAR2011

External Ignition Protection of Marine Electrical Devices

RATIONALE

J1171 has been reaffirmed to comply with the SAE five year review policy.

1. **Scope**—This SAE Recommended Practice covers all electrical devices suitable for use in marine engine compartments and fuel tank spaces.
- 1.1 **Purpose**—To recommend a test procedure for certifying the External Ignition Protection of electrical devices used on boats.
2. **References**—There are no referenced publications specified herein.
3. **General**—A device shall not produce combustion by excessive external surface temperature or by an internally generated arc. Reproducible test procedures are necessary to ensure that neither condition can cause external ignition when the particular electrical device is being operated.

In the first case, which involves excessive external surface temperatures, a test procedure includes operation for a minimum time at a higher-than-rated system voltage (or current) level with a limiting external surface temperature value. This should assure that such a device is acceptable for use in an engine compartment or fuel tank space. This test procedure is detailed in Section 4.

In the second case, which involves devices containing parts capable of arcing, two test approaches are necessary since such devices may be either sealed or non-sealed. Those that are sealed are External Ignition Protected by the fact that a combustible mixture cannot enter the void in which the arc occurs. Therefore, the test of sealed devices is a test of the seal integrity. This test is detailed in Section 5.

Non-sealed devices are External Ignition Protected when tests demonstrate that ignition of a combustible mixture within the device does not cause ignition of a combustible mixture surrounding the device. This will be verified by 50 device explosions with the flammability of the mixture within the enclosing chamber being checked by a chamber explosion after each 10 device explosions as detailed in Section 6.

The test sequence for any device is:

- a. Section 4—Device Operation
- b. Section 5—Sealed Devices
- c. Section 6—Non-Sealed Devices

This is to ensure that any deficiency introduced in the device by the Operation Test Procedure, such as seal deterioration, etc., can be detected in the following tests.

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Table of Contents Sae J1171 Marine Manual

1. Understanding the eBook Sae J1171 Marine Manual
 - The Rise of Digital Reading Sae J1171 Marine Manual
 - Advantages of eBooks Over Traditional Books
2. Identifying Sae J1171 Marine Manual
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Sae J1171 Marine Manual
 - User-Friendly Interface
4. Exploring eBook Recommendations from Sae J1171 Marine Manual
 - Personalized Recommendations
 - Sae J1171 Marine Manual User Reviews and Ratings
 - Sae J1171 Marine Manual and Bestseller Lists

5. Accessing Sae J1171 Marine Manual Free and Paid eBooks
 - Sae J1171 Marine Manual Public Domain eBooks
 - Sae J1171 Marine Manual eBook Subscription Services
 - Sae J1171 Marine Manual Budget-Friendly Options
6. Navigating Sae J1171 Marine Manual eBook Formats
 - ePub, PDF, MOBI, and More
 - Sae J1171 Marine Manual Compatibility with Devices
 - Sae J1171 Marine Manual Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Sae J1171 Marine Manual
 - Highlighting and Note-Taking Sae J1171 Marine Manual
 - Interactive Elements Sae J1171 Marine Manual
8. Staying Engaged with Sae J1171 Marine Manual
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Sae J1171 Marine Manual
9. Balancing eBooks and Physical Books Sae J1171 Marine Manual
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Sae J1171 Marine Manual
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Sae J1171 Marine Manual
 - Setting Reading Goals Sae J1171 Marine Manual
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Sae J1171 Marine Manual
 - Fact-Checking eBook Content of Sae J1171 Marine Manual
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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