

	SURFACE VEHICLE RECOMMENDED PRACTICE	SAE	J2005 APR2011
		Issued 1991-12 Reaffirmed 2011-04	
		Superseding J2005 JUL2004	
Stationary Sound Level Measurement Procedure for Recreational Motorboats			

RATIONALE

SAE J2005 has been reaffirmed to comply with the SAE 5-Year Review policy.

1. Scope—This SAE Recommended Practice establishes the procedure for determining if recreational motorboats have effective exhaust muffling means when operating in the stationary mode. It is intended as a guide toward standard practice and is subject to change to keep pace with experience and technical advances.

1.1 Purpose—This document specifies guidelines for stationary sound level measurements for boats with above-water exhaust systems.

2. References

2.1 Applicable Publication—The following publications form a part of this specification to the extent specified herein.

2.1.1 ANSI PUBLICATION—Available from the American National Standards Institute, Inc., 25 West 43rd Street, New York, NY 10036-8002.

ANSI S1.4—Specifications for Sound Level Meters

2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J34—Exterior Sound Level Measurement Procedure for Pleasure Motorboats

2.2.2 ANSI PUBLICATIONS—Available from the American National Standards Institute, Inc., 25 West 43rd Street, New York, NY 10036-8002.

ANSI S1.1—Acoustical Terminology

ANSI S1.13—Methods for the Measurement of Sound Pressure Levels

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2011 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
 Tel: +1 724-776-4970 (outside USA)
 Fax: 724-776-0790
 Email: CustomerService@sae.org
 SAE WEB ADDRESS: <http://www.sae.org>

<p>SAE values your input. To provide feedback on this Technical Report, please visit http://www.sae.org/technical/standards/J2005_201104</p>
--

3. **Instrumentation**—The following instrumentation shall be used for the measurement required:
 - 3.1 A sound level meter which meets ANSI Standard S1.4 Type 1 or Type 2 Specification for Sound Level Meters.
 - 3.2 A microphone windscreen that does not affect the overall reading by more than ± 0.5 dB(A).
 - 3.3 A sound level calibrator. (See 5.3.)
4. **Procedure**
 - 4.1 **Measurement Site**—A suitable site is a body of water free of large obstructions or reflective surfaces such as buildings, boats other than those involved in this procedure, large embankments or breakwaters, etc. for a minimum distance of 3 m (10 ft) from the boat being measured. The boat being tested shall either be moored to a dock or lashed to another boat (See Figure 1). If the measurement is made from a dock, care should be taken to minimize the effect of sound waves reflected from the dock. If the measurement is made in open water, the boat being evaluated shall be lashed to the measurement boat to prevent relative motion and to allow positioning of the microphone in the prescribed location. The measurement boat shall be positioned to minimize reflected sound.

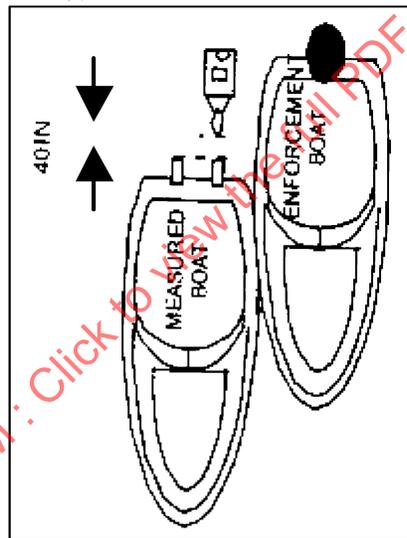


FIGURE 1—TYPICAL BOAT POSITION

- 4.2 **Boat Operation**—The engine shall be operated at low idle speed within the engine manufacturer's recommended operating range, in neutral gear if so equipped. For motorboats without a neutral gear, the engine shall be operated at its lowest operational speed. The engine shall be operated for a sufficient amount of time to allow water to flow through the exhaust system before taking sound level measurements. If sufficient water flow cannot be determined, the engine shall be operated for at least 60 s before proceeding with the sound level measurements.
- 4.3 **Measurements**
 - 4.3.1 The microphone shall be placed at a distance of 1.2 to 1.5 m (4 to 5 ft) above the water and no closer than 1 m (3.3 ft) from the vertical projection of any part of the boat including the swim platform (where applicable) in the area adjacent to the exhaust outlet(s).

- 4.3.2 The meter shall be set for slow response and the A-weighting network.
- 4.3.3 The observer reading the meter shall not be closer than arm's length from the microphone to minimize sound reflections.
- 4.3.4 The applicable reading shall be the average sound level measured during a period when the background sound level is at least 10 dB lower than the measured sound level. Background sound level includes wind effects, noise from boats other than the one being measured, wave action, boat wakes, and other extraneous noises. Peak readings of intermittent sound levels created by wave slaps or changes in sound level due to wave action and/or engine speed variation shall not be included in the applicable reading.
- 4.3.5 The observer shall record the applicable reading and the background sound levels taken immediately before and immediately after the applicable reading.

5. **General Requirements**

- 5.1 The measurements shall be conducted only by persons qualified by training to perform these measurements.
- 5.2 Proper use of all test instrumentation is essential to obtain valid measurements. Operating manuals or other literature furnished by the instrument manufacturer should be consulted for both recommended operation of the instrument, and precautions to be observed.
- 5.3 Proper acoustical calibration shall comprise the complete measurement system including extension cables, etc. Field calibration shall be performed immediately before and after each test sequence.
- 5.4 A measurement shall be invalid if changes in the background sound level affect the applicable reading.
- 5.5 The use of the word "shall" in the procedure is to be understood to be mandatory, while the word "should" is to be understood as advisory.

6. **Notes**

- 6.1 **Marginal Indicia**—The change bar (I) located in the left margin is for the convenience of the user in locating areas where 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 TECHNICAL COMMITTEE
REAFFIRMED BY THE SAE MARINE TECHNICAL STEERING COMMITTEE