

**A-27 ALTERNATING CURRENT (AC) GENERATOR SETS**

**Table of Contents**

27.1	PURPOSE .....	1
27.2	SCOPE .....	1
27.3	DEFINITIONS .....	1
27.4	REFERENCED ORGANIZATIONS.....	1
27.5	REQUIREMENTS – IN GENERAL .....	1
27.6	DESIGN AND CONSTRUCTION - IN GENERAL.....	1
27.7	IGNITION PROTECTION .....	2
27.8	ENCLOSURES .....	2
27.9	SOUND SHIELDS.....	3
27.10	EXTERNAL WIRING TERMINALS AND LEADS - AC (50 TO 300 v) .....	3
27.11	EXTERNAL WIRING TERMINALS AND LEADS - DC.....	4
27.12	INTERNAL GENERATOR SET WIRING.....	4
27.13	SEPARATION OF CIRCUITS.....	4
27.14	TESTS REQUIRED.....	5
27.15	FUEL SYSTEM .....	7
27.16	SHIELDS OR GUARDS.....	8
27.17	GENERATOR SET MARKING.....	8
27.18	MANUFACTURER'S INSTRUCTIONS .....	8
27.19	MARKING, SAFETY SIGNS AND LABELS.....	9
	TABLE I - ENCLOSURE FOR WIRE-TO-WIRE CONNECTION .....	10
	TABLE II - ENCLOSURES FOR RIGIDLY MOUNTED TERMINALS .....	10
	TABLE III - MINIMUM ACCEPTABLE SPACINGS AT UNINSULATED WIRING TERMINALS.....	10
	TABLE IV - MINIMUM ACCEPTABLE SPACINGS AT OTHER THAN OUTPUT WIRING TERMINALS .	10
	TABLE V - MINIMUM ACCEPTABLE SPACINGS BETWEEN ANY UNINSULATED ENERGIZED PART AND THE WALLS OF A METAL ENCLOSURE, OR OTHER ACCESSIBLE DEAD-METAL PARTS, INCLUDING FITTINGS FOR CONDUIT OR ARMORED CABLE .....	11
	TABLE VI - MAXIMUM ACCEPTABLE TEMPERATURE RISES.....	12
	TABLE VII - ENCLOSURE MARKING.....	13
	TABLE VIII - HOSE CLAMP WIDTHS.....	13
	TABLE IX - TEST LIQUIDS OF NONMETALLIC MATERIALS .....	13
	APPENDIX A - ARTICULATE PROBE WITH WEB .....	14
	APPENDIX B - FAN PROBE.....	15
	APPENDIX C.....	15

This is a preview of "A-27". [Click here to purchase the full version from the ANSI store.](#)

## **A-27 ALTERNATING CURRENT (AC) GENERATOR SETS**

*Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all alternating current (AC) generator sets and associated equipment manufactured and/or installed after July 31, 2005.*

### **27.1 PURPOSE**

This standard is a guide for the design, construction, and installation of alternating current (AC) generator sets on boats.

### **27.2 SCOPE**

This standard applies to alternating current generator sets intended for installation and operation on boats.

### **27.3 DEFINITIONS**

Accessible - Capable of being reached for inspection, removal, or maintenance without removal of permanent boat structure.

Readily accessible - Capable of being reached quickly and safely for effective use under emergency conditions without the use of tools.

### **27.4 REFERENCED ORGANIZATIONS**

ABYC - American Boat & Yacht Council, Inc., 3069 Solomon's Island Road, Edgewater, MD 21037-1416. Phone: 410-956-1050. Fax: 410-956-2737. Website: [www.abycing.org](http://www.abycing.org)

ASTM - American Society for Testing and Materials, ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Phone: 610-832-9585. Fax: 610-832-9555. Website: [www.astm.org](http://www.astm.org).

CFR - Obtain the Code of Federal Regulations and other government publications from the Superintendent of Documents, United States Government Information, POB 371954, Pittsburgh, PA 15250-7954. Phone: 202-512-1800. Fax: 202-512-2250. Website: [access.gpo.gov](http://access.gpo.gov). An excerpted edition of the CFR is available from ABYC, Website: [www.abycinc.org](http://www.abycinc.org)

IEEE - Institute of Electrical & Electronics Engineers, 3 Park Ave, New York, NY 10016-599. Phone: 212-419-7900 Fax: 212-752-4929. Website: [www.ieee.org](http://www.ieee.org)

SAE - Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096. Phone: 724-776-4841. Website: [www.sae.org](http://www.sae.org)

UL - Underwriters Laboratories, Inc., 12 Laboratory Drive, PO Box 13995, Research Triangle Park, NC 27709. Phone: 919-549-1400. Website: [www.ul.com](http://www.ul.com).

### **27.5 REQUIREMENTS – IN GENERAL**

27.5.1 Exhaust systems, and exhaust system components supplied with or on generator sets, shall meet the requirements of ABYC P-1, *Installation of Exhaust Systems for Propulsion and Auxiliary Engines*.

27.5.2 To minimize the potential for migration of carbon monoxide from machinery compartments containing gasoline engines to adjacent accommodation compartments, bulkhead and deck penetrations shall be in accordance with the requirements of ABYC H-2, *Ventilation of Boats Using Gasoline*.

27.5.3 As installed in accordance with the manufacturer's instructions, the equipment and arrangement of component parts of the generator set, shall provide easy access to those items necessary for normal maintenance, such as oil fills, filters, drains, dipsticks, and cooling water drains.

27.5.4 All exposed belt drives, chain drives, and rotating parts, as installed, shall be covered with guards, or shall be designed in such a way as to prevent injury during the normal operation of the generator set. A sound shield shall be considered as serving the purpose of this paragraph.

**NOTE: Maintenance or generator set repairing are not considered normal operation.**

27.5.5 If the generator set or its components are installed in normally occupied spaces, protective guards, jacketing, or generator set sound shields, or enclosures shall be provided wherever persons or gear might come in contact with exposed surfaces of the generator set or its components that exceed 93°C (200°F).

27.5.6 Fire ports installed in accordance with A-27.9.1 shall be readily accessible as installed in the boat.

### **27.6 DESIGN AND CONSTRUCTION - IN GENERAL**

27.6.1 Generator sets shall be designed to operate in an ambient temperature of 50°C (122° F).

27.6.2 Provision shall be made for removal of substantially all of the oil from the engine sump without spillage of oil into the bilge.

27.6.3 Means shall be provided to determine the correct oil level in the engine as installed.