



# Installation Manual

## ***TRACKERmarine Genset Series 4000 KY***

# Safety Precautions

Before operating the generator set, read this manual and become familiar with it and the equipment. **Safe and efficient operation can be achieved only if the unit is properly operated and maintained.** Many accidents are caused by failure to follow fundamental rules and precautions.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or the equipment.

**⚠ DANGER** *This symbol warns of immediate hazards which will result in severe personal injury or death.*

**⚠ WARNING** *This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.*

**⚠ CAUTION** *This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.*

Read and observe each of the following safety precautions.

## FUEL AND FUMES ARE FLAMMABLE

Fire, explosion, and personal injury can result from improper practices.

- Do not smoke or allow an open flame or spark-producing equipment near the generator set or fuel tank.
- Inspect the fuel lines and connections daily for leaks per the maintenance schedule.

## EXHAUST GASES ARE DEADLY

- Never sleep in the boat with the generator set running unless the boat is equipped with an operating carbon monoxide detector.
- Inspect the exhaust system daily for leaks per the maintenance schedule. Do not use engine cooling air to heat a compartment.
- Never operate the generator set inside a building or in an area where exhaust gases could accumulate, such as in a boat house.

## ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Disconnect the negative (-) cable at the starting battery before removing protective shields or touching electrical equipment. Use rubber insulative mats placed on dry wood platforms on the ground or over floors that are metal or concrete when around electrical equipment. Do not wear damp clothing (particularly wet shoes) or allow skin surfaces to be damp when handling electrical equipment.
- Use extreme caution when working on electrical components. High voltages can cause injury or death.
- Tag remote or open switches to avoid accidental closure or starting.

- DO NOT CONNECT GENERATOR SET DIRECTLY TO ANY BUILDING ELECTRICAL SYSTEM. Hazardous voltages can flow from the generator set into the utility line. This creates a potential for electrocution or property damage. Connect only through an approved device and after building main switch is open. Consult an electrician in regard to emergency power use.

## MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Before starting work on the generator set, disconnect negative (-) cable at the battery. This will prevent accidental arcing or starting.
- Keep your hands away from moving parts.
- Make sure that fasteners on the generator set are secure. Tighten supports and clamps, keep guards in position over fans, etc.
- Do not wear loose clothing or jewelry while working on generator sets, because they can become caught in moving parts. Jewelry can short out electrical contacts and cause shock or burning.
- If adjustment must be made while the unit is running, use extreme caution around hot manifolds, moving parts, etc.

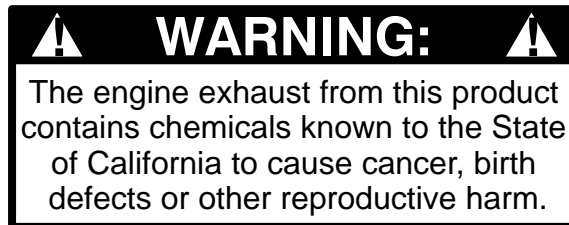
## GENERAL SAFETY PRECAUTIONS

- Wear safety glasses and protective clothing when servicing batteries. DO NOT SMOKE while servicing batteries. Lead-acid batteries emit a highly explosive hydrogen gas that can be ignited by electrical arcing or by smoking.
- Have a fire extinguisher rated ABC nearby. Maintain extinguisher properly and become familiar with its use.
- Benzene and lead, found in some gasoline, have been identified by some state and federal agencies as causing cancer or reproductive toxicity. When checking, draining or adding gasoline, take care not to ingest, breathe the fumes, or contact gasoline.
- Used engine oils have been identified by some state or federal agencies as causing cancer or reproductive toxicity. When checking or changing engine oil, take care not to ingest, breathe the fumes, or contact used oil.
- Remove all unnecessary grease and oil from the unit. Accumulated grease and oil can cause overheating and engine damage, which presents a potential fire hazard.
- Do not store anything in the generator set compartment such as oil or gas cans, oily rags, chains, wooden blocks, portable propane cylinders, etc. A fire could result or the generator set operation (cooling, noise and vibration) may be adversely affected. Keep the compartment floor clean and dry.
- Do not work on this equipment when mentally or physically fatigued, or after consuming any alcohol or drug that makes the operation of equipment unsafe.

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# Introduction

## ABOUT THIS MANUAL

This manual is a guide for the installation of the Series 4000 Model KY *Trackermarine* generator set (genset) in an enclosure on the deck of a Tracker pontoon boat. Proper installation is essential for safe, reliable and quiet operation. Read through this manual before starting the installation.

**⚠WARNING** *Improper installation can result in severe personal injury, death and equipment damage. The installer must be qualified to perform the installation of electrical and mechanical equipment.*

**⚠WARNING** *Marine gensets present hazards of asphyxiation, electrocution and fire. Because these hazards vary depending on many vessel-related factors, THIS UNIT MUST NOT BE INSTALLED ON ANY BOAT EXCEPT THOSE PONTOON BOATS SPECIFICALLY AUTHORIZED BY TRACKER MARINE.*

**⚠WARNING** *Because wind, temperature, adjacent boats or structures and other environmental factors can affect exhaust gas travel, Onan strongly recommends installing a CO detector at the same time as this genset.*

This manual addresses the following aspects of the installation:

- Location and Mounting
- Ventilation and Noise Reduction
- Exhaust Connections
- Fuel Connections
- Electrical Connections (AC power output, control and battery)
- Startup

For operation and maintenance see the Operator's Manual and for service the Service Manual.

**Note:** Manuals are updated from time-to-time to reflect changes in the equipment and its specifications. For this reason, only the copy of the installation manual supplied with the genset should be used as a guide for the installation.

## INSTALLATION CODES AND STANDARDS FOR SAFETY

The pontoon boat builder bears sole responsibility for the selection of the appropriate genset, for its proper installation and for obtaining approvals from the authorities (if any) having jurisdiction over the boat.

As of the date of the publication of this manual no specific standards are known to exist for the installation of these gensets in the type of application outlined in this manual.

It is recommended, however, that the codes and installation standards in Table 1 be obtained for reference as a guide for the application and installation of the genset.

**TABLE 1. REFERENCE CODES AND STANDARDS**

NFPA No. 70 ( <i>National Electrical Code</i> ) and No. 302 ( <i>Pleasure and Commercial Motor Craft</i> )	National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
USCG Code of Federal Regulations (CFR) Title 25, Chapter 3	U. S. Government Printing Printing Office Washington, D. C. 20404
ABYC Standards and Recommended Practices for Small Craft	American Boat and Yacht Council, Inc. P. O. Box 747 Millersville, MD 21108

## GENSET CONFIGURATION AND DIMENSIONS

See Figure 1 for an overall view of the genset. Note the locations of the components to which access will be required for operation and maintenance.

See *Outline Drawings* for the dimensions of the genset. Detailed are the exact locations of the mounting bolt holes, all connection points (fuel, battery, remote control, AC, exhaust), the sizes and types of connection fittings, the locations of the inlet and outlet air openings, the location of the oil drain valve, the location of the maintenance door and the overall dimensions. See your Onan dealer for larger scale drawings and a floor template to locate the opening cutouts.

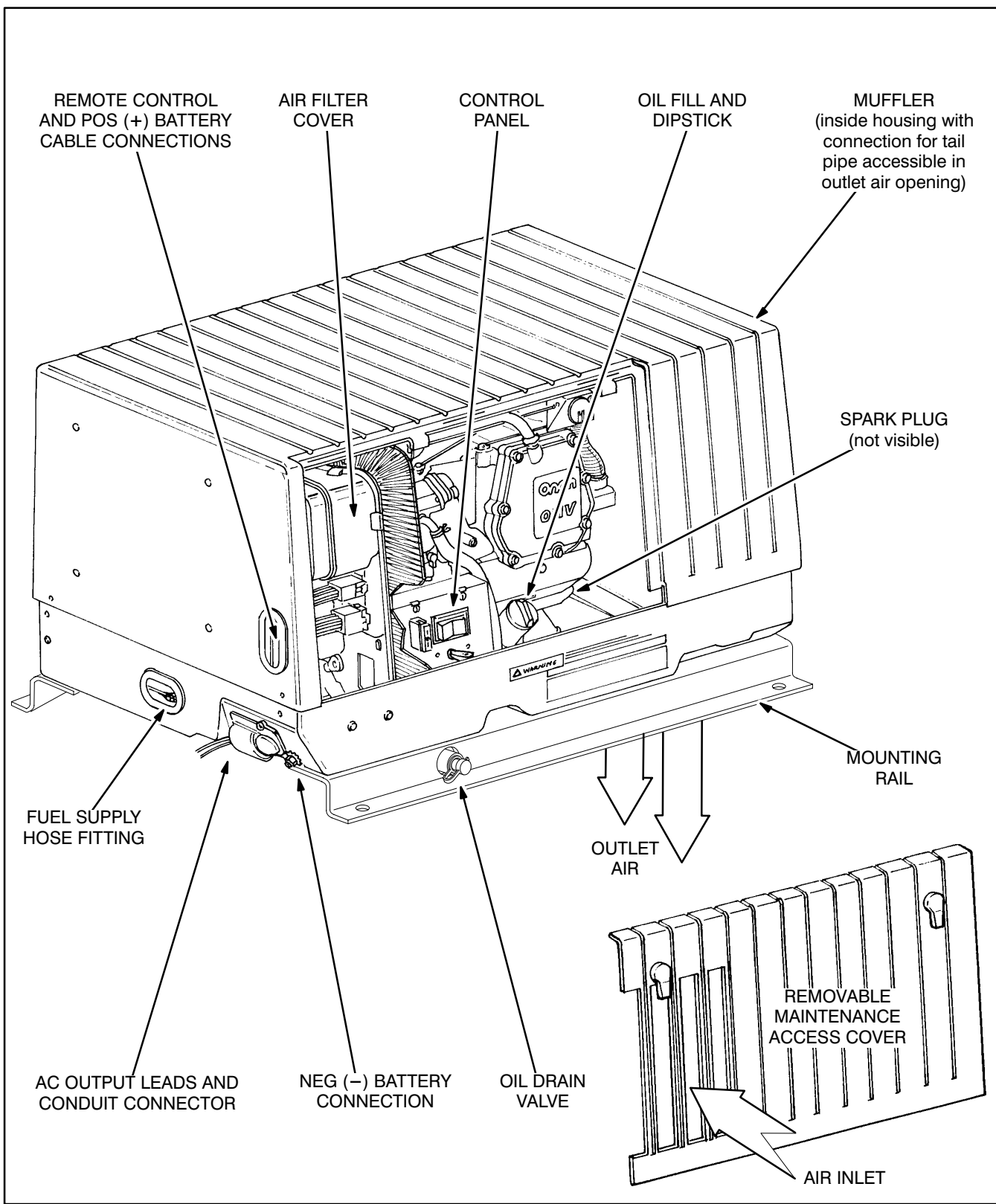


FIGURE 1. TYPICAL GENSET

# Location and Mounting

The genset must be isolated from the boat cabin much as the propulsion engine is to reduce the entrance of engine exhaust, gasoline vapors and noise. Refer to *Outline Drawings* for details concerning mounting bolt holes, overall dimensions, floor cutout dimensions, location of connectors, etc. Figure 2 illustrates a typical mounting location on a pontoon boat.

When locating and mounting the genset:

1. Support the genset on a structure able to resist the dynamic weight of the genset: cyclic forces of at least  $\pm 555$  lbs ( $\pm 3$  g-force) vertical and  $\pm 185$  lbs ( $\pm 1$  g-force) horizontal.
2. Orient the genset so that the maintenance access cover (Figure 1) is outboard.
3. Size the genset compartment such that:
  - A. There is access to the AC output, battery, remote control and fuel connections on the left side of the genset (Figure 1). At least 1 inch (25 mm) is required.
  - B. There is clearance all around. At least 1/4 inch (6 mm) is required around the sides of the genset and 1 inch (25.4 mm) at the top. If the compartment is to be lined with acoustic insulation, the clearances are to
4. Size the genset compartment access opening such that the genset maintenance access cover (Figure 1) can be removed easily and the engine oil drain valve opened and the oil drained.
5. Make sure other boat equipment or bulkheads will not obstruct the air inlet and outlet openings or interfere with operating the genset, performing routine maintenance or removing the genset for service.
6. There must be a vapor-tight, fire-resistive barrier between the genset and the interior of the boat cabin. (The equivalent of 26 gauge galvanized steel is recommended.)

the insulation. See *Ventilation and Noise Reduction*.

C. Cooling air is not restricted. At least 1-1/2 inch (38 mm) clearance is required at the front if the compartment air inlet does not line up with the air inlet in the maintenance access cover on the genset. See *Ventilation and Noise Reduction*.

**⚠ WARNING EXHAUST GAS IS DEADLY.**  
**Construct a suitable vapor barrier of approved materials between the genset and vehicle interior to keep out exhaust gas.**

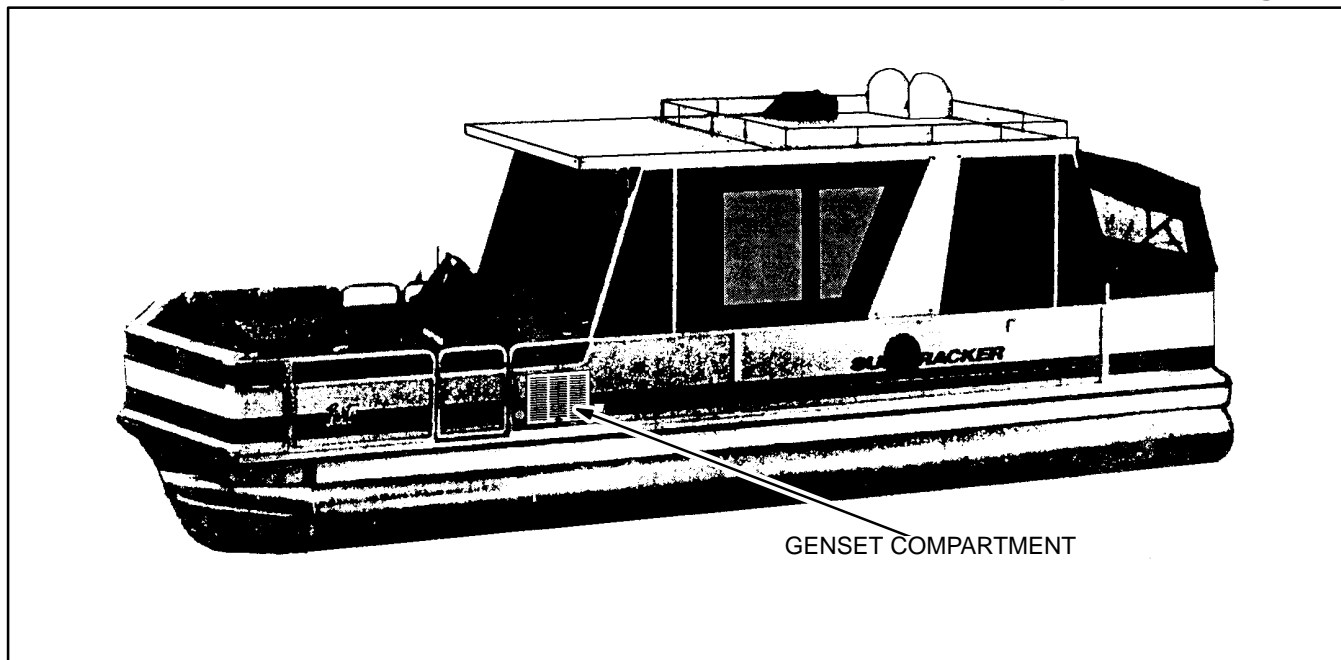


FIGURE 2. TYPICAL MOUNTING LOCATION ON THE DECK OF A PONTOON BOAT

# Ventilation and Noise Reduction

## VENTILATION

The genset cooling blower draws cooling air through the air inlet in the maintenance access cover and pushes it across the generator, engine cooling fins and muffler. The air is discharge out the bottom of the genset. See Figure 3.

The air flow to and from the genset must be free of obstructions and restrictions or the genset will tend to overheat, causing shutdowns and possible damage to the genset.

Air ducts and decorative grills restrict air flow. For example, the free-air opening of expanded metal grilles is only 60 to 90 percent of total area. A minimum free-air inlet of 40 in<sup>2</sup> (258 cm<sup>2</sup>) is required. Contact the material supplier for help in calculating grill areas that will provide the specified free-air opening.

A noise deflector on the air outlet side must be located a minimum of 6 inches (150 mm) below the genset and be open on three sides.

To ventilate gasoline fumes, Coast Guard Regulations (see *Introduction*) require 15 square inches of open area communicating directly with the outside for each cubic foot of net compartment volume, or an approved power ventilator.

**⚠️WARNING** Gasoline fumes are explosive and can cause severe personal injury or death. The genset compartment must be ventilated to prevent the accumulation of gasoline fumes. The genset compartment must also be vapor-tight to prevent gasoline fumes from entering the boat cabin.

**⚠️WARNING** EXHAUST GAS IS DEADLY! Because discharged genset cooling air can include deadly exhaust gas, never use it to heat the boat cabin.

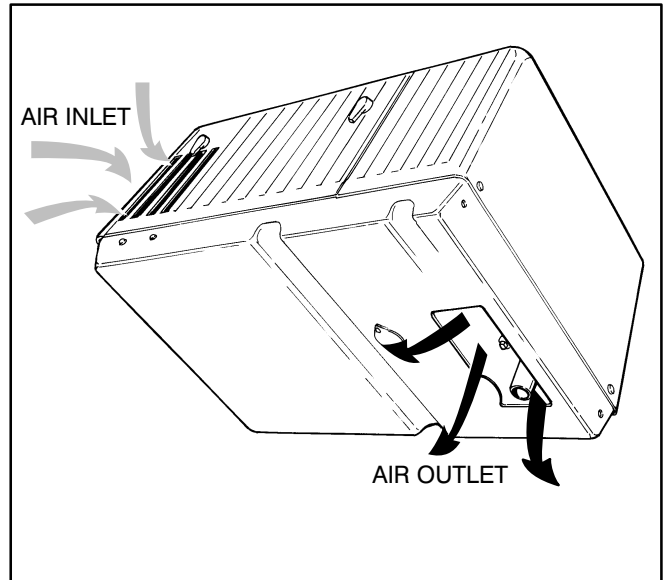


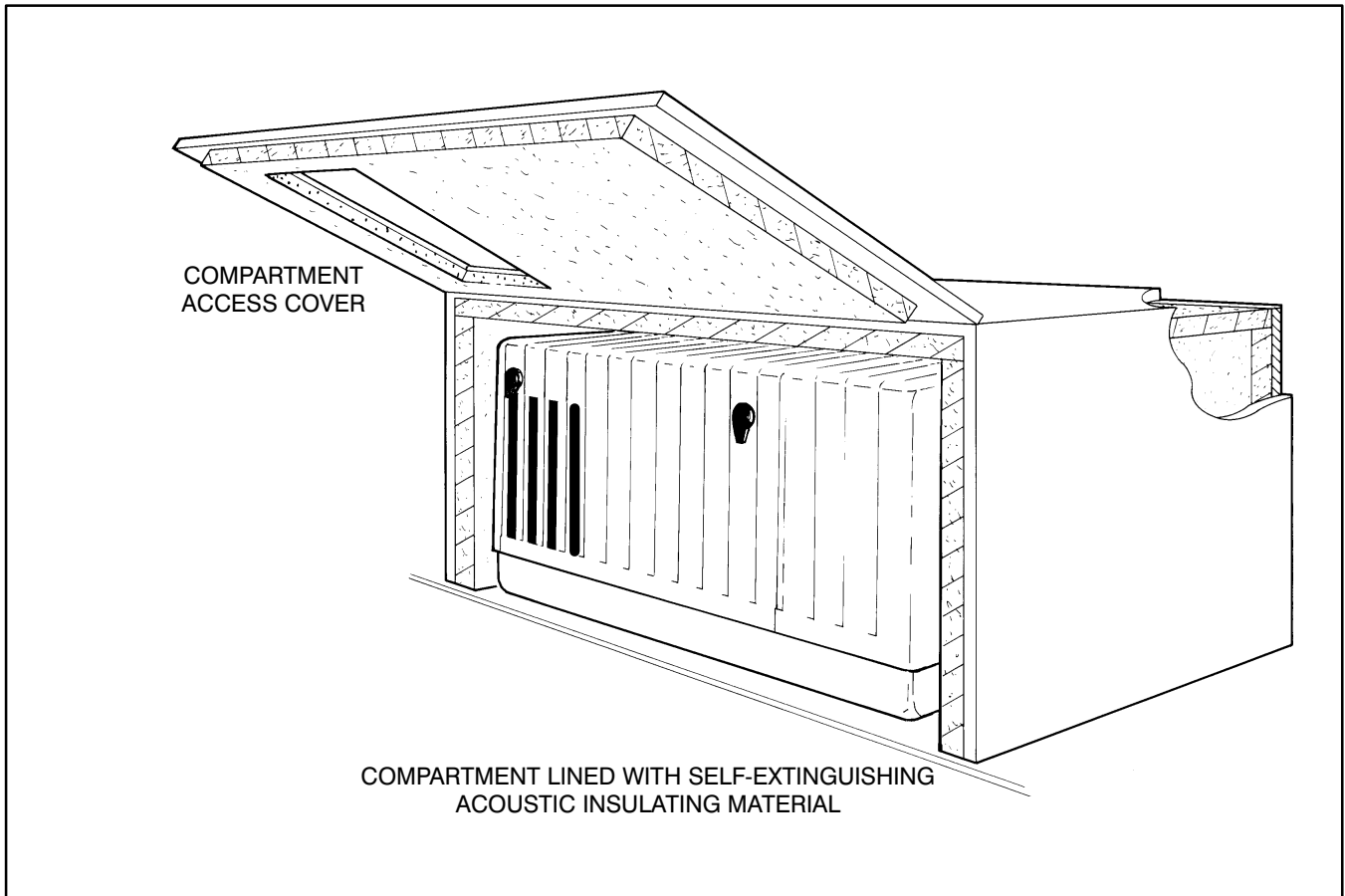
FIGURE 3. COOLING AIRFLOW THROUGH THE GENSET

## NOISE REDUCTION

The design of the genset minimizes noise. For additional noise reduction, line the top and sides of the genset compartment with 1/2 to 1 inch (13 to 25.4 mm) thick sound absorbing (acoustic) insulation. See Figure 4. The insulation and adhesive should have a "Self-Extinguishing" fire hazard classification of at least 200°F (90°C). Acoustic insulation should not be used to line the bottom of the compartment as it will absorb spilled fuel and oil.

See *Location and Mounting* regarding the required clearances to the insulation.

Noise can further be reduced by reducing the number and size of compartment openings to the minimum required for ventilation and by baffling openings to reduce line-of-sight noise. Note however that unless the air inlet openings in the compartment and genset line up exactly, the clearance at the front must be increased. See Item 3.C. under *Location and Mounting*.



**FIGURE 4. NOISE REDUCTION COMPARTMENT**



# Exhaust Connections

The exhaust system must be gas-tight and designed to limit entry of exhaust gases into the boat cabin or under the boat (between the pontoons).

**⚠ WARNING** ***EXHAUST GAS IS DEADLY! To keep exhaust gases from entering the boat do not terminate the exhaust tailpipe underneath the boat (between pontoons) or closer than specified to openings into the boat cabin. Use approved materials and parts only.***

The muffler is approved by the U.S. Forest Service and other codes as a spark-arrest muffler. (Failure to provide and maintain a spark arrester can be a violation of the law.) Liability for damage, injury and warranty expense due to the modification of the exhaust system or to the use of unapproved parts becomes the responsibility of the person performing the modification or installing the unapproved parts. Contact an Onan distributor for approved exhaust system parts.

The muffler is mounted inside the genset housing and has a tailpiece to which the customer supplied tailpipe is clamped (Figure 5). When routing and connecting the tailpipe:

1. Use 1-1/8 inch I.D., 18-gauge aluminized or other corrosion resistant steel tubing for the tailpipe. (Do not use flexible pipe. Flexible pipe is not gas tight or durable.) Clamp the tailpipe to the muffler tailpiece with an automotive-type U-bolt muffler clamp. Use automotive-type tailpipe hangers every 2 to 3 feet (0.6 to 0.9 m). Attach the hangers to metal framework, not to wood or other combustible material.

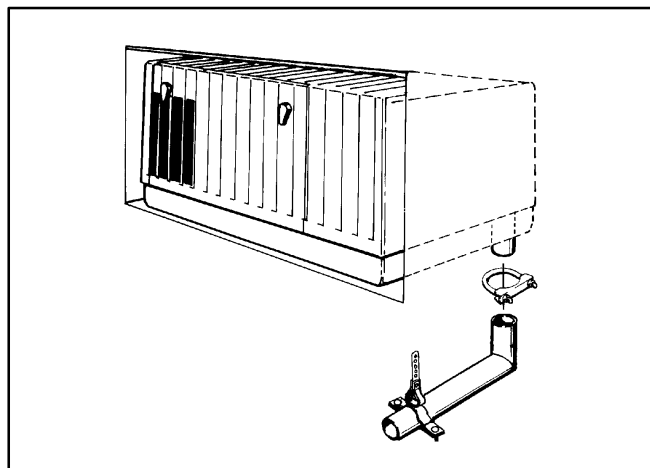
See *Outline Drawings* for the location of a 5/16-18NC threaded hole in the base of the genset for attaching a tailpipe hanger. The length of the screw used must be such that it will not extend more than 1/2 inch (12 mm) into the genset.

2. Do not terminate the tailpipe underneath the boat. Extend it a minimum of 1 inch (25 mm) beyond the perimeter of the boat (Figure 6).
3. Do not route the tailpipe such that it will interfere with draining engine oil or restrict the air outlet.
4. Do not route the tailpipe closer than 3 inches (76 mm) to combustible material (wood, felt,

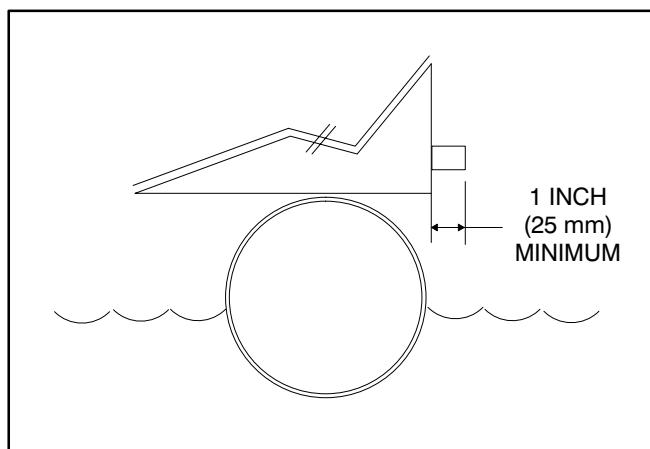
cotton, organic fibers, etc.) unless it is insulated or shielded. The temperature rise (above ambient) on adjacent combustible material must not exceed 117°F (65°C).

5. Do not route the tail pipe near fuel lines or fuel tanks.
6. Do not terminate the tailpipe such that it is closer than 6 inches (153 mm) to any opening into the boat interior (door, window, vent).
7. Make sure a tailpipe deflector will not cause excessive back pressure.

**⚠ CAUTION** ***Excessive back pressure can cause engine damage.***



**FIGURE 5. EXHAUST CONNECTIONS AT GENSET**



**FIGURE 6. TERMINATING THE EXHAUST TAILPIPE**

# Fuel Connections

**⚠ WARNING** *Gasoline is flammable and can cause severe personal injury or death. Do not smoke or allow any flame, spark, pilot light, arc-producing equipment or other ignition sources around fuel or fuel components, or in areas sharing ventilation. Keep a type ABC fire extinguisher nearby.*

Either use a separate fuel pickup tube for the genset or a separate fuel tank. Do not connect the genset fuel line to the propulsion engine fuel line. Follow the boat manufacturer's instructions when making connections to the main fuel tank.

**⚠ CAUTION** *Either or both engines could starve for fuel if the genset and propulsion engine fuel lines are interconnected. Always use separate fuel lines or a separate fuel tank for the genset.*

To prevent the genset from running the boat out of fuel, do not extend the genset fuel pickup tube down into the fuel tank as far as the pickup tube for the propulsion engine.

The fuel supply tank filler cap should relieve pressure at not more than 1-1/2 psi to prevent flooding the genset engine with fuel.

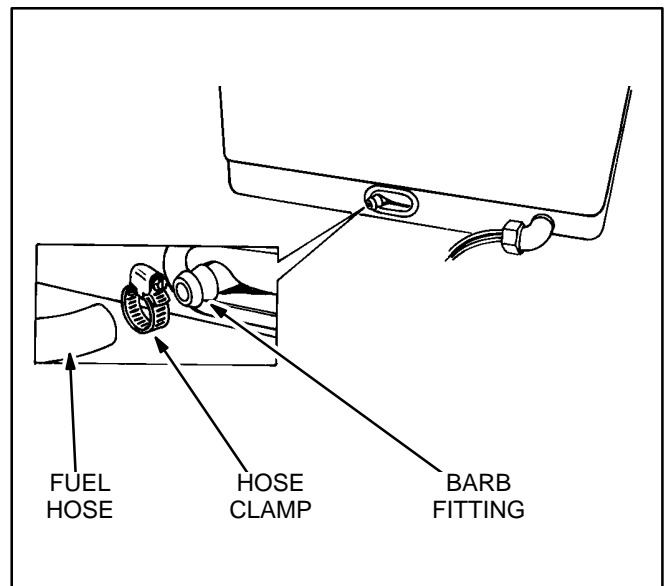
**⚠ WARNING** *Flooding the genset engine with fuel can lead to fire aboard the boat. Fuel supply line pressure must not exceed 1-1/2 psi under any condition.*

For long runs, copper or hot dip coated seamless steel tubing (ASTM A-254) with double-flared fit-

tings should be used. See Figure 7 for the connection at the genset. Use 1/4 inch I. D. fuel hose (SAE 30-R7) and a stainless steel hose clamp.

Run the fuel line at or above the top of the fuel tank to reduce the risk of siphoning fuel out of the tank if the line should break. The maximum fuel pump lift is 36 inches (914 mm).

Route fuel lines away from electrical wiring and hot engine exhaust components. Fuel lines should be accessible for inspection and replacement, protected from damage and secured to prevent kinking, contact with sharp edges and chafing due to vibration.



**FIGURE 7. FUEL CONNECTION AT THE GENSET**

# Electrical Connections

Do not connect the battery cables to the battery until so instructed in *Installation Review and Startup* to prevent accidental starting of the genset during installation.

**⚠WARNING** *Accidental starting of the genset can cause severe personal injury or death. Do not connect the starting battery until so instructed in Installation Review and Startup.*

## AC POWER OUTPUT

For AC power output connections the genset is equipped with 75 inch (1.9 m) long leads which exit through a 1/2 inch trade size conduit connector (Figure 8). The line circuit breakers are on the control panel. See Figure 9 for typical connections.

### Wiring Methods

The National Electrical Code (NFPA No. 70) may be applicable. Especially note the following:

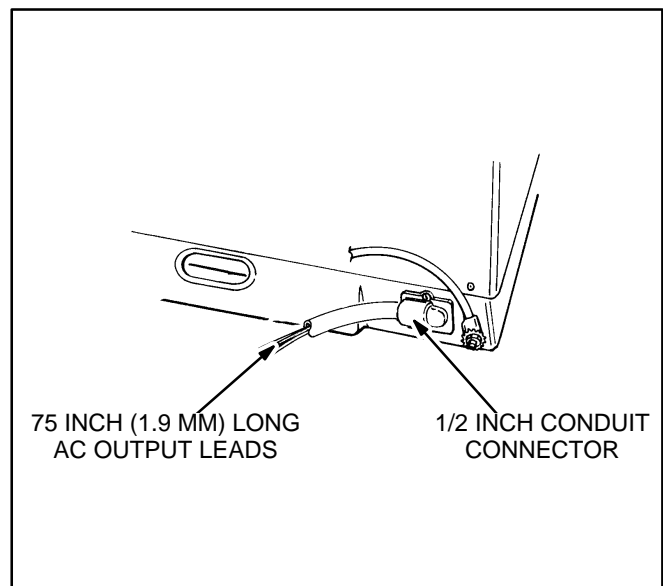
1. A qualified electrician should supervise and inspect the installation of all AC wiring on the boat.
2. Vibration-proof switches and controls should be used to prevent the opening and closing of circuits while the boat is in motion.
3. Rain-tight conduit, connectors and junction boxes should be used for all exterior wiring.
4. Ground fault circuit interrupters (GFCIs) should be used for all branch circuits with convenience power receptacles.
5. All wiring entrance holes into the interior of the boat cabin should be sealed (inside and outside all conduit connectors) with silicone rubber or

an equivalent type of sealant to keep out exhaust gas.

**⚠WARNING** *EXHAUST GAS IS DEADLY! Seal all wiring openings into the boat interior to keep out exhaust gas.*

6. AC wiring, remote control wiring and fuel lines should all be routed separately.
7. The genset and all connected AC and DC equipment and controls should be bonded to a common grounding point in accordance with applicable codes.

**⚠WARNING** *Faulty grounding can lead to fire and electrocution, resulting in severe personal injury or death. Grounding must be in accordance with applicable codes.*



**FIGURE 8. AC POWER OUTPUT LEADS**

## Connecting The Boat To Shore Power

When the boat has provision for connecting shore power it must have an approved device to keep the genset and utility from being interconnected. See Figure 9 for typical connections.

**⚠️WARNING** *Interconnecting the genset and the public utility (or any other power source) can lead to the electrocution of personnel working on the utility lines, damage to equipment and fire. An approved switching device must be used to prevent interconnections.*

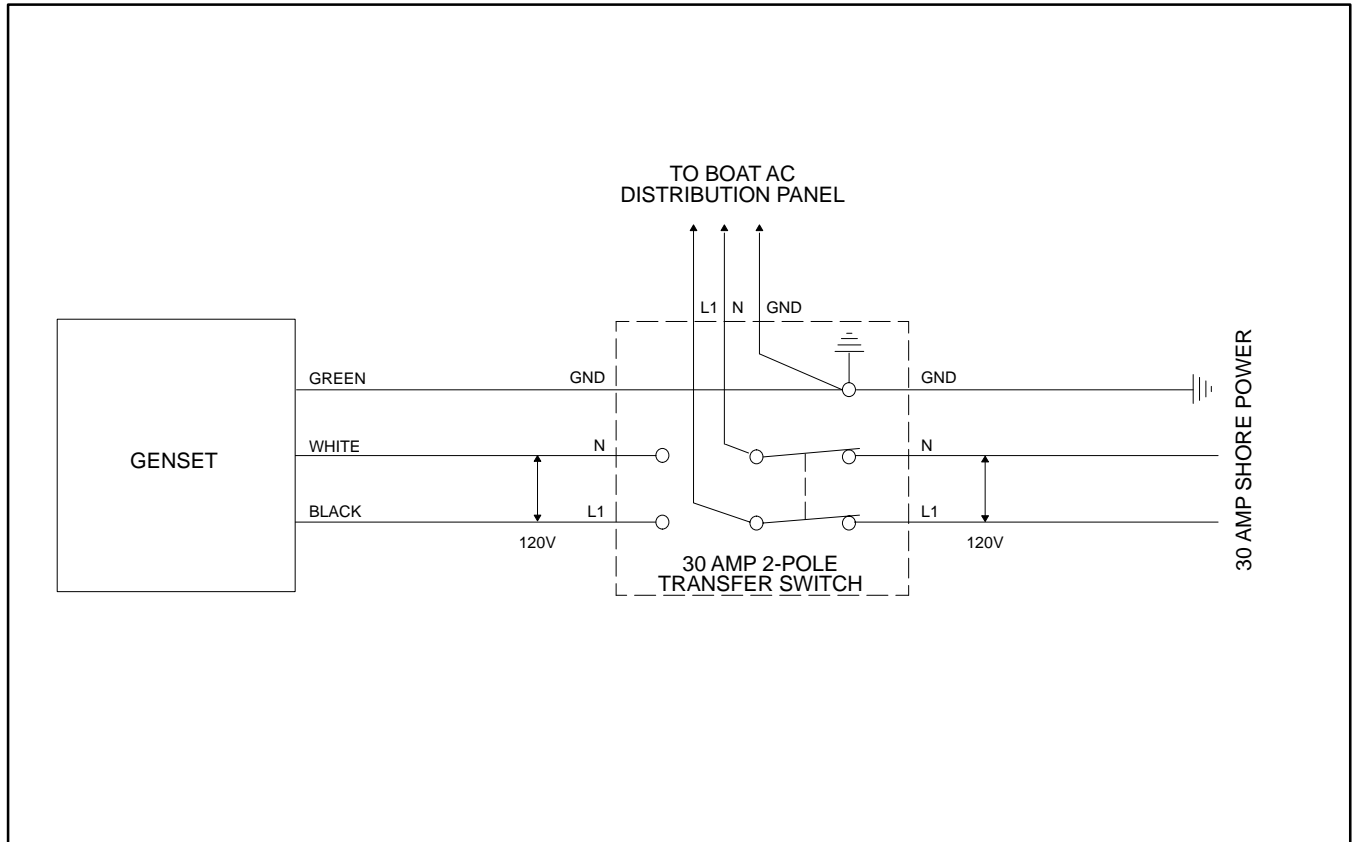


FIGURE 9. TYPICAL CONNECTIONS

## REMOTE CONTROL

A 6-pin connector for remote control connections is stowed inside the genset housing (Figure 10). Remote control wiring harnesses in several lengths and remote control panels in two styles are available separately. Figure 11 is a schematic of typical remote control connections. It identifies the function of each connector pin number. To make connections to a remote control panel:

1. Remove the genset access door.
2. Push the remote control wire harness connector through the entrance hole in the side of the genset housing and snap it together with the genset connector. If the wiring harness is made up by others, insulated 18 AWG copper conductors should be used for distances up to 30 feet (9 metres) and heavier gauge conductors for distances that are greater. The remote panel end of each lead should be marked to identify the connector pin number.
3. Refer to Figure 11 to make the proper connections at the remote control panel.

4. Route control leads separately from AC power leads to reduce the possibility of erratic operation due to false induced signals.
5. Seal the hole where the leads enter the boat cabin with silicone rubber or an equivalent type of sealant to keep out exhaust gas.

**⚠ WARNING EXHAUST GAS IS DEADLY!**  
**Seal all wiring openings into the boat cabin to keep out exhaust gas.**

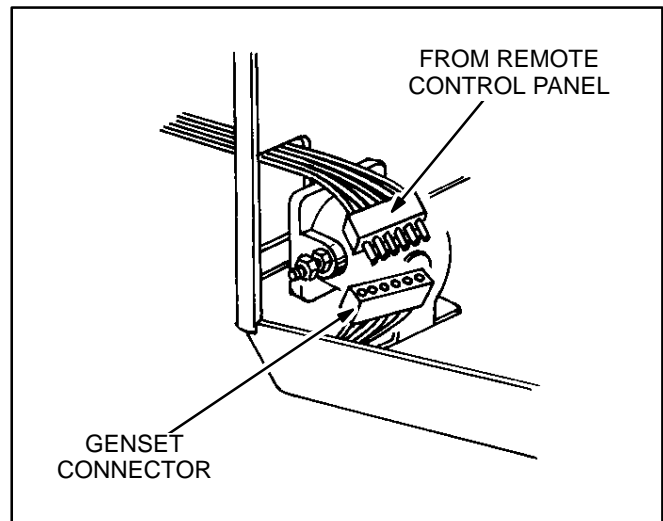


FIGURE 10. REMOTE CONTROL CONNECTOR

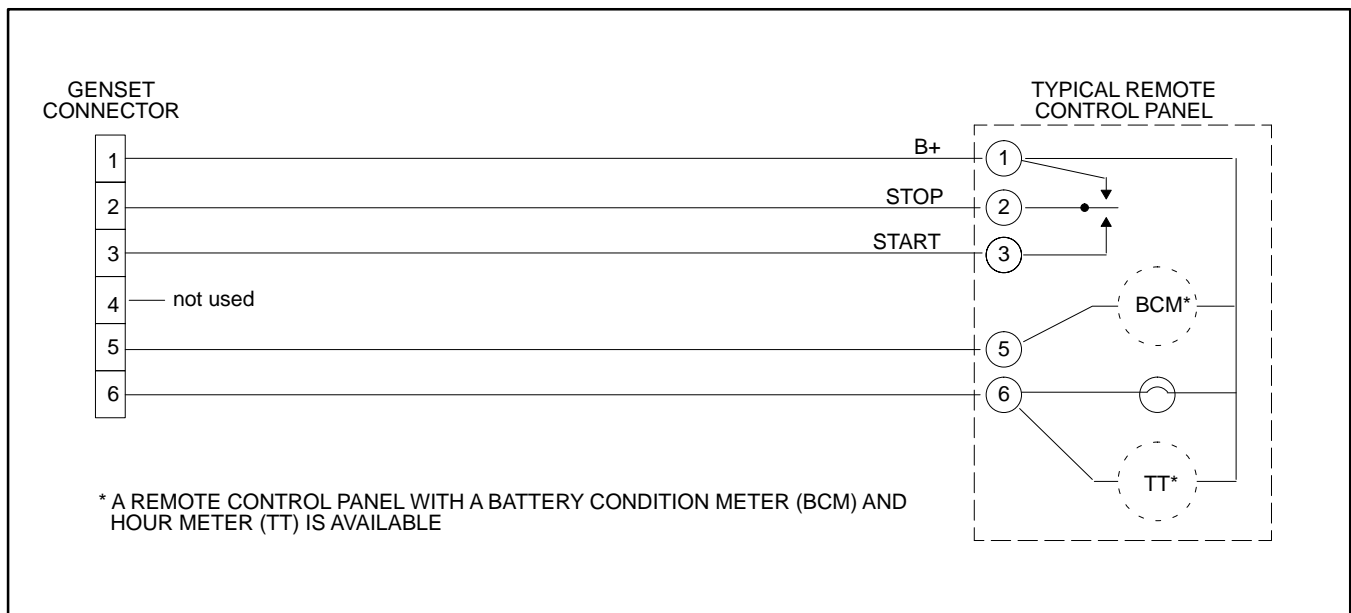


FIGURE 11. SCHEMATIC OF TYPICAL REMOTE CONTROL CONNECTIONS

## BATTERIES

Do not connect the battery cables to the battery until so instructed in *Installation Review and Startup* to prevent accidental starting of the genset during installation.

**⚠️WARNING** *Accidental starting of the genset can cause severe personal injury or death. Do not connect the starting battery until so instructed in Installation Review and Startup.*

The genset has a 12 VDC, negative-ground engine control and cranking system. See *Specifications* for the requirements for cranking batteries.

### Battery Compartment

Batteries must be mounted in a separate compartment from that of the genset and away from spark-producing equipment. An enclosed compartment must have openings of at least 1.7 square inches (11 square centimetres) at the top and bottom for ventilation of battery gasses. It should be mounted such that spills and leaks will not drip acid on fuel lines, wiring and other equipment that could be damaged.

**⚠️WARNING** *Arcing can ignite the explosive hydrogen gas given off by the battery, causing severe personal injury. The battery compartment must be ventilated and must isolate the battery from spark-producing equipment.*

### Battery Cables

Cables should be run from both terminals of the battery to the genset. It is not recommended that the boat frame be used as a path to the battery negative (-) terminal because of the high cranking currents involved. Size the cables according to Table 2. Total cable length is the sum of the lengths of the positive (+) and negative (-) cables. In other words, total cable length will be approximately twice the distance between the battery and the genset.

**TABLE 2. BATTERY CABLE SIZES FOR AMBIENT TEMPERATURES DOWN TO -20 ° F (-29° C)**

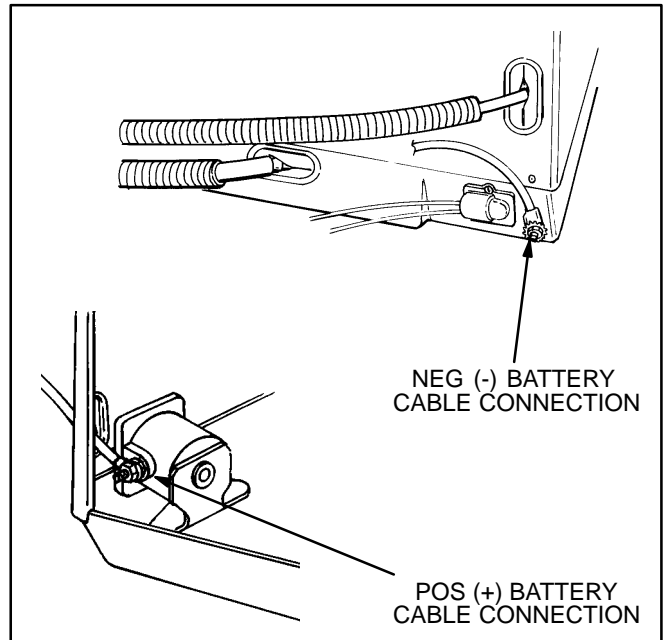
TOTAL CABLE LENGTH, FEET (METRES)	CABLE SIZE, AWG
0 to 10 (0 to 3)	2*
11 to 15 (3 to 4.5)	0
16 to 20 (4.5 to 6)	000

\* - A total length of up to 20 feet (6 metres) may be used in warmer climates or when battery capacity totals at least 1000 CCA (Cold Cranking Amps).

Route battery cables away from fuel lines and hot engine exhaust components. Battery cables should be accessible for inspection and replacement, protected from damage and secured to prevent chafing due to vibration.

### Connecting Battery Cables

Clearly and permanently mark both ends of each battery cable as to its polarity, positive (+) or negative (-). After making sure the battery cables are not connected at the battery, connect the battery cables to the genset (Figure 12).



**FIGURE 12. BATTERY CABLE CONNECTIONS**

# Review and Startup

## INSTALLATION REVIEW

Before starting the genset inspect the installation and check off (✓) each of the following questions if it can be answered "YES". If an item cannot be checked off provision must be made to satisfy the requirement.

- [ ] Is the control panel on the genset easily accessible for starting and stopping the genset, re-setting circuit breakers, checking and adding engine oil, replacing the spark plug and changing the air filter?
- [ ] Is the genset securely bolted in place?
- [ ] Is there the specified clearance all around the genset housing?
- [ ] Are the air inlet and outlet openings free of obstructions?
- [ ] Is there easy access for draining the engine oil?
- [ ] Are all tailpipe connections tight and all hangers and support straps secure?
- [ ] Does the tailpipe terminate at least 1 inch (25 mm) beyond the perimeter of boat and at least 6 inches (153 mm) away from any opening into the boat cabin?
- [ ] Is the genset located outside the interior (living) space of the boat and separated by approved vapor-tight and fire-resistive materials?
- [ ] Are all wiring holes into the boat cabin (inside and outside AC conduit connectors) sealed to keep out exhaust gas?
- [ ] Have all AC connections been inspected and approved?
- [ ] Have properly sized batteries and battery cables been installed?
- [ ] Have the battery cables been secured at sufficient intervals to prevent chaffing and contact

with sharp edges, fuel lines and hot exhaust parts?

- [ ] Are all fuel connections tight?
- [ ] Has the fuel line been secured at sufficient intervals to prevent chaffing and contact with sharp edges, electrical wiring and hot exhaust parts?

## STARTUP

When all the items on the Installation Review check list have been checked off, connect the battery cables to the battery, positive (+) cable first.

**⚠WARNING** *Batteries give off explosive gases that can cause severe personal injury. Do not smoke near batteries. Keep flames, sparks, pilot lights, electrical arcs and arc-producing equipment and all other ignition sources well away.*

***Do not disconnect the battery cables while the genset is cranking or running: the arcing can ignite the explosive battery gases.***

Read through the Operator's Manual and perform the maintenance and pre-start checks instructed. The genset is shipped from the factory with the proper level of engine oil, which should nevertheless be checked before the genset is started. Start and operate the genset, following all the instructions and precautions in the Operator's Manual.

**⚠WARNING** ***EXHAUST GAS IS DEADLY! Do not operate the genset when the boat is indoors unless there is ample fresh air ventilation.***

Check for fuel and exhaust leaks and unusual noises while the genset is running under full and intermediate loads. To calculate electrical loads see *Powering Equipment* in the Operator's Manual. Do not place the genset in service until all fuel and exhaust leaks have been fixed and operation is satisfactory.

# Specifications

<b>INSTALLATION:</b>	
Weight of Genset	185 pounds (84 Kg)
Minimum Compartment Size (H x D x W)*	16.4 inch x 20.6 inch x 30.5 inch (420 mm x 523 mm x 775 mm)
Minimum Free Air Inlet Area	40 inch <sup>2</sup> (258 cm <sup>2</sup> )
Muffler Outlet Collar O. D.	1.13 inch
Fuel Connection	1/4 inch barb fitting for gasoline hose
<b>GENERATOR:</b> 2-Pole Revolving Field, Self-Excited, Electronically Regulated, 1-Phase	
Power	4000 watts
Frequency	60 Hertz
Voltage	120 volts
Current	33.3 amperes
Speed	3600 rpm
<b>FUEL CONSUMPTION:</b>	
No load	0.29 gph (1.1 l/h)
Half load	0.48 gph (1.8 l/h)
Full load	0.71 gph (2.7 l/h)
<b>ENGINE:</b> 1-Cylinder, 4-Stroke Cycle, Spark-Ignited, OHV, Air Cooled	
Bore	3.11 inch (79 mm)
Stroke	2.44 inch (62 mm)
Displacement	18.5 inch <sup>3</sup> (304 cc)
Compression Ratio	8.5 : 1
Oil Capacity**	1.6 quart (1.5 l)
Intake Valve Clearance (Cold)	0.002 inch (0.05 mm)
Exhaust Valve Clearance (Cold)	0.002 inch (0.05 mm)
Spark Plug Gap	0.025 inch (0.64 mm)
Spark Plug Tightening Torque	13 lbs-ft (17 N-m)
Ignition Timing (magneto type ignition)	25° BTDC, non-adjustable
<b>DC SYSTEM:</b>	
Nominal Battery Voltage	12 volts
Minimum Battery Cold Cranking Capacity: Above/Below Freezing	360/450 amperes
Control Fuse	5 amperes
* See <i>Location and Mounting</i> and <i>Outline Drawings</i> for additional considerations when sizing the genset compartment.	
** See <i>Periodic Maintenance</i> in the Operator's Manual for oil filling instructions.	







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