

Operation & Maintenance Manual



Boston Whaler® 25 Guardian® Series



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420 Megan Avenue Edgewater Florida 32132 USA

Safety Notices

This manual uses three levels of notification for safety-related information.

The signal words **CAUTION**, **WARNING**, and **DANGER** identify specific levels of hazard. They are defined as:

CAUTION

A hazard that might result in injury or damage to property or equipment.

WARNING

A hazard that could result in death or serious injury.

DANGER

A hazard that will result in death or serious injury.

When you see a safety information box in this manual, carefully read the message **before** you proceed. Take these safety warnings seriously and be alert to the possibility of property damage, serious injury, or death.

If you do not understand a safety warning, call the Customer Service Department at Brunswick Commercial & Government Products.

About This Manual

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Brunswick Commercial & Government Products reserves the right to make changes at any time, without notice, to features, specifications, and model availability. The right is also reserved to change any specification, part, or system without incurring any obligation to update older boats.

The information in this manual is based on the latest specifications available at the time of publication. The photographs and illustrations might not depict actual models or equipment, but are intended as representative views for reference only. The continuing accuracy of this manual cannot be guaranteed.

Certain features, parts, options, systems, and accessories discussed in this manual might not be found on your boat.

Be sure that the operator and at least one other person in the boat are familiar with the contents of this manual. A second person should be able to safely operate the boat if the primary operator is not available.

Make this manual available to anyone who will operate this boat.

Warranty Information

Read the **Brunswick Commercial & Government Products** limited commercial warranty statement located on the inside rear cover of this manual. The statement explains what is covered and what is not covered under the warranty. The statement also explains your responsibilities and obligations as the boat owner.

A product registration card was shipped with your boat. Complete this card and mail it to Brunswick Commercial & Government Products using the postage-paid envelope supplied. We use this information to initiate your warranty coverage and to contact you in case of a safety-related issue with your boat.

Include your boat's **Hull Identification Number (HIN)** on the product registration card and anytime you contact the factory. See information about your boat's HIN in Section 6 of this manual.

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Operator Responsibilities

It is expected by **Brunswick Commercial & Government Products** (BCGP) that the personnel authorized to operate this boat are experienced boat handlers familiar with high-performance boating. BCGP cannot predict, nor warn against, every possible hazardous situation related to the operation and maintenance of this boat.

If you use a method or procedure different from one outlined in this manual, you must satisfy yourself that your method or procedure will not put your boat, your crew, or other boaters at risk.

The safety of this boat and its crew is always your responsibility. Follow these general guidelines when operating this boat:

- Read this manual **before** you operate the boat. Understand all of the information in the manual, particularly Sections 1 and 2.
- Understand the operation of all boat controls and systems.
- Make this manual available to any person who might operate this boat.
- Always operate this boat within the limits of your skill and experience. If you do not have the appropriate level of experience, ask someone to instruct you.
- Understand and follow all applicable boating regulations.
- Always use safety equipment and operating procedures that are appropriate for your mission.
- Never work alone around machinery such as outboard engines, generators, and fire pumps.

Giving Assistance

The **1971 Federal Boat Safety Act** grants protection to any person who offers good faith assistance to another boater who is in distress. The “Good Samaritan” rule will protect you from liability if you act in a reasonable and prudent manner while attempting to render assistance during a boating emergency.

You should attempt to give assistance when you see a distress signal while boating if you can do so without endangering your boat or your crew.



Personal Flotation Devices

Personal Flotation Devices (PFDs) are designed to save lives. It is your responsibility to ensure that the boat has a sufficient number of PFDs for your crew. It is your responsibility to ensure that non-swimmers wear PFDs at all times and that everyone wears a PFD during emergencies, special operations, and severe weather.

The United States Coast Guard recognizes four types of wearable devices and one type of throwable device.

- **Type I** – Life preserver, appropriate for open ocean, off-shore, and foul weather.
- **Type II** – Buoyant vest, appropriate for near-shore and inland waters.
- **Type III** – Flotation aid, appropriate for calm inland waters.
- **Type IV** – Throwable device, appropriate to throw to a person already in the water. These devices must never be worn as a vest.
- **Type V** – Special-purpose vest, includes harnesses, working vests, and rafting vests. These vests must be worn while underway to count toward minimum PFD requirements.

All PFDs must be easily accessible. They must be removed from their shipping bags and they should be unbuckled. Make sure that everyone knows where the PFDs are located. Make sure that everyone knows how to put one on and correctly adjust it.

Check the availability and condition of all PFDs before each mission.



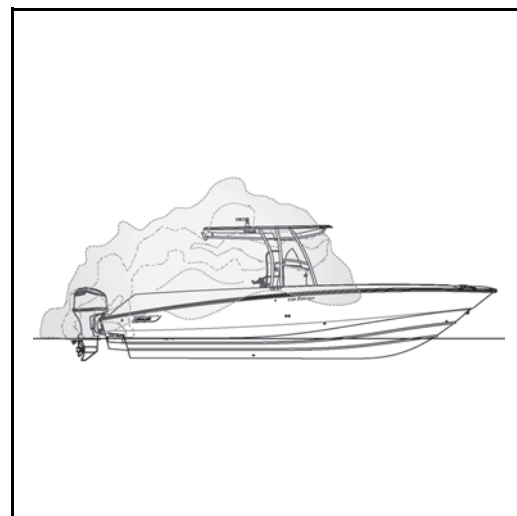
Exhaust Emissions

All internal combustion engines produce carbon monoxide when they are running. While carbon monoxide is broadcast with the engine exhaust gases, it is itself a colorless and odorless gas. It is extremely toxic.

Varying ambient conditions can allow carbon monoxide to mix freely with air or cause it to settle and collect in confined areas in or around your boat. Always be aware of operating conditions that might allow carbon monoxide to collect in confined spaces on your boat.

Remember these important precautions:

- Avoid running your outboard engines or portable fire pump in confined areas such as boat houses
- Be aware of engine exhaust from adjacent boats when you are moored
- Be aware of wind direction and strength when operating your boat at slow speeds
- Adjust hatches, doors, windows, and canvas to increase air movement in occupied spaces when your outboard engines or portable fire pump are running



DANGER

Prolonged exposure to carbon monoxide can cause serious injury or death. Always insure that confined spaces in your boat have an adequate supply of fresh air.

For more information about the dangers of carbon monoxide, read the booklet **What You Can't See** that is in your owner's bag.



Fire Extinguishers

Your boat is equipped with at least two 2¾-pound United States Coast Guard approved Type ABC fire extinguishers. Each extinguisher is UL Rated 1-A:10-BC. This rating indicates that each extinguisher can be used to fight Class A, B, and C fires. These classes include fires involving wood, cloth, gasoline, oil, grease, and live electrical equipment.

The fire extinguishers are mounted in locations that allow quick access in case of a fire emergency. **Be familiar with these locations.** Read and understand the instructions on the extinguisher label and in the manufacturer's instruction booklet located in your owner's bag.



Formulate a fire plan in advance that will help you evaluate your risk and response in case of an on-board fire emergency.

Fires

Most marine fires result from spilled gasoline or oil accumulating in the bilge. Careful use of on-board fire extinguishers should control small fires.

Direct the fire extinguisher output toward the base of the flames in a sweeping motion. Check carefully and verify that the fire has been extinguished. Evaluate the damage and get assistance immediately.

Larger fires involving the boat's fuel tank might result in explosion and complete destruction of the boat. Formulate a fire plan in advance that will help you decide if you can fight the fire or if you should abandon the boat.



WARNING

Gasoline floats on water. If you abandon the boat, swim up wind or up current from the boat to avoid burning gasoline that might spread on the surface of the water.

Severe Weather

Follow these important safety precautions if you must operate your boat in severe weather conditions:

- Review the condition and operation of all safety and communication gear
- Have everyone wear personal flotation devices
- Verify that your radio's Digital Selective Calling system (DSC) is functioning
- Use your ignition shutoff clip and lanyard
- Stow loose gear and lash down equipment
- Close all hatches, doors, and windows
- Install the dive door, if equipped
- Reduce boat speed
- Periodically report your situation by radio
- Monitor marine weather advisories



EPIRB

Your boat might be equipped with an emergency position-indicating radio beacon (EPIRB).

The EPIRB is capable of sending important location information to the **Cospas-Sarsat** satellite system during an emergency. You must register the EPIRB with the National Oceanic & Atmospheric Administration (NOAA) to ensure an effective search and rescue response.

In case of an emergency, the beacon can be deployed manually or it can be released by a hydrostatic feature if the boat sinks.



The EPIRB requires regular attention to stay in mission-ready condition:

- Every 30 days – perform self-test procedure
- Every 90 days – inspect category 1 bracket
- Every 2 years – replace HRU unit
- Every 5 years – replace EPIRB battery

Refer to the EPIRB operator's manual for detailed operation and maintenance information.



Boat Load Capacities

The United States Coast Guard requires boats less than 20 feet (6 m) to display a capacity plate that indicates the maximum number of people and the maximum weight that the boat can support under normal operating conditions. Additional capacity information for your boat is listed in Section 6 of this manual.

- Do not exceed the capacity limits of this boat under any circumstances
- Consider reducing these capacity limits during emergencies, special operations, and severe weather
- You are always responsible for the safety of the boat and its crew even if the capacity limits have not been exceeded

WARNING

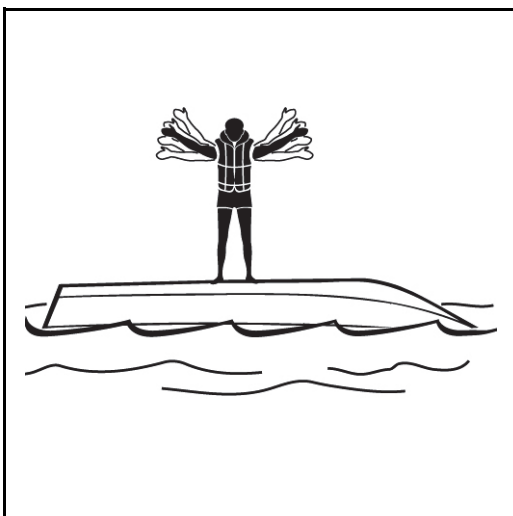
The dive/rescue door is a specialized piece of rescue equipment. All posted USCG and NMMA load capacities are suspended when the dive/rescue door is out. Operate your boat carefully to avoid swamping or capsizing.



Capsizing

Your boat might capsize due to improper loading, improper operation, or severe weather conditions. Formulate a capsizing plan in advance that includes the following actions:

- Try to turn off the outboard engines to avoid injury and additional damage
- Activate EPIRB and DSC systems if possible
- Locate all crew and evaluate their condition
- Stay with the boat, it will always float and it is easier to locate
- Distribute PFDs if possible
- Try to climb onto the hull



Swamping

Swamping (flooding the interior of the boat) can occur for a number of reasons, including severe weather conditions, improper operation, and improper loading. Consider the following:

- Know the safe loading limits for this boat under normal conditions. Refer to the boat specifications in Section 6 of this manual and the **NMMA Certification Plate** in the boat.
- Consider reducing those loading limits during emergencies, special operations, and severe weather.
- Distribute any load or cargo evenly front to back and port to starboard so that the approximate center of the load is near the center of the boat.
- Close all hatches, doors, and windows during severe weather.
- Install the dive door, if equipped.
- Adjust boat trim and speed to match weather conditions.
- Avoid backing into large waves whenever possible.
- Check operation of all bilge pumps, float switches, and water level sensors before each trip.



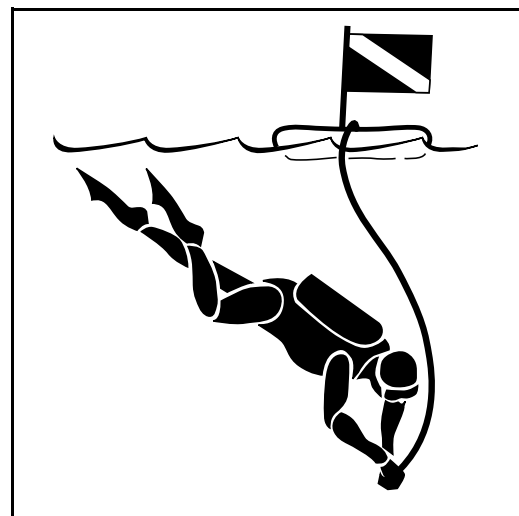
Diving Operations



Never start or operate the engines when people are in the water near your boat. Contact with the boat, engines, or rotating propellers can cause serious injury or death.

Navigational Rules require a vessel which is engaged in diving operations to display a rigid replica of the international **Alpha** signal flag during daylight hours. During night operations, you would display **RIAM** lights on a special display mast. Both these displays indicate that your boat is operating with restricted maneuverability.

Some local or state regulations might require the red and white diver's flag during daylight hours to indicate that a person is in the water.





Dive/Rescue Door

Your boat might be equipped with a dive/rescue door. The dive/rescue door can expand your operational capabilities by providing easy access to the water and to the boat.

Operating a Boston Whaler when the dive/rescue door is **out** requires experience and a high level of skill. Always operate any boat within the limits of your experience. If you do not have this experience, ask someone to instruct you or gain experience through experimentation under controlled conditions.

WARNING

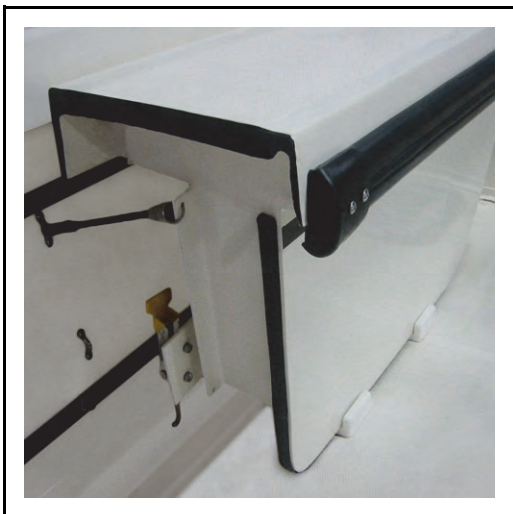
The dive/rescue door is a specialized piece of rescue equipment. All posted USCG and NMMA load capacities are suspended when the dive/rescue door is out. Operate your boat carefully to avoid swamping or capsizing.

DANGER

Always monitor the amount of water on the deck while the dive/rescue door is out. An unexpected shift in water weight might cause your boat to capsize.

Water can come into the boat when the dive/rescue door is removed. You must manage the water, the rescue operation, and all personnel to avoid swamping or capsizing your boat. Refer to **Load Distribution** in Section 2 for additional information.

When your dive/rescue door is in place, it must be secured with the cam locks provided. When your dive/rescue door is out, it must be stored and secured in the storage blocks provided.



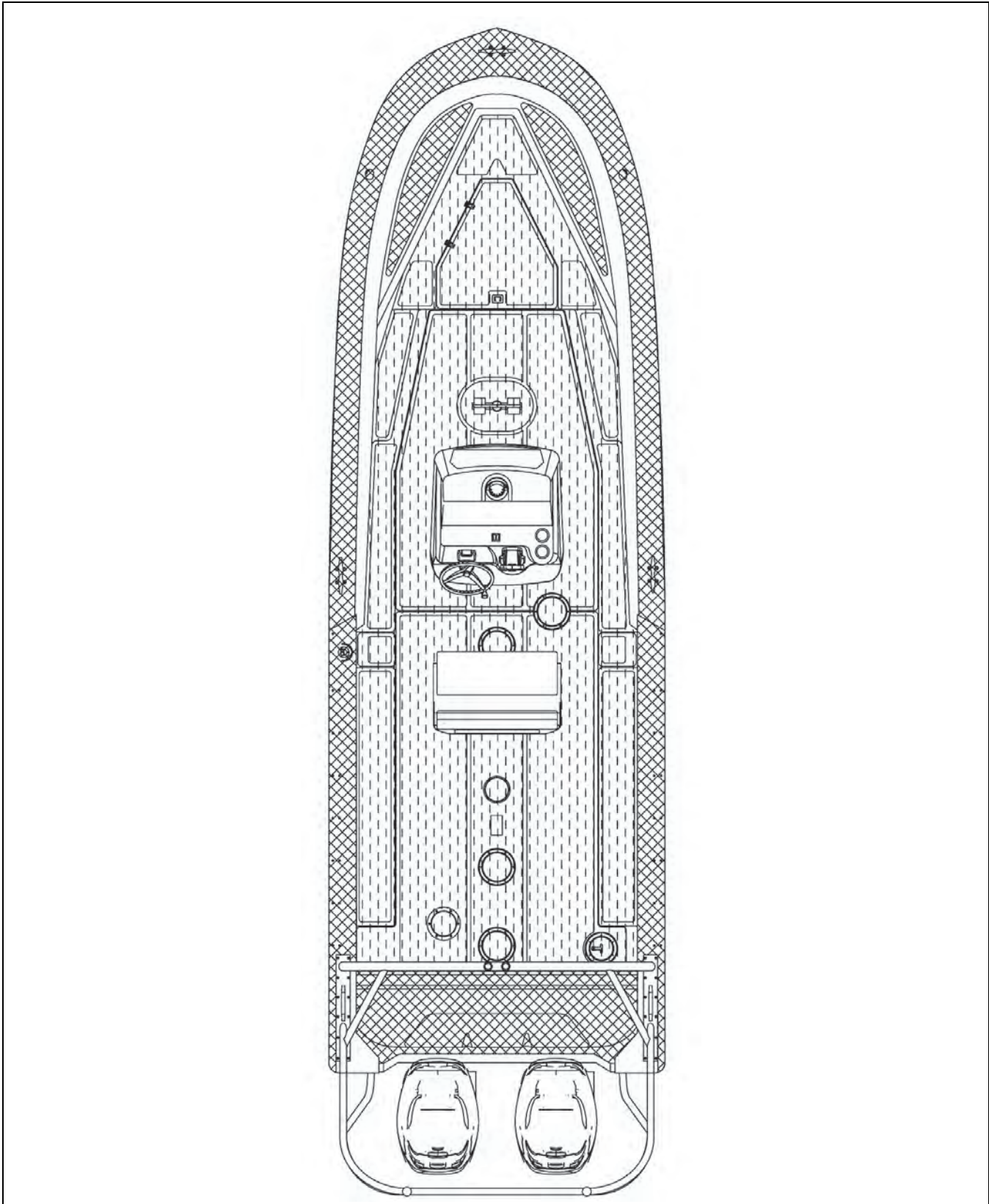
Proposition 65 Information

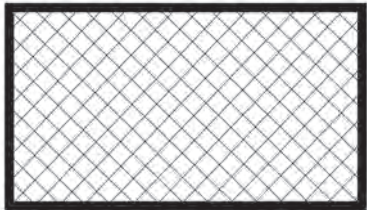
When you received your boat, **NMMA** hang tag part number NW501-07 was attached to the steering wheel. The distribution of this tag is required by California's **Safe Drinking Water and Toxic Enforcement Act of 1986**.

This hang tag outlines important information about certain chemicals known by the State of California to cause cancer and birth defects. The hang tag also includes information about limiting your exposure to these harmful chemicals.

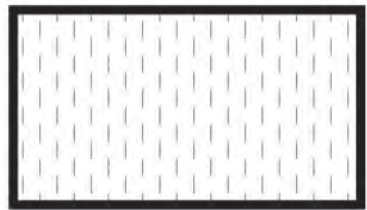
Read the information on this hang tag and store the tag in your owner's bag.



Deck Occupancy Chart



Working Decks: Do not allow passengers on these decks while the boat is underway. These decks can only be used when you are at the dock, mooring, or anchoring.



Accommodation Decks: You can allow passengers to move around these decks while the boat is underway. You must continually evaluate the sea state and boat performance. Restrict passenger access to these decks if conditions warrant. Keep accommodation decks free of loose gear.

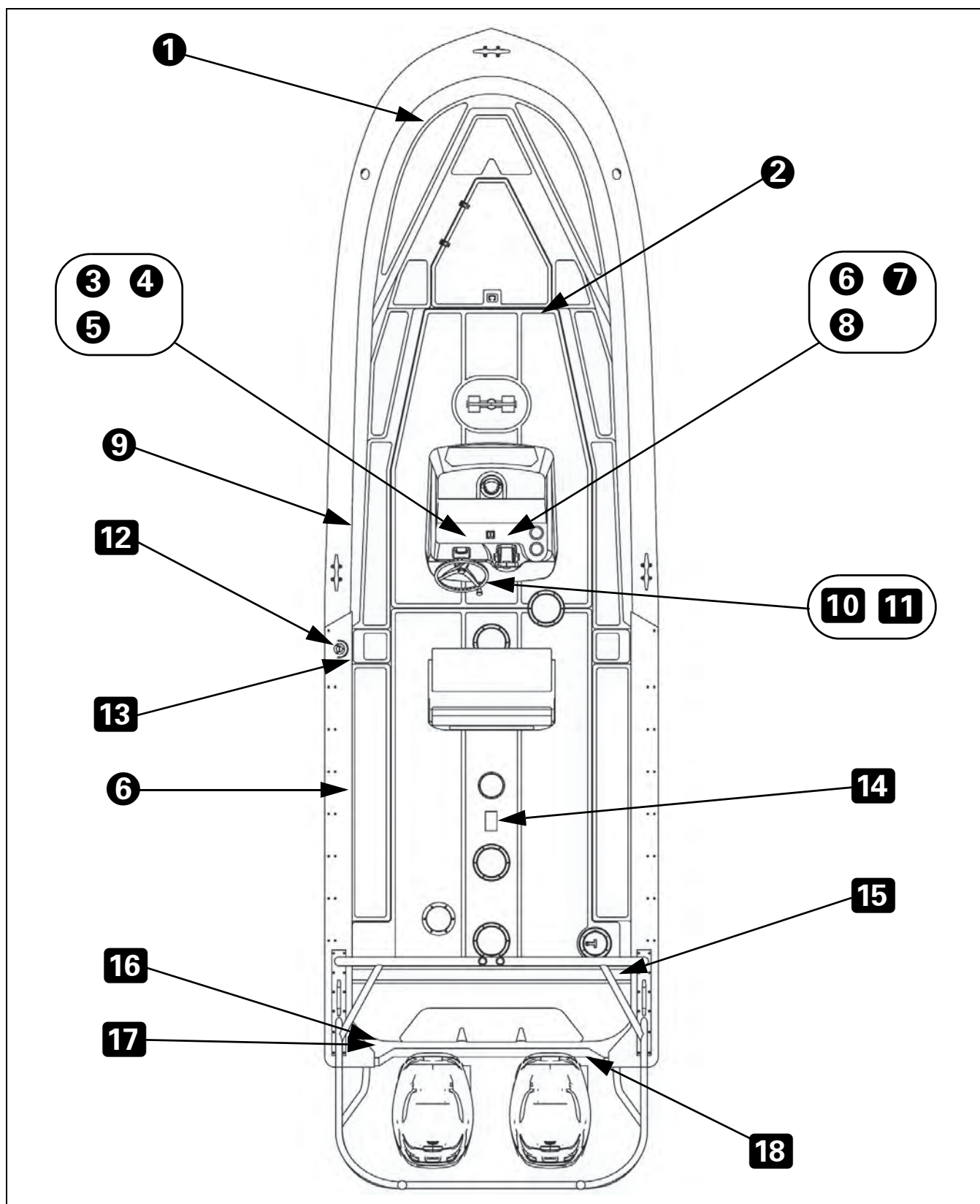
 WARNING

Gelcoat surfaces are always slippery when wet. Use extreme caution when walking on wet surfaces to avoid slipping or falling. Never wax portions of the boat that have a non-skid pattern.

 DANGER

Never occupy working decks while the boat is underway. Do not sit on the gunwales or any part of a working deck while the boat is underway.

Warning Label Chart



- ❶ 1017078 Do Not Stand**
- ❷ 1836858 Danger Hatch Closing**
- ❸ 1017136 Hi-performance Boat**
- ❹ 1016518 Steering Effort**
- ❺ 1950698 Rotating Propellers**
- ❻ 2090315 Dive/Rescue Door**
- ❼ 1811368 Carbon Monoxide**
- ❽ 1972938 Battery Chargers**
- ❾ 2024446 NMMA Capacity Plate**
- ❿ 1795087 Proposition 65 Tag**
- ⓫ 1817722 Customer Information Tag**
- ⓬ 0995704 Fuel Fill**
- ⓭ 1016898 Do Not Drill, Fuel Lines**
- ⓮ 1016443 Do Not Drill, Fuel Tank**
- ⓯ 1016922 Battery Terminals**
- ⓰ 1903624 Rotating Propellers**
- ⓱ 1811367 Carbon Monoxide**
- ⓲ 1016880 Do Not Paint, Bonding Plate**

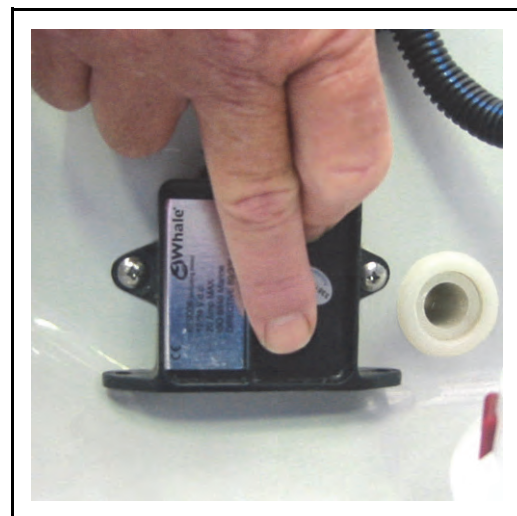
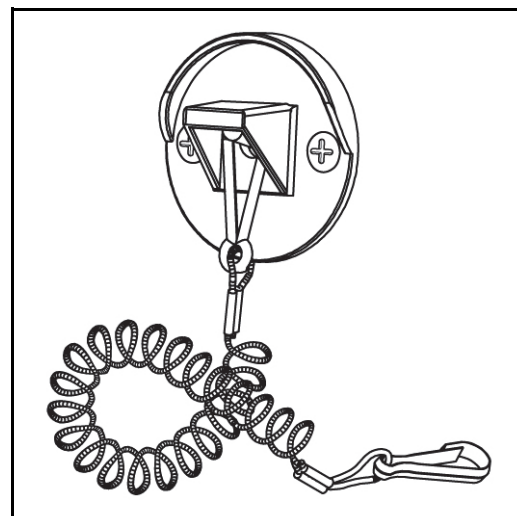
These warning labels contain important information about your safety. Replace any label that becomes damaged or unreadable.

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Pre-operation Checklist

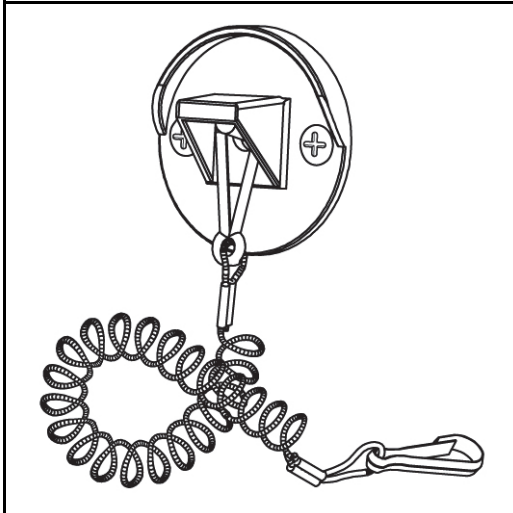
Review all the items on this checklist each time you prepare for a mission. Resolve any issues before you begin your mission.

- ☐ Drain plug installed in hull
- ☐ Hull in seaworthy condition
- ☐ Submit mission plan to officer-in-charge
- ☐ Compare expected load to boat capacity
- ☐ Verify trip routing and navigational information
- ☐ Check regional weather advisories
- ☐ Boat operator's manual on-board
- ☐ Safety equipment on-board
- ☐ EPIRB in mission-ready condition
- ☐ VHF and HF radios operational
- ☐ Radio's DSC system operational
- ☐ Chart plotting units operational
- ☐ Radar operational
- ☐ Adequate fuel load for mission
- ☐ Fuel tank and fuel hoses good condition
- ☐ Fuel filters in good condition
- ☐ No water in water separators
- ☐ Navigation lights operational
- ☐ RIAM lights operational
- ☐ Signal horn operational
- ☐ Bilge pumps operational
- ☐ Water level sensors operational
- ☐ Engine starting batteries in good condition
- ☐ House battery in good condition
- ☐ Battery OFF-ON switches correctly set
- ☐ Engine control levers in NEUTRAL
- ☐ Ignition shutoff clip and lanyard in place
- ☐ Engines in full Tilt Down position
- ☐ Engines operational and normal
- ☐ Steering system operational and normal



CAUTION

Test your bilge pumps and water level sensors before each mission. Manually activate the water level sensor when the rocker switch is in the AUTO position and verify pump operation. Clear away any sludge or debris that might restrict the pumps or water level sensors.



Ignition Shutoff Switch

Your boat is equipped with one ignition shutoff switch. The ignition shutoff switch is located at the helm station.

The ignition shutoff switch is designed to shut off both engines if you move away from the helm station by accident, either by falling down or by being ejected from the helm seat. Both of these situations can be caused by unsafe operating techniques or severe operating conditions.

Do not use the ignition shutoff switch to stop the engines during normal boat operation.

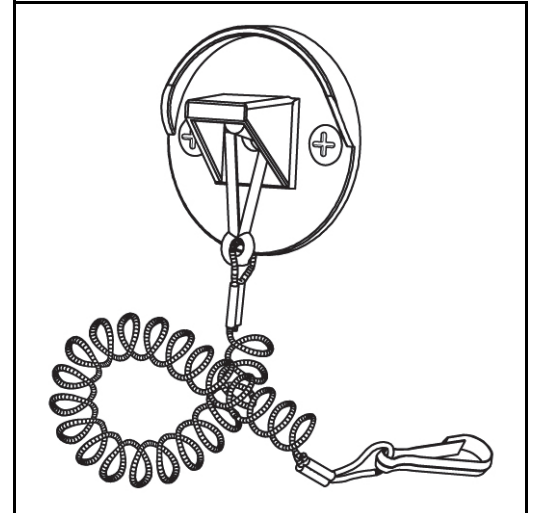
WARNING

Do not activate the ignition shutoff switch during normal operations when the boat is on plane. Activating the ignition shutoff switch at planing speeds will cause the boat to suddenly decelerate, possibly injuring or ejecting passengers.

You should connect the ignition shutoff switch clip and lanyard to a sturdy part of your life vest or your clothing. If you move beyond the scope of the lanyard, the ignition shutoff switch will be activated and the engines will shut off immediately.

Understand this important information about your ignition shutoff switch:

- It is your responsibility to decide when to attach the switch lanyard, but we strongly recommend that you use the shutoff switch anytime you are operating the boat.
- Test the ignition shutoff switch periodically by pulling the clip and lanyard while the engines are at idle speed. Both engines should stop immediately.
- The engines will not start if the clip and lanyard is not attached to the shutoff switch.
- The switch can only function properly when the lanyard is attached to a sturdy part of your life vest or your clothing.
- Do not shorten the switch lanyard. It must be long enough to avoid inadvertent switch activation during normal operator activity.
- Refer to the outboard engine operator's manual for specific information about the ignition shutoff switch.





Main Engine Key Switches

Your boat is equipped with two main engine key switches. The key switches are located at the helm station. The key switches control the starting, running, and stopping of the outboard engines. The key switches also control the operation of certain engine accessory systems.

Each switch has a unique key that can only be removed when the switch is in the OFF position. Record and save the key number following the instructions in Section 6.

DANGER

Never start or operate the engines when people are in the water near your boat. Contact with the boat, engines, or rotating propellers can cause serious injury or death.

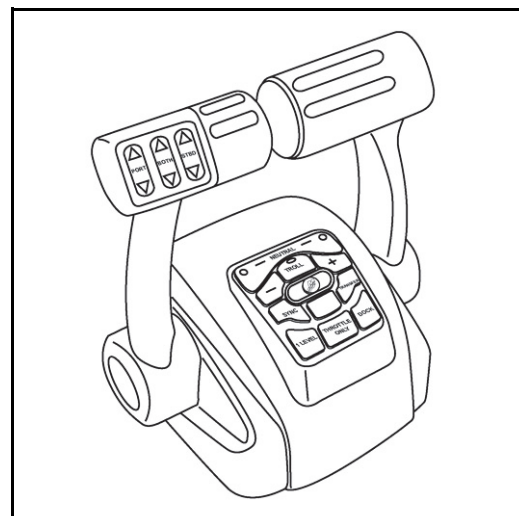


- You **must** turn the engine battery OFF-ON switches to the ON position before you use the main engine key switches.
- You **must** turn the main engine key switches to the OFF position after you secure the engines from service.
- You **should** turn the engine battery OFF-ON switches to the OFF position after you secure the engines from service.



To **START** the port outboard engine, the control port lever must be in the NEUTRAL position. The ignition shutoff switch clip and lanyard must be attached to the shutoff switch. Turn the port main engine key switch to the ON position and then to the START position. **DO NOT** hold the key in the START position. The port engine's electronic control module (ECU) will start the engine automatically. If the port engine does not start, turn the key to the OFF position and repeat the starting process.

To **STOP** the port engine, turn the port main engine key switch to the ACC or OFF position. If you are securing the port engine from service, turn the port main engine key switch to the OFF position.



⚠ CAUTION

Leaving the main engine key switches in the ACC or ON position when the engines are not running will drain the starting batteries and might damage the engines' electrical systems.

To start or stop the starboard engine, follow the procedures above using the control starboard lever and the starboard main engine key switch.

For additional engine control information, refer to the engine operator's manual in your owner's bag.



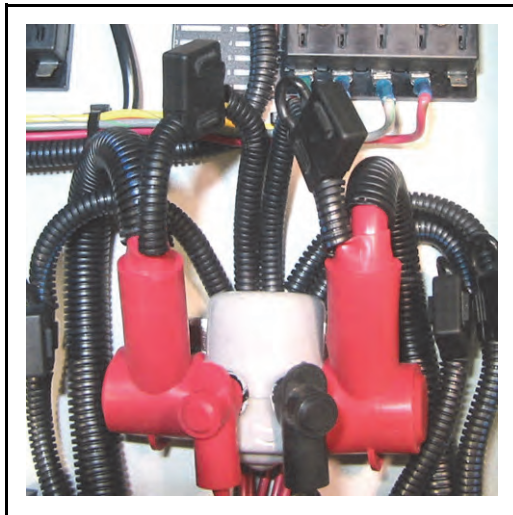


Battery Parallel Switch

Your boat is equipped with an emergency battery parallel switch. The switch is located at the helm station. You can use the emergency battery parallel switch to connect the two engine starting batteries in parallel if one engine will not start due to low battery voltage.

The battery parallel switch controls a solenoid that connects the two engine starting batteries. The switch is a three-position rocker switch that is ON-OFF-ON. The center switch position is OFF. Both the left and right switch positions are momentarily ON when held down.

When you release the switch, it will return to the center OFF position.



If one of your outboard engines will not start due to low battery voltage, use the emergency battery parallel switch to provide power from the other starting battery.

Push and hold the battery parallel switch ON to either the left or right position. Note this position. **Hold** the battery parallel switch in the ON position and try to start the engine.

If the engine does not start, release the battery parallel switch to the OFF position. Move the battery parallel switch to ON in the opposite direction. **Hold** the battery parallel switch in the ON position and try to start the engine.

Starting Procedure

Use the following checklist each time you start the outboard engines. Additional detailed information about these systems is covered in the engine operator's manual.

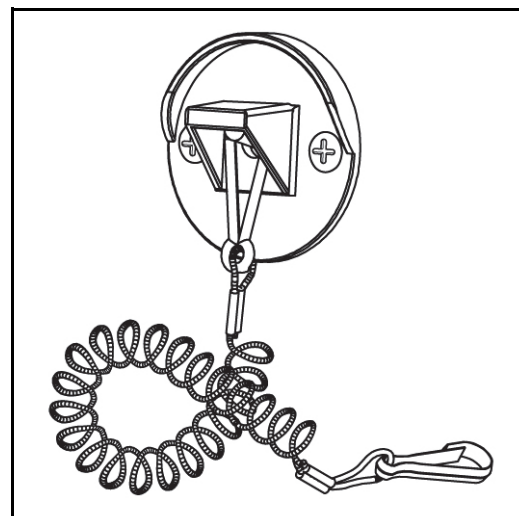
DANGER

Never start or operate the engines when people are in the water near your boat. Contact with the boat, engines, or rotating propellers can cause serious injury or death.

CAUTION

Never start or run the outboard engines without an adequate supply of cooling water. The engines will be damaged immediately.

- ☐ Boat operator's manual on-board
- ☐ Review **Pre-operation Checklist**
- ☐ Engine battery OFF-ON switches to ON position
- ☐ House battery OFF-ON switch to ON position
- ☐ Release engine tilt locks and lower engines to full Tilt Down position
- ☐ Verify fuel supply
- ☐ Move engine control levers to NEUTRAL position
- ☐ Attach ignition shutoff switch clip and lanyard
- ☐ Start engines using the main engine key switches
- ☐ Use emergency battery parallel switch if required
- ☐ Verify engine cooling system operation by observing the overboard indicators
- ☐ Verify all engine systems using the gauges
- ☐ Let outboard engines idle in NEUTRAL for five minutes before leaving the dock





Shift and Throttle Control

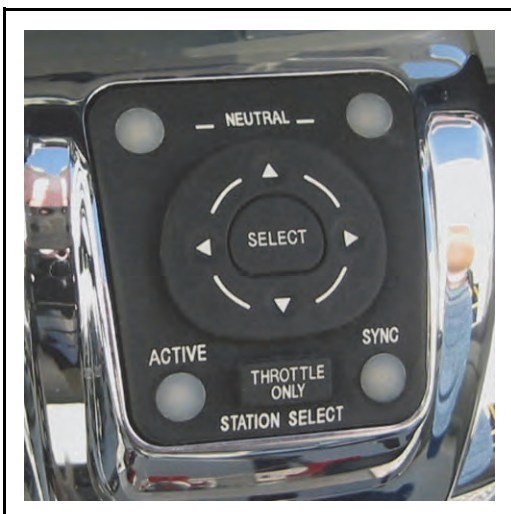
Boat direction, boat speed, and close-quarter maneuvering are controlled by the dual-lever control. The dual-lever control includes gear selection, engine speed, and engine trim angle functions. Additional detailed information about your dual-lever control is covered in the engine operator's manual.

Shifting

- Each shift lever controls gear selection for one engine. The shift lever must be in NEUTRAL before starting the engine. The engine will not start if the shift lever is in FORWARD or REVERSE.
- The engines must be running before you shift into FORWARD or REVERSE.
- From NEUTRAL, move the shift lever forward to select FORWARD gear.
- From NEUTRAL, move the shift lever backward to select REVERSE gear.
- Never shift directly from FORWARD to REVERSE without pausing in NEUTRAL.
- Never shift directly from REVERSE to FORWARD without pausing in NEUTRAL.

CAUTION

Shifting the engines from FORWARD to REVERSE at any boat speed above idle can cause catastrophic engine damage. This engine damage can include gearcase failure or water ingestion.



Neutral Throttle

- The dual-lever control has a neutral throttle feature. Depress the **Throttle Only** button and move the shift lever forward to increase engine speed in NEUTRAL.
- Move the shift lever back to NEUTRAL to disengage the neutral throttle feature.

Speed Control

- Move the shift lever forward from the FORWARD gear detent to increase engine speed in forward gear.
- Move the shift lever backward from the REVERSE gear detent to increase speed in reverse gear.

Engine Trim

WARNING

Certain combinations of engine trim angle, boat operating angle, and boat speed can reduce your forward-facing visibility. Reduced operator visibility can contribute to collisions, causing serious injury or death.

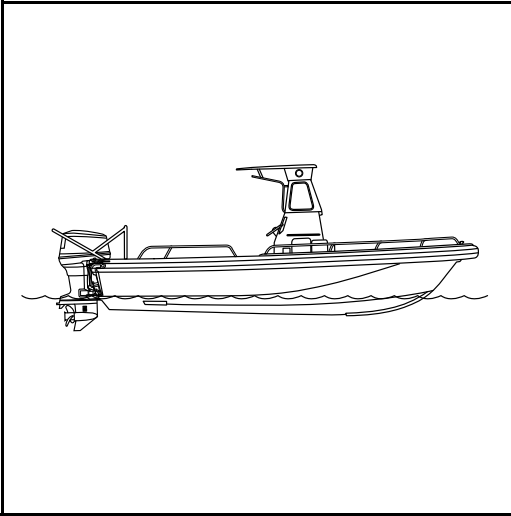
Trimming your engines **down or in** is best for acceleration and carrying heavy loads. The boat ride tends to be slower and wetter, and the boat might bow steer.

Trimming your engines **up or out** increases boat performance and fuel economy. Excessive trim angle will reduce boat performance. Excessive trim angle might cause propeller ventilation and engine over-speed alarms.

WARNING

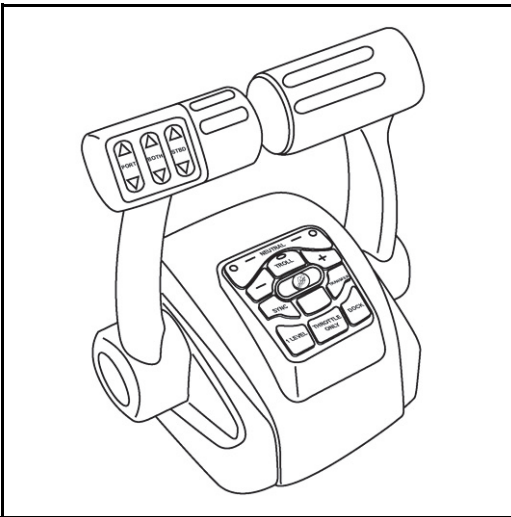
Excessive engine trim angle can cause the boat to “porpoise” or bounce. Porpoising can reduce operator control and visibility, resulting in unsafe boat operation.





You must determine the correct engine trim adjustments through experimentation or experience, based on your mission loads and operating conditions.

- Adjusting engine trim angles can affect ride comfort and boat performance. 4° “bow up” is an average setting for boat operating angle.
- Adjusting engine trim angles can compensate for uneven boat loading and some weather conditions.
- Typically, your dual-lever control will have **three** engine trim switches located on the port control lever.
- The **center** trim switch moves both engines at the same rate to change general boat operating angle.
- The **left** and **right** trim switches are used to change the trim angles of the port and starboard engines individually. This function allows you to synchronize engine trim angles or compensate for changes in boat load distribution and some weather conditions.



 CAUTION

Do not trailer your boat with the engines in their fully tilted position.

 CAUTION

Center the engines before tilting to avoid contact with any special towing equipment on your boat.



Engine Gauges

Your boat might be equipped with a number of dash-mounted gauges that display the condition of various engine systems.

The gauges power up when the engine ignition switch is turned to the ON position.

The engine gauges are illuminated for nighttime operation. The brightness of the gauge lights is controlled by the dimmer switch located on the helm station switch panel.

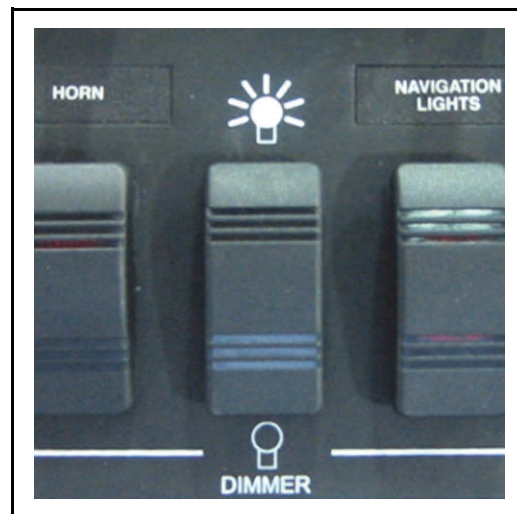
Review this general information about each gauge.

Refer to the engine operator's manual for detailed information about the gauges and their functions.

Tachometer

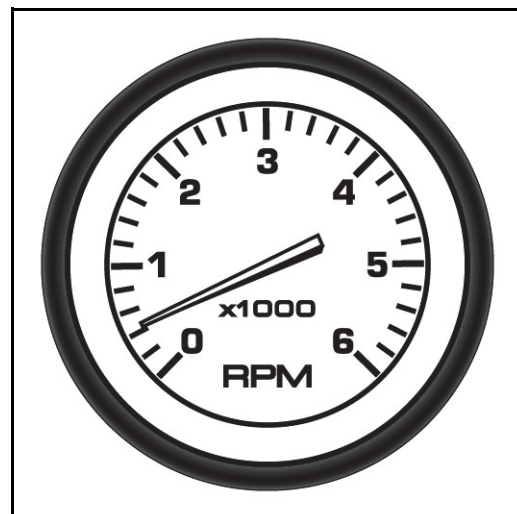
The tachometer displays engine speed in revolutions per minute (RPM). You can take the gauge reading on most tachometers and multiply by 1,000 to calculate engine speed. You can use engine RPM to influence fuel consumption, adjust boat performance, and evaluate propeller selection.

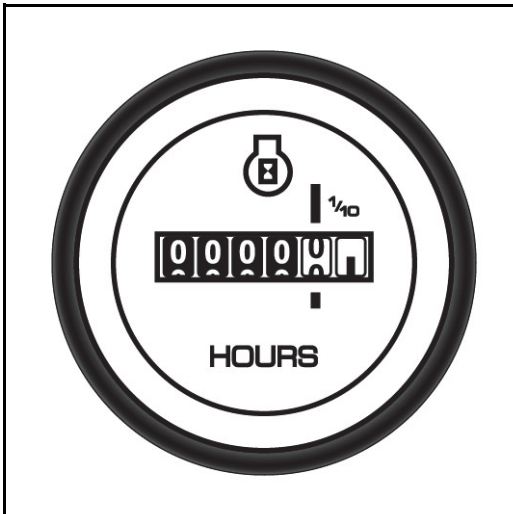
Some tachometers are driven by a signal from the engine's battery charging system. If your engine is running and the tachometer is reading zero, you might have a charging system problem.



CAUTION

Never allow your engines to exceed the maximum RPM listed in the engine operator's manual. Excessive RPM will cause extensive engine damage.



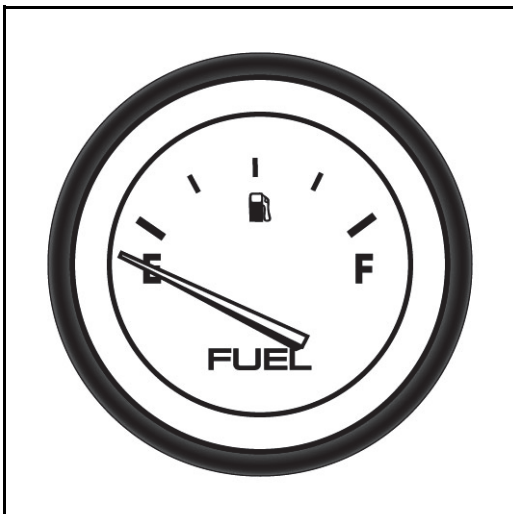


Hour Meter

The hour meter records cumulative hours of engine operation. The hour meter powers up when the engine ignition switch is turned to the ON position.

Always turn the engine ignition switch to the OFF position when the engine is secured from service. The hour meter will continue to count time when the engine is not running if the ignition switch is left in the ACC or ON position.

The engine operating hours can be used to schedule periodic maintenance for the boat and the engines.



Fuel Gauge

The fuel gauge powers up when the starboard engine ignition switch is turned to the ON position. The fuel gauge displays the approximate fuel level in the fuel tank.

The correlation between the gauge reading and fuel load is approximately linear from **FULL** to $\frac{1}{4}$ **FULL**. The accuracy of the fuel level reading decreases below $\frac{1}{4}$ **FULL** because of the tank's profile.

The most accurate reading is obtained when the boat is at rest and level.

CAUTION

The fuel gauge reading is approximate. Verify the gauge reading using other methods. Be conservative when estimating fuel on-board.

Water Pressure Gauge

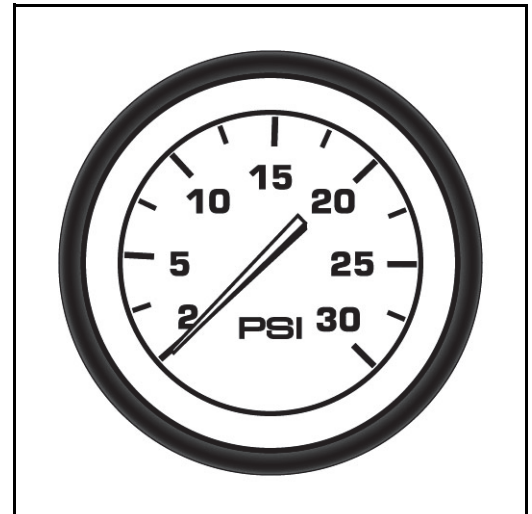
The water pressure gauge displays the pressure in the engine's cooling system. The gauge's unit of measure is pounds per square inch (PSI).

The water pressure gauge is a good indicator of cooling system condition. Notice the readings at various engine RPM settings and watch for any variation.

Refer to the engine operator's manual for PSI ranges for your engine.

CAUTION

If the water pressure reading drops significantly while the boat is on plane, stop the boat immediately. Check the engine's water intakes and cooling system. If the engine is overheating, continued operation could cause extensive damage.



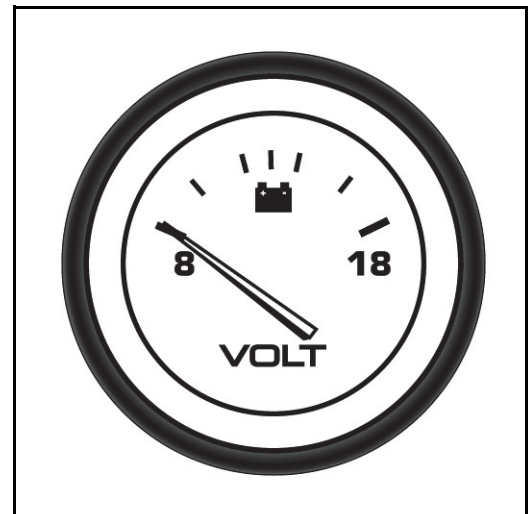
Voltmeter

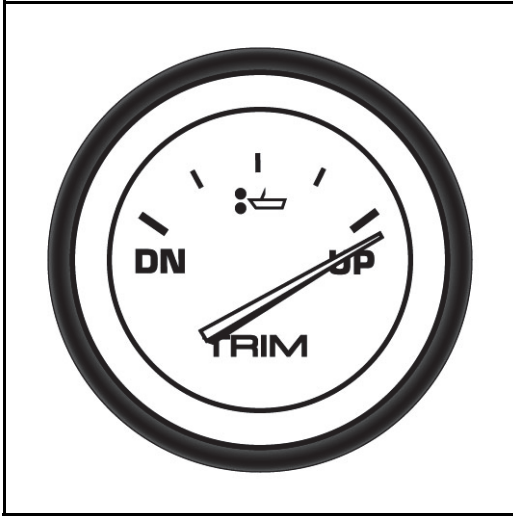
Each outboard engine has an alternator that charges its starting battery when the engine is running above idle speed. The voltmeter displays engine battery voltage measured in DC volts (VDC).

These readings indicate that engine battery systems are in good condition:

- Key OFF: 0 volts
- Key ON, engine not running: 12 volts
- Engine running above idle: 14½ volts

Refer to the engine operator's manual for additional detailed information about the engine charging systems.





Trim Gauge

The trim gauge measures the engine's angle position relative to the boat's transom. The first 15° of movement is the engine's **trim** range. The additional engine movement is referred to as the **tilt** range. Engine movement through the tilt range does not register on the trim gauge.

The trim gauge displays this value as relative **Bow Up** or **Bow Down**.

It takes specific experience with each boat/engine/propeller combination to identify the best engine trim settings for certain conditions. Remember that **either** extreme of the trim range is usually inefficient.

Generally, engine trim **IN** is good for acceleration and load carrying. Engine trim **OUT** is good for speed and fuel efficiency.

Refer to the engine operator's manual for detailed information about the engine trim systems.

SmartCraft Vessel View[®] System

Your boat might be equipped with Mercury Marine's SmartCraft Vessel View boat and engine information system. The Vessel View color LCD display is located at the helm station, directly above the steering wheel. The Vessel View system powers up when either engine main ignition key switch is turned to the ON position.

The Vessel View system is a comprehensive boat and engine information center that continuously monitors and reports detailed information about your boat, your engines, and your boating environment. Your Vessel View system is networked with the boat's GPS to provide detailed operational information such as navigation, speed over ground, and fuel to destination.

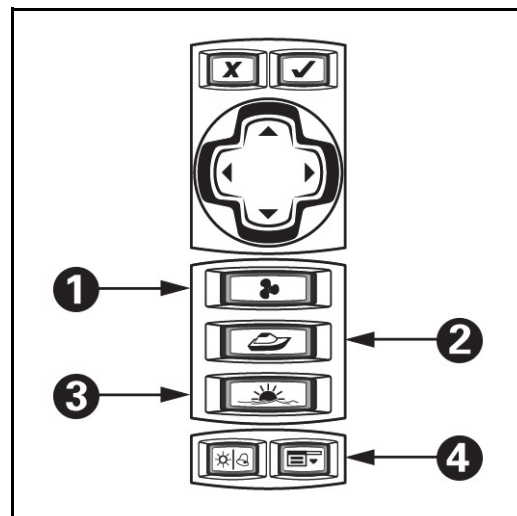
Your Vessel View system has a user-friendly interface that is controlled by seven buttons and a track pad. These controls allow you to calibrate and control all of the information reports and formats.

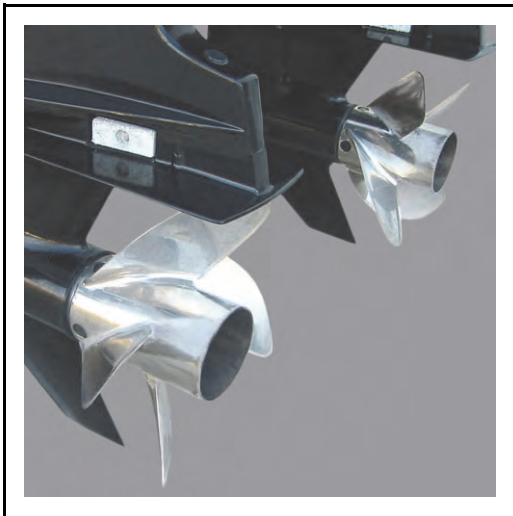
The Vessel View information reports are grouped into four categories.

- ❶ **Propulsion** includes all engine systems information
- ❷ **Vessel** includes information about fuel use, tank levels, generators, and air conditioning
- ❸ **Environmental** includes information about water depth, navigation, and GPS
- ❹ **Setup** includes screens related to calibration, display, and setup

The Vessel View system reports warnings using five levels of graphical icons. The icons change appearance as the warnings become more critical.

Refer to the **SmartCraft Vessel View** operation manual in your owner's bag for detailed information about the setup and operation of this important system.





Propellers

Your outboard engines are equipped with propellers of a tested size and design to provide best engine and boat performance.

Refer to the engine operator's manual for detailed information about propeller designs and the correct propeller selection method.

CAUTION

Never use propellers that allow the engines to operate outside of their recommended RPM range at full throttle. Extensive engine damage can occur.



You should always carry a spare propeller, propeller hardware, and propeller wrench on-board. Universal propeller wrench **P/N 1964627** is available from Boston Whaler. You should replace your propeller when it becomes damaged to avoid additional damage to the engine.

WARNING

To prevent the engine from starting accidentally, turn the correct engine battery OFF-ON switch to the OFF position before changing a propeller.



In some situations, you might want to change the propellers to give your boat slightly different performance characteristics. Changes to your boat's configuration, such as additional equipment or adding bottom paint, can affect the type and size of propellers required.

Reducing propeller pitch and diameter will increase acceleration and load carrying capability, with a slight decrease in top speed. It will also **increase** the engine's full-throttle RPM at a rate of about 150 RPM per inch of pitch change.

Increasing propeller pitch and diameter will decrease acceleration and might increase top speed. It will also **decrease** the engine's full-throttle RPM at a rate of about 150 RPM per inch of pitch change.

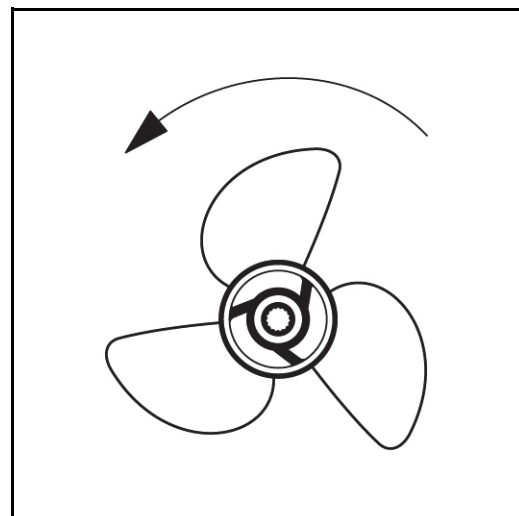
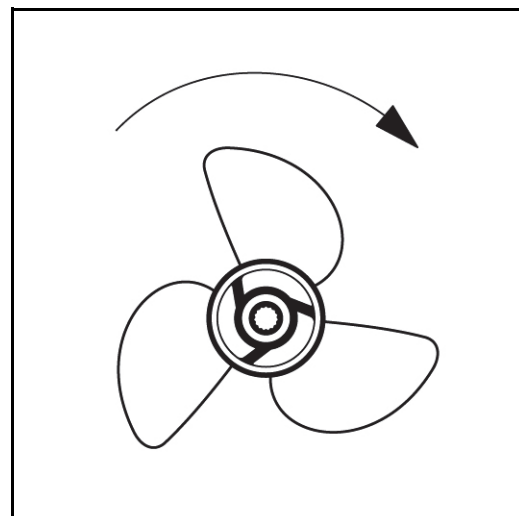
Your boat might be equipped with one engine that is counter-rotating, which means that the port propeller rotates in a counter-clockwise direction while in forward gear when viewed from behind the boat. Counter-rotating propellers have significant advantages for the boat operator. They improve slow-speed maneuverability, help cancel engine torque, reduce steering effort, and help carry extra weight.

⚠ CAUTION

Mismatching propellers on a pair of counter-rotating outboard engines could cause a loss of directional control and could result in catastrophic gearcase failure.

If you are considering a propeller change, the type, pitch, and diameter should be discussed with an authorized outboard servicing dealer.

Refer to the engine operator's manual for detailed information about propellers.





Load Distribution

Placement and concentration of non-permanent loads in a boat can affect boat performance and crew safety. Refer to **Boat Load Capacities** in Section 6 of this manual for additional information.

WARNING

Improper operation, excessive loading, improper load distribution, and mismatching loads to existing conditions can contribute to boat swamping or capsizing. These situations can result in serious injury or death.

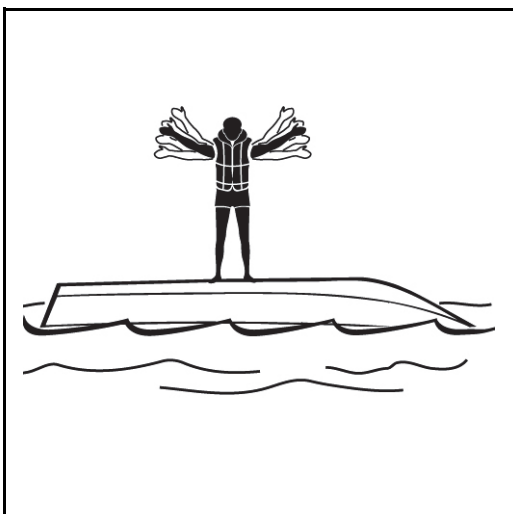
WARNING

The dive/rescue door is a specialized piece of rescue equipment. All posted USCG and NMMA load capacities are suspended when the dive/rescue door is out. Operate your boat carefully to avoid swamping or capsizing.



Follow these guidelines for non-permanent loads:

- Never exceed the capacity limits listed in this manual.
- Consider reducing these capacity limits during emergencies, special operations, and severe weather.
- Never concentrate a heavy load in one small area of the boat.
- Equipment and people are considered part of your non-permanent load.
- Distribute any non-permanent load or cargo evenly, front-to-back and port-to-starboard.
- The center of the non-permanent load distribution should be in the center of the boat.
- Do not allow your non-permanent loads or cargo to shift unexpectedly. Always secure non-permanent loads and cargo with netting, tie-down straps, lines, and appropriate deck hardware.
- You must be prepared to adjust the load distribution as operating conditions change.



Boat Trim Tabs

Your boat is equipped with Lenco® electro-mechanical trim tabs. The trim tab control buttons and LED indicator lights are located at the helm station, near the engine controls.

Using the boat trim tabs properly requires experience and skill. Always operate any boat system within the limits of your experience. If you do not have this experience, ask someone to instruct you or gain experience through experimentation under controlled conditions.

WARNING

The boat's attitude and steering effort can react very quickly to changes in trim tab position. Adjust trim tab deployment in small increments to avoid loss of boat control.

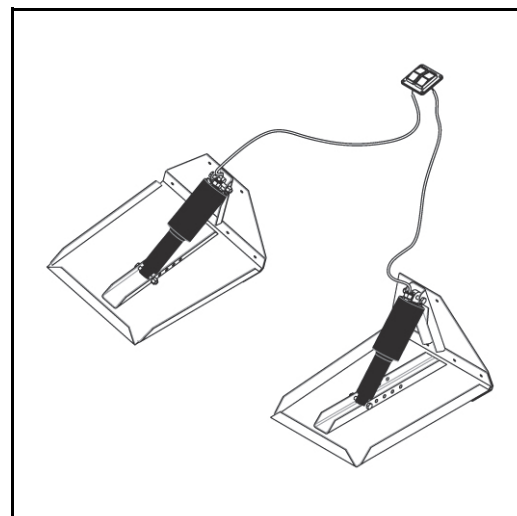
You can use the boat trim tabs to:

- Adjust for uneven load distribution
- Adjust for strong crosswinds
- Adjust for changing weather conditions
- Trim the boat fore and aft
- Trim the boat port and starboard
- Improve ride smoothness
- Improve boat performance

The electro-mechanical cylinders and trim tabs are located on the lower portion of the boat's transom.

The trim tab control box senses switched 12 VDC at the starboard engine main ignition key switch.

- The trim tab system will only operate when the starboard engine main ignition key switch is ON
- The trim tabs will automatically retract when the starboard engine main ignition key switch is turned OFF





Operation

The trim tab switch panel is labeled and wired to make tab operation simple. When operating the trim buttons, think of how you want the **bow of the boat** to move to properly trim the boat.

To lower the **port** bow, push the **left** DOWN button. This lowers the trim plane on the **starboard** side of the transom.

To lower the **starboard** bow, push the **right** DOWN button. This lowers the trim plane on the **port** side of the transom.

To evenly lower or raise the bow, you can push both buttons at the same time. To evenly **lower** the bow, push **both** DOWN buttons. To evenly **raise** the bow, push **both** UP buttons.

The Lenco switch panel includes two LED segment bars that represent the relative position of both trim tabs. When you **lower** one or both of the trim tabs, the LED segment bars will extend to indicate that the trim tabs are moving down. When you **raise** one or both of the trim tabs, the LED segment bars will retract to indicate that the trim tabs are moving up.

⚠ CAUTION

The trim tabs will automatically retract when the starboard engine main ignition key is turned OFF. Make sure that both trim tabs are fully retracted before you put the boat on a trailer, cradle, or boatlift. Contact with the trim tabs can cause serious damage to the tabs and boat.

Refer to the **Lenco** operation manual in your owner's bag for detailed information about the operation and maintenance of the trim tab system.

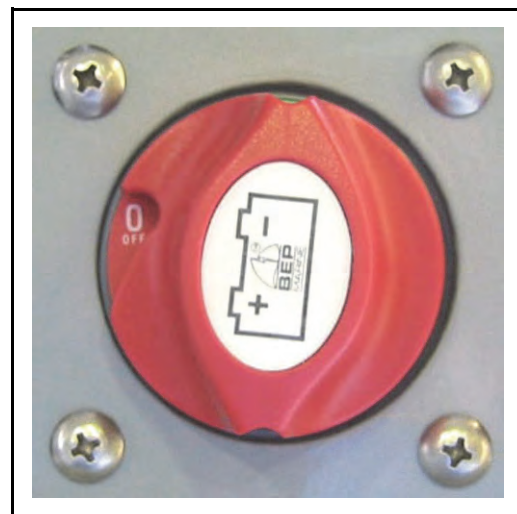


Stopping Procedure

Use the following checklist at the end of each mission to verify that the appropriate boat systems are configured for a short period of non-use at the dock.

If you are not going to use the boat for a long period of time, refer to **Off-Season Storage** in Section 6.

- ☐ Put both engine control levers in NEUTRAL
- ☐ Secure the boat. Deploy fenders and fender boards.
- ☐ Turn the main engine key switches to the OFF position
- ☐ Verify that the boat trim tabs are fully retracted
- ☐ Power down all electronic equipment following manufacturer's instructions
- ☐ Center the outboard engines before tilting to avoid contact with any special towing equipment
- ☐ Raise the engines to full Tilt Up position and engage tilt locks
- ☐ Turn engine battery OFF-ON switches to OFF position
- ☐ Turn house battery OFF-ON switch to OFF position
- ☐ Remove battery OFF-ON switch knobs, if appropriate
- ☐ Bilge pumps have an uninterruptible power supply to support automatic operation
- ☐ Verify bilge pump rocker switches are in the AUTO position
- ☐ Connect and activate shore power, if appropriate
- ☐ Verify shore power polarity



CAUTION

Keep the bilge pump switches in the AUTO position anytime the bilge drain plug is in place, whether the boat is in the water or on a trailer. Keeping the switches in the AUTO position allows the system to sense rainwater or melting snow that might accumulate in the bilge.





Trailer

If Boston Whaler supplied the trailer for your boat, it is designed specifically for your boat and it is commercial-grade. The trailer construction is heavy-duty and it exceeds the capacity requirements for your boat. This trailer might be equipped with additional upgrades to suit your mission.

Regulations controlling trailer equipment and manufacture vary from place to place. You must verify that your trailer meets the laws and transportation regulations in the states or countries where you use it.

Refer to the trailer owner's manual for detailed information about the operation and maintenance of this trailer.



CAUTION

Do not trailer your boat with the engines in their fully tilted position.

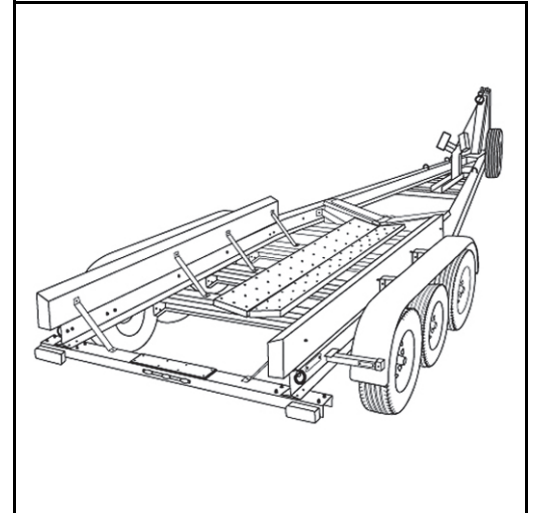
CAUTION

Center the engines before tilting to avoid contact with any special towing equipment on your boat.

If you supplied the trailer for your boat, you must verify that the trailer's design is adequate for your boat.

Review these guidelines when evaluating a customer-supplied trailer:

- The trailer's net carrying capacity must exceed the weight of the boat in its fully-loaded condition
- Construction materials must suit your operating environment
- The trailer should have torsion axles
- All trailer equipment (brakes, tires, winch, straps, etc.) should be heavy-duty
- Trailer bunks must be continuous and as long as the boat's running surface
- Trailer bunk contact angle must match the hull deadrise angle
- Trailer bunks must be parallel with the boat centerline and must not touch any lifting strake
- Trailer should be equipped with a barge stop to support the boat's bow
- Trailer bunks must not be segmented or swivel
- Trailer must not be an "all-roller" design
- Trailer must not support boat weight at any single, concentrated point such as a keel roller



Refer to **Trailer Setup** in Section 6 for detailed information about trailer dimensions.

CAUTION

Transporting your boat on a sub-standard trailer can cause serious, permanent damage to the hull. This type of hull damage is considered "improper storage" and is not covered under the BCGP limited commercial warranty.



Safety Checklist

Use the following safety checklist to verify that your boat, trailer, and towing vehicle are in good condition. Use this checklist each time you prepare for a mission. Resolve any issues before beginning your mission.

- ☐ Trailer maintenance log is current
- ☐ Tow vehicle **gross combined weight rating (GCWR)** must exceed combined weights of your tow vehicle, boat, and trailer
- ☐ Tow vehicle is in good condition
- ☐ All gear and equipment in boat is secured
- ☐ Outboard engines supported by trailering locks
- ☐ Boat correctly positioned on trailer bunks
- ☐ Winch cable tight and locked
- ☐ Bow safety cable attached
- ☐ Bow tie-down link secured
- ☐ Stern tie-down straps secured
- ☐ Trailer surge or electric brakes operational
- ☐ Trailer tires and spare in good condition
- ☐ Tire pressures are correct
- ☐ Lug nuts are correctly tightened
- ☐ Wheel bearings lubricated and functional
- ☐ Trailer coupler securely attached to tow vehicle
- ☐ Trailer safety cables attached to tow vehicle using criss-cross pattern
- ☐ Trailer brake emergency actuator chain attached to tow vehicle
- ☐ Trailer light connector plugged in to tow vehicle
- ☐ Trailer clearance, brake, and turn signal lights operational
- ☐ Trailer jack completely retracted and caster wheel removed if possible



Refer to the trailer owner's manual for detailed information about maintenance procedures and service specifications.

Towing

⚠ WARNING

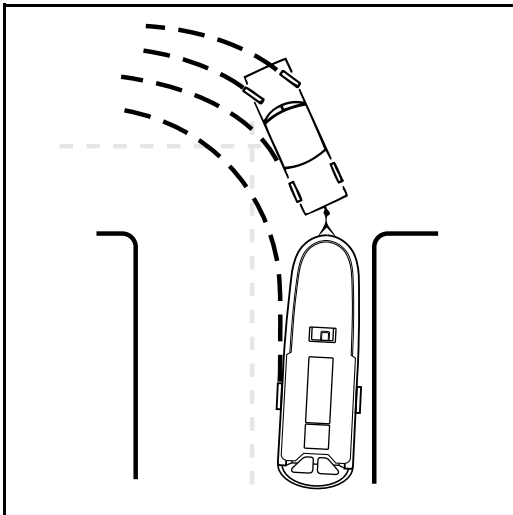
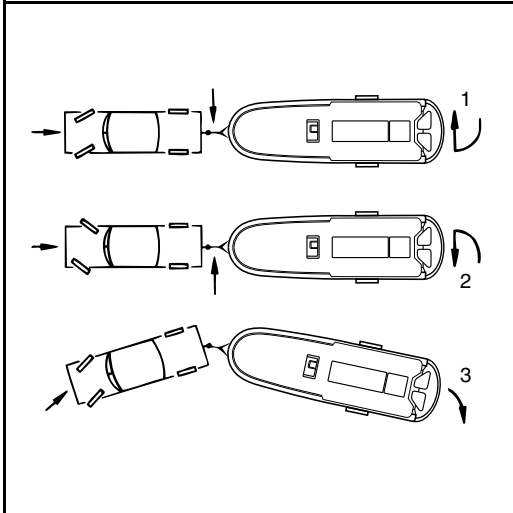
Tow vehicle GCWR must exceed the combined weights of your tow vehicle, boat, and trailer. Overloading the tow vehicle is unsafe and could cause loss of vehicle control.

Towing your boat on a trailer requires experience and skill. Always operate a towing vehicle within the limits of your experience. If you do not have this experience, ask someone to instruct you or gain experience through experimentation under controlled conditions.

When maneuvering on streets or highways, always remember that the boat and trailer have at least doubled the effective length and weight of your tow vehicle. Follow these guidelines when towing:

- Always use common sense when trailering a boat
- Operate your tow vehicle well within the existing traffic regulations
- Pay close attention to road and weather conditions
- Always avoid traffic situations where rapid acceleration or deceleration is required
- Double the standard following distance for your vehicle speed
- Always be aware of traffic conditions around you
- Identify any possible “blind spots” behind or on either side of your trailer
- Plan ahead and check your mirrors carefully when changing lanes, stopping, or turning
- Always signal your intentions well in advance of a lane change or a turn
- Make very wide turns. Your trailer will not follow the path of your tow vehicle tires
- Stop periodically to check the condition of the trailer, boat, and tow vehicle





Backing

Backing a trailer requires experience and skill. Always operate a towing vehicle within the limits of your experience. If you do not have this experience, ask someone to instruct you or gain experience through experimentation under controlled conditions.

Follow these guidelines when backing your trailer:

- Have a spotter outside the vehicle to assist with instructions
- Check your mirrors constantly
- Always know where the boat is in relation to any fixed objects
- Never accelerate in reverse. Back up slowly!
- When the trailer is straight behind the tow vehicle, the rear of the trailer will move opposite the direction that you turn the steering wheel
- If you turn the steering wheel clockwise, the trailer will move to the left
- If you move the steering wheel counter-clockwise, the trailer will move to the right
- Half way through the turn, adjust the steering wheel to follow the trailer through its turn
- Do not allow the trailer to turn so sharply that the trailer or boat hits the tow vehicle

Lifting and Slings

Safety Warnings

DANGER

Verify that the lifting equipment, spreader bars, slings, and attaching hardware are professionally certified to a working load of at least 8500 pounds (3856 kg) with a safety factor of five. Failure of any lifting component could cause extensive damage to the boat, serious injury, or death.

DANGER

Never allow anyone to be in the boat or under the boat while you are lifting it. A mistake in the lifting procedure or a component failure could cause serious injury or death.

DANGER

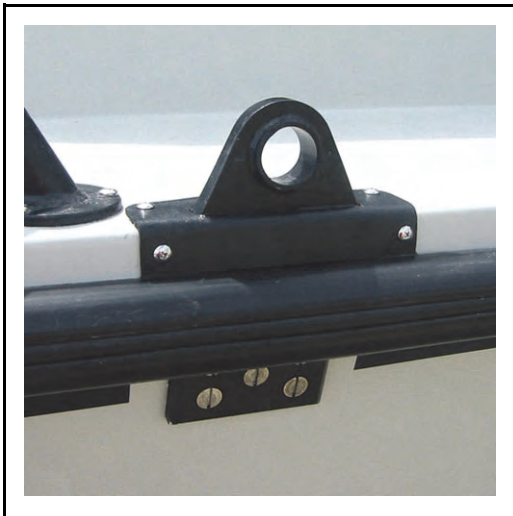
Inspect all lifting equipment for signs of wear or fatigue each time you lift the boat. Re-certify or replace the lifting equipment annually. Failure of any lifting component could cause serious injury or death.

WARNING

Never use the boat's bow eye, stern eyes, cleats, or railings as attachment points to lift this boat. Failure of these items during lifting could cause extensive damage to the boat, serious injury, or death.

CAUTION

Before you lift your boat, inspect the bottom to determine if there are any thru-hull transducers installed. Contact between lifting gear and a transducer will cause immediate, extensive damage to the transducer and the hull.



Gunwale Lifting Eyes

Your boat might be equipped with gunwale lifting eyes. **These gunwale lifting eyes are only available as a factory-installed option.**

Your hull would have a special lamination schedule and aluminum plate inserts to distribute the lifting load. If your boat has gunwale lifting eyes that were installed by the factory, you may use them as attaching points to lift your boat.

If you use the gunwale lifting eyes to move the boat, attach a four-point harness that is professionally certified to a working load of at least 8500 pounds (3856 kg) with a safety factor of five. Your boat might have been shipped with a Boston Whaler lifting sling set that meets all manufacturer requirements for lifting this boat.



CAUTION

Lift sling angles must always be greater than 60° from the deck, measured in any direction. Lift sling angles less than 60° will multiply the lifting forces and will damage the gunwale lifting eyes and the boat.

To provide a 5° bow-up angle during lifting, the front two straps are slightly longer than the rear two straps. The front two straps are marked **FORWARD** and rear two straps are marked **REAR**.

Attach at least two guide lines to control the boat while it is being lifted.

DANGER

Never allow anyone to be in the boat or under the boat while you are lifting it. A mistake in the lifting procedure or a component failure could cause serious injury or death.

Move the boat slowly.

Forklift

You can use a large marine forklift to move your boat. The forklift must be professionally rated to a working load of at least 8500 pounds (3856 kg) with a safety factor of five. Adjust the forks to lift the boat evenly. The forks must not contact any thru-hull fittings on the bottom of the boat.

DANGER

Never allow anyone to be in the boat or under the boat while you are lifting it. A mistake in the lifting procedure or a component failure could cause serious injury or death.

Move the boat slowly.



[illegible]

Safety Warnings

WARNING

Inspect your fuel system and fuel tank before each mission. Correct the cause of any gasoline leak immediately. Ventilate the area to eliminate gasoline vapor before energizing any electrical circuits or starting the outboard engines.

DANGER

Leaking gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions. Correct the cause of any gasoline leak immediately.

WARNING

This fuel system is not designed to support an automatic “hands free” fuel nozzle. Never use an automatic fuel nozzle to fill this tank and never leave a fueling process unattended.

WARNING

The components in your boat fuel system are designed to work with automotive gasoline containing up to 10% ethanol, by volume. Using automotive gasoline with higher concentrations of ethanol will damage boat fuel system components and might cause fuel leaks.

CAUTION

Carefully follow the engine manufacturer’s recommendations when selecting gasoline for your outboard engines. Using non-recommended fuels can cause serious engine damage and might void your engine warranty.

CAUTION

Gasoline and oil spills are a safety hazard and can contaminate the marine environment. Never allow gasoline or oil to be discharged into the water.





General Description

Read and understand all the fuel-related information and warnings in this section and in your outboard engine operator's manual.

Your boat is equipped with a built-in gasoline fuel system that includes an aluminum fuel tank. The fuel tank is manufactured using marine-grade 5052-H32 aluminum alloy and is installed in the mid-bilge area. The fuel tank has a manufacturer's compliance label next to the fuel level sending unit. The compliance label includes information about tank capacity, construction materials, and date of manufacture.

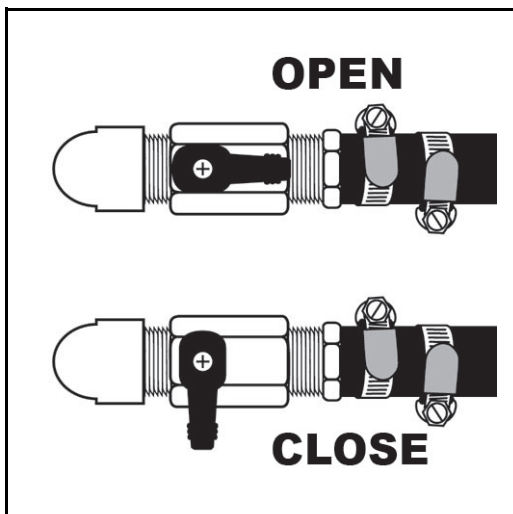
Your gasoline fuel system is designed to meet the diurnal emissions requirements outlined in ABYC Standard H24.18.4.1 and in Code of Federal Regulations (CFR) Title 40, sub-parts 1045 and 1060. These design elements work to limit liquid and vapor hydrocarbon (HC) emissions from your on-board gasoline fuel system.

The fuel system working capacity is 150 gallons.

The fuel tank has an electric sending unit that sends fuel level information to a fuel gauge located at the helm station.

The fuel tank has separate fuel withdrawal tubes for the port and starboard outboard engines and an additional withdrawal tube for an optional fire pump. Each fuel withdrawal tube has a manual fuel shutoff valve. You can use these valves to stop fuel flow during storage, during fuel system servicing, or in the event of an on-board fire.

The manual fuel shutoff valve is in the **OPEN** position when the lever is parallel with the valve body and the fuel valve is in the **CLOSE** position when the lever is perpendicular to the valve body.



The **Fuel System Diagram** in this section shows locations of the fuel tank, fuel fill, fuel tank vent, fuel level sending unit, fuel withdrawal tubes, fuel shutoff valves, fuel filters, and certain emission system components.

The fuel fill cap is located on the port ring deck, midship. The fuel fill hose is equipped with a flow-control valve which will not allow liquid gasoline to escape from the fuel fill cap during normal fueling operations.

The fuel tank vent is located on the starboard hull side, midship. The fuel tank venting system is equipped with a carbon canister which reduces vapor hydrocarbon (HC) emissions.

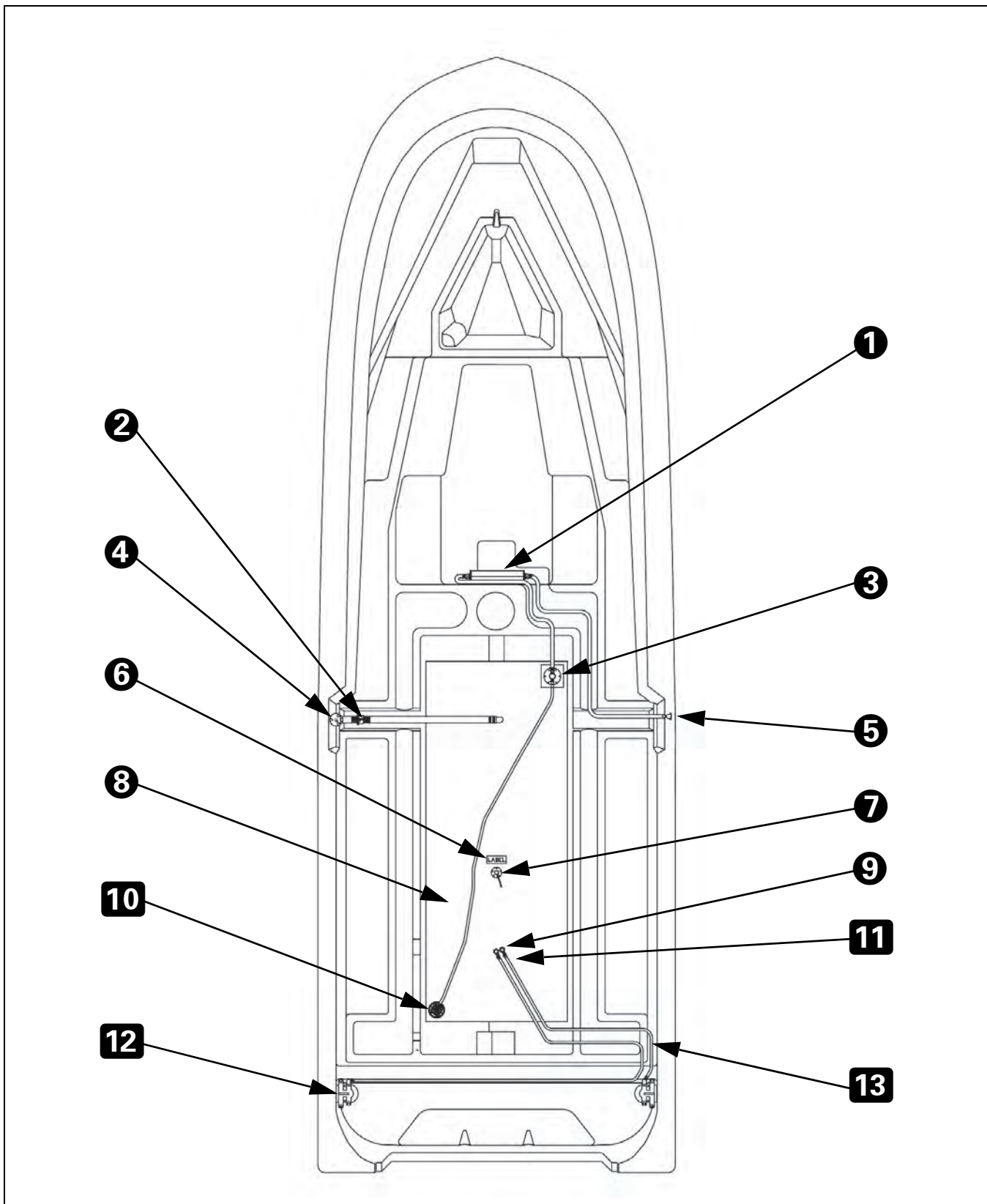


WARNING

Do not allow any liquid gasoline to enter the boat or accumulate in the bilge. Liquid gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions.



Fuel System Diagram



- ① Canister, carbon, vent**
- ② Valve, flow-control**
- ③ Valve, fuel level vent**
- ④ Cap, fuel fill**
- ⑤ Vent, fuel tank**
- ⑥ Label, manufacturer compliance**
- ⑦ Sender, fuel level**
- ⑧ Tank, gasoline, 150 gallons**
- ⑨ Tube, fuel withdrawal (3 per tank)**
- ⑩ Valve, grade level vent**
- ⑪ Valve, fuel shutoff (3 per tank)**
- ⑫ Filter, gasoline, Racor[®] (optional)**
- ⑬ Hose, fuel distribution, USCG A1**



Racor® Gasoline Filters

Your boat might be equipped with two Racor® 320R-RAC-01 gasoline filters. This filter features a water-separating 10-micron filter element, a replaceable spin-on canister, and a clear bowl to help detect water in your fuel.

Your inspection and servicing routine is directly related to the quality and quantity of gasoline that you take on-board. You should check the sight bowls for evidence of moisture before and after **every** mission.

Refer to **Blended Fuels** in this section for more information about water in gasoline.

Replace the filter elements on this schedule, whichever happens first:

- Every 100 operating hours
- Annually
- Noticeable engine performance loss

WARNING

Follow the manufacturer's recommendations exactly when servicing these filters to avoid engine damage or fuel leaks. Refer to the manufacturer's instruction booklet in your owner's bag for detailed information about these service procedures.

WARNING

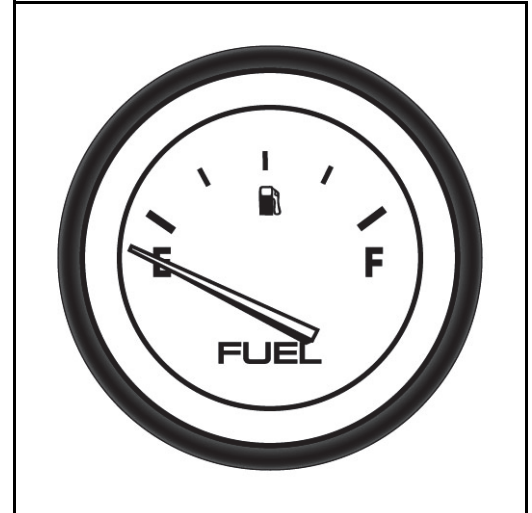
Do not allow any liquid gasoline to enter the boat or accumulate in the bilge. Liquid gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions.

Fuel Gauge and Sending Unit

The fuel tank has an electric sending unit that sends fuel level information to a fuel gauge located at the helm station. The fuel level sending unit is manufactured by **ISSPRO**. The sending unit is fully electronic and compatible with Mercury Marine's SmartCraft gauge system. The sending unit generates a fuel level signal ranging between 240 ohms (empty) and 33 ohms (full).

The fuel gauge powers up when the starboard engine main ignition key switch is turned to the ON position. The fuel gauge displays the approximate fuel level in the fuel tank. The correlation between the gauge reading and fuel load is approximately linear from **FULL** to $\frac{1}{4}$ **FULL**. The accuracy of the reading decreases below $\frac{1}{4}$ **FULL** because of the tank's profile.

The most accurate fuel level reading is obtained when the boat is at rest and level.



CAUTION

The fuel gauge reading is approximate. Confirm the gauge reading using other methods. Be conservative when estimating fuel on-board.



Fuel Stripping Pump

Your boat might be equipped with a system that allows you to manually strip gasoline and possibly water from the bottom of the fuel tank.

Refer to **Contaminated Gasoline** in this section for detailed information about the risks related to taking on gasoline that might contain ethanol or might be contaminated.

The optional fuel stripping pump is designed to work through the fuel tank sounding port. The boat must be at rest and level before you remove the sounding cap.

WARNING

Do not attempt to remove the sounding cap if the boat is in motion. Spilled liquid gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions.



Adjust the boat angle so that the lowest portion of the fuel tank is below the sounding hole. If possible, let the gasoline “rest” for 30 minutes before sampling. Install the pump so the pickup foot is touching the bottom of the tank. Pump the sample gasoline into a clean container and inspect for moisture or particulate contamination. Dispose of the test sample following all state and federal regulations.

Carefully remove the stripping pump. Remove all residual fuel from the stripping pump and reinstall the sounding cap following these guidelines:

- **DO NOT** over-tighten the sounding cap.
- **DO NOT** use tools to reinstall the cap.
- Confirm that no liquid gasoline is around the sounding cap after five minutes of boat operation.



Bonding System

A system of green #8 awg insulated copper wires forms a common bond among most non-current carrying metal objects in your boat, including the fuel tank, the fuel fill cap, and the bonding plate on the hull.

Bonding is the process of connecting various metal components in the boat to a common electrical contact. This helps to reduce the chance of rails and other metal objects carrying dangerous electrical charges.

The bonding buss system is also connected to the negative buss system to reduce the possibility of a voltage challenge between the two systems.

Maintenance

Check the bonding system periodically to assure that the wire and connections are not broken or damaged. You can verify the integrity of the system by checking for continuity with an ohmmeter or continuity light between the bonding plate and the fuel fill cap. If the meter or light indicates a break in continuity, replace the bonding system wires. After testing, coat all screws and terminals with liquid neoprene.

Repair

The following procedure covers the removal and installation of the bonding system wires. Bonding wires are accessed through the deck access plates and access hatches. Refer to the **Fuel System Diagram** in this section for component locations.

Perform a continuity test as described in **Bonding System Maintenance**. Remove the screw at each terminal location of the faulty wire. Attach a new wire to the end of the faulty wire and use the faulty wire to pull the new wire into position. Secure the wire to the terminal with a screw. Coat the terminal and screw with liquid neoprene.





Contaminated Gasoline

Water from condensation and sediment from contaminated gasoline can collect in your fuel tank. Contaminated gasoline can damage boat fuel system components, corrode the fuel tank, clog fuel filters, and damage your engines' fuel systems.

Your fuel filter inspection and servicing routine is directly related to the quality and quantity of gasoline that you take on-board. You should check the fuel filter sight bowls for evidence of moisture before and after **every** mission.

Refer to **Blended Fuels** in this section for more information about water in gasoline.



Use your fuel stripping pump to sample the gasoline for evidence of moisture or particulate contamination. Adjust the boat angle so that the lowest portion of the fuel tank is below the sounding hole. If possible, let the gasoline "rest" for 30 minutes before sampling. Pump the sample gasoline into a clean container and inspect for moisture or particulate contamination.

Refer to **Fuel Stripping Pump** in this section for detailed information about this service procedure.

If the test sample shows evidence of moisture or particulate contamination, consult a professional tank-cleaning contractor about having your fuel tank pumped out and cleaned.

Dispose of the test sample following all state and federal regulations.



WARNING

Do not allow any liquid gasoline to enter the boat or accumulate in the bilge. Liquid gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions.

Fueling Procedures

Safety Warnings

DANGER

Gasoline vapor is extremely flammable and highly explosive under certain conditions. Always stop the engines and never smoke or allow open flames or sparks within 50 feet of the fueling area when refueling.

DANGER

A discharge of static electricity can ignite gasoline vapor, causing serious injury, death, and destruction of property.

WARNING

This fuel system is not designed to support an automatic “hands free” fuel nozzle. Never use an automatic fuel nozzle to fill this tank and never leave a fueling process unattended.

WARNING

The components in your boat fuel system are designed to work with automotive gasoline containing up to 10% ethanol, by volume. Using automotive gasoline with higher concentrations of ethanol will damage boat fuel system components and might cause fuel leaks.

CAUTION

Carefully follow the engine manufacturer’s recommendations when selecting gasoline for your outboard engines. Using non-recommended fuels can cause serious engine damage and might void your engine warranty.





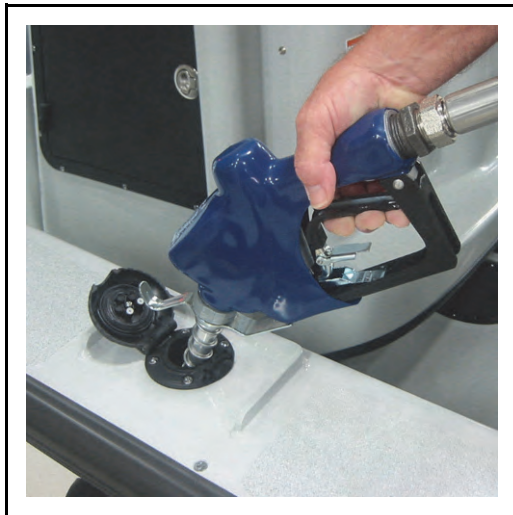
Static Electricity

A discharge of static electricity can ignite gasoline vapor that has accumulated during the fueling process. Use extreme caution when fueling your boat under unusual circumstances such as when the boat is suspended in a boatlift.

Your boat has important safety features and systems that can be defeated by not following standard fueling practices. Under normal conditions, your boat's bonding system protects it from accumulating and discharging static electricity.

Here are some important guidelines to protect you from static electricity discharge while fueling:

- Always keep your boat in continuous contact with the water or a land-based grounding system during fueling.
- Always keep the fuel nozzle in contact with the fuel fill assembly or the edge of the fuel tank opening during the fueling process. This contact must be continuously maintained until fuel flow has stopped.
- Never fuel your boat under unsafe conditions that could increase the possibility of creating static electricity.
- Only fill portable gasoline tanks while on land, never on-board the boat.
- Never use homemade containers as a source of gasoline to fill your fuel tank.
- Only carry gasoline on-board in a UL-approved container or in a portable gasoline tank such as those provided with outboard engines.
- Never store portable gasoline tanks in living, engine, or mechanical spaces.



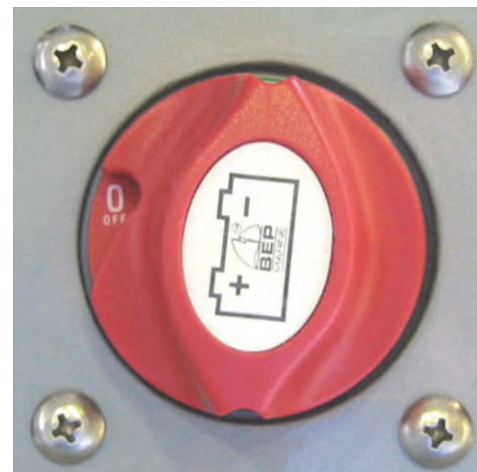
General Guidelines

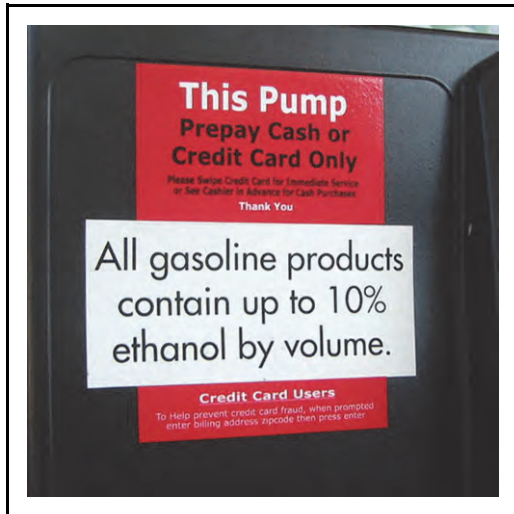
Also follow these important guidelines during fueling operations:

WARNING

This fuel system is not designed to support an automatic “hands free” fuel nozzle. Never use an automatic fuel nozzle to fill this tank and never leave a fueling process unattended.

- Shut down outboard engines, electric motors, and fans before fueling. All possible sources of ignition must be **OFF** before you begin taking on gasoline.
- Close all ports, windows, doors, hatches, and compartments.
- Extinguish cigarettes, pipes, stoves, and all other flame-producing devices.
- Make sure all electrical power is **OFF**. Do not operate any electrical switches.
- Never take on gasoline at night, except in well-lighted areas.
- Insert fuel nozzle and make sure nozzle is in contact with or grounded against fill pipe before you pump gasoline. This contact must be continuously maintained until gasoline flow has stopped.
- Never exceed a fill rate of 9 GPM. Slow the fill rate to 6 GPM for the final ¼ of tank.
- **DO NOT fill the tank completely.** Allow a minimum of 2% of tank volume for temperature-related expansion. Allow for 6% expansion if the temperature of the gasoline taken on-board is 32°F or lower.
- Close and secure the fuel fill cap after fueling.
- Wipe up any spillage completely and dispose of rags or waste on-shore following all state and federal regulations.
- Ventilate the area to eliminate gasoline vapor before energizing any electrical circuits or starting the outboard engines.





Blended Fuels

WARNING

The components in your boat fuel system are designed to work with automotive gasoline containing up to 10% ethanol, by volume. Using automotive gasoline with higher concentrations of ethanol will damage boat fuel system components and might cause fuel leaks.

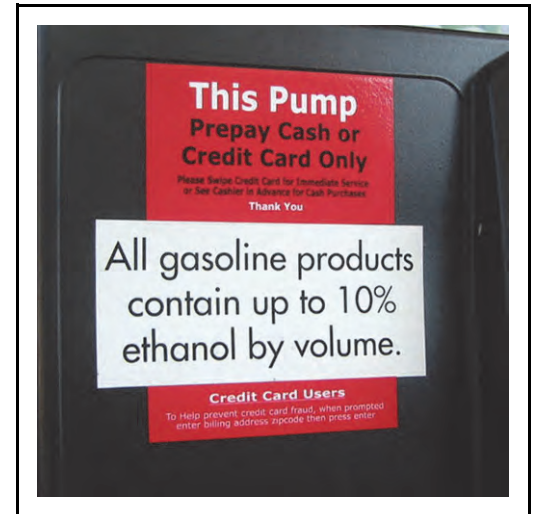
Automotive gasoline has contained various oxygenated hydrocarbon compounds as replacements for lead since 1985. These compounds boost the octane rating of gasoline. Two familiar compounds are MTBE and ethanol. Ethanol is now the most common compound since MTBE was identified as a serious polluter of ground water.

Ethanol for gasoline is a highly refined grain alcohol rated at about 200 proof. The U.S. EPA currently allows automotive gasoline to contain up to 10% ethanol, by volume. While E-10 gasoline does not cause significant problems in road vehicles, it does require extra attention when used in your boat.

Follow these rules when using E-10 gasoline in your boat:

- Read and understand all of the fuel-related safety warnings and maintenance procedures outlined in this operator manual.
- Read and understand all of the fuel-related safety warnings and maintenance procedures outlined in your outboard engine operator's manual.
- Ethanol is hygroscopic, meaning that it attracts and easily mixes with moisture. E-10 gasoline will corrode metal fuel system parts faster than gasoline without ethanol. If you are switching to E-10 gasoline, it can loosen scale and deposits in older fuel systems. Regularly inspect all fuel system components and fuel filters for signs of corrosion and particulate contamination.

- If E-10 gasoline absorbs enough moisture, it can suffer phase separation. The ethanol and water mixture will fall out of suspension and collect in the lowest parts of the fuel system. The ethanol and water mixture can damage engines, clog fuel filters, and corrode metal fuel system parts. Fuel tanks with E-10 gasoline should always be kept as full as possible to reduce exposure to moisture from condensation and humidity.
- Concentrations of ethanol greater than 10% can change the physical properties of some rubber and plastic fuel system parts such as gaskets, hoses, tanks, and filters. Regularly inspect all non-metal fuel system parts for signs of swelling or deterioration. In some extreme cases, rubber parts such as hoses and gaskets can actually sweat liquid gasoline. Be alert for the odor of gasoline or small droplets of gasoline near these parts.
- Always have fuel system repairs performed by a qualified marine technician.



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General Description

This section contains general theory and functional information about the boat systems. This information is intended to give you an idea about how each boat system is configured and how it should be used.

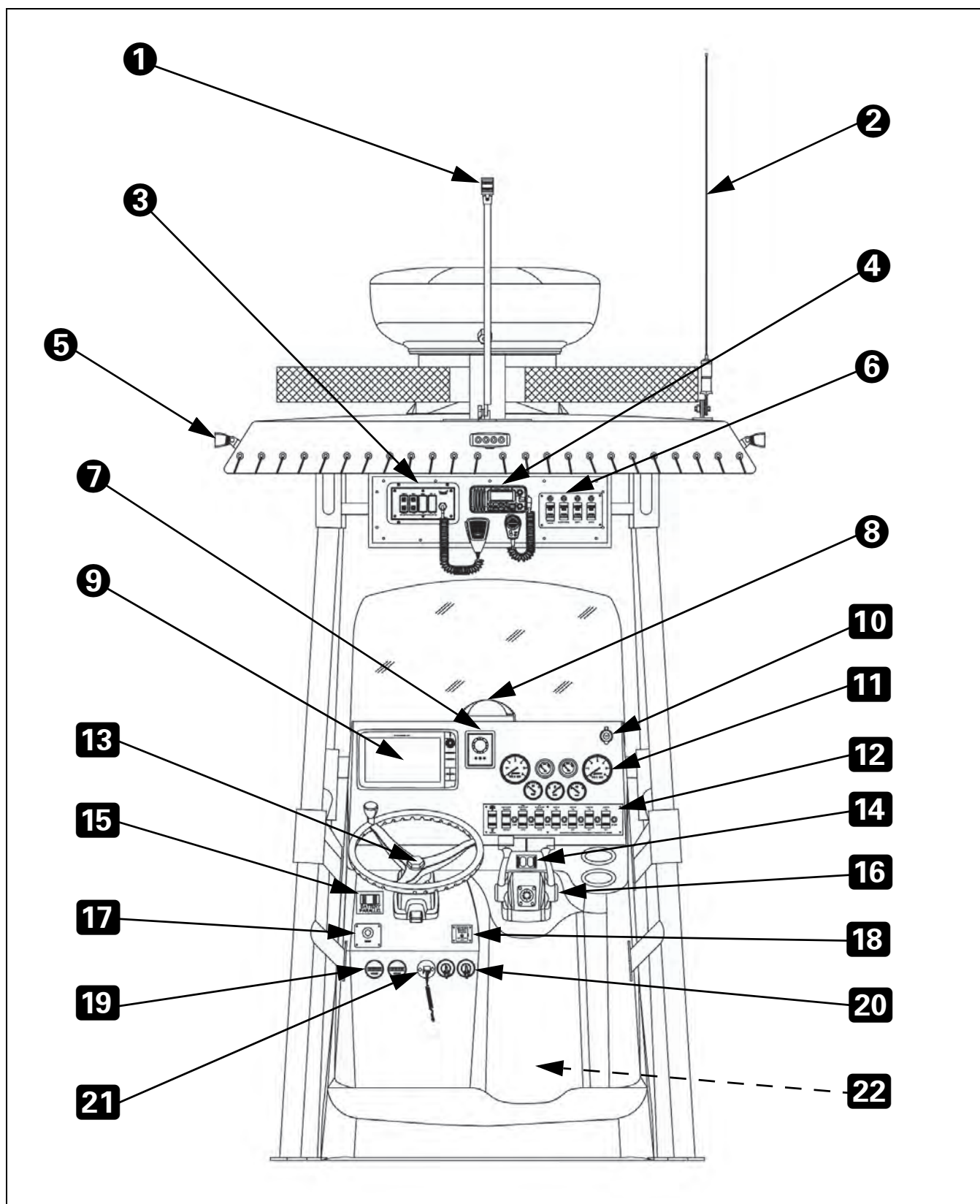
The content of this section is based on the most current design and assembly information available at the time of publication. The information and illustrations are general representations of the boat systems. The information is not meant to be used as a detailed parts manual or a service manual.

Certain features, parts, systems, and accessories discussed in this section might not be found on your boat.

This boat and these boat systems should be maintained by an experienced marine technician.

Specific troubleshooting and parts information for each accessory component might be included in the **OEM** literature contained in your owner's bag.

Control Console Layout



- ① Light, anchor**
- ② Antenna, VHF radio**
- ③ Control head, Whelen light bar**
- ④ Radio, VHF**
- ⑤ Floodlight, LED (4 places)**
- ⑥ Panel, switch, floodlights**
- ⑦ Touch pad, ACR spotlight**
- ⑧ Compass, magnetic**
- ⑨ Display, navigation**
- ⑩ Outlet, accessory, 12 VDC**
- ⑪ Engine instrumentation**
- ⑫ Panel, switch, helm station**
- ⑬ Helm, steering, manual hydraulic**
- ⑭ Panel, switch, Lenco tabs**
- ⑮ Panel, switch, battery parallel**
- ⑯ Control, engine, dual-lever**
- ⑰ Button, horn, 12 VDC**
- ⑱ Panel, LED, battery status**
- ⑲ Gauge, operating hours, engine**
- ⑳ Switch, key, engine ignition (2 places)**
- ㉑ Switch, engines, emergency shutoff**
- ㉒ Storage, batteries, engines & house**



Steering System

The steering system installed in your boat is a Teleflex Sea Star II hydraulic system. This is a manually operated, closed-loop hydraulic system requiring no pumps or electric motors. The system consists of the following components:

- Steering wheel
- Sea Star II helm pump
- Teleflex hydraulic hoses
- Front-mount steering cylinders
- Sea Star HA-5430 fluid



The Sea Star II helm pump is an axial piston pump specifically designed for manual steering. It has a built-in lock valve to prevent the steering load of the engines from feeding back to the boat operator. The lock valve will not allow the outboards to move unless the steering wheel is turned. The lock valve also contains a pressure relief valve which provides over-pressure protection for the mechanical components, the hydraulic hoses, and the fittings.

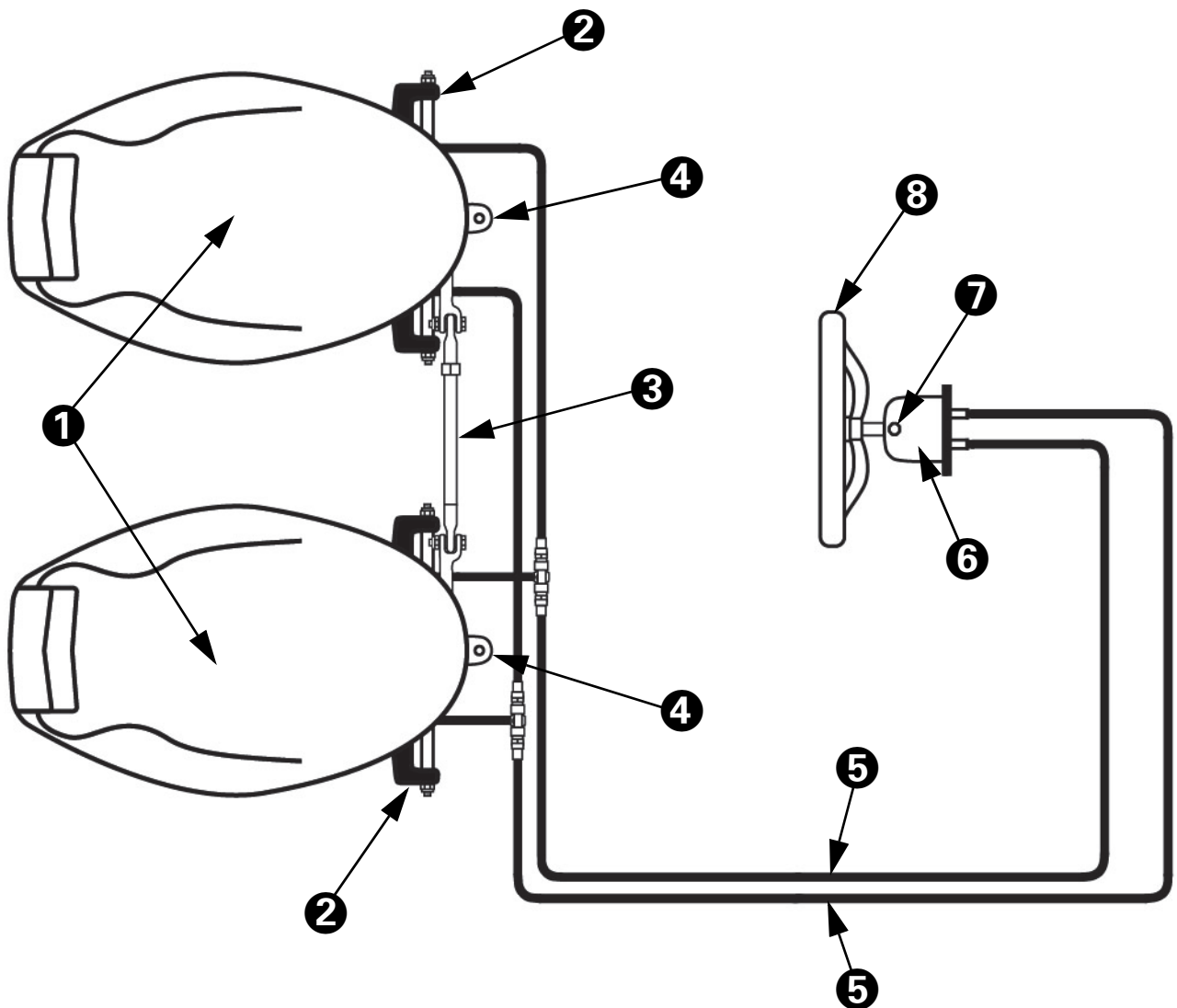
When the steering wheel is turned **clockwise**, hydraulic fluid is pumped out of the helm unit, into the starboard hoses and then into the steering cylinders. As the fluid is pumped into one side of the steering cylinders, an equal volume of fluid is displaced from the opposite side. The steering cylinder bodies move to port. The cylinder bodies are connected directly to the engine steering arms. The engine steering arms also move to port and put the boat into a **starboard** turn. The fluid displaced from the steering cylinders returns to the helm pump reservoir through the port hoses.

Turning the steering wheel **counter-clockwise** results in a similar response, but in the opposite direction. When no course correction is required, the lock valve holds the outboard engines in place.

Return the steering wheel to the **CENTERED** position when you turn the engines **OFF**.

Steering System Diagram

- | | |
|----------------------------|--------------------------|
| ❶ Outboard engine | ❺ Hydraulic hoses |
| ❷ Steering cylinder | ❻ Helm reservoir |
| ❸ Tie bar | ❼ Fill port |
| ❹ Steering arm | ❽ Steering wheel |





Navigation Lights

Your boat is equipped with navigation lights for your safety. Regulations state that all boats, regardless of size, must display navigation lights at night.

Your navigation lights let people operating other vessels know the approximate size of your boat and the direction your boat is traveling. Depending on which lights are displayed, they let people operating other vessels know your position while you are underway or anchored.

Your navigation lights must be displayed at night or in low visibility conditions. It is your responsibility to verify that the navigation lights are in working condition and that proper lighting is displayed.



⚠ CAUTION

Installing after-market accessories such as radar domes, arches, and strobe lights can obstruct the navigation lights and decrease their effectiveness. It is your responsibility to comply with regulations regarding the normal operation of the navigation lights.

Operation

Operate your navigation lights using the three-position rocker switch located on the helm station switch panel. The down position is **ANCHOR**, the center position is **OFF**, and the up position is **NAV**.

While underway, move the rocker switch up to the **NAV** position. This turns on the port red, starboard green, and 360° white lights. The red and green lights are located on the forward ring deck. The 360° white light is located on a folding mast.

At anchor, move the rocker switch down to the **ANCHOR** position. This turns on only the 360° white light.

No lights are lighted when the rocker switch is in the center **OFF** position.



Compass

⚠ WARNING

All magnetic compasses are subject to magnetic interference, which can produce errors called deviation. Compass deviation can contribute to inaccurate course plotting and position fixes, placing your crew, your boat, and others at risk.

Deviation

Your magnetic compass is located in line with the helm station, below the operator's line of sight so it can be easily read during normal boat operation.

The location of your compass has been selected to minimize deviation caused by other equipment installed on the boat. Magnets, ferrous metals, and current-carrying devices are common causes of deviation.

Periodically check the alignment of the compass to verify that it is installed properly and compensated. Compensation is the act of correcting for deviation.

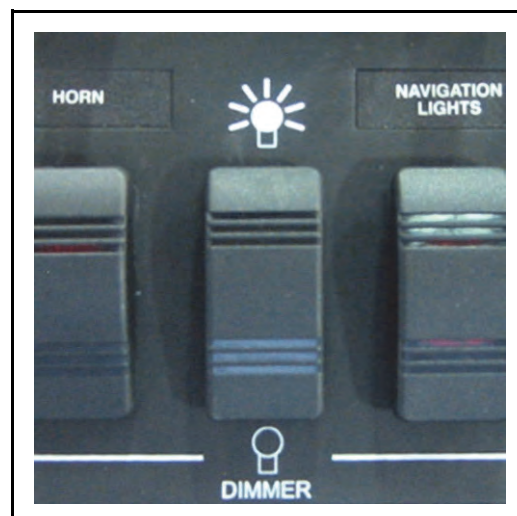
Refer to the compass manufacturer's literature for detailed information about the compensation procedure.

Variation

It is important to understand that magnetic compasses point toward **magnetic north**. There is a difference between magnetic north and true north. That difference is called variation. Variation differs depending on your geographical location and can be determined by referring to a local chart.

Night Lighting

The internal red night operation light is connected to the lighting circuit of the engine gauges. The compass night light, like the engine gauge lights, is dimmed using the dimmer switch on the helm station switch panel.



Bilge Pump System



Your bilge pump system consists of a forward 1100 gallon per hour (GPH) pump and an aft 1100 GPH pump. Each bilge pump is connected to a water level sensor that will automatically activate the system when water in the bilge reaches a depth of about two inches.

One 1100 GPH pump is located in the bilge, just forward of the control console. It is under a removable sump cover. The discharge for the forward bilge pump is located midship on the starboard side.

One 1100 GPH pump is located in the aft bilge area and can be accessed through a deck hatch. This pump discharges on the starboard side just forward of the transom.



The bilge pump power circuit is wired directly to the battery side of the **port** engine battery OFF-ON switch. The bilge pump system has an uninterruptible power supply that is not affected by the position of the port engine battery OFF-ON switch.

The uninterruptible bilge pump power circuit is protected by a 20-amp blade fuse. The fuse is located in a water-proof holder that is within seven inches of the port engine battery OFF-ON switch.



Operation

Operate your bilge pump system using the two 2-position rocker switches located on the helm station switch panel. The **AUTO** switch position supplies constant power to the water level sensor so water is pumped anytime it is detected.

The rocker switch has a red LED indicator that will be lighted anytime the bilge pump is running.



⚠ CAUTION

Keep the bilge pump switches in the **AUTO** position anytime the bilge drain plug is in place, whether the boat is in the water or on a trailer. Keeping the switches in the **AUTO** position allows the system to sense rainwater or melting snow that might accumulate in the bilge.

The **MANUAL** switch position supplies power directly to the bilge pump. When the rocker switch is in the **MANUAL** position, the bilge pump will run even if there is no water in the bilge.

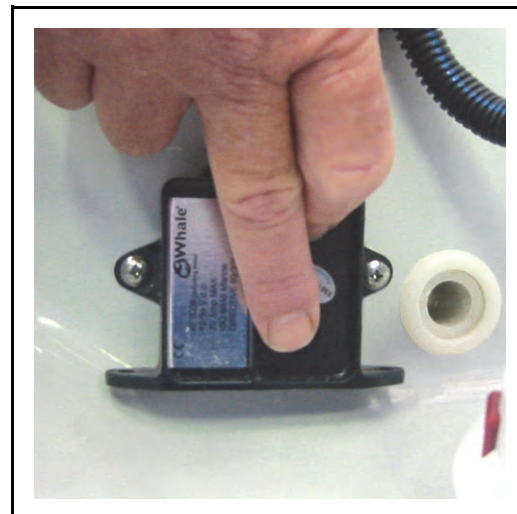
The rocker switch has a red LED indicator that will be lighted anytime the bilge pump is running.

⚠ CAUTION

The bilge pumps will be damaged if they are run continuously when no water is in the bilge.

⚠ CAUTION

Test your bilge pumps and water level sensors before each mission. Manually activate the water level sensor when the rocker switch is in the **AUTO** position and verify pump operation. Clear away any sludge or debris that might restrict the pumps or water level sensors.



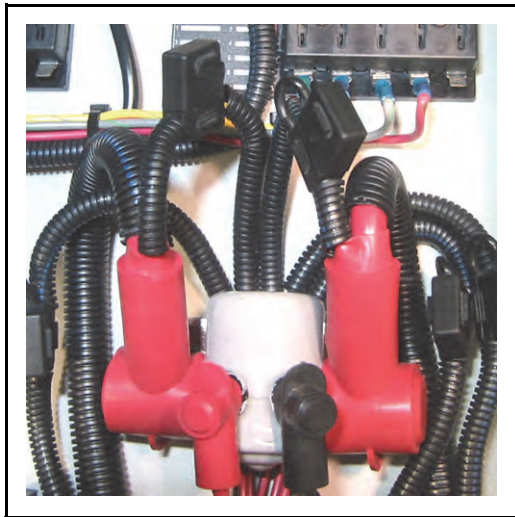


Battery Parallel Switch

Your boat is equipped with an emergency battery parallel switch. The switch is located at the helm station. You can use the emergency battery parallel switch to connect the two engine starting batteries in parallel if one engine will not start due to low battery voltage.

The battery parallel switch controls a solenoid that connects the two engine starting batteries. The switch is a three-position rocker switch that is ON-OFF-ON. The center switch position is OFF. Both the left and right switch positions are momentarily ON when held down.

When you release the switch, it will return to the center OFF position.



If one of your outboard engines will not start due to low battery voltage, use the emergency battery parallel switch to provide power from the other starting battery.

Push and hold the battery parallel switch ON to either the left or right position. Note this position. **Hold** the battery parallel switch in the ON position and try to start the engine.

If the engine does not start, release the battery parallel switch to the OFF position. Move the battery parallel switch to ON in the opposite direction. **Hold** the battery parallel switch in the ON position and try to start the engine.

Trim Tabs

Your boat is equipped with Lenco® electro-mechanical trim tabs. The trim tab system consists of four major components. The switch panel with LED tab indicators is located at the helm station, near the engine controls. The system control box is located inside the control console. There are also two electro-mechanical actuator assemblies with stainless steel trim planes fastened to the transom.

When the tab buttons are pressed, the trim tabs move into position. Water force on the trim tab lower surface creates upward pressure, raising the stern and lowering the bow. Properly sized trim tab planes improve boat performance over a wider range of loads, weather, and water conditions.

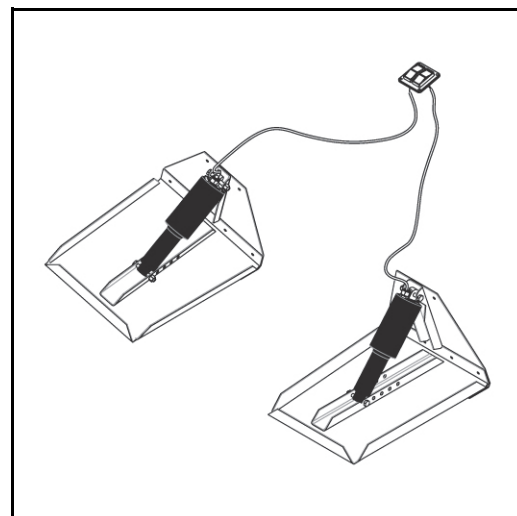
The switch panel is labeled to make trim tab operation simple. When operating the tab buttons, think of how you want the **bow of the boat** to move to properly trim the boat.

To lower the **port** bow, push the **left DOWN** button. This lowers the trim plane on the **starboard** side of the transom.

To lower the **starboard** bow, push the **right DOWN** button. This lowers the trim plane on the **port** side of the transom.

To evenly lower or raise the bow, you can push both buttons at the same time. To evenly **lower** the bow, push **both DOWN** buttons. To evenly **raise** the bow, push **both UP** buttons.

The Lenco switch panel includes two LED segment bars that represent the relative position of both trim tabs. When you **lower** one or both of the trim tabs, the LED segment bars will extend to indicate that the trim tabs are moving down. When you **raise** one or both of the trim tabs, the LED segment bars will retract to indicate that the trim tabs are moving up.





Trim Tab Control Box

The trim tab control box operates on power supplied through the accessory fuse block. The trim tab power circuit is protected by a 20-amp blade fuse. The trim tab control box senses 12 VDC when the starboard engine ignition key switch is in the ON position.

Because the trim tab control box senses switched 12 VDC at the starboard engine ignition switch:

- The trim tab system will only operate when the starboard engine ignition switch is **ON**
- The trim tabs will automatically retract when the starboard engine ignition switch is turned **OFF**



⚠ CAUTION

The trim tabs will automatically retract when the starboard engine is turned OFF. Make sure that both trim tabs are fully retracted before you put the boat on a trailer, cradle, or boatlift. Contact with the trim tabs can cause serious damage to the tabs and the boat.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the trim tab control box.



Proper Boat Trim

All boats “break over” or get on plane at a particular speed. This speed is determined by load distribution, water conditions, and other factors. Trim tabs allow your boat to plane at speeds below its natural planing speed. By pressing the **BOW DOWN** buttons, your trim tabs move down. This will raise your stern and lower your bow, getting the boat on plane sooner.

When learning to use trim tabs, begin by pressing the tab buttons in ½ second bursts for gradual trimming. A momentary delay occurs from the time you press the tab buttons to the time the boat reacts. This delay is normal and varies with boat speed. Be careful not to over-trim the boat. An over-trimmed boat will “plow” or “bow-steer”. If you over-trim the boat, push both **BOW UP** buttons to raise the bow.



WARNING

The boat's attitude and steering effort can react very quickly to changes in trim tab position. Adjust trim tab deployment in small increments to avoid loss of boat control.

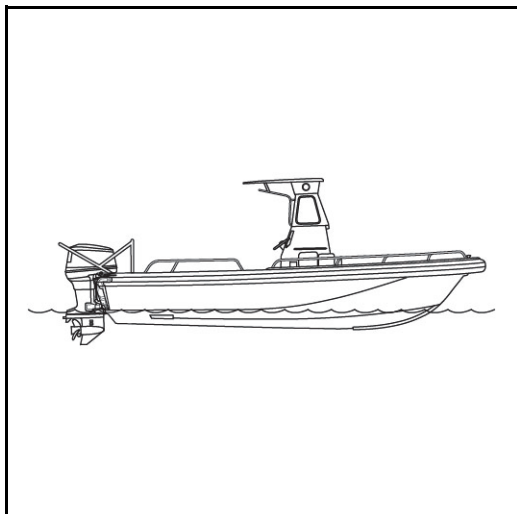
Rough Water

When running in chop or heavy seas, press both **BOW DOWN** buttons to lower the bow elevation. This will bring the “V” of the hull in more contact with the waves and reduce the pounding effect.



WARNING

Do not over-trim, particularly at high speeds, as the bow will dig in and wave action might cause the boat to veer. While underway, do not move one trim tab significantly farther down than the other, as undesirable listing will occur.



Trim Tabs and Engines

Adjusting the trim tabs in conjunction with the trim function on your outboard engines will improve your boat performance and maneuverability.

When the boat comes on plane, adjust the trim tabs to achieve the desired running attitude of the boat. Then trim the outboard engines up using the trim function on the dual-lever control until the engine propellers are parallel with the surface of the water.

If necessary, readjust the boat trim tabs to fine tune the running attitude of the boat.

Refer to the **Lenco** operation manual in your owner's bag for detailed information about the operation and maintenance of the trim tab system.



Signal Horn

Your boat is equipped with a 12 VDC signal horn. The signal horn is installed on the control console face. The **HORN** push button switch is located on the console face, near the steering wheel. This signal horn satisfies United States Coast Guard Navigation Rule 36 for signals to attract attention.

The signal horn circuit is protected by a 10-amp blade fuse located in the accessory fuse block inside the console.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the signal horn circuit.



Battery Status Indicator

Your boat is equipped with a battery status indicator panel. The panel is mounted at the helm station. The panel has a green LED that is lighted anytime a battery switch or a boat accessory circuit is powered and active.

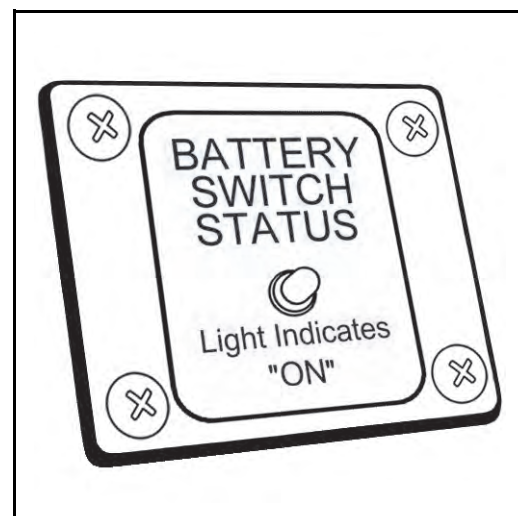
Turn all battery OFF-ON switches to the OFF position before you leave the boat unattended for any period of time. Check to make sure that the battery status green LED is not lighted.

Leaving the boat unattended with the battery status green LED lighted might allow one or more of the batteries to become discharged.



Bilge Pump Special

The only exception to the 12 VDC circuit control described above is the bilge pump system. The bilge pump system has an uninterruptible power supply that originates at the battery side of the **port** engine battery OFF-ON switch. The bilge pump system is powered and active regardless of the position selected on any of the battery OFF-ON switches.





Console Interior Light

Your control console is equipped with an interior dome light. The dome light is used to light the interior of the console for inspection or servicing. It is accessed through the console door. The OFF-ON rocker switch for the console interior dome light is located on the light fixture.

The interior dome light circuit is protected by a 2½-amp blade fuse located in the accessory fuse block inside the console.

Turn off the console interior dome light when it is not required to avoid discharging the house battery.



T-top Combination Light

If your boat is equipped with a T-top, you have a combination red/white light fixture above the helm area. Operation of the red/white light is controlled by its black bezel. There is no OFF-ON switch on the helm station switch panel. Rotate the bezel in either direction to select the color and intensity of the overhead light.

The T-top combination light is protected by a 1-amp blade fuse located in the fuse block inside the T-top radio box.

Turn off the T-top combination light when it is not required to avoid discharging the house battery.



Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the T-top combination light circuit.

Floodlights

Your boat might be equipped with one or more 12 VDC floodlights. The floodlights are usually mounted on the T-top and the tow tower frame. You can use the floodlights to illuminate the deck or surrounding water while you are working or doing boarding operations.

Each floodlight is controlled by an OFF-ON rocker switch located inside the T-top radio box. Each floodlight power circuit is protected by a 10-amp push button breaker located above the rocker switch.

Turn off the floodlights when they are not required to avoid discharging the house battery.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to all of the floodlight circuits.



Cockpit Lighting

Your boat might be equipped with red cockpit night lighting. The lights are used to illuminate the deck surfaces without creating glare at night. The red cockpit lights are usually installed in pairs, port and starboard. Typically, they are located on the interior hull sides, under the gunwale boards or ring deck.

To operate the red cockpit lights, move the **COCKPIT LIGHTS** rocker switch at the helm station switch panel to the ON position. Each cockpit light fixture also has an OFF-ON rocker switch that is used to control the individual light fixture.

The cockpit light power circuit is protected by a 10-amp push button breaker located above the rocker switch.

Turn off the cockpit lights when they are not required to avoid discharging the house battery.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the cockpit light circuit.





Siren and Strobe Light

Your boat might be equipped with a Whelen® flush-mount siren and strobe light. The normal mounting location is on the forward side of the control console.

Use the siren control head to operate the various strobe, radio, siren, and public address features.

Refer to the **Whelen** operator's manual for detailed information about the siren and strobe functions.

The siren amplifier circuit is protected by a 10-amp blade fuse located in the accessory fuse block inside the control console.

Turn off the siren and strobe features when they are not required to avoid discharging the house battery.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the siren amplifier and strobe circuits.



Remote Spotlight

Your boat might be equipped with a remotely operated spotlight manufactured by ACR®. The spotlight is usually mounted on the T-top or a folding mast. The soft-touch remote control is mounted on the console face, near the steering wheel. Your spotlight is an ACR model RCL-100D and it is rated at 200,000 peak candlepower.

The spotlight power circuit is protected by a 15-amp blade fuse located in the accessory fuse block inside the control console.

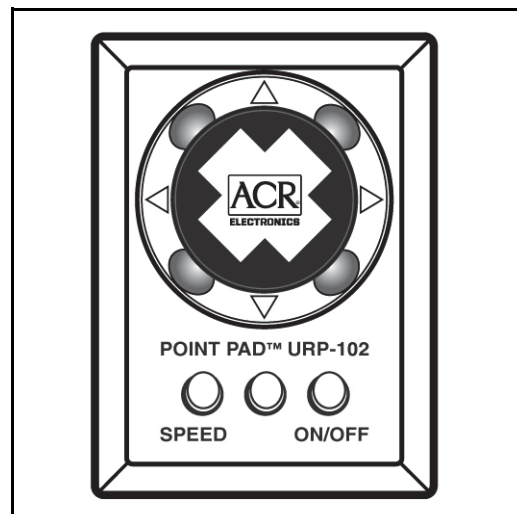
To operate the remote spotlight:

- Turn the house battery OFF-ON switch to the **ON** position
- A dim light in the center of the control pad will indicate the spotlight is in **STANDBY** mode
- Push the ON/OFF button one time to turn on the spotlight
- The indicator light will brighten and the spotlight will turn on
- Push the soft-touch control pad to control the spotlight
- Push the **SPEED** button one time to slow the spotlight response speed
- Push the ON/OFF button one time to turn off the spotlight

Turn off the remote spotlight when it is not required to avoid discharging the house battery.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the remote spotlight circuit.

Refer to the **ACR** operation manual in your owner's bag for detailed information about the operation and maintenance of this spotlight.



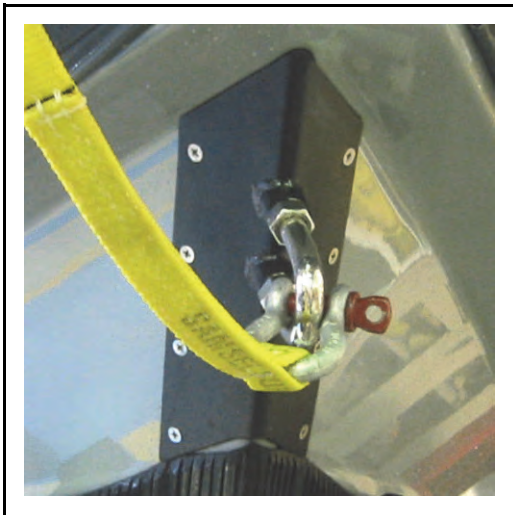


Towing System

Your boat might be equipped with a towing system. Towing another boat requires experience and skill. Always operate any boat within the limits of your experience. If you do not have this experience, ask someone to instruct you or gain experience through experimentation under controlled conditions.

CAUTION

Your towing system is designed to tow another boat of similar displacement at non-planing speeds for an unrestricted period of time. Exceeding this recommendation could cause the tow system or tow line to fail.



DANGER

Never allow personnel to stand near a deployed tow rig. The tow line or a tow component could fail with a high level of energy, causing serious injury or death.

Towing a Boat

Understand this information before towing another boat:

- Evaluate the condition of the target boat and its crew before beginning a tow operation.
- Remove all non-essential crew from the target boat.
- Make sure that all tow rig components on both boats are of sufficient capacity for the tow.
- Set the tow rig as low and as close to the boat centerlines as possible.
- Take at least one-half turn around the tow bar before you secure the tow line using a series of figure eights.
- **DO NOT** use any knots to secure the tow line.
- Set engines or rudders on target boat to maintain station behind your boat.

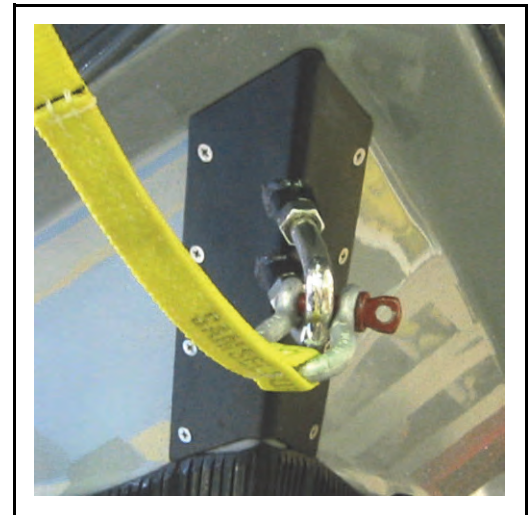


- Keep all crew in both boats clear of the tow rig.
- Keep your tow line clear of your engines and propellers.
- Always avoid shock loading your tow rig and towing system. **Never** attempt to jerk an excessive load into motion.
- Maintain communications with crew on target boat.
- Continuously evaluate condition of tow rig and target boat.

Being Towed

Understand this information before being towed by another boat:

- Evaluate the condition of your boat before beginning the tow operation.
- Remove all non-essential cargo and crew from your boat.
- Make sure that all tow rig components on both boats are of sufficient capacity for the tow.
- Set the tow rig as low and as close to the boat centerlines as possible.
- Use your boat's bow eye as the attachment point for the tow rig.
- Set your engines to maintain station behind the towing boat.
- Keep your crew behind the control console, clear of the tow rig.
- Maintain communications with crew on the towing boat.
- Continuously evaluate condition of your boat and the tow rig.





ELCI System

If your boat is equipped with a 110 VAC or 220 VAC shore power system, the installation includes an **electrical leakage circuit interrupter (ELCI)**. The ELCI system is an important safety feature designed to eliminate the possibility of stray current in the water around your boat when the shore power system is active.

The ELCI system will respond to leakage of AC electrical current outside of its intended circuit path. If the stray current exceeds 30mA, the primary ELCI circuit breaker will trip and a red fault light will come on.

DANGER

If your ELCI circuit breaker trips repeatedly and the red fault light is on, your shore power system might be leaking AC current into the water around your boat. This stray current could shock or electrocute people in the water around your boat. Disable your shore power system immediately and have it serviced by an experienced marine electrician.



Follow these steps to test your ELCI system each time you activate the shore power system:

- Move main ELCI breaker to the OFF position
- Route and connect shore power cord
- Listen for audible warning indicating reverse polarity
- Verify green POWER light on ELCI panel
- Move main ELCI breaker to the ON position
- Press TEST button on ELCI panel
- Red FAULT light should come on and ELCI breaker should trip
- Press RESET button on ELCI panel
- Verify green POWER light on ELCI panel
- Move main ELCI breaker to the ON position
- Activate AC power distribution panel inside cabin or control console



Sea Water Washdown Pump

Your boat might be equipped with a 12 VDC sea water washdown system. The sea water pump and sea strainer are located in the transom area. The pump and sea strainer can be inspected and serviced through the transom hatches just forward of the engines. The washdown system includes a seacock that can be closed if you service the system while the boat is in the water.

The washdown pump output can be accessed through the hose fitting located on the interior transom bulkhead.

The pump is controlled by an OFF-ON rocker switch located on the helm station switch panel. The pump power circuit is protected by a 10-amp push button breaker located above the rocker switch.

The pump is equipped with a pressure switch that activates the pump on demand when the rocker switch is in the ON position.

Turn off the sea water washdown pump when it is not required to avoid discharging the house battery.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the sea water washdown pump.



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General Description

Your boat is equipped with a 12 volt direct current (12 VDC) electrical system. The 12 VDC electrical system provides power to all DC electrical loads on the boat.

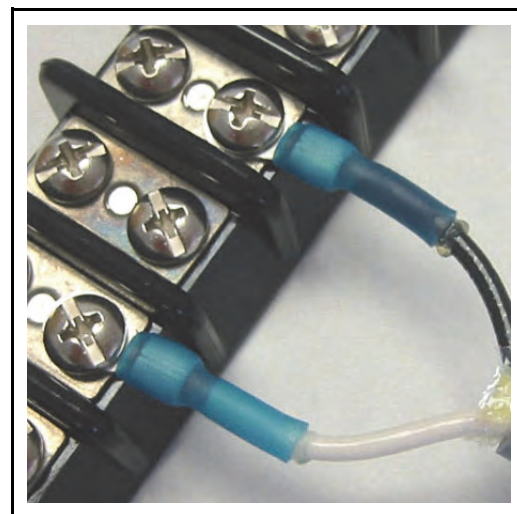
The complete 12 VDC electrical system consists of **seven main power distribution circuits** that are electrically connected on the negative side of the system.

Power for all 12 VDC systems is normally supplied by one house (electronics) battery and two engine starting batteries.

The engine and house batteries are charged when the outboard engines are running above idle speed, regardless of battery OFF-ON switch position.

Each electrical circuit is configured as a two-wire, negative-return system, which includes a 12 VDC power lead and a negative-return lead. Each electrical circuit is powered by one of three 12-volt batteries, is controlled by one of three battery OFF-ON switches, and is protected by two or more circuit breakers.

All 12 VDC wiring in your boat conforms to ASTM Standard B-33 and is premium-grade tinned copper marine cable, designed to minimize voltage drop and resist corrosion. The termination of each 12 VDC electrical circuit is protected from moisture intrusion by self-sealing heat-shrink insulation on each connector.





Batteries

Safety Warnings

CAUTION

Batteries should always be enclosed in the covered battery boxes provided with your boat. The boxes will contain any spilled acid and will protect the battery terminals from damage or shorting due to contact with metal objects. The battery boxes should always be secured using the heavy-duty straps and aluminum trays provided. The boxes, heavy-duty straps, and aluminum trays are designed to hold the batteries in place while the boat is underway, reducing the possibility of damage to the batteries and other equipment in the storage area.

DANGER

Never use an open flame in the battery storage area. Avoid striking sparks near the batteries. A battery can explode if a flame or spark ignites the free hydrogen gas vented during charging. Always disconnect the batteries before doing any work on the 12 VDC electrical systems.

WARNING

Always wear eye protection when servicing batteries. Batteries contain sulfuric acid, which can cause serious injury. Avoid contact with skin, eyes, and clothing. If contact occurs, immediately flush the affected area with water and call for medical assistance.

CAUTION

The 110 VAC battery charger has been programmed to support the charging requirements of your batteries. Changing the battery type without reprogramming the battery charger can damage the batteries.

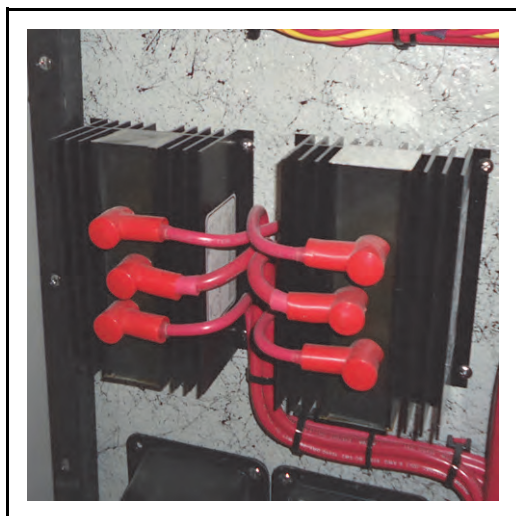
Capacities

Exide® marine heavy-duty 12-volt batteries are normally selected for your boat. One Group 24 1000 marine cranking amp (MCA) battery is provided for each outboard engine and one Group 27 115 amp hour, deep cycle battery is normally provided for the boat's electrical accessories. These batteries are considered wet-cell and require periodic maintenance.

Your boat might be equipped with Optima® Blue Top marine batteries. Optima batteries use spiral cell technology to improve vibration resistance and service life. These batteries are classified as non-spillable and do not require periodic checks of electrolyte levels.

With proper care, these marine heavy-duty batteries will last several years. Refer to any maintenance information that came with the batteries and to **Batteries** in Section 6 of this manual.



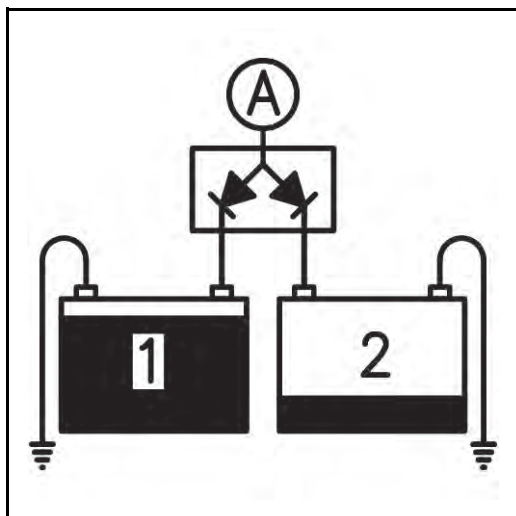


Charging

The outboard engine alternators charge the three batteries when the engines are running above idle speed. All outboard engines charge their starting batteries through the starting circuit. Some outboard engines charge the house batteries through an integral auxiliary charging circuit and some require an external battery charge isolator. The external charge isolator diverts some of the engine charging output to the house batteries.

The engine and house batteries are charged when the outboard engines are running above idle speed, regardless of battery OFF-ON switch position.

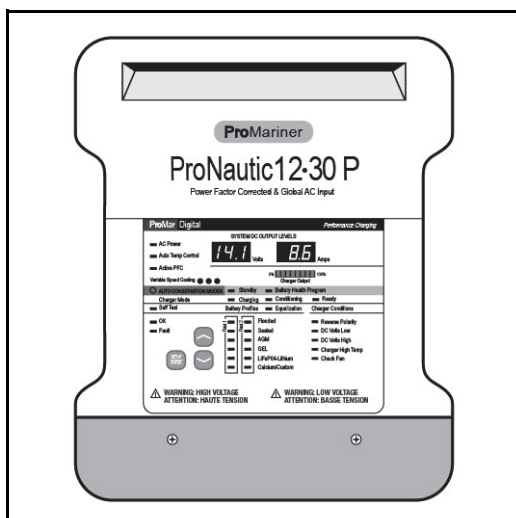
The charge isolator also prevents a higher-charged battery ① from discharging into a lower-charged battery ② by keeping the batteries electrically isolated.



The battery charge isolator output circuits are protected by three 70-amp push-button circuit breakers located inside the control console.

Your boat is normally equipped with one 110 VAC battery charger that charges all batteries when the boat is connected to shore power. All batteries are charged when the 110 VAC battery charger is active, regardless of battery OFF-ON switch positions.

Each 110 VAC battery charger output circuit is protected by a 40-amp push-button circuit breaker located inside the control console.



⚠ CAUTION

The 110 VAC battery charger has been programmed to support the charging requirements of your batteries. Changing the battery type without reprogramming the battery charger can damage the batteries.

Refer to the battery charger operation manual in your owner's bag for detailed information about its programming and operation.

Grounding and Bonding

Definitions

The terms grounding and bonding are often incorrectly used interchangeably. They are different systems that can work together to provide solutions to common problems and risks on the water.

Bonding is the process of connecting various metal components in the boat to a common electrical contact. This helps to reduce the chance of rails and other metal objects carrying dangerous electrical charges.

Grounding is defined as the method in which any electrical potential is connected to the surrounding water for the purpose of energy dissipation.

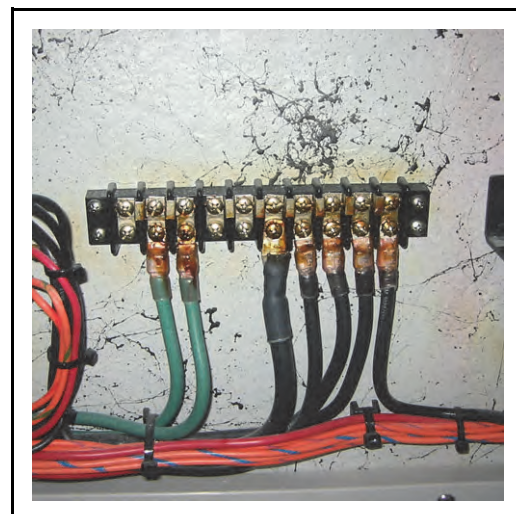
Properly designed grounding and bonding systems incorporating zinc or aluminum anodes and bronze plates will also help control corrosion of aluminum and stainless steel parts.

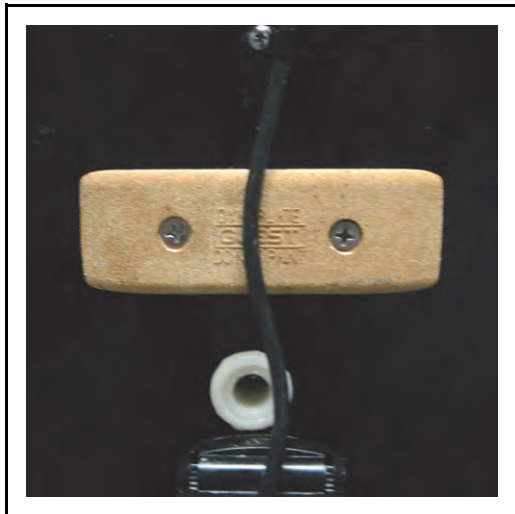
Grounding

The negative terminals of all house and starting batteries, and the negative battery cables from the outboard engines, are connected together at the negative buss bars located inside the control console. These negative buss bars serve as the return point for the entire 12 VDC electrical system.

The accessory fuse block and negative terminal strip on the electronics distribution panel also connect to the negative side of the 12 VDC electrical system at the buss bars. The connections are made with #8 awg black wires from each device.

Note: All grounding wires and cables are **black**.





Bonding

Your boat's bonding system starts with a bronze plate located below the water line at the center of the transom. A #8 awg green cable connects the bronze plate to the bonding buss system. The fuel tank, fuel fill, engine crash rail, hand rails, engine bracket, and tow post are also connected to the bonding buss system with #8 awg green cables.

Also directly connected to the bonding system are any shielded cables from certain sensitive electronic devices. This helps mitigate radio frequency interference (RFI) generated by various electrical systems.

The negative buss system and the bonding buss system are also connected to each other to reduce the possibility of a voltage challenge between the two systems.

Note: All bonding wires and cables are **green**.



[illegible]



Battery Switches

Battery Parallel Switch

Your boat is equipped with an emergency battery parallel switch. The switch is located at the helm station. You can use the emergency battery parallel switch to connect the two engine starting batteries in parallel if one engine will not start due to low battery voltage.

The battery parallel switch controls a solenoid that connects the two engine starting batteries. The switch is a three-position rocker switch that is ON-OFF-ON. The center switch position is OFF. Both the left and right switch positions are momentarily ON when held down.

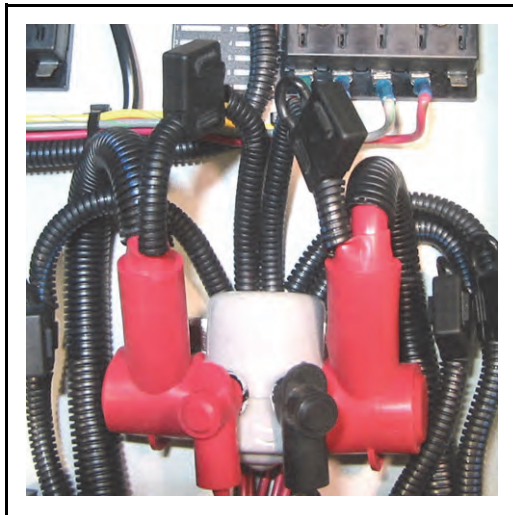
When you release the switch, it will return to the center OFF position.

If one of your outboard engines will not start due to low battery voltage, use the emergency battery parallel switch to provide power from the other starting battery.

Push and hold the battery parallel switch ON to either the left or right position. Note this position. **Hold** the battery parallel switch in the ON position and try to start the engine.

If the engine does not start, release the battery parallel switch to the OFF position. Move the battery parallel switch to ON in the opposite direction. **Hold** the battery parallel switch in the ON position and try to start the engine.

The emergency battery parallel system is protected by two 10-amp in-line blade fuses wired to the load sides of both engine battery OFF-ON switches. The two in-line blade fuses protect the electrical wiring between the solenoid and battery parallel switch.



Battery OFF-ON Switches

Your boat is equipped with three battery OFF-ON switches that allow you to turn battery power on and off to the outboard engines and to each main 12 VDC power distribution circuit in the boat. The battery OFF-ON switches are located on or inside the control console.

- One battery switch controls power to all main 12 VDC power distribution circuits
- One battery switch controls power to the port outboard engine and certain engine accessories
- One battery switch controls power to the starboard outboard engine and certain engine accessories



CAUTION

Never move the engine battery OFF-ON switches to the OFF position while the outboard engines are running. Moving the engine battery OFF-ON switches to the OFF position while the engines are running will cause immediate damage to the engines' charging systems.

You can disable each battery OFF-ON switch by removing its handle. Turn the switch handle an additional 20° **counter-clockwise** from the OFF position to remove it. Disabling the battery OFF-ON switches gives you an additional level of security when the boat is left unattended.



Bilge Pump Special

The only exception to the 12 VDC circuit control described above is the bilge pump system. The 20-amp in-line blade fuse that protects the bilge pump system has an uninterruptible power supply that originates at the battery side of the **port** engine battery OFF-ON switch. The bilge pump system is powered and active regardless of the position selected on any of the battery OFF-ON switches.





DC Power Distribution

All DC electrical devices and systems in your boat are controlled and protected by **seven** main 12 VDC power distribution circuits.

Starboard Engine

Main 12 VDC power circuit 1 of 7 provides power for starting the starboard engine through a battery OFF-ON switch connected to a Group 24 1000 MCA battery. The starboard engine battery OFF-ON switch is properly labeled and is located on or inside the control console.

The main power and negative battery cables from the starboard engine route through the splash-well boot and connect to this power circuit through a main two-position, heavy-duty terminal strip located near the transom. This main terminal strip simplifies engine removal for service or replacement.

Turning the starboard engine battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the starboard engine and its accessories.

Port Engine

Main 12 VDC power circuit 2 of 7 provides power for starting the port engine through a battery OFF-ON switch connected to a Group 24 1000 MCA battery. The port engine battery OFF-ON switch is properly labeled and is located on or inside the control console.

The main power and negative battery cables from the port engine route through the splash-well boot and connect to this power circuit through a main two-position, heavy-duty terminal strip located near the transom. This main terminal strip simplifies engine removal for service or replacement.

Turning the port engine battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the port engine and its accessories.

See **Wire Color Chart** in this section for wire colors.



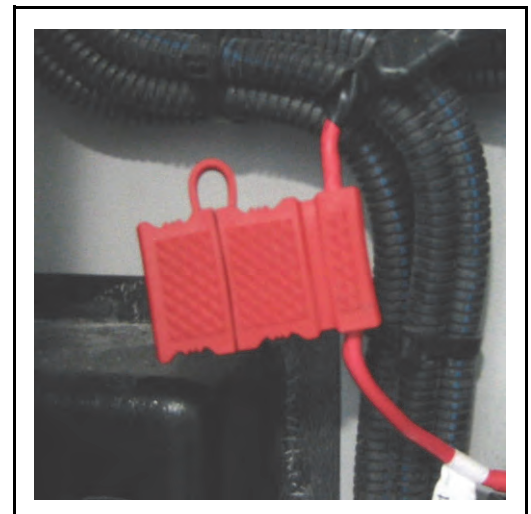
Bilge Pump System

Main 12 VDC power circuit 3 of 7 provides uninterrupted power to the bilge pump switches located on the helm station switch panel. The circuit is directly connected to the **port** engine battery OFF-ON switch. The connection is made on the **battery side** of the battery OFF-ON switch and is always powered, regardless of switch position.

The circuit is protected by one 20-amp, in-line blade fuse located within seven inches of the port engine battery OFF-ON switch.

This uninterruptible power circuit provides flexibility in controlling your bilge pumps. With the port engine battery OFF-ON switch in the **OFF** position, you can still operate your bilge pumps in the automatic or manual mode.

See **Wire Color Chart** in this section for wire colors.





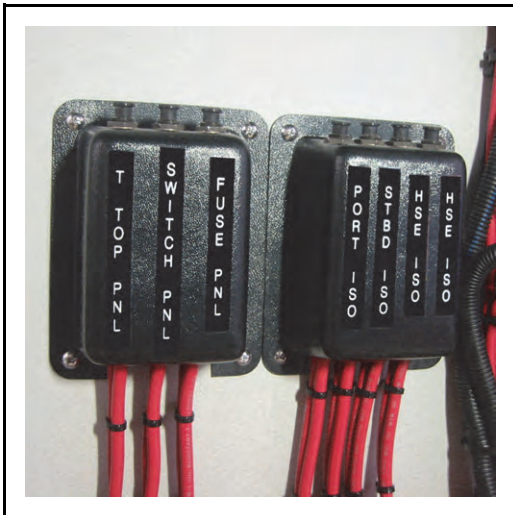
Helm Station Switch Panel

Main 12 VDC power circuit 4 of 7 provides power to the helm station switch panel. The helm station switch panel controls most of the basic boat systems, such as navigation lights, signal horn, floodlights, and courtesy lights.

The bilge pump switches are located on the helm station switch panel, but they are not included in this power circuit.

This circuit is protected by one 60-amp, push button breaker. The 60-amp breaker is located inside the control console, within seven inches of the house battery OFF-ON switch.

One Group 27 115 amp hour, deep cycle battery normally powers this circuit through the house battery OFF-ON switch.



The helm station switch panel has no connection to the negative side of the 12 VDC electrical system. Any accessories installed on these switches must also connect to the negative side of the 12 VDC electrical system through one of the negative terminal strips provided. These negative terminal strips are located inside the control console.

If the 60-amp push button breaker trips electrically, troubleshoot the power circuit and its protected devices before you reset the breaker.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to all of the helm station switch panel circuits **except the bilge pump system**.

See **Wire Color Chart** in this section for wire colors.



⚠ CAUTION

The total combined amperage ratings for all accessories connected to the helm station switch panel must not exceed 60 amps. Overloading the helm station switch panel might cause repeated tripping of the 60-amp breaker and other electrical problems.

Accessory Fuse Block

Main 12 VDC power circuit 5 of 7 provides power to the accessory fuse block located inside the control console. The accessory fuse block protects most of the basic boat systems, such as spotlights, trim tabs, and 12-volt outlets.

This circuit is protected by one 60-amp, push button breaker. The 60-amp breaker is located inside the control console, within seven inches of the house battery OFF-ON switch.

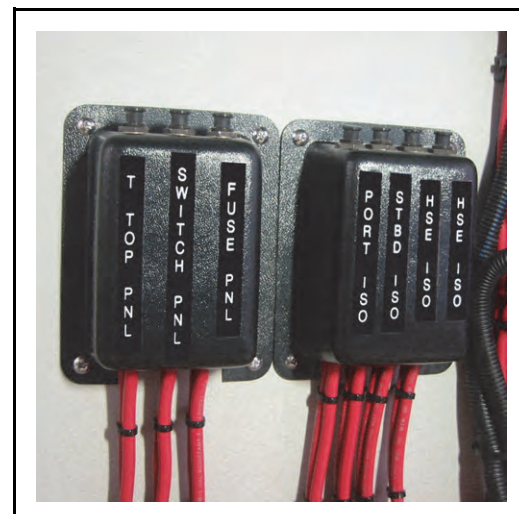
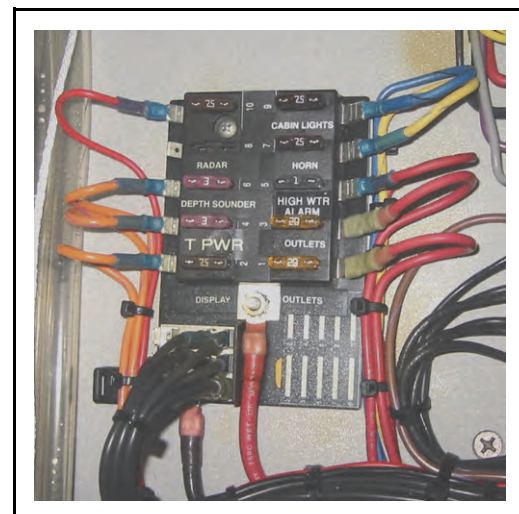
One Group 27 115 amp hour, deep cycle battery normally powers this circuit through the house battery OFF-ON switch.

Ten branch circuits can be connected to the 12 VDC electrical system at the accessory fuse block. The accessory fuse block also has ten connection points for the negative side of the 12 VDC electrical system. Some of the electrical accessories might have been installed at the factory.

If the 60-amp push button breaker trips electrically, troubleshoot the power circuit and its protected devices before you reset the breaker.

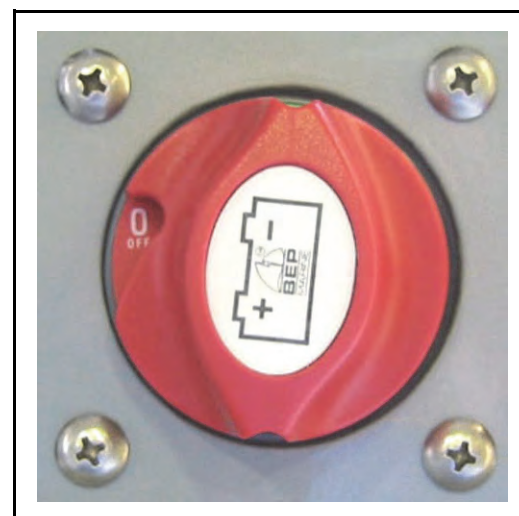
Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the accessory fuse block.

See **Wire Color Chart** in this section for wire colors.



CAUTION

The total combined amperage ratings for all accessories connected to the fuse block must not exceed 60 amps. Overloading the accessory fuse block might cause repeated tripping of the 60-amp breaker and other electrical problems.



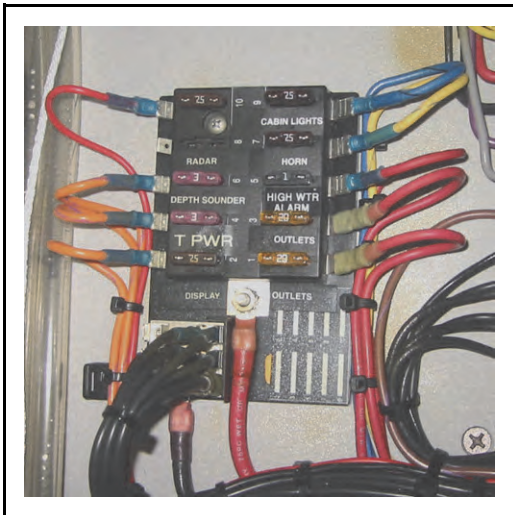


T-top Fuse Block

Main 12 VDC power circuit 6 of 7 provides power to the fuse block located inside the T-top radio box. The T-top fuse block supplies power to the floodlight switch panel and protects any radios installed in the T-top radio box.

This circuit is protected by one 60-amp, push button breaker. The 60-amp breaker is located inside the control console, within seven inches of the house battery OFF-ON switch.

One Group 27 115 amp hour, deep cycle battery normally powers this circuit through the house battery OFF-ON switch.



Ten branch circuits can be connected to the 12 VDC electrical system at the T-top electronics fuse block. The T-top electronics fuse block also has ten connection points for the negative side of the 12 VDC electrical system. Some of the electronics might have been installed at the factory.

If the 60-amp push button breaker trips electrically, troubleshoot the power circuit and its protected devices before you reset the breaker.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the T-top electronics fuse block.

See **Wire Color Chart** in this section for wire colors.



⚠ CAUTION

The total combined amperage ratings for all accessories connected to the T-top electronics fuse block must not exceed 60 amps. Overloading the T-top electronics fuse block might cause repeated tripping of the 60-amp breaker and other electrical problems.

Electronics Distribution Panel

Main 12 VDC power circuit 7 of 7 provides power to the electronics distribution panel (optional) located inside the control console. The electronics distribution panel protects your sensitive communication and navigation systems.

This circuit is protected by one 60-amp, push button breaker. The 60-amp breaker is located inside the control console, within seven inches of the house battery OFF-ON switch.

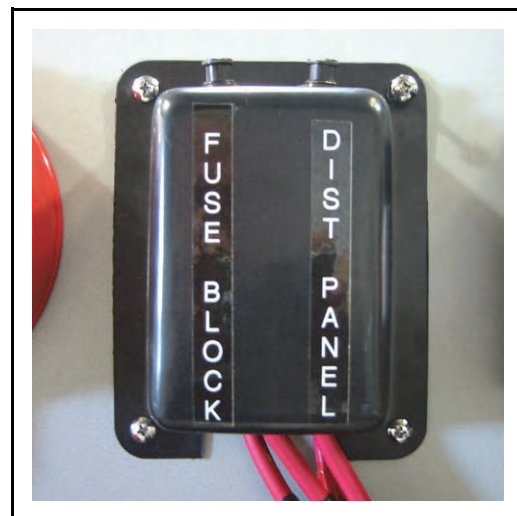
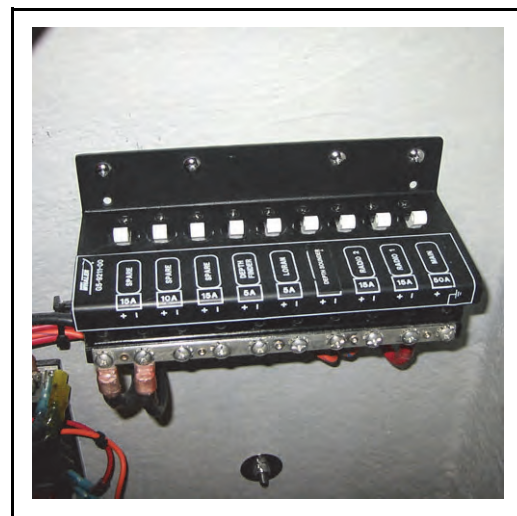
One Group 27 115 amp hour, deep cycle battery normally powers this circuit through the house battery OFF-ON switch.

The electronics distribution panel has eight switchable circuit breakers controlled by one main 50-amp switchable breaker. This panel provides a convenient point to connect all existing and future electronics. The electronics distribution panel also has nine connection points for the negative side of the 12 VDC electrical system. Some of the electronics might have been installed at the factory.

If the 60-amp push button breaker trips electrically, troubleshoot the power circuit and its protected devices before you reset the breaker.

Turning the house battery OFF-ON switch to the **OFF** position at the end of your mission will cut power to the electronics distribution panel.

See **Wire Color Chart** in this section for wire colors.



 **CAUTION**

The total combined amperage ratings for all electronics connected to the distribution panel must not exceed 60 amps. Overloading the electronics distribution panel might cause repeated tripping of the 60-amp breaker and other electrical problems.



Black	Ground
Black/brown	Ground, pumps
Black/orange	Ground, accessories
Black/green	Ground, water level sender
Black/blue	Ground, lighting
Black/gray	Ground, navigation lights
Black/white	Ground, blower
Black/white	Ground, parallel solenoid
Black/white	Generator stop
Black/yellow	Engine stop
Green	Bonding system
Green/yellow	AC grounding
Brown	Bilge pumps, manual
Brown/red	Bilge pumps, automatic
Brown/orange	Fuel transfer pumps
Brown/white	Macerator pumps
Brown/yellow	Baitwell pumps
Brown/green	Sea water washdown
Brown/blue	Fresh water washdown
Brown/purple	Available
Red	Battery, unprotected
Red/purple	Battery, protected
Purple	Engine, switched 12 volts
Pink	Sender, fuel level
Yellow	Bilge blower
Yellow/red	Engine start
Yellow/gray	Horn
Orange	Accessories, general
Orange/red	Wiper, port
Orange/green	Wiper, starboard
Orange/white	Wiper, center
Orange/purple	Navigation equipment
Orange/blue	Communication equipment
Orange/brown	Electric head
Orange/black	Audio system
Orange/yellow	Diesel preheat

[illegible]

Specifications

Length, overall	24 ft. 7 in.	7,5 m
Trailered length, engines tilted	33 ft. 2 in.	10,1 m
Trailered height - Note 1	9 ft. 1 in.	277 cm
Trailered height - Note 2	10 ft. 9 in.	328 cm
Beam	8 ft.	244 cm
Boat weight - Note 3	3575 lbs.	1622 kg
Draft, engines tilted	16 in.	41 cm
Bridge clearance, floating - Note 1	5 ft. 10 in.	178 cm
Bridge clearance, floating - Note 2	7 ft. 6 in.	229 cm
Engine shaft length, single	30 in.	76 cm
Engine shaft length, dual	25 in.	64 cm
Load capacity (people, gear, engines)	3035 lbs.	1377 kg
Maximum engine power	400 HP	298 kW
Maximum engine weight	1060 lbs.	481 kg
Minimum engine power	200 HP	149 kW
Fuel tank capacity - Note 4	150 gallons	568 liters
Fuel, minimum octane rating	87 AKI	90 RON

Note 1 - With standard console, no T-top

Note 2 - With standard T-top, no options

Note 3 - Base boat, excluding engines and options

Note 4 - Calculated under CFR Title 40

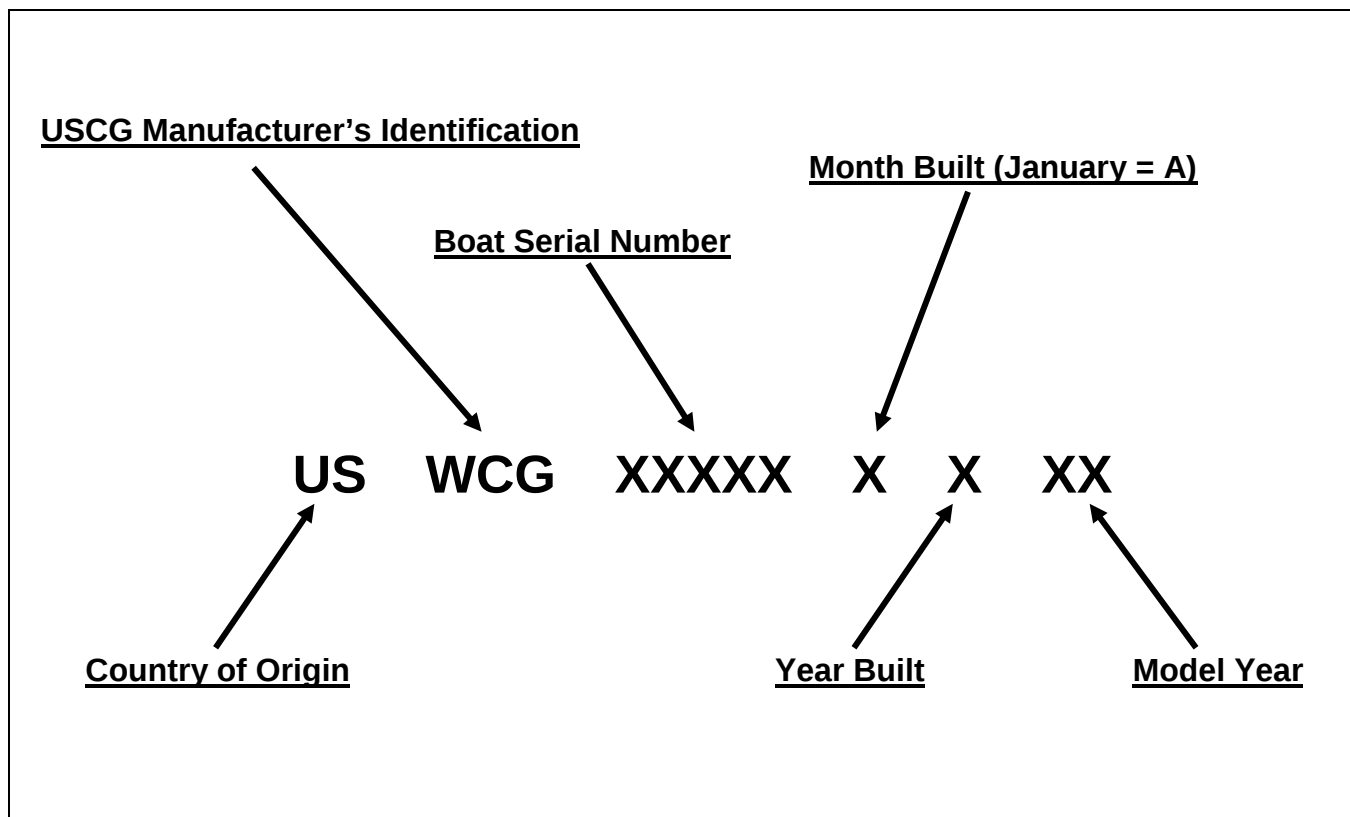
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Hull Identification Number

The Hull Identification Number (HIN) is located on the starboard outboard side of the transom. This is the most important form of boat identification and it must be included in all correspondence related to your boat.

Model and serial number information for each piece of equipment installed on your boat was gathered during the construction process. This important information was recorded on a **Serial Number Sheet**. A copy of the **Serial Number Sheet** is in your owner's bag.

Keep a copy of this important information somewhere safe on shore.



Options

Brunswick Commercial & Government Products (BCGP) designs, engineers, and manufactures each boat for your specific mission. We add extra Phenolic plate, aluminum plate, and fiberglass material during the molding process to reinforce attachment points for the various options. For this reason, many options **cannot** be added after the boat leaves the factory. If you want to add options or accessories to the boat, you must contact Brunswick Commercial & Government Products Customer Service Department in the United States at 386-423-2900, for advice.



WARNING

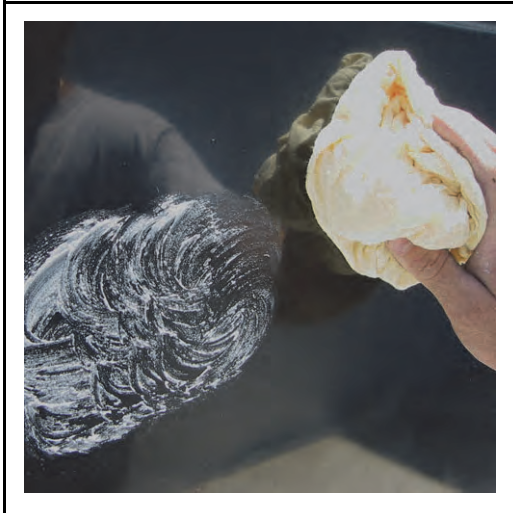
Installing certain options and accessories on the hull and deck can lead to structural failure or boat instability. Improper installations can cause property damage and serious injury. Improper installations might void portions of your hull warranty.

Hull Maintenance

Regularly scheduled maintenance will help keep your boat mission-ready and help protect it from deterioration caused by its working environment. Your experience with your particular working environment will help determine the appropriate time intervals between significant system inspections.

Washing

Exterior and interior laminated fiberglass parts and all metal parts should be washed frequently using fresh water, a mild soap, and clean cloths or a sponge. **DO NOT** use abrasive cleaners, abrasive pads, steel or bronze wool, or alkaline cleaners to clean your boat. After washing, rinse thoroughly with fresh water. Dry the boat to prevent water spots from forming on the hull and powder-coated hardware.



Waxing

WARNING

Gelcoat surfaces are always slippery when wet. Use extreme caution when walking on wet surfaces to avoid slipping or falling. Never wax portions of the boat that have a non-skid pattern.

The interior and exterior fiberglass parts of the hull should be waxed a minimum of twice per year to protect the gelcoat from salt, dirt, and ultraviolet degradation. Use a wax that is formulated for fiberglass and gelcoat surfaces. **DO NOT** wax the boat in direct sunlight. The gelcoat could “haze” over if waxed in direct sunlight or extreme heat. **DO NOT** wax the non-skid surfaces on the decks.

Compounding

It might be necessary to compound the hull and interior fiberglass components to remove stains, light scratches, and hazed film on the gelcoat. Compounding should only be done after the boat has been thoroughly cleaned to remove all dirt and oil. Use a fine grade compound formulated for gelcoat and fiberglass parts. Follow the manufacturer's instructions carefully. After compounding, re-wax all surfaces following the above steps.



Gelcoat & Fiberglass Repair

The interior and exterior of your hull might sustain damage that cannot be compounded or waxed out. Typical damage would be cracks, gouges, holes, and chips. They can be caused from dropping heavy items inside your boat, or hard impacts with other things such as docks, other boats, and submerged objects. If you strike an underwater object while underway, the boat should be hauled and thoroughly inspected for damage.

Fiberglass repairs should only be done by an experienced fiberglass repair facility. If the damage penetrates the hull, call Brunswick Commercial & Government Products Customer Service Department for the correct repair procedures. The repair must be done following Boston Whaler's recommendations. Improper repairs can lead to hull failure and might void portions of your commercial warranty.

Trim Care

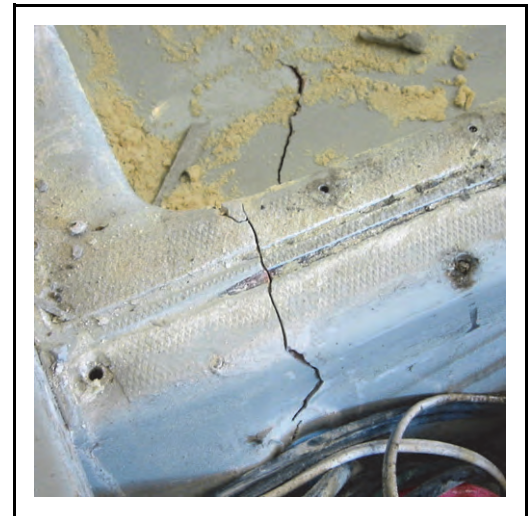
All trim on your boat must be regularly maintained to extend its life and service. Most items can be cleaned with a mild soap and a soft cloth or sponge.

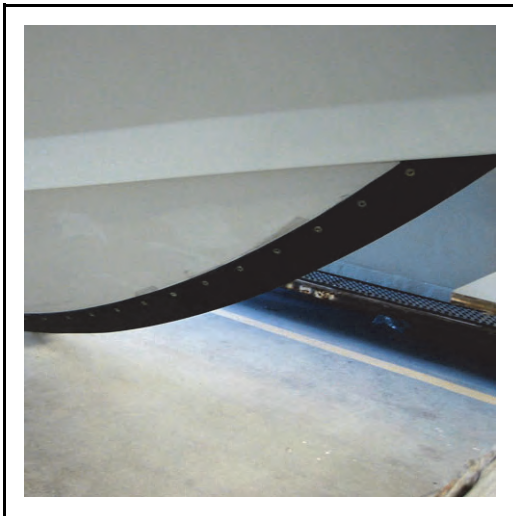
Aluminum

Wash aluminum parts with clear water and mild detergent. Protect surface with liquid cleaner or wax. **DO NOT** use harsh chemicals or abrasives. To minimize corrosion from contact between dissimilar metals, use a high quality marine grade caulking compound when mounting non-aluminum hardware. Also ensure all electrical equipment is insulated from the aluminum hardware.

Deck Hardware

Clean deck hardware frequently with a mild soap and water. A glass cleaner is usually safe for stainless hardware. Remove rust spots as soon as possible with a brass, silver, or chrome cleaner. Never use an abrasive like sandpaper or steel wool on stainless steel parts.





Cutwater & Chafe Plates

Your boat might be equipped with an optional stainless steel cutwater. This is a plate that protects the keel against debris while underway and possible damage while beaching. Inspect the cutwater several times a year for loose screws, missing screws, and large gaps along the outside edges. If you service or replace any screws, you must use the correct screws and bed them with black 3M® 5200 sealant.

CAUTION

The cutwater retaining screws are very special. They do not penetrate through the hull. DO NOT drill out the holes or substitute any other screws. Incorrect service procedures could cause serious hull damage and might void portions of your hull warranty.



Your boat might be equipped with stainless steel transom corner chafe plates. The same precautions apply to these items. All chafe plates are powder-coated to give them a longer service life, but sometimes the powder-coat might be worn or chipped away. If the powder-coat gets chipped away, touch up the part with a high quality, acrylic enamel.

Drains & Scuppers

Check all compartment drains, scuppers, and bilge discharge fittings at least once a month. Inspect for gaps in sealant, tightness, cracks, and UV damage. Inspect scupper flaps for deterioration. If any drains or thru-hull fittings are damaged, have them serviced or replaced immediately.

CAUTION

Failure to properly maintain thru-hull fittings might lead to serious hull damage and could void portions of your hull warranty.

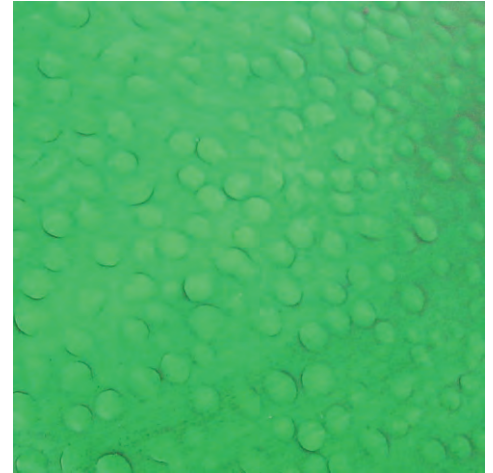


Hull Blistering

The chemical and physical structure of all fiberglass boats is somewhat porous. Water can permeate through gelcoat and fiberglass during long periods of immersion in water. This process is referred to as **hydrolysis**.

The effect of hydrolysis over time allows water to enter the gelcoat and substrate, forming a blister. Blistering is caused by the deterioration of certain water-soluble materials in the hull laminate. Blisters can form in near-surface layers of gelcoat or very deep in the fiberglass substrate.

The damage can range from cosmetic to structural, although structural damage is a rare occurrence. Studies point to long-term immersion of a boat in warm water as a primary cause of hull blisters. Stress cracks on the hull below the waterline can also contribute to the formation of blisters.





Damage caused by blistering is not covered under your hull warranty.

There are a number of important things that you can do to avert hull blistering. They include:

Storage

Store your boat out of the water when not in use. Store your boat on a trailer, in a boatlift, or on a cradle. Be sure to use a bunk style design that supports the boat well.

Refer to **Storage and Trailers** in this section for more information about trailer design and proper boat support.

Inspection

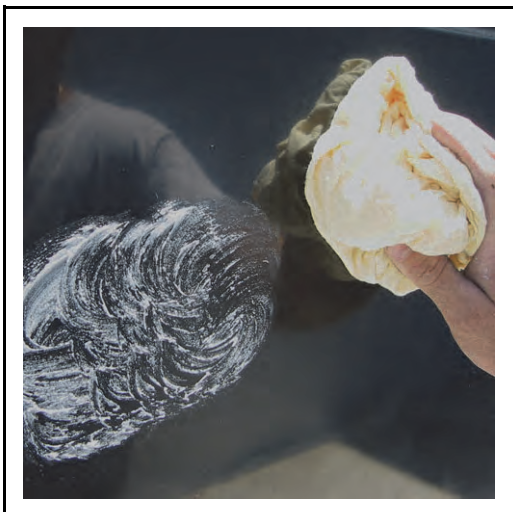
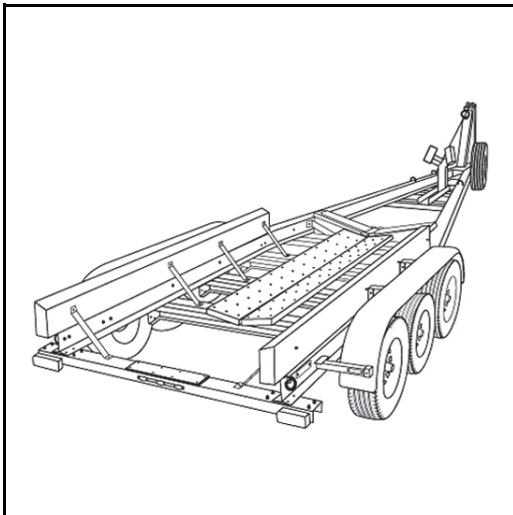
Inspect the entire surface of the boat bottom on a frequent basis. Address any structural or cosmetic issues immediately. Even a minor scratch or scrape might allow water to enter the hull laminate.

Waxing

Applying a high-quality wax formulated for marine use can slow the hydrolysis process. Be sure the boat bottom is clean and follow all of the wax manufacturer's recommendations.

Bottom Painting

Painting the bottom of your boat slows the formation of blisters and controls marine growth. **Bottom coatings fall into two general categories, barrier coating and conventional bottom painting.**



⚠ CAUTION

Some compound of copper is the active ingredient in most conventional bottom paints. Do not apply any copper-based bottom paints to the engine bracket or the engines. Severe damage resulting from galvanic corrosion will occur.

⚠ WARNING

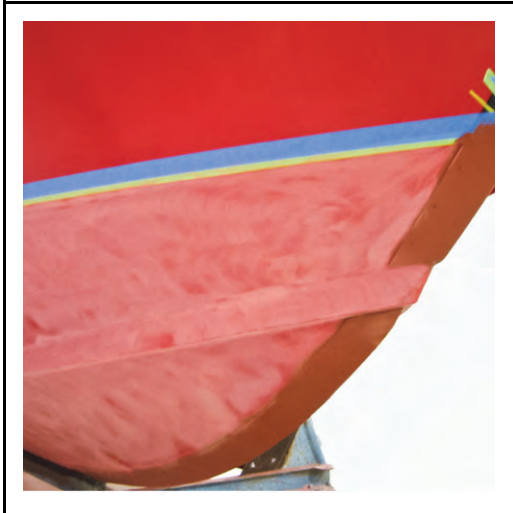
There are risks and dangers associated with using paints and solvents. Follow all the manufacturer's guidelines and precautions while painting your boat. Dispose of all painting supplies following all local regulations.

Barrier coating is a process where a vinyl ester resin is applied to the boat's bottom. This process is complicated and very lengthy, including a long "drying out" phase. The vinyl ester resin barrier coat is then covered by conventional bottom paint. This process should only be done by a professional fiberglass repair facility.

The second process is **conventional bottom painting** using a high-quality product. Bottom painting slows the process of hydrolysis and protects your boat from most types of marine growth. If the boat has never had bottom paint, consider using one of the newer formulations of paint that does not contain copper compounds.

To determine the waterline, place the boat in the water with a full load of fuel and gear and mark the waterline. Measure above the marked line about two inches (5 cm) for placement of the tapeline. Use a vinyl/rubber masking tape such as 3M[®] 471.





Preparation is the key to successful hull painting. If the hull is bare, the gelcoat will have to be de-waxed before sanding can begin. After de-waxing is complete, light sanding with 80-grit sandpaper is recommended.

Proper ventilation and dust collection is essential. The dust created from sanding is toxic and should not be breathed. A properly fitted respirator must be used. **DO NOT** use a paper filter mask.

The bottom paint can be applied after sanding and cleaning is complete. Follow the manufacturer's recommendations for applying the paint. Always use the etching primer called for by the paint manufacturer. Humidity and weather will play a role in how and when the paint is applied. Several thin layers are better than one thick layer. Make sure there is enough paint left to cover areas that were not accessible during painting because of slings or jack stands.



Follow the manufacturer's recommendations for periodic maintenance after the painting is complete. If the hull bottom is already painted, you must be sure to test the new paint's adhesion to the old paint. If the paints are incompatible, the new paint will "lift" the old paint. Never apply paint without first preparing the old painted surface.



Storage and Trailers

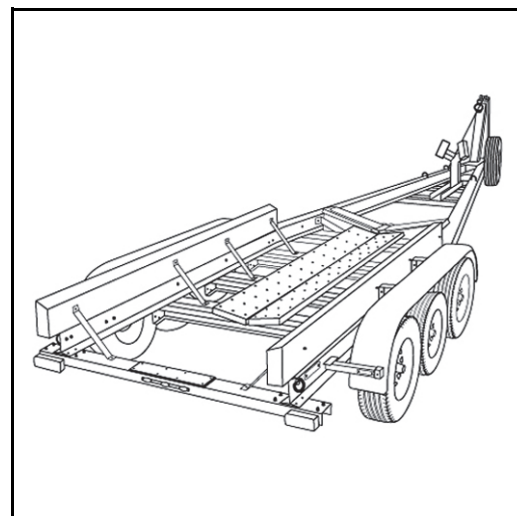
Store your boat out of the water when you are not using it to avoid the short-term effects of marine growth and the long-term effects of hydrolysis. Hydrolysis is the process where moisture can be absorbed by gelcoat and fiberglass over a long period of exposure.

Choose your trailer, boatlift, or storage cradle carefully. Be sure they incorporate a continuous bunk design that supports the boat well. Refer to **Trailer Setup** in this section for the correct dimensions if you are buying or replacing your trailer.

Review these guidelines when evaluating a trailer for your boat:

- The trailer's net carrying capacity must exceed the weight of the boat in its fully-loaded condition
- Construction materials must suit your operating environment
- The trailer should have torsion axles
- Trailer bunks must be continuous and as long as the boat's running surface
- Trailer bunk contact angle must match the hull deadrise angle
- Trailer bunks must be parallel with the boat centerline and must not touch any lifting strake
- Trailer bunks must not be segmented or swivel
- Trailer must not be an "all-roller" design
- Trailer must not support boat weight at any single, concentrated point such as a keel roller

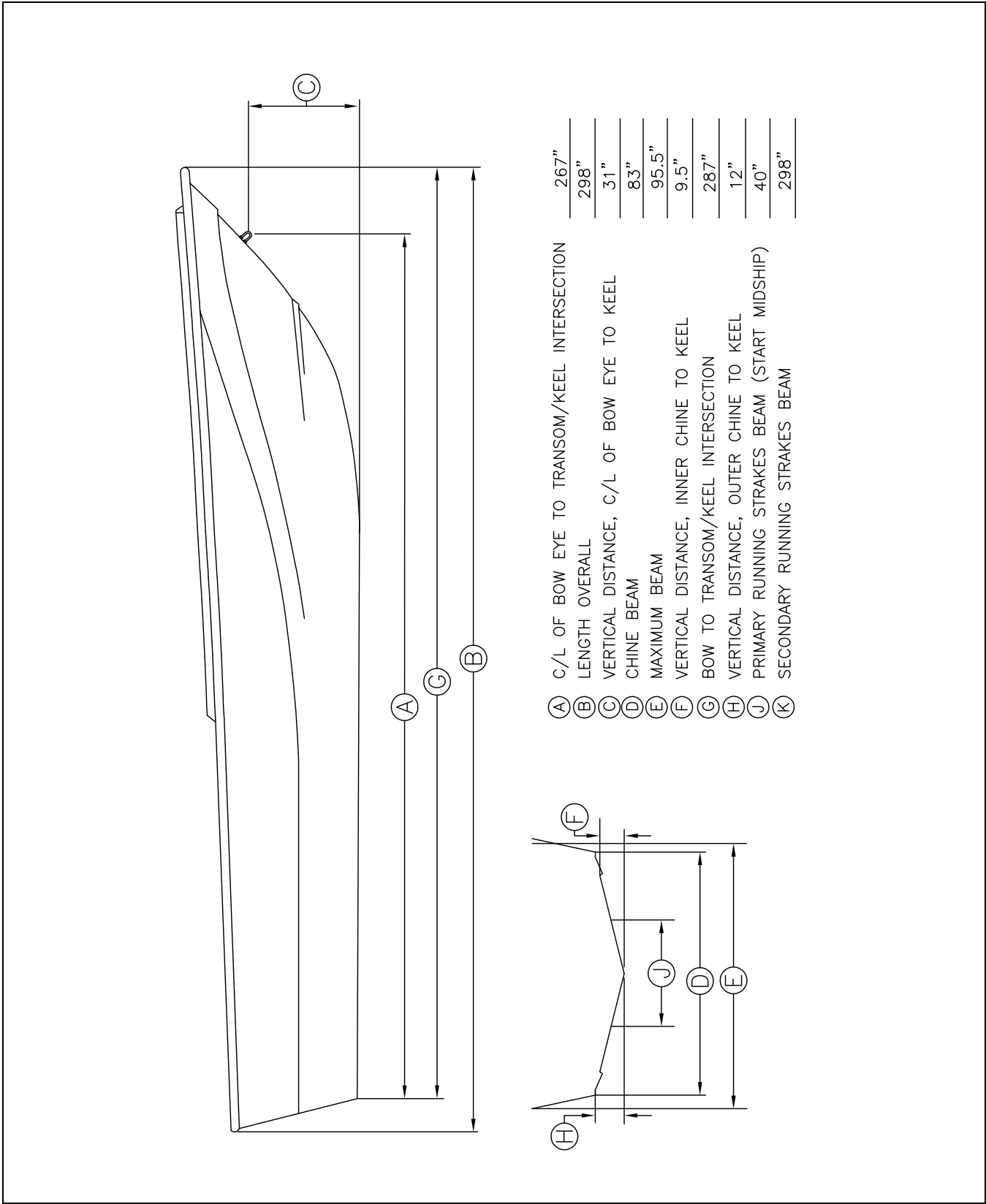
Heavy-duty trailers and storage cradles supplied by BCGP meet all these requirements and are approved for use with **Boston Whaler** and **Impact** boats.



CAUTION

Storing your boat on a sub-standard trailer or boatlift can cause serious, permanent damage to the hull. This type of hull damage is considered "improper storage" and is not covered under the BCGP limited commercial warranty.

Trailer Setup



Fuel System

Your boat is equipped with one below-deck aluminum fuel tank that requires little maintenance. You should visually inspect the fuel tank and all associated hoses and fittings for leaks or deterioration before each mission. If you suspect a leak, you should have your boat serviced immediately by an experienced marine technician.

WARNING

Do not allow any liquid gasoline to enter the boat or accumulate in the bilge. Liquid gasoline is a fire and explosion hazard. Gasoline vapor is extremely flammable and highly explosive under certain conditions.

Your boat might be equipped with Racor® 320R-RAC-01 gasoline fuel filters. These filters feature a water-separating 10-micron filter element, a replaceable spin-on canister, and a clear bowl to help detect water in your fuel.

Your inspection and servicing routine is directly related to the quality and quantity of gasoline that you take on-board. You should check the sight bowls for evidence of moisture before and after **every** mission.

Replace the filter element on this schedule, whichever happens first:

- Every 100 operating hours
- Annually
- Noticeable engine performance loss

WARNING

Follow the manufacturer's recommendations exactly when servicing this gasoline filter to avoid engine damage or fuel leaks. Refer to the manufacturer's instruction booklet in your owner's bag for detailed information about these service procedures.





Steering System

Your boat is equipped with a manual hydraulic steering system.

WARNING

Follow the steering system manufacturer's maintenance recommendations exactly. Improper maintenance might cause loss of steering, which could cause property damage or serious injury.

Be sure to check the operation of the steering system before each mission. Turn the steering wheel from hard port to hard starboard while watching for any unusual engine movement and listening for any unusual noise. If any unusual movement or noise is detected, have the steering system serviced before operating the boat.

Weekly, check the steering fluid level in the helm reservoir. It should be maintained at no less than $\frac{1}{2}$ inch and no more than $\frac{1}{8}$ inch below the bottom of the filler cap threads. **Be careful not to overfill the reservoir.**



Every six months, a qualified marine technician should check the following items:

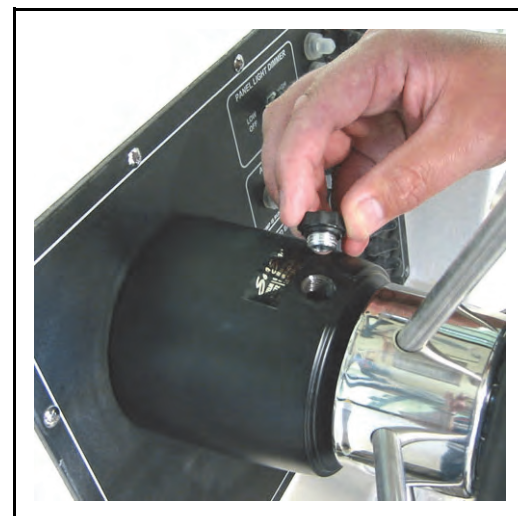
- Check fluid level in the helm reservoir.
- Check outboard engine tilt tubes for salt deposits or signs of corrosion. Clean and grease as required.
- Check and grease slider assembly on front of the engine steering cylinder assemblies.
- Check mechanical linkage and connections.
- Tighten loose parts and replace any worn items.
- Check all self-locking fasteners and locking tabs for tightness.
- Check system for hydraulic fluid leaks. Refill and purge system as necessary.
- Check steering hoses for signs of chafing, cuts, and leaks. Replace any steering hose that shows signs of damage.
- Inspect the bilge, console interior, and splashwell for signs of leaking hydraulic fluid.



Approved Steering Fluids

The following fluids are approved for use in this manual hydraulic steering system:

- Sea Star HA-5430
- Texaco H015
- Aero Shell #41
- Esso Unavis N15 or J13
- Chevron Aviation fluid A
- Mobil Aero HFA
- Any MIL SPEC H-5606-C fluid



Dexron II automatic transmission fluid may be used in an emergency.

WARNING

Never use brake fluid in your manual hydraulic steering system. Brake fluid will damage the system and can cause loss of steering control.



Batteries

Safety Warnings

CAUTION

Batteries should always be enclosed in the covered battery boxes provided with your boat. The boxes will contain any spilled acid and will protect the battery terminals from damage or shorting due to contact with metal objects. The battery boxes should always be secured using the heavy-duty straps and aluminum trays provided. The boxes, heavy-duty straps, and aluminum trays are designed to hold the batteries in place while the boat is underway, reducing the possibility of damage to the batteries and other equipment in the storage area.



DANGER

Never use an open flame in the battery storage area. Avoid striking sparks near the batteries. A battery can explode if a flame or spark ignites the free hydrogen gas vented during charging. Always disconnect the batteries before doing any work on the 12 VDC electrical systems.

WARNING

Always wear eye protection when servicing batteries. Batteries contain sulfuric acid, which can cause serious injury. Avoid contact with skin, eyes, and clothing. If contact occurs, immediately flush the affected area with water and call for medical assistance.



Capacities

Exide® marine heavy-duty 12-volt batteries are normally selected for your boat. One Group 24 1000 marine cranking amp (MCA) battery is provided for each engine and one Group 27 115 amp hour, deep cycle battery is normally provided for the boat's electrical accessories. These batteries are considered wet-cell and require periodic maintenance.

Your boat might be equipped with Optima® Blue Top marine batteries. Optima batteries use spiral cell technology to improve vibration resistance and service life. These batteries are classified as non-spillable and do not require periodic checks of electrolyte levels.

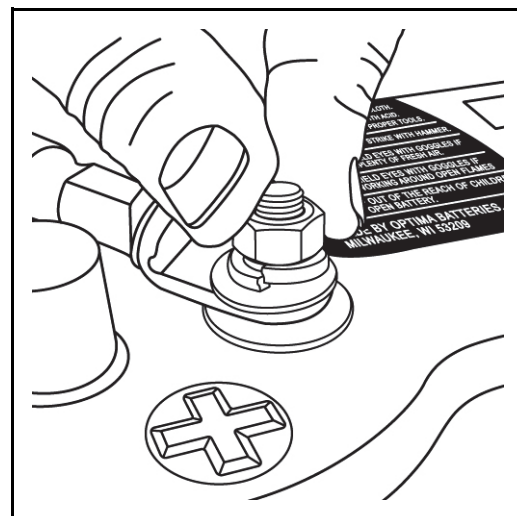
With proper care, these marine heavy-duty batteries will last several years.

Maintenance

Only use elastic lock nuts with flat washers or standard hex nuts with split lock washers and flat washers to secure cables to the battery terminals. **DO NOT** use wing nuts to secure cables to the battery terminals.

Periodic battery maintenance is important to assure that the boat will be ready for operation when needed. Battery maintenance should include:

- Inspect the batteries and charging systems before each mission for loose connections and damaged wiring.
- Check and maintain the electrolyte level in all wet-cell batteries. **Add distilled water only, as necessary.**
- Coat the terminals and cable connections with heavy grease to reduce corrosion.
- Keep the batteries dry and clean.





Remove the batteries from the boat during cold weather or off-season storage. Always protect the batteries from freezing temperatures.

You must not allow your batteries to become completely discharged. As a battery discharges, the active material on both positive and negative plates changes to lead sulfate, causing the plates to become similar in chemical composition. The battery electrolyte becomes weaker and the voltage drops. As the battery remains discharged, this process continues until recharging the battery becomes impossible.

If the battery does become discharged, be sure to recharge it as soon as possible. Overcharging a battery can also reduce its effective life.

Cleaning

WARNING

Always wear eye protection when servicing batteries. Batteries contain sulfuric acid, which can cause serious injury. Avoid contact with skin, eyes, and clothing. If contact occurs, immediately flush the affected area with water and call for medical assistance.



At least once a year, or when they appear to have dirt or corrosion on the terminals, the batteries should be cleaned. To clean the batteries, turn the battery OFF-ON switches to the OFF position. Disconnect the battery cables from the terminals. **Remove the negative (black) cable first.** Remove the battery from the plastic battery box. Clean the terminals and casing with a solution of baking soda and water. Use a soft wire brush on the terminals. Do not allow the cleaning solution to enter the battery cells. Wipe the battery and terminals dry with a clean cloth. Clean the battery cable ends in the same manner. Connect the cables to the appropriate terminals and coat the cable connections with heavy grease. **Connect the positive (red) cable first.**



Bilge Pump System

The bilge pumps and water level sensors are sealed units and do not require any periodic maintenance. Check the bilge area weekly to make sure there is no sludge or debris that could foul the water level sensors or clog the pumps.

⚠ CAUTION

Test your bilge pumps and water level sensors before each mission. Manually activate the water level sensor when the rocker switch is in the AUTO position and verify pump operation. Clear away any sludge or debris that might restrict the pumps or water level sensors.

Periodically check the condition of the bilge pumps by turning the pumps on manually. You should see them pump water out the through-hull fittings if there is water in the bilge, or hear the pump motors running.

Trim Tabs

Periodically check the condition of the trim tab actuators. The actuators are completely sealed and require no maintenance. However, marine growth should be removed from the actuator shafts by pressure washing.

Cold temperatures do not affect the trim tab system. No winterization procedure is necessary.

In saltwater, to control galvanic corrosion, a zinc anode should be attached to the **top** of each trim tab. The anode must be in clean, direct contact with the stainless steel trim plane. Do not ground the trim tabs to other underwater metal objects.

Erosion of the anode material is a natural result of its protective responsibility. **Replace the anodes when they have eroded to one-half their original size.**

Refer to the **Lenco** operator's manual for detailed information about system operation and maintenance.





Off-Season Storage

All boat and engine systems must be carefully prepared for long periods of non-use. This preparation is particularly important in regions where you experience extreme changes in temperature or where the winter temperatures are consistently below freezing.

Outboards

You must protect your outboard engines from freeze damage and from internal corrosion caused by extreme changes in temperature.

Trapped water can freeze and cause extensive engine damage. Store your outboards in the vertical, operating position to avoid trapping water in the cooling system passageways.

Internal engine parts can be damaged by corrosion due to lack of proper storage lubrication. Your outboard engine operator's manual has a detailed procedure for adding extra internal lubrication just before the engines are stored.

Refer to the OEM engine manual in your owner's bag for detailed information about storage and winterization.

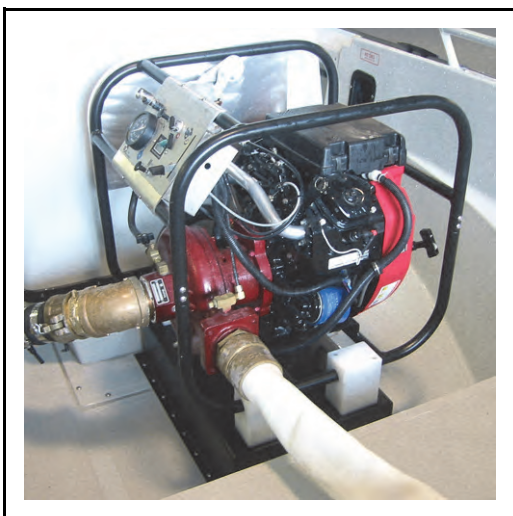
Fire Pump

You must protect your portable fire pump from freeze damage and from internal corrosion caused by extreme changes in temperature.

Trapped water can freeze and cause extensive damage. Use the pump manufacturer's recommendations to drain all raw water from the engine and pump.

Internal engine parts can be damaged by corrosion due to lack of proper storage lubrication.

Refer to the OEM pump manual in your owner's bag for detailed information about storage and winterization.



Batteries

Remove the batteries from the boat during cold weather or off-season storage. Always protect the batteries from freezing temperatures.

You must not allow your batteries to become completely discharged. As a battery discharges, the active material on both positive and negative plates changes to lead sulfate, causing the plates to become similar in chemical composition. The battery electrolyte becomes weaker and the voltage drops. As the battery remains discharged, this process continues until recharging the battery becomes impossible.

Leave the batteries in their plastic boxes. Store the batteries in a cool, dry location. Check the battery condition monthly during storage to avoid serious damage.

Make sure the batteries are fully charged before you reinstall them.





Fuel System

You must take appropriate steps to protect your boat's fuel system and engines during periods of non-use. Situations where fuel isn't being consumed and exposure to extreme changes in temperature will cause condensation to accumulate in your fuel system. This moisture can compromise your fuel, your fuel system, and your engines.

Use a high-quality fuel stabilizer formulated for gasoline containing ethanol when you perform these steps. Review the storage information contained in your engine operator's manual.

Follow these suggestions to minimize the possibility of damage to your fuel system and engines during storage:

- If possible, use fuel that does not contain ethanol on a regular basis, or just before storing your boat
- Store your boat with the fuel tank **full** to avoid exposing the fuel to moisture in the atmosphere
- Refer to **Fueling Procedures** in Section 3 of this manual for fueling information
- Add a high-quality fuel stabilizer to the fuel following the additive manufacturer's recommendations
- Run each engine at idle for at least ten minutes to pump stabilized fuel through the engine's fuel system
- If possible, store your boat where it will not be exposed to extreme changes in temperature



Refer to **Blended Fuels** in Section 3 of this manual for more information about moisture and gasoline.

Sea Water Washdown System

Your boat might be equipped with a sea water washdown system. You must protect the washdown system from damage caused by freezing temperatures.

Use the following steps to prepare this system for off-season storage:

- Remove the cap from the hose outlet fitting
- Verify that the inlet seacock is in the **OPEN** position
- Run the washdown pump for approximately ten seconds or until the water stops flowing
- Leave the inlet seacock in the **OPEN** position and the hose outlet cap off during storage



Fresh Water System

Your boat might be equipped with a fresh water system. You must protect the fresh water system from damage caused by freezing temperatures.

Use the following steps to prepare this system for off-season storage:

- Treat the fresh water holding tank with a non-toxic antifreeze following the manufacturer's recommendations
- Run the treated water through all the outlets and faucets to protect the under-deck plumbing



Hull Drainage

Remove the main hull drain plug. Open all internal seacocks and drains. Verify that there is no debris plugging any drain, seacock, or limber hole.

Store the boat with the bow higher than the stern to promote adequate drainage.

Secure the main hull drain plug to the steering wheel to alert personnel that the boat is in storage configuration.



[illegible]

Boston Whaler® Products

Limited Commercial Warranty

Brunswick Commercial & Government Products (BCGP) warrants that each Boston Whaler hull manufactured by **BCGP** will be free from structural defects due to substandard material or workmanship, under conditions of reasonable commercial or government service, for a period of ten years from the date of manufacture. The following stipulations apply to this warranty:

- The hull warranty is offered on a pro-rata basis. Available reimbursement will be reduced each month by a percentage, which will be the number of months from date of manufacture divided by 120. As an example, if the repair occurs 72 months after date of manufacture ($72 \div 120 = 0.6$), 60% of the pro-rata warranty has expired. **BCGP** will pay 40% of the authorized warranty repair or replacement cost.
- All warranty repairs must be authorized in advance by **BCGP**. Any structural defects will be repaired at a service agent chosen by **BCGP** or at the **BCGP** repair facility in Edgewater, Florida.
- Expenses for towing, hauling out, transportation to and from the **BCGP** service agent, or to and from the **BCGP** repair facility in Edgewater, Florida are the responsibility of the boat owner.
- Damage resulting from abuse, misuse, accidents, improper storage, sub-freezing temperatures, lack of reasonable and proper maintenance, overloading or overpowering, and modification or alteration of the hull is not covered.
- Damage resulting from a war, police action, or armed conflict is not covered.
- This warranty is not transferable from the original owner.
- Specifically excluded from this warranty are gelcoat issues such as fading, color shifting, chalking, blistering, cracking, crazing, and stress lines.

Accessories manufactured and installed by **BCGP** are warranted for 12 months from date of installation against defective material or workmanship. Specifically excluded from this accessory warranty are windshield breakage or leakage, engines, engine components, batteries, propellers, controls, control cables, steering systems, electronics, and any other accessory covered by a separate OEM warranty. This accessory warranty is not transferable from the original owner.

None of these warranties applies to any Boston Whaler hull, accessory, or part that has been structurally altered or subjected to unreasonable use, improper storage, lack of reasonable and proper maintenance, negligence, or accident.

The obligation of **BCGP** under this warranty is limited to the pro-rata cost to repair or replace a hull or part that has, within the warranty period, been determined by **BCGP** to be defective in material or workmanship. The decision to repair or replace a hull or part shall be solely at the election of **BCGP**. If a warranted defect is determined to exist, **BCGP** will provide written authorization for exactly what repair will be made. **No work of any kind may be performed without this written authorization.** **BCGP** makes no other express warranties, and intends no implied warranties. Implied warranties of fitness and merchantability are specifically excluded. **BCGP** also disclaims any liability for product failure or other economic loss arising from claims of negligence, defective design, manufacturing defect, failure to warn or instruct, lack of seaworthiness, and any other theory of liability not expressly covered by this warranty. If any implied warranties are found to exist, such implied warranties will be subject to the time limits in this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation might not apply to you. **BCGP** will not be liable for incidental or consequential damages including, but not limited to, loss of profits, rental of substitute equipment, or other commercial loss. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion might not apply to you. **BCGP** will not be liable for any warranty expressed by a third party, if such warranty is not also expressed in writing by **BCGP**.

BCGP reserves the right to improve its products through ongoing changes in design and materials without obligation to incorporate such changes on existing boats. Speed, boat weight, fuel consumption, and other boat performance characteristics are estimates and cannot be guaranteed.

To initiate a warranty claim, it is the responsibility of the boat owner to contact **BCGP** or an authorized **BCGP** service agent immediately after discovering a defect. The boat owner must supply details of the problem, hull identification number, date of purchase, and selling dealer name, if applicable. **BCGP** will be solely responsible for determining and authorizing warranty repairs.

This warranty gives you specific rights and you might have other rights that vary from state to state. Other **BCGP** products might have warranties that are different from this one.



World-class support for World-class boats.