

# CRUISER BOATS OWNER'S MANUAL



**MONTEREY**  
*B . O . A . T . S*

## Welcome Aboard

Monterey welcomes you to its growing family of new boat owners.

This manual will familiarize you with the operation, maintenance and safety information about your new boat. This manual is written to cover several models in our line, so your model may not contain some options or may operate or look a little different. It is supplemented with the owner's manual that is provided by the engine manufacturers. We urge you to read these publications carefully and follow recommendations to help assure enjoyable and safe operation of your new boat.

Below is an area provided for you to record the model and serial number of your boat, engine and major accessories. If you need service, these numbers will be important to you while anywhere in the United States and Canada. Any Monterey Dealer will be happy to assist you.

Because subsequent owners require this important information as well, these publications should remain with your boat when it is sold.

Thank you for choosing a Monterey Boat, we assure you of our continuing interest in your boating pleasure and satisfaction.

**DATE PURCHASED** \_\_\_\_\_

**DEALER/PHONE NUMBER** \_\_\_\_\_

**BOAT MODEL** \_\_\_\_\_

**HULL NUMBER** \_\_\_\_\_

**TRAILER ID NUMBER** \_\_\_\_\_

**ENGINE #1 MAKE/MODEL** \_\_\_\_\_

**ENGINE #1 SERIAL NUMBER** \_\_\_\_\_

**ENGINE #2 MAKE/MODEL** \_\_\_\_\_

**ENGINE #2 SERIAL NUMBER** \_\_\_\_\_

# INTRODUCTION

Take a few minutes to read this manual completely before you use your boat for the first time, it should answer any remaining questions you may have. Contact your dealer or local boating administrator for further information.

Because of our policy of continuous product improvement, the illustrations used in this manual may not be the same as on your boat and are intended only as representative reference views. Keep this manual on board for future reference.

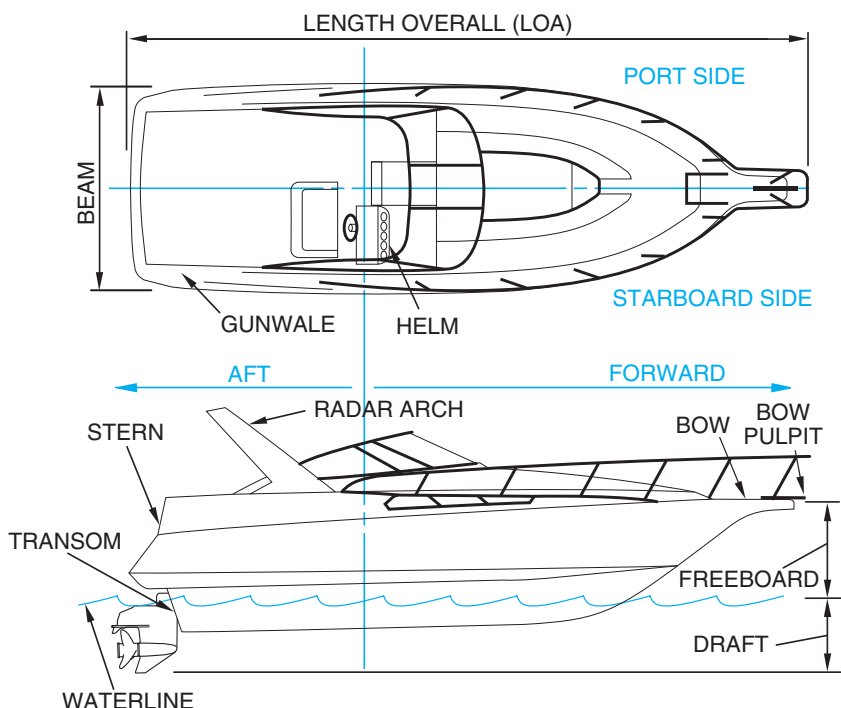
## IDENTIFICATION NUMBERS

Safeguard information about your boat by recording the Hull Identification Number (HIN), and model and serial numbers of major components and accessories. Keep a detailed Data Sheet for emergency purposes in a safe place off the boat. In case of theft, damage, etc., report these numbers to local authorities, your insurance agent, and your dealer.

### NOTE

**By law, the HIN must be clearly visible and may not be removed, altered, or tampered with in any way. The HIN is attached to the transom on the upper starboard side, above the waterline.**

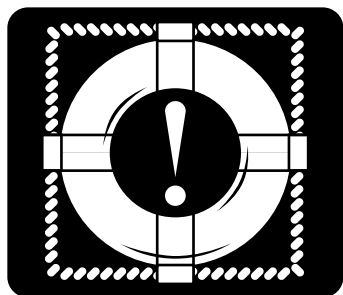
## BOATING TERMINOLOGY



KC-0033

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# BOATING SAFETY

# 1

The popularity of boating and other water sports has undergone an explosion of growth in the past few years. Because of this, safety is an important issue for everyone who shares in the use of our waterways.

This section covers general boating safety information. Throughout this manual specific precautions and symbols identify safety related information.



The Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



## WARNING



This symbol and signal word indicate a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



## CAUTION

This symbol and signal word indicate a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. This symbol **MAY** also be used to alert against unsafe practices.

## CAUTION

This signal word indicates a situation which if not avoided, **MAY** result in product or property damage.

The precautions listed in this manual and on the boat are not all-inclusive. If a procedure, method, tool or part is not specifically recommended, you must satisfy yourself that it is safe for you and others, and that the boat will not be damaged or made unsafe as a result of your decision. **REMEMBER – ALWAYS USE COMMON SENSE WHEN OPERATING!**

# BOATING REGULATIONS

The U.S. Coast Guard is the authority of the waterways; they are there to help the boating public. State boating regulations are enforced by local authorities. You are subject to marine traffic laws and “Rules of the Road” for both federal and state waterways; you must stop if signaled to do so by enforcement officers, and permit to be boarded if asked.

There are many pamphlets, prepared by the Coast Guard, available to you. These pamphlets explain “Rules of the Road”, signal lights, buoys, safety, international and inland regulations and much more than is presented in this manual. For more information contact your local U.S. Coast Guard Unit or call the Coast Guard Boating Safety Hotline at 1-800-368-5647.

## BOATER RESPONSIBILITIES

### Registration

The U.S. Coast Guard requires that all power boats operating on the navigable waters of the United States must be registered in the state of main use. Many states also require registration in that state whenever boating on waters within their state boundary. Registration numbers and validation stickers must be displayed on the boat according to regulations, and the registration certificate must be carried on board when the boat is in use.

Contact your state boating authorities (and neighboring states) for registration information on boats and trailers. Your dealer may be able to supply you with the appropriate forms.

### Education

This manual is not intended to provide complete training on all aspects of boat operation. We strongly recommend that all operators of this boat seek additional training on boat handling and safety. Many states require operators under the age of 18 to be licensed in small boat operation and offer courses for training and certification.

The following is a listing of some of the agencies and organizations that offer safety training or information; refer to your local telephone directory for their telephone numbers and addresses.

- American Red Cross
- U.S. Coast Guard Auxiliary
- U.S. Power Squadrons
- State Boating Offices

### Insurance

You must get insurance before operating your new boat. Loss by fire, theft or other causes, and liability protection against accidents is a must for responsible boaters. The boat owner is legally responsible for any damage or injury caused when he, or someone else operating the boat, is involved in an accident. Many states have laws detailing minimum insurance needs. Your insurance agent and your dealer can supply you with more information.



## REQUIRED SAFETY EQUIPMENT

Your boat has been equipped at the factory with most federally required safety equipment. **As the boat owner, obtaining necessary U.S. Coast Guard approved safety equipment is your responsibility.**

MINIMUM REQUIRED SAFETY EQUIPMENT			
EQUIPMENT	CLASS 1 (16 to less than 26 ft.) (4.9 to less than 7.9 m)	CLASS 2 (26 to less than 40 ft.) (7.9 to less than 12.2 m)	CLASS 3 (40 to not more than 65 ft.) (12.2 to not more than 19.8 m)
PERSONAL FLOTATION DEVICES (PFDs)	One approved Type I, II or III device aboard for each person on board or being towed on water skis, etc.; and, in addition, one throwable Type IV device.		
FIRE EXTINGUISHERS Must say Coast Guard Approved.	At least one B-I type approved hand portable fire extinguisher (Not required on outboard motorboats less than 26 feet in length and not carrying passengers for hire if the construction of such motorboats will not permit entrapment of explosive or flammable gasses or vapors and if fuel tanks are not permanently installed.)	At least two B-I type approved portable fire extinguishers; OR at least one B-II type approved portable fire extinguisher.	At least three B-I type approved portable fire extinguishers; OR at least one B-I type <b>plus</b> one B-II type approved portable fire extinguisher.
VISUAL DISTRESS SIGNALS (Required on coastal waters only.)	Must carry visual distress signals approved for both daytime and nighttime use. Note: All boats carrying six or more passengers for hire must meet these requirements also.		
BELL, WHISTLE	Every vessel less than 12 meters (39.4 ft.) in length must carry an efficient sound producing device.	Every vessel 12 meters (39.4 ft.) but less than 20 meters (65.6 ft.) in length must carry a whistle and a bell. The whistle must be audible for 1/2 nautical mile. The mouth of the bell must be at least 200 mm (7.87 inches) in diameter.	

KC-0081

### Personal Flotation Devices

Federal law requires at least one Type I, II or III Personal Flotation Device (PFD) for each person on board or being towed on water skis; and in addition, one throwable Type IV PFD.

### Note

**Requirements for coastal waters and inland waters differ; check with the local authorities for more information.**

PFDs are intended to help you save your own life; you and your passengers should wear a PFD whenever boating. It is especially important that children, handicapped people and non-swimmers wear a PFD at all times. Make certain you know how to use PFDs. Try it on and make adjustments for a comfortable fit and show children how to properly put on a PFD. There are three types of acceptable PFDs to wear and one type used for throwing in emergency situations.

Type I – good for offshore or rough water use. Will turn an unconscious person face up in water.

Type II – good for near-shore and most inland waters. Will turn most unconscious people face up in water.

Type III – good for calm, inland waters. Designed to enhance a variety of water sports. The Type III is not designed to turn an unconscious person face up in the water, though it has the same buoyancy as a Type II.

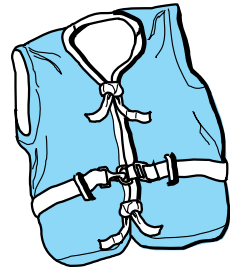
Type IV – designed to be thrown to person in the water. They are easy to hang on to in the water but do not protect as well as Types I, II or III. **Cushions should never be worn on a person's back and must always be kept handy for emergency situations.**

### Note

**Special PFDs are available for skiing and other water sports. These PFDs are constructed with materials suitable for high impact falls into the water.**

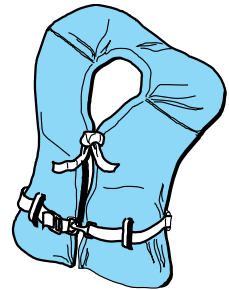
Keep the following PFD points in mind:

- Set an example and wear your PFD. Require your passengers to wear them also.
- At the beginning of each season, check PFDs for damage and test for proper flotation.
- Remove PFDs from packaging and stow in the boat for quick access. Do not stow PFDs near grease or oil.
- Teach children how to float in the water with a PFD.
- Do not use a PFD as a boat fender.



TYPE I  
LIFE PRESERVERS

KC-0041



TYPE II  
BUOYANT VESTS

KC-0051



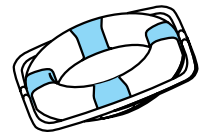
TYPE III  
FLOTATION AIDS

KC-0061



## CAUTION

**Many states require minors to wear a PFD at all times. Consult the local boating authorities for more information.**



TYPE IV  
THROWABLE DEVICES

KC-0071



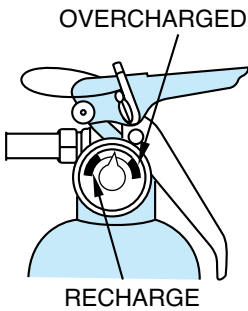
# BOATING SAFETY



## Fire Extinguishers

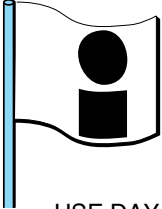

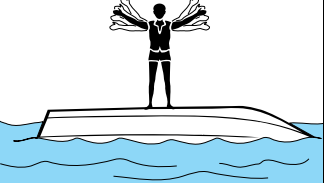

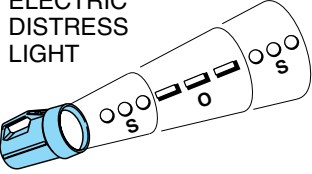


U.S. Coast Guard approved fire extinguishers are generally required on all Class I-III boats. Extinguishers should be mounted in readily accessible areas away from the engine compartment and alcohol stove (if equipped). All passengers should know the location and operating procedure of each fire extinguisher.

Any marine fire extinguisher must be classified to extinguish type B fires (gasoline, oil, or grease). The size and number of required fire extinguishers depend on the size of your boat. Check pressure gauge regularly for proper pressure; have extinguisher filled if necessary.



KC-0083

## Visual Distress Signals

 <p>ORANGE FLAG</p> <p>USE DAY ONLY</p>	<p>RED DISTRESS FLARE (HAND)</p>  <p>USE DAY AND NIGHT</p>
 <p>ARMS SIGNALS (USE BRIGHT CLOTH)</p> <p>USE DAY ONLY</p>	<p>USE DAY ONLY</p>  <p>ORANGE SMOKE SIGNAL (HAND)</p>
 <p>ELECTRIC DISTRESS LIGHT</p> <p>USE NIGHT ONLY</p>	 <p>RED METEOR FLARE USE DAY AND NIGHT</p>
	<p>DYE MARKER USE DAY ONLY</p> 

KC-0082

All boats operating on coastal waters (including the Great Lakes) are required to carry Coast Guard approved visual distress signals for day and night use. Carry several types of signaling devices to handle a variety of conditions.



## WARNING



**Pyrotechnic signaling devices can cause injury and property damage if not handled properly. Follow manufacturer's directions. Stow devices so they are inaccessible to children.**

## Recommended Equipment

As a precaution, a good boater will avoid potential problems on an outing by having additional equipment on board. Normally, this equipment is dependent on the body of water and the length of the trip; your dealer can assist you:

- First aid kit and manual
- Anchor with sufficient line
- Mooring lines and fenders
- Bailing device (bucket, hand pump, etc.)
- Combination oar/boat hook
- Day/night visual distress signal
- Lubricant
- Tool kit
- Spare propeller, nut and washer
- Spare fuses and bulbs
- Local charts and compass
- Waterproof flashlight
- Portable AM/FM radio with weather band
- Spare flashlight and radio batteries
- Sunglasses and sun block
- Tow line
- Parallel ruler and dividers
- Emergency Position Indicating Radio Beacon (EPIRB)
- Spare keys
- Binoculars
- Food and water provisions (extended cruise)
- Auxiliary starting battery



KC-0090



## EMERGENCIES

Be prepared to deal with emergencies before they happen. Try to formulate a plan for each type in advance so that decisions can be made quickly and without hesitation. Precious moments lost can mean the difference between losing and saving a life.

### Reporting

The operator of the boat is responsible for filing a report with the appropriate authorities. In general, reports are necessary for accidents involving loss of life, injury, or damage over \$200. Ask your insurance agent for detailed information.

### Giving Assistance

If you see a distress signal, you must assume it is a real emergency and render assistance immediately. If you can assist a boat in distress, you should. An unwritten law of the sea is that one boater will aid another boater in distress. The 1971 Boating Safety Act grants protection to a “Good Samaritan” boater offering good faith assistance, and absolves a boater from any civil liability arising from assistance given.

### Fires

Most fires occur just after refueling. They are caused by poor maintenance, smoking, or carelessness. Use the fire extinguisher at the **base of the flames** using a sweeping motion. Verify that the fire has been extinguished. If so, check damage and get assistance immediately. **If not, get out and swim at least 25 yards upwind from the boat and use the visual distress signals to get assistance.**

Deciding on abandoning the boat or staying to fight the fire is difficult and depends on many factors. **Try to formulate a fire plan in advance to make that decision quickly and without hesitation.**



KC-0164



## WARNING

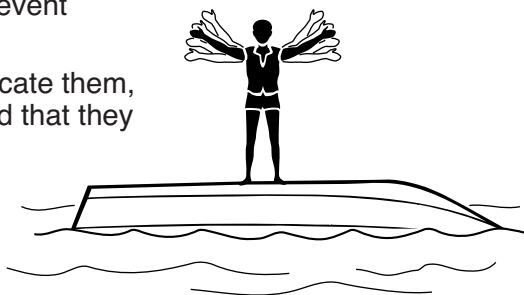


**Gasoline will float on top of water and can burn. If the boat is abandoned, swim up wind, far enough to avoid fuel that may spread over the surface of the water to avoid serious injury.**

### Capsizing

A boat may capsize or swamp when least expected. Like fires, try to formulate a plan in advance on what to do if it should happen. Keep in mind the following guidelines:

- Try to turn the engine OFF to prevent damage.
- If others were on board, try to locate them, make sure they're conscious and that they can swim.
- **Stay with the boat, it will float!** Climb up on the hull and try to get assistance.
- Don't try to swim to shore. It's usually further than it looks.



KC-0170

## HAZARDOUS CONDITIONS

Every waterway poses hazards that you should avoid; shallow water, tree stumps, sand bars, etc. Ask local boaters for information and consult a marine chart when boating on unfamiliar waters. As the operator of the boat, you should try to avoid all hazards, known and unknown. The following information does not contain all possible water hazards.

### Weather

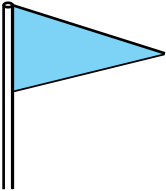
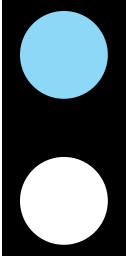
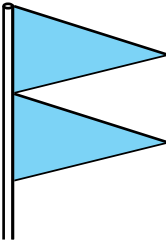
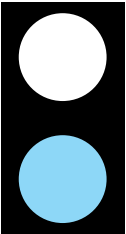
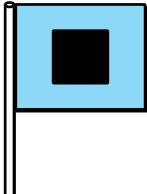
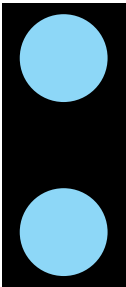
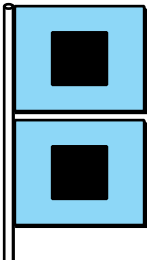
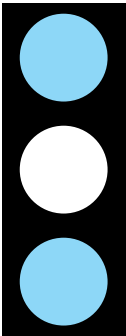
**Storms** – Take common sense precautions if you are forced to operate your boat in stormy conditions:

- Wear PFDs
- Stow gear below and lash equipment on deck.
- Reduce speed and head for place of refuge you can reach most easily.
- If you lose power, keep boat headed into the waves by rigging a sea anchor off the bow.

**Fog** – It is best to avoid operating your boat in foggy weather. When fog sets in take bearings and log courses and speeds. You are required to emit a five second blast from your horn or whistle once every minute. Additionally, have passengers wear PFDs and observe for oncoming vessels.

# BOATING SAFETY



DAYTIME WARNING	DESCRIPTION	NIGHTTIME WARNING
	<b>Small Craft Advisory</b> - Winds greater than 18 knots, sustained for two hours or more or hazardous wave conditions. Following a storm, hazardous wave conditions can persist long after the high winds have subsided.	
	<b>Gale Warning</b> - Sustained winds (2 or more hours), of 34-47 knots.	
	<b>Storm Warning</b> - Sustained winds of 48 knots or greater.	
	<b>Hurricane Warning</b> - Forecast winds of 64 knots and above. Displayed only in connection with a hurricane.	

 Actual Signal in red

KC-0371

## Dam Spillways

The water around a dam spillway is a hazardous area. It is subject to rapid changes. Boaters must keep clear of the spillway areas below dams.

## Shallow Water Operation

Operating in shallow water can present a number of hazards. If the engine strikes an underwater hazard, check for boat and engine damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller.

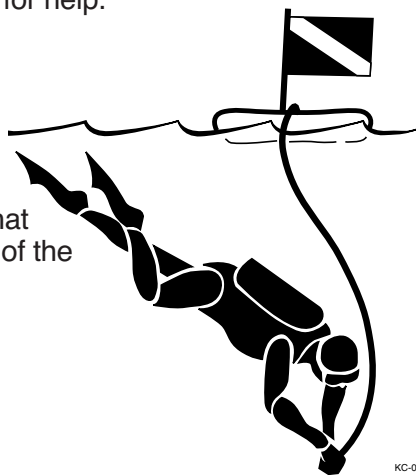
In coastal areas, tides can affect water level as much as 30 feet. Check with local marinas or Coast Guard stations for tide tables and current charts.

## Sand Bars

Sand bars in narrow inlets are constantly shifting, making it difficult to mark them with buoys. Sometimes sand bars are indicated by waves as they form into breakers when passing over sand bars. If you ground the boat on a sand bar, seek help from another boater or radio for help.

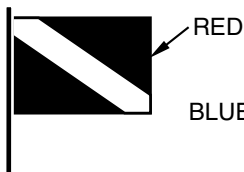
## Warning Markers

It is a good idea to ask local authorities if there are hazardous areas and how they are marked. Boaters must also recognize the flag designs which indicate that skin divers are present and keep well clear of the area.



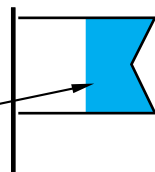
KC-0250

DIVERS FLAG



USED BY  
RECREATIONAL  
DIVERS -  
INDICATES  
DIVER'S  
POSITION

ALPHA FLAG



WORLDWIDE  
VESSELS  
ENGAGED IN  
DIVING  
OPERATIONS -  
DOES NOT  
INDICATE  
DIVER'S  
POSITION

KC-0372

# BOATING SAFETY



Watch for swimmers. Swimming areas may not be marked. Steer clear from the area and always remain alert.



KC-0260



**DISTRESS**

KC-0352

Distress flags indicate a fellow boater is in need of assistance.

Navigation markers serve as a means of identifying navigable routes, and indicate water hazards. Boaters should become familiar with navigation markers and stay within marked boundaries and clear of hazards.

## OPERATION BY MINORS

Minors must always be supervised by an adult whenever operating a boat. Many states have laws regarding the minimum age and licensing requirements of minors. Be sure to contact the state boating authorities for information.

## PASSENGER SAFETY

Whenever you are going for an outing, make sure that at least one passenger is familiar with the operation and safety aspects of the boat in case of emergency. Show all passengers the location of emergency equipment and explain how to use it. Don't allow passengers to drag their feet or hands in the water, or sit on the bow, bow pulpit, deck, or gunwale while the boat is moving.

# WATER SPORTS

Larger boats produce a wake too big for skiers. Only boats that are equipped with a ski-tow eye should be used to pull water skiers.

When using your boat for water sports, be safe and courteous and follow these guidelines:

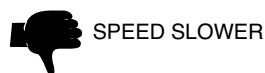
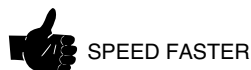
- Be considerate to others you share the water with.
- Stay clear of other boats, skiers, fishermen and navigation markers.
- Return immediately to a fallen skier.
- Never swim alone or at night.
- Turn off engine and anchor boat before swimming.



## WARNING



- **Skiers must wear a USCG approved flotation device. A type III water ski vest is an approved and practical PFD.**
- **Keep at least 100' away from all other objects.**
- **When skiing have an experienced driver and aft facing observer in the boat.**
- **Never ski in shallow water or at night.**
- **Always keep a downed skier in sight.**
- **Turn the engine OFF when approaching someone in the water.**



KC-0270





## GENERAL PRECAUTIONS

Your safety, the safety of your passengers, and other boaters are among your responsibilities as operator of this boat. Your boat must be in compliance with U.S. Coast Guard safety equipment regulations. You should know how to react correctly to adverse weather conditions, have good navigation skills, and follow the “rules of the road” as defined by the Coast Guard and state/county/local regulations.

You must never operate a boat while under the influence of alcohol or any other drug. You are also responsible for the alcohol/drug use and on-board behavior of your passengers. Drugs reduce your reaction time and affect your better judgement. When combined with the sun, wind, noise and activity of boating, drugs compound fatigue and can be very dangerous.



### **WARNING**



**Never operate or allow another person to operate the boat while under the influence of alcohol or drugs. 50% of all boating fatalities involve alcohol.**

Before each outing you should check all safety equipment, such as fire extinguishers, PFDs, flares, distress flags, flashlights, engine stop switch, etc. They should be operable, readily visible, and easily accessed.

Complete a float plan and tell someone of your travel plans. Check local weather reports before casting off; do not leave the dock area when strong winds and electrical storms are in the area or predicted to be in the area.

Know the weight capacity of your boat. Do not overload your boat.



### **WARNING**



**Read and understand this manual and all other manuals provided with your boat. Be sure that you understand all controls and operating instructions before attempting to operate the boat. Improper operation can be extremely dangerous.**

# SPECIAL GAS PRECAUTIONS



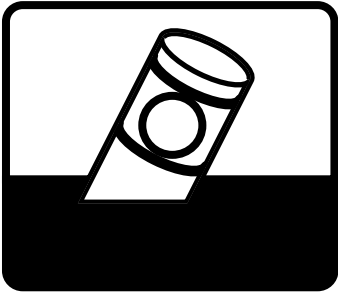
## **WARNING**



Holding tank systems on boats produce odorless methane gas which is extremely lethal in enclosed spaces. Follow these precautions when working on your boat's holding tank system to prevent injury:

- Before work, open all doors and hatches wide, and rig a good fan to disperse gas.
- During work, have another person frequently check on you.
- Before and during work, **DON'T SMOKE.**

# 2



## BASIC RULES OF THE ROAD



### CAUTION

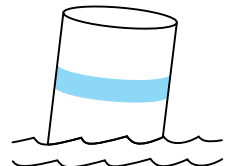
**The nautical rules of the road must be followed to prevent collisions between vessels. Like traffic laws for automobiles, the operator is legally required to follow safe operating rules.**

The following information outlines only the most basic of the nautical rules of the road. For more information, contact your local U.S. Coast Guard Auxiliary.

## AIDS TO NAVIGATION

Learn to recognize the different buoys and day markers; they are the signposts of the waterway. There are 2 primary marking systems in use in the U.S.; the Uniform State Waterway Marking System (USWMS) used on inland waters and maintained by each state, and the Federal Waterways Marking System (FWMS) used on coastal waters and rivers and maintained by the U.S. Coast Guard (USCG). In addition, the FWMS has two modified systems; Western River Buoyage, and Intracoastal Waterway Buoyage. Be sure to check with local authorities on the buoyage system in use.

The only buoys you are permitted to moor to are mooring buoys. Mooring to a navigation buoy or other navigational aid or regulatory marker is illegal.



MOORING  
BUOY

WHITE WITH BLUE BAND

MAY SHOW WHITE  
REFLECTOR OR LIGHT

KC-0412

The type of hazard/warning buoys and markers depend on the area of jurisdiction. Check with boating authorities for information on local marking systems.

## **USWMS System**

In the USWMS Lateral System, well defined channels are marked with red and black buoys. Lateral means the sides of the channel are marked and the boat should pass between them.

The USWMS Cardinal System is used when there is no well defined channel or where an obstruction may be approached from more than one direction. With the cardinal system:

- Pass north or east of BLACK-TOPPED WHITE buoy.
- Pass south or west of RED-TOPPED WHITE buoy.
- RED and WHITE VERTICALLY STRIPED buoy indicates boat should pass outside of the buoy (away from shore).

## **Uniform State Regulatory Markers**

USWMS regulatory markers are white with international orange geometric shapes; you must obey regulatory markers.

## **FWMS System**

The FWMS Lateral System is for use on navigable waters except Western Rivers and Intracoastal Waterways.

The markings on these buoys are oriented from the perspective of being entered from seaward (the boater is going towards the port). This means that red buoys are passed on the starboard (right) side when proceeding from open water into port, and black buoys to port (left) side.

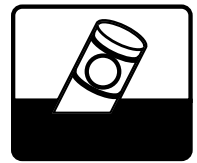
The right side (starboard) of the channel is marked with RED, even numbered buoys. The left (port) side of the channel is marked with GREEN, odd numbered buoys.

The middle of the channel is marked with RED and WHITE vertically striped buoys; pass close to these buoys.

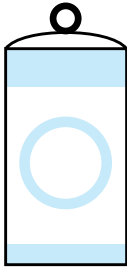
Obstructions, channel junctions, etc. are marked with RED and GREEN horizontally striped buoys.

A RED band at the top means the preferred channel is to the left of the buoy; a GREEN top band means the preferred channel is to the right of the buoy.

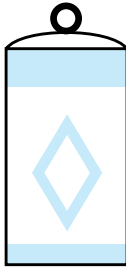
# BASIC RULES OF THE ROAD



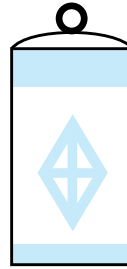
## UNIFORM STATE WATERWAY MARKING SYSTEM (USWMS)



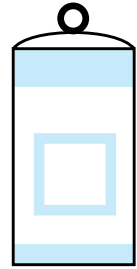
CONTROLLED  
AREA



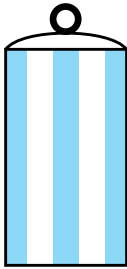
DANGER



BOATS  
KEEP OUT



INFORMATION



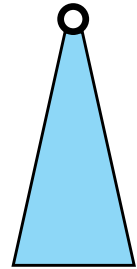
DO NOT PASS  
BETWEEN SHORE  
AND BUOY



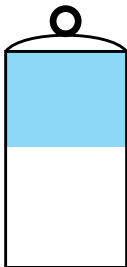
SPECIAL  
PURPOSE



NAVIGATE TO  
STARBOARD  
FACING UPSTREAM



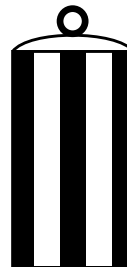
NAVIGATE TO  
PORT FACING  
UPSTREAM



NAVIGATE TO  
SOUTH OR WEST



NAVIGATE TO  
NORTH OR EAST

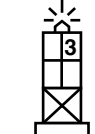
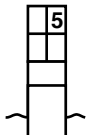

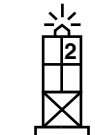
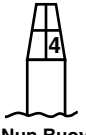




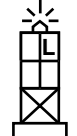
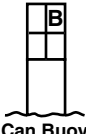

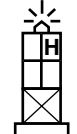
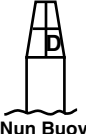



MID-CHANNEL

KC-0411

Day markers are colored and numbered the same as buoys. RED, triangular day markers with even numbers mark the starboard side of the channel. GREEN, square day markers with odd numbers mark the port side of the channel.

Lights, bells and horns are used on buoys for night or poor visibility conditions. Buoys with unique light flashing characteristics are identified on nautical charts with the specific flashing pattern.

Federal Waterways Marking System (FWMS)				
Lateral Aids Marking the Sides of Channels as seen When Entering From Seaward	Port Side Odd Numbers (Green)	 Lighted Buoy (Green Light)	 Can Buoy	 Daymark
	Starboard Side Even Numbers (Red)	 Lighted Buoy (Red Light)	 Nun Buoy	 Daymark
Safe Water Aids Marking Mid-Channels and Fairways (No Numbers—May be Lettered)	(Red)	 Lighted (White Light)	 Spherical Buoy	 Daymark
Preferred Channel Aids (No Numbers—May be Lettered)	Preferred Channel to Starboard (Green and Red)	 Lighted Buoy (Green Light)	 Can Buoy	 Daymark
	Preferred Channel to Port (Green and Red)	 Lighted Buoy (Red Light)	 Nun Buoy	 Daymark

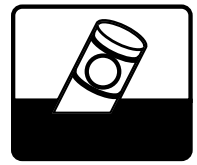
KC-0441

## Light Structures

Maneuvering a boat at night can be dangerous and confusing. To aid boaters with navigation and warn of hazards, the U.S. Coast Guard and state and local authorities maintain a variety of light structures. Some light structures may be equipped with radio beacons, radar reflectors, and/or fog signals.

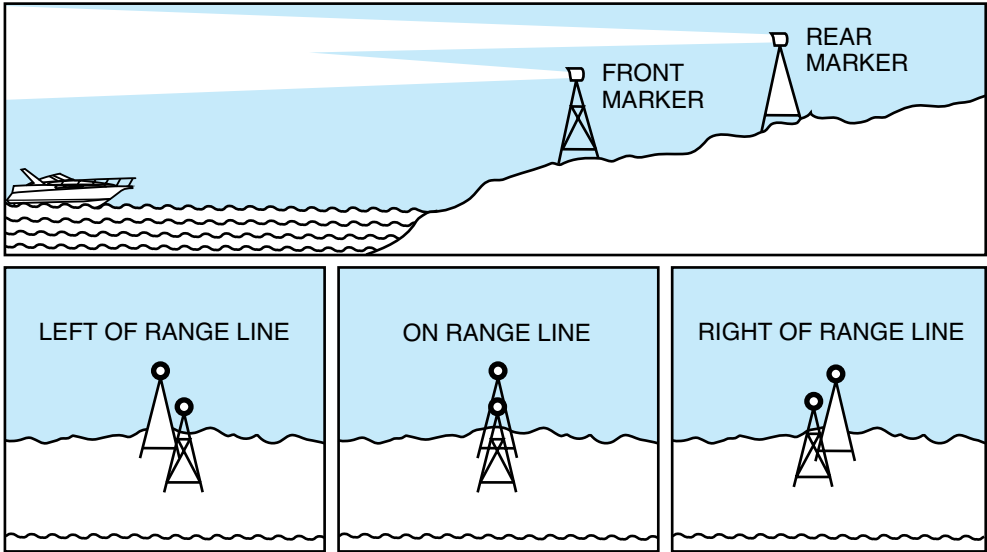
**Minor Lights** – are colored according to the buoyage marking system in use. They are similar to lighted buoys, except they are usually higher and on more stable platforms to increase visibility. Most minor lights are part of a series to mark a channel, river, or harbor.

# BASIC RULES OF THE ROAD

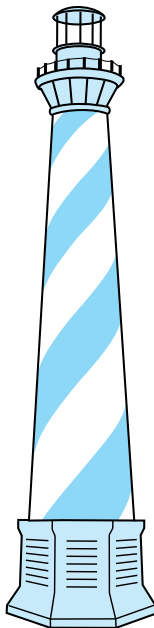
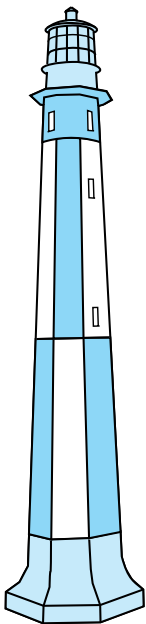


**Range Lights** – are usually visible in one direction and help a boat operator navigate in a generally safe direction. Steering a course to keep range lights arranged in a line (one on top of the other) will help guide a boat through a channel.

RANGE LIGHTS



KC-0442



**Lighthouses** – can be found at harbor entrances, prominent headlands, isolated danger areas, and along the coasts. These striped or patterned structures have unique flashing characteristics to help identify them.

KC-0443

# RIGHT-OF-WAY



## CAUTION

In general, boats with less maneuverability have right-of-way over more agile craft. Likewise, smaller boats should give-way to larger ones. You must stay clear of the vessel with right-of-way and pass to his stern.

## Whistle Signals

Signaling other boats with a whistle is similar to using turn signals on an automobile. It is not necessary to use a whistle signal every time a boat is nearby. In general, boat operators should signal their intention to avoid potentially confusing or hazardous situations.

It is customary for the privileged boat to signal first, and the give-way boat to return the same signal to acknowledge she understands and will comply. Use the danger signal (five or more short and rapid blasts) if intent is not clear.

Use the following whistle blasts early enough to be noticed and understood by other boaters:

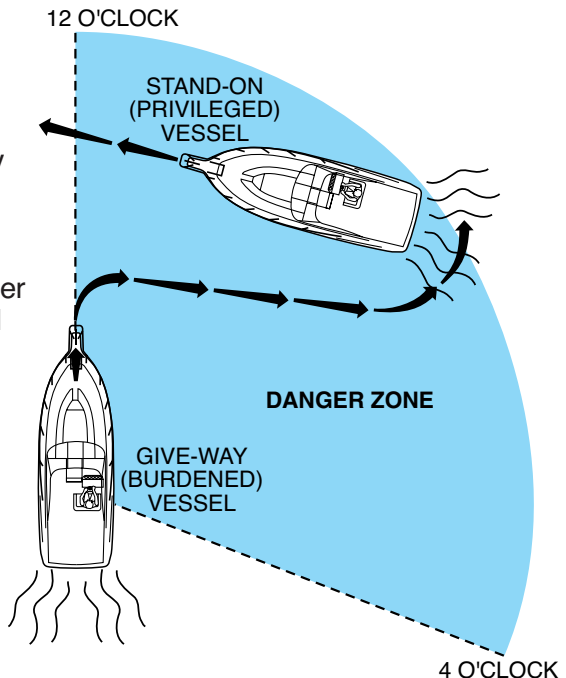
- One long blast: Warning signal (coming out of slip or passing astern)
- One short blast: Pass on my port side
- Two short blasts: Pass on my starboard side
- Three short blasts: Engines in reverse
- Five or more short and rapid blasts: Danger Signal!

## Privileged Boats

Privileged boats have right-of-way and can hold course and speed. Sailboats and boats paddled or rowed have the right-of-way over motor boats. Sailboats under power are considered motorboats. Small pleasure craft must yield to large commercial boats in narrow channels.

## Burdened Boats

The burdened boat is the boat that must make whatever adjustments to course and speed necessary to keep out of the way of the privileged boat.

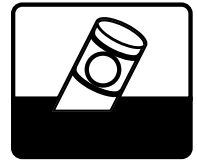


KC-0477

Cruiser



# BASIC RULES OF THE ROAD

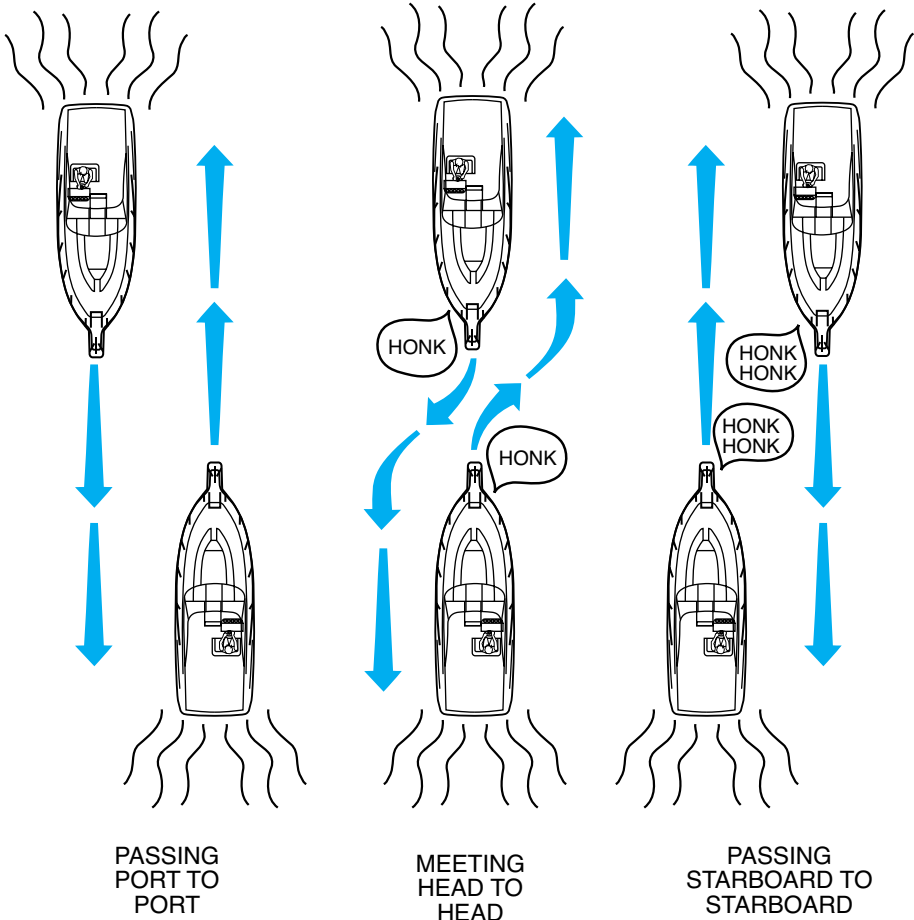


## Crossing Situation

In crossing situations, the boat to the right from the 12 o'clock to the 4 o'clock position has the right-of-way. It must hold course and speed. The burdened boat keeps clear and passes behind the privileged boat. Boats going up and down a river have the privilege over boats crossing the river.

## Meeting Head-On

Neither boat has the right-of-way in this situation. Both boats should decrease speed, should turn to the right, and pass port-to-port. However, if both boats are on the left side of a channel, each vessel should sound two short horn blasts and pass starboard to starboard.



KC-0475

## Overtaking

The boat that is overtaking one ahead of it is the give-way boat and must make any adjustments necessary to keep out of the way of the stand-on boat. The stand-on boat should hold its course and speed.

## The General Prudential Rule

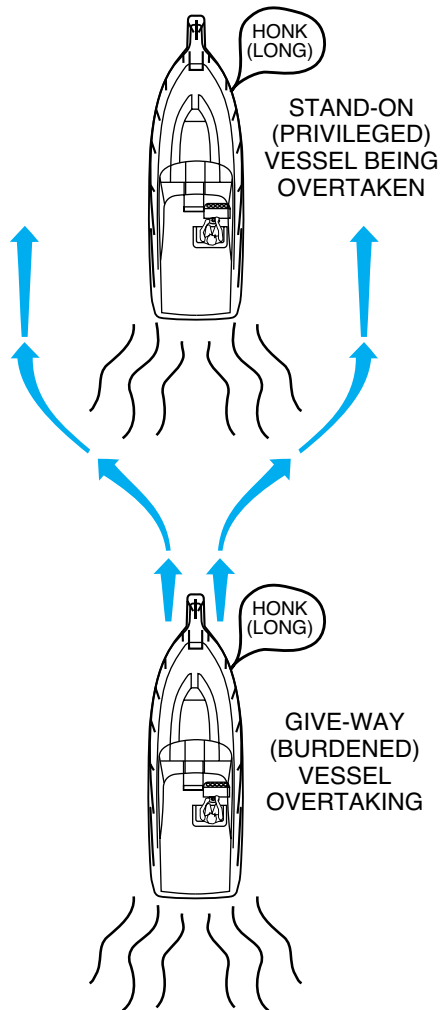
The general prudential rule regarding right-of-way is that if a collision appears unavoidable, neither boat has right-of-way. As prescribed in the Rules of the Road, both boats must act to avoid collision.

## Night Running

Boats operating between sunset and sunrise (hours vary by state) must use navigational lights. Nighttime operation, especially during bad weather or fog can be dangerous. All Rules of Road apply at night, but it is best to slow down and stay clear of all boats, regardless of who has right-of-way.

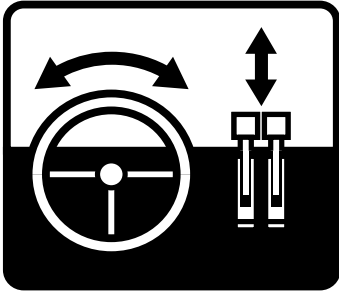
Protect your night vision by avoiding bright lights and have a passenger, if possible, help keep watch for other boats, water hazards, and aids to navigation.

The size, speed, and direction of other vessels are determined at night from the running lights. A green light indicates the starboard side of the boat, and a red light indicates the port side. Generally, if you see a green light, you have the right-of-way; if you see a red light, give-way to vessel.



KC-0476

# 3



## CONTROLS AND INDICATORS

Knowing the controls and indicators on your boat is essential for safe and proper operation. The controls and indicators shown in this section may be optional or slightly different than those on your boat.

### SHIFT/THROTTLE CONTROL

The shift/throttle control differs from model to model and may depend on the engines used. The following control is typical of the operation of most remote controls. Be sure to consult the engine and remote control manual for operational differences.

#### CAUTION

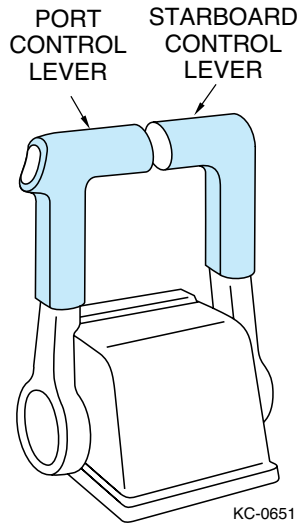
**Do not shift too quickly from forward to reverse. Stay in neutral, or idle position until the boat has lost most of its headway before completing the shift to reverse or engine damage may occur.**

**Single Engine Control** – Single lever controls operate as both a gear shifter and a throttle for a single engine. The lever is detented in the neutral position for starting. Shifting is accomplished by moving the lever into the first 15° of travel; push the lever for forward, and pull the lever back for reverse. By advancing the lever beyond 15°, you move from the shifting range to the throttle range. Never attempt to shift without the engine running.

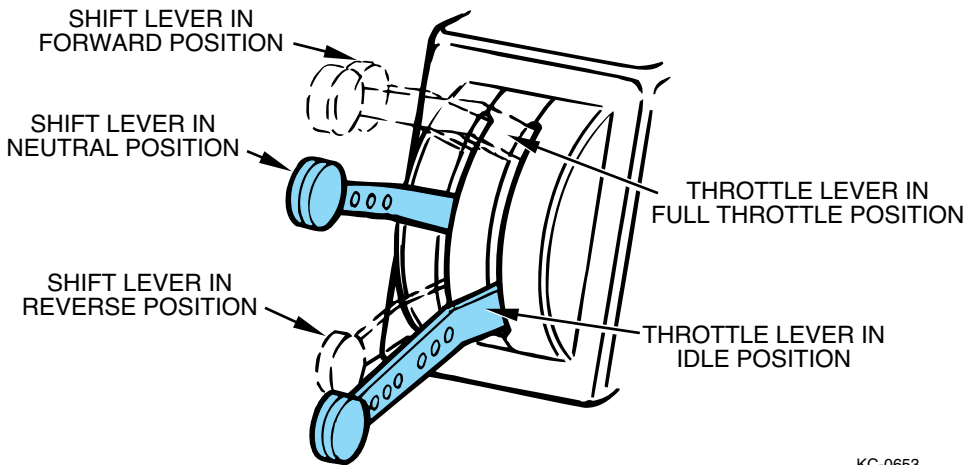
**Twin-Engine Control** – Twin-engine controls allow for independent lever control of both the shift and throttle operation of each engine. The basic operation is the same as the single-engine control.

Increasing throttle control (forward) increases boat speed. The shift control allows selection of forward or reverse propeller directions.

Some boats may have individual controls for the shift and throttle of each engine. If your boat is equipped with dual-lever controls, you must make sure that the throttle lever is in the idle position before attempting to make a shift.



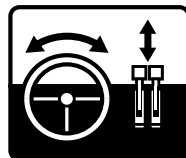
TYPICAL DUAL-LEVER CONTROL



## Note

Refer to the engine and remote control operator's manuals for more detailed information concerning operation of your unit in conjunction with the engine.

# CONTROLS AND INDICATORS



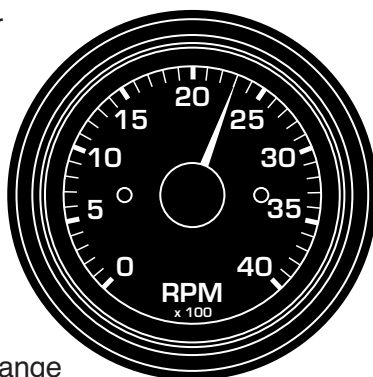
## INSTRUMENTS

All instruments are illuminated for night operation. Their type, number, and location vary; some may not appear on your model. If your boat is equipped with twin-engines, there may be two sets of some of the instruments described in this section; one set for each engine. Typically, instruments for the port side engine will be found on the port side of the helm control panel; likewise for the starboard engine instruments.

If an instrument reading is outside of normal or recommended ranges, investigate cause immediately or see your dealer. Consult the engine operator's manual for the normal recommended ranges.

### Tachometer

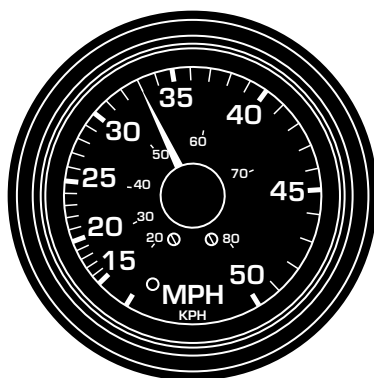
Registers engine speed in revolutions per minute. Use this gauge to keep the engine within the proper operating range. Consult the engine manual for the proper RPM operating range for your engine.



KC-0700

### Speedometer

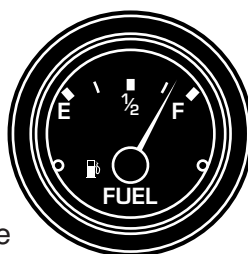
Registers forward boat speed relative to the water in miles per hour. Use this gauge to monitor fuel consumption and propeller performance. Since most marine speedometers are operated by water pressure, accuracy is only approximate.



KC-0710

### Fuel Gauge

This gauge registers approximate fuel level in the gas tanks. Since the accuracy of your gauge varies with the attitude of your boat (trim and list), and the fuel pick-up tube cannot withdraw all of the fuel in the tank, it is wise to observe the One Third Rule. Use one third of your gas to go out, one third to come back, and one third as a reserve.



KC-0720

## Water Pressure Gauge

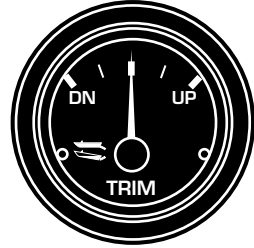
Registers the water circulated by the water pump in pounds per square inch (PSI). Use this gauge to observe that the engine cooling system is operating properly. Consult the engine manual for the normal operating PSI range.



KC-0730□

## Engine Trim Gauge

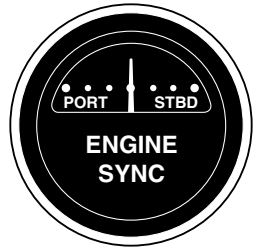
Shows the position of the outdrive unit and indicates the relative position of the bow, from a horizontal plane. Use this gauge to monitor boat trim.



KC-0740

## Engine Sync Gauge

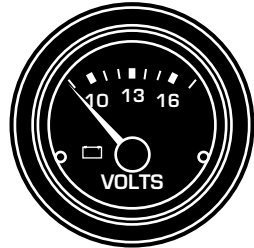
Indicates synchronization of engine speeds. Adjust throttles so that needle is centered. Excessive noise and vibration can occur if engines are not properly synchronized to each other.



KC-0702

## Voltmeter

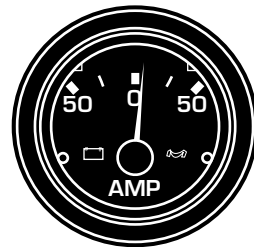
Indicates the condition of the main or cranking battery in volts DC. Normal operating range is 12+ volts.



KC-0750

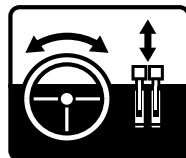
## Ammeter

Measures the charging current in the electrical system. Consult the engine manual for the normal operating range.



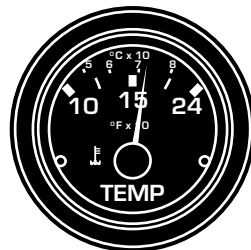
KC-0760□

# CONTROLS AND INDICATORS



## Engine Water Temperature Gauge

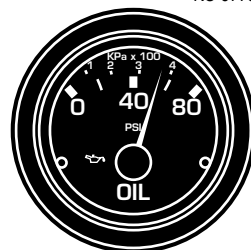
Indicates the engine water/coolant temperature inside the engine. Consult the engine manual for the normal operating range.



KC-0770□

## Engine Oil Pressure Gauge

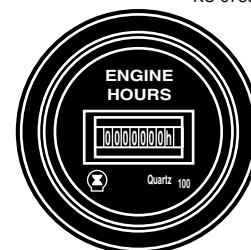
Indicates the pressure of the lubricating oil inside the engine. Consult the engine manual for the normal operating range.



KC-0780□

## Engine Hourmeter

Registers accumulated engine operating time, and is activated when the ignition switch is in the “ON” position. Be aware that time will be logged whenever the ignition switch is “ON”, even when the engine is not running. Use the hourmeter to keep accurate logs for scheduled maintenance.



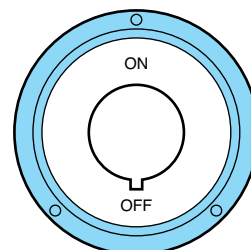
KC-0782□

## Switches

Each electrical circuit on your boat is equipped with a control switch. Some switches may have an LED indicator for easy ON/OFF identification. Most switches will have a fuse holder, or circuit breaker adjacent to the switch.

**Master Power Switch** – Disconnects the boat electrical systems from the batteries. When not using the boat, keep this switch in the OFF position.

**Battery Switch** – Connects the battery(ies) to the electrical system. Provides isolation and positive disconnect of battery(ies) to protect against tampering, electrical fire hazards, and battery run-down. Rotate switch to the OFF position when the boat is not in use.



TYPICAL  
BATTERY  
SWITCH

KC-0704

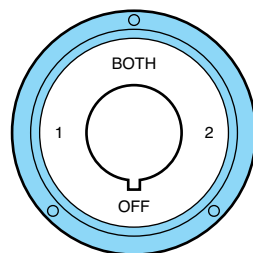


## WARNING



**Never turn switch to the OFF position while the engine(s) is running or serious alternator/electrical system damage could occur.**

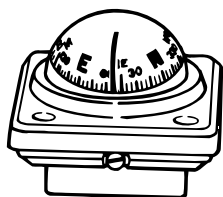
**Battery Selector Switch** – Operates as a battery switch and provides the additional ability to connect two batteries in parallel for starting in case one battery is low. Allows emergency starting of either engine with the opposite battery. May be used in conjunction with an isolator and third battery. Refer to Ship Systems for more information.



TYPICAL  
BATTERY  
SELECTOR  
SWITCH

KC-0705

**Windshield Wiper Switch** – Controls operation of windshield wipers.



KC-0920

**Compass** – Aids with navigation by indicating where NORTH is located. The compass must be adjusted for the area you are in and can be affected by instruments installed adjacent to it. The compass must be compensated (corrected) for deflections caused by magnets and electrical wiring in its vicinity.

After all optional equipment has been installed in the helm area, the compass should then be compensated. Since the compass is an important navigational aid, the compensating should be done by a qualified compass adjuster. It is seldom that a compass can be corrected to zero deviation on all headings, so he will provide you with a deviation card or chart showing the correction to be applied when laying out a compass course or making your navigational calculations.

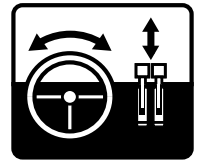
After the compass is adjusted, do not permit items which might affect it to be placed near the compass, even temporarily. The compass must be readjusted if any influencing item for which it has been compensated is removed or relocated, or added in the vicinity. As a rule of thumb, electrical or metal items should be kept three or more feet away from the compass so as not to affect its magnetic field.

Get to know your compass. Watch how it swings. Check that its readings are consistent on frequently sailed courses. Note if it becomes sluggish, and above all, if it becomes erratic. These two signs warn of alien magnetism or damaged compass.

**Fuel Gauge Switch** – Allows you to check the amount of fuel in the fuel tank when the navigation lights are OFF or the ignition switch is OFF.



# CONTROLS AND INDICATORS



**Boarding and Courtesy Lights** – Are controlled by selector switches for operation of boarding lights and cockpit courtesy lights. The main DC breaker (Master Power) switch must first be in the ON position to activate lighting.

**Navigation Lights Switch** – Controls the running and anchor lights for night operation. NAV position will turn on the red and green bow lights, white stern light, and gauge illumination. ANC position turns on only the white stern light for night anchoring.



## CAUTION

**Never operate the boat between sunset and sunrise with the switch in the anchor light position. Running lights are required to indicate direction and right-of-way at night.**

**Blower Switch** – Activates the engine box ventilation blower to remove explosive fumes from the box and bilge areas.



## WARNING



**The blower must be operated for a minimum of five minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can lead to conditions favorable for an explosion, with severe personal injury or death resulting.**

**Bilge Switch** – Activates the bilge pump to remove excess water from the bilge. Some models are equipped with an automatic bilge pump setting. Switch to AUTO whenever the boat is in operation, water will be pumped-out as it enters the bilge.

## CAUTION

**Be sure to switch the bilge OFF when the boat is not in use. Wave action or trailer travel can cause the pump to run down the battery.**

**Ignition Switch** – Starts and stops the engine. Be sure to consult the engine operator's manual for information.

**Depth Sounder** – Indicates the distance between the bottom of your boat and the earth's surface directly below the transducer. To avoid running aground in shallow water, always add extra distance to meter reading. Consult the depth sounder operator's manual for more information.

**Gas Fume Detector** – Alarm will sound when gas fumes are detected. Turn on bilge blower to evacuate fumes. The sensor for the vapor detector is mounted in the bilge area where fumes collect. Test the unit before each cruise to check for proper performance.



## WARNING



If the gas fume detector indicates a dangerous condition, do the following:

- **DO NOT** operate electrical equipment.
- **Extinguish** open flames and smoking materials immediately.
- **Turn engine(s) OFF.**
- **Wait 5 minutes before opening the engine compartment to investigate the cause.**
- **Determine cause and correct immediately before resuming operation.**

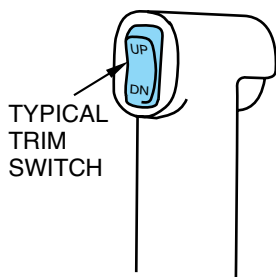
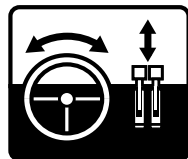
**Engine Alarm System** – Sounds alarm if the engine temperature exceeds set limit or if oil pressure drops below set range. If alarm sounds during operation, immediately shut down engines and determine cause. Consult the engine operator's manual for more information.

**Battery Charger** – Operates from the shore power or generator systems. It converts 110 volts A.C. to 12 volts D.C. to charge the batteries. The battery charger will either deliver full output to a discharged battery, or deliver a trickle charge to a battery with minimal discharge. Consult the battery charger operator's manual for more information.

**Battery Isolator** – Allows you to charge multiple batteries. The isolator automatically detects how much of a charge to send each battery. It prevents batteries from being overcharged, and eliminates a higher charged battery from discharging into a lower charged battery. Consult the battery isolator operator's manual for more information.

**Horn Button** – Push and hold to sound the horn.

# CONTROLS AND INDICATORS

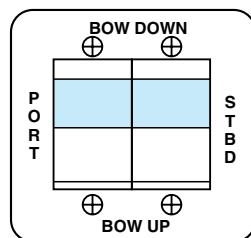


TYPICAL  
TRIM  
SWITCH

KC-0931

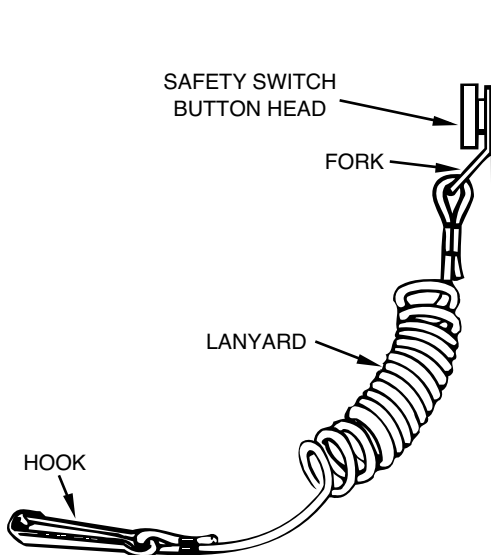
**Trim/Tilt Switch** – Your engine is equipped with power trim and tilt, this switch activates that function. Push and hold the switch until the engine is at the desired angle. Use this switch in combination with the trim gauge to maximize boat performance in the water. The tilt switch raises the drive unit for trailering.

## TRIM TAB SWITCHES



KC-0932

**Trim Tab Switches** – These rocker switches control the trim tabs located on the port and starboard transom. Adjusting trim tabs will improve the ride of your boat and correct listing from side to side due to varying weight conditions. See the RUNNING section of this manual for further trimming procedures.



KC-0950

## Engine Stop Switch and Lanyard –

The engine stop switch stops the engine when engaged. Attach the lanyard to the boat operator whenever the engine is running. If the operator is thrown from the seat or moves too far from the helm the lanyard will engage the switch and shut off the engine.

To attach the lanyard, hold out the button head and slide the fork beneath the safety switch. Attach the hook on the opposite end of the lanyard to a strong piece of clothing on the operator, such as a belt loop.



## WARNING



**Attach the Engine Stop Switch lanyard to the operator before starting the engine. This will prevent the boat from becoming a runaway if you are accidentally thrown from the boat.**

**The Engine Stop Switch can only be effective when it is in good working condition. Observe the following:**

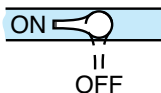
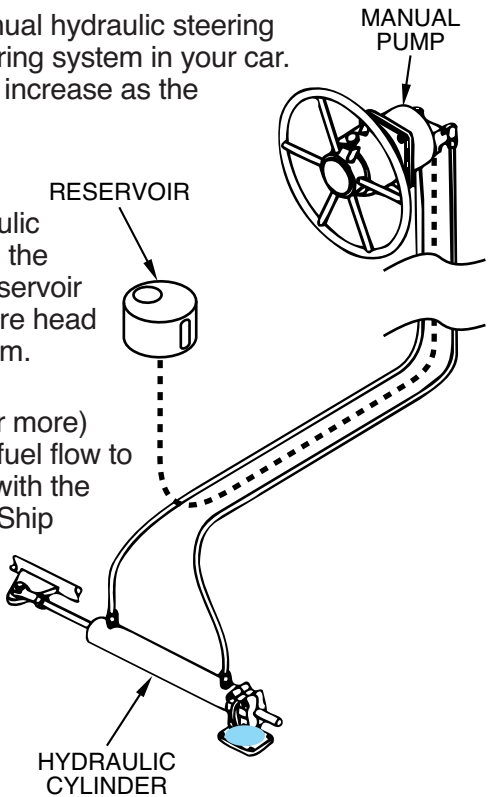
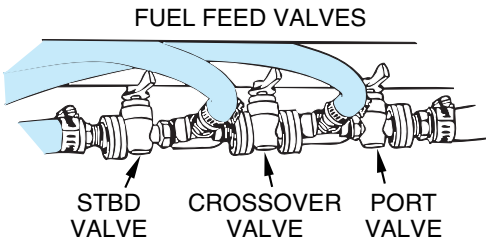
- **Never remove or modify the Engine Stop Switch and/or lanyard.**
- **Lanyard must always be free from obstructions that could interfere with its operation .**

**ONCE A MONTH: Check switch for proper operation. With engine running, pull lanyard. If engine does not stop, see your DEALER for replacement of switch.**

**Hydraulic Steering System** – The manual hydraulic steering system does not act like the power steering system in your car. The effort required to turn the wheel will increase as the system is called on to exert more force.

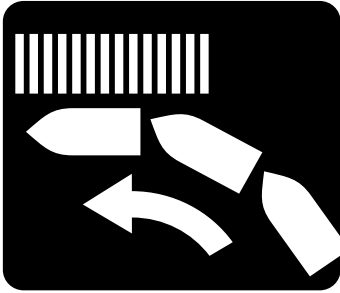
As the steering wheel is turned, the pistons in the manual pump force hydraulic fluid to the cylinder, which then provides the force necessary to turn the boat. The reservoir holds extra fluid and maintains a pressure head that prevents air from entering the system.

**Fuel Feed Valves** – Models with two (or more) fuel tanks use manual valves to control fuel flow to the engines. Boat trim can be adjusted with the proper use of fuel feed valves. Refer to Ship Systems for more information.



KC-1002

KC-1882



# 4

## OPERATION

This section describes the basics of fueling, starting, running, trimming, and docking your boat. Since there is a variety of control and engine options, be sure to consult the other owner's manuals provided with your boat.

### FUELING

Built-in tanks have the fuel filler aft in the boat. Some models with oil injection also have fillers for the oil reservoir.

The fuel tank is equipped with either a shut-off valve or anti-siphon valve. The shut-off valve requires you to manually turn the fuel valve, while the anti-siphon valve operates automatically. Because gasoline fumes are heavier than air, they will sink to the lowest part of your boat, such as the bilge. It is important to always evacuate fumes with the blower before attempting to start engine.



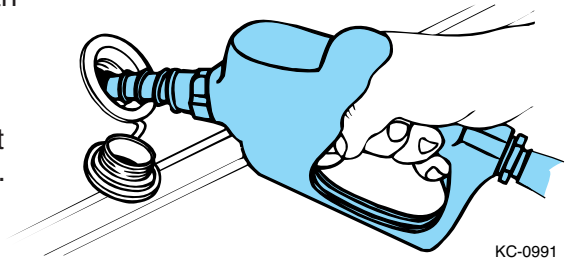
### WARNING



**Gasoline is extremely flammable and highly explosive under certain conditions. When refueling, always stop the engine and never smoke or allow open flames or sparks within 50 feet of the fueling area.**

Take care not to spill gasoline. If gasoline is spilled accidentally, wipe up all traces of it with dry rags and immediately dispose of the rags properly onshore. When fueling:

- Know your fuel tank capacity. Be sure to have enough fuel to reach your destination. If departing for an extended cruise, know the availability of fuel along your route.
- Avoid fueling at night, except under well lighted conditions.
- Moor your boat securely to the dock. Know the location of fire extinguisher in case of emergency.
- Keep accurate records on fuel consumption. A fuel log tracking fuel use over time will help determine average consumption.
- Close all doors, hatches, windows, and other compartments.
- Extinguish cigarettes, pipes, stoves, and all other flame producing items.
- Make sure all power is off, and do not operate any electrical switches.
- Remove fuel fill cap. Insert hose nozzle and make sure nozzle is in contact with or grounded against fill opening. This will reduce the risk of static spark.
- Add fuel. Do not fill to capacity to allow for fuel expansion.
- Check oil level.



## Note

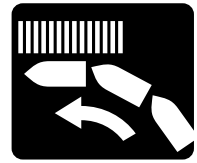
**Each time you fill up, inspect fuel lines for leaks and hose deterioration.**

## Note

**The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into the water. Violators can be fined \$5,000. We urge you to protect our fragile environment by avoiding any type of discharge, trash, or litter into our waterways.**

After fueling, you should:

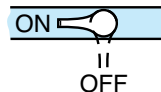
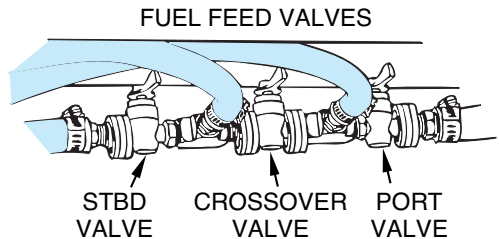
- Close fill cap securely and wipe up spillage.
- Open all windows, hatches, doors, and compartments.
- Check all fuel lines and connections for leakage.
- Run blower for at least five minutes before starting your boat. If you smell gasoline fumes, continue to run blower.



## STARTING

The following starting guidelines cover a wide variety of engine power and accessory options. Be sure to follow the starting instructions contained in the engine operator's manual and tailor starting procedures for your particular model.

- Complete Pre-Operation checks found in the Getting Underway section.
- Turn battery selection switch(es) to ON position.
- Open engine hatch.
- Open fuel feed valve(s).
- Operate bilge blower for at least five minutes prior to starting engine(s). Continue to operate until underway at cruising speed.
- Use manual bilge pump switch to remove any water in bilge below the automatic switch level.

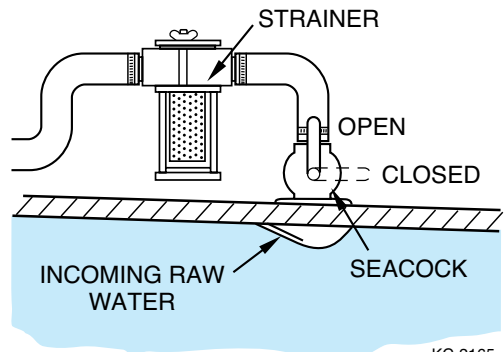


KC-1002

- Make sniff test with your nose; this is a very effective way to detect fumes.

- Open seacocks for engine cooling water. Seacocks for washdowns, heads, air conditioning, etc. are opened on an as needed basis.

TYPICAL SEACOCK AND STRAINER



KC-2165

- Close engine hatch.
- Move stern drive(s) to full IN position.
- Move trim tab controls to the full DOWN position.
- Put shift lever(s) in NEUTRAL position.
- Move throttle lever(s) fully forward and return to idle position. Throttle linkage and cable must move freely.
- Slightly advance throttle lever forward.

**The blower must be operated for a minimum of five minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can cause an explosion.**

- Turn the ignition key switch of one engine to START position. Release key immediately after engine starts.
- If engine will not start, move throttle to FULL position once or twice to actuate the carburetor accelerator pump.



## **CAUTION**

**To prevent damage to the engine:**

- **Do not operate starter longer than a few seconds; let it cool for several minutes before trying again.**
- **Shift quickly and without hesitation. Never ease engine into gear or shift mechanism could be damaged.**
- Operate engine at approximately 1000 to 1200 RPM for a few minutes before starting other engine (if equipped).
- Repeat steps for remaining engine, if equipped.
- Make sure gauges indicate normal operating ranges. If not, shut down engine(s) immediately and determine cause.
- After running engine(s) at 1000 to 1200 RPM for several minutes, reduce throttle to idle speed until you're ready to depart.

## **SHIFTING/RUNNING**

Follow these guidelines when shifting your boat:

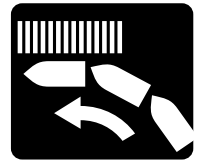
- Pause in neutral before shifting from forward to reverse, or reverse to forward.
- Avoid shifting into reverse while the boat is traveling forward at speed.
- Keep the shifter control clean and clear of obstructions.



## **CAUTION**

**Go slowly in reverse to avoid taking water in over the transom. You can swamp the boat by taking on too much water.**





## WARNING ALARM

### CAUTION

**Continued operation after the warning alarm has sounded may cause severe engine damage.**

Your boat is equipped with a warning alarm that will sound if an engine problem develops. If the warning alarm sounds, **IMMEDIATELY** throttle back to idle speed and shift into neutral. **IMMEDIATELY** check the gauges and stop the engine. On some models, the horn may emit a short chirping sound during starting to verify operation.

## STEERING CONTROLS

All boats have a tendency to wander somewhat at slow speeds. A natural reaction to this effect is to steer the boat back and forth in an attempt to compensate for wandering. Invariably, the compensation will result in oversteer and only worsen the effect. Keep the steering wheel in the center position, the boat will wander back and forth somewhat, but the overall course will be a straight one.



### WARNING



**The steering system must be in good operating condition for safe boat operation. Frequent inspection, lubrication, and adjustment by your dealer is recommended.**

## STOPPING

1. Slowly bring throttle control to the idle position and the shift control to the **NEUTRAL** position. Bring the trim tabs to the **UP** position and the outdrives to the **IN** position accordingly. If the boat has been driven for a long period of time at high speed, allow the engine a 2-3 minute cool-down period at low idle.
2. Turn the ignition key to the **OFF** position.
3. If any problems were encountered during the outing, have the boat inspected by your dealer and request any necessary repairs before the next outing.



## CAUTION

**Do not use the engine stop switch for normal shutdown. Doing so may impair your ability to re-start the engine quickly or may create a hazardous swamping condition.**

### End of Day Shutdown

- To prevent marine growth from accumulating on the hydraulic cylinder shafts, make sure trim tabs are UP and outdrives are in the full IN position.
- Lock ignition key switch and remove ignition keys.
- Stow and secure all equipment.
- Pump bilges dry with manual switch. Leave on AUTO when finished.
- Close all inlet seacocks and fuel valves.
- Use fresh water to flush head and engines.
- Inspect boat for damage.
- Clean any spills, stains, or moisture from boat. Inspect and clean sea strainers.
- Turn battery select switches to OFF.
- Turn off breaker on electrical panel except for the bilge pumps.
- Remove any food, garbage, and wet gear from boat.
- Secure lockers, hatches, and canvas as equipped.
- If keeping boat in water, hook up shore power cord, make sure battery charger light is ON, and check mooring lines.

## DOCKING

Practice docking before attempting it for the first time. Use a float, like a plastic milk jug with a line and small weight, as your docking target.



## WARNING

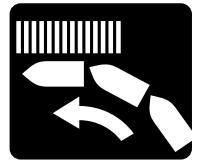


**Never use your hand, arm or other part of your body to attempt to keep the boat from hitting the dock. The boat could push against the dock, causing an injury.**

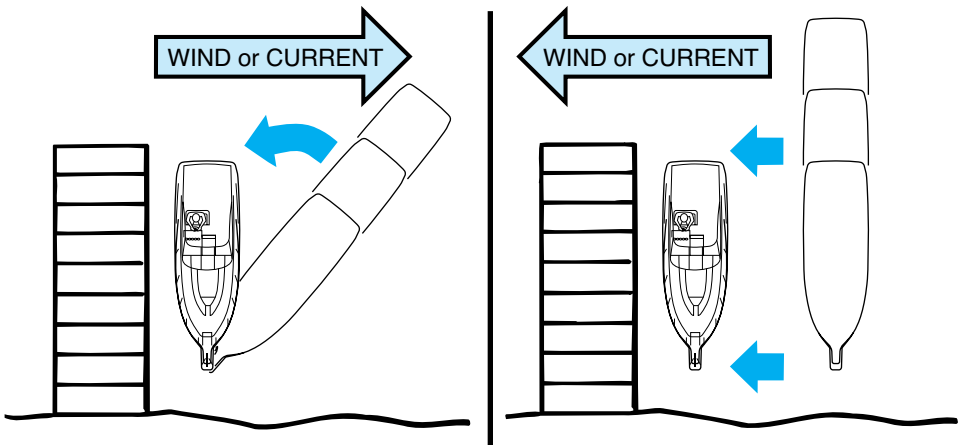
Follow these guidelines when docking:

- Come to a stop a short distance from the dock, then proceed slowly.

# OPERATION



- Have fenders, mooring lines, and crew ready.
- Observe how the wind and current are moving your boat. Approach the dock with the boat pointed into the wind, if possible. If the wind or current is pushing you away from the dock, use a sharper angle of approach. If you must approach the dock downwind or down current, use a slow speed and shallow angle. Be ready to reverse to stop and maintain position.
- If there is no wind or current, approach the dock at a 10 to 20 degree angle.
- If possible, throw a line to a person on the dock and have that person secure a bow line.
- With the bow secure, swing the stern in with the engine, or pull it in with a boat hook.



KC-1125

Before tying-up the boat, be sure to use enough fenders to protect the boat from damage. If possible, tie-up with the bow towards the waves with a good quality double-braided nylon line. Tie-up only to the lifting or tie-down eyes; never use the handrails or windshield frames. If the boat is to be moored for a long period of time, use chafing protectors on lines to protect the gelcoat finish. Leave a little slack in the lines to allow for some wave movement or tidal action if applicable.

Follow these guidelines when departing:

- Very slowly shift into forward at idle speed.
- When the stern moves away from the dock, turn the engine away from the dock.
- Cast off bow line and back away.

If the wind or current is pushing away from the dock, cast off all lines and allow to drift until you are clear.

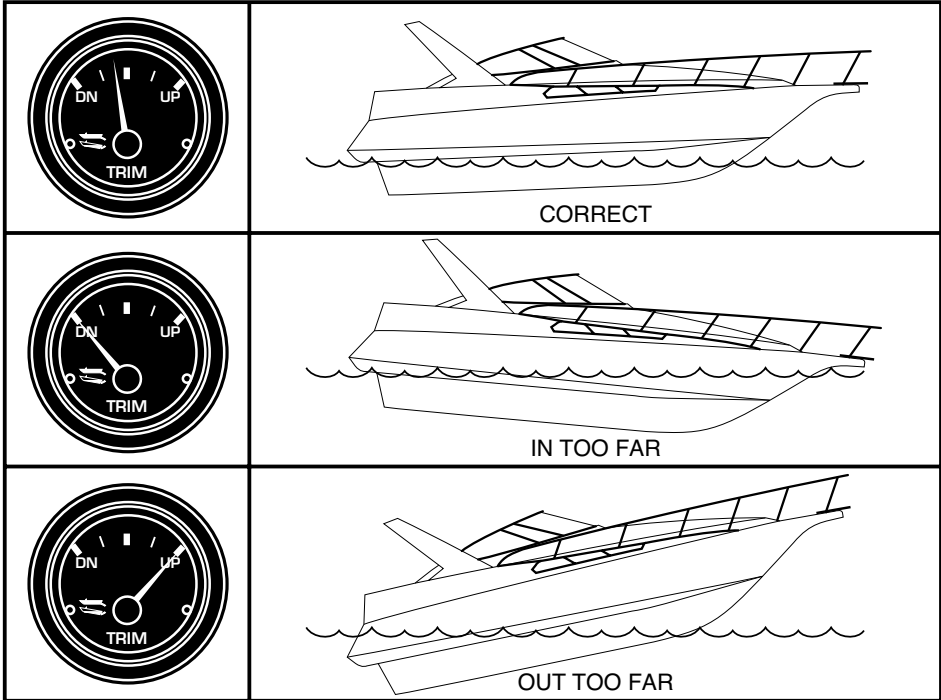
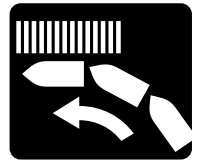
## BOAT TRIM

The performance of your boat depends on load weight and distribution. Distribute weight evenly, from bow to stern, and also from port to starboard. After loading, the boat's trim can be adjusted by changing the engine trim angle and trim tabs.

### Drive Trim Angle

Drive trim angle is the angular relationship between the lower drive unit and the transom of the boat. Boat trim while underway greatly affects boat performance and efficiency. For best results, the boat should be on plane and trimmed to reduce the wetted surface. With less boat in the water, both speed and fuel economy increases. Engines with manual trim must be adjusted for best overall operation for the load and conditions. Engines with power trim should be adjusted continuously for best results.

If the engine is trimmed in too far (closer to the boat bottom), speed drops, fuel economy decreases, and the boat may not handle correctly. However, it does provide better acceleration from a stand still; and because it forces the bow down, visibility is improved. If the engine is trimmed out too far (away from the boat bottom), steering torque may increase, the boat may be difficult to get on a plane, and may bounce.



KC-1157



## WARNING



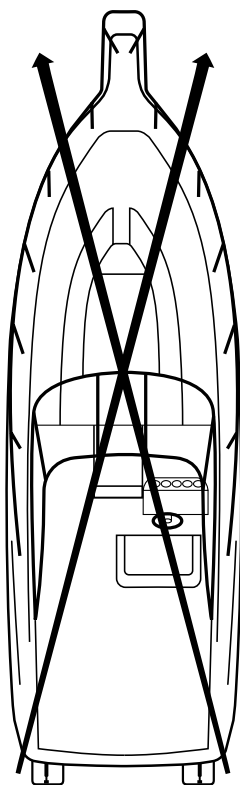
**Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising reduces control and visibility.**

To use power trim effectively, always start with the engine trimmed in. As the boat planes, increase the angle out. Experience is the best teacher for understanding proper trim.

## Trim Tabs

Water is deflected and redirected as the trim tabs are raised and lowered. This change in water flow creates upward pressure under the tabs, and raises the stern. When the stern raises, the bow is lowered. Likewise, lowering the port tab will cause the port stern to raise, making the starboard bow lower.

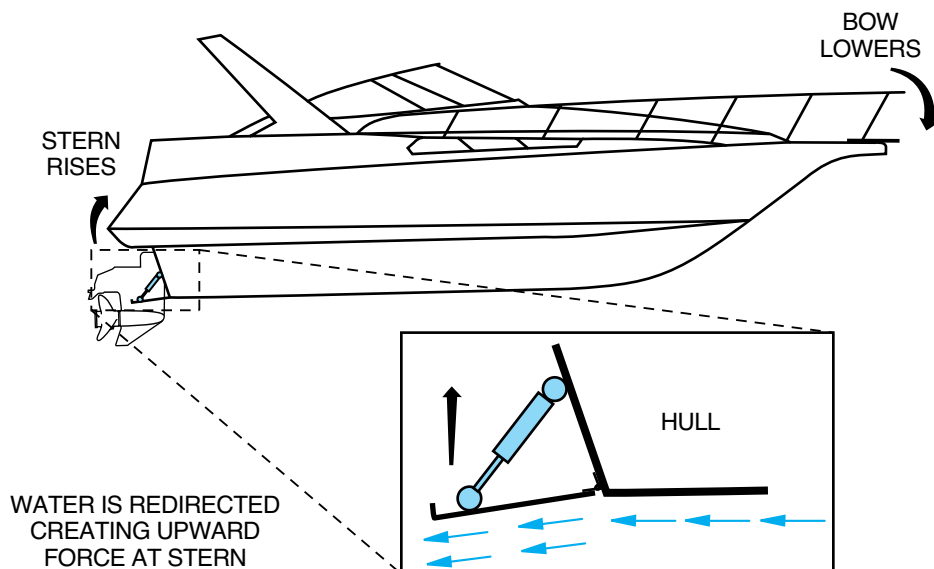
- **PORT TAB LOWERED**
- PORT STERN RISES
- STARBOARD BOW LOWERS



- **STARBOARD TAB LOWERED**
- STARBOARD STERN RISES
- PORT BOW LOWERS

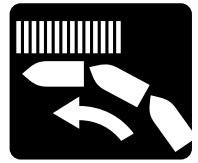
KC-1155

Using trim tabs in conjunction with the power trim will compensate for uneven weight distribution, listing, water conditions, and other factors that cause inefficient operation. Remember that trim tabs are trimming the hull while power trim is trimming the engine drive.



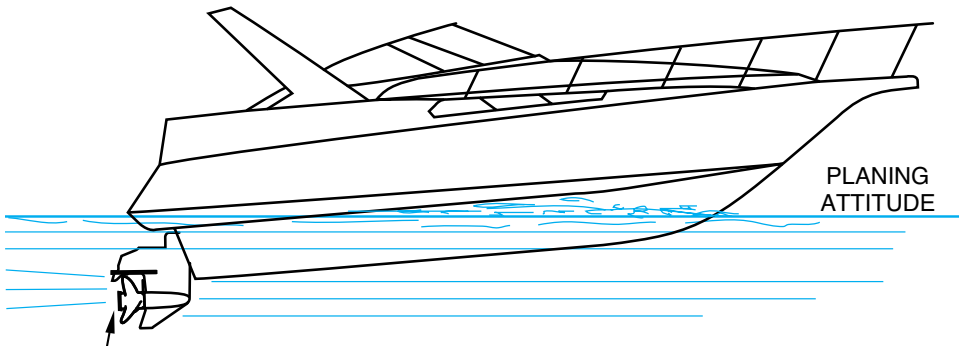
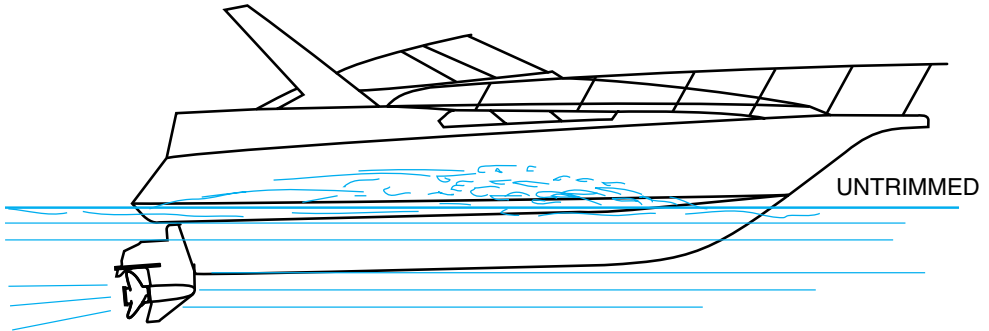
KC-1154

# OPERATION



To use the trim tabs with the power trim:

1. Adjust the trim tabs to achieve a planing attitude.
2. Use the power trim to position the prop path parallel to the water flow.



PROP PARALLEL TO WATER FLOW

KC-1153

3. Readjust the trim tabs to fine tune attitude.
4. Do not overtrim because bow will dig in, causing the boat to veer.
5. To avoid listing, do not move one tab significantly further down than the other while underway.



## WARNING

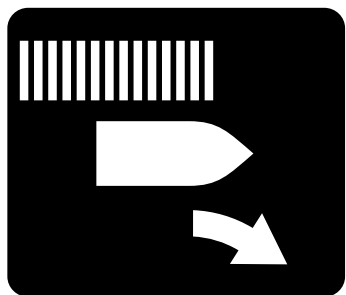


Improper use of trim tabs at high speeds can cause an accident or injury.





# 5



## GETTING UNDERWAY

There are many things to consider to make your boating trip safe and enjoyable. This section includes a safety checklist, boarding guidelines, boat loading, and capacity information.

The contents of this section should be read and understood before casting off. Remember, if you have a problem during your cruise, you can't get out and fix it, or walk to safety or for help.

You are responsible for the safety of all passengers, the boat, and any damage the boat or its wake may cause. Always keep passengers from blocking your view so that you do not run into other boats, swimmers, water skiers, personal water vehicles, or aids to navigation.

### SAFETY CHECKLIST

The following checks are essential to safe boating and must be performed before starting the engine. Get in the habit of performing these checks in the same order each time so that it becomes routine.



#### **WARNING**



**DO NOT launch the boat if any problem is found during the Safety Check. A problem could lead to an accident during the outing causing severe injury or death. Have any problem attended to immediately; see your dealer.**

## Pre-Operation

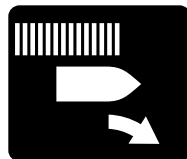
- Check the weather report, wind and water conditions.
- Check that the required safety equipment is on board.
- Check that the fire extinguisher is fully charged.
- Check that bilge drain plug is installed properly.
- Check that no fuel, oil or water is leaking or has leaked into the bilge compartment.
- Check all hoses and connections for leakage and damage.
- Check engine and stern drive oil levels.
- Check stern drive pump and trim tab pump fluid levels.
- Check hydraulic steering fluid level.
- Make sure water strainer for raw water intake is clean.
- Check that raw water inlet seacocks are open.
- Inspect exhaust connections for water leaks or gas stains. Tighten loose connections.
- Check the propeller for damage.
- Check the engine cooling water intake pick-up for blockage.
- Check that battery terminals are clean and tight.
- Check electrical circuits (lights, pumps, horn, etc.) for proper operation.
- Check that throttle/shift control is in neutral.
- Check that the steering system operates properly.
- Check that all required maintenance has been performed.

## During Operation

- Check gauges frequently for signs of abnormal behavior.
- Check that controls operate smoothly.
- Check for excessive vibration.

## After Operation

- Fill fuel tank to prevent moisture due to condensation.
- Check for fuel, oil and water leakage.
- Check the propeller for damage.
- Complete END OF DAY SHUTDOWN checks found in the Operation section of this manual.



## SAFETY EQUIPMENT

Federal and local laws require certain safety equipment to be on board at all times. In addition, responsible boaters carry other equipment in case of emergency. Check with local boating authorities for any additional requirements over and above federal requirements.

## BOARDING

When boarding the boat, always step in. Do not jump. Avoid stepping on potentially slippery surfaces. Board one person at a time.

Do not board the boat while carrying gear. Set gear on the dock, board the boat and then pick-up the gear.

### Boat Loading

The performance of your boat is dependent on load weight and distribution. Passengers should board one at a time and should distribute themselves to maintain trim. Remember to distribute weight from right to left, and also from front to back.



### WARNING




**All passengers should be carefully seated and not be riding on the bow, bow pulpit, deck, gunwale, or rear sun deck while underway.**

- Do not allow your passengers to ride with their feet dangling over the side, floating debris can cause serious injury.
- Avoid excess weight in the bow or stern.
- Securely stow all extra gear in stowage areas to prevent load shifting. Do not stow gear on top of safety equipment; safety equipment must be quickly accessible.
- In adverse weather, reduce the load in the boat. People/load capacity ratings are based upon normal boating conditions.
- Do not use the engine unit as a boarding ramp. Make sure engine is off when swimmers, divers, and skiers are boarding to prevent injury.

## Capacity

Boats up to 26' in the National Marine Manufacturers Association (NMMA) program have a maximum rated load capacity, which is stated on the certification plate (if equipped). The person/load capacity is determined by various USCG formulas. Actual capacity is determined by the availability of proper seating on the boat. Acceptable seating determines the number of passengers, not the overall load capacity.

U.S. COAST GUARD	
<b>MAXIMUM CAPACITIES</b>	
<b>11 PERSONS OR 1620 LBS.</b>	
1620 POUNDS, PERSONS, GEAR	
<b>THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION</b>	
MANUFACTURER:	
MODEL:	
DESIGN COMPLIANCE WITH BIA REQUIREMENTS BELOW IS VERIFIED. MFGR. RESPONSIBLE FOR PRODUCTION CONTROL.	
<b>LOAD CAPACITY • COMPARTMENT VENTILATION STEERING, FUEL AND ELECTRICAL SYSTEMS INTERNATIONAL LIGHTS • MANEUVERABILITY</b>	
	<b>NATIONAL MARINE MANUFACTURERS ASSN.</b>

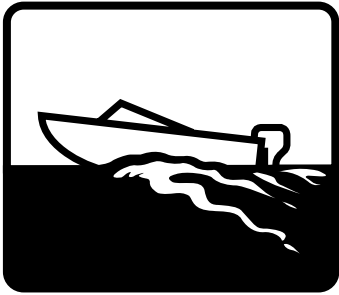
KC-1445



## WARNING



**Do not exceed the USCG certified maximum capacities under any circumstances. Overloading will reduce freeboard and increase the likelihood of swamping, especially in heavy seas. Overloading causes handling to become sluggish making it hard to react quickly.**



# 6

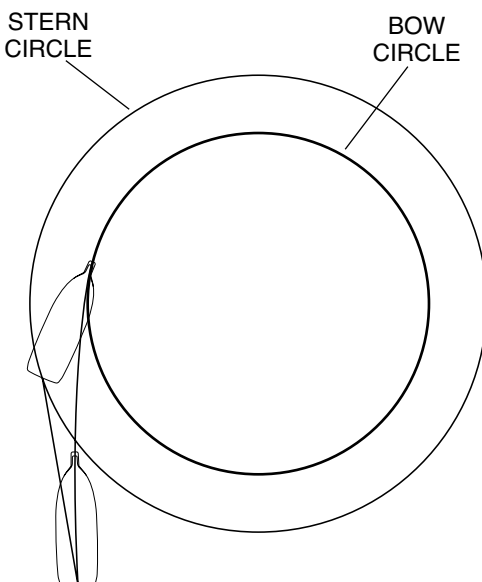
## RUNNING

We urge you and all others operating the boat to seek certified instruction from the local boating authorities.

This section is designed to present the most basic operational principles. It is NOT intended to cover all conditions encountered during operation. The principles presented in this manual are limited directly to the operation of the boat. The responsibility for the proper application of these principles belongs to you.

### MANEUVERING TECHNIQUES

Steering response depends on three factors: engine's position, motion and throttle.



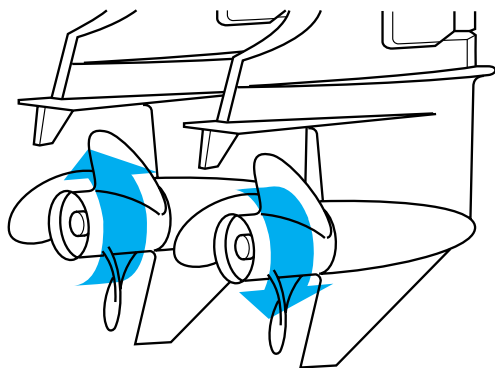
Like an automobile, high speed maneuvering is relatively easy and takes little practice to learn. Slow speed maneuvering, on the other hand, is far more difficult and requires time and practice to master.

When making tight maneuvers, it is important to understand the effects of turning. Since both thrust and steering are at the stern of the boat, the stern will push away from the direction of the turn. The bow follows a smaller turning circle than the stern.

KC-1474

The effects of unequal propeller thrust, wind, and current must also be kept in mind. While wind and current may not always be present, an experienced boater will use them to his advantage. Unequal thrust is an aspect shared by all single engine propeller-driven watercraft. A clockwise rotation propeller tends to cause the boat, steering in the straight ahead position, to drift to starboard when going forward, and to port when going backward. At high speed, this effect is usually unnoticed, but at slow speed; especially during backing, it can be powerful. For this reason, many veteran boaters approach the dock with the port side of the boat toward the dock, if possible.

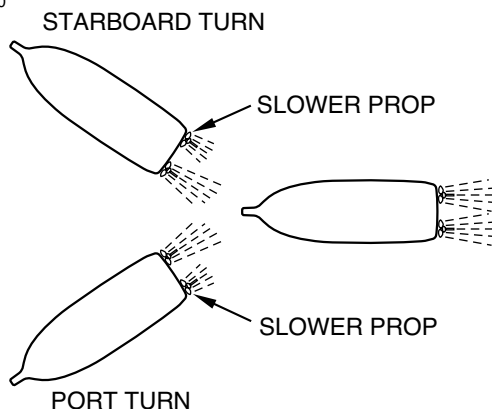
## Stopping



Twin-engine craft with counter-rotating engines operate with less propeller torque induced drifting, using the concept of counterrotation. One engine propeller turns clockwise while the other turns counterclockwise. This helps maintain an even keel by eliminating the tendency of your dual-powered boat to veer.

KC-2340

Stopping (checking headway) is a technique that must be developed. Since a boat has no brakes, reverse thrust is used to slow and stop the boat. The momentum of the boat will vary according to the load as well as the speed. Make it a practice to slow to idle (no-wake) speed before shifting into reverse.



KC-1074

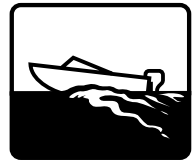
## Twin-Engine Maneuvering

One thing to keep in mind when maneuvering with twin-engine powered boats at low speeds, is that turns are made by thrusts of power from the engines and propeller, not by turning the outdrive unit; this means at lower speeds, steering your boat becomes a combination of propeller direction, engine thrusts, and steering wheel maneuvers.

To make sharp and close quarter turns, observe the following:

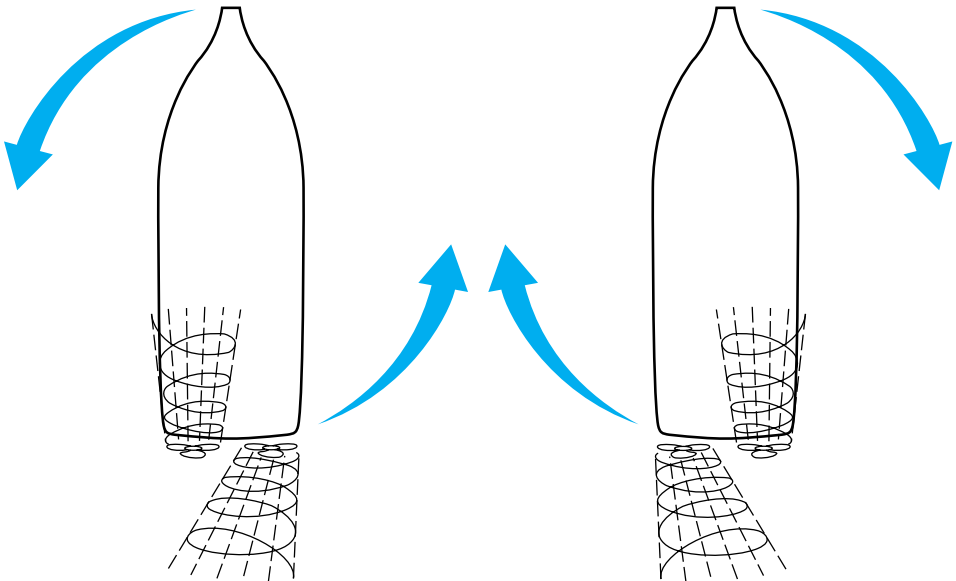
- Before attempting to make close turns at low speed, bring the throttles to idle so you can shift into reverse without damaging the engine.
- Reverse the direction of the engine on the side you want to turn. For example, if you want to turn starboard, shift the starboard engine into

## RUNNING



reverse. The forward speed of the port engine, along with the reverse rotation of the starboard engine, will pivot your boat into a starboard turn.

- Practice using the throttles to control the boat. You should try these maneuvers in open water before attempting them near docks or other boats.
- Use quick “bursts” of throttle to control the boat. Keep in mind that once the boat starts to move, momentum will carry through.



TWIN ENGINE MANEUVERING

KC-1521

It is best to learn maneuvering skills in open water away from traffic. Adequate practice is the only way to develop your boating skills.

## SALT WATER

If boat is moored in salt water for long periods, tilt the engine out of the water (except during freezing temperatures). After removing the boat from the water, lower the engine to the run (down) position until the cooling system has drained thoroughly. Hose the entire hull down with fresh water and wipe dry.

Today's engines are built for operation in either fresh or salt water. Fresh water internal flushing is not normally required, however, it may be desirable after use in salt, polluted, or brackish water. Your dealer will assist you in securing the appropriate engine flushing device.

# FREEZING TEMPERATURES

When the boat will be operated and left in the water and temperatures drop below freezing, the engine must remain in the tilted down (submerged) position at all times to prevent water in the engine from freezing. When the boat is removed from the water, drain the engine completely.

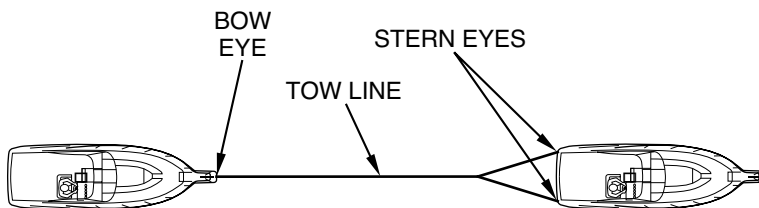
## TOWING PROCEDURE

If you need a tow, or wish to tow another boat, use great care. The boat structure can be damaged by excessive pulling strain. You should always offer help to a boat in trouble. However, towing a capsized, grounded, or hull damaged boat is dangerous. Give assistance to the occupants; then call the proper authorities.

If seas are rough, it may not be easy to extend the tow line from one boat to another. In these cases, use a light throwing line with a weight on one end and with the heavier towing line secured to it.

Never attempt to tow a much larger or grounded vessel. Because of the tremendous stress caused by towing, use a tow line that is rated at least 4 times the gross weight of the boat being towed. Tow ropes must always be in good condition, free of any cuts or abrasions.

Attach tow line to the bow eye on the disabled boat. Attach the opposite end of the bridle only to the stern eyes of the tow boat. Wrap the bridle with chafing gear where it rubs against the boat or any corners. Leave at least 2 boat lengths between the boats for adequate movement.



KC-2115

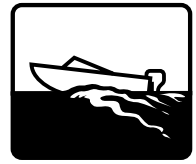


## WARNING



**When towing, use only the bow and stern eyes; never use cleats, handrails, etc. Do not allow anyone to be in line with the tow rope. If the rope should break or pull free, a dangerous recoil could occur which may seriously injure or kill anyone in its path.**





Adjust the tow line to match wave action. Keep the boats on the crest or in the trough of the waves at the same time. In protected, calm waters, shorten the line for better handling. Always tow at moderate speed, allowing for adverse wind and wave conditions. Have the operator of the towed boat steer with you if possible.

## ANCHORING

### Dropping Anchor

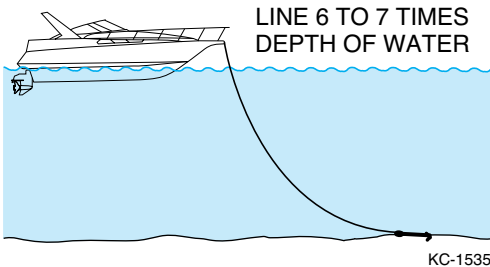
There are many types of anchors available on the market. The choice of one anchor over another depends on many factors. An anchor will usually hold best in a mixture of mud and clay or in hard sand. For more information on anchors consult your dealer.



### CAUTION

**Always anchor from the bow; NEVER anchor from the stern. A small amount of current will make the boat unsteady...a strong current can pull a boat, anchored by the stern, under water and keep it there.**

When anchoring, it is helpful to keep a few guidelines in mind.



- Make sure the line is tied to the anchor and tie the other end of the line to the forward cleat or bow eye.
- Head the boat into the wind or current over the spot where you want to lower the anchor.
- Stop the boat before lowering the anchor.
- When the anchor hits bottom, slowly back up the boat, keeping tension on the line. Let out an anchor line that is 6 to 7 times the depth of the water. For example, if you are in 10 feet of water, let out 60 to 70 feet of line.
- Secure anchor line to the bow cleat. Pull on line to make sure anchor is holding.
- Occasionally check your position against the shoreline. If the anchor is dragging and you are drifting, reset the anchor.

## Weighing (Pulling In) Anchor

Start engine and move forward until anchor line is straight up and down. Pull hard to lift anchor from the bottom material (use wind).

If the anchor is stuck, attach anchor line to the bow cleat so that it is taut. The up and down motion of the bow from wave action may lift the anchor from the bottom. If the anchor remains stuck, let out a few more feet of line and attach it to the bow cleat. Slowly maneuver the boat around the anchor until the anchor pulls loose. Be sure to keep the line tight during this procedure.

## PERFORMANCE BOATING

Some boat models; especially those with high horsepower engines, are capable of impressive performance. Don't be tempted to push your boat to its limits until you are familiar with your boat's operating characteristics. The operator should have at least 10 hours of experience with the boat before any extended full throttle operation.

Operators must get used to the unique handling characteristics of performance operation; practice adjusting the throttle, trim and steering in an open body of water free of traffic. Never operate the boat when traffic is high or when conditions are rough.

Here are some guidelines for performance operation. Read them, practice them, and soon you will be operating your boat to its full capability.

### Before Running

- Keep the bottom clean and free of scum, barnacles and other growth. Growth on the hull can slow the boat down considerably.
- Prepare the boat. Be sure all gear is properly stowed and compartments are latched.
- Weight distribution affects performance. Keep weight in the boat low and evenly distributed. Remove unnecessary weight and keep on shore.
- The propellers should be of the proper pitch to turn the recommended RPM rating for the engine and of the proper type for your average load and individual requirements. Your dealer can help you select a performance propeller.

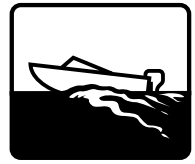
### When Underway



## WARNING



**Keep one hand on the wheel and the other on the throttle at all times. If the boat begins to operate in an unsafe way, pull back on the throttle and trim the engines IN at the same time.**



- Raise trim tabs above the boat bottom.

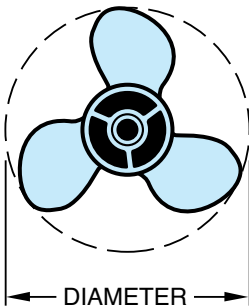
## Note

**Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising lowers top speed and fuel efficiency, and reduces control and visibility.**

- Trim the engines out. Trimming the engine out at speed will cause the boat to rise up. The boat will begin accelerating without adjusting the throttles because less of the boat is dragging in the water. Steering will become easier because the propellers have less torque.
- Watch the tachometer to keep the engines within the full throttle operating range. See the engine operator’s manual for the proper tachometer reading at full throttle.

Performance operation on smooth water is very stable, but quick reactions and adjustments are needed to maintain control. Know your limits and stay within them. Always keep one hand on the steering wheel and the other on the throttles; constant adjustments are necessary for rapidly changing conditions. Depending on the speed, keep watch well ahead so that you may have enough time to react.

## PROPELLERS

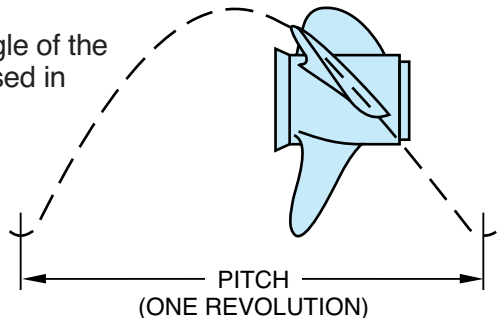


KC-1580

The propeller converts the engine’s power into the thrust needed to propel the boat. Care and selection of your propeller is very important to proper boat operation. Propellers are identified by two numbers, such as 13 x 19, and a material identification, such as aluminum or stainless steel. In the number sequence, the first number is the diameter of the propeller and the second is the pitch.

Pitch is the angle of the blades expressed in the theoretical

distance a propeller travels in each revolution. In the above example, the pitch is 19, or each revolution of the propeller pushes the boat 19 inches through the water. A 19” pitch is considered “higher” pitched and a 15” propeller is considered “lower” pitched.



KC-1581

Keep these guidelines in mind when selecting a propeller:

- There are many different propeller designs for specific operating characteristics, including the number of blades, relief holes, cupping, etc. Do not attempt to change propellers until after you have a chance to determine your average load and individual requirements. Your dealer is best qualified to help you select a propeller.
- Engine RPM must be within the recommended operating range. Refer to the engine operator's manual.
- Higher propeller pitch reduces: RPM, acceleration, engine noise, and usually improves fuel economy and top speed.
- Lower propeller pitch increases: RPM, acceleration, engine noise, reduces fuel economy and top speed.



## **WARNING**



**Before installing or removing the propeller:**

- **Put the remote control in the “NEUTRAL” position.**
- **Put the main switch in the “OFF” position and remove the key.**

A smaller pitch propeller should be selected for water skiing or for heavy loads. A smaller pitch propeller will develop more thrust for raising skiers quickly. When a skier has fallen, or a skier is not being towed, it is important that the operator watch the tachometer to make sure engine RPM does not continuously exceed the maximum full throttle RPM range.

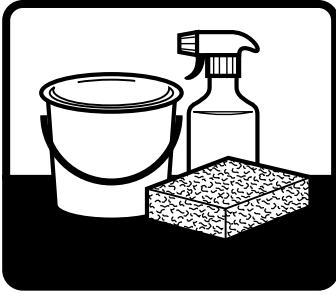


## **WARNING**



**DO NOT use your hand to hold the propeller when loosening the nut. You could be injured. Put a wood block between the cavitation plate and the propeller blade to prevent the propeller from turning.**

Problems associated with propellers include ventilation, cavitation, and blow-out. These problems have similar symptoms and are best diagnosed by an expert. If you think you have a propeller related problem, consult your dealer.



# CARE AND MAINTENANCE

This section describes how to care and maintain your boat. It includes information about maintaining electrical components, corrosion protection, and general maintenance.

## ELECTRICAL

### Battery

The boat is equipped with a 12-volt direct current (12 VDC) negative ground electrical system. The positive (red) wire is hot and feeds current from the battery to the electrical systems. The negative (black) wire is ground and completes the circuit back to the battery. Until the engine is running at high idle or faster, all electrical power comes from the main battery. Once the engine is started and running above 1200 rpm, electrical power is then provided by the engine alternator. The alternator provides more power as engine speed is increased. When the engine is operating, the alternator is charging the battery.

Some models are equipped with a battery isolator that will automatically charge an accessory battery (such as a trolling motor battery) when the engine is running. The isolator automatically isolates each battery so that the lower charged battery will be charged first and the full battery cannot discharge to the drained battery. A battery selector switch may also be included for flexibility of use such as selecting either battery for starting, paralleling batteries, etc. Many different battery setups can be found; refer to Fish/Ski Features for more information.



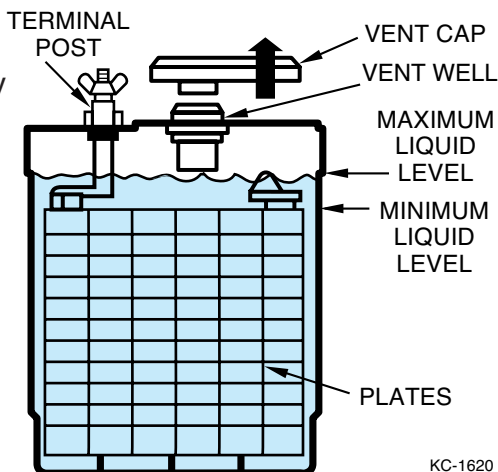
## WARNING



**Batteries contain sulfuric acid which can cause severe burns. Wear protective clothing to avoid acid contact with skin, eyes, etc.**

Be sure to turn OFF battery charger and battery switch before servicing batteries. Check the battery frequently for signs of corrosion. If corrosion is evident, clean terminal posts with a baking soda and water solution and a wire brush. Before cleaning, remove the vent caps and seal the vent wells with corks to prevent the solution from getting inside the battery. Also, check the fluid levels in the cells. Usually, a level approximately 1/4 to 1/2 inch above the plates is sufficient. If needed, fill with distilled water; do not overfill!

Some batteries are sealed, and cannot be filled.



KC-1620

Batteries are perishable products and will self-discharge. If you operate your boat sparingly, you may want to charge your battery occasionally (if not equipped with system battery charger). To recharge, remove the battery from the boat and remove the battery caps (when applicable). Recharge the battery according to the directions enclosed with your battery charger. When installing the battery in the boat, make sure the battery is secured in the battery box.



## WARNING



**Batteries produce explosive hydrogen gas. Never attempt starting your engine with jumper cables under any circumstances. Keep all sparks, flames and smoking materials away from batteries. Risk of spark at the battery post igniting gasoline or hydrogen fumes is too great. Always wear eye protection when near batteries and have adequate ventilation when charging. An explosion can cause blindness or other serious injuries.**

## Circuit Breakers and Fuses

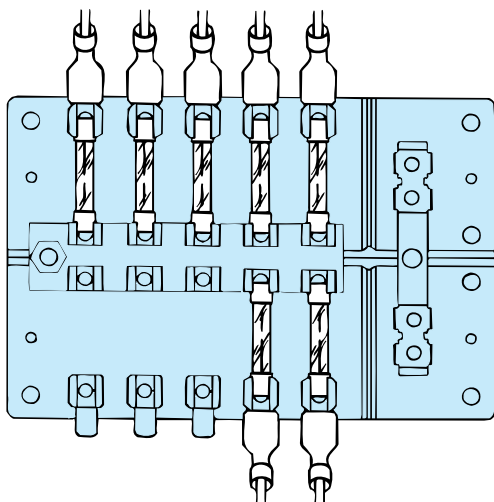
All electrical circuits are protected from overload by the use of fuses or circuit breakers. In the event of an overload or short circuit, the fuse will blow or circuit breaker will trip. If a circuit continuously overloads under normal operating conditions, have your boat inspected by the dealer immediately.

# CARE AND MAINTENANCE



## CAUTION

**Never exceed the recommended fuse sizes or bypass the fuse safeguard. Always install the proper (type and rating) fuses whenever replacing or changing fuses. Continuous fuse/breaker failures indicate a severe problem that requires immediate attention. Failure to install correct fuse may result in damage to the electrical system or severe personal injury.**



TYPICAL FUSE BLOCK

Some boat models have each individual circuit protected with a circuit breaker located next to the switch. To reset a tripped circuit breaker, switch OFF the circuit, wait about one minute for the breaker to cool, push the breaker button fully, and switch ON the circuit.

KC-1630

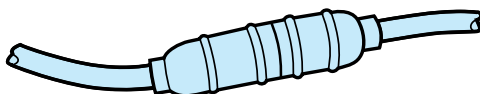


## CAUTION

**The electrical system is designed to protect you from short circuits and overload. Any modifications to the system, such as adding electrical accessories, should be done by a qualified technician.**

Some installed accessories, such as the stereo, have an additional fuse located in the positive lead of the stereo. Some in-line fuse holders can be found near the battery.

TYPICAL IN-LINE FUSE HOLDER



(TWIST AND PULL TO OPEN)

KC-1640

# FUEL SYSTEM

Fuel vents are normally located in the hull or transom below and in the same general area as the fuel fills. Check to see that the fuel fill and vent lines are free of obstructions and kinks. Be sure to check fuel filter periodically and clean as needed.

Fuel lines, vent hoses, and drain hoses should be checked frequently for leaks. Some models are equipped with removable inspection plates for fuel system component inspection. If a leak occurs around the fitting, then tightening of the hose clamps may be all that is necessary. However, if the leak continues, replace the hose immediately to prevent a build-up of fluids or gases. Surface cracking on the hose indicates wear, and replacement is recommended. Use fuel system parts certified for marine use only; do not substitute automotive parts in marine application.

# STEERING SYSTEM

The steering system is the primary link for boat control and must be inspected and maintained regularly. The hardware at both the helm and engine end must be checked frequently for tightness. Refer to the engine operator's manual for the appropriate torques on hydraulic systems, check fluid level in reservoir. Make sure all hoses are tight and do not leak.

Steering pivot points must be lubricated regularly with waterproof marine grease to ensure smooth operation. To lubricate, wipe all traces of old lubricant and dirt from the components and grease fittings. Coat moving parts thoroughly and apply 2-4 "shots" of grease to each fitting. Turn the steering wheel back and forth several times to work lubricant in. Remove excess lubricant with clean, lint-free cloth.

# CORROSION PROTECTION

## Galvanic Corrosion

Galvanic corrosion (electrolysis), to the boater, is the break-up of metals due to the effects of electrolytic action. When two dissimilar metals are immersed in a conductive fluid (salt water), an electric current is produced, much like a battery. As the current flows, it takes with it tiny bits of the softer metal. If not stopped, a great deal of damage could occur.

If you operate in salt, polluted, or brackish waters, your boat should be equipped with a transom mounted zinc anode to prevent damage to those metal parts coming in contact with the water. The zinc is, by design, self-sacrificing. It is slowly eroded away by electrolytic action and requires periodic inspection for deterioration. If the zinc shows extreme erosion, it must be replaced to continue protection, or damage to other metal parts may result.



# CARE AND MAINTENANCE



Most engines are equipped with one or more zinc anodes which must also be inspected regularly for deterioration. Some boat models may be equipped with an electronic cathode system. This system emits a low current electrical charge into the water close to the metal components. This charge cancels the effect of electrolysis.

## CAUTION

**Never paint or coat zinc anodes or cathodes with any substance. Once covered, they do not provide protection from galvanic corrosion. Replace anodes if they have deteriorated 50% or more.**

## Salt Water Corrosion

The entire boat should be rinsed with fresh water and washed immediately after use in salt water. If the boat is used primarily in salt water, wax the hull monthly and apply corrosion inhibitor to all hardware. See your dealer for products suitable for the marine salt water environment. Fresh water internal flushing is recommended when used in salt, polluted, or brackish waters. Flush the entire engine cooling system with fresh water for at least 5 minutes after use in these waters. See your dealer for appropriate flushing devices.

# GENERAL MAINTENANCE

## Marine Growth

If accelerated marine growth is a problem in your area, an anti-fouling bottom paint may be necessary to slow growth and prevent gelcoat damage. Before selecting a bottom paint, talk with other boaters and your dealer to determine which product works best in your area. Many local variables can affect the selection of paint. Be sure to follow the paint manufacturer's directions exactly.

## Cleaning

Periodic cleaning is the best way to keep your boat looking new. Regular washing and waxing keep dirt and scum from building up and deteriorating the finish. Keeping your boat in "show room" condition means greater personal satisfaction and higher resale value. Special cleaning products are available from your dealer to remove mildew.

## Hull

Routine, periodic maintenance is the only practical way to keep the surface of your boat looking shiny and new. Boats left outdoors will gradually deteriorate from exposure to sunlight, water, dust and chemicals in the air. Outdoor exposure may cause your boat's surface to show a variety of changes, including:

- Chalking (fine, powdery whiteness on the surface)
- Fading (gradual loss of color)
- Yellowing
- Loss of gloss

Darker colors tend to exhibit these changes more rapidly than light colors because they absorb more of the sun's rays (ultraviolet and infrared).

Keep your boat covered when not in use. Use heavy duck or canvas (tarpaulin). **DO NOT** use sheet-plastic or other nonporous materials which can trap moisture between the cover and the boat's surface.

When washing the boat, be sure to use a mild detergent and warm water solution. **DO NOT** use abrasive cleaners, solvents, ammonia or chlorine as these will damage the gelcoat surface. Under extreme conditions, special cleaners may be used to remove marine growth, such as scum or algae, from the hull; see your dealer.

Waxing the entire gelcoat surface at least twice a season is recommended for all climates. Use of a specially formulated marine gelcoat wax will prevent color fade and soil and scum adhesion. If the gelcoat has chalked or faded from lack of proper maintenance, buffing may be necessary to bring back the shiny appearance. Hand buffing with #7 rubbing compound or power buffing with glazing compound #1 will quickly restore the surface.

## Bottom Maintenance

The bottom of your boat must be kept clean! Any build-up of marine life from water will create drag and affect the boat's performance and efficiency. Never use wire brushes or scouring pads on the bottom of your boat, as this can cause small scratches that actually trap dirt.

## Upholstery

Regular washing with mild detergent and warm water or automotive vinyl cleaners is sufficient to keep the cushions, canopy top, and vinyl coverings in good condition. Keep the cushions from becoming soaked and dry off thoroughly after washing to prevent mildew accumulation after the boat is covered. Prop the cushions up in the boat when covered to allow air circulation and spray with mildew repellent. Lubricate canopy top snaps with petroleum jelly.

# CARE AND MAINTENANCE



## CAUTION

**Certain automotive, household and industrial cleaners can cause further damage and discoloration. Solvents and dry cleaning fluids, or products that contain dyes such as waxes, should be used with caution. Whenever cleaning stubborn stains, be sure to test the treatment in an unseen area first. The following stain treatments should be used with discretion. Between steps, be sure to rinse thoroughly with plenty of clean water and allow to dry.**

Stain	Steps		
	1	2	3
Ballpoint Ink*	A	B	E
Chewing Gum	D	A	B
Coffee, Tea or Chocolate	B		
Crayon	D	B	
Eyeshadow	B		
Grease	D	B	E
Ketchup	A	B	
Latex Paint	A	B	E
Lipstick	A	B	
Mildew or Wet Leaves*	C	A	B
Motor Oil	B		
Paint, Oil Base (Dried)	D	A	B
Paint, Oil Base (Fresh)	D	B	E
Permanent Marker*	B	C	E
Shoe Polish*	D	B	E
Soil	A	B	
Spray Paint	B	E	
Suntan Lotion	A	B	E
Tar/Asphalt	D	A	B
Yellow Mustard	A	B	C

\*These products contain certain dyes that stain permanently.

### Treatment

- A. Medium soft brush-warm soapy water.
- B. Household spray cleaner (Fantastic).
- C. One (1) tablespoon bleach to one (1) quart water.
- D. Wipe or scrape off excess. (Chill gum with ice.)
- E. Follow instructions of staining agent manufacturer.

## Carpet

Occasional washing with mild detergent and warm water or household carpet cleaners will keep the carpet clean. Thoroughly hose the detergent out of the carpet and into the bilge. This is usually the best time to clean the bilge. Let the carpet dry in the sun to prevent any mildew or odor caused by moisture.

## Windshield

A clean windshield is important. The windshield requires special cleaning to prevent scratches to the surface. Use a mild soap solution and damp cloth only. Harsh detergents, solvents, chemicals or dry cloths will scratch the surface.

## Bilge

Your bilge accumulates oil and greasy dirt over a period of time and should be cleaned out. Usually, ordinary soap and water does not remove the accumulation, and something stronger is necessary. Consult your dealer for recommendations on special bilge cleaning products.

## Teak

Teak does not require refinishing, but should be cleaned occasionally with a teak cleaner, which can usually be found at a marine supply store. The best way to keep teak in top condition is to oil it regularly with teak oil, at least twice a year. Follow manufacturer's instructions and warnings carefully as some cleaners or oils may damage gelcoat, vinyl or aluminum. Avoid rust-producing steel wool pads when cleaning. Scotchbrite or similar nonmetallic pads are recommended.



## CAUTION

**Teak sealers can be harmful to other materials. Make sure you thoroughly remove any of this oil that has come in contact with the vinyls, gelcoats, etc. Teak should not be varnished as the natural oils will cause poor adhesion.**

## Interior Wood

Most interior wood is teak. If a scratch develops, it can be repaired easily using a fine grade sandpaper (400 to 1000 grit). Use a tack cloth to clean sanding residue, and then apply a small amount of lemon oil. Let dry and wipe with a soft cloth.

# CARE AND MAINTENANCE



## Plexiglass

Plexiglass is susceptible to scratching. When cleaning, always apply clean, lukewarm water and wipe with a soft, lint-free cloth. DO NOT use the following:

- Abrasive cleaners
- Solvents
- Glass cleaning solutions
- Acetone, benzene, gasoline
- Dry cleaning fluids
- Alcohol or carbon tetrachloride

## Window Channels

A nylon pile is used in sliding window channels. NEVER use any products that contain bleaching solutions in this area. Use only mild detergent and water solution for cleaning. If windows stick, spray the channels with silicone spray while working the window back and forth.

## Interior Fabric

Clean interior fabrics with dry cleaning fluid approved for use with soft fabrics. Follow the label instructions carefully. Be sure to test cleaners in an unseen area first.



## CAUTION

**Dry cleaners require adequate ventilation during use. Open all hatches and windows before application.**

Use a soft cleanser to clean marks or stains on wallpaper; they will usually come off with soap and water. Lightly rub the mark or stain with a sponge or soft cloth and dry with a clean cloth.

## Canvas

In most cases, boat canvas is subjected to more abuse than any other item on the boat. Canvas must be regularly maintained for long life and top performance.

Moisture, dirt and chemicals from industrial fallout, heat, ultraviolet rays and salt water can all contribute to the deterioration of canvas. These elements can cause serious damage if left unchecked. The following guidelines should help keep your canvas in good condition for years to come.

- The convertible top is not designed to withstand long periods of time exposed to the elements as a protective cover at dock side or when your boat is in storage. A full, properly fitted, light colored mooring cover should be used for these purposes.
- If canvas gets wet during use, remove side curtains and open windshield so seams can dry out. The air circulation will allow all canvas to dry and prevent the growth of mildew. **Never store folded or rolled up damp canvas.**
- Occasionally set up all canvas and curtains and hose down with fresh water to remove accumulated soot and dirt. Sweep or brush the underside of the canvas to prevent the accumulation of dirt and mildew.
- Wet canvas must be allowed to dry thoroughly before storage. **DO NOT** allow canvas to dry loose since shrinkage can occur. Erect all canvas fully on the boat when drying.
- Do not allow the canvas to be exposed to direct sunlight for long periods of time.
- Use care when handling clear vinyl curtains and windows to prevent scratching.
- Do not use cleaners on clear vinyl curtains and windows. Clean with plenty of clean water and a soft, clean cloth.
- Do not fold canvas parts. Loosely roll canvas to prevent damage.
- Do not store canvas in poly bags. Canvas should be kept in a well ventilated compartment.
- The outer canvas surfaces can be cleaned with a soft scrub brush and either automotive convertible top cleaners or household cleaners suitable for use on vinyl surfaces. The underside of the canvas may be periodically sprayed with a spray disinfectant to prevent the growth of mildew.
- Do not store or dock your boat under trees. Tree sap is very corrosive to canvas and can also be harmful to gelcoat and vinyl interiors.
- Adjust top bows to eliminate pockets in which rain water can accumulate. The weight of this accumulated water can collapse the top or bag the canvas.

# CARE AND MAINTENANCE



- Snaps and zippers should be regularly lubricated. Vaseline, silicone spray, or paraffin are some of the lubricants that are effective. **Zippers should never be forced.**
- Never trailer your boat with the convertible top in the mounted position. All canvas should be dismantled, rolled, and securely stored while trailering your boat to prevent wind damage.

## Stainless Steel and Chrome

Stainless steel and chrome plated parts are not totally resistant to corrosion. Occasional cleaning and polishing with a marine chrome and stainless polish will maintain and extend the useful life. In salt water areas, rinse all hardware with fresh water and apply a light coating of corrosion inhibitor oil to enhance appearance. Check hardware tightness at least once a season.

## Bilge Pump(s)

Periodically check the bilge pump(s) inlet screens for debris. Foreign materials can clog the screen or become lodged in the bilge pump impeller, which can cause the pump to malfunction. Inspect all clamps and hoses for tightness on a regular basis.

## Toilet

Basic maintenance on the toilet involves the following:

- Use a nonabrasive cleaner for keeping the bowl clean.
- A light coating of a general purpose marine lubricant on the pump rods and slides will reduce friction of moving parts.
- Use recommended deodorant and lubricant for the internal parts of the head.

## Detectors

The gas vapor detector and Carbon Monoxide (CO) detector require little maintenance. Consult the owner's manual for periodic testing procedures.

## Trim Tabs

Inspect the trim tab pump periodically for fluid level. Fill with recommended fluid until full (if needed). Also inspect trim tabs for loose fasteners, leaking cylinders, and harness connections.

## Alcohol Stoves

Carefully read and follow manufacturer's operating instructions supplied with your stove, and observe the following:

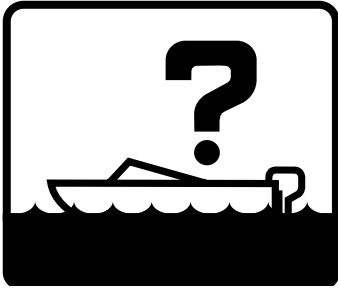
- Use only denatured alcohol labeled specifically for marine use.
- Do not operate the stove while underway.
- Do not fill stove near an open flame or hot object.
- All alcohol spilled should be wiped up prior to lighting the stove.



### CAUTION

**If your boat is left in the water continuously for a period of time exceeding two weeks, we recommend the use of a good quality barrier coating system and bottom paint. See your dealer for more information.**





# 8

## TROUBLESHOOTING

The following chart will assist you in finding and correcting minor mechanical and electrical problems. If an engine problem is indicated, consult your engine owner's manual.

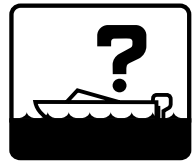
Some problems may require specialized skill and tools to correct them; see your dealer.

### TROUBLE CHECK CHART

Symptom	Possible Cause
Engine will not crank	<ul style="list-style-type: none"><li>● Emergency safety switch not connected</li><li>● Faulty ignition switch</li><li>● Throttle/shift control in gear</li><li>● Main circuit breaker open</li><li>● Battery terminals corroded</li><li>● Weak battery</li><li>● Battery switch in OFF position</li><li>● Engine problem</li></ul>
Engine cranks but will not start	<ul style="list-style-type: none"><li>● No fuel in tank</li><li>● Fuel filter clogged</li><li>● Flame arrestor dirty</li><li>● Fuel valves closed</li></ul>

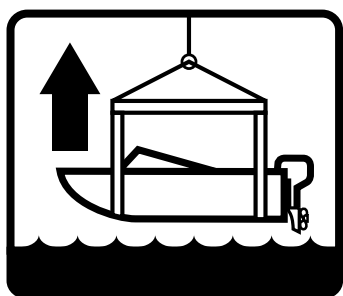
Symptom	Possible Cause
Engine cranks but will not start (cont.)	<ul style="list-style-type: none"><li>● Contaminated fuel</li><li>● Faulty fuel pump</li><li>● Bad spark plugs</li><li>● Engine problem</li></ul>
Poor boat performance	<ul style="list-style-type: none"><li>● Excessive water in bilge</li><li>● Uneven load distribution</li><li>● Engine trim wrong</li><li>● Damaged or obstructed propeller</li><li>● Improper propeller selection</li><li>● Contaminated fuel</li><li>● Engine problem</li></ul>
Poor gas mileage	<ul style="list-style-type: none"><li>● Engine trim wrong</li><li>● Marine growth on hull</li><li>● Plugged flame arrestor</li><li>● Faulty fuel pump</li><li>● Engine problem</li></ul>
Throttle/shifting problems	<ul style="list-style-type: none"><li>● Corroded cable</li><li>● Kink in cable</li><li>● Engine problem</li></ul>
Excessive vibration	<ul style="list-style-type: none"><li>● Propeller damaged or fouled</li><li>● Engine problem</li></ul>
Electrical problems	<ul style="list-style-type: none"><li>● Blown fuse or open circuit</li><li>● Loose wiring connections</li><li>● Defective switch or gauge</li><li>● Weak battery</li></ul>

# TROUBLESHOOTING



Symptom	Possible Cause
No power to AC outlets	<ul style="list-style-type: none"><li>● Ground fault circuit interrupter tripped</li><li>● Loose shore power cord</li><li>● AC breaker</li></ul>
Sink/shower does not operate	<ul style="list-style-type: none"><li>● Fresh water pump circuit breaker is off</li><li>● Fresh water tank is empty</li><li>● Fresh water pump is defective</li></ul>
Head will not flush	<ul style="list-style-type: none"><li>● Head circuit breaker is off</li><li>● Weak or discharged battery</li><li>● Head seacock closed</li></ul>
Head will not empty	<ul style="list-style-type: none"><li>● Discharge valve closed</li><li>● Line to holding tank blocked</li></ul>





# 9

## STORAGE

Storage or winter lay-up requires special preparation to prevent damage to the boat. Perform all annual maintenance at this time.

Without proper preparation, storage for long periods of time may cause internal parts of the engine and drive unit to rust because of lack of lubrication. Or, if the boat is stored in below freezing temperatures, water inside the bilge or cooling system may freeze causing damage. Damage to the boat due to improper storage will not be covered by the warranty. The following procedures should help prevent damage to your boat.

### While The Boat Is Still In The Water

1. Fill fuel tank and add the proper amount of fuel stabilizer and conditioner according to the manufacturer's recommendations.
2. Operate boat for at least 15 minutes to be sure that treated fuel has reached engine.

#### Note

If the boat is to be stored for more than 5 months, stored in a high moisture (humidity) environment, in temperature extremes, or stored outdoors, "fog" the engine with a rust preventative fogging oil according to the manufacturer's recommendations. See your dealer.

### When The Boat Is Removed From The Water

#### Note

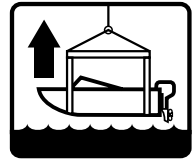
Remove the bilge drain plug immediately after taking the boat out of the water. After washing, raise the bow of the boat high to allow as much water as possible to drain while performing other storage preparations.

- Flush the engine cooling system with clean water. DO NOT exceed 1500 rpm when flushing.
- Perform all scheduled maintenance. For stern drives, tuning the engine and changing the oil and fuel filters is especially important.
- Thoroughly clean the hull, deck and interior of the boat as soon as it is removed from the water. Cleaning at this time is easier because the marine growth is still wet. Be sure to allow for a couple of days of air drying to prevent mildew due to trapped moisture.
- Apply a coat of wax to the entire surface of the boat and rust inhibitor on all metal parts.
- Clean all traces of dirt, oil, grime, and grease from the engine and bilge. Touch-up areas of engine where paint has been removed.
- Prepare the engine for storage according to the instructions contained in the engine owner's manual.
- Store the bilge drain plug in a plastic bag and tape it to the throttle control lever so that it is easily found for reactivation.
- Remove the batteries from the boat. Clean, fully charge and store the batteries in an area not subject to freezing temperatures. Never store batteries close to heat, spark, or flame producing devices.
- Open all faucets and allow fresh water pump to empty water tank and intake lines. Run the pump dry for one or two minutes before turning it off.
- Open all drains, including the one on the water heater (if equipped).
- Empty holding tank for sanitary system, and flush with fresh water.
- Close inlet seacock. Remove inlet hose from pump housing and temporarily attach a short hose to the inlet. Pour one quart of nontoxic anti-freeze into container. With the open end of the temporary hose in the container, pump the head until the colored fluid runs down the rim of the bowl.
- Close outlet seacock.
- Remove strainer and seacock drain plugs to prevent damage from freezing. Close all seacocks.
- The boat bottom must be properly supported to prevent damage.

If stored on a trailer:

- Repack trailer wheel bearings with water resistant wheel bearing grease. If the trailer is equipped with bearing protectors, squirt grease into hubs with a grease gun.
- Park trailer and boat in a protected area. It is best to store boat on cradle. If the rig is left outside, install a boat cover. See your dealer.

# STORAGE



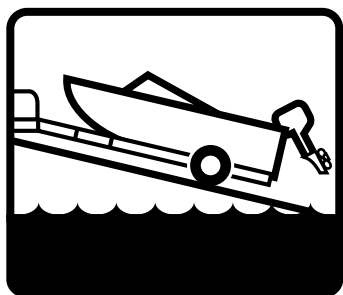
- Loosen tie-downs and winch line but be sure the boat is resting properly on hull supports.
- Jack up trailer and place blocks under trailer frame to relieve weight on trailer tires and springs.
- Refer to engine and boat accessory manuals for further storage instructions.

## Reactivating The Boat After Storage

- Charge and install batteries in boat.
- Check engine and bilge for signs of nesting animals; clean as necessary.
- Check entire engine for cracks and leaks caused by freeze damage.
- Check hose condition and all hose clamps for tightness.
- Install bilge drain plug.
- Open and close all seacocks to check operation. Install all drain plugs in strainers and seacocks.
- Open all faucets and fill fresh water holding tank with about 20 gallons of water. Turn fresh water pump on to allow water to flow through faucets before closing them. Pump will run until operating pressure is reached. Fill fresh water tank until full.
- Perform daily maintenance. If not performed during lay-up, perform annual maintenance.
- If the boat is equipped with the optional fresh water cooling system (stern drive only) and was drained for storage, fill the system with fresh coolant solution.
- Check and lubricate steering system.
- Remove blocks from under trailer frame.
- Tighten tie-downs and trailer winch line.
- Check tire pressure and lug nuts on trailer.
- Take the boat to the water and start it. It may take a minute of cranking to allow the fuel system to prime. Allow a one minute cool down period for every 15 seconds of cranking. When the engine starts, keep a close watch over the gauge readings and check for leakage and abnormal noises. Keep speeds low for the first 15 minutes until the engine has reached normal operating temperature.
- Refer to engine and boat accessory manuals for further reactivation instructions.







# 10

## TRAILERING

This section provides information about trailering. It describes the hitch and safety chains, backing your trailer, preparing to launch, launching, and loading your trailer. Also included is a trailering checklist.



### WARNING



- The trailer must be matched for the boat's weight and hull.
- The towing vehicle must have the capability of pulling the load. Pulling a load that exceeds the vehicle's towing capacity may cause loss of control.

### Note

Check the certification label on the left forward side of your trailer. The label is required to show the Gross Vehicle Weight Rating (GVWR), which is the load carrying capacity plus the weight of the trailer itself. Be sure that the total weight of your boat, engine, gear, and trailer do not exceed the GVWR.

Trailer laws on things such as lighting, registration, trailer brakes, gross vehicle weight, etc., vary widely from state to state. Contact your state Dept. of Motor Vehicles (and that of other states through which you may be traveling) for laws you must be in compliance.

# CLASSIFICATIONS

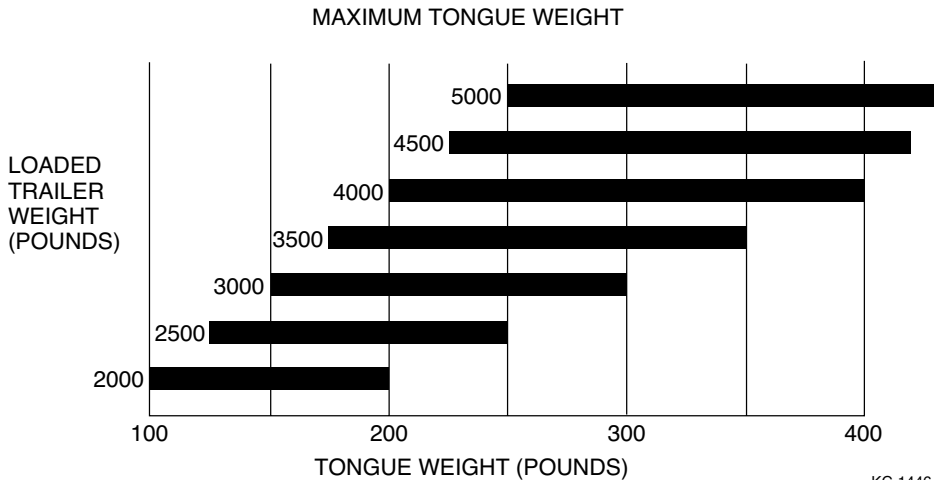
Trailers are separated into four classes based on gross vehicle weight (GVW). Gross vehicle weight is equal the trailers weight plus maximum load it may carry at 60 MPH.

- Class One GVW under 2000 lbs.
- Class Two GVW over 2000 under 3500 lbs.
- Class Three GVW over 3500 under 5000 lbs.
- Class Four GVW over 5000 lbs.

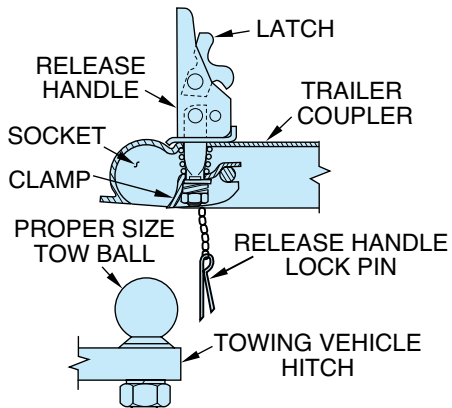
## HITCH

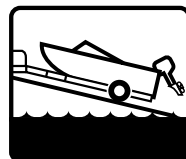
Hitches are divided into classes that specify the gross trailer weight (GTW) and maximum tongue weight for each class. Always use a hitch with the same class number as the trailer, or greater.

Most boat trailers connect to a ball hitch that is bolted or welded to the towing vehicle. Special heavy-duty equalizing hitches are necessary for trailer tongue weights of 350 pounds or greater.



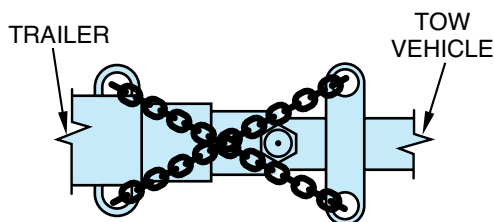
The trailer hitch coupler must match the size of the hitch ball. Never use a hitch ball that does not match the trailer coupler. The correct ball diameter is marked on the trailer coupler.





## SAFETY CHAINS

### CRISSCROSS SAFETY CHAINS



BOTTOM VIEW OF HITCH COUPLING

KC-1691

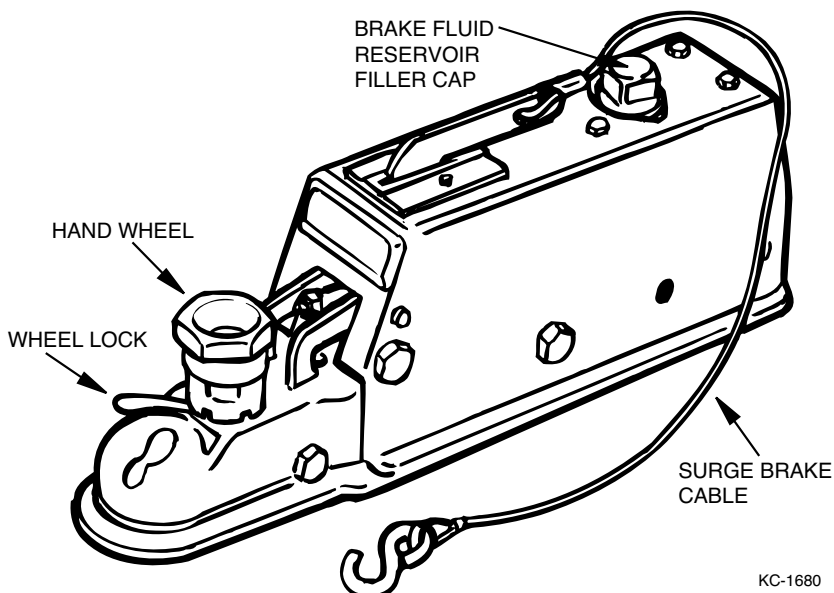
Safety chains on your boat trailer provide added insurance that it will not become completely detached from the towing vehicle when underway.

Crisscross the chains under the trailer tongue to prevent the tongue from dropping to the road if the trailer separates from the hitch ball. Rig the chains as tight as possible with just enough slack to permit tight turns.

Make sure the proper chains are correctly attached between the towing vehicle and trailer before and during each trip.

## Trailer Brakes

In some states, any trailer with a gross vehicle weight rating (GVWR) of 1,500 pounds or more is required to have brakes. Usually, this brake is a self-contained, hydraulic surge system, with either a drum or disk brake. Some trailer brake systems are electrically actuated and require a control box inside the towing vehicle. Consult your trailer manufacturer's owner's manual for more information on operation, adjustments and maintenance.

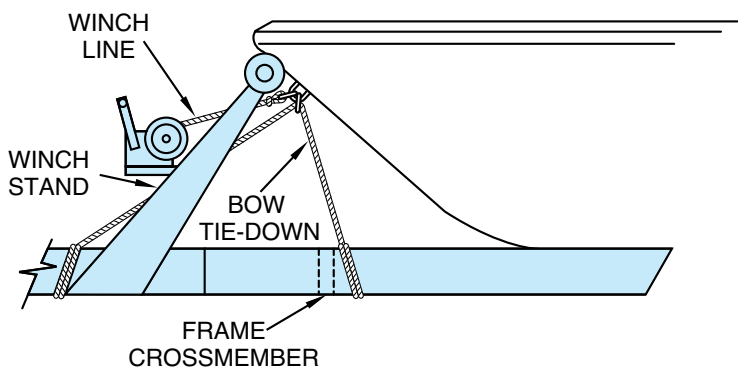


KC-1680

# TRAILERING CHECKLIST

Below is a checklist to follow when trailering your boat:

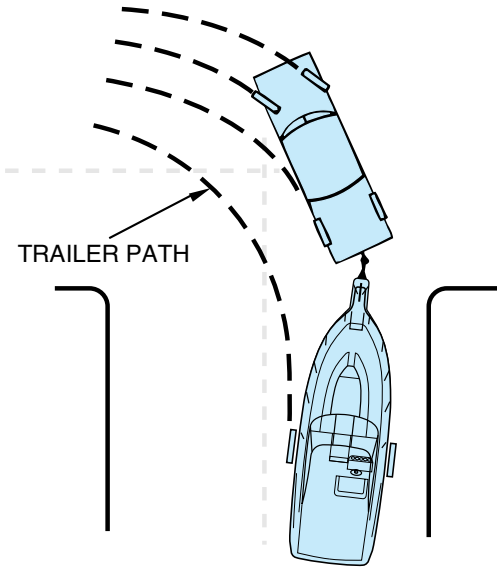
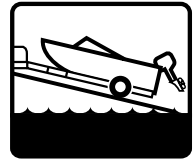
- Consult your state laws as to brake and axle load requirements. Check brakes for proper operation and fluid level prior to departure on each trip.
- Check springs and undercarriage for loose parts.
- Check tires for proper inflation. Under-inflated tires heat up rapidly and tire damage or failure is likely to occur.
- Wheel bearings and lug nuts should be checked before each trip.



KC-1711

- Your boat should be fastened to the trailer by a line from the bow eye to the winch line PLUS a bow tie-down to the winch stand or trailer tongue. The stern of your boat should be tied down to the trailer from the stern eyes.
- Check to be sure the taillights and turning signals work prior to towing.
- Convertible tops are not designed to stay on boats at highway speeds. Before towing, take down the convertible top, side curtains, and back cover.
- Carry a spare tire for both your trailer and your towing vehicle along with sufficient tools to change them.
- Consult the engine operator's manual for engine related trailering precautions.
- On extended trips, carry spare wheel bearings, seals, and races.
- While traveling, check the wheel hubs every time you stop for gas or refreshments. If the hub feels abnormally hot, the bearing should be inspected before continuing your trip.

# TRAILERING



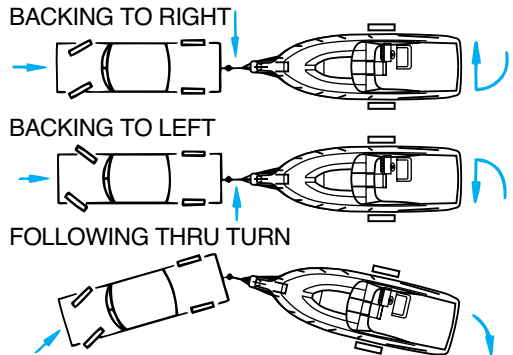
- When rounding turns on highways or streets, do not cut corners. Also, go slow over railroad tracks.
- Before backing your trailer into water, disconnect the light plug from the towing vehicle to reduce the likelihood of blowing out lights when they become submerged.

KC-1736

## BACKING UP TRAILERS

If you have never towed a trailer before, take the time to practice backing your trailer before using it for the first time. Follow these guidelines when backing:

- Back slowly and make small steering adjustments.
- Turn the car wheels in the opposite direction you want the trailer to go.
- After the trailer begins moving, turn the car to follow it.
- Have a second person assist you with hand signals.



KC-1766

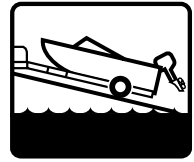
# LAUNCHING

Before launching your boat, stay to one side and watch a couple of launchings to notice any problems on the ramp and the effects of the wind and current on launching. It is a common courtesy to prepare the boat for launching away from the ramp especially during busy periods. Perform the pre-launch sequence as follows:

1. Remove the boat cover, if equipped.
2. Check that bilge drain plug is in place.
3. Remove any additional trailering tie-downs from the boat.
4. Attach the bow and stern docking lines and fenders if necessary.
5. Disconnect the trailer lights from the car.

Launching with two people is recommended. Since all launches are different from each other in some way, the following procedure must be modified to fit the launch in use:

1. Back the boat down the ramp until the wheels are at least halfway submerged. Keep the trailer/car combination as straight as possible and at 90 degrees to the shore line.
2. Loosen and detach the bow strap from the bow eye.
3. Back the boat further down until the top of the fenders are about 2" above the water.
4. Board the boat and start it. If possible, remain on the trailer until the engine has warmed-up.



## LOADING

Loading, like launching, is best done with two people:

1. Back the trailer into the water until the top of the fenders are about 3" above the water. Keep the trailer/car combination as straight as possible and, if possible, at 90 degrees to the shoreline. Set the parking brake securely.
2. Approach the trailer in a straight line from at least 5' out. Use "bursts" of propeller thrust to move towards the trailer at the slowest steerable speed. Guide the boat onto the support bunks.
3. Check to see that the boat is centered on the support rails and is headed in a straight line for the bow stop (bumper board).



### WARNING



**Excessive throttle can cause the boat to travel over the bumper board causing extensive damage to the boat, trailer, and car and could cause severe personal injury.**

4. Using a very light touch on the throttle, ease the boat forward until the bow comes to rest against the bow stop (bumper board).

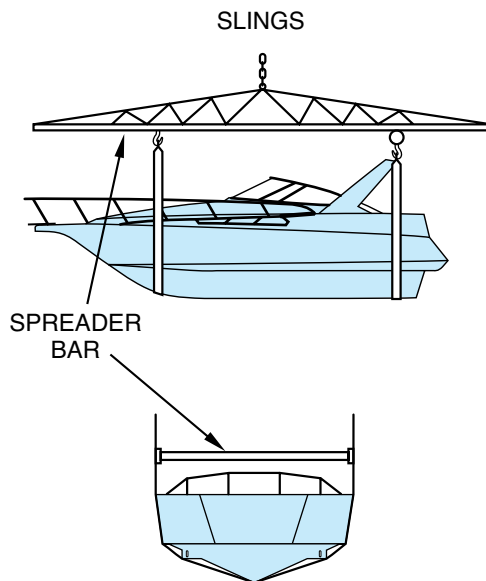
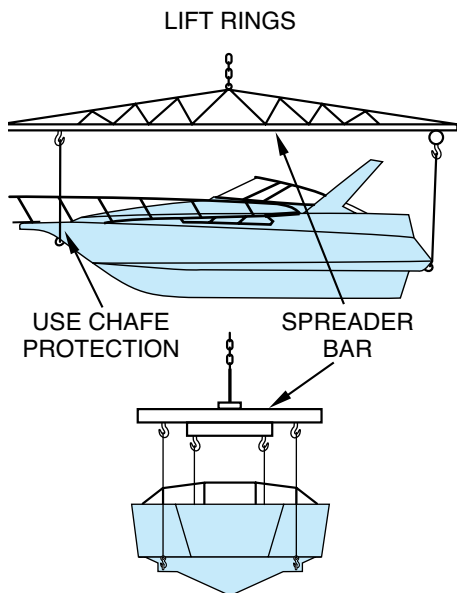


### CAUTION

**The winch bow strap is merely a means of securing the boat to the trailer and is not intended to winch or pull the boat onto the trailer.**

5. Attach and tighten the winch bow strap.
6. Pull the trailer up the ramp and attach any additional tie-downs and connect the trailer light harness.
7. Pull drain plug.
8. Perform end of day shut down procedures.

# SLINGING/LIFTING

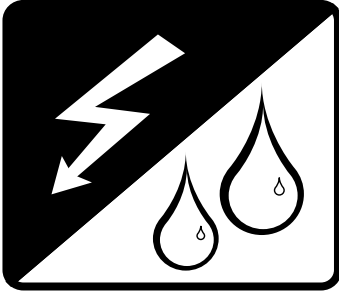


KC-1866

If the boat is to be removed from the water without a trailer, follow these guidelines:

- Never attach lifting cables to cleats, ski tow eyes or hand rails. Attach cables only to the lifting eyes in the transom and bow.
- Cover lifting cables with rubber hose or other protectors to prevent damage to the finish.
- Attach guide lines to the bow and stern to control movement.
- Use spreader bars and keep lifting pressure vertical to prevent side load damage.
- Keep the bow slightly higher than the stern to prevent engine damage.





# SHIP SYSTEMS

Your boat is equipped with several systems for operation. This section describes the basic operational principles for the major systems. The procedures and illustrations in this section are typical and are intended to be representative of the system on your boat. Be sure to consult all system information provided with your boat before operation.

## ELECTRICAL SYSTEMS

Some boats are equipped with two electrical systems; a battery powered direct current (DC) system, and a generator or shore powered alternating current (AC) system. These systems have a load center panel which serves as the main distribution panel.

The DC system supplies electricity to all of the boat's electrical circuits (lights, pumps, blowers, ignition, etc.)

The AC system supplies power to the electrical outlets, and to AC powered systems (electric stove, water heater, microwave, refrigerator, etc.) when the boat is moored to dock or slip.

### DC Electrical System



#### **WARNING**



**Considerable care has been taken to design a safe electrical system to protect you from hazardous shocks. Any modifications to the system should always be done by a qualified technician to protect you from hazardous shock.**

Your boat has a 12 volt negative ground DC system. The positive wire is hot, and feeds current from the batteries to the various 12 volt systems, and the negative wire is the ground.

Many boats are equipped with three batteries. Two batteries (cranking batteries) are used only to start the engine(s). The third battery is an auxiliary battery that provides power to all of the other DC electrical circuits via the master battery switch.

While the engines are running, all batteries are charged by the engine alternator(s), and the rate of charge is controlled by an internal voltage regulator.

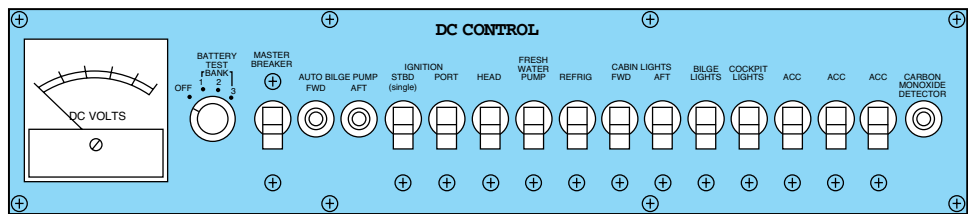
The electrical system is grounded by grounding the cranking batteries to the engine(s) and the auxiliary battery to the cranking batteries. The engine(s) are connected by ground cable to provide added assurance that a proper ground is being achieved. The engine(s) are then grounded to a bonding strip located in the engine compartment.

The auxiliary battery is separated from the cranking batteries by an electronic solid state isolator. When the engines and ignition switches are “OFF”, the isolator prevents accessory loads from depleting the cranking batteries. When the batteries are being charged by the alternator(s), the isolator automatically combines and isolates the alternator output and distributes the charge among the batteries according to individual need.

## DC Master Panel

A typical DC master panel may consist of a voltmeter, a battery test switch, a series of switch type and resettable circuit breakers, and the master breaker switch.

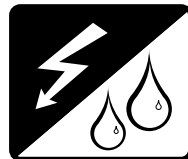
## Typical DC Control Panel



TYPICAL DC CONTROL PANEL

KC-1633

The meter allows you to check on the condition of the batteries. With master breaker switch in the “OFF” position, turn battery test switch to:



- “1” to check the starboard engine cranking battery,
- “2” to check the port engine cranking battery,
- “3” to check the auxiliary battery, and
- “OFF” to disable meter and test circuit.



## CAUTION

**Never reset a breaker which has been automatically tripped without first detecting and correcting the cause of the problem.**

The switch type circuit breakers’ function is twofold: they allow you to manually enable or interrupt a circuit by moving the switch on or off, and they protect the system receiving the DC current (power) by automatically opening the circuit if a short or overload condition occurs.

The resettable circuit breakers protect the system receiving DC power by automatically opening the circuit if a short or overload occurs.

## AC Electrical System

Models equipped with shore power AC systems are rated for 125 volts at 60 cycles. Source current can be provided from a 110 volt, 60 cycle shore power station.

The AC system in your boat is much like the system in your home. The hot wire (usually black) sends current to the AC system. The neutral wire (always white) sends current back to the source, and the ground wire (always green) grounds all systems to a common ground. In your boat the common ground is the copper bonding strip located in the engine compartment.



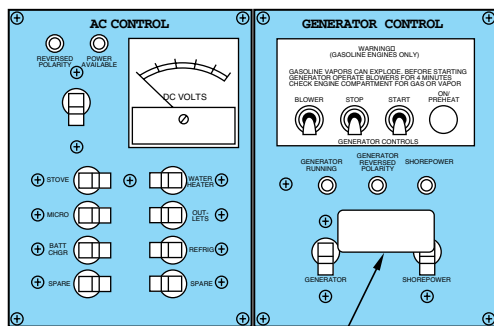
## WARNING



**Considerable care has been taken to design a safe electrical system to protect you from hazardous shocks. Any modifications to the system should always be done by a qualified technician to protect you from hazardous shock.**

## Typical AC Generator Control Panel

Many AC control panels consist of a voltmeter or main AC breaker, a reversed polarity indicator light, and individual circuit breakers.



SLIDE PROTECTOR

TYPICAL AC CONTROL PANEL

KC-1634

**Voltage Meter** – Allows you to monitor the AC voltage. Damage to components can occur if voltage entering your system is less than 105 volts. Do not use AC powered equipment if you get a reading of 105 volts or less.

**Reversed Polarity Light** – Indicates if the polarity of the **shoreside power source** has been reversed, but will not indicate if the boat polarity (wiring) is reversed.



## WARNING



Every effort has been made at the factory to assure proper wiring polarity for the boat AC system. Any modification performed on the boat AC system must be made by a qualified marine technician and checked to assure compliance with ABYC guidelines and National Electrical Codes.

**Power Available Light** – Indicates that power from the shore or from the generator is available to the panel for distribution. This indicator must be illuminated before switching the main AC breaker “ON.”



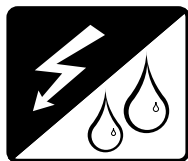
## WARNING



If a reversed polarity warning is indicated, **DO NOT USE** the shore power source. Immediately turn off the power source on shore and disconnect the shore power cord. Reversed polarity is a dangerous and potentially lethal condition which may cause shock, electrocution, or death.

**Main AC Breaker** – Switches the entire AC system “ON” and “OFF.” This allows you to check for proper voltage and polarity immediately after shore power cord connection has been made, before individual circuits are enabled.

**Individual Circuit Breakers** – Allow you to manually enable or interrupt a circuit by flipping the switch “ON” or “OFF,” and they also protect the system receiving the AC load by automatically breaking the circuit in cases of shorts or overloads.



## CAUTION

**Never reset a breaker which has been automatically tripped, without first discovery and remedying the cause of the problem.**

If your boat is equipped with a generator, the Generator Control panel contains the starting/stopping controls for the generator as well as the controls for switching between Shore Power and Generator.

## Note

**Read the generator owner's manual before operating the generator for the first time. The manual contains important operation and maintenance information.**

Whenever operating the generator, you must first operate the engine compartment blower for at least 4 minutes prior to starting, and continuously during generator operation to remove dangerous gas or vapor.



## WARNING



**The blower must be operated for a minimum of four minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can cause an explosion.**

## Note

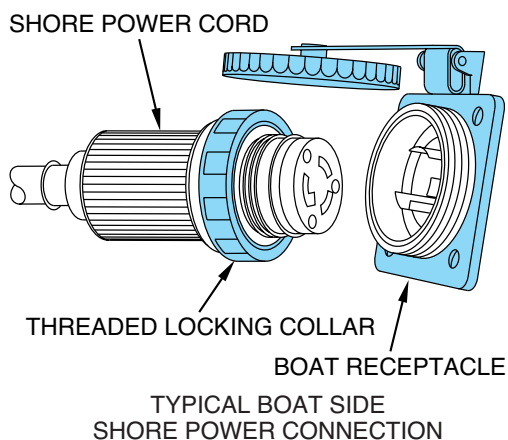
**Models equipped with a diesel engine powered generator may have a PREHEAT switch used during starting.**

## Note

**Some models may be equipped with extra batteries and a DC to AC converter. The converter will allow certain AC appliances, such as a refrigerator, to operate from battery power while underway. The operation of battery conversion systems is not discussed in this manual.**

Since boats equipped with shore power usually remain in the water for extended periods, corrosion is the primary cause of AC electrical problems. Corroded connections can overheat plugs and receptacles and is usually first noticed at the plug. If signs of overheating is evident, repairs must be made immediately before further damage is done.

## Shore Power Connection



KC-2053

One or two 125 volt receptacles are provided for shore power inlet. The type of receptacle determines the amperage rating of the system. Four amperages may be found; 15 ampere, 30 ampere, 50 ampere 125V and 50 ampere 125/250V.

A 15 ampere shore cord could be viewed as an extension cord for the boat. Fifteen ampere systems usually supply one device such as a battery charger, and have no AC control panel or individual branch circuits.

The 30 and 50 ampere systems are equipped with an AC control panel for power distribution to branch circuits.

All shore power systems require a special, marine grade three-conductor cable to make a proper connection to the shore. Dockside connections are plug-in while boat side connections plug-in and are locked in position with a threaded locking collar to prevent accidental disconnection and enhance water resistance. If the proper receptacle is not available at dock side, there are special adapters available to connect to 50 ampere systems. Consult your dealer for information on proper adapters.

Some boats may be equipped with two separate 30 ampere electrical systems (with separate AC Control Panels) or may use two 125V shore power cords to provide 250V service (in which case the AC Control Panel will combine service automatically for large appliances).

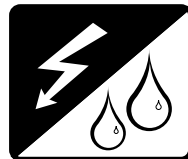


### WARNING



**Plugs and receptacles for different systems are designed in noninterchangeable configurations. A plug from one system cannot fit into the receptacle of another system. Never attempt to modify a shore power cable; use only commercially available adapters for system modification.**

To minimize shock and fire hazards when connecting and disconnecting shore cord:



To connect:

1. Turn “OFF” the boat’s main AC breaker switch.
2. If the outlet on the pier has a disconnect switch, turn the switch in the “OFF” position.
3. Connect shore power cable at the boat first.
4. Make sure the cable has more slack than the mooring lines.
5. Remove the cap from the outlet on the pier. Connect the other end of shore cable to the outlet on the pier.
6. If polarity warning indicator is activated, immediately disconnect cable.
7. Set the shore disconnect switch in the “ON” position.

To disconnect:

1. Set the 110 volt AC MAIN switch in the “OFF” position.
2. If there is a disconnect switch on the shore, set the disconnect switch in the “OFF” position.
3. Disconnect shore power cable at shore outlet first.
4. Disconnect the power cable from the inlet in the boat. Replace the cap over the inlet.
5. Place cable in storage for future use.



## WARNING



**Some marinas have been known to “break” shore power ground circuits to prevent electrolysis. Opening the ground circuit creates a potentially dangerous on board shock hazard. Ensure that your shore power cable ground circuit is always continuous.**

**Generator Breaker** – Makes or breaks the connection between the generator and the AC control panel. DO NOT switch while the generator is operating.

**Shore Power Breaker** – Makes or breaks the connection between shore power and the AC control panel. DO NOT switch while shore power is being used.

**Generator Running Light** – Indicates that generator power is being received by the AC control panel.

**Reversed Polarity Light** – Indicates if the polarity of the generator output (wiring) has been reversed.



## **WARNING**



**If a reversed polarity warning is indicated, DO NOT USE the generator. Immediately turn off the generator and determine the source of the problem. Reversed polarity is a dangerous and potentially lethal condition which may cause shock, electrocution, or death.**

**Shore Power Light** – Indicates that shore power is being received by the AC control panel.

### **To Operate From Shore Power**

1. Shut down generator if applicable. If equipped, Generator Running indicator will go out.
2. Turn “OFF” generator breaker and main AC breaker. If equipped, Power Available indicator will go out.
3. If so equipped, move the slide protector over the Generator breaker.
4. Flip the Shore Power breaker to the “ON” position. The Power Available indicator should illuminate.
5. Flip the Main AC breaker to the “ON” position. If the Reversed Polarity light illuminates, flip the breaker “OFF” immediately.



## **WARNING**



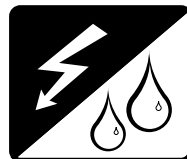
**If a reversed polarity warning is indicated, DO NOT USE the shore power source. Immediately turn off the power source on shore and disconnect the shore power cord. Reversed polarity is a dangerous and potentially lethal condition which may cause shock, electrocution, or death.**

6. Flip individual circuit breakers “ON” as required.

### **To Operate From Generator Power**

1. Shut down shore power if applicable. If equipped, Shore Power indicator will go out.
2. Turn “OFF” shore power breaker and main AC breaker. If equipped, Power Available indicator will go out.
3. If so equipped, move the slide protector over the Shore Power breaker.
4. Flip the Generator breaker to the “ON” position. The Power Available indicator should illuminate.
5. Flip the Main AC breaker to the “ON” position. If the Generator Reversed Polarity light illuminates, flip the breaker “OFF” immediately.





## WARNING



If a reversed polarity warning is indicated, **DO NOT USE** the generator power source. Immediately turn off the power source. Reversed polarity is a dangerous and potentially lethal condition which may cause shock, electrocution, or death.

6. Flip individual circuit breakers “ON” as required.

## WATER SYSTEMS

Some boat models may be equipped with two or more water systems; a fresh water system, a raw water system, and a head and waste containment system.

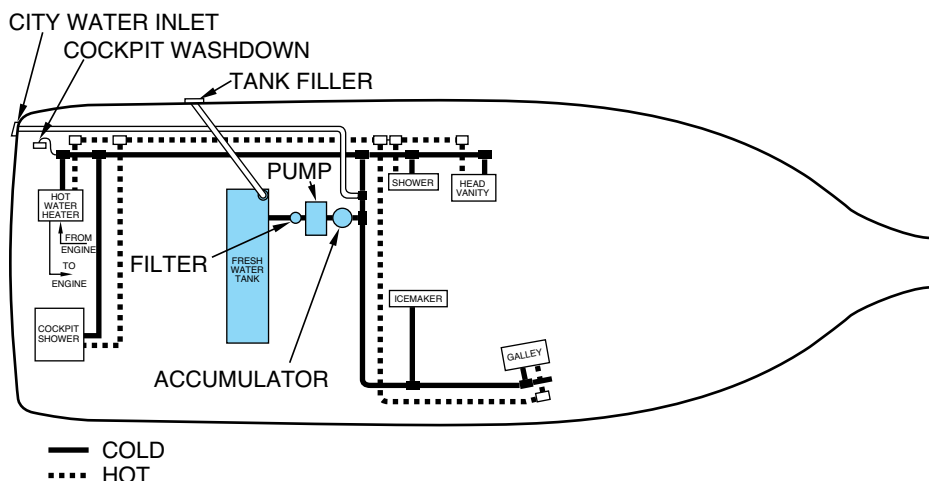
The fresh water system provides potable (drinkable) water to items such as sinks, showers, hot water heater, ice makers, or cockpit washdowns.

The raw water system provides outside (that which the boat is on) water to items such as cockpit washdowns, heads (marine toilets), and engines.

The head and waste containment system provides outside (raw) water to the head.

### Fresh Water System

Two types of fresh water systems are common; a manual system and a pressurized system. Manual systems consist of a storage tank and a hand pump/faucet.



TYPICAL COMPLEX FRESHWATER SYSTEM

KC-2040

Pressurized systems can range from the simple type consisting of a storage tank, electric pump and faucet, to the complex type consisting of a storage tank, filter, electric pump, accumulator, city water hookup, water heater, and any one of a number of showers, sinks, or other items which require potable water.

## Note

**All fresh water drainage is directed overboard.**

## Fresh Water Tank

The boat is fitted with a fresh water tank that is filled through the deck plate filler marked "WATER." The tank is vented through the hull, this allows air to enter/escape as water levels rise and fall. The water tank is full when water comes out of the vent.

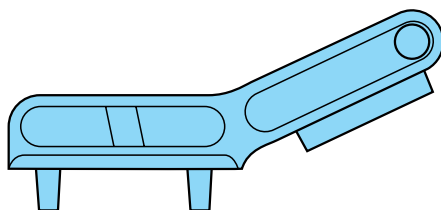
## Note

**Fill the tank only with potable water. Using and refilling the tank often will help keep it a source of clean drinking water.**

To fill the tank:

1. Insert the filler cap (special) key provided with your boat.
2. Insert the key into the slot in the cap and turn counterclockwise to unlock.
3. Remove the cap.
4. Using a sanitary drinking water hose (blue), fill the tank with clean, fresh drinking water.

TYPICAL DECK PLATE KEY



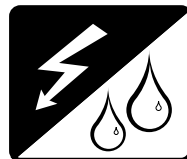
KC-2047

5. Replace the cap and lock into position with the key.

## Filter, Pump, and Pressure Accumulator

Water is drawn from the tank by a self-priming pump located to port and below the engine hatch. Before entering the pump, the water passes through a filter to capture any contaminants. The pump provides a flow of water at a preset pressure to the remainder of the system. Should the system develop a leak or become empty, a dry tank shut down switch prevents pump burnout.

A pressure accumulator tank provides a smooth surge free flow of water from the pump to various fresh water systems. The pressure accumulator also reduces the need for excessive pump cycling by maintaining a constant pressure in the lines.



## Initial Fresh Water System Startup

1. Fill the fresh water tank with approximately 20 gallons of potable water.
2. Turn the FRESH WATER PUMP breaker “ON.”
3. Open the cold water galley faucet to allow air to escape. Close the faucet when a steady flow of water is apparent.
4. Open the hot water galley faucet to fill the water heater and allow air to escape from the line. Close the faucet when a steady flow of water is apparent.
5. Bleed air from the remainder of the faucets, showers, etc., in the same manner as steps 3 and 4. After all lines have been bled, the pump will build to operating pressure and then shut off.
6. You may now continue to fill the tank to its capacity.



## CAUTION

**The fresh water pump works on demand and WILL NOT automatically shut-off when the tank is empty. If the breaker switch is in the “ON” position, and the tank is empty, the pump will run continuously and may overheat.**

## City Water Hookup



## CAUTION

**Monitor the water system during initial usage of the “city water” feature. In this mode, the boat is connected to an unlimited source of water. NEVER leave boat unattended while using the “city water” feature. Any major leak or break in the system will allow abnormal bilge accumulation which in turn could cause sinking or swamping of batteries and engine.**

As an alternative to the fresh water tank, the fresh water system can be connected to “city water.” Because the water enters the boat under pressure, it bypasses the tank, the filter, the pump, and the pressure accumulator. Also, since city water pressure can sometimes be higher than the boat system was designed for, your water inlet may be equipped with a pressure regulator that limits the maximum pressure to 35 psi.

## Note

Using “city water” hookup does not replenish water supply in the tank. The tank can only be filled at the fresh water fill plate.



### WARNING



**Before connecting to any water fitting (dockside or otherwise), be sure the water is potable and suitable for human consumption. Also, a special sanitary drinking water hose is required for the potable water connection. Never use common garden hose for drinking water.**

To connect city water:

1. Turn the FRESHWATER PUMP breaker “OFF.”
2. Remove the threaded plug from the female swivel hose connector of the water inlet fitting. Clean any particles from the strainer.
3. Attach the proper sanitary drinking water hose to the water inlet fitting. Be sure to clean both ends and flush the hose before connecting. Foreign matter may damage the pressure regulator.
4. Before connecting to the dockside city water outlet, open the valve fully to flush any rust particles that may be present.
5. Connect the hose to the dockside city water outlet.

## HOT WATER HEATER

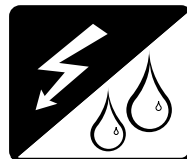
The hot water tank is equipped with a high pressure relief valve for safety. Some models may have a thermostat that regulates the heater to a specific water temperature. The thermostat is adjustable to suit individual taste. The electric hot water heater is operated by turning “ON” the WATER HEATER breaker switch located on the AC panel.

The hot water tank also operates via a heat exchanger. Heated cooling water from the engines is delivered to a heat exchanger which in turn heats the water in the hot water tank.



### CAUTION

**Do not turn the hot water switch on unless the fresh water system is charged. Damage to the heating element will result if allowed to heat up with no water in the system.**



To use the hot water heater:

1. With fresh water tank filled and pump “ON” or city water connection operating, turn HOT WATER HEATER breaker “ON.”
2. Turn on one of the hot water faucets to purge any remaining air from the hot water system.

## Note

**Some hot water heaters are equipped with a high temperature limit switch to protect the heating elements should the heater be activated without water in the tank. If for any reason the system does not operate, turn the hot water heater breaker “OFF” and push the reset button on the heater.**

## Fresh Water System Maintenance

The following maintenance actions should be performed monthly to keep the fresh water system clean and sanitary:

- Drain the fresh water tank completely (using all faucets, showers, etc.). Refill tank with at least 20 gallons of clean, fresh water and drain again.
- Clean fresh water pump inlet filter screen (if equipped).
- Replace fresh water system filter(s) (if equipped).
- Clean city water inlet strainer (if equipped).
- Flush city water system (using all faucets, showers, etc.).

## SANITIZING THE FRESH WATER SYSTEM

If water in the tank has been allowed to stagnate and you suspect that the fresh water system may be contaminated, sanitize the system. To sanitize:

1. Drain the fresh water tank completely (using all faucets, showers, etc.).
2. Mix a solution of 1/4 cup household bleach to 1 gallon of water for every 15 gallons of tank capacity. Pour the solution into the fresh water tank.
3. Fill the tank with clean, fresh water.
4. Turn fresh water pump “ON” and bleed air from all faucets, showers, etc.
5. After approximately 3 hours, drain the system completely.
6. Flush the system with one full tank of water.
7. Fill tank with clean, fresh drinking water.

If you can smell or taste bleach in the water:

1. Drain the system completely.
2. Mix a solution of one quart of white vinegar to 5 gallons of water. Pour the solution into the fresh water tank.
3. Allow the solution to remain in the tank until approximately one hour of cruising time is logged.

## Note

**Boat motion will “slosh” the vinegar/water solution to help clean the tank.**

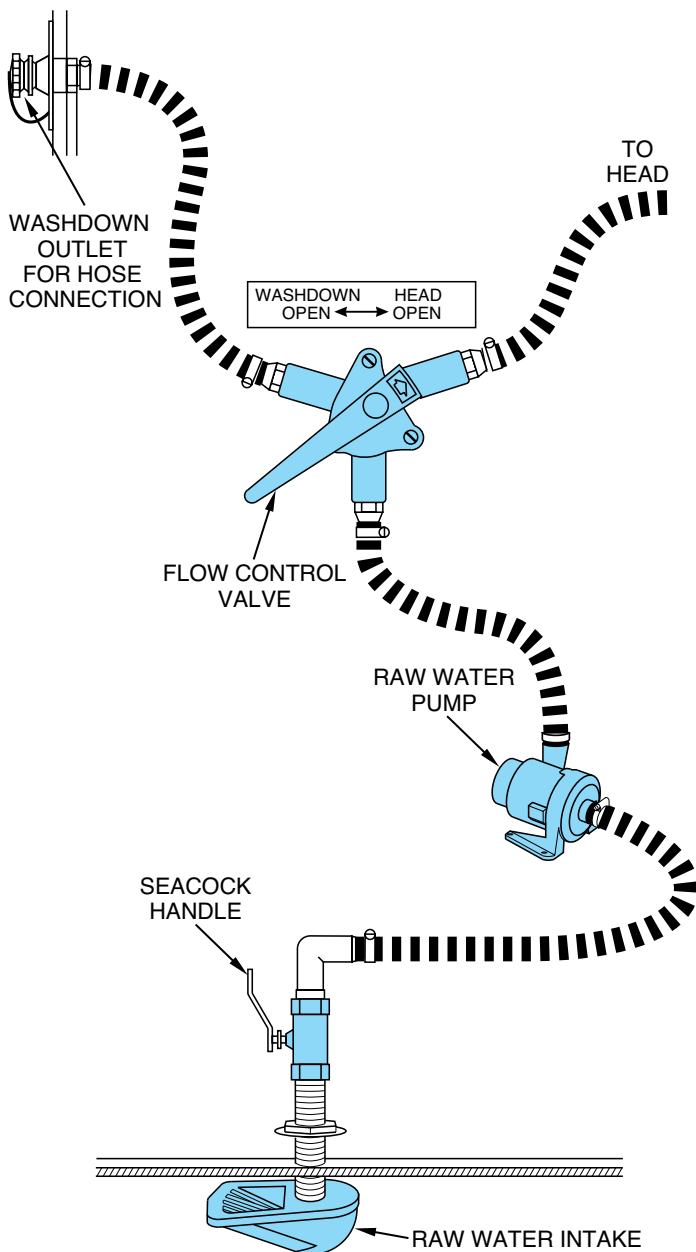
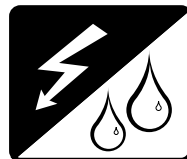
4. Allow the solution to remain in the tank for at least one week.
5. Drain the fresh water system completely.
6. Flush the system with one full tank of water.
7. Fill the tank with clean, fresh drinking water.

## Raw Water System

Boats may contain several raw water systems. Essentially, any component that requires outside water such as the engines, head, or cockpit washdown will each have its own raw water intake.

All raw water systems have three things in common; each will have its own thru-hull raw water intake, a seacock and a strainer. The seacock is very important as it protects a boat from sinking if a downstream hose or fitting should fail. It is therefore very important to close any seacock not in use.

All raw water systems have some type of pump to draw water into the boat. Engines have pulley driven pumps; heads may have manual push/pull or electric pumps; cockpit washdowns have electric pumps. Some raw water systems may supply two components and will have a flow control valve for directing water flow.



KC-2043

To operate a raw water system:

1. Open seacock.
2. Adjust flow control valve (if equipped).
3. Turn appropriate pump switch "ON" if necessary.

## Head and Waste Containment System

Some boats are equipped with a head (marine toilet) and waste containment system. The head has either the manually operated system, or the electrically operated system, which draws seawater in through the hull to flush waste water from the marine toilet. The toilet pumps the waste water on to a holding tank.

### Waste Holding Tank

The boat is fitted with a waste holding tank that is emptied through the deck plate fitting marked "WASTE." Waste is pumped from the head through a sanitary waste hose to the top portion of the tank. A 3/4" sanitary waste hose is attached to the bottom of the tank, and runs to the dockside pumpout plate. An overboard vent keeps the tank at atmospheric pressure regardless of waste levels.

All the components which comprise the waste system are made of materials specially formulated to prevent odor permeation and to resist chemical actions. It is strongly recommended that you regularly add chemical to your tank by flushing it through the head. The chemical helps to control odor and break down the waste. Follow the manufacturer's instructions on the chemical before using.

Depending on the model, there are 3 basic waste system configurations; dockside pumpout, pumpout and overboard discharge, and pumpout, discharge and macerator.



## CAUTION

**Do not flush into a full holding tank. Attempting to flush the head when the tank is full could result in damage to the waste system.**

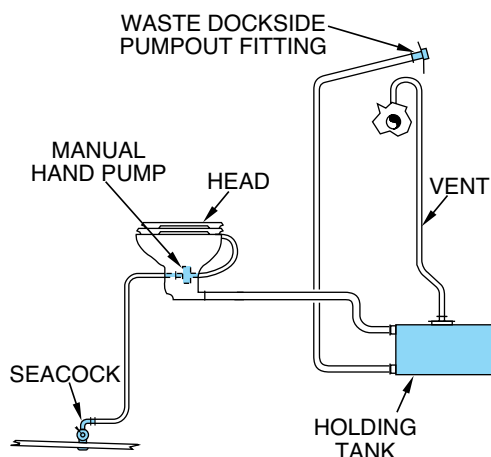
A waste tank indicator may be installed to provide a visual indication of the amount of waste in the tank.

### Waste Disposal

#### DOCKSIDE PUMPOUT

This system directs all waste to the holding tank. To clear the tank of waste water, you will need to use the dockside pumpout services provided at marinas, etc.

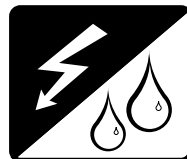
To empty the tank of waste, hook a suction hose to the pumpout plate and to the dockside pump. The marina will handle the proper disposal of the waste and may charge for this service.



**TYPICAL DOCK PUMPOUT SYSTEM**

KC-2044





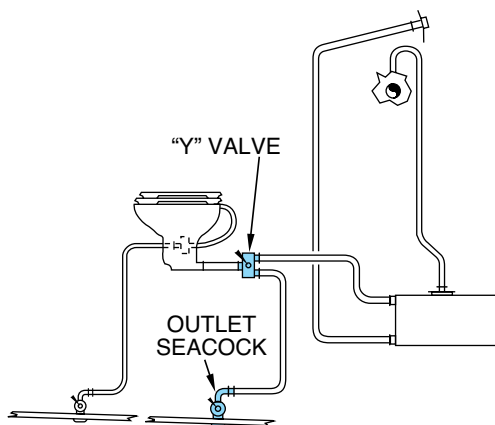
## Overboard Discharge

A “Y” valve is installed, in this version, between the marine toilet and the waste holding tank. The “Y” valve can direct the flow of waste to the holding tank, or direct to an outlet seacock for overboard discharge of waste.



## CAUTION

**Overboard discharge of waste should only be used in approved areas. It is your responsibility to comply with local regulations regarding the discharge of waste.**



To operate overboard discharge, the “Y” valve lever must be in the overboard position, and the waste water outlet seacock must be open. Close the outlet water seacock when not in use.

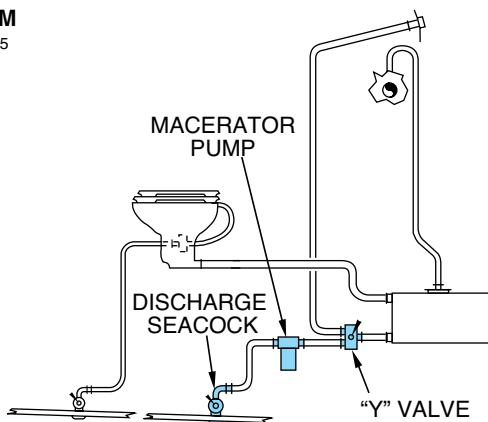
To empty the waste holding tank, see Dockside Pumpout.

### TYPICAL OVERBOARD DISCHARGE SYSTEM

KC-2045

## Macerator Pump

A “Y” valve is installed between the pumpout plate and the macerator discharge seacock. The macerator pump is located between the “Y” valve and the macerator discharge seacock. In this configuration all waste is flushed from the head to the holding tank. The “Y” valve permits you to use the dockside pumpout feature, or to use the macerator to pump the waste from the holding tank overboard.



### TYPICAL MACERATOR SYSTEM

KC-2046



## CAUTION

**Overboard discharge of waste should only be used in approved areas. It is your responsibility to comply with local regulations regarding the discharge of waste.**

To pump out the holding tank using the macerator pump:

1. Open the discharge seacock.
2. Move the “Y” valve lever to the down or overboard position.



## CAUTION

**Do not run the pump dry. Running the pump when there is no waste to pump out of the holding tank will shorten the life of the pump.**

3. Activate the macerator pump by turning its circuit breaker “ON.”
4. Close the macerator discharge seacock and turn macerator pump “OFF” after the pumpout is complete.

## Head Operating Instructions

Before operating the head for the first time, read the owner’s manual for the marine toilet.

### ELECTRICALLY OPERATED HEAD

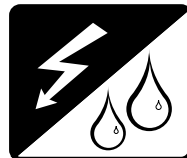
1. Open the inlet water seacock below the cabin floor.



## CAUTION

**Overboard discharge of waste should only be used in approved areas. It is your responsibility to comply with local regulations regarding the discharge of waste.**

2. If overboard discharge is to be used, make sure the “Y” valve is in the overboard position, and that the macerator discharge seacock is open.
3. To charge the head, depress the foot pedal on the lower left side of the bowl, and push the flush button. Release the flush button after the bowl is moistened, and then pump the floor pedal 2-4 times to fill the bowl with water.
4. To flush, depress the foot pedal and push the flush button at the same time – hold until all waste is removed.



## Note

**To empty the bowl of excess water, operate flush button until water level decreases to desired level.**

## Manually Operated Head

1. Open the inlet water seacock below the cabin floor.
2. If overboard discharge is to be used, make sure the “Y” valve is in the overboard position, and that the macerator discharge seacock is open.
3. Pump the floor pedal 2-4 times to fill the bowl with water.
4. To flush, depress the foot pedal and operate flush handle next to head at the same time. Operate handle until all waste is removed.

## Note

**To empty the bowl of excess water, operate flush button until water level decreases to desired level.**

# SAMPLE FLOAT PLAN

Copy this page and fill out the copy before going boating. Leave the filled out copy with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return as scheduled. DO NOT file this plan with the Coast Guard.

Name \_\_\_\_\_ Telephone \_\_\_\_\_

Description of Boat: Type \_\_\_\_\_ Color \_\_\_\_\_ Trim \_\_\_\_\_

Registration Number \_\_\_\_\_

Length \_\_\_\_\_ Name \_\_\_\_\_ Make \_\_\_\_\_

Other Info. \_\_\_\_\_

Persons Aboard:	Name	Age	Address & Telephone
-----------------	------	-----	---------------------

_____	_____	_____	_____
-------	-------	-------	-------

_____	_____	_____	_____
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_____	_____	_____	_____
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_____	_____	_____	_____
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Engine Type: \_\_\_\_\_ HP \_\_\_\_\_

No. of Engines: \_\_\_\_\_ Fuel Capacity: \_\_\_\_\_

Survival Equipment:

PFDs \_\_\_\_\_ Flares \_\_\_\_\_ Mirror \_\_\_\_\_

Smoke Signals \_\_\_\_\_ Flashlight \_\_\_\_\_ Food \_\_\_\_\_

Paddles \_\_\_\_\_ Water \_\_\_\_\_ Anchor \_\_\_\_\_

Raft or Dinghy \_\_\_\_\_ EPIRB \_\_\_\_\_

Radio: Yes \_\_\_\_\_ No \_\_\_\_\_ Type \_\_\_\_\_ Freq \_\_\_\_\_

Destination \_\_\_\_\_ Est. Time of Arrival \_\_\_\_\_

Expect to Return By \_\_\_\_\_

Auto Type \_\_\_\_\_ License No. \_\_\_\_\_ Parked \_\_\_\_\_

If not returned by \_\_\_\_\_ call the Coast Guard, or \_\_\_\_\_

(Local Authority). Coast Guard Telephone Number: \_\_\_\_\_

Local Authority Telephone Number: \_\_\_\_\_

# ***MONTEREY***

**B · O · A · T · S**

This manual is designed to give you a basic understanding of your Monterey boat and some of the responsibilities that go along with owning/operating a boat. Of primary importance is the owner's/operator's responsibility for safety. Read this manual and all other information supplied with your boat before taking to the water and be sure that all other operators do the same.

In this manual, references are made to manuals and other information of installed equipment and accessories. This manual is not intended to be the final authority, but rather a general guide for operation. If the information contained in this manual should conflict with that given in the manufacturer's information, the manufacturer's information shall take precedence.

As part of your warranty responsibilities, you must register your Monterey boat within 10 days of purchase and perform periodic maintenance/inspections as outlined in this manual and other information supplied in the owner's packet.

The descriptions and specifications contained in this manual were in effect at the time of printing. Monterey Boats reserves the right to discontinue models at anytime, without notice and without incurring obligation. The equipment and features described within this manual may not be identified as either standard or optional. Refer to the current price sheet for correct vendor supplied options.

This section contains specific information about your Monterey boat that is different or not covered elsewhere in this manual. If you have questions about your boat not covered in this manual, or in the other supplied information, your dealer will be glad to assist you. Refer to the Table of Contents on page i-2 to locate general information.

Once again, thank you for choosing a Monterey boat; we wish you many years of boating enjoyment!

# SPECIAL GAS PRECAUTIONS



## WARNING



Holding tank systems on boats produce odorless Methane gas which is extremely lethal in enclosed spaces. Follow these precautions when working on your boat's holding tank system to prevent injury:

- Before work, open all doors and hatches wide, and rig a good fan to disperse gas.
- During work, have another person frequently check on you.
- Before and during work, **DON'T SMOKE.**

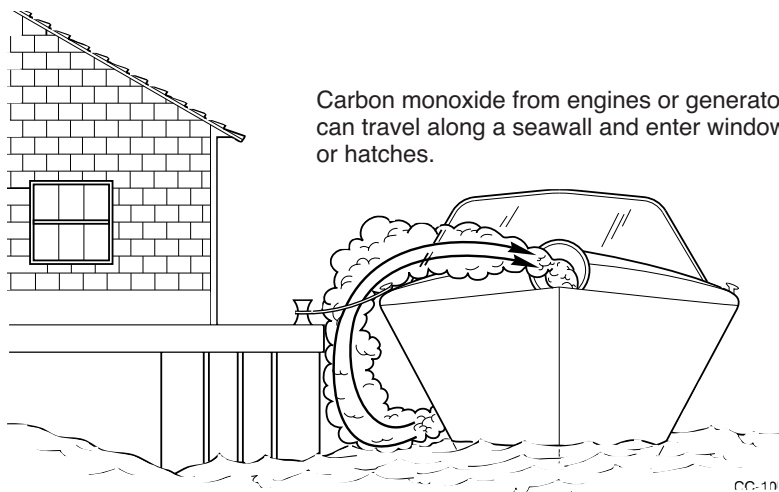


## WARNING



Carbon monoxide (CO) gas is an odorless, colorless gas which is lethal in high concentrations. Common sources of CO in a marine environment are: exhaust from engines and generators, ranges, space and water heaters, and any other device used to burn carbon based materials. Also, boathouses, sea walls, and other boats in close proximity can contribute to CO levels. If any of the following symptoms are experienced by anyone onboard, **IMMEDIATELY** move the person to fresh air and get medical help:

- |                       |               |
|-----------------------|---------------|
| ● flushed appearance  | ● nausea      |
| ● throbbing temples   | ● dizziness   |
| ● inattentiveness     | ● fatigue     |
| ● ringing in the ears | ● vomiting    |
| ● headaches           | ● collapse    |
| ● drowsiness          | ● convulsions |



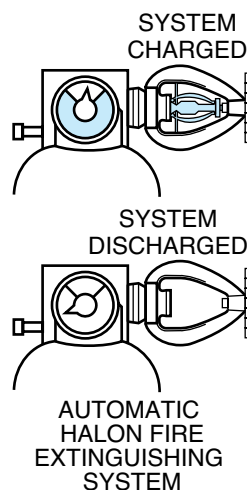
CC-10

# FIRE EXTINGUISHING SYSTEM

Your Monterey boat is equipped with a Halon Automatic Fire Extinguishing System to provide protection in the event of an engine compartment fire. The system is automatically actuated when temperatures reach or exceed a preset limit.

When actuation occurs, a loud popping sound may be heard followed by “rushing” air sound. When a discharge occurs, immediately shut down all electrical and mechanical systems, and powered ventilation if not already done automatically by means of the pressure switch (optional).

Do not open the engine hatch at this time! This feeds oxygen to the fire and flashback can occur. Allow the Halon extinguishing agent to “soak” the compartment for at least fifteen (15) minutes, and wait for hot metals and fuels to cool before inspecting for cause or damage.



## WARNING



**Halon and fire by-product fumes are toxic; do not breath halon or fire fumes. Accidental discharge can be dangerous and may cause serious injury. Do not attempt to service the system unless qualified to do so.**



## CAUTION

**Halon fire extinguisher cylinders must be accurately weighed periodically according to manufacturer's specifications to ensure that they are adequately charged.**

# TROUBLESHOOTING

The following charts will assist you in finding and correcting minor mechanical and electrical problems with your boat. Contact your nearest authorized Monterey dealer for problems and procedures requiring the skill of a trained service technician.

## Engine and Power Train

### Note

**For further troubleshooting information other than given here, refer to the individual component owner's manual.**



## WARNING



**Disconnect battery cables before making checks or adjustments around engine and electrical components. Personal injury or damage to the boat may occur.**

PROBLEM	POSSIBLE CAUSE	SOLUTION
Engine will not start.	Fuel valves are closed or fuel tank is empty.	Check fuel valves or fill tank.
	Contaminated fuel.	Check fuel for contaminants or water. If fuel is contaminated, drain tank and lines, flush with clean fuel and replace fuel filters. See Monterey Dealer for Service.
	Loose wiring or bad key switch.	Look for any loose connections. Contact technician to replace switch if necessary.
	DC main and/or ignition circuit breakers are OFF.	Turn all breakers ON.
Low starter speed.	Weak or bad battery.	Have battery tested or charged.
Starter will not turn engine crankshaft.	Corroded battery terminals.	Clean terminals.
	Loose wiring connections.	Clean and tighten all wire connections.
	Weak or discharged battery.	Charge battery.
	Defective starting switch.	Contact authorized dealer for switch replacement.
Lack of power.	Throttle not fully open.	See authorized dealer for throttle linkage adjustment.
	Contaminated fuel.	Drain fuel tank and lines; flush with clean fuel and replace fuel filters. See Monterey Dealer for service.



PROBLEM	POSSIBLE CAUSE	SOLUTION
Erratic engine speed.	Pinched or clogged fuel lines or tank vent line.	Replace line or remove obstruction. See Monterey Dealer for service.
	Contaminated fuel.	Drain fuel tank and lines; flush with clean fuel and replace fuel filters. See Monterey Dealer for service.
Engine overheats.	Engine cooling water seacock closed or water pick-up is blocked.	Open seacock or remove obstruction.
	Leaking or pinched water lines.	Repair or replace water lines. See Monterey Dealer for service.
Excessive vibration. NOTE: Some vibration is normal due to engine and prop action.	Foreign objects obstructing the propeller.	Remove objects from propeller by reversing prop or cutting and pulling away obstruction.
	Bent propeller.	Replace propeller as necessary.
	Engine components touching a brace or some part of the hull.	Check engine mounts and components for proper alignment. See Monterey Dealer for service.
Poor performance.	Engine not timed properly or misfiring.	Have engine tuned-up by an authorized dealer.
	Boat is overloaded or weight is badly distributed.	Reduce overload or distribute load evenly. Trimming the boat will also help.
	Material wrapped around the propeller.	Run prop in reverse or cut and pull material from prop.
	Damaged or use of wrong propeller.	Inspect propeller; replace as necessary.
	Boat hull has marine growth on it or hull is damaged.	Clean or repair hull as necessary.
	Excessive bilge water.	Pump out water and inspect hull for leaks.

Note

For any troubleshooting information other than given here, refer to the individual component owner’s manuals.



CAUTION

Never reset a circuit breaker which has been automatically tripped without first locating and correcting the problem.



CAUTION

Only experienced and certified electrical professionals should perform work on your boat’s electrical system.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Electrical component will not function.	Circuit breaker in the tripped or OFF position.	If breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Weak or discharged battery.	Charge battery.
	Loose or broken wire connection.	Connect or repair wire as necessary. Install plug in outlet.
Lights do not come on or are dim.	Circuit breaker in the tripped or OFF position.	If breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Weak or discharged battery.	Charge battery.
	Loose or broken wire connection.	Connect or repair wire as necessary.
	Light bulb burned out.	Replace bulb.
Generator will not start.	DC main circuit breaker in OFF position.	Turn circuit breaker ON.
No power at AC outlets.	Ground fault circuit interrupter tripped.	Reset button on outlet and test. If reset button or light does not come on, DO NOT use any outlets. Have circuit checked by qualified technician.

Note

For any troubleshooting information other than given here, refer to the individual component owner’s manuals.

PROBLEM	POSSIBLE CAUSE	SOLUTION
No water from cockpit washdown when turned on.	WASHDOWN PUMP circuit breaker tripped or OFF.	If breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Washdown switch OFF.	Flip switch to ON.
	Strainer or hull inlet plugged.	Clean strainer or remove obstruction from inlet.
	Seacock closed.	Open washdown seacock.
No water at showers or sinks when faucets are turned on.	Pump’s automatic shut-off is defective.	Have washdown pump checked by authorized dealer.
	FRESHWATER PUMP circuit breaker tripped or off.	If breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Freshwater tank is empty.	Fill freshwater tank.
Low water pressure at all showers and sinks.	Pump is defective.	Have pump serviced by authorized dealer.
	Water system has lost its charge.	Check for leaks in water system or air leaks in accumulator. See Monterey Dealer for service.
Low water pressure at only one shower or sink.	Weak or worn pump.	Have pump serviced by authorized dealer.
	Restriction or obstruction in water line.	Clean, repair, or remove obstruction from water line.

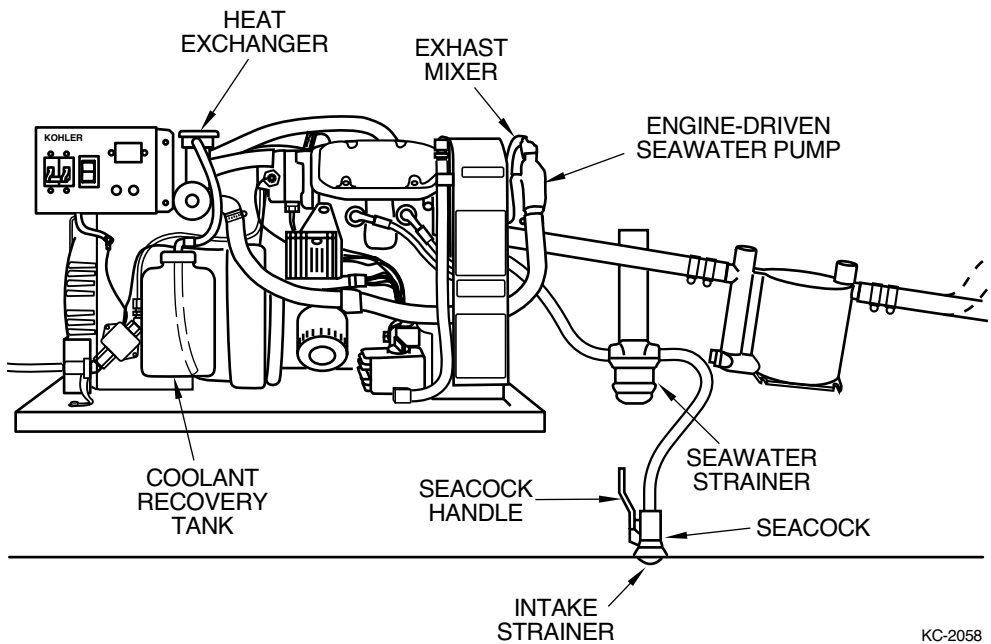
PROBLEM	POSSIBLE CAUSE	SOLUTION
Shower sump overflows.	SUMP PUMP circuit breaker in the tripped or OFF position.	If the breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Discharge lines blocked or pinched.	Remove obstruction or straighten line.
	Pump or automatic switch is defective.	Have pump or switch serviced by authorized dealer.
Head will not flush.	HEAD, FWD circuit breaker in the tripped or OFF position.	If breaker is tripped, correct the problem and reset; otherwise turn circuit breaker ON.
	Low battery charge.	Charge the batteries.
	Flush water seacock not open.	Open seacock.
Head will not empty.	Inlet pedal valve not working.	Have head serviced by authorized dealer.
	Y valve not open or line to holding tank is blocked.	Open Y valve or remove obstruction.

## GENERATOR SET

The following procedure summarizes the operation of, and safety precautions for, the optional marine generator available for your boat. Before operating your generator, read the owner's manual which accompanies your generator.

### Prestart

1. Check that the air cleaner is clean and properly installed.
2. Check the battery connections and electrolyte level (if battery has filler caps).
3. Check that the fuel tanks are full and that the fuel system is primed for operation.
4. Check that the oil level is at or near FULL mark.



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## **WARNING**

**Hot coolant can cause severe burns. Do not remove the pressure cap when engine is hot.**

5. Check that coolant level in coolant recovery tank is between the MIN and MAX marks. Periodically remove the pressure cap and check on the fluid level **when engine is cool**. Do not rely solely on level in the coolant recovery tank.
6. For initial startup only, prime the sea water pump by closing seacock, removing hose from water filter outlet, filling hose and pump with clean water, replacing hose, and opening seacock.

## **CAUTION**

**Failure to have seacock open when generator is running, will result in serious engine damage due to overheating.**

7. Check that generator seacock is open.
8. Check that marine ship-to-shore transfer switch is in the proper position and that all breakers are in the OFF position.
9. Open the manual fuel shut-off valve (if equipped).

## Starting



### **WARNING**



**The blowers must be operated for a minimum of four minutes before each time the engine is started. Failure to operate the blower can cause an explosion.**

1. Operate the ventilation blowers for a minimum of four minutes and check the engine compartment for gasoline vapors.

### **CAUTION**

**Do not crank the engine for more that seven seconds at a time. Allow a five second cool down period between cranking attempts if the engine fails to start. If the engine fails to start after three attempts , contact an authorized dealer for repairs. Failure to do so may result in serious damage to the starter motor.**

2. Press the controller master switch, or the remote start switch on the AC control panel, to the START position and release switch when the unit has started.

### **CAUTION**

**Allow at least 30 seconds after shutdown before starting a hot engine. If the engine fails to start after the first attempt, close the seacock before continuing. This will prevent sea water from entering the engine cylinders through the exhaust valve.**

### **CAUTION**

**After generator has started, check to be sure that water is flowing overboard from the generator discharge. If there is no discharge, stop and check for leaks or obstructions.**

## Stopping

1. Run generator set at no load for five minutes to allow engine to cool down.
2. Switch the controller master switch, or the remote start switch on the AC control panel, to the STOP position and wait until the generator set comes to a complete stop.

## Circuit Protection

The AC circuit breaker on the generator controller will trip if a fault is detected in the AC output circuit. In case of fault, refer to your generator owner's manual for troubleshooting information.

### CAUTION

**Only replace fuses with fuses of the same type (ABC or #AB (ceramic)) and ampere rating. Do not use clear glass fuses.**

## Engine Shutdown Switches

The generator set engine is protected by three shutdown switches which automatically reset after the engine cools down; or in the case of low oil pressure, if the problem is corrected.

Low Oil Pressure (LOP) – will shut down unit if pressure is 20 psi or less.

High Water Temperature (HWT) – will shut down unit if temperature is greater than 248°-266°.

High Exhaust Temperature (HET) – will shut down unit if temperature is greater than 215° ± 5°.

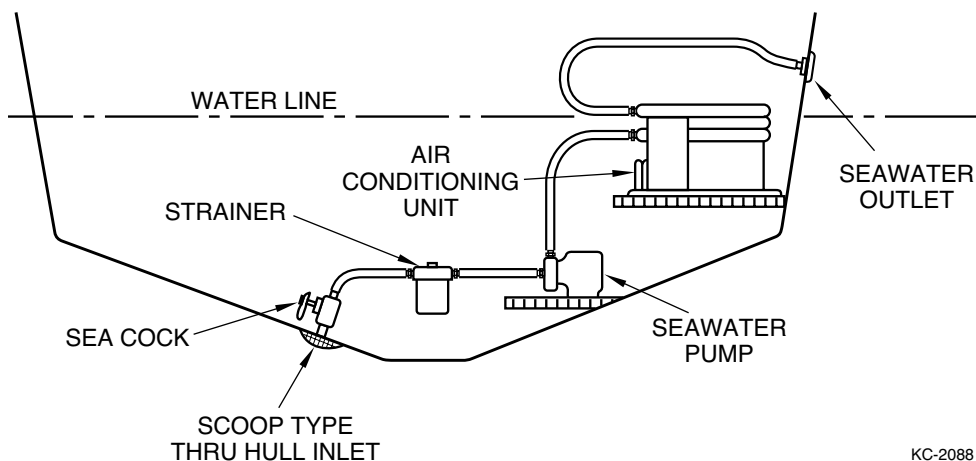
## AIR CONDITIONER

The following describes the optional air conditioning unit available for your boat. Before operating your air conditioner, read the accompanying owner's manual for more information.

The rated capacities of the air conditioning units are:

- 7,000 Btu/hr for the 246 and 265
- 9,000 Btu/hr for the 286

The optional air conditioning unit is supplied with sea water through a sea water pump. The seacock must be open to operate the heating/cooling unit.



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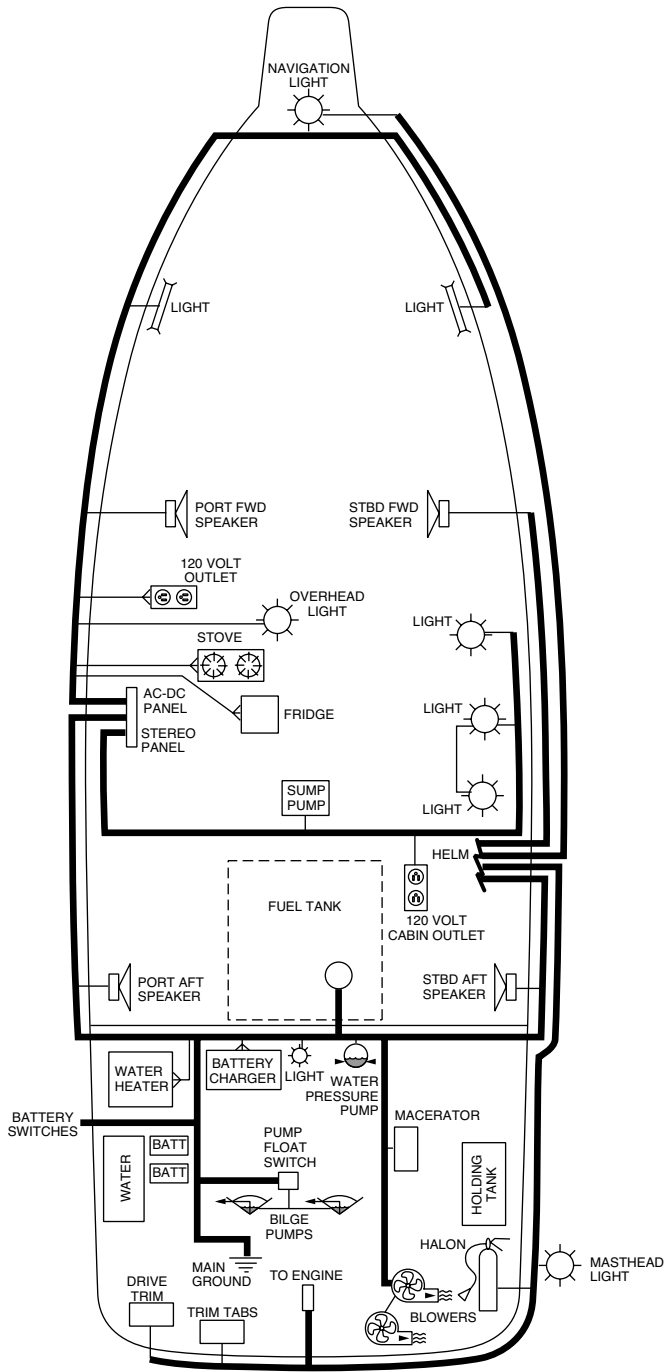
## CAUTION

After air conditioner has started, check to be sure that water is flowing overboard from the air conditioner discharge. If there is no discharge, stop and check for leaks or obstructions.

## SPECIFICATIONS

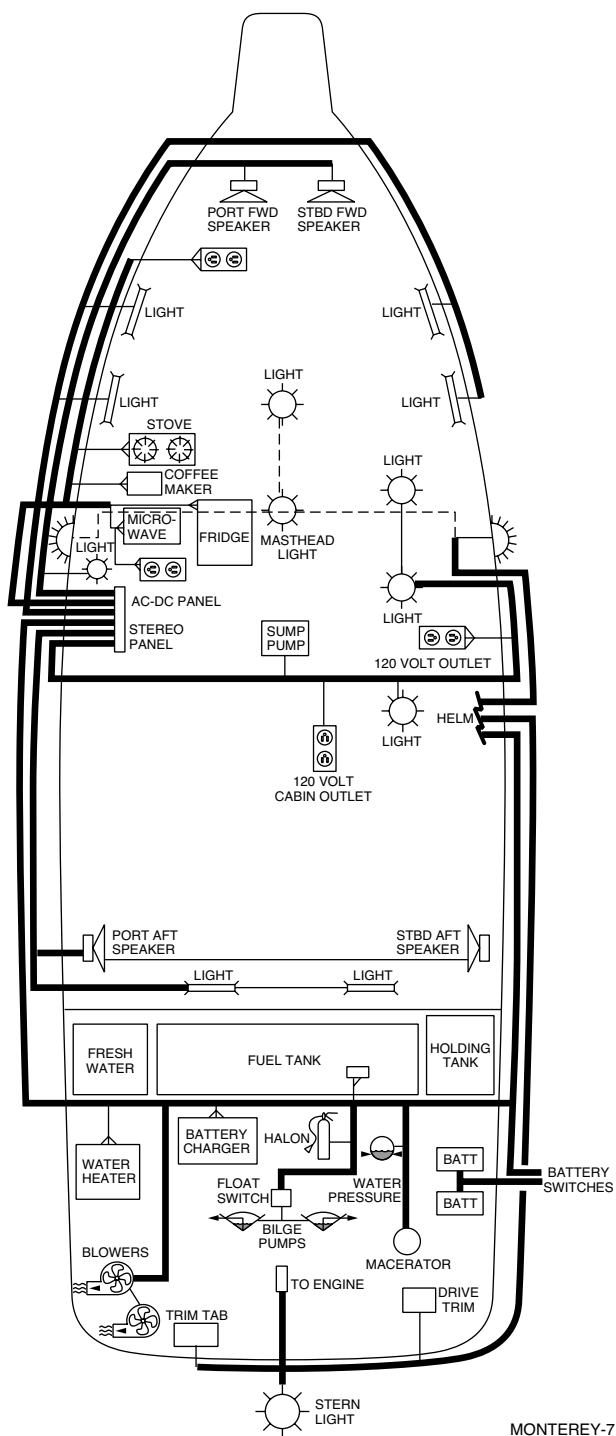
	256	276	296
<b>LOA with Pulpit</b>	N/A	29' 0" (8.84 m)	31' 6" (9.60 m)
<b>Hull Length</b>	24' 10" (7.59 m)	26' 10" (8.08 m)	28' 10" (8.76 m)
<b>Beam</b>	8' 6" (2.59 m)	9' 6" (2.89 m)	10' 0" (3.05 m)
<b>Deadrise</b>	20°	19°	19°
<b>Bridge Clearance with Arch</b>	7' 1" (2.19 m) 8' 6" (2.59 m)	7' 10" (2.36 m) 9' 2" (2.80 m)	7' 7" (2.29 m) 9' 4" (2.82 m)
<b>Draft Up</b>	18"	20"	21"
<b>Draft Down</b>	34"	36"	37"
<b>Fuel Capacity</b>	57 gal (216 l)	100 gal (378 l)	140 gal (529 l)
<b>Water Capacity</b>	21 gal (79 l)	32 gal (121 l)	44 gal (166 l)
<b>Weight</b>	4500 lbs (2041 k)	6500 lbs (2948 k)	8000 lbs (3628 k)
<b>Horsepower Rating Single/Twin</b>	180-300	230-300/180-205	300/185-225





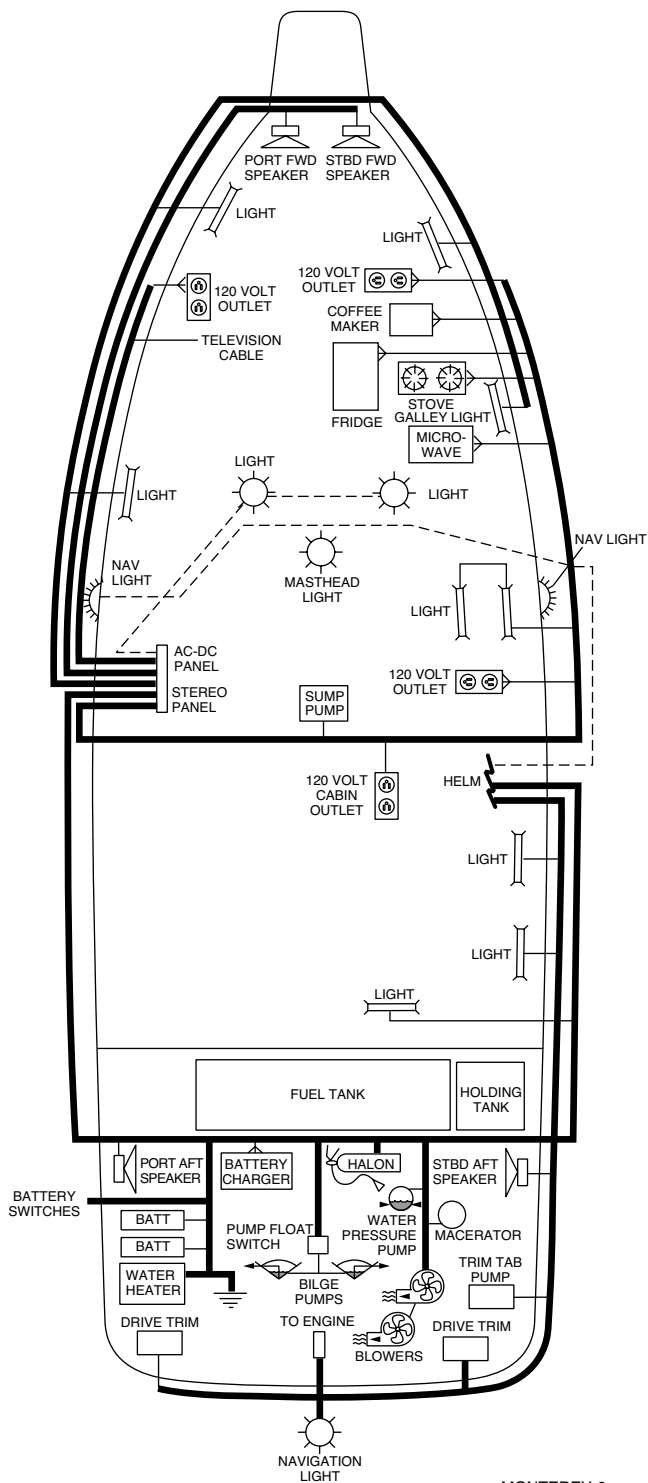
MONTEREY-8

## 256 WIRING DIAGRAM



MONTEREY-7

## 276 WIRING DIAGRAM

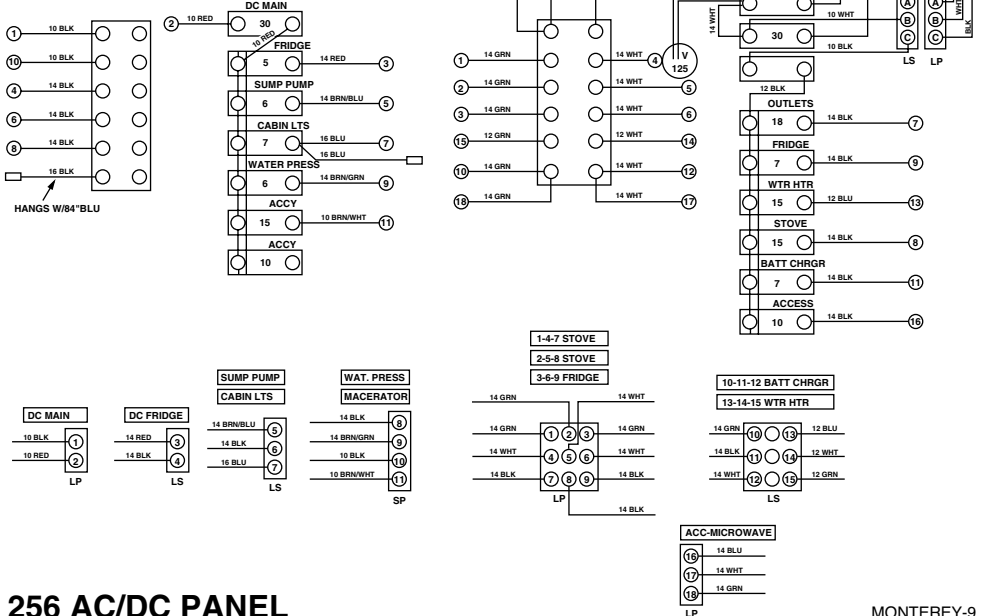
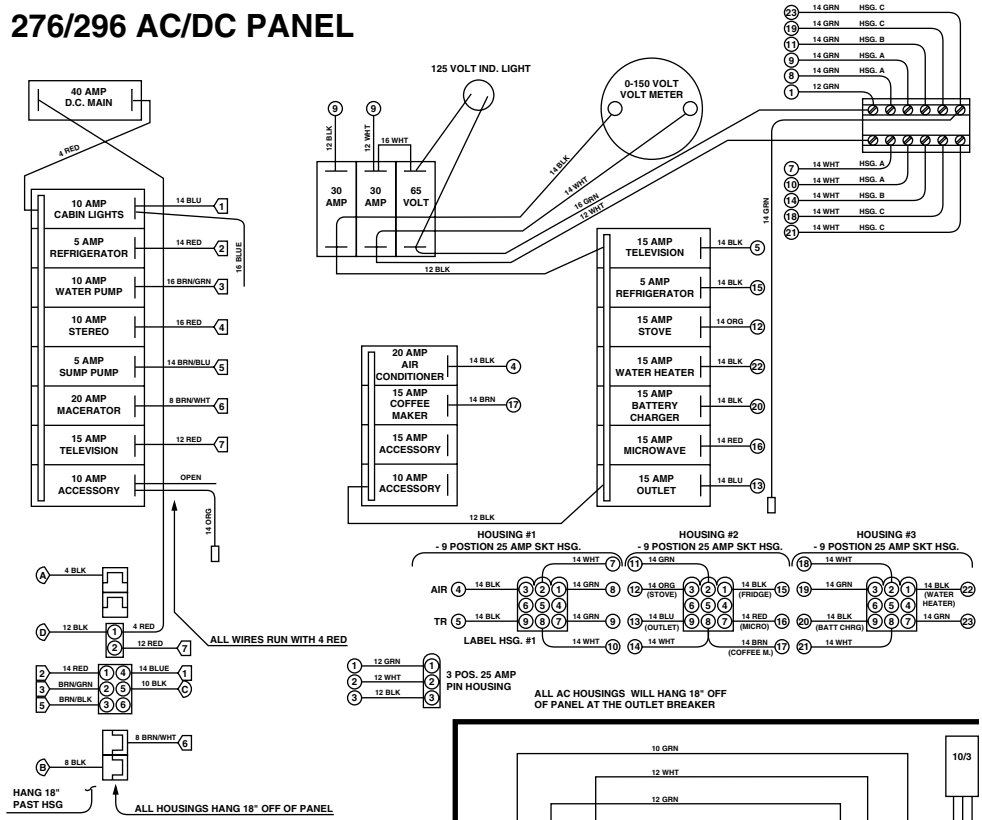


MONTEREY-6

## 296 WIRING DIAGRAM

TY-WRAP WIRES TOGETHER THEN OVER WITH DC GROUND

## 276/296 AC/DC PANEL



## 256 AC/DC PANEL

MONTEREY-9

# WARRANTY STATEMENT

## ONE-YEAR LIMITED AND EXTENDED FIVE-YEAR HULL WARRANTY ON NEW MONTEREY BOATS

SEABRING MARINE INDUSTRIES, INC. (MONTEREY BOATS) warrants to the original purchaser of its products that the boats manufactured by it will be free from defects in materials and workmanship for one (1) year from the date of sale to the original retail purchaser.

This warranty is extended to the original retail purchaser only and does not apply to used boats, or to the following:

### WHAT IS NOT COVERED:

This warranty does not cover:

1. Any boat that has been repaired or altered by persons other than MONTEREY BOATS or an authorized MONTEREY BOATS dealer, or modified in any way so as to affect its use and operation;
2. Engines, outdrives, controls, batteries, propellers, any other accessories or equipment that have been made by other manufacturers, whether or not warranted by such other manufacturers;
3. Gelcoat finish cracking, crazing or blistering;
4. Any boat used for racing or commercial purposes or that has been subject to misuse, neglect, accident or structural modification;
5. Windshield breakage, windshield leaks, hatch leaks, fuel gauges and fuel gauge systems, fuel tanks and any defects in paint, upholstery, canvas, vinyl, plastics, fabrics, trim or other materials;
6. Any boat that has been overpowered according to the maximum B.I.A.-recommended engine horsepower specified on the capacity plate affixed to said boat;
7. Installation of engines, parts or accessories by anyone other than MONTEREY BOATS.
8. Loss of time, inconvenience, loss of the use of the boat or other matters not specifically covered hereunder; and
9. Any boat purchased by a consumer through an authorized dealer located in the United States, of which said boat is registered and/or operated outside the United States.

### EXTENDED HULL WARRANTY:

MONTEREY BOATS warrants to the original purchaser of its products that each hull manufactured by it will be free of structural defects as defined below for a five (5) year period, of which said period begins on the date of sale to the original retail purchaser. This extended warranty applies to hulls only and does not otherwise modify, expand or affect the balance of the warranty provisions noted herein.

### GENERAL PROVISIONS:

MONTEREY BOATS' obligation under this warranty is strictly and exclusively limited to structural repairs made necessary because of defects in material and workmanship that occur during normal operating conditions for which the product is designed. MONTEREY BOATS does not authorize any person to create or assume for it any other obligation or liability with respect to its boats. No person, including a MONTEREY BOATS dealer, is authorized to make any repairs or replacements under this warranty without the prior written approval of MONTEREY BOATS. MONTEREY BOATS' obligation under this warranty is limited to the cost of repair of the warranted item or replacement thereof, at MONTEREY BOATS' option. The sales personnel or other employees of MONTEREY BOATS dealers are not authorized to make warranties concerning MONTEREY BOATS products.

MONTEREY BOATS shall have no obligation under this written warranty unless and until each of the following conditions are met:

1. The original retail purchaser of its product completes and mails the Warranty Registration Card to MONTEREY BOATS within ten (10) days from the date of the sale of the boat to that purchaser;
2. Notice of each warranty claim is given to the MONTEREY BOATS Dealer within a reasonable period of time after discovery of any claimed defect;
3. Notice of each warranty claim is made in writing to MONTEREY BOATS within one (1) year from the date of purchase by the original retail purchaser; and
4. All transportation charges incurred in transporting the boat for warranty work are paid for by the owner.

**ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE ONE-YEAR WARRANTY. MONTEREY BOATS SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES RESULTING FROM A BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY.**

Some states do not allow exclusions or limitations of incidental or consequential damages, and some states do not allow limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. This warranty gives you specific rights, and you also may have other rights that vary from state to state.

MONTEREY BOATS reserves the right to make changes at any time, without notice, in prices or to make changes in colors, specifications, equipment, options, materials, etc., and MONTEREY BOATS shall be under no obligation to equip or modify boats built prior to such changes.

**IMPORTANT:** Return of the Warranty Registration Card to MONTEREY BOATS is important for purposes of recording customer information for notification and correction of product defects under the Federal Boat Safety Act.

SEABRING MARINE INDUSTRIES, INC.  
Post Office Box 70, Archer, Florida 32618  
(904) 495-3624 / FAX: (904) 495-2044

D E A L E R

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