

1990
US MARINE
MOTORYACHT
OWNER'S
MANUAL

Welcome Aboard

This manual has been prepared to assist you in the operation and care of your US Marine yacht. Please read through it completely, as familiarization with its contents can contribute to the safe and effective operation of your boat.

Your US Marine yacht is part of a carefully engineered total value package. It has been paired with a motor (or motors) designed to provide optimum performance and utility. Please be aware that any changes you might make to this boat and motor combination may result in handling and performance qualities that differ from those experienced with the original package.

Your boat's mechanical and electrical systems were designed to meet safety standards in effect at the time the boat was constructed. Some of these standards were mandated by Federal law, others are considered industry norms. All of them were designed to insure your safety and the safety of other people, vessels and property around you. To maintain the integrity and safety of your boat, only qualified people should perform maintenance on, or in any way modify, the steering system, engine control system, fuel system or electrical system. Failure to maintain these systems as designed could violate Federal law, and could expose you and other people to the danger of bodily injury or accidental death. We recommend that you follow the instructions provided in this handbook, in the engine owner's manual, and in the accessory instruction sheets included with your boat. We also recommend that you perform the following steps:

1. Make certain that you receive a full explanation of all systems from the dealer before taking delivery of your boat.
2. Read this manual thoroughly, paying particular attention to the subjects of **fueling, checking for fumes, starting, carbon monoxide, alcohol stoves, loading limits, trim tabs, recommendations for safety, and warranty.**
3. Practice—all members of the family should be familiar with the operation and systems of your boat.
4. Participate in a safe boating course. Call the local office of the United States Power Squadrons or the United States Coast Guard Auxiliary for the date and location of their next class.

The hazard warning symbols shown below are used throughout this manual to call attention to potentially dangerous situations which could lead to either personal injury or product damage. We urge you to read these warnings carefully and follow all safety recommendations.

DANGER

The symbol shown above alerts you to immediate hazards which **WILL** cause *severe personal injury or death* if the warning is ignored.

WARNING

The symbol shown above alerts you to hazards or unsafe practices which **COULD** result in *severe personal injury or death* if the warning is ignored.

CAUTION

The symbol shown above alerts you to hazards or unsafe practices which **COULD** result in *minor personal injury, or cause product or property damage* if the warning is ignored.

NOTICE

The symbol shown above calls attention to installation, operation, or maintenance information which is important to proper operation, but is not hazard related.

There is information in this manual related to the following
US Marine yachts:

2955 Avanti Sunbridge	3688 Motoryacht
2958 Motoryacht	3785 Avanti Sunbridge
3255 Avanti Sunbridge	3988 Motoryacht
3258 Motoryacht	4387 Motoryacht
3288 Motoryacht	4388 Motoryacht
3555 Avanti Sunbridge	

Due to our ongoing commitment to product improvement, we reserve the right to change, without notice or other obligation, the specifications or information contained in this publication.

▲ WARNING

A qualified operator should be in control of the boat at all times. Do not operate your boat while under the influence of alcohol or drugs. Never operate your boat at speeds which exceed your ability to react if an emergency develops. At night, turn on the appropriate running lights and cruise at a reduced speed that will allow you plenty of time to avoid dangerous situations.

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PREPARATION

Prior to leaving on your first outing (or, for that matter, any outing) there are certain items to check and activities to perform. Familiarize yourself with your gear while dockside, and consider the following suggestions:

Recommendations for Safety

1. Personal Flotation Devices:

One Coast Guard approved personal flotation device (PFD) of suitable size is required for each person aboard a recreational boat. New PFDs bearing Coast Guard approval are now identified as Types I, II, III, or IV.

Requirements for boats's keel: feet (16') or over in length: One (1) Type I, II, or III (wearable) PFD for each person on board, and one (1) Type IV (throwable) PFD in each boat.

2. Always have on deck wear PFDs. Always check those devices intended for young children for fit and performance in the water. Never hesitate to have "all hands" wear lifesaving devices whenever circumstances cause the slightest doubt about safety.
3. Do not overload or improperly load your boat. Maintain adequate freeboard at all times. Consider the sea conditions, the duration of the trip, the weather and the experience of the personnel on board. **Do not allow anyone to ride on parts of the boat that were not designed for such use. Sitting up on seat backs, bow riding, gunwale riding, or lounging on forward sundeck cushions while underway can be especially hazardous.**
4. Falls are the greatest cause of injury both afloat and ashore. Eliminate tripping hazards whenever possible, make conspicuous those that must remain, and require that everybody on board wear proper footwear.
5. Understand the meanings of navigation buoys, and never motor to one. (It is a Federal offense.)
6. Know the various distress signals. A recognized distress signal used on recreational boats is to slowly and repeatedly raise and lower the arms outstretched to each side.
7. Storm signals are for your information and safety. Learn them and be guided accordingly.
8. A special flag (red flag with a white diagonal stripe) flown from a boat or buoy means skin diving operations are underway nearby. Approach with caution and stay clear by at least 25 yards.

9. Be especially careful when operating in any area where there might be swimmers.
10. Watch your wake. It might capsize a small craft. You are responsible for damage caused by your wake. Pass through anchorages at minimum speed.
11. Learn and abide by common boating "rules of the road".
12. Always have up-to-date charts of your cruising area on board.
13. Keep an alert lookout. Serious accidents have resulted from failure in this respect.
14. Always instruct at least one person on board in the rudiments of boat handling in case you are disabled or fall overboard.
15. Consider what action you would take under various emergency conditions such as a person overboard, fog, fire, a damaged hull or other bad leaks, motor breakdown, severe storm or collision.
16. If your boat ever capsizes, remember that if it continues to float, it is usually best to remain with it. You are more easily located by a search plane or boat.
17. Keep firefighting and lifesaving equipment in good condition and readily available at all times.
18. Do not test fire extinguishers by squirting small amounts of the agent. The extinguisher might not work when needed. Always follow approved instructions when checking fire extinguishers.
19. Have an adequate anchor and sufficient line (at least six times the depth of the water) to assure a secure hold in all types of weather and sea conditions.
20. Boat hooks are valuable when docking or when needed to retrieve objects that have fallen overboard.
21. Keep electrical equipment and wiring in good condition. No knife switches or other arcing devices should be installed in fuel compartments. Allow ample ventilation around batteries.
22. Good housekeeping in your boat is important. Cleanliness diminishes the probability of fire.
23. Know your fuel tank capacity and cruising range. If it is necessary to carry additional fuel, do so only in proper containers. Take special precautions to prevent the accumulation of fuel vapors in confined spaces.
24. Before departing on a boat trip, you should advise a responsible friend or relative about where you intend to cruise. Be sure to give that person a good description of your boat. Keep them advised of

any changes in your cruise plans. These precautions will enable your friend or relative to toll the Coast Guard where to search for you and what type of boat to look for if you fail to return. Be sure to advise the same person when you complete your trip to prevent any false alarms about your safety.

26. Your local United States Coast Guard Auxiliary and the United States Power Squadrons offer safe boating courses several times a year. These are comprehensive courses, and are generally of minimal cost to you. Call your local U.S. Coast Guard Auxiliary or Power Squadron Flotilla for the time and place of their next class.

Safety Equipment

The following safety-related items should be considered as part of your standard equipment:

1. Fire extinguishers (correct number and type, located for easy access)
2. Personal flotation devices
3. Fenders, lines and boat hook
4. Flares (night and day type)
5. Flashlight(s); with extra batteries
6. Charts of your intended cruising area
7. First aid kit

Tool Chest

1. Assorted screwdrivers (Phillips and flat blade)
2. Pliers (regular, vice-grip, and water pump)
3. Wrenches (box, open-end, allen, and adjustable)
4. Socket set (metric and U.S. standard)
5. Hacksaw with spare blades
6. Hammer
7. Battery jumper cables
8. Electrical tape
9. Assorted fasteners
10. Gear grease and penetrating oil
11. Feeler gauges

Miscellaneous Items

1. Engine and accessories manual
2. Spare propeller with fastening hardware
3. Propeller shaft packing material
4. Spare propeller shaft and strut
5. Extra V belts
6. Engine lubricating oil
7. Transmission fluid
8. Spare fuel and oil filters
9. An extra cooling pump impeller
10. Portable fuel can
11. Replacement light bulbs
12. Spare set of injectors for diesel engines, or a spare set of spark plugs and other ignition parts for gas engines

Static Float Attitude

The static loading attitude of your boat can be affected by many variables. Optional equipment and loading of gear are the biggest contributors to a boat's list. After launching, the floating attitude of any new boat can be adjusted. If your boat lists to one side, load heavy items on the opposite side until the boat floats more level. Load the remainder of your gear evenly after that.

Other Tips

1. When commissioning a new boat, do not plan an extensive trip or party until you have had a shakedown cruise to make sure all equipment on your boat is functioning properly and you are familiar with its operation.
2. Use big fenders or fender boards to protect your boat's hull whenever mooring next to floats, piers or other boats.
3. Carry plenty of line that is properly sized to your boat. We suggest at least four 50' lengths of 1/2" nylon line for boats up to 34 feet, and four 50' lengths of 5/8" nylon line for boats over 34 feet.

OPERATING

Fueling Procedures

The following procedures apply primarily to gasoline engine-powered boats. However, by learning and using these steps, an extra margin of safety will be realized when fueling your US Marine yacht equipped with diesel engines.

⚠ WARNING

Fuel vapors are explosive and can become trapped in the lower portions of a boat where they might be ignited accidentally. While fueling, all doors, hatches, and portlights must be closed.

⚠ WARNING

Do not use fuels that incorporate any form of alcohol or alcohol derivatives. Alcohol destroys marine fuel system hoses and components, which could lead to hazardous leaks, fire or explosion.

1. Be sure that your boat is securely moored to the dock.
2. Turn off all electrical equipment including engines, generator, appliances, or ice blower, lights, etc.
3. Extinguish all cigarettes, cigars or other items that may produce a spark or flame.
4. Close all openings including hatches, windows, doors and portlights.
5. Through deck fittings are provided for fuel tank filling. Remove the cap and insert the fuel supply nozzle, allowing the nozzle to maintain contact with the fitting; this will prevent possible static sparking.
6. After about 10 gallons have been pumped into the tank, inspect the engine and tank area for signs of fuel leakage. Proceed with fueling if no problems are detected.
7. Allow for thermal expansion of the fuel on very hot days. Do not fill the fuel tank completely.
8. If, when filling the tank, you can't get fuel in at a reasonable rate, check the fuel vent line to see that it's not kinked or plugged.
9. When you have finished fueling, replace the fill cap and wash off any fuel spillage.

- Open the engine compartment and all windows, doors and hatches, inspect, both visually and by smell, for fuel fumes or leakage. Any sign of fuel leakage or any indication of fumes, must be investigated and corrected prior to starting the engine.
- Operate the bilge blower for at least four minutes prior to starting the engine. Leave the blower on until the boat is underway and up to cruising speed.

FUEL CAPACITY TABLE

Models	Fuel Capacity (Gallons)
2955 Avanti Sunbr dge	120
2958 Motoryacht	120
3255 Avanti Sunbr dge	120
3258 Motoryacht	120
3288 Motoryacht	200 (100 port/100 stb)
3555 Avanti Sunbr dge	205 (centerline)
3688 Motoryacht	200 (100 port/100 stb)
3785 Avanti Sunbridge	205 (centerline)
3888 Motoryacht	300 (150 port/150 stb)
4387 Motoryacht	300 (150 port/150 stb)
4388 Motoryacht	300 (150 port/150 stb)

Launching

- Your US Marine yacht may be equipped with a transom drain plug. Make sure this plug is tightly in place.

CAUTION

Failure to install the drain plug securely will result in the boat filling with water when it is launched.

- Inspect the bottom of your new yacht and make a mental note of the locations of all fittings below the waterline.
- After the boat has been lowered into the water, immediately board it and inspect the lower compartments and around the through-hull fittings for signs of leakage.
- If any leaks are noted, immediately remove the boat from the water. The selling dealer should be notified so the leaks can be repaired before relaunching the boat.

Starting

The engine's operating and maintenance manual furnished with your boat describes prestart and starting procedures. The following notes are basic reminders and are not intended to cover every detail of starting. We urge you to thoroughly read and understand your engine manual.

1. Check the lubricating and cooling fluid levels.
2. Visually check for fuel, oil, coolant, and exhaust leaks.
3. Check that the seawater coolant intake valve (seacock) is open.
4. Check the water separators (if your boat is so equipped) for moisture or contamination. Drain them if necessary.
5. On boats with a single, side-mounted shift/throttle lever, advance the lever to the maximum throttle position several times (while holding the handle button in to disengage the shift mechanism). Then return the lever to the 1/4 throttle position.
6. On boats with dual control installations, the throttle lever should be in the SLOW/START position and the shift lever in the NEUTRAL position before starting the engines.
7. On boats so equipped, make sure the emergency engine shutdown switch cap is in place and the lanyard is attached to the operator.

WARNING

A serious accident may occur if the emergency engine shutoff switch lanyard is not fastened to the boat operator. In order for the emergency engine shutdown system to operate correctly, the lanyard must be physically attached to the operator (around the wrist or securely fastened to a stout piece of clothing, such as a belt, etc.).

WARNING

Gasoline vapors are highly explosive. To prevent a possible explosion and fire, check the engine and fuel compartments before each engine start for fumes or accumulation of fuel. Always operate the bilge blower for at least four minutes before engine starting, during the starting process, and anytime you are operating your boat below cruising speeds.

6. Turn the ignition key to the START position. Note: the engine(s) will not turn over unless the shift lever is in the NEUTRAL position.
8. **DO NOT** continuously operate the starter for more than 15 seconds at a time. Allow at least three minutes for cooling between start attempts.
10. For low temperature starting of diesel engines (below 14° F/-10° C), use the preheater system. Hold the button in for 15-30 seconds (do not exceed 30 seconds), then start the engine.
11. If the engine fails to start, wait one minute and try again with the one difference being to advance the throttle only once to the maximum position.
12. As soon as the engine starts, set the engine speed at 1200 RPM for V-8 engines, 2000 RPM for 4- or 6-cylinder engines, or 750-1200 RPM for diesels. Check the oil pressure; it will vary from one engine to another, but should come up immediately. If it does not, turn the engine off right away and diagnose the problem.
13. With the engine running, the voltmeter should indicate a reading of 12-14 volts.
14. Check the steering operation by turning the steering wheel full port and starboard while observing the outdrive or rudder movement.

▲ WARNING

On boats with dual control levers, always pull the throttle lever back to SLOW before moving the shift lever to FORWARD or REVERSE. Failure to do so can cause transmission damage and possible injury or death.

15. While the boat is still securely moored to the dock and the engine is idling at 600-800 RPM, advance the shift control to forward, to reverse, and into neutral to check the shifting operation.

▲ WARNING

Carbon monoxide is a poisonous gas that is colorless, odorless and heavier than air. It can accumulate in the lower regions of the boat in dangerous concentrations if proper ventilation is not provided. A person breathing these fumes could become seriously ill or even suffocate. Always run the bilge blower and open windows or hatches whenever the engine is idling. Also, never operate the engine when either the slant cover or the camper cover is installed.

Before You Leave

Provided you have not encountered any problems, you are almost ready to go. (If you did encounter problems, do not attempt to operate your boat until they are corrected.) Before you leave, perform the following steps:

1. Check the operation of equipment such as bilge pumps, running lights, wipers, radios, etc.
2. Instruct passengers in the use and location of flotation devices and fire extinguishers.
3. Obtain a reliable weather forecast and plan accordingly for everyone's comfort and safety.
4. Notify a responsible friend or relative of your cruise plans. Upon your return or a change in your cruise schedule, notify that person again in order to avoid unnecessary concern.
5. Fill potable water tanks.

Maneuvering

With all of your predeparture checks now completed, you are ready to leave the dock.

Basic Maneuvering

Remember that all boats steer by the stern (the feeling is much like steering your automobile in reverse). For example, when you turn the steering wheel to the left, the stern of the boat will swing to the right as the boat goes into a left turn. This is especially important to keep in mind when docking or when operating in close quarters with other boats.

There are no brakes on a boat. Stopping is accomplished by allowing the boat to slow down (under 5 mph) and then putting the engine in reverse. Gently increasing reverse power will allow you to stop the boat in a very short distance. A boat does not respond to steering in reverse nearly as well as it does when going forward, so do not expect to accomplish tight turning maneuvers when backing up.

If your boat has twin propellers, you can engage one engine in forward gear and the other in reverse gear to turn the boat completely around in its own length if the rudder is left in the center position. You can make such a turn in either direction. Port engine forward and starboard engine in reverse spins you clockwise. Starboard engine forward and port engine in reverse spins you counterclockwise. You can accentuate the spin with full rudder in the stern's direction.

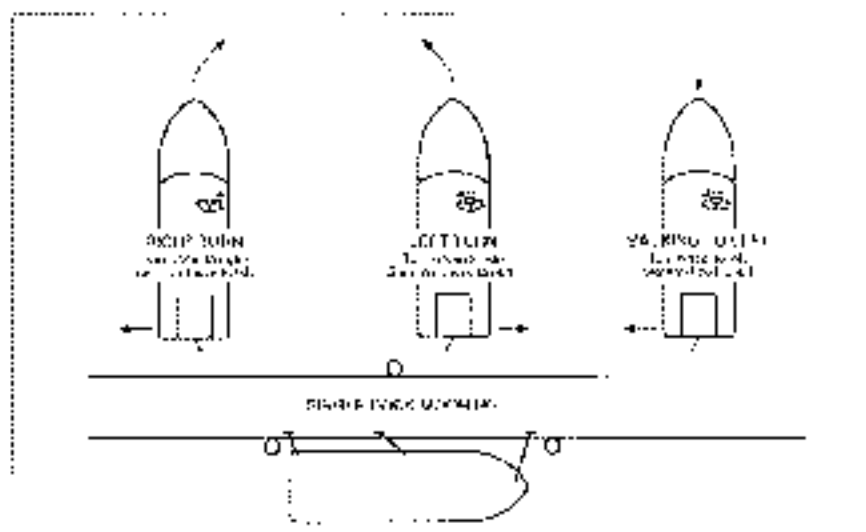
Once you are away from the dock, devote some time to learning how to maneuver.

- Practice docking by using an imaginary dock.
- Practice stopping and reversing.
- When operating in close quarters or docking, all maneuvering should be done at idle speed. Proceed with caution in congested areas.
- Gradually increase your speed. Get used to the boat before any full throttle operation.

Docking

Preparation:

Proper docking requires preparation. Start by making sure you have adequate mooring gear, and that it is stowed correctly and is ready for use. Your dealer is the best source for information concerning the amount and type of equipment you should carry.



Approaching the Dock:

When approaching a mooring area, lower your speed within a reasonable distance to allow your wake to subside before it reaches other boats or docks. As you get close to your moorage, check for any wind or current action that may affect your maneuver; then make a conservative approach with these factors in mind. Try to use the elements to your advantage. Allow them to carry the boat into the dock. If there are high winds or strong currents, it is best to approach the moorage from the lee side. With a mild current and little or no wind, it is best to approach from the windward side. While approaching, check to see

that all lines are attached to the cleats on the side facing the moorage. Also insure that fenders are lowered on that side. Be sure to check that the fenders are hung at the proper height.

As you approach your moorage, it is desirable to have one person at the bow and one at the stern of the boat, each with a boat hook and a mooring line attached to a cleat. Approach at idle RPM at an angle approximately 45 degrees to the dock. When the bow is within a few feet of the dock (starboard side), the stern can be brought alongside the moorage by turning hard to port. Next, turn to starboard and at idle RPM put the boat into reverse. This will stop the boat and bring the stern ever closer to the dock. These steps are reversed for docking to port.

Mooring:

To attach lines to deck cleats, make a loop in one end of the line and pass it through the hole in the base of the cleat; then pass the loop back over the entire cleat. The line can now be used to secure your boat. Lines may be kept this way while underway as long as they are coiled and cannot become fouled in deck gear or props. In heavy sea conditions, all lines should be removed from the decks.

TIP: To tie up, run the line from your boat around the dock cleat and then back to your boat. This way you can untie the line without jumping from your deck to the dock and back again. Instead, just cast off one end of the line and bring the whole length back on board.

WARNING

Whenever you are towing another boat, or having your boat towed, make sure the towline is fastened securely to the bow or transom towing eyes only. Never attach a towline to dock cleats or the anchor windlass (if so equipped), as serious injury may result if the cleats or windlass pull free from the deck. Also, to reduce the danger created by a potential failure of the towline, everyone should stay well clear of the towline attachment points on both the towing and the towed boats.

Leaving the Dock:

Take into account wind, sea current and other forces that affect your maneuvering as you leave the dock. Most maneuvering to and from a dock is best accomplished at idle speeds.

Do not forget to release the mooring lines and stow the fenders.

When leaving a moorage on your starboard side and your bow cannot be pushed away from the dock first, start forward with the steering wheel turned to starboard for two or three feet. Then shift to reverse

with steering full to port. Repeat if necessary to get the stern far enough away from the dock so you can back clear of any other boats that may be moored ahead of you. (Reverse wheel directions when leaving a dock located to port.)

Boat Performance

Boat speeds are affected by a great many factors. Some, such as temperature and altitude, you cannot change, but some factors you can.

1. **Loading:** Take only necessary equipment with you. Keep weight low in the boat and balanced.
2. **Propeller(s):** Keep them in good repair and at the correct pitch for your particular situation. The factory standard equipment propeller(s) may not be the best for your particular boat and load conditions. If the engine RPM at full throttle is less than the maximum rating, try a prop of less pitch. If the engine RPM exceeds the maximum rating, try a prop of greater pitch.

A slightly bent or nicked propeller will adversely affect the performance of your boat.

3. **Weeds, barnacles and other growth:** Keep your boat's bottom clean. When your boat starts "growing grass", it will slow down greatly.

Boat Running Attitude

1. If your boat runs with its bow too high at cruising speeds, the following suggestions will help you achieve a more correct cruising attitude.

- Move some weight forward in the boat.
- Adjust the trim tabs. (See the Trim Tab section below.)
- Adjust the thrust angle of your engine (reduce the distance between the bottom of the transom and the drive unit). See your engine owner's manual for trimming instructions.

2. If your boat runs with its bow too low at cruising speeds (usually indicated by water coming off the hull far forward and steering difficulty or veering off course), you can raise the bow by performing steps opposite of those above.

Trim Tabs

Trim tabs are intended for corrections to boat trim on the port and starboard axis; however, they may also create very minor changes in pitch (fore and aft) attitude. For major corrections, redistribute loads.

1. If the tab position is unknown, put both tabs in the full bow-up position.
2. After power has been applied and the boat is up to cruising speed, push the appropriate tab button to move the boat from side-to-side. Several short touches of the tab button are recommended, rather than one long one. Allow the boat to react to the new position of the trim tab after each touch. When installed in accordance with the manufacturer's recommendation, the port trim tab switch will operate the starboard trim tab and vice versa.
3. Both tabs can be lowered slightly to lower the bow. However, forcing the bow down too far with trim tabs will cause steering difficulty and a loss of efficiency.
4. When running in a following sea, run trim tabs to the full bow-up position.

▲ WARNING

Improper use of trim tabs can cause a loss of control. Do not use trim tabs in a following sea, as they may cause broaching or other unsafe handling characteristics. Do not allow people who are unfamiliar with trim tabs to operate them.

Steering Wheel Pressure

Stern drive models can be adjusted so there is very little pull on the wheel at one given speed or trim angle. This is done by setting the trim tab on the lower unit in the direction the wheel is pulling. Small adjustments should be made until the steering has neutral torque at the speed you desire. (We suggest using your normal cruising speed.) When running faster or slower than this speed, a minimal amount of torque will be present.

Instruments

While under way, instruments should be checked frequently for possible indications of trouble.

1. **Tachometer**—A tachometer is an electrical instrument that indicates engine revolutions per minute (RPM). The tachometer is useful for monitoring engine speed to avoid exceeding the maximum RPM rating. In addition, it can be used to detect performance changes by comparing speedometer readings at various RPMs.

2. *Temperature Gauge*—The temperature gauge indicates engine coolant temperature by monitoring a signal from a sending unit installed in the engine water jacket. When the gauge reads in the danger area, shut off the engine and diagnose the problem. A common cause of overheating is picking up a foreign object in the seawater intake. Usually, raising and lowering your outdrive will free it. Backing up in reverse gear, then pulling ahead in forward gear for 10–15 feet can be helpful, too. On those twin-engine powered boats equipped with a hot water system, whereby the cooling system of one engine is pumped through the hot water tank to provide heating for the fresh water supply, the temperature gauge for that engine will indicate a different operating temperature than the other engine.
3. *Oil Pressure Gauge*—The oil pressure gauge indicates engine lubricating oil pressure. Low pressure readings are generally caused by low oil quantity. In any case, immediately shut down the engine and diagnose the problem.
4. *Fuel Gauge*—The fuel gauge indicates fuel level. Since boats are exposed to rough water conditions and varying degrees of trim, fuel gauges may provide inaccurate readings at times. It is always good to keep track of your running time as a double check against an inaccurate gauge.
5. *Compass*—Your boat may come equipped with a compass for use in marine navigation. Many factors affect the operation of your compass, such as local magnetic variation and deviation (induced needle deflection caused by metal components and the operation of electrical equipment aboard your boat). Each compass must be "swung" (compensated) to adjust for individual boat characteristics, and for the particular compass installation. It is vitally important, therefore, that you have your compass professionally swung before using it for marine navigation. Your US Marine dealer can refer you to local shops that perform this work.

Dual Station Operation

Always start the engine at the station from which you will be operating the boat. Remind everyone near the unattended control station to KEEP HANDS OFF. When leaving one station to begin operating at the other, bring the boat to a complete stop. Never leave the helm while the boat is underway and assume that someone else has the boat under control. If you are operating your boat at the bridge and you encounter heavy sea conditions, bring your boat down to an idle, point it into the

sea and have bridge passengers move down to the cabin. If sea conditions become very heavy, you should also leave the bridge and operate your boat from the power station. Children should be required to wear life jackets.

Diesel Engine Shut-Down

1. Cool the engine down gradually, allowing it to idle in neutral for at least five minutes.

NOTICE

Gradual cool-down of a turbocharged engine is absolutely necessary to avoid shortened turbocharger life.

CAUTION

It is important to follow steps 2, 3, 4, and 5 in sequence to avoid the possibility of electrical system damage.

2. To turn the engine off, push the STOP button.
3. After the engine stops, turn the ignition key counterclockwise to the OFF position.
4. Turn off the DC ignition breaker switches.
5. Turn off the battery switch.
6. Close the seawater intake valve.
7. Close the fuel supply valves.
8. Carefully inspect the engine and engine compartment for indications of oil, fuel, water, or exhaust leakage.

NOTICE

Steps 6, 7, and 8 need not be followed for short term shut-down (overnight). For long-term storage, refer to the "STORAGE" section of your engine owner's manual.

Electrical System (12-Volt DC)

WARNING

To reduce the risk of electrical shock, only qualified personnel should install batteries and perform electrical system maintenance. You can minimize fire danger of fire and explosion by not exposing the batteries to open flame or sparks. It is also important that no one smoke anywhere near the batteries. Because fuel fumes are heavier than air, they will collect in the bilge areas where they can be accidentally ignited. Running the bilge blowers for at least four minutes prior to engine starting, electrical system maintenance, or activation of electrical devices will decrease the danger of fire and explosion.

On all single engine yachts, one battery supplies the engine and all 12-volt DC accessories with power. Installation of a second switched battery is recommended, and is easily accomplished by your US Marine dealer.

All 29' twin-engine models through 32' Avanti models are equipped with two master battery switches and two batteries. One battery provides starting power to both engines and to the 12-volt DC accessories which are controlled from the switch panel at the helm station. This battery is charged by the port engine alternator. The other battery provides power to the remainder of the 12-volt DC accessories and is charged by the starboard engine alternator. Field current for the starboard alternator is obtained through a fuse on the battery switchboard, and is controlled by an oil pressure switch on the starboard engine. A third battery switch may be installed if the boat is equipped with the generator option.

On the 35' through 43' models, three ON-OFF battery switches and two batteries are provided. One battery is used for starting and ignition on both engines and is charged by the port engine. The other battery is used for accessories and is charged by the starboard engine. The isolation of the charging circuit on the starboard engine is accomplished by the use of a special alternator exciter circuit. This circuit is fused at the accessory battery switch by a 10-amp fuse. The exciter circuit is activated by an oil pressure switch.

installed on the starboard engine. When the starboard engine is started, the oil pressure comes up, the pressure switch closes, the exciter circuit is energized, and the alternator charges the accessory batteries. The third battery switch is a crossover switch between the start and accessory battery and is used to start the engines if the start battery goes dead.

N O T I C E

The crossover switch should be turned on only in emergencies. Leaving this switch ON can drain all onboard batteries.

On single engine models, the condition of the battery can be read on the voltmeter when the ignition switch is in the ON position. On twin-engine yachts, the condition of the main starting battery can be read on the port voltmeter when the engine battery switch and the port ignition switch are in the ON position. The condition of the accessory batteries can be read on the starboard voltmeter when the accessory battery switch is in the ON position. The starboard ignition switch does not have to be ON to read the accessory battery condition. That means the starboard voltmeter will register the accessory battery state even when the engines are shut down and the ignition switches are turned off.

With the engine not running, voltmeter readings in the 11.5 to 12.5-volt range are considered normal. Readings in the 10 to 11.5-volt range indicate a marginal charge condition. Readings below 10 volts indicate a severely discharged condition.

With the engine running (over 1500 RPM), voltmeter readings of 13 to 14 volts are considered normal. Readings below this indicate a severely discharged battery or a nonfunctioning charging system.

Check the battery electrolyte level regularly. Remove the caps on top of the battery and observe the level of the fluid inside. If the zinc plates are exposed, add distilled water until they are covered again. Corroded battery terminals can impair battery performance and charging ability. Clean them with baking soda and water; then coat them with a preservative or a light film of grease. Be sure all battery connections are tight. When storing the boat, it is best to remove the battery, give it a full charge, and store it inside away from extreme temperatures.

2. Battery Charger

On all yacht models, the battery charger operates when 110-volt dockside power is connected and the battery charger circuit breaker is ON. On those models equipped with a generator, the battery

charger also operates when the AC source selector switch is on GENERATOR, the generator is running, and the battery charger circuit breaker is ON. The battery charger will charge the batteries regardless of the battery switch position. The battery charger has two isolated outputs and charges all batteries simultaneously, as required. On 37', 36' and 43' models, the battery charger has three isolated outputs.

3. *Fuses and Circuit Breakers (12 Volt):*

On twin-engine 29' and 32' models only, the engine and accessory circuits are protected by a large circuit breaker located on the engine. Single-engine 29' and some 32' models have main fuse blocks located behind the instrument panel. All other models have breaker panels. Breakers are marked as to which accessory they protect. ATO fuses are used on all standard equipment accessories. Consult the electrical schematics located in the back of this manual for more information.

Electrical power for trim tabs is taken directly off the battery and is fused at the battery with a 20 amp inline fuse.

Some equipment, such as the stereo, CB radio and depth sounder are individually fused. Literature specific to this equipment should be referred to for additional information.

On boats other than the single-engine 29' and some 32' models, engine circuits are protected by a large circuit breaker or fuse located on the engine. The accessory circuits are separate from the engine circuit and are protected by a large circuit breaker located at the main battery switches. The ignition circuits are protected at the ignition switch or in the main fuse block.

The fuses or breakers for models other than the 3288 are located on the face of the DC Master Panel. Model 3289 has three fuse blocks behind the instrument panel. The main power supply for the accessories is protected by a large circuit breaker which is located at the main battery switch. Also located at the main battery switch are fuses for the accessory battery charging circuit and the automatic bilge pump.

Optional accessories are fused at the instrument panel with the exception of the power windlass, which has its own control switch panel and is protected by a circuit breaker located by the battery switches.

Electrical System (110-Volt AC)

The AC system is energized by either shore power or the onboard generator (optional on some models).

Shore power receptacles are rated at either 30- or 50-amps and appropriate power cords are furnished. Since not every shore installation has 30 amp service, we recommend that 15- and 20-amp adapters be purchased. However, whenever 15- or 20-amp adapters are used, there will be a corresponding drop in supplied power from the dockside system.

When connecting to shore power, turn off the main circuit breakers or the AC control panel. Always attach the cord to the boat first; then attach the cord to the shore outlet, thereby avoiding accidental dropping of a "hot" cord into the water. Correspondingly remove the end at the dock outlet first, before removing the cord from the boat outlet.

⚠ WARNING

Monitor the electrical control panel's polarity indicators when connecting shore power to your boat. A green light illuminating after the power cord is plugged into the boat's external power receptacle indicates acceptable electrical power. Therefore, you may energize the main breaker switches. However, a red light indicates reversed polarity, which could cause electrical system damage and possible electrical shock injuries. In this case, *DO NOT* energize the main breaker switches. Instead, immediately disconnect the shore power cord (always from the dockside outlet first) and notify marina management.

Whether using shore power or the generator, the simultaneous operation of several 110-volt accessories can result in an overloaded circuit. It might be necessary to turn off one accessory while operating another.

All models with 110-volt receptacles in the head and galley are equipped with ground fault interrupters to protect users from electric shock. This device will also protect other **labeled** outlets.

Generator

The literature package supplied with your boat has a very complete operator's manual for your generator. We urge you to read that manual prior to operating your generator, and to observe the following:

1. Follow instructions in the operator's manual for prestart checks and break-in procedures.
2. Always operate the blower for a minimum of four minutes before starting the generator. Leave the blower running while the generator is operating.

3. Never operate the starter for more than 30 seconds. If the generator does not start, wait at least 30 seconds before making another starting attempt.
4. In addition to servicing the filters attached to the generator, any separate filter/separators should be serviced as indicated by the instructions included in your literature package.
5. The coolant mixture installed at the factory consists of equal parts of water and antifreeze.
6. The seawater intake valve must always be open during generator operation, and the seawater strainer should be checked frequently for debris.

Hot Water Heater

On all models the hot water heater is connected to the 110-volt power system. On those models equipped with freshwater engine cooling, the coolant from the closed engine cooling system is circulated through the hot water tank for heating of potable water. Heaters must be kept full of water to avoid damage to the 110-volt heating elements. They should also be drained (power turned Off) when the possibility of freezing exists.

Air Conditioning/Heating

On boats equipped with optional air conditioning, both heating and cooling are controlled at the same panel.

To operate the system, proceed as follows:

1. Be sure the seawater inlet valve is open and the 110-volt panel circuit breaker switches are OFF.
2. Set the control switch at each location to OFF.
3. Turn ON the main circuit breaker on the 110-volt panel.
4. Turn the thermostat fully clockwise for cooling, or fully counterclockwise for heating.
5. Set the fan speed control to the HIGH position.
6. Turn the control knob to START. This energizes the fans and the seawater pump. Check the overboard discharges to be sure that water is flowing through the condensing units.
7. Turn the control knob to RUN. The compressor will start to cool or heat according to the setting of the thermostat.

- To set the thermostat, allow sufficient time for the unit to heat or cool the area to the desired temperature. When the area is sufficiently heated or cooled, turn the thermostat knob slowly toward the center position until it "clicks" once. The thermostat is now set to maintain a constant temperature.
- Select a fan speed desired. When operating on the heat cycle, allow the unit to run on low fan for 5 to 15 minutes until it begins to heat well. Then increase the fan speed for efficient heat output. On the cooling cycle, use any fan speed desired. Keep in mind, however, that the lower the fan speed, the less capacity the system has.
- To turn the system off, turn the system switch on the switch panel to OFF. Do not use the circuit breaker switches on the 110 volt panel to turn the system on or off.

Fuel System

▲ CAUTION

It is very important that the fuel system be inspected thoroughly at the time it is first filled and then at each subsequent filling. For your safety and the safety of your passengers, the fueling instructions in this manual must be followed.

1. *Fuel Fills and Vents:*

Fuel fills are located either on the aft deck or on the side decks adjacent to the aft cockpit. Fuel receptacle caps are marked "Fuel" or "Gas". Fuel vents are normally located in the hull or transom below and in the same general area as the fill. If you experience difficulty filling the fuel tank, crack to see that the fuel fill and vent lines are free of obstructions and kinks.

2. *Anti-siphon Valves:*

As required by the U.S. Coast Guard, the fuel systems on aft stern drive boats are equipped with an anti-siphon valve. This valve is an integral part of the barb fitting on the fuel tank to which the neoprene fuel line attaches. The valve is spring loaded and is opened by fuel pump pressure. These valves will prevent gasoline from siphoning from the fuel tank in the event of a fuel line rupture.

N O T I C E

If an engine running problem is diagnosed as fuel starvation, the antisiphon valve should be checked. In the event the valve is stuck or clogged, it should be cleaned or replaced while the engine is shut down. Under no circumstances should it be removed except in an emergency.

3. Fuel Filters:

All fuel tanks are equipped with a fine mesh screen filter on the fuel pick-up tube in the tank. In addition, when supplied by the motor manufacturer, an additional filter is installed on the engine. Fuel filters should be checked periodically to see that they are clean and free of debris.

4. On models equipped with two fuel tanks, the fuel line from each tank is run to a manifold system equipped with tank selector valves. If the boat is equipped with a generator, there is also a valve on the manifold for the generator fuel line. Under normal conditions, the boat should be run with the main valves open and, if so equipped, the crossover valve closed. If for some reason one of the tanks runs dry, the valve to that tank can be closed, and both engines can be run off the tank that still has fuel. When running both engines off the same tank, engine RPMs should be reduced.

C A U T I O N

Avoid the storage or handling of gear near the fuel lines, fittings and tanks.

5. Diesel Fuel:

The diesel fuel system utilized in US Marine yachts is similar in most ways to the gas system. However, diesel engine operation requires a return fuel line from the engine to the tank. Thus, the fuel system has two lines between the engine and the fuel tank, instead of one. Diesel fuel tanks are not fitted with antisiphon valves. Fuel filters are utilized in every diesel installation. It is very important that the filters be checked and cleaned regularly.

Make sure that your fuel suppliers are reputable and can be relied upon to furnish clean, proper, high quality fuel. Also, once you have found good suppliers, keep your tank as full as possible with their fuel. Then, if you are forced to add to the tank with a potentially poor quality supply, the portion of poor quality fuel will be minimized.

Diesel fuel of ASTM grade 2-D is recommended. The minimum cetane value is 40 (45 for cold temperature operation), and the maximum sulfur content is 0.5%. If the sulfur content exceeds 0.5%, oil changes should be performed twice as frequently as indicated in the engine manual.

Air in the fuel supply system can stop an engine or severely restrict performance. Snow or air be introduced into your fuel lines. Refer to your engine manual for detailed instructions on how to "bleed" it out of the system.

Consult your dealer or local marina concerning fuel additives that help to prevent fungus or other growth in your fuel tanks.

Shaft-Transmission Alignment (Inboard Engines)

Alignment between your engine transmission output shaft and the propeller shaft is very critical. Although this alignment has been performed at the factory, it should be checked again after the boat has been in the water for 48 hours. Alignment inspection should be performed as part of the routine maintenance program (after the initial 20 hours of operation, then every 60 hours) and whenever unusual noise or vibration is noticed. To insure proper alignment when the boat has been launched after a haul-out or dry storage, wait for 48 hours before making final adjustments.

Proper alignment is usually achieved by moving the engine. We recommend that alignment be performed by an experienced marine mechanic. However, checking alignment is so easy and simple when these procedures are followed:

1. Remove the flange bolts at the transmission-to-shaft coupling and slide the shaft aft until the flanges are about 1/4" apart.
2. Rotate the shaft to see if there is obvious "wobble" of the shaft flange; if there is, it may indicate that the shaft has been damaged.
3. Move the shaft up and down and from side to side to determine, as closely as possible, the central position where the shaft is normally located. At this position, the transmission flange should align with the shaft flange without moving the shaft to either side or raising it more than 1/8". If this is not the case, a misalignment condition exists.
4. Move the shaft flange into contact with the transmission flange. Check the gap between flange faces by attempting to insert a .003" feeler gauge at the top, bottom and each side. Repeat this operation

after rotating the shaft 1/4 turn (3 times). Misalignment is indicated when the feeler gauge can be inserted easily at any point.

Shaft Log Stuffing Box Packing (Inboard Engines)

The propeller shaft emerges from the bottom of the boat through an opening called the shaft log. The shaft stuffing box is connected to the shaft log by a short length of special flexible hose. Packing rings are compressed around the shaft by the packing nut. The stuffing box prevents excessive amounts of water from leaking around the shaft and into the boat.

Normal wear can cause stuffing box leakage to increase. It usually can be stopped by loosening the locknut, tightening the packing nut slightly, and then resetting the locknut tightly. Do not over-tighten the locknut. Bear in mind that a slight leak (up to 10 drops per minute while running) helps to lubricate the packing and is therefore desirable.

When stuffing box leakage becomes excessive, even after following the above steps, packing replacement can be performed as follows:

1. Remove the boat from the water.
2. Loosen the locknut; then back the packing nut off the sleeve. Remove the old packing.
3. Wrap new packings around the shaft; then cut the rings with a razor blade at an angle approximately 30 degrees to the long axis of the shaft. Stagger the ends of each ring around the shaft and ensure that the rings are fully seated in the packing nut recess.
4. Tighten the packing nut by hand only until resistance of the packing contacting the stuffing box is felt. Then tighten the locknut securely.
5. When initially launched, the packing must be allowed to leak at a rate of about 5 to 30 drops a minute, as it will expand and seal from water contact and friction heat from the turning shaft. Failure to allow this leakage will result in packing burnout after running for only a short period of time.

Rudder Stuffing Gland (Inboard Models)

As in the case of the shaft log stuffing box, the rudder stuffing gland is part of the assembly where the rudders emerge from the bottom of the boat.

It is very similar to the propeller shaft stuffing box and will require the same maintenance. Since it obviously does not receive the same wear as the propeller shaft, repacking is seldom required. This shaft stuffing gland should not leak water.

Steering

Depending on the model you own, your steering system may be either manually or hydraulically actuated. With hydraulic steering you may notice a rhythmic pulsing when turning the wheel. This is a standard characteristic of the hydraulic pump, and is not a malfunction. Also, when coming off a hardover position, a resistance may be felt followed by a distinct sound. This is a normal situation resulting from the release of the check valve.

The fluid reservoir for the hydraulic steering system is usually located in the aft end of the engine compartment. Following instructions in your literature package and on the reservoir, check the fluid level and pressure regularly.

Refrigerator

The refrigerator used by US Marine operates on 110-volt AC and 12-volt DC power. When the 110 volt system is not operating, the refrigerator operates on 12-volts. When an AC source is supplied by a generator or by dockside power, the refrigerator automatically switches over to the 110-volt power supply.

The refrigerator is the heaviest continuous draw on the 12-volt DC system. If no other 12-volt accessories are used, the refrigerator can draw a battery dead in less than 24 hours. For this reason it is recommended that when operating on 12 volts, the cold setting on the refrigerator should not be set higher than position two. It is also advisable to turn the refrigerator off at night. If you are going to be out more than one day and cannot connect to dockside power, you should plan to run your generator or engines periodically to maintain a charged battery.

Seawater Strainers

Seawater strainers should be periodically checked for debris. Depending on the boat model, there may be strainers for engines, for the generator, for the air conditioning system, and for the seawater wash-down pump.

Exhaust System (Inboard Engines)

The engine exhaust system is designed to keep water out of the engines in most sea conditions. However, care should be taken not to anchor stern to the sea and the engines should not be shut off if the

seas are too high. Always use good seamanship and consider the sea conditions before anchoring or shutting off the engines.

Check all exhaust system clamps after the first 20 hours, then continue to check the clamps periodically after that.

Marine Head with Holding Tank

The marine head and holding tank system is designed so that sea water is used to flush waste from the toilet into the holding tank. The holding tank is plumbed to a waste fitting on the deck for use at a dock-side pump out station, and to a macerator pump so that waste may be pumped overboard where regulations permit. The push-button switch for the macerator is located at the helm station (lower helm station on command bridge models).

To operate the marine head, open the seacock on the seawater intake. Before using the head, pump some water in to wet the bowl. After use, pump until the bowl is thoroughly cleaned. Pump a few more times to clean the lines. If excess waste should cause the water to rise in the bowl, stop pumping until the water recedes.

If at any time you are unable to pump water into the bowl, the probable reason is debris in the pump diaphragm. To remedy this, shut the inlet seacock and dismantle the pump. The pump is generally held together with six screws. The design is simple and the problem will be obvious when the pump body is split open.

To winterize the toilet, shut off the intake valve and pump until the bowl is dry. Remove the drain plug in the base and pump again to remove all water. Do not fill the bowl with antifreeze. The inlet seacock should be left closed while the boat is underway, or whenever the boat is left moored in the water.

HOLDING TANK AND VALVE LOCATION TABLE

Model	Cap. (Gal.)	Location of Holding Tank	Location of Inlet Seacock	Location of Discharge thru Hull	Location of Y-Valve
2955	13	stb side	engine	stb side	
Avanti		engine	room	atl	N/A
Sunbridge		room			

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HOLDING TANK AND VALVE LOCATION TABLE (CONT.)

Model	Cap. (Gal.)	Location of Holding Tank	Location of Inlet Seacock	Location of Discharge thru Hull	Location of Y-Valve
2953 Motoryacht	13	centerline forward of water tank	beneath cft berth thru access hatch	starboard side midship	N/A
3255 Avanti Sunbridge	10	stb side engine room	engine room	stb side aft	N/A
3258 Motoryacht	13	centerline forward of water tank	beneath cft berth thru access hatch	starboard side midship	N/A
3288 Motoryacht	23	beneath salon stb side access	beneath salon stb side access	beneath salon stb side access	beneath salon stb side access
3556 Avanti Sunbridge	30	stb side engine wall	under aft berth	stb side aft	stb side aft access
3688 Motoryacht	20	beneath salon stb side access	beneath salon stb side access	beneath salon stb side access	beneath salon stb side access
3785 Avanti Sunbridge	30	stb side engine wall	under aft berth	stb side aft	stb side aft access
3898 Motoryacht	36	beneath forward cabin sole	beneath galley sole	behind galley stb side	beneath galley sole

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HOLDING TANK AND VALVE LOCATION TABLE (CONT.)

Model	Cap. (Gal.)	Location of Holding Tank	Location of Inlet Seacock	Location of Discharge thru Hull	Location of Y-Valve
4387 Motoryacht	74	centerline beneath aft berth	FWD: galley access hatch AFT: aft berth access hatch	FWD: port side below head portlight AFT: transom above stb rudder	FWD: hg. access hatch AFT: inside transom above stb rudder
4388 Motoryacht	36	beneath forward cabin sole	beneath galley stb	behind galley stb side	beneath galley sole

AM/FM Cassette Stereo

The AM/FM cassette stereo that comes standard with your yacht has a separate brochure that explains its operating features. Note that AM/FM radio reception will be impaired anytime the engine is running and therefore it is suggested that you turn the radio off while underway.

Depth Sounder

Your yacht may come equipped with an electronic depth sounder. It will provide you with measurements of water depth beneath the boat. In many cases it also will help you locate schools of fish. The depth sounder comes with its own owner's manual. We suggest that you read it carefully before turning on the unit.

▲ WARNING

The depth sounder should not be used as a navigation aid to prevent collision, grounding, boat damage or personal injury. When the boat is moving, submerged objects will not be seen until they are already under the boat, or bottom depths may change too quickly to allow time for the boat operator to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

Potable Water System

The water filter should be inspected frequently and cleaned as required.

Sinks and showers ("gray water") drain overboard. Sinks above the waterline are gravity drained, and showers below the waterline are pump drained. Drain pumps should be turned OFF after the shower is drained.

Water tanks should be topped-off at every opportunity to avoid the possibility of running short of potable water.

When your boat is to be left unattended for an extended period of time, it is advisable to pump the water tanks dry to prevent stored water from becoming stagnant and distasteful.

POTABLE WATER SYSTEM SPECIFICATIONS

Model	Tank Location	System	Water Fill Location	Capacity (gallons)
2955 Avanti Sunbridge	under aft V-berth	demand pump	stb deck midship	30
2958 Motoryacht	under salon sole	den and pump	port deck cockpit	45
3255 Avanti Sunbridge	under aft V-berth	demand pump	stb deck midship	30
3258 Motoryacht	under salon sole	demand pump	port deck cockpit	45
3288 Motoryacht	under aft berth sole	demand pump	stb deck midship	88
3555 Avanti Sunbridge	under aft salon sole	demand pump	stb deck midship	50
3588 Motoryacht	under aft berth sole	demand pump	stb deck midship	88
3765 Avanti Sunbridge	under aft salon sole	demand pump	stb deck midship	50
3888 Motoryacht	under galley sole	demand pump	stb deck midship	88
4387 Motoryacht	forward engine room	demand pump	stb deck midship	100
4388 Motoryacht	under galley sole	demand pump	stb deck midship	88

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Pressure type (demand) systems operate any time the electrical switch for the pump is in the ON position. Make sure the switch is OFF when the boat is not in use, or whenever the water tank is empty. On those models with showers, the shower sump switch is located in the head.

Starter Motor

The engine starter motor is designed to deliver high horsepower for only very short periods of time. Avoid operation for more than 15 seconds at one time. Due to its high horsepower, this motor builds up considerable heat and can be permanently damaged with prolonged use. If it does not operate, check the battery charge and all direct wiring for shorts or loose connections. If excess bilge water is allowed to accumulate, the starter can be damaged. Check the operation of the automatic bilge pumps regularly.

Bilge Blower

The bilge blower removes fumes from the engine compartment and draws fresh air into the compartment through the deck vents.

To ensure fresh air circulation, the bilge blower is to be used before starting the engine, during starting, and while the boat is operating below cruising speed. Operate the blower for at least four minutes before starting the engine.

▲ WARNING

Operation of the blower is **NOT A GUARANTEE** that explosive fumes have been removed. If you smell any fuel, shut off the engine and all electrical accessories and investigate immediately.

Bilge Pump

The electric bilge pump supplied with your yacht is an impeller-type pump. If bilge water is present and the pump motor is running but not pumping, check to see if it is clogged by debris. If it is clear but still does not pump, check the discharge hose for kinks or a collapsed area.

NOTICE

The Federal Water Pollution Control Act prohibits the discharge of oil or oil waste into or upon the navigable waters and contiguous zone of the United States if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5000.

Running Lights

Although the night lights or navigation lights supplied with your yacht are of top quality, failure may occur for a variety of reasons:

1. There may be a blown fuse. (Replace the fuse in the switch panel.)
2. The bulb may be burned out. (Carry spare bulbs for replacement.)
3. The bulb base may be corroded. (Clean the base periodically and coat it with nonconductive grease.)
4. A wire may have come loose or may be damaged. (Repair as required.)

N O T I C E

Prolonged operation of cabin interior lights (overnight) will result in a dead battery. Be conservative in the use of battery power.

Alcohol Stove

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

1. Use only denatured alcohol labeled specifically for marine use.
2. Do not operate the stove while underway.
3. Do not fill the stove near an open flame or hot object.
4. All spilled alcohol should be wiped up prior to lighting the stove.
5. Don't put any cooking utensils on the stove until the burners are lit and functioning properly.
6. Pressurized Type
 - *To fill:*
Unscrew the cap and fill the tank using a funnel. Replace the cap (the filler cap is equipped with a safety valve and must not be replaced with any other type of cap.)
 - *To start:*
Pump approximately 20 times to pressurize the tank and slowly open one burner at a time to allow alcohol to flow into the priming

cup below the burner body (fill this cup about 3/4 full). With the burner off, ignite the priming alcohol. When the priming alcohol is fully consumed, turn the control knob toward the OPEN position and light the burner.

WARNING

Flare-up may occur during preheating, particularly if the burner valve is opened before preheating has been completed. If flare-up occurs, shut off the burner and restart the stove.

7. Nonpressurized Type

• To Fill:

Close both burners and completely loosen the retaining screw in the middle of the stove's front. Pull the top forward (towards you), disengaging the pegs at the rear, and lift the top of the stove up (lift at the middle of the grid to help keep the top horizontal). The stove top must only be lifted when the burner openings are completely covered by the regulating plates (burners are closed). Providing all flame has been extinguished and there is no heat glow on top of the tank, the tank unit can be lifted out.

The tank openings are recessed to facilitate filling; pour the fuel directly into the opening covered by the wire mesh. Check the fuel quantity by raising the tank to the vertical position. When fuel is visible in the recess, discontinue filling.

After filling, make certain no excess fuel remains in the stove. Always wipe the tanks dry. Place the tanks in the stove. Check to see that they fit properly in their mountings.

Make certain that both burners are closed and follow the steps shown above in reverse order to reassemble the stove.

• To Light:

Turn the regulator knob counterclockwise (towards the + sign) to open the burner. Place a lighted match at the tank opening. (The match can be dropped in and removed at the next filling). If the stove is warm (from previous use), the burner may ignite suddenly and then instantly snuff itself out. If this happens, blow down into the burner opening to dissipate any alcohol fumes before attempting to relight the stove.

- *To Extinguish:*

Turn the right star knob clockwise (towards the - sign) to close the burner. Winterize your stove by burning all remaining fuel, and by following the directions provided in the manufacturer's instructions.

8. Electric Burners (if so equipped):

- Never attempt to use both alcohol and electric burners simultaneously. To do so will cause overheating which can destroy the electric burner elements.
- After removing the cutting board or cover, turn the appropriate burner knob to the desired setting. Make sure both alcohol burner knobs are in the closed position. The electric burner element will then heat-up fairly rapidly for use in cooking.
- When finished, turn the knob to the OFF position and allow the burner to cool-down completely before replacing the cutting board or cover back on the stove.

9. Regularly clean the stove as described in the owner's instructions that come with the stove.

Electric Stove

Carefully read and follow the manufacturer's operating instructions supplied with your stove. Note that the stove breaker switch must be ON in order to operate the stove.

Loading Limits

1. Command bridges: 700 pounds maximum.
2. Hardtops: 100 pounds maximum.
3. Transom platforms: 250 pounds maximum.
4. Auxiliary outboard motor (transom platforms with molded outboard brackets): 10 horsepower maximum.

GENERAL MAINTENANCE AND REPAIRS

In addition to instructions found elsewhere in this manual and in the literature specific to certain components, the following information is provided for general maintenance and repair.

Because conditions vary widely in different areas, and since the frequency and type of use can differ greatly between owners, intervals for maintenance are not seted here. Common sense should determine the frequency of maintenance.

Bilges/Engine Compartment

1. Pump the bilges dry and remove all loose dirt. Be sure that all lumber holes are open. If there is oil in the bilge and the source is not known, look for leaks in engine oil lines or engine gaskets. Oil stains can be removed by using a bilge cleaner available from your dealer or a marina. **DO NOT** use flammable solvents.
2. Check all wiring to be sure it is properly supported, that its insulation is intact, and that there are no loose or corroded terminals. If there are corroded terminals, they should be replaced or if roughly cleaned with sandpaper. Tighten all terminals securely and spray them with WD-40 or similar preservative.
3. Inspect the entire fuel system (including fill lines and vents) for any evidence of leakage. Any stains around joints could indicate a leak. Try a wrench on all fittings to be sure they are not loosening, but do not overtighten them. Clean fuel filters and vent screens. Operate all valves to be sure they are in good condition.
4. Inspect the entire bottom for evidence of seepage, damage or deterioration, paying particular attention to hull fittings, hoses, and clamps. Straighten kinked hoses and replace any that do not feel pliable. Tighten loose hose clamps and replace those that are corroded. Tighten any loose nuts, bolts, or screws. Operate sea-cocks to be sure they are in good condition.
5. Refer to your engine operating manual for engine maintenance details. Wipe off engines to remove accumulated dust and grease. If a solvent is used, make sure it is nonflammable. Go over the entire engine and tighten nuts, bolts, and screws, including the mounts. Inspect the wiring on the engine and clean and tighten the terminals. Inspect the belts and tighten them if needed. Replace any belt that is cracked or frayed. Clean and lubricate the battery terminals; fill the cells with distilled water as needed.

Cabin and Topside Areas

1. Test all electrical equipment and appliances to make sure they operate properly. Inspect all wiring for proper support, sound insulation and tight terminals. Pay particular attention to portable appliance cords and plugs.
2. Inspect and operate all heads, basins, showers and sinks. Also inspect the freshwater system plumbing, including the tank. Check and operate the water pumps, including the shower pump and sink drain pumps. Check all water lines and connections for leaks, and make sure all connections are tight.

3. Check bow rails, ladders, and grab rails for loose screws, breaks, sharp edges, etc., that might be hazardous in rough weather. Inventory and inspect life jackets for tears and deterioration. Check your first aid kit to make sure it is complete. Check the signalling equipment. Inspect anchor, mooring and towing lines and repair or replace as required. **DO NOT** slow wet lines or they may rot and rot.
4. Salt and brackish water are capable of etching and damaging window glass. Keeping windows clean is the best preventive measure you can take. When window cleaning, flush with plenty of fresh water.

Exercise caution when cleaning windows and doors made of plexiglass because it tends to scratch easily.

First, use generous amounts of water to wash off as much dirt as possible. Use your bare hands with plenty of water to dislodge any caked dirt. Then use a soft, grit-free cloth or clean, soft sponge with a cleaner made specifically for plexiglass. Never use a glass cleaning solution or a duster, as these will scratch the surface. **DO NOT** use solvents such as acetone, kerosene, benzina, carbon tetrachloride, fire extinguisher fluid, dry cleaning fluid, or lacquer thinner since they will attack the surface. When you are finished, rinse with fresh water and dry with a clean, damp chamois using a blotting action.

5. To keep teak looking fresh, it should be treated with teak oil at least twice a year (more often if exposure is severe). If the teak is in particularly bad condition, the teak oil should be rubbed in using 220-grit wet-or-dry sandpaper.
6. Stainless steel railings and fittings should be cleaned with soap and water or household glass cleaner. Because irreversible pitting will develop under rust that remains on stainless steel for any period of time, it is best to remove rust spots immediately with brass, a liver or chrome cleaner. Then coat the railing or fitting with a good automobile or boat wax. Never clean with mineral acids or brushes. Also do not allow stainless steel to come into continuous contact with iron, steel or other metals which could cause contamination leading to rust or corrosion.
7. A variety of high quality fabrics have been used in the construction of your boat. Proper care and cleaning of all fabrics will contribute to their long life.

Prior to cleaning any fabric, we suggest that you **test your cleaning solution and method on a hidden or inconspicuous area.**

Convertible tops and vinyl upholstery can be cleaned using a mild soap and water solution. Vinyl cleaners and conditioners are **NOT**

recommended for use on US Marine yacht upholstery. To prevent rainwater seepage at the seams, a coating of "Scotch Guard" can be applied to the seams on the inside of the vinyl. Mildew can occur if your boat does not have adequate ventilation. Heat alone will not prevent mildew. If mildew does occur, it can often be removed using a solution of hot water and laundry bleach (one cup of bleach to one gallon of hot water). Brush the solution into the affected area, let it sit for 10 to 15 minutes and rinse with plenty of fresh water. If at all possible, the vinyl top parts of your boat should be stored indoors in a fairly warm, dry place. This will greatly extend the life of the material.

Dry cleaning should be considered for interior fabrics other than vinyl.

8. When instruments are exposed to a saltwater environment, salt crystals may form on the bezel and the plastic covers. These salt crystals should be removed with a soft, damp cloth; never use abrasives or rough, dirty cloths to wipe plastic parts. Mild household detergents or plastic cleaners can be used to keep the instruments bright and clean.

Hull

1. The finish on a fiberglass boat is similar to that of an automobile and will respond to the same system of care and cleaning. Car waxes and cleaners are often used to maintain a sparkling finish. Also, a variety of polishes and cleaners for fiberglass are now on the market. We suggest that you experiment with different brands to determine what you like best.
2. Almost unavoidable during the life of your boat is damage to the gelcoat or coated surface. This is not as serious as you might think. Repair is not costly and can be done by the novice.

Scratches: If the scratch does not penetrate the gelcoat surface, it can be repaired with automotive rubbing compound. Dampen a soft rag and apply the compound by rubbing in a circular motion. The scratch may not disappear completely; however, its noticeability will decrease.

Gouges and Chips: To repair, obtain 'patch paste' from your US Marine yacht dealer and follow this recommended procedure:

- Clean the area to be repaired of wax and oil. Acetone is a good solvent.
- Mix a small portion of patch paste and catalyst on a piece of cardboard (two or three drops of catalyst to a tablespoon of paste).

- Apply the paste to the gouge with a putty knife or flat-edged stick; try to match the paste to the surface contour of the area being repaired. It is better to have an excess of paste, rather than not enough.
- Allow the paste to harden thoroughly. In most climates, one to two hours should be sufficient.
- Shape the patch as desired using fine wet sandpaper.
- Finish by using automotive rubbing compound in the same manner as you did for small scratches.

▲ WARNING

Teak oil, acetone and catalyst are hazardous materials and should be used only in well ventilated areas. Follow the manufacturer's instructions. Also, never store rags that have been wetted with acetone, teak oil, fuel or any other solvent aboard your boat. Immediately remove them from the boat and discard them to prevent spontaneous combustion and fire.

3. The bottom paint on boats is designed to dissolve slowly to prevent marine growth. Therefore, it is unusual to find a boat bottom that does not need repainting after a season's use.

Periodically haul the boat out of the water and scrub the bottom with a bristle brush and a solution of soap and water. It is not always necessary to repaint the bottom each time it is scrubbed, but no bare spots should be permitted.

Our recommended procedure for repainting the bottom is as follows:

- Prepare the bottom by sanding, cleaning and fairing as required.
- It is imperative that the new paint be applied over a perfectly dry surface. Fiberglass hulls should never be hauled, painted and relaunched on the same day, since this does not allow sufficient time for the moisture which has been absorbed into the old paint to completely dry out. Generally, 24 - 36 hours of drying time is required.

N O T I C E

US Marine recommends the application of an epoxy barrier coating, such as International Paint Company's Interlux "Interprotect 2000 System", to help seal the hull bottom and reduce the possibility of gelcoat blistering on any boat that is permanently moored. The barrier coating should be covered with several coats of antifouling paint. Note that many states regulate the chemical content of bottom paints in order to meet environmental standards. Check with your local US Marine yacht dealer about recommended bottom paints, and about laws that are in effect.

<http://www.boat-manuals.com/>

4. Whenever your boat is out of the water you should check all metal parts for stray current corrosion. Stray current corrosion, or electrolysis, can be prevented several ways. The following are the most common causes and the simplest cures:
 - Wiring may leak a certain amount of electricity. Keep a clean, dry bilge.
 - A poorly grounded zinc anode. Check the ground wire and clean the contact surfaces.
 - The zinc anode may be deteriorated beyond effectiveness. Replace it when it has deteriorated 50% or more.
 - Do not use a copper-based bottom paint, as it can cause electrolysis on some metal parts. If your boat is permanently moored, we recommend that you contact someone in your area specializing in corrosion control and have them check your boat in its moorage to see that it is properly protected.

Also, while your boat is out of the water, propellers, rudders, and shafts should be inspected for damage.

5. Every attempt has been made to equip your boat with a propeller that will optimize performance. Changes in altitude and load can affect performance; therefore, your boating needs may dictate a propeller change. Your US Marine yacht dealer can help you in the selection of propellers better suited to your needs.

If your boat is equipped with twin rudders, check to see that they are mounted parallel to each other. Measure the distance between the leading edges of both rudders; then measure the distance between the trailing edges. The difference should be less than 1/4". Adjustment is performed at the transom, inside the engine compartment.

6. Flapper valves on cockpit scuppers should be checked often to see that they are pliable and are providing the proper sealing action.

STORAGE

The following suggestions are offered for storage at the end of your boating season:

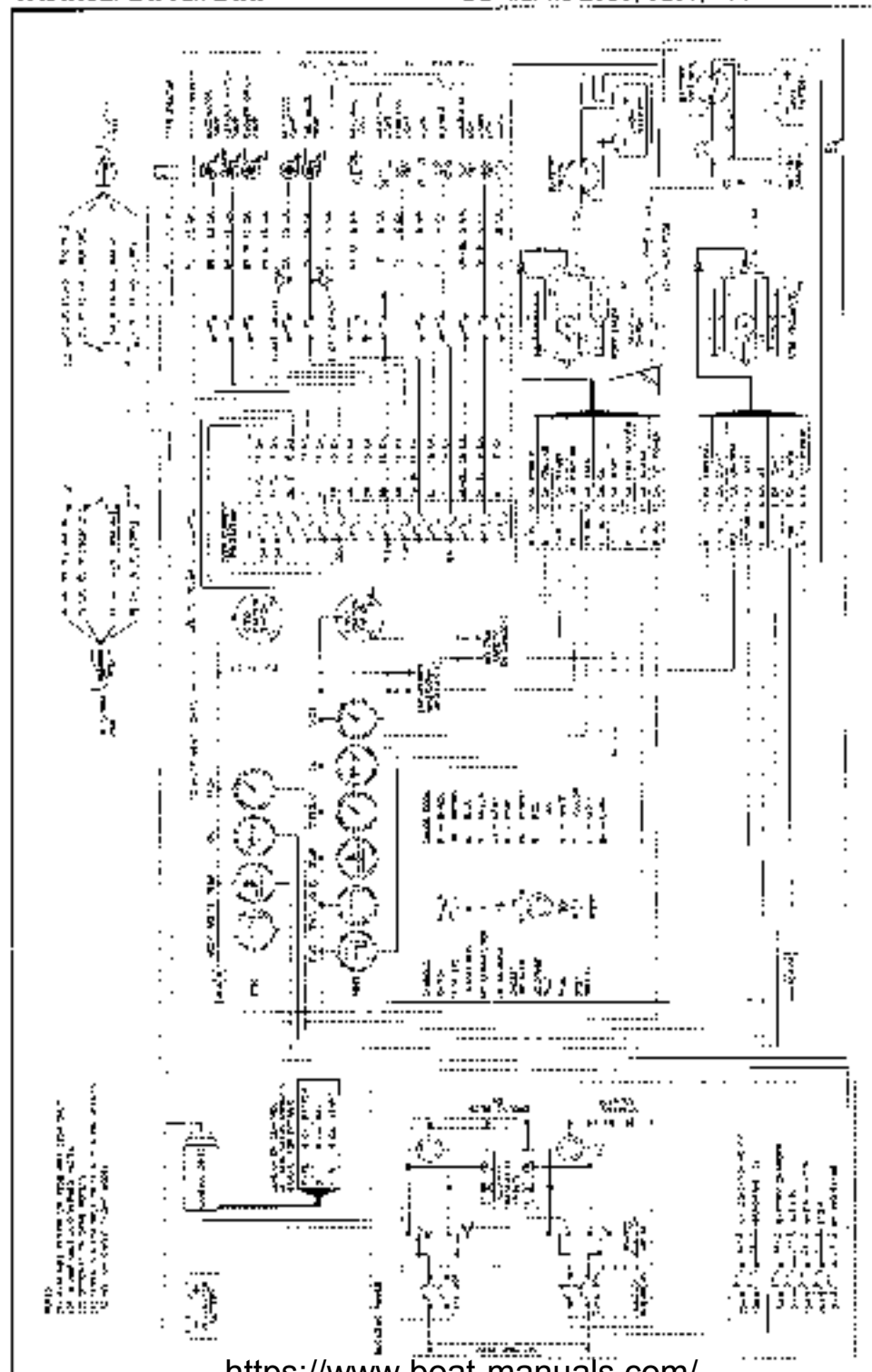
1. If your boat is to be stored out of the water, it is extremely important that its hull is properly supported to avoid permanent hull distortion. If your boat is stored inside, it should be in a well ventilated building.
2. A temporary winter cover is recommended if covered storage isn't available. A proper winter cover should keep the weather off the boat, but still provide adequate ventilation. Wrapping a boat in a tight plastic cover can do more damage than good. Dampness and lack of air circulation provide ideal conditions for the fungi that cause mildew and dry rot.

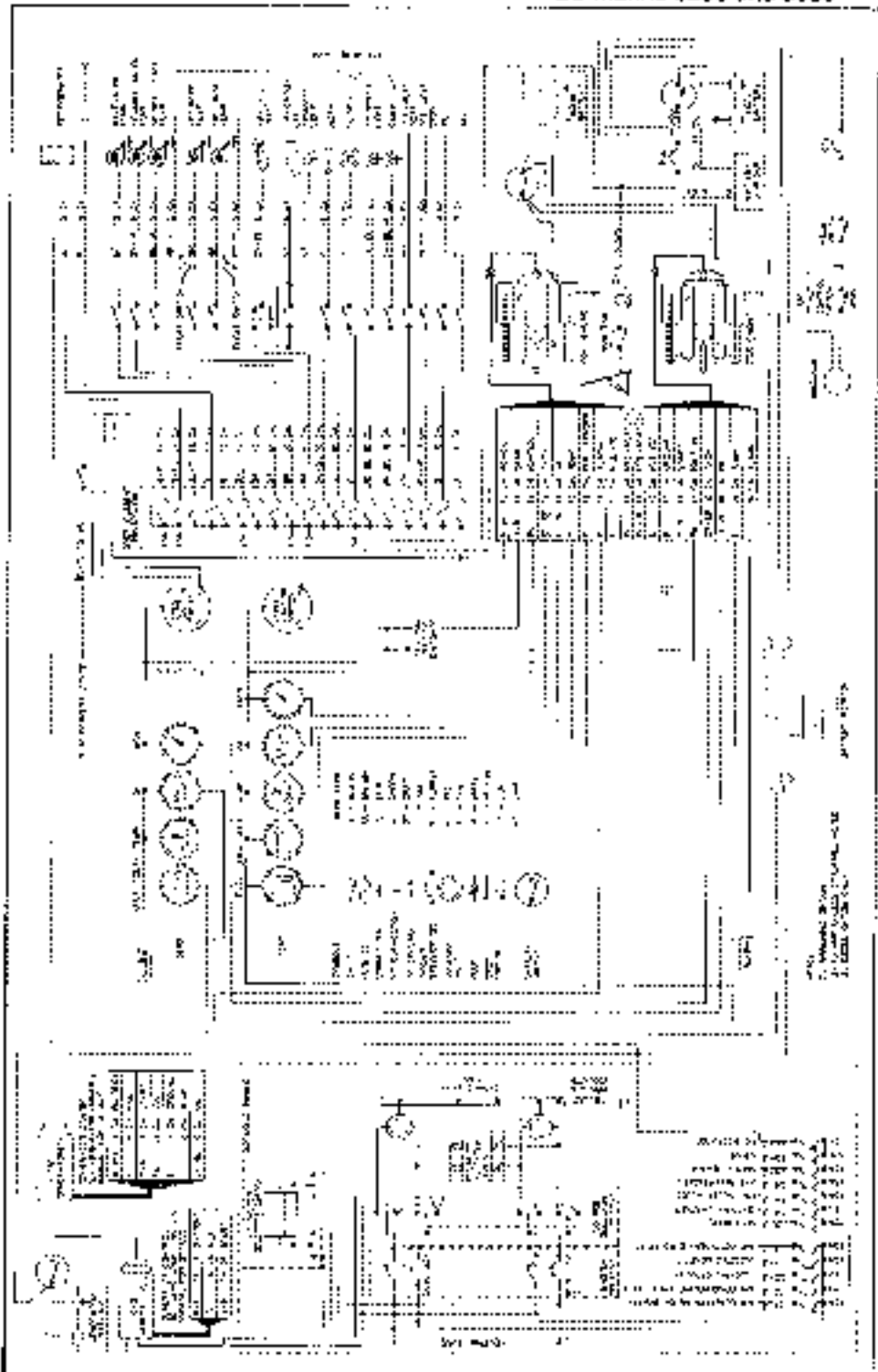
3. Remove the batteries from the boat. Fill the cells with distilled water to the proper level and store the battery in a warm place. A fully charged battery will survive storage better than one that is not.
4. Refer to your engine manual for engine storage instructions.
5. Drain the freshwater tanks and lines by opening all faucets and operating the water pump (be sure that the hot water tank power switch is turned OFF). Operate the pump until all tanks and lines are empty and no water flows from any of the faucets. Also, drain the pump to prevent damage that can result from freezing.
6. Flush each head several times. If the boat is to be stored in salt-water, close the intake seacock, add fresh water to the bow and allow it to stand for a day or more to dissolve accumulated salt. Then, with the seacock closed, flush the head until it is pumped dry. Pump out the holding tank.
7. Fuel tanks should be filled so there is little air space, thereby minimizing condensation.
8. Refer to your engine manual for storage procedures related to the engine seawater cooling system.
9. Thoroughly clean your boat. If possible, remove cushions, matresses, blankets, towels, and other items that can hold moisture and cause mildew. Such items left on board should be positioned for maximum air circulation. It helps to stand matresses and cushions on edge.
10. Defrost and dry out the refrigerator and freezer; leave the doors propped open. Leave all drawers and locker doors open.
11. Clean all deck hardware; then coat the hardware with rust inhibitor.
12. Lubricate the steering mechanism and throttle control linkage.
13. Close all seacocks.
14. Provide as much heat and ventilation for interior spaces as is safe and practical.

We hope these preventive measures will help make getting ready again in the spring easier. Should you have any questions, your US Marine yacht dealer is ready to provide assistance.

NAUTICAL TERMS

ABEAM:	On either side of the boat.
AFT:	To the rear, or near the stern.
BEAM:	The width of the hull.
BILGE:	The lowest portion inside a boat (in a fiberglass boat, generally the underdeck and lower portion of the engine compartment).
BOW:	The forward portion of the boat.
CHINE:	The intersection of the side and bottom of a V-bottom boat.
DRAFT:	Vertical distance from the waterline of the boat to the lowest point of the boat.
FATHOM:	A measurement of six feet, generally used to measure water depth.
FREEBOARD:	Vertical distance from the deck to the waterline.
GUNWALE:	The point where the hull and deck meet.
HATCH:	A covered opening in the deck.
HEAD:	Toilet or toilet room.
HEEL:	Steering wheel.
KEEL:	The lowest external portion of the boat.
KNOT:	Nautical mile per hour; one nautical mile is 6,076 ft.; a land mile is 5,280 ft.
LEE:	Opposite side from which the wind blows.
MAYDAY:	International spoken distress signal for radiotelephone communications.
PORT:	To the left side of the boat.
PORTLIGHT:	A hinged window in the boat's cabin or hull.
SCUPPER:	An opening in a deck or cockpit permitting water to drain overboard.
STANCHION:	A fixed, upright post used for support (of rails or lifelines).
STARBOARD:	To the right side of the boat.
STERN:	The rear of the boat.
STERN DRIVE:	Inboard/outboard propulsion unit.
TRANSOM:	The vertical part of the stern.
WINDWARD:	The direction from which the wind is blowing.





WARRANTY

Limited Warranty

US Marine warrants to the original purchasers of its 1990 model boats, purchased from an authorized US Marine dealer, operated under normal, noncommercial use that the Selling Dealer will: (A) Repair any structural hull defect which occurs within five (5) years of the date of delivery, and (B) Repair or replace any parts found to be defective in factory material or workmanship within one (1) year of the date of delivery.

What Is Not Covered

This warranty does not apply to: (1) Engines, drive trains, controls, props, batteries, or other equipment or accessories carrying their own individual warranties; (2) Engines, parts or accessories not installed by US Marine; (3) Window breakage or leaks, cosmetic gelcoat finish, i.e., discoloration, blisters, cracks or crazing; (4) Hardware, vinyl tops, vinyl and fabric upholstery, plastic, metal, wood or tape trim; (5) Any US Marine boat which has been altered, subjected to misuse, negligence or accident, or used for racing purposes; (6) Any US Marine boat which has been overpowered according to the maximum horsepower specifications on the capacity plate provided on each US Marine outboard boat; (7) Any US Marine boat used for commercial purposes; (8) Any defect caused by failure of the customer to provide reasonable care and maintenance.

Other Limitations

THERE ARE NO OTHER EXPRESS WARRANTIES ON THIS BOAT, TO THE EXTENT ALLOWED BY LAW.

1. Any implied warranty of merchantability is limited to the duration of this written warranty.
2. Neither US Marine nor the Selling Dealer shall have any responsibility for loss of use of the boat, loss of time, inconvenience, commercial loss or consequential damages.
3. Some states do not allow limitations on how long any implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Your Obligation

In order to comply with Federal regulations, it is essential that your warranty registration card be submitted within 30 days of delivery of your boat. Return of this card is a condition precedent to warranty coverage. Before any warranty work is performed, we require that you contact your Selling Dealer to request warranty assistance.

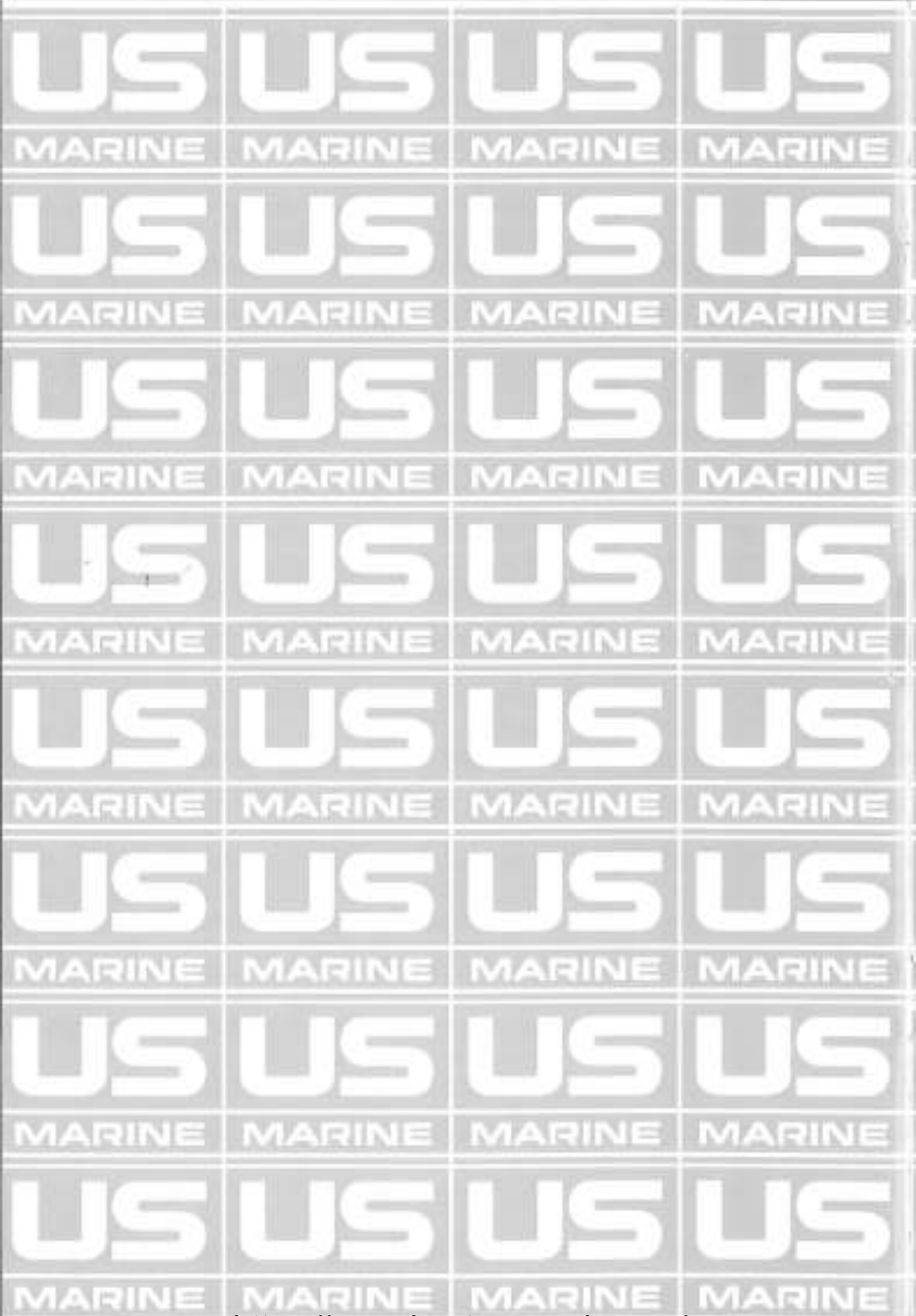
We require that you return your boat, at your expense, to your Selling Dealer or, if necessary, to the US Marine factory. You will be responsible for all transportation, haulouts and other expenses incurred in returning the boat for warranty service.

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