

Bentley
PONTOON

Boat Owner's Manual

www.Bentleypontoon.com

INTRODUCTION

This Owner’s Manual introduces you to the special features of your Bentley Industries boat. This manual includes descriptions of the boat’s various systems and general information about boat handling, operation, and maintenance. Please take the time to read this manual and the equipment manuals and become familiar with their contents. Keep them with the boat in a safe place that is easily accessible.

GENERAL INFORMATION

This section of your boat manual contains important information about your new Bentley Industries boat and general procedures to be followed before operating it.

Capacity Plate

A capacity plate is mounted on each Bentley boat. The capacity plate states the maximum load your boat can carry and the motor’s maximum horsepower. Give yourself an added margin for safety in turbulent waters. On outboard boats, the plate shows maximum recommended horsepower for the outboard motor.

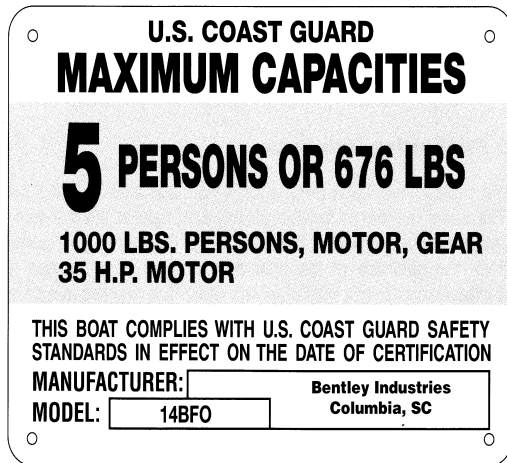


Figure 1-1 Capacity Plate



CAUTION: Overloading and improper distribution of weight are significant causes of accidents. Overloading is a violation of U.S. Coast Guard regulations.

The U.S. Coast Guard requires that a plate stating the maximum load capacity be affixed to boats up to 20 feet long. This plate shows the load in pounds (persons and gear) the boat can carry safely under normal conditions. The U.S. Coast Guard establishes these load capacity ratings. (Boats over 20 feet long are not subject to U.S. Coast Guard safe labeling requirements.)

You, the operator, are responsible for using common sense and sound judgment when loading your boat. Pleasure boats tend to remain stable under most operating conditions because of their beam, draft, and weight displacement. Remember that **overloading and improper distribution of weight are significant causes of accidents. Keep weight below maximum limits for safety in turbulent waters.**



WARNING: Do not exceed your boat's capacity rating. An overpowered boat can become unstable, resulting in a toss of control or capsizing. An overloaded boat can become hard to handle. Overloading can also reduce freeboard and increase the danger of flooding or swamping, particularly in rough water.

NOTE: Your Bentley Industries warranty will be voided if you exceed the recommended capacity horsepower rating.

Serial Numbers

Along with a capacity tag, each Bentley Industries boat has a serial number. The serial number is located on the right side of the transom of each Bentley Industries pontoon boat. The serial number on your pontoon boat is located on the backside of the right tube bracket. The number, which is assigned by the Coast Guard, will begin with BNT. The last two numbers are the year of production.

For example: BNT 00000 Z094

Education

If you have never owned a boat before, free courses on the arts of boat handling and seamanship are conducted by volunteer organizations, such as the U.S. Power Squadrons, the U.S. Coast Guard Auxiliary and the American Red Cross. These courses will sharpen your boating skills and bring you up-to-date on current rules and regulations even if you are a veteran boater. See Section 2 for more information.

BOAT DELIVERY RESPONSIBILITIES

Dealer

The dealer will perform the following services:

1. Discuss the terms of all warranties, and stress the importance of registering warranties with the appropriate manufacturers.
2. Provide instruction for obtaining warranty service.
3. Go over the pre-delivery service record with you, and then sign it to certify that all work has been done.
4. Provide you with thorough instruction in the operation of your boat and all of its systems and components.

Owner

You, the owner, have responsibilities also:

1. Sign off on the boat inspection sheet prior to delivery.
2. Schedule an appointment with your dealer to go over all warranties. Complete the Bentley Industries Boat limited warranty registration card. The card is in an envelope inside the Owner's Manual packet. Keep a record of the hull number for future reference.
3. Inspect the boat at the time of delivery to ensure that all systems and components are operating properly.
4. Schedule an appointment with your dealer to go over the pre-delivery engine service record. Sign this record to indicate that it has been explained to you by your dealer.
5. Operate all equipment in accordance with the manufacturer's instructions. Read all manuals and instructions supplied with your boat.
6. Refer to your engine warranty for initial inspection and service requirements.
7. Perform or provide for the appropriate periodic maintenance outlined in the owner's manuals and service guides.
8. Schedule your boat's 20 hour check-up with your dealer.

WARRANTY

Your new Bentley Industries boat is backed by a limited express warranty. The complete warranty is printed at the end of this section. It is important to understand all the terms of the warranty. If a problem arises with your boat, contact the dealer immediately to determine warranty coverage. When contacting your dealer, please have the model or serial numbers for the items needing repair readily available. Your boat's hull

identification number will also be needed. The hull identification number is below the stern casting on the starboard rear corner of your Bentley Industries boat.

Should the dealer fail to correct the problem, contact Bentley Industries within 30 days.

EQUIPMENT MANUFACTURER MANUALS

Bentley Industries purchased various equipment and components from other manufacturers and installed them on your boat while it was being built. Most OEMs (original equipment manufacturers) have provided operation and maintenance manuals for your boat's equipment. Keep the OEM manuals with your Owner's Manual in a safe and accessible place. Be sure to pass them along to the new owner if you sell your boat.

Most OEM equipment has its own limited warranty. Warranty registration cards are in your owner's packet.

NOTE: Please note that information in this manual only summarizes more detailed information in the equipment manuals. Information in the OEM manuals takes precedence over information in the Bentley Industries Owners Manual.

BOATING LAWS AND REGULATIONS

Boat Registration

Every boat equipped with propulsion machinery of any type must be registered in the main state of usage. In nearly all states this means registration or the designated state agency. In a few jurisdictions, the Coast Guard retains registration authority. All motorcrafts not documented by the U.S. Coast Guard must display registration numbers. Registration numbers and validation stickers must be displayed on the boat according to regulations. Your Bentley Industries dealer will either supply registration forms or tell you where they may be obtained. The registration agency will issue a certificate which must be carried aboard when using your new Bentley Industries boat.

Insurance

The boat owner is legally responsible for any damages or injuries caused by the boat. In most states this is true even if someone else is operating the boat when the accident occurs. You should carry adequate personal liability and property damage insurance on your Bentley Industries boat as you do on your automobile. You should also protect your investment by insuring your Bentley Industries boat against physical damage or theft.

Discharge of Oil

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or a 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 \$5,000.

Disposal of Plastics & Other Garbage

Plastic refuse dumped in the water can kill fish and marine wildlife and can foul vessel propellers and cooling water intakes. Other forms of waterborne garbage can litter beaches and make people sick. U.S. Coast Guard regulations completely prohibit the dumping of plastic refuse or other garbage mixed with plastic any where and restrict the dumping of other forms of garbage within specified distances from shore.

Marine Sanitary Device

If your boat has a porta-potti, it is illegal to discharge the waste into the water in most areas. You are responsible for being aware of and obeying all local laws concerning waste discharge. Consult with the Coast Guard, local marina or your dealer for information.

Some states and localities have limits in speed, noise and trailer specifications. It is your responsibility to be aware of these laws and limits and to be sure that your boat (and trailer) company with your local Marine Patrol or local Coast Guard office.

HAZARD COMMUNICATION LABELS

Some or all of the hazard communication labels shown below can be found in various locations on board your boat. If any label is missing, notify your Boat dealer for a replacement.

NOTE: Respective labels are determined by the standard and optional equipment actually installed on board your boat upon delivery.

BOATMAN'S CHECK LIST

For maximum enjoyment and safety, check each of these items BEFORE you start your engine:

DRAIN PLUG (Securely in place?)

LIFE-SAVING DEVICES (One for every person on board?)

FUEL SYSTEM (Adequate fuel? Leaks? Fumes?)

BATTERY (Fully charged? Cable terminals clean and tight?)

ENGINE (In neutral?)

CAPACITY PLATE (Are you overloaded or overpowered?)

WEATHER CONDITIONS (Safe to go out?)

ELECTRICAL EQUIPMENT (Lights, horn, pump, etc.?)

EMERGENCY GEAR (fire extinguisher, baiter, paddle, anchor & line, signaling device, tool kit, etc.?)

©NMMA 1981

**WHEN TRAILERING TIE DOWN
AFT SUN LOUNGE CUSHION**

**WARNING INSPECT FUEL SYSTEM
ANNUALLY FOR LEAKS AND
CORROSION**

CAUTION

DO NOT STORE GASOLINE OR HAZARDOUS MATERIALS UNDER SEAT

CAUTION

**ENGINE MUST BE OFF
BEFORE USING PLATFORM**

WARNING

**NO PASSENGER ALLOWED ON
OUTSIDE OF GATES
WHILE BOAT IS IN MOTION**

(BOATS WITH FENCING ONLY)

**NO PASSENGER ALLOWED ON
SUNDECK WHILE BOAT IS IN
MOTION**

**NO PASSENGER ALLOWED ON
SUNDECK UNTIL ALL SAFETY
PULL-PINS ARE SECURED**

Effective January 1, 2003

Bentley Industries, LLC. ("Bentley Industries") warrants all of its new boats (subject to the terms and conditions listed below) to be free from defects in materials and workmanship under normal non-commercial use and service to only the original retail purchaser (hereinafter called "Consumer") for the time periods stated herein, when the boat is sold through an authorized Bentley Industries boat dealer. This warranty is not transferable to any subsequent owner of the boat.

WARRANTOR

This warranty is granted by Bentley Industries, LLC. 8000 Wilson Blvd. Columbia, SC 29203, Telephone (803) 691-2100

TERMS OF WARRANTY

1. COMMERCIAL USE — This warranty extends to any non-commercial Consumer who normally uses it for personal, family or household purposes.
2. COMPONENTS — Manufactured and installed by Bentley Industries, other than specifically described below, are covered for twelve (12) months from the date of the delivery to the Consumer, except the following items which are not covered by a Bentley Industries warranty:
 1. Windshield breakage
 2. Paint finishes
 3. Engine installation when installed by others
 4. Tears in vinyl or fabric upholstery, carpet, convertible tops, side curtains, or for zippers.
 5. Vinyl or fabric that fades or discolors
 6. Leakage around windshields, latches, top and other apertures.

3. ALUMINUM RIVET HULLS AND JON BOATS — Bentley Industries' warranty for aluminum rivet boat hulls, canoes and jon boats, except for riveted seam lines, for damage resulting from defects in materials and workmanship is for a period of ten (10) years from the date of delivery to the Consumer based on the following depreciation schedule for labors and material costs. **NEW EFFECTIVE 07/01/2004 Bentley Industries provides a lifetime limited warranty to the consumer against leakage resulting from defects in material or workmanship for the all riveted seam lines. Structural damage to the seam line caused by striking an object is not covered.**

Year	1st	2nd	3rd	4th	5th	6th	7th
Bentley Industries pays	100%	100%	80%	70%	60%	50%	40%
Owner pays	0%	0%	20%	30%	40%	50%	60%

4. PONTOON BOAT — Effective July 1, 2004 Bentley Industries' pontoon boats provide a LIFETIME LIMITED WARRANTY to only the original owner for the DECK only (no carpet), TUBES, and TRANSOM for damage resulting from defects in material or workmanship.

5. COMPONENTS NOT MANUFACTURED BY BENTLEY INDUSTRIES - The component parts not manufactured by Bentley Industries are individually warranted by their respective manufacturers and not by Bentley Industries. Applicable warranty policies or statements not delivered with the boat can be requested from Bentley Industries' Service Department for the following components:

1 Engine

2. Controls and steering components

3. Propellers

4. Pumps

5. Fuel tanks

6. Hardware and lights

7. Instruments

8. Pedestals and pedestal bases

9. Windshields

10. Carpet - Five year limited warranty on alpha carpet and two year limited warranty on medallion carpet. Warranty applies to the original owner and is non transferable.

11. Plastic Units - Lifetime limited warranty against defective materials or workmanship to the structure of the unit. Warranty does not cover color fade. Warranty applies to original owner and is not transferable.

12. Bimini Tops (Pontoon Boats) - Five year limited warranty against loss of color from normal exposure conditions including sunlight, rot or normal atmospheric chemicals which might render it unserviceable. Warranty does not cover labor installation or fabrication costs, nor does it cover damage due to speeds in excess of 15 mph.

13. Vinyl - Five year limited warranty against defective material or workmanship. Warranty does not cover product abuse, neglect or the use of cleaning procedures or materials other than those specifically recommended.

14. Wood (Aluminum/Pontoon Boats) - Lifetime warranty for original purchaser against decking failure due to fungal decay, termite damage, delamination or structural failure of plywood in normal recreational usage. Materials, labor and carpet fully warranted for 10 years; after 10 years plywood replacement and labor only.

6. FURTHER, THIS WARRANTY DOES NOT APPLY TO:

1. Damage resulting from the use or storage of harmful solvents or cleaners, electrolysis by reversed polarity connections, use of improper anti-fouling paint or metal attachment to the boat.
2. Damages due to accident, misuse, abuse, negligent operations, or acts of God.
3. Boats used for racing purposes or boats that have been modified in any way.
4. Failure to perform maintenance services recommended in the Owner's Manual.
5. Use of motors larger than certified by the United States Coast Guard.

7. TRAILER DAMAGE — Bentley Industries warranty does not cover repairs necessary due to inadequate trailer support, or improperly designed or assembled trailers.

BENTLEY INDUSTRIES' RESPONSIBILITY

During the warranty period described above, Bentley Industries will, at its option, repair or replace, free of charge, including related labor charges, any warranted parts found to be defective due to defective material or workmanship when repair work is done by a Bentley Industries authorized dealer or by Bentley Industries, within a reasonable time after the boat is delivered for repair. Expenses, losses, or charges to the Consumer for all incidental or consequential items of a commercial nature (such as hotel or motel accommodations, telephone calls, meals, loss of salaries or commissions resulting from down time, etc.) are NOT COVERED under this warranty and Bentley Industries disclaims any liability or responsibility for such.

WARRANTY CLAIM PROCEDURE

1. Should a warranted defect occur within the warranty period, the Consumer should immediately (in no event later than 30 days after discovery of the defect) contact the dealer from whom the boat was purchased. The Bentley Industries boat must be returned to the dealer from whom you purchased your boat to perform warranty repairs. In the event you are traveling or have moved to another locale, notice may be given and warranty work may be performed by any Bentley Industries authorized dealer.
2. You must present your original sales receipt to the dealer to prove the boat is still under warranty.
3. The authorized Bentley Industries dealer will examine the boat to determine if, in his opinion, a warrantable defect exists. If a warrantable defect exists, the dealer will, at its option, repair or replace the defect as described under "Bentley Industries' Responsibility" above. If, in the dealer's opinion, service is required at the factory, the dealer must obtain written authorization from Bentley Industries' Warranty Department. The boat(s) must be returned to the Bentley Industries Warranty Department, prepared

for transportation, with all transportation charges prepaid by Consumer. Bentley Industries will, at its option, repair or replace the defect as described under “Bentley Industries’ Responsibility” above. The boat will be returned to the Consumer freight collect. This warranty does not cover transportation to the dealer or the manufacturer, loss of time, loss of revenues, inconvenience or other incidental or consequential damages.

4. Consumers will be asked to sign a warranty form to assure Bentley Industries that all warranty work has been performed.

CONSUMER’S RESPONSIBILITY

The warranty registration card must be completed by the Consumer and the selling Bentley Industries dealer on the date of the delivery. The card must be submitted within thirty (30) days of delivery to Bentley Industries, a condition precedent to warranty coverage.

It is the obligation of the Consumer to deliver the boat to the authorized Bentley Industries dealer or the Bentley Industries factory to repair, transportation charges prepaid, within thirty (30) days of discovery of the defect.

The Consumer must maintain the boat in accordance with recommendations printed in the Owner’s Manual.

EXCLUSIONS AND IMPLIED WARRANTIES

Bentley Industries boats are intended primarily for recreation and leisure time purposes. This warranty does not extend to any defect due to the negligence of others, failure to operate or maintain the products in accordance with the operating and maintenance instructions furnished with each new product, unreasonable use, accident, alterations, or ordinary wear and tear.

IN CONSIDERATION OF THE FOREGOING, THE IMPLIED WARRANTY OF MERCHANTABILITY IS LIMITED IN DURATION TO THE DURATION OF THESE WRITTEN WARRANTIES AND ANY OTHER IMPLIED WARRANTIES ARISING BY OPERATION OF LAW ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. (Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.)

THIS WARRANTY IS SPECIFICALLY IN LIEU OF ALL OTHER EXPRESSED WARRANTIES ON

THE PART OF BENTLEY INDUSTRIES. No person, including any dealer, agent or representative of Bentley Industries is authorized to make any representation or warranty concerning Bentley Industries products on behalf of the company, except to refer purchasers to this warranty.

This warranty excludes transportation to and from the dealer or manufacturer to obtain warranty service, loss of time, loss of revenues, inconvenience or other incidental damages. BENTLEY INDUSTRIES IS NOT LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF ANY WRITTEN OR IMPLIED WARRANTIES, NEGLIGENCE OR OTHERWISE FOR SUCH BENTLEY INDUSTRY BOATS. (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.)

THE WARRANTY HEREIN CONTAINED IS EXPRESSLY LIMITED TO THE ORIGINAL PURCHASER OF A BENTLEY INDUSTRIES BOAT, AND BENTLEY INDUSTRIES DISCLAIMS ANY RESPONSIBILITY OR LIABILITY TO ANY SUBSEQUENT OWNERS OR PURCHASERS OF A BENTLEY INDUSTRIES BOAT.

Bentley Industries reserves the right to make changes in the design or material of its product without any obligation to incorporate such changes in any product previously manufactured.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

SAFETY

HAZARD COMMUNICATION STATEMENTS

Five levels of advisory and cautionary statements are used throughout this manual to call attention to special information, operating procedures and safety precautions.

Hazard Seriousness Level

The signal words DANGER, WARNING and CAUTION identify hazards and the levels of hazard seriousness. Their selection is based on the likely consequence of human interaction with a hazard in terms of:

1. The degree of severity.

(Minor injury, severe injury, death)

2. The probability of injury.

(WILL result in, COULD result in)

Failure to follow the recommendations contained in any of these statements may result in some form of personal injury. Definitions for identifying hazard levels with their respective signal words are as follows:

DANGER Immediate hazards that WILL result in severe personal injury or death

WARNING Hazards or unsafe practices that COULD result in severe personal injury or death

CAUTION Hazards or unsafe practices that COULD result in minor personal injury or product or property damage

Owner Advisory Statements

Advisory statements consist of two levels: NOTE and IMPORTANT. Advisory statements alert you to conditions that affect equipment operation, maintenance and servicing practices.

A NOTE statement is a general advisory statement relating to equipment operation and maintenance procedures. A NOTE statement draws attention to information that is of more importance than normal text.

An IMPORTANT statement indicates a procedure intended to prevent damage to equipment or associated components.

SAFETY GEAR AND EQUIPMENT

Before leaving on your boating excursion, be sure that all required lifesaving and fire extinguishing equipment is on board. Periodically inspect all safety equipment to be sure it is in proper operating condition. Make sure all passengers know what safety equipment is on board, where it is, and how to use it.

Required Equipment

Federal law requires you to provide and maintain safety equipment on board your boat. Check U.S. Coast Guard, state, and local re to ensure your boat has all required safety equipment on board. Additional equipment may be recommended. For your own safety and that of your passengers, make yourself aware of its availability and use.

Personal Flotation Devices (PFDs)

There must be one U.S. Coast Guard approved wearable personal flotation device of Type I, II, or III for each person on board or being towed on water skis, water sports tubes, kneeboards, etc. The PFD5 must be of a suitable size for each person, and they must be in serviceable condition and readily accessible.

- **PFD Type I, Wearable:** This PFD has the greatest required buoyancy. Its design allows for turning most unconscious persons in the water from face down position to a vertical or slightly backward position. Type I is most effective for all waters, especially when rescue may be delayed.
- **PFD Type II, Wearable:** Type II turns its wearer the same as Type I, but the turning action is not as pronounced as the Type I. The Type II will not turn as many persons under the same conditions as a Type I.
- **PFD Type III, Wearable:** Type III allows the wearers to place themselves in a vertical or slightly backward position. Type III has the same buoyancy as a Type II PFD. It has little or no turning ability.
- **PFD Type IV:** Your boat also must have one throwable PFD Type IV device on board. The Type IV device can be thrown to a person in the water and grasped and held by the person until rescued. The design does not allow for it to be worn. The most common Type IV PFDs are buoyant cushions and ring buoys. The throwable Type IV PFD shall be immediately available for use and in serviceable condition.

Fire Extinguisher

All Class A and Class I motorboats must carry at least one U.S. Coast Guard approved portable fire extinguisher. Coast Guard approval is indicated on the label. The

extinguisher can be any one of the following: 2-pound dry chemical, 4-pound carbon dioxide, or 1-1/4 gallon foam extinguisher.

Sound Signalling Device

Class I boats are required to carry a hand, mouth, or power operated horn or whistle. They are also recommended for Class A boats. The device should be used to promote safe passing, as a warning to other vessels in fog or confined areas, or as a signal to operators of Jocks or drawbridges. Following are standard whistle signals:

- One Prolonged BlastWarning signal
- One Short BlastPass on my port side
- Two Short BlastsPass on my starboard side
- Three Short BlastsEngines in reverse
- Five or More Blasts..... Danger Signal

Navigation Lights

Navigation lights are intended to keep other vessels informed of your presence and course. If you are operating your boat between sunset and sunrise, you are required to display appropriate navigation lights.

Visual Distress Signals

U.S. Coast Guard regulations require all recreational boats be equipped with visual distress signal equipment. The regulations apply to boats used on coastal waters, which includes the Great Lakes, territorial seas and those waters directly connected to the Great Lakes and the territorial seas, up to a point where the waters are less than two miles wide, and to boats owned in the United States when operating on the high seas.

Visual distress signal equipment may be of the pyrotechnic or non-pyrotechnic type. The equipment must be approved by the U.S. Coast Guard, be in service able condition, and be stowed in a readily accessible location. Equipment having a date for serviceable life must be within the specified usage date shown.

Approved pyrotechnic visual distress signals and associated equipment include:

- Red flares, hand-held or aerial
- Orange smoke, hand-held or floating
- Launchers for aerial red meteors or parachute flares

Approved non-pyrotechnic equipment includes orange distress flags and electric distress lights.

No one signaling device is ideal under all conditions or for all purposes. Consider carrying various types of equipment on board. Careful selection and proper stowage of visual distress equipment is very important if young children are frequently aboard.

Recommended Additional Gear and Equipment

Basic Equipment

Anchor and anchor line	Tow line
2 lightweight fenders	2 mooring lines
First-aid kit	Flashlight or portable searchlight
Oar or paddle	Compass
Signal flares	Boat hook
Sunburn lotion	Sea anchor (open waters)

Gear and Equipment for Extended Cruises

Charts of the area	Parallel rulers
Dividers	Spare battery
Rainwear	

Tools

Spark plug wrench	Screwdrivers
Pliers	Adjustable wrench
Hammer	Electrician's tape
Lubricating oil	Jackknife

Spare Parts

Spare bulbs	Fuses
Extra drain plug	Shear pin (if applicable)
Spare propeller	Propeller nut and washer
Spark plugs	Flashlight batteries

SAFE BOATING PRACTICES

General Recommendations

Your safety and the safety of your passengers are your responsibility. You should fully understand and become familiar with the following safety precautions before launching your boat:

- Always operate your boat with care, courtesy and common sense. Understand and obey the Rules of the Road.
- Keep your boat and equipment in safe operating condition. Make a practice of inspecting the hull, engine, and all boating gear.
- Do not allow passengers to ride on parts of your boat other than designated seating areas. Make sure passengers remain seated while underway. Passengers seated in the bow area should not obstruct driver's vision.
- If your boat has a walk-through windshield, secure it in the closed position before accelerating faster than idle speed.
- Be very careful when fueling your boat. Be aware of the boat's fuel tank capacity and fuel consumption for frequently used engine speeds.
- Make sure you have enough fuel for your boating excursion. Keep an adequate reserve of fuel in case your plans change due to weather or other circumstances. The most common practice for good fuel management is the one-third rule. Use one-third of your fuel supply to travel to your destination and one-third to return. Keep the remaining one-third in reserve for emergencies.
- Always keep accurate updated charts of your boating area on board.
- Before departure, file a travel plan with a responsible person ashore.
- Make sure at least one other passenger knows the basic operating procedures for handling your boat in case you unexpectedly become unable to do so.
- Do not overload or improperly load your boat. You are responsible for using common sense and sound judgment. Turbulent water and unfavorable weather reduce the capacity of your boat. You should be aware of weather reports and water conditions before getting underway.

Safe Operating Speed

The maximum speed at which you can make sudden turns without losing control of your boat is the maneuvering speed of the craft. Maneuvering speed varies depending on wind, waves and other factors. Some boats display a warning advising that maneuverability above a given speed is limited. This speed is based on tests in calm water. There are

SAFE BOATING PRACTICES

General Recommendations

Your safety and the safety of your passengers are your responsibility. You should fully understand and become familiar with the following safety precautions before launching your boat:

- Always operate your boat with care, courtesy and common sense. Understand and obey the Rules of the Road.
- Keep your boat and equipment in safe operating condition. Make a practice of inspecting the hull, engine, and all boating gear.
- Do not allow passengers to ride on parts of your boat other than designated seating areas. Make sure passengers remain seated while underway. Passengers seated in the bow area should not obstruct driver's vision.
- If your boat has a walk-through windshield, secure it in the closed position before accelerating faster than idle speed.
- Be very careful when fueling your boat. Be aware of the boat's fuel tank capacity and fuel consumption for frequently used engine speeds.
- Make sure you have enough fuel for your boating excursion. Keep an adequate reserve of fuel in case your plans change due to weather or other circumstances. The most common practice for good fuel management is the one-third rule. Use one-third of your fuel supply to travel to your destination and one-third to return. Keep the remaining one-third in reserve for emergencies.
- Always keep accurate updated charts of your boating area on board.
- Before departure, file a travel plan with a responsible person ashore.
- Make sure at least one other passenger knows the basic operating procedures for handling your boat in case you unexpectedly become unable to do so.
- Do not overload or improperly load your boat. You are responsible for using common sense and sound judgment. Turbulent water and unfavorable weather reduce the capacity of your boat. You should be aware of weather reports and water conditions before getting underway.

Safe Operating Speed

The maximum speed at which you can make sudden turns without losing control of your boat is the maneuvering speed of the craft. Maneuvering speed varies depending on wind, waves and other factors. Some boats display a warning advising that maneuverability above a given speed is limited. This speed is based on tests in calm water. There are

- Anchoring and weighing anchor
- Handling mooring lines and tying up
- Responding to fire, flooding, collision, and other emergencies

Voluntary Inspections

State boating officials in many states or the U.S. Coast Guard Auxiliaries offer courtesy inspections to check out your craft. They will check your boat for compliance with safety standards and required safety equipment. You may voluntarily consent to one of these inspections, and you are allowed time to make corrections without prosecution. Check with the appropriate state agency or the Coast Guard Auxiliary for details.

Rules of the Road

Your boat is subject to U.S. Coast Guard-enforced marine traffic laws known as Rules of the Road. The United States Inland Navigational Rules apply to all vessels inside the demarcation lines separating inland and international waters. You can get a copy of the Rules of the Road from your local U.S. Coast Guard Unit or the United States Coast Guard Headquarters (1300 E Street NW, Washington, D.C. 20226) in the publication titled, Navigational Rules, International-Inland.

Aids to Navigation (U.S. Coast Guard pamphlet #123) explains the significance of various lights and buoys. This and other pamphlets, including the Boating Safety Training Manual and Federal Requirements for Recreational Boats, are also available from the U.S. Coast Guard Headquarters.

Because of proposed alterations for buoys and markers, contact the U.S. Coast Guard to stay informed of impending changes.

If you have a ship-to-shore radio telephone on board, heed storm warnings and answer any distress calls. The spoken word “**MAYDAY**” is the international signal of distress. “**MAYDAY**” **should NEVER be used unless there is present danger**

— **an emergency — and you are in need of immediate assistance.**

Right-of-Way

- Boats being overtaken such as rowboats, large vessels and sailboats have the right-of-way in nearly all cases. Stay clear of these craft and do not create

a wake which may cause them trouble. Remember, you can maneuver more easily than they can.

- If you meet head-on — keep to your right.
- When crossing, the boat to your right has the right-of-way.

- Slow down when approaching other vessels.
- Always be ready to assist another boat in distress.

Drugs and Alcohol

In the interest of safety, do not use drugs or alcohol while operating your boat. (Drugs or alcohol means either substance or both substances at the same time.) Operating a motorized vessel while under the influence of drugs or alcohol carries a significant penalty. Using drugs or alcohol decreases your reaction time, impairs your judgment, and inhibits your ability to operate your boat safely.

WATER SPORTS

Water Skiing

Water skiing, kneeboarding, and riding on inflatable towable devices require an increased safety awareness. The following guides will do much to reduce the hazards while water skiing.

WARNING: Boats are not designed for and should not be used for towing any device designed to become airborne when towed behind a boat.

1. Ski only in safe areas, away from other boats and swimmers, out of channels and in water free of underwater obstructions. Never participate in towed water sports near beaches or in restricted areas. Stay out of channels and other heavily travelled waterways.
2. Allow no one who cannot swim to water ski.
3. Be sure that the skier is wearing a proper personal flotation device. A properly designed ski vest is intended to keep a stunned or unconscious person afloat.
4. Always carry a second person on board to observe the skier so the driver can give full attention to the operation of the boat and the waters ahead.
5. Approach a skier in the water from the lee side, and be certain to stop your motor before coming in close proximity to the skier.
6. Give immediate attention to a fallen skier. He or she is vulnerable in the water alone and is difficult to see by other boaters.

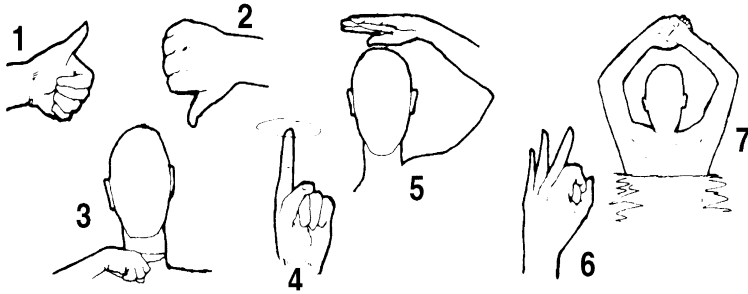


Figure 2-1 Water Skiing Signals

Figure 2 identifies a set of hand signals recommended by the American Water Ski Association (AWSA). Skier, observer and boat operator should all know and understand these seven simple signals from the skier.

1. Thumb Up: Speed up the boat.
2. Thumb Down: Slow down the boat.
3. Cut Motor/Stop: Immediately stop boat. Slashing motion over neck (also used by driver or observer).
4. Turn: Turn the boat (also used by driver). Circle motion—arms overhead. Then point in desired direction.
5. Return to Dock: Pat on the head.
6. OK: Speed and boat path OK. Or, signals understood.
7. I'm OK: Skier OK after falling.

For more information about water skiing, please contact the American Water Ski Association, 799 Overlook Drive, Winter Haven, Florida 33884 (1-800-533-2972).

Fishing

When fishing from your boat, remember that you are a boat operator first and a fisherman second. When large groups of fishing boats are clustered together, and the fish are biting, following all boating rules is difficult. Using common sense is essential in these situations. Courtesy is also important to prevent tangled and cut lines. A fishing line wrapped around your propeller could damage your engine.

Swimming and Diving

Be sure your boat is securely anchored before going swimming or scuba diving. Turn the engine off and remove the ignition key, especially if children are staying aboard. Do not

use the swim platform or boarding ladder while the engine is running. Keep a responsible person aboard at all times.

You must display the red and white diver's flag if you dive. Place this flag on the boat or on a buoy in the area of the diving activity.

Before diving, make sure everyone understands proper reboarding procedures. The engine should always be turned off when swimmers and divers are reboarding. Rig a ladder or other means of climbing aboard unaided. Place the boarding ladder as far as possible from the outboard motor or stern drive in case you slip.

CAUTION: Do not use the lower unit of the outboard or stern drive as a boarding aid.

CARBON MONOXIDE HAZARD

Carbon monoxide poisoning can be a hazard whether your boat is moored or underway. Common sources include the exhaust from internal combustion engines and open flame devices such as charcoal grills. Because its weight is about the same as that of air, it can quickly spread throughout a confined space without the occupants being aware of its presence. It does not rise or fall as do some other gases. You must be aware of your surroundings and how they affect your safety and that of your passengers.

Carbon monoxide can be harmful or fatal if inhaled. Carbon monoxide in high concentrations can be fatal in minutes. To prevent exposure and reduce the possibility of carbon monoxide accumulation, make sure of adequate ventilation.

Carbon monoxide (CO) is an odorless and colorless poisonous gas. Burning gasoline or any other fuel containing carbon produces carbon monoxide.

Many variables can affect carbon monoxide accumulation. Among these are the following:

- Boat layout and configuration
- Location of structures and other boats
- Wind direction
- Vessel speed

Several examples follow which show how carbon monoxide can be hazardous.

Engine or generator exhaust from other vessels alongside, while docked or anchored, may emit carbon monoxide and cause excessive accumulation in the cockpit. Be alert for exhaust from other vessels alongside.

While underway, engine exhaust from your boat may cause excessive accumulation of carbon monoxide within the cockpit when operating the boat with a high bow angle. Provide adequate ventilation, redistribute the load, or operate at lower bow angle.

Engine exhaust from your boat, when operating at slow speed or stopped, may cause excessive accumulation of carbon monoxide within the cockpit. A tail wind can increase accumulation. Provide adequate ventilation or slightly increase speed if possible.

Because this manual cannot identify or describe every possible variable or combination of variables, boat operators must remain aware of the possibility of carbon monoxide accumulation.

SAFE OPERATION UNDER ADVERSE CONDITIONS

Storms

Keep an eye on the weather. Be aware of possible changing conditions by checking local weather reports prior to departure. Monitor strong winds and electrical storms closely. If you are forced to operate your boat under stormy conditions, observe these precautions:

- Make sure all passengers are wearing PFDs.
- Secure all loose gear.
- Reduce your speed. Keep enough power to head into the waves at an angle. Avoid taking waves over the bow. If wind and waves come from astern, adjust your power to keep waves behind from breaking over the stern.
- Position passengers so that weight will best keep the boat stable. It is advisable for passengers to keep weight low and as close to the centerline of the boat as possible.
- Head for the harbor or place of refuge which you can reach the most easily.
- If you lose power, tilt the outboard or stern drive up to reduce drag. Trail a sea anchor off the bow to keep the boat headed into the waves. A bucket filled with water, or even a plastic ice chest, can serve as an emergency anchor.
- Sound the bell, horn or whistle at short intervals.

Fog

Foggy conditions include mist, snowstorm or heavy rain.

- Avoid operation in such weather, especially if your boat is not equipped with radar or other electronic navigational aids.
- Check compass for direction. The compass will not inform you about your speed or distance from shore.
- Sound a 5-second blast from your horn or whistle is required once per minute (required by law). Remember to listen for the fog signals from other vessels and from navigation aids.
- Head toward shore slowly.

- If fog is too thick, drop your anchor and wait. Sound your horn or whistle. Have all passengers keep a constant lookout for other vessels.

Cold Weather

- Avoid bulky clothing. Wear several layers of lighter clothing and include a vest-type PFD among the layers for good insulation.
- Cold water and high winds often accompany cold weather. Avoid operation in cold weather unless your boat has protection against the wind and icy spray, such as a cabin or storm canvas, exposure to cold weather lead to frostbite or hypothermia. Freezing spray can also cause problems with your boat such as jammed control cables or frozen windshield wipers.

If a person falls overboard, hypothermia may be an immediate concern. Hypothermia means a person’s body loses heat to the water faster than the body can replace it. If not rescued, the person will become exhausted or likely drown. In general, the colder the water, the shorter the time for survival. PFDs will increase survival time because they provide insulation.

Water Temperature (°F)	Exhaustion Unconsciousness	Expected Time of Survival
32.5	Under 15 min	Under 15 to 45 mm.
32.5-40	15-30 min	30-90 min
40-50	30-60 min	1-3 hrs
50-60	1-2 hrs	1-6 hrs
60-70	2-7 hrs	2-40 hrs
70-80	3-12 hrs	3 hr-Indefinite
Over 80	Indefinite	Indefinite

Shallow Water

Operation in water too shallow for your boat presents a number of hazards to the propulsion system and the hull. If you strike anything at any speed, there is a risk of rupturing the hull, or damaging the propeller, propeller shaft, struts and rudder. Even if you do not strike the bottom or an obstruction, you run the risk of clogging your engine’s cooling water intakes with sand, aquatic weeds or debris. This also applies to deep water containing stump fields, sand bars or unmarked underwater obstructions. If you are unfamiliar with the area you are in, obtain a chart or ask local boatmen about depth conditions. Go slowly and keep a bow lookout when operating in shallow waters.

Night Operation

Nighttime operation is not necessarily hazardous, but remember that vision is restricted. Floating debris, fixed obstructions or large waves may be hard to spot. Night vision can also be impaired by sudden exposure to bright light.

- Check your navigation lights before you go out in the dark. They must be working in order to warn other boats of your presence and course. If the bow light of another boat shows red, you must yield. If the bow light shows green only, you have the right-of-way. Slow down even if you have the right—of-way.
- Watch for onshore lights. Be aware that these lights can sometimes make lighted or reflective navigational lights and the lights of other boats difficult to see.
- Always proceed at a slow speed.
- Have crew members assist in keeping a lookout for other boats or other possible hazards.
- Avoid staring at bright lights ashore and on your boat. In case of poor visibility, turn on your running lights.

Swamped or Capsized Boat

If your boat becomes swamped or capsizes, put on a PFD immediately and set off a distress signal. Chances are good that a capsized boat will stay afloat. For this reason stay with the boat. Do not leave the boat or try to swim to shore except under extreme conditions. A capsized boat is easier to see than a swimmer, and the shore may be farther than it appears.

Collision

In case of a serious collision, first check the condition of persons aboard. Then inspect the boat to determine the extent of damage.

- Have all persons on board put on their PFDs.
- Prepare to help the other craft unless your passengers or boat are in danger.
- If the bow of the other boat penetrated your boat's hull, prepare to plug the fracture once the boats are separated. Shore up the hole with a spare life jacket or bunk cushion inside your boat. While plugging the hole, trim weight to get the hole above the waterline.

If your boat has a radio, contact the U.S. Coast Guard or other rescue authorities immediately (VHF channel 16 or CB radio channel 22).

Running Aground

If your boat runs aground, check persons on board for injury and inspect the boat and propeller for damage. If possible, shift weight of passengers or gear to heel boat while reversing engine.

NAVIGATIONAL AIDS CHART

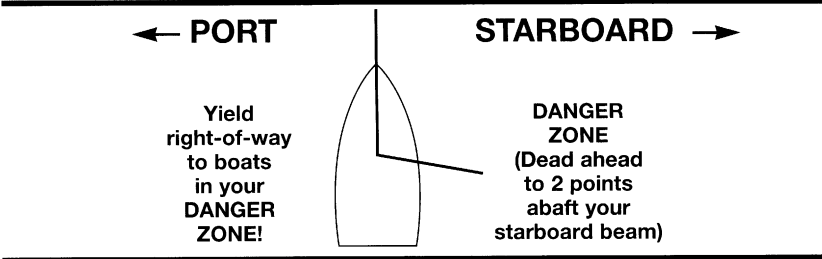
The Navigational Aids Chart on the following two pages contains information concerning:

- Whistle Signals
- Storm Warnings
- Bridge Signals
- Buoy description and information

NAVIGATIONAL AIDS CHART

REMEMBER THESE RULES

1. **OVERTAKING - PASSING:** Boat being passed has the right-of-way. **KEEP CLEAR.**
2. **MEETING HEAD ON:** Keep to the right.
3. **CROSSING:** Boat on right has the right-of-way. Slow down and permit boat to pass.



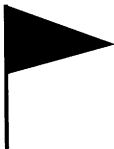
WHISTLE SIGNALS

- ONE LONG BLAST:** Warning signal (Coming out of slip)
- ONE SHORT BLAST:** Pass on my port side
- TWO SHORT BLASTS:** Pass on my starboard side
- THREE SHORT BLASTS:** Engine(s) in reverse
- FOUR OR MORE BLASTS:** Danger signal

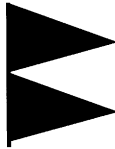
BRIDGE SIGNALS

		DAY (Flag)	NIGHT (Lights)
SOUND	VISUAL		
VESSEL: Open	VESSEL: Open		
BRIDGE: OK	BRIDGE: OK		
No	No	Same	Same
VESSEL: Replies:			
RADIO: VHF CH. 13	No		

STORM WARNINGS



RED FLAG
Small craft
(winds to
33 knots)



2 RED FLAGS
Gale
(winds up to
47 knots)



**SQUARE
RED FLAG
BLACK BOX**
(Storm)



**2 SQUARE
RED FLAGS
BLACK BOX**
(Hurricane)

LATERAL AIDS AS SEEN ENTERING FROM SEAWARD

PORT SIDE
ODD NUMBERED AIDS

GREEN LIGHT ONLY

FLASHING

OCCULTING

QUICK FLASHING

ISOPHASE

LIGHTED BUOY
*G "9"
 FI G 4sec*

CAN
*G
 C "7"*

DAYMARK
*G
 "1"*

SAFE WATER
MID-CHANNELS OR FAIRWAYS
NO NUMBERS-MAY BE LETTERED

WHITE LIGHT ONLY MORSE CODE
 Mo(A)

SPHERICAL
*RW
 SP "G"*

MR
*RW
 "A"*

LIGHTED
 AND/OR SOUND
*RW "N"
 Mo (A)*

PREFERRED CHANNEL
NO NUMBERS-MAY BE LETTERED

STARBOARD SIDE
EVEN NUMBERED AIDS

RED LIGHT ONLY

FLASHING

OCCULTING

QUICK FLASHING

ISOPHASE

LIGHTED BUOY
*R "8"
 FI R 4sec*

NUN
*R
 N "6"*

DAYMARK
*R
 "2"*

GREEN LIGHT ONLY RED LIGHT ONLY

*GR "C"
 FI (2 + 1)*

*RG "B"
 FI (2 + 1)*

LIGHTED

CAN
*GR
 C "L"*

PREFERRED CHANNEL TO STARBOARD
TOPMOST BAND GREEN

NUN
*RG
 N "W"*

PREFERRED CHANNEL TO PORT
TOPMOST BAND RED

JG
*GR
 "A"*

JR
*RG
 "B"*

SYSTEMS AND COMPONENTS

This section provides information about your boat's electrical system, instruments, controls, and other equipment.

ELECTRICAL SYSTEM

Your boat's electrical system is a 12 volt, direct current (VDC) type very similar to the system in an automobile. A battery or batteries supply power to the system. The battery's negative terminal is connected to the grounding studs of the engine. This type of negative ground system is the approved system for marine DC electrical systems. Critical circuits are protected by circuit breakers.

On a new boat, the electrical system is wired to handle factory-installed electrical equipment. If you add additional equipment, it must be adaptable to the negative ground system. Some models have extra accessory switches that can be used when installing additional equipment.

NOTE: Power feeds for accessory equipment must NOT be taken from the volt meter terminals. Consult with your dealer for additional DC power needs

on your boat.

An error in wiring the electrical circuits can cause a fire or damage the alternator, regulator, or other expensive components. Have your dealer install any additional equipment.

IMPORTANT: Be sure to protect all electrical components from rain, water, or sea spray. All wiring connections should be protected with shrink tape or electrical tape.

Wiring Code

The following chart details wire colors and wiring connections for your boat's functions including the engine and trip controls.

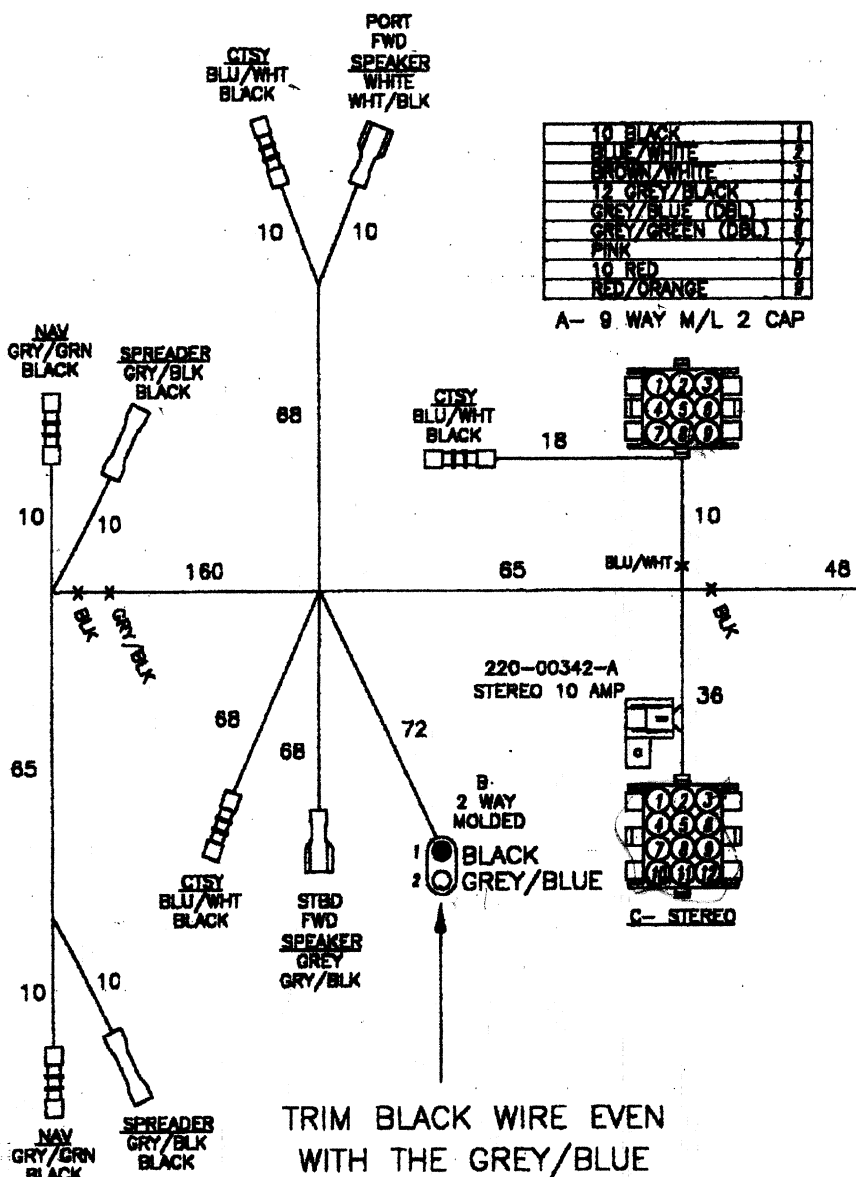
ELECTRICAL CODE

Engine Functions — Mercury Outboards

Black	Battery Negative	To	Ignition Switch/"M1" Post
Black/Yellow	Magneto Ground	To	Ignition Switch/"M2" Pos
Red	Engine Mounted Fuse	To	Ignition Switch/"B" Post
Purple	Alternator Output	To	Ignition Switch/"A" Post
Yellow/Black	Electric Choke	To	Ignition Switch/"C" Post
Yellow/Red	Starter Solenoid	To	Ignition Switch/"S" Post
Tan	Temperature Sender	To	Temperature Gauge/"s" Post
Gray	Tachometer Signal	To	Tachometer Gauge/"S" Post
Tan/Light Blue	Temperature Sender	To	Temperature Buzzer
Lt. Blue/ White	Trim Up Solenoid	To	Trim Up Switch
Lt. Green/White	Trim Down Solenoid	To	Trim Down Switch

Boat Functions — All Models

Red/Black	Transom Circuit Protection	To	Dash Circuit Protection
Black	Battery Negative	To	All Ground Circuits
Gray/Blue	Navigation Switch	To	Stern Light
Gray/Green	Navigation Switch	To	Bow Light
Dk. Brown/White	Livewell Switch 1/Pump	To	Livewell Pump 1/Right
Pink	Main or Starboard Gas Sender	To	Gas Gauge
Dk. Blue/White	Interior Lights Circuit Protect	To	Interior Lights
Pink/Black	Auxiliary or Port Gas Sender	To	Gas Gauge
12 Pin Plug	Continuous Power Source	To	Radio
9 Pin Plug	Horn Switch	To	Horn
Gray/Black	Docking Light Switch	To	Docking Lights
Purple	Ignition Switch	To	Dash Gauge Positive
9 Pin		To	Horn Switch
White/Dk. Brown	All Pumps Circuit Protection	To	All Pump Switches
9 Pin	Accessory Circuit Protection	To	Accessory Switch(es)
Black		To	Speaker Ground
White	Port Forward	To	Speaker Positive
Lt. Red/White	Tilt/Trim Switch	To	Engine Mounted Fuse



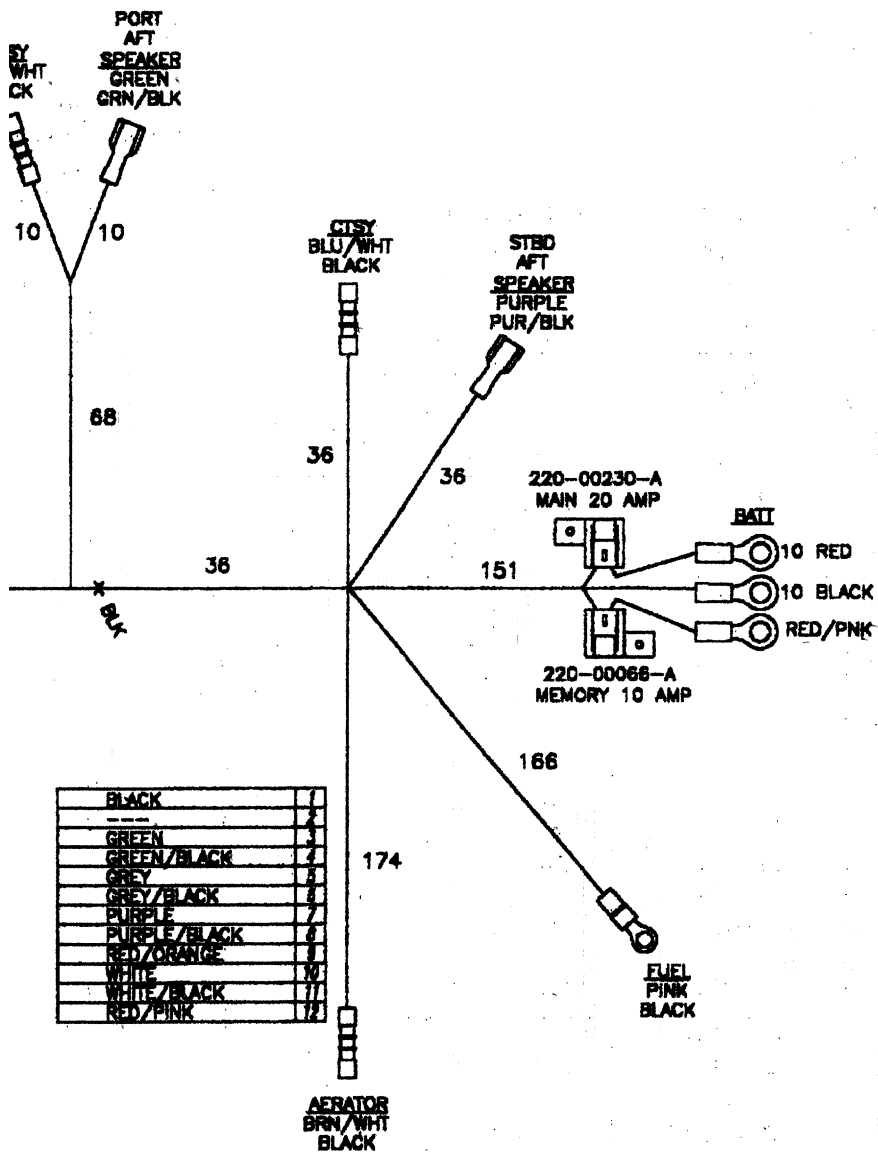
10 BLACK	1
BLUE/WHITE	2
BROWN/WHITE	3
12 GREY/BLACK	4
GREY/BLUE (DBL)	5
GREY/GREEN (DBL)	6
PINK	7
10 RED	8
RED/ORANGE	9

A- 9 WAY M/L 2 CAP

220-00342-A
STEREO 10 AMP

C- STEREO

TRIM BLACK WIRE EVEN WITH THE GREY/BLUE SEND TO TERMINATING MOLD AFTER LAYOUT



PONTOON DIST HRN PART # 220-02263-H BENTLEY	
	10-29-02 22002263.DWG

White	Trim Up Solenoid	To	Trim Up Solenoid
Black/White	Trim Down Solenoid	To	Trim Down Solenoid

4. Battery (Engine Starting)

The battery installed on your boat, by your dealer, has a high reserve capacity and cold cranking performance. The battery is charged through the engine-driven alternator.

Test the battery frequently for specific gravity (state of charge), water level in each cell, and battery cleanliness. Check that all connections are tight. If you need to replace a battery, install the same type. Be sure that the battery compartment is well ventilated.

WARNING: Poison! Batteries contain sulfuric acid and can cause severe personal injury if mishandled. Avoid contact with eyes, skin, or clothing. In case of contact, flush with water for at least 15 minutes. If swallowed, drink large quantities of water or milk. Follow the instructions on the label for Magnesia, beaten egg or vegetable oil. Get medical attention immediately.

When you install a battery, battery connections must be made properly.

Attach the negative battery cable to the negative (-) terminal on the battery.

Attach the positive cable to the positive (+) terminal.

WARNING: During charging, batteries produce gases which can explode, if ignited. A spark or explosion can shatter a battery. Battery acid can cause severe personal injury such as blindness. Keep flame, spark, and smoking materials away from battery while charging. Charge the battery in a well ventilated area.

To avoid explosions, do not use jumper cables and a booster battery to start the engine. Recharge the battery and recharge it ashore.

Batteries produce hydrogen and oxygen gases when they are being charged. These flammable gases escape through the vent/fill caps and may form an explosive atmosphere around the battery if ventilation is poor. This gas may remain around the battery for 24 hours after charging. Sparks or flame can ignite the gas and cause an explosion.

4.1 Meter

The voltmeter on the bow panel shows the charge level of the trolling motor batteries. (Power from the batteries is supplied to the 12V DC breaker on the helm dash.)

4.2 INSTRUMENTS AND CONTROLS

Note: Some boats do not have instrument panels. The instruments provided will vary from boat to boat. Instruments are listed in alphabetical order.

The instruments installed on your boat indicate current operating conditions for the engine and related systems. When you take delivery of your boat, ask your dealer about the normal readings of the gauges. This will provide you with a reference point to evaluate how well your boat is operating. Keep in mind that the readings on some gauges tend to fluctuate. You should investigate the cause for gauge readings that show a continuous variance or a sudden, substantial variance from normal readings.

Fuel Gauge

The fuel gauge indicates an estimate of the amount of fuel in the fuel tank. Note that the actual fuel supply may vary from that shown on the gauge. The most accurate reading of the fuel gauge is at idle speed when your boat maintains an approximately level position. While underway, the fuel gauge will usually indicate that the tank is fuller than it actually is because the bow is higher than when the boat is at rest. Since gauge readings are approximate, they should be compared to the hours of use versus known fuel consumption per hour.

Speedometer

The speedometer indicates the speed your boat is crossing the water in miles per hour. Water pressure from a water pickup at the boat's stern is measured and converted into a reading on the boat's speedometer.

Tachometer

The tachometer displays the engine operating speed in increments of 100 revolutions per minute (RPM). The tachometer shows the RPMs necessary under various engine operating conditions. Consult your dealer if you need more information.

Voltmeter

The voltmeter shows battery voltage. If the engine is running at normal speed (1000 RPMs or higher) and the alternator is charging, the reading on the meter will range between 12.0 to 15.5 volts. If the meter reading is high when the engine is not running and the ignition key or switch is ON, the battery is fully charged. Significantly higher or lower readings indicate a battery problem, alternator malfunction, or heavy drain on the battery. Check the charging system and the battery system for the cause of these readings. An oscillating reading shows a loose voltage regulator connection or loose belts. Low voltage readings after stopping the engine indicate a bad battery or a heavy load on the battery. Refer to your engine owner's manual for proper gauge readings.

Remote Controls

Remote controls, if provided, are mounted at the helm.

Throttle and Gearshift

Single-lever controls on some models integrate the throttle and gearshift into a single hand lever. (Some systems have separate levers for throttle and shift.) The single lever controls both the engine operating speed and the forward and aft movement of the boat. This type of design ensures safe control of the engine with one hand.

Moving the throttle forward of the neutral position engages the shifting mechanism, causing the boat to move forward. Continuing the forward movement increases engine RPMs and increases the speed at which the boat moves through the water.

High speed acceleration in reverse can create a wake that could wash over the transom and flood the boat. Gradually increase speed when moving in reverse.

Moving the throttle aft of the neutral position reverses the shift mechanism, causing the boat to move backward. Continuing the aft movement of the throttle increases engine RPMs and causes the boat to move backward faster. When maneuvering at low speeds, you can reverse the throttle (move throttle forward or aft) to control or brake boat travel.

When shifting between forward and reverse, always pause in neutral for a few seconds before reversing propeller rotation to prevent damage to the drive system.

Steering

Some models have a tilt steering wheel and an enclosed cable system connected to the motor. Check the cables regularly and tighten them as needed. Getting the “feel” of your boat’s steering system is important. Steering does vary from boat to boat depending on the shape of the hull, the type of engine, water and wind conditions, and the load. Turn the wheel from full left to full right. Check that the drive unit is turning correctly, freely, and smoothly. The cable output end of the steering system should be clear of fuel lines, control cables, electrical wiring, and outboard gear when an engine is moved through its full operating range.

Be sure the trim tab on the drive unit is adjusted properly. This trim tab can help reduce steering effort through the entire steering range. Follow the directions of the engine manufacturer for adjustment.

ENGINE

Refer to the engine owner’s manual for safety precautions and detailed operation, maintenance, and winterizing instructions.

NOTE: Your boat’s fuel system meets federal requirements in effect at the time your boat was manufactured. The fuel system was assembled with the best materials and components available.

LIVE WELL

An aerated livewell is standard on some models. The livewell provides an environment where your catch can be kept alive and healthy until you are back on shore. Turning on the LIVEWELL switch activates the livewell pump. Operating the livewell pump fills the livewells with fresh water and circulates fresh water through the well while the pump is running. The livewell pump can only be used while the boat is at rest in the water or moving at no wake speed. Fresh water sprays into the livewell through the aerator head. The location of the head varies by model.

IMPORTANT: Do not operate the livewell pump dry. The pump is water-cooled and becomes overheated if no water is flowing through the pump. If water does not come out of the discharge sprayer nozzle, stop the pump and correct the problem (for example, blown fuse, broken wires, closed flow control valve, plugged inlet). If the problem persists, check with your dealer.

Water starts overflowing when the well is about 3/4 full. As water continues to spray into the well, excess water flows into the overflow drain and directly outside the boat through the thru-hull drain fittings.

Do not use the livewells to hold bait. Bait can be lost through or plug the drains. Consider constructing a bait basket if you want to use the livewell to hold bait.

The livewell pump draws water through a hull fitting in the transom and pumps it into the livewell. The incoming water increases the oxygen content of the livewell water, helping to keep your fish alive. Use the livewell pump to maintain the proper water temperature for your fish.

If the overflow or drain becomes plugged, try back-flushing it with a garden hose set at low velocity. (Some models have a screen at the pump intake on the transom. Remove the screen before back-flushing.) Often the obstruction will blow back into the livewell where it can be easily removed. Be careful that you do not use too much pressure. You can blow the hoses off the fittings.

On some models, the livewell drains through the pump and the screen on the hull fitting must be cleaned occasionally.

NOTE: The Federal Water Pollution Act prohibits the discharge of oil or oily 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.

AM/FM CD MARINE STEREO

Some models are equipped with an AM/FM stereo receiver with CD player. The system has electronic circuits especially designed for superb radio reception on both AM and FM bands. Your boat has stereo speakers either above or below deck.

NOTE: Features may vary on some stereo models. See the manufacturer's manual for a list of features for stereo installed on your boat. The manual also has detailed instructions for using your stereo safely.

UNDERWAY

This chapter provides basic information for a typical boating excursion from launching to returning to port. All boaters are responsible for their own safety and the safety of others. Even though you may be an experienced operator, you can still benefit from reviewing the basic boating principles discussed in this chapter.

NOTE: This chapter may refer to equipment and components that are standard on some models and optional or unavailable on other models.

TRANSPORTING

A correctly selected trailer supports your boat properly, makes towing safer, and makes loading and unloading easier. Improper trailering is one of the major causes of damage to the hull. The warranty does not cover damage of this type. Let your dealer help you select the appropriate trailer for your boat.

To select a trailer, check the attached certification label for the Gross Vehicle Weight Rating (GWVR). This label is required on all boat trailers. The GWVR 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. Be sure that total weight plus the weight of the trailer does not exceed the GWVR.

Your boat manufacturer strongly recommends that you use a transom saver to support the weight of the outboard motor while the boat is being trailered.

For aluminum hulls, select long, straight, longitudinal bunkers or a long series of closely spread support to several of the boat's crossribs. Avoid single rollers between cross ribs. Keel supports should carry an equal share of the weight. One support set higher than the rest can "hook" in the bottom of your boat.

IMPORTANT: When trailering a pontoon boat with a bunk style trailer, the transom must be supported to protect the motor and the transom.

The type and size of the side supports, or pads, are very important. Side supports run lengthwise to the boat and parallel to the keel. Side supports should only be tight enough to keep the boat from leaning from side to side. Any unnecessary pressure will damage

the hull. Newer trailers have self-adjusting side supports and a bow pad that can be easily adjusted. These eliminate the need for manually adjusting side supports and keel rollers every time you load your boat.

Always use bow and stern tie downs to prevent the boat from shifting. Mooring covers should not be in place when you tow your boat. Strong winds at high speeds can damage them. Do not put other gear in your boat while trailering. Ask your dealer about state requirements concerning brakes, lights and licensing.

These are some general guidelines for safe trailering of your boat.

1. Always check local and state laws for legal towing speeds and other requirements such as licensing, lighting, brakes and turn signals. Requirements may vary from state to state.
2. If the weight of the boat and equipment is not properly distributed on the trailer, the trailer may sway or fishtail while being towed. Swaying or fish tailing can result in damage to the boat, trailer, or towing vehicle and can be very dangerous at higher highway speeds.
3. To prevent damage to the hull, make sure the rollers or bunks support a large hull surface area. Distribute the weight of the boat and equipment evenly on the trailer.
4. To prevent wind damage to a boat with a convertible top, do not tow it with the top up. Also, some mooring covers are not intended for use while trailering. Check with your boat dealer for more information.
5. Always remove the drain plug while trailering your boat. Be sure to install it before launching.
6. Make sure the overall height of your boat and trailer does not exceed legal limits.
7. Always tie down rear sun deck on your boat before trailering.

Inspect your trailer regularly to make sure the side supports are in good working condition. Check bolts securing rollers and supports from time to time to make sure they are tight.

The trailer should be designed and built to carry the full weight of your boat, engine, and gear while providing support for the hull. Be sure not to overload your trailer by loading the boat with excess baggage, camping equipment, etc. Be sure the total weight of your boat, engine, fuel, gear, and trailer does not exceed the gross vehicle weight rating. Make sure the hitch of your towing vehicle is appropriate for the rating.

Distributing the weight on the trailer is important. Place the heaviest items at the bottom of the boat over a roller or chock, and secure them to keep them from shifting.

Balancing the load on the trailer is also important. If too much weight rests on the hitch, the towing vehicle will oversteer, a condition that causes the front end of the vehicle to sway. Conversely, too little weight on the hitch causes the trailer to fish tail. In both cases, the vehicle will be difficult to handle and at higher speeds the swaying or fishtailing can become uncontrollable, resulting in personal injury and damage to the boat, trailer, or towing vehicle.

Weight on the hitch, or tongue weight, should be 5% to 10% of the total weight of the loaded trailer to avoid overloading the tow vehicle and to provide adequate pressure on the hitch ball. If the weight of the loaded trailer is 2000 pounds, the weight on the tongue should be between 100 and 200 pounds. A weight distributing hitch transfers portions of tongue weight to a point between the front and rear wheels of the towing vehicle and to the trailer wheels.

IMPORTANT: Bumper hitches are not safe and are illegal in many states.

All trailers with a gross vehicle weight rating of 1500 pounds or greater are required by law to have brakes. (State laws may vary; be sure to check your state's requirements.) The brake system is usually completely self-contained on the trailer and no hook-up is required to the towing vehicle. Brakes are either drum or disc type. They work the same way as the brakes on a standard passenger vehicle, but the method of applying the brakes is different. Your trailer dealer can explain how the brakes on your trailer work.

Make sure your boat is secure before towing it.

- Store equipment to keep it from shifting or falling.
- Remove and store convertible top if your boat is so equipped.
- Use a second safety chain to secure your boat's bow to the trailer tongue. Tie down the stern to the trailer.

Improper towing can result in an accident causing personal injury and equipment damage. Become familiar with towing instructions in owner's manuals and with warnings supplied with your trailer and towing vehicle.

Towing a boat requires extra caution by the vehicle's driver. Allow extra distance between vehicles. Obey speed limits. Some states have lower speed limits for vehicles with trailers. Go slow over railroad tracks. If you are traveling slower than other traffic, pull over when it is safe to do so and allow traffic to pass. When rounding turns on highways or streets, do not cut corners. To prevent damage to your boat or trailer as well as the property of others, do not cut corners when rounding turns on highways or streets. (See Figure 4-1).

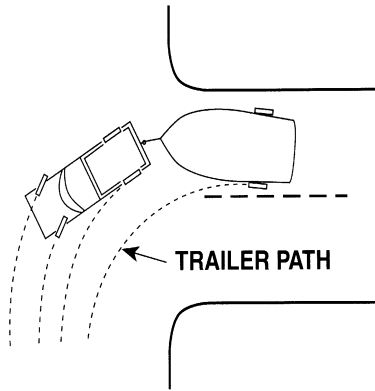


Figure 4-1 Trailer Path

If you do not have experience backing a trailer, practice before you get into a confined public or private launch site. Take your trailer to an open area and get accustomed to using it. If possible, take someone with you who knows how to back a trailer.

Steering a trailer while backing it up works the opposite of steering a car. If the trailer needs to go to the right, turn the steering wheel to the left and vice versa. Inexperienced backers tend to turn the wheel too far. Do not oversteer. Turn the wheel gradually until you get the feel of safe backing.

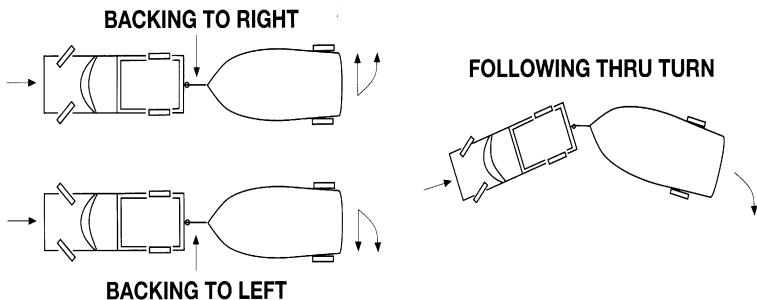


Figure 4-2 Trailing

LAUNCHING

Launching your boat will require that you back the trailer down the launch ramp. Learn to back the trailer as straight as possible before launching your boat for the first time.

NOTE: For more specific information refer to your trailer owner's manual. Here are some tips to remember when you are putting your boat in the water:

1. Prepare for launching before backing your boat onto the ramp:

- Remove all tiedowns and the transom saver outboard motor support.
- Store all loose gear properly.
- Inventory your safety equipment.
- Lock winch and trailer unit.
- Tilt drive unit up to clear the ramp.
- Disconnect trailer wiring - car to trailer.

2 Have someone at the ramp give you directions. Back slowly down the ramp. Always remember to launch your boat at a right angle to the shore

3. When the boat's transom is in several inches of water, stop the towing vehicle. Turn off the engine with transmission in first gear (manual transmission) LJ or PARK (automatic transmission). Set the manual parking brake.

4. Attach bow line to the boat. Disconnect winch cable and move the boat down the trailer and into the water. Tie boat to the pier.

NOTE: To keep the boat from drifting away, a person on shore should hold the other end of the bow line until the boat is tied to the pier.

5. Pull your vehicle away from the launch ramp. Park in a designated area. Be sure you do not block access to the launch ramp.

FUELING

If possible, fill your boat's fuel tank before loading passengers and gear. If passengers are on board, have them leave the boat until fueling is complete.

DANGER: Fuel leaking from any part of the fuel system can lead to fire and explosion that can cause serious bodily injury or death.

IMPORTANT: Remember that if 1/2 pint of gasoline explodes, it has the same power as 15 sticks of dynamite.

Inspect fuel system for leakage, weakening, hardening, swelling or corrosion of components including fuel tanks, fuel lines, fittings, fuel filters, and carburetors. If any component shows signs of leakage or deterioration, it must be replaced before starting the engine.

WARNING: Do not use fuels containing any form of alcohol or alcohol derivatives. Alcohol destroys marine fuel system hoses and components. Weakened hoses can lead to hazardous leaks, fire, or explosion. If only gasoline containing alcohol is available, or the presence of alcohol is unknown, you must inspect the system more frequently.

Preparing for Fueling

DANGER: Fuel vapors are explosive.

1. Securely moor boat to dock. Stop engine.
2. Turn off all electrical equipment, engines, lights, bilge pump and blower, etc.
3. Put out all cigarettes, cigars, and pipes. Do not use anything that can produce a spark or flame.
4. Make sure a fire extinguisher is readily available.

Filling the Tank

1. Always fill tank in an area having adequate lighting. You may not see gasoline spills under poor lighting or in darkness.
2. Remove fuel fill cap from through-hull fitting on transom. Insert fuel supply nozzle.
3. After pumping approximately 10 gallons of fuel into tank, inspect engine and fuel tank area for signs of fuel leakage. Continue fueling if you do not find any leaks or other problems.
4. Stop filling tank before fuel overflows. Allow space at top of tank for thermal expansion. Fuel pumped from underground tanks is cooler than outside air. Gasoline expands as it warms up and can easily overflow tank.

If fuel cannot be pumped into the tank at a reasonable rate, check for a plugged fuel vent or a kink in the line.

IMPORTANT: Gas will shoot out of vent if the tank is overfilled. Fuel spilled on the boat can damage the finish. Rinse gasoline off with water, do not use a rag.

After Fueling Procedures

1. When you have finished fueling, replace fuel fill cap. If necessary, wash off any fuel spilled around fuel fill area. Properly dispose of rags used to wipe off fuel spillage.
2. Open engine compartment and all hatches, windows, doors and compartments closed during fueling. Inspect these areas for fuel fumes or fuel line leakage. Investigate and correct any indication of fumes or fuel leakage before starting engine.

LOADING PASSENGERS AND GEAR

WARNING: Overloading and improper distribution of weight are significant causes of accidents. Capacity plates, located near the helm, show maximum loads under normal conditions. Give yourself an added margin for safety in turbulent waters. Overloading is a violation of U.S. Coast Guard regulations. Boats under 20 feet long are subject to U.S. Coast Guard safe loading and labeling requirements.

The U.S. Coast Guard requires that a plate stating the maximum load capacity be affixed to boats up to 20 feet long. This plate shows the load in pounds (persons and gear) the boat can carry safely under normal conditions. The U.S. Coast Guard establishes these load capacity ratings. (Boats over 20 feet long are not subject to U.S. Coast Guard safe labeling requirements.)

You, the operator, are responsible for using common sense and sound judgment when loading your boat. Pleasure boats tend to remain stable under most operating conditions because of their beam, draft, and weight displacement. Remember that overloading and improper distribution of weight are significant causes of accidents. Keep weight below maximum limits for safety in turbulent waters.

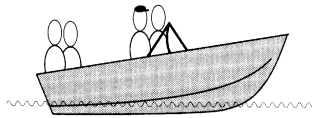
When loading your boat, remember to distribute the load evenly and keep the load low. When loading your boat, always step onto the boat, never jump. Have someone on the dock pass your gear aboard. Secure all gear firmly so that it will not move or interfere with boat operation. Be sure all required safety gear is aboard your boat in an easily accessible location.

CAUTION: Wet surfaces can be slippery. Passengers should wear adequate deck shoes while boarding and underway to avoid accidental slipping and injury.

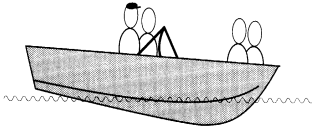
Passengers should board the boat one at a time and find a seat. Passengers should remain seated during loading of the boat to maintain an even trim. Do not allow passengers to ride on the bow with feet hanging over the side or to ride sitting on the stern or gunwales. Falling from moving boats is a major cause of fatal recreational boating accidents.

CAUTION: Driver's vision must not be obstructed by passengers seated in front of the driver.

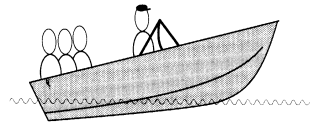
The way passengers are seated and gear is stowed in your boat affects your boat's performance. To get the best performance, drive it as nearly parallel to the water as possible. On planing-type boats, place more weight in the stern to slightly raise the bow.



CORRECT
Balanced load: gives
maximum performance



INCORRECT
Overload forward: causes
boat to "plow"



INCORRECT
Overload aft: causes
boat to "porpoise"

Figure 4-3 Loading Passengers

Minor deficiencies in your boat's ride can be quickly corrected by shifting passengers or gear forward or aft. Shifting passenger or gear weight changes the planing angle of the hull or the thrust of the propeller. This has the same effect as changing the angle on the drive unit. By taking a little extra time to carefully place such items as coolers, water jugs and the anchor, you will create a more desirable trim.

Proper weight distribution is also very important for pontoon boat safety and performance. Evenly distribute passenger and gear weight from bow to stern and port to starboard. Too much weight in the bow area can cause a pontoon boat to plow through the water and cause steering problems.

STARTING THE ENGINE

The following information is merely a guide and not intended to explain in detail all starting procedures and instructions. Refer to the engine owner's manual for detailed pre-start and starting instructions.

1. Secure the boat to the dock or mooring slip before attempting to start the engine.
2. Check engine oil level.
3. Check fuel supply to ensure you have enough fuel for your expected travel plan.

DANGER: Gasoline vapors are highly explosive. To prevent a possible explosion and fire, check engine and fuel compartments for fumes or accumulation of fuel before each engine

4. Inspect fuel, oil, exhaust, and power steering systems for leaks.

5. Operate bilge pump until flow of water stops.
6. Make sure throttle is in neutral position.
7. If you are starting a cold engine, advance the throttle several times and leave it in the SLOW/START position. This will actuate the carburetor accelerator pump and feed fuel to the engine.
8. Turn ignition key to START position to start engine.

NOTE: Engine will not turn over if throttle is not in the neutral position. If engine does not turn over, throttle may not be in neutral. Move throttle lever up and down slightly and try again.

9. If engine fails to start, wait one minute. Move throttle only once to maximum position, then back to neutral. Try to start engine again.

10. Run engine approximately one to two minutes at fast idle speed (1200 to 1500 RPM) to warm up engine. Keep boat secure at dock until engine is warmed up.

LEAVING THE DOCK

After the engine has warmed up, you are ready to leave the dock. Before you cast off, check all gauges for proper readings. If oil pressure reading is abnormally low or temperature reading abnormally high, stop engine immediately. Check that charging system is working properly. Voltmeter should read between 12 to 15 volts. Check again for fuel, oil, and exhaust leaks. Correct the cause for any abnormal condition or gauge reading before getting underway.

Check the operation of the steering by turning the steering wheel to full port and to full starboard while observing outdrive movement. With boat still securely moored to the dock and engine idling at 600 to 800 RPM, move the throttle forward, then aft, then back to neutral to check for proper shifting. Then cast off mooring lines and stow fenders.

WARNING: Make sure passengers sitting in the bow area do not obstruct the operator's vision when casting off and while underway.

WARNING: Before getting underway, close and latch walk-through windshield to prevent personal injury or damage at higher speeds.

When you are sure your boat is ready, check wind, tide, and current or other forces that will affect the way you maneuver your boat away from the dock. Shift your boat's engine into forward or reverse depending on whether you want to move the bow or the stern away from the dock first. Move the throttle lever to neutral. Then push forward quickly and firmly to shift into forward gear or pull back to shift into reverse. Your engine should be running at a slow speed as you move away from the dock. If you move the bow out first, watch that the swim platform does not swing into the dock or a piling.

CAUTION: Deck areas and swim platform are slippery when wet. Passengers must be careful to prevent accidental slipping or tripping. Passengers must stay off swim platform while underway to avoid falling overboard.

STEERING

Watch the stern when you turn! Steering a boat is like driving a car on slippery pavement. When you turn the steering wheel, the stern responds first by swinging in the opposite direction of the bow. When you are leaving the dock or trying to avoid an object in the water, this swing can be critical.

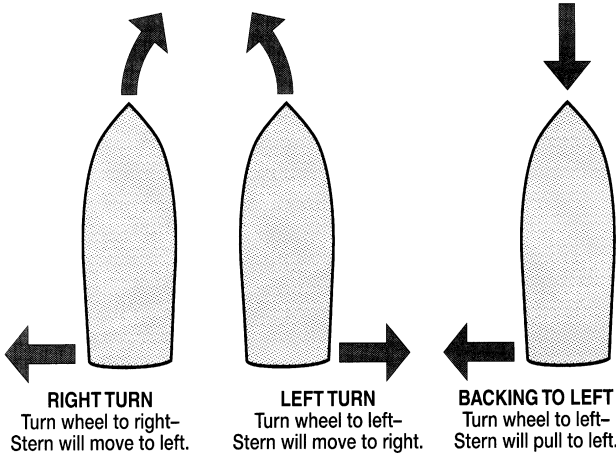


Figure 4-4 Steering, Turns and Backing

Always give yourself plenty of room to make a turn. You should also slow the speed of your boat while turning. Never make sharp, fast turns because you can easily lose control of your boat. Remember that your passengers should be seated whenever you are making a turn.

When making tight turns, trim engine in for better handling. Since both the 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.

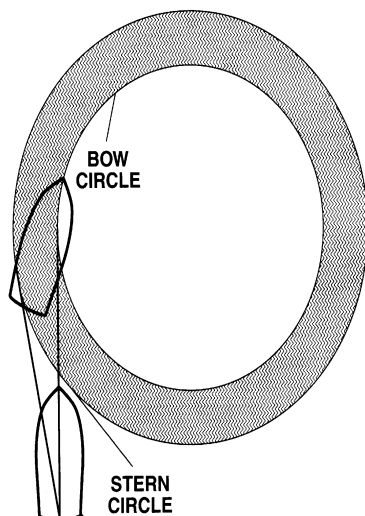


Figure 4-5 Steering, Maneuvering

BOAT SPEED

The maximum speed at which you can make sudden turns without losing control of your boat is the maneuvering speed of your boat. Maneuvering speed varies depending on wind, waves and other factors. Some boats display a warning advising that maneuverability above a given speed is limited. This speed is based on tests in calm water. There are minimum safe speeds for certain conditions as well, maintaining headway in a cross wind, for example. Some careful experimentation will serve you well later on. When you encounter a potentially hazardous situation, adjust speed accordingly.

ACCELERATING

CAUTION: Acceleration at full throttle is not recommended during the first 20 hours of engine operation. This engine “break-in period” coincides with the 20-hour engine checkup.

When you throttle up and accelerate, your boat increases the trim angle which causes the boat to ride bow high as shown in Figure 9. The maximum angle is commonly known as the “hump.” Get over the hump as quickly as possible because visibility, handling, and performance are limited. It should only take a few seconds at full throttle for your boat to level out at its planing attitude. Then, accelerate until you reach a comfortable plane and throttle down to cruising speed. This also will provide for better fuel efficiency.

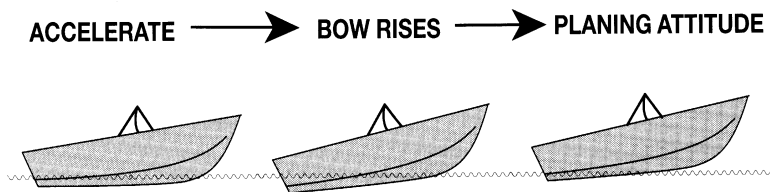


Figure 4-6 Boat Acceleration

WARNING: High speed acceleration in reverse can create a wake that could wash over the transom and flood the boat.

TRIMMING

NOTE: Refer to your engine owner's manual regarding the power trim controls installed on your boat.

CAUTION: Use extreme caution when operating with drive unit raised. Severe damage to drive unit may result if unit is raised beyond the gimbal ring support flanges at engine speeds above 1200 RPM.

The drive angle of the boat is the relationship of propeller thrust to the planing surface of the hull's bottom. The performance of the same boat under varying conditions can be improved by adjusting the drive angle.

By gradually shifting the drive unit from its innermost adjustment towards the outermost adjustment, the propeller thrust will change. It will push in a downward motion and tend to lift the bow upwards.

Move the drive unit angle towards its innermost adjustment, and the propeller is brought in as close as possible to the transom. The angle of the propeller will cause an upward thrust and will push the boat's bow downward.

Trim the engine all the way in (under) until the boat is on plane. Then fine tune the trim angle for best performance (See A on Figure 10).

After reaching plane, under certain load conditions, your boat could have a tendency to bury its forward V-ed section. The boat will begin to plow and lose speed (B on Figure 10). If the water is choppy the boat will yaw. A boat will spin out if its bow is excessively buried. The only way to correct this situation is to increase the angle and swing the drive unit outward.

When the drive unit is extremely angled out, your loaded boat will be sluggish in coming to plane. Once on plane, it will tend to porpoise (C on Figure 10). Correct this motion by moving the propeller inward. This will decrease the angle between the drive shaft and transom.

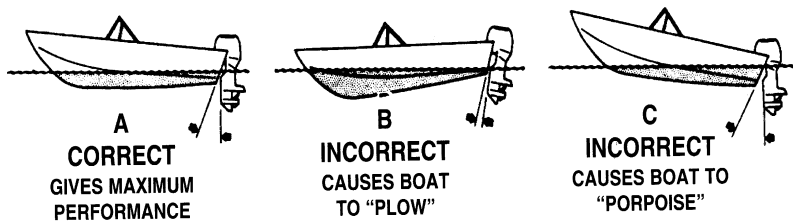


Figure 4-7 - Motor Angle

Very often, the optimum drive unit angle setting for the highest speed while carrying a light load will be just short of the porpoise point. However, such a setting is unsuitable when you have a heavy load or are pulling skiers. By reducing the drive unit angle, the boat operator will find it easier to maneuver the boat and to pull skiers to the surface.

To adjust to the ideal boat angle for given load and water conditions, the drive unit must be trimmed. The drive unit has an adjustable trim range. The best all-around performance attainable is when the drive unit is adjusted to allow the boat to run at an angle between 3° and 50° to the water.

For best performance, on inboard/outboard motor boats, trim the engine all the way in/under until the boat is on plane before fine tuning the trim angle. Trim the engine back in for better handling before making sharper turns.

NOTE: Unlike planing hulls, pontoons displace (plow through) water instead of climbing on plane. However, trimming the motor angle properly will improve pontoon performance.

STOPPING

You cannot stop a boat as quickly as a land vehicle because a boat has no brakes. Stop the boat by allowing it to slow down to less than 5 miles per hour. Then, put the engine in reverse. By slowly increasing power, you can stop the boat in a short distance. Remember that the boat does not respond to steering in reverse as well as it does when going forward.

ANCHORING

Anchor your boat if you stop for recreation or an emergency. The size and weight of your boat govern the weight of the anchor and the diameter of the anchor line. A burying anchor grips into the bottom and holds your boat secure. Holding power should be more important than weight. Your dealer can help you select the proper anchoring equipment.

The length of the anchor line should be six to eight times the depth of the water to assure that the anchor bites into the bottom. The bottom end of the anchor line should be galvanized chain. The rest of the line should be nylon anchor line.

Keep anchor secure while underway to prevent damage or injury if boat's attitude changes suddenly. If your boat has a power winch, do not use it as the primary source for securing the anchor or anchor line. See the power winch instruction manual for details about proper operation and maintenance.

These are some general guidelines for anchoring your boat:

- Secure the anchor line to the deck cleat. Do not tie line to hardware not designed to support this stress.
- If you are anchoring for more than a few hours, use more than one anchor. If you use only one anchor, make sure your boat has enough space to swing full circle in case of shifting winds.
- Keep the anchor and line in an area where it will be readily available in an emergency.

Dropping Anchor

1. Have a crew member carefully lower the anchor, keeping a slight tension on the line as the anchor drops. Maintain tension after the anchor reaches the bottom. Simply throwing the anchor overboard usually fouls the line and requires starting over.
2. Maneuver the boat slowly aft until the proper length of line is run out.
3. Fasten the anchor line around the deck cleat. Anchor flukes should dig into the bottom and hold boat in position.
4. Check shoreline landmarks when you drop anchor. Check the position of the landmarks again 30 minutes later. If your boat's position has changed, the anchor is dragging and must be reset.

Weighing Anchor

Weighing, or pulling in the anchor, requires moving the boat towards the anchor and pulling in the anchor line as the boat moves. When the line is vertical, pull up firmly on the anchor line to free the flukes from the bottom. If the anchor remains stuck, feed out a few feet of line and attach it to the bow cleat. Maneuver the boat around the anchor, keeping the line taut until you find an angle that will pull the anchor free.

DOCKING

Always approach the dock slowly. If possible, come in against the wind or current, whichever is stronger. Come in at a 30°-45° angle, the same angle used when parking a car. As the boat nears the dock, slowly swing parallel to it. Tie the bow line first; then the stern.

If wind or current is moving toward the dock, move parallel to the dock further out. Let the wind or current push you in. Tie the stern first, then the bow.

Use extreme caution if wind or current is from your stern. Approach slowly at a slight angle with engine in slow reverse. Gently swing parallel. Tie stern first, then the bow

If the weather looks bad, use spring-lines from the bow and stern to dock amidships of the boat. Tie up on the downwind side of the dock. If the wind is changeable, place fenders over the side between the boat and the dock.

MOORING

After you have positioned your boat next to the dock, you must secure it with mooring lines to keep it in position. Mooring lines must be long enough to secure your boat in any docking situation. For example, the length of the lines for a 16-foot runabout should be at least 15 feet. An eye splice at the end of each line works well with bow or stern cleats.

The mooring lines you will use most often are the bow line, the stern line, and spring lines. Each line has a specific purpose. The bow line and the stern line secure your boat's bow and stern. The two spring lines keep your boat from moving forward or backward when you are moored alongside a dock.

If you are mooring your boat for a short time, bow and stern lines may be the only lines you will need. If you are mooring your boat for a longer time or the currents are swift, you should use spring lines. The stern spring line leads from the boat's stern cleat forward to the piling or cleat on the dock. The bow spring line leads from the bow cleat aft to the dock.

If you are mooring your boat in a slip, bow and spring lines, port and starboard, will keep your boat in position.

NOTE: If tides are a consideration, be sure to leave slack in the lines to make up for the rise and fall of the water while your boat is docked.

EMERGENCIES

Boaters should respond to all emergency calls. You are expected to proceed to the scene and render assistance. Distress calls often are made for assistance with a disabled boat.

The Federal Boat Safety Act of 1971 requires boat operators involved in accidents to offer aid to others in the accident and in emergencies. The law's "Good Samaritan" clause also absolves you from civil liability in the event that your assistance causes bodily injury or property damage.

As a boat owner, you have accepted many responsibilities. You should know how to cope with any type of emergency that could occur on your boat or someone else's. There is a way to handle each emergency — if you do not panic! Proceed calmly using good common sense. Some tips for particular situations are listed below.

Man Overboard

If someone in your boat falls overboard:

- Self-rescue is the best method as long as the overboard person is not injured, unconscious or panicked. Get some type of PFD out to him and keep in constant verbal contact.
- Turn the steering wheel to move the propeller away from the person. Circle around quickly, approaching into the wind and waves. Turn off the engine when the person is alongside, if he is able to grasp, throw him a line or extend a paddle or a boat hook within his reach. Be careful not to hit him.
- Assist the person back aboard.
- Do not dive over the side after an unconscious person or non-swimmer unless you are trained in lifesaving techniques. It is harder to save two people than one. If the victim has sunk out of sight, probe gently beneath the surface with a paddle or boat hook. Do not risk restarting the engine until you have drifted clear of the victim's suspected location.

Fire and Explosion

If a fire occurs, stop the boat immediately. Position the boat so that the fire is downwind. Boat fires involving flammable liquids, such as gasoline, can be extinguished with your dry chemical or carbon dioxide type extinguisher. Read the extinguisher directions and memorize them. Be prepared to use the extinguisher quickly if the need arises.

In a boat fire, you must decide quickly whether to abandon ship or stay aboard and try to extinguish it. If the incident is merely a galley stove, trash container, smoldering upholstery or an electrical fire, try to extinguish the blaze by aiming the extinguisher nozzle at the base of the flame. However, if the fire involves the fuel system the danger of an explosion is greatly increased. If it is necessary to abandon ship, make sure all passengers wear a PFD or take it with them before going overboard.

A gasoline vapor explosion there is immediate danger of a fire. If you do abandon ship, keep yourself and your passengers clear of the burning boat. Remember, gasoline floats on water and can spread out over the surface of the water.

Capsizing

Capsizing usually occurs due to unsafe operation, overloading or poor load distribution. Your boat has been manufactured for level upright flotation; however, if the boat does capsize, hold onto whatever you can. The boat hull is much easier for rescuers to spot than a human head sticking out of the water. Do not attempt to swim to shore. It may be farther than it looks.

Collisions

If you are involved in a collision with a boat, or with a fixed object such as a pier, sandbar, reef, bridge, check for injuries and render first aid, if necessary. Before proceeding, check out your boat thoroughly. Check steering cables for possible jamming; inspect below decks for leakage and attempt to plug any holes you find; raise outboard motor or stern drive unit and inspect for possible propeller or lower unit damage. Proceed carefully to port and remove the boat from the water to thoroughly inspect it for damage.

Running Aground

Operating in shallow water can present a number of hazards. Sand bars in narrow inlets are constantly shifting, making it difficult to mark them with buoys. Some times sand bars are indicated by waves as they form into breakers when passing over sand bars.

If your boat runs aground, first check persons aboard for injury. Then check for damage to the boat. It may be possible to rock the boat by shifting the weight of the passengers and gear and by raising the drive unit while reversing the engine. If you ground your boat on a sand bar, shut down the engine and seek help from another boater or radio for help. See your dealer as soon as possible, as sand ingested in the engine cooling system can cause major engine damage.

If the drive unit strikes an underwater hazard, check for boat and drive unit damage. Pontoons still float if they are punctured. Go at a slower speed. A water-logged pontoon may change handling characteristics. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. If vibration is noticeable, return to port slowly to prevent further drive and engine damage from an out-of-balance condition. Watch the temperature gauge to make sure the engine does not overheat.

Towing and Being Towed

CAUTION: To prevent boat damage, **DO NOT** use deck hardware for towing. Use a commercial towing service.

If wind and waves are high, it may not be easy to extend the tow line from one boat to another without risking a collision. Use a light throwing line with a weight on one end and the heavier towing line secured to it.

Using a fishing rod may also be helpful. Wrap a sinker in cloth to prevent damage and attach it to the end of a fishing line. Cast the sinker over the other boat and reel in until the occupants of the other boat get hold of the sinker. Cut the fishing line off at the reel and splice the towing line to it, then instruct the occupants of the other boat to haul the towing line aboard.

Storms

Storms sometimes appear without advance notice. Although weather information from meteorological observation and reporting stations is available, weather bureau predictions are wrong or information gathering equipment can fail. Many marinas fly weather signals. You should learn to recognize these signals and monitor your local weather forecasts before leaving port. Watch the horizon for indications of an approaching storm.

- The present and forecasted weather conditions are of primary consideration, but a threat of possible storms should always be a concern. There is no substitute for a strong understanding of what action to take when the weather takes a turn for the worst. Return to a safe port if time allows. If it is impossible to do so:
- Stow or tie down all loose gear
- Reduce speed as the seas build. Prompt all persons aboard to put on their PFD.
- Place a sea anchor out over the stern to maintain the boat's bow into the seas. If there is no sea anchor on board, use a canvas bucket or any object that will offer resistance against the flow of the current. Take care to keep anchor from tangling with the propeller. Use an anchor like which floats.
- If you lose power, keep the boat headed into the waves by rigging or using sea anchors off the bow.

Fog

When warm air is above cooler water, its temperature drops. As the air cools, it loses its ability to hold moisture and fog will develop when the air temperature drops to the dewpoint temperature. Dewpoint temperature depends on the amount of humidity in the air. You should be aware that fog can form quickly as the air temperature drops, especially if the air is calm and humid. Remember the following guidelines:

- Turn on running lights -
- As fog sets in, take bearings and mark your position on the chart. While continuing to log your course and speed.
- Prompt all persons aboard to put on their PFD (personal flotation device).
- If your boat has depth finding equipment, take sounding and match them with sounding on your charts.
- Station a person forward on the boat as a lookout.
- Reduce your speed. From time to time, stop engine and listen for fog signals.
- Sound the proper horn or fog bell at proper intervals to warn other boaters.

- If there is any doubt in continuing boat movement, anchor. Listen for other fog signals while continuing to sound the proper fog horn or bell for a boat at anchor.

DISTRESS SIGNALS

If an emergency should occur, any signal that attracts attention is fine, but displaying recognized symbols increases your chance of receiving help. It is good boating practice to carry distress signals.

Daytime Signals

Simultaneously raising and lowering arms (least visible); fluorescent orange panels or flags; orange smoke flare; mirror, preferably signalling type; dye markers; SOS on horn, whistle or bell.

Night Signals

Flares (common railroad type is least effective, parachute flares fired from a gun are most effective); rockets, electric distress light; flashlight or lantern.

Properly package your distress signals and store in a cool dry place. Conserve your distress signals. Do not use them until you sight another boat or see and hear aircraft.

Anytime

A VHF marine radio (channel 16) is the best device for calling for help. Three international emergency signals are:

- **MAYDAY** — life/death situation, request immediate assistance.
- **PAN PAN** — safety of the boat or person in jeopardy.
- Security navigation and weather warnings.

FIRST AID

As a boat operator, you should be familiar with basic first aid procedures that may be needed while you are far from help. Fish hook accidents, or minor cuts and abrasions are the most common on board a boat, but you should learn the proper procedures and be ready to deal with the truly serious problems that could arise:

- Drowning (mouth-to-mouth resuscitation)
- Bleeding (pressure and elevation techniques)
- Hypothermia (techniques for warming the victim)
- Burns (treatment depends on severity)

First aid literature and courses are available through most Red Cross chapters.

PROTECTING THE ENVIRONMENT

It's fun to be out on the water whether you're fishing, cruising, or just soaking up sun. Unfortunately, not all boaters are responsible individuals, and their foolish actions often spoil our waterways. Here are ten ways you can help protect the aquatic environment as recommended by the National Marine Manufacturers Association. Practice them every time you go out, and you can help assure that our waterways will remain clean and unspoiled for years to come.

- Observe local and federal maine head rules.
- Know about and use legal bottom paints.
- Use biodegradable cleaning agents whenever possible.
- Don't litter on or off the water - take it home!
- Don't top off fuel tanks and always clean up fuel spills.
- Watch your wake and propeller wash.
- Keep your motors finely tuned.
- Control your bilge water.
- When fishing, practice "Catch and Release."

MAINTENANCE AND REPAIR

We recommend that maintenance and repairs be performed by your dealer. However, some owners may prefer to take care of routine maintenance and repairs themselves. For those individuals, this chapter includes general information and basic procedures.

IMPORTANT: Check with your dealer before beginning any maintenance or repair if you are not sure about the proper tools, equipment and supplies

to be used.

NOTE: Always refer to the manufacturers' manuals for detailed maintenance and repair procedures. If information in this manual conflicts with information in the manufacturer manuals, the manufacturer manuals must take precedence.

ENGINE

Refer to the engine owner's manual for recommended frequencies and detailed information about engine care and maintenance.

EXTERIOR CARE

Proper care of your boat's exterior will help assure that it will continue to look like new after years of service. Accelerated aging or deterioration of carpet, vinyl, seat upholstery, etc. due to exposure to the elements and/or failure to perform routine cleaning procedures, is not covered under your boat's warranty.

Corrosion Protection (Aluminum Surfaces)

Corrosion is the break-up of metals due to an electro-chemical reaction. There are several different causes of corrosion, such as: galvanic corrosion, where two dissimilar metals are immersed in a conductive fluid (salt water); stray current corrosion, where an electrical current leaves a metal conductor for a water path causing rapid corrosion; as well as salinity and pollution corrosion. Although your boat is constructed with high quality 5052 marine aluminum, recommended by the Aluminum Association for salt water use, the following precautions should be exercised to prevent corrosion:

1. Install a transom mounted sacrificial zinc anode on your boat if you operate in salt, polluted, or brackish waters. This sacrificial zinc anode will deteriorate before the metal that it protects. If the zinc erodes 50% or more, it must be replaced to continue protection, or damage to other metal parts may result.
- 2 Regularly rinse your boat's aluminum trim with fresh water
3. Never apply a copper, lead, antimony, arsenic, or mercury based anti-fouling paint to your boat, either with, or without, the use of a primer coat.

4. Regularly inspect the metallic components of your boat that are in contact with the water. Look for pitting or a lacy appearance to the metal. If you see damage, inspect all wiring for breaks or loose connections.

Most engines are equipped with one or more sacrificial zinc anodes which must be inspected regularly for deterioration. See the engine operation and maintenance manual for information on maintaining the corrosion control anodes on your engine.

Do not reverse polarity on any electrical device or attach any ground circuit to the hull. If installing additional accessories, always maintain the integrity of the two wire systems. In addition to minimizing the likelihood of electrolysis, it provides protection against high voltage damage during an electrical storm.

To ensure accessories are properly grounded run the ground wire directly to the negative post of your battery. On aluminum boats never mount a conductive and/or dissimilar metal accessory directly to the aluminum structure. Always use a non-conductive spacer (such as wood or rubber) between accessory and boat.

WARNING: There is danger of an electric current in the water when near a boat mooring where boats may be linked to shore power.

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

The entire boat should be rinsed with fresh water immediately after use in salt water. If the boat is used primarily in saltwater, wax the hull monthly and apply corrosion inhibitor to all hardware. See your dealer for products suitable for the marine salt water environment. Remove the boat from the water every three months and rinse inside and out with fresh water. Fresh water internal engine flushing is recommended when used in salt, polluted or brackish waters.

IMPORTANT: The application of an epoxy barrier coating to help seal the hull bottom and reduce the possibility of gelcoat blistering on any boat that is moored is recommended. 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 dealer about recommended bottom paints, and about laws that are in effect in your area.

Aluminum Surfaces

Cleaning

Treat natural aluminum portions of most aluminum boats with a clear protective coating to reduce natural oxidation. Rinse occasionally with clear water or mild detergent to keep these portions of the boat clean. On painted aluminum surfaces, use only clear water until the paint is properly cured (several weeks after painting). After curing, use water and mild detergent for cleaning and protect the surface with a liquid cleaner or wax. Do not use harsh chemicals or abrasives.

Remove stains or light corrosion with a good metal polish. Buff with a fine rubbing compound only if necessary. Remove algae, scum or other marine growth while they are still wet. They will be much harder to remove if they have had a chance to dry out.

Painting

Do not use paints containing copper, mercury or lead on aluminum boats with or without primer. Anti-fouling paint may be used if you do not run your boat in salt water. Ask your dealer to recommend the right paint for your situation.

Repairs

Knock out minor dents with a rubber mallet or use automotive body tools. -Have your dealer or an experienced body mechanic repair punctures, skin fractures, loose rivets and bent or broken reinforcing members (ribs).

Loose Rivets

Clean head around rivets with a wire brush. Flow on a marine sealer around the head for a temporary repair. To retighten, use a steel hammer and a bucking tool (steel block) shaped to fit the head of the rivet. Place bucking tool against rivet head and strike flattened end of rivet inside hull with a steel hammer.

Broken Rivets

Drill out the remaining part of the rivet using a drill bit slightly smaller than the original rivet. Install a solid aluminum rivet. (For a temporary repair, dip a stainless steel sheet metal screw in sealer and insert.)

Pop Rivets

Pop rivets are used to fasten floors, castings, and other trim. Remove by inserting a small punch through the center hole and tapping out the core. Once the core is removed, drill out the rest of the rivet and install a new pop rivet. If pop riveting equipment is not available, you can install a stainless steel sheet metal screw instead.

IMPORTANT: Do not use pop rivets where a watertight seal or a structural fastener is needed.

Cracked-Aluminum

Ask your dealer for advice on patching cracked aluminum. Aluminum must be of similar thickness and alloy.

Hull Bottom Maintenance

If a film of algae or scum builds up on the bottom of your boat, it will be easier to remove if it is not allowed to dry out. Use a fine grade of steel wool if the buildup does not come free with a thorough scrubbing. If your boat will remain in the water for more than three months, check with your dealer about the best bottom coating to use for preventing algae or scum buildup.

Deck Hardware and Fittings

Cleats, chocks, rails, stanchions and similar equipment should be cleaned periodically with good chrome cleaner and polished with paste wax to prevent corrosion. In salt water areas hardware should be flushed with fresh water and sprayed with a marine corrosion inhibitor every month. Corrosion inhibitors are available from your dealer.

Replace broken or damaged hardware by bolting it through the deck or gunwale and a reinforcing block underneath.

Use deck hardware only for its intended purpose. Do not use stanchions for tying off fenders, mooring lines or water ski ropes. A mooring cleat should not be used for a water ski rope if obstructions prevent it from swinging in a proper arc.

Sunlight and ozone will eventually cause a loss of elasticity in the rubber components aboard your boat. Inspect them frequently and replace them when signs of hardening or surface cracking are detected.

Windshields and Portals

Clean glass windows and windshields. Clean plastic windows by flushing with clear water; after dirt is removed, use appropriate window cleaner. Do not wipe dirt from dry plastics or use abrasives. The plastic can become permanently scratched or dulled.

IMPORTANT: To prevent breakage of your windows and windshields, check the mounting bolts periodically. Tighten them if they are loose. If a leak occurs, identify the problem area and dry it thoroughly. Coat the area with a rubber sealant. Flush the area with water and repeat the process if necessary until the leak is eliminated.

Seat Coverings and Vinyl

The vinyl used on your boat requires routine care. See the cleaning and care instructions below and in your Owner's Packet. Keep vinyl clean and dry to keep mildew from forming. Remove seat cushions and wipe dry after each use. In very rainy weather, cover or remove cushions since seams can trap and absorb moisture. Store cushions in a dry, well-ventilated place. Keep the boat covered when not in use to prevent aging of the upholstery.

Each week, wipe vinyl surfaces with a soft damp cloth and towel dry. For dirt and stains that cannot be removed with a damp cloth, clean with a mild soap and water solution and, if necessary, a soft bristle brush. Rinse thoroughly and towel dry.

Suntan lotion and insect repellents can stain vinyl quickly and cause vinyl surface to deteriorate. Remove these products immediately after contact and wash area with a mild soap solution. Rinse and towel dry.

IMPORTANT: Harsh detergents, abrasives, bleach, and solvents can cause permanent damage to vinyl upholstery. Refer to manufacturer's instructions for recommended stain removal procedures.

Protect your vinyl from being ripped or torn. Mildew, or a condition known as pinking or yellowing, can occur in any vinyl openings, and this type of damage is not covered by your warranty.

Vinyl Upholstery Cleaning and Care Instructions

The upholstery on your boat is made to withstand the effects of sun, heat, rain and soiling under normal conditions. While your vinyl is made to withstand the elements, it is important to care for it by keeping it clean at all times. Many substances may stain your vinyl if left on over a period of time. Remember to remove any contaminant and clean vinyl immediately.

Follow the cleaning instructions below. Do not use 409 Cleaner or any silicone base products.

<u>Common Stains -</u>	<u>Steps</u>	<u>1</u>	<u>2</u>	<u>3</u>
Betadine		B	A	
Chewing Gum		D	A	
Eyeshadow		E	B	
Motor Oil		B		
Spray Paint		B		
Mildew or Wet Leaves			C	B A
Shoe Polish		D	B	
Yellow Mustard		A	B	C
Oil Base Paint (fresh)		D	B	
Oil Base Paint (dried)		D	B	
Suntan Lotion		A	B	
Tar/Asphalt		D	B	
Lipstick		A	B	
Latex Paint		A	B	
Crayon	D	B		
Ketchup		A	B	
Grease	D	B		
Ballpoint Ink*		E	B	A
Household Soil		A	B	
Permanent Marker*		E	B	C
Coffee, Tea, Chocolate			B	

-
- A. Medium-soft brush, warm soapy water / Rinse / Dry
 - B. Vinyl Finish Cleaner® (to order call 800-247-9901)
 - C. One (1) tablespoon ammonia, one-fourth (1/4) cup of hydrogen peroxide, three-fourths (3/4) cup of water / Rinse I Dry
 - D. Wipe or scrape off excess (chill gum with ice)
 - E. Denatured Alcohol I Rinse / Dry

Note: All cleaning methods must be followed by a thorough rinse with water.

*Suntan lotion, shoe polish, wet leaves, and some other products contain dyes that stain permanently.

Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution as many contain dyes or solvents that can permanently damage the protective coating.

Canvas

The canvas on your boat resists mildew, rot, and the weather. If canvas is wet, let it air dry before you store it. Never store canvas damp or wet. Provide proper ventilation to limit the possibility of mildew.

Keep canvas clean. Dirt and dust on canvas support the formation of mildew. To clean canvas, wet down all canvas material. Scrub with a soft bristle brush and a solution of mild soap and water. Never use a detergent or bleach on your canvas. Brush or sweep the underside of the top. Spray with Lysol or other disinfectant to prevent mildew. Lubricate zippers with paraffin and snaps with petroleum jelly.

Floor Coverings

Spills and stains should be treated immediately. The longer a spot remains, the more difficult it will be to remove. Blot up spills with clean, white, absorbent materials. Remove solid built-up materials with a rounded tablespoon, spatula or edge of a dull knife.

Pretest spot removal agents in an inconspicuous area. Apply several drops of diluted household cleaner on the carpet or vinyl and rub gently with a clean, white towel. If color transfers to the cloth or a color changer occurs, a professional cleaner should be

consulted. Do Not Overwet! Use small amounts of the cleaning agents and blot frequently. Always blot, do not rub or brush. Work from the outer edge of the spot towards the center to prevent rings. The final step is always to gently rinse the area with water, then absorb all the remaining moisture with absorbent towels.

Be patient. Some stains respond slowly. All spots and stains cannot be removed from every fabric due to differences in fibers, dyes, constructions, finishes, com position of the stain, length of time the stain has remained on the article, etc. Some stains require professional treatment.

Pontoons

If a rock, log, or other obstacle punctures a pontoon, the pontoon will not completely fill with water. A bulkhead system inside the pontoon contains the water in confined areas. If water enters a portion of the pontoon, the boat will list, but it will not sink. Contact your dealer for pontoon repairs.

TROUBLESHOOTING

TROUBLESHOOTING CHART

The following troubleshooting procedures are designed to correct minor problems with the engine, inadequate performance, and vibration. The chart shows the problem, cause, and correction in the order of probable occurrence. Refer to your engine manual and use a common sense approach when rectifying problems. If the difficulty appears too complex or risky, contact your dealer or a qualified marine technician.

CAUTION: Disconnect all battery cables before performing maintenance, inspections, checks, and repairs.

DANGER: DO NOT disconnect or reconnect battery cables if gasoline fumes are present.

Engine

Problem: Engine will not crank (Ignition system)

Cause	Correction
Throttle lever in wrong position	Check position of throttle lever, ensure it's in the NEUTRAL position.
Loose wire in starting circuit	Tighten all wiring connections.
Ignition switch defective	Test switch continuity. Replace switch as required.
Defective solenoid	Turn dual battery switch to battery setting #1 or #2; if equipped.
Battery switch in OFF position	Replace solenoid.
Dead battery	Recharge or replace battery.
Spark plug(s) fouled or broken	Clean, adjust gap, or replace.
Distributor cap broken, wet, cracked or dirty	If wet or dirty, wipe with cloth and cleaning solvent. Inspect cap for cracks, carbonized paths (inside and out); replace cap as required.
Hydrostatic lock	Remove spark plugs and crank engine. If engine cranks water is entering cylinders from exhaust system, or from a possible gasket leak. If water enters engine through exhaust line, improper draining of exhaust system exists. Contact your dealer or a qualified marine mechanic to correct problem.

Problem: Engine cranks but will not start (Fuel System)

Cause	Correction
Lack of fuel	Clean fuel filter, check fuel level, and check anti-siphon valve.
Improper starting procedure	See your engine manual to review starting procedure.
Choke plate sticking	Check thermostatic spring housing adjustment.
Clogged fuel filter	Check fuel filter, replace if required.
No fuel reaching carburetor(providing all fuel valves are open	Check fuel pump, fuel pump filter, carburetor fuel filter, and fuel tank line for cracked flanges or restricted fittings, check anti-siphon valve.
Engine Flooded	Do not attempt to start engine for at least 5 minutes. For hot engine, fully advance throttle once, return throttle to NEUTRAL then crank engine.
Contaminated fuel	Inspect for water or other contaminants in fuel. If contaminated, drain tank and flush with fresh fuel.

Problem: Low cranking speed

Cause	Correction
Loose or dirty electrical connections or damaged wiring	Check all related electrical connections and wires
Bad Battery	Test Battery (see your engine manual).
Engine oil too heavy for current temperature	Drain oil and refill with correct grade and viscosity oil (see your engine manual).

Problem: Starter will not crank engine

Cause	Correction
Discharged Battery	Charge battery, change dual battery switch to all; if equipped.
Corroded battery cables	Clean terminals
Loose connection in starting circuit	Check and tighten all connections.
Defective starter switch	Replace switch.
Starter motor brushes dirty	Clean or replace brushes.
Jammed starter drive	Loosen starter motor, then free locked gear.

Problem: Poor acceleration

Cause	Correction
Accelerating pump Throttle not fully open Ignition or carburetor Flame arrestor dirty or air intake obstructed Engine overheating	Replace. Inspect cable and linkages for binding, obstructions, or loose fasteners. Service ignition system and carburetor. Clean flame arrestor and check air intake. Check engine temperature (See your engine manual).

Problem: Engine runs but misfiring

Cause	Correction
Fouled spark plug(s) Improper timing Wet spark plug wires Carbon tracked distributor Loose ignition wires Cold engine with improperly set choke Defective fuel pump Partially clogged fuel filter Incorrect carburetor mixture Contaminated fuel	Remove and clean, replace as required Check timing and adjust as required (See your engine manual). Inspect wires, wipe dry, replace damaged wires Clean, replace as required. Inspect all wire connections Repair, replace as required Clean fuel filter, replace as required See your engine manual for proper carburetor adjustment Drain fuel tank and flush clean; replace fuel filter.

Problem: Excessive fuel consumption

Cause	Correction
Restriction in flame arrestor Faulty fuel pump Dirty flame arrestor screen Distributor breaker points or spark plugs improperly set or bad Incorrect timing Choke not properly adjusted Float level too high	Remove and clean flame arrestor. Repair, replace as required. Clean, replace as required. Clean, set or replace breaker points and spark plugs. Time engine. Adjust choke as required. Reset float level as required (See your engine manual).

Problem: Blue exhaust smoke

Cause	Correction
Lube level too high	Drain off excessive oil.
Oil too thin	Drain and replace oil (See your engine manual).
Oil overheated	Check cooling system.

Problem: Black or gray exhaust smoke

Cause	Correction
Fuel mixture too rich	Adjust carburetor
Choke locked	Lubricate and adjust
Poor carburetor setting	Readjust carburetor (See your engine manual)
Carburetor fuel level too high	Adjust carburetor float
Clogged flame arrestor	Clean, replace as required

Problem: White exhaust smoke

Cause	Correction
Engine misfiring	See your engine manual
Spark plugs dirty or not gapped correctly	Clean, adjust gap, replace as required

Problem: Knocking or pinging

Cause	Correction
Incorrect fuel	Drain tank, replace with proper fuel.
Incorrect timing	Time engine (See your engine manual).
Pre-ignition	Clean or replace spark plugs, check engine timing.
Overheated engine	Check engine cooling system.
Cooling system trouble	Check water intake connections for leaks.

Problem: Rough running

Cause	Correction
Choke not operating	Check choke linkages for binding or obstruction.
Faulty fuel pump	Refer to your engine manual for fuel pump testing procedures.
Idle speed too low	Check idle speed, adjust as required.
Faulty ignition system components	Service ignition system (See your engine manual)
Clogged fuel filter	Replace fuel filter.
Contaminated fuel	Inspect fuel for water or other contaminants, If contaminated, drain tank then flush with fresh fuel.
Fuel lines or fuel tank vent line kinked or clogged	Use compressed air (20 psi or less) to blow out obstruction. Replace line if kinked.
Flame arrestor plugged with foreign material or air intake hose obstructed	Clean flame arrestor and check hose.

Problem: Engine overheating

Cause	Correction
Bad sending or receiving unit	Replace unit(s).
Loose wiring connections at sending or receiving unit	Tighten all connections
Worn or broken impeller in sea water pump	Replace impeller
Clogged oil cooler	Remove obstruction
Exhaust lines plugged	Remove obstruction
Ignition timing late	Time engine.
Choke valve locked closed	Free choke valve movement.
Collapsed water pump suction hose	Install new hose
Loose or worn belts	Adjust or replace belts as required
Restricted water intake	Clean water intake

Problem: Sludge in oil

Cause	Correction
Infrequent oil changes	Drain, then refill with proper grade and viscosity oil.
Dirty oil filter	Replace oil filter.
Water in oil	Drain, then refill. If trouble persists, check for cracked block or head, defective head gasket.

Problem: Inadequate performance

Cause	Correction
Damaged or improper propeller.	Inspect propeller, replace if required.
Boat overloaded or improper distribution of load	Reduce load or redistribute load.
Fouled or damaged hull bottom.	Inspect, clean, or repair as required.

Problem: Vibration

Cause	Correction
Propeller bent or pitch out of true.	Inspect propeller, replace as required.
Damaged propeller shaft.	Replace shaft.
Loose engine mounting bolts.	Inspect and tighten as required.
Engine out of alignment	See your engine manual.

WINTERIZATION AND STORAGE

Presented here is general information for winterizing and storing your boat after the boating season. Your dealer can advise you about preparing your boat for storage. Following the procedures in this section helps extend the life of your boat and its equipment and simplifies fitting out after storage.

Ventilation is very important during storage. Indoor storage is ideal, especially in areas where ice and snow accumulate. Make sure the storage building has adequate ventilation. If you use outdoor storage facilities, cover your boat with a canvas cover. Provide ventilation to keep the boat from “sweating” by building a frame over the boat to support the canvas. Build the frame several inches wider than the boat so the canvas will clear the rails.

Before preparing your boat for winter storage, thoroughly check the condition of the boat, its systems and equipment. Note any repairs needed. The need for repairs may become apparent during winterization. Make arrangements to have the repairs completed.

EXTERIOR PREPARATION

Preparation of your boat’s exterior for winter storage is similar to the routine exterior care. Refer to Section 5 for specific cleaning solutions and procedures.

Hull

Scrape off crusted marine growth and barnacles. Then scrub hull thoroughly to remove marine growth, scum and loose paint. Apply fresh coat of bottom paint, if appropriate.

Remove bilge drain plug. Avoid frustration at the beginning of the next season by storing it in a safe place.

For boats with aluminum hulls, check hull for dents and cracks and for loose or broken rivets. Make any necessary repairs.

Deck

Wash the deck and walkway surfaces. Clean all deck hardware with good chrome cleaner; then apply one coat of rust inhibitor. Corrosion inhibitors are available from your dealer.

Remove all cushions and any other items that can hold moisture and cause mildew. Clean the indoor/outdoor carpet. If you leave life jackets and other safety equipment onboard, they must also have space left around them for adequate air circulation.

NOTE: Cushions may be left onboard only if they can be propped up where air can circulate.

Weather permitting, open any hatches to allow enclosed areas to air out for a day or two.

ENGINE

Refer to the owner's manual for detailed information about preparing the engine for winter storage.

FUEL SYSTEM

Fill the fuel tank to minimize condensation. If tank is completely filled, fuel may overflow from the tank during hot weather. Help prevent damage to the environment. Leave enough space for fuel to expand. Add a gasoline stabilizer solution to the fuel prior to storage. Follow the stabilizer manufacturer's recommended procedure.

BATTERIES

Remove the batteries from your boat and store them in a location away from freezing temperatures. Batteries should be stored in a cool, dry place on a wooden pal let. Do not place batteries directly on concrete, brick, or dirt floors because the charge will be absorbed into the ground. Charge the batteries once a month or apply a continuous trickle charge while they are being stored.

WARNING: Battery electrolytes can cause severe eye damage and burn your skin. Wear goggles, rubber gloves and a protective apron when working with battery. If electrolyte spills, wash area with a solution of baking soda and water.

Clean the outside of the battery case, terminals, and battery clamps with a baking soda and water solution. Do not allow solution to enter battery cells.

Clean battery posts and clamps with a piece of fine grit emery cloth. Use a light sanding motion when cleaning.

Apply a light coat of petroleum jelly to cover the ends of the battery cables.

LIVE WELLS

Drain all water from the live wells. Turn the valve inside the live well so that it is parallel with the tube. The water will drain through the thru-hull side fittings.

Run the live well pump long enough to ensure that the pump is running dry. Remove the live well inlet hose and drain.

SUPPORTING YOUR BOAT DURING STORAGE

Cradle

A cradle is the ideal support for your boat whenever it is not in the water because it supports the boat under the main frames. If a cradle is not available, the boat may be

supported on two or three timbers on firm footing to keep the boat level. The timbers and the foundation must be substantial enough to prevent any change in shape while supporting the boat during storage. The weight carried by the supports should be evenly divided; the keel should carry a share of it.

Pontoon Boats

Pontoon boats should be stored on 4x4 inch blocks at the welded seams (See Figure 7-1). If not properly supported, the seams may open. Open seams will require dealer repair before launching the boat after storage.

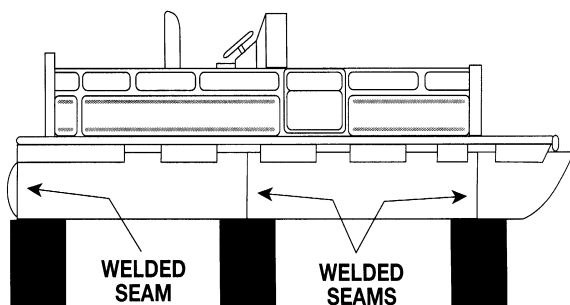


Figure 7-1 Pontoon Boat Storage Support

Storage on Boat Trailer

If you store your boat on its trailer, loosen or remove all tiedowns to relieve stress on the hull. Place blocks under the axles to keep tires away from the ground. Store with the bow up to allow water to drain.

Figure 7-1 Pontoon Boat Storage Support

TIMELY TIP: Repack the trailer wheel bearings while the trailer is on blocks.

FITTING OUT AFTER STORAGE

Fitting out is not difficult if the boat was properly prepared for storage. Before launching your boat, do not load unneeded equipment or personal items until the launch and final checkout are complete.

NOTE: For detailed information on recommissioning your boat's systems and equipment, refer to the owner's manual for each system or component.

1. Check all thru-hull fittings to make sure they are clean.

IMPORTANT: We can not overemphasize our concern for your safety. Inspection of the fuel system is a most important safety precaution.

2. Inspect, visually and by smelling, the fuel system and all associated components for proper connections, wear, leaks, or other damage and needed repair.
3. Check propellers for proper installation and tightness. Clean propeller if necessary.
4. Check charge on battery. Recharge or replace if necessary.
5. Clean battery terminal posts and cable terminal with wire brush or bronze wool. Inspect all battery wiring. Repair or replace if necessary.
6. Install batteries and attach cables. After cable posts are tightened down, smear posts with petroleum jelly or marine grade grease to keep out air and acid. Check all wiring connections and contacts for corrosion and tightness.

IMPORTANT: Do not apply petroleum jelly or marine grade grease before connecting and tightening clamps.

7. Test operation of navigational lights and other lighting onboard. Repair or replace as necessary.
8. Inspect all wiring for fraying, wear, loose connections, or other damage. Repair or replace if necessary.
9. Inspect all switches, controls, and other related equipment for proper operation. Repair or replace if necessary.
10. Inspect all life jackets, anchor lines, and other safety equipment for proper operation and physical condition. Repair or replace if necessary.
11. After launching your boat, check all sources of possible leaks from bow to stern. Make this check with boat before leaving the dock!
12. Check all steering controls, cables, and linkage for free operation.
13. Check all safety equipment including flares flags fire extinguishers, and first aid kits. Replace equipment as necessary.
14. Test run engine as directed in the equipment manuals.