AVALON & TAHOE PONTOON OWNERSHIP AND OPERATION GUIDE

PLEAE READ AND RETAIN THIS OWNERS MANUAL.
THIS MANUAL SHOULD BE PROVIDED TO THE OWNER, SUBSEQUENT OWNERS AND ANY OPERATOR OF THE BOAT.

This manual as well as safety labels which may be posted on your boat use the following safety alerts to draw your attention to special safety instructions that should be followed.

⚠ DANGER

DANGER – Immediate hazards which WILL result in severe personal injury or death.

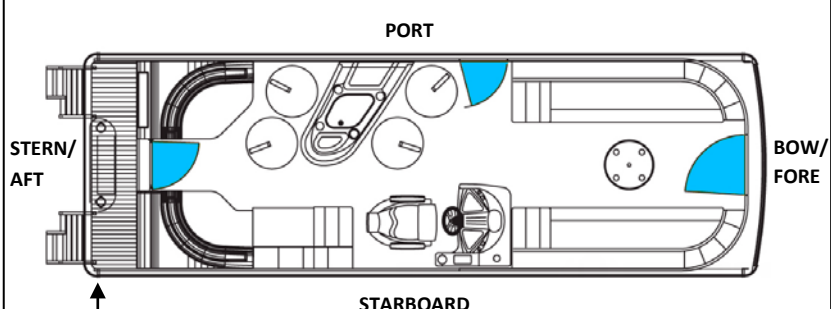
⚠ WARNING

WARNING – Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION

CAUTION – Hazards or unsafe practices which could result in minor injury or property damage.

ABOUT YOUR BOAT



Dear Avalon or Tahoe Owner,

Thank you for choosing to purchase an Avalon or Tahoe Pontoon Boat!

We are glad that you have become a part of the Avalon & Tahoe family of boaters. If you are like most boat buyers, you probably spent a great deal of time researching the market, learning about different brands and debating different models. That fact that you purchased an Avalon or Tahoe indicates that you value comfort, contemporary styling, attention to detail and quality construction.

Proper use and care of your new boat are key factors in the level of enjoyment you will experience. Please take the time to read and review the material in this binder. In addition to many tips related to maintenance and general usage, you will find a great deal of information related to your safety and the safety of your passengers.

Our goal is not only to build the best boats possible, but to build the safest. We hope that you feel we have achieved that goal once you have had the chance to use and enjoy your new boat. We take great pride in producing a product that will likely serve as the platform for family and friends to gather, spend quality time together and generate memories that will last a lifetime.

Thanks again for choosing Avalon & Tahoe. See you on the water.

Best Regards,

Jim Wolf
President & CEO
Avalon & Tahoe Mfg., Inc.

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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?)
- ✓ STEERING SYSTEM (Working smoothly and properly?)
- ✓ 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, bailer, paddle, anchor & line, signaling device, tool kit, etc.?)

NOTE: While this manual contains a wealth of information on safe and enjoyable boating, it doesn't provide everything you need to know about it. Read the material supplied by the manufacturer of your engine, since this manual doesn't supplant or change applicable engine specifications, installation, operation or maintenance instructions supplied by the manufacturer of any of your equipment, parts or accessories. We also recommend reading the boating literature published by your state boating agency and taking advantage of the free boating education classes described on the last page of this booklet.

SECTION 1

YOU AND YOUR BOAT

Congratulations on your purchase of a new Avalon or Tahoe pontoon boat! You have made a considerable investment, and you probably didn't do it without giving the purchase careful thought. The purpose of this manual is to urge you to give the same careful thought to the way you operate and maintain your boat.

Boat ownership carries with it responsibilities - to yourself, to your boating companions and to the general public. Safe, common sense operation, careful maintenance, and compliance with the law will not hamper your boating pleasure. Rather, they will make boating more enjoyable for you and your fellow waterways users.

This manual, as well as any literature supplied by the manufacturer for your specific boat and engine, should be read thoroughly and kept handy for ready reference.

SAFETY: DRINKING & DRIVING

The most common and flagrant violation of good judgment by mariners involves the use of alcohol or drugs. Each year about one-half of all boating accidents involving fatalities result from the misuse of alcohol or drugs.

Regarding drinking and boat operation, the best answer is to abstain or plan to have someone else (a "designated driver") get you home. Drinking by the boat operator is dangerous because it impairs judgment, coordination, and reaction time more severely than on land.

States are toughening their laws and penalties for problem boat owners. Recent federal law defines boat operator intoxication as having more than .08 percent blood alcohol concentration or merely "the general appearance or behavior of intoxication." Never allow an obviously intoxicated person to take the helm.

Boating is meant to be fun. But operators must have the good sense to always be mentally alert and physically capable of boating in a safe manner.

THE PRELIMINARIES

REGISTRATION: Federal law requires that all motorboats be registered and that all motor craft not documented by the U.S. Coast Guard display registration numbers. In nearly all states, this means registration with the designated state agency. In a few jurisdictions, the Coast Guard retains registration authority. Your dealer will either supply registration forms or tell you where they may be obtained. The registration agency will issue you a certificate which must be carried aboard when the boat is in use.

INSURANCE: The boat owner is legally responsible for damages or injuries he causes. In most states this is true, even if someone else is operating the boat at the time of the accident. Common sense dictates that you carry adequate personal liability and property damage insurance on your boat, just as you would on an automobile. You should also protect your investment by insuring your boat against physical damage or theft.

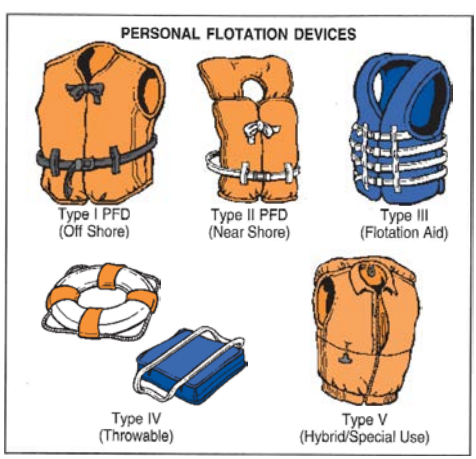
EDUCATION: If you have never owned a boat before, an excellent introduction to the arts of boat handling and seamanship can be obtained through the free courses conducted by volunteer organizations, such as the U.S. Power Squadrons, the U.S. Coast Guard Auxiliary and the American Red Cross. Even if you are a veteran boatman, these courses will help sharpen your boating skills, bring you up to date on current rules and regulations and add to your enjoyment of the sport. See last page of this manual for additional information.

ACCESSORY EQUIPMENT: U.S. Coast Guard regulations require certain accessory equipment on each boat. This equipment varies according to length and type of boat and type of propulsion. Other law enforcement agencies - state, county and municipal - impose similar equipment requirements on waters that do not fall under Coast Guard jurisdiction. Some local laws require additional equipment. It is important to obtain copies of your state and local laws.

U.S. COAST GUARD REQUIREMENTS

For a more detailed description, obtain "Federal Requirements for Recreational Boats" published by the Coast Guard, generally available at boating retailers, or contact the Coast Guard directly (see last page of this manual).

1. **Personal Flotation Devices (PFDs):** PFDs must be Coast Guard approved, in good and serviceable condition, and of the appropriate size for the user. Though not required, the Coast Guard emphasizes that PFDs should be worn at all times when the vessel is underway. Throwable devices must be immediately available for use. Boats less than 16 feet in length (including canoes and kayaks of any length) must be equipped with one Type I, II, III or V (see accompanying illustration for examples of types) PFD for each person on board. Boats 16 feet and longer must be equipped with one Type I, II, III or V plus one Type IV.



2. **Visual Distress Signals:** All boats 16 feet and more in length used on coastal waters, the Great Lakes, territorial seas and those waters connected to them must be equipped with visual distress signals.

Pyrotechnic signals must be Coast Guard approved, in serviceable condition, readily accessible and marked with a date showing service life which must not be expired. Approved pyrotechnic signals include red flares (hand-held or aerial), orange smoke (hand-held or floating), and launchers for aerial red meteors or parachute flares. Non-pyrotechnic visual distress signals include an orange distress flag (for day use only) and an electric distress light (for night use only).

3. **Fire Extinguishers:** These are required on boats if any of the following conditions exist: inboard engines; closed compartments where portable fuel tanks may be stored; double bottoms not sealed or filled; closed living spaces; closed stowage compartments; permanently installed fuel tanks.
Approved extinguishers are classified by a letter and number symbol, either B-1 or B-II (B designation to extinguish flammable liquids such as gasoline, etc.), and are hand-portable. B-1 types dispense 1.25 gallons of foam, 4 pounds of carbon dioxide, 2 pounds of dry chemical or 2.5 pounds of Halon extinguishing agents. B-II types dispense 2.5 gallons of foam, 15 pounds of carbon dioxide, 10 pounds of dry chemical or 10 pounds of Halon extinguishing agents. *Fire extinguishers required: On boats less than 26 feet, One B-1; on boats 26 feet to less than 40 feet, two B-1 or one B-II; on boats 40 to 65 feet, three B-1 or one B-II and one B-1.*

4. **Sound Signaling Devices:** Regulations do not specifically require vessels less than 12 meters (39.4 feet) to carry a whistle, horn or bell. However, the navigation rules require sound signals to be made under certain circumstances. Meeting, crossing and overtaking situations described in the "Rules of the Road" section of this manual illustrate when sound signals are required. Recreational vessels are also required to sound fog signals during periods of reduced visibility. Vessels 12 meters or more in length are required to carry a whistle or horn and a bell.

5. **Navigation Lights:** Recreational vessels are required to display navigation lights between sunset and sunrise and other periods of reduced visibility (fog, rain, haze, etc.). Navigation lights are intended to keep other vessels informed of your presence and course. It is up to you to make sure they are operational and turned on when required.

ADDITIONAL SAFETY INFORMATION

EMERGENCY STOP SWITCH

Many boats have a factory installed lanyard actuated emergency stop switch (kill switch). If so equipped, it is highly recommended that it be used since it can prevent your boat from becoming a runaway. The lanyard should be of sufficient length to avoid inadvertent activation. Accidental loss of power can be hazardous particularly when docking or in heavy seas, strong current or high winds.

RECOMMENDED EQUIPMENT

The list of required safety equipment is short and covers only the bare essentials. Additional recommended equipment on the next page will give you an extra margin of safety and convenience.

FLOAT PLAN

Before you leave on a boat trip, advise a responsible person ashore of where you plan to cruise and when you expect to arrive. Give him an adequate description of your boat. That person will then be able to tell the authorities where to look and the type of boat to search for in case you fail to arrive. Keep the person informed of any changes in your Float Plan and advise him when you arrive to prevent false alarms about your safety.

RECOMMENDED ADDITIONAL GEAR AND EQUIPMENT			
BASIC GEAR	TOOLS	EXTENDED CRUISING	SPARE PARTS
Anchor and anchor line	Spark plug wrench	Charts of the area	Spare bulbs
Tow line	Screw drivers	Parallel rulers	Fuses
2 Lightweight fenders	Pliers	Dividers	Extra drain plug
2 Mooring lines	Adjustable wrench	Spare battery	Shear pin (if applicable)
First aid kit	Hammer	Rainwear	Spare propeller
Flashlight/searchlight	Electrician's tape		Propeller nut and washer
Oar or paddle	Lubricating oil		Spark plugs
Compass	Jackknife		Flashlight batteries
Signal flares			
Boathook			
Sunburn lotion			
Sea anchor (open waters)			

TRAILERING & TRANSPORTATION

For many boating enthusiasts, the voyage begins in the driveway, not at the dock. The boat trailer is an important element of the boating package, and, like the others, it must be checked and maintained.

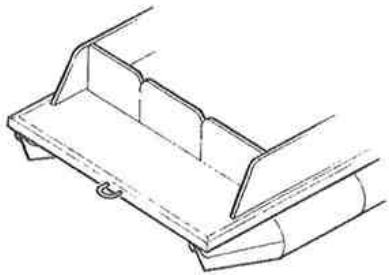
The trailer should be a proper "match" for your boat's weight and hull design. Too little trailer capacity will be unsafe on the highway and could cause abnormal tire wear. Too high a capacity trailer sprung for high loads can damage light, particularly aluminum, boats.

SECURE ALL ITEMS BEFORE ROAD TRANSPORT

During road transportation you must secure all items that might dislodge and fly out of your boat. This includes tables, unhinged seat cushions, tops, sundeck lids and any other item that can be affected by wind. Stow items under seats or secure with rope. Be careful to pad areas where rope touches cushions or rails.

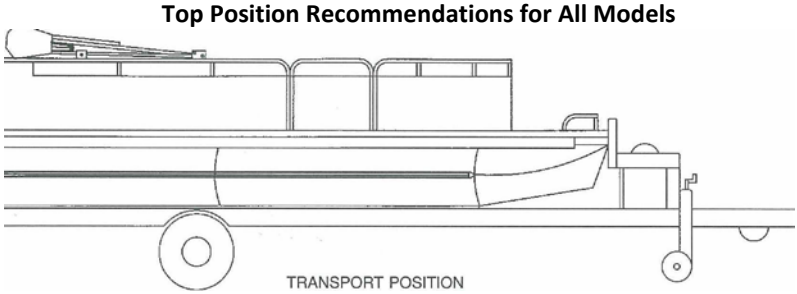
MOORING OR SEAT COVERS MUST BE REMOVED BEFORE TOWING

Mooring or seat covers are intended to decrease your boat's exposure to rain, dirt and sun. They are not intended to be a transport cover. Transporting your boat with the mooring or seat covers on will damage the covers! **Failure to follow these instructions could cause damage to your boat or damage to vehicles behind you.**



Use U-Bolt to pull boat onto the trailer.

Top Position Recommendations for All Models



YOUR BOAT MAY BE EQUIPED WITH TRAVEL TRANSPORT BRACKETS FOR THE BIMINI TOP. IF SO, LOWER THE TOP INTO THE TRAVEL POSITION OR PLACE TOP COMPLETELY DOWN WHEN TRANSPORTING AND TIE TOP TO WALL RAIL. ALSO, SECURE SUNDECK CUSHIONS, UNHINGED SEATS, TABLES OR ANY OTHER LOOSE ITEMS BEFORE TRANSPORT.

LOAD-CARRYING CAPACITY

Check the metal or plastic certification label attached by the manufacturer to the left forward side of your trailer. It may show the maximum load carrying capacity of the trailer. It is required to show the Gross Vehicle Weight Rating (GVWR) which is the load-carrying capacity plus the weight of the trailer itself. Be sure that the total weight or your boat engine, gear and trailer do not exceed the GVWR.

TONGUE WEIGHT

Too much or too little tongue weight will cause difficult steering and tow vehicle sway. A rough rule of thumb is 5% to 10% of boat and trailer weight should be on the trailer tongue.

⚠ CAUTION

Improper trailer setup can cause hull damage, and, in some cases, could void your boat warranty.

Most of the weight of your boat and engine is at the transom (stern) supports which must be positioned so that the boat's transom rests directly on them. If the boat overhangs these supports the hull can be deformed and performance drastically affected.

An aluminum boat should have long, straight longitudinal bunkers or a long

series of closely spaced rollers to spread support to several of the boats cross ribs. Single rollers between cross ribs must be avoided. Roller heights must be adjusted so that boat weight is evenly distributed on them. One roller set higher than the rest can cause a "hook" in the boat bottom.

Side supports should run parallel to the keel and support the aft 1/3 of the hull, extending beyond the transom. If center supports are used, they should not exert any great pressure on the hull where flexing may take place. Side supports need only be tight enough to keep the boat centered.

⚠ CAUTION

Make sure that the boat is securely fastened to prevent movement between boat and trailer. Do not overload your trailer by putting camping gear or other heavy equipment in the boat.

Before towing your boat, close and secure all hatches, doors, and port lights; store equipment securely; take down and carefully secure all canvas. Tops, side curtains, and aft curtains can be damaged while towing in the raised position. **When rounding turns on highways or streets, do not cut corners. Also, go slow over railroad tracks.**

TIE-DOWNS

Insuring that your boat is held securely in place on the trailer's hull supports, especially when underway, is extremely important. If it is not firmly and properly secured, your boat can be damaged as it bounces against the hull supports -or it may slide or falloff the trailer while being towed. Depending upon your boat model, all the necessary tie-downs for holding boats on trailers may not be provided by the trailer manufacturer. Regardless of your trailer's make or model, there are two key areas to consider:

1. **Bow Tie-Downs:** A bow stop to hold the front of your boat in place is located on the winch stand. It should be positioned so that the winch line pulls the boat bow forward against the bow stop. A separate tie-down should then be attached to hold the boat down to the trailer (see illustration). Besides keeping your boat from sliding off to the rear if the winch releases, in conjunction with the winch stand it must keep the boat on the trailer during quick stops or minor collisions. Be certain that the lines do not pass over any edge that will cause chafing.

2. **Rear Tie-Downs:** As noted previously, it is very important to be sure that the transom of your boat is resting fully and securely on the supports provided at the rear end of the trailer, and that it remains in place when parked or underway. Special rear tie-downs are available for this purpose.

Check often to be sure the rear tie-downs are securely locked in place and that they are tight enough to prevent any movement of the boat. Check by rocking the boat on the trailer. If it does not remain firmly in place on the supports, tie-downs should be tightened or re-rigged. The strength of rear tie-downs should at least equal the trailer's empty weight.

PLEASE NOTE: Trailer laws covering such things as brakes, lights, safety chains, licenses, etc., will vary from state to state. Be sure that your trailer is in full compliance with your state laws. Your trailer dealer usually can help you in this regard. If not, contact your nearest state motor vehicle department office for full information.

TRAILERING CHECKLIST

Before towing your boat on its trailer check to be sure:

- Coupler, hitch and hitch ball are of the same size.
- Coupler and safety chains are safely secured to hitch.
- Check all fasteners for proper tightness.
- Boat is securely tied down to trailer. (Winch line is not a tie down)
- Wheel lug nuts are properly tightened.
- Wheel bearings are properly adjusted and maintained.
- Load is within maximum load carrying capacity.
- Tires are properly inflated.
- All trailer lighting is working properly.
- Trailer brakes are properly adjusted and working.
- Mooring cover is off.
- Loose items are secured.

Extra Gear - If you are carrying baggage, extra gear or equipment in the boat, is it secured to prevent movement or loss on the highway?

Engine - Outboard motors should be tied in place so they will not tilt or turn due to road shock. Do not rely on the boat's steering system for this purpose. Continuous road shocks may fatigue the boat steering system. Tilt lower unit up if necessary for road clearance. The use of a motor support bracket is highly recommended to reduce long term stress on the motor mount.

LAUNCHING

Every trailer boater develops his own favorite launching technique. Until you do, here are a few helpful tips:

1. Check the ramp first - Whether you're launching from an unimproved or a surfaced ramp, check it out before starting your launching procedure. How steep is it? Is the surface firm enough to support the weight of trailer rig and tow vehicle? Is it wide enough? How deep is the water at the end of the ramp? Some surfaced ramps become very slippery when wet - do you have wheel chocks to prevent your rig from sliding down the ramp?

2. Back trailer to the ramp - Have someone stand to one side of the ramp to direct you. Backing up a trailer can be tricky. A good way to simplify the procedure is to grasp the steering wheel with one hand at its lowest point (at 6 o'clock). When you want the trailer to go right, move your hand on the

wheel to the right: to make the trailer go left, move your hand to the left. Stop when the rear of the trailer is a few feet from the water's edge; put your gear shift in "Park," set the parking brake and place chocks under the front wheels of the tow vehicle. (Caution: The lower ends of ramps are often wet and slippery.)

3. Prepare for launching - Attach a bow line to your boat and detach trailer tie-downs. If your boat is an outboard or stern drive, tilt up the lower unit. If your trailer has a tilt bed, then release tilting mechanism.

⚠ WARNING

To avoid flooding and swamping your boat, before launching be sure the hull drain plug is in place and tight.

4. Launching - Remove wheel chocks, release brake and back trailer to the water. If at all possible, avoid submerging trailer wheels. Reset parking brake, gear shift and wheel chocks. Unlock winch and push boat slowly but firmly off the trailer into the water. Be sure you (or your partner) have a firm hold on the bow line.

5. Final Steps - Detach winch hook and line from the boat, crank it back up and lock it in place. Using the bow line, walk the boat to the loading site, away from the ramp. Remove wheel chocks and park your car and trailer where they will not obstruct access to the ramp.

To load the boat on the trailer, simply reverse the above procedure. Before loading, clean any dirt or sand off rollers or bunks. Sand on bunks or rollers can abrade the boat's bottom while trailering.

⚠ WARNING

To avoid injury if the winch line or hook gives way, stand to one side when winching the boat onto your trailer.

LOADING AND CAPACITIES

(See checklist on page 1)

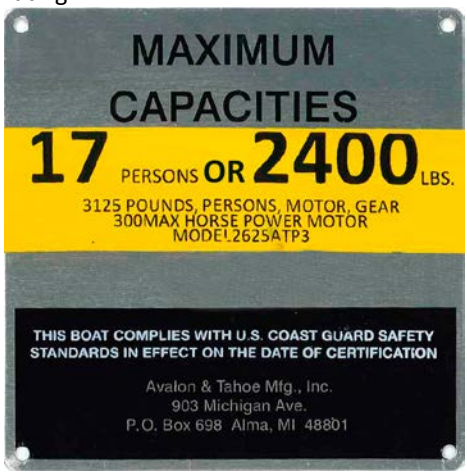
⚠ WARNING

Do not exceed these capacity ratings. An overpowered boat can become unstable, sometimes resulting in a loss of control or capsizing.

POWERING AND LOADING: Boats under 20 feet in length, built since 1972, are required to have a capacity plate. On outboard boats, the plate must show maximum recommended horsepower for the outboard motor. If the available, usable passenger seats are less than the indicated capacity, reduce your passenger load accordingly.

An overloaded boat can become sluggish and hard to handle. Overloading can also reduce freeboard and increase the danger of flooding or swamping,

particularly in rough water. In adverse weather reduce the load capacity. A boat's capacity ratings are based upon normal conditions. In addition, overloading is illegal under most state laws and could get you a ticket. Some boat warranties are void if the owner exceeds the recommended capacity rating.



BOARDING: Never jump into a boat from the dock. And do not board a boat with your arms full of gear. Instead, leave the gear on the edge of the dock, board the boat as close to the centerline as possible, and begin taking the gear aboard after you yourself are aboard.

STOWAGE: Once you, your passengers and your gear are aboard, it's time to stow things away. Again, use common sense. The necessary safety equipment, for example, should be placed where it is readily accessible: The fire extinguisher mounted on a bracket in the cockpit within easy reach in case of emergency. The items you don't need immediately should be stowed where they won't get in the way. Items like distress flares, matches and perishable foods should be kept in waterproof containers or bags and kept where they are least likely to get wet. Fishing tackle, water ski equipment, diving gear, etc. should be kept out of the way until needed.

PASSENGER INSTRUCTIONS: You are responsible for the safety of your passengers, as well as their behavior while aboard.

1. **Wearing of PFDs:** It is a U.S. Coast Guard regulation that each person on board has available a Personal Flotation Device (PFD). It is also the obligation of the boat owner to instruct each passenger on the proper wearing of PFDs. It is strongly advised that all occupants wear these devices. Small children and non-swimmers should wear PFDs at all times.

2. **Proper Seating:** The operator of the boat is responsible for the safety of his passengers as well as his own personal safety. He should insure that he and his passengers are securely seated in appropriate seating locations before starting. The operator should not allow sitting on seat backs, gunnels, bows, transoms or on fishing seats above idle speed, or in any location with feet dangling over the side. In many states incorrect seating is illegal. Proper seating also correlates to proper weight distribution: have passengers seated to balance the load.

3. **Proper Visibility:** The operator of the boat is responsible by law to “maintain a proper lookout by sight (and hearing).” He must insist that he has an unobstructed view particularly to the front. No passengers load or

fishing seats should block his view when operating above idle speed.

4**. Back-up operator:** At least one other person should be instructed in the operation of the boat in case the operator is suddenly incapacitated.

BEFORE STARTING THE ENGINE

1. Follow the checklist on Page 1.

2. Inspect engine area once again, checking for water or fuel leaks, tight hose connections and engine crankcase oil level (if applicable).

3. If your boat is an inboard/outboard operate bilge blower for at least four minutes to expel any gasoline vapors. It's also good practice to leave the blower running when the engine is running.

4. If your boat is an inboard/outboard operate bilge pump (if applicable) until flow stops.

5. Lower outdrive or outboard motor into down position. Running either unit in the up position may cause damage.6. Make sure the gearshift control is in the neutral position.

OPERATION

GETTING UNDER WAY

1. Start engine according to manufacturer's instructions.

2. Allow engine to warm up at idle and check all gauges.

3. Release mooring lines and push boat away from dock as you put engine in gear*. Remember: extra caution and slow speeds lessen your chances of colliding with seawalls, pilings and other craft.*

4. After leaving dock, secure and store any fenders or mooring lines.

5. Weight distribution: Correct weight distribution is a must. If too much weight is placed forward or shifts, it might affect the safety of the passengers and gear. Keep the boat in proper trim and freeboard.

6. The motor angle adjustment is important. The vertical angle of the lower unit (long shaft) in relationship to the transom must be adjusted properly to obtain best performance from the motor and boat. The correct angle can only be determined by observing how the boat operates at full throttle. The angle adjustment should be made when trim and load distribution changes. Moving the lower unit out away from the transom will force the stern of the boat down and bow up. At full throttle the front bottom of the nose cone should raise and cut through the water.

7. Meeting Head-On: Keep to right.

8. Approaching Waves and Wakes: When approaching a wave or wake in excess of 2', slow down and turn your boat to a 45° angle to the wave or wake. Failure to do so may result in water crossing the deck and damaging the walls. See warning on page 24.

9. Docking Safely: It is important that the helmsman understand the operating characteristics of a pontoon boat, especially if accustomed to handling conventional power boats. Because of this characteristic, when propulsion is stopped, the momentum carries the boat farther than in the case of conventional craft. The operator should, therefore, take this into account when approaching a dock or other mooring point. After docking, to assist in tying down the pontoon boat, convenient mooring eyes are provided at both ends of the pontoon.

SUGGESTIONS FOR YOUR SAFETY

When your boat is in motion, all passengers should be within the enclosed area of the deck, and the gates should be securely latched. Never permit passengers to ride on the forward open deck area while cruising. This open area of the deck should only be occupied when the boat is stopped or at anchor, as for swimming, diving, fishing, or at dock. Sitting on the aft sun deck when boat is in motion is an extremely dangerous practice and should not be permitted.

SPECIAL NOTE ON ALL FISHING MODELS - The low bow railings and opening do not provide adequate protection. All persons should stay in the area of the boat enclosed by high railing when underway. By sitting in this area when boat is in motion correct weight distribution is maintained. It is also unsafe to sit in the fishing chairs while the boat is in motion. Disregard of this warning may result in personal injury.

SPECIAL SAFETY NOTE ON ALL REAR ENTRY MODELS - Never use the rear entry gate or ladder while the motor is running. Always turn your engine off anytime there is a person swimming near the boat. The engine must be off before anyone exits or enters the rear entry gate. Persons entering or exiting the boat via the rear entry gate should never step on the motor pod. Never operate your boat while anyone is standing on the rear entry platform outside the gate. Failure to pay attention to these warnings can result in bodily injury or death.

FUELING

BEFORE FUELING: Do not smoke; extinguish open flames; do not use electrical switches; stop all engines, motors, fans and other devices likely to cause sparks; put out lights and stove flames, close all doors, hatches, windows and other compartments; have all passengers go ashore; avoid fueling at night, except under well lighted conditions.

DURING FUELING: Keep nozzle of fuel hose or can in contact with fuel opening to guard against possible static spark. **To avoid fuel back splash, start filling SLOWLY so that the air in the tank has time to escape through the vents.** After a short moment filling speed can be safely increased. Do not fill to capacity; allow room for expansion. Portable fuel tanks should be

removed from boat and filled on the dock; outboard motor fuel should be mixed with oil according to engine manufacturer's instructions; the portable fuel tank cap and vent should be tightly closed when tank is full; after tank is full and returned to the proper position in the boat, the tank vent should only be opened when fuel line is connected to the outboard motor. Wipe any spilled fuel from portable tank before bringing aboard. **NOTE:** Vapor from spilled fuel is heavier than air and will flow to the lowest part of the boat. Ventilate before starting engine.

AFTER FUELING: Close fill opening; wipe up any spilled fuel; open all ports, windows, doors and hatches; operate bilge blower at least four minutes, make sure there is no odor of gas in the fuel or engine compartment (use your nose).

If you can still smell fumes continue operating the blower. Check gas fill, hoses, bilge and lower engine compartment for leaks or gas accumulation if odors persist. Do not start engine until source of fumes is found and corrected. After starting engine and before lighting any galley fire or stove flame check for fumes again. **NOTE:** Know your boat's fuel capacity and cruising radius; on extended cruises, check with local sources about the availability of fuel along your route; carry additional fuel only in approved containers and stow securely.

⚠ WARNING

Leaking fuel is a fire and explosion hazard. Inspect system regularly. Examine fuel system for leaks or corrosion at least annually.

RULES OF THE ROAD

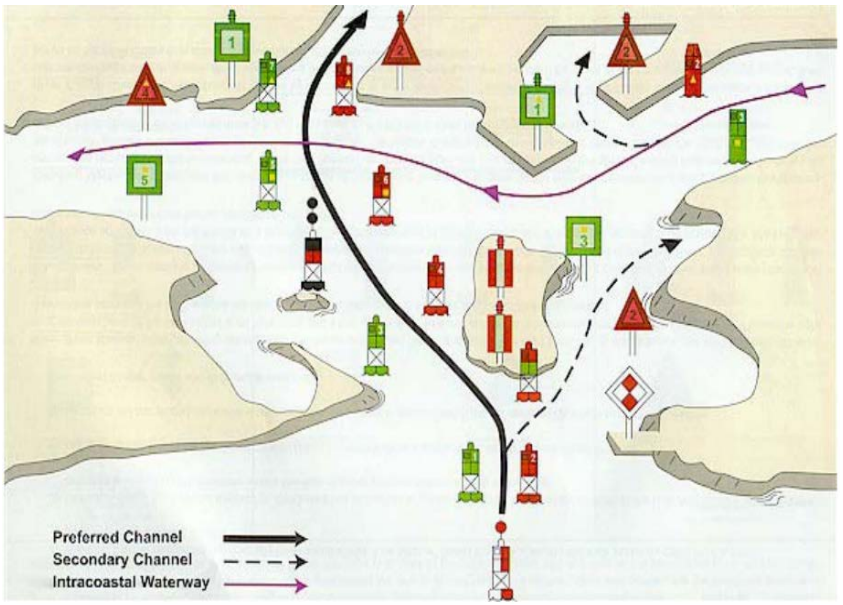
The nautical Rules of the Road dictate who has the right-of-way in crowded anchorages and when boats meet in open water.

RIGHT-OF-WAY

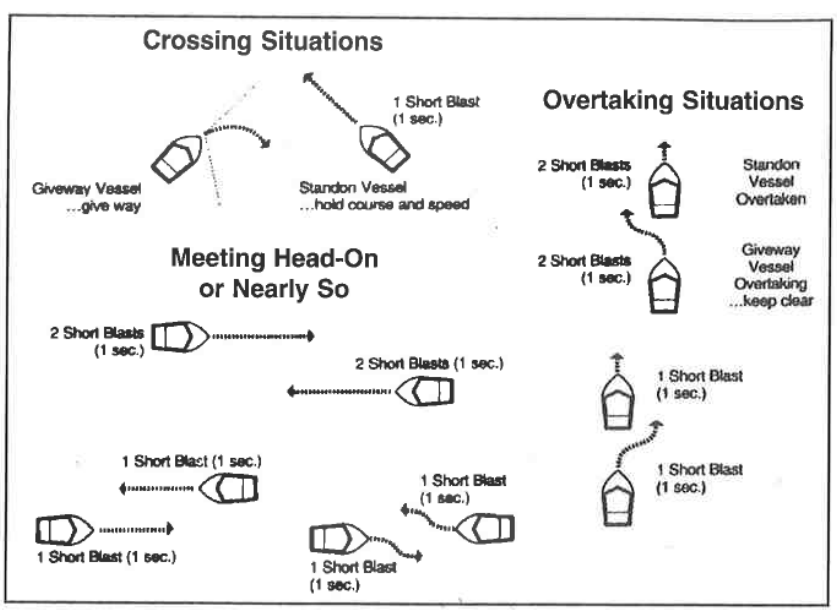
1. Sailboats have right-of-way over powerboats in nearly all cases. Stay clear of these craft and do not create a wake which may cause them trouble.
2. In narrow channels, powerboats fewer than 65 feet in length cannot hamper the operation of large vessels which cannot navigate outside the channel. In general, keep your distance from all commercial vessels and other large craft; you can maneuver more easily than they can.
3. In overtaking situations, the boat being passed has right-of-way, and the passing boat is required to stay clear.
4. Meeting head-on -keep to right.
5. Crossing: Boat on the right has right-of-way. Slow down and permit it to pass.

Channel Buoy Guide (Federal)

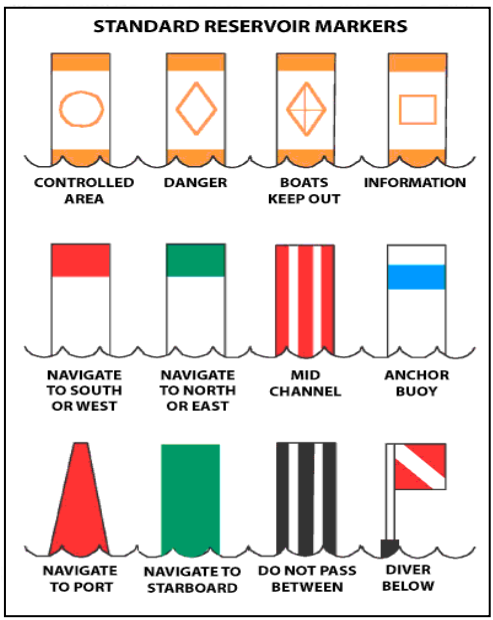
For the most current information, request the U.S. Coast Guard U.S. Aids to Navigation; write to Commandant (G-NSR-1/14), U.S. Coast Guard, Washington, D.C. 20593; or call the Coast Guard's Boating Safety Hotline toll-free at 800-368-5647.



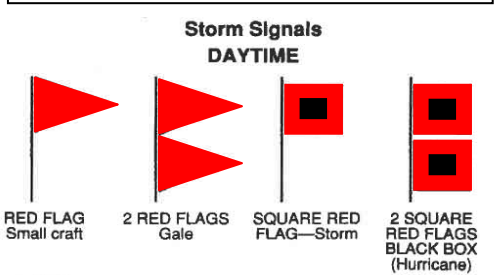
WHISTLE SIGNALS - The diagrams below describe the whistle signals and actions to be taken by recreational vessels in a crossing, meeting and overtaking situation. These are basic examples.



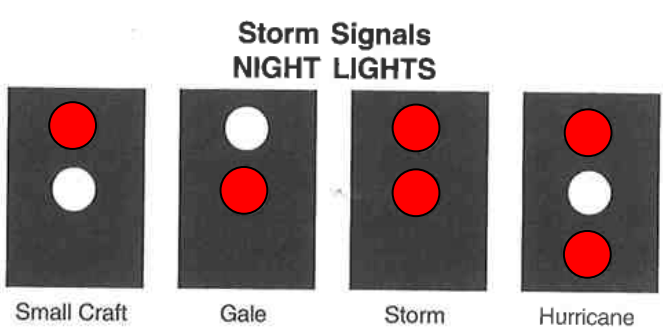
NAVIGATION AIDS - Navigation aids are the signposts of the waterways. Shown below are the usual buoys and markers you will encounter. Make sure you are familiar with these and any other specialized markers used in your area.



WEATHER - Boating for pleasure can become a chore when the weather turns bad. The best advice for boatmen in bad weather is Stay Home! Check the weather forecast on your local radio station before leaving home; continuous weather information is also provided in most areas by the National Oceanic and Atmospheric Administration at 162 MHz (FM). It is also a good idea to bring a portable radio along with you to check the weather forecasts periodically.



Storm signal flags are being phased out by some Coast Guard stations, yacht clubs and launching facilities. But when in use, they indicate high wind and possibly hazardous wave conditions.



ADVERSE CONDITIONS

IN A STORM: If you are forced to operate your boat under stormy conditions, a few common sense precautions should be followed:

1. Wear PFD's.
2. Secure any loose gear.
3. Reduce speed
4. Seat your crew where they can help and where their weight will best keep the boat stable. In small boats it is advisable for passengers to keep their weight as low in the boat as possible.
5. Head for the harbor or place of refuge you can reach most easily. If this requires running into wind and waves, cross wave tops at an angle and slow down to avoid taking waves over the bow. If wind and waves are coming from astern adjust power to prevent the boat from plowing into the wave ahead and to keep the waves behind from breaking over the stern.
6. If you lose power and must ride out the storm, tilt the outboard or stern drive up to reduce drag and rig a sea anchor off the bow to keep the boat headed into the waves. Sea anchors are commercially available and recommended especially in open water. A bucket, or even a plastic ice chest, can serve as an emergency sea anchor.
7. Avoid boating if electrical storms are predicted.

IN FOG (or mist, snowstorm or heavy rain): Again, it is best to avoid operating in such weather, especially if your boat is not equipped with radar or other electronic navigational aids. A compass and chart will give you an idea of the direction you're heading, but provide no information on your boat's speed or distance from shore.

If you are in fog, you are required, while under way, to emit a 5-second blast from your horn or whistle once a minute. You must also listen for the fog signals from other vessels and from navigation aids.

In situations like these, all hands must act as lookouts to prevent collisions. Again, keep your speed low.

IN COLD WEATHER: Cold weather is often accompanied by cold water and high winds, and all of them can be unpleasant. Avoid bulky clothing, which may inhibit your movement; instead, wear several layers of lighter clothing and include a vest-type PFD among the layers for good insulation and protection against falls overboard. Avoid operating in cold weather unless your boat has a cabin, storm canvas or similar protection against the wind and icy spray.

The wind and spray could cause frostbite or hypothermia (extreme loss of body temperature). Freezing spray can also cause problems with your boat - jammed control cables, frozen windshield wipers, etc.

⚠ WARNING

Falls overboard are doubly dangerous in cold water. PFD's should be worn at all times, and anyone who falls overboard should be retrieved as fast as possible to prevent hypothermia.

IN SHALLOW WATER: Operating in water too shallow for your boat presents a number of hazards, chiefly to the propulsion system and hull. "Shallow water" here means water generally too shallow for the boat, but also can apply to deep water which contains stump fields, sand bars or other unmarked underwater obstructions. Striking any of these at high speed could, of course, cause serious injuries to you or your passengers. Outboards are built to kick upward in these situations which could cause an engine over-speed problem if the ignition is not shut off quickly. If you strike anything, at any speed, you run the risk of rupturing the hull, damaging the propeller, propeller shaft, struts or 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. If you are unfamiliar with the water, obtain a chart or ask local boatmen about depth conditions. Go slowly, and keep a bow lookout when operating in shoal waters.

AT NIGHT: Nighttime operation is not necessarily hazardous, but it does present you with a number of problems: Vision is restricted and could be completely obscured in bad weather or fog; floating debris and fixed obstructions or even large waves can be hard to spot; your night vision can be ruined by sudden exposure to a bright light. If you operate at night, remember:

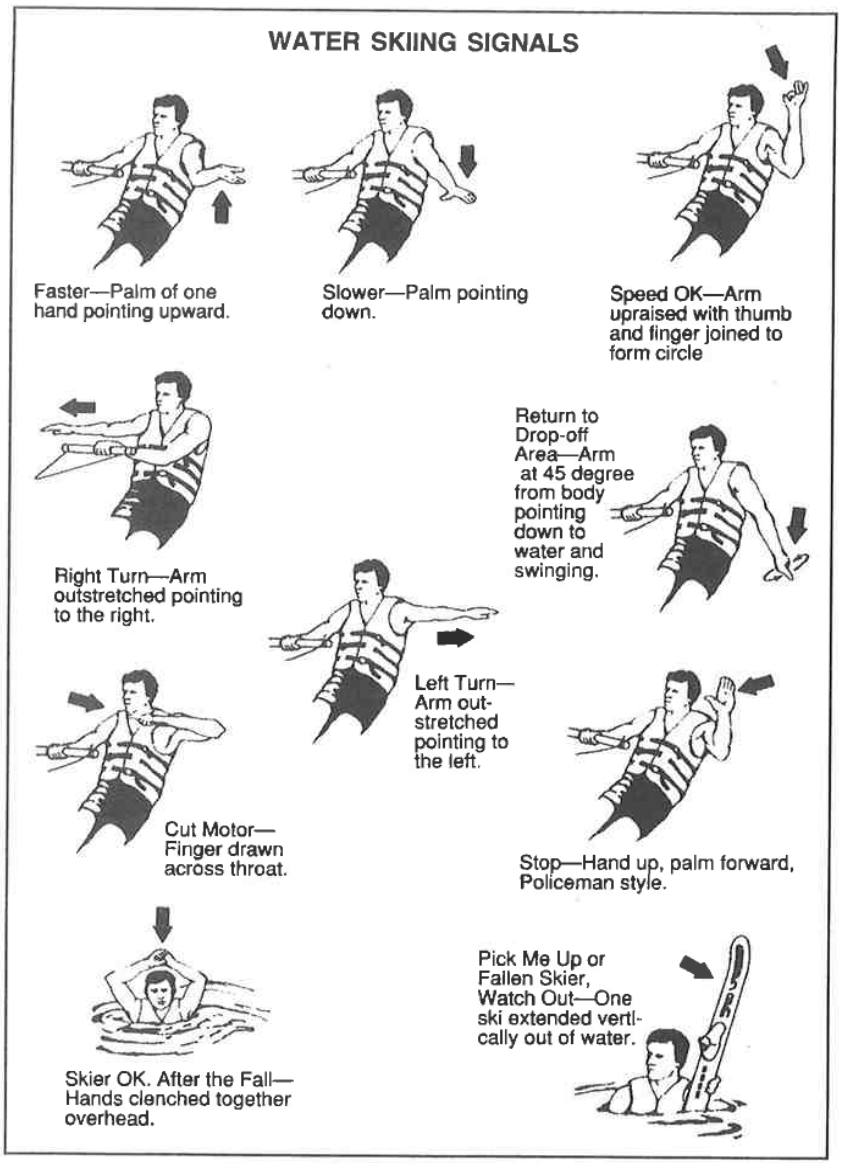
1. Your navigation lights must be working to warn other boats of your presence and course. Observe the meeting and passing rules. If the bow light of another boat shows red, you must yield; if the bow light shows green only, you have right-of-way, but use common sense and keep clear. Slow down even if you have the right-of-way.
2. Onshore lights can be helpful, but not always. Glare can destroy night vision, and these lights can sometimes make lighted and reflective navigational lights and the lights of other boats difficult to pick out.
3. High speed operation must be avoided at night. The consequences of any collision are more severe at high speed.
4. Keep a sharp lookout. Have a crew member assist you in watching for other boats, possible hazards and navigation features.
5. Protect your night vision. Avoid staring at bright lights ashore and on your boat.

WATERSPORTS

WATER SKIING: You are responsible for the safety -and conduct -of a water skier, just as you are for passengers in your boat. Find out the skier's level of experience before you start, and avoid any maneuvers which may cause

problems for the skier. Likewise, instruct the skier to avoid dangerous antics while being towed. Skiers should wear a ski vest, or a vest type PFD, preferably in a bright color. Do not ski in congested areas where there is a danger of a downed skier being run down by another boat. Avoid skiing near swimming areas, piers and underwater hazards.

It takes three people to water ski -the boat operator, the skier and a backward-facing observer. The observer is required by law in most states and is the safest means of protecting both the boat and skier. The observer's job is to relay all signals from the skier (see figure below) to the operator and to inform the operator immediately if the skier falls.



WATER SKIER DOWN

When engaging in water skiing or similar activities the boat operator should always keep a fallen or down skier on the operator's side of the boat while returning to attend to the skier. The operator should never back up to the skier or anyone in the water.

⚠ WARNING

The engine must be turned off when anyone is in the water near the stern (near the propeller), including when passengers are boarding from or de-boarding into the water. Shifting to neutral is **not** sufficient.

A boat operator should never drive his boat directly behind a water skier. At 25 miles per hour the boat will overtake a fallen skier who was 200 feet in front in 5 seconds.

Courtesy and consideration for others is essential in water skiing. When skiing make sure your wake is not causing problems for fishermen and other boatmen.

CTS/HPP MODELS: Your boat is designed to give you quick acceleration with a minimum of time spent in the bow-up transitional planeing off condition. Planeing your boat is most easily accomplished by trimming the engine fully "under" or "in." Moderate to maximum throttle may be required depending on the engine height and propeller. However, once on plane the engine should be trimmed out a little to avoid a bow down condition called "plowing." Plowing can cause "bow steering" or "over-steering" and inefficiently consumes horsepower. In this condition, if attempting to turn or encountering a diagonal moderate wake, a more abrupt turn than intended may result.

⚠ WARNING

Avoid possible serious injury or death. Adjust engine to an intermediate trim position as soon as boat is on plane to avoid possible ejection due to boat spin-out. Do not attempt to turn boat when engine is trimmed extremely under or in.

SAFE OPERATING SPEED

The maneuvering speed of your boat is the maximum speed at which you can make sudden turns without risking loss of control. This speed obviously varies depending on wind and waves. Some boats display a warning advising that maneuverability above a given speed is limited. This posted speed is based on standardized industry tests on calm water. There are minimum safe speeds for certain conditions as well, such as to maintain headway in a crosswind or to keep the bow up so waves don't break over it. A little prudent experimentation noting the safe speeds under various conditions will serve you well in the future. When encountering rough water or any adverse condition, adjust your speed to the safe speed you have predetermined. Beware of swimmers, divers, submerged obstacles and

other boats while operating your boat. Always obey the boating laws of a given area.

⚠ CAUTION

Avoid prolonged high-speed operation in rough or choppy water. It's like driving a speeding car over rough, rocky roads - uncomfortable and eventually damaging to the vehicle. The intense pounding and vibration could cause loosening or breakage of components and can even result in stress and major damage to the hull itself.

FISHING: Hot fishing, such as a spawning run, always creates excitement and usually attracts swarms of fishermen. Enjoy it, but don't get carried away. Remember, you're a boat skipper first and a fisherman second, when it comes to responsibilities.

When fishing boats are clustered and the fish are hitting, you may find it difficult to follow the Rules of the Road strictly, especially since operating at a slow trolling speed slows the boat's response to the helm. Common sense in these situations is essential; do not try to assert your right-of-way, just make sure you keep clear. Courtesy is also important to prevent tangled or cut lines. Remember that a fishing line could become wrapped around your propeller shaft and damage the engine. Have a sufficient crew aboard to insure that the helm will always be manned. Never leave the helm unattended when the boat is in use. Stow any fishing gear you are not using to prevent breakage or tripping. Never anchor in a channel or tie up to a navigation aid. Both are illegal.

SWIMMING AND DIVING: Before going over the side for swimming or scuba diving, make sure the boat is securely anchored to prevent its being carried away by wind or current. Turn the engine off and, if children are remaining aboard, remove the ignition key. In fact, it is wise to keep a responsible person aboard.

Navigation Rules require vessels restricted in ability to maneuver to display appropriate day shapes (warnings). To meet this requirement, recreational vessels engaged in diving activities may exhibit a rigid replica of the international code flag "A" (blue and white) not less than one meter in height. This requirement does not affect the use of the red and white diver's flag which may be required by state or local law to mark the diver's location under water.

⚠ WARNING

To avoid injury from the sharp propeller, the lower unit of the outboard or stern drive should not be used as a boarding aid. The engine must be turned off when anyone is in the water near the stern (near the propeller) including when passengers are boarding from or de-boarding into the water.

Make sure everyone understands proper re-boarding procedures. Rig a ladder or other means of climbing onboard unaided. The boarding ladder should be placed as far from the outboard motor or stern drive lower unit as practicable to avoid foot injuries in case you slip.

⚠ WARNING

Never dive from the roof of your boat. Impact with objects underwater can cause injury or death.

ANCHORING

The weight of your anchor and diameter of anchor line should be governed by the size and weight of your boat. Get advice from your dealer or knowledgeable boat owners.

Anchoring and anchoring tips:

1. Keep anchor and line secured to deck mount or below deck to prevent damage from sudden shifting.
2. Before using, make sure the anchor line is secured to the boat -to a bow eye, cleat or Samson post forward, never to a light fixture, rail or railing stanchion.
3. When dropping anchor, make sure your feet do not become entangled in the line.
4. Make sure the anchor is holding. If you think it's plowing or dragging across the bottom, take a sighting on several landmarks to make sure before you start all over.
5. Release the anchor by driving the boat slowly to the point where the anchor line becomes vertical. It should release once you pass that point.
6. Two or more anchors should be used if you're anchoring overnight or for extended periods of time. Select a spot that is protected from the weather. Make sure there is sufficient room for your boat to swing in a full circle to prevent damage in case of wind shift.
7. Make sure you have enough anchor line for the water you're in. The line should be 7 times as long as the water is deep under normal conditions, and 10 times the water depth in a storm.

DOCKING

If you keep your boat docked for extended periods of time, make sure bumpers or fenders are properly placed to prevent damage to the hull. Allowance should be made for waves and tide fluctuations. A cockpit cover will protect the interior of your boat from rain and dust.

PULLING AWAY FROM THE DOCK

With a smaller boat, the easiest way to get away from the dock is to push off with your hands or a short pole. Otherwise, operate your boat at slow speeds and proceed with caution. The engine operates from the stern. By turning the steering wheel right, the stern will move to the left. Turn the wheel left, the stern will swing right. To the inexperienced driver, this will be a surprising, new experience. If you want to back up your boat, turn the wheel right and the stern will swing right.

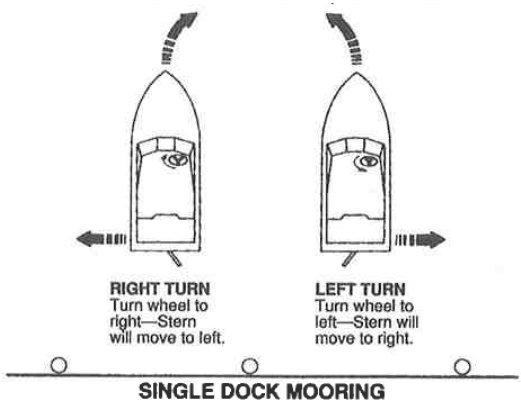
REMEMBER: OPERATE AT SLOW SPEEDS TO AVOID ACCIDENTS.

DOCKING PROCEDURES

Once away from the dock, practice docking procedures to gain experience and confidence. Procedures are listed below:

1. Practice docking in open water using an imaginary dock.
2. Practice stopping. There are three steps listed below to help you:
    a. Reduce boat speed while approaching the dock.
    b. Shift boat into neutral. At this point the boat should almost be drifting.
    c. Shift boat into reverse. This will stop the boat.
3. In close quarters or congested areas, all maneuvering should be at slow speeds. Proceed with caution.

REMEMBER: DO NOT SHIFT INTO REVERSE AT HIGH SPEEDS. BOAT MAY SHIFT SUDDENLY CAUSING YOU TO LOSE YOUR BALANCE. ALSO, THIS MAY DAMAGE YOUR ENGINE.



SINGLE DOCK MOORING

RETURNING HOME

If you're returning the boat to its trailer, it's a good idea to hose down the hull and lower unit with fresh water after use to keep them free of dirt and grime. This is especially important after use in salt water.

If you keep the boat at a dock, make sure you have placed the fenders properly to avoid hull damage. Allow slack in mooring lines for wave and tide fluctuations. A cockpit cover will help keep the boat clean and dry.

EMERGENCIES

Most distress calls aren't true emergencies. In most cases, the boat is disabled for one reason or another, but there is no immediate danger of death or serious injury and the situation is more of an inconvenience than a true emergency. Nevertheless, emergencies can occur, and you should know how to cope with them whether they occur aboard your boat or someone else's.

If you observe another boat in distress, assume it is a true emergency, proceed to the scene and render assistance. Note: Federal Law requires boat operators involved in accidents to offer aid to others in the accident and in emergencies. This law's "Good Samaritan II clause also absolves you from civil liability in the event that your assistance causes injury or property damage.

ACCIDENT REPORTS: Boat operators are required by law to file a Boating Accident Report with their state boating law enforcement agency when their boat is involved in certain boating accidents. A boating accident must be reported if (1) there is loss of life or probable loss of life or (2) there is personal injury requiring medical treatment beyond first aid or (3) there is damage to boats or other property where the damage value exceeds $500.00 or (4) there is complete loss of the boat. Seek further assistance from local law enforcement personnel.

MAN OVERBOARD: Follow these procedures if someone in your boat falls overboard:

1. Turn the steering wheel to move the propeller away from the person (see "Docking" section).
2. Circle around quickly, approaching into the wind and waves. Turn off the engine when the person is alongside, and throw him a cushion ring buoy with a line attached or extend a paddle or boat hook within his reach. Don't hit him with the ring buoy.
3. Assist the person back aboard.
4. Do not dive over the side after an unconscious person or non-swimmer unless you are trained in lifesaving techniques. A panicky victim can drown his Would-be rescuer. 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: Most boat fires involve flammable liquids, such as gasoline. Use your Coast Guard approved dry chemical or carbon dioxide type extinguisher. Read the directions for use on the extinguisher and memorize them, so you'll be prepared to use it quickly if the need arises.

The biggest decision involved in a boat fire is deciding whether to abandon ship or stay aboard and attempt to extinguish it. It's an easy decision if all that's involved is a galley stove, a trash container, smoldering upholstery or an electrical fire. If, however, the fire involves the fuel system, the danger of explosion is increased. If it is necessary to abandon ship, make sure all passengers wear a PFD (if there's time) or take it with them before going over the side.

A gasoline vapor explosion may, or may not, be followed immediately by fire; but the danger is there. If you do abandon ship, keep well clear of the burning boat and advise all others to do the same: burning fuel can spread out over the surface of the water nearby.

CAPSIZING: If your boat capsizes, even if it floats in an upside-down position, stay with it. You and your passengers may be able to right the boat. If the boat is level but inverted, attach lines to one gunwale, pass them over the keel and use them to pull the boat over from the other side. If this doesn't work, 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 ashore; it may be further than it looks.

SWAMPING OR FLOODING: A swamped or flooded boat could become unstable and capsize. If the flooding is caused by a hole in the hull, attempt to plug the hold with anything handy -rags, clothing, canvas, etc. Bailing, with buckets or any available containers is important. If the flooding is caused by wave action through the outboard motor well, attempt to turn the boat into the waves; also shift weight forward.

⚠ WARNING

A pontoon can take water over the bow if improperly loaded, weight is not distributed evenly, it is driven into a large wave at high speed, or if decelerated abruptly. Also see page 11 #8.

COLLISIONS: If you are involved in a collision with another boat, or with any fixed object (pier, sandbar, reef, bridge, etc.) your first job is to check for injuries and render first aid, if necessary. Before proceeding, check out your boat thoroughly: Inspect below decks for leakage and attempt to plug any holes you find; check steering cables for possible jamming, raise outboard motor or stern drive unit and inspect for possible propeller or lower unit damage. After proceeding carefully to port, have the boat removed from the water, so that you can make a thorough inspection for damage.

TOWING AND BEING TOWED: 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. In these cases, use a light throwing line with some sort of weight on one end and with the heavier towing line secured to it. Another idea is to use a fishing rod: Attach a heavy sinker to the end of the line; wrap the sinker in cloth to prevent damage; 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; instruct the occupants of the other boat to haul the towing line aboard.

DISTRESS SIGNALS – DAYTIME: Simultaneously raising and lowering arms (least visible); fluorescent orange panel or flag; orange smoke flare; mirror, preferably signaling type; dye markers, SOS on horn, whistle or bell.

AT NIGHT: Flares (common railroad type is least effective, parachute flares fired from a gun are most effective); rockets; emergency strobe light; flashlight or lantern.

*Conserve your distress signals. Do not use them until you sight another boat or hear and see aircraft.

ANYTIME: If your boat is equipped with a marine radio, use proper "Mayday" calling procedure on channel 16. If you have a CB radio, ask anyone who answers to notify the Coast Guard or other rescue service.

FIRST AID: You should be familiar with elementary first aid to deal with problems that may occur while you are far from help. Fish hook accidents and 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); and burns (treatment depends on severity).

REMEMBER: There's a way of handling nearly every emergency -if you don't panic in those first crucial seconds. If you've learned your boating lessons and safety procedures well, you'll have the confidence and the ability to cope with an emergency, should one arise.

EXHAUST AND COOLING

Check the engine compartment of a stern drive powered boat periodically for exhaust fumes, which could mean you have an exhaust leak. Check manifolds, hoses and connections, too.

Accumulation of water in the bilges could be caused by a break in the cooling system, leakage around flanges in through-hull fittings, or -on stern drives -from leakage caused by a damaged exhaust bellows or rubber boot.

⚠ WARNING

If your boat is an inboard/outboard operate bilge blower for at least four minutes to expel any gasoline vapors. It's also good practice to leave the blower running when the engine is running.

During off-season lay-up, the cooling system should be drained accordingly to manufacturer instructions, to avoid engine damage from freezing weather.

TROUBLESHOOTING

If your boat performance isn't what you're expecting, try this trouble-shooting guide. **NOTE:** These are the most common problem areas affecting performance.

1. Improper outboard motor tilt angle or transom height.
2. Incorrect propeller selection.
3. Improper load distribution.
4. Marine growth on hull or lower unit.

IF YOU CAN'T CURE THE PROBLEM YOURSELF, PLEASE SEE YOUR DEALER

SYMPTOM	CHECK POINTS
Poor speed- light load	1. Incorrect propeller selection 2. Load too far forward 3. Engine malfunction 4. Motor trim too far in 5. Marine growth on hull or lower unit
Poor speed- heavy load	1. Under powered 2. Engine malfunction 3. Incorrect propeller selection 4. Motor trim too far out 5. Marine growth on hull or lower unit
Slow to plane- heavy load	1. Motor trim too far out 2. Incorrect propeller selection 3. Too much load in stern 4. Marine growth on hull or lower unit
Speed loss	1. Marine growth on hull or lower unit 2. Weeds on propeller 3. Damaged propeller
Hard ride in rough water	1. Too much load in stern 2. Motor trim too far out 3. Poor speed management
Runs wet through water	1. Load too far forward 2. Motor trim too far in 3. Overloaded
Lists on straight When heavily loaded	1. Load not evenly distributed loaded 2. Motor trim too far in
Lists or rolls on straight when lightly loaded	1. Loose steering lightly loaded 2. Motor trim too far in 3. Load too far forward
Nose heavy-catches on waves and in turns	1. Motor trim too far in and in turns 2. Load too far forward
Porpoises on straight run.	1. Motor trim too far out 2. Too much load in stern
Banks too much in turns	1. Overloaded, improper weight distribution 2. Load too far forward 3. Motor trim too far in 4. Overpowered
Excessive Cavitation	1. Incorrect propeller selection 2. Motor too high on transom 3. Motor trim too far out 4. Overpowered 5. Load too far forward 6. Weeds on propeller

SECTION 2

PROPER USE & MAINTAINENCE

Properly used and maintained, your boat will give you years of service and keep boating the way it was meant to be - fun. By keeping the boat and its components "Ship Shape," you'll be doing more than protecting your investment and impressing your neighbors, you'll also be insuring solid performance on the water.

The first step in insuring proper performance is keeping the boat clean, particularly below the water line, where a buildup of scum, algae or other marine growth can rob you of hull performance and boost fuel costs. If you remove the boat from the water each time you use it, hose down the bottom and sides with fresh water to minimize any build-up. For more extensive cleaning, the procedures for fiberglass and aluminum boats differ somewhat. Follow the appropriate directions in this section.

ALUMINUM HULLS

CLEANING: Natural aluminum portions of most aluminum boats are treated with a clear protective coating to reduce natural oxidation. An occasional rinse with clear water or mild detergent will 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 chemical cleaners or abrasives.

Remove stains or light corrosion with a fine rubbing compound, buffing or the use of many types of metal polishes. Removal of algae, scum or other marine growth will be easier if you get at it before it has a chance to dry out. In the case of fiberglass hulls, antifouling bottom paint is recommended in areas where marine growth is a problem.

PAINTING: When repainting an aluminum boat, exercise caution in preparing the surface and follow the paint manufacturer's instructions carefully. Paints containing copper should not be used on aluminum boats.

REPAIRS: Minor dents can be knocked out with a rubber mallet or automotive body tools. Punctures, skin fractures, loose rivets and bent or broken reinforcing members should be repaired by your dealer or someone with the proper experience and equipment.

CORROSION: Modern aluminum boat building techniques minimize corrosion problems. But galvanic corrosion or electrolysis can still occur when two dissimilar metals, such as brass and aluminum, are in contact, or electrically connected and wetted by a common electrolyte, like contaminated water. This can force an electrical current to flow and cause one of the metals to be attacked or corroded. In general, the more salty the water, the

more rapid the attack. To minimize the corrosion problem, use a good quality caulking compound when mounting non-aluminum fixtures and hardware to aluminum. An aluminum boat should never be used as the ground wire for electrical circuiting. Electrical equipment should be completely insulated from the aluminum boat to eliminate electrolytic action.

SALT WATER USE

Your Pontoon can be used in saltwater with the following preparation and maintenance.

PREPARATION:

1. If you plan to **use** your boat in saltwater you **must** have all portions of the boat that will be submerged painted with an approved aluminum anti-fouling paint. This service is provided by your dealer or by someone recommended by your dealer. There is an extra charge for this service.
2. In some cases you may need to have zinc anodes added to your boat to prevent electrolysis. Electrolysis is a deterioration of the metal caused by stray electrical current interacting with the saltwater. Ask your dealer whether he recommends zinc anodes. There is an extra charge for this service.
3. If you trailer your boat on a trailer that carries the boat on bunks ANTIFOULING PAINT on the bottom of the pontoons must be applied to be sure that the pontoons have a barrier between them and the bunks. The application of anti-fouling paint is a service provided by your dealer or by someone recommended by your dealer. There is an extra charge for this service.

MAINTENANCE:

1. After each use the entire boat must be washed down with freshwater to remove salt deposits. Allow the boat to dry before covering it with the mooring or seat covers.
2. Cover your boat WHEN DRY with seat covers or a mooring cover to keep salt and dirt off of your boat. Since most salt water areas are very humid and hot it is imperative that the boat be dry before it is covered. If you cover it wet you WILL see mildew develop.
3. If you Trailer you MUST flush the saltwater from in between the bunks and the pontoons. This does not prevent corrosion if no antifouling paint is applied.
4. A yearly inspection for corrosion or deterioration of the electrical connections is recommended. **Avalon & Tahoe does NOT warrant saltwater corrosion.**

Some dealers add additional saltwater resistant materials to our boats to make them even better suited for saltwater use. These specially equipped models may have a sticker called "Saltwater Series." However this does not make them saltwater proof nor keep salt water from affecting them to some degree. Even these models must have all of the above described

preparation and maintenance to minimize the effects of salt water.

PONTOON BOATS ARE NOT RECOMMENDED FOR USE IN OPEN OCEAN. SALTWATER USE MUST BE LIMITED TO PROTECTED AREAS AND IN WATER CONDITIONS THAT DO NOT EXCEED THE LIMITATION DESCRIBED IN THE SAFETY SECTION.

ELECTRICAL SYSTEM

Your boat's electrical system is a 12-volt, direct current type, quite similar to that in an automobile. On a new boat, the system is wired to handle the factory installed electrical equipment, and critical circuits are protected by a fuse system. Each fuse has a maximum amperage rating for a full accessory load, including factory equipment -DO NOT EXCEED THIS RATING. Always carry spare fuses of the proper rating.

If you or your dealer is installing additional electrical equipment, such as bilge pump, depth sounder, marine radio, radio direction finder, etc., it may be necessary to wire a separate fused circuit directly to the battery.

An error in rewiring or circuiting could cause fire and damage to the alternator, regulator or other expensive components. Installation of additional instruments or electrical service repairs should be done by your dealer or some other qualified service representative.

STEREO SWITCH: If your boat is equipped with the music on/off dash switch you must turn the switch marked with the music icon to the ON position in order for your stereo to operate. Turn the music switch to the OFF position when you are through using your boat. Some stereo models have active components that may drain the battery even if the switch on the stereo is off. Please refer to your stereo owner's manual for information on full stereo operation.

UPHOLSTERY

Your boat's seats and other upholstery should be kept as clean as the exterior finish. To prevent replacing your upholstery, we recommend the following: Regular washing with mild detergent and warm water or vinyl cleaners is sufficient to keep the cushion and vinyl coverings in good condition. Keep the cushion from becoming soaked and dry thoroughly after washing to prevent mildew accumulations when the boat is covered. Prop up the cushions in the boat when it is covered to take advantage of air circulation. Spray with a mildew repellent. 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 untouched over a period of time. Remember to remove any contaminant and clean vinyl immediately. Our vinyl is made to withstand the effects of sun, heat, acid rain and soiling, under normal conditions. Please consult the following cleaning recommendations before cleaning your upholstery: Certain household cleaners, powdered abrasives, steel wool, and industrial cleaners

can cause damage and discoloration. These are not recommended for use. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes are not recommended because many contain dyes and solvents that can permanently damage the protective coating. In some instances, consumers have reported the appearance of a pink stain on vinyl that is resistant to various cleaning methods. Our lab tests indicate that the pink stain has been present in the past, but it becomes more visible to the naked eye whenever the whitest-white vinyl is used. This is true regardless of manufacturer or vendor. Avalon & Tahoe has chosen a white that reduces the appearance of the pink stain but retains as much of the lightest white we can use. Although there can be other causes for pink staining on vinyl, most pink stains are caused by dyes produced by micro-organisms. These dyes are metabolic products of the micro-organisms, otherwise known as a form of fungi. It is virtually impossible for consumers to avoid these micro-organisms as they exist in the atmosphere. It is also more prevalent in high-humidity areas. Rain can cleanse the air with the result that the micro-organisms are deposited on items such as marine vinyl. While the vinyl is treated to resist the growth of micro-organisms meaning the vinyl is not a food source, the stain results from failure to properly clean and maintain the vinyl. This means that after use, the upholstery must be cleaned with a soft brush and warm soapy water, followed by a thorough rinse with clean water. If this procedure is not followed, the micro-organisms can find the marine vinyl to be a suitable host site. This situation is worsened if the boat is stored without proper ventilation or if the boat cover is put on while the vinyl is still wet, creating a situation in which all forms of fungi (mold and mildew) thrive. The organism causing the pink stain has been identified by the Burlington Scientific Corporation as Streptoverticillium reticulum, although there are other strains of organisms that can cause stains. ***Failure to follow these instructions regarding the proper care of upholstery can cause your warranty to be voided.*** We cannot guarantee that the cleaning methods will work. Stains from any external source are unlikely to be covered by warranty.

Mild soap and water will keep your seats clean and pliable. Wet vinyl will promote mildewing. Keep vinyl dry and clean. Remove seats and wipe dry after use to insure that there is no moisture between the seat cushions. ***NOTE: Mildew is not a warranted item.***

Do not use solvents, bleach, Armor All, 409 or any other harsh cleaner on vinyl. They can cause permanent damage. Use cleaners made especially for vinyl.

The ultra-violet rays of the sun and ozone in the atmosphere (particularly in windborne spray) can cause cracking and "aging" of upholstery. While some vinyl seats have been chemically-treated to retard these problems, the best countermeasures are keeping the boat covered and shaded when not in use. **NOTE:** Uncovered and neglected upholstery will not be warranted.

WINDSHIELDS AND CLEAR PLASTICS

Plastic windows and windshields should be flushed with clear water; after abrasive dirt is removed, use a plastic window liquid cleaner. Do not use window cleaner such as Windex. **NOTE:** Do not wipe dirt from a dry plastic windshield, and do not use an abrasive cleaner, because the plastic can become permanently scratched or dulled.

Vibration may loosen your windshield; to prevent breakage, check the mounting bolts periodically for a tight fit. If leaks occur, identify the leak area, dry it thoroughly and coat the area with a live rubber sealant. After the sealant dries, check the area by sprinkling with a hose. Repeat the process until the leak is eliminated.

HARDWARE AND FITTINGS

Deck hardware, such as cleats, chocks, rails, stanchions, etc., should be cleaned periodically with a good chrome cleaner and polished with paste wax to preserve luster and prevent corrosion. In salt water areas, flush hardware with fresh water and spray hardware, at least monthly, with a marine corrosion inhibitor, available from your dealer.

Broken or damaged hardware should be replaced by bolting through deck or gunwale with a reinforcing block beneath.

Deck hardware should be used only for its intended purpose. Stanchions, for example, are intended only to support railings and should not be used for tying off fenders, mooring lines or water ski tow ropes. Do not use a mooring cleat for a water ski rope if obstructions prevent the rope from swinging in a proper arc. Failure to use bow chocks for an anchor line could damage other hardware or the superstructure in the event of a sudden surge.

Ozone and sunlight eventually cause hardening and loss of elasticity in the rubber components aboard your boat -grommets, fuel hoses, stern drive boot, etc. Inspect these components frequently and replace if you detect signs of hardening or surface cracking. Leakage, particularly in the stern drive area, could cause below-deck flooding.

FIRE PROTECTION

Charcoal grills can be dangerous aboard a boat. They can tip over and spill hot coals or flaming starter fluid if the boat is hit by a sudden wave. On inboard and stern drive boats, a charcoal grill placed aft, near fuel tank vents could cause a vapor explosion.

⚠ WARNING

Never use gasoline-type camp stoves aboard a boat. Any gasoline spills could drain unnoticed into the bilges and create a danger of vapor explosion.

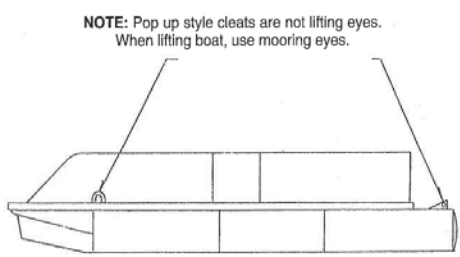
STORING YOUR PONTOON BOAT

Mooring during the summer months -The best way to moor your boat is under a boat house or storage roof. A mooring cover is available on most models to help reduce the effects of sun & dirt. Your mooring cover can repel most water but will collect water during heavy downpours. It is important that collected water be removed after a rain to help prevent tearing and staining. Your mooring cover can be damaged by high winds. Although storms are unpredictable proper precautions must be taken to prevent damage when possible. Wind and rain damage are not covered by your warranty. If you desire a canvas cover that will also be able to withstand heavy loads, contact your dealer to get information on a custom storage cover that can be made by a local canvas maker.

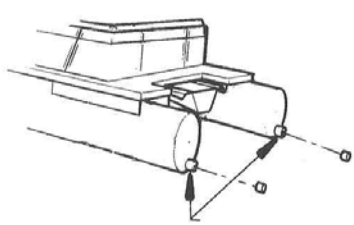
If you store your boat by lifting with cables, you must use the lifting eyes on the boat. **Separate pop-up cleats are not able to support the boat**. Be sure you have a spacer bar to prevent the cables from damaging your walls.

Storage during the winter months -Your mooring cover cannot be used for storage during the winter months. Your cover is intended to help reduce the effects of sun and dirt. It cannot withstand a snow load. Storage should be indoors or under plastic shrink wrap if stored outdoors. While stored you must periodically check for accumulation of ice in the shrink wrap. Pressure from the weight of the ice can damage your wall railings and other components.

Storage of the boat should be on flat ground or on blocks under the bottom keels. Each block should be at least 4 feet long and run fore and aft at each support point. Each pontoon should be supported a minimum of 3 support points spaced evenly along the pontoon.



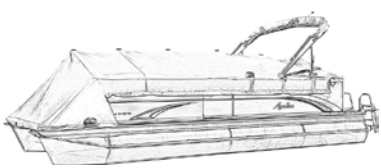
It is also recommended that the rear drain plugs be removed during storage. This reduces interior pressure caused by dropping temperatures. Extreme drops in inside air pressure can cause a vacuum that can damage your pontoons.



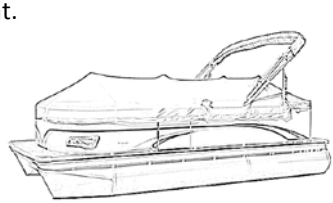
LOWER DRAIN PLUGS

MOORING COVER INSTALLATION

1. Locate the two sewn-in tags on one end of the mooring cover (Figure 1) or playpen cover (Figure 2) that has the material, boat type, date, seamstress or tailor name imprinted & the Do Not Transport warning. This is the front of the cover.
2. Lay out your mooring cover on your pontoon boat with the two tags at the front of the boat.
3. Start snapping on your mooring cover onto the built-in snaps located at the outside-top of the walls. We recommend starting at one of the rear corners of the boat. Make sure you line up the snaps correctly; you'll know right away if you missed a snap. Velcro any boots around the Bimini top frame as you come to them.
4. Once you have completed snapping your mooring cover on, ready the poles for installation inside the boat.
5. The poles fit into the sewn-in vents that are located along the center of the mooring cover. The first few vents are for the standard straight poles.
6. Once you reach the rear sundeck area (if applicable) install your S-shape pole. This pole is designed to fit around the sundeck. The snap is located on the floor near the rear bench (See figures 3-6).
7. You are now ready to store your boat.

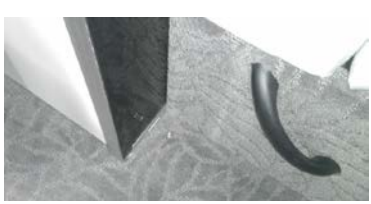


Mooring Cover (Figure 1)



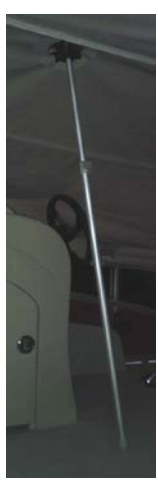
Playpen Cover (Figure 2)

S-Pole (Figure 3)



S-Pole Snap Location (fig. 4)

S-Pole (Fig. 5)



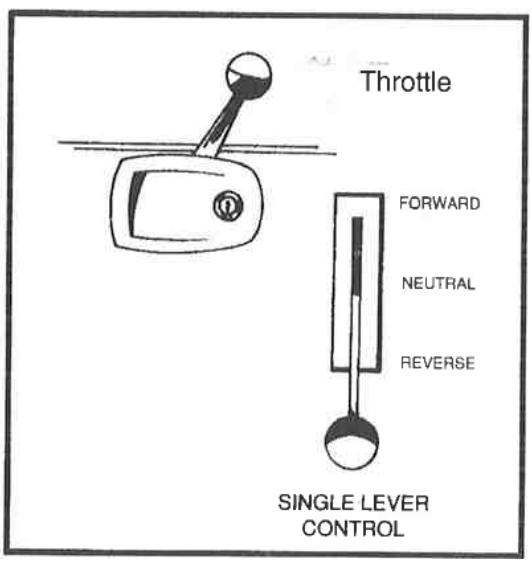
Straight Pole (Fig. 6)

SECTION 3

PROPULSION SYSTEM REMOTE CONTROLS

The remote control is manufactured by the motor company. Please read your motor owner's manual for specific information on operations of your control.

The remote control head is mounted at the helm station of your boat. Single lever controls integrate the throttle and gear shift into a single hand lever.



SINGLE LEVER CONTROL

NOTE: When shifting from forward to reverse, or reverse to forward, pause at neutral and allow the engine to return to idle (500-600 RPM) to avoid damage to the mechanism. Except in emergency, avoid shifting into reverse when the boat has significant forward speed.

If the remote control system jams at any time, turn off the ignition switch immediately. Stiff, jerky or hard-operating control levers are an indication of trouble in the control system. Don't force or continue to use a malfunctioning control system -you could cause further damage. See your dealer.

Do not allow persons to stand or step on control cables leading to outboard motors. This could bend cables and cause loss of control.

MAINTENANCE: The remote control head should be kept clean and free of corrosion; check for loose mounting screws or other parts and tighten if necessary. Check cable conduit for cracks or abrasions and kinked or bent cable; replace damaged cable (See your dealer). Check cable ends and connection fittings for corrosion, loose brackets, and loose, worn or damaged fittings. Replace worn or corroded parts. Cable ends, fittings and control mechanism may be sprayed with a moisture-displacing lubricant. If your boat has "quick disconnect" fittings, be sure to inspect their springs for corrosion.

I/O STERN-DRIVE MODELS

Avalon & Tahoe Mfg., Inc. is proud to offer stern-drive models. Our stern-drive system features many unique standards, including one marine battery, power trim and tilt, electronic ignition, stainless steel propeller, complete bilge and blower system. Performance on the stern-drive system may vary depending on altitude, daytime temperatures, as well as weather conditions and weight distribution of the pontoon boat. All these factors could ultimately affect the performance of the pontoon boat. Optional propellers, which can be purchased, and the correct trim angle will also affect the performance of the vessel. When purchasing a pontoon boat with a stern-drive unit, one should refer to the owner's manual supplied by the engine manufacturer, which will feature maintenance and break-in period for the new stern-drive engine and winter storage preparation, as well as warranty information for the stern-drive engine.

The bilge pump is automatically activated by a float switch in the motor pod. The float switch is wired directly to the battery. When the float switch is activated this will also activate the bilge pump which will remove the water from the motor pod of the pontoon boat. If water intrusion due to leak or rain causes the bilge pump to run constantly, the battery will lose its charge. If this happens you should have the boat inspected for leaks and/or take precautions to limit rain exposure. The bilge pump is self-priming and water lubricated. The bilge pump can be activated by a manual switch on the instrument panel. Do not operate the bilge pump if fuel fumes are present. Owner should check the bilge pumps operation before each trip.

STERNDRIVE TROUBLE SHOOTING

⚠ WARNING

Consult your dealer about repair or replacement of remote control components. Improperly installed components could cause an accident or breakdown.

NOTE: On outboards, make sure the push-pull cables are free to move with the engine through its full steering range. Don't trail with engine bouncing on the tilt lock. Brace the engine with something sturdy.

ENGINE CONTROL	
SYMPTOM	**CHECK POINTS**
Engine starter does not engage when lever is in neutral position	1. Neutral start switch not properly adjusted 2. Neutral start switch malfunctioning or stuck 3. Dead battery or loose electrical connection 4. Safety switch lanyard is not connected
Control becomes stiff or unusually hard operating, jerky and erratic	1. Control cable(s) are crushed, kinked or bent 2. Cable(s) are corroded at ends or are clogged internally with dirt and grime 3. Engine shift or throttle linkage not working properly 4. Remote control mechanism is defective, faulty or has been damaged internally 5. Foreign objects interfering with throttle or shift mechanism at either control head or engine
Throttle and shift does not respond properly to control hand lever.	1. Cable ends and connection fittings are not properly secured at the engine or control head 2. Wear in the control mechanism or excessive backlash caused by too many bends in the push-pull cable(s) conduit 3. Control system not properly adjusted 4. Throttle and shift linkage on engine malfunctioning
Engine starter engages when remote control hand lever is in **forward** or **reverse**	1. Neutral start switch not properly adjusted 2. Neutral start switch malfunctioning or stuck in "closed" position 3. Faulty wiring

STEERING SYSTEM

It's important that you get the "feel" of your boat's steering system. Turn the steering wheel from full left to full right, and make sure the motor steering arm is turning accordingly. The system should operate freely and smoothly throughout its entire range. The cable out-put end and its fittings should be kept clear of fuel lines, control cables, electrical wiring or onboard gear when the motor or stern drive unit is moved through its full steering cycle in both running and full tilt positions.

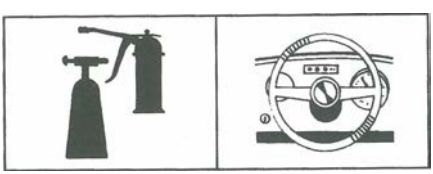
In addition, it is wise to check for the presence of "Self Locking" nuts that are used to fasten the "steering link rod" between the steering cable(s) and the engine. These nuts must never be replaced by common or non-self-locking nuts which can vibrate off. Have your dealer give your steering system a more thorough check at least once a year. He should check for proper lubrication, any unusual backlash, or any unusual component wear.

STEERING TORQUE

Under certain engine trim positions and/or bow-up boat attitude, such as when getting on plane, there can be a noticeable pull on the steering wheel, often referred to as "steering torque." This may only be a temporary situation such as when planeing off, or it may be eliminated or reduced by changing your engine trim so that the propeller shaft is more parallel to the water surface. Adjustment of the engine trim tab will help under some conditions. See engine owner's manual for a more detailed explanation. Under any circumstances, the operator should always keep a firm grip on the steering wheel.

HYDRAULIC STEERING: Many models are equipped with hydraulic steering. This steering helps minimize torque and improve ease of steering. Hydraulic steering requires annual inspection for proper fluid levels. Any hydraulic steering related problem should be repaired by an authorized dealer.

MAINTENANCE: The moving metal parts of the steering system must be cleaned and lubricated with a good grade of marine grease to insure smooth operation. In fresh water use, this should be done every three months; in salt water, do it at least every month and before putting boat in off-season storage. All fittings and cable conduit should be inspected for corrosion or damage and replaced if necessary. The steering wheel should be inspected for looseness and tightened, if necessary. Replace the steering wheel if there are any cracks around hub or base of spokes. In cable-and-pulley systems, make sure cable is in pulley grooves, the cable covering is not damaged, and cable has proper tension.



⚠ WARNING

A steering cable with evidence of damaged, bent or frayed parts should be replaced. Failure to do so can lead to sudden loss of steering and control of the boat.

⚠ WARNING

Repairs to steering system should be done by an authorized dealer only. Improper repair of steering systems can result in a loss of control resulting in injury or death.

TROUBLE SHOOTING

PUSH-PULL CABLE STEERING	
SYMPTOM	**CHECKPOINTS**
Steering stiff or unusually hard operating, jerky or erratic.	1. Corrosive deposits at cable output end, operating, jerky or erratic. either inside cable sleeve or inside motor tilt tube 2. Crushed or kinked cable conduit 3. Bent cable ram at output end 4. Friction device at helm over tightened. 5. Ball and socket at the link arm is not rotating properly 6. Internal corrosion or damage to cable 7. Engine and boat not "trimmed out" properly 8. Engine trim tab loose, damaged or incorrectly set 9. Transom bracket improperly mounted, bent or distorted (motor mounted systems only) 10. Bent or distorted engine link may be interfering with engine (motor mounted systems only) 11. Improper hydraulic fluid level
Steering sloppy and has excessive free steering wheel movement.	1. Cable transom bracket loose or cable excessive free steering wheel end fittings loose or badly worn 2. Worn or loose fasteners in helm unit or drive unit 3. Worn push-pull cable 4. Improper hydraulic fluid level 5. Steering wheel loose on helm
Steering system won't turn.	1. Corrosive buildup at output end of cable **WARNING:** If the system does not free easily, replace the steering cable 2. System badly damaged at the helm or cable output end 3. Ball and socket at the link arm is not rotating properly.

FUEL SYSTEM

Each time you fuel up; inspect the fuel lines, connections and fuel tanks for tightness, signs of leaks and deterioration. At least annually, conduct a more thorough inspection of fuel system components, especially those hidden from a routine inspection. Replace any deteriorated components.

Portable fuel tanks should also be inspected frequently for leakage, along seams and at engine and tank connections. Portable tanks should be placed flat on the deck to prevent movement and should not be rested on or against fuel lines.

⚠ WARNING

Do not attempt to repair a leaking fuel tank or hose - replace it.

Keep your fuel tanks full during storage or periods of infrequent use to prevent condensation of water vapor and subsequent engine malfunction, if you are sure your fuel does not contain alcohol. But alcohol-containing fuel particularly absorbs humidity and it will separate from the fuel as the temperature drops during winter months, causing corrosion. Fuel tanks should be empty during storage if your fuel contains alcohol.

Leaking gasoline is a fire and explosion hazard. The fume-exhausting action of the bilge blower and the natural ventilation which takes place when your boat is under way will remove the fumes, providing there is no leak of fuel to constantly replace them. But under certain wind conditions, fumes may tend to stay in the boat longer, even when the blower is running. It's a good idea to open up all hatches to allow compartments to air out before starting and keep them open until the boat is underway.

Do not paint aluminum fuel tanks with antifoulants containing copper. Severe damage can result from galvanic action.

Outboard 2-cycle engines should use either TC-W II® or TC-W3™ NMMA - certified oils. This applies to Personal Watercraft also. Check owner's manual for specific manufacturer recommendations.

IGNITION SYSTEM

NOTE: Do not attempt to connect or disconnect any part of the electrical circuit while the engine is running.

⚠ CAUTION

Battery electrolyte is a corrosive acid and should be handled with care. If electrolyte is spilled on any part of the body, flush immediately with water.

BATTERY: Inspect your battery frequently for specific gravity (state of charge); individual cell water level, cleanliness and clean, tight connections. It is important that you make battery connections correctly. The negative

battery cable must be attached to the negative (-) terminal on the battery and the positive cable must be attached to the positive (+) terminal. Reversing these connections may cause immediate damage to the transistorized regulating unit.

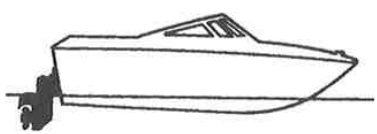
NOTE: If battery discharges for no apparent reason, check for any switches that may have been left on, especially the stereo switch.

ENGINE TRIM

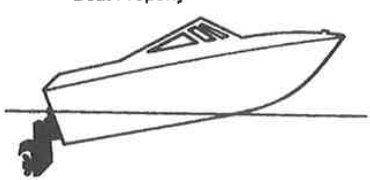
The word "trim" is all-important in boat performance. Trim refers, not just to the proper distribution of weight within the boat, but, in outboards and stern drives, to the "in and out" angle of the lower unit. An outboard or stern drive lower unit tilted too far in (forward) will cause the bow to nose downward. If tilted too far out (aft), the motor or drive unit will push the bow upward. Adjust the motor or drive unit so the propeller shaft is parallel with the water surface when the boat is in its normal running attitude at full throttle.

Many stern drive and outboard engines are equipped with power trim which is operated by a switch near the helm or in the throttle control. Activating this switch allows you to change the angle of your engine by depressing the desired button. For a list of characteristics resulting from trimming your engine "under," "down" or "in," or trimming "up" or "out," see your engine owner's manual.

Boat Properly Trimmed



Bow Too Low—Trim Bow "Up"



Bow Too High—Trim Bow "Down"

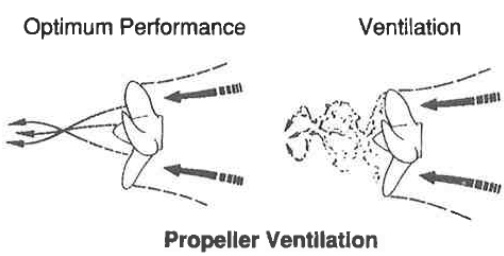
PROPELLERS

Your engine should be equipped with a propeller that performs satisfactorily under average conditions. There is no "best" propeller for your boat. These are only props that work better than others in certain applications. If you alternate between high speed operation and general cruising, you may want to carry two or more propellers.

An accurate tachometer is important in choosing the best prop for your boat. When operating your boat at full throttle under normal load

conditions, the engine RPM is the controlling factor in determining the correct propeller blade pitch. To obtain peak performance, the engine RPM at full throttle should be in the full throttle operating range specified by the engine manufacturer. If engine RPM is below that range, install a prop of reduced pitch to increase engine RPM. If engine RPM is above the recommended range, install a prop of increased pitch.

VENTILATION: Ventilation occurs when air from the water's surface or exhaust gases from the exhaust outlet are drawn into propeller blades. The normal water load is reduced and the propeller over-revs, losing much of its thrust. However, as the propeller momentarily over-revs, this brings on massive cavitation (see below), which can further "unload" the propeller and stop all forward thrust. It continues until the propeller is slowed down enough to allow the bubbles to surface. This action most often occurs in turns, particularly when trying to plane in a sharp turn or with an excessively trimmed-out engine or drive unit. With Pontoon boats ventilation can be caused by an improperly loaded boat. If all passengers are in the front bow benches ventilation can happen. Passengers should be situated evenly throughout the boat. Passengers should not sit in front recliner chairs or front fishing chairs while the boat is underway. Not only can this cause ventilation, but the lower walls cause this activity to be unsafe. Boats that have rear fishing chairs are particularly susceptible to ventilation if passengers are not situated evenly throughout the boat. Ventilation can also occur if the propeller's pitch causes the engine to operate above or below its suggested RPM range.



Propeller Ventilation

CAVITATION: Depending upon water temperature, when the pressure on the leading edge of a propeller blade drops enough, water vapor bubbles are created by "boiling." As the water vapor moves downstream into higher pressure, it collapses back into liquid releasing energy that chips away at the blades, causing a "cavitation burn" or erosion of the metal. Initial cause of the low pressure may be nicks in the leading edge, too much cup, improper polishing, etc. If cavitation is caused by a damaged propeller, have it reconditioned or replaced.

ENGINE OVERSPEED: This can occur when a propeller of too Iowa pitch is used or engine is set at wrong tilt angle or height on transom. Over-speeding can cause damage to the powerplant in the form of broken connecting rods, crank shafts and valve train components (in four-cycle engines). Broken parts can be thrown from the engine at high velocity and cause injury or damage. A tachometer should be used to monitor engine speed and to avoid "over-revving." If you're using a low-pitch propeller for better load carrying or water skiing performance, be careful when operating under light load conditions to avoid over-speeding the engine.

INSPECTION AND MAINTENANCE: At least once a year, more often if you use your boat extensively, remove the propeller from your outboard or 1-0 and inspect shaft seal for possible damage from mono-filament fishing line and, on certain older models, drive pin hole for possible burrs. Clean and lubricate the shaft according to engine manufacturer instructions. Replace drive pin if bent or worn. Replace the prop using a new cotter pin or tab lock washer. Follow manufacturer instructions for care and maintenance of gear case.

SECTION 4

WARRANTIES AND SERVICING

Warranties: Boat, powerplant and some components carry warranties. These warranties cover only what they specifically say they cover. In general they apply only to repair or replacement of defective parts. Normal wear and tear, routine maintenance and servicing, and damage caused by negligence, misuse or modification are usually excluded. **Contact your dealer for more information regarding the warranty submission process.**

Avalon & Tahoe Mfg., Inc. is not responsible for consequential damages from improper storage, controls, motors, batteries and other accessories or other equipment or component parts thereof warranted by parties other than Avalon & Tahoe Mfg., Inc.

NOTE: It's important that you read and understand these warranties. They may contain provisions which require you to take certain steps to keep the warranty valid. Protect yourself by filling out all warranty forms and returning them to the manufacturer. This is essential, not only to activate the warranty, but to get your name on file in case of a recall program.

MANUFACTURER OBLIGATIONS

(BEYOND WARRANTY)

The manufacturer is obliged to follow U.S. Coast Guard instructions regarding product recall and repair, in the case of certain defects or standards compliance problems. The manufacturer will be unable to notify you unless you have returned the warranty forms.

DEALER RESPONSIBILITIES

Your dealer is responsible for rigging your boat in accord with manufacturer instructions for the items which he installs. To protect yourself on the warranty, make sure the dealer uses factory-recommended or compatible components and parts when repairing or servicing your boat or engine.

⚠ CAUTION

Use parts recommended by the engine manufacturer. Incorrect parts can be dangerous in some cases and could void your powerplant warranty. Marine engine electrical parts have been designed to prevent ignition of flammable fumes-do not substitute automotive parts.

WRITTEN WARRANTY

Avalon & Tahoe Mfg., Inc. (hereinafter "A&T"), makes this limited warranty:

1. WHO IS COVERED.

The original retail purchaser (hereinafter "Owner") who has purchased an A&T manufactured boat from an authorized A&T dealer. This warranty is not transferable.

2. WHAT IS COVERED.

This limited warranty covers significant defects in materials and workmanship supplied by or performed by A&T. This limited warranty provides coverage for the A&T manufactured pontoon boat, as well as electronics and other accessories manufactured by others, but installed by A&T prior to shipment to your A&T dealer. This warranty does not cover electronics or accessories manufactured by others and installed by your A&T dealer, you or anyone else. For products including, but not limited to, electronics originally manufactured by others but installed by A&T, the warranty from the component manufacturer shall be the primary warranty coverage for its duration and this warranty will only apply to the time period, if any, after expiration of the component manufacturer's warranty. Applicable warranties may be found in the product owner's packet, or by contacting the component manufacture's Customer Service Department or website. **Engines, stern drives, engine control systems, propellers, batteries and trailers are excluded from this warranty. The sole and exclusive warranty for all such excluded components is from the manufacturer of those components.**

3. WARRANTY PERIODS.

Commercial Warranty. The limited warranty for boats used for competition, hire, governmental, rental, time share, military or any other commercial use is 90 days from date of purchase.

Personal Use Warranty. The following limited warranty is made for boats purchased by individual(s) for normal personal recreational use.

A. Pontoons and structural components. Lifetime parts, ten (10) years labor. Subject to the other terms and conditions of this warranty, this warranty covers structural failure of pontoons, gates, channels, seat frames, motor mounts, railings, wood decks and wood components caused by defects in material and or workmanship under normal personal non-commercial use.

B. Carpet and upholstery vinyl. Three (3) years parts and labor, plus two (2) years parts only. Product is warranted from failure due to significant fading, peeling or cracking. This warranty shall include replacement materials and/or labor, based upon an inspection by a qualified A&T representative. Excessive deterioration caused by overexposure to the sun, as a result of failure to properly cover the boat while not in use, is excluded from this warranty. Damage caused by rips, tears, snags and unraveling or other abuse is not covered under this warranty. Seat stains or

discoloration from ink, drinks, pollen, leaves, micro-organisms, bacteria, fungus, mold, etc., are excluded from coverage under this warranty. Damage due to lack of maintenance and/or the use of improper cleaning agents voids this warranty.

C. Mooring Cover and Bimini top fabric warranty. Three (3) years parts and labor, plus two (2) years parts only. These components are warranted against excessive loss of color or strength under normal exposure conditions. Damage caused by trailering, storms, rips, tears, snags and unraveling or other abuse is not covered under this warranty. Stains or discoloration from ink, drinks, pollen, leaves, micro-organisms, bacteria, fungus, mold, etc., are excluded from coverage under this warranty. Damage due to lack of maintenance and/or the use of improper cleaning agents voids this warranty.

D. Electronics and other non-A&T manufactured components. Three (3) years parts and labor, plus two (2) years parts only. Covers radios, gauges and depth finders not manufactured by A&T, but which were factory installed. Excludes damage from salt or excessive exposure to water.

E. Other Components. Three (3) years parts and labor, plus two (2) years parts only. Any other components manufactured or supplied by A&T and not excluded from this warranty.

4. OWNER'S RESPONSIBILITY.

The original owner is required to register his/her boat by completing and returning A&T Warranty Registration Form, Ver. 1.0, within thirty (30) days of delivery of the boat, by mail or through an authorized A&T dealer. The owner must provide proof of purchase, including date of purchase, name of the authorized A&T dealer and boat serial number when registering the boat. Proper maintenance, storage and cleaning of the A&T products and components are the responsibility of the owner. Failure of any product or component caused by improper cleaning procedures, damage from accidents, damage from storms or other Acts of God, negligence or faulty maintenance procedures is expressly excluded from the warranty. Failure to properly register your boat within thirty (30) days of purchase will limit all warranty periods to ninety (90) days.

5. HOW TO GET LIMITED WARRANTY SERVICE.

To obtain warranty service, take your boat to the A&T dealer where you originally purchased your product, or another authorized A&T dealer, or another warranty service facility designated by A&T, and have a warranty claim submitted to A&T. If you or your dealer have moved, or if you desire to change dealers, contact A&T Warranty Service Dept., 903 Michigan Ave., Alma, Michigan, 48801, Phone: (989) 463-2112, Fax: (989) 463-8226 for the name of an A&T dealer near you. Your claim must be made in writing and submitted within thirty (30) days of the discovery of the defect and also within the warranty period. Failure to timely submit a claim in writing, waives the claim. You must provide proof of current ownership when making a claim.

6. WHO PERFORMS LIMITED WARRANTY SERVICE.

The A&T dealer where you originally purchased your boat can usually perform warranty work for you. If that A&T dealer cannot perform the service work, they should call A&T's Warranty Service Department for assistance. If you are unable to visit your original A&T dealer, contact A&T, 903 Michigan Ave., Alma, Michigan, 48801, for the name and location of an A&T dealer near you. In some instances,

A&T may require that the boat or certain parts be returned to the A&T manufacturing facility for warranty service. Costs incurred for transporting the boat and/or parts to and from A&T and/or dealer are the responsibility of the owner.

7. BINDING ARBITRATION.

If you are unable to resolve a disagreement with your dealer regarding your right to pursue warranty coverage for a needed repair, contact the A&T Warranty Service Department. If a dispute about warranty service arises between A&T and you, the disagreement will be resolved through binding arbitration under the United States Federal Arbitration Act, as amended. This mandatory arbitration provision shall apply to any and all disputes arising out of your purchase and use of an A&T product, including all tort claims, statutory claims, contract theories and this express limited warranty. The locale for any in-person arbitration hearing shall be in Ingham County, Michigan, or any county adjacent thereto. We will consent to your attending by phone, video conference or other means that does not require your physical attendance, should you choose not to attend in-person. The expenses of any arbitration will be split evenly between you and A&T.

8. EXCLUSIONS AND LIMITATIONS.

Damage caused by abuse, misuse, unreasonable use, overpowering, neglect of others, waves, failure to observe proper maintenance and operating practices, failure to comply to the safety regulations listed in your operator's manual, failure to trim boat properly or slow down in rough water, overloading, immersion in water, electrolysis, salt water corrosion, rust, towing behind other boats, improper trailers or trailering, improper use or stress on components or parts, attempted disassembly without A&T authorization, accidents, acid rain, natural disasters or Acts of God, or normal wear and tear or normal fading of fabrics and carpeting are not covered by this warranty. Replacement parts provided under terms of the warranty will, whenever possible, match original equipment (but is not guaranteed). When necessary, A&T will substitute parts of comparable function and value. A&T will not be responsible for any sums exceeding the cost of defective part or product to the original purchaser. A&T reserves the right to make changes, without notice, to the design or material of the product without incurring any obligation to incorporate such changes for products previously manufactured by A&T.

The purchaser shall be fully responsible for, and shall pay for, transporting the pontoon boat for inspection and repair of the alleged defect and to include, but not limited to, paying the cost of transporting the pontoon boat to and from the factory, dealer, supplier or service provider. If purchaser causes the inspection to occur at the site of the pontoon boat, then purchaser shall be fully responsible for, and shall pay for, the inspection by the servicing dealer.

This warranty will not be extended to non-factory installed items, including, but not limited to, protective bottom paint, engines and the installation of its components or additional time for adjustments or final assembly for delivery.

A&T will not be responsible nor liable for any damages of any kind caused or contributed to by use of any boat loaded in excess of the load capacities or equipped with horse power exceeding the U.S. Coast Guard Maximum Capacity limits shown on the capacity plate of the boat.

Any modification, alteration or repair performed by unauthorized personnel will invalidate all or part of the A&T warranties. Corrosion due to using non-marine grade screws and fasteners to add, replace or repair any items will not be covered by

warranty.

This warranty is voided for any boat or component that has been declared a total loss or total constructive loss or which bears a "salvage" or similar title.

Consequential, indirect, incidental damages, mental anguish or distress, damage to property or injury to persons, loss of property, loss of time or inconvenience, loss of earnings, loss of use and enjoyment, towing expenses, haul out or launching expenses, de-rigging or re-rigging charges, gasoline, mileage, A&T dealer or non-A&T dealer service calls, charges, transportation, telephone, loading expenses or any similar cost not mentioned above are all excluded from coverage and waived by the Owner. This warranty is expressly limited to the cost of repair and/or replacement of the damaged or defective part or parts, as the case may be, at the exclusive option of A&T and A&T shall not be responsible for any other damages whatsoever. A&T's maximum liability for any alleged breach of this warranty shall not exceed what the fair market value of your boat, excluding motor, controls, electronics and trailer, would be without the alleged defect.

9. EXCLUSIVE LIMITED WARRANTY AND REMEDIES.

This written statement of limited warranty represents the entire warranty authorized and offered by A&T. There are no warranties or representations beyond those expressed in this written document. This warranty cannot be amended by any dealership, salesperson or other agent. **This warranty is the sole and exclusive warranty; all other warranties, whether express or implied, including the IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED.** No warranties are made on products sold outside the continental United States or Canada. The repair or replacement obligations of A&T, under this limited warranty, are the sole and exclusive remedies for any economic losses claimed or incurred by the Owner.

10. STATE WARRANTY ENFORCEMENT LAWS.

Some states or provinces may have "lemon" laws which permit owners to obtain a replacement unit or a refund of the purchase price under certain circumstances. The provisions of these laws vary from state to state. To the extent allowed by state law, A&T requires that you first provide us with written notification of any service difficulty you have experienced with the A&T pontoon or sport boat, so that we have an opportunity to make any needed repairs, before you are eligible for the remedies provided by these laws. Your written notification should be sent to the A&T Warranty Service Dept. Manager at the address above. Always include your Hull Identification Number, found on the starboard aft riser of the pontoon.

11. LIMITATIONS PERIOD.

Any action for an alleged breach of this warranty must be brought within one (1) year of the alleged breach. Any claims asserted after this time period shall be deemed waived.

12. INVALID PROVISIONS.

To the extent any provisions of this limited warranty are inconsistent with the law of the state or province where you purchased your boat, any such provisions will be deemed stricken from this warranty and the other provisions shall remain in full force and effect.

Revised January, 2010

MORE ABOUT BOATING

EDUCATION: Boating becomes more fun as you learn more about it. A good place to start is at one of the many free boating education classes offered throughout the country.

Boating courses are offered at thousands of locations across the U.S. Instruction is free by the Coast Guard Auxiliary and Power squadrons, but there is a small fee for books and materials. To find the course nearest your home call toll free: **1-800-336-BOAT (In VA, 1-800-245-BOAT)**

The Coast Guard Auxiliary offers several courses: basic skills and seamanship, sailing and coastal navigation. To contact this group directly contact U.S. Coast Guard Auxiliary, Commandant (G-NAB), 2100 Second St. SW, Washington, DC 20593; 202/267-0972.

U.S. Power Squadrons offer two courses, one on general boating, another on basic sailing. USPS is headquartered at 1504 Blue Ridge Rd.,
P.O. Box 30423, Raleigh, NC 27622; 919/821-0281.

Local chapters of the American Red Cross offer instruction in canoeing, outboard boating, rowing and sailing for both children and adults. National headquarters are 17th & D Sts. NW, Washington, DC 20006; 202/639-3686.

Many state boating offices have boating safety textbooks available, including information on state and local boating regulations. Located in state capitols, these agencies are often part of departments of natural resources, conservation, wildlife, parks or law enforcement bureaus.

The U.S. Coast Guard maintains a toll free Boating Safety Hotline to answer consumer questions about boating safety recall information, to report possible safety defects in boats, and for answers to boat safety questions:
1-800-368-5647

CHARTS & MAPS: The National Ocean Service (NOS), a division of the National Oceanic and Atmospheric Administration (NOAA), is the principal government chart agency for U.S. waters. NOS distributes free chart catalogs covering the four U.S. recreational boating areas (No.1 Atlantic & Gulf Coasts, NO.2 Pacific Coast Inc. Hawaii, NO.3 Alaska, NO.4 Great Lakes and adjacent waterways). Catalogs will tell you which chart(s) you need and include ordering instructions. Contact NOAA/NOS, Distribution Branch, (N/CG33), Riverdale, MD 20737; 301/436-6990.

In addition, many federal agencies publish recreational maps, including the U.S. Army Corps of Engineers, the Department of the Interior (U.S. Fish & Wildlife Service, National Park Service, Forest Service, others), and the Tennessee Valley Authority. State tourism offices are also good sources of information on boating and fishing sites and public access boat launching ramps.

ABOUT YOUR BOAT

SERIAL NUMBER: _____

MODEL: _____ COLOR: _____ LENGTH: _____

DIAMETER OF TUBE: _____ WIDTH: _____

SOLD TO: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

MOTOR: _____ HP: _____ PROPELLER SIZE: _____

DEALER: _____ DATE OF PURCHASE: _____

NOTES

NOTES

ADDITIONAL BOATING LINKS

U.S. Coast Guard Boating Safety Resource Center:
http://www.uscgboating.org/

Discover Boating® Owning & Operating Tips:
http://www.discoverboating.com/owning/default.aspx

National Safe Boating Council:
http://www.safeboatingcouncil.org/

BoatSafe.com:
http://www.boatsafe.com/

Campaign for safe boating:
http://www.safeboatingcampaign.com/

Boating Safety Courses:
http://www.boat-ed.com/

Coast Guard Boating Safety - YouTube:
http://bit.ly/SaA7wu

About Boating Safely:
http://www.aboutboatingsafely.com/index.htm

Federal Boating Safety Laws - About.com:
http://bit.ly/VV4uZa

United States Coast Guard:
http://www.uscg.mil/

AVALON & TAHOE MFG., INC.
903 MICHIGAN AVE
ALMA, MI 48801
TOLL FREE: 800.334.2913 FAX: 989.463.8226

Tell us what you think by submitting a testimonial on our website:
http://www.avalonpontoons.com/about/testimonials/
http://www.tahoepontoons.com/about/testimonials/