



STINGRAY[®]

P O W E R B O A T S

Owner's Manual



 **STINGRAY[®]**
Boats

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I. FOREWORD

Welcome to the recreational world of boating! Stingray is proud to have you as a new Stingray Powerboat owner.

This Owner's Manual is provided to aid you in the safe and reliable operation of your Stingray Powerboat. **READ IT AND BECOME THOROUGHLY FAMILIAR WITH PROPER OPERATING PROCEDURES BEFORE YOUR OUTING.** Stingray recommends that all operators attend a boating safety course before operating your new boat. Contact the local office of the U.S. Coast Guard or The Coast Guard Auxiliary (Details in Section III). Careful operation and proper maintenance in accordance with this Owner's Manual will provide you with maximum boating pleasure and performance.

Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.



WARNING



DANGER



CAUTION

READ THIS FIRST!

For your safety, read this Owner's Manual and understand it thoroughly before operating your new STINGRAY boat. This manual contains warnings given here for your immediate attention plus other important information.

WARNING

Underage operators may be hazardous to themselves and others. You must know and observe your state's minimum boating age regulations. Stingray does not recommend operation of this watercraft by persons under the age required for a driver's license.

WARNING

Falls overboard are twice as 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.

WARNING

The throttle on the shifter control does not return to idle such as a car does when left unattended. Make sure you can reach the shifter lever quickly in an emergency. Safety clips should be plugged into the control box and lanyard properly attached to the driver's person.

WARNING

Consult your Stingray dealer about repair or replacement of steering system components. Improperly installed components could cause loss of steering, loss of boat control, and an accident or breakdown.

WARNING

If the steering system does not steer easily, STOP!
Do not operate boat. Have steering system checked immediately.

 **WARNING**

USE ONLY PARTS RECOMMENDED BY THE ENGINE MANUFACTURER. Incorrect parts can be dangerous, in some cases, and could void your engine warranty.

 **WARNING**

Switch off engine before taking skiers aboard from the water. Do not leave engine running in neutral; if the shifter is accidentally engaged, the skier could be seriously injured by the propeller.

 **WARNING**

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

 **WARNING**

**GASOLINE VAPORS ARE
HIGHLY EXPLOSIVE!**

 **WARNING**

Never assume all explosive fumes have been removed from the engine compartment. If you detect any fuel odors, shut down the engine and electrical circuits, and immediately determine where the odor is materializing.

 **WARNING**

All passengers must be properly seated while boat is in motion.

 **WARNING**

Stingray Boats are not designed for the towing of Para-sails, Kites, Gliders, or any other device that is designed to become airborne when towed behind a boat.

 **WARNING**

Battery electrolyte can cause severe eye damage and burns to the skin. Wear goggles, rubber gloves and a protective apron when working with battery. If spillage occurs, immediately wash area with a solution of baking soda and water.

 **WARNING**

When winterizing your sinks and water system, **DO NOT** use automotive type radiator anti-freeze under any circumstances. It is poisonous. Most fresh water anti-freeze protects the system to -50°F and adds color to the water to indicate its presence. Although this type of anti-freeze is non-toxic, **DO NOT** drink the solution. The system must be thoroughly drained and flushed to remove all traces of the color of the anti-freeze when the boat is recommissioned.

 **WARNING**

High speed acceleration in reverse creates a wake that could wash over the transom and enter the boat.

 **WARNING**

To prevent personal injury, never wax or use lubricant on nonskid deck surfaces. Wet or dry waxed gelcoat is very slippery and will cause unsafe footing.

 **WARNING**

Overloading and improper distribution of weight are significant causes of accidents. Capacity plates indicate maximum loads under normal conditions.

 **DANGER**

Do not overflow the fuel tank or allow fuel spills into the hull or bilges. Visually monitor fuel vent during refueling.

 **DANGER**

DO NOT use deck hardware for towing. Stingray Powerboats recommends using a commercial towing service if your boat becomes aground or using the lifting eyes mounted through the hull when being towed or towing another boat.

 **DANGER**

Never let the odor of gasoline go unchecked. Fuel leakage can cause fire and explosion.

 **DANGER**

Fuel vapors are explosive and can become trapped within lower portions of the boat. All hatches, windows, doors, and compartments must be closed when fueling your boat.

 **CAUTION**

Improper trailer set-up can cause hull damage, and, in some cases, could void your boat warranty. Rear boat supports should be as direct & under the transom as possible to prevent a “hook “from being formed in the hull bottom. Roller trailers with too few rollers can distort the bottom of your boat and void your warranty.

 **CAUTION**

When backing, be sure to have a lookout since your visibility may be severely blocked. Also, make certain the stern drive will clear obstacles.

 **CAUTION**

When shifting between forward and reverse, always pause in NEUTRAL for a few seconds before reversing the rotation of the propellers. This will prevent unnecessary wear to the drive system.

 **CAUTION**

Wire brushes, scouring pads, and other abrasive type materials / solutions should never be used on the bottom of your boat. They create small scratches that will collect dirt, silt, sand, marine growth, and other foreign materials.

 **CAUTION**

Do not turn dual battery switch to OFF setting while engine is running; alternator and wiring damage could occur.

 **CAUTION**

Acceleration at full throttle is not recommended before the engine break-in period has been completed. This break-in period coincides with the 20 hour engine check-up. Therefore, full throttle acceleration should not take place until after this check-up.

 **CAUTION**

If a complete loss of oil pressure occurs. Stop the engine immediately. Serious damage will occur if the engine continues to run after loss of oil pressure.

 **CAUTION**

Never use acetone, benzene, carbon tetrachloride, lacquer thinner, or similar type solvents. They penetrate the glass/plexiglass surfaces and causes hazing that will obstruct visibility.

 **CAUTION**

Electrically operated bilge pumps and automatic float switches are subject to malfunction and are no substitute for frequent inspection of the bilge, especially during periods of long rain, high seas or storm conditions.

 **CAUTION**

Use of gasoline that contains alcohol can damage your engine.

 **CAUTION**

If using an electric buffer, be very careful not to pause in one area too long. This may cut into the boat's underlying surface.

 **CAUTION**

Do NOT use acetone, gasoline, or household glass cleaners. These products cause crazing when exposed to sunlight. Some commercial glass cleaners contain acetone. Always read the label.

LAUNCHING RECORD

OPERATION BEFORE LAUNCHING

OK

- 1. Propeller
- 2. Shaft turns free
- 3. Thru-hull fittings
- 4. Drain plug tight
- 5. Bottom clean and paint
- 6. Hull sides clean and finish
- 7. Bright work clean and finish
- 8. Decks clean and finish
- 9. Interior finish
- 10. Upholstery clean
- 11. Bilge clean
- 12. Spray Hose tested for windshield leaks
- 13. Terminal of battery is wired to ground stud
on propulsion engine
- 14. All Electrical equipment operation OK including:
 - A. Horn
 - B. Running Lights
 - C. Bilge Pump
 - D. Bilge Blower
 - E. Windshield Wiper
- 15. With fuel tanks full:
 - A. No fuel leaks at fill pipe
 - B. No fuel leaks at over-flow vent
 - C. No fuel leaks at any fuel line connections
- 16. Throttle control and cable travel
- 17. Shift control and cable travel
- 18. Crankshaft oil level at FULL mark
- 19. Power Steering Pump

WITH BOAT IN WATER

- 20. No water leaks at stern drive
- 21. No water leaks at thru-hull fittings

STARTING ENGINES

- 22. Oil Pressure
- 23. No fuel leaks in fuel lines, at fittings,
at fuel filter, fuel pump, carburetor
- 24. No engine water leaks
- 25. No engine oil leaks
- 26. Reverse gear shifts thru all positions and is
in proper adjustment

WATER TEST BOAT

- 27. Boat performance
- 28. Engine performance
- 29. Instruments register properly

FINAL CHECK

- 31. All accessory equipment operated OK
- 32. All loose equipment on boat
- 33. All boat, engine, accessory literature
given to new owner

INSPECTION BY: _____

DEALER'S SIGNATURE: _____

OWNER'S SIGNATURE: _____

DATE: _____ LOCATION: _____

II. GENERAL INTRODUCTION

REGISTRATION

Federal law requires registration of all motor boats and that boats must exhibit registration numbers. The U.S. Coast Guard or appropriate state agency has authority regarding boating. Your Stingray dealer should be able to supply all your registration information.

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, just as you would on an automobile. You should also protect your investment by insuring your boat against physical damage or theft.

Stingray Powerboats has obtained a special agreement with National Marine Underwriters for boat owners to receive comprehensive market rate insurance on all Stingray models with one easy phone call. For more information call **1-800-BOAT INSurance** (1-800-262-8467).

III. SAFETY

The safety of you, your passengers and bystanders is an important priority when boating. Your Stingray boat has been constructed to meet U.S. Coast Guard and National Marine Manufacturers Association requirements. However, it is still the responsibility of the boat operator to operate his boat in a safe manner.

Plan your trips carefully. Tell someone where you are going and when you expect to get there. If you change your boating plans, contact this person to prevent false alarms.

N.M.M.A. Certification guarantees that your boat was built according to the National Marine Manufacturers Associations requirements concerning safety and quality.

WARNING

All passengers must be properly seated while boat is in motion.

PASSENGER SAFETY

You are responsible for the safety of your passengers as well as for their behavior while aboard. Make sure:

1. Each passenger is properly instructed in Personal Flotation Device (PFD) use and keeps one within reach in case of emergency. Children and nonswimmers should wear a PFD at all times.
2. Passengers do not sit on gunwales, open decks, or seat backs when the boat is underway. This could cause them to be thrown overboard during a sudden maneuver.
3. At least one other person knows how to operate the boat in case of an emergency.

WARNING

Overloading and improper distribution of weight are significant causes of accidents. Capacity plates indicate maximum loads under normal conditions.

SAFETY: DRINKING AND DRIVING

Please keep in mind that along with the fun of boating comes responsibility. As the owner or operator of a pleasure boat, you are obligated (morally and legally) to use good judgement while underway in providing for the safety and well-being of your passengers and other boaters around you.

Without question, the most common and flagrant violation of good judgement by boaters involves the use of alcohol or drugs. Each year, about half of all accidents involving fatalities are the result of alcohol or drugs.

Laws enacted in 1984 make it a federal offense to operate a boat while intoxicated, subjecting the operator to a \$1000 fine. Criminal penalties can go as high as \$5000, and may include the termination of operating privileges for up to one year. Operator is responsible for the safety of his passengers, including those under the influence.

Alcohol or drugs have an inhibiting effect on the judgement and reaction time of helmsman who are already subjected to physical stresses of operating in the open water. You are urged to heed the advice of experts and statisticians...the best of which is that if you operate a boat, do not drink or use drugs. **NEVER ALLOW AN OBVIOUSLY INTOXICATED PERSON TO TAKE THE HELM.**

Have fun in your Stingray AND have the good sense to always be mentally alert and physically capable of operating in a safe manner.

SAFETY:
RULES OF THE ROAD

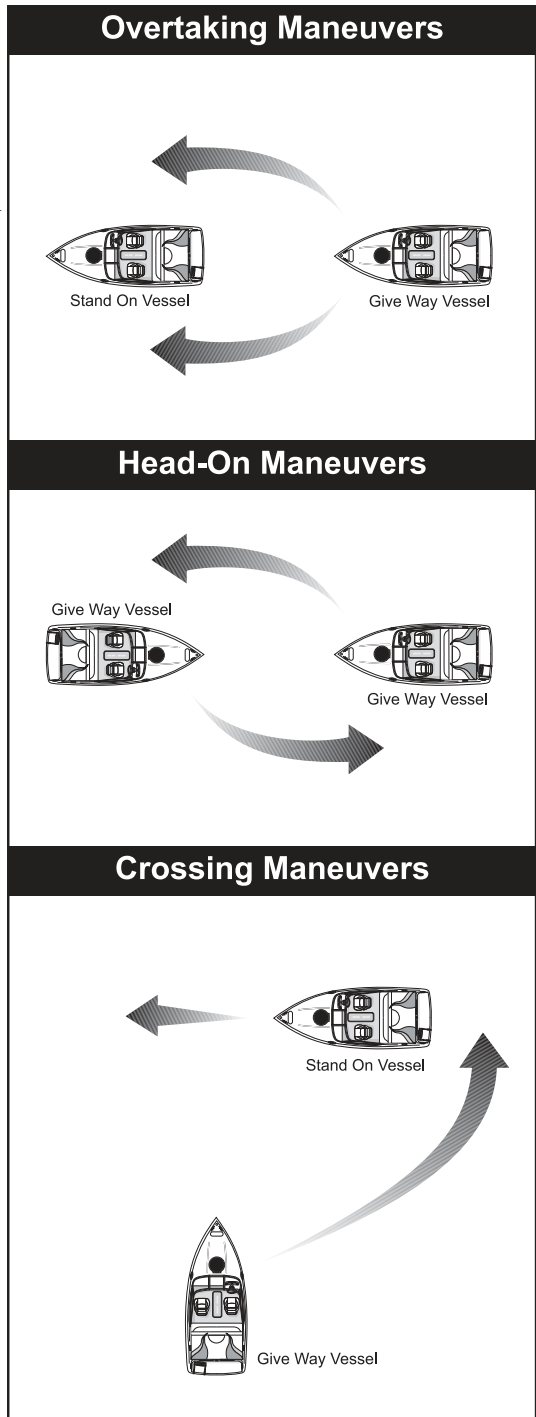
The rules summarized here were established by the Inland Navigational Rules Act of 1980, and do not necessarily apply when operating a boat on the high seas or outside U.S.A.

A. Warning Signals

1. One short horn blast: Changing course to starboard (right).
2. Two short horn blasts: Changing course to port (left).
3. Three short horn blasts: Backing.
4. Five or more short horn blasts: Doubt previous signal or Danger.

B. Overtaking Maneuvers

1. Give-way vessel announces intention to overtake stand on vessel to port or starboard with appropriate horn signal.
2. Give-way vessel waits for same signal or doubt response from stand-on vessel.
3. Give-way vessel completes agreed upon maneuver, or repeats original signal if doubt signal was sounded by stand-on vessel.



C. Head On Maneuver in a narrow channel

1. When closing on the same course in a narrow channel, both vessels must give way.
2. Either vessel sounds one short horn blast and maneuvers to starboard.
3. Responding vessel also maneuvers to starboard after one short horn blast reply.

D. Crossing Maneuvers

1. The vessel which has the other vessel on its starboard (right) side is the give-way vessel and must maneuver to starboard, if necessary, after sounding one short blast on its horn.
2. The stand-on vessel acknowledges the give-way vessel on its port (left) side with a single short blast response and maintains course.

SAFETY: ACCESSORY EQUIPMENT

U.S. Coast Guard regulations require certain accessory equipment on all boats. This equipment varies according to class of boat. Your Stingray is either a Class I 16 to 26 feet in length, or a Class II - over 26 feet. Other law enforcement agencies - state, county, and municipal - have similar equipment jurisdiction. Some local laws require additional equipment. It is important to obtain copies of your state and local laws. Also, contact your Stingray dealer for his help on safety equipment needs.

EQUIPMENT REQUIRED BY U.S. COAST GUARD**A. Fire Extinguishers**

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

The extinguisher can be any of the following:

1. 2-pound dry chemical
2. 4-pound carbon dioxide
3. 1.25 gallon foam extinguisher

B. Personal Flotation Devices (PFD's)

U.S. Coast Guard requirements concerning PFD's for Class I and II boats: One type I, II, or III (wearable) for each person on board and one type IV (throwable) in each boat.

C. Sound Signalling Device

Your Stingray boat is equipped with a power operated horn. This device should be used to promote safe passing, as a warning to other vessels in fog or confined areas, or as a signal to operators of locks or drawbridges.

D. Navigational Lights

Boats operating between sunset and sunrise are required to display appropriate navigational lights. It is up to you to make sure they are turned on when required. Navigational lights are intended to keep other vessels informed of your presence and course.

E. Sight Signalling Device

Boats 16 feet and longer operating on coastal waters and the Great Lakes are required to carry approved sight signalling devices (for example, pyrotechnics, such as flares for use at night and international orange flags for daytime distress signalling). Check with the U.S. Coast Guard or your Stingray dealer for specific requirements in your area.

RECOMMENDED EQUIPMENT

Below is a list of recommended equipment that you should keep on board your Stingray boat:

- | | |
|-------------------------------|-----------------------------|
| 1. Basic tool kit. | 8. Food and water. |
| 2. Binoculars or telescope. | 9. Foul weather gear. |
| 3. Blankets and dry clothing. | 10. Hand held signal light. |
| 4. Compass. | 11. Manual Bailing system. |
| 5. Extra line. | 12. Maps and charts. |
| 6. First Aid kit | 13. Oar or paddle. |
| 7. Floatable keychain. | 14. 2-way shortwave radio. |

SAFETY: WATERSPORTS

WATER SKIING

You are responsible for the safety and conduct of a water skier, just as you are for passengers in your boat. The following guides will do much to reduce the hazards while water skiing:

1. Water ski only in safe areas, away from other boats and swimmers, out of channels, and in areas free of underwater obstructions.
2. Do not allow anyone who cannot swim to water ski.
3. Be sure that the skier is wearing a proper U.S.C.G.A. flotation device. A properly designed ski vest is intended to keep a stunned or unconscious person afloat.
4. Always carry a second person on board to observe the skier, so full attention may be given to the operation of the boat and the waters ahead.
5. Approach a skier in the water from the starboard side, and be certain to stop your motor before coming in close proximity to the skier.

6. Give immediate attention to a fallen skier.
7. Be courteous and make sure your wake is not causing problems for fishermen and other boatmen.

WARNING

Switch off engine before taking skiers aboard from the water. Do not leave engine running in neutral; if the shifter is accidentally engaged, the skier could be seriously injured by the propeller.

SWIMMING AND DIVING

Before going over the side for swimming or scuba diving, do the following:

1. Anchor the boat to prevent drifting. Wind can move a boat faster than a strong swimmer can swim.
2. Remove engine keys (if children remain on board) to prevent accidental starting.
3. Display red-and-white diving flags on the boat or on a buoy in the area of the diving activity.
4. Lower the swim ladder.
5. Make sure everyone understands proper re-boarding procedures.

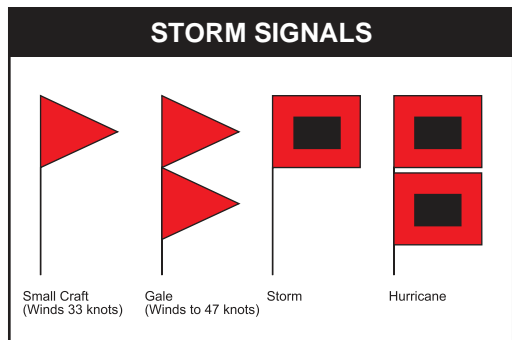
CAUTION

Stingray Boats are not designed for the towing of Para-sails, Kites, Gliders, or any other device that is designed to become airborne when towed behind a boat.

SAFETY: HAZARDOUS CONDITIONS

WEATHER

Boating for pleasure can become a chore when the weather turns hazardous. 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). In addition, storm signals are displayed at Coast Guard stations, yacht clubs and some launching facilities.

Storm signals do not necessarily mean rain or snow; they are used to indicate high winds and that possibly hazardous wave conditions are expected, so do not be misled by a clear sky. Continue to update your weather information throughout the day.

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 navigational 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 speeds.
4. Keep a sharp lookout. Have a crew member assist you in watching for other boats, possible hazards, and navigational features.
5. Protect your night vision. Avoid staring at bright lights ashore and on your boat.

IN FOG

Again, it is best to avoid operating in such weather, especially if your boat is not equipped with radar or other electronic navigational aids (loran). A compass and navigational chart will give you an idea of the direction you are 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 five second blast from your horn or whistle once per minute. You must also listen for the fog signals from other vessels and from navigational 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 falling 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 wind-shield wipers, etc.

WARNING

Falls overboard are twice as 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" generally means water too shallow for the boat, but it can also apply to deep water which contains stump fields, sand bars, or other unmarked underwater obstructions. Striking any of these at high speed could cause serious injuries to you or your passengers. Outdrives are built to kick upward in these situations which could cause an engine overspeed problem if the ignition is not shut off quickly. If you strike anything, at any speed, you run the risk of rupturing the hull or damaging the propeller or propeller shaft. 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 good lookout when operating in shoal waters.

SAFETY: ACCIDENTS

If you are involved in a boating accident on the navigable waters of the United States, you are required by law to stop and give whatever assistance you can without seriously endangering your boat or your passengers. You must also give your name and address, and the identification of your vessel to any person injured and to the owner of any property damaged.

A written accident report must be submitted within 48 hours to state authorities where the boat is registered, or where the accident occurred, if there is loss of life or personal injury causing incapacitation or property damage in excess of \$200.

If you observe another boat in distress, assume it is a true emergency. Proceed to the scene and render assistance.

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

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.
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. Do not 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.

COLLISIONS

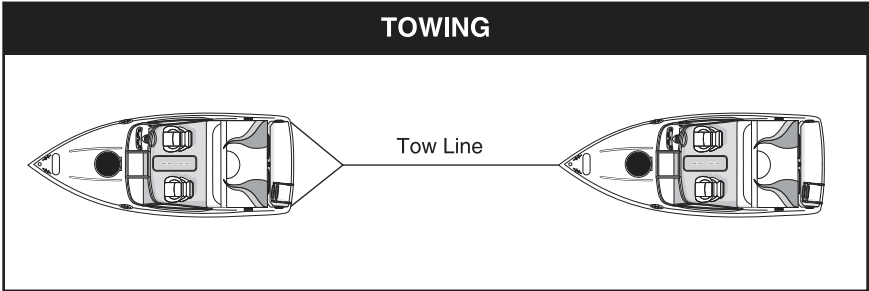
If you are involved in a collision with another boat, or with any fixed object (pier, sandbar, reef, bridge, etc.) your first job is to check out your boat thoroughly. Inspect below decks for leakage and attempt to plug any holes you find. Check steering cables for possible jamming; raise stern drive 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.

CAUTION

DO NOT use deck hardware for towing. Stingray Powerboats recommends using a commercial towing service if your boat becomes aground or using the lifting eyes mounted through the hull when being towed or towing another boat.

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.



DISTRESS SIGNALS: DAY AND NIGHT

Below is a list of daytime distress signals:

1. Simultaneously raising and lowering arms.
2. Florescent orange panel or flag.
3. Orange smoke flare.
4. Mirror.
5. Dye markers.
6. SOS on horn, whistle, or bell.

Below is a list of nighttime distress signals:

1. Flares
2. Rockets
3. Emergency strobe light.
4. Flashlight or lantern.

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 will 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 the flame. It's an easy decision if all that is 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 is time) or take one 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. Keep in mind that burning fuel can spread out over the surface of the water nearby.

CAPSIZING

If your boat capsizes and 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 does not 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 is much 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 hole with anything handy such as rags, clothing, canvas, etc. Bailing with buckets or any available containers, is important.

CB RADIO

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 such as drowning, severe bleeding, hypothermia, and burns.

REMEMBER: There is a way of handling nearly every emergency if you do not panic in those first crucial seconds. If you have learned your boating lessons and safety procedures well, you will have the confidence and the ability to cope with an emergency, should one arise.

FIRE PROTECTION

If your boat has a galley, make sure the stove is operated and maintained according to the manufacturer's instructions. Keep a Coast Guard approved fire extinguisher within reach for emergencies.

WARNING

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

SAFETY: 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. U.S. Coast Guard Auxiliary flotillas offer several different courses, usually during the off-season. The most popular course is the "Boating Skills & Seamanship Course," and information on where and when it is offered can be obtained by calling 1-800-336-BOAT.

The United States Power Squadron also offers free courses, ranging from basic seamanship to celestial navigation. For information, contact your local Power Squadron, or write:

U.S.P.S.
P.O. Box 30423
Raleigh, NC 27622

You can get the key addresses of all state boating agencies in a free copy of "A Boater's Guide" by writing to:

National Marine Manufacturers Association
401 N. Michigan Avenue
Chicago, IL 60611

In some states, the state boating agency not only conducts its own boating education classes, but can supply information on others as well.

For self study, a good source of information is the U.S. Coast Guard's book called "The Skipper's Course". It is good and easy to read. This book may be purchased through:

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Stock #050-012-00159-6

CHARTS AND MAPS

U.S. nautical charts are sold throughout the country at Government Printing Office stores and through designated agents. To find out which charts you need and where you can buy them, write for a chart catalog:

National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, MD 20852

IV. TRAILERING

The information contained in this section describes procedures used by many trailer boaters. Always follow the specific information provided by the manufacturer of your trailer. He is the expert.

NOTE: Before towing your boat: close and secure all hatches, doors, and portlights; 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.

LOAD CARRYING CAPACITY

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

CAUTION

Improper trailer set-up can cause hull damage, and, in some cases, could void your boat warranty. Rear boat supports should be as direct & under the transom as possible to prevent a “hook “from being formed in the hull bottom. Roller trailers with too few rollers can distort the bottom of your boat and void your warranty.

Bunk supports run parallel to the keel and support the hull, extending beyond the transom. If bow and center supports are used, they should not exert any great pressure on the hull where flexing may take place.

TRAILERING CHECKLIST

Below is a checklist to follow when trailering your Stingray boat:

1. Purchase a trailer with the proper capacity rating.
2. Consult your state laws as to brake requirements, and check brakes for proper operation prior to departure on each trip.
3. Check tires for proper inflation. Under-inflated tires heat up rapidly and tire damage is likely to occur.
4. Wheel bearings should be checked at least every 90 days and before storing for the winter months.
5. While traveling, check the wheel hubs every time you stop for gas or refreshments. If the hub feels abnormally hot, the bearing should be inspected before continuing your trip.
6. Your boat should be fastened to the trailer by a line from the bow eye to the winch line PLUS a safety chain or straps to the winch stand or trailer tongue. The stern of your boat should be tied down to the trailer from the stern eyes. Overtightening tie down straps may distort the boat bottom.
7. Check to be sure the taillights and turning signals work prior to towing.

8. Your trailer should support your boat in as many areas as possible and be adjusted so the load is well divided among the supporting roller or bunks. Occasional lubrication of the rollers aids in launching and retrieving your boat.
9. 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 on the tongue.
10. Close and secure all cabin windows and doors. Store equipment so that it cannot slide or fall.
11. **IMPORTANT:** Convertible tops are not designed to stay on boats at highway speeds. Before towing, take down the convertible top, side curtains, back cover, and mooring cover.
12. Check springs and under carriage for loose parts.
13. Carry a spare tire for both your trailer and your towing vehicle along with sufficient tools to change them.
14. On extended trips, carry spare wheel bearings, seals, and races.
15. Before backing your trailer into water, disconnect the light plug from the towing vehicle. This will greatly reduce the likelihood of blowing out your trailer lights when they become submerged.
16. When rounding turns on highways or streets, do not cut corners. Also, go slow over railroad tracks.

WARNING

Trailer sway and fishtailing are especially dangerous at higher speeds where they can become uncontrollable.

BACKING TRAILERS

Before attempting to back-up your trailer, practice in an empty parking lot. Also, watching the “other guy” at a loading ramp can give you additional insights into proper technique for backing your trailer.

CAUTION

When backing, be sure to have a lookout since your visibility may be severely blocked. Also, make certain the stern drive will clear obstacles.

Here is a simple procedure to help you back your trailer:

1. Turn the front wheels of the car in the opposite direction you want the trailer to go.
2. Once the turn is started, follow the trailer as you normally would backing the car.

3. Equip your vehicle with a right hand mirror - a real benefit when passing and parking.

FUELING

During fueling, it is very important to take precautions to avoid spillage or accumulation of gasoline vapors. Gasoline vapors are heavier than air and will sink into the lower cavities in your boat such as the bilge.

WARNING

**GASOLINE VAPORS ARE
HIGHLY EXPLOSIVE!**

DANGER

Never let the odor of gasoline go unchecked. Fuel leakage can cause fire and explosion.

DANGER

Fuel vapors are explosive and can become trapped within lower portions of the boat. All hatches, windows, doors, and compartments must be closed when fueling your boat.

CAUTION

Use of gasoline that contains alcohol can damage your engine.

Below is a list of instructions concerning fueling:

1. Close all doors, hatches, windows, and other compartments.
2. Extinguish cigarettes, pipes, stoves, and other flame producing items.
3. Make sure all power is off, and do not operate electrical switches.
4. Remove fuel fill cap. Insert hose nozzle and make sure nozzle is in contact with or grounded against fill opening. This will reduce the risk of static spark.
5. Add fuel. Do not fill to capacity; this will allow for expansion.

NOTE: Each time you fill up, inspect all fuel lines for leaks and hose deterioration. Remember: spills and leaks in your car end up on the pavement: spills and leaks in your boat end up in your bilge.

DANGER

Do not overflow the fuel tank or allow fuel spills into the hull or bilges. Visually monitor fuel vent located adjacent to the fuel fill plate.

After fueling, you should:

1. Close fill and wipe up spillage.
2. Open all windows, hatches, doors, and compartments.
3. Operate bilge blower for a minimum of 5 minutes. If you can still smell fumes, continue operating the blower. Check gas fill, hoses, bilge, and lower engine compartments for leaks or gas accumulation if odors persist.

Avoid fueling at night except under well-lighted conditions. Also, know your Stingray's fuel capacity and cruising distance.

V. LAUNCHING

Launching a boat can be an eye opening experience to the beginning boater. As a suggestion, set aside some time to watch other boaters' attempts at backing trailers and launching their boats. Below are some helpful steps to aid you in launching your Stingray:

1. Check the condition of the ramp. Ramps usually consist of cement, but some are made of asphalt or sand and gravel. Asphalt can be very slippery when wet. Also, check the water depth at the end of the ramp. This will help you determine the distance to back up your trailer.
2. The next step is backing the trailer to the ramp. Have someone assist you and use your mirrors as an aid. Back the trailer to the edge of the ramp and stop. Park the vehicle, and engage the parking brake.

NOTE: Additional information on backing trailers has been included in the trailering section of your owners manual.

3. Prepare for launching by attaching a line to the bow eye fitting.

Also, detach the tie down straps and tilt the outdrive to the full "up" position. Install transom drain plug.

4. To launch, release the parking brake and back the trailer into the water to a point where the boat will clear the trailer. Engage the parking brake.
5. Check the bilge for leaking water (loose drain plug). Unlock the winchline from the boat; crank and lock it in place. Push the boat into the water and have your assistant guide the boat with the bow line.
6. Put the car in "drive", disengage the parking brake, and park your vehicle and trailer.

To reload, repeat the procedure in reverse. Remember to clean any sand or dirt that has accumulated on the bunks of your trailer. This will reduce the amount of maintenance on your boat's hull in the future.

NOTE: Refer to launching record in the front of this manual.

STARTING

Before starting your boat, the boat must be in the water or connected to a water source. You should read your engine manual and pay close attention to the break-in period. Engine performance is dependent upon following guidelines. At this point you can prepare for starting the engine. Below is a checklist to follow:

1. Boat should be secured to the dock, because the boat could shift unexpectedly. Also, leave adequate space between other boats and you.
2. Equipment and personal items should be stored or in a secure place. Lifevests should be worn or easily accessible.
3. Engine drain plugs are installed and closed.
4. Check oil and coolant levels.
5. Inspect the engine compartment for water or fuel leaks.
6. Check V-belts for proper tension.
7. Locate all controls and gauges
8. Safety Lanyard
9. Operate bilge pump.
10. Operate bilge blower for a minimum of five minutes before starting engine to expel gasoline fumes.
11. Lower out drive unit into down position.
12. Set shift control lever into neutral position.

STARTING PROCEDURES

Engine starting procedures will vary depending upon the engine controls and accessories in your boat; see your engine manual for specific directions. The following procedures are the basic steps used in starting

engines. Your Stingray dealer should give you detailed instructions about the operation of the controls installed on your particular boat. If for some reason the engine fails to start after following the procedures below, contact your dealer.

WARNING

The throttle on the shifter control does not return to idle such as a car does when left unattended. Make sure you can reach the shifter lever quickly in an emergency. Safety clips should be plugged into the control box and lanyard properly attached to the driver's person.

***NOTE:** If your boat has not been used for a period of time, you may need to pump the throttle several times.*

1. Run blower for 5 minutes before starting. Visually check for any spilled fuel or fuel leaks in engine compartment.

WARNING

Never assume all explosive fumes have been removed from the engine compartment. If you detect any fuel odors, shut down the engine and electrical circuits, and immediately determine where the odor is materializing.

2. Clip safety lanyard to life jacket and plug into control box.
3. Place the control shift lever into the neutral position. All engine controls have neutral start safety switch that will prohibit the starter motor from engaging when the shift lever is in a gear position.
4. Advance the engine throttle control lever to approximately 1/4 to 1/2 throttle position.
5. Turn the key switch to the start position. The engine should start. Do not allow the engine to reach high RPM until it attains normal operating temperatures.

IMPORTANT:** If the engine fails to start within 30 seconds, release the starter switch and wait 60 seconds allowing the starter to cool. Repeat the above procedures. If after four repeat operations the engine still will not start, investigate and determine cause for engine not starting. **STARTING MOTOR DAMAGE MAY RESULT IF STARTING OPERATION IS CONTINUED.

6. Warm the engine up for five to ten minutes or until all the systems reach operating temperatures. Operate the engine between 800 and 1500 RPM during warm-up. Check all gauges at this time for any sign of engine malfunctions.

IMPORTANT: DO NOT INCREASE ENGINE SPEED UNTIL OIL PRESSURE GAUGE INDICATES NORMAL. Shut engine down if oil pressure does not register ten seconds after starting engine.

WARNING

Overloading and improper distribution of weight are significant causes of accidents. Capacity plates indicate maximum loads under normal conditions.

WARNING

All passengers must be properly seated while boat is in motion.

After the engine reaches normal operating temperatures, return the throttle lever to the idle position.

OPERATING SPEED

The safe operating speed of your Stingray will be dependent upon the engine and boat size, weather and water conditions, and the experience of the boater and passengers.

On the other hand, the maneuvering speed of your boat will be the maximum speed you can make sudden shifts and turns without losing control of your boat. Practice maneuvering around docks, heading into waves, and turning at slow speeds to give you experience at handling your boat.

***NOTE:** Beware of swimmers, divers, submerged obstacles, and other boats while operating your boat. Also, obey the boating laws of your given area.*

CAUTION

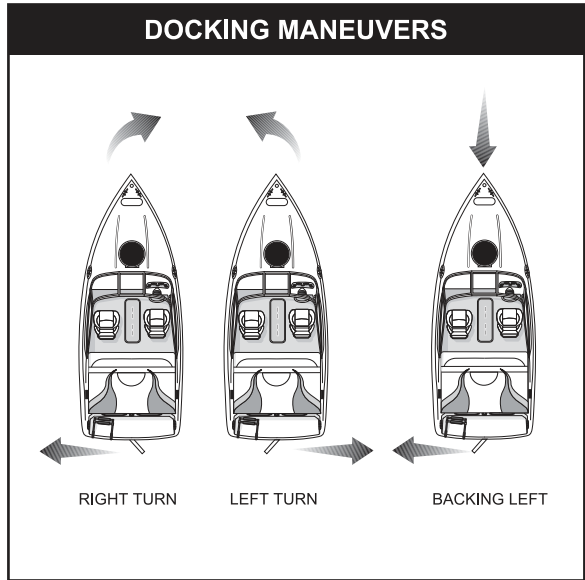
Acceleration at full throttle is not recommended before the engine break-in period has been completed. This break-in period coincides with the 20 hour engine check-up. Therefore, full throttle acceleration should not take place until after this check-up.

ANCHORING

An anchor is essential to have on your Stingray. Anchor and anchor line will be determined by the size and weight of your boat. Consult your Stingray dealer for his recommendations.

Below are some suggestions for you when anchoring:

1. Keep anchor and line secure or in storage when not in use.



2. Make sure anchor line is secured to an appropriate fixture such as a boweye, or cleat.
3. Before dropping anchor, unravel anchor line and make sure line does not wrap around your feet or other objects.
4. For extended or overnight boating, use two anchors. Allow for sufficient room to prevent damage from rough water or wind shifts. Your boat should be able to swing into a complete circle.

DOCKING

If you keep your Stingray 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 stern drive 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. While backing the boat, the stern will go in the direction you turn the wheel.

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 as follows:

1. Practice docking in open water using an imaginary dock.
2. Practice stopping.

There are four steps listed below to help you:

- a. Reduce speed while approaching the dock.
- b. Shift boat into neutral at drifting speed.
- c. Shift boat into reverse. This will stop the boat.
- d. Consider wind and current speed and direction

REMEMBER: *Except in an emergency, do not shift into reverse at high speeds. This may cause damage to your engine*

3. In close quarters or congested areas, all maneuvering should be at slow speeds. Proceed with caution.

VI. OPERATION & PERFORMANCE

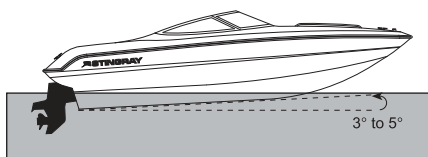
TRIM

TRIM ANGLE

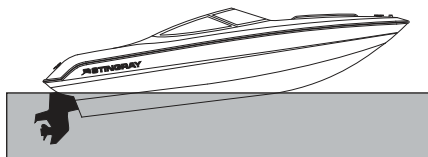
Trim angle of a stern drive is how far in or out from the transom surface the lower unit is tilted. The trim angle of the lower unit has a distinct effect on the planing angle of the boat which, in turn, significantly alters top speed and handling. Power trim allows you to conveniently control trim angle with the touch of a button. While on plane, the angle of the boat bottom to the water has much to do with maximum top speed, fuel economy, handling and choppy water ride.

Boat bottoms have the least drag at an angle of from 3 to 5 degrees with the water.

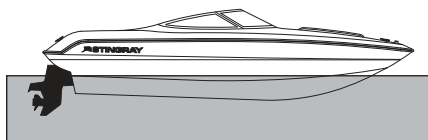
TRIM ANGLES



Boat Properly Trimmed



Bow Too High - Trim Bow "Down"



Bow Too Low - Trim Bow "Up"

If they run flatter than 3 degrees, as most light planing boats tend to do, or steeper than 5 degrees, as stern-heavy boats just barely on plane may do, efficiency suffers.

Here is where power trim can pay back dollars in fuel savings or give added performance and safety with a faster, better handling boat or push onto plane a stern-heavy boat that otherwise might not make it.

TRIM ANGLE AND ITS EFFECT ON THE BOAT

If trimmed “in” too far: top speed drops, fuel economy decreases, the boat may oversteer in one direction or the other, called “bow steering”, and steering torque will increase. However, getting on plane should be easier and the ride in choppy water or at part throttle should be smoother.

If trimmed “out” too far: getting on plane may be difficult or labored, the propeller may lose its hold on the water, fast V-bottom boats may start to “walk” from right to left to right, etc, the boat may begin porpoising, and steering torque will again increase.

A properly trimmed boat will move easily through the water without pulling the steering wheel right or left.

WEIGHT DISTRIBUTION

Weight distribution is extremely important; it affects a boat’s running angle or attitude. For best top speed, all movable weight - fuel, battery, anchor, passengers - should be as far aft as possible, to allow the bow to come up to a more efficient angle (3 to 5 degrees). But on the negative side of this approach, as weight is moved aft, getting on plane becomes more difficult.

Finally, the ride in choppy water becomes more uncomfortable as the weight goes aft. With these factors in mind, each boater should seek out what weight locations best suit his needs.

Weight and passenger loading placed well forward increases the “wetted area” of the boat bottom and, in some cases, this configuration can produce an extremely wet ride, from wind-blown spray, and could even be unsafe in certain weather conditions or where bow steering may occur.

WARNING

Overloading and improper distribution of weight are significant causes of accidents. Capacity plates indicate maximum loads under normal conditions.

Weight distribution is not confined strictly to fore and aft locations, but also applies to lateral weight distribution. Uneven weight concentration

to port or starboard of the longitudinal centerline can produce a severe listing attitude that can adversely affect the boat's performance, handling ability and riding comfort. In extreme rough water conditions, the safety of the boat and passengers may be in jeopardy.

ELEVATION AND CLIMATE

Elevation has a very noticeable effect on the wide-open throttle power of an engine. Since air (containing oxygen) gets thinner as elevation increases, the engine begins to starve for air, like a supercharger in reverse. The "rule of thumb" is a three percent loss in power for every 1,000 feet above sea level. Humidity, barometric pressure, and temperature do have a noticeable effect on the density of air. Weather conditions also have an effect on power output of internal combustion engines. While the published horsepower ratings refer to the power that the engine will produce at its rated RPM under a specific combination of weather conditions, heat and humidity thin the air and reduce the available horsepower. This phenomenon can become particularly annoying when an engine is propped out on a cool, dry day in spring. Later, on a hot, sultry day in August, the engine does not have its old zip.

Although some performance can be regained by dropping to a lower-pitch propeller, the basic problem still exists. The propeller is too large in diameter for the reduced power output. Experienced dealers can determine how much diameter to remove from a lower-pitch propeller for specific high elevation locations. In some cases, a gear-ratio change to more reduction is possible and very beneficial. However, the gear ratio change should be qualified and would probably be a good idea for someone who almost always boats at high elevations such as Lake Tahoe. A changeover is expensive, and you should consult your Stingray dealer for his recommendations.

VII. PROPULSION SYSTEM: COMPONENTS

PANEL SWITCHES

1. Ignition and horn: Function the same as your car.
2. Safety switch: By attaching the lanyard to the driver, the engine is shutdown when he leaves the helm station. Note: The engine will not start with out the lanyard attached to the switch.

3. **Navigation Lights:** Three position light switch. Up position is navigation lights, center position is off, and down position is anchor light only.
4. **Blower:** On-off switch controls the bilge blower.
5. **Bilge Pump:** On-off switch controls the bilge pump. The automatic switch is independent of the dash switch.
6. **Acc:** Accessory switch.

GAUGES

1. **Oil Pressure:** The engine oil pressure gauge indicates the oil pressure of the engine at all operating speeds. Oil pressure should be approximately 12-25 psi at idle speeds. At normal cruising speeds the oil pressure should be 45-65 psi depending upon oil grade and oil operating temperature. Check your engine manual for specifics on your engine.



CAUTION

If a complete loss of oil pressure occurs stop the engine immediately. Serious damage will occur if the engine continues to run after loss of oil pressure.

2. **Volt Meter:** The volt meter allows you to determine if the alternator output is keeping up with the boat's power needs. Volt gauge readings should not drop below 10.5 volts when starting the engine and should not rise above 14.7 volts. Reading of higher or lower would indicate a battery or charging system malfunction which should be corrected.
3. **Tachometer:** The engine speed in Revolutions Per Minute (RPM) is displayed on the tachometer. The engine can be operated between idle and full throttle without damage but should not be allowed to over-rev. Operating the engine beyond recommended RPM limits can cause severe damage to the engine.
4. **Fuel:** Indicates the amount of fuel remaining in the tank.
5. **Speedometer:** Displays boat speed in Miles Per Hour. Accuracy $\pm 10\%$.
6. **Power Trim:** Indicates the angle of the drive unit relative to the transom.
7. **Water Temperature:** Indicates engine coolant temperature. If the indicator suddenly rises to the hot or red area of the gauge, the engine should be stopped, and the cause of overheating determined and corrected.

SHIFTER CONTROLS

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

When shifting from forward to reverse, or reverse to forward, pause at neutral and allow the engine to return to idle to avoid damage to the mechanism. Except in an emergency, **AVOID SHIFTING INTO REVERSE WHEN THE BOAT HAS SIGNIFICANT FORWARD SPEED.**

For trouble-free operation, keep the shifter control unit clean and free of corrosion; check for loose mounting screws or bolts, and tighten if necessary. Check control cables for cracks or abrasions and kinked or bent cable; replace damaged cables.

WARNING

THE THROTTLE ON THE SHIFTER CONTROL DOES NOT RETURN TO IDLE SUCH AS A CAR DOES WHEN LEFT UNATTENDED. Make sure you can reach the shifter lever quickly in an emergency. Safety clips should be plugged into the dash and lanyard properly attached to the driver's person.

Check cable ends and connection fittings for corrosion, loose brackets, and loose, worn or damaged fittings. Replace worn or corroded parts (See your Stingray dealer for replacement parts). Cable end, fittings, and shifter control unit may be sprayed with a moisture displacing lubricant.

NOTE: If the shifter 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. DO NOT FORCE OR CONTINUE TO USE A MALFUNCTIONING CONTROL SYSTEM - you could cause further damage. See your Stingray dealer as soon as possible.

CAUTION

When shifting between forward and reverse, always pause in NEUTRAL for a few seconds before reversing the rotation of the propellers. This will prevent unnecessary wear to the drive system.

WARNING

High speed acceleration in reverse creates a wake that could wash over the transom and enter the boat.

STEERING SYSTEM

It is important that you get the “feel” of your Stingray’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. The cable end and its fittings should be kept clear of fuel line, control cables, electrical wiring or on board gear when the stern drive unit is moved through its full steering cycle in both running and full tilt positions.

The moving metal parts of the steering system should be cleaned and lubricated with a good grade of marine grease to insure smooth operation. With regard to the ram and steering tilt tube, Stingray recommends lubrication:

1. Every sixty days for freshwater.
2. Every thirty days in saltwater.
3. Before placing in storage, if for thirty days or more.

All fittings and cables should be inspected for corrosion or damage and replaced if necessary. Also, the steering wheel should be inspected for looseness and tightened, if necessary.

***REMEMBER:** The steering system should be inspected by a qualified mechanic at regular service intervals from a safety standpoint.*

PROPELLERS

Nothing is more important to the proper performance of your Stingray than the condition of the propeller. Even minor damage can adversely affect the boat’s performance. Common symptoms of a damaged propeller are a sudden rise in RPM, vibration, or a sudden loss of speed.

A propeller is measured by two dimensions - diameter and pitch. The diameter is twice the distance from the center of the hub to the tip of one blade. Pitch is expressed in the number of inches a propeller will advance in a solid medium in one revolution.

An accurate tachometer is important in choosing the best propeller for your boat. When operating your boat at full throttle under normal load conditions (people, fuel, and equipment), 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 propeller of reduced pitch to increase engine RPM. If engine RPM is above the recommended range, install a propeller of increased pitch. Check with your Stingray dealer for his recommendations.

Most propellers are made with three blades as a compromise for vibration, convenient size, efficiency, and cost.

DAMAGED PROPELLERS

Even slight propeller damage can mean the loss of one MPH. Greater damage can mean considerably more speed loss. Worse yet, damage usually is not done to each blade uniformly and, therefore, sets up imbalance vibrations that can cause fatigue damage to other parts of the engine or outdrive.

Up to a point, dealers can have a propeller restored to like new condition; however, extreme damage can be more expensive to repair than the cost of a replacement. Remember to carry a spare propeller.

ALUMINUM PROPELLERS

Aluminum is by far the most popular propeller material used today for stern drives. It is relatively low in cost, has good strength, good corrosion resistance, and is easily repaired.

STAINLESS STEEL

Stainless steel is a stronger material than aluminum so the blades flex less and are made thinner than aluminum propellers. Since the blade has a thinner cross section, it has less drag and is more efficient through the water. Stainless steel propellers may increase top speed by two to four MPH. Stainless steel is much tougher than aluminum and will far outlast an aluminum prop.

PROPELLER / BOAT MATCHUP

WATER SKIING

To take advantage of as much of the engine's horsepower as possible for pulling up water skiers, a propeller with a lower pitch should be selected. With higher initial engine RPM, more thrust is developed to pop skiers out of the water and get the boat on plane faster. Each two inch drop in pitch provides about 10% more thrust.

It is important that the operator watch the tachometer to make sure that the engine RPM does not continuously exceed the maximum recommended full throttle RPM without a skier. Propping the engine above the maximum recommended RPM limit is called "under propping" and can cause engine damage.

CRUISING

Since cruising does not require top acceleration, a little added fuel economy, less engine wear, and a lower sound level can be obtained when using the proper propeller. You will get better overall performance by propping the engine to operate within the recommended maximum RPM band at wide open throttle and then throttling back to 3000-3500 RPM.

One reason for getting better fuel economy is that propellers tend to have a slight increase in efficiency as the pitch is increased within a given prop line.

SPORT BOATING

When a compromise between wide open throttle speed and acceleration is needed, propping out in the upper half of the recommended RPM range with a light load is suggested. This should be the best prop, unless planing off with a heavy load is unsatisfactory. However, it is important to watch top RPM.

CAVITATION

Cavitation is caused by formation of water vapor bubbles along the surface of the propeller. Cavitation is usually the result of using a damaged propeller, or some hull projection in front of the engine. The result is often called a "burn" on the propellers surface. Damaged propellers should be reconditioned or replaced.

VENTILATION

When the propeller draws a large air bubble from the water's surface, a void is formed between the propeller and the water and the prop spins free while forward motion of the boat comes almost to a halt. This can occur when exiting from a hard corner or when the drive has been trimmed out to far. When this condition occurs, throttle back immediately and the bubble will release from the propeller allowing the prop to resume its grip on the water. Trim the drive in when getting on plane or exiting a hard corner to sink the drive deeper into the water and avoid the problem.

INSPECTION AND MAINTENANCE

At least once a year, more often if you use your boat extensively, remove the propeller from your stern drive and inspect the shaft seal for possible damage. Clean and lubricate the shaft according to engine manufacturer instructions. Replace the propeller using a new tab lock washer. Follow manufacturer's instructions for care and maintenance of the gear case. Also, check your shaft alignment periodically (refer to engine manual for recommendations).

WARNING

USE ONLY PARTS RECOMMENDED BY THE ENGINE MANUFACTURER. Incorrect parts can be dangerous, in some cases, and could void your engine warranty.

VIII. EXTERIOR CARE

GELCOAT CARE

Your Stingray is subject to weathering processes and eventually, the outer gelcoat will appear faded or dull. How much wear and tear from weathering depends upon how you treat and maintain your boat. If you allow the gelcoat to deteriorate, then you will have a higher expense of repairing the exterior surface. It is more economical in the long run to maintain your Stingray on a periodic basis. Your boat's gelcoat is not covered by any warranty.

Weathering occurs from direct sunlight, water, chemicals, and dust. Some of the terms below describe the changes that can occur to the gelcoat surface:

1. Chalk is the top surface being broken down into an extremely fine powder. When this happens, the color whitens. The chalk that has developed is strictly on the surface.
2. Fade means that the color has uniformly changed. This happens when the actual pigments have changed color especially from excessive chalk, or when the gelcoat has either been stained or bleached by something.
3. Gloss refers to the shine of the surface and can change from sanding action, chalk, or residues.

PROCEDURES TO MAINTAIN GELCOAT FINISHES

WARNING

To prevent personal injury, never wax nonskid deck surfaces. Wet or dry waxed gelcoat is very slippery and will cause unsafe footing.

The following are some general instructions, which will help you maintain your Stingray's sleek appearance.

1. Wash monthly or more frequently, depending upon use. Wash with a mild dishwashing soap but avoid strong alkaline cleaners and abrasives.

CAUTION

Wire brushes, scouring pads, and other abrasive type materials / solutions should never be used on the bottom of your boat. They create small scratches that will collect dirt, silt, sand, marine growth, and other foreign materials.

2. Wax your boat three times a year, more if you are in an area with above average sunshine and your boat is not protected by a cover.

For boats that have weathered and have chalked:

1. Wash.
2. Wax. If this does not work, then use a fine rubbing compound, followed immediately with wax.

When using fine rubbing compounds, make sure you follow directions. Some tips are listed below.

1. Avoid using in direct sunlight. This dries out the compound.
2. Use clean pads to apply compound. Apply the rubbing compound to a small area, remove excess, and apply pressure. If using a power buffer, use a low RPM buffer (1200 to 2000 RPM). Keep your pad wet and do not allow it to dry out. Follow up with waxing.

CAUTION

If using an electric buffer, be very careful not to pause in one area too long. This may cut into the boat's underlying surface.

When using waxes, make sure you consult your Stingray dealer for his recommendations. Use only waxes designed for fiberglass.

***NOTE:** If a power buffer is used, use a low RPM buffer with light pressure. Keep it moving at all times to prevent heat build up.*

STAINS

Your Stingray boat will pick up stains from normal boating activity. Stains are a result of dust, road tar, plant sap, and other stains from materials which come into contact with your boat.

Surface stains may be removed by dishwashing soap, mild cleansers, or some household detergents. Chlorine and ammonia products can cause serious damage to the color of the gelcoat. Check with your Stingray dealer for his recommendations.

If the stain is not removed by the dishwashing soap or mild cleanser, then the next procedure is to use either denatured or rubbing alcohol. Do not use acetone, ketone, or other solvents to remove stains. These chemicals are flammable and may also damage the gelcoat.

SPECIAL CARE FOR BOATS THAT ARE MOORED

If permanently moored in saltwater or fresh water, your boat will collect growth and grass on the hull bottom. We suggest that you prevent

this by periodically cleaning the hull, or painting the hull with a good grade of anti-fouling paint.

CAUTION

Due to varying water conditions, if your boat is to be left in the water for an extended period of time (a month or more), it is recommended you apply a two-part epoxy barrier coat to prevent water absorption through the gelcoat which can create blisters.

IX. INTERIOR CARE

BILGE

Your bilge accumulates oil and greasy dirt over a period of time and should be cleaned out. Usually, ordinary soap and water will remove the accumulation, if not, a car wash steam cleaner will do the job.

CAUTION

Electrically operated bilge pumps are subject to malfunction and are no substitute for frequent inspection of the bilge, especially during periods of long rain, high seas or storm conditions.

HOSES

Fuel lines, vent hoses, and drain hoses should be checked frequently for leaks and clogs. If a leak occurs around a fitting, then tightening the hose clamps may be all that is necessary. However, if the leak continues, replace the hose immediately. Surface cracking on the hose indicates wear or old age, and replacement is recommended. Use fuel system parts certified for marine use only. Do not substitute automotive parts in marine applications.

WINDOWS AND WINDSHIELDS

REPLACEMENT PARTS

Replacement parts are available through your boat dealer or the product manufacturer.

GLASS

Glass breakage for any reason is not covered by warranty (consult your insurance policy).

CAUTION

Never use acetone, benzene, carbon tetrachloride, lacquer thinner, or similar type solvents. They penetrate the glass/plexiglass surfaces and causes hazing that will obstruct visibility.

DECK HATCHES

Always be sure the hatch is fully closed and locked when trailering the boat.

TOPS AND CURTAINS

Your Tops and Curtains will give you years of service, if you follow these simple rules:

1. Never trailer your boat with top or canvas up.
2. Never roll up top when wet. Always store in boot.
3. Brush down top occasionally, both inside and outside. Mildew thrives on dust and moisture.
4. Vinyl coated tops can be cleaned with detergent and water. For extreme cases of soil on the vinyl surface, scrub with a solution of ammonia and water, then rinse.
5. Roll curtains, do not fold. Store in a clean dry place.
6. Do not allow petroleum products, including bug sprays, to come in contact with tops or curtains. This will break down mildew inhibitors and cause clear vinyl to turn brown and crack.

ACRYLIC PRODUCTS

CAUTION

Do NOT use acetone, gasoline, or household glass cleaners. These products cause crazing when exposed to sunlight. Some commercial glass cleaners contain acetone. Always read the label.

The sparkling clarity of acrylic products can be preserved for many years by following these cleaning instructions:

1. **Washing:** Wash with a mild soap or detergent, using a soft cloth or chamois.

2. **Scratch removal:** Minor scratches can be removed with a plastic cleaner-polish or a good grade commercial automotive paste wax.
3. **Removal of tar, grease, paint, etc.:** Use a good grade of naphtha or kerosene.

ELECTRICAL

Your Stingray is equipped with a standard 12 volt battery. The battery comes with a non-metallic box to help contain spills and prevent corrosion.

Check your battery terminals frequently for corrosion. Clean terminals with a baking soda and water solution and a wire brush. Also, check the fluid levels in the cells. Usually, a level approximately 1/4 to 1/2 inch above the plates is sufficient. If needed, fill with distilled water. However, some batteries are sealed, and this process is not necessary. Read directions when applicable.

If you operate your Stingray sparingly, you may want to charge your battery occasionally. To recharge, remove the battery from the boat and remove the battery caps (when applicable). Recharge the battery according to the directions enclosed with your battery charger.

WARNING

Battery electrolyte can cause severe eye damage and burns to the skin. Wear goggles, rubber gloves and a protective apron when working with battery. If spillage occurs, immediately wash area with a solution of baking soda and water.

CAUTION

Do not turn dual battery switch to OFF setting while engine is running; alternator and wiring damage could occur.

VINYL

In general, most soil can be easily cleaned with warm soapy water and several clear rinses. Moderate scrubbing with a medium bristle brush will help to loosen the soiling agent from the depressions of embossed surface. Certain commercially available products clean stains from vinyl very effectively. Check the label on the product to see if it is recommended. Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not

recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution. Many contain dyes or solvents that can permanently damage the protective coating. Always remove stains immediately. Do not use 409® cleaner or silicone base products.

Surface mildew is best removed with a mixture of one tablespoon of ammonia one-fourth cup of hydrogen peroxide, and three-fourths cup of water. Rinse several times with clear water.

Use caution cleaning embroidery stitching on upholstery.

PAINTED PRODUCTS

Maintaining the finish of all marine products requires care and cleaning, with special attention for saltwater applications. A variety of methods are available to remove surface deposits. Prior to using any cleaning materials, test clean a small inconspicuous area before use on a large scale. The cleaning agent should be applied with a soft cloth or sponge. Never clean painted products with wire brush, steel wool, sandpaper, or any abrasive materials that can damage the paint. Do NOT use any metal polish, cleaner, acetone or toluol.

We recommend using a mild detergent solution to remove most air-borne soils. To remove non-water soluble deposits like tar, sealants, grease, oil, paints, graffiti, etc., we recommend using alcohol or petroleum solvents such as mineral spirits.

DETERGENT SOLUTION:

Use 5% solution of commonly used commercial or industrial detergent in water. Cleaning with the solution should be followed by an adequate rinse with clean water.

ALCOHOLS

Denatured alcohol (ethanol)	Isopropyl alcohol (rubbing)
Methanol (wood alcohol)	

PETROLEUM SOLVENTS

Mineral Spirits	VM& P Naphtha
Turpentine (wood or gum)	

NEVER USE ACETONE OR TOLUOL

The life of all painted products can be prolonged by waxing it with a good grade commercial car wax (follow manufacturer's instruction.)

HOLE DRILLING IN PAINTED SURFACES

Any hole drilled in painted surfaces can damage the paint seal. If salt water gets under the seal, corrosion around the hole can result. If holes are drilled in painted surfaces, we recommend applying a thin coating of silicone sealer around the hole. If screws or fasteners are screwed into painted surfaces, they should be separated from the surface with a non-metallic washer.

ELECTROLYSIS

The combination of non-compatible metals, salt water, and improperly grounded electronic equipment can cause corrosion problems on all metals to include painted surfaces. If boats are connected to shore power, we recommend an isolator be installed.

X.TROUBLESHOOTING

If your boat performance is not what you are expecting try this troubleshooting guide:

1. Improper drive tilt angle or transom height.
2. Incorrect propeller selection.
3. Improper load distribution.
4. Water under cockpit floor.

The following sections concerning troubleshooting are broken into four sections: Boat handling, steering, engine performance, and gauges.

BOAT HANDLING

A. 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.

B. 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.

C. SLOW TO PLANE - HEAVY LOAD

1. Motor trim too far out.
2. Incorrect propeller selection.
3. Too much load in stern.

D. SPEED LOSS

1. Marine growth on hull or lower unit.
2. Weeds on propeller.
3. Damaged propeller.

E. HARD RIDE IN ROUGH WATER

1. Too much load in stern.
2. Motor trim too far out.
3. Poor speed management.

F. RUNS WET IN ROUGH WATER

1. Load too far forward.
2. Motor trim too far in.
3. Overloaded.

G. LISTS ON STRAIGHT WHEN HEAVILY LOADED

1. Load not evenly distributed.
2. Motor trim too far in.

H. LISTS OR ROLLS ON STRAIGHT WHEN LIGHTLY LOADED

1. Loose steering.
2. Motor trim too far in.
3. Load too far forward.

I. NOSE HEAVY - CATCHES ON WAVES AND IN TURNS

1. Motor trim too far in.
2. Too much load in bow.

J. PORPOISES ON STRAIGHT RUN

1. Motor trim too far out.
2. Too much load in stern.

K. BANKS TOO MUCH IN TURNS

1. Overloaded, improper weight distribution.
2. Load too far forward.
3. Motor trim too far in.
4. Overpowered.

L. 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. Thru-hull fittings disturb water flow.
7. Weeds on propeller.

STEERING**A. STEERING STIFF OR UNUSUALLY HARD OPERATING JERKY ERRATIC.**

1. Corrosive deposits at cable output end, 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 overtightened.
5. Internal corrosion or damage to cable.
6. Engine and boat are not trimmed out properly.
7. Engine trim tab loose, damaged or incorrectly set.
8. Transom bracket improperly mounted, bent or distorted (boat

mounted systems only).

9. Bent or distorted engine link may be interfering with engine (motor mounted systems only).

B. STEERING SLOPPY AND HAS EXCESSIVE FREESTEERING WHEEL MOVEMENT.

1. Cable transom bracket loose or cable and fittings loose or badly worn.
2. Steering wheel loose on helm.
3. Worn or loose fasteners in helm unit or drive unit.
4. Worn push-pull cable.

C. STEERING SYSTEM WILL NOT TURN.

1. Cable transom bracket loose or cable end fittings loose or badly worn.
2. System badly damaged at the helm or cable output end.

WARNING

If the steering system does not steer easily, STOP!
Do not operate boat. Have steering system checked immediately.

WARNING

Consult your Stingray dealer about repair or replacement of steering system components. Improperly installed components could cause loss of steering, loss of boat control, and an accident or breakdown.

ENGINE PERFORMANCE

A. SHIFT AND THROTTLE CONTROL BECOMES STIFF OR UNUSUALLY HARD OPERATING, JERKY OR ERRATIC.

1. Control cable(s) are crushed, kinked or bent too sharply.
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.

B. THROTTLE AND SHIFT DOES NOT RESPOND PROPERLY TO CONTROL HAND LEVER.

1. Cable ends and connection fittings 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.

C. 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, loose or corroded battery terminals.
4. Faulty ignition switch.
5. Loose ground or positive wires.

D. 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.

E. ENGINE WILL NOT START: STARTER ENGAGES.

1. Lack of fuel.
2. Clogged anti-syphon valve or fuel tank pick-up.
3. Clogged fuel filter.
4. Plugged fuel line or defective pump.
5. Carburetor float valve stuck.
6. Damp spark plugs, wires, or distributor cap.
7. Loose spark plug or coil wires.
8. Water in fuel supply.

F. ENGINE RUNS ERRATICALLY

1. Automatic choke out of adjustment.
2. Water and/or dirt in fuel filter.
3. Fuel pump malfunction.
4. Fuel tank vent and line plugged.

G. ENGINE VIBRATES

1. Damaged propeller or weeds on propeller or gear-case.
2. Carburetor out of adjustment.
3. Spark plug(s) damaged or dirty.
4. Loose or damaged spark plug wires.
5. Incorrect firing order.
6. Engine out of time.

H. ENGINE RUNS BUT BOAT MAKES LITTLE OR NO PROGRESS.

1. Fouled or damaged propeller.
2. Excessive marine growth on bottom of hull.

***NOTE:** Consult your engine manual for specifications and help on trouble shooting and repairs of your engine. Also, consult your Stingray dealer for additional help or information about your boat.*

GAUGES

Before replacing an instrument on your panel, check the following:

1. Make sure all electrical connections are tight and free of corrosion.
2. Check to see that terminal has not pulled off wire, causing loss of continuity.
3. Check to see that each instrument and sending unit is properly grounded.
4. On tachometer, check selector switch for proper setting for your engine. If arrow is in between the proper setting, erratic reading will occur. Proper setting for different engines are listed below.
 - a. Outboards: One
 - b. Four Cylinders Engine: Two
 - c. Six Cylinder Engines: Three
 - d. Eight Cylinder Engines: Four

***NOTE:** Be sure arrow is at indicator mark and not screwdriver slot.*

5. Ground the sender wire to get full scale deflection on temperature, trim, fuel, and oil pressure.
6. Moisture build up on the inside of the gauge is quite common and harmless.

XI. WINTERIZING

To prepare for winter or off season, here is a list of suggestions to keep your boat in top condition.

1. Clean the boat and apply a thin coat of rust inhibitor on the metal hardware and on your steering and control cables.
2. Drain the fluid from your engine block and manifolds. Frozen water will expand and crack your engine. Consult your engine manual for location of drain plugs.

WARNING

To prevent personal injury, wear goggles, rubber gloves and a protective apron when working with battery. Battery electrolyte can cause severe eye damage and burns to the skin. In case of spillage, wash area with a solution of baking soda and water.

- Fuel should be conditioned during any period of extended storage.

WARNING

When winterizing your sinks and water system, DO NOT use automotive type radiator anti-freeze under any circumstances. It is poisonous. Most fresh water anti-freeze protects the system to -50°F and adds color to the water to indicate its presence. Although this type of anti-freeze is non-toxic, DO NOT drink the solution. The system must be thoroughly drained and flushed to remove all traces of the color of the anti-freeze when the boat is recommissioned.

- Remove battery and store in safe, dry place. Check fluid levels.
- Remove interior cushions and jumpseats and store in cool, dry place. Otherwise, place cushions on end to allow sufficient ventilation.
- Drain porta potti and fresh water system. Add freshwater anti-freeze to water tank and porta potti. Pump anti-freeze into the supply lines using the faucets and transom shower.
- Store boat in a garage or other facility if available. If not, cover the boat with a mooring cover after the interior has been allowed to dry out. The canvas will breathe and allow for sufficient ventilation of the interiors. Moisture and poor air circulation are the main reasons for rot and mildew. This can occur at any time of the year.
- If your boat is to be stored on a trailer, you should:
 - Block the trailer wheels so the tires are off the ground. This reduces tire deterioration.
 - Loosen tie-down straps to reduce stress on the hull.

NOTE: This is also a good time to replace wheel bearings and touch up trailer paint.

XII. GLOSSARY

- Either side of the boat.
- To the rear or near the stern.
- The width of the hull.
- The lowest portion inside a boat (in a fiberglass boat, generally the lower portion of the engine compartment.)
- The forward portion in a boat.
- Vertical partition in a boat.
- The intersection of the side and bottom of a V-bottom boat.
- Deck fitting, used as guides for mooring or anchor line.
- Deck fitting with arms or horns on which lines may be fastened.
- Upper structure which covers the hull.
- Vertical distance from the waterline of the boat to the lowest point of the boat.
- A measurement of 6 feet generally used to measure water depth.
- Vertical distance from deck to waterline.
- Where hull and deck meet.
- A covered opening in the deck.
- Toilet or toilet room.
- Vertical distance between the floor and cabin or canopy top.
- Steering wheel.
- The basic part of a boat; a watertight vessel that provides buoyancy to float the weight of the craft and its load.
- The lowest external portion of the boat.
- Nautical miles per hour. A nautical mile is 6,076 feet; a statute mile is 5,280 feet.
- Opposite from which the wind blows.
- International spoken distress signal for radio.
- to the left side of the boat.
- A hinged window in the boat's cabin.
- An opening in a deck or cockpit permitting water to drain overboard.
- Curve or sweep of the deck as viewed from the side.
- A fixed, upright post used for support (of rails).
- To the right side of the boat.
- To the rear of the boat.
- Inboard/outboard unit.
- Longitudinal members fastened inside the hull for additional strength.
- The vertical part of the stern.
- Track or path a boat leaves behind while in motion.
- The direction from which the wind is blowing.

SERVICE GUIDE

	After first 20 hrs. operation	Every 50 hrs. of operation	Every 100 hrs. of operation	Once every Year
Change Engine Oil*	●	●		●
Replace Oil Filter*	●	●		●
Check Engine Alignment	●			
Lubricate Propeller Shaft	●	●		●
Check Water Pump & Alternator Belts for Tension*	●	●		
Change Water Separating Fuel Filter*	●			●
Replace Carburetor Fuel Inlet Filter*	●	●		
Check Battery Electrolyte Level*				●
Check All Electrical Connections for Tightness*	●	●		
Check Cooling System Hoses & Connections for Leaks*	●			●
Tighten Engine Mount Fasteners*	●			●
Lubricate Throttle & Shift Linkage Pivot Points*				●
Check for Loose, Damaged or Missing Parts*	●		●	●
Inspect Propeller for Possible Damage*		●		
Inspect Zinc Anodes, Replace When Necessary*	●			●
Check Fuel Pump Sight Glass for Leaking Diaphragm*		●		
Check Exhaust System for Leaks*	●		●	
Inspect the Fresh Water Pump & System*	●		●	

*Refer to engine operators manual for details

Upon reaching the specified engine break-in period, an inspection should be performed by the selling dealer at local rates and paid for by the owner. After the normal break-in check-up, your Stingray should be taken to the selling dealer every 6 months or 100 hours of operation - or at least once a year for lube change, tune-up, etc. The inspection and service schedule above is based on average operating conditions. Under severe operating conditions, intervals should be shortened.

OWNER SATISFACTION

Your satisfaction is important to your authorized Stingray dealer and to Stingray Powerboats. If you have a problem concerning warranty or service, please take the following action:

Contact the owner and/or service manager of your authorized Stingray dealer. Fully explain your problem and ask for assistance in resolving the situation. The OWNER of the dealership is concerned with your satisfaction and your future business. For this reason the owner is in the best position to assist you. Also, all warranty and service matters are handled and resolved through the authorized Stingray dealer network.

If you are unsatisfied after working with your Stingray dealer and feel you require further assistance, WRITE to the address below. Please be certain to provide the model, product identification number, hours of use, accessories, dates that events occurred and what action has been taken by both you and your dealer. Include the name and address of the dealership. To assist us in resolving your inquiry, please include copies of related receipts, photographs, and any other pertinent information including the names of the dealership personnel with whom you have been working in the resolution of your problem.

Upon receipt of your WRITTEN correspondence we will contact the dealership and review the information you provided.

In order to provide a permanent record, all warranty and service resolutions take place only through WRITTEN correspondence.

Please send your correspondence to:

CUSTOMER SERVICE DEPARTMENT
STINGRAY POWERBOATS
P.O. BOX 669
HARTSVILLE, SOUTH CAROLINA 29551