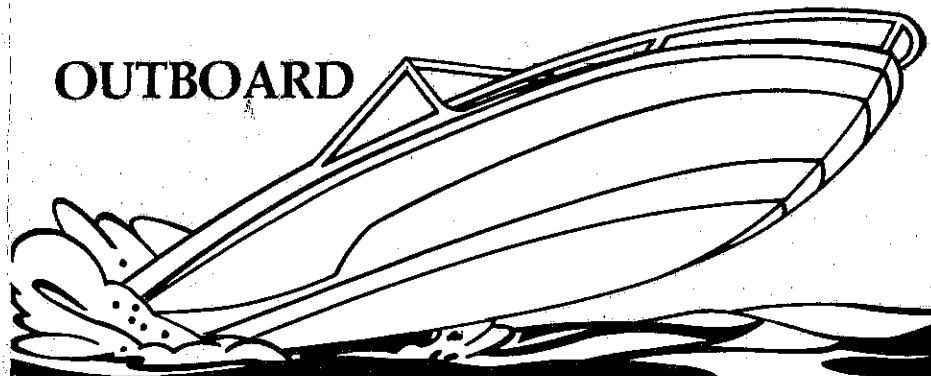
1976 Old Version

# Glastron® & Carlson

# OWNER'S MANUAL

OUTBOARD



# OUT FRONT

# OUTBOARD
# CARRY ON CHECK LIST
(Keep on Board)

## BEFORE FIRST USE:

1. Read Boat Operator's Manual
2. Read Outboard Motor Operator's Manual
3. Familiarize yourself with all caution and safety warnings

## PRE-LAUNCH INSPECTION

1. Drain Plug - and inner hull plugs—install
2. Accessory gear - secure
3. Safety equipment - aboard and accessible
4. Fuel supply - adequate
5. Lighting - check
6. Propeller - check condition

## BEFORE START

1. Engine - check condition
2. Fuel - check for leaks and proper ventilation
3. Battery - properly connected - check water level
4. Steering cables and fittings - tight
5. Bilge - clean, dry, clear of loose objects

## STARTING

1. Control lever to neutral position
2. Stern area - clear
3. Start engine, turn key to right
4. Voltmeter/ammeter - check for charge (where equipped)
5. Allow engine to warm up

## OPERATION — (UNDER WAY)

1. Observe "Rules of the Road"
2. Steering - test for proper operation
3. Speed - only when clear and in open water
4. Trim boat for best weight/distribution, speed/rpm combination
5. Operate only when driver is seated securely at controls and all passengers are in their seats

## MOORING (STORAGE)

1. Dock boat slowly - exercise extreme care
2. Stop engine - ignition off
3. Properly stow gear for trailering/storage
4. Secure boat on trailer
5. Remove drain plug and inner hull plugs (See Caution, Page 7) if boat is removed from water for storage
6. Hull - check for possible damage and cleanliness

# U.S. COAST GUARD REQUIREMENTS

## GLASTRON AND GLASTRON/CARLSON HAS PROVIDED:

**Navigation Lights:** Complies with Coast Guard regulations for either inland or international waters depending on model. (If factory installed)

**Fuel System:** Permanent fuel systems (if factory installed), fuel piping and proper ventilation complies with recommendations of the Boating Industry Association (B.I.A.).

**Flotation:** All of our boats have polyurethane flotation installed, which has been B.I.A. certified.

**Capacity Plate:** Each outboard has a capacity information plate which indicates the horsepower and safe load capacity for that boat.

**WARNING: Do not exceed these recommended capacities. To exceed the maximum horsepower capacity may lead to unsafe speeds and/or unstable handling characteristics and will void the Glastron warranty.**

## YOU MUST PROVIDE:

**Personal Flotation Devices:** There must be at least one Coast Guard approved personal flotation device aboard for each person riding in the boat and for each person skiing.

**Fire Extinguisher:** Outboard boats must have a hand portable fire extinguisher of approved type on board.

**Bell, Whistle or Horn:** A sounding device is required by federal and state regulations on Class I boats (16'-26' length).

**Registration:** You must properly register your boat and display the proper registration numbers as required by Federal law.

**State Laws:** The State in which you operate your boat may have other equipment requirements—check the laws.

## YOU SHOULD PROVIDE:

**Safety Kit:** Carry a safety kit that includes distress signals, bilge pump, flashlight, first aid kit, hand tools, spare propeller, shear pins, cotter pin (or prop nut), oar, anchor, and a tow line.

**SPECIAL NOTE: All boat manufacturer's are required by Federal law to notify first time owners in the event any defect is discovered "which creates a substantial risk of personal injury to the public." FAILURE OF THE PURCHASER TO RETURN THE WARRANTY REGISTRATION CARD WILL WAIVE THE RIGHT TO NOTIFICATION OF DEFECT AND REPAIR AT MANUFACTURER'S EXPENSE. In order that we can comply with the law IF it becomes necessary, it is essential that your warranty registration card with the owner's name, address and hull serial number be completed and mailed (Federal Boat Safety Act of 1971 Subsection 15 (b).**

**IMPORTANT: To register the warranty on your boat, complete and mail the card from this manual within 15 days of pruchase. It is pre-addressed and postage paid for your convenience.**

## *CONGRATULATIONS!*

*Welcome to the Glastron and Glastron/Carlson fleets of satisfied owners. Your boat is designed, engineered, tested and constructed to give you the most in performance and comfort with safety.*

*This owner-operator's manual will help you get the most pleasure and utility from your boat. It contains information about your equipment, operating procedures, performance, construction, safety requirements and suggestions for service and care.*

**EVERYONE WHO USES THIS BOAT SHOULD READ THIS MANUAL, THE OUTBOARD MOTOR MANUAL, AND BE FAMILIAR WITH SAFETY AND CAUTION WARNINGS CONTAINED THEREIN.**

Founded in 1956, Glastron Boat Company has recorded a remarkable continuing growth. Glastron has become the world's largest manufacturer of fiberglass pleasure boats under one brand name, with world-wide sales through over 1000 dealers in all states and 55 foreign countries.

Glastron Boat Plant area in Austin, Texas is now over 660,000 square feet with a total Austin employment of about 1000. In 1969 Glastron acquired Carlson boats in Anaheim, California to produce the Carlson high-performance fiberglass pleasure boats and certain Glastron models.

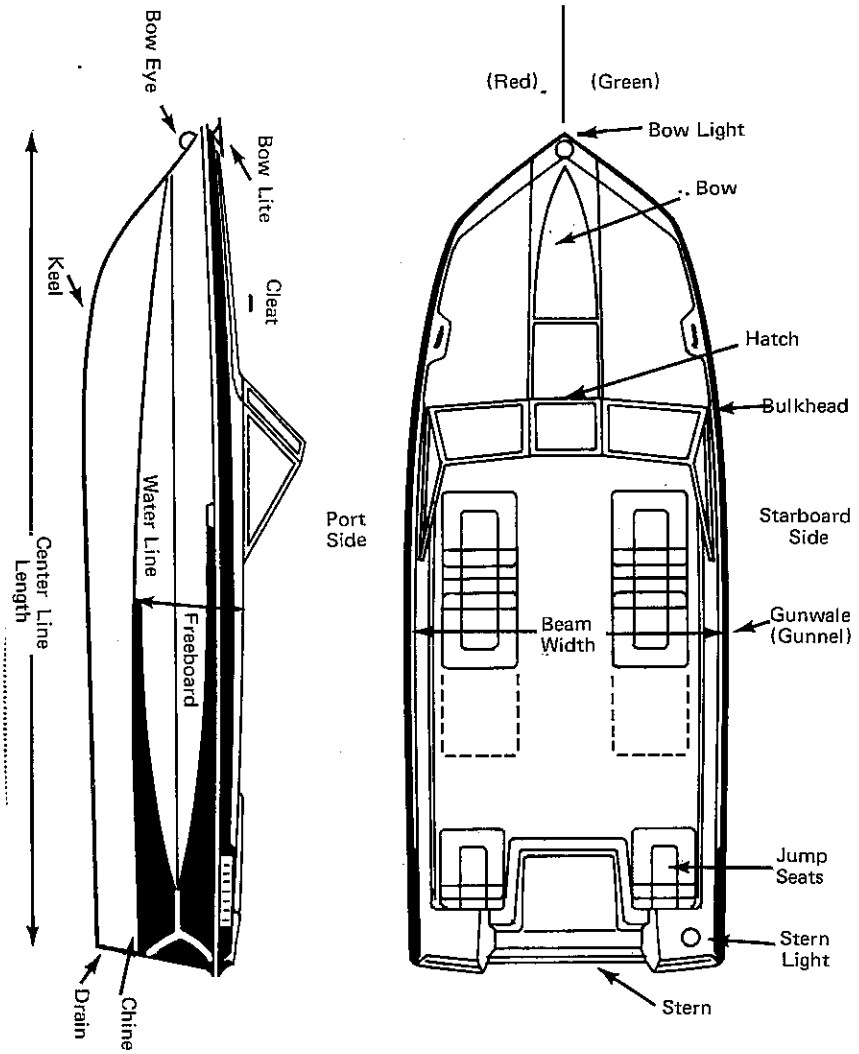
# CONTENTS



## SAFETY

The purpose of the warning and caution notices is to attract the operator's attention to possible dangers. Each deserves the operator's careful attention and understanding. Safety warnings do not by themselves eliminate any danger and the warnings they give are not substitutes for proper accident prevention measures.

# NAUTICAL TERMS
## OUTBOARD



# Section I: Operation

## CAPACITY PLATE:

Glastron and Glastron/Carlson does not release any model until the boat has met the most stringent of engineering tests and passed Boating Industry Association (B.I.A.) certification program requirements. Each boat has been certified by B.I.A. to comply with safety specifications for boat capacity compartment ventilation, navigation lights, flotation, steering and fuel systems, as applicable.

**NOTICE:** Each plate carries the maximum horsepower and weight/capacity ratings. **For safety, do not exceed these ratings.**

**WARNING: Exceeding the horsepower rating as designated for your boat will void the warranty and may lead to unsafe speeds and/or unstable handling characteristics.**

**DEFINITION:** Class A Boats – Under 16' Length (Centerline)
Class I Boats – 16' - 26' Length (Centerline)

**BEFORE LAUNCH:**

1. **CAUTION: Make sure drain plug is properly installed before you place your boat in the water.**
2. Inspect the hull for cleanliness or damage. A dirty hull lessens performance, increases drag and fuel consumption. There is a possibility that the gelcoat finish can "blister" and peel if boats are kept in the water continuously. (See "Care and Maintenance", Section III).
3. Secure all accessories and loose equipment.
4. Check that boat is properly equipped with U.S. Coast Guard required and approved safety equipment.
   You must have a U.S.C.G. approved personal flotation device for each person on board and for each person skiing. Small children and non-swimmers should be required to wear a life vest at all times. Check the condition of the flotation devices.
5. Have an approved fire extinguisher aboard.
6. If your boat is Class I, you must have aboard a hand, mouth or power operated horn or whistle. You should have one for a Class A boat as well.
7. **CAUTION: Check to assure an adequate fuel supply. Take every precaution. Fill portable tanks outside your boat. A half pint of gasoline is said to have the destructive power of five sticks of dynamite under certain conditions. You are dealing with several gallons of gasoline when refueling. See page 16 for additional safety cautions when refueling.**
8. Lighting: Check for proper operation.
9. Propeller and Lower Unit: Check for nicks or cracks in the propeller and the general condition of your lower unit.
10. Check that engine is securely fastened to the transom.

**LAUNCHING:** See TRAILERING, Pages 29 - 31.

**BEFORE START:**

1. The fuel compartments must be properly ventilated and free from evidence of fuel leaks.
2. Check battery to make sure it is not standing in water, that battery cables are properly connected and that water in battery is at a safe level. By turning the key to "on" position the voltmeter, if installed, will indicate the condition of your battery.
3. Check steering cable and fittings for secure operation and proper lubrication.
4. Check that the bilge is clean, dry and free of oil, water and loose objects.
5. Secure boat to ramp or dock before starting.
6. Make sure drive unit and propeller are free and have adequate clearance from any underwater objects and that the stern area of the boat is clear before starting.

**STARTING:** (See your Engine Operating Manual)

1. Place control lever in neutral position. (Refer to engine manual for cold starting.)
2. Turn key to Start.
3. Check voltmeter/ammeter for proper charging if applicable.
4. Allow the motor to warm up before operation.

**OPERATION – UNDERWAY:** (See Development of Boating Skills, Page 9)

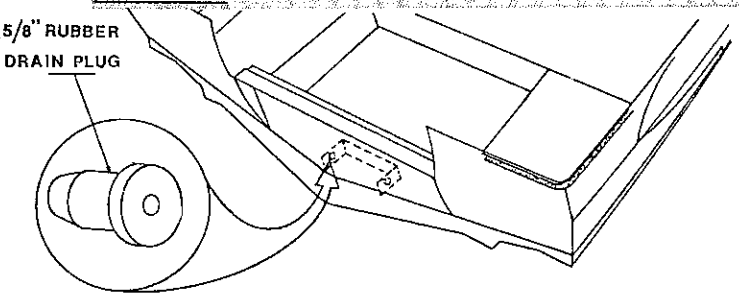
1. Test steering for proper operation as you move slowly away from dock.
2. Keep speed under control at all times. Respect the rights of others. Be courteous.
3. Trim boat by weight distribution. For best rpm configuration see your Engine Owner's Manual.
4. Drive "defensively" as you should your car.
5. Remember—the privilege to use public water carries with it an obligation to helm your boat in a safe and courteous manner.
6. Operate boat underway only with operator sitting securely in driver's seat.

**DOCKING:** (See Basic Fundamentals of Operation, Page 7)

1. Approach the dock or beaching area with adequate speed to control boat with steering but slow enough to immediately stop the boat with reverse throttle if necessary.
2. Turn off ignition after docking and tilt motor if applicable.
3. Remove and secure ignition key.
4. Secure boat equipment.
5. Remove drain plug (if boat is removed from water for storage).
6. Check your hull for possible damage and cleanliness.
7. For temporary or winter storage, see your Engine Operator's Manual for procedures to protect the engine.

**CAUTION:** **The double bottom of most Glastron Outboard boats is sealed to prevent accumulation of water. It is possible for water to get into this area through condensation or seepage. This accumulation could adversely affect the boat's handling characteristics.**

**One or more drain plugs or rubber stoppers, located at the rear of the boat in the sump area, should be removed periodically to allow excess water to drain into the sump. RE-PLACE STOPPERS AND/OR PLUGS WHEN WATER HAS DRAINED.**




## BASIC FUNDAMENTALS OF OPERATION

### STOPPING:

Your Glastron or Glastron/Carlson is no more difficult to operate than your automobile, but it is different.

Your boat will slow down when the throttle is retarded to idle in a varying length of time depending on forward or reverse speed, boat load and the effects of wind, waves, tide and current.

It will slow more quickly when headed directly into the wind, waves or current than when it is running with these forces on the stern. For maximum braking action, shifting to reverse and advancing throttle will provide maximum deceleration. (Normally used for docking at slow speeds.)

The judgment of distance and momentum on the water may be a new experience for you and often is deceptive to an inexperienced boat operator.

The ability to estimate distance on the water, to judge the stopping distance of your boat at varying speeds in different water conditions can only be learned with experience.

**CAUTION: Make sure each person who operates your boat is trained in all facets of boating and boat handling.**

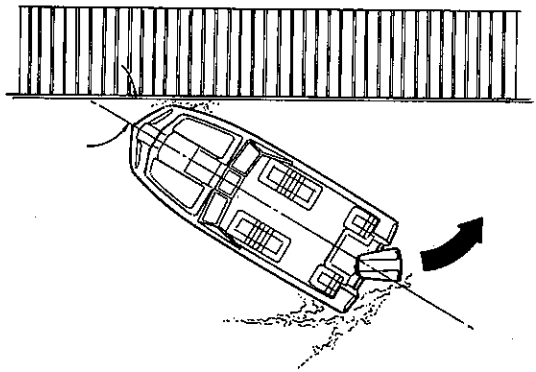
### STEERING:

Steering response of an automobile and a boat are markedly different. The front wheels of an automobile turn in the direction that the steering wheel is turned and the rear wheels follow in the track of the front wheels.

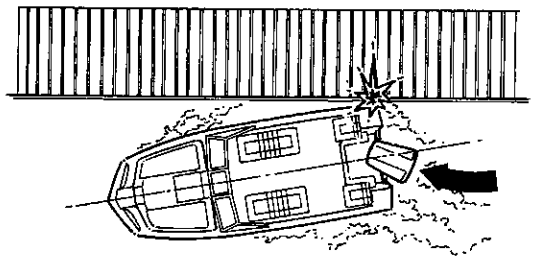
Not so with your boat! When you turn the steering wheel of a boat, the stern, rather than the bow, reacts first. Turn the wheel to the right, the stern swings to the left. Turn the wheel to the left and the stern will swing to the right.

The thrust of the propeller from the stern plus the resistance of the water built up on the outside of the turn will cause the bow to deflect in the direction of the turn.

In a turn away from an object your boat's stern is directed toward the object. If you remember this, you will have mastered the most important single principal of boat helmsmanship.



**Proper handling.**



**Improper handling.**

## BOAT HANDLING AT THE DOCK

Make use of the natural directional characteristics of your boat. A handling trick that will prove invaluable in docking a boat is to proceed at a slow speed to the docking location. Make your approach at a $30^{o}$ to $45^{o}$ angle, either starboard or port side. Just before the bow touches the dock, shift to neutral, turn the steering wheel over toward the dock, then shift into reverse. A short quick move of the throttle will then permit the motor to draw the stern of the boat to the dock.

## DEVELOPMENT OF BOATING SKILLS

Development of boating skill will depend on practice, study and observation. The skillful boat operator will learn to sense when in the interest of safety a change of speed or course is necessary. He will gradually qain an instinctive touch in protecting his boat from strain, stress and avoid possible hazardous situations.

### Weather Forecasts

Until you are capable of knowledgeable weather forecasting, get in the habit of checking your local newspaper, radio and T.V. broadcasts, consulting operators of local marinas or placing a call to the nearest Coast Guard Station or airfield to get up-to-date information on marine weather forecasts.

### Small Craft Warnings

If small craft warnings are broadcast for the boating area, or if storm warning signals are displayed, don't go boating just because the sky seems clear. Learn to respect the weather and its consequences.

### Water Surfaces Give Clues To Depth

Make it a practice to study the water ahead. Deeper water is usually darker in color and shallow water is lighter.

Ripples will build up more easily in a light breeze on water flowing over shallows than it will in deep water. Usually, disturbed water marks the location of underwater obstacles.

In navigable rivers, deeper water will be found on the outside of bends. At curved sections, mud and sand bars are more likely to build up on the inside curves.

### Charts

When the boatman leaves areas marked with buoys and cruises into unfamiliar areas, a chart is a necessity. A chart is a mariner's road map. It can help you reach a destination without jeopardizing your boat and passengers.

### Night Operation

At night, you must forego certain pleasure boating activities that are commonplace by day—waterskiing and skin diving in particular—in the interest of safety.

If your passengers decide to swim, take a personal inventory from time to time. Use the "buddy system" with passengers paired off, each responsible for the other. Don't let swimmers stray too far.

**CAUTION! Swim only in known waters, when the engine is shut off and the boat is securely anchored. Keep one person, who understands the operation of the boat, on board at all times.**

It is good practice to tell some responsible persons where you are going and when you expect to return (both night and day).

## BASIC RULES

Knowing the "Rules of the Road" is a legal requirement of all boatmen (see back cover). "Rules" are a combination of common sense principles blended with courtesy. Courtesy involves a recognition of the other fellow's rights, comfort and safety.

Speed limit signs are usually found at or near boat anchorage or swimming areas.

You are expected to keep clear of boatmen engaged in fishing or swimming. Avoiding persons engaged in water skiing or scuba diving is of prime importance.

The privilege to use public waters carries with it an obligation to operate your boat in a safe and courteous manner.

Here are some basic rules to remember in the proper operation of a boat:

1. Keep your speed under control. Don't show off. Respect the rights of others afloat and on shore. Slow down when it's a matter of courtesy.
2. Always cross a large wave at a right angle.
3. Slow down immediately when caught in a squall or heavy waves. Maintain enough power to head the boat into or at a slight angle to the wind and waves.
4. Consult your Glastron dealer and talk with other experienced boatmen on special problems in handling your boat.
5. A cardinal principle of boating requires that you be ready at all times to render assistance to other craft in need of aid.

**CAUTION: Every boat operator is responsible for his wake and any damage it might cause.**

**CAUTION: You wouldn't drive your automobile at excessive speeds perpendicular to ruts in a corn field. Neither should you drive your boat at excessive speeds over rough water. To do so is considered abuse of the product and can cause premature structural failure. Speeds that permit personal comfort for you and your passengers are generally safe cruising speeds.**

It is recommended that you take advantage of materials and publications available as follows:

U.S. Power Squadron free boating classes.

U.S. Coast Guard publications.

### UNITED STATES POWER SQUADRON (U.S.P.S.)

All boatmen are invited to take advantage of the free boating classes conducted by the U.S.P.S. Individuals who have successfully completed the boating course are invited to membership in a local squadron and may take further courses in Seamanship, Advanced Piloting, Junior Navigation, Marine Electronics, Engine Maintenance, Sail and Weather. Courses are taught by volunteer instructors in formal classroom sessions. Call 800-243-6000 Toll Free, for information on the nearest U.S. Power Squadron. (800-882-6500 in Connecticut).

## U.S. COAST GUARD PUBLICATIONS

You are invited to write to the U.S. Coast Guard for information relative to boating safety. It is suggested that you indicate your particular interest in:

- Taking a safe boating/seamanship course
- Applying for home study "Skipper's Course"
- Information on Federal equipment requirements
- General safe boating literature
- Learning more about the Coast Guard Auxiliary.

Address your inquiry to the Coast Guard Office nearest you.

## FOR FURTHER INFORMATION:

Director of Auxiliary
1st Coast Guard District
J.F.Kennedy Federal Bldg.
Government Center
Boston, Mass. 02203

Director of Auxiliary
2d Coast Guard District
Federal Building
1520 Market Street
St. Louis, Missouri 63103

Director of Auxiliary
2d Coast Guard District (SR)
1600 Hayes Street
Nashville, Tennessee 37203

Director of Auxiliary
2d Coast Guard District (ER)
8413 Federal Office Building
550 Main Street
Cincinnati, Ohio 45202

Director of Auxiliary
2d Coast Guard District (NR)
301 Post Office & Courthouse Bldg.
Dubuque, Iowa 52001

Director of Auxiliary
3d Coast Guard District (NA)
Governors Island
New York, N.Y. 10004

Director of Auxiliary
3d Coast Guard District (SA)
Coast Guard Base Gloucester
King and Cumberland Streets
Gloucester, New Jersey 08030

Director of Auxiliary
5th Coast Guard District
431 Crawford Street
Portsmouth, Virginia 23705

Director of Auxiliary
7th Coast Guard District
51 S.W. First Avenue
Miami, Florida 33130

Director of Auxiliary
8th Coast Guard District
Custom House
New Orleans, Louisiana 70130

Director of Auxiliary
9th Coast Guard District
New Federal Building
1240 E. 9th Street, Rm. 2021
Cleveland, Ohio 44114

Director of Auxiliary
11th Coast Guard District
19 Pine Avenue
Long Beach, Calif. 90802

Director of Auxiliary
12th Coast Guard District
630 Sansoma Street
San Francisco, Calif. 94126

Director of Auxiliary
13th Coast Guard District
613 2d Avenue
Seattle, Washington 98104

Director of Auxiliary
14th Coast Guard District
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Director of Auxiliary
17th Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 90801

## ACCESSORY EQUIPMENT REQUIRED

No boat should be operated without a complete complement of accessory equipment. The U.S. Coast Guard requires that each boat, depending upon size, carry certain approved safety accessories. Other law enforcement agencies—state, county or municipal—impose similar equipment requirements that do not fall under Coast Guard jurisdiction.

Your boat is rated Class A if under 16' in length and as Class I if between 16' and 26' in length.

### FIRE EXTINGUISHERS

Class A and Class I boats including all outboards must carry at least one portable fire extinguisher. This can be either:

a. Two pound dry chemical extinguisher
b. Four pound carbon dioxide extinguisher
c. 1¼ gallon foam extinguisher

**WARNING: Vaporizing liquid extinguishers such as carbon tetrachlorides are not permitted because of the danger of toxic fumes.**

### PERSONAL FLOTATION DEVICE

All boats must be equipped with a U.S.C.G. approved personal flotation device for each person on board and for each person skiing. Buoyant vests are most highly recommended.

**CAUTION: Small children and non-swimmers should be required to wear them at all times. All persons aboard should have a flotation device readily available when there is a threat of a storm or when navigating on dangerously rough water.**

**NOTE:** All personal flotation devices must be tagged or marked with a U.S. Coast Guard approval number.

### SOUND SIGNALING DEVICE

All Class I boats must carry on board a hand, mouth or power operated horn or whistle. These are recommended for Class A boats also.

Signal devices should be used only when changing course in confined areas, to promote safe passing, to warn other craft of your proximity in fog or as a signal to operators of docks or drawbridges.

### LIGHTS

Depending upon the model, Glastron and Glastron/Carlson boats that come equipped with navigation lights conform to either international or inland lighting rules as required by the Coast Guard.

Under inland rules a boat is required to show a combination red and green light forward when underway from sunset to sunrise. This combination light must be visible from a distance of one mile. A white light visible 360° for two miles must be displayed aft. This white light must be displayed when anchored or while rowing at night.

**NOTE:** The above regulations are duplicated by many state boating laws specifying required equipment for state and local waters not under federal jurisdiction.

**Some local laws require additional equipment. It is important that you obtain a copy of local laws.**

## RECOMMENDED ADDITIONAL GEAR

Important both to safety and convenience are the following items:

**Basic Gear**

Suitable anchor and anchor line
Tow line
2 lightweight fenders
2 mooring lines
Flashlight
Spare fuses
First aid kit
Sunburn lotion
Portable searchlight
Flares
Bilge pump and bailer
Extra drain plug
Oar or paddle
Boat hook

**Navigation Gear**

Compass
Parallel rulers
Dividers
Charts of the area

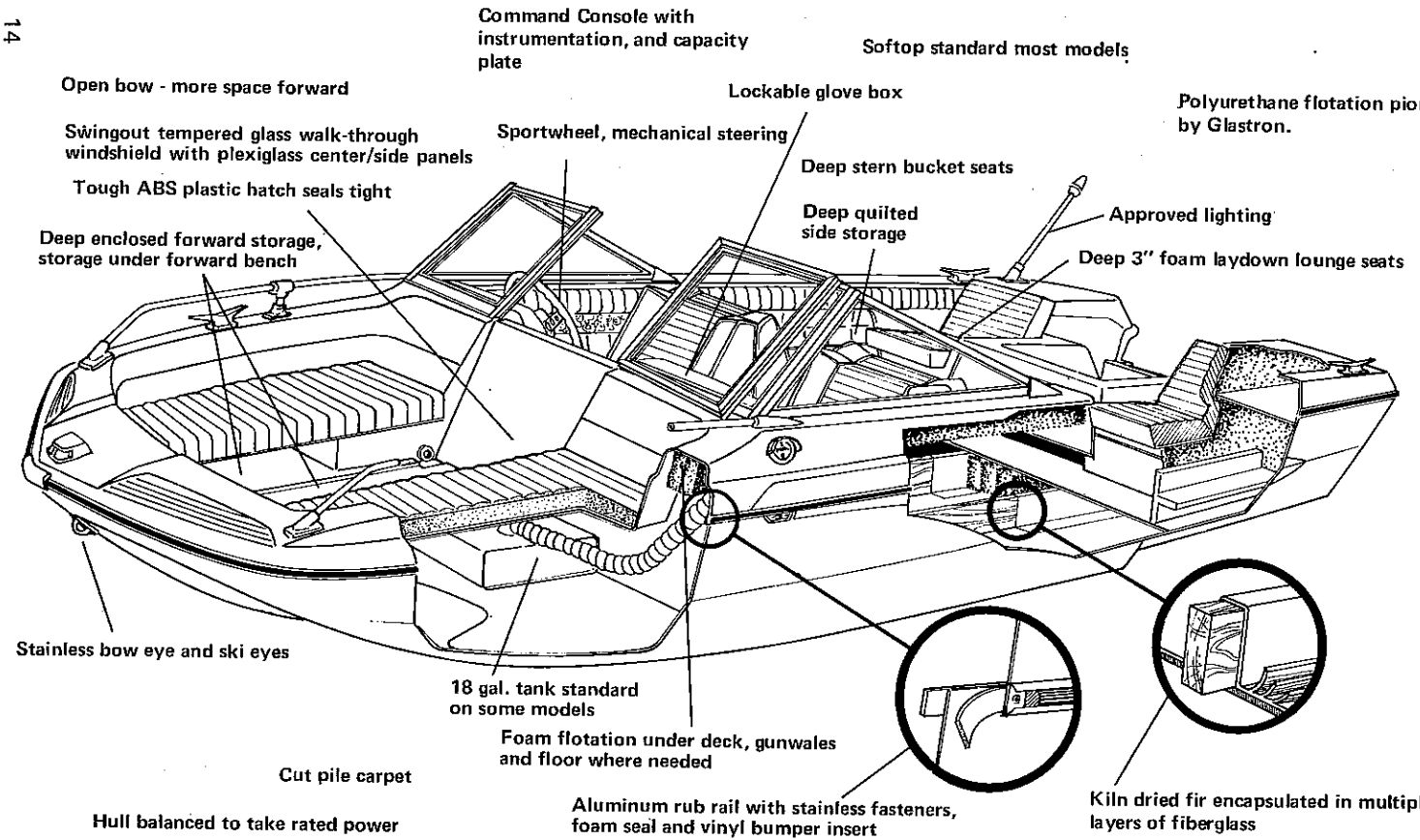
**Basic Tools**

Spark plug wrench
Screw driver
Pliers
Adjustable wrench
Knife
Hammer
Roll of soft wire
Electrician's tape

**Extended Cruising**

Fuses, coil, spare battery
Spare propeller
Propeller nut
Lock washer
Shear pins (if applicable)
Spare light bulbs
Spark plugs
Check with your dealer and other boatmen for advice on additional equipment

**NOTE:** For additional information relative to safe operation, see Section II: "Systems."




CUT-AWAY OF A TYPICAL OUTBOARD

# Section II: Systems

## FUEL SYSTEM

Depending on the Glastron or Glastron/Carlson outboard model you own, your fuel will be provided from either portable auxiliary tanks that come with your outboard motor or from built-in permanently installed tanks located in the bow or under the splashwell of the boat.

All factory installed fuel systems in these boats are in compliance with B.I.A. certification program requirements. These standards cover parts and equipment used and the correct procedures for installation.

**CAUTION: If fuel tanks are permanently installed in your boat after it leaves the factory, you should ascertain that the installation adheres to approved standards and requirements. The installation should be made only by a qualified marine dealer or service center. Listed below are items which should be considered.**

1. Any permanently installed fuel system should provide maximum protection from leakage caused by shock or vibration. Components should be accessible for periodic inspection.
2. Remote fill plates must be located as remotely as practicable from ventilators, at least 15 inches horizontally, and where fuel spillage will flow overboard. The fill pipe installation must be self-draining.
3. Overboard fuel tank vents to permit the discharge of gasoline fumes must be installed where these vapors will flow overboard.
4. Where rigid fuel lines terminate at an engine connection, a section of flexible line must be provided with sufficient slack to absorb engine vibration.
5. Deck fill plates must be grounded through the fuel tank to the boat's bonded conductor or common ground point. If static conductive neoprene tubing is used in lieu of metallic conductors, it must be installed in direct contact with non-painted attachment surfaces. Static conductive tubing will conduct static electric charges, but does not offer protection from stray current corrosion. Therefore, when electric fuel gauges are installed fuel tanks must be electrically bonded to the engine or boat bonding system with metallic conductors.
6. The system should be pressure checked to at least 4 p.s.i. prior to use.
7. It is recommended you obtain installation, care and maintenance instructions for any fuel system which may be installed in your boat **after** it leaves the factory.

## FUEL TANKS

Special care and treatment of the fuel tanks on your boat is a must. Fuel tanks are coated on the interior with a corrosion resistant material and on the outside with a protective coat of paint.

It is important to keep the tanks full when stored to prevent condensation which can cause corrosion in the tank. Condensation will also preclude proper engine operation.

The outside protective paint is designed to resist rust and deterioration of the tank. Your dealer has spray paint available for use in touch-up or repair to any unpainted area on your fuel tank and can offer assistance with any corrosion problems that may exist.

**NOTE: It is advisable to have your dealer check all fuel connections, fittings, resilience of neoprene hoses and fuel tanks for corrosion, leaks and tightness at least once each year.**

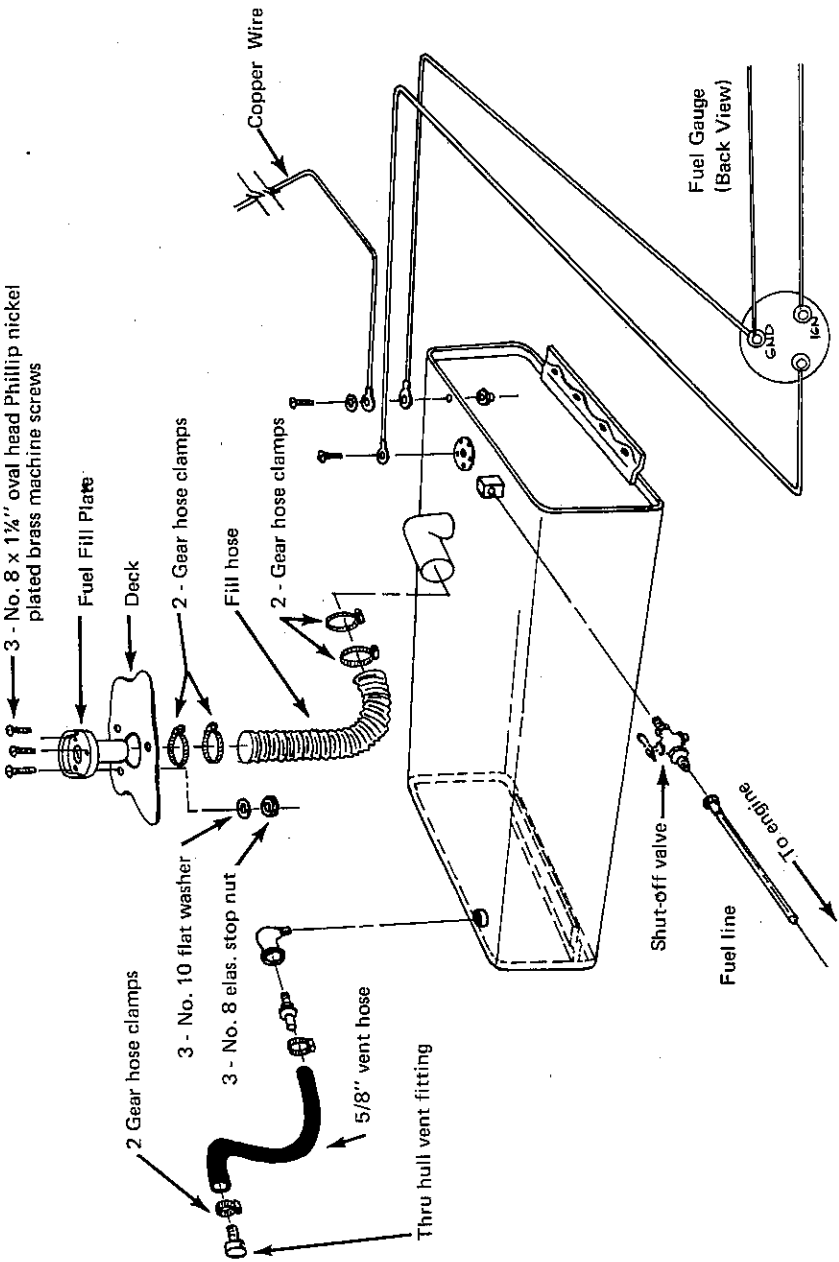
## REFUELING

1. Exercise care in refueling your boat. Make sure the gas pump hose nozzle is in contact with the rim of the fill tank opening while refueling to prevent generating a spark of static electricity.
2. Close all hatches, windows and doors before refueling and allow no smoking.
3. After refueling make sure before starting that fuel has not overflowed into the bilge or engine compartment.
4. Any portable tanks should be removed from the boat for refueling.

**WARNING: Before starting the engine check for leaking fuel or excessive fuel vapors (this is particularly important after refueling or if the boat has been sitting idle for any period of time). If a fuel leak is discovered, immediate measures should be taken to correct the source. However, do not attempt to repair a leaking fuel tank; have it replaced with a new one.**

**WARNING: If your boat has a top installed you are warned NOT to operate your boat with the optional rear soft-top curtain closed. The cockpit MUST be open for legal engine and fuel compartment ventilation. You can be cited for a violation of boating safety laws if your boat is operated with this curtain closed.**

# TYPICAL OUTBOARD FUEL SYSTEM
## (BUILT-IN)



## MECHANICAL STEERING SYSTEMS

**CAUTION: Mechanical steering systems require service to be safe and relatively trouble free. It is essential to periodically inspect the complete steering system.**

The engine attachment and anchor point at the aft end of the cable must be checked for wear and to be sure all fittings are secure. And parts are free from rust and corrosion.

**IMPORTANT: Cables must be tight and properly aligned. Check for corrosion, binding, looseness and/or interference in the system. Proper lubrication of all working parts is essential.**

NOTE: You should have your dealer inspect your steering system every year, and to personally check your steering before each use of the boat.

NOTE: For Morse and Teleflex steering cables a small quantity of good quality grease applied occasionally to the cable terminal assembly and the moving parts of the transom connection kit, will assure free movement.

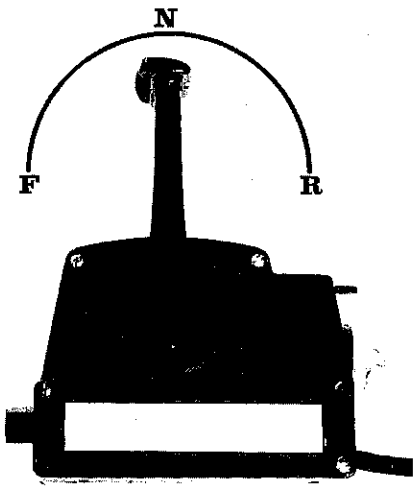
Mercury suggests that if future lubrications of the Ride-Guide cable engine end be required, lubricants (multi-purpose Quicksilver preferred) should be inserted through the grease fitting located at the engine end of the flexible cable. A Quicksilver lubricant gun (C-91-30500) can be used effectively. Turn the steering wheel so that the cable is at its maximum outward travel to prevent over-lubrication of the Ride-Guide engine connection point.

**WARNING: When replacing any bolt, screw or other fastner, use only genuine Glastron parts, parts recommended by the accessory or engine manufacturing or parts of equivalent strength and material.**

### THROTTLE & GEARSHIFT CONTROL LEVER

**Single Engine Mounting Installation**

N = Neutral position
F = Forward position
R = Reverse position
T = Throttle



See your Outboard Motor Owner's Manual for proper use of the throttle and gearshift controls.

NOTE: An Emergency Ignition Cut-off Switch is available as an outboard motor accessory. One end of the cord is snap fastened to operator, the other end to cut off device. When cord is pulled, it mechanically turns ignition key switch to "Off" position. See your outboard motor dealer.

## ELECTRICAL

Glastron and Glastron/Carlson outboards are wired for 12 volts direct current, and all wiring is color-coded as indicated on following page. A typical outboard wiring schematic is shown on page 21 with descriptions of the functions performed.

Note that your boat's standard harness is protected by a master fuse in aft of passenger compartment. This is a 10 or 15 amp fuse and replacement should be made only with a fuse of the same rating. If accessory electrical equipment is installed, each item should be separately fused with proper size fuse and not more than 5 amps of combined electrical load should be attached to boat's installed wiring harness. If additional current capacity is required, a separate fused circuit of proper sized wire should be added from battery to device. The 202 and 208 require 30 amp fuses.

### INSTRUMENT PANEL

The equipment on instrument panels on your outboard may vary from only a switch plate to a speedometer and fuel gauge depending upon model.

#### Switch Panel

Switches are provided on some models for such equipment as lights, horn, bilge pump, and other accessories if installed.

#### Speedometer

The speedometer operates by water pressure obtained through a pitot pick-up mounted on the transom.

#### Electric Fuel Gauge

Fuel gauges will be found in boats with built-in fuel tanks. The gauge is electrically operated by a sender unit which is in the tank itself. Note that your fuel system is grounded for safety.

## WIRING COLOR CODE IN GLASTRON OUTBOARDS

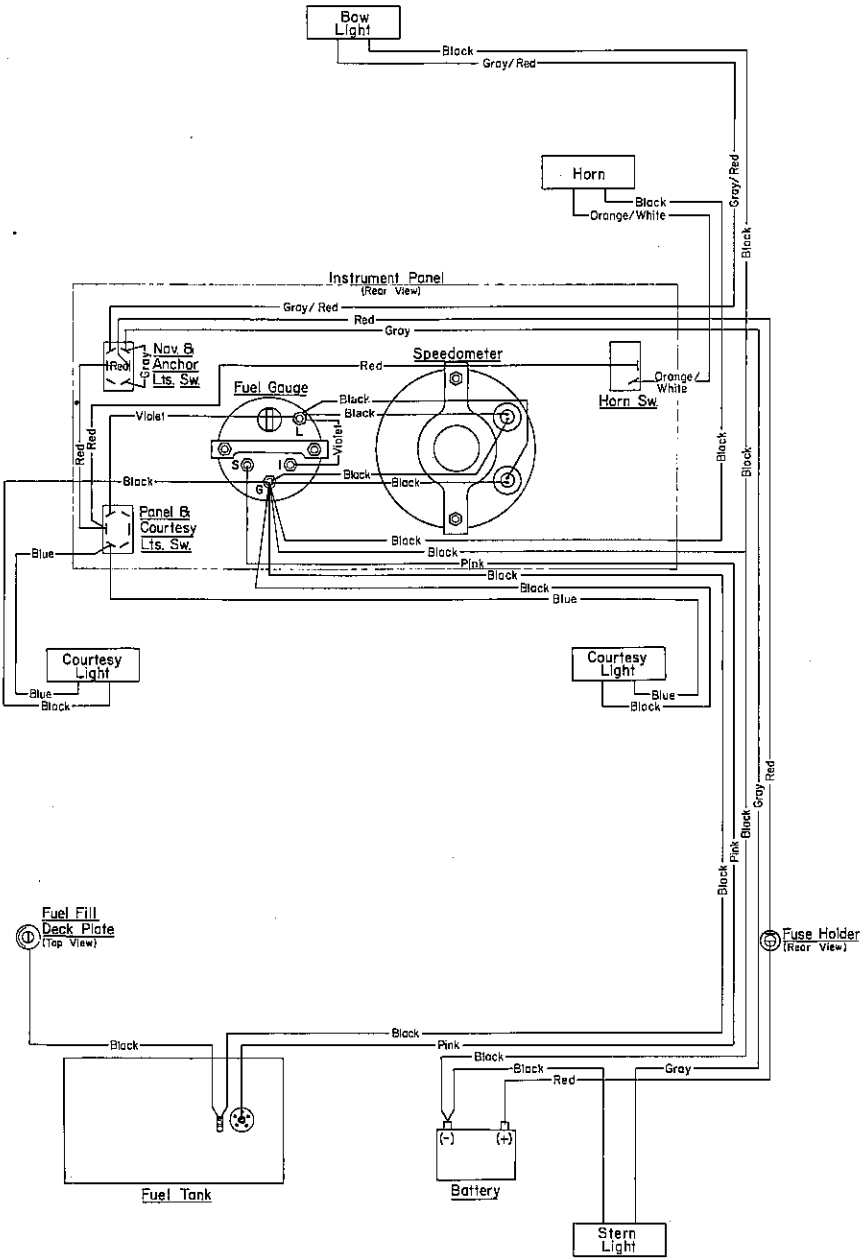
| EQUIPMENT | WIRE COLOR | 150 | 152 | 160 | 162 | 166 | 176 | 188 | 192 | 202 | 208 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BATTERY POSITIVE | Red | X | X | X | X | X | X | X | X | X | X |
| ALL NEGATIVE | Black | X | X | X | X | X | X | X | X | X | X |
| BOW LIGHT POSITIVE | Gray/Red | X | X | X | X | X | X | X | X | X | X |
| STERN LIGHT POSITIVE | Gray | X | X | X | X | X | X | X | X | X | X |
| HORN POSITIVE | Orange/White | | | | | X | X | X | X | X | X |
| DASH POSITIVE | Violet | | | | | X | X | X | X | X | X |
| ACCESSORY LIGHT POSITIVE | Blue | | | X | X | X | X | X | X | X | X |
| FUEL TANK SENDER | Pink | | | | | X | X | X | X | X | X |

**Engine Operation**

(Refer to your Engine Operator's Manual)

**WARNING: Installation of an engine with horsepower in excess of the maximum horsepower reflected on Glastron and Glastron/Carlson specification sheets for each model will void the warranty on your boat and may lead to unsafe speeds and/or unstable handling characteristics.**

# TYPICAL OUTBOARD ELECTRICAL SYSTEM



# Section III: Maintenance and Service

## CARE AND MAINTENANCE

### FIBERGLASS CONSTRUCTION

Glastron and Glastron/Carlson hulls are constructed of handworked laminates of fiberglass reinforced polyester. While hand laminating is the most expensive type of fiberglass construction, we feel that it is essential to guarantee uniform construction and the best possible strength to weight ratio for your boat hull.

Glass fibers reinforce polyester resin much like steel reinforcing rods in concrete. These fibers are manufactured in three basic forms. Fiberglass cloth is much like the material in a shirt, enlarged several times. Fiberglass mat is made of short fibers pressed together into a thick sheet. Fiberglass roving is similar to fiberglass cloth, but woven with much heavier "threads."

Your boat is manufactured using a combination of these three reinforcement materials. The exterior finish of your boat is gelcoat. Even though gelcoat is the finish on the outside of the boat, it is the first material applied to the mold in the manufacturing process.

Boats that are stored in the water are subject to a phenomenon called water blistering. We have found this to be an industry wide problem, and have noticed it on all brands of fiberglass boats. Our chemists are constantly researching the problem, and are currently using gelcoat and production techniques that afford the greatest resistance to water blistering. However, until we develop a method of manufacture that can completely prevent this problem, there is a possiblilty that water blistering can occur on a boat that is stored in the water. We feel that this is a cosmetic problem, and it is not covered under our warranty policy. This problem, along with other boat maintenance can be reduced by storing your boat out of the water.

Small hair line cracks, called gelcoat crazing, may occur occasionally in the gelcoat surface at points of impact or points of high stress. Since the gelcoat is not a structural part of your boat this will in no way affect the performance, strength or quality.

#### Repair

Fiberglass, as tough as it is, can be scratched, scarred or even penetrated by hard contact with sharp objects such as spikes or jagged rocks.

Touching up scratches or blemishes is easy to do. Your dealer carries a gelcoat patching material, color matched to your boat. Full instructions are included with each kit. If your dealer is temporarily out of the kits, he can get one for you through his regional distributor.

## MAINTAINING HULL FINISH

We recommend that you give your boat a coat of wax and keep the hull clean at all times. A waxed boat is easier to clean and the wax serves as a protective coating to your hardware and gelcoat finishes.

Wash your boat regularly with fresh water after use in salt water. Salt crystals will not damage your gelcoat finish but can dull the appearance. Should dirt or salt built up in the grooves or molded-in-non-skid surfaces, they can be removed with soap, water and a good brush.

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Your owner's packet has an information card recommending a Carnauba boat wax. Carnauba boat wax is a durable wax especially designed for fiberglass boats. It contains cleaners to polish gelcoat which may have become dull in appearance. We also recommend the use of Carnauba wax on your hardware.

### Keep Planing Surface Clean

If left in the water continually, (particularly in salt water) hulls are subject to many types of marine growth. These growths add weight, reduce maximum speed, increase fuel consumption and in general limit the operating efficiency of your hull.

Ask your dealer to recommend an antifouling paint which is best for your area.

A good wax coating on a hull that does not have antifouling paint can make cleaning a much easier task.

We recommend that you coat your vinyl upholstery with a good grade upholstery wax. These waxes will also serve as a cleaner for soiled areas on your vinyl. The use of harsh detergents can eventually damage the threads on your vinyl upholstery parts.

The information relative to boat wax in your owner's packet also recommends a good vinyl and leather protective wax.

Remember, when a prospective buyer looks at a used boat, he always notes the condition of the seats, vinyl and hardware as well as the finish of the hull. Keeping your boat in good condition will keep the value at its peak.

## CANVAS MAINTENANCE

Keeping your top clean, dry and properly stored will greatly extend the life of your boat's canvas. The proper care and maintenance procedures are listed below:

1. **Moisture**—Moisture will cause some shrinkage during the first few months of use, which is normal. Always allow your top to dry while installed on your boat. Storing it wet will cause your top to mold and mildew.
2. **Keep Canvas Clean**—Dirt and industrial fallout can initiate deterioration of your top especially if moisture is present. Clean your canvas periodically with a mild detergent and water. Harsh chemicals will remove your top's protective coating.
3. **Store Canvas Top and Accessory Curtains in a Dry Area**—Using your canvas as a boat cover will shorten its life. Your soft top may be stored inside the protective boot; however, both should be dry before enclosing the top in the boot. Never store your top or rear curtain (accessory) in a visqueen bag such as the shipping wrapper. The plastic visqueen can under certain conditions cause plasticizer migration, causing the top to become stiffer and develop cracks.

## CHECK POINTS FOR PEAK PERFORMANCE

Your Glastron or Glastron/Carlson Hull design was carefully tested to assure that it would perform properly with recommended power. It will, but only with some help from you.

### Angle Of Motor Adjustment Important

Outboard drive units are equipped with a means to alter the angle of drive unit. The same boat under different load conditions may call for a varied drive angle; that is, the relation of propeller thrust to the planing surface of the hull's bottom.

As the drive unit is gradually shifted from its innermost adjustment (when the gear box and propeller are closest to the bottom of the boat) the propeller thrust gradually alters and prop thrust pushes more and more downward. This tends to lift the bow.

With the drive unit angle cocked fully under and the propeller brought in as closely as possible to the transom, the angle of the propeller is such that an upward thrust is exerted, which tends to push the boat's bow downward.

Under certain load conditions after reaching plane, your boat may show a tendency to bury its forward V section. This will cause the boat to plow and to slow down because of increased water drag. It may also cause the boat to yaw when moving into choppy water.

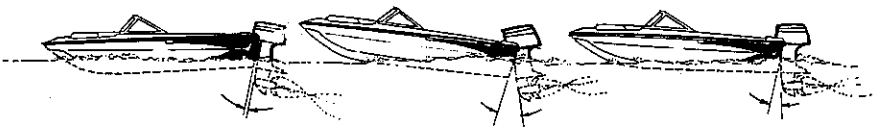
If the bow is buried excessively you may even create a tendency for the boat to spin out; that is to tend to swap ends in a sharp high speed turn.

To correct this, increase the angle and swing the drive unit outward one or more adjustment pinholes.

If the drive unit is angled out excessively, your boat under load may come onto plane sluggishly and once on plane may have a tendency to porpoise. The correction for this type motion is to move the propeller inward; that is, to decrease the angle between the drive shaft housing and the boat's transom.

Often the drive unit angle setting that will offer the highest speed under light load conditions will be that setting just short of the porpoising point. This setting, however, may be unsuitable to heavy load conditions or when pulling water skiers. The latter situation may call for a reduced angle.

Boat operators who find difficulty in pulling one skier onto the surface will find that with the drive unit angled inward they can usually pull two skiers onto the surface.



**INCORRECT**
Causes boat to "plow"

**INCORRECT**
Causes boat to "squat" or porpoise

**CORRECT**
Gives maximum performance

### Shift Passenger and Gear Load

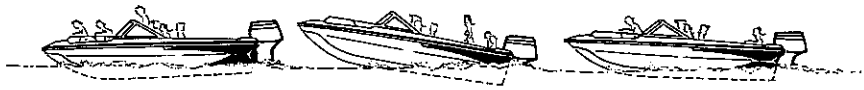
By consulting a water speedometer, you will note that when under way the boat's speed will shift as a passenger moves from a front seat to the rear of the cockpit. In effect, this shift in passenger weight alters the planing angle of the hull or thrust of the propeller in much the same manner as though the drive unit angle were changed.

A shift of passenger or gear load forward or aft will often correct minor boat riding deficiencies. The experienced boat operator will know what drive unit angle setting to use for varying water and load conditions and for the different purposes to which he puts his boat.

The trademark of the skilled skipper is a boat trimmed to best advantage for existing water conditions. Few persons operate boats without some accessory gear load aboard. A little care in placing items such as cooler box, water jugs, tackle box, anchor, tools and spares, or the location of added customized small gear storage compartments, will help create more desirable trim.

Performance characteristics can be affected when loading your boat with gear. Distribute the load evenly and allow your boat its best performance.

**For best boat and motor performance, the boat should be driven as nearly parallel to the water as possible. On planing type boats, favor stern loading to raise the bow slightly. Passengers and equipment should be so distributed in the boat that it is evenly balanced both front to rear and side to side.**



**INCORRECT**
Overload forward
Causes boat to "plow"

**INCORRECT**
Overload aft
Causes boat to "squat"

**CORRECT**
Gives maximum performance

### Propeller Torque And Its Correction

Some of the more powerful motors create a considerable torque effect; that is, a twisting motion causing the boat to ride with one sheer lower than the other. This twisting reaction is caused by the direction of propeller rotation lifting one side of the boat. This causes an uneven drag, so that a boat's bow may tend to fall off in one direction or the other from the intended course given by the wheel.

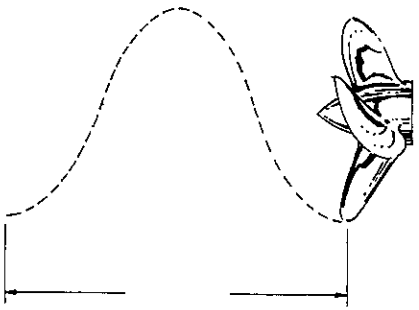
Good hull design offsets this tendency in Glastrons, but some torque action may occur when maximum or close to maximum rated horsepower is applied. Any slight torque may be offset by shifting passenger or gear weight laterally to the high side of the boat.

Don't feel that the need to change fore and aft or lateral trim is an inherent weakness in hull design. It is not. In fact, motor manufacturers incorporated the transom angle adjustment feature because they realized that their power plants would be applied to relatively light-weight boats in which loads might vary considerably from trip to trip. A change in engine thrust angle will cause a change in torque characteristics.

### Basic Propeller Characteristics

Propellers have two basic characteristics: diameter and pitch. Diameter is that distance measured across the propeller hub line from the outer edge of the $360^{\circ}$ arc made by the propeller's blades during a single rotation. Pitch is the angle of the blades from a flat plane, expressed in inches in terms of the propeller's theoretical advance through the water in one complete rotation.

For example, a propeller with a 12 inch pitch, when rotated $360^{\circ}$ would, theoretically, advance 12 inches through the water. Actually, no propeller applied to any boat is 100% efficient. No 12-inch pitch blade will, in a single rotation, advance a boat 12 inches. This variance is referred to as slippage.



Pitch

Diameter

With an accurate tachometer to report the number of revolutions per minute of your boat's power plant at the crankshaft, a knowledge of the gear ratio of your power plant (how many revolutions per minute your propeller rotates for any given number of revolutions per minute of the engine's flywheel), multiplied by the pitch of the propeller—will tell you the distance, in inches, your boat advances in one minute based on 100% propeller efficiency.

Usually, only boat designers and builders, and engine and propeller builders, are interested in exacting figures of this sort. However, you should be vitally interested to gain the greatest possible forward motion from your boat at any throttle setting. To determine this, you must do some testing.

No one propeller is the best propeller for your boat and engine under all conditions of use and load. Boatmen who use their boats alternately for general cruising with light loads or weekend camping with heavy loads will need two or more propellers.

A propeller change is called on to gain best performance for each type of activity. You may feel that propeller changes are a nuisance and decide that one propeller will handle the job. This is your prerogative, but don't be unhappy if the owner of the same model boat and power plant can edge you in top speed by several miles an hour, or his boat seemingly is more efficient in handling heavy loads even though you have better top speed.

You need not become highly technical about your boating, but we do suggest that you get in the habit of consulting the tachometer. A good tachometer is an inexpensive instrument. Without one, you cannot tell whether or not your boat's engine is delivering its full rated horsepower. If your engine is advertised at a certain horsepower range, remember that this horsepower is developed at a certain specified r.p.m. If, because of an improperly adjusted drive unit angle, poor selection of propeller, damaged propeller or a poorly tuned engine, your engine will not rev up to the rated r.p.m. level, you will not be getting the horsepower from your engine that you paid for.

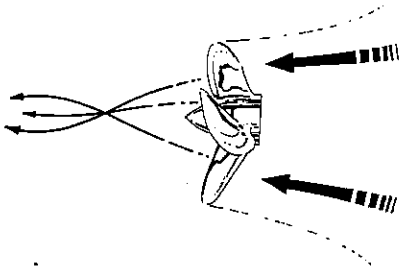
A tachometer also serves as a gauge of your engine's condition. When you note, after a period of service, that your engine has fallen off several hundred r.p.m., check into the cause or consult your dealer.

### Cavitation, Its Causes and Corrections

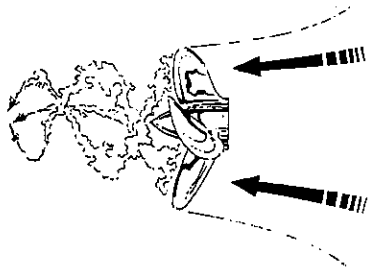
Cavitation is a phenomenon that occurs in all propeller-driven craft under certain conditions.

The surfaces of propeller blades are not perfectly flat, and, as water is drawn through the blades to be discharged aft into the propeller's slip stream, the water flowing over the curved surface of the blade encounters areas of greater and lesser pressure.

In those areas of reduced pressure gas bubbles are formed. When they move out of the low pressure area these bubbles collapse. If they collapse while in contact with an object such as part of the propeller blade or the trim tab, the bubbles create such high localized forces that they erode the surface of the object. In the case of a propeller such damage is sometimes called a "burn". It is usually caused by an irregularity in the propeller's leading edge, and it should be corrected by reconditioning the prop or replacement.



Optimum Performance



Ventilation

### Ventilation, Its Causes and Corrections

While often called cavitation, ventilation is really a different effect. At times when a boat enters or leaves a sharp turn, the propeller seems to slip and lose thrust and the engine may overspeed. This problem is normally caused by air or aerated water entering the propeller (a damaged propeller can also cause ventilation). The correction can usually be accomplished by one or more of the following:

a. Replace the damaged or incorrect propeller with the recommended one.
b. Set the outboard or outdrive at a lesser trim angle (trim the unit inward)
c. Try a cupped propeller.

### Replace Damaged Propellers

Propellers should be free from nicks, excessive pitting, and any distortions that alter the propellers from their original design.

Operating your boat with a damaged propeller will reduce its top speed, may introduce undesirable handling characteristics, and will definitely boost fuel cost.

A damaged propeller may also create unpleasant vibrations leading to an increased sound level. These excessive vibrations will hasten wear to rotating and reciprocating engine components, and may cause costly damage.

**Badly damaged propellers should be replaced. Those that are chipped, bent, or merely knocked out of shape can be reconditioned by your marine dealer. If damaged beyond repair, replace the malfunctioning propeller with a new one.**

**CAUTION: Persons in the water can be seriously injured if struck by a rotating propeller. Operate motor only when operator is seated securely at controls. Turn off motor when swimmers are entering/leaving boat from/to water.**

# Section IV: Trailering

## TRAILERS AND BOAT TRAILING

With a modern easy-to-launch-and-load trailer, you don't need access to private water frontage or an unlimited budget to spend on mooring facilities in order to enjoy sports afloat. You can store your Glastron in your garage or back yard.

### Choose Your Trailer With Care

We strongly recommend that you don't try to shave your boating budget by buying the cheapest trailer available. Trailer builders are constantly improving their products—using better metals, wheels, bearings—and standardizing on many components to relieve spare parts problems. But remember that a breakdown hundreds of miles from home may prove expensive. A trailer that is not properly mated to your boat and motor can cause distortion of damage to the hull that may detract from its performance and prove expensive to correct.

If you expect to use a trailer merely to haul your boat to and from a permanent mooring, a mediocre piece of equipment may fill the bill. But, if you plan to store your boat for lengthy periods on the trailer and expect to travel long distances over the highways, be particular.

**CAUTION: Buy only a trailer that is tagged with a specific maximum load capacity. This is a static load and represents the maximum number of pounds the trailer is designed to support at rest. This load capacity includes the weight of the boat, motor and accessory gear. Don't exceed it.**

Don't merely guess at the weight. Drive an unloaded trailer to a railway, freight or lumber yard platform scale. Weigh the trailer. Then load boat, motor and gear—be sure to fill the boat's fuel tanks—and weigh again.

**NOTICE: A copy of the latest Digest of State Boat Trailer Laws may be obtained free by writing the Boating Industry Association, 401 N. Michigan Avenue, Chicago, Illinois 60611. This complete report will tell which states require licenses, fees involved and where to apply, trailer lighting requirements, safety chain and brake requirements, maximum trailer speeds and other miscellaneous laws that may affect your trailboat travel.**

### Trailer Balance Important

Sway in boat trailers is usually caused by a tail heavy load. Smooth trailing calls for a 60-75 pound minimum downward pressure on the tongue. If your trailer sways, shift movable gear forward in the boat.

Sway may also be caused by an overly heavy load in the towing car. Helper springs will keep the rear of the automobile higher by compensating for added gear and trailer tongue weight.

Non-adjustable metal helper springs will prevent the towing car rear from dipping. Pneumatic "air-lift" springs offer the added advantage of flexibility of support to meet varying load requirements, and when deflated will prevent rough rides when your automobile is not being used for towing.

## How To Rig And Maintain Your Trailer

All modern boat trailers are fitted with adjustable supporting rollers and/or bunk pads. For the protection of your boat, be certain these supports conform to the hull's design. To maintain the running lines of your boat, the bunks should run longitudinally and completely support the transom. The bunks must conform to the contour of the bottom of the boat. Once adjusted, you need not alter them.

Tie-downs should be drawn snugly so that on rough roads the boat and its gear load remain in constant contact with trailer bed and hull supports. We recommend carrying one extra mounted and inflated tire. Inflate trailer tires to recommended pressures, which are usually double or more than that recommended for automobile tire pressures.

Trailer wheel bearings should be greased every 2,000 miles or after use in salt water. After launching, particularly from a sandy beach or in salt water areas, flush the wheel hubs and underbody of the trailer with fresh water.

**For safety, install side view mirrors on your car, since the loaded trailer may obscure your vision in the regular rear view mirror. Auto supply stores and marine dealers carry telescoping side view mirrors that may be extended when trailing.**

## Tips On Boat Launching

With a present day trailer fitted with some form of tilt bed, heavy duty geared retrieving winch and rollers supports, you will find that handling even a 20-footer is no chore. However, since many launching ramps are rather steep, we would suggest that you carry a set of wheel chocks in your boat or towing car. Don't depend on finding stones, bricks or blocks of wood at the launching ramp.

A pair of wedge shaped wood sections fitted with a short length of chain or a lanyard will eliminate the need to crawl under the car to pull the chocks free.

If you plan to trail unfamiliar areas, you may find that two sections of heavy duty mesh wire, four to five feet in length and a foot wide, will prevent your car from bogging down in sandy or muddy areas. Some trailboatmen install clamp-on bumper hitches to their front bumpers. If the ground near the launching area isn't firm, uncouple and switch the boat trailer from the rear to front hitch. Then push the trailer from your car's front end to the water's edge while the car's rear wheels remain on solid ground.

If you own one of the larger Glastrons, we recommend a folding dolly wheel under the tongue of the trailer.

Where launching ramps are steep, the trailer may be disconnected and rolled into position at the ramp with the aid of a dolly wheel. A spare section of cable with eye splices fitted with "S" hooks provides a simple means to lower a trailer down a steep grade to the water while controlling it by the car's own power.

Those who often launch from sandy beaches have learned that a portable pressurized-tank tire pump is convenient. Deflating automobile and trailer tires to approximately half their normal pressure will prevent them from bogging down. The air tank accessory will save the back and arm strain of hand pumping and will eliminate even short distance travel to the nearest service station on under-inflated tires.

Periodically lubricate winch bearing surfaces, rollers, components of the ball and socket coupler and other swiveling or hinged components such as rear cradle linkage, mechanical or automatic tile mechanisms and tilt or locking levers.

### Storing Your Boat On A Trailer

There is no one right way to store a boat. Water offers the perfect cradling to prevent boat distortions but mooring afloat has the drawback of exposure. When mooring at home, with the boat on the trailer, keep your rig in a protected location, shaded and preferably under cover. Remove wet gear from the boat. Loosen tie-down lines. Be certain that the trailer bed offers good support at the transom. Protect boat from corrosive elements or salt atmosphere and periodically wash down boat.

If the boat is stored outdoors where rain may drop onto the unprotected boat or under the boat cover, raise the tongue of the trailer so that the keel line of the boat is higher forward than aft. Be sure the drain plug has been removed from the transom.

**NOTE: Drain plugs to the inner hull should be removed during storage to allow condensation and trapped water to escape and replaced when operating.**

Remember that interior vinyls, even though very durable, can be damaged by exposure to extreme weather conditions.

Glass windshields should be shielded. Stray baseballs and stones have an infallible way of finding them. Plexiglas shields should be flushed with fresh water and soap, dried with a chamois and covered from direct sunlight. For off-season trailer storage, jack the trailer axles so the wheels are free of the ground, then put cement blocks or some other chocking material under the trailer axle so the wheels don't rest in mud, damp grass, snow or ice.

### Use A Sturdy Frame Hitch

We strongly recommend, even for short distance trailing, that you fit the towing car with a frame-type hitch, bolted or welded securely to your car's frame.

**CAUTION: Check the ball hitch for secure latching before towing trailer from parked position.**

Many modern automobiles are built with very lightweight frame material. Consult your marine dealer or local mechanic and follow his advice if he recommends having additional stressing metal added for greater security. A modest priced welding job will assure you that your trailer won't break free due to a faulty hitch and damage your boating equipment or cause property or personal damage. While not required in all states, it is just plain good practice to have a heavy duty safety chain on your trailer, capable of withstanding loads of three times the gross weight of the trailer.

**CAUTION: Know and comply with state trailer laws within the area you are towing your boat. These laws vary widely from state to state.**

# Section V: Warranty

## LIMITED WARRANTY

Glastron Boat Company (Glastron) warrants each new Glastron and Glastron/Carlson boat to the original purchaser only to be free from defects in material and workmanship under normal use or service for one (1) year from date of retail purchase from an authorized Glastron Dealer according to the following terms:

Any part of the boat manufactured by Glastron and found in the reasonable judgment of Glastron to be defective in material or workmanship will be repaired or replaced at Glastron's option by an authorized Glastron dealer without charge for parts and labor.

The boat including any defective part must be returned to an authorized Glastron dealer within the warranty period. The expense of returning the boat to the dealer and the expense of returning the boat back to the owner will be paid for by the owner. Proof of purchase will be required by the authorized Glastron dealer to substantiate any warranty claim. In addition, all warranty work must be performed by an authorized Glastron dealer.

### WARRANTY DOES NOT COVER:

This warranty does not cover any boat that has been subject to misuse, neglect, negligence, or accident, or operated for racing purposes, or operated in any way contrary to the operating or maintenance instructions as specified in the Glastron Owner's-Operator's Manual. The warranty does not cover any boat that has been altered or modified so as to adversely affect the boat's operation, performance or durability or that has been altered or modified so as to change the intended use of the boat. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which in the reasonable judgment of Glastron are either incompatible with the boat or adversely affect its operation, performance or durability.

### IN ADDITION:

This warranty does not cover: (1) engines, (other than Glastron Engines), outdrives, controls, batteries, or other equipment or accessories carrying their own individual warranties (appropriate adjustments to them provided by their respective manufacturers); (2) machinery, equipment and accessories not factory installed; (3) windshield breakage; (4) gelcoat maintenance and gelcoat crazing; (5) upholstery damage such as puncturing, or by solvents or cleaners; (6) any Glastron boat which has been overpowered or overloaded (in excess of horsepower and/or capacity as specified on capacity plate on each Glastron boat); (7) any Glastron used for commercial purposes. Upon request, Glastron may provide special written warranty for specific commercial applications.

Glastron boats contain flotation material; however, there is no boat that is unsinkable. Therefore, personal flotation devices should be carried for each passenger in accordance with U.S. Coast Guard requirements.

## NO OTHER WARRANTIES MADE: LIABILITY DISCLAIMER

Repairs or replacements qualifying under this warranty will be performed by an authorized Glastron dealer following delivery of the boat to the dealer's place of business. Glastron's responsibility in respect to claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any boat.

Glastron assumes no responsibility for loss of use of the boat, loss of time, inconvenience, or other damage, consequential or otherwise, including, but not limited to, expense for gasoline, expense of returning the boat to the dealer and expense of returning the boat back to the owner, removal of the motor from a boat and reinstallation, mechanic's travel time, in-and-out-of-water charges, telephone or telegraph charges, trailering or towing charges, rental of another boat during the time warranty repairs are being performed, travel, lodging, loss or damage to personal property, or loss of revenue.

Glastron reserves the right to change or improve the design of any boat without assuming any obligation to modify any boat previously manufactured.

**ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE DURATION OF THE ONE (1) YEAR WARRANTY PERIOD. ACCORDINGLY, ANY SUCH IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE ONE (1) YEAR WARRANTY PERIOD. GLASTRON'S OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND GLASTRON DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.**

Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

The Warranty Registration Card must be signed by the owner and returned to Glastron within fifteen (15) days after the original purchase. Nothing herein shall be interpreted, however, as limiting Glastron's obligations under the Boat Safety Act of 1971 to correct defects which violate Coast Guard Safety Standards, Regulations, or which are determined to create a substantial risk of personal injury to the public.

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

This warranty applies only to boats sold in the United States and Canada.

Customer Relations Department Manager
Glastron Boat Company
P. O. Box 9447
Austin, Texas 78766

In keeping with Glastron's policy of continuous improvements of all products, we reserve the right to change specifications and prices without notice.

**Special Note:** All boat manufacturers are required by Federal law to notify first time owners in the event any defect is discovered "which creates a substantial risk of personal injury to the public". Failure of the purchaser to return the boat warranty registration card will waive the right to notification of defect and repair at manufacturer's expense. In order that we can comply with the law if it becomes necessary, it is essential that your boat warranty registration card with the owner's name, address and boat serial number be completed and mailed (Federal Boat Safety Act of 1971, Subsection 15b).

## WARRANTY SERVICE

To make a claim under warranty, contact the authorized Glastron dealer from whom the boat was originally purchased, or the nearest authorized Glastron dealer. Remember, your boat must be delivered to an authorized Glastron dealer within the warranty period, and all warranty work must be performed by an authorized Glastron dealer. Any repairs to be performed after the warranty period must first be approved in writing by the Glastron Service Department. Proof of purchase will be required by the Glastron dealer to substantiate any warranty claim.

### EXAMPLES OF ITEMS NOT COVERED BY WARRANTY

Provisions of the Warranty Will Not Apply To:

Normal service requirements arising during the warranty period.

Normal service work over and above the repair and replacement of defective parts.

Boats subject to misuse, neglect, negligence, accident, or used for racing purposes.

Boats that have been altered or modified so as to adversely affect their operation, performance or durability or to change their intended use.

Repairs made necessary by the use of parts or accessories which are either incompatible with the boat or adversely affect its operation, performance or durability.

Boats not operated or maintained in accordance with the instructions in the Glastron Owner's-Operator's Manual.

Expense of returning the boat to the dealer and expense of returning the boat back to the owner, removal of the motor from a boat and reinstallation, mechanic's travel time, and in-and-out-of-water charges.

The warranty applies only to the original retail purchaser.

## OWNER'S OBLIGATION AND RESPONSIBILITY

Normal maintenance service and replacement of service items are the responsibility of the owner and as such are not considered defects in material or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service. To assist you in obtaining maximum service and satisfaction from your new Glastron boat, the principal service and replacement items are described as follows:

**PROPER MAINTENANCE AND CARE:** See your Glastron dealer for proper maintenance and care of your boat. Proper maintenance and care will assist in keeping your overall operating cost at a minimum.

**ENGINE 20-HOUR CHECK-UP: (SEE ENGINE MANUAL FOR DETAILS)** Any precision piece of mechanical equipment should have an inspection after initial break-in. This inspection will be performed at your local Glastron dealer. This is an opportune time to discuss with your Glastron dealer any questions you may have about your Glastron boat and to establish a routine preventative maintenance schedule. After the 20-hour check-up, your unit should be taken to an authorized Glastron dealer every 6 months or 100 hours of operation, whichever occurs first.

**BOAT MAINTENANCE: (SEE BOAT OWNER'S-OPERATOR'S MANUAL)**

# OPERATING RECORD

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## WARNING AND CAUTION SUMMARIZED

**WARNING:** See Outboard Operator's Manual for other safety warnings.

**CAUTION:** Provide a U.S.C.G. approved personal flotation device for each person aboard and for each person skiing.

**CAUTION:** Provide a fire extinguisher for your boat.

**CAUTION:** It is a good practice always to start your engine with the controls in neutral. And operate only when driver is seated securely at controls and passengers are seated.*

**CAUTION:** Fill auxiliary fuel tanks outside of the boat.

**CAUTION:** Install drain plug and inner hull plugs before you launch your boat.

**CAUTION:** CLEAR the stern area of the boat prior to start.

**CAUTION:** Display running lights between sunset and sunrise.

**CAUTION:** Every boat driver is responsible for his wake and the damage it might cause.

**CAUTION:** Turn off motor when swimmers are entering or leaving the boat from the water.

**WARNING:** A vaporizing liquid extinguisher, such as carbon tetrachloride is not permitted on board since these create toxic fumes.

**WARNING:** If fuel leak is discovered, do not operate your boat until repairs are made. Do not attempt to repair leaking fuel tank—Have it replaced.

**WARNING:** Do not operate your boat with the optional rear soft-top curtain closed.

**WARNING:** It is extremely important to keep steering cables and fittings tight and free from corrosion at all times.

**WARNING:** Do not smoke while fueling boat.

**WARNING: INSTALLATION OF AN ENGINE WITH HORSEPOWER IN EXCESS OF THE MAXIMUM HORSEPOWER REFLECTED ON GLASTRON AND GLASTRON/CARLSON SPECIFICATION SHEETS FOR EACH MODEL WILL VOID THE WARRANTY ON YOUR BOAT AND MAY LEAD TO UNSAFE SPEEDS AND/OR UNSTABLE HANDLING CHARACTERISTICS.**

**WARNING:** The "Federal Boat Safety Act of 1971", (Public Law No. 92-75) established rules, regulations and standards which affect the operator of a power boat. Especially:

Sec. 12(c): "No persons may use a vessel in violation of this Act or regulation issued thereunder."

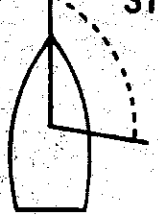
Sec. 34: Any person who willfully violates Section 12(c) of this Act of the regulations issued thereunder shall be fined not more than $1,000 for each violation or imprisoned not more than one year, or both.

We encourage you to read this law and to stay abreast of the regulations by consulting your dealer and periodically or contacting the nearest U.S. Coast Guard Auxiliary Squadron.

An emergency ignition cut-off switch is available as an outboard motor accessory. One end of cord is snap fastened to operator, the other end to cut off device. When cord is pulled, it mechanically turns ignition key switch to "Off" position. See your outboard motor dealer.

PORT ← → STARBOARD

Yield right-of-way to boats in your DANGER ZONE!



DANGER ZONE (Dead ahead to 2 points abaft your starboard beam)

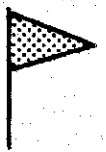
## REMEMBER THESE RULES

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

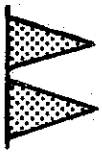
## WHISTLE SIGNALS

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

## STORM WARNINGS



RED FLAG Small craft (winds to 38 mph)



2 RED FLAGS Gale (up to 54 mph)

SQUARE RED FLAG—BLACK BOX (whole gale)

2 SQUARE RED FLAGS BLACK BOX (Hurricane)

## CHANNEL BUOY GUIDE

**Entering port or going upstream**

### PORT SIDE

Color: Black
odd numbers


Lighted


Can Spar


Unlighted Bell


Unlighted Whistle

### MID-CHANNEL

Color: Black & White
no numbers

Lighted

Can Spar Nun

### JUNCTION

Red and Black Lighted

Can Spar Nun

### STARBOARD

Color: Red
even numbers


Lighted


Spar


Unlighted Bell


Unlighted Whistle

# USE COMMON SENSE AFLOAT