IMPORTANT OWNER IDENTIFICATION and REGISTRATION INFORMATION

The Mariner Outboard Motor Warranty is not effective until the product is registered at the factory. For further warranty and registration information read the following information and see “International Warranty” on the back cover of this manual.

It is vitally important that your selling dealer fill out the Mariner Outboard Registration Card (shown at right) completely and mail the copies designated “Factory” Copy” and “Distributor Copy” to the Mariner Area Office or Distributor in your area immediately upon your purchase of a new Mariner Outboard Motor. It identifies your name and address, the product model and serial number, date of sale, type of use and selling dealer’s name, address and code number. The dealer also certifies that you are the original purchaser and user of the product.

A copy of the Mariner Outboard Registration Card designated “Customer Copy” will be given to you by your dealer immediately upon your purchase of a new Mariner Outboard Motor. It is the only valid registration identification card that you will receive, unless you are informed otherwise by your dealer. (See Note Below) Should your Mariner Outboard Motor require warranty service, present your copy of the Mariner Outboard Registration Card to the servicing dealer. Warranty service will not be performed by the dealer unless the registration card is presented by you at the time the service is requested.

NOTE: In some countries, Mercury Marine will issue the original owner a permanent Mariner Owner Registration Card within forty-five (45) days after receipt of the “Factory Copy” of the Mariner Outboard Registration Card. (Ask your dealer for further details.)

IMPORTANT: Read this manual carefully and thoroughly, particularly SAFETY WARNING, CAUTION and IMPORTANT information in bold type.
GENERAL INFORMATION

TO THE OWNER

We congratulate you on your purchase of our product and welcome you to our ever-growing family of outboard owners. You have selected one of the marine industry’s finest products.

Proper maintenance, care and operation of your outboard are necessary to help ensure your complete satisfaction and continued boating pleasure. For this reason, we ask that you read this manual thoroughly.

We call your attention particularly to the inside front cover and back cover of this manual. A thorough understanding of the operation and maintenance procedures and product warranty will protect your investment and help to avoid any misunderstanding.

Our authorized dealers and employees are trained to serve you and are dedicated to your satisfaction.

If you should experience a problem, we ask that you first contact your dealer for assistance. If you are not satisfied with action taken by your dealer, contact our Area Office or Distributor having jurisdiction in your area.

Thank you for purchasing our product and may you always experience the best that boating has to offer.

DIRECTIONAL REFERENCES

All directional references are given as they appear when viewing boat from stern, looking toward bow.

SERIAL NUMBER

The serial number is stamped into the serial number plate on the swivel bracket. This number is the manufacturer’s key to numerous engineering details.
which apply to your motor. When ordering parts, accessories and tools, or when corresponding with the dealer in regard to service matters, always specify model and serial number.

**PERIODIC CHECKUP**

After 20 hours, an inspection should be performed by an Authorized Dealer at local rates. After the 20-hour check, your outboard should be taken to an Authorized Dealer every 100 hours of operation - or at least once each year - for lube change, tuneup, etc.

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**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>V200</th>
<th>V150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
<td>85.725mm (3-3/8&quot;)</td>
<td>79.375mm (3-1/8&quot;)</td>
</tr>
<tr>
<td>Stroke</td>
<td>67.31 in. (2.65&quot;)</td>
<td></td>
</tr>
<tr>
<td>Total Piston Displacement</td>
<td>2327 cc (142 Cu. In.)</td>
<td>1999 cc (122 Cu. In.)</td>
</tr>
<tr>
<td>Recommended Spark Plugs*</td>
<td>Champion QL76V</td>
<td></td>
</tr>
<tr>
<td>Horsepower</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>Kilowatts</td>
<td>149</td>
<td>112</td>
</tr>
<tr>
<td>Full Throttle RPM Range</td>
<td>5300-5800</td>
<td>5000-5500</td>
</tr>
<tr>
<td>Fuel Tank Cap.</td>
<td>22-1/2 Liters (5 Imperial Gallons; 6 U.S. Gallons)</td>
<td></td>
</tr>
</tbody>
</table>

* See spark plug information on Page 39.

① Measured at the propshaft in accordance with ICOMIA 28.
V-6 Model

a  Cowl
b  Water Pump "Tell-Tale" Hole
c  Dyna-Floate Mount
d  Water Discharge
e  Trim Tab Adjustment Plug
f  Anti-Cavitation Plate
g  Trim Tab
h  Jet Prop Exhaust
i  Quicksilver Propeller
j  Skeg
k  Front Cowl
l  Engine Harness
m  Steering Arm
n  Tilt Tube
o  Transom Mounting Bracket
p  Serial Plate Location
    (Opposite Side)
q  Swivel Bracket
r  Water Intake
s  Gear Housing
t  Speedometer Pickup
u  Speedometer Tube
v  Tilt Pin
MOTOR INSTALLATION

OUTBOARD MOTOR MOUNTING

SAFETY WARNING: DO NOT operate outboard until all of the mounting procedures (printed in "Engine Mounting Instructions," included with new outboard) have been completed. The motor(s) must be secured to boat transom with four 12.7mm (1/2") diameter bolts (provided) thru the selected clamp bracket holes (2 each bracket) and thru the transom drilled holes and secured with washers and locknuts (provided). The two 10.2cm (4") long bolts must be installed thru the brackets' upper mounting holes and the two 15.2 cm (6") long bolts thru the brackets' lower mounting holes, as shown in sketch, right. The installation MUST BE watertight, and engine should be checked for tightness on the transom during operation. Failure to bolt engine to transom, as explained above, may result in damage to boat and/or loss of motor and possible injury to occupants of boat. Harness connectors (Figure 12) also must be attached.

IMPORTANT: For proper boat operation, position the engine on the boat transom in relation to the boat bottom and according to correct procedures explained in the "Engine Mounting Instructions".

For boats, particularly in the over-80 km/hr. (50 MPH) class, raising the outboard higher than standard on the transom will:

1. Decrease steering torque up to 58.4 cm (23") high installation.

4 (ENGLISH 7)
2. Increase top speed as the engine is raised, due simply to a reduction in gear housing drag.

3. Improve boat handling and stability. (WARNING: A light, very fast boat, running on a small segment of its bottom, requires close concentration and coordination on the part of the driver in order to maintain top speed in a relatively safe manner.)

4. Increase the opportunity for "ventilation," particularly when planing off. [Above a 55.9cm (22") installation, a sharpened, hi-rake, steel propeller, designed for surface operation, is recommended.]

To avoid damage to transom and to prevent motor from working loose during operation, it is imperative that all recommended mounting bolts, indicated in "Safety Warning" on Page 3, be installed thru transom and tightened securely. Use a marine-type sealant on bolts to prevent leakage.

a Mounting Bolts at Bottom of Clamp Bracket
b Mounting Bolts at Top of Clamp Bracket
c Hydraulic Lines
d Clamp Bracket Side Support Flanges
3 How to Plane a Boat

a WRONG! Bow Up
b WRONG! Bow Down
c RIGHT! Plane or Even Keel

4 Tilt Stop Lever

Motor can be tilted up with Power Trim (see "Power Trim Operation", following) or manually by completing instructions under "Tilting Engine Manually", following. Lock in full up position by pushing in button. (Figure 4) To lower motor to operating position, lift up on lower unit and move tilt stop lever to original position (button will return to out position).

BATTERY AND ACCESSORIES INSTALLATION

Secure a strong battery (reserve capacity rating of 100 minutes) for electric start and for electrical accessories in a convenient location in the boat. Install accessories according to instructions in accessory kits.
PROPELLER RECOMMENDATIONS

PROPELLERS.

1. Select a propeller that will allow the motor to operate at or near the top of the recommended full throttle RPM range (chart, below) with a normal load. Maximum engine speed (RPM) for propeller selection exists when boat speed is maximum and trim is minimum for that speed. (High RPM, caused by an excessive trim angle, should not be used in determining correct propeller.) Normally, there is a 300 to 500 RPM change between propeller pitches.

<table>
<thead>
<tr>
<th>Model</th>
<th>Full Throttle RPM Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>V150</td>
<td>5000-5500</td>
</tr>
<tr>
<td>V200</td>
<td>5300-5800</td>
</tr>
</tbody>
</table>

2. If full throttle operation is below the recommended range shown in chart, above, the propeller MUST BE changed to prevent loss of performance and possible engine damage.

3. For better acceleration, such as is needed in water skiing, propping up to 500 RPM above the recommended range is advised. Continuous operation above the recommended maximum speed, however, is not permissible.

4. After initial propeller installation, the following common problems may require that the propeller be changed to a lower pitch:

   a. Warmer weather and greater humidity cause an RPM loss.

   b. Operating in a higher elevation causes an RPM loss.

   c. Operating with a damaged propeller or dirty boat bottom or gear housing causes an RPM loss.

   d. Operating with an increased load (additional passengers pulling skiers, etc.).
INSTALLING PROPELLER

SAFETY WARNING: When installing or removing propeller, be sure that ignition switch is off and place a block of wood between the anti-cavitation plate and propeller to prevent accidental starting and to protect the hands from propeller blades while removing the propeller nut.

5 Propeller Removal and Installation

6 Propeller Nut and Tab Washer

a Rear Thrust Hub
b Tab Washer
c Propeller Nut

1. To aid in future removal of the propeller, liberally coat the propeller shaft splines with one of the following Quicksilver products:
- Special Lubricant 101
- 2-4-C Multi-Lube
- Perfect Seal
2. Place thrust hub into propeller hub (shoulder into recess of propeller).

3. While aligning splines, place Quicksilver jet-prop propeller (with forward thrust hub) on propeller shaft, as shown in Figure 5.

4. Place rear thrust hub, tab washer and propeller nut on propeller shaft. (Figure 6)

5. Thread propeller nut on propeller shaft and tighten with a wrench, making certain that nut is recessed into tab washer.

6. Bend three of the tabs of tab washer down in grooves of propeller hub to secure propeller nut. (Figure 6)

7. After first use, bend the three tabs straight, retighten propeller nut and again bend tabs down in thrust hub grooves. Check propeller periodically for tightness.

CAUTION: If propeller moves forward-and-aft on the propeller shaft (is loose), retighten the propeller nut. Operation with a loose propeller could cause damage to the thrust hub and gear housing during acceleration, deceleration or when shifting gears.

REMOVING PROPELLER

To remove propeller, remove propeller nut, tab washer, propeller and thrust hub from the propeller shaft. (Figures 5 and 6)
FUEL MIXTURE AND FUEL/OIL SYSTEM

INSTALLING FUEL TANK

1. Place fuel tank in position in bottom of boat. (Figure 7)

2. Connect fuel line to fuel tank by inserting twist connector into receptacle and lock by turning ⅛-turn clockwise. (Figure 7) Arrange the fuel line so that it cannot become pinched, kinked, sharply bent or stretched during operation of the motor.

Check with the motor in far left and right turn positions.

CAUTION: Use CARE when transporting fuel tanks, whether in a boat or car. DO NOT fill fuel tanks to maximum capacity. Cool gasoline expands considerably and builds up pressure in the fuel tank due to higher outside temperatures. This can cause fuel leakage and a potential fire hazard. Close vent screw to prevent spillage.
GASOLINE-OIL SELECTION

Use Leaded Super or Premium automotive gasoline with a minimum of 90 research octane and Quicksilver Formula 50-D 2-Cycle Outboard Lubricant. If 50-D is not available, consult your Authorized Dealer for an acceptable oil.

NOTE: Some fuel distributors pre-mix gasoline and oil for 2-cycle engines. Such fuels, if known to be of recommended octane rating and quality, are acceptable.

CAUTION: The use of other than Formula 50-D Lubricant or an acceptable oil may cause piston scoring, bearing failure or both. DO NOT, under any circumstances, use multi-grade or other highly-detergent automobile oils or oils which contain metallic additives. Use of improper gasolines and/or oil can cause serious damage to your outboard motor.

BREAK-IN PROCEDURE AND FUEL MIXTURE (Without Oil Injection)

CAUTION: Follow break-in procedure carefully.

Operate a new motor at ½-throttle (2500-3500 RPM) for 2 hours. After 2 hours, the motor may run at any speed, although sustained operation at full throttle should be avoided for an additional 8 hours. Mix gasoline and oil during the break-in period at a 25:1 ratio as shown in the following chart.

Break-in Fuel Mixture (25:1 Ratio)

<table>
<thead>
<tr>
<th>Type Oil</th>
<th>Metric Measure</th>
<th>Imperial Measure</th>
<th>U.S. Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula 50-D</td>
<td>800cc oil to each 20 liters</td>
<td>30 Imp. oz. oil</td>
<td>24 U.S. oz. oil to each 5 gal-lons of gasoline</td>
</tr>
<tr>
<td></td>
<td>of gasoline</td>
<td>to each 5 Imp. gals. gasoline</td>
<td></td>
</tr>
<tr>
<td>Other Acceptable Oils</td>
<td>Use at 25:1 ratio shown above.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FUEL MIXTURE AFTER BREAK-IN (Without Oil Injection)

After motor break-in, use a 50:1 gasoline-oil ratio as shown in the following chart.
**After Break-in Mixture (50:1 Ratio)**

<table>
<thead>
<tr>
<th>Type Oil</th>
<th>Metric Measure</th>
<th>Imperial Measure</th>
<th>U.S. Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula 50-D</td>
<td>400cc oil to each 20 liters of gasoline</td>
<td>15 Imp. oz. oil to each 5 Imp. gals. gasoline</td>
<td>12 U.S. oz. oil to each 5 gals. gasoline</td>
</tr>
<tr>
<td>Other Acceptable Oils</td>
<td>Use at oil manufacturer’s recommended gasoline/oil ratio, not to exceed 50:1.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CORRECT FUEL MIXING PROCEDURE**

**CAUTION:** Observe fire prevention rules, particularly the matter of smoking. Mix fuel outdoors or at least in a well-ventilated location.

Mix fuel directly in the remote tank. Measure accurately the required amounts of oil and gasoline. Pour a small amount of gasoline into remote tank (Figure 7) and add a small amount of oil (about the same amount as gas). Mix thoroughly by shaking or stirring vigorously; then add balance of oil and gasoline and mix again. Cleanliness is of prime importance in mixing fuel, as even a very small particle of dirt can cause carburetion trouble.

**IMPORTANT:** Always use fresh gasoline. When standing, gasoline forms certain gum and varnish deposits and, when kept in a tank for a length of time, may give carburetor trouble and cause spark plug fouling.

**IMPORTANCE OF CONSISTENT FUEL MIXTURES**

**IMPORTANT:** Using less than the recommended proportion of oil may result in very serious motor damage from lack of sufficient lubrication. Using more than the recommended proportion of oil will cause spark plug fouling, erratic carburetion, excessive smoking and faster-than-normal carbon accumulation.

**BREAK-IN PROCEDURE (With Oil Injection)**

During the break-in period, operate your new outboard motor on the first 30 gallons of fuel by mix-
ing gasoline-oil in the fuel tank at a 50:1 ratio as described in chart above.

**NOTE:** The 50:1 ratio gasoline-oil in the fuel tank combined with the metered oil ratio supplied by the oil injection system will supply the necessary gasoline-oil mixture required for break-in lubrication.

Operate your new outboard motor at ½ throttle (2500-3500 RPM) on the first 10 gals. with 50:1 mixture fuel. Operate your new outboard with the remaining 20 gals. of 50:1 mixture fuel at any speed, although sustained operation at full throttle should be avoided until all 30 gals. of fuel have been consumed. After the break-in with 50:1 ratio fuel, it is no longer necessary to mix oil to the gasoline in the remote fuel tank.

**FILLING THE OIL INJECTION SYSTEM**

1. Remove cowls to expose the oil reservoir.

2. Remove onboard reservoir cap (Figure 8) and fill reservoir full with Formula 50-D or BIA approved TC-W oil. (Use a pre-diluted oil only.) Replace cap tightly.

3. Remove remote oil tank cap and fill with Formula 50-D or BIA approved TC-W oil. (Figure 9) Replace cap tightly.

**CAUTION:** Be certain that all reservoir and remote oil tank caps are installed tightly. An air leak, on the remote oil tank cap, will prevent oil from moving from the remote oil tank to the oil reservoir. A leak at the engine reservoir will cause oil spillage.

While filling the oil reservoir and the remote oil tank, use caution so that oil does not become contaminated.

4. Reinstall outboard cowls.

As the oil level in the remote oil tank (Figure 9) lowers, refill periodically. When the oil level in the onboard oil reservoir lowers to a pre-determined level, an audible warning will be heard as an intermittent operation of the warning horn. (The over-heat warning is a continuous operation of the warning horn.) If the intermittent operation of the warning horn is heard, indicating the onboard reservoir is low, there is approximately 30-35 minutes of
wide-open-throttle operation remaining. Either re-fill oil system or proceed to a landing where the recommended oil is available.

SAFETY WARNING: If on water and if the oil injection warning horn sounds and upon inspection it is determined that the onboard reservoir is filled with oil, the following procedure should be followed:

1) Disconnect the 3 gallon remote tank from the engine and transfer oil from it into the gas tank. (Estimate approx. 50:1 to 100:1 mix.)

2) Reinstall the remote oil tank to the engine even though it may be empty.

3) Operate the engine as little as possible and have an Authorized Dealer check out the problem as soon as possible.

NOTE: With the oil injection system only, each time the key switch is turned from the “Off” to “On” position, the warning horn will sound for a short interval. This is an electrical check on the warning systems for both the oil injection and overheat.

If the warning horn continues to sound intermittently when the key is in the “On” position (engine is not running) check the oil level in the onboard oil reservoir. Fill the oil reservoir and remote oil tank as required and make certain the fill caps are on tight. Should the warning horn continue to sound, contact your authorized dealer. Do not run the engine unless premixed (50:1) fuel is used.
OPERATION

DESCRIPTION OF CONTROL COMPONENTS
(Figure 10)

1. “a” - Neutral lock bar; prevents accidental shift and throttle engagement. The neutral lock bar must be depressed in order to advance control handle to in-gear position from neutral. Once control handle is moved from neutral position, the neutral lock bar will remain depressed until control handle is returned to neutral position.

2. “b” - Control handle; features full gear shift and throttle. Always shift with a firm, quick motion. Approximately the first 40 degrees of control handle travel (“Forward” and “Reverse”) shift the motor. Remainder of control handle movement advances the throttle. DO NOT try to shift into forward or reverse gear with motor not running. Forcing shift lever under this condition will result in damaged shift mechanism.

15 (ENGLISH 7)
3. "e" - Throttle-only button; allows engine throttle advancement without shifting engine. This is done by disengaging the shift mechanism from the control handle. Throttle-only button can be depressed only when control handle is in neutral and should be used only to assist in starting the engine.

4. "d" - Ignition/choke switch; serves 4 functions: (1) turns motor "OFF," (2) turns motor "ON," (3) actuates starter motor to start engine, (4) actuates carburetor choke.

5. "e" - Ignition safety stop clip; when used with ignition safety stop switch and equipped with the proper length cord (with a minimum breaking strength of 45kg) (100 lbs.) connected to the driver, will shut engine "OFF" if the driver no longer has access to the steering wheel and remote control. The ignition safety stop switch SHOULD NOT BE USED as a normal engine shut-off.

IMPORTANT: The ignition safety stop switch can be repositioned with or without safety stop clip so that engine can be restarted. To reposition switch without clip, simply push up on switch. To reinstall safety stop clip, if switch is in the "up" position, pry switch down (using the safety stop clip or the ignition key), as shown in Figure 9. Position safety stop clip over the switch and push switch up.

6. "f" - Detent adjustment screw; increases or decreases the effort necessary to move control handle in or out of neutral position. To increase detent effect, thread detent screw "in" (clockwise). To decrease detent effect, thread detent screw "out" (counterclockwise). (DO NOT thread detent screw all-the-way "out.")

7. "g" - Control handle friction screw; a control handle adjustment that sustains a set engine speed without the driver's hand holding onto the control handle. To increase control handle friction, thread friction screw "in" (clockwise). To decrease control handle friction, thread friction screw "out" (counterclockwise). (DO NOT thread friction screw all-the-way "out.")
11 Prying Ignition Safety Stop Switch Down

10. “j” - Trailer button; used for trimming outboard up for shallow water, beaching, launching and trailering.

BEFORE STARTING OPERATION CHECK LIST

SAFETY WARNING: Be sure that boat is tied to a dock securely, or that there is adequate space in front and behind the boat, prior to starting engine.

Before starting engine operation, the following checks should be completed each time the boat is operated, and they should be kept in mind as a check list at all times.

1. Check all fuel system connections and lines for leaks. Open fuel line shut-off valve, if so required.

2. Check that fuel tank is full.

8. “h” - Tachometer/trim indicator receptacle; wiring harness from tachometer and trim indicator plug into this connector.

9. “i” - Trim switch; used to actuate the Power Trim motor for trimming the outboard up-and-down. To trim outboard “up,” press up on trim switch. To trim outboard “down,” press down on trim switch.

17 (ENGLISH 7)
3. Check that battery connections and all other electrical connections are secure.

4. Check the steering system for ease of operation. Be alert to any changes in steering action.

**SAFETY WARNING:** The need for steering system/remote control inspection or service is indicated by increased effort or binding while turning the steering wheel, excessive free-play or unusual sounds while steering. If any of these problems exist, DO NOT WAIT. Contact your dealer immediately. Use extreme care and observe slow speeds if operating boat before repairs are made.

5. Check that control handle is secure.

6. Check shift and throttle linkages for ease of operation and make sure that all anchor bolts and nuts are tightened properly. Be alert for unusual looseness, sticking or jamming and, if problems exist, follow instructions in "Safety Warning," immediately preceding. Check shift control operation with engine running (read starting procedures, following, before continuing).

**STARTING/SHIFTING**

1. Be sure that remote control cables are attached. Check steering attachment.

2. Fasten plug from remote control wiring harness (Figure 12) to receptacle on engine harness.

**CAUTION:** A strong battery (reserve capacity rating of 100 minutes) must be maintained. If a "sealed" or "maintenance-free" battery is used, the outboard must be equipped with an accessory voltage regulator (see your dealer). Connect red cable to positive (+) battery terminal. Failure to observe correct polarity will result in destruction of rectifier.
3. Connect battery leads. Install battery lugs on end of lead wires and fasten securely to correct terminals on battery. Harness lead with red sleeve attaches to positive (+) post of battery and black lead to negative (-) post. Occasionally place grease on terminals to prevent corrosion.

4. Fill fuel tank with enough fuel and secure tank properly in boat.

5. Connect engine fuel line to fuel tank by inserting twist connector and lock by turning \( \frac{3}{8} \)-turn clockwise. (Figure 7)

6. Open air vent screw on fuel tank cap. (Figure 7)

7. Squeeze priming bulb on fuel line until bulb feels firm. (Figure 13)

**CAUTION:** Do not attempt start-up before launching boat. DO NOT operate motor out-of-water, or water pump impeller will be damaged.
SAFETY WARNING: Be sure that outboard is in “NEUTRAL” gear before attempting to start motor electrically or manually. If outboard starts while in gear, occupants may be thrown from boat.

8. Place control handle in neutral position. (Figure 10)

9. If engine is cold, push in on throttle-only button. Depress neutral lock bar and move control handle to forward position and release throttle-only button (button will remain in). This disengages the shift mechanism from the throttle and allows starting of engine at faster RPM.

SAFETY WARNING: Be sure that boat is tied to a dock securely or that there is adequate clear space in front and behind the boat prior to starting engine.

CAUTION: The starter motor may be damaged seriously if operated continuously. DO NOT operate for longer than 20 seconds. Allow a 2-minute cooling period between starting attempts.

SAFETY WARNING: As soon as engine starts, be prepared to alter throttle setting. DO NOT allow engine to exceed 2500 RPM while in “Neutral” gear.
IMPORTANT: The starting circuit on this outboard is protected by a 20 amp fuse. (Figure 12) If the starter fails to operate, check for a melted fuse. If fuse has melted, the cause for overload must be found and corrected before replacing fuse. A spare fuse is located with the emergency start rope in a pocket inside the cowl.

10. Turn ignition key clockwise past “Run” position to “Start” position. If necessary, actuate the carburetor enrichener by pushing in on ignition key. As soon as engine starts, release ignition key and allow it to return to “Run”. DO NOT allow engine RPM to exceed 2500. Move control handle back to decrease RPM.

11. If motor should falter after starting, momentarily actuate the carburetor enrichener by pushing in on ignition key.

12. After engine has started, allow it to run for a short time (one or two minutes) to “warm up” (not exceeding 2500 RPM). After engine has warmed up, return control handle to neutral position. When control handle is returned to neutral position, the neutral lock bar will return to “lock” position, thus locking control handle in neutral, and the throttle-only button also will return to “out” position, thus allowing normal throttle and shift operation.

CAUTION: When shift lever is in “Reverse”, lower unit is locked in normal operating position. Shock load of impact could cause transom breakage, particularly when boat is backing up. Proceed cautiously when in reverse motion and be careful of underwater obstructions. DO NOT accelerate motor to high RPM.

13. Depress neutral lock bar and shift with a firm, quick motion (“Forward” or “Reverse,” whichever is desired). DO NOT ease gears into engagement. Approximately the first 40 degrees of control handle travel, forward or reverse from neutral position, shift the outboard. The remainder of control handle movement advances the throttle of the engine.

CAUTION: A warning horn will sound if engine overheats. Stop motor immediately and remedy cause of overheating.
EMERGENCY STARTING PROCEDURE

CAUTION: Battery leads must be installed to battery (even though battery may be dead), as described previously. Failure to connect battery leads correctly will result in destruction of rectifier.

1. Complete Steps 1-thru-9 in previous paragraph ("Starting/Shifting").

2. Remove cowling as explained in "Removing Cowling", following.

3. Remove 3 wing nuts from flywheel cover (Figure 15) and lift flywheel cover off.

4. Turn switch to "On".
5. If motor is cold, squeeze primer bulb until bulb is firm and push button on enrichener. (Figure 14) Wait about 4 to 6 seconds and start the engine. Avoid use of the enrichener if motor is warm.

SAFETY WARNING: Care must be exercised when using manual starting procedure. DO NOT attempt to replace flywheel cover or cowling after motor has started. Stay clear of the flywheel. Loose clothing SHOULD NOT BE WORN by anyone near the motor when operating under these conditions. Proceed to the nearest landing for service.

6. Remove starter rope from pocket inside left cowl cover. Engage end of hand starter rope in one of the recesses provided in flywheel starter plate and wrap rope around plate. Grasp handle firmly and pull with a full, vigorous stroke. (Figure 16)

**STOPPING**

If motor is to be restarted soon, stop by shifting into neutral and, with motor at slow idle, turn key to "Off" position.
SAFETY WARNING: If the motor will not be operated for a period of time, if it is to be removed from the boat, or if it is to be tilted up, prevent spillage from the carburetor throat and bowl and gum formations in carburetor during storage as follows:

1. With motor running at idle, disconnect the fuel line from the fuel tank, thus allowing carburetors to run dry (motor stops).

2. Turn electric start key to “Off”. Disconnect positive (+) battery lead to prevent accidental starting or shorting.

ADJUSTABLE ZINC TRIM TAB

Whenever two or more different metals are submerged in a conductive solution, such as salt water, polluted water or water with high mineral content,
an electrical current will flow between the metals and cause "galvanic corrosion". This deterioration affects whichever metal has less corrosion resistance and, in time, will require replacement. (For example, aluminum gear housing parts deteriorate more quickly when using stainless steel propellers.) To protect submerged surfaces, the sacrificial trim tab (made of a special self-sacrificing zinc alloy; Figure 17) helps limit corrosion. Surface erosion of the trim tab in salt water requires that it must be checked and replaced periodically. DO NOT paint or place a protective coating on trim tab, or its inhibiting value is lost.

The zinc trim tab balances the "steering torque" so that the steering wheel will turn with equal tension in each direction. (Figure 17) If the boat turns more easily to the left, remove plug on top of drive shaft housing extension (Figure 17), loosen cap screw and move trailing edge of trim tab to the left when viewing motor from behind. Tighten cap screw and replace plug. Reverse the procedure if boat turns more easily to right.
TILT ANGLE ADJUSTMENT

SAFETY WARNING: Operating some boats at minimum trim “in” at planing speeds will cause undesirable and/or unsafe steering conditions. Each boat should be tested for handling characteristics after any adjustment is made to the tilt angle cam location.

Adjust tilt angle of motor on transom with tilt pin (Figure 1) so that anti-cavitation plate (Figures 1 and 3) is about parallel and even with bottom of boat. Speed sometimes may be improved by tilting motor out one tilt pin hole to raise bow and reduce wetted surface. If motor is tilted in, boat will ride bow down, wetting more of the bottom and reducing speed, which generally will improve operation in rough water. (Figure 3) Under ideal conditions, efficiency is best with lower unit operating in level position. Operation with excessive tilt will reduce performance noticeably and may induce cavitation. It is preferable to level boat by proper loading rather than by extreme adjustment of tilt angle.

Perform adjustment as explained in previous paragraph. After determining required tilt pin hole, that places boat on plane or even keel, reposition tilt pin into next lowest tilt pin hole (one hole nearer to transom) for operation with Power Trim. Should maximum tilt down (in) be required, DO NOT install the tilt pin.

POWER TRIM OPERATION

SAFETY WARNING: A tight grip on the steering wheel is always advisable and is required when accelerating, decelerating or when trimming the boat. Upon reaching cruising speed, the outboard should be trimmed to obtain a balanced steering condition. While trimming, steering loads will vary and will pull in one direction until a balanced condition has been attained. If the outboard is trimmed past the balanced steering condition, the steering
wheel then will have a tendency to pull in the opposite direction. Excessive trimming past the balanced steering position will result in increased steering loads and, in most boat applications, a decrease in performance.

TRIMMING OPERATION

IMPORTANT: The Power Trim electrical system is protected by a 90 amp fuse and a 20 amp fuse. (Both mounted on the power trim pump. Figure 18) If the Power Trim electrical system becomes inoperative, check for a melted fuse. If fuse has melted the cause for overload must be found and corrected before replacing fuse.

NOTE: The control handle is equipped with a trim switch (that is used for trimming the engine “up” and “down” while engine is under power) and one trailer button (that is used to trim engine up for shallow water operation, beaching, launching and trailering). (Figure 10) The trim switch and trailer button operate the hydraulic pump motor, which then applies hydraulic pressure thru hydraulic hoses to the trim cylinder, thus trimming outboard “down” or “up.”

CAUTION: If engine will be operated in shallow water with engine trimmed beyond trim limit cut-out, follow these precautions:

1. DO NOT operate engine above idle RPM. (When engine is trimmed beyond trim limit cut-out, the swivel bracket will have no side support.)

2. Check that water level is above water intake ports. (Should water level fall below water intake ports, damage from overheating or water pump impeller damage could occur.)

1. To trim engine “up,” push up on trim switch. (Figure 10) (This switch, when actuated, will trim engine “up” until a limit switch stops lower unit from moving beyond clamp bracket supporting flanges.)
NOTE: If the trim switch (down) or "Trailer" button remains depressed after engine reaches its end of travel, an overload cut-out switch will open and pump motor will stop. To prevent cut-out switch from opening, it is recommended that switch/button be released as soon as engine reaches end of travel. If cut-out switch should open, do not depress switch/button for approximately one minute. After this period of time, cut-out switch will close (reset itself) and pump again may be operated.

2. To trim engine "down," push down on trim switch. (Figure 10)

3. To trim engine "up" past the trim limit switch (for shallow water operation, beaching, launching and trailering), press in on trailer button. (Figure 10)

Trimming Engine "Up" ("Out")
Characteristics

1. Will lift bow of boat, generally increasing top speed.
2. Transfers steering torque harder to left on installations below 58cm (23") transom height.
3. Increases clearance over submerged objects.
4. In excess, can cause porpoising and/or ventilation.
5. If trimmed out beyond the water pickup (Figure 1), reduced water supply can cause serious overheating.

SAFETY WARNING: Excessive trim "out" also may reduce the stability of some high speed hulls. To correct instability at high speed, reduce the power GRADUALLY and trim the motor "in" slightly before resuming high speed operation. (Rapid reduction in power will cause a sudden change of steering torque and may cause additional momentary boat instability.)
Trimming Engine “Down” (“In”) Characteristics

1. Will help planing off, particularly with a heavy load.

2. Usually improves ride in choppy water.

3. In excess, can cause boat to veer to the left or right (bow steer).

4. Transfers steering torque harder to right (or less to the left).

5. Improves planing speed acceleration (by moving tilt pin one hole closer to transom).

SAFETY WARNING: Excessive speed at minimum trim “in” will cause undesirable and/or unsafe steering conditions. Each boat should be tested for handling characteristics after any adjustment is made to the tilt angle (tilt pin relocation; “v” in Figure 1).

Power Trim Pump

- a “Fill Vent” Screw
- b Release Valve Control Knob
- c 90-Amp Fuse
- d 20-Amp Fuse
Tilting Engine Manually

Rotate release valve control knob (Figure 18) full left 3 turns (counterclockwise) to allow engine to be tilted either up or down manually.

CAUTION: Before operating engine, manual release valve must be returned to normal operating position to allow reverse lock to operate; turn control knob to full right (clockwise).

Trim Indicator Gauge

Trim indicator gauge shows position of engine trim angle. When engine is trimmed all-the-way down, trim indicator needle should be at the bottom of the green arc on the trim indicator gauge. If not, loosen clamp over trim sender switch (Figure 4) and turn sender switch so that trim indicator gauge needle is at bottom of green arc on gauge when engine is all-the-way down. Tighten clamp.

Trim Limit Switch

Trim limit switch (Figure 19) limits outward extension of the lower unit when trimming out so that
the lower unit does not trim out beyond the clamp bracket side support flanges (Figure 2). To adjust switch, loosen clamp (Figure 19) and turn switch clockwise to reduce outward trim travel or counterclockwise to increase outward trim travel. Tighten clamp. Allow an overlap of clamp bracket to swivel bracket of no less than 38mm (1½").

3. Reinstall “Fill-Vent” screw, then back out 1½ turns to vent the reservoir.

CAVITATION AND VENTILATION

Cavitation occurs when the water flow cannot follow the contour of a fast-moving underwater object, such as a gear housing or propeller. The water pressure drops so low that vaporization “boiling” occurs. The water vapor permits the propeller to speed up, but the boat speed is reduced. In addition, the water vapor then condenses into a liquid that erodes the surface of the gear housing or propeller. This erosion is called “cavitation burn” which can seriously damage the gear housing or propeller. Common causes of cavitation are:

1. Propeller of improper pitch.
2. Bent propeller blade or damaged gear housing skeg.
3. Accidentally raised burrs or sharp edges on propeller or gear housing.

Checking Oil Level

Check hydraulic system oil level periodically as follows:

1. Tilt outboard to full down position.

2. Remove “Fill-Vent” screw. (Figure 18) Fill to upper (“FULL”) mark on dipstick with a high quality, name brand SAE 10W-30 or 10W-40 service grade “SE” automotive oil. Do not overfill.

**NOTE:** In tropical areas, single-viscosity SAE 30 oil may be used.

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4. Weeds or other debris snagged on propeller or gear housing. This usually can be remedied by running briefly in reverse to shed the objects.

Ventilation is caused by surface air or exhaust gas that feeds into the propeller and results in propeller speed-up and a corresponding decrease in boat speed, similar to cavitation. While some ventilation is helpful in accelerating quickly, excessive ventilation is annoying and usually is the result of:

1. An engine installed too high on transom.

2. An engine trimmed out too far.

3. A missing propeller diffuser ring.

4. A damaged propeller or gear housing that allows excessive exhaust to bleed out between the propeller and gear housing.

NOTE: In order to reduce drag (at top speed) from the exhaust hub tube and diffuser ring, some high-performance Quicksilver Propellers are made with-out the tube and ring. Their performance may suffer, however, if used on slower, heavily-loaded boats.

**WATER PUMP OPERATION**

**CAUTION:** DO NOT operate motor out-of-water, or water pump impeller will be damaged. Read flushing instructions carefully, following. Always be sure that water intake (Figure 1) is covered by at least 51mm (2") of water before starting.

**CAUTION:** A warning horn will sound if engine overheats. Stop motor immediately and remedy cause of overheating.

Normal water pump operation is indicated by a "tell-tale" stream of water issuing from a small hole at
the lower rear of bottom cowl while the motor is running. (Figure 1) (Tell-tale will be constant only with engine speeds above 2500 RPM. At lower speeds, operation will be intermittent.) If this stream is not evident during operation, check for a clogged hole with a piece of wire. If clogged, remove water discharge hose. If, after attempting to clean, water still is not being discharged, avoid further operation until water pump and cooling system have been checked for failure. Operation of motor with inoperative water pump or with obstruction in cooling system will cause severe damage from overheating. Motor should be referred to Authorized Service facilities for inspection and necessary repair.

The water pump assembly should be checked at least once each season. See “Lubricant and Maintenance Chart”, following. At the same time, the upper drive shaft to crankshaft splines should be lubricated.

REMOVING MOTOR FROM BOAT

Disconnect remote controls, steering connections, fuel line, Power Trim hoses and electrical starting harness from motor. Remove bolts which secure motor to transom.

IMPORTANT: Keep motor in an upright position until all water has drained from the drive shaft housing. Be sure that all water drain holes in gear housing are open.
SAFETY WARNING: Before attempting any checks or repairs other than on the battery, the battery cables MUST BE REMOVED from the battery to prevent possible personal injury or damage to the equipment.

REMOVING COWLING

3. Push each side cowl outward and lift cowl up to remove. (Figure 23)

1. Remove front cowl by pushing the release lever (located behind bottom center of front cowl, Figure 20) toward right side of motor and lift cowl out until the hinge disengages at the pivot point.

2. V150: Release the 2 fastening clamps from the wrap-around cowl. (Figure 21) V200: Push in inner cowl latch (Figure 22) and simultaneously pull out on outer cowl latch.
21 Cowl Clamp (Release) V150

22 Cowl Clamp (Release) V200

23 Cowl (Removal)

- a Fastening Clamps
- b Release Lever
- c Remote Control Wiring Harness

- a Inner Cowl Latch
- b Outer Cowl Latch
- c Cowl Release Lever
- d Remote Control Wiring Harness
- e Fuel Connector

- a Rear Cowl Pins
- b Pin Sockets

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CARBURETOR ADJUSTMENT

Carburetor adjustment is NOT necessary, as each carburetor is provided with a fixed jet idle mixture and a high speed fixed jet. Should it become necessary to replace the fixed jets because of operation at high elevation, contact your local Authorized Servicing Dealer.

SERVICING FUEL TANK FILTER

Detach the fuel line from fuel tank and remove fuel pickup tube by removing four screws in top connector housing. The filter, a fine wire mesh, can be cleaned by rinsing in clean lead-free gasoline or kerosene. (Figure 24)

SAFETY WARNING: Be careful when cleaning fuel filter elements; gasoline is extremely flammable and highly explosive under certain conditions. Always stop the engine and do not smoke or allow open flames in the area while cleaning fuel filter elements.

SERVICING MOTOR FUEL FILTER

Motor fuel filter is more than adequate to take care of all requirements under normal use. If, after all other checks, fuel filter obviously is the cause of the trouble, replace the fuel filter. See your Authorized Dealer.

24 Fuel Tank Filter

a Fuel Tank Filter
SPEEDOMETER PICKUP MAINTENANCE

1. If the water pickup (Figure 1) is clogged, the speedometer will be inoperative. Clean the pickup with a piece of wire or blow out with compressed air. Before blowing out with air, disconnect the tubing from the speedometer.

2. To prevent freeze damage, drain the system of water completely before storage. Remove tubing from speedometer fitting and blow thru the tubing to remove water.

GEAR HOUSING LUBRICATION

CAUTION: If any water drains from the filler hole, if lubricant appears milky brown, or if large amounts of lubricant must be added to fill the gear housing, it should be checked promptly by your local servicing dealer. Operating the outboard, when any of these conditions is present, may damage the gears.

Periodically (every 25 hours) lubricate the lower drive unit with Super-Duty Quicksilver Outboard Gear Lubricant as follows:

IMPORTANT: Do not use regular automotive grease in the lower drive unit.

1. Remove lubricant fill plug and washer, located on left side of gear housing. (Figure 25)

2. Insert lubricant tube into fill hole, then remove lubricant vent screw and washer.

IMPORTANT: Never apply lubricant to the lower unit without first removing lubricant vent screw, as the injected lubricant displaces air which must be allowed to escape so that the gear housing can be completely filled.

3. Fill gear housing with lubricant until excess starts to flow out of lubricant vent screw hole.

4. At this point, drain approximately 30cc (one fluid ounce) from gear housing to permit expansion of lubricant.

5. Replace lubricant vent screw and washer.

6. Remove lubricant tube from fill hole and install fill plug and washer.
<table>
<thead>
<tr>
<th>Fig. No.</th>
<th>Description</th>
<th>Lubricant Used or Maintenance</th>
<th>Fresh Water Frequency</th>
<th>Salt Water Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Ride-Guide Steering Cable</td>
<td>Quicksilver 2-4-C Multi-Lube</td>
<td>Every 60 Days</td>
<td>Every 30 Days</td>
</tr>
<tr>
<td>26</td>
<td>Throttle-Shift Linkage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Upper Shift Shaft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Tilt Tube</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Swivel Pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Propeller Shaft</td>
<td>Quicksilver: Special Lub. 101 2-4-C Multilube Perfect Seal</td>
<td>Once in Season</td>
<td>Every 60 Days</td>
</tr>
<tr>
<td>25</td>
<td>Gear Housing</td>
<td>Quicksilver Super-Duty</td>
<td>After 1st 10 Days, Then Each 30 Days</td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td>28</td>
<td>Steering Link Rod Pivot Points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Tilt Lock Lever Shaft and Locking Brace Pivot Points</td>
<td>SAE 30W Engine Oil</td>
<td>Every 60 Days</td>
<td>Every 30 Days</td>
</tr>
<tr>
<td>--- ▲</td>
<td>Engine Crankshaft Splines to Drive Shaft Splines</td>
<td>Quicksilver 2-4-C Multi-Lube</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>--- ▲</td>
<td>Gear Housing Bearing Carrier and Cover Nut</td>
<td>Quicksilver Perfect Seal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fig. No.</td>
<td>Description</td>
<td>Lubricant Used or Maintenance</td>
<td>Fresh Water Frequency</td>
<td>Salt Water Frequency</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------</td>
<td>------------------------------------------------</td>
<td>------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>18</td>
<td>Power Trim Pump Oil Level</td>
<td>SAE 10W-30 or 10W-40</td>
<td>Every 100 Hrs. or Once in Season</td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td>2</td>
<td>Trim Tab and Anodic Plate</td>
<td>Check Condition, Replace if Necessary</td>
<td>Every 30 Days</td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td>1-6</td>
<td>Propeller</td>
<td>Check for Possible Damage and Tightness</td>
<td>Every 50 Hrs.</td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td></td>
<td>Steering and Trim Cylinder</td>
<td>Tighten</td>
<td>Every 100 Hrs.</td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td>Fasteners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Engine Exterior</td>
<td>Clean and Check</td>
<td>Once in Season</td>
<td>Occasionally</td>
</tr>
<tr>
<td></td>
<td>Water Pump and Impeller</td>
<td>Inspection by Dealer</td>
<td></td>
<td>Same as Fresh Water</td>
</tr>
<tr>
<td></td>
<td>Oil Injection (If equipped)</td>
<td>Formula 50-D or an Equivalent BIA TC-W Oil (Use a pre-diluted oil only)</td>
<td>As Required</td>
<td>As Required</td>
</tr>
</tbody>
</table>

*Recommended Owner/Operator Service  
△ Recommended Authorized Dealer Service
25 Gear Housing Lube (Filling)

a Lubricant Vent Screw and Washer
b Lubricant Fill Hole

26 Throttle - Shift Linkage Lubrication

a Lubrication Points (9)

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Swivel Pin and Tilt Lock Lubrication

are connected. DO NOT remove spark plug connectors and hold them in your hand to check for spark while engine is running, as high voltage is present. NEVER attempt to turn engine over by hand with propeller or flywheel.

If the electrical system is not operating, do not attempt to fix it yourself, but refer to your nearest Authorized Service facility.

SERVICING SPARK PLUGS

1. Remove spark plugs, clean and inspect. If the center electrode is eroded, replace with new spark plug.

2. Install spark plugs. Start the threads one or two turns with fingers to avoid danger of cross-threading. After seating plug finger-tight on gasket, an additional ¼-turn with a wrench will generally be sufficient to tighten. Do not overtighten, as insulator may crack, or threads may strip.

IGNITION MAINTENANCE

SAFETY WARNING: DO NOT touch or disconnect any ignition system parts while engine is running or while battery cables
3. Inspect high tension leads. If insulation is damaged or deteriorated, install new high tension lead.

4. Connect each spark plug lead to its respective spark plug.

**28** Tilt Tube, Steering Cable and Steering Link Rod Pivot Points

**29** Tilt Lock Lever Shaft and Locking Brace Pivot Points

- a Tilt Tube Grease Fitting
- b Steering Cable Grease Fitting
- c Steering Link Rod Pivot Points

- a Locking Brace Pivot Point
- b Tilt Lock Lever Shaft Grease Fitting
MAINTENANCE OF BATTERY

SAFETY WARNING: Hydrogen gases, that escape from the battery during charging, are explosive. When charging batteries, be sure that the battery compartment or area (where the batteries are located) is well-ventilated.

SAFETY WARNING: Battery electrolyte is a corrosive acid and should be handled with care. If electrolyte is spilled or splashed on any part of the body, immediately flush the exposed area with liberal amounts of water and obtain medical aid as soon as possible. Safety glasses and rubber gloves are recommended when handling batteries or filling with electrolyte.

not in use. Recharge every 60 days or when specific gravity drops below 1.230. (Recharge rate should not be over 6 amperes. Discontinue charging when gravity reaches 1.260.) Cover plates with distilled water, but not over 4.8 mm (3/16”) above perforated baffles.

WINTER STORAGE CARE OF BATTERY

CAUTION: A discharged battery can be damaged by freezing.

See your Authorized Dealer for battery maintenance and storage information.

PREPARATION FOR STORAGE OR SHIPMENT

See your Authorized Dealer for correct procedure.
SAFETY WARNING: As a safety precaution, remove positive (+) battery cable when boat is placed in storage, on display or in transit. This will eliminate possibility of accidental starting of engine and resultant overheating and damage to the engine due to lack of water.

If a speedometer is installed in the boat, disconnect the pickup tube and allow it to drain. Reconnect the tube after draining.

ATTENTION REQUIRED following OPERATION in SALT WATER or SILT

Even though the interior surfaces of this outboard motor are treated to resist corrosion, there still is a possibility of a mechanical buildup of salt or silt deposits which no form of protective coating can prevent and which can be eliminated only by occasional flushing with fresh water.

SAFETY WARNING: When flushing, be certain that area in vicinity of propeller is clear and that no person is standing nearby—to avoid possible injury. It is recommended to remove propeller as a precautionary measure.

IMPORTANT: When storing outboard motor for the winter, be sure that all water drain holes in the gear housing are open and free so that all water will drain out. Trapped water may freeze and expand, thus cracking the gear housing and/or water pump housing.

Check and refill lower unit, as explained, before storage to protect against possible water leakage into gear housing which is caused by loose lubricant vent screw or loose fill plug. Be sure to replace gaskets under plugs, replacing any damaged gaskets.
1. Install Quicksilver Flushing Attachment (or equivalent tool) on the gear housing from the FRONT side, positioning the rubber cups over the water intake openings. (Figure 30)

2. Connect hose between flushing attachment and water tap.

3. With the motor in normal operating position (vertical), open water tap and adjust water flow so that there is a significant water loss around the rubber cups.

4. Shift motor into “Neutral” and start engine. Operate at idle speed and readjust the water supply as necessary to again establish a significant water loss around the flushing device rubber cups.

5. Increase engine speed to approximately 1500 to 2000 RPM. DO NOT OVER-REV ENGINE—OPERATE AT SLOWER SPEEDS ONLY. Check to be sure that water is discharging from the “tell-tale”.

6. Continue flushing until water being discharged becomes clear (3 to 5 minutes for salt water units).

7. Stop engine, turn water off and remove flushing attachment from gear housing.

   IMPORTANT: While and after flushing, keep motor in upright position until all water has drained from driveshaft housing to prevent water from entering the powerhead via driveshaft housing and exhaust ports.

8. Clean the motor thoroughly, then spray or wipe Quicksilver Corrosion and Rust Preventive Type II (or equivalent) on the motor to protect the finish of all parts.

9. Refer to “ADJUSTMENTS/MAINTENANCE - Lubrication Chart” following, and lubricate motor components as outlined.

10. When outboard is left on boat when moored, keep in a normal operating position. If partially tilted out-of-water, zinc trim tab (Figure 17) cannot act as a galvanic corrosion inhibitor.

11. Disconnect positive (+) battery terminal when in dock or in storage for any long period of time.
Flush Test Device

ATTENTION REQUIRED FOLLOWING COMPLETE SUBMERSION

In an effort to deter serious internal engine damage and avert expensive engine repairs, a motor, that has been submerged, requires IMMEDIATE service upon recovery.

1. Wash entire motor with clean, fresh water to remove mud, silt, weeds, salt, etc.

2. Remove the spark plugs and purge the engine and carburetor of as much water as possible ("crank" engine with spark plug holes facing downward).

3. If compressed air is available, "blow-dry" the engine internally and externally.

4. Pour a liberal amount of Quicksilver Engine Cleaner or Quicksilver Formula 50-D 2-Cycle Outboard Lubricant into the engine via the carburetor and spark plug hole.

5. Manually "crank" engine to distribute the lubricant within the engine, then drain excess lubricant from engine.
6. Reinstall spark plugs and high tension leads.

IMPORTANT: If it appears that the engine DID NOT take in any foreign material (mud, sand, weeds, etc), and "cranks" freely, the engine should be started. If there is evidence that foreign material had entered the engine, the engine should be disassembled and cleaned (take motor to an Authorized Dealer for service).

7. Start engine and operate at low RPM for a minimum of 5 minutes, then run engine at varied throttle settings for an additional 15-20 minutes. (Normal operation will continue the drying-out process, displacing remaining moisture and providing internal lubrication.)

8. If engine performance still indicates engine trouble, take motor to an Authorized Dealer for further service.

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**TROUBLESHOOTING CHART**

IMPORTANT: The following chart is intended as a guide to aid in finding and correcting minor outboard motor malfunctions, should they occur. Possible causes are listed in order of probability and, even though some may appear to be quite obvious, these same causes often are overlooked when a problem occurs. If a problem cannot be located and corrected with the aid of the guide, see your Authorized Dealer for further service.

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**SAFETY WARNING:** Before attempting any checks or repairs, battery cables MUST BE REMOVED from battery to prevent possible personal injury or damage to equipment.

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<table>
<thead>
<tr>
<th>Trouble</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Engine will not start</td>
<td>1. Gas tank empty</td>
<td>1. Fill tank with clean, fresh fuel.</td>
</tr>
<tr>
<td></td>
<td>2. Clogged fuel filter</td>
<td>2. Clean or replace fuel filter.</td>
</tr>
<tr>
<td></td>
<td>5. Improper use of choke</td>
<td>5. Read starting procedure in owner’s “Operation and Maintenance Manual”.</td>
</tr>
<tr>
<td></td>
<td>6. Engine flooded</td>
<td>6. Avoid excessive use of choke. Do not attempt to start engine for at least 5 minutes.</td>
</tr>
<tr>
<td></td>
<td>7. Weak or low capacity battery</td>
<td>7. Check condition of battery; use battery of recommended capacity.</td>
</tr>
<tr>
<td></td>
<td>8. Loose or corroded battery connections</td>
<td>8. Tighten cables on battery. Clean battery terminals.</td>
</tr>
<tr>
<td></td>
<td>10. Improper fuel-oil ratio</td>
<td>10. Mix fuel-oil thoroughly and to recommended ratio.</td>
</tr>
<tr>
<td></td>
<td>11. Defective or wrong type spark plugs</td>
<td>11. Inspect spark plugs; clean or replace with recommended spark plugs.</td>
</tr>
<tr>
<td></td>
<td>12. Poor connections or damaged ignition</td>
<td>12. Check wires for wear or breaks and tighten all loose connectivity.</td>
</tr>
<tr>
<td></td>
<td>13. Fuse for electric start circuit is melted</td>
<td>13. Check and correct cause for electric overload and replace fuse with a SFE 20 amp fuse.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Trouble</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| B. Poor idling or engine misses while idling | 1. Fouled spark plugs  
2. Fuel system obstruction  
3. Stale or contaminated fuel  
4. Throttle shutter(s) not closing completely  
5. Defective ignition component  
6. Reed valve open or broken | 1. Inspect spark plugs. Clean or replace.  
2. Check for pinched or kinked fuel line or other obstructions in fuel system.  
3. Fill tank with clean, fresh fuel.  
4. See Authorized Servicing Dealer for proper throttle adjustment.  
5. See Servicing Dealer for repair.  
6. See Authorized Servicing Dealer for repair. |
| C. Engine misfires at high speeds | 1. Fouled or wrong type spark plugs  
2. Stale or contaminated fuel  
3. Wrong fuel and oil mixture  
4. Poor connections or damaged ignition wiring  
5. Improper carburetor mixture  
6. Incorrect spark timing | 1. Inspect spark plugs. Clean or replace.  
2. Fill tank with clean, fresh fuel.  
3. Mix fuel and oil as instructed in owner's "Operation and Maintenance Manual".  
4. Check wires for wear or breaks and tighten all loose connections. Replace worn or broken wires.  
5. Return to Authorized Servicing Dealer for proper carburetor servicing.  
6. Return to Authorized Servicing Dealer for proper synchronization. |
<table>
<thead>
<tr>
<th>Trouble</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Battery will not hold charge</td>
<td>1. Corroded or loose battery terminals</td>
<td>1. Clean and tighten battery terminals.</td>
</tr>
<tr>
<td></td>
<td>2. Low electrolyte level</td>
<td>2. Fill battery to recommended level.</td>
</tr>
<tr>
<td></td>
<td>3. Worn out or inefficient battery</td>
<td>3. Replace battery with one of recommended capacity.</td>
</tr>
<tr>
<td></td>
<td>4. Excessive use of electrical accessories</td>
<td>4. Use battery of recommended capacity.</td>
</tr>
<tr>
<td></td>
<td>5. Defective rectifier</td>
<td>5. Have serviced by an Authorized Dealer.</td>
</tr>
<tr>
<td>E. Motor speed faster than normal</td>
<td>1. Transom too high</td>
<td>1. Have outboard adjusted to proper transom height.</td>
</tr>
<tr>
<td></td>
<td>2. Boat improperly loaded</td>
<td>2. Distribute load to place boat on an even plane.</td>
</tr>
<tr>
<td></td>
<td>3. Tilt angle not correctly adjusted</td>
<td>3. Adjust tilt angle to achieve most efficient operation.</td>
</tr>
<tr>
<td></td>
<td>4. Propeller of wrong pitch or diameter</td>
<td>4. Install correct propeller to operate outboard at its recommended RPM range.</td>
</tr>
<tr>
<td></td>
<td>5. Propeller damaged.</td>
<td>5. Have propeller repaired or replaced.</td>
</tr>
<tr>
<td>F. Motor speed slower than normal</td>
<td>1. Weeds or other foreign material tangled on gear housing</td>
<td>1. Remove and clean lower unit.</td>
</tr>
<tr>
<td>2. Boat improperly loaded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Tilt angle not correctly adjusted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Excessive oil in fuel mixture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Improper fuel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Propeller damaged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Propeller of wrong pitch or diameter</td>
<td></td>
<td></td>
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<tr>
<td>8. Transom height too high or too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Wrong type or fouled spark plugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Carburetor out of adjustment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Distribute load to place boat on an even plane.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Adjust tilt angle to achieve most efficient operation.</td>
</tr>
<tr>
<td>4. Mix gas and oil to recommended ratio and mix thoroughly.</td>
</tr>
<tr>
<td>5. Use only recommended gas and oil in fuel mixture.</td>
</tr>
<tr>
<td>6. Have propeller repaired or replaced.</td>
</tr>
<tr>
<td>7. Install correct propeller to operate outboard at its recommended RPM range.</td>
</tr>
<tr>
<td>8. Have outboard adjusted to proper transom height.</td>
</tr>
<tr>
<td>9. Use only recommended spark plugs.</td>
</tr>
<tr>
<td>10. Have carburetor serviced by an Authorized Dealer.</td>
</tr>
</tbody>
</table>

**G. Engine overheating**

<table>
<thead>
<tr>
<th>1. Cooling system clogged</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Engine overloaded (cannot attain recommended RPM)</td>
</tr>
<tr>
<td>3. Incorrect transom height and/or tilt angle adjustment</td>
</tr>
<tr>
<td>4. Not enough oil in fuel mixture</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Check water intake for restriction (see “Water Pump Operation” in owner’s “Operation and Maintenance Manual”).</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Readjust as necessary (see “Tilt Angle Adjustment” in “Operation and Maintenance Manual”).</td>
</tr>
<tr>
<td>4. Mix fuel-oil thoroughly and to recommended ratio.</td>
</tr>
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</tr>
<tr>
<td><strong>H. Tachometer does not operate</strong></td>
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</tr>
<tr>
<td><strong>I. Oil injection warning horn sounds (Intermittent horn sound)</strong></td>
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</tbody>
</table>
INTERNATIONAL WARRANTY

I. We warrant each new Mariner Outboard Motor and accessories attached, thereto, (hereafter referred to as “Product”) manufactured by us to be free from defects in material and workmanship. This warranty shall remain in effect for a period of one (1) year from date of purchase.

II. Since this warranty applies to defects in material and workmanship, it does not apply to normal worn parts, adjustments, tuneups or to damage caused by: 1) Neglect, lack of maintenance, accident, abnormal operation or improper installation or service; 2) Use of an accessory or part not manufactured or sold by Mercury Marine; 3) Operation with fuels, oils, lubricants, or fuel/oil mixtures which are not recommended for use with the Product; 4) Participating in or preparing for racing or other competitive activity or operating with a racing type lower unit; or 5) Alteration or removal of parts.

III. Reasonable access must be provided to the product for warranty service. This warranty will not apply to: 1) Haul-out, launch, towing and storage charges; telephone or rental charges of any type, inconvenience or loss of time or income; or 2) Removal and/or replacement of boat partitions or material because of boat design for necessary access to the Product.

IV. Claim shall be made under this warranty by delivering the Product for inspection to a Mariner Outboard Dealer authorized to service the Product. If purchaser cannot deliver Product to such authorized dealer, he may give notice in writing to the Mercury Marine Area Office or Distributor. The Mariner Area Office or Distributor shall then arrange for the inspection and repair, provided such service is covered under this warranty. Purchaser shall pay for all related transportation charges and/or travel time. If the service is not covered by this warranty, purchaser shall pay for all related labor and material and any other expenses associated with that service. Any Product or parts shipped by purchaser for inspection or repair must be shipped with transportation charges prepaid.

Purchaser must provide “proof of purchase” and substantiate “date of purchase” by presenting the “Customer Copy” of the “Mariner Outboard Registration Card” or the plastic “Owner’s Warranty Registration Card” to the dealer authorized to service the product. If either of these items is not available, purchaser must provide a copy of the original Bill of Sale (Sales Contract) for the product to be serviced. Warranty Claims will not be accepted until adequate “proof of purchase” and “date of purchase” is presented by purchaser.

V. Our obligation under this Warranty shall be limited to repairing a defective part or at our option replacing such part or parts as shall be necessary to remedy any malfunction resulting from defects in material or workmanship as covered by this warranty. We reserve the right to improve the design of any Product without assuming any obligation to modify any Product previously manufactured.

VI. All incidental and/or consequential damages are excluded from this warranty. Implied warranties are limited to the life of this warranty.

VII. This warranty is in lieu of all other warranties, expressed or implied, and may not be modified or extended by anyone, except that any qualification or restriction contained herein which is prohibited by any law where the Product is sold and such qualification or restriction only, is null and void. All other qualifications and restrictions of this warranty remain in full force and effect.

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