

# OPERATION & MAINTENANCE MANUAL

**50 • 60**

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## IMPORTANT INFORMATION

Because of your valued investment we here at Mercury Marine also value you as a consumer of the finest outboard products sold in the world. It is for this reason we suggest you break-in your new outboard motor in the following fashion

This break-in assures that all moving parts "wear-in" evenly to ensure a longer engine life and optimum performance

Operate your new outboard motor at varied throttle settings - not to exceed 1/2 throttle (2500-3500RPM) during the first hour or the first five gallons of break-in fuel. Refer to "Fuel Mixture and Gasoline/Oil Recommendations" - "Break-In Fuel Mixture."

During the second hour operation, or the second 5 gallons of break-in fuel, operate the outboard at varied throttle settings not to exceed 4500 RPM.

**DO NOT OPERATE YOUR NEW OUTBOARD MOTOR AT FULL THROTTLE UNTIL THE SECOND HOUR OF BREAK-IN IS COMPLETED.** This includes full throttle acceleration pulling waterskiers, or wide open throttle running

After the first two hours of running, approximately 10 gallons of fuel, full throttle operation may be attained, but not sustained, for the remaining break-in fuel (approximately 5 gallons)

For the next five hours of operation, full throttle operation may, again, be attained, but it is strongly not recommended for sustained use (Not more than 5 minutes of continuous wide open throttle )


### **▲CAUTION**

**SEVERE DAMAGE to your engine can result by not complying with the preceding break-in procedures.**

# READ THIS MANUAL THOROUGHLY

If you don't understand any portion, contact your dealer for a demonstration of actual starting and operating procedures.

## NOTICE

Throughout this publication, and on your outboard, DANGER, WARNINGS and CAUTIONS, accompanied by the international HAZARD Symbol , may be used to alert the installer/user to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. OBSERVE THEM CAREFULLY.

These "Safety Alerts" alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus "common sense" operation, are major accident prevention measures.

## DANGER

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

## AWARNING

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

## CAUTION

CAUTION — Hazards or unsafe practices which could result in minor personal injury of product or property damage.

IMPORTANT - Indicates information or instructions that are necessary for proper operation **and/or** maintenance.

## AWARNING

The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard and the safety of all occupants aboard. We strongly recommend that the operator read this Operation and Maintenance Manual and thoroughly understand the operational instructions for the outboard and all related accessories before the boat is used.

## AWARNING

The following advantages and disadvantages of a LANYARD **STOP SWITCH** should be considered before electing to use, or not to use, such a switch.

ADVANTAGES: The purpose of a LANYARD STOP SWITCH is to stop the engine when the operator leaves his control station, either accidentally by falling into the boat, or by falling or being ejected overboard. This is most likely in certain types of boats such as low sided bass boats, high performance boats and light sensitive handling, fishing boats operated by hand-tiller. It is **also** likely as a result of poor operating practices such as sitting on the back of the seat at planing speeds, standing at planing speeds, operating at high speeds in shallow or obstacle infested waters, drinking and driving, or daring high speed boat maneuvers.

DISADVANTAGES: Inadvertent activation of the switch is also a possibility. This could cause any or all of the following potentially hazardous situations:

- Loss of balance and falling forward of unstable boat passengers - a particular concern in bow rider type boats.
- Loss of power and directional control in heavy seas, strong current or high winds.
- Loss of control when docking.

As we cannot possibly know of and advise the boating public of ALL conceivable boat/motor types and/or poor operating practices, the final decision of whether or not to use a LANYARD STOP SWITCH rests with you, the owner/driver.

We strongly recommend that other occupants be instructed on proper starting and operating procedures should they be required to operate the outboard and boat in an emergency.

### ⚠WARNING

It is difficult for a person standing or floating in the water to move clear if they see a powerboat heading toward them, even at slow speed. Shift the unit to neutral and shut off engine when your boat is near people in the water.

SERIOUS INJURY IS LIKELY IF A PERSON IN THE WATER IS STRUCK BY A MOVING BOAT, GEAR HOUSING, PROPELLER, OR ACCESSORY RIGIDLY ATTACHED TO YOUR BOAT OR OUTBOARD.

### ⚠WARNING

The use of accessories not manufactured or sold by Mercury Marine is not recommended for use with your outboard. If your outboard or outboard operating system is equipped with an accessory not manufactured by Mercury Marine, be sure to read the Operation and Maintenance Manual for that accessory before operation. If you haven't been supplied with such a manual, contact your dealer or the manufacturer of the accessory to secure the applicable manual.

### ⚠WARNING

USE CARE when transporting fuel container, whether in a boat or car. DO NOT fill fuel container to maximum capacity. Gasoline will expand considerably as it warms up and can build up pressure in the fuel container. This can cause fuel leakage and a potential fire hazard.

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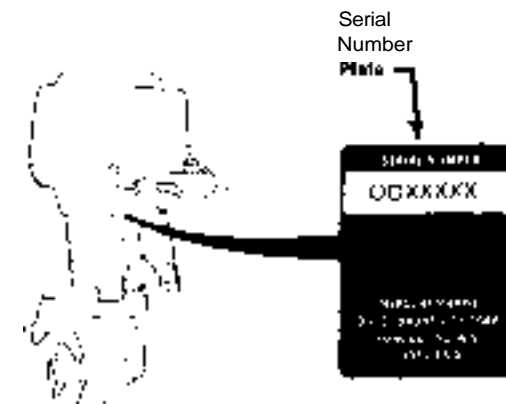
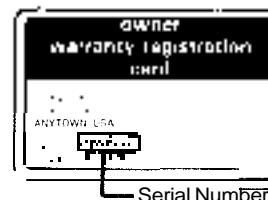
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The description and specifications contained herein were in effect at the time this guide was approved for printing. Mercury Marine, whose policy is one of continuous improvement, reserves the right to discontinue models at any time to change specifications, designs, methods or procedures without notice and without incurring obligation.

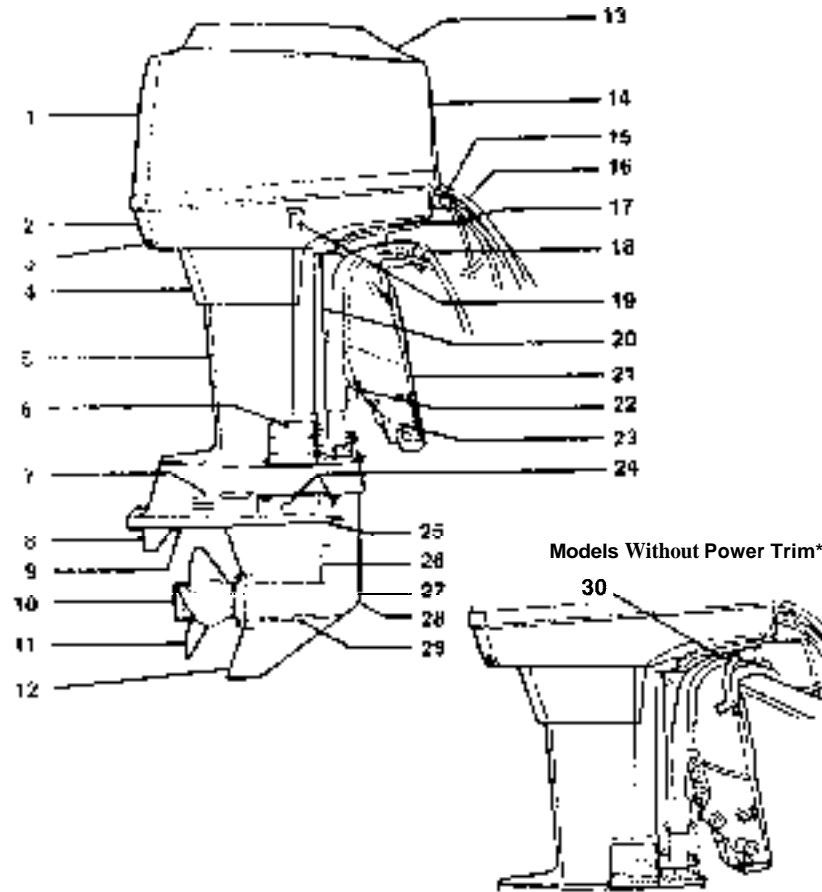
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### OUTBOARD SERIAL NUMBER LOCATION



# SPECIFICATIONS



- 1 - Top Cowl
- 2 - Rear Cowl Latch
- 3 - Water Pump "Tell-Tale" Outlet
- 4 - Exhaust Relief Outlet
- 5 - Drive Shaft Housing
- 6 - Dyna Float Suspension
- 7 - Water Discharge
- 8 - Trim Tab
- 9 - Trim Tab Adjustment Bolt
- 10 - Jet Prop Exhaust
- 11 - Quicksilver Propeller
- 12 - Skeg
- 13 - Oil Reservoir Tank Cap
- 14 - Oil Level Sight Gauge
- 15 - Fuel Line Connector

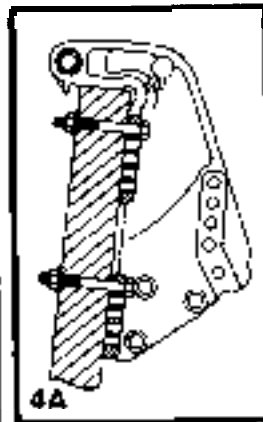
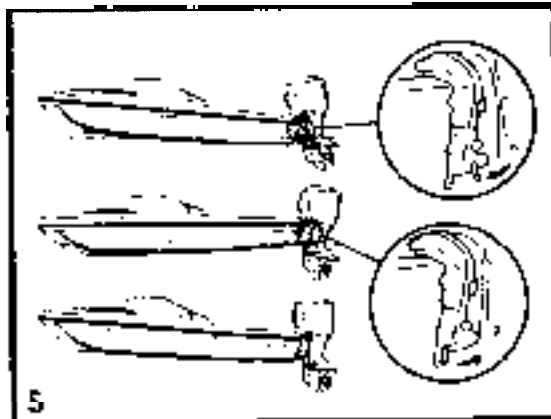
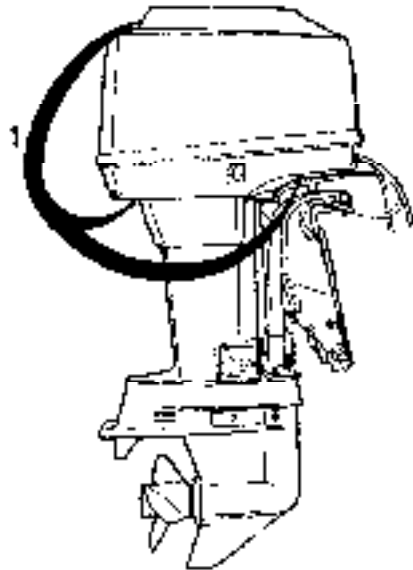
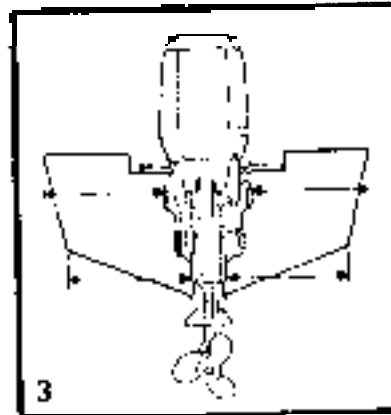
- 16 - Engine Wiring Harness/Battery Cables
- 17 - Steering Arm/Bracket
- 18 - Tilt Tube
- 19 - Auxiliary Tilt Switch
- 20 - Swivel Bracket
- 21 - Transom Bracket
- 22 - Trim Adjustment Pin
- 23 - Manual Tilt Release Valve
- 24 - Lubricant VENT Plug (2)
- 25 - Anti-Ventilation Plate
- 26 - Water Intake
- 27 - Speedometer Pickup Up
- 28 - Gear Housing
- 29 - Lubricant Fill Plug
- 30 - Tilt Release Lever

<sup>1</sup>International Only

MODEL	50	60
Horsepower	50	60
Propshaft Kitwards	37.3	43.7
Full Throttle RPM Range	5400-5500	
Idle Speed	650-720 RPM (in Gear)	
Piston Displacement	51.8 cc (in (1.94cc))	
Bore	2.91 in (75mm)	
Stroke	2.52 in (64mm)	
Recommended Spark Plug <sup>1</sup>	NGK BU8H	
Recommended Gasoline	Any leaded or unleaded (lead-free) gasoline, with a minimum posted octane rating of 87 (research octane number 90)	
Recommended Oil	Quicksilver 2-Cycle Outboard Oil	
Battery Rating	Minimum Reserve Capacity Rating of 100 Minutes and Cold Cranking Amperage of 350 Amperes	
Transom Height	Long Shaft = 20 in. (508mm)	

<sup>1</sup>Use NGK-BU8H where radio frequency interference (RFI) suppression is required.

# OUTBOARD MOTOR INSTALLATION



## AWARNING

**DO NOT OVERPOWER** - Most boats are rated and **certified** for the maximum horsepower capabilities of the boat. Refer to the boat "Certification Plate" for the maximum horsepower limit. If in doubt, contact your dealer.

**IMPORTANT:** For proper boat operation, position the outboard on the boat transom in relation to the boat bottom and according to procedures explained in the "Outboard Motor Installation Manual."

## LIFTING OUTBOARD

### CAUTION

After outboard removal, **DO NOT** turn outboard upside down or lay on its side. Water could enter powerhead causing damage to internal engine components.

**1** "Finger grip wells" are located at the top rear and along both sides of the bottom cowl.

## TRANSOM HEIGHT

### CAUTION

**WE DO NOT** recommend outboard mounting heights in excess of **22-1/2 in. (572mm)**. Excessive mounting heights require that extreme care be taken to ensure proper water flow to water intake ports for engine cooling.

**2** Proper transom height is important for best boating performance. The gear housing anti-ventilation plate should be parallel to and at the same level as the boat bottom.

## MOUNTING OUTBOARD ON TRANSOM

### WARNING

Before operating, **outboard(s) MUST BE SECURED** to boat transom with four 1/2 in. diameter bolts and locknuts, as follows: 2 bolts must be installed thru upper mounting holes and 2 bolts thru lower mounting

holes. Installation must be water-tight, and outboard should be checked for tightness on the transom during operation. Failure to bolt outboard to transom (using 4 bolts and locknuts, as shown) may result in damage to boat and/or loss of outboard and possible injury to occupants of boat.

### CAUTION

Marine sealer must be used on shanks of mounting bolts to make a water-tight installation.

**IMPORTANT:** **DO NOT** use an impact driver when tightening transom mounting bolts.

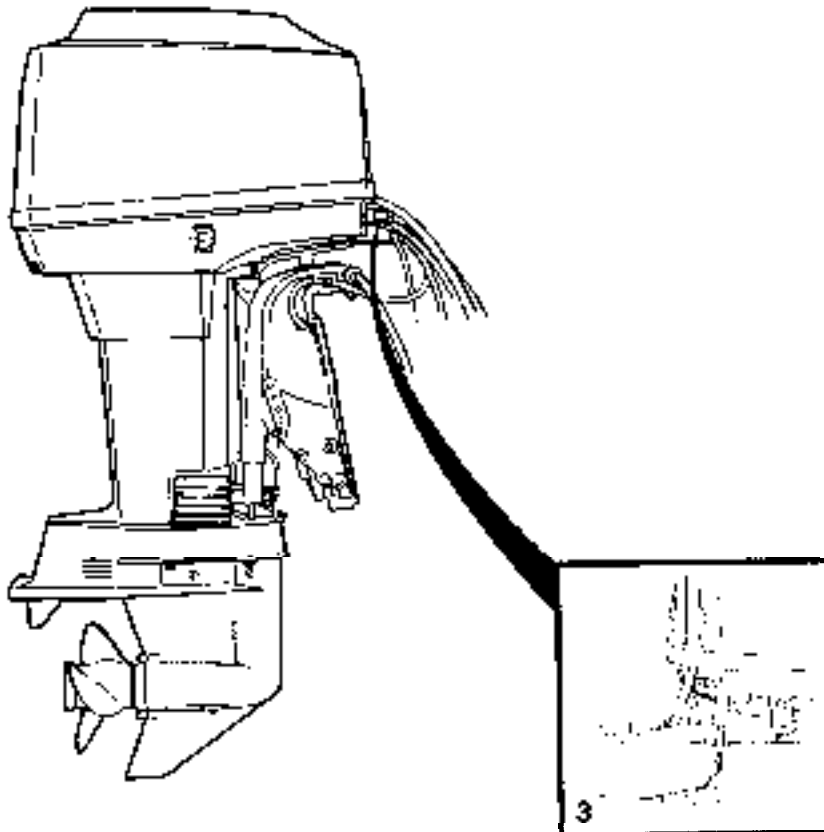
**3** Place outboard on center line of boat transom and drill through transom using upper bolt holes in each set of transom bracket mounting holes as guides.

**4/4A** Secure outboard to transom with bolts, locknut, and washers provided.

## TRIM IN ANGLE ADJUSTMENT

**5** Trim angle of the lower unit has a distinct effect on performance and handling. On some boats, due to the transom angle, trimming the outboard down (IN) too far may result in undesirable or unsafe steering conditions at planing speeds. If these steering conditions are experienced, under no circumstances should the outboard be operated without a trim adjustment pin and without the pin adjusted in the proper holes to prevent unsafe handling characteristics. See your Authorized Dealer.

**IMPORTANT:** Propeller shaft tilt will affect boat performance. With the outboard tilted in, propeller force will make the boat want to go into a right-hand turn. The situation reverses when the lower unit is tilted out well past vertical. The operator must resist this force to keep the boat on a straight course. Refer to **TRIM TAB ADJUSTMENT**.



## OUTBOARD MOTOR INSTALLATION (Continued)

### TILT LOCK LEVER

**1** Locks outboard in a fully tilted position.

#### **CAUTION**

Outboard must not be run in full tilt lock position, as water pickups in lower unit would be out of the water and water pump and/or engine would be damaged.

To engage tilt lock lever:

Tilt outboard to full up position. Push in on tilt lock lever knob and turn tilt lock lever toward transom bracket. Lower outboard until tilt lock lever rests on transom bracket.

To disengage tilt lock lever:

Tilt outboard to full up position. Push in on tilt lock lever knob and turn tilt lock lever away from transom bracket.

### TRIM TAB ADJUSTMENT

**2** The trim tab will help to offset steering pull caused by propeller torque at high speeds or extreme tilt angles. If boat pulls to the left, loosen bolt and rotate trailing edge of trim tab to the left (as viewed from behind outboard). If boat pulls to the right, rotate trim tab to right. Tighten cap screw

**IMPORTANT** The trim tab is made of special alloy to protect outboard housings from galvanic corrosion. **DO NOT** paint or place **protective** coating on the trim tab.

### BATTERY and ELECTRICAL ACCESSORIES

#### **CAUTION**

Failure to observe correct polarity when connecting battery leads to battery will result in damage to the charging system on electric starting models.

**IMPORTANT:** Secure battery in a favorable position in the boat.

Any accessories such as horns, lights, etc., should be properly fused and installed with connections attached directly to battery terminals

### MOUNTING FUEL TANK and CONNECTING FUEL LINES

Arrange fuel line so that it does not become twisted, kinked, pinched or stretched

**3** Connect fuel line to outboard. Make sure fuel line connector is locked on outboard fuel connector

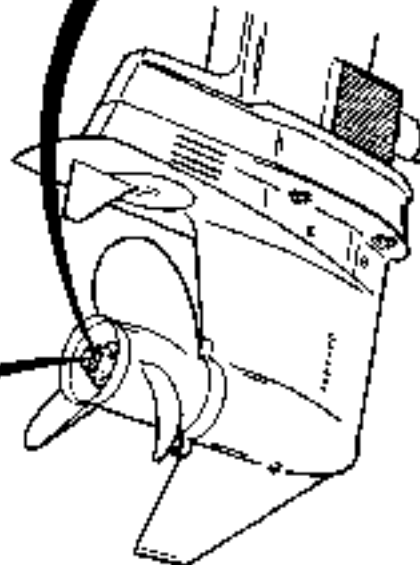
# PROPELLERS

## PROPELLER SELECTION

Select a propeller that will allow engine to operate at or near top of recommended full throttle RPM range 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 excessive trim angle should not be used to determine

ing correct propeller.) Normally, there is a 300 to 500 RPM change between propeller pitches. Full throttle RPM range is listed in SPECIFICATIONS.

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



# PROPELLERS (Continued)

## PROPELLER REMOVAL

### AWARNING

Before attempting to remove or install propeller, remove spark plug leads from spark plugs to prevent engine from starting **accidentally**.

**1** Remove top cowl (see COWL REMOVAL and INSTALLATION) and disconnect spark plug leads.

**2** Place wood block between propeller blade and anti-ventilation plate to prevent rotation.

**3** Turn propeller shaft nut counterclockwise to remove nut.

**4** Slide tab washer, propeller and splined thrust hub off propeller shaft.

## PROPELLER REPAIR

Some damaged propellers can be repaired. Consult your Authorized Dealer.

## PROPELLER INSTALLATION

**IMPORTANT:** Periodically check propeller nut for tightness during boating season.

**5** Apply a liberal coat of one of the following Quicksilver lubricants to the propeller

shaft; Special Lubricant 101, Anti-Corrosion Grease or 2-4-C Marine Lubricant.

**6** Slide splined thrust hub onto propeller shaft with thrust hub shoulder toward gear housing.

Slide propeller and tab washer in that order, onto shaft and install propeller nut.

Place a wood block between propeller blade and anti-ventilation plate to prevent rotation.

Turn propeller shaft nut clockwise. Using a socket wrench, TIGHTEN NUT SECURELY [minimum of 55 lb ft (74.6 N m) of torque].

Bend tab on tab washer to secure propeller nut.

Reconnect spark plug leads and install top cowl.

**IMPORTANT:** After first use, bend tab straight, retighten propeller nut [minimum of 55 lb. ft. (14.6 N·m)] and again bend tab on tab washer to secure nut.

### CAUTION

Operation with a loose propeller could cause damage to the thrust hub and gear housing during acceleration, deceleration or when shifting gears.



# CONDITIONS AFFECTING OPERATION

## WEIGHT DISTRIBUTION

positioning of weight (passengers and gear) inside the boat has the following effects:

### A. Shifting weight to rear (stern).

- Generally increases speed and engine RPM.

- At extremes, can cause boat to porpoise.

Causes bow to bounce in choppy water.

- Increases danger of the following-wave splashing into boat when coming off plane.

### B. Shifting weight to front (bow).

- Improves ease of planing off.

Improves rough water ride.

- At extremes, can cause boat to veer back and forth (bow steer).

- Reduces engine RPM.

## BOTTOM OF BOAT

To maintain maximum speed the following conditions of the boat bottom should be observed:

### A. Clean, free of barnacles and marine growth.

### B. Free of distortion, nearly flat where it contacts the water.

### C. Straight and smooth, fore and aft

## GEAR HOUSING

If outboard is not tilted up when boat is docked, marine vegetation may accumulate. This growth **MUST BE REMOVED** before operation; it may clog water inlets and cause engine to overheat.

## CAVITATION

Cavitation occurs when water flow cannot follow the contour of a fast moving underwater object, such as a gear housing or propeller. Cavitation permits the propeller to speed up, but the boat speed to reduce. Cavitation can seriously erode the surface of the gear housing or propeller. Common causes of cavitation are:

### A. Bent propeller blade or damaged gear housing skeg.

### B. Raised burrs of sharp edges on propeller or gear housing.

### C. Weeds or other debris snagged on propeller or gear housing.

## VENTILATION

Ventilation is caused by surface air or exhaust gases which are introduced around the propeller resulting in propeller speed-up and a reduction in boat speed. Excessive ventilation is annoying and usually caused by:

### A. Outboard installed too high on transom.

### B. Outboard tilted out too far.

### C. A missing propeller diffuser ring

### D. Damaged propeller or gear housing which allows exhaust gases to escape between propeller and gear housing

# FUEL MIXTURE and GASOLINE/OIL RECOMMENDATIONS

## ⚠WARNING

USE CARE when transporting fuel container, whether in a boat or car. **DO NOT fill** fuel container to maximum capacity. Gasoline will expand considerably as it warms up and can build up pressure in the fuel container. This can cause fuel leakage and a potential fire hazard.

## GASOLINE RECOMMENDATIONS

## ⚠CAUTION

Use of improper gasolines and/or oils can cause serious damage to your outboard motor.

Any leaded or unleaded (lead-free) gasoline, with a minimum posted octane rating of 87 (research octane number 90) is satisfactory for use in these model outboard motors.

However, gasolines containing alcohol, either methyl alcohol (methanol) or ethyl (ethanol) may cause increased:

Corrosion of metal parts

- Deterioration of elastomer and plastic parts.

- Fuel permeation through flexible fuel lines.

- Wear and damage of internal engine parts.

Starting and operating difficulties

Some of these adverse effects are due to the tendency of gasolines containing alcohol to absorb moisture from the air, resulting in a phase of water and alcohol separating from the gasoline in the fuel tank.

The adverse effects of alcohol are more severe with methyl alcohol (methanol) and are worse with increasing alcohol content.

## ⚠WARNING

**FIRE AND EXPLOSION HAZARD:** Fuel leakage from any part of the fuel system can be a fire and explosion hazard which can cause serious bodily injury or death. Careful **periodic** inspection of the entire fuel system is mandatory, particularly after storage. All fuel components including fuel tanks, whether plastic, metal or fiberglass, fuel lines, primer bulbs, fittings, fuel filters and carburetors should be inspected for leakage, softening, hardening, swelling or corrosion. **Any** sign of leakage or deterioration **necessitates** replacement before further **engine** operation.

Because of the possible adverse effects of alcohol in gasoline, it is recommended that only alcohol-free gasoline be used where possible. If only alcohol-containing fuel is available, or if the presence of alcohol is unknown, then increased inspection frequency for leaks and abnormalities is required.

## OIL RECOMMENDATIONS

## ⚠CAUTION

The use of other than recommended gasoline and Quicksilver 2-Cycle Outboard Oil or an acceptable NMMA TC-W II™ 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.

In an emergency, if Quicksilver 2-Cycle Outboard Oil is not available, substitute a high quality 2-cycle oil that is intended for outboard use and meets **NMMA** rating TC-W II™, shown on oil container. Use the oil manufacturer's recommended gasoline-oil mixture as shown on the label, not to exceed 50:1

## FUEL MIXTURE and GASOLINE OIL RECOMMENDATIONS (Continued)

50:1 BREAK-IN FUEL MIXTURE — WITH OIL INJECTION

Type of Oil	U.S. Measure	Imperial Measure	Metric Measure
Outboard 2-Cycle Outboard Oil	16 U.S. oz. to each 8 gallons of gasoline	1.5 Imp. oz. to each 5 Imp. gallons of gasoline	400cc to each 20 liters of gasoline
Other Acceptable NMMA TC-W II™ Oils	Use at Oil Manufacturer's Recommendations. DO NOT EXCEED 50:1		

## FUEL MIXTURE and GASOLINE/ OIL RECOMMENDATIONS (Continued)

MIXING INSTRUCTIONS

### ⚠ WARNING

Observe fire prevention rules, particularly NO SMOKING. **Mix fuel** outdoors in a well ventilated location.

**IMPORTANT:** Always use fresh gasoline. Gasoline which is kept in tank too long will form gum and varnish deposits which cause trouble.

Mix fuel directly into remote tank. Pour small, equal amounts of gasoline and oil into tank. Mix thoroughly, then add remaining oil and gasoline. Mix again. Keep fuel clean and mix each batch of fuel exactly the same way to avoid carburetion problems.

**IMPORTANT:** Use recommended amount of 2-cycle oil. Too much or too little oil can cause performance problems, as well as serious engine damage.

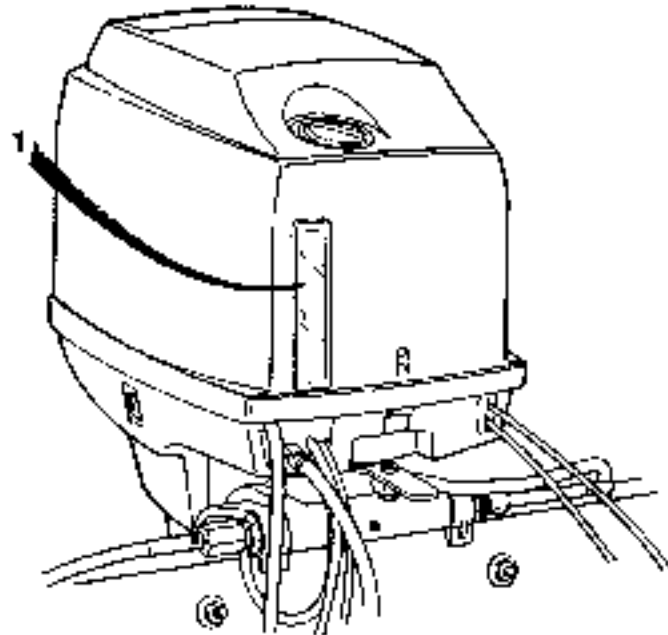
BREAK-IN FUEL MIXTURE  
(WITH OIL INJECTION)

During the break-in period (refer to BREAK-IN PROCEDURE) operate your new outboard motor on the first 15 gallons of fuel, by mixing 50:1 Break-In in the fuel tank at a 50:1 ratio, as described in the 50:1 BREAK-IN FUEL MIXTURE - WITH OIL INJECTION chart.

**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.

After the 15 gallons of 50:1 break-in fuel has been consumed it is no longer necessary to mix oil to the gasoline in the remote tank, for normal operation.

# FUEL MIXTURE and GASOLINE/ OIL RECOMMENDATIONS (Continued)



## OIL INJECTION SYSTEM

Oil Tank Capacity

Tank Capacity ..... 0.766 gal  
(3.54 liters)

Maximum Operating Time at  
Full Throttle Before Low Oil  
Warning Horn Sounds ..... 10-1/2 hrs

Oil Remaining When Low Oil  
Warning Horn Sounds ..... 14.5 fl oz  
(435ml)

Approximate Running Time  
Remaining at Wide Open  
Throttle When Low Oil Warn-  
ing Horn Sounds..... 1-1/2 hrs

Filling Oil Injection System

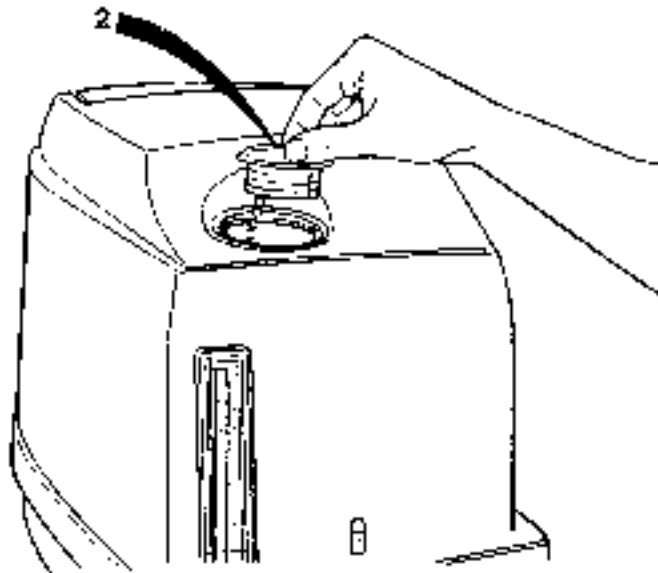
### **⚠WARNING**

Warning horn sounds momentarily as a test whenever you switch key from OFF to ON. Horn sounds intermittently to indicate low oil supply. Horn sounds steadily to indicate engine overheating. DO NOT IGNORE **WARNING HORN. Permanent damage to engine will result if the cause is not immediately identified and corrected.**

**1** Check oil level using sight gauge in front side of top cowling

**2** Unscrew tank cap and fill tank with Quicksilver®-Cycle Outboard Oil or BIA approved TC-WII™ pre-diluted oil only

Replace cap tightly



## BREAK-IN PROCEDURE

Operate your new outboard motor at varied throttle settings - not to exceed 1/2 throttle (2500-3500 RPM) during the first hour or the first five gallons of break-in fuel. Refer to "Fuel Mixture and Gasoline/Oil Recommendations" - "Break-In Fuel Mixture."

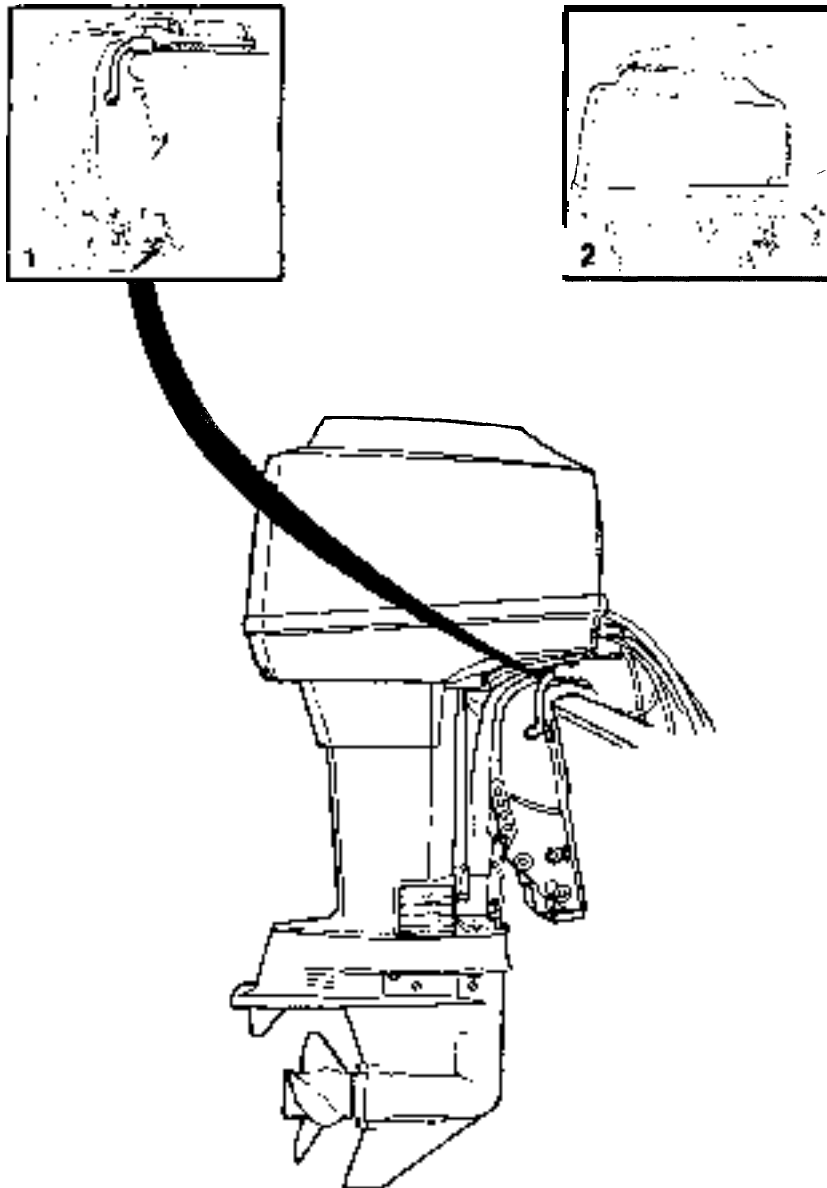
During the second hour operation, or the second 5 gallons of break-in fuel, operate the outboard at varied throttle settings not to exceed 4500 RPM.

**DO NOT OPERATE YOUR NEW OUTBOARD MOTOR AT FULL THROTTLE UNTIL THE SECOND HOUR OF BREAK-**

**IN IS COMPLETED.** This includes full throttle acceleration, pulling waterskiers, or wide open throttle running.

After the first two hours of running, approximately 10 gallons of fuel, full throttle operation may be attained, but not sustained for the remaining break-in fuel (approximately 5 gallons.)

For the next five hours of operation, full throttle operation may, again, be attained, but it is strongly not recommended for sustained use (Not more than 5 minutes of continuous wide open throttle)



## MANUAL TILT SYSTEM OPERATION (Models without Power Trim)

Models not equipped with power trim are equipped with a manual tilt assist system, that allows the operator to easily tilt and/or lock the outboard to any tilt angle, from full in (down) position, to full out (up) position. Additionally a hydraulic shock absorber feature is incorporated into the system, which acts to cushion kick-up of the outboard which occurs upon high speed impact of the lower unit with a submerged or heavy floating obstacle.

**IMPORTANT:** The manual tilt assist system utilized on this model, is designed to be adjusted when the engine is idling in neutral, or with the engine shut off. An optional power trim kit is recommended if trim adjustment of outboard is desired while boat is underway. Refer to Quick-silver ACCESSORIES MANUAL for kit application.

### BASIC TILT OPERATION

To Tilt Outboard:

- 1** Push tilt release lever fully toward rear of outboard (TILT position).
- 2** Grasp outboard using "finger grip wells" at rear of top cowl and tilt outboard manually. Pull tilt release lever fully toward boat transom (LOCK/RUN) to hold outboard at desired tilt position; or secure outboard in full tilt up position, using tilt lock lever (refer to OUTBOARD MOTOR INSTALLATION).

### ⚠WARNING

Tilt release lever **MUST BE** set to LOCK/RUN position, during normal outboard operation. Failure to set tilt release lever to **LOCK/RUN** position, could cause outboard to be tilted up and out of the water while operating in reverse, or during deceleration in forward, resulting in possible loss of boat control.

Tilting Outboard Out (Up) Will:

- Lift bow of boat.
- Generally increase top speed.

- Transfer steering torque harder to left on standard or slightly elevated transom height installations.
- Increase clearance over submerged objects.
- In excess, cause porpoising and/or ventilation.
- Cause overheating if tilted out (up) beyond water pickup.

Tilting Outboard In (Down) Will:

- Result in quicker planing off, especially with heavy loads.
- Generally improve ride in choppy water.
- Increase right hand steering torque.
- Improve acceleration at planing speeds.
- In excess, cause boat to veer to left or right (bow steer).

### ⚠WARNING

Unsafe steering conditions may result at high speed with the outboard tilted all the way in (down). Test your boat for changes in handling whenever tilt angle adjustments are made.

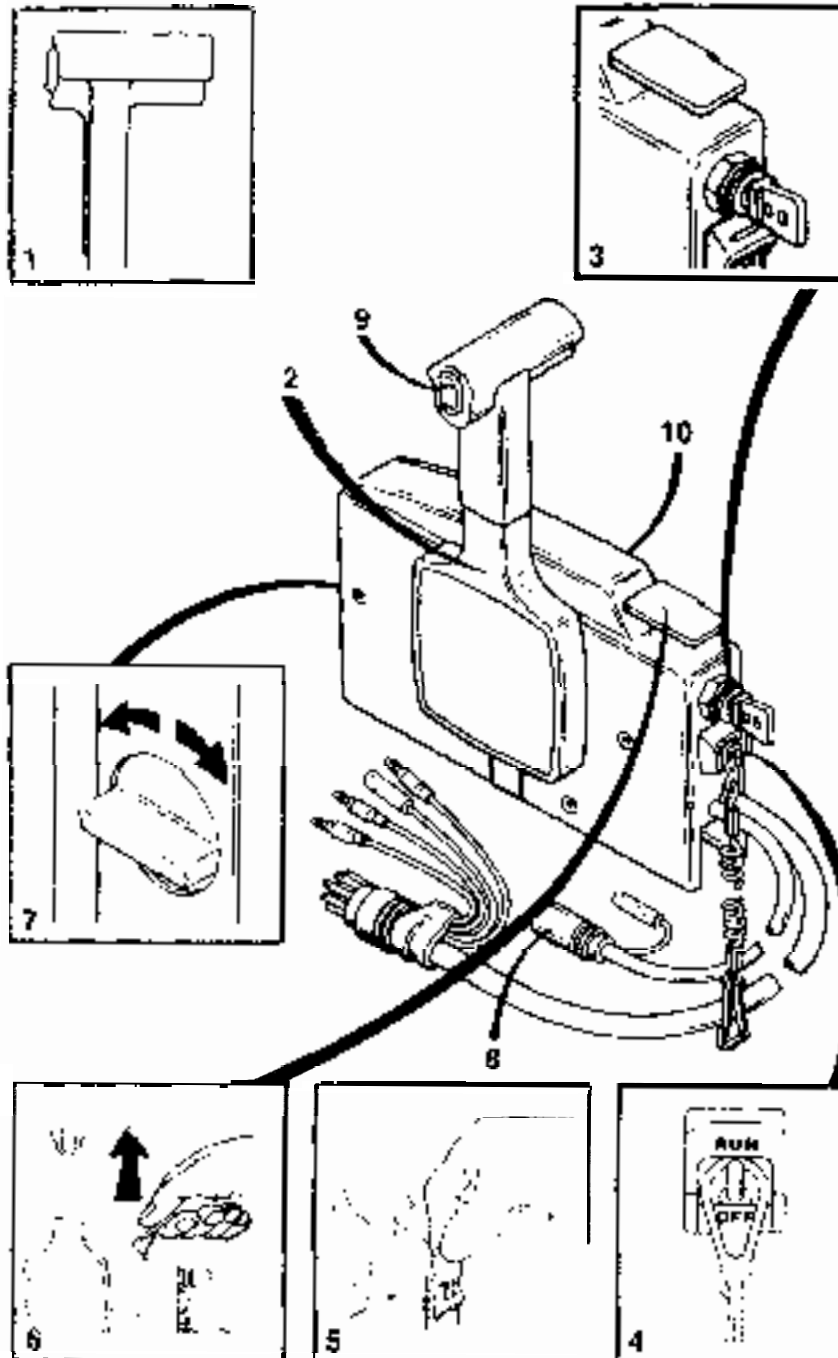
### SHALLOW WATER OPERATION

### ⚠CAUTION

If outboard will be operated in shallow water, with outboard tilted beyond approximately 20° of tilt, follow these precautions:

- **DO NOT** operate engine above **2000** RPM. When outboard is tilted beyond approximately 20° of tilt, the swivel bracket will not have side support.
- Check that water level is above water intake ports to avoid overheating and/or water pump impeller damage.

## QUICKSILVER SIDE MOUNT REMOTE CONTROL COMPONENTS



**1** Neutral Lock Bar - prevents accidental shift and throttle engagement. Bar must be squeezed before control handle can be moved, from NEUTRAL.

**2** Control Handle - controls forward, reverse motion and engine speed.

**3** Ignition/Choke Switch - turns engine ON and OFF actuates electric starter motor actuates carburetor enrichener and sounds alarm horn momentarily to test warning circuits

**4** Lanyard Stop Switch - Refer to page 1 for explanation. The lanyard cord/clip, when used with the lanyard stop switch MUST BE connected to boat driver. Should driver be unable to reach steering wheel or remote control, the lanyard cord/clip will be pulled from lanyard stop switch and the engine will shut OFF. This lanyard stop switch SHOULD NOT BE USED as normal engine shut-off.

**IMPORTANT:** The Lanyard Stop Switch can be repositioned to RUN with or without lanyard cord/clip so that engine can be restarted.

**5** Engine can be restarted with or without lanyard cord/clip. Installed by simply pushing switch up to run position. If necessary push switch down with key to reinstall clip.

**6** FAST IDLE LEVER - Allows engine throttle advancement, without shifting gears, to assist engine starting.

**7** THROTTLE FRICTION Adjustment Knob - Adjusts control handle friction so that boat speed can be set and driver does not have to hold handle. Turn knob clockwise to increase friction. DO NOT thread knob all the way out.

**8** Tachometer Receptacle - Wiring harness connector for optional tachometer.

**9** Trim Up Switch (For Outboards with Power Trim) - Trim outboard out (up) by pressing up on switch trim outboard in (down) by pressing down on switch.

**10** Warning Horn Located in Remote Control. Refer to "Operation" - "Warning Horn Operation" following.

## OPERATION MODELS WITH REMOTE CONTROL

### WARNING HORN OPERATION

This outboard is equipped with a warning system to signal engine overheat and low oil level in the oil injection system.

The warning horn is located inside of side mount remote control. If boat is equipped with a panel or console remote control, the warning horn is incorporated behind the key switch in the key switch wiring harness.

Each time the key switch is turned from the "OFF" position to the "ON" position the warning horn will sound momentarily. This indicates that the warning system will function when the engine is running.

### CAUTION

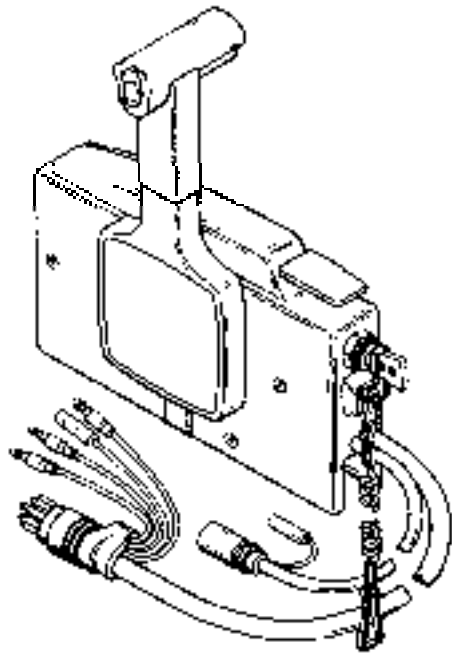
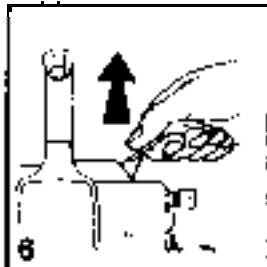
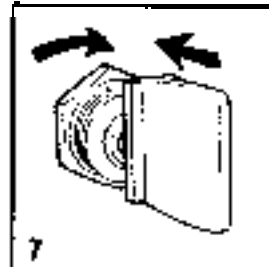
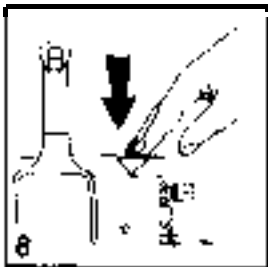
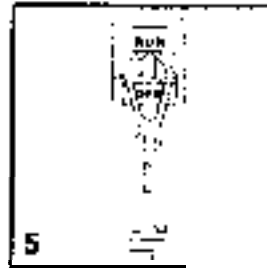
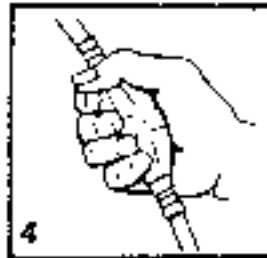
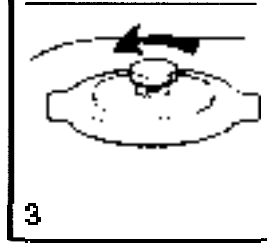
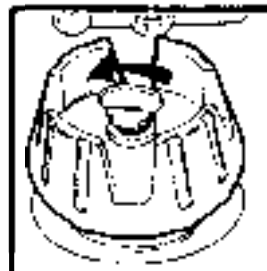
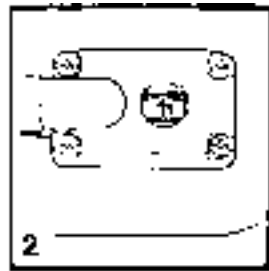
If the warning horn fails to sound momentarily when the key switch is turned from the "OFF" position to the "ON" position or continually sounds, see an Authorized Dealer. DO NOT operate the engine.

The warning system gives the following indications:

MOMENTARY BEEP (when key switch is turned on) - circuit test of warning system.

STEADY BEEP - Engine is overheat.

INTERMITTENT BEEP - Oil injection oil level.



# OPERATION

## MODELS WITH REMOTE CONTROL

(Continued)

OPERATOR and PASSENGERS SHOULD BE SEATED WHENEVER ATTEMPTING TO START the ENGINE.

Before attempting to start engine, MAKE CERTAIN that outboard is shifted into NEUTRAL and that area around boat is clear (to get underway).

IMPORTANT: Remote control MUST BE equipped with a neutral start switch — remote control handle MUST BE in NEUTRAL position in order to operate the starter.

### BEFORE STARTING

Tilt outboard to vertical position

- 1 Check oil level in oil injection system tank — add oil as necessary.
- 2 Check fuel tank(s) for sufficient fuel
- 3 Open air vents on fuel tanks
- 4 Squeeze fuel primer bulb until it is firm.
- 5 Place control handle in NEUTRAL. Check that lanyard stop switch is in RUN position.

### 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. If any of these problems exist, contact your Dealer immediately. Use extreme care if operating boat before repairs are made.

Check remote control and steering operation.

Turn key from OFF to ON to test warning circuit, the warning horn should sound only momentarily. If it does not, contact an Authorized Dealer.

### CAUTION

DO NOT operate starter motor for longer than 30 seconds or starter motor may be damaged. Allow at least 2 minutes between starting attempts.

IMPORTANT: Starter circuit is protected by SFE 20 AMP fuse on starboard side of engine. If starter fails to operate, check for blown fuse. BEFORE replacing fuse, locate and correct cause of overload.

### STARTING COLD ENGINE

6 Lift Fast Idle Lever to a point halfway between full up and full down position.

IMPORTANT: With Fast Idle Lever in up position, control handle CANNOT be moved into FORWARD or REVERSE GEAR.

7 Turn key clockwise to HUN position and push in on key to activate enricher. Hold key in the pushed in position for 4 to 6 seconds, then turn key clockwise past RUN position to START.

### CAUTION

Be prepared to alter throttle setting when engine starts. DO NOT allow engine to exceed 2500 RPM while in NEUTRAL.

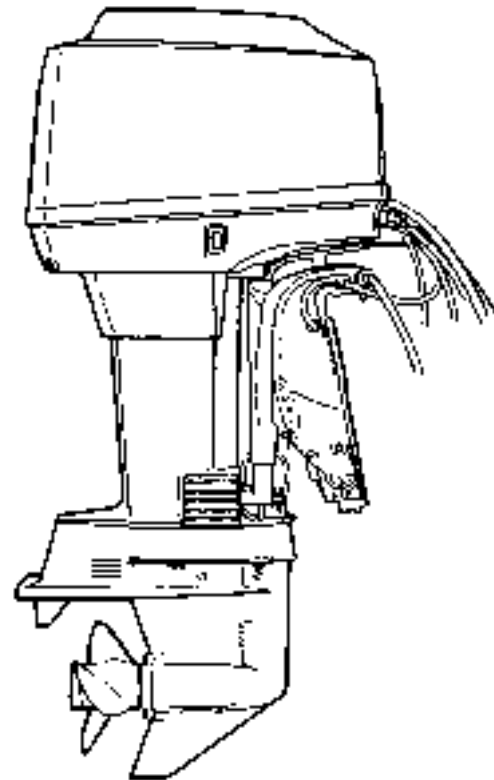
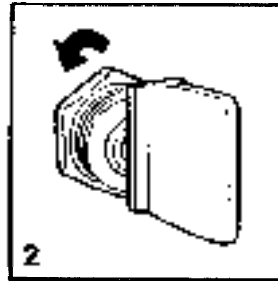
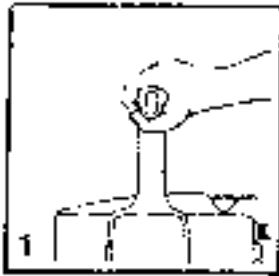
As soon as engine starts, allow key to return to RUN position and release enricher if any ne falters, push in on key to actuate enricher again.

Check for steady stream of water from water pump "Tell-Tale." If intermittent or no flow is observed, STOP ENGINE IMMEDIATELY. Check "Tell-Tale" stream often during outboard operation.

8 After warm-up, return Fast Idle Lever to full down position.

### CAUTION

A continuous warning horn will sound if engine overheats. Stop engine immediately if alarm sounds. Locate and remedy cause of overheating before using outboard.



## OPERATION MODELS WITH REMOTE CONTROL (Continued)

### STARTING WARM ENGINE

Place control handle in Neutral. Turn key clockwise past RUN position to START.

As soon as engine starts, allow key to return to RUN position. If engine falters, push in on key to actuate enrichener.

**NOTE** If engine fails to start, follow STARTING COLD ENGINE procedure.

Check for steady stream of water from water pump "Tell-Tale." If intermittent or no flow is observed, STOP ENGINE IMMEDIATELY. Check "Tell-Tale" stream often during outboard operation.

### ⚠ CAUTION

A continuous warning horn will sound if engine overheats. Stop engine immediately if alarm sounds. Locate and remedy cause of overheating before using outboard.

### THROTTLE/SHIFTING GEARS

**1** Squeeze Neutral Lock Bar and push control handle forward to engage FORWARD GEAR. Pushing handle further forward increases engine speed.

### ⚠ CAUTION

Exercise extreme care when operating in REVERSE GEAR. DO NOT operate engine at high speeds in REVERSE.

Squeeze Neutral Lock Bar and pull back on control handle to engage REVERSE GEAR.

### STOPPING THE ENGINE

**2** Shift to NEUTRAL and turn key counterclockwise to OFF position.

**IMPORTANT:** In an emergency the outboard can be stopped at any speed, in or out of gear. For normal operation, idle engine and **shift** to NEUTRAL before turning key to OFF.

### ⚠ CAUTION

If outboard will not be operated for a period of time, if it is to be removed from boat, or if it is to be tilted up, prevent spillage from carburetor throat and bowl and gum formations in the carburetor during storage as follows:

- Disconnect the fuel line.
- Allow engine to idle until it stops, indicating the carburetors have run dry.
- Turn electric start key to OFF.
- Disconnect positive (+) battery lead to prevent accidental starting or shorting.

# COWL REMOVAL and INSTALLATION

## **⚠ CAUTION**

**DO NOT ATTEMPT TO REMOVE OR INSTALL COWL WHILE ENGINE IS RUNNING.**

## **REMOVAL**

STOP ENGINE

**1** Push down to disengage cowl latch at rear of outboard.

**2** Lift up on rear of cowl and tilt forward to disengage cowl hook at front of outboard.

Lift cowl off

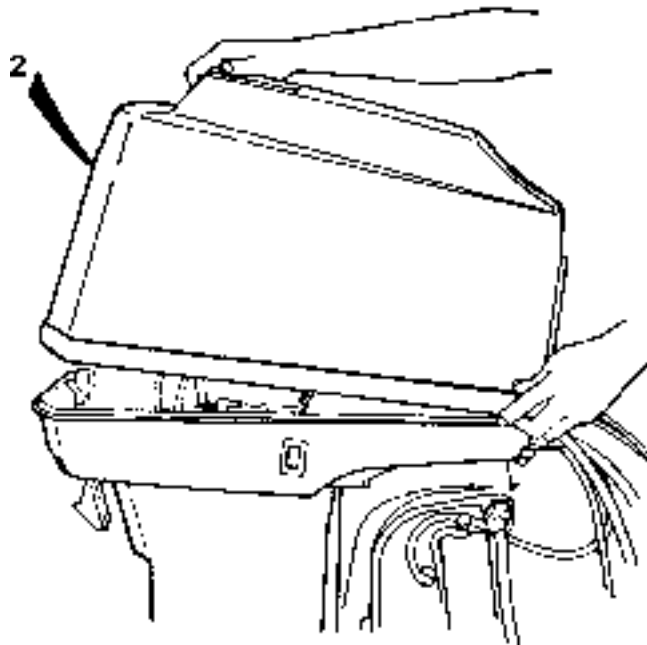
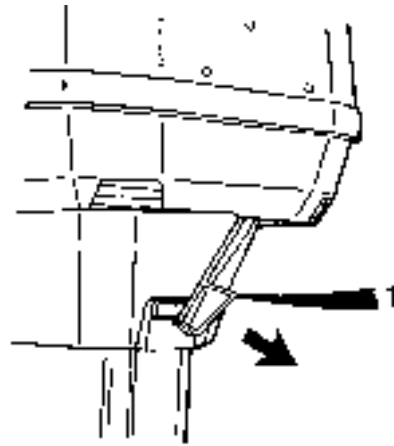
## **INSTALLATION**

Position cowl over engine

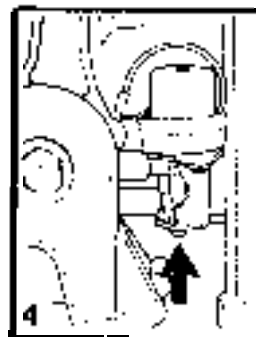
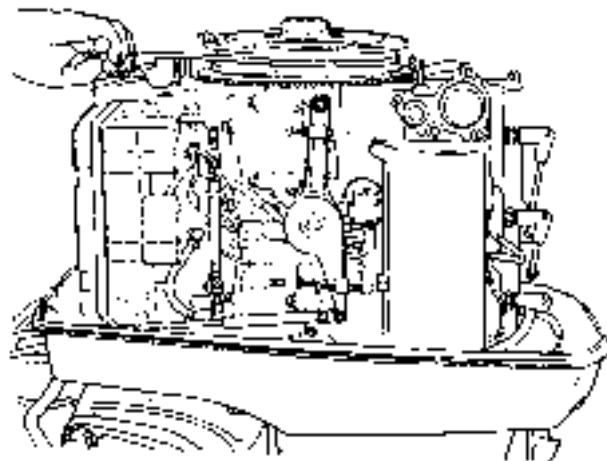
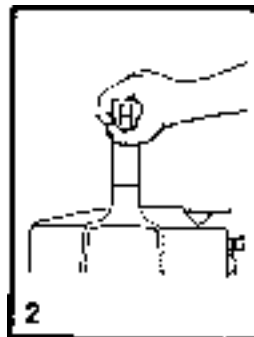
Lift up on rear of cowl and tilt it forward slightly to engage front hook.

Lower cowl into position and engage rear latch

Push latch up to secure cowl







## EMERGENCY OPERATION

### ⚠CAUTION

Battery leads must be connected to battery (even if battery is dead).

Remove cowl (refer to COWL REMOVAL and INSTALLATION.)

**1** Remove 4 wing nuts from flywheel cover and lift cover off. Remove starter rope from pocket inside cowl.

**2** Shift remote control into neutral.

### ⚠WARNING

When using emergency starter rope to start outboard, the start-in-gear protection provided by the remote control is inoperative. Make sure to position remote control handle into neutral before starting outboard to prevent outboard from starting in gear. Sudden unexpected acceleration can cause serious injury or death.

**3** Engage knot of starter rope in one of the flywheel notches and wind rope clockwise around flywheel

Turn key switch to RUN

**4** If engine is cold, push button on fuel enricher. Wait 4 to 6 seconds. Avoid using enricher if engine is warm.

Observe preliminary motor starting steps as outlined in OPERATION procedures and pull rope to start motor. Repeat, if motor has not started.

### ⚠WARNING

Care must be taken when using emergency starting procedure. DO NOT attempt to replace flywheel cover or cowl after engine has started. Stay clear of flywheel. DO NOT WEAR loose clothing when operating under these conditions.

# POWER TRIM

## ⚠WARNING

Keep a tight grip on the steering **wheel**/tiller handle, especially when changing speed or trimming boat and outboard. Trim outboard after reaching cruising speed. 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**/tiller handle will then 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 boating applications, a decrease in performance.

## OPERATION

The remote control handle is equipped with a trim/tilt switch which tilts the outboard out (up) and in (down). Refer to QUICKSILVER SIDE MOUNT REMOTE CONTROL COMPONENTS.

## ⚠CAUTION

If outboard will be operated in shallow water with outboard trimmed beyond 20" trim limit, follow these precautions:

- DO NOT operate outboard above 2000 RPM. When outboard is trimmed beyond 20° trim limit the swivel bracket will not have side support.
- Check that water level is above water intake ports to avoid overheating or water pump impeller damage.

Outboard can be trimmed beyond 20° limit for launching, trailering, shallow water operation, etc., if engine speed does not exceed 2000 RPM.

To trim/tilt outboard out (up) - push up on switch.

To trim/tilt outboard in (down) - push down on switch.

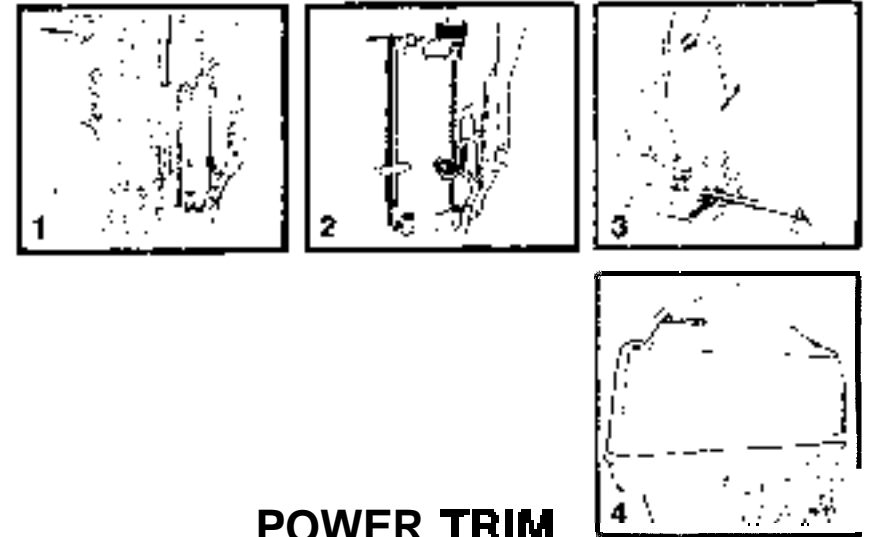
To trim/tilt outboard beyond 20" limit - decrease engine speed to less than 2000 RPM and push up on switch

Trimming Outboard Out (Up) Will:

- Lift bow of boat
- Generally increase top speed
- Transfer steering torque harder to left on standard or slightly elevated transom height installations.
- Increase clearance over submerged objects.
- In excess, cause porpoising and/or ventilation.
- Cause overheating if trimmed out (up) beyond water pickup.

## ⚠WARNING

Some high speed hulls may become unstable if outboard is trimmed too far out (up). To correct such instability, reduce power GRADUALLY and trim outboard **down/in** before resuming high speed. Cutting power too quickly may momentarily create even greater instability.



## POWER TRIM (Continued)

Trimming Outboard In (Down) Will:

- Result in quicker planing off, especially with heavy loads.
- Generally improve ride in choppy water.
- Increase right hand steering torque
- Improve acceleration at planing speeds.
- In excess, cause boat to veer to left or right (bow steer).

## ⚠WARNING

Unsafe steering conditions may result at high speeds with the outboard trimmed all the way in (down). Test your boat for changes in handling whenever trim angle is changed.

## CHECKING OIL LEVEL

Check power trim oil level periodically as follows:

## ⚠CAUTION

DO NOT open fill screw while outboard is in (down) position. The reservoir is under pressure and oil may blow out of fill hole.

Tilt outboard to full out (up) position and engage tilt lock lever (Refer to OUTBOARD MOTOR INSTALLATION.)

**1** Remove fill cap from trim pump reservoir

**2** Fluid level should be to bottom of threads in fill hole; if not, add Quicksilver Power Trim & Steering Fluid or; Automotive Transmission Fluid (ATF) Type F, FA or Dexron II

Reinstall fill cap

## TILTING OUTBOARD MANUALLY

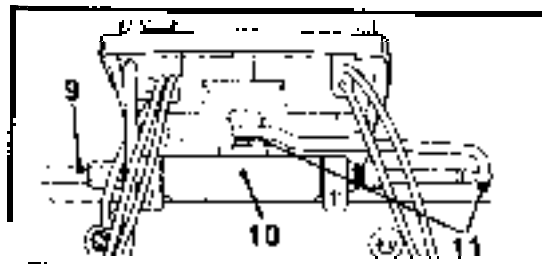
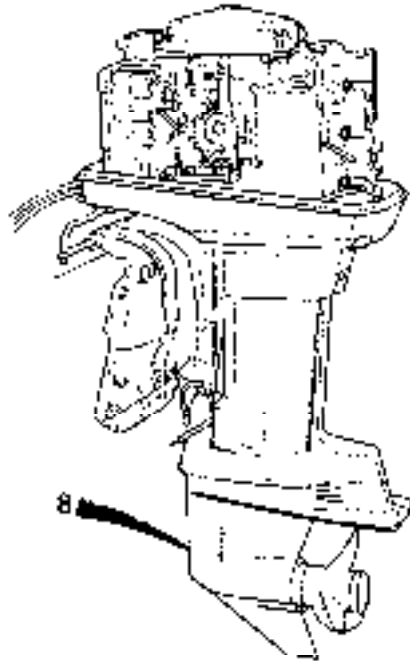
Should the power trim system become inoperative, the outboard can be manually tilted, as follows.

**3** Rotate manual tilt release valve 2-3 turns to the left (counterclockwise).

**4** Grasp outboard using "finger grip wells" at rear of top cowl and tilt outboard either up or down manually. Rotate manual tilt release valve full right to hold outboard at desired tilt position.

## ⚠CAUTION

Before operating outboard manual release valve must be **turned** fully clockwise.



# LUBRICATION/MAINTENANCE GUIDE

ITEM	DESCRIPTION	TYPE OF LUBRICANT or MAINTENANCE	FRESH WATER FREQUENCY	SALT WATER FREQUENCY
1	Throttle/Shift Linkage (all Pivot Points)	A	Every 60 days	Every 30 days
2	Tilt Lock Lever	A	Every 60 days	Every 30 days
3	Swivel Pin/Bracket	A	Every 60 days	Every 30 days
4	Outboard Exterior	Clean and Inspect	Once a season	Occasionally
5	Trim Tab	Inspect - Replace if Necessary	Every 30 days	Every 30 days
6	Propeller	Inspect and Tighten Prop	Every 50 hours	Every 50 hours
7	Propeller Shaft	A	Once a season	Every 60 days
8	Gear Housing	B	Check and fill after 1st 10 days, then every 30 days	Check and fill after 1st 10 days, then every 30 days
			Drain and Refill after 1st 25 Hours, then after every 100 hours, or once a year before storing	Drain and Refill after 1st 25 Hours, then after every 100 hours, or once a year before storing
9	Ride-Guide* Steering Cable	A	Every 60 days	Every 30 days
10	Tilt Tube	A	Every 60 days	Every 30 days
11	Steering Link Rod Pivot Points	D	Every 60 days	Every 30 days
12	Power Trim Pump Oil Level	C	Every 100 hours or once a season	Every 100 hours or once a season
	All Bolts, Fasteners, etc.	Check Tightness	Every 100 hours	Every 100 hours

\*If Equipped

### Type of Lubricants

A = Quicksilver 2-4-C Marine Lubricant  
 B = Quicksilver Gear Lube

C = Quicksilver Power Trim & Steering Fluid or; (ATF) Type F, FA or Dexron II  
 D = SAE 30W Motor Oil

# GEAR HOUSING LUBRICATION

## ⚠ CAUTION

Have gear housing checked by your local service dealer if any of the following are found:

- Water drains from filler hole.
- Metal particles are present on magnetic fill plug.

NOTE: Presence of a small amount of fine metal **particles** (resembling powder) indicates normal wear.

- Lubricant appears milky brown.
- Large amounts of lubricant must be added to fill gear housing.

IMPORTANT: DO NOT use automotive lubricant in gear housing. Use only Quicksilver Gear Lube.

## CHECK LUBRICANT LEVEL

IMPORTANT: Inspect fill and vent plug washers for damage. Use new washers as needed.

**1** Remove lubricant fill plug and washer. Note amount of metal particles on magnetic fill plug. Refer to caution, preceding.

**2** Insert lubricant tube in fill hole.

**3** Remove both vent plugs with washers.

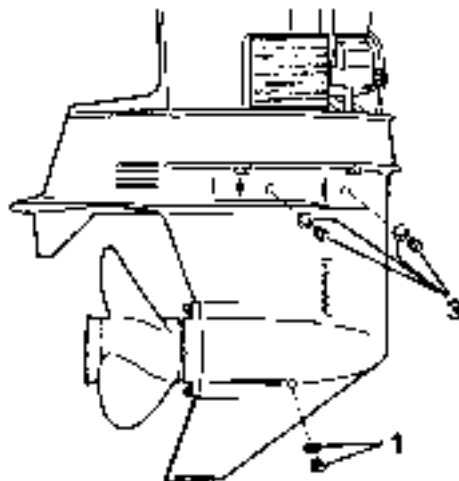
IMPORTANT: Never add lubricant to gear housing without first removing both vent plugs, as trapped air will prevent housing from being filled. Fill gear housing only when outboard is in operating position.

**4** Add lubricant to gear housing until excess starts to flow from one (first) vent hole. If this requires more than 2-3 fl. oz. (60-90ml) of lubricant, refer outboard to authorized dealer. Install vent plug and washer for this vent hole only.

Continue to add lubricant until excess starts to flow from remaining vent hole.

Install remaining vent plug and washer

Remove lubricant tube and install cleaned magnetic fill plug and washer.



# GEAR HOUSING LUBRICATION (Continued)

## DRAINING and REFILLING GEAR HOUSING LUBRICANT

With outboard in operating position place a clean container under gear housing fill hole.

IMPORTANT: Inspect fill and vent plug washers for damage. Use new washers as needed.

**1** Remove lubricant fill plug and washer. Note amount of metal particles on magnetic fill plug. Refer to caution, preceding.

**2** Remove both vent plugs with washers and allow sufficient time for all lubricant to drain.

IMPORTANT: Never add lubricant to gear housing without first removing both vent

plugs, as trapped air will prevent housing from being filled. Fill gear housing only when outboard is in operating position.

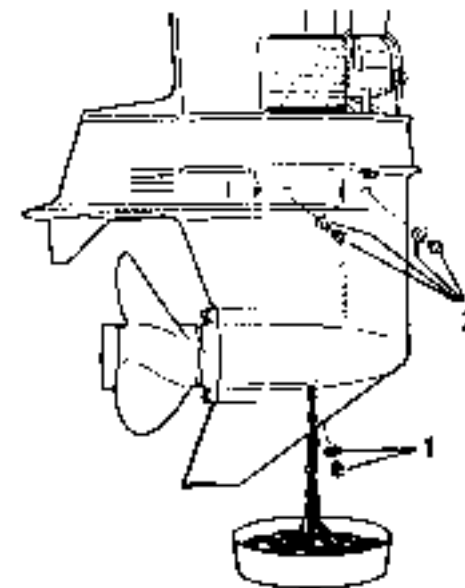
**3** With outboard in operating position, insert lubricant tube into fill hole

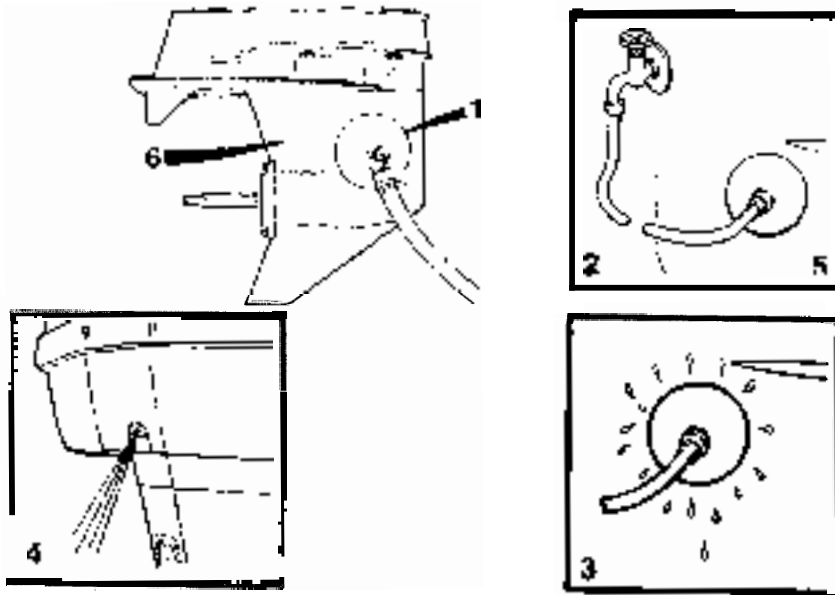
**4** Fill gear housing with lubricant, until excess starts to flow from one (first) vent hole (approximately 13 fl. oz. [370ml] of Quicksilver Gear Lube). Install vent plug and washer for this vent hole only

Continue to add lubricant until excess starts to flow from remaining vent hole

Install remaining vent plug and washer.

Remove lubricant tube and install cleaned magnetic fill plug with washer.





## FLUSHING OUTBOARD COOLING SYSTEM

### ⚠ CAUTION

When flushing, be certain the area around propeller is clear, and no one is standing nearby. To avoid possible injury, remove the propeller.

To prevent silt and/or salt buildup in cooling system, flush with fresh water periodically.

**1** Install Quicksilver Flushing Attachment (or equivalent) over water intake openings according to instructions supplied with flushing attachment.

**2** Connect hose between flushing attachment and water tap.

**3** With outboard in normal operating position, open watertap and adjust flow so that some water leaks from around cups.

**4** Check that water is running from "Tell-Tale." Shift outboard to neutral and start.

### ⚠ CAUTION

DO NOT over rev. RUN at slower speeds only.

With engine running at IDLE speed, continue flushing until water becomes clear (3 to 5 minutes for salt water units).

**5** Stop engine, turn-off water and remove flushing attachment.

**IMPORTANT: Keep outboard in upright position until all water has drained out. Water left trapped in outboard could cause engine damage.**

**6** Clean outboard exterior surfaces and wipe with Quicksilver Corrosion Guard to protect finish.

## IGNITION MAINTENANCE

### ⚠ CAUTION

DO NOT touch or disconnect any ignition system parts while engine is running, as high voltage is present.

If electrical/ignition system is not operating, DO NOT attempt to repair, but refer to your authorized service facility.

### SPARK PLUGS

Periodic inspection, cleaning and/or replacement of spark plugs will enhance engine performance. Always replace spark plugs with type specified in SPECIFICATIONS.

Replace spark plugs as follows:

Remove cow (Refer to COWL REMOVAL and INSTALLATION)

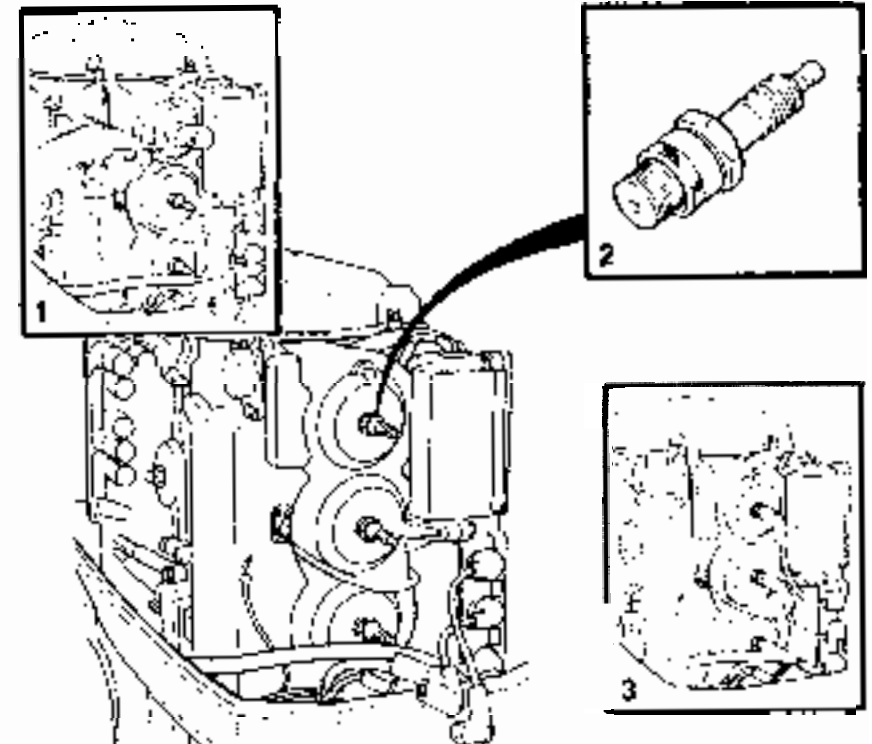
**1** Disconnect spark plug leads and use 13/16 in (21mm) wrench to remove spark plugs

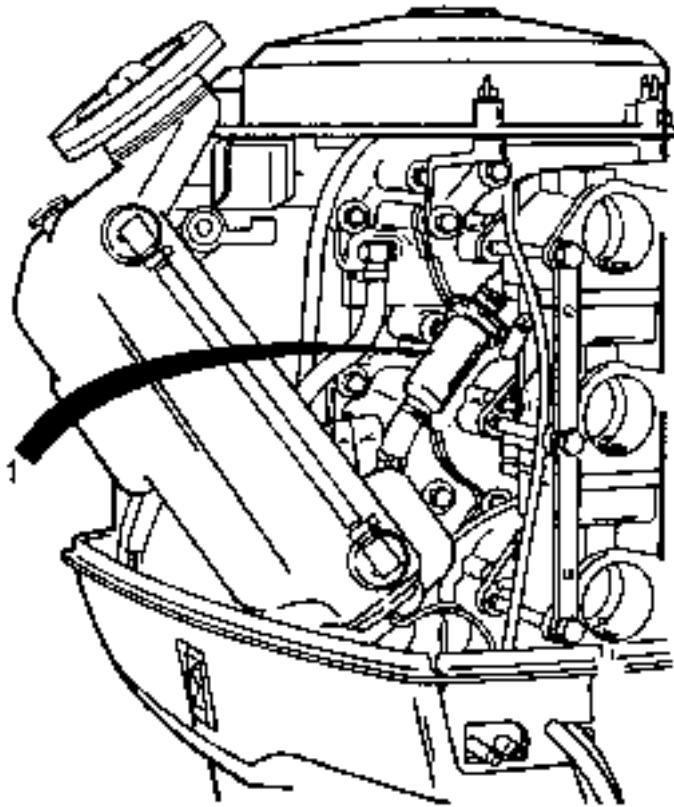
**2** Check that gaskets are in place and install new plugs

Thread spark plugs in by hand until finger-tight. Use wrench to tighten an additional 1/4 turn. DO NOT OVERTIGHTEN

**3** Reconnect spark plug leads to correct plugs

Inspect spark plug leads for damage - replace as necessary





## CLEANING FUEL FILTERS

### **⚠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.

### **FUEL TANK FILTER**

Disconnect fuel line from tank

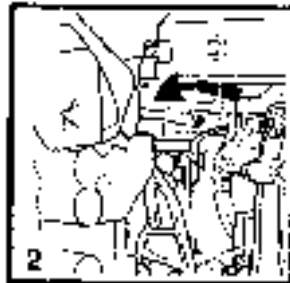
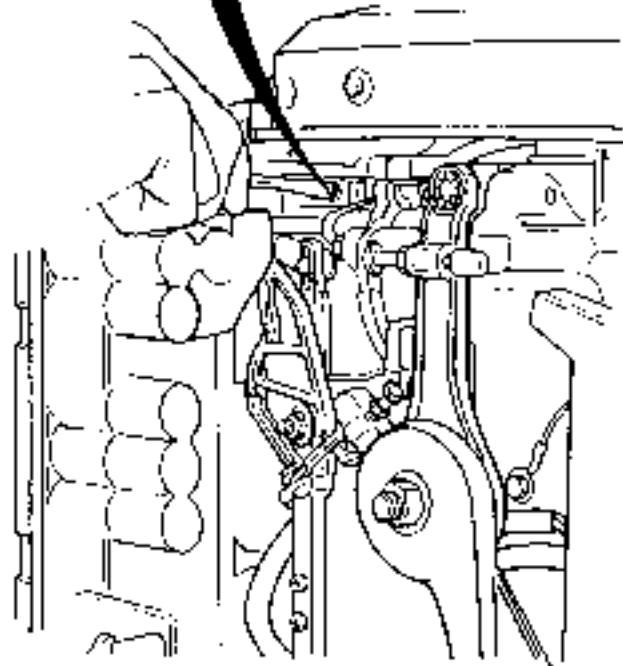
Loosen screws and remove fuel pickup tube with gauge and float.

Clean filter by rinsing in clean gasoline

Reinstall on fuel tank

### **ENGINE FUEL FILTER**

**1** If engine in-line fuel filter (located on starboard side of engine behind oil tank) appears to be contaminated, it should be removed and replaced. See your authorized dealer.



## CARBURETOR ADJUSTMENTS

The carburetors have been calibrated and pre-set at factory to provide best performance under normal conditions. However, extreme changes in weather and/or elevation may necessitate further carburetor adjustment.

**IMPORTANT:** To maintain peak engine performance when operating at HIGHER ELEVATIONS, it will be necessary to install a LEANER fixed high speed jet. (See your authorized service facility.)

### LOW SPEED MIXTURE

**1** Pre-set low speed mixture screws as follows:

**A** Lightly tighten screw-turn clockwise

**B** Back-out screw 1-1/4 turns counter-clockwise.

Start engine Allow to run at IDLE for several minutes

With engine at IDLE, shift to FORWARD GEAR.

**2** Turn screw counterclockwise until engine starts to "load-up" or fire unevenly (TOO RICH)

**3** Slowly turn screw clockwise until engine fires evenly anti RPM increases

Continue turning clockwise until RPM decreases and engine misfires (TOO LEAN)

Set low speed mixture screw at point midway between TOO RICH and TOO LEAN When in doubt, set TOO RICH rather than TOO LEAN

## TRAILERING BOAT/OUTBOARD

When trailering or transporting the boat/outboard, it is recommended that outboard remain in normal operating position

If adequate road clearance presents a problem, place outboard in full tilt-up position and place a suitable block of wood between swivel bracket and clamp brackets. Lower outboard to rest on block

### CAUTION

Tilt lock mechanism (on non power trim models) is NOT intended to support outboard during trailering. Damage to boat or outboard could occur if additional support is not used.

# INSPECTION and MAINTENANCE

Inspect outboard often, and at regular intervals, to help maintain its top operating performance and correct potential problems before they occur. The entire outboard should be checked carefully, including all engine parts.

Check for loose, damaged or missing parts. Tighten or replace as required.

Check gear housing oil level  
see LUBRICATION GUIDE

Service spark plugs. Check plug leads and electrical leads for damage.

Inspect fuel lines for damage. Service fuel filters.

Remove and inspect propeller. If badly nicked, bent or cracked, refer to Authorized Service Facilities. (Refer to PROPELLER - INSTALLATION.)

Repair nicks and corrosion damage on finish. Use Quicksilver spray paints - see your Dealer.

Inspect trim tab. Replace if 50% of tab has been eroded away.

**IMPORTANT: DO NOT apply paint or protective coatings to trim tab.**

Check that remote control/ignition choke switch harness is connected and control (if equipped) is correctly adjusted.