

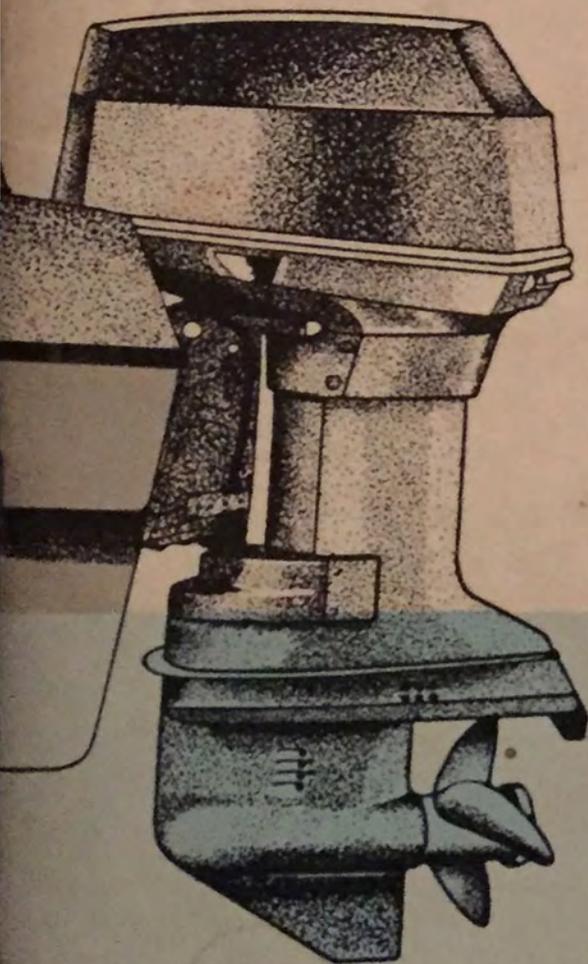
# **EVINRUDE**

*first in outboards*

MODEL 25602E  
SER. # E0001284

**1976**

**OWNER'S-OPERATOR'S  
MANUAL**



**25 HP**

models

**25602** -E

**25603**

**25652**

**25653**

# EVINRUDE

*first in outboards*

## welcomes you aboard . . .

Outboard boating is one of America's most popular participation sports.

When you selected Evinrude, you selected a product that has gained a reputation as the quality leader since 1909. And, there is no doubt that this year's outboards are the finest ever produced.

Your new Evinrude outboard has all the most wanted features in outboard motors. Some of these features, such as quality of workmanship, engineering excellence, whisper quiet operation, and dependability, have long been standards at Evinrude. Your new Evinrude boasts many new features while retaining the best features developed in preceding years. These features, the old and the new, are designed to enhance your boating pleasure and add to your satisfaction in selecting Evinrude.

Your new Evinrude Motor is designed and constructed to give you the maximum in service and performance. Please study this manual so that you will have a complete understanding of its operation and to be able to take full advantage of its many built-in features. **EVERYONE WHO USES THIS EQUIPMENT SHOULD READ THIS MANUAL AND BE FAMILIAR WITH THE SAFETY WARNINGS MARKED **

This manual is dedicated as a mariner's companion to help more fully enjoy the sport in comfort and safety. For quick reference, keep it handy when operating your outboard.

**HAPPY BOATING**

## EVINRUDE MOTORS

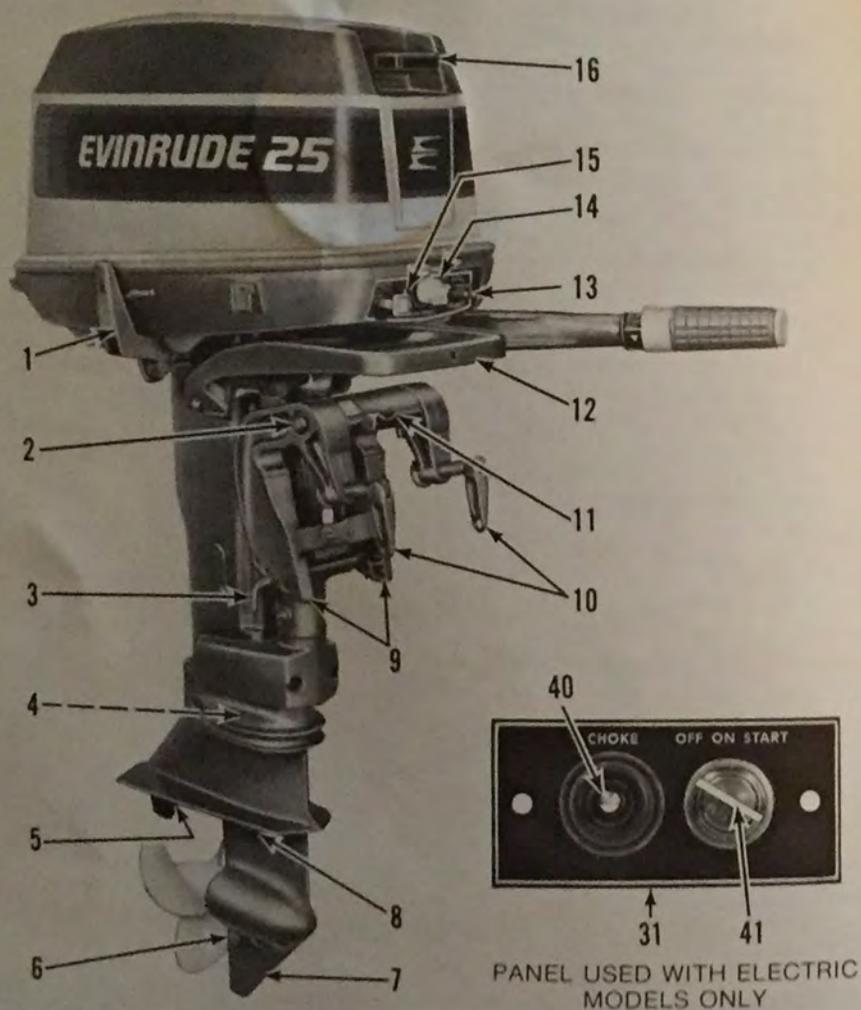
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# FEATURES

## ELECTRIC START



PANEL USED WITH ELECTRIC MODELS ONLY

### STARBOARD VIEW

- |                               |  |                  |
|-------------------------------|--|------------------|
| 1. Shift Lever                | 11. Reverse Lock Lever                   | 15. Choke Knob   |
| 2. Tilt Friction Nut          | 12. Steering Bracket (Remote Control)    | 16. Starter Grip |
| 3. Angle Adjusting Rod        | 13. Electric Cable Plug (Electric Start) | 17. Fuel Line    |
| 4. Water Pump (Under Housing) | 14. Low Speed Adjusting Knob             | 18. Fuel Tank    |
| 5. Water Intake               |  | 19. Priming Bulb |
| 6. Oil Drain/Fill Plug        |  | 20. Drain Screw  |
| 7. Skag                       |  | 21. Fuel Gauge   |
| 8. Oil Level Plug             |  | 22. Handle       |
| 9. Stern Brackets             |  | 23. Filler Cap   |
| 10. Clamp Screws              |  |                  |

## MANUAL START



- |   |  |                            |
|---|--|----------------------------|
| 24. Motor Cover                             | 31. Dash Plate and Cable Assembly (Electric Start) | 38. Motor Rest             |
| 25. Steering Handle and Twist Grip Throttle | 32. Propeller                                      | 39. Tilt Grip              |
| 26. Safety Chain Lug                        | 33. Exhaust Outlet                                 | 40. Choke Switch           |
| 27. Model and Serial Number Nameplate       | 34. Anti-Cavitation Plate                          | 41. Starter Key and Switch |
| 28. Angle Adjusting Rod Retainer            | 35. Water Discharge and Exhaust Relief             |                            |
| 29. Fuel Connector                          | 36. Idle Speed Adjustment                          |                            |
| 30. Gearcase                                | 37. Latch (Motor Cover)                            |                            |

### PORT VIEW



# INSTALLATION INSTRUCTIONS



**SAFETY WARNING:** DO NOT OVERPOWER BY USING A MOTOR OF A HORSEPOWER RANGE HIGHER THAN THAT PRESCRIBED ON THE CERTIFICATION PLATE ON THE BOAT. IF NO PLATE, SEE YOUR DEALER.

## TRANSOM HEIGHT

The proper transom (vertical) height for the Standard Length Model is 14-1/2 to 15-1/2". The proper transom (vertical) height for the Long Shaft Model is 19-1/2 to 20-1/2". If the transom is too high, the propeller will operate in turbulent water with lowered efficiency. Overheating may result. If the transom is too low, excessive drag may result and your boat will not perform properly.



**NOTE:** We recommend using an accessory transom plate to protect your boat and help prevent loss of motor. See your Dealer.

## PROPELLER SELECTION

Your motor is equipped with a propeller that will perform satisfactorily under average conditions. However, since some boats have a varying speed potential, it may be necessary to install a propeller having an increased or decreased blade pitch to achieve maximum performance.

When operating your motor at full throttle under normal load conditions the engine RPM is the controlling factor in determining the correct propeller blade pitch for your rig. To obtain peak performance, the engine RPM under these operating conditions should be in the upper half of the FULL SPEED RPM OPERATING RANGE. (See SPECIFICATIONS.) If the engine RPM is on the low side of the recommended range, install a propeller of reduced pitch and the engine RPM will increase. If the engine RPM is above recommended RPM, install a propeller of an increased pitch to reduce engine RPM. See your DEALER.

It is suggested that a tachometer be utilized to accurately check engine RPM. See your DEALER. He will be pleased to assist you in obtaining maximum performance from your boat and motor.

## LIFTING AND CARRYING MOTOR

A handle, located at the balance point of your motor, is a convenient grip to use for carrying. To lift your motor from boat or motor stand, use the carrying handle and lower motor cover at the rear. DO NOT use the tilt grip on the motor cover for lifting or carrying.



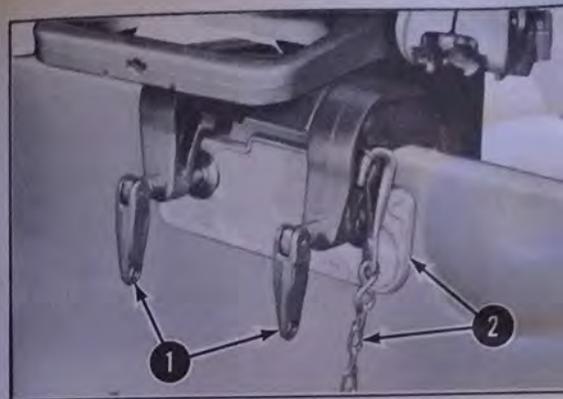
1. Carrying Handle 2. Rear Lower Motor Cover 3. Tilt Grip

## INSTALLING MOTOR



**SAFETY WARNING:** SOME BOATS IN THE WATER ARE EXTREMELY UNSTABLE, EVEN WHEN SECURED TO DOCK. DO NOT STAND ERECT. STAY AS CLOSE AS POSSIBLE TO CENTER LINE OF BOAT WHILE INSTALLING MOTOR.

When mounting the motor on the boat in shallow water, place stern bracket in full tilted position before lifting motor onto transom. This will avoid dragging propeller in sand or silt.



- 1 CLAMP SCREWS.** Center motor on transom before tightening clamp screws. Turn clamp screws tight, tighten again after 15 minutes of operation. Do not use tools to tighten clamp screws.
- 2 SAFETY CHAIN AND TRANSOM PLATE.** To prevent loss of motor overboard, we recommend securing motor to boat with a safety chain and transom plate (not supplied with motor).

## INSTALLATION OF ELECTRICAL EQUIPMENT - (ELECTRIC START)

We recommend your dealer make the electrical installation for you. Should you desire to do this yourself, the kit included with your motor is complete with detailed instructions for installation. These instructions must be followed exactly in order to insure proper operation of the electrical system.

The motor may be manually started and operated without a battery.

## BATTERY AND BATTERY BOX (Not supplied with motor)

We recommend a 12 volt battery with a 70 ampere hour rating, or better, and a minimum of 2.0 minutes cold starting capacity at 300 amperes discharge, zero degrees fahrenheit and a 10 second voltage rating of 7.5 volts. Battery should be installed in a battery box and secured to the boat.



**SAFETY WARNING:** BATTERY ELECTROLYTE IS AN ACIDIC SOLUTION 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.



**NOTE:** Connecting the cables to the battery should be the last step in your installation. BE SURE NEGATIVE (-) BATTERY CABLE, (BLACK), IS SECURELY ATTACHED TO NEGATIVE TERMINAL ON BATTERY AND POSITIVE (+) BATTERY CABLE, (RED), IS SECURELY ATTACHED TO POSITIVE TERMINAL ON BATTERY.

All accessories (except as indicated in OMC Installation Instructions) SHOULD BE PROPERLY FUSED and connected DIRECTLY TO BATTERY.

## REPLACEMENT KEYS (ELECTRIC START)

For replacement keys, send key number, stamped on face of ignition switch, and \$1.00 for each key, minimum two key order, to Stevens Experimental Co., 111 Greenwood Avenue, P.O. Box 193, Waukegan, Illinois 60085.

|         |
|---------|
| KEY NO. |
|         |

## REMOTE CONTROLS (ACCESSORY)

Your motor is designed for operation with remote controls available as an accessory. Properly installed and maintained remote controls will provide smoothly operating throttle and gearshift levers.

# INSTALLATION INSTRUCTIONS

See your DEALER for OMC engineered systems for your boat and motor. We also recommend that you see your DEALER for correct installation of all remote controls.

## REMOTE STEERING (ACCESSORY)

The basic steering system recommended for this motor is the cable and pulley system. Proper installation must be made to insure safe and easy steering. See your DEALER.

**SAFETY WARNING:** WE RECOMMEND REMOVING THE STEERING HANDLE WHEN USING REMOTE STEERING TO AVOID POSSIBLE INTERFERENCE WITH REMOTE CONTROL CABLES.

## REMOTE CONTROL CABLES (Not supplied with motor)

The Control Cables are an essential link between the motor and the control lever and should be selected wisely. We strongly recommend that you use OMC control cables or cables of equal quality. OMC cables have annealed core wire ends, sealed cable ends, and lifetime lubrication. If you do not use OMC cables make sure the brand selected has all three of these important features.

**SAFETY WARNING:** FAILURE TO HAVE ANNEALED CORE WIRE ENDS ON THE CONTROL CABLES MAY RESULT IN THE REMOTE CONTROL BECOMING INEFFECTIVE.

## REMOVING MOTOR FROM BOAT

Disconnect electric cables from battery and motor (ELECTRIC START MODEL), safety chain and fuel line. Loosen the clamp screws. Lift motor vertically from boat. To lift your motor, use the carrying handle and the lower motor cover at the rear. DO NOT use the tilt grip on the motor cover for lifting or carrying. See LIFTING AND CARRYING MOTOR.

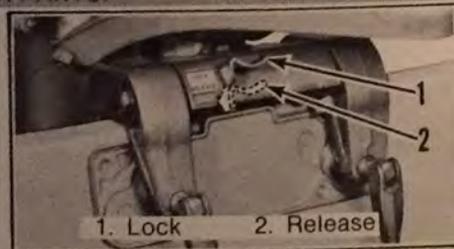
**NOTE:** Do not place motor in a position where the lower unit will be higher than the powerhead. Any water remaining in the exhaust tube may run into the cylinder and cause serious damage.

**SAFETY WARNING:** DO NOT OPERATE MOTOR OUT OF WATER, OR IN A TEST TANK WITHOUT THE PROPER TEST WHEEL AS IT WILL RESULT IN DAMAGE TO WATER PUMP, OVERHEATING, TOO HIGH RPM, AND POSSIBLE EXPLOSION OF MOTOR PARTS.

## REVERSE LOCK

During normal operation the REVERSE LOCK should be in LOCK position. The RELEASE position is used ONLY when tilting the motor, or operating in shallow or obstructed waters.

The REVERSE LOCK, when in LOCK position, will release when the motor strikes an underwater object while traveling forward at a moderate speed.



## TILTING

To tilt motor, move reverse lock to RELEASE position, grasp tilt grip at rear of motor cover and pull motor toward you. DO NOT TILT MOTOR BY PUSHING DOWN ON STEERING HANDLE.

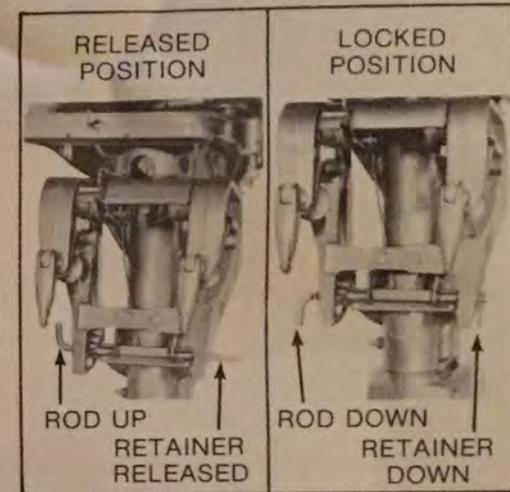
## MOTOR ANGLE ADJUSTMENT

The stern bracket has four positions for adjusting the motor to allow for transom angle and boat loading. The vertical angle of motor on boat must be adjusted for best performance. In most instances, the motor will be in proper adjustment if the angle adjustment rod is in the second position from the boat.

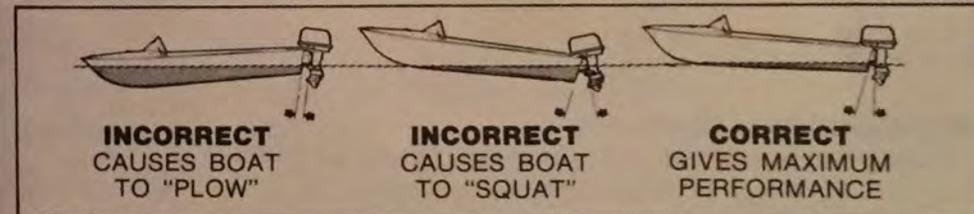
Motor should be perpendicular to water when boat is underway. This adjustment can only be determined by observing boat operation at full speed. Set angle adjustment for your usual load. Angle adjustment should be changed if boat loading results in improper motor angle.

Adjust motor angle as follows:

1. Stop motor
2. Set reverse lock in RELEASE position.
3. Tilt motor up.
4. Turn tilt adjusting rod up and press in against spring to release retainer. Remove rod from stern brackets. Place rod in desired position. Turn rod down and press in to allow retainer to lock. Make sure rod retainer drops into lock position.
5. Move motor back against rod and place reverse lock in LOCK position so motor is perpendicular to water when boat is under way.

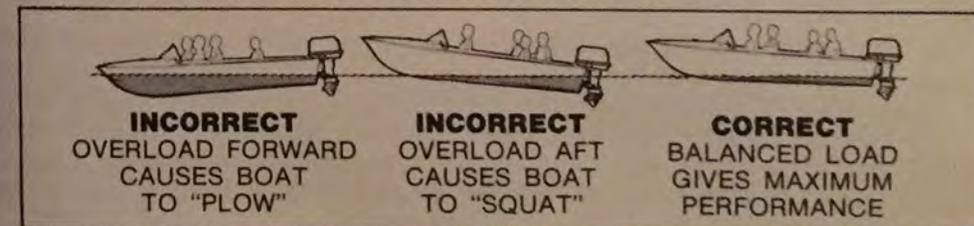


**SAFETY WARNING:** IF THE LOWER UNIT IS TILTED TOO FAR FORWARD, THE BOW WILL DIG, WHICH IS DANGEROUS WHEN IN ROUGH WATER WITH A FOLLOWING SEA OR IF TILTED TOO FAR AFT PORPOISING CREATED MAY CAUSE HAZARDOUS STEERING. SEE CORRECT ANGLE ADJUSTMENT ILLUSTRATION.



## BOAT TRIM

For best boat and motor performance, the boat should be driven as nearly parallel to the water as possible. Passengers and equipment should be so distributed in the boat that it is evenly balanced both front to rear and side to side.



# FUEL AND LUBRICANT

This is a two cycle engine that requires lubricant to be mixed with gasoline. Follow these instructions.

**NOTE:** Recommended lubricant and gasoline must be properly mixed or serious damage will result to the engine.

## RECOMMENDED LUBRICANT

Use EVINRUDE LUBRICANT (in Canada use OMC two cycle motor oil) which is BIA certified for service TC-W (Two Cycle-Water Cooled). It is formulated to give best engine performance with least combustion chamber deposits, least piston varnish, maximum spark plug life, and best lubrication. EVINRUDE LUBRICANT can be purchased from your DEALER in the following packages:

Single pint cans (enough for 6 U.S. gallons (5 Imperial) of gasoline) .....

Six-Pack of pint cans .....

Case of 4 six-packs or total of 24 pints .....



Always keep an ample supply on hand. Do not settle for less than the BEST. Other additives such as "tune-ups," "tonics," "friction reducing compounds," etc. are unnecessary and should not be used in your engine, except as described in this manual.

If EVINRUDE LUBRICANT is not available, another BIA certified TC-W or TC-2 lubricant (oil) may be used.

**NOTE:** Avoid the use of the following, as they will contribute to deterioration of your engine and shorten spark plug life:

### AVOID USE OF:

- Automotive oils
- Premix fuel of unknown oil quality
- Premix fuel richer than 50:1 ratio

## RECOMMENDED GASOLINE

Use gasoline with the following minimum octane numbers:

|   |    |
|---|----|
| PUMP POSTED OCTANE NUMBER                             | 86 |
| Research Octane Number Most Commonly Used in the Past | 91 |

Automotive gasolines regular-leaded or lead-free meeting these minimum octane numbers may be used; however, best results will be obtained on 40 hp and under by using lead-free gasoline.

**SAFETY WARNING:** GASOLINE IS EXTREMELY FLAMMABLE AND HIGHLY EXPLOSIVE UNDER CERTAIN CONDITIONS. ALWAYS STOP ENGINE, AND DO NOT SMOKE OR ALLOW OPEN FLAMES OR SPARK NEAR THE BOAT WHEN REFUELING OR CHANGING FUEL TANKS.

**NOTE:** When operating in any other country than the United States, Canada or Australia, any gasoline may be used which will satisfactorily operate an automobile engine.

## FUEL MIXTURE

1 part approved lubricant to 50 parts gasoline.

(3 Gal. Tank) 1/2 pint lubricant to 3 gallons (2-1/2 Imperial) of gasoline.

(6 Gal. Tank) 1 pint lubricant to 6 gallons (5 Imperial) of gasoline.

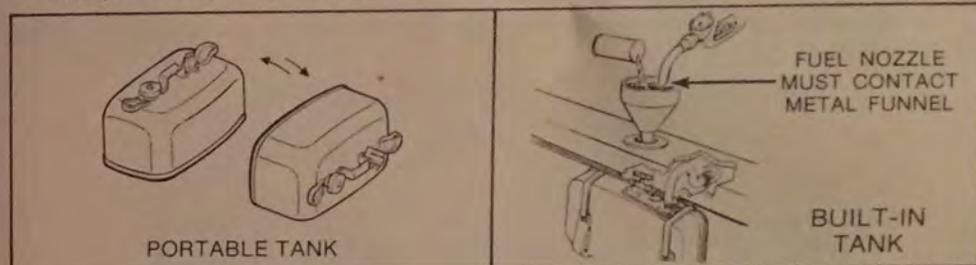
## FUEL MIXING INSTRUCTIONS

Fuel mixing instructions for EVINRUDE LUBRICANT or other BIA certified TC-W lubricants:



**SAFETY WARNING:** TO PREVENT SPILLING FUEL IN BOAT, REMOVE PORTABLE FUEL TANK WHEN REFUELING. GASOLINE IS HIGHLY FLAMMABLE - ALWAYS MIX IN WELL VENTILATED AREA.

Always use fresh gasoline.



### ABOVE 32°F.

Portable Tank - Pour lubricant into tank, add gasoline. Replace filler cap securely. To mix fuel, tip tank on side as shown and back to upright position.

Built-in Tank - Use large funnel with a fine mesh strainer (100 mesh or finer). Pour lubricant slowly with the gasoline as tank is filled.

### BELOW 32°F.

Portable Tank - Pour approximately one gallon gasoline into tank, add required lubricant. Replace filler cap securely. Thoroughly mix by shaking tank. Add balance of gasoline.

Built-in Tank - In separate container mix all lubricant needed with one gallon or more of gasoline. Use large funnel with a fine mesh strainer (100 mesh or finer). Pour this mixture slowly with gasoline as tank is filled.

## BREAK-IN PROCEDURE

The 50:1 mixture is used during break-in. Use only EVINRUDE LUBRICANT or other BIA certified TC-W lubricants.

OPERATION (FIRST HOUR): Do not operate engine at continuous full power for the first hour of operation. After 15 minutes of slow to half throttle operation, we recommend a short burst of full throttle operation every 5 to 10 minutes. Run at full throttle for about 90 seconds, then return to half throttle or less.

**NOTE:** Frequently check operation of cooling system during break-in. A fine spray of water discharged from exhaust relief outlet indicates proper operation.

OPERATION (SECOND HOUR): Bring boat into planing attitude and reduce power to three-quarter throttle (approximate) while maintaining planing attitude. At intervals during the second hour, apply full power for periods of one to two minutes, returning throttle to original setting - three-quarter throttle for a cooling period.

Avoid continuous full throttle operation for extended periods during the next three hours.

# STARTING AND OPERATION

## FUEL TANK

Place fuel tank in boat so tank will not shift around. Be sure fuel line is not wedged under tank. Allow fuel line slack to permit steering.

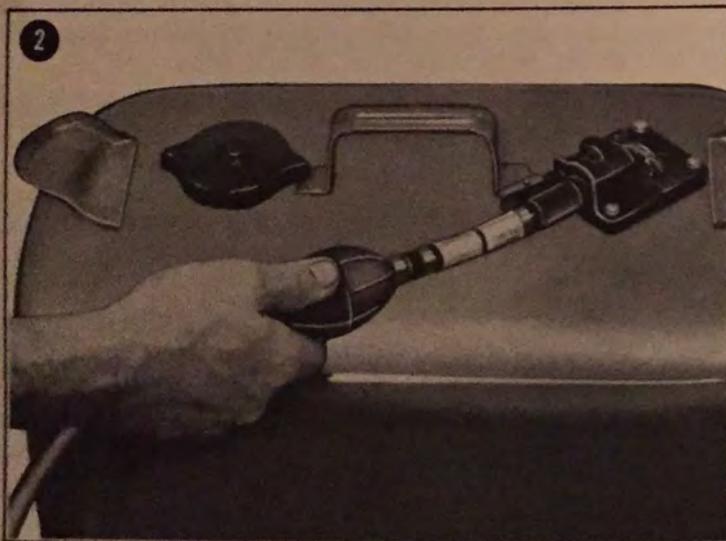
## MANUAL STARTING

- 1 Slide fuel line connectors onto motor and tank couplings until locking lever snaps into position (PRIMER BULB AT TANK).

To disconnect fuel line depress, locking lever on fuel line connector and pull off at motor or fuel tank.



- 2 Squeeze fuel line primer bulb several times until resistance is felt.



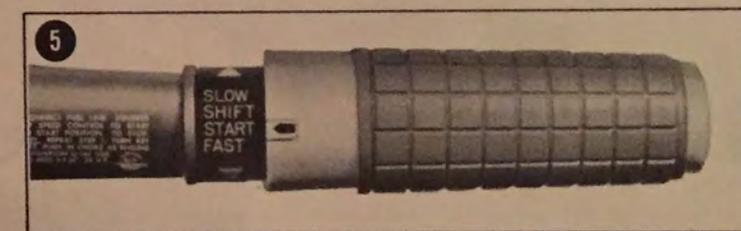
- 3 Turn throttle grip to SHIFT position.



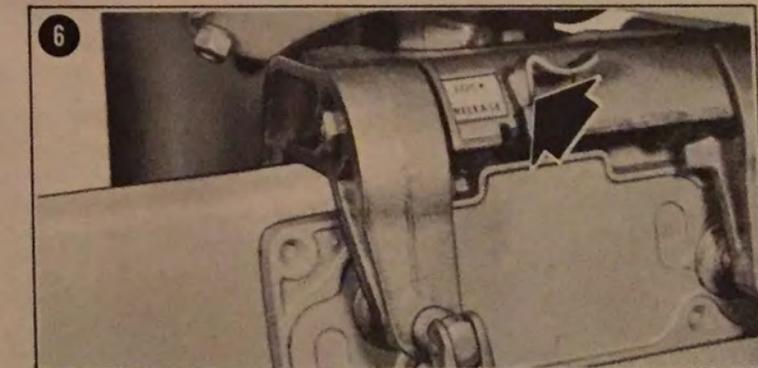
- 4 Move shift lever to NEUTRAL position. Motor can be started ONLY in NEUTRAL shift position.



- 5 Turn throttle grip to START position.



- 6 Set reverse lock lever in LOCK position.



# STARTING AND OPERATION

## MANUAL STARTING (CONTINUED)

- 7 Cold Motor - Pull choke knob all the way out.  
Warm Motor - Do not choke. If motor fails to start after a few pulls on the starter handle, then use the choke.

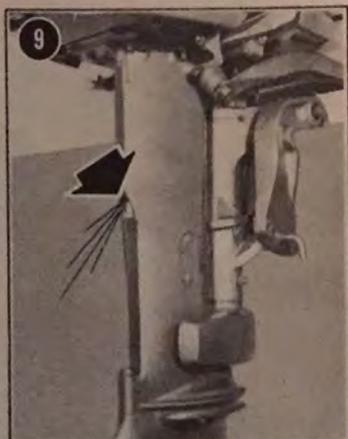


- NOTE:** A lock-out prevents starting motor in gear. If motor will not crank, reduce throttle to SHIFT position and move shift lever to NEUTRAL.

**SAFETY WARNING:** ATTEMPTING TO MANUALLY START THE ENGINE WHILE IN GEAR MAY DAMAGE PARTS OR CAUSE THE START IN NEUTRAL FEATURE TO BECOME INOPERATIVE. START ENGINE WITH SHIFT LEVER IN NEUTRAL POSITION.

- 8 Pull starter handle slowly until starter engages, then pull forcibly. Repeat, if needed, until motor starts. To prevent damage to starter assembly, allow starter cord to rewind before releasing starter handle. When motor starts, push choke in gradually until motor is running smoothly. If motor does not start, see TROUBLE CHECK CHART.

- 9 Check to see that at least a fine spray of water is coming out of the exhaust relief outlets to assure proper water pump operation. See COOLING SYSTEM.



## SHIFTING

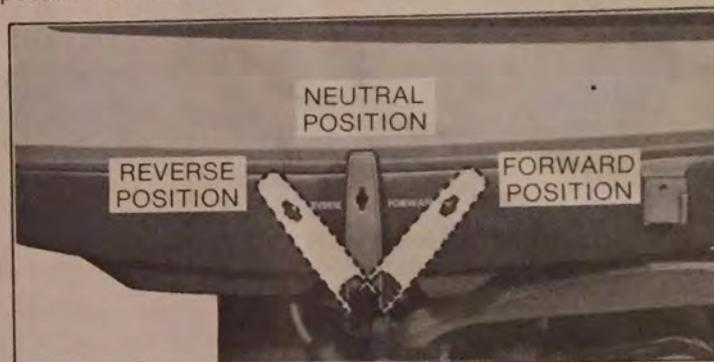
Turn throttle grip to SHIFT position.

- NOTE:** Always retard throttle to SHIFT position before shifting.



- NOTE:** To avoid damage to shifting mechanism, do not attempt shifting from NEUTRAL to FORWARD or REVERSE when motor is not running. It is permissible to shift to NEUTRAL after the throttle grip has been retarded to SHIFT position.

With motor running, SNAP shift lever with QUICK ACTION to FORWARD or REVERSE position as desired.



- SAFETY WARNING:** DO NOT OPERATE MOTOR IN REVERSE WITH REVERSE LOCK IN RELEASE POSITION AS MOTOR MAY TILT INTO BOAT.

## SPEED CONTROL

Turn throttle grip toward FAST (counterclockwise) or SLOW (clockwise) position as desired.

- NOTE:** When operating in reverse, additional care should be exercised as the motor has no automatic tilt protection if an underwater obstruction is hit.

## STOPPING (MANUAL START)

Reduce throttle all the way, shift to NEUTRAL position and depress STOP BUTTON until motor stops.



- SAFETY WARNING:** DISCONNECT FUEL LINE AT MOTOR IF NOT USED FOR ANY LENGTH OF TIME. FAILURE TO DO SO COULD RESULT IN FUEL LEAKAGE INTO THE BOAT.

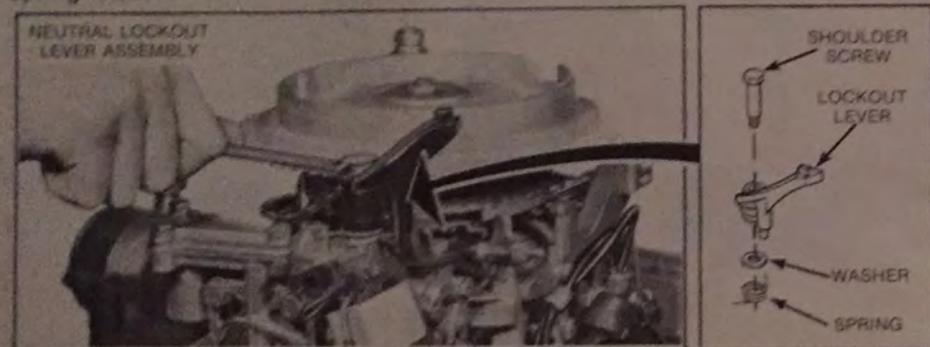
# STARTING AND OPERATION

## EMERGENCY STARTING

**SAFETY WARNING:** DO NOT USE JUMPER CABLES AND A BOOSTER BATTERY TO START ENGINE. DO NOT CHARGE A BATTERY IN THE BOAT. FUMES VENTED DURING BATTERY CHARGING CAN LEAD TO AN EXPLOSION. FOLLOW EMERGENCY STARTING PROCEDURE.

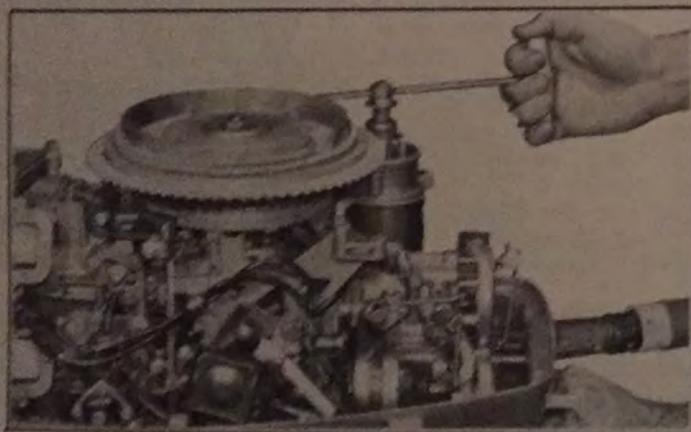
**SAFETY WARNING:** BE SURE SHIFT LEVER IS IN NEUTRAL POSITION SINCE NEUTRAL LOCKOUT FEATURE IS REMOVED FOR EMERGENCY STARTING. IF AVAILABLE, SOMEONE SHOULD BE AT STEERING WHEEL.

If manual starter fails, remove motor cover. See REMOVING MOTOR COVER. Use a 3/8" wrench to remove three screws attaching starter. Use a 5/8" wrench to remove screw attaching Neutral Lockout Lever Assembly. Caution - Lever is spring loaded.



**SAFETY WARNING:** ELECTRIC START MODEL KEY SHOULD BE IN OFF POSITION WHILE WRAPPING CORD ON FLYWHEEL. DO NOT TURN FLYWHEEL BY HAND WITH IGNITION KEY IN ON POSITION. USE STARTER CORD ONLY. UNDER NO CIRCUMSTANCES WHEN ROPE STARTING HAVE KEY IN START POSITION.

If starter cord is broken it may be long enough to use as an emergency cord. If not, obtain a 1/4 inch cord and tie a knot at one end. Place knot in pulley notch and wrap cord around clockwise. Follow procedure for starting.



## TRAILERING

Motor should be trailed in normal operating position. Additional road clearance can be obtained by placing angle adjusting rod in outer stern bracket position. If trailer construction still does not provide adequate clearance, see your DEALER for OMC accessory trailing bracket.

**SAFETY WARNING:** DISCONNECT FUEL LINE AT MOTOR IF NOT USED FOR ANY LENGTH OF TIME. FAILURE TO DO SO COULD RESULT IN FUEL LEAKAGE INTO THE BOAT.

## TROUBLE CHECK CHART

**SAFETY WARNING:** DO NOT REMOVE OR INSTALL THE MOTOR COVER WHILE ENGINE IS RUNNING. THE MOTOR COVER IS A MACHINERY GUARD. ITS REMOVAL EXPOSES THE OPERATOR TO MOVING PARTS. KEEP HANDS, HAIR AND CLOTHING AWAY FROM FLYWHEEL, STARTER AND AIR INTAKE.

MOTOR WILL NOT START, check for:

1. Throttle grip in START position and shift lever in NEUTRAL position
2. Fuel in tank
3. Fuel line connector properly attached
4. Fuel line primer bulb at tank end
5. Carburetor primed (squeeze primer bulb)
6. Fuel tank resting on fuel line
7. Fuel line clear and not kinked
8. Cold motor: Engine not choked sufficiently
9. Warm motor: Engine over-choked or flooded (correct by pushing in choke knob, disconnect fuel line at motor, and cranking until cleared)
10. Fuel pump filter obstructed
11. Water in fuel system
12. Loose spark plug leads
13. Spark plugs carboned, burned, or wet
14. Incorrect spark plug gap (correct gap is 0.030")
15. Loose spark plugs, causing poor compression (recommended torque 17-1/2 to 20-1/2 ft.-lbs.)
16. Recheck starting instructions

MOTOR WILL NOT IDLE PROPERLY, check for:

1. Carburetor adjustment improperly set
2. Defective spark plugs
3. Improper fuel mixture

MOTOR LOSES POWER, check for:

1. Defective spark plugs
2. Fuel pump filter partially restricted or fuel contaminated
3. Obstruction at water intake. Cooling system not operating properly

MOTOR VIBRATES EXCESSIVELY, check for:

1. Damaged propeller
2. Carburetor improperly adjusted
3. Loose steering friction screw
4. Weeds on propeller

MOTOR RUNS, BUT MAKES LITTLE OR NO PROGRESS, check for:

1. Damaged propeller
2. Weeds on propeller
3. Sheared drive pin

If this does not solve problem, then contact your DEALER.

## STARTING AND OPERATION

### COOLING SYSTEM

Water for cooling is supplied by a water pump located above the gearcase. The pump operates as a displacement pump at low speeds and as a centrifugal pump at high speeds. The thermostat maintains consistent operating temperatures throughout the entire range of motor operation, increasing motor life and efficiency.

 **NOTE:** For continuous operation in waters containing excessive amounts of salt, sand or silt, we recommend an OMC accessory chrome plated water pump kit. See your DEALER.

### SHALLOW WATER OPERATION

Avoid operating in shallow waters. If necessary, proceed at slow speeds until deeper water is reached.

The reverse lock is designed to release automatically from the LOCK position if an obstruction is hit while going forward at normal running speeds. The reverse lock may not release from the LOCK position when running at slow speed. When running in shallow water, place the reverse lock in RELEASE position which allows the motor to "kick-up" more easily if an obstruction is hit. If an obstruction is hit, retard the throttle immediately and stop motor. Check lower unit for possible damage.

If motor vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. Operate at slow speed. Replace damaged propeller. See PROPELLER AND DRIVE PIN REPLACEMENT.

 **NOTE:** Operating motor with lower unit dragging on bottom will result in propeller wear, and cause sand to be forced into water pump and may cause damage to the pump.

### FUEL ECONOMY

The economy throttle position can effect fuel savings depending on boat load and hull design. When boat reaches top speed, slightly back off on throttle from FULL SPEED position. This will result in a fuel saving without noticeable loss in speed.

### OPERATING IN WEEDY WATER

Weeds on the propeller will cause motor to vibrate. Run at reduced speed when weeds are thick. Stop motor, clear propeller and water intake completely of weeds as often as necessary before resuming speed in clear water.

### SALT WATER OPERATION

Your motor is built for operation in either fresh or salt water. If motor is to remain on boat during long periods of inoperation, tilt gearcase out of the water (except during freezing temperatures). When removing motor from water, allow cooling system to drain thoroughly, by placing motor in upright position. Internal flushing is unnecessary. We recommend that motor exterior be rinsed with fresh water and wiped off with a lightly oiled rag.

### OPERATING IN FREEZING WEATHER

In freezing temperatures, keep the lower unit submerged in the water at all times. This will avoid freezing and possible damage to the water pump or other parts of the motor. When removing the motor from the water, keep the motor in an upright position until water is completely drained from the cooling system.

### ANTI-CORROSION PROTECTION

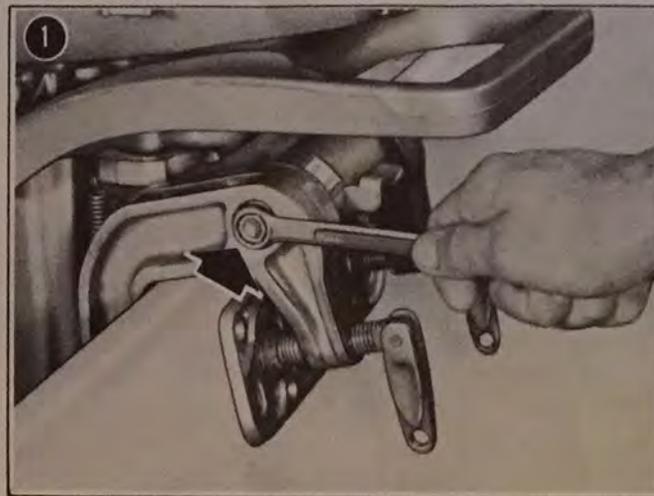
It is important especially in salt water areas to protect the lower unit from galvanic corrosion. Your dealer has accessory kits available which provide additional protection under adverse conditions.

## ADJUSTMENTS

### TILT FRICTION ADJUSTMENT ①

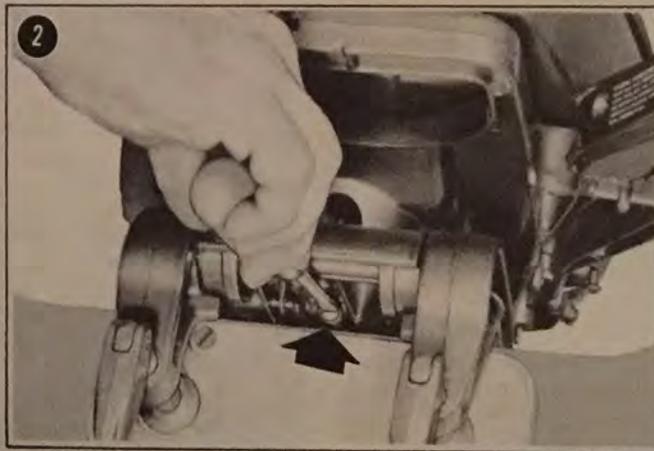
Use 9/16 wrench to tighten the tilt shaft nut only enough to hold the motor in any position of tilt.

 **NOTE:** DO NOT overtighten, as doing so will increase the pressure required to tilt the motor when an obstruction is hit. Failure to tilt when hitting an obstruction can do serious damage to your motor.



### STEERING FRICTION ADJUSTMENT ②

Adjust steering friction with motor mounted to boat by simply loosening or tightening screw with screwdriver as shown. Steering friction should be adjusted so that a slight drag is felt when turning. This will allow smooth steering. Minimum friction is required when remote steering is used.



 **SAFETY WARNING:** THE STEERING FRICTION SCREW IS NOT INTENDED TO ALLOW "HANDS OFF" STEERING.

## ADJUSTMENTS

### IDLE SPEED ADJUSTMENT

Turning clockwise on the knob increases idle speed, turning counterclockwise decreases idle speed. Make certain that throttle is in slow position and the motor is at normal operating temperature before making the idle speed adjustment.



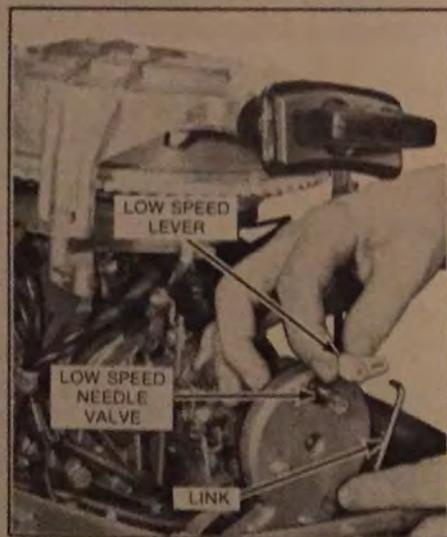
### CARBURETOR ADJUSTMENT

#### HIGH SPEED

High speed fuel ratio calibration is maintained through use of fixed high speed jet. No adjustment is required.

#### LOW SPEED

The carburetor low speed adjustment is preset at the factory with provisions made for normal adjustment to compensate for changes in fuel, altitude and climate. When running at slow speed with a warm engine, adjust the "low speed" knob until motor idles smoothly. Turning the adjustment knob clockwise (right hand rotation) will lean out the fuel mixture. Turning the adjustment knob counterclockwise (left hand rotation) will enrich the fuel mixture. Should additional readjustment be required, proceed as follows:



1. Stop motor.
2. Remove motor cover. See REMOVING MOTOR COVER.
3. Pull off low speed lever and disconnect from link. Be careful not to bend linkage.
4. Use low speed lever to turn needle valve clockwise until it gently seats. DO NOT FORCE.
5. Turn needle valve counterclockwise 3/4 turn.
6. Start motor on boat or in test tank (using test wheel) and run until warm, approximately 2 minutes.
7. Retard throttle to normal idle speed and adjust needle valve until best performance is obtained.
8. Replace low speed lever and link. (Do not disturb position of needle valve while installing lever.)
9. Readjust idle speed screw.
10. Stop motor and replace motor cover.

After the carburetor has been properly adjusted, it should not require frequent readjustment.

## MAINTENANCE

### SPARK PLUG INSPECTION AND REPLACEMENT



**SAFETY WARNING:** DO NOT REMOVE OR INSTALL THE MOTOR COVER WHILE ENGINE IS RUNNING. THE MOTOR COVER IS A MACHINERY GUARD. ITS REMOVAL EXPOSES THE OPERATOR TO MOVING PARTS. KEEP HANDS, HAIR AND CLOTHING AWAY FROM FLYWHEEL, STARTER AND AIR INTAKE.

Using the correct spark plug is most important for efficient operation. See SPECIFICATIONS for the recommended spark plug.

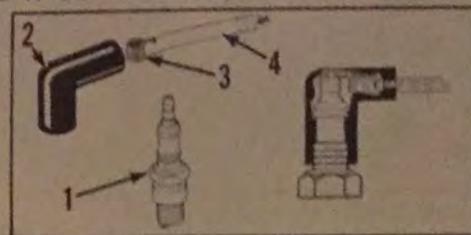
To remove spark plugs, stop motor and remove motor cover. Detach rubber covered spark plug terminal (twist slightly counterclockwise and pull off). Remove spark plug for inspection or replacement as necessary.

When reinstalling spark plug, clean the spark plug seat in cylinder head. Install spark plug. (Recommended torque 17-1/2 to 20-1/2 ft. lbs.)



**NOTE:** Do not overtighten, or damage may result to cylinder head.

The spring inside rubber terminal lead cover must be positioned to fit properly over spark plug terminal (see illustration).



1. Spark Plug      3. Spring  
2. Cover            4. Lead

### PROPELLER AND DRIVE PIN REPLACEMENT

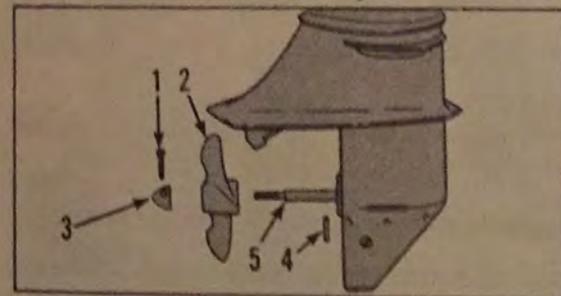
Your motor has a shock absorber in the propeller hub to minimize propeller damage and reduce possibility of shearing drive pin when propeller strikes an object. If drive pin does shear it can be easily replaced.



**SAFETY WARNING:** REMOVE SPARK PLUG LEADS FROM SPARK PLUGS TO AVOID ACCIDENTALLY STARTING MOTOR.

To replace drive pin, pull out cotter pin, remove propeller nut and propeller. The damaged drive pin can be driven out with a new pin. A spare drive pin and cotter pin are supplied with your owner's kit. Lubricate propeller shaft with OMC Sea-Lube Anti-Corrosion Lube. When replacing propeller nut, tighten nut finger tight and then advance (tighten) to align cotter pin hole. Do not back up nut. (If propeller nut is not drawn up tight enough, excessive drive pin and propeller hub wear will result.) Install cotter pin (use new pin if necessary) bending ends over against nut.

If propeller strikes an object, it may be damaged and can cause excessive motor vibration and/or damage to the motor. See your DEALER.



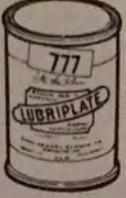
1. Cotter Pin  
2. Propeller  
3. Propeller Nut  
4. Drive Pin  
5. Propeller Shaft

# MAINTENANCE

## LUBRICATION

### TYPES OF LUBRICANT

Contact your DEALER for OMC Lubricants.

| OMC SEA-LUBE*<br>ANTI-CORROSION<br>LUBE  |   | OUTBOARD<br>LUBRICANT<br>(OIL)  | OMC SEA-LUBE*<br>PREMIUM BLEND<br>GEARCASE LUBE                                   | LUBRIPLATE<br>777   |
|--|---|---|---|---|
|  |  |  |  |  |
| 1  | 2   | 3   | 4   | 5   |

LUBRICATION PICTURE SYMBOLS

### GEARCASE LUBRICATION

**SAFETY WARNING:** REMOVE SPARK PLUG LEADS FROM SPARK PLUGS TO AVOID ACCIDENTALLY STARTING MOTOR.

Remove oil drain/fill and oil level plugs from side of gearcase. With motor in normal running position, allow oil to drain completely.

To refill, place tube of OMC SEA-LUBE\* Premium Blend Gearcase Lube in drain/fill hole. With motor in normal running position, fill until lubricant appears at oil level hole. See SPECIFICATIONS for gearcase capacity

**NOTE:** Recommended lubricants which have been formulated to protect against damage to bearings and gears must be used, as extensive damage can result from improper lubrication.

Install oil level plug before removing lubricant tube from oil drain/fill hole. Drain/fill plug can then be securely installed without oil loss.

If the proper tube or filler type can is not available, install drain/fill plug. Slowly fill gearcase through oil level hole allowing trapped air to escape. Install plug.

### LUBRICATION POINTS

- A** Shifter Starter Lockout
- B** Carburetor, Choke Linkage and Cam
- C** Shift Lever Shaft, Reverse Lock and Swivel Bracket
- D** Clamp Screws
- E** Motor Cover Latch and Starter Neutral Lockout
- F** Throttle Shaft Bushings and Gears
- G** Throttle and Shaft Linkage, Electric Starter

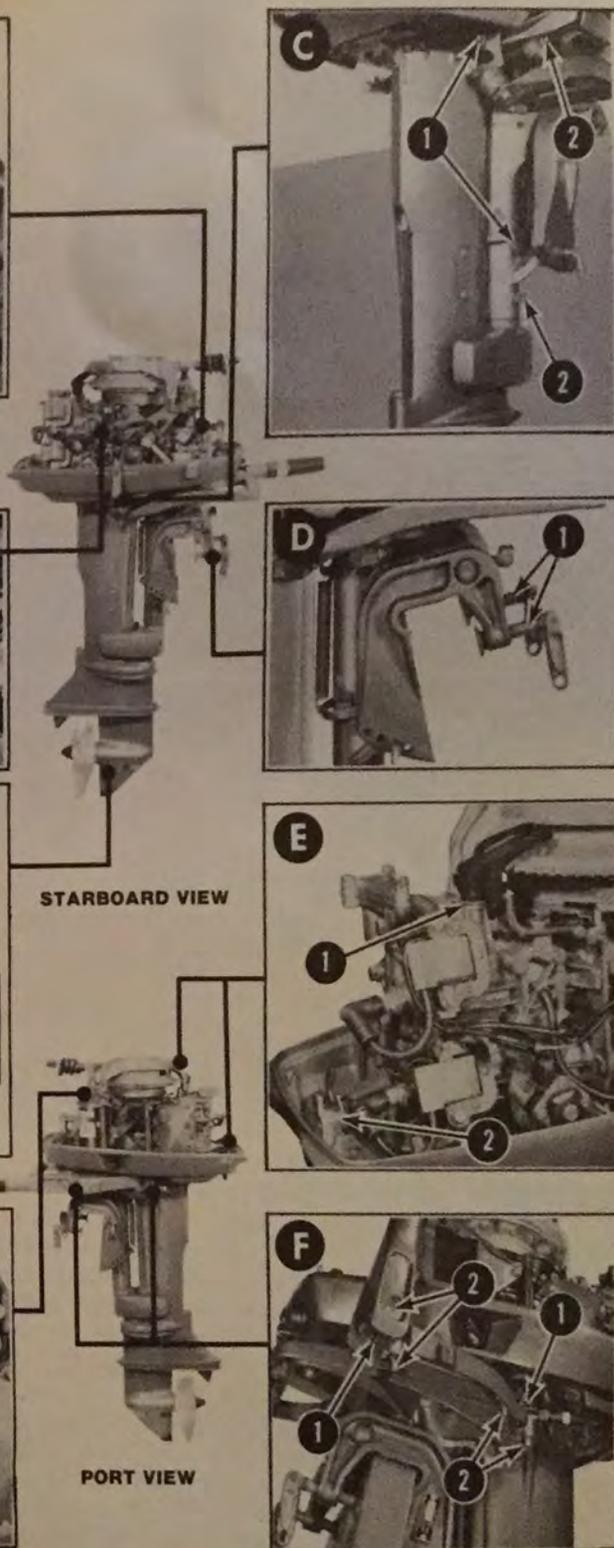
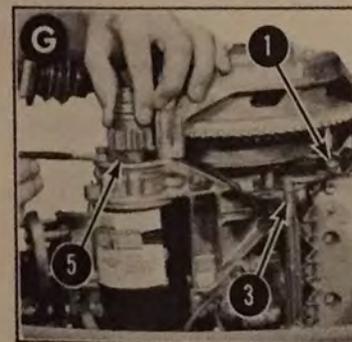
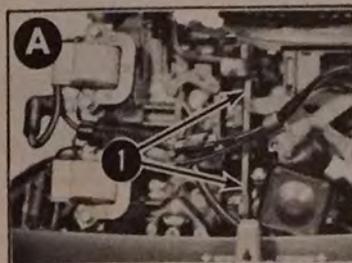
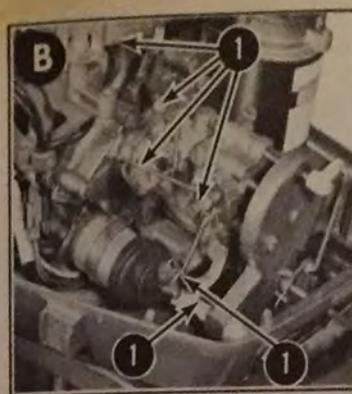
Frequency of Lubrication • Fresh Water-60 Days • Salt Water-30 Days (Some areas may require more frequent lubrication)

### H Gearcase

Change after first 20 hours of operation and check after 50 hours of operation. Add lubricant if necessary.

Drain and refill every 100 hours of operation or once each season whichever occurs first.

\*Trademark



# MAINTENANCE

## OFF SEASON STORAGE (CONT)

9. Remove and check spark plugs. Clean or replace if necessary. Torque to 17-1/2 to 20-1/2 ft. lbs. Refer to SPARK PLUG INSPECTION AND REPLACEMENT. Leave spark plug leads disconnected.
10. Touch up paint. See your DEALER.
11. Apply a coat of automotive wax on external finish of the motor.
12. Give motor thorough visual check for loose screws or damaged and worn parts.
13. Store motor in an upright position in a dry and well ventilated room.

## AFTER STORING - BEFORE USING

If you have properly stored your motor proceed as follows:

1. Connect spark plug leads.
2. Check lower unit lubrication. If leakage is evident, lower unit seals may need attention. See your DEALER.
3. Electric Start Models - Check battery water level and charge. Install and connect battery. See INSTALLATION OF ELECTRICAL EQUIPMENT.
4. After starting, check to see that a least a fine spray of water is coming out of the exhaust relief outlets. This indicates proper water pump operation.

## SUBMERGED MOTOR

### MOTOR DROPPED OVERBOARD (NOT RUNNING)

If motor is recovered from water immediately, it must be serviced within 3 hours after recovery. See your DEALER. (See PROLONGED SUBMERSION.)

Since this motor is provided with needle bearings, it must be serviced within 3 hours after recovery to avoid costly repairs. Both fresh and salt water characteristically will start etching the highly machined bearing surfaces of the crankshaft and connecting rods as well as the bearings once exposed to the surrounding atmosphere.

If service is not readily available, proceed as follows:

1. Remove motor cover and rinse motor with fresh water.
2. DISCONNECT SPARK PLUG LEADS and remove spark plugs. Reattach leads and ground plugs on motor block.

 **NOTE:** To remove or attach leads, pull off or push on with a slight counterclockwise twist.

3. Place motor in horizontal position (spark plug openings down) and work out all of the water by rotating flywheel with starter cord approximately 25 times.
4. Place motor in upright position. Remove high speed screw and washer to drain carburetor.
5. Starters and electrical equipment on motors that have been submerged should be completely disassembled, cleaned, flushed with fresh water if exposed to salt, and thoroughly dried before assembly.
6. Reassemble parts you removed and follow starting instructions. After starting, permit motor to run 1/2 hour or longer on boat or in a test tank with test wheel.
7. If motor fails to start, remove spark plugs again to see if water is present between electrodes. Blow out any water from between electrodes and reinstall or replace with new spark plugs. If the motor still fails to start, HAVE IT SERVICED IMMEDIATELY. Motors which have been submerged must be started or disassembled as soon as possible or expensive repairs will be necessary. To minimize damage, motor must be started or serviced within approximately 3 HOURS after recovery.

 **NOTE:** If motor cannot be started and if service is not readily available, the motor should be re-submerged immediately in fresh water to avoid exposure to the atmosphere. Make arrangements to have it serviced with the least possible delay.

### MOTOR DROPPED OVERBOARD (RUNNING)

Follow the same procedure as MOTOR DROPPED OVERBOARD (NOT RUNNING). However, if there is any binding when flywheel is rotated it indicates a bent connecting rod and no attempt should be made to start the motor. HAVE IT SERVICED IMMEDIATELY.

### MOTOR DROPPED OVERBOARD (IN SALT WATER)

Follow same procedure as MOTOR DROPPED OVERBOARD (NOT RUNNING) and (RUNNING) but take the motor to your DEALER as soon as possible, even if it can be started, as salt water can cause excessive corrosion of ignition system and internal parts.

### PROLONGED SUBMERSION (FRESH OR SALT WATER)

If motor has been dropped overboard and not recovered immediately, then motor must be serviced within 3 hours after recovery. See your DEALER.

If sand has entered the motor, no attempt at starting should be made. Return it to your DEALER for disassembly and cleaning.

## LIMITED WARRANTY

Evinrude Motors (Evinrude), a division of Outboard Marine Corporation, warrants each new Evinrude outboard motor for one (1) year according to the following terms:

This warranty extends to the original retail purchaser only, and commences on the date of original retail purchase.

Any part of the outboard motor manufactured or supplied by Evinrude and found in the reasonable judgement of Evinrude to be defective in material or workmanship will be repaired or replaced by an authorized Evinrude dealer without charge for parts and labor.

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

If any outboard motor is used for commercial purposes, such as rental or other income-producing activities, then this warranty is limited to six (6) months from the date of original retail purchase.

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

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

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

Evinrude reserves the right to change or improve the design of any outboard motor without assuming any obligation to modify any outboard motor previously manufactured.

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

This warranty applies to all outboard motors sold in the United States. Any outboard motors sold elsewhere are warranted by the affiliated marketing company of Outboard Marine Corporation.

EVINRUDE MOTORS  
4143 North 27th Street  
Milwaukee, Wisconsin 53201

A Division of OUTBOARD MARINE CORPORATION  
Waukegan, Illinois 60085

## WARRANTY SERVICE

To make a claim under warranty, contact the authorized Evinrude dealer from whom the outboard motor was originally purchased, or the nearest authorized Evinrude dealer. Remember, your outboard motor must be delivered to an authorized Evinrude dealer within the warranty period, and all warranty work must be performed by an authorized Evinrude dealer. Proof of purchase will be required by the Evinrude dealer to substantiate any warranty claim. Use your Evinrude owner's registration card to establish proof of purchase.

### EXAMPLES OF ITEMS NOT COVERED BY WARRANTY

Provisions of the Warranty Will Not Apply to:  
Normal service requirements arising during the warranty period, such as carburetor or ignition adjustment or repair, or wear of a piston ring, cylinder, or water pump.

Normal service work over and above the repair and replacement of defective parts.  
Outboard motors subject to misuse, neglect, negligence, accident, or used for racing purposes.  
Outboard motors that have been altered or modified so as to adversely affect their operation, performance or durability or to change their intended use.

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

Outboard motors not operated or maintained in accordance with the instructions in the Evinrude Owner's-Operator's Manual.

Twenty-hour check-up, service check-up, tune-up, or diagnosis.  
Normal cleaning, adjusting or replacing of spark plugs in the outboard motor.

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

The warranty applies only to the original retail purchaser.

### OWNER'S OBLIGATION AND RESPONSIBILITY

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

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

**20-HOUR CHECK-UP AT CUSTOMER'S EXPENSE:** Any precision piece of mechanical equipment should have an inspection after initial break-in. This inspection will be performed at local Evinrude dealer rates and paid for by the owner. This is an opportune time to discuss with your Evinrude dealer any questions you may have about your Evinrude outboard motor and to establish a routine preventative maintenance schedule. After the 20-hour check-up, your unit should be taken to an authorized Evinrude dealer every 6 months or 100 hours of operation, whichever occurs first.

### ENGINE TUNE-UP AND MAINTENANCE

**LUBRICATION:** Grease requirements and oil changes are listed in the Evinrude Owner's-Operator's Manual.

**FUEL SYSTEM CHECK:** Fuel filters should be replaced periodically to clean the fuel properly. Carburetors need periodic adjustment. Both are necessary to obtain peak performance from the engine.

**SPARK PLUGS AND IGNITION SYSTEMS:** These items are subject to wear and contamination and should be checked periodically.

**CARBON DEPOSITS:** A degree of carbon build-up is normal in the combustion chamber of any gasoline engine, depending on fuel quality and operating conditions, and should be periodically removed. For best results, follow the gasoline and oil recommendations.

**PROPELLERS:** Propellers should be serviced, straightened or replaced when necessary for maximum performance. Propellers are subject to various underwater hazards and resulting damage is an owner responsibility.

**WATER PUMP PARTS WEAR:** These parts are subject to various amounts of wear depending upon water conditions and are normal maintenance service items. Your Evinrude dealer will be able to tell you how often these parts need replacing in your area.

**CLUTCH WEAR OR CLUTCH DOG WEAR (where applicable):** These parts are subject to various amounts of wear depending upon individual operating habits and are therefore an owner responsibility. Where applicable, refer to instructions in your Evinrude Owner's-Operator's Manual on shifting.

# EVINRUDE DEALER SERVICE

## 20 HOUR CHECK

This is important. After the first 20 hours of operation, we recommend that you return your Evinrude outboard to your DEALER for minor inspection and adjustment (if necessary).

20 Hour Check Includes:

1. Drain, flush & refill gearcase using OMC Sea-Lube\* Premium Blend Gearcase Lube
2. Torque cylinder head and spark plugs
3. Adjust carburetor
4. Check propeller
5. Check timing and ignition
6. Adjust remote control and linkage (where applicable)

This is an opportune time to discuss with your DEALER any questions on your outboard motor which have arisen in the first 20 hours of operation, and establish a routine preventative maintenance schedule.

The 20 hour check will be performed at local DEALER rates and paid for by the owner.

## REPAIR SERVICE

Should you be in need of service an Evinrude dealer is not far. He usually carries a complete stock of spare parts. Always take your motor to an authorized Evinrude dealer, he has the knowledge, experience and special tools to take care of any problem that may arise. If you are away from your home waters, take your motor to the nearest authorized Evinrude dealer. Names and addresses can be found in your Evinrude Dealer Service Directory or your telephone directory under "Outboard Motors." If you are in your home waters, take your motor back to the selling dealer - he knows you and your equipment.

### DEALER PHONE NO.

IN ORDER TO ASSURE RECEIVING PROPER SERVICE PARTS ALWAYS PROVIDE THE FULL MODEL & SERIAL NUMBERS OF YOUR MOTOR.

FIND YOUR NEAREST  
EVINRUDE DEALER  
IN THE YELLOW  
PAGES



## REPLACEMENT PARTS

Be sure that only factory approved parts designed for your motor are used as replacements. Your authorized Evinrude dealer can be relied on as a source of genuine parts. Replacement parts not of our manufacture have not been approved for use on Evinrude motors.



**SAFETY WARNING:** WHEN REPLACING ANY BOLT, SCREW OR OTHER FASTENER USE ONLY GENUINE OMC PARTS OR PARTS OF EQUIVALENT STRENGTH AND MATERIAL.



## RULES OF THE ROAD FOR OUTBOARDING



- Keep clear of sailing craft and rowboats. Yield right of way to slower boats.
- Always keep to the right.
- Do not use your motor near swimmers or skin divers.
- Learn the sign language of the various buoys and warning signals. These are your nautical traffic signs, posted for your safety and convenience.

## COASTAL WARNING DISPLAY SYSTEM

The United States Weather displays coastal warning signals (RED and BLACK flags by day, RED and WHITE lights by night) whenever winds dangerous to navigation are forecast. Learn these signals and heed them. Ignoring them can be dangerous to you.

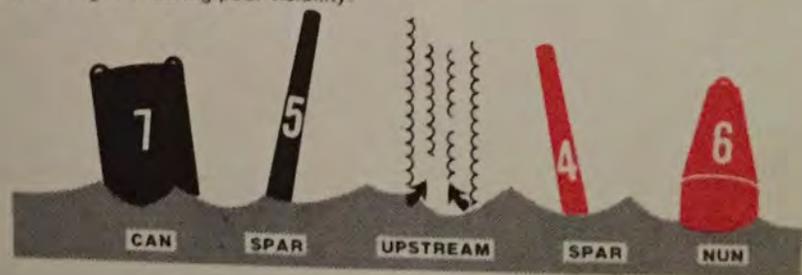
| DAY SIGNALS   | NIGHT SIGNALS   |
|---|---|
| <br>WARNING: SKIN DIVER IN AREA  |  |
| <br>SMALL CRAFT WARNING - Winds up to 38 miles an hour (33 knots) and/or sea conditions dangerous to small craft operations forecast for area. |  |
| <br>GALE WARNING - Winds from 39 to 54 miles an hour (34 to 46 knots) forecast for area.   |  |
| <br>WHOLE GALE WARNING - Winds from 55 to 73 miles an hour (48 to 63 knots) forecast for area.   |  |
| <br>HURRICANE WARNING - Winds 74 miles an hour (64 knots) and above forecast for area.   |  |

## BUOYS . . . YOUR WATERWAY SIGNPOSTS

There are three basic types of buoys: NUN (cone shaped), SPAR (spar shaped) and CAN (cylindrical shaped).

Going upstream, the RIGHT (Starboard) side of the channel is marked with even numbered RED buoys, nuns or spars; the LEFT (Port) side of the channel is marked with odd numbered BLACK buoys, cans or spars. BLACK and WHITE vertically striped buoys indicate the middle of a channel. Always pass close to these buoys.

BLACK and RED horizontally striped buoys are obstruction markers, wrecks, channel junctions, etc., areas where caution is necessary. A red band at the top means the channel is to the left of the buoy; a black band, to the right. Various other buoys are used, buoys with lights and audible signals for night or during poor visibility.



OBSTRUCTION MARKER

MIDDLE OF CHANNEL MARKER



**EVINRUDE**   
*first in outboards*

EVINRUDE MOTORS, 4143 N. 27TH STREET, MILWAUKEE, WIS. 53216  
DIVISION OF OUTBOARD MARINE CORPORATION