

FORCE™
OUTBOARDS



85 and 125 HP OUTBOARD OWNER'S MANUAL



US MARINE CORPORATION
105 Marine Drive • Hartford, WI 53027

OB 4138

Thank you

Your purchase of a FORCE outboard is a sound investment in pleasure boating. US Marine engineering skill and know-how, combined with an intensive testing program and strict quality control standards in manufacturing, have produced the finest outboards available anywhere.

The information in this Owner's Manual will help you to get the most efficient, economical, and dependable performance from your new FORCE outboard. We urge you to read and follow the instructions carefully, and keep the manual handy for future reference. You will find it a useful guide to boating pleasure.

Thank you for your demonstration of confidence in US Marine — manufacturers of fine quality marine products.

FORCE OUTBOARDS ARE MANUFACTURED BY:

**US MARINE CORPORATION
105 MARINE DRIVE
HARTFORD, WI 53027**

The information set forth in this manual is believed to be accurate on the date of publication. US Marine Corporation reserves the right to change products, models and specifications at any time.




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SAFETY

THE PURPOSE OF SAFETY SYMBOLS IS TO ATTRACT THE OPERATOR'S ATTENTION TO POSSIBLE DANGERS. THE SYMBOLS, AND THE EXPLANATIONS WITH THEM, DESERVE THE OPERATOR'S CAREFUL ATTENTION AND UNDERSTANDING. SAFETY WARNINGS DO NOT BY THEMSELVES ELIMINATE ANY DANGER; THE INSTRUCTIONS OR WARNINGS THEY GIVE ARE NOT SUBSTITUTES FOR PROPER ACCIDENT PREVENTION MEASURES.

Symbol Meaning

 **SAFETY WARNING:** FAILURE TO OBEY A SAFETY WARNING MAY RESULT IN INJURY TO THE OPERATOR OR TO OTHERS.

 **NOTE:** ADVISES YOU OF INFORMATION OR INSTRUCTIONS VITAL TO THE OPERATION OR MAINTENANCE OF YOUR EQUIPMENT.

 **CAUTION** ADVISES YOU OF IMPORTANT THINGS TO REMEMBER.

IMPORTANT!

AN OVERHEAT BUZZER IS SUPPLIED AS PART OF YOUR ENGINE. WARRANTY ON THIS ENGINE IS VOID IF ENGINE INSTALLATION ON THE BOAT DOES NOT INCLUDE THE OVERHEAT BUZZER OR AN OPTIONAL US MARINE TEMPERATURE GAUGE.

SPECIFICATIONS

This manual covers several different model engines. Some of the statements found herein may not apply to your model. Should you have any questions about your engine, please contact your nearest Authorized US Marine Outboard Dealer.

	85 HP	125 HP
Horsepower, Rating @	5000 RPM	5000 RPM
Recommended Operating Range	4500-5500 RPM	4500-5500 RPM
Engine — Two Cycle	3 Cylinder Firing Order 1-2-3	4 Cylinder Firing Order 1-3-2-4
Bore and Stroke	3-5/16" x 2.8"	3-5/16" x 2.87"
Cubic In. Displacement	72.39 Cubic Inches	99.2 Cubic Inches
Cooling	Water Cooled — Displacement Type Water Pump	Water Cooled — Displacement Type Water Pump
Propeller — Standard	Aluminum Alloy — 13" Dia. x 19" Pitch Right-Hand Rotation	Aluminum Alloy — 13" x 19" Pitch Right-Hand Rotation
Electrical System	12 Volt — Negative Ground	12 Volt — Negative Ground
Alternator — Output Maximum	7 Amps.	7 Amps.
Alternator — Cut-in Speed	1000 RPM	1000 RPM
Spark Plug Champion	UL18V — USA QL-76V — Canada	UL18-V — USA QL-76V — Canada
Gear Ratio	15:30	15:26
Transom Height	20"	20"/25"
Weight	Standard 249 lbs.	Trim/Tilt 300 lbs.

(SPECIFICATIONS, PRODUCT AVAILABILITY AND DESIGN SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION)

CUSTOMER REGISTRATION

A CUSTOMER REGISTRATION form is included with your new outboard. This form must be filled in by the dealer on the date of sale. The dealer will send the CUSTOMER REGISTRATION to US Marine.

A TEMPORARY REGISTRATION CARD is also included with your new outboard. This card must be filled in by the dealer on the date of sale. The dealer must present this to you for the purpose of receiving warranty work before your Registration Card is processed and received by you. If you do not receive your Customer Registration Card within 30 days of the date of purchase, send your Temporary Registration Card to the following address and a new card will be sent to you.

US Marine Corporation
105 Marine Drive
Hartford, WI 53027
Attn: Warranty Administrator

IMPORTANT!

It is suggested that you maintain your sales receipt or bill of sale in a safe place. This document can also be used in verifying date of purchase. The bill of sale may also be of assistance to your local police department in tracing your motor should it ever be stolen.

GENERAL INFORMATION

SERVICE RECOMMENDATIONS

Do not attempt to make repairs or adjustments that are not specifically covered in this manual. We recommend that all repairs other than those outlined herein be handled by a dealer authorized by US Marine. Authorized dealers are equipped with the knowledge and special tools required to make the repair according to factory specifications and in the most economical manner possible. Warranty work must be done by an authorized dealer. Any authorized dealer can service your engine.

INFORMATION REQUESTS

Information requests should be forwarded to a dealer authorized by US Marine, preferably to the dealer from whom the outboard was purchased. Be sure to furnish the following information: model number, serial number, purchase date and specific information required.

BOAT TRANSOM

Your new outboard is designed to be installed on a boat with a vertical transom height of 20" or 25", depending on the model. Proper transom height is essential to obtain maximum forward thrust from your engine.

If the transom is too high, propeller slippage may result, affecting general performance and proper cooling of the engine.

If the transom is too low, the lower unit will be riding too low in the water, causing excessive drag.

The engine should be mounted with the anti-cavitation plate flush with the bottom of the boat, plus or minus 1/2 inch, depending on the characteristics of the boat.

NOTE: Never operate at full throttle when the engine is overloaded. This can occur under conditions when a planing boat is loaded so it does not plane, when towing another boat, or when operating a dual engine boat on only one engine.

ENGINE INSTALLATION

It is recommended that the selling dealer make the initial installation of your outboard motor in accordance with the following instructions to assure proper performance and safe operation.

MOUNTING ENGINE

Mount the engine at the center of the transom and tighten the clamp screws alternately until tight.

NOTE: HEX CLAMP SCREWS ARE TO BE TIGHTENED TO APPROXIMATELY 35 FT. LBS. DO NOT OVERTIGHTEN.

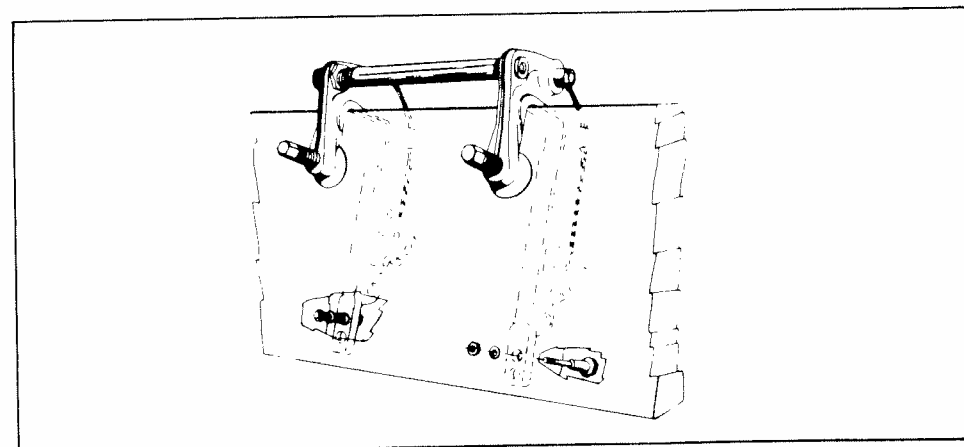


FIGURE 1

If the engine is not centered on the transom, the torque of the propeller will tend to cause the boat to run off course and create hard steering and control.

Check the tightness of the clamp screws occasionally during operation. The stern brackets and clamp screws not only support the weight of the engine but also are subjected to thrust loads, shock loads and steering stresses. Tight clamp screws will guard against damage to the transom and also prevent the engine from working loose during operation.

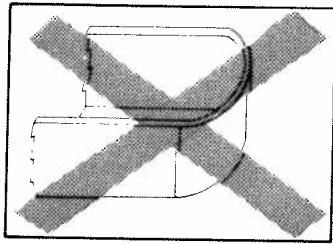
NOTE: Due to the immense amount of thrust delivered by the propeller, it is essential that the engine be bolted to the transom utilizing the holes provided in the lower end of the stern brackets. By securing the engine in this manner, you will be assured against loss of the engine when maneuvering at high speeds or when the engine is developing high thrust loads. Make sure that the stern brackets remain parallel to each other to prevent their breakage and distortion. When installing the mounting bolts, the holes through the transom should be caulked liberally to prevent water leakage.

SAFETY WARNING: Do not operate the boat until the outboard has been bolted to the transom in accordance with the procedure outlined above.

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.

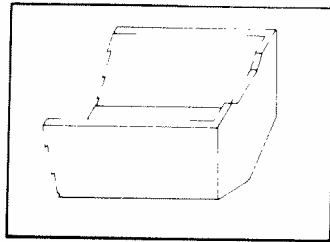
CURVED AND REVERSE ANGLE TRANSOMS

Most outboards do not adapt well to mounting on curved or reverse angle transoms. If the outboard is to be mounted on a boat with this type transom, contact your dealer for additional information. (See Figure 2)



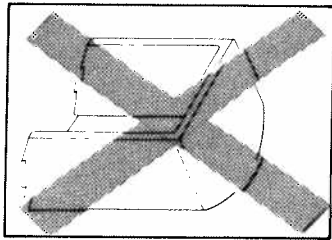
CURVED TRANSOM

(Not Suitable for Outboard Installation)



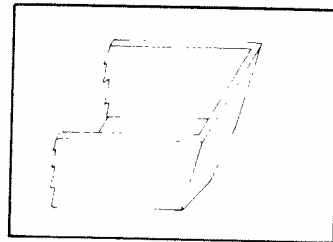
STRAIGHT TRANSOM

(OK for Outboard Installation)



REVERSE ANGLE TRANSOM

(Not Suitable for Outboard Installation)



STANDARD TRANSOM

(OK for Outboard Installation)

FIGURE 2

FUEL SUPPLY LINE AND SYSTEM

If other than a US Marine outboard fuel tank is used, the proper fuel supply line, vent and check valve system must be incorporated. Contact your dealer for additional information.

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

REMOTE CONTROLS

INSTALLING REMOTE CONTROLS TO ENGINE

1. Route control cables into cable guide with throttle cable on bottom. Route cables behind fuel and drain lines back to control cable connecting points (A) and (B). (See Figure 3.)

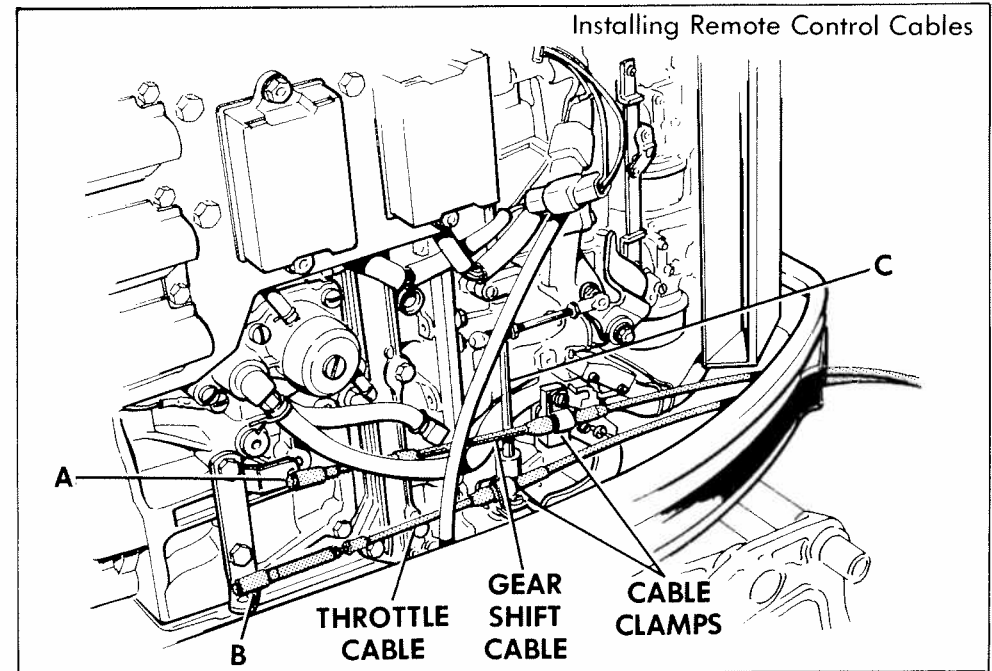


FIGURE 3

2. Remove cable clamp screws. Route throttle and gear shift cables into cable clamps. Position clamps over cables so that the detent in cable clamps lies directly over the detent in remote control cables. Reinstall screws, and tighten securely.

THROTTLE CABLE

With the throttle tower shaft (C) fully retarded, and control lever in control box in "Neutral," adjust the large throttle end connector so that the hole in the connector lines up with the rod end connector stud (B).

NOTE: Connectors must thread at least 1/4 inch on cables.

Pull back on the sleeve until the connector drops in place over the rod end connector stud (B). Slide sleeve forward to lock in place. (See Figure 3.)

GEAR SHIFT CABLE: ADJUSTMENT PROCEDURE

1. Disconnect shift connector from connector stud on side of powerhead. (See Figure 4.)

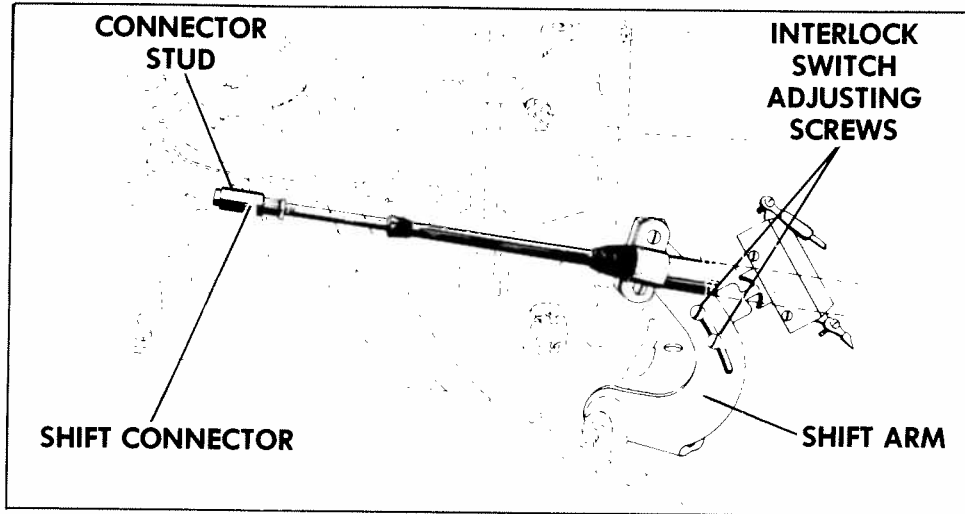


FIGURE 4

2. Shift remote control box into forward gear.
3. While turning propeller, pull shift arm toward rear of powerhead until lower unit is fully engaged in forward gear.
4. Mark location of shift rod where it emerges from the motor leg. (See Figure 5.)

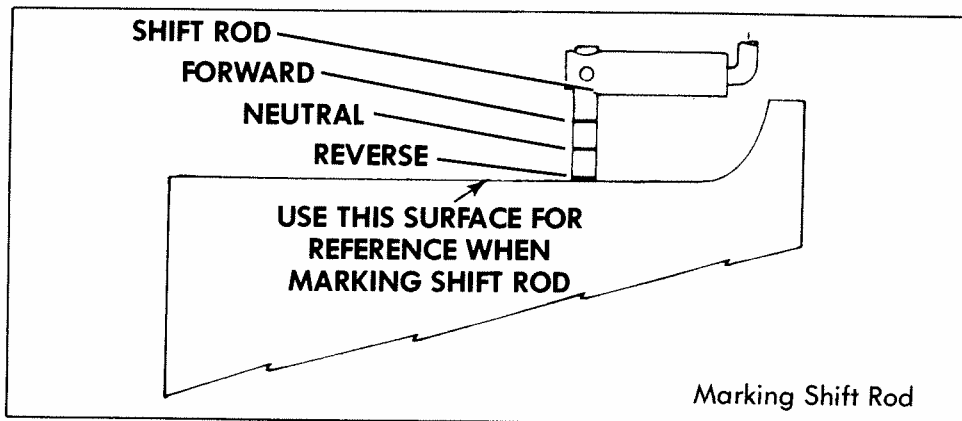


FIGURE 5

5. While turning propeller, pull shift arm to front of powerhead until unit is fully engaged in reverse gear.
6. Mark location of shift rod where it emerges from motor leg. (See Figure 5.)
7. Place mark on shift rod halfway between the forward and reverse marks. This center mark represents the neutral position on the shift rod.
8. Align neutral mark on shift rod with surface of motor leg.
9. Raise or lower tab on shift arm until it is aligned with tab on towershaft. (See Figure 6.)

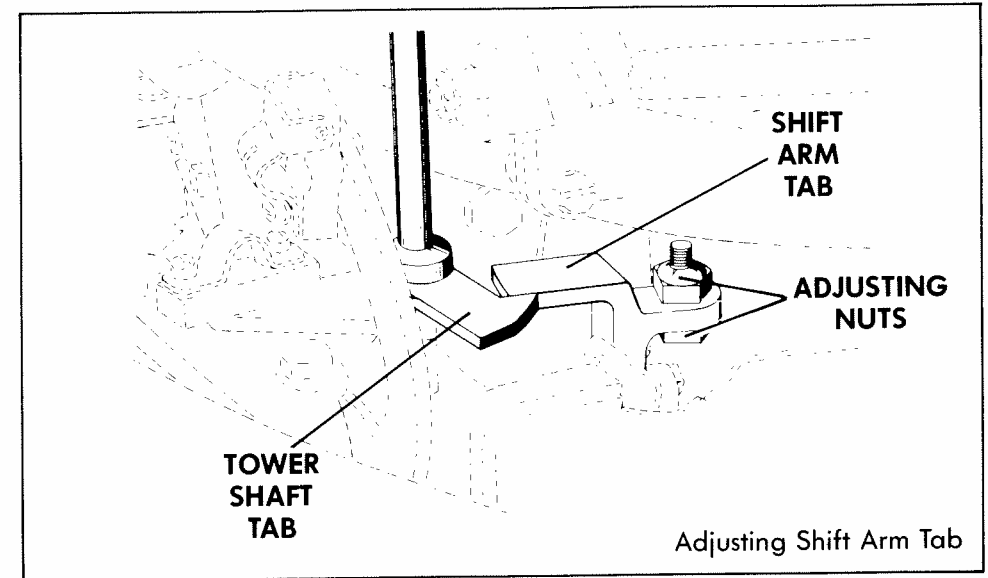


FIGURE 6

10. While turning propeller, pull shift arm toward rear of powerhead until lower unit is fully engaged in forward gear.
11. Maintain moderate pressure on shift arm (toward rear of powerhead) and adjust shift connector until it is centered on connector stud. Secure connector to stud.

IMPORTANT

- NOTE:** When performing step 11, apply only enough rearward pressure to take the lost motion out of the shift linkage. **DO NOT APPLY SO MUCH PRESSURE THAT YOU CAUSE PRELOADING BETWEEN THE CLUTCH AND FORWARD GEAR.**

12. Shift control box into neutral.
13. Adjust interlock switch as necessary so that starter will engage when control box is in neutral.

CHECKING REMOTE CONTROL INSTALLATION

Check the controls for correct operation by rotating the propeller and by moving the control lever in the remote control box to the "Forward," "Neutral," and "Reverse" positions. With the control lever in the "Forward" and "Reverse" positions, the propeller should be locked firmly in place. When in "Neutral," the propeller should turn freely.

NOTE: The initial installation of your remote steering and remote controls, and adjustments must be made by your Authorized US Marine Dealer.

ASSEMBLY OF ELECTRIC CONTROL CABLE TO ENGINE

1. Route electric cable through cable bushing directly above battery cable.
2. Remove electric cable clamp from port side of power head.
3. Assemble cable clamp over electric cable and reinstall. Do not tighten screw at the time.
4. Back eight electric terminal block screws out two to three turns. (Not too far so they don't drop out.)
5. Connect electric cable lead wires to engine terminal block. Tighten screws securely. (See Figure 7.)

NOTE: A decal indicating the correct wiring sequence is provided directly alongside the engine terminal block.

NOTE: Make sure that terminal connections of different colored wires do not touch. If they do, the engine may not operate properly or may not operate at all.

6. After electric cable has been connected, adjust cable in clamp so that a small neat loop forms from the terminal block. Tighten clamp screw securely.
7. Connect electric cable to keyswitch as outlined in instructions supplied with switch.

CONNECTING BATTERY (See Figure 8)

NOTE: Connecting the cables to the battery should be the last step in your installation. Extreme caution must be exercised when connecting the battery cables to the battery. THE RED (+ POS.) CABLE MUST BE CONNECTED TO THE (+) POSITIVE TERMINAL OF THE BATTERY, AND THE BLACK (- NEG.) TO THE (-) NEGATIVE TERMINAL.

SAFETY WARNING: FAILURE TO CONNECT THE BATTERY CABLES CORRECTLY WILL RESULT IN SERIOUS DAMAGE TO THE ELECTRICAL SYSTEM OF THE ENGINE. CONNECTIONS MUST BE TIGHT AT ALL TIMES.

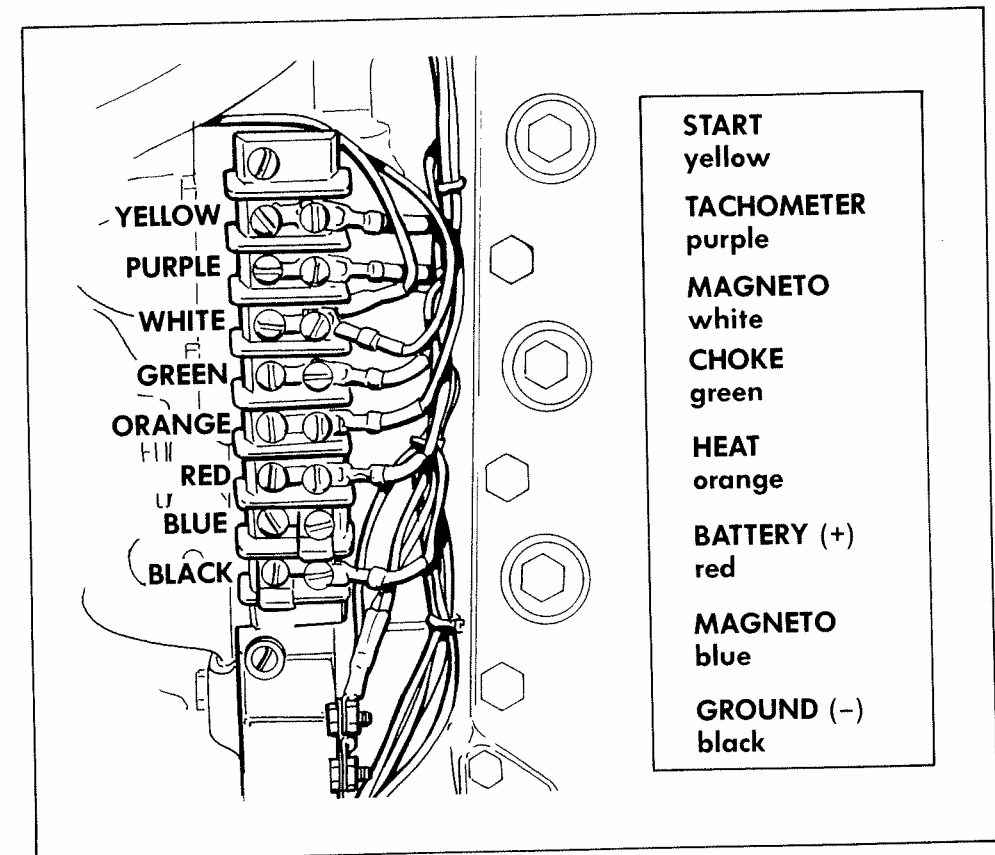


FIGURE 7

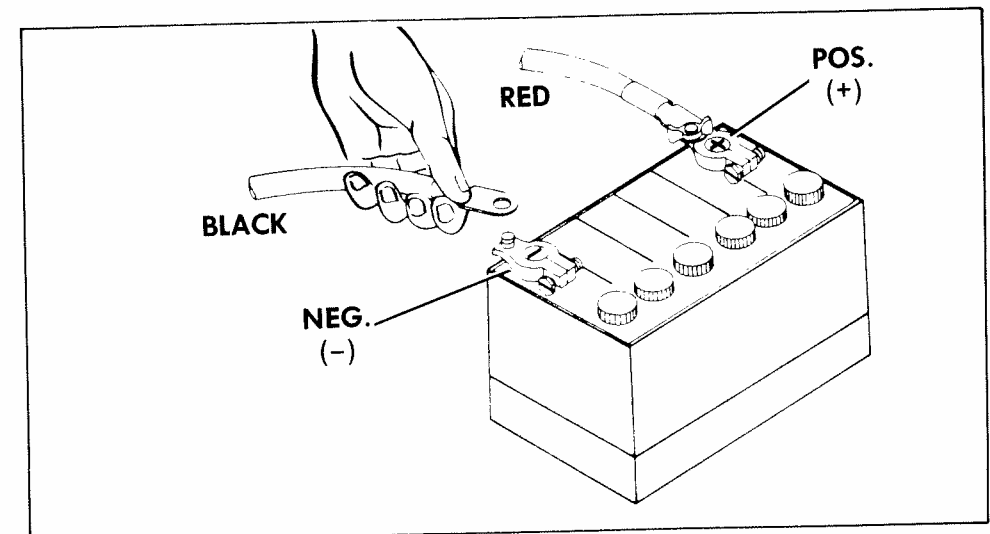





FIGURE 8


 **NOTE:** A 12 Volt marine type battery with a minimum rating of 70 Amp. Hrs. is recommended to insure instant starting and long starter motor life. A maintenance-free battery should not be used.


 **SAFETY WARNING:** BATTERY ELECTROLYTE IS A STRONG ACID 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.

BATTERY CARE

The battery is important because it affects the reliability of your engine. It is important to maintain water level and keep the battery charged.

 **NOTE:** The alternator will maintain the battery charge for average use. However, the battery should be periodically inspected according to the battery manufacturer's specifications. On dual engine installations, a separate battery must be used with each engine.

 **NOTE:** Your engine has a negative ground electrical system. Consult your dealer for additional information.

 **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.

OPERATION

OIL SELECTION

First Choice — US Marine 2-Cycle 50-1 Premium Grade Oil (Available from Your Dealer). This is a high heat-resistance base oil with a non-metallic additive to lubricate and keep the engine and spark plugs clean.

Second Choice — Any BIA-TC-W Certified Oil Packaged by an Outboard Motor Manufacturer.

Third Choice — Any BIA-TC-W Certified Oil.

Emergency Use Only — A High Quality SAE 40 Heavy Duty Outboard Oil.

GASOLINE SELECTION

Use 87 Octane Minimum (As Listed on the Pump).

1st Preference — Leaded Regular or Unleaded Regular (From a Major Fuel Supplier).

2nd Preference — Leaded Regular or Unleaded Regular.

3rd Preference — Regular with Maximum 10% Ethanol or Regular with Maximum 5% Methanol.

DO NOT USE

Low Octane White Gas.
Naphtha or Lamp Gas.
Any Fuel Not Intended for Modern Gasoline Engines.



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. TO PREVENT FUEL SPILLAGE IN BOAT, REMOVE PORTABLE FUEL TANK FROM BOAT WHEN REFUELING. ALWAYS MIX IN WELL VENTILATED AREA. USE EXTREME CAUTION WHEN SMOKING AT ANY TIME IN OR AROUND THE BOAT.

BREAK-IN PROCEDURE

Mix correct amount of US MARINE 2-CYCLE OIL with each gallon of gasoline (see gasoline-oil mixture requirements and fuel ratio conversion table). When US MARINE OIL or any BIA certified TCW oil is not available and an alternate oil is used, a break-in additive is REQUIRED. For the first tank of gasoline, add a good commercial "gasoline" break-in additive (in addition to the recommended gasoline-oil mixture) to reduce friction in the new engine. Consult your dealer for the recommended additive ratio to be used.

BREAK-IN PERIOD

24 Gallons (4 Tankfuls)

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

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

FOR A PROPER FUEL MIX

1. Maintain a clean fuel tank.
2. Strain all fuel through a fine mesh strainer.
3. Pour one (1) gallon of fresh gasoline into an empty fuel tank. Add proper amount of US MARINE OIL and mix thoroughly. Add balance of gasoline.
4. Observe safety rules — mix fuel in a well ventilated area (preferably outdoors). Avoid sparks and open flames.
5. Repeated use of additive compounds such as "break-in" oils, "tune-up" compounds, "tonics," "friction reducing" compounds, etc., is not recommended.

IMPORTANT GASOLINE-OIL MIXTURE REQUIREMENTS

Oil Type	BREAK-IN		AFTER BREAK-IN	
	Break-In Ratio	Break-In Period	Pleasure	Commercial or Heavy Duty
US Marine 2-Cycle Oil or any BIA Certified TCW Oil	25/1 or 4% Oil	See ** Page 13	50/1 or 2% Oil	50/1 or 2% Oil
Other	25/1* or 4% Oil	See ** Page 13	50/1 or 2% Oil	25/1 or 4% Oil

*Additive recommended — First tank of fuel

**Momentary bursts of full throttle operation

BREAK-IN SCHEDULE

1. For first 5-10 minutes, operate engine at a fast idle in gear (under 2000 RPM). Check operation of the water pump and cooling system. (Refer to "Checking Water Pump Operation.")
2. For remainder of first hour, do not operate engine over 3500 RPM or 1/2 throttle.
3. For operation second hour, run 3/4 throttle with occasional bursts to wide open throttle for up to one minute each.
4. Avoid continuous full throttle operation for extended periods during the next four hours.
5. Your outboard motor may now be operated at any throttle setting desired using the proper fuel ratio as specified in the gasoline-oil chart.
6. Observe required maintenance and operating instructions.

FUEL RATIO CONVERSION TABLE

RATIO	GASOLINE QTY.	OIL QTY.		
25/1 or 4% Oil	1 Gallon 3.8 Liters	1/3 Pint	5.3 oz.	.158 Liters
	6 Gallons (5 Imp. Gal.) 23 Liters	2 Pints	32 oz.	.946 Liters
	12 Gallons (10 Imp. Gal.) 46 Liters	4 Pints	64 oz.	1.892 Liters
50/1 or 2% Oil	1 Gallon 3.8 Liters	1/6 Pint	2.6 oz.	.079 Liters
	6 Gallons (5 Imp. Gal.) 23 Liters	1 Pint	16 oz.	.473 Liters
	12 Gallons (10 Imp. Gal.) 46 Liters	2 Pints	32 oz.	.946 Liters

STARTING PROCEDURE

STARTING

1. Make sure that fuel tank has a sufficient amount of properly mixed fuel and that vent screw located on fuel tank filler cap or gauge is open. (See Figure 9.)
2. Connect fuel line to bushing on fuel tank. Slide sleeve in fuel line coupler back, engage with tank bushing and release sleeve to lock in place.

NOTE: Check to make sure that fuel line is securely connected to fitting on fuel pump.

3. Squeeze prime bulb in fuel line several times until bulb becomes firm. This pumps fuel from tank to engine in preparation for starting. (See Figure 10.)

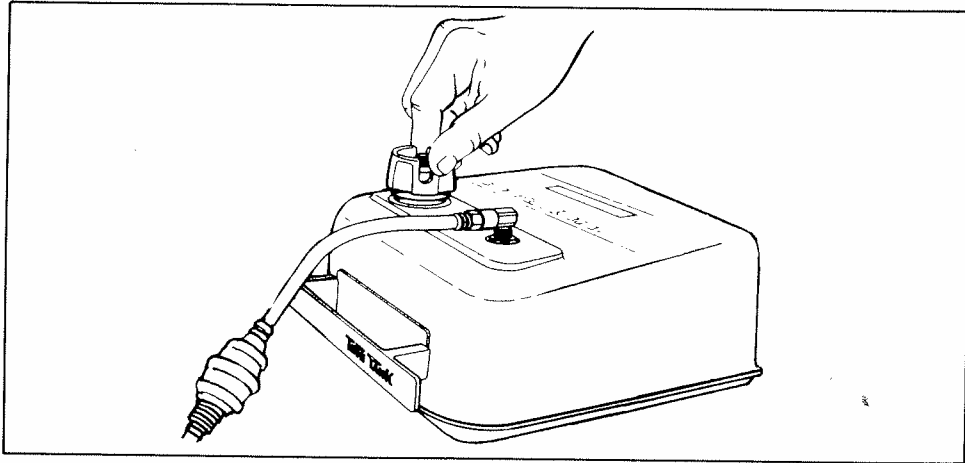


FIGURE 9

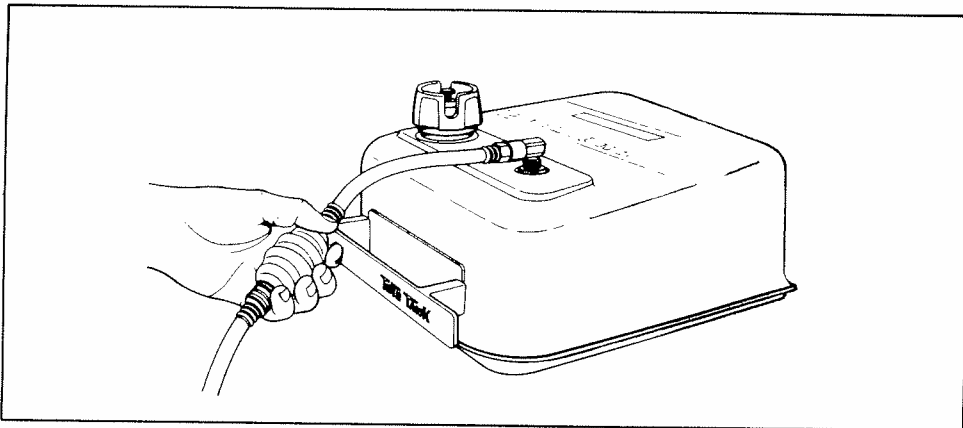


FIGURE 10

4. Place control lever in "Neutral" position. (See Figure 11.)

NOTE: There are (3) safety devices to prevent your outboard motor from starting in gear.

Electric Interlock: Located on the gearshift arm of the motor (electrically disengages starter motor if in gear).

Neutral Lock Button: Located in center of the control arm hub (pushing in and then moving the control arm disengages the shift arm in the control box).

Neutral Release Bar: Located on the underside of the control handle (will not allow forward or reverse motion of control arm until depressed).

5. Push in neutral lock button.
6. Grip control handle and lift up on release bar.
7. Hold neutral lock button in while moving control lever forward until it stops.

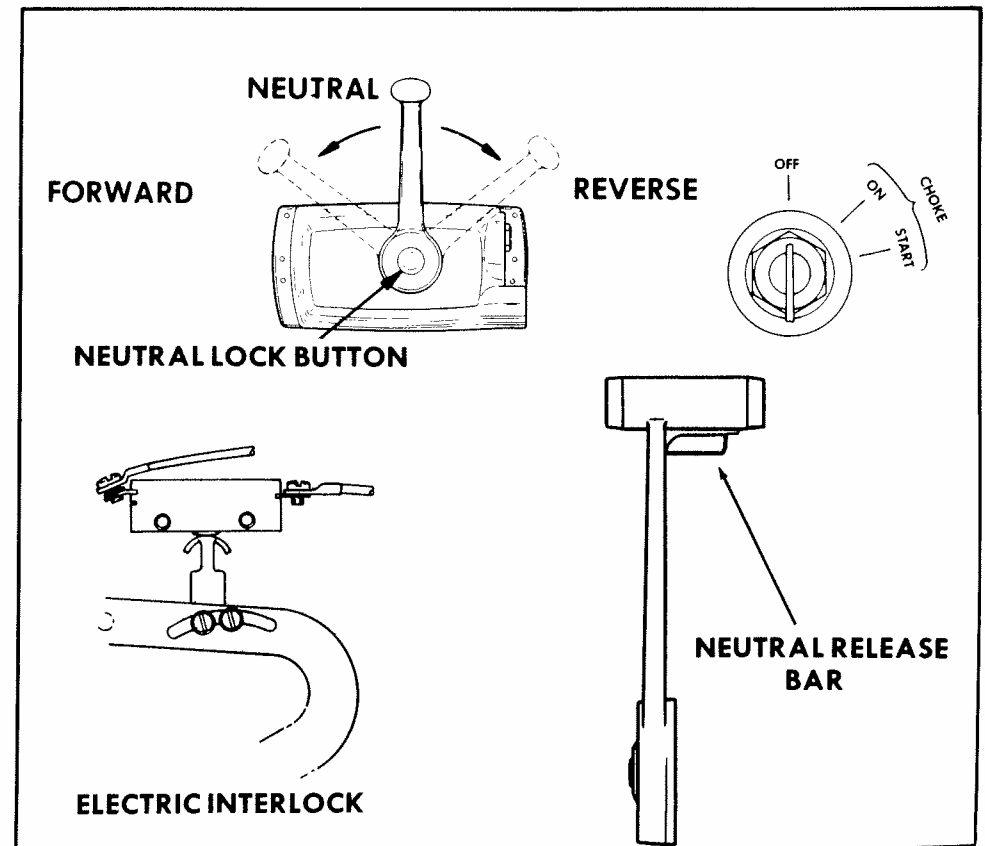


FIGURE 11

8. Engage electric starter motor by turning and holding ignition key in start position. For cold engine starting, choke engine at same time by depressing key. (See Figure 11.)

NOTE: NEVER OPERATE STARTER MOTOR FOR A CONTINUOUS PERIOD OF MORE THAN 15 SECONDS before allowing intermittent cooling periods of not less than three (3) minutes.

After engine has started, release key and allow it to return to the "On" position. If engine pops and begins to stall, choke again. Continue intermittent choking until engine is warmed up.

9. Return control lever to "Neutral" position.
10. Move control lever ahead for forward and pull back for reverse operation.

NOTE: To avoid damaging the shifting mechanism, always shift with a quick snapping action — never "ease" engine into gear. Exercise care when operating in reverse as too high a speed may cause water to be taken into the boat over the transom.

FUEL SAVER RANGE

Fuel Saver Range or cruise position (blue field which appears in window "A" on control box) is a throttle setting which results in substantial fuel savings with minimum loss in boat speed.

Maximum fuel economy can be obtained by backing throttle lever farther from Fuel Saver Range to lowest throttle setting while maintaining good planing position of boat.

TO STOP

NOTE: Return Control Lever to "Neutral" position, turn ignition key to "Off" position. (See Figure 11.)

STARTING A WARM ENGINE

Perform steps 4, 5, 6 and 7 but do not choke. If engine fails to start after several attempts, then use the choke.

ENGINE FLOODING

Flooding occurs when an engine is over-choked. If engine is flooded, open choke, advance throttle control to start position and continue cranking until engine starts. Observe caution for starter motor. Do not crank more than 15 seconds. Then allow starter to cool.

ADJUSTING CARBURETOR

Changes in temperature, humidity, barometric pressures and fuels may make carburetor adjustments necessary to obtain best starting and low speed operation.

The carburetors have two separate fuel systems: a high speed system which meters fuel from above high idle to wide open; and an idle system which governs idle speeds.

The high speed system is equipped from the factory with a fixed non-adjustable jet which must not be changed or altered except by your authorized dealer. Replacement jets for high altitude areas are available through your dealer.

The idle system is governed by an adjustable needle valve and can be adjusted as follows:

INITIAL SETTING — 3 CYLINDER MODELS (See Figure 12)

1. Remove the three (3) rubber plugs on carburetor cover.
2. Turn idle adjustment needles "in" (clockwise) until they seat lightly.

NOTE: DO NOT OVERTIGHTEN AS NEEDLES AND SEATS MAY BE DAMAGED.

3. Back needles out (1) full turn.

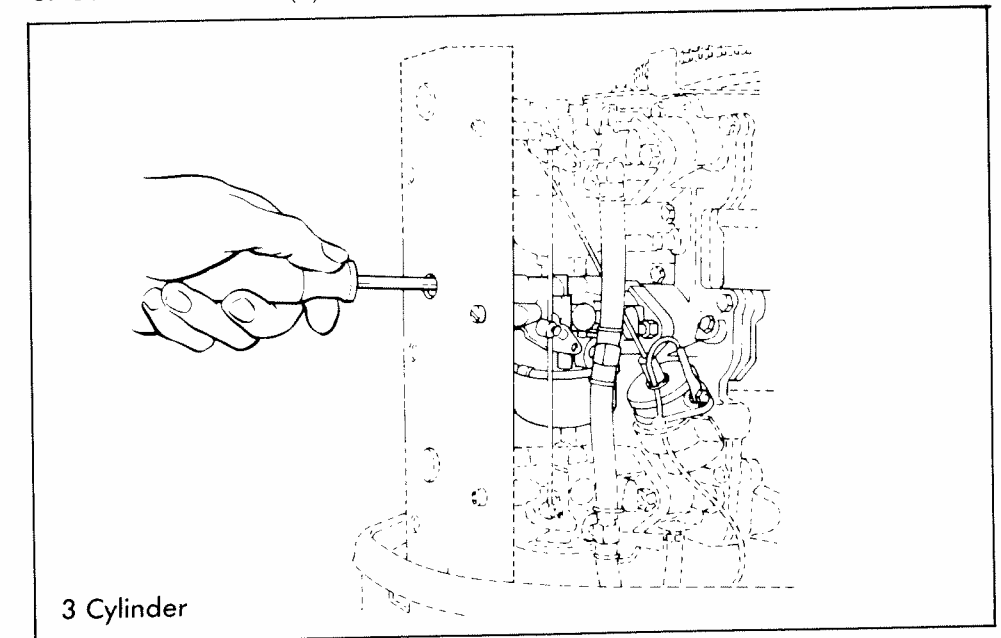


FIGURE 12

FINAL ADJUSTMENT — 3 CYLINDER MODELS

1. Start engine and run until fully warmed up.
2. Set control lever at "Neutral" position.
3. Turn idle adjustment needle, on top carburetor, slowly counterclockwise (open) until engine loses power and begins to roll or gallop due to an over rich mixture. Slowly turn needle clockwise (close) until it runs smoothly and begins to pick up speed. Continue turning clockwise until engine pops or stalls due to a lean mixture. Set adjustment halfway between these two points. Note setting of needle.
4. Repeat procedure outlined in step 3 to adjust center and bottom carburetors.

NOTE: It may be necessary to repeat steps 3 and 4 to achieve ultra-fine tuning.

5. Install the three (3) rubber plugs in the carburetor cover.

INITIAL SETTING: 4 CYLINDER MODELS

Turn idle adjustment needles "in" (clockwise) until they seat lightly.

NOTE: DO NOT OVERTIGHTEN AS NEEDLES AND SEATS MAY BE DAMAGED.

Back needles out one full turn.

FINAL ADJUSTMENT: 4 CYLINDER MODELS (See Figure 13)

1. Start engine and run until fully warmed up.

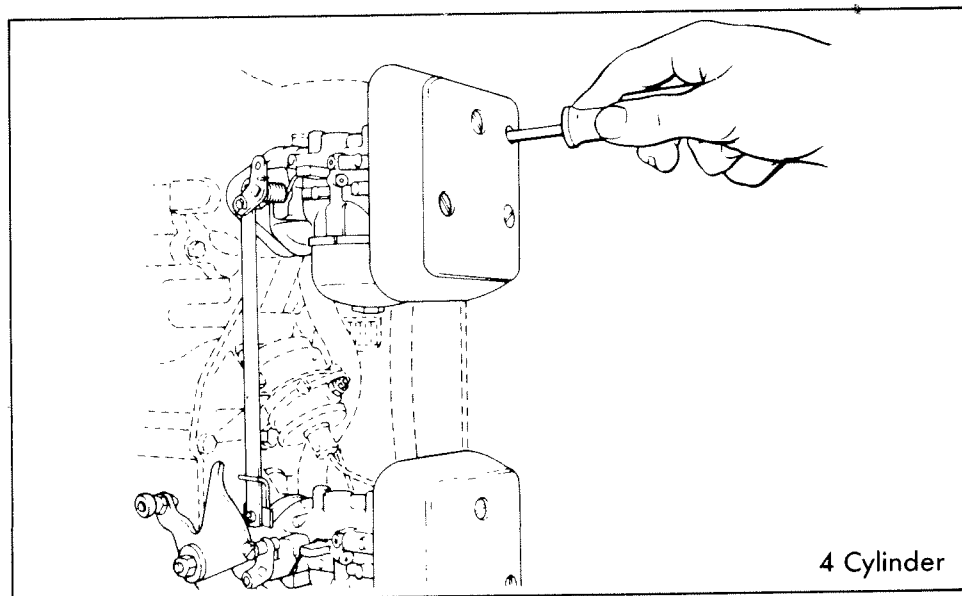


FIGURE 13

2. Return control lever to "Neutral" position.
3. Adjust one carburetor at a time. Turn idle adjustment needle on top of carburetor slowly counterclockwise (open) until engine loses power and begins to roll or gallop due to an over-rich mixture. Slowly turn needle clockwise (close) until engine runs smoothly and begins to pick up speed. Continue turning clockwise until engine pops or stalls due to a lean mixture. Set adjustment halfway between these two points.
4. Adjust both carburetors in same manner. Do not adjust leaner than necessary to obtain smooth idling. It is better to have the idle setting a little rich rather than too lean.

NOTE: It may be necessary to repeat steps 3 and 4 to achieve ultra-fine tuning.

Any carburetor adjustments other than those outlined above should be made by your dealer.

EMERGENCY STARTING (See Figure 14)

A starter collar has been provided on the flywheel which may be used to start the engine if the battery is low and/or the electric starter does not operate. (This is magneto C-D ignition, so it will run without a battery.)

1. Remove engine cover.
2. Put gear shift selector in "Neutral".
3. Wrap starter rope around emergency starter collar.
4. Perform steps 3 through 6 under "STARTING PROCEDURE."

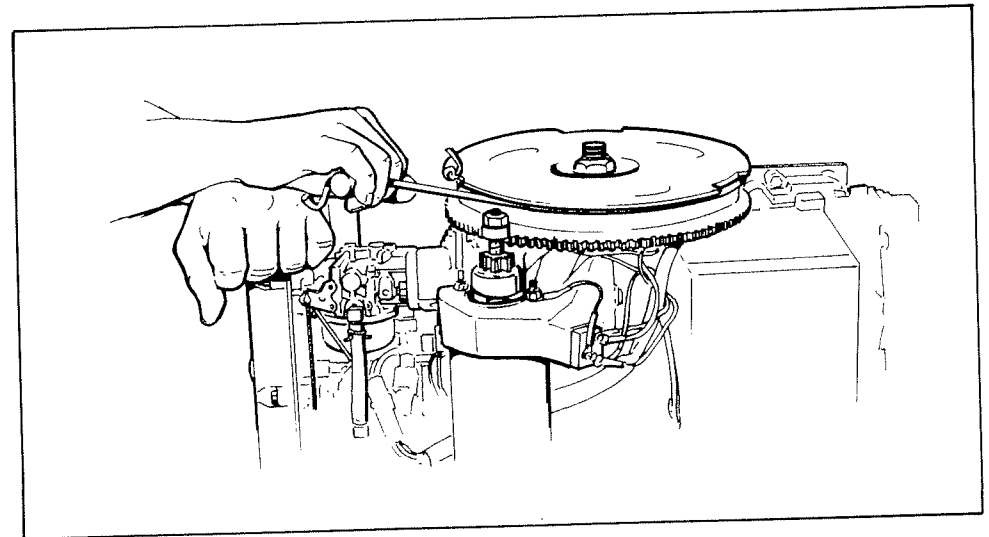


FIGURE 14

5. Turn ignition switch to "On" position.
6. Turn engine over with emergency starter rope — exercise caution to make sure hands and clothing do not come in contact with moving parts of engine.

SAFETY WARNING: DO NOT TURN FLYWHEEL BY HAND WITH IGNITION KEY IN "ON" POSITION. UNDER NO CIRCUMSTANCES WHEN ROPE STARTING HAVE KEY IN "START" POSITION.

SAFETY WARNING: DO NOT TOUCH HIGH VOLTAGE IGNITION COILS OR SPARK PLUG LEADS WHEN CRANKING MOTOR OR WHILE MOTOR IS RUNNING.

ADJUSTING THROTTLE STOP

Your engine is equipped with a throttle stop which can be adjusted to establish the correct idle speed. It is located on the throttle. (See Figure 15.)

Adjust for an idling speed of approximately 750 RPM in "Forward" gear. To increase the idle speed, loosen lock nut and turn the throttle stop screw "in." To decrease idle speed turn throttle stop screw "out." After adjusting, tighten lock nut securely.

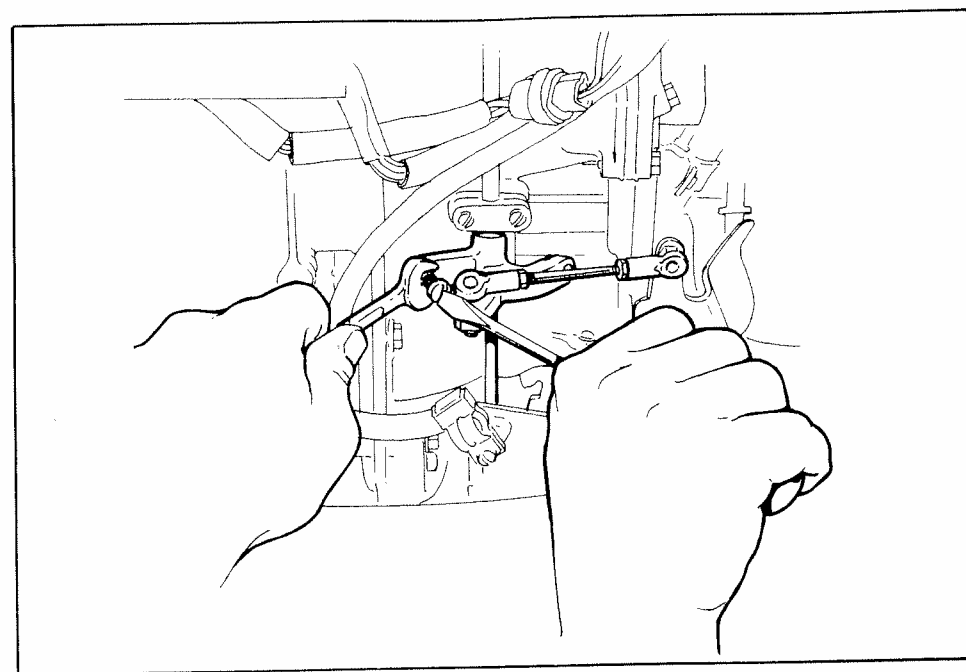


FIGURE 15

OVERHEATING

An overheat buzzer is supplied as part of your engine. This buzzer (or the optional temperature gauge) must be installed to warn the operator to shut off the engine when the buzzer sounds or when the temperature exceeds 180° on the temperature gauge. This will indicate that weeds are obstructing the water inlet, or a malfunction of the cooling system.

Never operate engine when buzzer is on or temperature exceeds the above mentioned limits. Shut engine off, tilt it up and inspect for weeds on water inlet of gear housing. If this is not the cause, take engine back to your dealer.

NOTE: Warranty on this engine is void if engine installation on the boat does not include the overheat buzzer or temperature gauge.

THERMOSTAT

Your engine is equipped with a thermostat that controls the temperature of the cooling water. This temperature control provides good idling characteristics and complete combustion of the fuel charge.

CHARGING SYSTEM

The charging system on your outboard is a self-limiting single phase alternator with a DC output of 7 Amps. This keeps the battery charged for most uses, including some electrical accessories.

To provide a convenient check on the condition of your battery, it is recommended that a voltmeter be installed. Contact your dealer for additional information on the accessory for this engine.

ENGINE TILT AND REVERSE LOCK

TILTING ENGINE — 85 HP (See Figure 16)

To tilt your engine out of the water, perform following steps:

1. Turn tilt release lever counterclockwise to "Release" position.
2. Grasp handle on back of engine cover and pull engine forward until tilting limit is reached.
3. Push tilt lock lever back to lock engine in tilted position.

To return engine to operation position, grasp handle on back of cover and pull slightly forward. Lift tilt lock lever to release and slowly return engine to operating position. Turn tilt release lever clockwise to "Engage" position. This lever locks engine in operating position and prevents engine from tilting up under rapid deceleration and normal reverse operation.

An electric hydraulic tilt kit or trim/tilt kit is available for your 85 HP outboard. Contact your dealer for additional information.

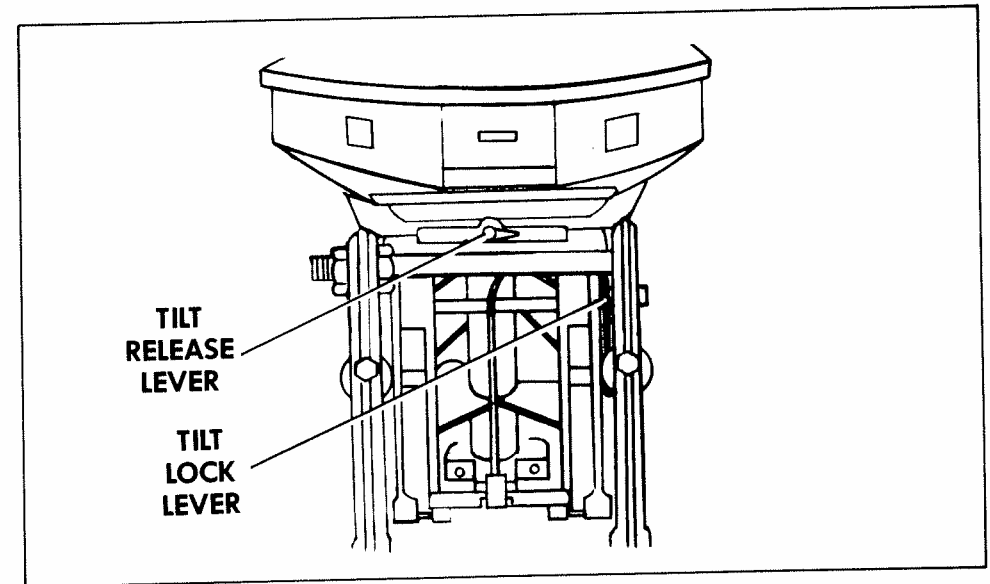


FIGURE 16

REVERSE LOCK

To activate the reverse lock, turn tilt release lever clockwise to engage position (with engine in operating position).

This reverse lock is built into your engine to prevent tilting up when operating in reverse and also to release and allow the engine to tilt up when an

underwater object is struck while operating at high speed in forward gear to minimize possible damage. If an underwater object is struck, stop immediately and inspect your engine and boat for damage.

NOTE: When operating at slow trolling speeds in shallow water, due to the impact force required to release the mechanism, it is permissible to operate with the tilt release lever turned counterclockwise to release position (reverse lock disengaged).

This allow the engine to slide over minor underwater obstructions.

NOTE: WHEN OPERATING IN REVERSE OR AT OTHER THAN TROLLING SPEEDS, IT IS ABSOLUTELY ESSENTIAL THAT THE ENGINE BE OPERATED WITH THE TILT RELEASE-REVERSE LOCK MECHANISM ENGAGED AT ALL TIMES. FAILURE TO DO SO COULD RESULT IN SEVERE DAMAGE TO STRUCTURAL PARTS OF THE BOAT OR THE ENGINE.

NOTE: Be extremely careful to avoid striking any underwater objects particularly when operating in reverse gear as the engine will transmit all shock loads directly to the transom of the boat with the possibility of subsequent damage both to the engine and to the boat.

NOTE: Do not use the tilt lock for trailering. Use accessory trailering bracket.

ADJUSTING ENGINE ANGLE

Maximum operating efficiency is attained when the axis of the propeller is parallel to the direction of motion or water surface when operating at planing speeds.

The angle of the engine is adjusted by changing the position of the angle adjusting bar in the holes provided in the stern brackets.

If the engine is tilted too close to the transom, the bow of the boat will "dig in" or "plow." If it is tilted too far away from the transom, the bow will ride high and the boat may "gallop" or "porpoise." If the engine races or overspeeds on sharp turns, lower the adjustment until the correct position is attained. (See Figure 17.)

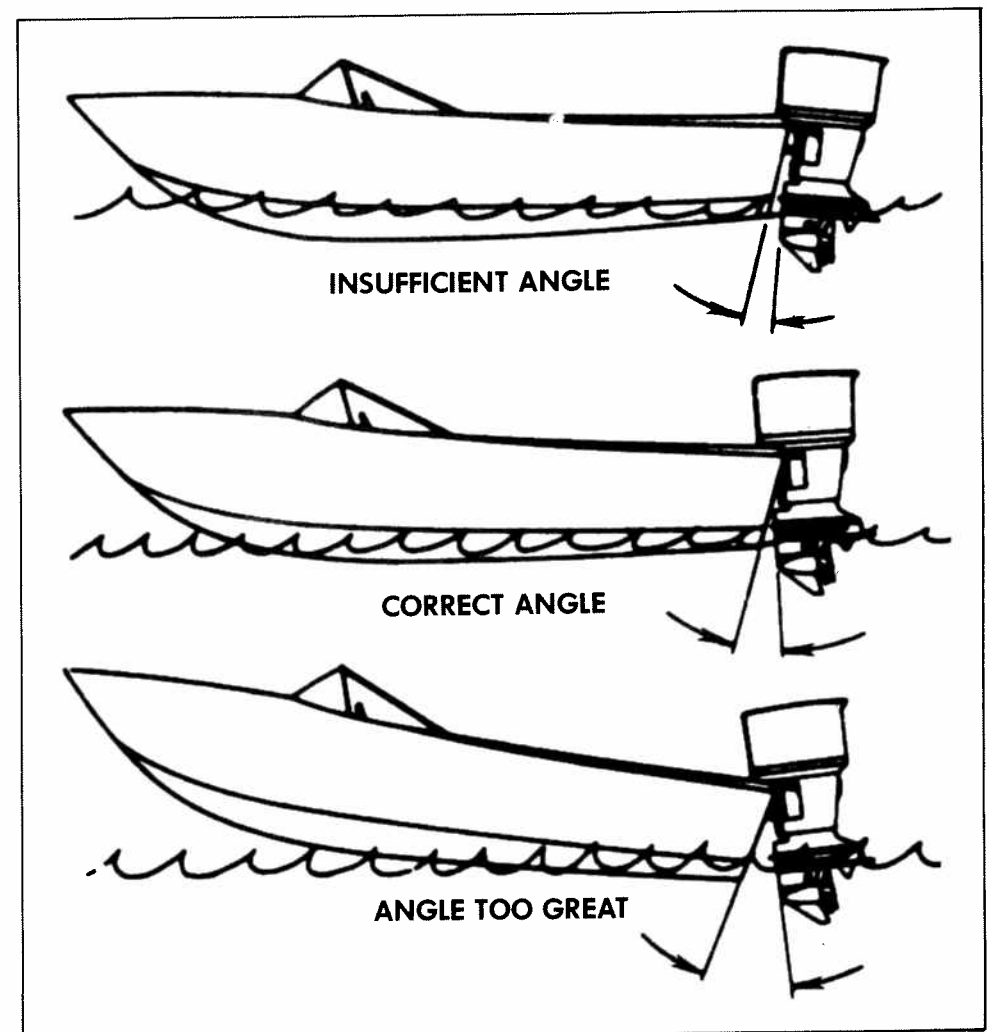


FIGURE 17

TACHOMETER

A tachometer, specifically designed to connect to the alternator on your outboard, is available from your dealer.

NOTE: Always disconnect battery prior to working with electrical system of your engine.

ADJUSTING EXHAUST SNUOT

This engine is equipped with a movable exhaust snout which acts as a trim tab. Loosen screws securing snout to underside of cavitation plate and turn snout as necessary to offset torque effect of engine on boat steering. Retighten screws securely. (See Figure 18.)

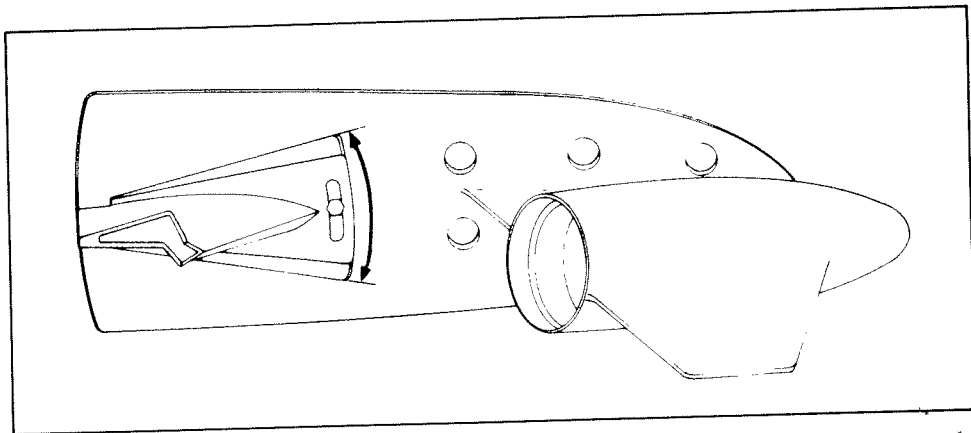


FIGURE 18

REMOVING ENGINE FROM BOAT

To remove the engine from the boat, simply reverse the installation procedure.

NOTE: When removing, maintain engine in an upright position, resting on its skeg until all water has drained from the motor leg. Do not transport or store engine in a position where the lower unit is elevated above the power head, as water may drain into the power head interior and cause extensive damage.

POWER TRIM & TILT — 125 HP

The power trim unit (standard on the 125 HP, optional on 85 HP) provides infinite trim adjustment throughout the normal lock-bar range.

When the trim cylinder is fully extended, hydraulic pressure is routed to a second cylinder (tilt cylinder) which raises the engine for beaching, launching or trailering. (See Figure 19.)

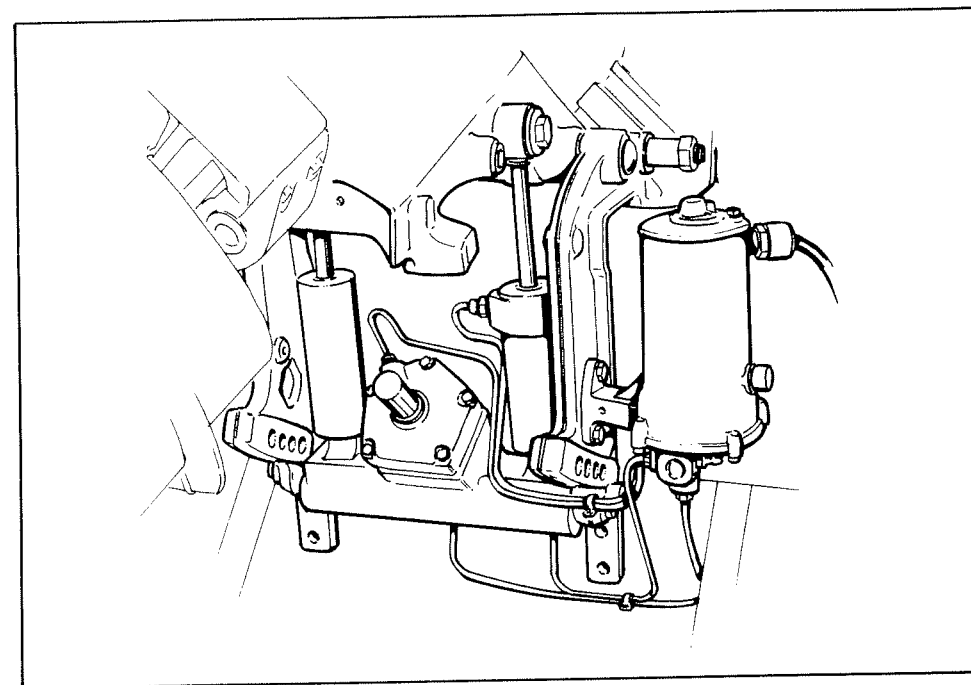


FIGURE 19

The trim unit is controlled by a control switch mounted on the dash (standard) or on the throttle handle (optional). The switch has a self-centering single pole, double throw design. An electric motor receives current from the control switch. The double pole switch directs current to one of two field windings which cause the motor to revolve clockwise (lift) or counterclockwise (lower).

With the outboard in the lowest position, motor leg closest to the transom, both cylinders are fully retracted. Moving the switch to the lift position activates the drive motor clockwise.

The motor drives the hydraulic pump which directs fluid under pressure to the base of the trim cylinder and tilt cylinder.

The trim cylinder has a larger diameter. It activates first because the larger area of its piston results in more lift force. It moves slowly to provide accurate trim adjustment.

When the trim cylinder has extended fully, the tilt cylinder moves rapidly to the full tilt position. At the end of the tilt cylinder's travel, the drive motor will stall. If the control switch is held too long, overloading the electrical circuit will cause the thermal relay, wired in series with the brushes, to open.

Moving the switch to the lower position activates the motor counterclockwise. This reverses the direction of fluid and directs pressure to the rod end of the cylinders. The weight of the outboard on the tilt cylinder causes the tilt cylinder to retract first. When the outboard contacts the rod end of the trim cylinder, both cylinders retract together until fully collapsed.

Position control of the outboard, once adjusted to the proper angle, is maintained by a lock-up of the hydraulic system. Damage to the outboard from underwater obstructions is avoided by spring-loaded check valves in the tilt cylinder and hydraulic pump. These valves relieve excess pressure and allow the outboard to pivot up while traveling in forward or in reverse.

NOTE: A hydraulic system, such as the power trim unit, has close tolerances and must be absolutely clean to work properly.

CONNECTING ELECTRICAL LEADS

SAFETY WARNING: BE SURE TO DISCONNECT BATTERY TO PREVENT STARTING BY ACCIDENT. WITH PRESSURE, PUMP CAN CREATE 1800 PSI WITHOUT PRESSURE, ARMATURE CAN OVER REV, DAMAGING ITSELF OR OTHER PARTS.

Connect switch cable socket to pump cable socket. Connect black lead to negative battery terminal. Connect red lead to positive battery terminal. (See Figure 20.)

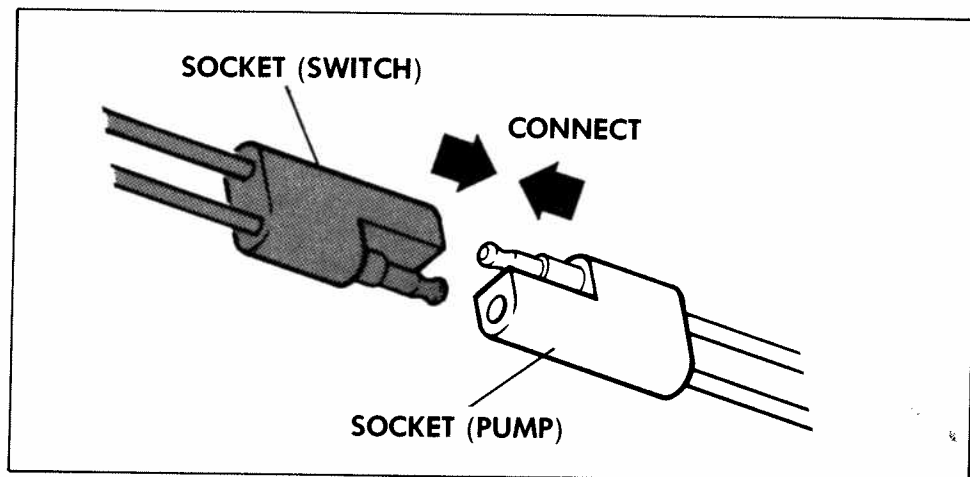


FIGURE 20

NOTE: Do not overfill. This will force oil into motor and cause it to fail.

Make sure engine is in full down position. Fill reservoir with #20 weight, non-detergent oil, and only to bottom of oil fill hole. (See Figure 21.)

Cycle unit up and down 3-5 times to bleed out any air in lines. (For extreme cold weather substitute type "A" ATF.)

NOTE: When the outboard is not in use, the power trim unit should be in the down position. Do not use power tilt for trailering. Use accessory trailering bracket available through your dealer.

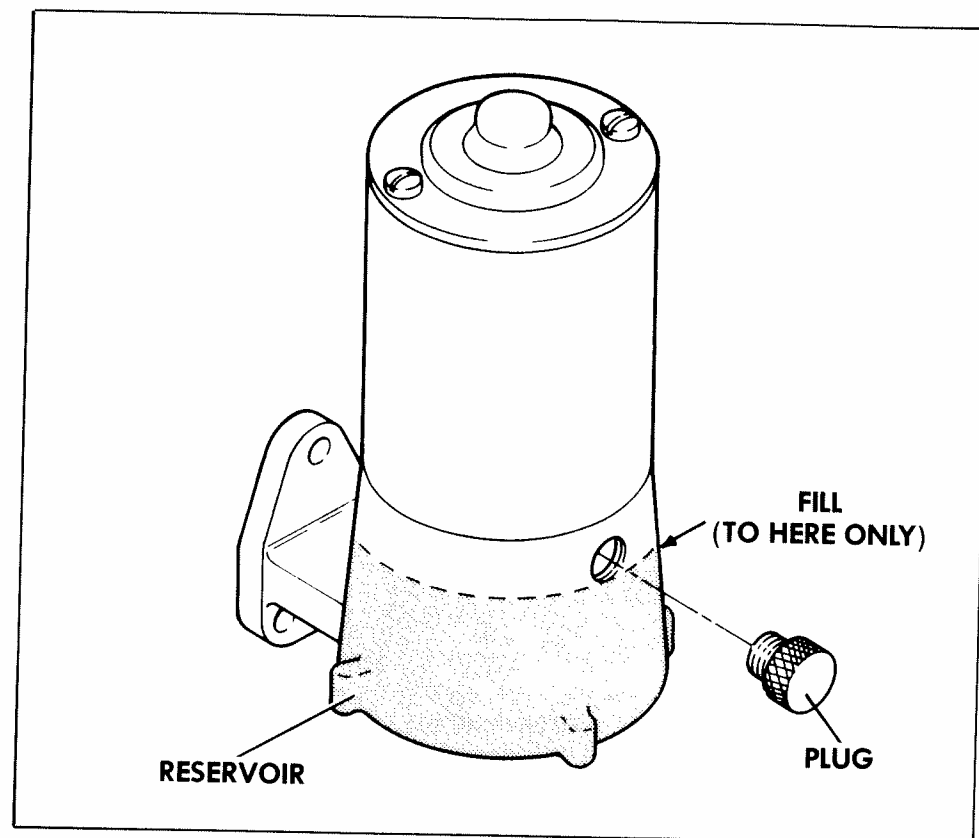


FIGURE 21

PROPELLER

Your engine is equipped with a propeller which will give you good all around operating performance. However, under special conditions, performance can be improved by changing to a propeller that is best suited for your particular boat and application.

The correct propeller will be determined by the boat design, weight and particular application. No one propeller can deliver optimum performance under all these different conditions.

If a propeller change is going to be made, it is very important that a tachometer be used to determine engine RPM. THE RPM MUST FALL WITHIN THE OPERATING LIMITS GIVEN ON THE "SPECIFICATIONS" PAGE OF THIS MANUAL OR SERIOUS DAMAGE TO THE ENGINE MAY RESULT. See your dealer for guidance on how to prop your engine for best performance.

NOTE: The use of bronze propellers is not recommended for use in salt water areas.

If the propeller is bent, unbalanced, badly nicked, broken or clogged with weeds, unusual or excessive vibration will occur. If any of these symptoms is evident, operation of the engine should be avoided or limited, and the propeller cleaned, replaced or repaired as soon as possible.

NOTE: As a safety measure, always carry a spare propeller, washer, flare and propeller nut.

SERVICING PROPELLER

Inspect propeller at frequent intervals for nicks, bent blades or hub slippage and have repaired or replaced if damaged. Remove propeller and lubricate propeller shaft periodically to ensure free fit and easy removal or assembly at all times.

NOTE: To prevent accidental starting shift into neutral, and disconnect spark plug wires.

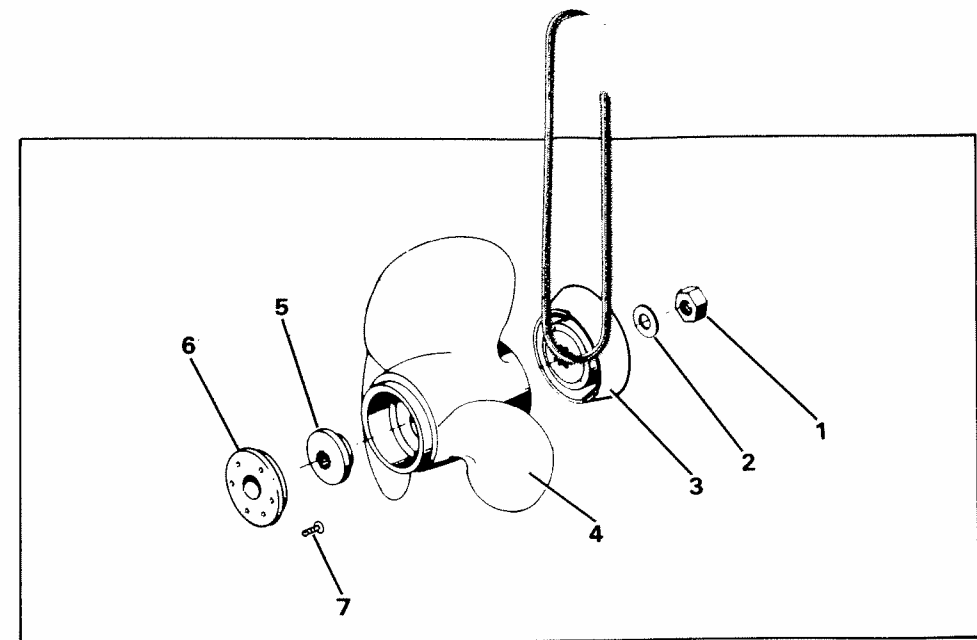


FIGURE 22

1. Refer to figure above for item number. Remove lock nut #1, washer #2 and flare #3. DO NOT REMOVE SPACER #5.
2. Position prop #4 on to prop shaft, add flare #3, washer #2, lock nut #1, and secure nut until no fore and after movement is present.

NOTE: If the nut #1 can be turned on by hand past the locking area, replace the nut.

NOTE: The anti-corrosion anode #6 should be checked routinely. This is a zinc coating which will corrode to protect the aluminum parts. When the sacrificial anode is corroded, it should be replaced with a new part to again protect the engine. Make certain the screws #7 are properly tightened.

SERVICING ENGINE

SAFETY WARNING: NEVER 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.

ENGINE COVER

REMOVING:

1. Turn engine cover release lever counterclockwise to disengage the engine cover latch mechanism.
2. Pull cover up in back and slightly forward to disengage forward cover retainer.
3. Lift cover up and off of engine.

INSTALLING:

1. Lower engine cover over power head exercising caution so as not to damage electrical components or spark plugs.
2. Pull cover forward and engage forward cover retainer with support plate.
3. Push cover back and down. Turn engine cover release lever clockwise to engage latch mechanism (release lever should be pointing straight down).

SERVICING SPARK PLUGS

Hard starting, missing, overheating, pre-ignition, or lack of power are signs of defective, insufficiently tightened, or wrong type spark plugs. Whenever engine performance indicates that the spark plugs are in need of attention (see Trouble Check List) service as follows:

1. Remove engine cover.
2. Disconnect spark plug leads by twisting slightly and pull off.
3. Remove spark plugs. Clean and inspect.

The spark plugs in your engine have a fixed circular gap that can not be changed. If the center electrode is badly eroded the plug must be replaced. Also if the porcelain has black carbon tracks from the center to the outer ring, the plug should be replaced.

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

4. Be sure to check the condition of the spark plug gaskets and clean the spark plug seats in the cylinder head before reinstalling.

5. Install plugs in cylinder head. Turn spark plugs in until finger tight on the gasket, and then tighten with a wrench. The correct torque is 120-180 inch pounds.
6. Reinstall lead wires to spark plugs using a clockwise twisting action.

SERVICING FUEL FILTERS

Fuel Tank Filter

1. Remove fuel line from fuel tank. (See Figure 23.)
2. Remove fuel tank adapter (1) to gain access to fuel filter on bottom of pick-up tube (2). Wash filter in clean gasoline. Replace if rusted, corroded or damaged.

Observe fire prevention rules when cleaning fuel filters.

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. TO PREVENT FUEL SPILLAGE IN BOAT, REMOVE PORTABLE FUEL TANK FROM BOAT WHEN REFUELING. ALWAYS MIX IN WELL VENTILATED AREA.

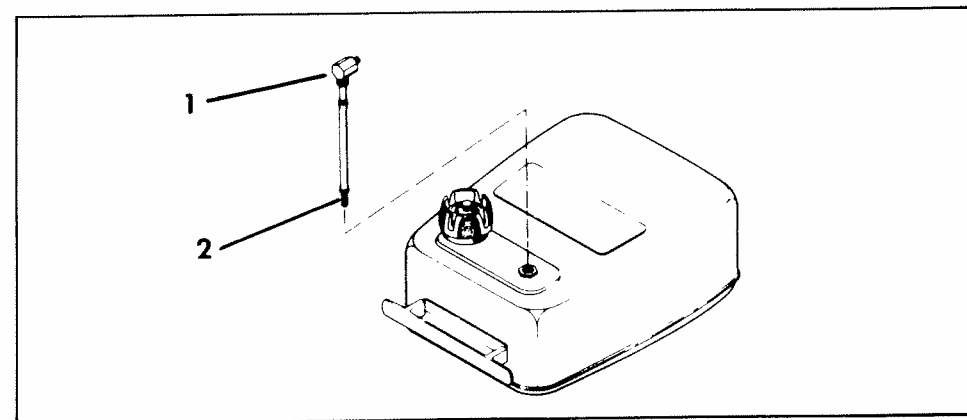


FIGURE 23

Fuel Pump Filter (See Figure 24)

Remove screw securing cover to fuel pump. Remove cover, screen and gasket.

Clean by rinsing in clean gasoline. Observe fire prevention rules when cleaning fuel filter.

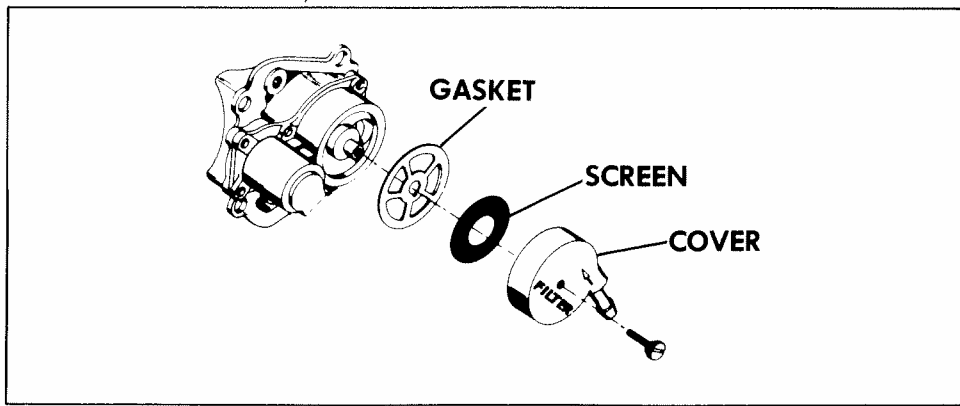


FIGURE 24

CHECKING WATER PUMP OPERATION

Your outboard is cooled by a water pump which acts as a positive displacement pump at low engine speeds and as a centrifugal pump at high engine speeds. The pump is located in the lower motor leg.

CAUTION The water pump has a rubber impeller which can be damaged by running dry or by operating in excessively silty or sandy water.

NOTE: Check to see that a spray of water is coming out of the idle exhaust outlet to assure proper water pump operation.

Cooling water is picked up on the side of the lower unit just ahead of the propeller and is discharged after circulation through the power head, along with the exhaust gases.

CAUTION NEVER START OR RUN YOUR ENGINE OUT OF WATER WITHOUT COOLING WATER.

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

OPERATION IN FREEZING TEMPERATURES

When using the engine in freezing or near freezing temperatures, keep lower unit submerged in the water. If engine is tilted out of water, water remaining in the cooling system and lower unit may freeze and cause related parts to rupture. Do not crank or start an engine that might be frozen. This could tear up the water pump impeller. If there is a chance of ice forming on the water, the engine should be removed and drained completely. Any water left in the cooling system or lower unit may freeze and rupture the associated parts and cause extensive damage.

CARE AFTER OPERATION IN SALT WATER

All engine parts that contact the water have been chemically treated to retard salt water corrosion. However, you should take some special precaution after running your engine in salt water.

1. Always tilt the engine out of the water when not in use.
2. Periodically run engine in fresh water to flush out salt deposits.
3. Wash engine down with fresh water and soap — rinse. Apply a marine type wax to protect the finish.
4. Periodically remove propeller and lubricate propeller shaft.
5. Whenever engine will not be used for a day or longer, disconnect negative battery cable to prevent battery run-down and electrolysis.

SUBMERGED ENGINE — SALT WATER

Do not attempt to start an engine that has been submerged in salt water, unless the electrical and ignition parts are cleaned and dried.

Immediately upon recovering engine:

1. Flush off all salt water both inside and out with clean fresh water.
2. Perform all steps as for Fresh Water.
3. In addition, if engine will not start, external parts and ALL electrical components MUST be protected. If Marine Ignition Dryer and Conditioner is not available put a thick coating of oil everywhere.
4. After engine has been completely protected with rust proof oil, take it to an authorized dealer for servicing.

SUBMERGED ENGINE — FRESH WATER

If the engine is recovered within a few hours and is not damaged mechanically, and is free of abrasive dirt inside, try to start as outlined below:

1. Remove spark plugs. Turn engine over several times by hand to expel water from crankcase and cylinder.
2. If fuel tank was submerged, drain all fuel from tank and flush with fresh fuel until all water is removed.
3. Dry and install spark plugs and dry off ignition coils and other components.
4. Drain fuel lines and carburetor.
5. Try starting engine using fresh fuel mixture. If engine starts, run for at least an hour, or until all parts are thoroughly warmed up and water has evaporated from internal moving parts.
6. If engine does not start or if flywheel turns over hard or if engine has been damaged as when submerged while running: first remove all water by rotating entire outboard to all positions. If possible remove reed plate, especially if flywheel will not rotate. Immediately fill entire inside of engine with oil using one of the following:

US Marine 2-Cycle Oil
Marine Storage Lubricant
or
MS Grade Automobile Oil

Pour oil in the carburetor air horn and through the spark plug holes. Rotate entire outboard to all positions and turn flywheel to work oil into every possible bearing and internal part. If possible spray Marine Ignition Dryer and Conditioner inside flywheel and over all electrical parts. Replace spark plug and reed plate.

7. After engine has been protected as in step 6 above, take to a dealer authorized by US Marine for servicing.

LUBRICATION

GEAR HOUSING LUBRICATION PROCEDURE

The lubricant in the lower gear housing should be checked after thirty (30) hours of operation and replaced every one hundred (100) hours (six months) or at least once each season (prior to storage) with US MARINE OUTBOARD GEAR LUBE. If this lubricant is not available, use a non-corrosive, leaded, EP 90 outboard gear lube. **DO NOT USE A CORROSIVE, AUTOMOTIVE TYPE LUBRICANT.**

TO DRAIN

With engine in an upright position, remove both the fill and drain plug screws and allow lubricant to drain completely. (See Figure 25.)

NOTE: When draining lubricant, check for water contamination and metal chips. If evidence of either is present, take your engine to your US Marine Dealer. Continued operation with water in gear housing will result in damage to drive gears and bearings. Chips could be the start of a failure.

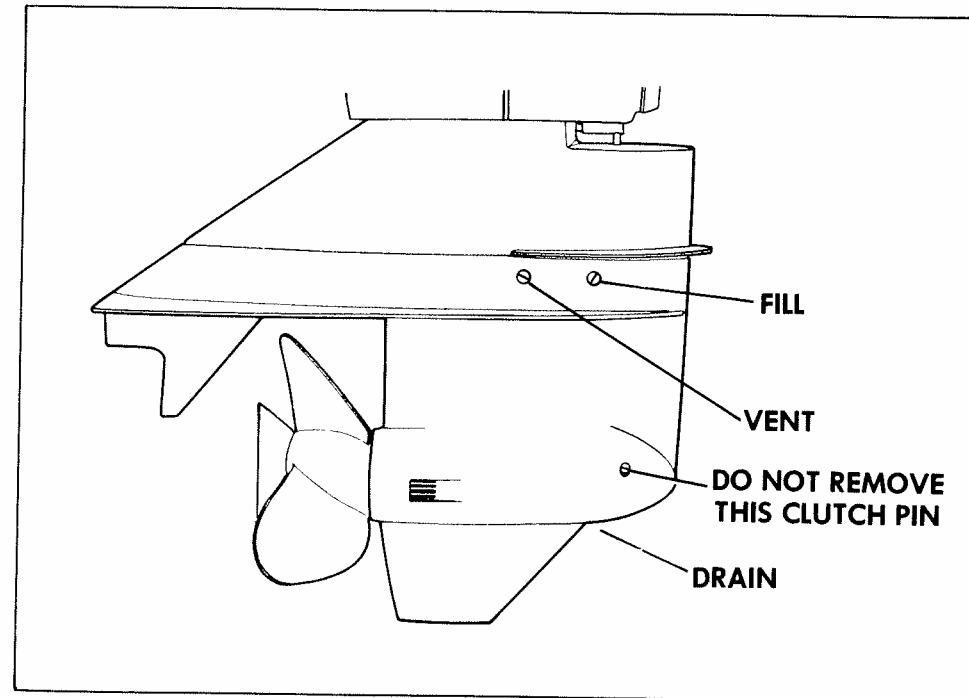



FIGURE 25

TO REFILL

1. When lubricant has drained, remove vent plug and install drain plug. Use sealer on pipe plug drain plug.
2. Insert tube nozzle into fill plug screw hole.
3. Add lubricant until it appears at vent hole.
4. Reinstall vent plug screw and washer.
5. Remove nozzle.
6. Allow engine to stand in an upright position for at least one-half (1/2) hour with fill screw removed. This will permit the gear lube to completely fill all cavities in the gear housing.
7. Recheck gear lube level. Add lube as outlined below if necessary, to bring lube level to fill hole. Reinstall fill plug screw and washer. Tighten securely.

TO ADD GEAR LUBRICANT

1. Remove fill plug and insert nozzle of tube into hole.
2. Remove vent plug screw and washer.
3. Add lube until it appears at vent hole.
4. Reinstall vent plug screw and washer and tighten securely.
5. Remove nozzle, reinstall fill plug and tighten securely.

 **NOTE:** Whenever gear lubricant is added, it is recommended that the gear housing and lubricant be inspected for water contamination and any sign of metal chips.

TO INSPECT FOR WATER CONTAMINATION

To inspect, loosen (do not remove) gear housing drain plug screw and allow a small amount of lubricant to drain. If water is present it will drain prior to the actual lubricant. Should water be present, take your engine to your dealer.

LUBRICATION CHART

Lubrication Point	Fig. No.	Lubricant	Frequency
* Gear Housing	25	1	* Check every 30 hours of use. Drain and replace every 6 months
Swivel Bracket — Grease Fittings	26	2	Every 60 days
Steering Tube & Link	27	2	Every 60 days
Clamp Screws	27	2	Every 60 days
Control Linkage	28	2	Every 60 days
Starter Pinion Gear	29	2	Every 30 days
Propeller Shaft	30	3	Every 60 days
Drive Shaft Spline	—	3	Every season

LUBRICANT CODE:

- 1 — US Marine Gear Lube. (If not available, use non-corrosive, EP 90 outboard gear lube.)
- 2 — Waterproof Marine Grease, Auto Chassis Lube, or "Rykon" #2 EP (Special Tool No. T2961.) For temporary lubrication when above are not available, use #40 motor oil.
- 3 — "Anti-Seize" Lubricant. (Special Tool No. T2987-1.)

*If your outboard is used in salt water or in commercial use, lubricate oftener as required.

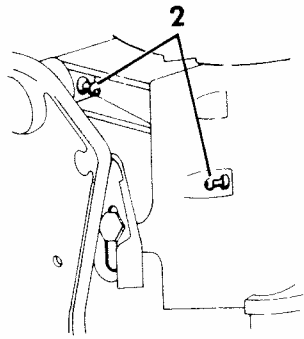


FIGURE 26
Swivel Bracket
Grease Fittings

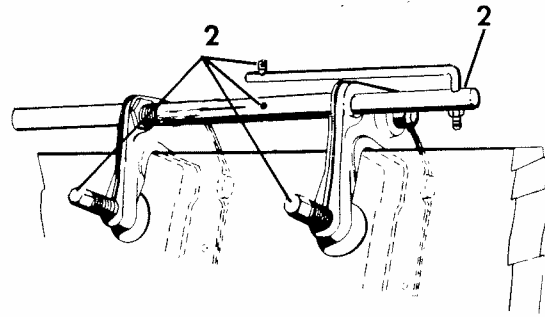


FIGURE 27
Clamp Screw &
Steering Link

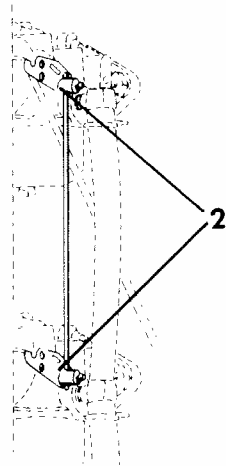


FIGURE 28
Control Linkage

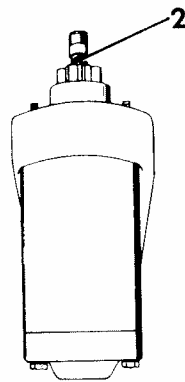


FIGURE 29
Starter Pinion Gear

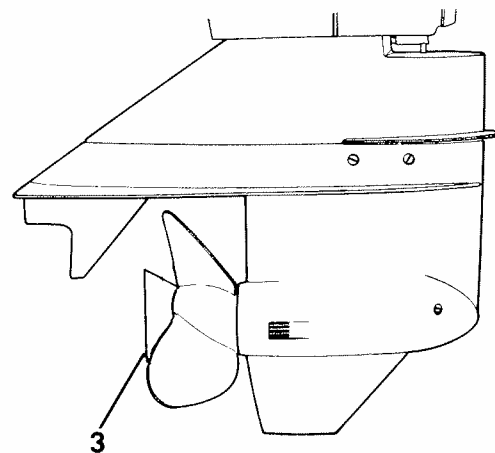


FIGURE 30
Propeller Shaft

TROUBLE CHECK LIST

	Engine Does Not Start	Starts But Does Not Run	Engine Misses	Does Not Idle	Does Not Develop Full Power	
●						Fuel Line Air Locked
●	●					Remote Fuel Tank Not Connected
●						Battery Cables Not Connected
●						Battery Needs Recharge
●						Remote Electric Cable Not Connected, Shorted or Wired Wrong
●			●	●		Remote Controls in Need of Adjustment
●	●					Fuel Tank Empty
	●	●	●	●		Recirculating Fuel System Dirty or Clogged
●	●		●	●		Fuel Line Kinked or Pinched
	●		●	●		Fuel Filters Dirty or Clogged
●	●		●	●		Vent Screw Gasket Obstructing Air Flow
●	●		●	●		Vent Screw on Fuel Tank Filler Cap Closed
	●	●	●	●		Air Leak in Engine
	●	●	●	●		Air Leak in Fuel System
●	●		●	●		Carburetor Passages Clogged or Dirty
	●	●	●	●		Incorrect Fuel-Oil Mixture
	●	●	●	●		Carburetor Out of Adjustment
●						Engine Flooded
	●	●	●	●		Wrong Type Spark Plugs
●	●	●	●	●		Defective or Fouled Spark Plugs
	●	●	●	●		Weak Ignition Coil
●						Spark Plug Lead Wires Interchanged
●		●				Frayed or Cracked Lead Wire Insulation
●		●				Disconnected Ground or Loose Wiring in Electrical System
●	●	●				Bad Key Switch


PREPARATION FOR STORAGE

It is recommended that your US Marine Dealer prepare your engine for off-season or prolonged storage. Your US Marine Dealer is equipped with tools and materials to perform these operations in accordance with latest factory specifications. This will also provide your dealer with the opportunity to perform annual maintenance as required by the terms of warranty, such as inspecting gear housing seals and water pump impeller.


If your engine cannot be returned to your US Marine Dealer, proceed as follows:

Before storing your engine it must be protected against rust and possible damage from freezing temperatures. The following procedures must be performed with engine mounted on boat and operated in a body of fresh water.

1. Run the engine until it is thoroughly warmed up.
2. Place gear shift in "Neutral" and allow engine to run at fast idle. Remove fuel line from fuel tank. Using a rust preventive oil, rapidly inject oil into carburetor air intakes for a period of ten (10) to twenty (20) seconds until engine stops. The above procedures will coat the interior of the crankcase with a protective coating of oil.

 **NOTE:** It is necessary to remove the carburetor cover to facilitate the injection of rust preventive oil.

3. Remove boat and outboard from water. Drain all fuel from lines and carburetor.

 **SAFETY WARNING: DISCONNECT FUEL LINE FROM MOTOR AND TANK. STORE FUEL LINE AND TANK IN A WELL VENTILATED AREA.**

4. Disconnect battery and remove spark plugs. Put an ounce or two of US Marine 2-Cycle Oil into each spark plug hole. Turn engine over by hand several times to distribute the oil. This will lubricate the pistons, rings and cylinder walls and expel water from the cooling system. Reinstall spark plugs.
5. Drain and refill lower gear housing as outlined under "LUBRICATION."
6. Lubricate all moving parts as outlined under "LUBRICATION."
7. Clean exterior of engine, apply a marine type wax to protect the finish and prevent rust or corrosion.
8. Remove propeller and apply coating of lubricant on propeller shaft. Reinstall propeller.
9. Store engine in an upright position in a dry, well ventilated area.

PREPARATION FOR USE AFTER STORAGE

It is recommended that your US Marine Outboard Dealer prepare your engine for use after storage. He is equipped with tools and materials to perform these operations in accordance with latest factory specifications. This will also provide your dealer with the opportunity to perform maintenance as required by the terms of warranty, test-run your engine and perform tune-up and necessary adjustments to ensure satisfactory operation.

If your engine cannot be returned to your US Marine Outboard Dealer, proceed as follows:

1. Remove spark plugs. Clean or replace as required.
2. Check lubricant in lower gear housing.
3. Lubricate all moving parts as outlined under "LUBRICATION."
4. Clean exterior of engine. Apply a marine type wax to protect the finish.
5. Check condition of battery.
6. Follow standard operating procedures.

EXTERIOR MAINTENANCE

Your outboard is protected with a durable baked enamel finish. To maintain its appearance, wash and wax frequently using marine cleaners and waxes.

US MARINE STATEMENT OF LIMITED WARRANTY

US Marine Corporation (hereafter "US Marine") of 105 Marine Dr., Hartford, Wisconsin 53027, issues the following warranty to the first retail purchaser **ONLY**, of the outboard motor.

COVERAGE

Subject to the conditions, limitations and exclusions set forth below, this limited warranty covers failures by defects in material and workmanship in normal use and service for the first 12 months from the date of purchase by the first retail purchaser:

- Pleasure Use — 12 months
- Commercial or Rental Use — 6 months
- Service Parts — 90 days or unexpired portion of engine warranty, whichever is longer

REMEDIES

US Marine will repair or replace without charge for parts or labor, any parts it supplies which it deems defective pursuant to the coverage described above at an outboard dealer authorized by US Marine. To obtain this repair or replacement the first retail purchaser must return the outboard to an authorized dealer.

OWNER RESPONSIBILITY

The owner is responsible for properly maintaining and using the outboard motor as described in the Required Maintenance and Operating Instructions and for repairs required as a result of failure to follow such instructions.

This warranty does not cover parts replacement, mechanical adjustment, repair or other service normally made or required as maintenance. Not included under warranty are:

- a. Spark plugs
- b. Breaker points
- c. Condensers
- d. Water pump impellers
- e. Oil seals
- f. Propellers
- g. Starter ropes or starter pinions on manual start engines
- h. Tune-ups

EXCLUSIONS

This warranty specifically contains the following exclusions:

- a. Installation services provided by the selling dealer such as installation of the outboard motor to a boat, installation of accessories to a boat or to any repairs resulting from incorrect installations.
- b. Shift or throttle cable adjustment or any service or repair resulting from improper shift or throttle adjustment, including but not limited to, worn or damaged clutch dogs.
- c. This warranty applies only to motors sold through dealers authorized by US Marine.
- d. Any damage resulting from improper storage procedure. Refer to your owner's manual for proper procedures.

GENERAL CONDITIONS

This is the only warranty made by US Marine applicable to its outboard motors. In addition, this warranty shall not apply to any outboard which has been:

1. Subjected to conditions beyond normal usage.
2. Repaired so as to adversely affect its performance or reliability.
3. Modified or altered including, but not limited to, modifications resulting in increased revolutions.
4. Used for racing or operating with a racing-type lower unit.
5. Used in excess of 500 hours — when inspection of a failed part does not indicate a defect in material or workmanship after 500 hours of use, normal wear will be considered the cause of the failure.
6. Operated with a type of fuel, lubrication oil or grease or operated with a fuel-oil mixture (ratio) other than that specified in the Owner's Guide for that particular model outboard. Specifically, the use of synthetic oils or gasohol or fuel containing alcohol additives, will void the warranty.
7. Run in a manner other than specified in the break-in instructions spelled out in the Owner's Guide.
8. Started or run out of water without cooling water.
9. Damaged due to transporting, striking an underwater object, or storage in an inverted position.

10. Subject to misuse, abuse, neglect, electrolysis, accident, fire, submersion, improper storage, improper trailering or an act of God.
11. Subject to continuous exposure to salt water or salt spray without proper care.
12. Subject to continuous running at RPM's outside the recommended operating range.
13. Subjected to freezing temperatures without draining water from engine.

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

US MARINE CANNOT ASSUME RESPONSIBILITY FOR CONSEQUENTIAL DAMAGES SUCH AS: LOSS OF TIME; INCONVENIENCE; EXPENSE FOR GASOLINE; TELEPHONE; TRAVEL; TRANSPORTATION OR LODGING; LOSS OR DAMAGE TO PERSONAL PROPERTY OR LOSS OF REVENUE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on how long any implied warranty lasts so the above limitation may not apply to you.

REQUIRED MAINTENANCE AND OPERATING INSTRUCTIONS

The following instructions are important and compliance with these instructions is the responsibility of the owner.

1. After the initial 10 hours of use, take engine to dealer for 10 hour check at the owner's expense.
2. Check gear housing lube after each 30 hours of use and add lube if required. Completely drain and replace lube every 6 months (or once per year prior to storage in climates where boating season is 6 months or less).
3. Check propeller shaft seal, drive shaft seal and shift rod seal every 12 months (or at lube change) and replace as required.
4. Have propeller shaft seals inspected immediately upon contact with monofilament fish line and replace, if damaged.
5. Inspect water pump housing plates and impellers annually and replace if required.
6. Have outboard motor prepared for winterized storage as directed in the Owner's Guide.
7. Have outboard motor tune-up performed at the beginning of each boating season. Have carburetor inspected, cleaned and adjusted periodically to ensure optimum performance.
8. Always operate the outboard motor within the RPM range specified on the serial plate. Correct RPM is obtained by correct propeller installation.
9. Be sure your boat is rated for your outboard motor. Power greater than that specified on the official hull rating plate is considered misuse and abuse and will void the outboard warranty.
10. Ensure adequate ventilation to the outboard motor and adequate protection from excessive spray or backwash. Any spray or backwash that "drowns" the engine or causes premature corrosion will void the warranty.
11. Do not overspeed clutch-type models in neutral — the speed control should not be advanced beyond the "Start" position.
12. When shifting, do so rapidly at proper engine speed. Do not "ease" shift mechanism into gear as this causes excessive wear to the clutches and gears.
13. Never engage the electric starter motor and crank continuously for more than fifteen (15) seconds. Allow for the armature and field coils to cool before again energizing.
14. Inspect the propeller at frequent intervals for nicks, bent blades or hub slippage and have repaired or replaced if damaged. Remove the propeller and lubricate the propeller shaft periodically to ensure free fit and easy removal or assembly at all times.
15. Do not use the tilt lock or the power tilt for trailering. Use accessory trailering bracket.

Your authorized selling dealer will perform the above (owner responsibility) maintenance service for you. He will also perform any service authorized under the provisions of this warranty. It is recommended that you return to your selling dealer or other authorized dealer for all service required to your outboard motor.

If you have moved, or are traveling, any dealer authorized by US Marine will perform these services for you. If warranty is indicated, you will need proof of the date of purchase such as your owner's registration card, bill of sale, etc.

The outboard motor must be delivered to an authorized Service Facility. Any travel time by the service facility, transportation charges, telephone calls, sales tax, gasoline, lodging, loss or damage to personal property, loss of revenues, damage to luggage or cargo, or any type of sequential damage will be the responsibility of the owner. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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

US MARINE CORPORATION, Hartford, Wisconsin

For your convenience, blanks have been provided to record your outboard model number, serial number, cylinder block number, ignition key letter and dealer information.

OWNER'S NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

MODEL NO. _____

SERIAL NO. _____

CYLINDER BLOCK NO. _____

IGNITION KEY LETTER CODE _____

DATE OF PURCHASE _____

DEALER NAME _____

ADDRESS _____

CITY _____

STATE/PROV. _____ ZIP CODE _____

PHONE NO. _____

INSURE YOUR ENGINE

Many insurance companies offer protection contracts for your boat and outboard engine. Insurance covering your own equipment against damage, theft, etc., as well as liability insurance for property damage and personal injury to others is available. It would be wise to contact your insurance agent for further information about adequate protection.

