
Johnson®

1961

WELCOME ABOARD

Your new outboard motor has been engineered and manufactured by the world's leader in marine technology, *Outboard Marine Corporation,* to give you the maximum in service and performance.

Please study this manual to completely understand how your outboard motor operates and to enable you to take full advantage of its many built-in features.

Printed in USA

ENGLISH – ESPAÑOL

Part Number 398287

40/50 MODELS

Table of Contents

About This Manual

Read this manual thoroughly before attempting to operate this motor.

Safety

This manual contains certain information related to the personal safety of you the operator, your passengers and bystanders.

The safety symbol, ⚠ **Safety Warning:** appears next to information important to prevent you and others from being hurt.

The note symbol, Note, appears next to information important to keep machinery from being damaged.

Important appears next to information important to ensure correct assembly and operation of the product.

Observe all Notes and Safety Warnings contained in this manual.

Product References, Illustrations and Specifications

When reference is made in this manual to a brand name, number, product or specific tool, an equivalent product may be used in place of the referred to product unless specifically stated otherwise. Equivalent products which are used must meet all current Coast Guard Safety Regulations and ABYC* standards to avoid hazards.

Outboard Marine Corporation reserves the right to make changes at any time, without notice, in specifications and models and also to discontinue models. The right is also reserved to change any specifications or parts at any time without incurring any obligation to equip same on models manufactured prior to date of such change. Specifications used are based on the latest product information available at the time of publication.

The continuing accuracy of this manual cannot be guaranteed.

All photographs and illustrations used in this manual may not depict actual models or equipment and are intended as representative views for reference only.

*ABYC - American Boat and Yacht Council

How to Read Illustration Symbols

10	Numbers in a rectangle indicate the photo described by that paragraph.
Ⓐ ⑨ 10	Look for circled letters Ⓐ or circled numbers ⑨, 10 to appear in text and on photos to indicate specific features or items.
Ⓐ	White letters on dark circles appear with the description of the item and locate it on the various graphics, charts, or photos.
	Dashed arrows indicate features not visible (hidden from view).
	Other symbols on photos point to the subject of the text for that photo.

PCE0001

Want to know more about boating?

A Bibliography and source list on over 40 different boating related subjects is available, at a nominal fee, from:

American Boat and Yacht Council, Inc.
P.O. Box 806-190 Ketcham Ave.
Amityville, N.Y. 11701
(516) 598-0550

This is an excellent source list on subjects such as boat handling, piloting in fog, fitting-out small craft, emergency repairs afloat, survival for sportsmen and many others. The more you know about boating, the more you will enjoy it.

The Skippers Course

Our waterways are becoming increasingly crowded, and Skippers who are careless or ignorant of the Rules of the Road are a danger to themselves and other boaters.

To protect such people, and innocent bystanders, the Federal government, the states, and some communities have laws and regulations designed to keep boating safe. Much of what you need to learn is based on these **legal requirements.**

This publication **"The Skippers Course"** is a self-instructional program designed to help you learn the nautical Rules of the Road.

Send $6.50, check or money order to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Stock Number 050-012-00159-6

Service Literature

A service manual, parts catalog or extra owner's manual can be purchased directly from OMC.

When ordering literature for your Evinrude® or Johnson® outboard, use the instructions and order form located at the end of this manual.

Maximum Boat Horsepower

⚠ Safety Warning: Do not over-power by using a motor with a horsepower rating higher than the maximum stated on the boat's capacity plate. Doing so could result in loss of control. If boat is not equipped with capacity plate, see your DEALER.

Boating Responsibilities

The operator is responsible for the correct operation of the boat and for the safety of its occupants. Be sure that all operators read this manual before operating the boat. Show your passengers the location and use of emergency equipment. Instruct one of your passengers in how to handle your boat in case of emergency. Requirements for personal flotation devices vary, depending on the type of boat. Be sure to comply with the regulation which applies to your boat.

Basic Boating Safety Rules

- Know your boat, what it can do and what it can't do, how it will handle in all kinds of weather.
- Load your boat with the weight properly distributed. Don't overload or overpower your boat.
- On small lighter boats, avoid standing up or shifting weight suddenly.
- Have boat occupants seated and only on seats provided. Never allow anyone to sit on boat's bow, gunwales, transom, seat backs or other boat structure not intended for use as a seat.
- Leave a Float Plan with a friend or relative before you depart.
- Life vests or preservers should be worn by all occupants when boating conditions are hazardous, and by children and non-swimmers at all times.
- Keep a good lookout. Failure to do so is the cause of most collisions.
- Operate at safe speeds. Watch your wake.
- Know the marine traffic laws and obey them.
- Respect the weather. Listen to weather forecasts and heed weather warnings.
- If your boat capsizes, the occupants should stay with the boat.
- Prevent fires or explosions:
- Be careful in handling volatile fuels.
- Have a safe fuel system installation and maintain it in top condition.
- Keep your boat and equipment neat and in prime operating condition. Carry a sufficient number of spare parts.
- Don't operate a boat if intoxicated.
- Always have a suitable anchor and suitable emergency signaling device aboard.

Owner's Identification Card

At the time you purchase your motor, your dealer will complete the warranty and motor registration form. This form is a temporary Owner's Identification card which you should carry until you receive your permanent card. Another form will be sent directly by the dealer to the factory, which will issue your permanent Owner's Identification card. This card will provide proof of ownership, as well as warranty validation, should warranty service be necessary. The procedure for warranty and motor registration will vary depending on your locality. Contact your DEALER or distributor for details. Please allow approximately six weeks, from purchase date, to receive your Owner's Identification card.

Propeller Selection

General

The selection of a propeller is one of the most critical factors in achieving satisfactory performance of boat and motor. Propellers must be custom selected to match the motor to the boat, load or application.

Selection

To select the correct propeller for your boating application, your boat and motor must be water tested. Contact your DEALER for assistance. For selection procedure and available propellers, see the **"Propeller Selection Guide"** shipped with your motor.

See **Propeller Replacement** before removing or installing propeller.

Note The correct propeller for your boat (under normal load conditions) will allow the engine to run near the upper limit of the full throttle operating range. See **"Propeller Selection Guide"** for selection procedure.

Insurance

Insure your outboard motor and/or boat as soon as practicable for protection against loss by fire, theft, etc. Consult your local insurance agent.

Stolen Motors

In case of theft, report Model and Serial Number to local authorities, insurance agent and the manufacturer.

Model and Serial Number

The model and serial number are stamped on a nameplate attached to the stern bracket.

Record Model and Serial Number below.

Model Number_____

Serial Number_____

High Performance Boating

The high performance sports boat has a high-to-power to weight ratio. It falls somewhere between the family boat and the full racing craft. A person who is not properly trained in the operation of a high performance boat should never attempt to operate such a boat at, or near, its highest speed capability.

For additional information, obtain a copy of **"Introduction to High Performance Sport Boating"** Part Number 507600

Motor Installation

We recommend that your DEALER install your motor. However, if you choose to install the motor yourself, you must obtain a copy of the **"Outboard Motor Installation Guidelines,"** OMC Part Number 507564. This manual contains vital installation instructions to install the motor on a boat.

⚠ Safety Warning: The "Outboard Motor Installation Guidelines" MUST be used to install this motor on the boat. This manual contains important information to prevent you and others from being hurt.

You may purchase a copy of either of the above publications from your DEALER or from one of the locations listed.

Specifications		Page
*Power @ Propeller Shaft 40 Model: 50 Model:	 40 hp (29.8 kw) @ 5000 RPM 50 hp (37.0 kw) @ 5000 RPM	•
Full Throttle Operating Range	4500 to 5500 RPM	2
Fuel Requirements	87 AKI (90 RON), see **Recommended Gasoline**	6
Fuel/Oil Ratio	Supplied by the ***VRO***$^{2}_{®}$ Oil Injection System. 100:1 Fuel/Oil ratio is required in fuel tank during break-in, see **Engine Break-In**	6
Fuel Filter	*OMC* P/N 398327, or equivalent	20
Spark Plug: Normal Operation Sustained High Speed Operation	 QL78C Gap Setting - 0.76 mm (0.030 in.) QL16V Gap is Permanent	21
Spark Plug Socket Wrench Size	13/16 in. : Torque 24 -27 N·m (18 -20 ft. lbs.)	21
Alternator	Non-Regulated/4 AMP, see **Battery**	3
Fuse: Engine and Trim/Tilt	*Littlefuse* 1 A.G. - 20 AMP or *Buss* A.G.A. - 20 AMP (located on starboard side of engine in wire terminal area)	18
Gearcase Lubricant Capacity	485 ml (16.4 fl. ozs.)	22
Fuel Tank Capacity: †(Not supplied with 50 Model in U.S. Market Area)	22.7 litres (6 U.S. Gallons, 5 Imperial Gallons)	6
Propeller - 40 Model: 29.85 cm (11¾ in.) Dia. x 43.2 cm (17 in.) Pitch	See **"Propeller** and **Steering Connector Selection Guide"** Supplied in Owner's Kit	2,21
Propeller - 50 Model: 29.85 cm (11¾ in.) Dia. x 43.2 cm (17 in.) Pitch	†(Not supplied with motor in U.S. Market Area) See **"Propeller** and **Steering Connector Selection Guide"** supplied in Owner's Kit	2,21
Transom Height ECE Model: ELC,TLC Models:	 368 -381 mm (14½ in. to 15 in.) 495 -508 mm (19½ in. to 20 in.)	•
Weight ECE Model: ELC Model: TLC Model:	 81.1 kg (180 lbs.) 84.0 kg (185 lbs.) 84.0 kg (185 lbs.)	•

* Power ratings are determined after the break-in period and when an additional 4 hours minimum of wide open throttle has been accumulated. See **Break-in Procedure.**

†Only available as separately purchased items in U.S. Market Areas.

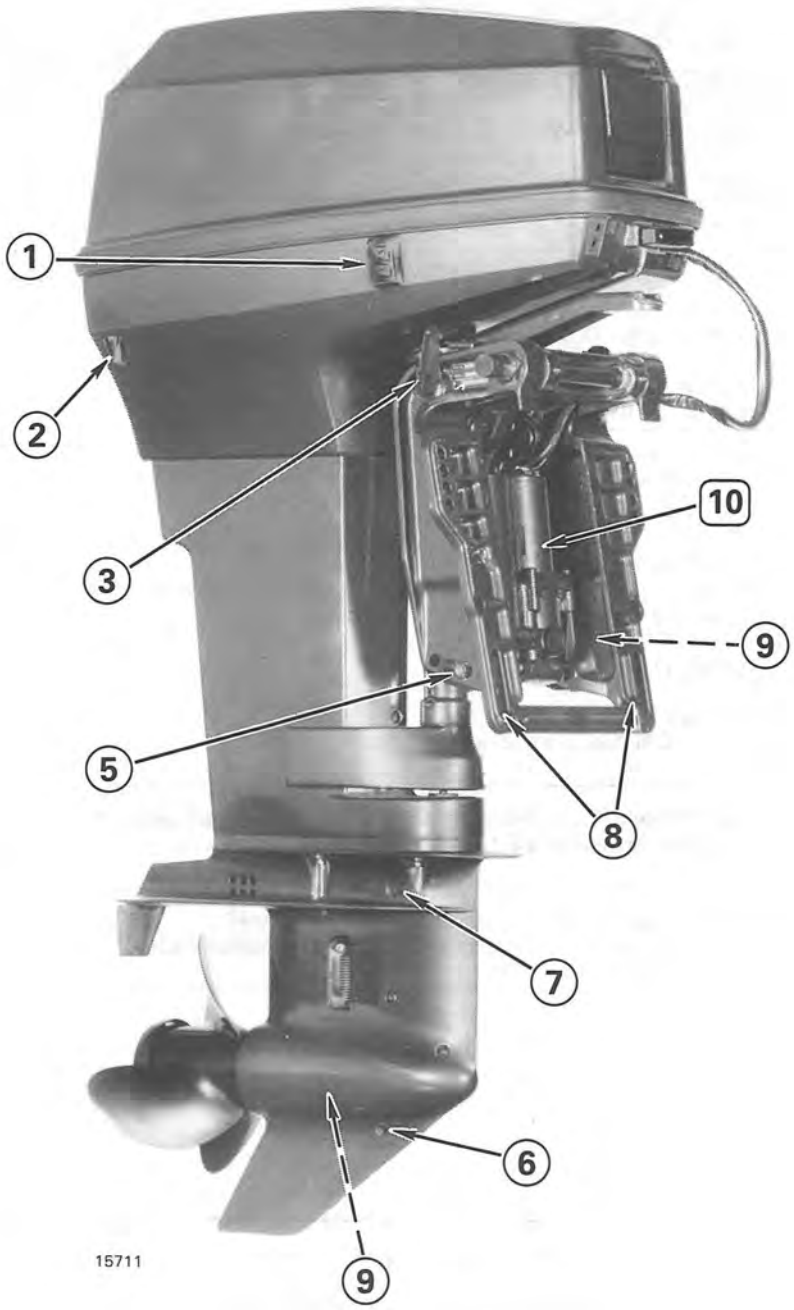
Battery (not supplied with motor)

For your safety, read and understand battery manufacturer's handling and first aid information supplied with the battery before installation is attempted.

Use a 12 volt battery with a 350 amperes cold cranking rating at -18° C (0° F) and 100 minutes reserve capacity rating at 27° C (80° F).

Install battery in a covered battery box. Secure box to the boat to prevent movement.

We do not recommend the use of maintenance-free or sealed batteries on this motor.



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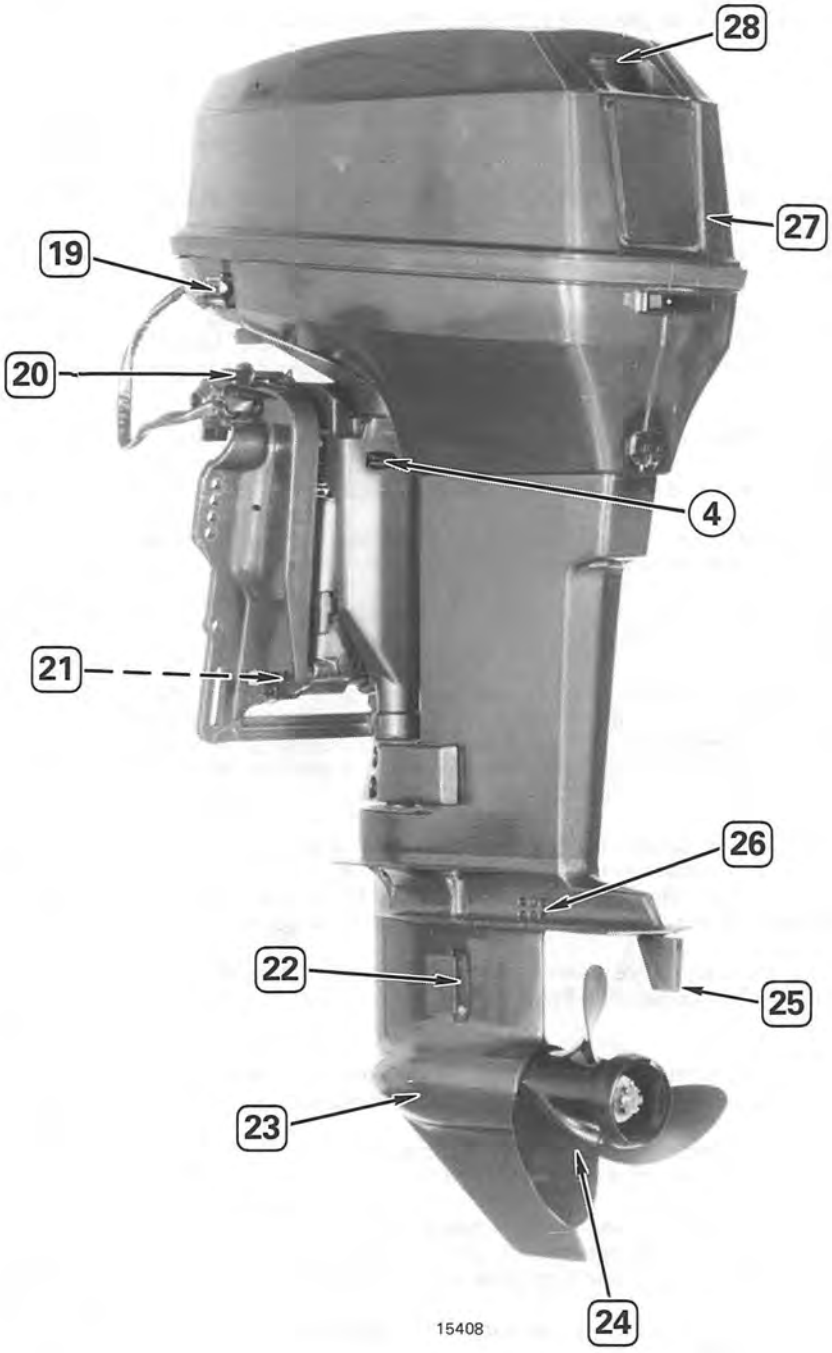

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Fuel and Lubricant

Recommended Gasoline

Use automotive gasoline with the following minimum octane specifications:

In the U.S. - 87 anti-knock Index (AKI)

Outside the U.S. - 90 Research Octane Number (RON)

Some gasolines being sold contain alcohol, even though they may not be so identified. Use of these fuels should be avoided until the type and percentage of alcohol are determined to be acceptable.

Note *OMC 2+4®* Fuel Conditioner is the only gasoline additive recommended by *Outboard Marine Corporation*. Use of other gasoline additives can result in poor performance or engine damage.

Preferred Fuel: Any regular unleaded, regular leaded, or premium unleaded gasoline having the recommended octane rating and not extended with alcohol is the preferred fuel.

Acceptable Fuel: Any of the above gasolines with up to 10% maximum alcohol volume:

10% ETHANOL (ethyl alcohol) (may be called gasohol)
5% METHANOL (methyl alcohol) + 5% cosolvent alcohols

Note Alcohol extended fuels may result in engine running quality problems, vapor lock or "fuel starvation" problems, or moisture absorption (phase separation) problems. If running quality problems are experienced, switch to a gasoline without alcohol as described in **Preferred Fuel.**

Fuels Not Acceptable: Do not use any regular unleaded, regular leaded or premium unleaded gasoline having more than 10% ETHANOL or more than 5% METHANOL even if it contains cosolvents or corrosion inhibitor and regardless of octane rating.

OMC products have been designed to operate using the **Preferred Fuel** or **Acceptable Fuel;** however, be aware of the following:

a. The boat fuel system may be different regarding use of alcohol fuels. Refer to boat owner's manual.

b. Alcohol attracts and holds moisture which may cause corrosion of metallic parts of the fuel system.

c. All parts of the fuel system should be inspected frequently and replaced if signs of deterioration or fuel leakage are found. Inspect at least annually.

⚠ **Safety Warning: Fuel leakage can contribute to a fire or explosion.**

Recommended Lubricant

This is a two cycle engine that requires lubricant to be mixed with gasoline. See inside front cover for **Recommended Lubricant.**

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

If the recommended lubricant is not available, another NMMA (BIA) Certified TC-W Lubricant (oil) may be used.

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

- Automotive oils
- Premix fuel of unknown oil quality
- Premix fuel not of the recommended fuel/oil ratio
- Lubricants which are not NMMA (BIA) certified

Engine Break-In

During the first 10 hours of break-in operation your engine's fuel must be mixed to a 100:1 (1% oil) fuel/oil ratio in addition to the operation of the ***VRO²®*** Oil Injection System. The additional oiling during the first ten hours of operation will allow the engine a smooth break-in for long engine life. After the 10 hour break-in period, check to see that the oil level in the VRO tank has changed indicating that oil has been used before using unmixed gasoline in the fuel system. See **Operating Procedure During Break-In.**

Fueling Instructions

⚠ **Safety Warning: Gasoline is extremely flammable and highly explosive under certain conditions.**

- **Always mix fuel outdoors, never indoors.**
- **Never smoke or allow open flame or sparks nearby when mixing or refueling.**
- **Always stop motor before refueling.**
- **Remove portable tanks from boat when refueling.**

All gasoline should be poured through a fine mesh strainer (100 mesh or finer). This will eliminate water and dirt which might otherwise clog fuel passages. Use only clean containers for mixing. Always use fresh gasoline.

Fuel Mixture	Lubricant	
	6 U.S. Gallons (Gasoline)	1 Litre (Gasoline)
100:1 (1% Oil)	8 Fl. Oz. (Lubricant)	10 Millilitres (Lubricant)

Above 32° F. (0° C)

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

2 Permanently Installed Tank - Pour lubricant slowly with the gasoline as tank is filled.

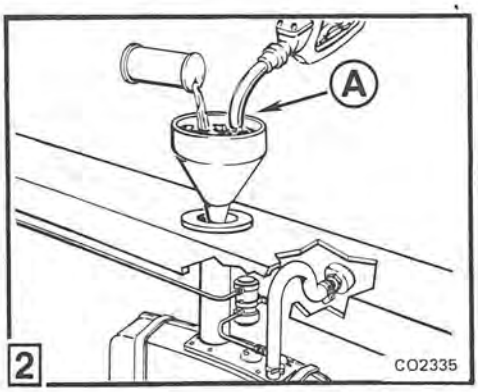
Below 32° F. (0° C)

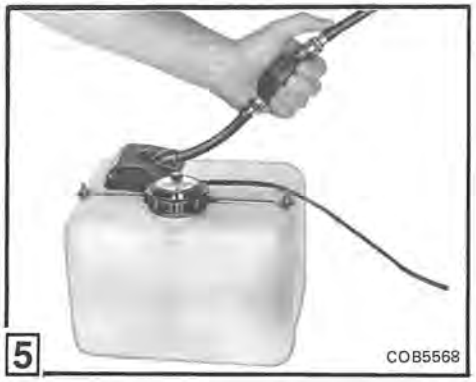
1 Portable Tank - Pour approximately 4 litres (one gallon) gasoline into tank, add required lubricant. Replace filler cap securely. Thoroughly mix by shaking tank. Add balance of gasoline.

2 Permanently Installed Tank - In separate container, mix all lubricant needed with 4 litres (one gallon) or more of gasoline. Pour this mixture slowly with gasoline as tank is filled.

To prevent electrostatic spark, fuel nozzle Ⓐ must contact metal funnel.

Note Fuel systems with built-in tanks, particularly those that include anti-siphon valves, filter/primer units etc., may have restrictions that will not allow the engine fuel pump to deliver the proper amount of fuel under all conditions. This can result in a loss of performance an possible engine damage. Your DEALER can help you determine if your boat's fuel system is restrictive and can advise you how to correct it.





Optional OMC Portable Fuel Tanks And Fuel Lines

OMC portable fuel tanks and fuel lines are designed to provide correct fuel flow for your engine requirements. OMC fuel tank hoses include a primer bulb assembly and a fuel line connector for attachment to your motor. See your DEALER.

Note Serious engine damage may occur from use of improper portable fuel tanks and/or fuel lines. If portable fuel tanks, fuel lines and primer bulbs other than genuine OMC parts are used, they must have equivalent characteristics for correct fuel flow for your engine. Your DEALER can advise you.

OMC *VRO*® Oil Injection System

Your motor is equipped with a ***VRO***® variable ratio oil injection system to automatically meter oil to the engine.

There are optional size oil tanks available for use with your motor, a 6.8 Litre (1.8 gal. shipped with your motor) 11.4 Litre (3.0 gal.), 13.3 Litre (3.5 gal.), or 26.6 Litre (7 gal.). Follow the installation instructions provided with the oil tank for installation of tank in boat. See your DEALER for an optional oil tank, Remote Fill Kit or Oil Level Gauge.

Use only the recommended lubricant or other NMMA (BIA) Certified TC-W oil to fill the oil tank. See **Recommended Lubricant.**

Note Operating this motor without the ***VRO***® system requires modification that must be performed by your **DEALER.** When operating without the ***VRO***® system, the recommended fuel/oil ratio is **50:1 (2% oil).**

3 Filling VRO Tank

- Remove filler cap on oil tank or remote oil fill location.
- Fill oil tank with the recommended lubricant.
- After the oil tank is filled, mark the full oil level Ⓐ with a permanent marking pen. This mark will allow for an easier oil level check during the break-in period.

4 → 7 VRO Oil Hose Installation

Note The oil hose must be purged of air before it is connected to the motor. Failure to purge air from oil hose and make an airtight connection may result in engine damage.

4 Place open end of oil hose in a container to catch the oil.

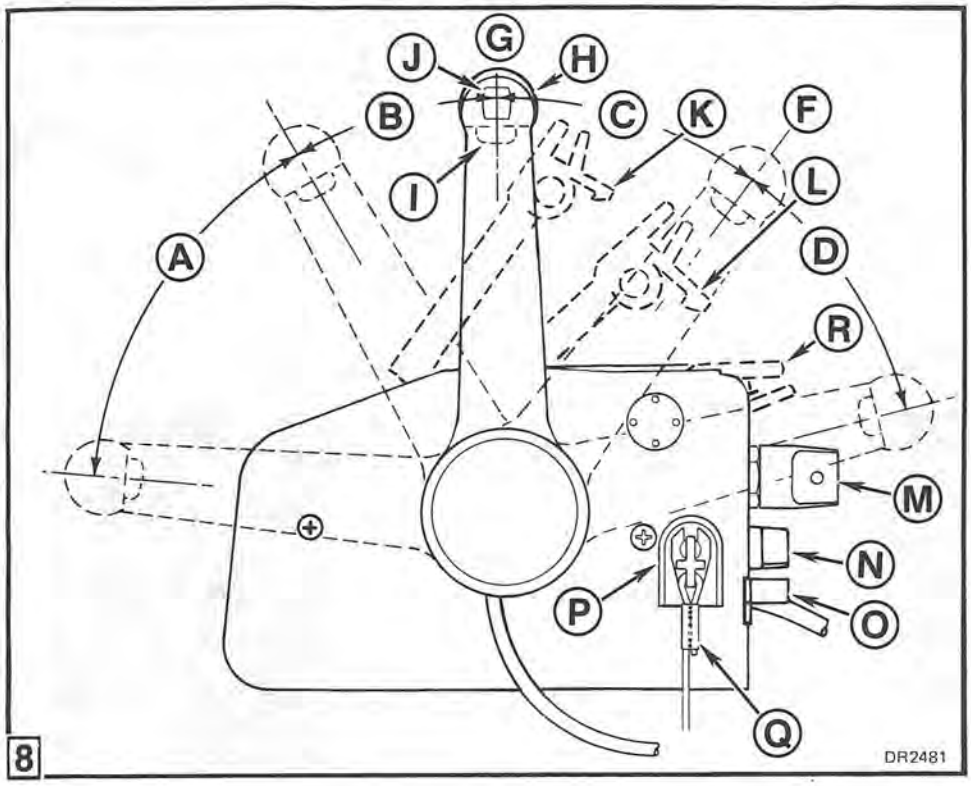
5 Holding the outlet end of the oil primer bulb up, squeeze the bulb until the hose is purged of air and oil flows form the oil hose.

6 Install the oil hose and clamp to the fitting on the lower engine cover and fasten clamp securely using pliers.

Note If clamp is damaged replace with a new clamp.

7 To complete priming, squeeze oil primer bulb until oil is visible at the sight tube located in the oil hose near the ***VRO***® pump.

Note Prime the ***VRO***® Oil System before priming fuel system. If fuel system is primed first; the oil system must be primed with the engine idling. Prime until oil is visible at the sight tube. **No Oil Flow** warning horn will sound until oil reaches the ***VRO***® pump.



Remote Control

A neutral start switch in control box prevents starting engine when control lever is in gear.

To shift into either gear, lift the lockout on the control handle and move the lever briskly in the desired direction to the fully shifted position. This requires 30° of lever motion. A control handle detent provides a "feel" at the forward idle and reverse idle positions.

When shifting BETWEEN forward and reverse, always hesitate briefly in neutral before shifting briskly into gear. This reduces clutch dog (propeller shaft) RPM to allow easier shifting and positive clutch dog engagement.

8 **Remote Control**

- **A.** Forward Speed Range
- **B.** Forward Shift Range
- **C.** Reverse Shift Range
- **D.** Reverse Speed Range
- **E.** Forward
- **F.** Reverse
- **G.** Neutral
- **H.** Control Handle
- **I.** Lockout
- **J.** Trim/Tilt Switch (Power Trim/Tilt Models)
- **K.** Fast Idle Lever-Start Position
- **L.** Latch-Fast Idle Lever
- **M.** Ignition/starter Primer Switch
- **N.** Throttle Friction Adjustment
- **O.** Accessory Plug Connector
- **P.** Emergency Ignition Cut-Off Switch
- **Q.** Lanyard
- **R.** Fast Idle Lever-Run Position

Emergency Ignition Cut-Off Switch

An Emergency Ignition Cut-Off Switch is a feature of the remote control. Use of this switch is highly recommended on any boat considered to have sensitive steering response. Examples of such boats would include smaller runabouts, high performance sport boats, and bass boats. In addition an emergency ignition cut-off switch should be used on any boat where the distance between the driver's seat cushion and the top edge of the boat next to the seat cushion is less than 305 mm (12 in.).

Attach the lanyard to a secure place on clothing. Do not place the lanyard on any part of clothing that may be torn or will permit the lanyard to pull away rather than stopping the engine. Using the switch is simple and does not interfere with normal operating procedures. However, if the operator leaves the helm area, the cut-off switch will stop the engine. This action will prevent your boat from becoming a runaway. Care should be taken to avoid knocking or pulling the lanyard off the switch during regular boating operation. Unexpected loss of forward motion could occur allowing occupants to be thrown forward.

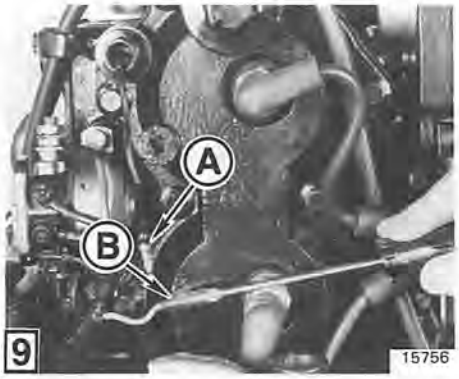
In an emergency situation, any occupant of the boat can restart the motor. Just press in and hold the Emergency Cut-Off switch's button while following normal starting procedure. If the button is released, the motor will stop.

⚠ **Safety Warning: The emergency ignition cut-off switch can only be effective if it is in good working condition. Observe the following:**

- **Lanyard must always have freedom of movement and be away from any obstructions or entanglements which could hinder its operation.**

Once a month:

- **Inspect switch for proper operation. With engine running, removal of the clip and lanyard must stop the engine. If engine does not stop, see your DEALER for replacement of switch.**
- **Inspect lanyard for cuts, fraying, worn clip, etc. Replace if in doubt.**



Warning Horn

Horn	Problem	Immediate Action	See Page
Horn sounds rapid short pulses that vary with engine speed	No oil flow from *VRO*® pump	STOP engine or limit engine speed to a maximum of 1500 RPM See Note 1	•
Horn sounds once every 20 seconds	Low oil level in *VRO* oil tank	Refill *VRO*® oil tank See Note 2	7
Horn sounds continuously	Engine overheat	Reduce engine to "IDLE" speed and return remote control handle to "NEUTRAL" position. See Note 3	16

Warning Horn

There is a warning horn in the remote control (shipped with the motor) or on the accessory control wiring kit. The warning horn has **three separate sounds** that will alert the operator to the three problems listed below.

Note

1. When the warning horn indicates no oil flow from the ***VRO***® pump, operation above 1500 RPM can result in serious engine damage. If it is necessary to operate above 1500 RPM to return to port, lubricant must be mixed with the gasoline at a 50:1 (2% oil) ratio. See **Fuel Mixture** below and follow **Fuel Mixing Instructions** for proper procedure.

Fuel Mixture 50:1 (2% oil)

1 part approved lubricant to 50 parts gasoline.

473 millilitres (16 fl. ozs.) of lubricant to 6 U.S. gallons, 5 imperial gallons or 22.7 litres, of gasoline.

20 millilitres of lubricant to 1 litre gasoline.

2. Failure to refill the VRO oil tank could result in serious engine damage. If VRO oil tank is run dry, the oil hose must be purged of air. Disconnect oil hose and follow procedure in **VRO Oil Hose Installation.** When the oil hose is disconnected and reconnected to the motor, it is recommended that lubricant be mixed with the gasoline at a 100:1 (1% oil) ratio. See **Fuel Mixing Instructions.** Before using unmixed gasoline, check to see that the level in the oil tank has changed indicating that oil is being used.

3. If the engine overheats, the S.L.O.W™ overheat warning system will automatically limit the engine speed to approximately 2000 RPM. The overheat problem must be corrected and the S.L.O.W.™ overheat warning system must be reset before you can continue with normal operation. See **Cooling System.**

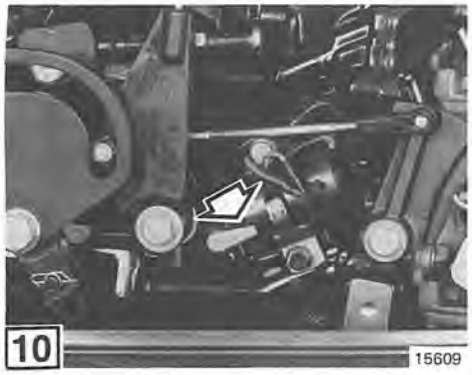
9 Warning Horn Test

When the ignition key is turned to the "ON" position, the warning horn will sound one short pulse. This indicates that the warning horn is working.

It is also advisable to periodically check the warning horn circuit which will indicate operation of wiring and warning horn at the same time. To check wiring and horn, proceed as follows:

- Disconnect the "TAN" temperature switch lead Ⓐ from the warning horn lead connector Ⓑ .
- Use a small screwdriver inserted into connector Ⓑ to ground the horn lead to an unpainted surface on the engine block as shown. With the ignition switch in the "ON" position, the horn should sound when a good ground contact is made.

If the horn does not sound and other electrical components are working indicating a charged battery, see your DEALER for service.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Operating Procedure During Break-In - First 10 Hours of Operation

Use only recommended lubricant in VRO Oil Tank and for 100:1 (1% oil) mix in fuel system during break-in. You must use a 100:1 (1% oil) fuel/ratio in the engine's fuel system during break-in in addition to the operation of the ***VRO*** Oil Injection System.

Note Fuel systems with built-in tanks, particularly those that include anti-siphon valves, filter/primer units etc., may have restrictions that will not allow the engine fuel pump to deliver the proper amount of fuel under all conditions. This can result in a loss of performance and possible engine damage. Your DEALER can help you determine if your boat's fuel system is restrictive and can advise you how to correct it.

First Ten Minutes:

- Operate engine at fast idle **only.**
- Check water pump indicator at rear starboard corner of lower engine cover. A steady stream of water indicates proper water pump operation.

Next 50 Minutes:

- DO NOT operate engine above one-half throttle (no more than 3000 RPM).
- DO NOT hold a constant throttle setting. Change engine speed every 15 minutes.

Note With easy-planing boats, use full throttle to quickly accelerate boat onto plane. Immediately reduce throttle to one-half as soon as boat is on plane. BE SURE boat remains on plane at this throttle setting.

Second Hour:

- Use full throttle to accelerate boat onto plane then reduce throttle setting to three-quarters. BE SURE boat remains on plane at this throttle setting.
- At intervals, apply full throttle for periods of one to two minutes, returning to three-quarters throttle for a cooling period.
- Change engine speed every 15 minutes.

Note Frequently check water pump indicator during the break-in period. A steady stream of water indicates proper water pump operation.

Next Eight Hours:

- Avoid continuous full-throttle operation for extended periods.
- Change engine speed every 15 minutes.

10 **11** **Manual Primer Valve**

The manual primer valve, under the engine cover, can be set at RUN or MANUAL START position. It will stay in either position it is set. Always set the manual primer valve at RUN position for all normal operation. This allows motor to be primed using primer button.

⚠ **Safety Warning: To prevent possible fire and explosion, manual primer valve lever must be in RUN position except for emergency starting. With lever in MANUAL START position and a pressurized fuel tank connected, leakage could occur through the carburetor air inlet opening.**

10 RUN Position

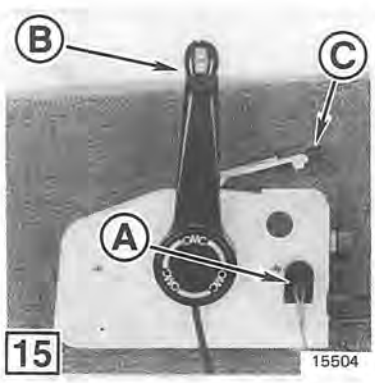
11 MANUAL START Position

Engine Overspeeding

The ignition system is equipped with a "Limiter" circuit to help prevent engine damage due to overspeeding (excessive rpm). If the engine overspeeds, the limiter circuit will activate causing the engine to run roughly or misfire (hesitate). Engine overspeed can be caused by:

- component failure (i.e. propeller or propeller hub)
- incorrect propeller
- propeller ventilation due to incorrect boat loading, excessive trim angle, or motor being mounted too high on transom.

Note Do not operate engine above the recommended full throttle RPM range. Significant reduction in engine service life or serious engine damage can result due to overspeeding. If overspeeding persists see your DEALER.



Starting and Operation

During the initial operation of your new motor, you must follow the **"Engine Break-In"** procedure as described in **General Information.**

Note Failure to follow the **"Engine Break-In"** procedure can result in serious engine damage.

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.

Note Do not operate motor out of water even momentarily. Water pump may be damaged or motor may overheat.

12 → 17 Starting Procedure

The recommended OMC portable fuel tank and fuel hose are used in the following instructions.

- Be sure manual primer valve is in the "RUN" position. See fig. 10.

Power Trim and Tilt Models:
- Use Trim/Tilt switch to lower motor to the "bow-down" position. See **Tilting.**

Manual Tilt Models:
- Lower motor to the run (down) position and place Tilt/Run lever in the "run position". See **Tilting.**

12 Slide fuel connector onto motor coupling until locking lever snaps into position.

- Fuel tank with gauge: Slide fuel connector onto tank coupling until locking lever snaps into position (primer bulb is nearest the tank end of fuel hose).

13 Fuel tank without gauge: Open vent screw on filler cap (turn counterclockwise).

14 Holding outlet end slightly up, squeeze primer bulb several times until resistance is felt.

15 A. Attach the emergency ignition cut-off switch lanyard to remote control and to a secure place on clothing.
B. Move control handle to "NEUTRAL" position.
C. Move fast idle lever to start position (the best start position will vary with each installation). Use the lowest speed position of the lever for reliable starting of your motor.

16 **Starting - Cold motor:** Starting a cold motor normally requires use of the primer. Only operate the engine primer when the engine is being cranked or is running.

- Turn ignition key clockwise to the "ON" position. The warning horn will sound one short pulse when the key is turned to this position.
- Push ignition key switch IN to activate primer solenoid.
- Hold ignition key switch in and turn key to "START" position.

Release key as soon as engine starts. If engine does not start, release key momentarily and then try again. DO NOT hold key in the start or primer position for over 10 seconds.

Note The starter motor and primer solenoid can be damaged if operated longer than 10 seconds at a time

Do not over prime. Excessive priming will cause engine flooding and hard starting.

To prime a cold engine when running (additional fuel for warm-up): While engine is running, push ignition key switch IN intermittently until engine warms-up.

Starting - Warm motor: Follow cold motor procedure except warm motor does not normally require primer operation.

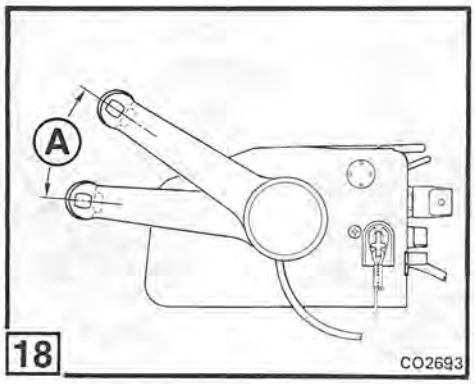
Note Never turn the ignition key to the "START" position when the engine is running or starter may be damaged.

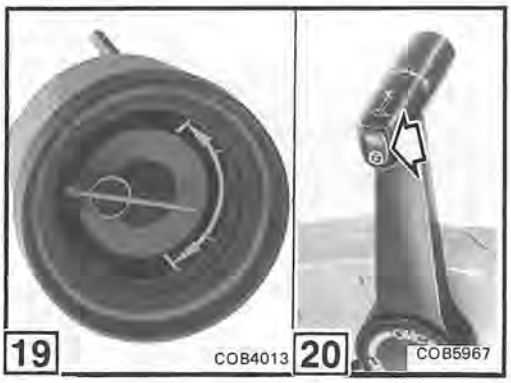
Immediately after starting, move the fast idle lever toward the run position.

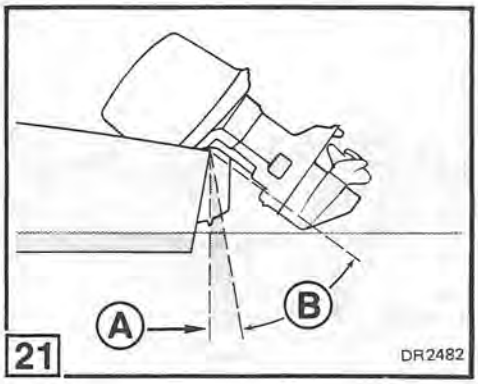
Note To avoid possible engine damage, fast idle must be kept below 3000 RPM in neutral.

17 Check to see that a steady discharge of water is coming out of the water pump indicator. This indicates proper water pump operation.

- If engine fails to start, see **Trouble Check Cart.**







Operation

Note Do not shift into FORWARD or REVERSE position unless motor is running.

Lift lock-out on control handle and move lever briskly in desired direction to the fully shifted position.

After shifting is completed, continue to move the lever slowly in the desired direction to increase speed.

Note When shifting from FORWARD to REVERSE or REVERSE to FORWARD always pause at NEUTRAL until motor is at idle speed and boat has slowed, then lift lock-out and shift into gear.

Stopping Motor

To stop motor, move control handle to NEUTRAL and then turn starter key counterclockwise to OFF position. Always leave the key in the OFF position when motor is not running to prevent battery from discharging. Remove the key when boat is unattended.

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

⚠ **Safety Warning: To help prevent possible fuel leakage, disconnect fuel line from motor and portable tank when boat is trailered, docked, or when motor is tilted for more than a few minutes.**

Coil fuel line on top of tank when not in use. This will help protect fuel line and connectors from damage and help prevent sand or dirt from entering connectors.

Note Whenever engine will not be used for an extended period of time, disconnect positive (+) battery cable at battery to reduce chance of battery running down and damage caused by electrolysis.

18 Fuel Economy

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

A. Economy Throttle Range

19 20 21 Power Trim and Tilt Operation

⚠ **Safety Warning: Any malfunction of the power trim and tilt unit could result in a loss of shock absorber protection if an underwater obstruction is hit. Malfunction can also result in loss of reverse thrust capability.**

POWER TRIM

Power Trim and Tilt feature provides the boat operator with the facility, at the helm, to change the angle of the engine's propeller in relation to the boat bottom.

The Power Trim and Tilt may be operated at any boat speed or at rest. You can trim the boat while underway to improve acceleration, boat speed, and to meet changing water conditions.

To operate the Power Trim, push the Trim/Tilt switch to the desired bow position. Holding the switch in the desired position will activate the motor's trim until the switch is released or the motor reaches its maximum position.

The trim gauge indicates the bow position that is achieved by the trim angle of your motor.

Boat performance and trim position will differ depending on the type of boat, load, propeller and operating conditions. The best ride, fuel economy, performance and speed is determined by the operator's use of the Power Trim.

The effect of the maximum Bow-Up and Bow-Down positions will be relatively the same for most applications, however, the bow position that is best for your operating conditions could be at any trim setting between the maximum Bow-Up and Bow-Down positions.

The boat will be properly trimmed when the trim angle is adjusted to provide a bow position that results in the best boat performance for your particular operating conditions.

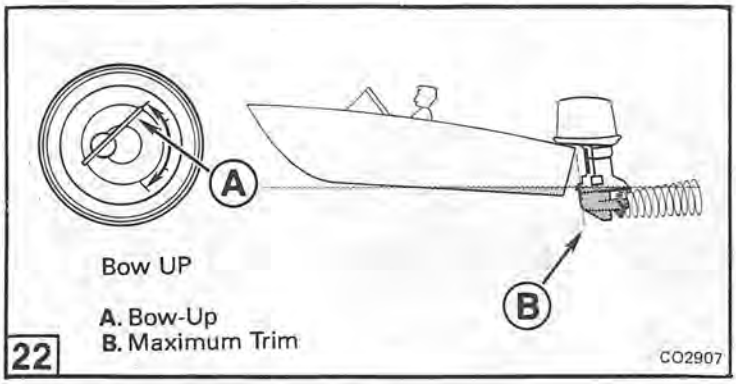
It will be necessary to utilize a speedometer and tachometer to determine boat and motor performance at the different trim positions.

19 Trim Gauge

20 Trim/Tilt Switch

21 **A.** Trim Range

B. Tilt Range



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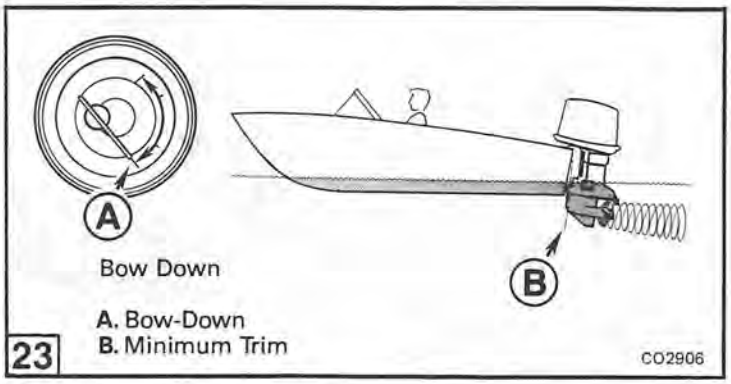

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22 BOW-UP

To move the boat's bow UP, move the Trim/Tilt switch to the UP position.

The Bow-Up position will give the best fuel economy and highest top speed. The Bow-Up position is normally used for cruising or running at full speed.

In the Bow-Up position, the boat may tend to turn to the left. If this condition exists, it should be compensated for with the operator's steering or the trim tab should be adjusted, if this is your most commonly used trim position (See **Trim Tab Adjustment**).

When the motor is trimmed to full bow UP position you must exert a clockwise force to the steering wheel to keep the boat in a straight ahead path. In this position the boat's bow will want to raise clear of the water. Excessive bow UP trim may cause propeller ventilation resulting in propeller slippage. When operating in rough water or crossing a wake, excessive bow UP trim may result in the boat's bow raising skyward possibly ejecting the occupants.

To familiarize yourself with Power Trim, we suggest you make test runs at the various bow positions. Note the time it takes for the boat to plane, the tachometer and speedometer readings, and the ride and action of the boat.

⚠ **Safety Warning: Some boat/motor/propeller combinations may encounter boat instability and/or high steering torque when operated at high speed at or near the motors trim range limits (Full Bow-Up or Bow-Down Positions). Boat stability and steering torque can also vary due to changing water conditions. If any of these conditions occur, reduce throttle and/or adjust trim angle to maintain control. If you experience boat instability and/or high steering torque, see your DEALER to correct these conditions.**

23 BOW-DOWN

To move the boat's bow DOWN, move the Trim/Tilt switch to the DOWN position.

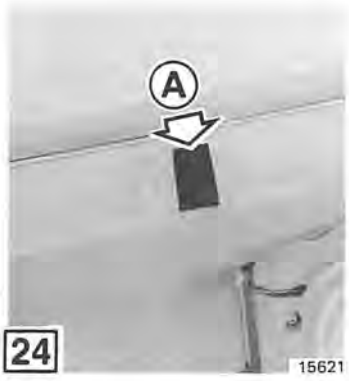
The Bow-Down position will give the best acceleration onto plane and the best towing power for skiing. The Bow-Down position is normally used for accelerating from a standing start or from idle speed.

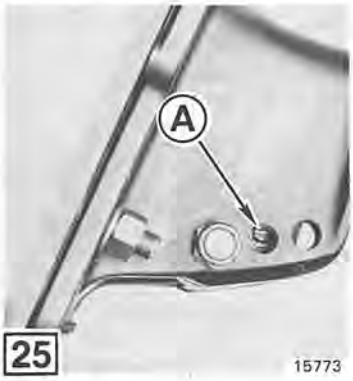
In the Bow-Down position the boat may tend to turn to the right. If this condition exists, it should be compensated for with the operator's steering or the trim tab should be adjusted if this is your most commonly used trim position (See **Trim Tab Adjustment**).

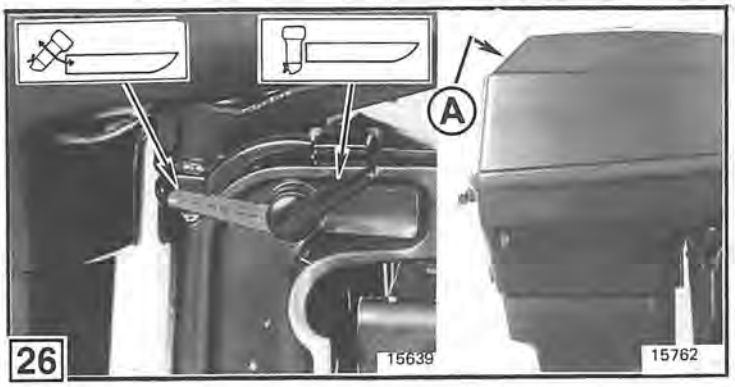
When the motor is trimmed to full bow DOWN position you must exert a counterclockwise force to the steering wheel to keep the boat on a straight ahead path. In this position the boat's bow will want to go deeper into the water. When operating the boat at high speed, the bow of the boat plows into the water, the boat may tend to bow steer or spin about rapidly and possibly eject the occupants.

If the trim unit is being trimmed to bow DOWN position while the motor is operated in reverse, the motor could suddenly change trim position when shifted to forward.

To familiarize yourself with power trim, we suggest you make test runs at various bow DOWN positions. Note the time it takes for the boat to plane, the tachometer and speedometer readings, and the ride and action of the boat.







Tilting - Power Trim/Tilt Models

The angle of motor tilt is also controlled by the Trim/Tilt switch. When the switch is held in the "Bow-Up" position, the motor is tilted up until the switch is released or the motor reaches the maximum tilt position.

The trim gauge will show maximum "Bow-UP" position whenever the motor is in the tilt range. The tilt range is an additional 50° beyond the trim range.

Tilting is normally used for raising the motor to obtain clearance when beaching, launching from a trailer, or mooring.

24 Trailering - Tilt Switch (Power Trim/Tilt Models)

For operator convenience, a trailering tilt switch Ⓐ is located on the lower starboard engine cover. This switch allows the motor to be tilted from outside the boat.

⚠ **Safety Warning: Keep clear of stern brackets and stern area of boat when raising or lowering the motor.**

25 Manual Operation - Power Trim and Tilt

In the event of failure of the boat's electrical system or other problem, it may be necessary to lower the motor manually. Slowly turn manual release screw Ⓐ counterclockwise until it stops. This will allow the motor to be pushed down to the run position.

⚠ **Safety Warning: Keep clear of motor when backing out manual release screw. After the motor is lowered, be sure to tighten manual release screw clockwise until it stops. This will reactivate shock absorber protection and reverse thrust capability.**

The motor is now in the full Bow-Down trim position and must be operated in a manner suitable for this condition.

26 Tilting - Manual Tilt Model

The Tilt/Run lever is located on the starboard stern bracket. When the lever is in the "Tilt Position", the motor can be manually tilted to any position within the tilt range.

To tilt motor:

- Move the Tilt/Run lever to the "Tilt Position".
- Grasp the engine cover Tilt Grip Ⓐ and raise or lower the motor to the desired position. See **Motor Angle Adjustment.**
- Move the Tilt/Run lever to the "Run Position". The motor is now locked in this position.

It is preferable to leave the motor in the run (down) position when it will not be used for a period of time. However, if circumstances make it necessary to leave the motor tilted, use the Tilt/Trail lock provided. See **Trailering.**

Shallow Water Operation

When operating in shallow waters, observe water pump indicator and proceed at slow speeds until deeper water is reached.

Note If an obstruction is hit, reduce the throttle immediately and stop the motor. Check the motor, propeller, stern brackets and tilt cylinder for possible damage.

If motor vibrates excessively after striking an underwater obstruction, it may indicate a bent or damaged propeller. Operate at slow speed. Your DEALER is equipped to check for propeller damage.

Note Operating motor with gearcase dragging on bottom will result in propeller wear. It may also cause sand to be forced into water pump which may cause damage to the pump.

POWER TRIM AND TILT MODELS

When operating in very shallow waters, the motor may be tilted slightly higher than normal trim range and operated at slow speeds. (Be sure the engine's water intake is in the water at all times and water is being discharged from the water pump indicator.) The motor should be lowered immediately when back in deep water.

MANUAL TILT MODEL

When operating in shallow waters, the motor may be tilted up to any desired running position and operated at slow speeds, see **Tilting - Manual Tilt Model.** Be sure the engine's water intake is in the water at all times and water is being discharged from the water pump indicator.

The motor can be operated, at slow speed, with the Tilt/Run lever in the "Tilt" position. This will allow the motor to tilt up and clear underwater obstructions. Before resuming normal running speeds, be sure to return the Tilt/Run lever to the "Run" position.

⚠ **Safety Warning: Do not operate motor in reverse with the Tilt/Run lever in the "Tilt" position as motor may tilt out of the water resulting in possible loss of control.**

Impact Damage

Impact damage can occur when moving in either a forward or reverse direction. This can occur because the water is not always free of hidden hazards. For example, a high speed collision with a stump or heavy log floating low in the water can transmit damaging loads to your boat or motor. These loads must be resisted by the combined strength of the motor and boat, together with the installer's care in attaching the motor to the boat.

A low speed impact when your boat is moving backwards can transmit very high loads to the motor and its steering system. For example, this loading can occur when the boat is in the water or on a trailer and it is backed into a fixed object like a pier or garage wall. If this contact occurs in a way that the boat's movement is stopped suddenly by the motor contacting the fixed object, the motor or steering system can be damaged.

Should you hit any object, stop immediately and examine your motor for loosening of motor attaching hardware and for damage to swivel and stern brackets (clamps, where applicable) and steering system parts. Examine the boat for possible structural damage. Tighten any loosened hardware and proceed slowly to shore. Before boating again, take your boat and motor to your DEALER so that it can be thoroughly inspected for possible damage.

⚠ **Safety Warning: Failure to inspect for damage may:**
- **Result in sudden loss of steering control**
- **Adversely affect your boat and motor's ability to resist subsequent high speed impacts.**

Salt Water Operation

Your motor is built for operation in either fresh or salt water. Fresh water internal flushing is recommended after use in salt, polluted or brackish water to prevent deposits from clogging cooling passages. Your local DEALER will assist you in securing the appropriate flushing device.

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. We recommend that motor exterior be rinsed with fresh water and wiped dry. See **External Finish**.

Operating in Freezing Weather

In freezing temperatures, keep the gearcase 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.

Prior to operation in freezing temperatures, check gearcase lubrication. If leakage is evident, gearcase seals may need attention. See your DEALER.

Note Any leakage of water into gearcase may result in freezing and damage to gearcase when motor is removed from water.

Operating in Weedy Water

Weeds on the propeller will cause motor to vibrate. Run at reduced throttle when weeds are thick. Reverse motor periodically to clear weeds from propeller. Stop motor, clear propeller and water intake completely of weeds before resuming speed in clear water. Check water pump indicator at intervals.

High Altitude Operation

The fuel calibration must be altered for operation at 900 m (3,000 feet) above sea level or higher.

See your DEALER for installation of High Altitude Performance Kit.

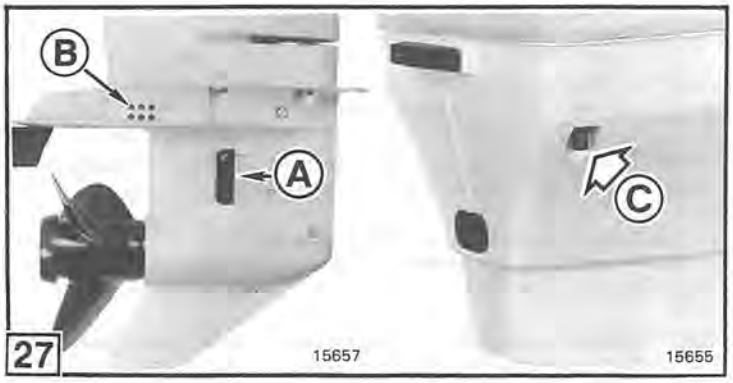
To maintain performance at high altitude, it may be necessary to replace the previously selected propeller with one of less pitch.

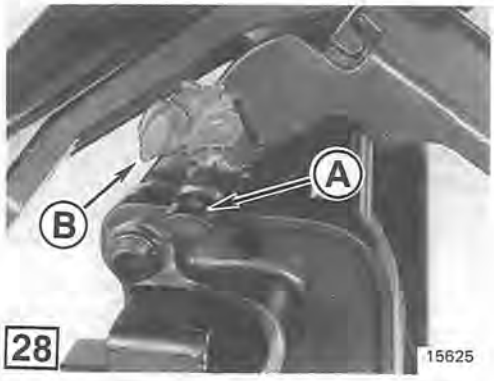
Note If a High Altitude Performance Kit is installed, the original carburetor parts must be installed before operating below 900 m (3,000 feet) above sea level. Serious powerhead damage could result if this is not done.

Dual Motor Maneuvering

When leaving or approaching the dock, or for any other close maneuvering at slow speed, start both engines. Leave the stand-by engine idling in NEUTRAL. Use the engine with the control nearest the operator to maneuver. The use of one control is very effective and more convenient. In the event that this engine stops, you can immediately go to the other engine which has been on stand-by.

Note Stand-by engine must be running when maneuvering or water may be forced back through the underwater exhaust outlet and cause serious damage to the powerhead.





27 Cooling System

Note Do not operate motor out of water even momentarily without use of a recommended Accessory Flush Kit. Water pump may be damaged or motor may overheat. Turn on water before starting motor.

This motor's cooling system is thermostatically and pressure controlled. Water enters the gearcase through intake screens Ⓐ and is pumped through the engine, then discharged at the rear of the gearcase Ⓑ.

When operating motor, the water intake screens Ⓐ must be completely submerged. Observe proper transom height and boat trim.

When engine is running, the water pump indicator Ⓒ should be discharging a steady stream of water. Check the indicator particularly when operating in weeds, mud, debris laden water, or at an extreme trim angle.

There is a warning horn in the remote control. If the engine overheats, the warning horn will sound and the S.L.O.W.™ overheat warning system will automatically limit engine speed to approximately 2000 RPM.

If the water pump indicator Ⓒ stops, becomes intermittent, or the warning horn sounds, reduce engine speed to an idle and:

- Shift motor into reverse and operate at a slow speed for about 10 seconds, then shift motor back into neutral. This could clear debris that is blocking the water intake screens.

If the water pump indicator Ⓒ is still not discharging a steady stream of water, STOP the engine.

- Clean the intake screens Ⓐ and the water pump indicator Ⓒ. Restart engine and run at idle.

If the water pump indicator still does not discharge steady stream of water, STOP the engine. Do not attempt to operate the motor. See your DEALER for service.

If a steady discharge is visible from the water pump indicator.

- Continue to run the engine at idle speed ONLY. Operate the engine until it cools to normal operating temperature and the warning horn stops.

If the warning horn does not stop sounding within two to three minutes, STOP the engine immediately or serious engine damage may occur.

Important After the engine has cooled and the warning horn stops sounding, the engine must be operated at idle speed to reset the S.L.O.W. ™ overheat warning system. The engine can now be operated above 2000 RPM.

Note Have your DEALER torque the cylinder head and exhaust cover screws if the engine overheats. If the engine continues to overheat, see your DEALER for service.

Note For continuous operation in waters containing excessive amounts of sand or silt, we recommend an OMC Accessory Chrome Plated Water Pump Kit. See your DEALER.

28 Trailering

We recommend your motor be trailered in its normal running position. If trailer does not provide adequate road clearance, a Trail Lock is provided to secure motor in full tilt position for trailering.

Note To prevent possible engine damage when trailering, secure the gearcase to boat transom or trailer.

⚠ **Safety Warning: Disconnect fuel line at motor whenever motor is not being used for any length of time. (Example: when trailering or docked.)**

- **If portable tank is used, coil fuel line on top of tank.**
- **If built-in tank is used, store end of fuel line as high above top of tank as possible. Failure to do so may result in fuel being siphoned from fuel tank into boat.**

Coil fuel line on top of tank when not in use. This will help protect fuel line and connector from damage and help prevent sand or dirt from entering connector.

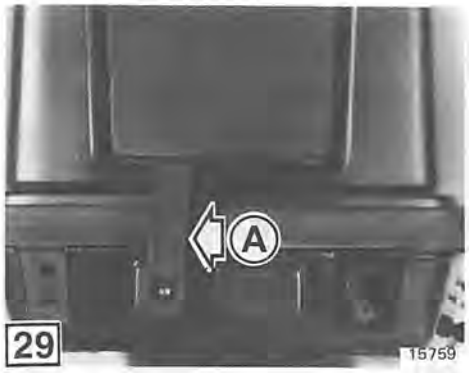
To engage Tilt/Trail lock:

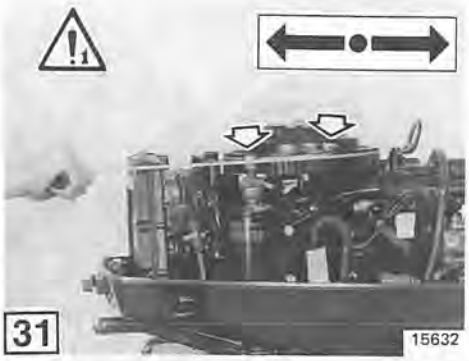
- Place motor in full tilt position. See **Tilting.**
- Push trail lock to the down position. A detent will hold the trail lock in the trailering Ⓐ or the stow Ⓑ position.
- Lower motor so that the trail lock rests against the stern brackets. **Manual tilt models** - Be sure to place Tilt/Run lever in the ⊨ "RUN" position

To disengage Tilt/Trail lock:

- Place motor in full tilt position.
- Move trail lock up into stow position Ⓑ . Place motor in full tilt position before launching. **Manual tilt models** - Be sure to place Tilt/Run lever in the ⊨ "RUN" position.

Note To prevent possible damage to motor or transom when trailering, secure the lower unit to boat transom or trailer.





29 30 Removing Engine Cover

To remove engine cover turn front and rear locking levers 90°. Lift cover off. Reinstall cover assembly in reverse order, making certain rubber seals fit properly between upper and lower engine covers before turning locking levers.

Do not remove or install the engine cover while engine is running. The engine 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.

A. Front Locking Lever - Released

B. Rear Locking Lever - Released

31 Emergency Starting

⚠ **Safety Warning:**

- **Do not use jumper cables and a booster battery to start engine. Do not charge a battery in the boat with an external charger. Fumes vented during either operation can lead to an explosion.**

⚠
- **When using Emergency Starting procedure, the start-in-gear protection provided by the remote control is inoperative. Make sure control handle is in neutral position to prevent sudden propulsion when engine starts. If available, someone should be at steering wheel.**

- **When releasing filler cap on portable tank, gasoline vapors (and possible liquid fuel if tank is full) will be released. Gasoline is extremely flammable and highly explosive under certain conditions. Do not smoke or allow open flames or spark near the boat when the cap is removed from the fuel tank.**

- **To prevent possible fire and explosion, manual primer valve lever must be in RUN position except for emergency starting. With lever in MANUAL START position and a pressurized fuel tank connected, leakage could occur through the carburetor air inlet opening.**

- **To prevent bodily contact with moving parts, do not turn flywheel by hand. Use starter cord only.**

- **Do not touch high voltage ignition coils or spark plug leads when motor is being started or when running. Shock can cause serious personal injury under certain conditions.**

If the battery does not have sufficient charge to operate the electric starter, the motor can be started manually. Proceed as follows:

- Place motor in normal running position.
- Slide fuel line connector onto motor coupling unit until locking lever snaps into position.
- Attach the lanyard to the Emergency Ignition Cut-Off Switch on the remote control.
- Move control handle to NEUTRAL position.
- Move fast idle lever to best START position.

COLD MOTOR

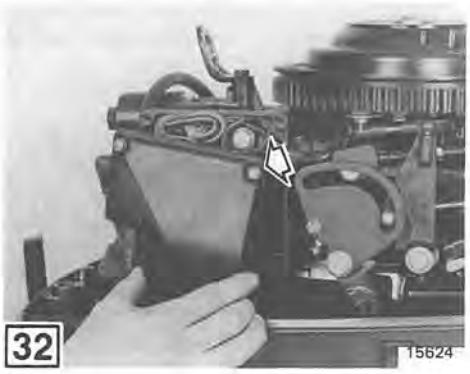
- Place starter key in OFF position.
- Remove engine cover. See **Removing Engine Cover.**
- If using the OMC portable 6-gallon gas tank slowly release filler cap on the tank to relieve the pressure in the tank. Close cap.
- Rotate the MANUAL PRIMER VALVE to the MANUAL START position.
- Squeeze the fuel line primer bulb once and release.
- Rotate the MANUAL PRIMER VALVE lever to the RUN position.
- Turn starter key to ON position ONLY to prevent accidental engagement of starter motor.

31
- Using the emergency starting cord, place the knot on end of cord in the notch of the pulley on top of the flywheel. Wrap cord around pulley clockwise as illustrated, making sure starter cord knot is clear of starter pinion.
- Pull forcibly on emergency starting cord to start the motor.
- After starting, allow motor to run 2 minutes at less than 3000 RPM. Reduce motor speed by moving fast idle lever down to RUN position and secure latch (speeds above 3000 RPM in neutral can damage the engine).
- DO NOT attempt to replace engine cover after motor has started. Attach emergency ignition cutoff switch lanyard to your clothing and head to nearest boat landing for service and replacement of engine cover.

WARM MOTOR

- Follow cold motor procedure except warm motor does not normally require primer operation.
- Place FAST IDLE lever in fast idle position to avoid high RPM. If engine fails to start, repeat cold motor procedure.
- If your electrical system is in operating order, the alternator should recharge your battery, if not, have the electrical system checked by your DEALER.

Note To avoid possible powerhead damage, do not exceed 3000 RPM in neutral.



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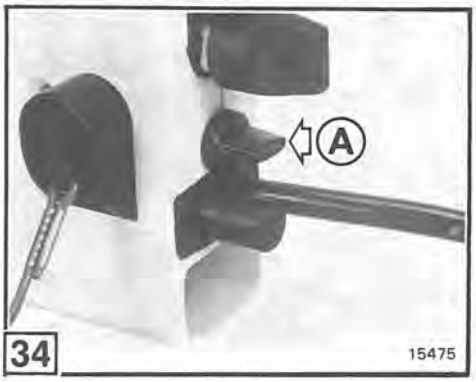

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32 33 Trouble Check Chart

Important Remove retaining screws and cover to allow access to fuse.

Starter Motor Will Not Operate, check for:

- Shift handle in NEUTRAL
- Battery and electrical connections
- 33 Check 20 A fuse at terminal strip on starboard side of engine. Always carry spare fuses. See **Specifications**.

Motor Will Not Start, check for:

- Lanyard attached to emergency ignition cut-off switch.
- Fast idle lever in START position.
- Fuel in tank
- Fuel line connector properly attached
- Fuel system primed (squeeze primer bulb)
- Portable fuel tank resting on fuel line
- Fuel line clear and not kinked
- Cold motor: Engine not primed sufficiently
- Warm motor: Engine over-primed or flooded (Do not prime motor, disconnect fuel line at motor, and crank until cleared).
- Fuel filter obstructed
- Water in fuel system
- No spark:
  Loose spark plug leads
  Spark plugs carboned, burned, or wet
- Incorrect spark plug gap. See **Specifications.**
- Ignition system. (See your DEALER)
- Loose spark plugs, causing poor compression. See **Specifications** for recommended torque.
- Recheck starting instructions.

Power Trim/Tilt Inoperative, check for:

- Check fluid level. See **Lubrication.**
- Manual release screw tightened securely
- 33 Check 20 A fuse at terminal strip. See **Specifications.**

Motor Will Not Idle Properly, check for:

- Damaged spark plugs (Insulator cracked)
- Improper fuel/oil mixture
- Primer in run position
- Vent screw on fuel tank closed

Motor Vibrates Excessively at idle or low speed, check for:

- Bent or broken propeller
- Carburetor slow speed adjustment improperly set
- Loose steering friction screw
- Weeds on propeller

Motor Loses Power, check for:

- Damaged spark plugs (Insulator cracked)
- Fuel filter partially restricted or fuel contaminated
- Obstruction at water intake. Cooling system not operating properly (see **Cooling System)**

Motor Vibrates Excessively, check for:

- Bent or broken propeller
- Weeds on propeller

Motor Runs, But Makes Little or No Progress, check for:

- Bent or broken propeller
- Weeds on propeller

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

Maintenance

⚠ **Safety Warning: Avoid accidental start up. Place remote control handle in neutral and remove all spark plug leads from spark plugs before performing any maintenance on motor.**

Carburetor Adjustment

High and Low Speed

Fuel ratio calibration is maintained through use of fixed high and low speed jets. No adjustment is required under normal conditions.

34 Throttle Friction Adjusting Knob - Remote Control

This knob may be adjusted so that throttle setting will not wander while you are underway.

To adjust, start engine and move control handle into throttle range. While you are underway, turn adjustment knob Ⓐ as required for proper friction adjustment.

The friction device is only effective in the forward throttle range.

Adjustable Stern Brackets

The adjustable stern brackets provided with your motor allow you to position the motor on the transom to obtain the best possible performance. Proper height adjustment of the stern brackets can, depending upon boat size and weight, increase the top speed performance. If it was necessary to use the alternate location holes when mounting motor to transom, the stern brackets are no longer adjustable. See **"Outboard Motor Installation Guidelines,"** OMC Part Number 507564. Consult your DEALER for the proper setting on your boat.

Idle Speed Adjustment

The correct procedure for idle speed adjustment must be carefully performed to ensure proper engine performance and remote control operation, see your DEALER.

35 Motor Angle Adjustment - Manual Tilt Models

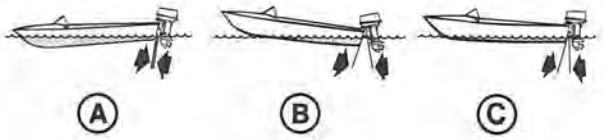
The vertical angle of the motor in relation to the boat must be adjusted for best performance. The motor should be perpendicular to the water when the boat is underway. This adjustment can only be determined by observing boat operation at full speed. A boat with a planing type hull should ride with the bow slightly out of the water. Motor angle should be changed if boat loading results in improper motor angle. See **Tilting - Manual Tilt Model.**

The stern bracket has three positions for adjusting the motors angle when in the full DOWN position. The motor is shipped with the angle adjusting rod in the first hole. This will be the best position for most boating applications. If it becomes necessary to increase the angle of the motor when in the full down position, then:

- Place motor in full tilt position and engage trailering lock, see **Trailering**. Be sure Tilt/Run lever is returned to the "RUN" position.
- Remove one of the ¾" locknuts Ⓐ from the angle adjusting rod.
- Remove angle adjusting rod and place in desired position. Install and securely tighten locknut Ⓐ .
- Each time one of the locknuts Ⓐ are removed, mark it with a screwdriver or other suitable tool. This will help identify the number of times this nut has been removed.

Important When a locknut Ⓐ is removed three times, it must be replaced. See your DEALER. Replace only with *OMC* specified part or its equivalent.

⚠ **Safety Warning: If engine is tilted forward so as to cause plowing (see A), swamping may occur in rough water. If engine is tilted aft so as to cause porpoising (see B), steering may be erratic or unstable. See correct angle adjustment (see C).**



CO2389

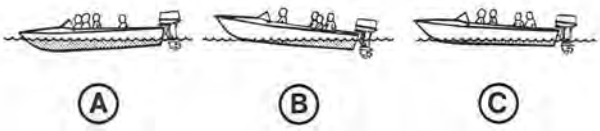
Incorrect CAUSES BOAT TO "PLOW"

Incorrect CAUSES BOAT TO "PORPOISE"

Correct GIVES MAXIMUM PERFORMANCE

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.

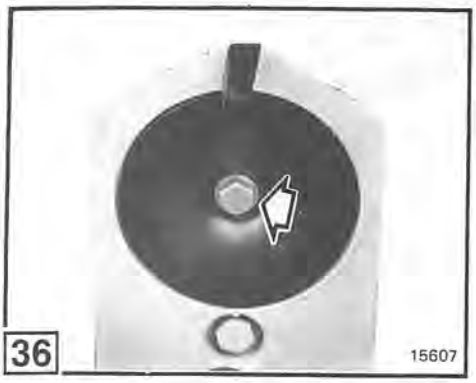


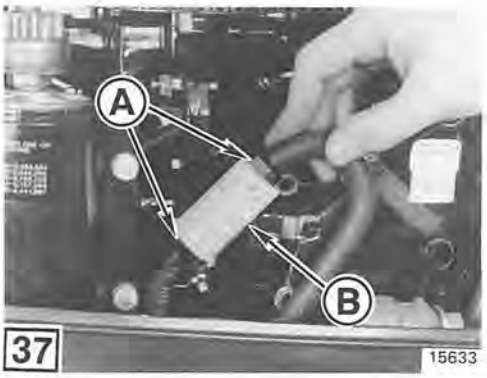
CO2390

Incorrect OVERLOAD FORWARD CAUSES BOAT TO "PLOW"

Incorrect OVERLOAD AFT CAUSES BOAT TO "SQUAT"

Correct BALANCED LOAD GIVES MAXIMUM PERFORMANCE





Trim Tab Adjustment

⚠ **Safety Warning: Improper trim tab adjustment can cause difficult steering.**

An adjustable trim tab is provided to compensate for propeller torque. The adjustable trim tab allows steering effort to be balanced when turning in either direction. Your DEALER has adjusted the trim tab for average boating conditions and the propeller provided. If further adjustment is necessary, proceed as follows:

- With a firm grip on the steering wheel and weight in the boat evenly distributed, run the boat at full throttle in a straight line. Do this in an area where current and wind will not be a factor.
- Turn the steering wheel to determine the direction that requires the least amount of steering effort.
- Loosen trim tab screw.
- If less steering effort is required in port turn, move the trim tab slightly to port.
- If less steering effort is required in a starboard turn, move the trim tab slightly to starboard.
- Retighten the trim tab screws and recheck the adjustment.

Repeat the above procedure as necessary until the steering effort is equal in both directions.

After adjustment is complete, torque the trim tab adjusting screw to 14-16 N·m (10-12 ft. lbs.).

Twin engines follow the same procedure as a single engine except both trim tabs should be adjusted the same amount.

Fuel Filter Replacement

37 The fuel filter is located in the fuel hose between the motor's fuel connector and the VRO pump. Replace the filter at the end of the ten hour break-in period as most dirt and impurities from a new fuel system would be present at this time.

Change the filter seasonally or as required to ensure best motor performance. See **Specifications.**

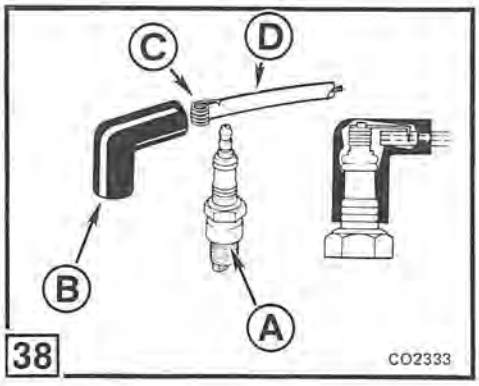
⚠ **Safety Warning: Gasoline is extremely flammable and highly explosive under certain conditions. Do not smoke or allow open flames or sparks near the motor when changing fuel filter.**

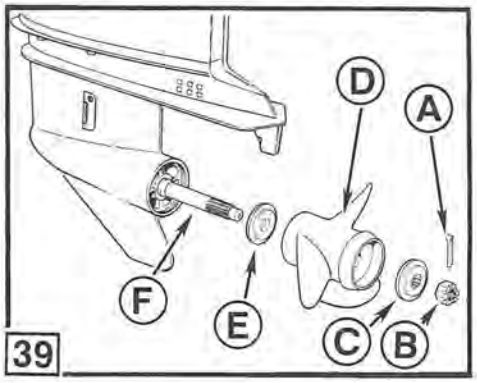
To change fuel filter proceed as follows:

- If portable fuel tank is used, disconnect the fuel hose from the motor before changing filter.
- Remove engine cover.
- Release the two hose clamps that secure the filter to the fuel hose. A partial twist of the clamp lock will release the clamp.
- Pull filter from hose and discard filter.
- Install new filter and secure hose clamps. (Use new clamps if necessary.)
- Clean up any spilled fuel and check for leaks by connecting fuel hose to motor and squeezing primer bulb until definite resistance is felt in bulb.
- Replace motor cover.

⚠ **Safety Warning: Failure to inspect your work could allow fuel leakage to go undetected. This could become a fire or explosion hazard.**

A. Hose Clamps
B. Fuel Filter





38 Spark Plug Inspection and Replacement

See **Specifications** for the recommended spark plug and gap for your operating conditions.

To remove spark plug, 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 and gasket, finger tight plus ¼ turn with wrench. See **Specifications** for spark plug wrench size and torque.

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

⚠ **Safety Warning: Avoid abusive handling which could crack ceramic portion of spark plug. Damaged spark plugs can emit sparks which could ignite fuel vapors under the engine cover.**

When reinstalling the rubber cover on the spark plug or the ignition coil, apply approximately 1 cc of *OMC Triple-Guard®* grease or equivalent inside rubber cover. This will help prevent corrosion of the spring terminal onto the spark plug or ignition coil terminal.

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

A. Spark Plug **B.** Cover **C.** Spring **D.** Lead

Propeller Care

Unusual or excessive vibration may indicate a bent or unbalanced propeller. Avoid or limit operation under these conditions. Carry a spare propeller and replace the damaged propeller as soon as practical. See your DEALER.

39 Propeller Replacement/Installation

To remove propeller:

- Remove cotter pin propeller nut. See **Specifications** for propeller nut socket wrench size.
- Remove thrust bushing, spacer and propeller.

To install propeller:

- Apply *OMC Triple-Guard®* grease to entire length of the propeller shaft.
- Install large propeller thrust bushing onto propeller shaft with shoulder of thrust bushing facing aft (rear).
- Install propeller onto propeller shaft.
- Propeller should seat onto thrust bushing.
- Install the spacer, engaging the propeller shaft splines.
- Install and tighten the propeller nut to a torque of 14 N·m (120 in. lbs.). Continue to tighten to align next cotter pin hole.

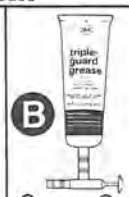
After propeller is installed, the propeller shaft should turn freely (engine in neutral). Install and secure cotter pin (use new pin if necessary).

A. Cotter Pin
B. Propeller Nut
C. Spacer
D. Propeller
E. Thrust Bushing
F. Propeller Shaft

Propeller Hub Replacement

A rubber bushing in the propeller hub absorbs shock and minimizes the chances of damaging the propeller or the outboard motor. However, if the bushing should become damaged or slips, it can be easily replaced by your DEALER or at a propeller station.

Lubrication

Types of Lubricant	Contact your DEALER for OMC Lubricants			
OMC Triple-Guard® Grease		OMC Hi-Vis® Gearcase Lube	General Electric Versilube	OMC® Power Trim/Tilt Fluid
				
A Tube	B Grease Gun	C	D	E
Lubrication Picture Symbols				

DR2411 Eng

Frequency of Lubrication †	
TYPE OF USE	FREQUENCY
Fresh water	Every 60 days
Salt water	Every 30 days
Storage of 30 days or longer	Before placing in storage

† Some areas may require more frequent lubrication

DR2509 ENG

Figure	Lubrication Point	Lubricant
1	*Gearcase	C
2	* Power Trim/Tilt Reservoir	E
3	*Steering System Lubrication	A
4	Starter Pinion Shaft - Coat upper section and screw areas of shaft	D
5	Trailering Lock (port and starboard), Swivel Bracket	B
6	Tilt Tube, Upper Tilt Cylinder Rod	B A
7	Shift and Throttle Shaft Fittings	A
8	Carburetor Linkage, Roller (Cam Follower)	A
9	Control Shaft Bushings and Control Lever Bearing	A

*Recommended Dealer Performed Service.

1 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.

With engine in vertical position, remove oil drain/fill plug ① and oil level plug ② .

Allow lubricant to drain completely.

To refill, place tube of *OMC Hi-Vis®* gearcase lube or equivalent in drain/fill hole ① . If *OMC Hi-Vis* gearcase lube is not available, *OMC® Premium Blend Gearcase Lube* or equivalent can be used. Fill until lubricant appears at oil level hole ② . See **Specifications** for gearcase capacity.

Install oil level plug ② before removing lubricant tube from drain/fill hole.

Drain/fill plug can now be installed without loss of lubricant.

Tighten both plugs securely.

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.

2 Trim/Tilt Unit

The oil level in the Trim/Tilt unit must be checked every 100 hours of engine operation or once each season whichever occurs first. This operation should be performed by your DEALER.

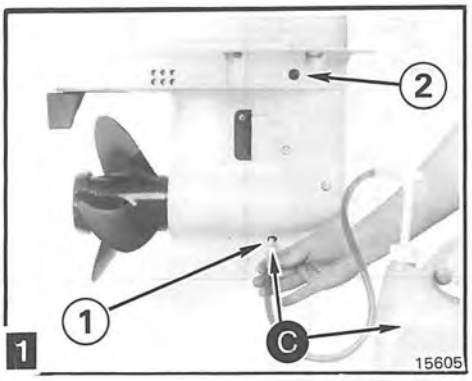
If you choose to perform this operation, you MUST obtain an *OMC* Service Manual. See your DEALER or use the **Service Literature Order Form** located in this manual.

Important Proper oil level must be maintained to ensure proper operation of the impact protection built into this unit.

Steering System Lubrication

The installer was instructed to grease the steering cable ram during installation. Once the engine is put into use, periodic regreasing with *OMC Triple-Guard®* grease is required as specified in the **Frequency of Lubrication Chart.**

⚠ **Safety Warning: Failure to regrease as recommended could result in steering system corrosion. Corrosion may affect steering effort making operator control difficult.**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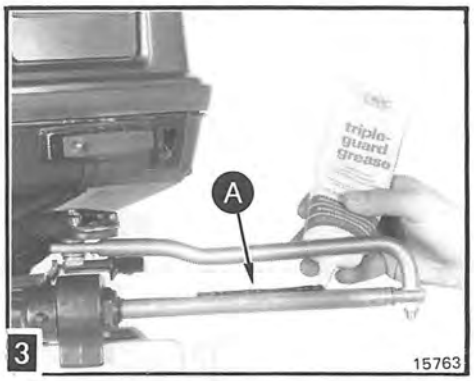
triple-guard grease
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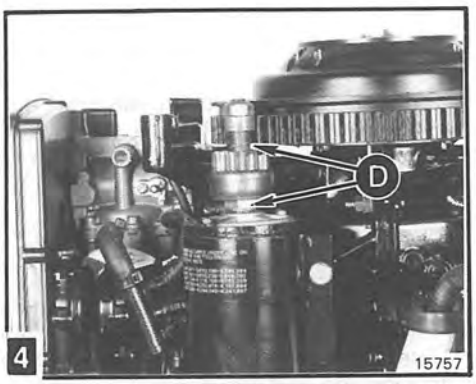
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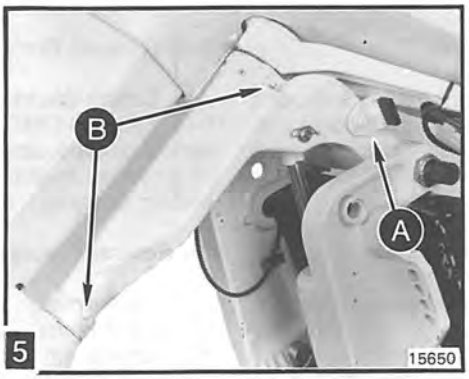
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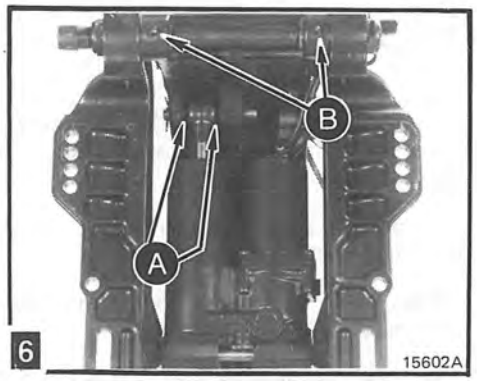
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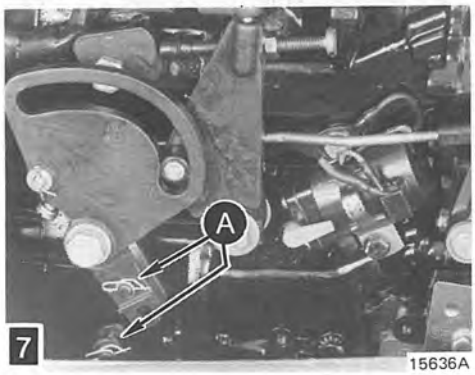
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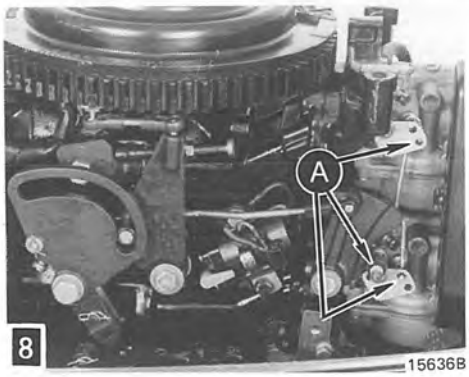
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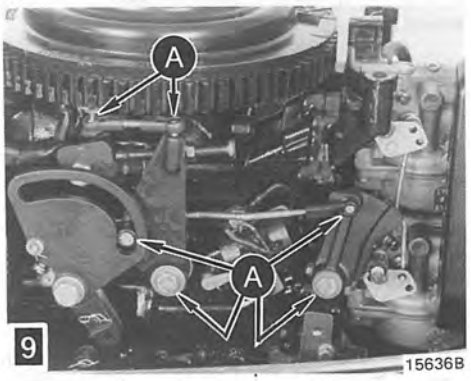
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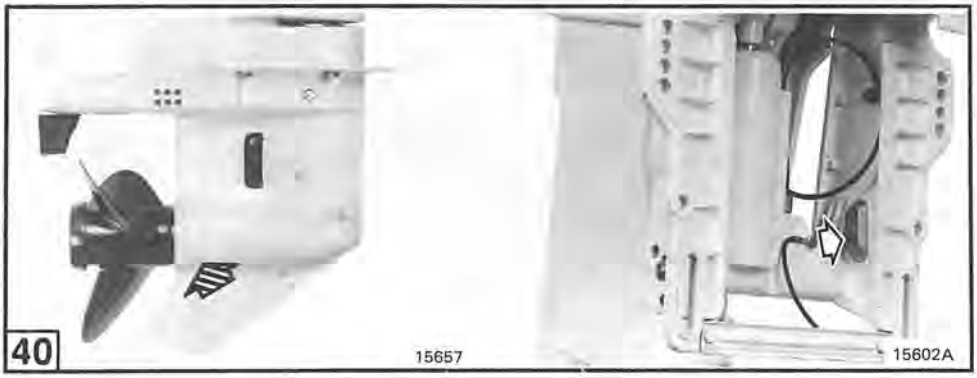


40 Anti-Corrosion Protection

Your motor is equipped with anti-corrosion anodes. The anodes protect your motor from galvanic corrosion. Galvanic corrosion may occur in fresh water or salt water, however, salt water usage will accelerate corrosion.

Erosion or disintegration of the anodes indicates they are performing their function.

Periodically inspect the condition of the anodes and replace if necessary.

Replace the anodes before they are completely eroded or corrosion to motor will increase. See your DEALER for replacement anodes.

Note Never paint or cover the anode with any coating. If you do, corrosion protection from the anode will be lost.

Do not use either copper or graphite base paints on boat bottom. These types could cause harmful galvanic corrosion to the motor. Anti-fouling paints containing tin (TBTA or TBTF compound) as an active material are acceptable.

Condition of Boat Bottom

The condition of the boat bottom has much to do with performance. A bottom covered with marine growth will reduce boat speed. It is therefore strongly suggested that a periodic cleaning of the boat bottom be done, the number of cleanings per season depends on the type of water in which the boat is run. See your DEALER for anti-fouling boat bottom paint that does not contain copper or graphite, but is suitable for your area.

External Finish

Your motor has a baked enamel finish designed for use in either fresh or salt water.

When used in fresh water:

- Periodically wash the entire motor with mild soap and water. Apply a coat of automotive wax.
- Between cleanings, occasionally wipe down motor with a clean dry cloth to maintain the luster.

When used in salt water:

- After each use, wash the entire motor with fresh water and wipe dry.
- As required, wash the entire motor with mild soap and water. Apply a fresh coat of automotive wax.

Replacement Parts

⚠ **Safety Warning: When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or passengers.**

Off Season Storage

Your warranty does not cover engine failures caused by neglect. It is important that you protect your engine with a well planned storage pattern. The off season storage of your outboard motor is important to its long life and trouble free operation. Temperature and humidity changes while in storage can cause corrosion of piston rings, cylinder walls, and bearing surfaces that are not properly protected. It is to your advantage to protect your motor as soon as possible before storage. We recommend that your DEALER prepare your motor for off season storage. Fuel system requires periodic cleaning and adjustment to maintain top performance. This is the best time to have your DEALER perform an engine tune-up.

If you desire to prepare you own engine for storage, proceed as follows:

See your DEALER for *OMC 2+4®* fuel conditioner and *OMC Storage Fogging Oil.*

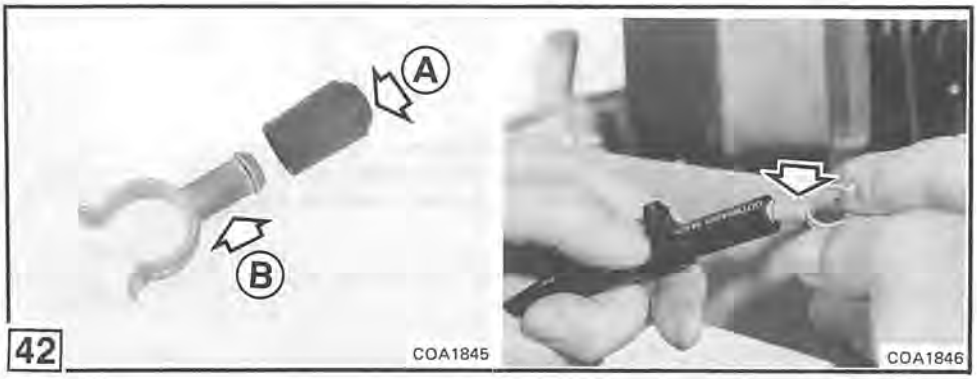
- Use *OMC 2+4* fuel conditioner or equivalent in your fuel mixture to stabilize the gasoline. It eliminates need for draining fuel for up to one year of storage. Add 8 ml of *OMC 2+4* for every litre (one ounce for every gallon) of gasoline. Then operate motor in fresh water for a few minutes to allow fuel mixed with *OMC 2+4* to enter carburetor.

Note Do not operate motor out of water even momentarily. Water pump may be damaged or motor may overheat.

- Remove engine cover. See **Removing Engine Cover.**
- Move shift lever to NEUTRAL position.
- Start engine.

⚠ **Safety Warning: Do not touch high voltage ignition coils or spark plug leads when motor is being started or when running. Shock can cause serious personal injury under certain conditions.**

⚠ **Safety Warning: Stay clear of flywheel after motor starts and be careful of loose clothing and hair which may become entangled in motor.**



41 • While engine is running at one-half throttle, disconnect fuel line at motor. Rapidly inject *OMC Storage Fogging Oil,* or equivalent, into the carburetor air intake(s) until motor smokes excessively.

• Stop engine.

• Remove spark plugs. Inject *OMC Storage Fogging Oil,* or equivalent, into the spark plug holes. Crank engine clockwise through a number of revolutions. This will lubricate and protect internal parts of powerhead while motor is in storage.

• Check spark plugs. Clean or replace if necessary. Refer to **Spark Plug Inspection and Replacement.**

• Install spark plugs and tighten as specified.

⚠ **Safety Warning: Leave spark plug leads detached from spark plugs to avoid accidentally starting motor.**

⚠ **Safety Warning: To prevent escape of liquid or vapors from tank which could be accidentally ignited, do the following:**

• **Portable Fuel Tank with Gauge - Disconnect fuel line from motor and tank.**

• **Portable Fuel Tank without Gauge - Disconnect fuel line from motor and close vent screw on filler cap.**

• **Store tank in a well-ventilated area away from heat or open flame (such as a pilot light).**

• Coil fuel line on top of portable tank when not in use. This will help protect fuel line and connectors from damage and help prevent sand or dirt from entering connectors.

• Remove battery and check condition. Charge, if required, following manufacturer's recommendations. Clean battery thoroughly. Store in a cool, dry place and not in direct sunlight. Check water level and charge periodically during storage.

• Motor may be left on boat or placed on a stand.

Note Store motor in the normal running (vertical) position to ensure proper drainage of the motor's cooling system.

• If motor is removed from boat, store the special locking type fasteners which attach the remote steering, shift, and throttle control systems to the motor to prevent their being substituted. When reinstalling motor on boat, make sure the control systems are reattached to the motor in their original positions and fasteners tightened as specified in the manufacturer's installation instructions.

⚠ **Safety Warning: Failure to carefully reattach control systems with original specified hardware may result in sudden unexpected loss of control of the boat at some later time.**

42 If motor is removed from boat, the VRO oil hose must be disconnected from the motor. After disconnecting the oil hose, cap the oil fitting on the motor and plug the oil hose from the VRO tank with the cap and plug provided. The cap and cap holder/plug are located on the fuel line near the VRO pump.

A. Cap **B.** Cap Holder/Plug

• See **Fuel Filter Replacement** If *OMC 2 + 4®* fuel conditioner has not been used in fuel mix, remove fuel tank drain screw (portable tank with gauge) and drain thoroughly. Replace drain screw securely.

• Remove propeller and have it checked by your DEALER. A slightly bent propeller blade may not be noticed on casual observation but will affect the performance of your motor. Clean the propeller shaft and lubricate with *OMC Triple-Guard®* grease. See **Propeller Replacement.**

• Slowly crank engine clockwise several times to drain water from the water pump.

• Drain and refill gearcase. Lubricate motor. See **Lubrication.**

• Touch up paint. See your DEALER.

• Clean fuel tank and inspect for rust or leakage in metal body. Replace if needed.

• Inspect fuel hose and primer bulb for leakage.

• Give motor visual check and make sure:

screws and nuts are tight (torque as specified in Service Manual),

spark plug boots, starter solenoid terminal boot, and connector sleeves are in place,

electrical leads are clamped in place to prevent contact with other moving motor parts,

deteriorated (cut, cracked, abraded) or damaged parts such as wires, coils, boots, sleeves are replaced,

deteriorated or damaged fuel system parts: hoses, clamps, fuel primer bulb, and gaskets are replaced.

• Replace engine cover.

• Wash exterior of motor with mild soap and water. Apply a coat of automotive wax.

Preseason Service

Before returning motor to service, proceed as follows:

- Remove the propeller and check the gearcase for signs of leakage. See **Propeller Replacement/Installation.** If a leak is found, gearcase seals may need attention. See your DEALER.

Note Damaged seals may allow water to enter the gearcase, leading to possible gearcase failure.

- Have your DEALER check lubricant level in the power trim/tilt reservoir. See **Lubrication.**
- Battery - check water level and charge.
- Install and connect battery.
- Make sure spark plug boots are in place on spark plugs.

⚠ **Safety Warning: Do not use jumper cables and a booster battery to start engine. Do not charge a battery in the boat with an external charger. Fumes vented during either operation can lead to an explosion.**

It is IMPORTANT that the battery connections are correct: the (-) negative, Black battery cable must be attached to the (-) negative terminal on the battery and the (+) positive, Red cable must be attached to the (+) positive terminal.

Note If the cables are reversed, the charging unit will be immediately damaged. DO NOT attempt to connect or disconnect any part of the electrical circuit while the motor is running.

Connect battery cables, making sure clamps are tight on posts to ensure good contact. Apply a coat of petroleum jelly to exposed area of the battery posts and clamp connectors to retard corrosion.

High resistance in the charging circuit can seriously affect the electrical system. We recommend that you make periodic checks to ensure clean, tight connections throughout the electrical system.

⚠ **Safety Warning: Failure to ensure clean, tight electrical connections may result in sparks that can ignite fuel vapors under the engine cover.**

If motor was removed from the boat:

- Make sure the control systems are reattached to the motor in their original positions and the original specified fasteners are tightened as specified in the manufacturer's installation instructions.

⚠ **Safety Warning: Failure to carefully reattach control systems with original specified hardware may result in sudden unexpected loss of control of the boat at some later time.**

4

- If the oil hose was disconnected from the motor, the oil hose must be purged of air. See **VRO Oil Hose Installation.** Return the oil fitting cap and cap holder/plug to their storage position.

3

- If the oil hose has been disconnected and reconnected to the motor, it is recommended that lubricant be mixed with the gasoline at a 100:1 (1% oil) fuel/oil ratio, see **Fuel Mixing Instructions.** Before using unmixed gasoline, check to see that the level in the oil tank has changed indicating that oil is being used. Refer to **Filling VRO Oil Tank** for marking oil level.
- After starting, check to see that a steady stream of water is being discharged from the water pump indicator. This indicates proper water pump operation.

Submerged Motor

Motor Dropped Overboard

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

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.

Note If service is not readily available, the motor should be resubmerged immediately in fresh water to avoid exposure to the atmosphere. Make arrangements to have it serviced with the least possible delay.

Dealer Service

When away from home and in need of an authorized DEALER to service your OMC product, consult the local telephone directory. If no listing is available in the U.S. (except Alaska and Hawaii) call 800-255-2550.

This inspection will be performed at local DEALER rates and paid for by the owner. After the DEALER 20-hour check-up, your unit should be taken to an authorized DEALER every 6 months or 100 hours of operation, whichever occurs first.

20 Hour Check

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

20 Hour Check Includes.

- Drain, flush and refill gearcase. See **Lubrication.**
- Torque cylinder head and spark plugs
- Adjust carburetor
- Check propeller
- Check timing (where applicable) and ignition
- 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.

Warranty Service

Warranty

The warranty covering this product is located at the end of this handbook. Read your warranty carefully to understand the terms and conditions that apply to your particular area.

To make a claim under warranty, contact the authorized DEALER from whom the outboard motor was originally purchased, or the nearest authorized DEALER. Remember, your outboard motor must be delivered to an authorized DEALER within the warranty period, and all warranty work must be performed by an authorized DEALER. Proof of purchase may be required by the DEALER to substantiate any warranty claim

Owner's Responsibility

See your DEALER for proper maintenance and care of your outboard motor. Normal maintenance service and replacement of service items are the owner's responsibility. Replacement of service items such as spark plugs, water pumps, propellers, clutch parts (where applicable), and belts are not considered defects in material or workmanship within the terms of the warranty.

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 to piston ring, or cylinder, or water pump.

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 whichare 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 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 delivering it 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.

Replacement of anode(s).

Maintenance Schedule Chart

Service Point	Frequency †			See Page
	First 10 Hours	First 20 Hours	Every 100 Hours or Once every season	
Fuel Filter	*		*	20
Gearcase	•	OMC SERVICE	OMC SERVICE	22
Cylinder Head Screws	•	OMC SERVICE	OMC SERVICE	16
Carburetor	•	OMC SERVICE	OMC SERVICE	18
Propeller	•	OMC SERVICE	OMC SERVICE	21,24
Timing & Ignition	•	OMC SERVICE	OMC SERVICE	•
Lubrication Points	•	•	See Lubrication Chart	22
Spark Plugs	•	OMC SERVICE	*	21
Engine Tune-Up	•	•	OMC SERVICE	•
Motor Adjustments	•	*	*	18

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† Severe usage may require more frequent service. See your DEALER.

• Not applicable

* Owner performed service

OMC SERVICE Recommended DEALER performed service.

Symbols

Certain symbols or combinations of symbols may appear on your new outboard motor or on its accessories. It is very important that you understand their meaning or purpose. If any symbol is not clearly understood, see your DEALER.

"Safety Warning" Symbols

Means risk of SERIOUS injury is present. Follow instructions in the Owner's/Operator's Manual before using motor or accessory.

Means place shift control in NEUTRAL before starting motor. Follow instructions in Owner's/Operator's Manual before starting motor.

Indicates that ELECTRICITY of more than 50 volts is present.

Indicates that contents are under pressure.

Identifies poisonous material.

Indicates a potential fire hazard.

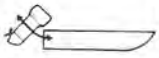
"Position Indicator" Symbols

Indicates upward movement. Example: While boat is at planing speed, activating trim switch to ⓓ raises the bow of the boat.

Indicates downward movement. Example: While boat is at planing speed, activating trim switch to ⓓ lowers the bow of the boat.

Indicates gear shift control positions. FORWARD, NEUTRAL and REVERSE.

Indicates a continuous regulating function. Example: Moving engine speed control in direction of increasing symbol width will continuously increase engine speed.



Identifies TILT/RUN (or REVERSE LOCK) control lever position that allows motor to be raised (or tilted) from the water.

Identifies TILT/RUN (or REVERSE LOCK) control lever position that engages REVERSE LOCK mechanism. Motor must be in normal running position to engage lock.

Identifies the priming device or the priming position. Pump that provides starting fuel.

Identifies the PRIME OFF position of the control knob after engine warm-up, and primer function is no longer required.

Indicates position of throttle control device during starting. May also identify STARTING control.

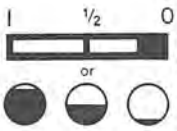
"Condition" Symbols

Identifies the meter which indicates accumulative running hours of engine.

Identifies the meter which indicates battery voltage, or amperage.

Identifies the meter which indicates engine speed expressed in revolutions per minute.

Identifies battery or a meter which indicates status of battery-generator charging system.



Indicates the amount of liquid in tank.

Identifies the meter which indicates engine coolant pressure.

Identifies the meter which indicates engine coolant temperature.

"Functional Description" Symbols

FILTER: Identifies a device which removes contaminants from fuel.

Identifies the EMERGENCY IGNITION CUT-OFF SWITCH. Emergency engine stop.

FUSE: Identifies a device which protects the electrical system from overload.

Identifies the negative ground or negative voltage connection.

CHOKE control.

Identifies a VALVE used to control the flow of liquid or gas.

Identifies the STOP SWITCH. It may also identify STOP position of the throttle control.

Identifies the operating device for starting the motor.

Identifies the location of the alternating current source.

Identifies the device used to LATCH or UNLATCH the engine cover.

FUEL SHUT OFF identifies the device used to cut off the fuel supply to the engine.

Identifies control used to fill or prime fuel system.

"Instructional" Symbols

Indicates GASOLINE is to be used or GASOLINE is present.

Indicates OIL is to be used or OIL is present.

Means read your Owner's/ Operator's Manual before operating the product. It contains information or instructions vital for operation of product.

Indicates areas to be lubricated.

Identifies KEROSENE/OIL mixture ratio for 2-stroke engines. Indicates 30 parts of KEROSENE are to be mixed with 1 part of OIL.

Indicates the GASOLINE/OIL mixture ratio for certain 2-stroke engines. Indicates 50 parts of GASOLINE are to be mixed with 1 part OIL.

Indicates the GASOLINE/OIL mixture ratio for certain 2-stroke engines. Indicates 100 parts of GASOLINE are to be mixed with 1 part OIL.