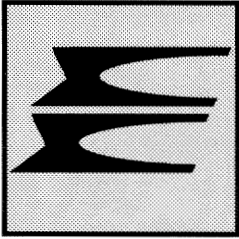
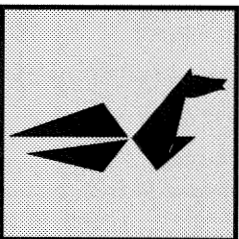


OMC



OMC



OPERATION & MAINTENANCE MANUAL



28066

Recommended Lubricant

Use *Evinrude*[®] or *Johnson*[®] *Outboard Lubricant* or *OMC*[®] *2-Cycle Motor Oil*, which are *NMMA*-certified for service *TC-W II*. These lubricants are formulated to give best engine performance with least combustion chamber deposits, least piston varnish, maximum spark plug life, and best lubrication.

If *Evinrude* or *Johnson Outboard Lubricant* or *OMC 2-Cycle Motor Oil* is not available, another *NMMA*-certified *TC-W II* lubricant may be used. Look for the certification information on the container label. Always keep an ample supply of the recommended lubricant on hand.

Note Failure to use a *TC-W II* certified lubricant could void your warranty.

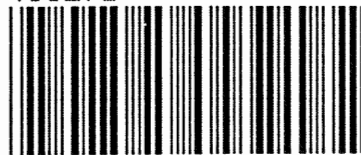
Refer to the **Fuel and Oil** section of this manual before operating this motor. If you have any questions, see your DEALER.

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.

433276



Models 9.9/15

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Printed in USA

Table of Contents

About This Manual	1
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General Information

Maximum Boat Horsepower	2
Boating Responsibilities	2
Basic Boating Safety Rules	2
Owner's Identification Card	2
Propeller Selection	2
Insurance	2
Stolen Motors	2
Model and Serial Number	2
Motor Installation	2
Specifications	3
Features/Quick Reference Index	4
Fuel and Lubricant	6
Fueling Instructions	6
Engine Break-In	7
Break-In Procedure - First 10 Hours of Operation	7
Emergency Ignition Cut-off Switch	7

Starting and Operation

Fuel Tank	8
Starting Procedure	8
Speed Control	9
Shifting	9
Stopping Motor	9
Removing Engine Cover	9
Cooling System	10
Shallow Water Operation	10
Shallow Water Drive	10
Tilting	11
Trailerling	11
Salt Water Operation	11
Operating in Freezing Weather	11
Operating in Weedy Water	11
High Altitude	11
Emergency Starting	12
Trouble Check Chart	12

Maintenance

Adjustments

Tilt Friction	13
Steering Friction	13
Idle Speed Adjustment	13
Carburetor	13
Motor Angle	14
Spark Plug Inspection and Replacement	15
Cleaning Fuel Pump Filter	15
Anti-Corrosion Protection	15
Lubrication	16
Propeller	
Replacement	18
Care	18
Fish Line Trap	18
Condition of Boat Bottom	18
External Finish	18
Replacement Parts	18

Installation Instructions


Maximum Boat Horsepower	19
Motor Mounting Recommendations	19
Installing Motor	19
Lifting and Carrying Motor	20
Electrical Installation	20
Electric Start Models with Tiller Handle	20
Remote Steering System	20
AC Lighting	21
Removing Motor From Boat	21
Off Season Storage	21
Preseason Service	23
Submerged Motor	23
Dealer Service	23
Warranty Service	24
Owner's Responsibility	24
Maintenance Schedule Chart	24
Symbols	25
Warranty	27
Service Literature Order Form	29


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, , appears next to information important to keep machinery from being damaged.

Important appears next to information that controls correct assembly and operation of the product.

Product References, Illustrations and Specifications

 **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.







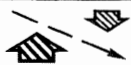

Outboard Marine Corporation reserves the right to make changes at any time, without notice, in specifications and models and also to discontinue models. The right is also reserved to change any specifications or parts at any time without incurring any obligation to equip same on models manufactured prior 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.

Certain features or systems discussed in this manual might not be found on all models in all marketing areas.

How to Read Illustration Symbols

	Numbers in a rectangle indicate the photo described by that paragraph.
	Look for circled letters  or circled numbers  ,  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.

DR2526 Eng

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 747
405 Headquarters Dr., Suite 3
Millersville, MD 21108
(301) 923-3932

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:

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Washington, D.C. 20402


Stock Number 050-012-00159-6

Service Literature

A service manual, parts catalog or extra owner's manual may be purchased from Outboard Marine Corporation. Use the instructions and order form provided in the English language owner's manual or see your DEALER.

General Information

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.**

Be sure you match this motor to a boat with a capacity plate stating it is rated for tiller steering and at least your motor's HP. This is because boats equipped with remote steering can have a much higher maximum horsepower rating than the same size boat meant for tiller steering.

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. The owner's portion of this form 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.

Propeller Selection

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.

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 _____

Motor Installation

We recommend your DEALER install your motor. However, if you want to do the installation yourself, follow the instructions provided in this manual.

Specifications		Page
Power at Propeller Shaft*	9.9 hp (7.4 kW) @ 6000 RPM	3
Power at Propeller Shaft*	15 hp (11.2 kW) @ 6250 RPM	3
Full Throttle Operating Range	9.9 Model 5500 to 6500 RPM	3
Full Throttle Operating Range	15 Model 5500 to 7000 RPM	3
Fuel Requirements	67 AKI (69 RON), see Recommended Gasoline	6
Fuel/Oil Ratio	See Recommended Lubricant	6
Alternator	Electric Start Models, non-regulated - 4 A, see Battery	3
Spark Plug: Normal Operation	QL77JC4 (Alternate L77JC4) Gap Setting - 0.76 mm (0.030 in.)	15
Sustained High Speed Operation	QL16V Gap is Permanent	
Spark Plug Socket Wrench Size	13/16 in.: torque 24-28 N·m (17-20 ft. lbs.)	3
Gearcase Lubricant Capacity:	260 ml (8.8 fl.ozs.)	16
Fuel Tank Capacity:	22,6 litres (6 U.S. Gallons)	6
Propeller - 9.9 models	9¼ in. (23,5 cm) Dia. x 8 in. (20,3 cm) Pitch	18
Propeller - 15 models	9½ in. (24,1 cm) Dia. x 10 in. (25,4 cm) Pitch	18
Transom Height - Standard Length - Long Shaft	368-381 mm (14½ to 15 in.) 495-508 mm (19½ to 20 in.)	3
Weight - Standard Length Model - Long Shaft - Rope Model - Long Shaft - Electric 9.9 Model - Standard Length - Electric 15 Model	33 kg (72 lbs.) 35 kg (77 lbs.) 36,4 kg (80 lbs.) 34,4 kg (75 lbs.)	3
Fuel Tank	6,14 kg (13.5 lbs.)	3

* 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**.

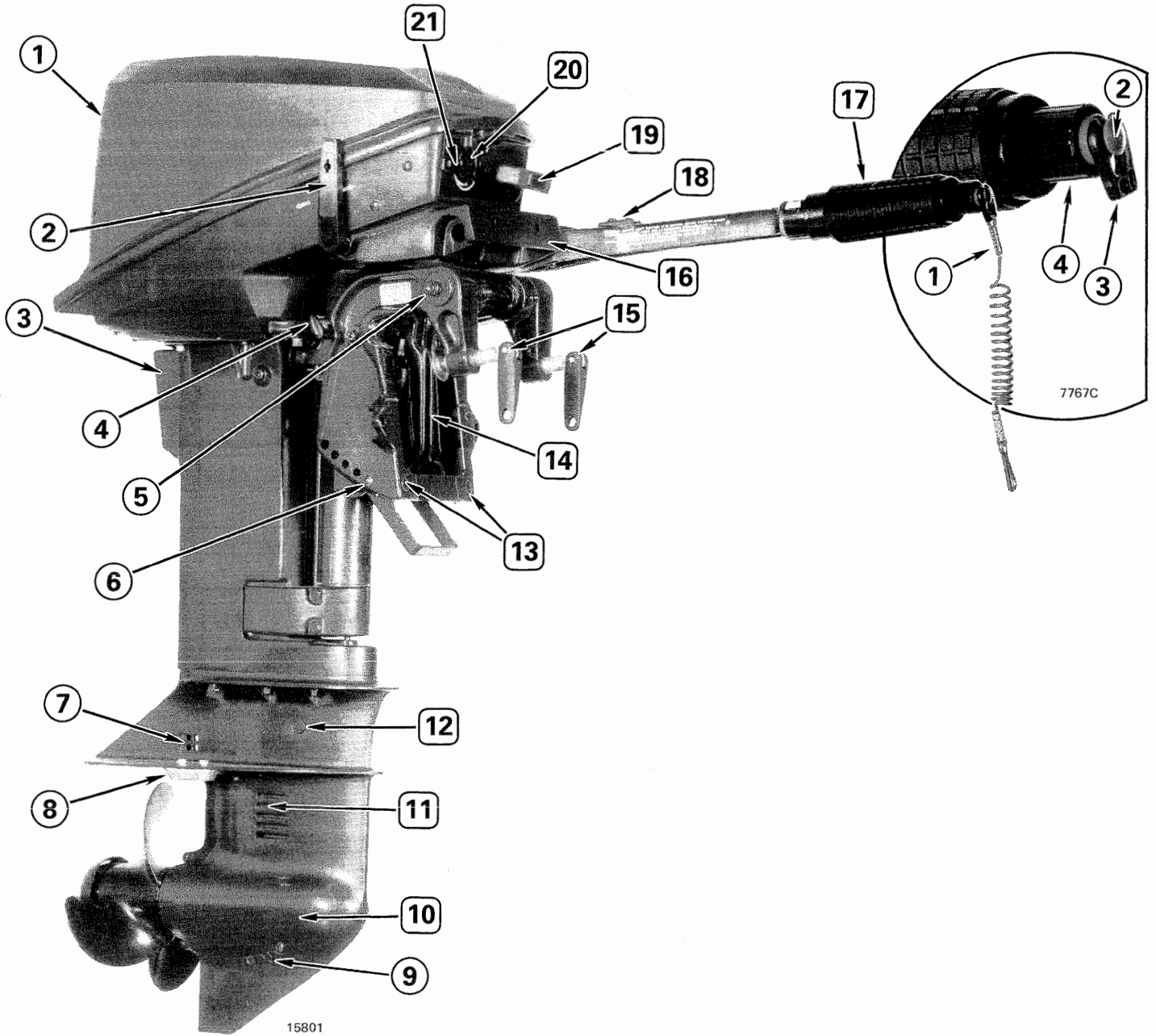
Battery and Battery Box (Not supplied with motor)

Read and understand battery manufacturer's safety information supplied with the battery before installation is attempted. Install battery in a battery box that is securely installed in the boat.

Note Maintenance free or sealed batteries are not acceptable for use with this model.

In order to operate your electrical system, a good 12 volt battery is required (not supplied with motor). For best performance, we recommend the following as suggested minimum requirements:

- 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).

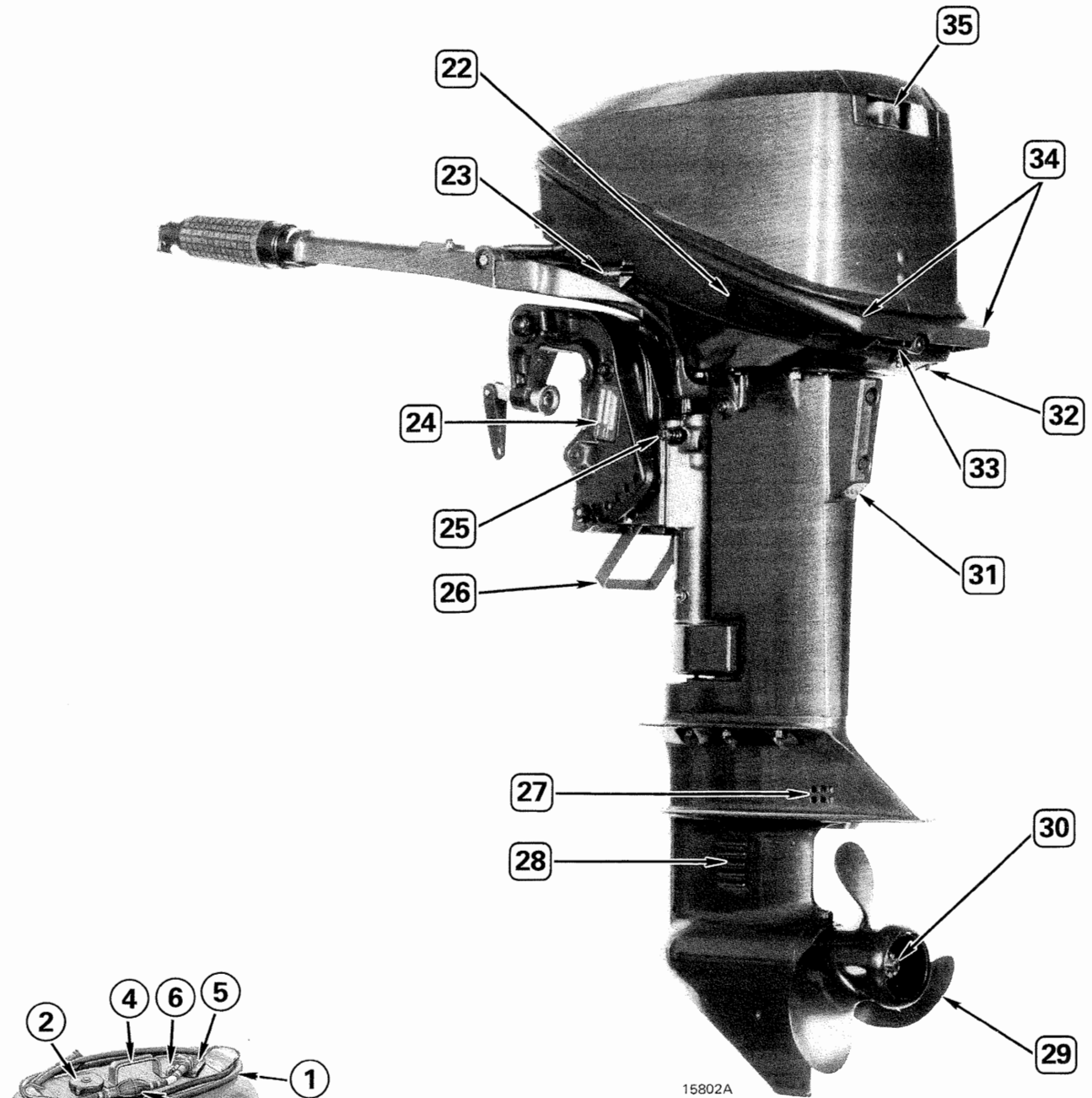


Emergency Ignition Cut-Off Switch (E.I.C.O.S.)

- 1. Clip and Lanyard Assembly
- 2. Stop Button/E.I.C.O.S.
- 3. Emergency Restart Clip
- 4. Idle Speed Adjusting Knob

Item	Description	Page
1	Engine Cover.	9
2	Shift Lever	8
3	Start Button (Electric Models only)	8
4	Tilt/Run Lever	8
5	Tilt Friction Nut	13
6	Angle Adjusting Rod	14
7	Water Discharge (Starboard)	10
8	Anti-corrosion Anode	15
9	Oil Drain/Fill Plug	16
10	Gearcase	16
11	Water Intake (Starboard)	10

Item	Description	Page
12	Oil Level plug	16
13	Stern Brackets	19
14	Carrying Handle	20
15	Clamp Screws	19
16	Lift Bracket	20
17	Steering Handle and Twist Grip Throttle	8
18	Emergency Restart Clip	7
19	Starter Grip	8
20	Slow Speed Adjusting Knob	13
21	Choke Knob	8



Fuel Tank View

- 1. Fuel Line
- 2. Filler Cap
- 3. Priming Bulb
- 4. Handle
- 5. Fuel Gauge
- 6. Drain Screw

Item	Description	Page
22	AC Lower Pan Plug (AC Light Models Only) . . .	21
23	Fuel Connector	8
24	Model and Serial Number Plate	5
25	Steering Friction Adjusting Screw	13
26	Shallow Water Drive Bracket	10
27	Water Discharge (Port)	10
28	Water Intake (Port)	10

Item	Description	Page
29	Propeller	18
30	Underwater Exhaust and Water Outlet	4
31	Exhaust Relief	10
32	Water Pump Indicator	9
33	Latch (Engine Cover)	9
34	Motor Rest	4
35	Tilt Grip	11

Fuel and Lubricant

Recommended Gasoline

Use automotive gasoline with the following minimum octane specifications:

In the U.S. - 67 Anti-Knock Index (AKI)

Outside the U.S. - 69 Research Octane Number (RON)

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% alcohol by volume:


- 10% ETHANOL
- 5% METHANOL with 5% cosolvents

Unacceptable Fuel: 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, regardless of octane rating.

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

- The boat fuel system may be different regarding use of alcohol fuels. Refer to boat owner's manual.
- Alcohol attracts and holds moisture which may cause corrosion of metallic parts of the fuel system.
- 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.
- Alcohol extended fuels can cause engine performance problems.


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

 **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.


Recommended Lubricant

This is a two cycle engine that requires lubricant to be mixed with gasoline. The recommended fuel/oil mixture ratio is 50:1 (2% oil). A 50:1 (2% oil) mixture must be used during engine break-in. See inside front cover for **Recommended Lubricant**.

A 100:1 mixing ratio is acceptable in certain circumstances after the motor is completely broken-in and if the motor is used frequently. 100:1 should NOT be used if the motor is used intermittently and the periods of non-use involve storage in areas with significant temperature and humidity variations. Internal rusting may result. 100:1 should NOT be used if the motor is subjected to sustained high rpm operation.

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

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)
50:1 (2% Oil)	16 Fl. Oz. (Lubricant)	20 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.

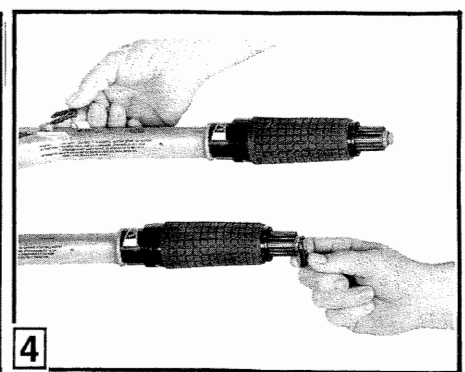
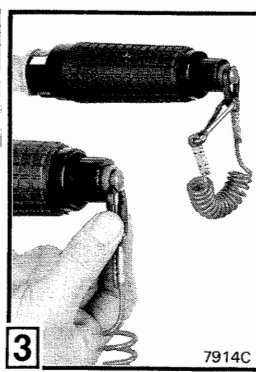
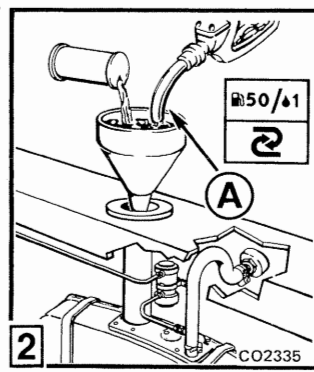
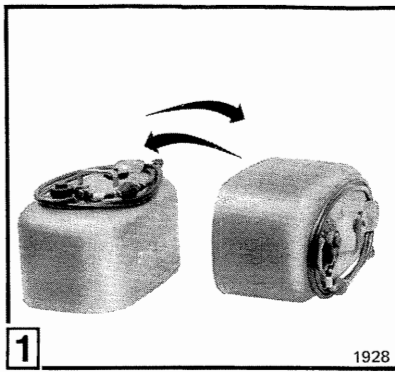
Below 32° F. (0° C)

 **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 components such as anti-siphon valves and filter/primer units, 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.



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.

Engine Break-In Procedure - First Ten Hours Operation

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-quarter throttle (less 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-quarter 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.

Emergency Ignition Cut-Off Switch

The red emergency ignition cut-off switch is located on the end of the tiller handle. 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.).

3 Attach clip and lanyard to the switch as shown. Motor will not start unless clip is in place. Attach the lanyard to a secure place on your 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 stop the engine.

Using the clip and lanyard will not interfere with normal operation. However, if the driver leaves the operator's area, the cut-off switch will stop the engine preventing the boat from becoming a runaway.

Make sure the lanyard is free to move and is away from obstructions or entanglements which could hinder its operation. Use care to avoid knocking or pulling the lanyard off the switch during normal operation. Unexpected loss of forward motion could allow occupants to be thrown forward.

When not in use, hook the loose end of lanyard in the hole in lanyard clip. This will keep the lanyard neatly out of the way.

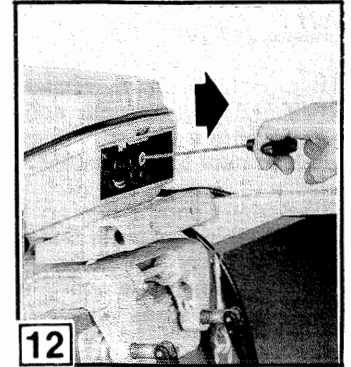
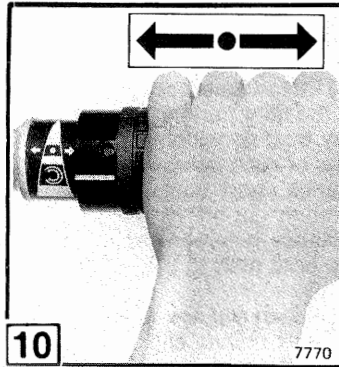
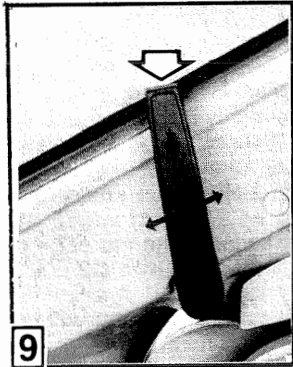
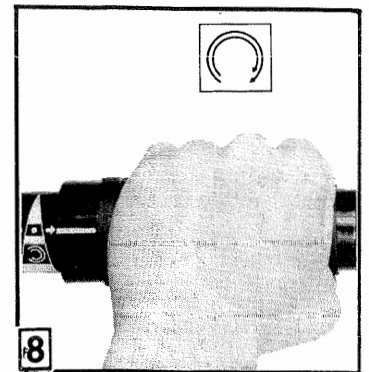
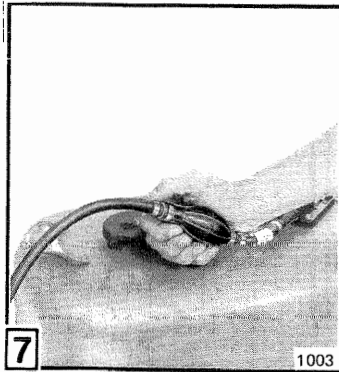
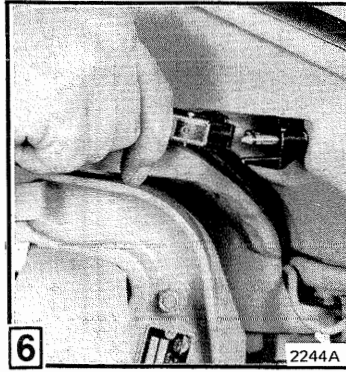
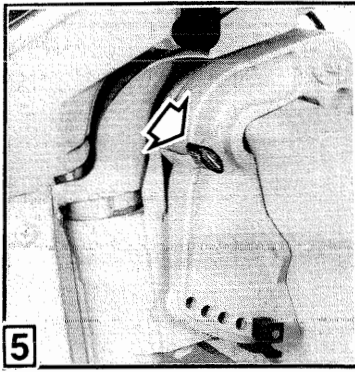
4 An extra clip for emergency restarting is attached to the tiller handle. Should the operator be thrown overboard, a remaining occupant can insert this clip in the cut-off switch so that the motor can be restarted.

! 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.



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.

5 → 14 Starting Procedure

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.

Make sure clip and lanyard assembly is in place, as shown on previous page, or motor will not start.

- 5** Place Tilt/Run Lever in RUN (down) position and motor in normal running position.
- 6** Connect fuel hose to plug-in connector on motor and tank with primer bulb end nearest tank.
- 7** Holding outlet end slightly up, squeeze fuel line primer bulb several times until resistance is felt.
- 8** Turn throttle grip to SHIFT position or slower.

- 9** Move shift lever to NEUTRAL position. This is the recommended position for starting. A cutout switch prevents electric starting when shift lever is in gear. Motor can be manually started in gear at slow throttle. A lockout prevents starting in gear at fast throttle.

⚠ Safety Warning: Always shift to neutral before manually starting to avoid sudden boat movement and a possible man overboard situation.

- 10** Turn throttle grip to START position.
- 11** Cold Motor - Pull choke knob all the way out.

Warm Motor - Do not choke. If motor fails to start after cranking motor a few times, then use the choke.

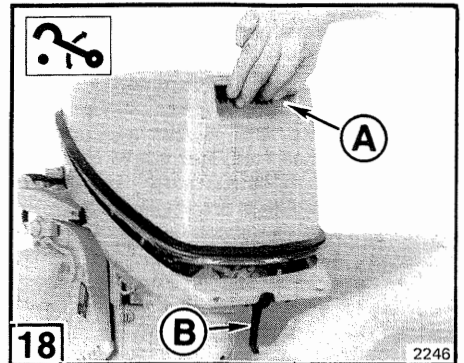
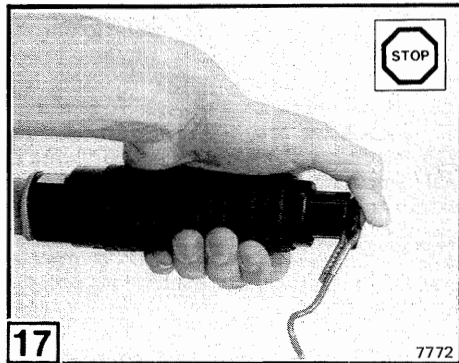
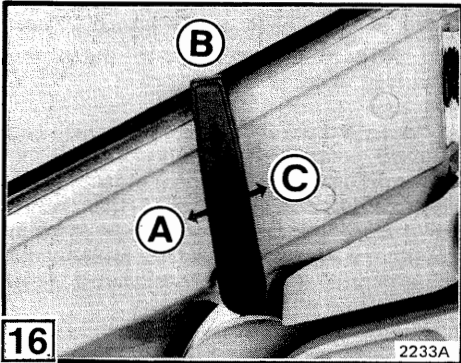
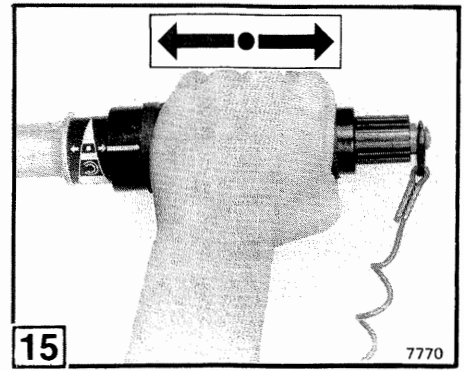
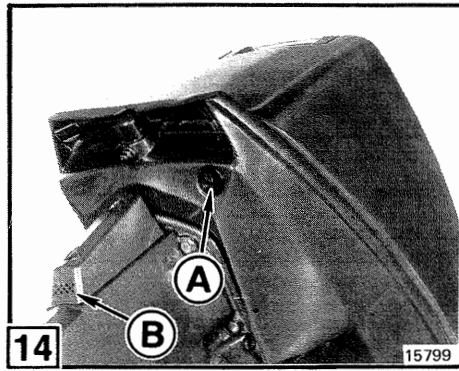
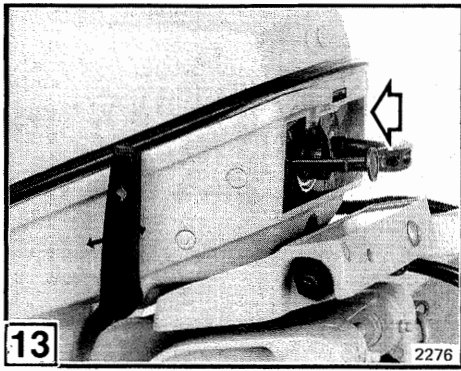
12 MANUAL STARTING:

While seated, pull starter handle slowly until starter engages, then pull forcibly. Repeat, if needed, until motor starts. To prevent damage to starter assembly, allow starter cord to rewind before releasing starter handle. After motor starts, push choke in gradually until motor is running smoothly. If motor does not start, see **Trouble Check Chart**.

12 ELECTRIC STARTING:

While seated, push start button to start motor. DO NOT hold start button in START position for over 10 seconds. If engine does not start, release momentarily and then try again. After motor starts, push choke in gradually until motor is running smoothly. If motor does not start, see **Trouble Check Chart**.

Note Do not press start button when engine is running.



13 After motor starts, push choke in gradually until motor is running smoothly.

14 **A.** Check to see that a steady discharge of water is coming out of the water pump indicator to assure proper water pump operation. See **Cooling System**.

B. The exhaust relief reduces the exhaust back pressure for smoother operation at slow and idle speeds.

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

Speed Control

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


Note When operating in REVERSE, be careful because the motor has no automatic tilt protection if an underwater obstruction is hit.

15 **16** Shifting

15 Turn throttle handle to SHIFT position or slower.

Note Always turn throttle to SHIFT position before shifting. To avoid damage to shifting mechanism, do not attempt shifting from NEUTRAL (A) to FORWARD (B) or REVERSE (C) when motor is NOT running. It is permissible to shift to NEUTRAL only.

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

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

17 Stopping Motor

Turn throttle handle clockwise all the way. Shift to neutral position and depress stop button until motor stops. Do not pull the lanyard assembly to stop the motor under normal operating conditions. It is intended for emergency use only.

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

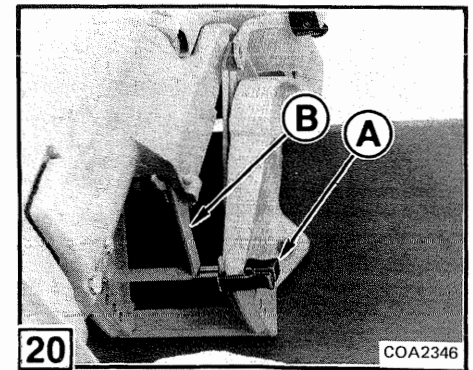
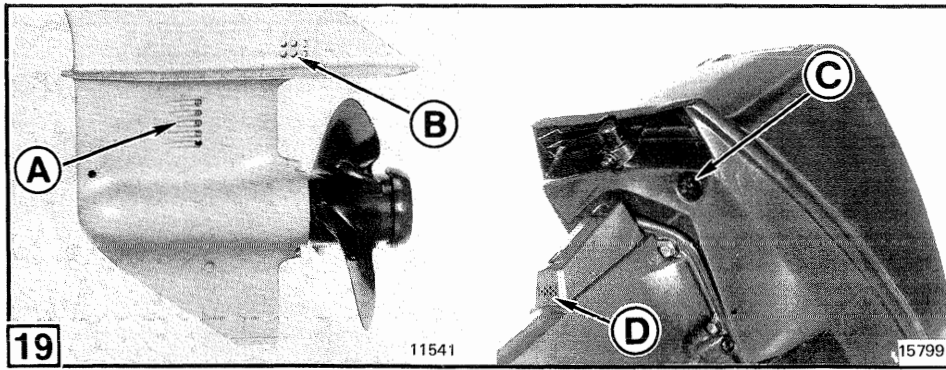
Coil fuel line on top of tank when not in use. This will help protect fuel line and connectors from damage and help prevent sand or dirt from entering connectors.

18 Removing Engine Cover

Release the latch counterclockwise (pull down 1/4 turn). Lift the rear of cover a little and move entire assembly slightly backward to release front hook from the lower pan. Lift entire cover assembly from motor. Reinstall cover assembly in reverse order, making certain rubber seal fits properly between cover and lower pan before securing the latch (push up).

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. Tilt Grip
- B. Latch Release Position



19 Cooling System

This motor is water cooled with a thermostatically and pressure controlled cooling system. Water enters the gearcase through a screened intake and is pumped to the powerhead. After the engine is warmed up, the water is discharged at the rear of the gearcase. The thermostat maintains a consistent temperature at low speeds, while pressure relief provides maximum cooling at higher speeds.

When operating motor, the water intake must be completely submerged so that it is in nonturbulent water. Observe proper transom height and boat trim.

A water pump indicator is provided and should be discharging a steady stream of water whenever the engine is running. Observe the indicator particularly when operating in weeds, mud or debris laden water. If engine overheats or the water pump indicator stops or becomes intermittent, stop the engine immediately and check for an obstructed water intake screen. Clear obstruction. Restart the engine and look for a steady discharge from the water pump indicator. Run engine at idle until engine returns to normal operating temperature. If no obstruction is apparent, it may indicate a worn water pump or other cooling system malfunction. See your DEALER.

Retorquing cylinder head screws is recommended anytime the engine overheats. If 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.

- A. Water Intake
- B. Water Discharge
- C. Water Pump Indicator
- D. Exhaust Relief

Shallow Water Operation

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

With Tilt/Run Lever in RUN position the motor will automatically tilt up if an obstruction is hit while going forward at normal running speed. The motor may not release when running in shallow water at slow speeds. When the Tilt/Run Lever is in RUN position, the reverse lock is automatically engaged. When running in shallow water, at slow speeds, place the Tilt/Run Lever in TILT position which allows the motor to kick-up more easily if an obstruction is hit. Before resuming normal running speed in deeper waters, be sure to return Tilt/Run Lever to RUN position.

! Safety Warning: Do not operate motor in reverse with Tilt/Run Lever in TILT position as motor may tilt out of the water resulting in possible loss of control.

Note If an obstruction is hit, retard the throttle immediately and stop motor. Check motor, propeller and angle adjusting rod for possible damage. If angle adjusting rod is bent it may alter the breakaway force required to release the reverse lock when operating in forward gear, resulting in possible damage to stern brackets. It may also affect the force required to release the reverse lock when operating in reverse causing motor to tilt out of the water. Replace bent angle adjusting rod.

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.

20 Shallow Water Drive

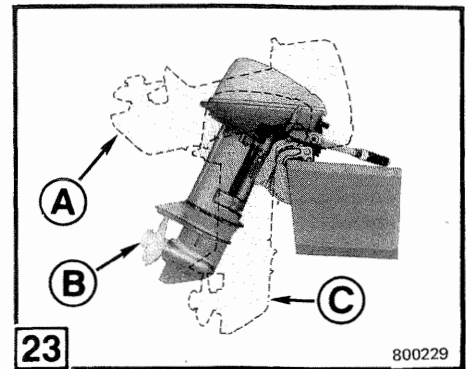
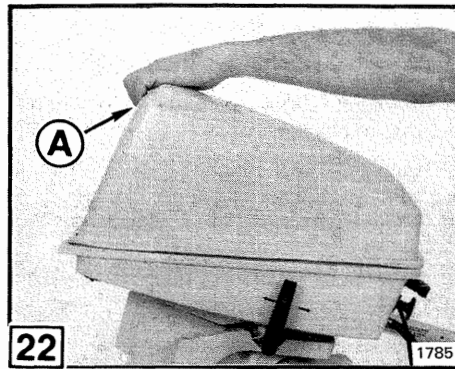
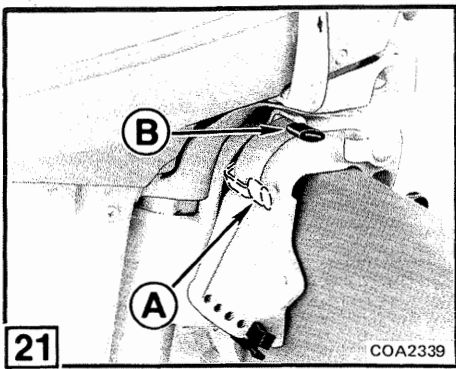
The shallow water drive position is controlled by the position of the angle adjusting rod. See **Motor Angle Adjustment**. To place motor in shallow water drive position proceed as follows.

- Stop motor.
- Raise Tilt/Run Lever to TILT (up) position. See **Tilting**.
- Grasp engine cover Tilt Grip and tilt motor up; lower motor until spring loaded shallow water bracket automatically engages the angle adjusting rod as shown.

Note Operate motor at slow speed in shallow water until deeper water is reached.

- To release motor from shallow water drive position place Tilt Lever in RUN (down) position and raise motor slightly to allow bracket to clear angle adjusting rod. Lower motor to run position.

- A. Angle Adjusting Rod
- B. Shallow Water Bracket



21 22 23 Tilting

The Tilt/Run Lever is located on the starboard stern bracket. This lever releases the reverse lock for full tilt engagement.

- To tilt motor, raise Tilt/Run Lever to TILT (up) position.

- 22**
- Grasp tilt grip (A) on engine cover and tilt motor up until lock engages.

Note Do not use steering handle to tilt motor.

- To lower motor, move Tilt/Run Lever to RUN (down) position. Raise motor slightly to release lock, then slowly lower motor. The reverse lock will automatically engage as motor returns to run position.

It is preferable to leave motor in the RUN position when it will not be used for a period of time. However, if circumstances make it preferable to leave motor tilted, leave the Tilt/Run Lever in TILT position - never in the RUN position. With lever in RUN position, a tilted motor could drop suddenly if accidentally bumped.

- 21**
- A. Tilt/Run Lever RUN Position
 - B. Tilt/Run Lever TILT Position

- 23**
- A. Full Tilt Position
 - B. Shallow Water Drive Position
 - C. Run Position

Trailing

We recommend that the motor be in its normal running position with the Tilt/Run Lever in the RUN position when trailering. Additional road clearance may be obtained by placing angle adjusting rod in outer stern bracket position.

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.

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.

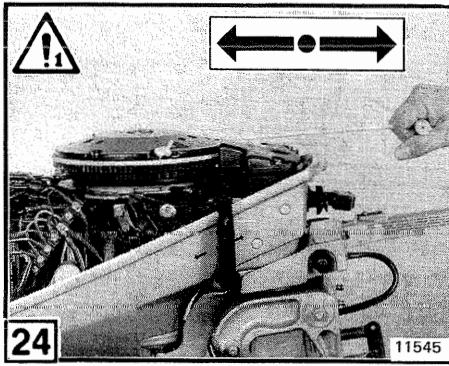
High Altitude Operation

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.



24 Emergency Starting

If the starting cord should break or the starter should fail, remove engine cover. If starter cord is broken it may be long enough to use as an emergency cord. If not, obtain a 6 mm (¼ inch) cord and tie a knot to one end. Place knot in flywheel notch and wrap cord around clockwise. Follow **Starting Procedure**.

Safety Warning:

-  ● When using **Emergency Starting procedure**, make sure **shift lever is in neutral position to prevent sudden propulsion when engine starts.**
- 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.
- Avoid electrical shock. Do not touch high voltage ignition coils or spark plug wires when motor is being started or when running.
- To prevent bodily contact with moving parts, do not turn flywheel by hand. Use starter cord only.

Trouble Check Chart

Motor Will Not Start, check for:

- Clip and lanyard in place
- Throttle in START position
- Fuel in tank
- Fuel line connector properly attached
- Carburetor primed (squeeze primer bulb)
- Fuel tank resting on fuel line
- Fuel line clear and not kinked
- Cold motor: Engine not choked sufficiently
- Warm motor: Engine over-choked or flooded (correct by pushing in primer knob, disconnecting fuel line at motor, and cranking until cleared)
- Fuel pump filter obstructed
- Water in fuel system

- No spark:
- Loose spark plug leads
- Spark plugs carboned, burned or wet
- Ignition system (see your DEALER)
- Incorrect gap in spark plugs (See **Specifications**).
- Loose spark plugs, causing poor compression. (See **Specifications** for recommended torque).
- Recheck starting instructions

Motor Will Not Idle Properly, check for:

- Carburetor slow speed adjustment improperly set
- Damaged spark plug (Insulator cracked)
- Improper fuel/oil mixture

Motor Loses Power, check for:

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

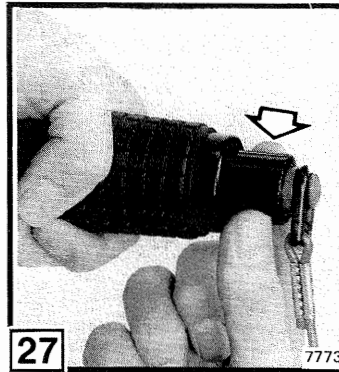
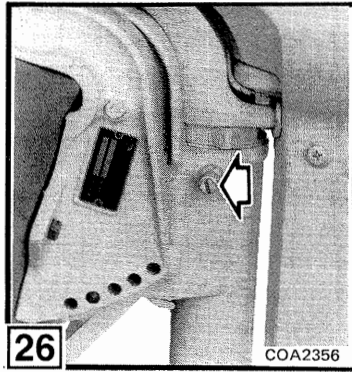
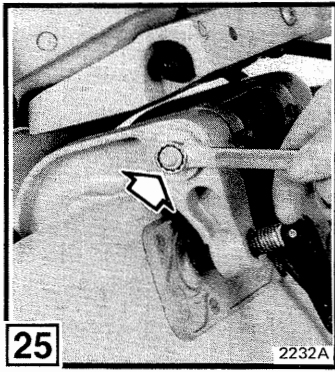
Motor Vibrates Excessively at idle or low speed, check for:

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

Motor 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

25 Tilt Friction Adjustment

Use $\frac{9}{16}$ inch wrench to tighten the tilt shaft nut only enough to control the return of the gearcase from TILT to RUN position.

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

26 Steering Friction Adjustment

The steering friction adjustment is preset at the factory, however, readjust after first 20 hours of operation or whenever adjustment becomes necessary.

The steering friction should be adjusted so that stable boat operation is maintained with a minimum of operator effort. Do not overtighten to allow for "hands off" steering which could result in loss of control.

Adjust steering friction with motor mounted to boat by simply loosening or tightening screw.

27 Idle Speed Adjustment

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

28 Carburetor Adjustment

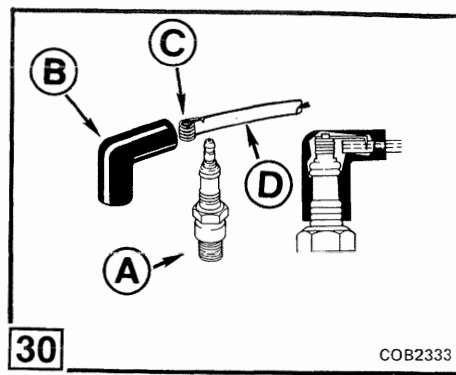
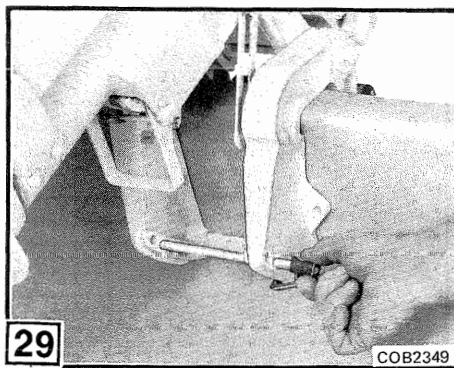
High Speed

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

Slow Speed

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

- Stop motor.
- Remove adjusting knob, use screwdriver to pry off knob.
- Use adjusting knob to turn needle valve shaft clockwise until it **Gently** seats. DO NOT FORCE.
- Turn needle valve counterclockwise $\frac{3}{4}$ turn.
- Start motor on boat (or in test tank using test wheel) and run until warm, approximately 2 minutes.
- Retard throttle to normal idle speed and adjust needle valve until best performance is obtained.
- Replace the adjusting knob in vertical position (pointer down) without disturbing setting.
- Readjust idle speed knob on steering handle.



29 Motor Angle Adjustment

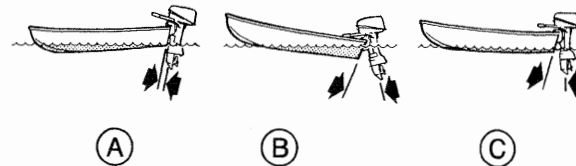
The stern bracket has several positions for adjusting the motor to allow for transom angle and boat loading. The vertical angle of motor on boat must be adjusted for best performance. Motor should be perpendicular to water when boat is underway. This adjustment can only be determined by observing boat operation at full speed. Set angle adjustment for your usual load. Angle adjustment should be changed if boat loading results in improper motor angle. Planing type hull should ride with bow slightly out of water at full throttle.

Adjust motor angle as follows:

- Stop motor.
- Set Tilt/Run Lever in TILT (up) position and tilt motor away from transom until locked in full tilt position. See **Tilting**.
- Squeeze retainer portion of angle adjusting rod to release retainer from stern bracket. Slide the adjusting rod assembly all the way out. Place rod in desired position. Make sure rod passes through both stern brackets. Slide in, and make sure that retainer is locked to stern bracket.
- Place Tilt/Run Lever in RUN (down) position. Tilt motor forward slightly to allow tilt lock to disengage, then lower motor against angle adjusting rod. Make a trial run and note boat attitude (motor angle). Motor should be perpendicular to water when boat is underway.

29 Angle Adjusting Rod and Retainer - Release Position

⚠ 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).



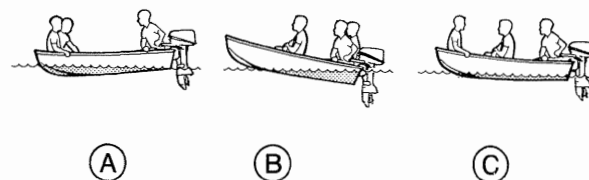
Incorrect
CAUSES BOAT
TO "PLOW"

Incorrect
CAUSES BOAT
TO "PORPOISE"

Correct
GIVES MAXIMUM
PERFORMANCE

Boat Trim

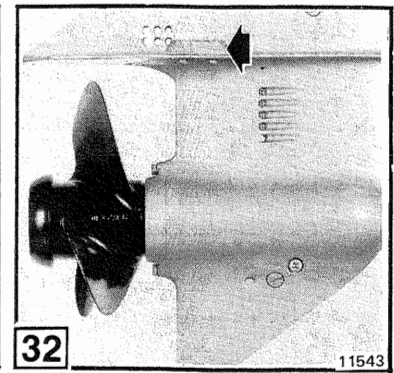
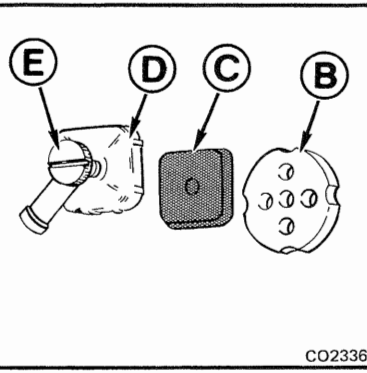
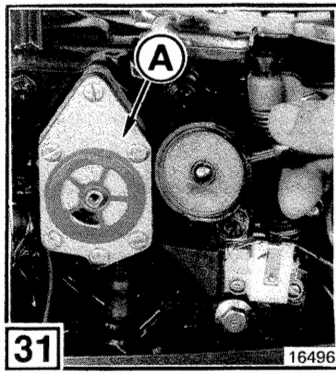
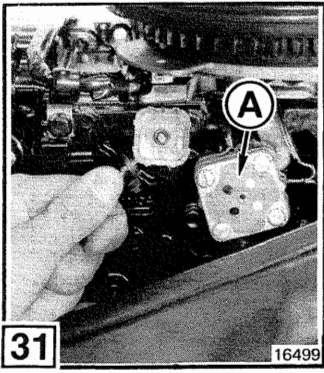
For best boat and motor performance, the boat should be driven as nearly parallel to the water as possible. Passengers and equipment should be so distributed in the boat that it is evenly balanced both front to rear and side to side.



Incorrect
OVERLOAD
FORWARD
CAUSES BOAT
TO "PLOW"

Incorrect
OVERLOAD AFT
CAUSES BOAT
TO "SQUAT"

Correct
BALANCED LOAD
GIVES MAXIMUM
PERFORMANCE



30 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 1/4 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 ignition coil terminals or spark plug.

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

31 Cleaning Fuel Pump Filter

Safety Warning: To prevent excessive fuel spillage, disconnect fuel line plug-in connector at motor before disassembly.

Note It is recommended that the fuel pump filter be cleaned every 100 hours of operation or once a season, whichever comes first.

- The fuel filter is located under the fuel inlet cover on the fuel pump.
- To inspect for sediment or water accumulation, remove the screw and cover.
- Wash filter element with clean solvent and a brush.

- Reassemble filter with lip of filter screen toward fuel pump.
- Reassemble cover locating inlet nipple between screw heads.
- Tighten cover screw securely and clean up any spilled fuel.
- Check for leaks by connecting fuel line to motor and squeezing primer bulb until definite resistance is felt in bulb.

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

- A. Fuel Pump
B. Gasket
C. Filter
D. Cover
E. Cover Screw

32 Anti-Corrosion Protection

Your motor is equipped with an anti-corrosion zinc anode. The anode protects 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 anode indicates it is performing its function.

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

Replace the anode before it is 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.

Types of Lubricant		Contact your DEALER for OMC Lubricants	
OMC Triple-Guard® Grease		OMC Hi-Vis® Gearcase Lube	
 A Tube	 B Grease Gun	 C	
Lubrication Picture Symbols			

DR2499 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

PCE0004

Lubrication

Figure	Lubrication Point	Lubricant
1	* Gearcase	C
2	Spark Advance Linkage, Roller (Cam Follower) and Carburetor Linkage	A
3	Swivel Bracket and Engine Cover Latch Shaft	B
4	Choke, Shift Lever Shaft and Detent	A B
5	Clamp Screws, Tilt/Run Lever Shaft, Tilt Shaft, and Steering Handle.	B

*Recommended Dealer Performed Service.

Note The recommended lubricants have been formulated to protect against damage to bearings and gears. They must be used since extensive damage can result from improper lubrication.

Gearcase

Remove oil drain/fill plug ① and oil level plug ② from side of gearcase. With motor in normal running position, allow oil to drain completely.

To refill, place tube of *OMC Hi-Vis®* gearcase lube or equivalent in drain/fill hole. If *OMC Hi-Vis®* gearcase lube is not available, *OMC Premium Blend Gearcase Lube* or equivalent can be used as an alternate. With motor in normal running position, fill until lubricant appears at oil level hole. See **Specifications** for gearcase capacity.

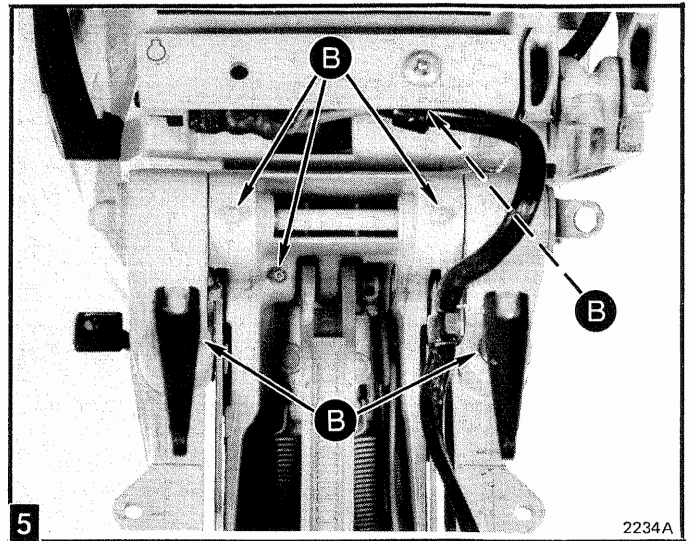
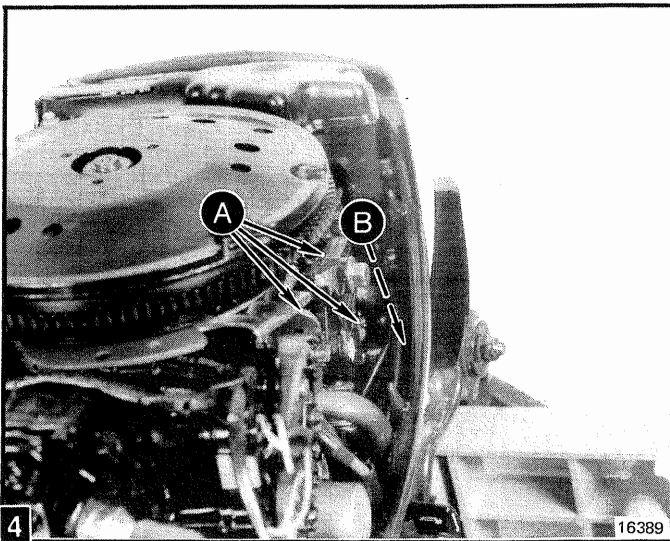
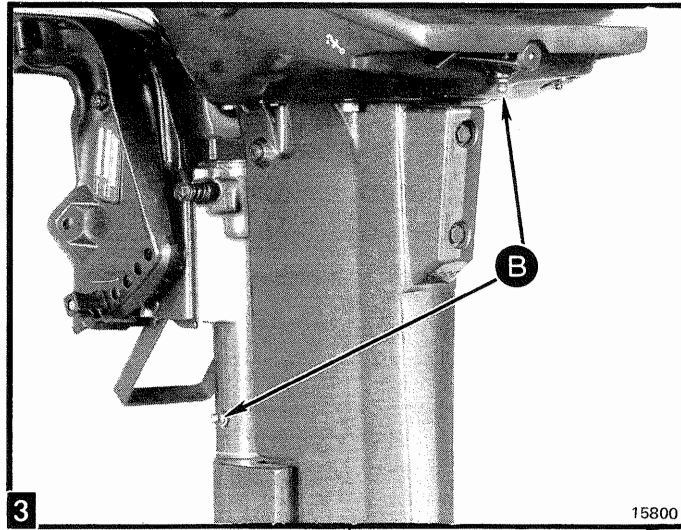
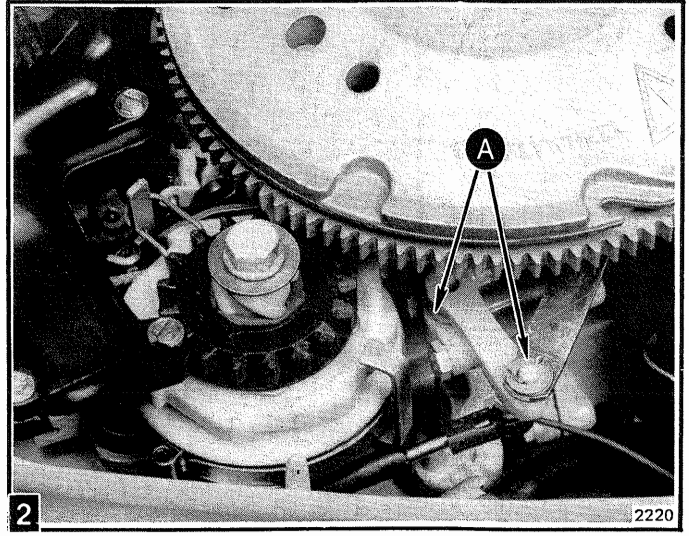
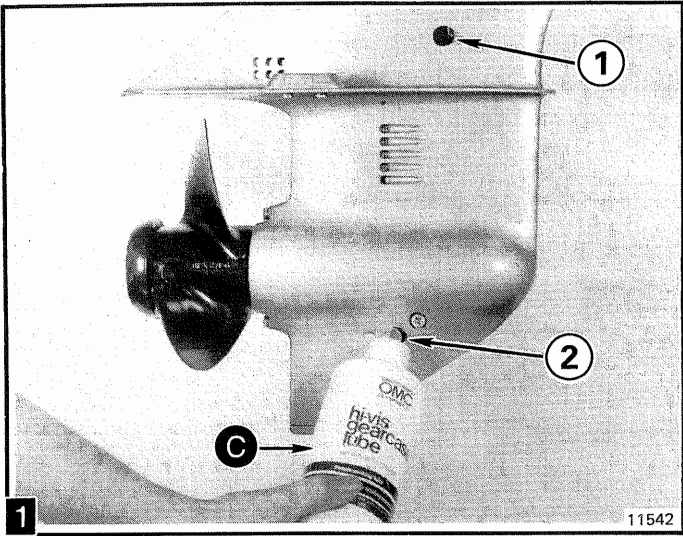
Install oil level plug before removing lubricant tube from oil drain/fill hole. Drain/fill plug can then be securely installed without oil loss.

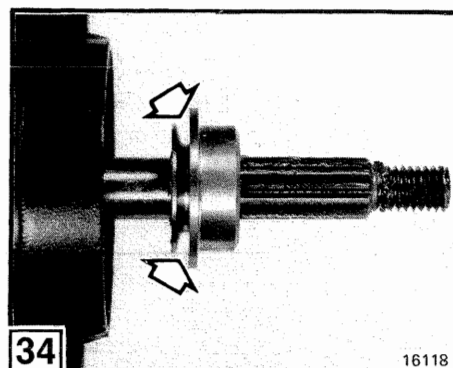
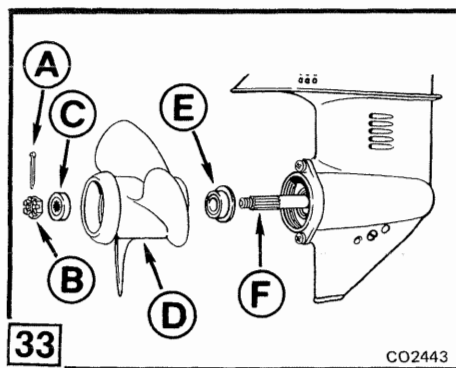
If the proper tube or filler type can is not available, install drain/fill plug. Slowly fill gearcase through oil level hole allowing trapped air to escape. Install plug.

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.





33 Propeller Replacement/Installation

Your motor has a shock absorber in the propeller hub to minimize propeller damage when propeller strikes an object.

⚠ Safety Warning: To avoid accidental start-up of motor, place shift lever in neutral and remove spark plug leads from spark plugs.

To remove propeller:

- Remove cotter pin and 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 propeller thrust bushing onto propeller shaft with shoulder of thrust bushing facing aft (rear) and fish line trap groove facing forward.
- 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.

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.

34 Fish Line Trap

There is a fish line trap located on the thrust bushing of the propeller. Remove propeller and check trap once a week, see **Propeller Replacement/Installation**. Remove trapped fish line as needed.

Note Failure to remove fish line may cause oil seal and gearcase damage.

⚠ Safety Warning: Remove spark plug leads from spark plugs to avoid accidentally starting motor.

Condition of Boat Bottom

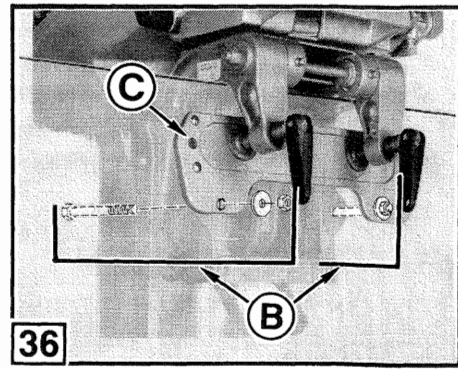
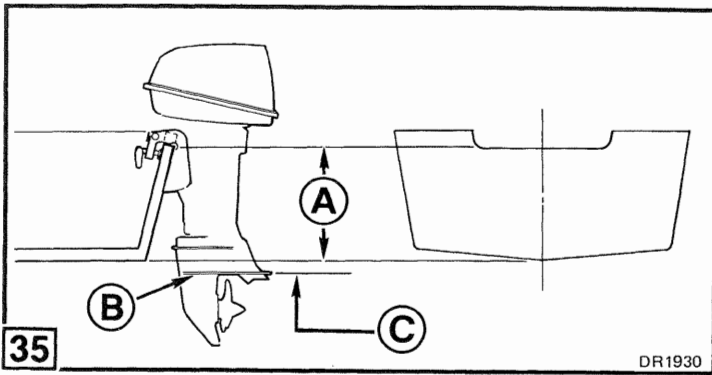
The condition of the boat bottom has much to do with performance. A bottom covered with marine growth will reduce boat speed. It is therefore strongly suggested that a periodic cleaning of the boat bottom be done, the number of cleanings per season depends on the type of water in which the boat is run.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

External Finish

The finish on your outboard motor is a baked enamel designed for use in either fresh or salt water. The only care necessary when used in fresh water is an occasional wipe down with a dry cloth to maintain the luster. It is advisable, after use in salt water, to wash the entire motor with fresh water and wipe dry.

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.



Installation Instructions

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.

Be sure you match this motor to a boat with a capacity plate stating it is rated for tiller steering and at least your motor's HP. This is because boats equipped with remote steering can have a much higher maximum horsepower rating than the same size boat meant for tiller steering.

35 Motor Mounting Recommendations

Curved transoms do not lend themselves to proper mounting of outboard motors. SUITABLE SHIMS MUST BE USED to obtain a flat surface for mounting of these motors to ensure the proper engagement of the motor to the boat transom. This will insure that the motor will not come loose from the boat's transom or that no part of the motor mounting assembly or boat will be damaged when maximum power is applied. Contact your DEALER or boat manufacturer for assistance, if necessary.

⚠ Safety Warning: Failure to mount motor on a flat surface can result in loss of speed, steering and shift control of the motor.

Note We recommend using an accessory transom plate to protect your boat and help prevent loss of motor. See your DEALER.

Transom height (A) listed in **Specifications**, is the correct boat transom height needed for a particular model outboard. This dimension is measured at the transom centerline perpendicular to the bottom of the boat. A properly installed motor will result in the anti-ventilation plate (B) of the motor being even to within 51 mm (2 in.) below the boat bottom (C) as shown.

Note If the motor is installed and the anti-ventilation plate is even with or higher than the boat bottom, you may want to make some test runs to check the performance of the boat and motor before making any transom modifications.

Proper boat transom height (A) is essential to obtain maximum forward thrust from your motor. If the motor is mounted too high in relation to the boat bottom the propeller may slip (ventilate). This will affect the general performance of your boat and result in improper cooling of your motor.

Interference from the keel is frequently the cause of propeller ventilation. By merely tapering the keel this can be eliminated. See your DEALER.

If the motor is mounted too low in relation to the boat bottom, poor boat performance and excessive water spray will result.

Due to the hull design of some boats, the motor may have to be mounted lower than specified to eliminate ventilation. However, the motor must not be installed with the anti-ventilation plate (B) lower than 51 mm (2 in.) below the boat bottom (C) as shown.

⚠ Safety Warning: Installing a motor on the boat's transom lower than 51 mm (2 in.) below the specified boat transom height may result in:

- Possible loss of boat control
- Boat rolling excessively when the motor is turned
- Boat capsizing (turning over)

36 Installing Motor

Some boats are extremely unstable in the water, even when secured to a dock. Do not stand erect. Stay as close as possible to center line of boat while installing motor.

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

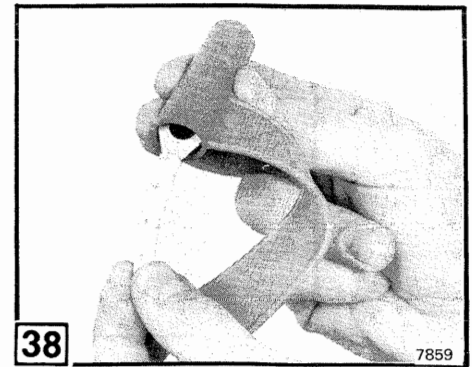
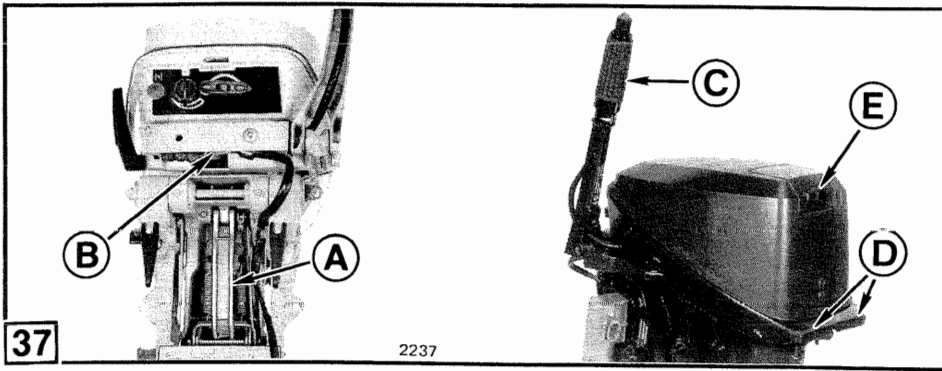
Note We recommend using an accessory transom plate to protect your boat and help prevent loss of motor. See your DEALER.

Clamp Screws - Center motor on transom before tightening clamp screws. Turn clamp screws tight, tighten again after 15 minutes of operation. Do not use tools to tighten clamp screws.

To prevent loss of motor overboard, we recommend securing the motor to the boat transom by bolting the stern brackets to the transom as illustrated and proceed as follows:

- Use the stern brackets as a template to locate and drill two 8 mm (5/16 inch) diameter holes through the transom.
- Lubricate bolt threads with *OMC Triple-Guard®* grease.
- Insert bolts through stern brackets and secure to transom with washers and locknuts.

Use a good waterproof caulking compound between bolts and transom to make installation water tight.



37 Lifting and Carrying Motor

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

- A. Carrying Handle
- B. Lift Bracket
- C. Stow Position
- D. Rear Lower Engine Cover
- E. Tilt Grip

Electrical Installation - Electric Start Models

We recommend your DEALER make the electrical installation for you. Should you desire to do this yourself, follow battery installation and cable connecting instructions as outlined.

An alternator is included with your motor and will keep the battery charged during normal operation.

This motor has a negative ground.

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

⚠ Safety Warning: When not connected to battery, cover the positive terminal with boot attached to (red) cable to prevent electrical spark from alternator. Do not run motor with cable wrapped around it. This may cause steering restriction and/or cable damage.

38 Positive Cable Boot (RED)

Note If motor is run without a battery, do not connect any electrical equipment to the motor's charging system as electrical damage could result.

Connect battery cables, making sure clamps are tight on either post to insure 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 insure clean, tight connections throughout the electrical system.

Electric Start Kit (Optional Equipment)

Accessory electric start and 4 Amp alternator charging kits are available for manual start models. See your DEALER.

Remote Steering System

Your motor can be converted for remote steering, shift and throttle control. See your Dealer for necessary kits.

Converted installation should include:

- stop switch at the remote control location
- start-in-gear protection; allows motor to only start in neutral, preventing sudden unexpected movement of the boat when starting.

⚠ Safety Warning: We recommend removing the steering handle when using remote steering to avoid possible interference with remote control cables.

An Emergency Ignition Cut-off Switch at the remote position is highly recommended on any boat considered to have sensitive steering response, or where the distance between the driver's seat cushion and the top edge of the boat next to the seat cushion is less than 12 in. (305 mm).

AC Lighting

Some models are equipped with an AC (Alternating Current) lighting system. This system is intended for operating lights on a boat.

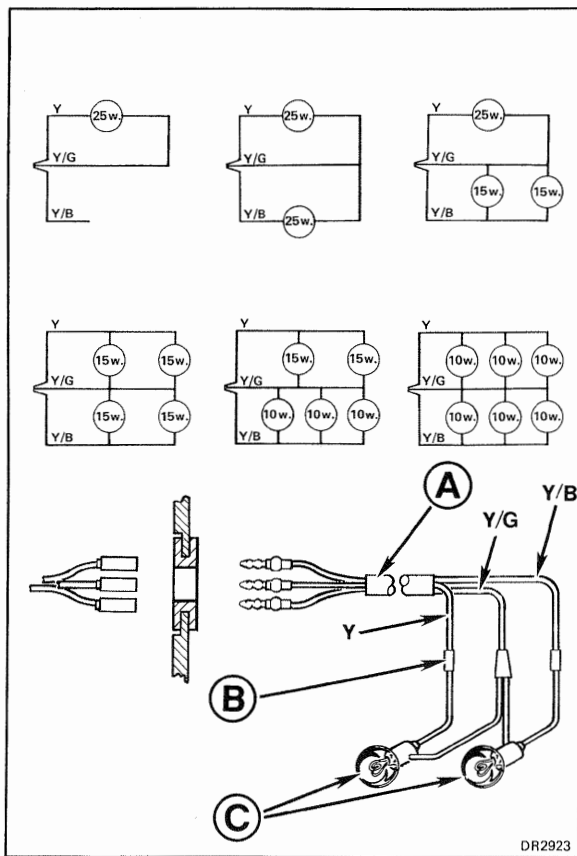
Follow the illustrations for proper installation of lead wires.

Note The current generated is alternating current (AC) and cannot be connected directly to a battery. For battery charging, use an *OMC* Battery Charging Kit. See your DEALER.

Various combinations of light bulbs can be used. Use 12-volt light bulbs of wattage sizes indicated on the diagrams.

Wire Colors:

Y - Yellow
Y/G - Yellow/Gray
Y/B - Yellow/Blue



Legend:

- (A) Sleeve
- (B) Cover connections with electrical tape
- (C) 25-watt bulbs

Removing Motor From Boat

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

Disconnect battery cables from battery, electrical cables, remote control cables (electric start model), and fuel line from motor. Remove stern bracket bolts and loosen the clamp screws. Lift motor vertically from boat. See **Lifting and Carrying Motor**. Hold motor in upright position to allow water to drain out.

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 motor to boat and control systems with original specified hardware may result in sudden unexpected loss of control of the boat at some later time.

39 Off Season Storage

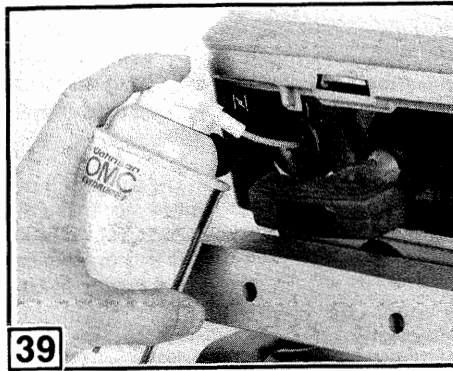
Your warranty does not cover engine failures caused by neglect. It is important that you protect your engine with a well planned storage pattern. The off season storage of your outboard motor is important to its long life and trouble free operation. Temperature and humidity changes while in storage can 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 your 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 1 oz. of *OMC* 2+4 fuel conditioner for every gallon (8 ml for every litre) of gasoline. Then operate motor in fresh water for a few minutes to allow fuel mixed with *OMC* 2+4 fuel conditioner to enter carburetor.

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



- Remove slow speed adjusting knob.
- Start engine.
- With engine running at one-half throttle, disconnect fuel line at motor and rapidly inject OMC Storage Fogging Oil or equivalent through slow speed adjusting knob opening into carburetor intake until engine smokes excessively.
- Stop engine.
- Remove engine cover. See **Removing Engine Cover**.

⚠ Safety Warning: To prevent accidental starting of engine, disconnect spark plug leads from spark plugs.

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

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

- Close vent screw on filler cap.
- Disconnect fuel line from motor and tank.
- 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 (Electric Start Models). Charge if required following precautions on battery label. 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. Motor must be stored in upright position. If motor, equipped with remote control, 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 motor to boat and control systems with original specified hardware may result in sudden unexpected loss of control of the boat at some later time.

- See **Cleaning Fuel Pump Filter**. If OMC 2+4 fuel conditioner or equivalent, has not been used in fuel mix, drain fuel tank thoroughly by removing drain screw. Replace drain screw securely.
- Remove propeller and check for damage. If damaged see your DEALER. A damaged propeller will affect the performance of your motor. Clean and lubricate the propeller shaft with *OMC Triple-Guard* grease or equivalent. See **Propeller Replacement**.
- Slowly crank several times to drain water from the water pump.
- Remove battery and check condition (water level and charge). Store in a cool dry place and not in direct sunlight. Check water level and charge periodically during storage.
- Drain and refill gearcase. Lubricate motor. See **Lubrication**.
- Touch up paint. See your DEALER.
- 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 (Electric Start Models) 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 bulb, gaskets are replaced.
 - Badly rusted or leaking fuel tank is replaced.
- Clean fuel tank and inspect for rust, or leakage in metal body.
- Replace engine cover.

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.

- Battery (Electric start models) - check water level and charge.
- Install and connect battery. See **Electrical Installation**.
- 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.

- 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

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 recommend 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 which are either incompatible with the outboard motor or adversely affect its operation, performance or durability.

Outboard motors not operated or maintained in accordance with the instructions in the 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	*	●	*	15
Gearcase	●			16
Cylinder Head Screws	●			●
Carburetor	●			13
Propeller	●			18
Timing & Ignition	●			●
Lubrication Points	●	●	See Lubrication Chart	16
Spark Plugs	●		*	15
Engine Tune-Up	●	●		●
Motor Adjustments	●	*	*	13

DR2414ENG

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

● Not applicable

* Owner performed 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.



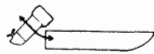
Indicates downward movement. Example: While boat is at planing speed, activating trim switch to  lowers the bow of the boat.



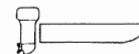
Indicates gear shift control positions. **FORWARD**, **NEUTRAL** and **REVERSE**.



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.



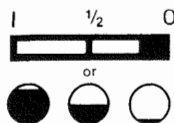
Identifies the meter which indicates battery voltage, or amperage.



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.



Identifies 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.



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.



Indicates **OIL** is to be used or **OIL** is present.



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**.

United States of America
Outboard Marine Corporation
100 Sea Horse Drive
Waukegan, Illinois 60085 U.S.A.
312/689-5630

Canada
Outboard Marine Corporation of Canada, Ltd.
910 Monaghan Road
Peterborough, Ontario, Canada
K9J7B6 (postal code)

WARRANTY

LIMITED ONE (1) YEAR WARRANTY

In the location above, Outboard Marine Corporation (OMC) warrants this new OMC product for one (1) year.

Outboard motors are eligible for this warranty only if registered with OMC. Return of the Owner's Registration Card is a condition precedent to warranty. Only outboard motors purchased from authorized United States or Canadian dealers and intended for sale in the United States or Canada are eligible for warranty registration.

This warranty commences on the date of first retail purchase and extends to original and subsequent retail purchasers; however, in no event shall the duration of this warranty exceed one year measured from the original retail sale.

Any part of this OMC product manufactured or supplied by OMC and found in the reasonable judgment of OMC to be defective in material or workmanship, will be repaired or replaced by an authorized *Evinrude* or *Johnson* dealer without charge for parts and labor.*

This OMC product including any defective part therein must be returned to an authorized *Evinrude* or *Johnson* dealer within the warranty period. The OMC dealer will then execute the warranty procedures on the owner's behalf. The expense of returning the OMC product to the authorized dealer for warranty service and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. OMC's responsibility in respect to warranty claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any OMC product. Proof of purchase will be required by the authorized *Evinrude* or *Johnson* dealer to substantiate any warranty claim.

This warranty does not cover any OMC product that has been subject to misuse, neglect, negligence or accident, or that has been improperly maintained, operated or installed. The warranty does not apply to any damage to the OMC product that is the result of rust or corrosion. The warranty does not cover any OMC product that has been altered or modified so as to adversely affect its operation, performance or durability or that has been altered or modified so as to change the intended use of the OMC product, in addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of other parts or accessories which in the reasonable judgment of OMC are either incompatible with the OMC product or adversely affect its operation, performance or durability.

OMC reserves the right to change or improve the design of any OMC product without assuming any obligation to modify any OMC product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE ONE (1) YEAR WARRANTY PERIOD.

ALL IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE ARE DISCLAIMED IN THEIR ENTIRETY AFTER EXPIRATION OF THE APPROPRIATE ONE (1) YEAR WARRANTY PERIOD.

OMC'S OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND OMC DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

OMC ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES, INCLUDING, BUT NOT LIMITED TO EXPENSE FOR GASOLINE, EXPENSE OF RETURNING THE OMC PRODUCT TO AN AUTHORIZED DEALER AND EXPENSE OF RETURNING THE OMC PRODUCT BACK TO THE OWNER, REMOVAL OF THE OMC PRODUCT FROM A BOAT AND REINSTALLATION, MECHANIC'S TRAVEL TIME, IN-AND-OUT-OF-WATER CHARGES, TELEPHONE OR TELEGRAM CHARGES, TRAILERING OR TOWING CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LODGING, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE OMC PRODUCT, LOSS OF TIME, OR INCONVENIENCE.

SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

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

Any OMC products sold outside the United States or Canada are warranted by the affiliated marketing company of Outboard Marine Corporation. The OMC product must be returned to an authorized dealer who will then execute the warranty procedures on the owner's behalf.

*In the event that a warranty claim is required outside of the continental United States or Canada, with the exception of Alaska and Hawaii, there may be additional charges not covered under warranty based on local practices and conditions, such as, but not limited to freight, insurance, taxes, license fees, import duties and any and all other financial charges, including those levied by governments, states, territories, and their respective agencies which will be the responsibility of the retail purchaser.

Warranty

Europe, Middle East, Africa

Outboard Marine Belgium, N.V.
Pathoekeweg 120
8000 Brugge, Belgium

Australia, New Zealand, Southwest Pacific

Outboard Marine Australia Pty. Ltd.
84 Canterbury Road
Bankstown, New South Wales
Australia, Sydney 70-0701

Caribbean, Mexico, Central America, South America

Outboard Marine International, Inc.
403 Sawgrass Corporate Parkway
Sunrise, Florida 33325 U.S.A.

Bangladesh, Brunei, Burma, Guam, Hong Kong, India, Indonesia, Japan, Korea, Macau, Malaysia, Maldives, Micronesia, Pakistan, People's Republic of China, Philippines, Singapore, Sri Lanka, Taiwan, Thailand

Outboard Marine Asia, Ltd.
T.Y.T.L 35-47 Tsing Yi Road
Tsing Yi Island, New Territories
Hong Kong

In the location above, Outboard Marine (OMC) warrants this new OMC product, provided the product is proven to be used and serviced in accordance with the requirements contained in the product's owner operator manual, Outboard Marine warrants its product to be free of defects in parts or workmanship for a period of twelve months (six months if used commercially) commencing at the date of substantiated first purchase, if any such defect is evidenced and adjudged as being justified by any of our approved product service dealers.

It will be repaired by replacement of such part or parts and include labor to so replace, to the exclusion of any other extraneous costs or liability for incidental, consequential or other damages.

Where local legislation provides the owner of our product any mandatory rights to those prescribed by Outboard Marine, such rights will be respected.

The OMC product under this warranty must be returned to an authorized dealer, who will execute the warranty procedure on the owner's behalf.

OMC **T E C H N I C A L**
 **SERVICE**