40 - 60 (4-stroke) LPG

Owner's Manual

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WARRANTY INFORMATION

TRANSFER OF WARRANTY

The limited warranty is transferable to a subsequent purchaser, but only for the remainder of the unused portion of the limited warranty. This will not apply to products used for commercial applications.

DIRECT SALE BY OWNER

The second owner can be registered as the new owner and retain the unused portion of the limited warranty by sending the former owner's plastic Owner Warranty Registration Card and a copy of the bill of sale to show proof of ownership. In the United States and Canada, mail to:

Mercury Marine
W6250 W. Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939
Attn: Warranty Registration Department

A new owner Warranty Registration Card will be issued with the new owner's name and address. Registration records will be changed on the factory computer registration file.
There is no charge for this service.
For products purchased outside the United States and Canada, contact the distributor in your country, or the Mercury Marine Service Office closest to you.

WARRANTY REGISTRATION

United States And Canada

1. It is important that your selling dealer fills out the Warranty Registration Card completely and mails it to the factory immediately upon sale of the new product.
2. It identifies name and address of the original purchaser, product model and serial number(s), date of sale, type of use and selling dealer's code, name and address. The dealer also certifies that you are the original purchaser and user of the product.
3. Upon receipt of the Warranty Registration Card at the factory, you will be issued a plastic Owner Warranty Registration Card which is your only valid registration identification. It must be presented to the servicing dealer should warranty service be required. Warranty claims will not be accepted without presentation of this card.
4. A temporary Owner Warranty Registration Card will be presented to you when you purchase the product. It is valid only for 30 days from date of sale while your plastic Owner Warranty Registration Card is being processed. Should your product need service during this period, present the temporary registration card to the dealer. He will attach it to your warranty claim form.
5. Because of your selling dealer's continuing personal interest in your satisfaction, the product should be returned to him for warranty service.
6. If your plastic card is not received within 30 days from date of new product sale, please contact your selling dealer.
7. The limited warranty is not effective until the product is registered at the factory.

Note: Registration lists must be maintained by factory and dealer on marine products sold in the United States, should notification under the Federal Boat Safety Act be required.

WARRANTY REGISTRATION

Outside The United States And Canada

1. It is important that your selling dealer fills out the Warranty Registration Card completely and mails it to the distributor or Marine Power Service Center responsible for administering the warranty registration/claim program for your area.
2. The Warranty Registration Card identifies your name and address, product model and serial number(s), date of sale, type of use and the selling distributor's/dealer's code number, name and address. The distributor/dealer also certifies that you are the original purchaser and user of the product.
3. A copy of the Warranty Registration Card, designated as the "Purchaser's Copy", MUST be given to you immediately after the card has been completely filled out by the selling distributor/dealer. This card represents your factory registration identification and should be retained by you for future use when required. Should you ever require warranty service on this product, your dealer may ask you for the Warranty Registration Card to verify date of purchase and to use the information on the card to prepare the warranty claim form(s).
4. In some countries, the Marine Power Service Center will issue you a permanent (plastic) Warranty Registration Card within 30 days after receiving the "Factory Copy" of the Warranty Registration Card from your distributor/dealer. If you receive a plastic Warranty Registration Card, you may discard the "Purchaser's Copy" that you received from the distributor/dealer when you purchased the product. Ask your distributor/dealer if this plastic card program applies to you.

5. For further information concerning the Warranty Registration Card and its relationship to Warranty Claim processing, refer to the "International Warranty".

IMPORTANT: Registration lists must be maintained by the factory and dealer in some countries by law. It is our desire to have ALL products registered at the factory should it ever be necessary to contact you. Make sure your distributor/dealer fills out the warranty registration card immediately and sends the factory copy to the Marine Power International Service Center for your area.

MERCURY MARINE TWO YEARS LIMITED WARRANTY (EUROPE)

WHAT IS COVERED

Mercury Marine warrant each new Mercury Outboard, Mariner Outboard, Jet Products, Thruster Electric Trolling Motors, Mercruiser Inboard or Sterndrive engine products to be free of defects in material and workmanship during the period described below.

DURATION OF COVERAGE

This Limited Warranty provides coverage for two (2) years from the date the product is first sold to a recreational use retail purchaser or the date on which the product is first put into service, whichever occurs first. Commercial users of these products receive warranty coverage of two (2) years from the date of first retail sale, or the accumulation of 500 hours of operation, whichever occurs first. Commercial use is defined as any work or employment related use of the product, or any use of the product generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes. The repair or replacement of parts, or the performance of service under this warranty, does not extend the life of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred to one recreational use to a subsequent recreational use customer upon proper re-registration of the product.

CONDITIONS THAT MUST BE MET IN ORDER TO OBTAIN WARRANTY COVERAGE

Warranty coverage is available only to retail customers that purchase from a Dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified pre-delivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Inaccurate warranty registration information regarding recreational use, or subsequent change of use from recreational to commercial (unless properly re-registered) may void the warranty at the sole discretion of Mercury Marine. Routine maintenance outlined in the Operation and Maintenance Manual must be timely performed in order to maintain warranty coverage. If this maintenance is performed by the retail customer Mercury Marine reserves the right to make future warranty coverage contingent on proof of proper maintenance.

WHAT MERCURY WILL DO

Mercury's sole and exclusive obligation under this warranty is limited to, at our option, repairing a defective part, replacing such part or parts with new or Mercury Marine certified re-manufactured parts, or refunding the purchase price of the Mercury product. Mercury reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

HOW TO OBTAIN WARRANTY COVERAGE

The customer must provide Mercury with a reasonable opportunity to repair, and reasonable access to the product for warranty service. Warranty claims shall be made by delivering the product for inspection to a Mercury dealer authorized to service the product. If purchaser cannot deliver the product to such a dealer, written notice must be given to Mercury. We will then arrange for the inspection and any covered repair. Purchaser in that case shall pay for all related transportation charges and/or travel time. If the service provided is not covered by this warranty, purchase shall pay for all related labor and material, and any other expenses associated with that service. Purchaser shall not, unless requested by Mercury, ship the product or parts of the product directly to Mercury. The warranty registration card is the only valid registration identification and must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

WHAT IS NOT COVERED

This limited warranty does not cover routine maintenance items, tune ups, adjustments, normal wear and tear, damage caused by abuse, abnormal use, use of a propeller or gear ratio that does not allow the engine to run in its recommended wide-open-throttle RPM range (see the Operation and Maintenance Manual), operation of the product in a manner inconsistent with the recommended operation/duty cycle section of the Operation and Maintenance Manual, neglect, accident, submersion, improper installation (proper installation specifications and techniques are set forth in the installation instructions for the product), improper service, use of an accessory or part not manufactured or sold by us, jet pump impellers and liners, operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operation and Maintenance Manual), alteration or removal parts, or water entering the engine through the fuel intake, air intake or exhaust system. Use of the product for racing or other competitive activity, or operating with a racing type lower unit, at any point, even by a prior owner of the product, voids the warranty.

Expenses related to haul-out, launch, towing, storage, telephone, rental, inconvenience, slip fees, insurance coverage, loan payments, loss of time, loss of income, or any other type of incidental or consequential damages are not covered by this warranty. Also, expenses associated with the removal and/or replacement of boat partitions or material caused by boat design for access to the product are not covered by this warranty.

No individual or entity, including Mercury Marine authorized dealers, has been given authority by Mercury Marine to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against Mercury Marine.

For additional information regarding events and circumstances covered by this warranty, and those that are not, see the Warranty Coverage section of the Operation and Maintenance Manual, incorporated by reference into this warranty.

DISCLAIMERS AND LIMITATIONS

THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THE WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMER, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

MERCURY MARINE ONE YEAR LIMITED WARRANTY (CONFEDERATION OF INDEPENDENT STATES, MIDDLE– EAST, AFRICA)

WHAT IS COVERED

Mercury Marine warrant each new Mercury outboard, Mariner outboard, Jet Products, Thruster Electric Trolling Motors, Mercruiser Inboard or Sterndrive engine products to be free of defects in material and workmanship during the period described below.

DURATION OF COVERAGE

This Limited Warranty provides coverage for one (1) year from the date the product is first sold to a recreational use retail purchaser, or the date on which the product is first put into service, whichever occurs first. Commercial users of these products receive warranty coverage of one (1) years from the date of first retail sale, or the accumulation of 500 hours of operation, whichever occurs first. Commercial use is defined as any work or employment related use of the product, or any use of the product, which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes. The repair or replacement of parts, or the performance of service under this warranty, does not extend the life of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred to a subsequent purchaser upon proper re–registration of the product.

CONDITIONS THAT MUST BE MET IN ORDER TO OBTAIN WARRANTY COVERAGE

Warranty coverage is available only to retail customers that purchase from a Dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified pre–delivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Inaccurate warranty registration information regarding recreational use, or subsequent change of use from recreational to commercial (unless properly re–registered) may void the warranty at the sole discretion of Mercury Marine. Routine maintenance outlined in the Operation and Maintenance Manual must be timely performed in order to maintain warranty coverage. If this maintenance is performed by the retail customer Mercury Marine reserves the right to make future warranty coverage contingent on proof of proper maintenance.

WHAT MERCURY WILL DO

Mercury's sole and exclusive obligation under this warranty is limited to, at our option, repairing a defective part, replacing such part or parts with new or Mercury Marine certified re–manufactured parts, or refunding the purchase price of the Mercury product. Mercury reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

HOW TO OBTAIN WARRANTY COVERAGE

The customer must provide Mercury with a reasonable opportunity to repair, and reasonable access to the product for warranty service. Warranty claims shall be made by delivering the product for inspection to a Mercury dealer authorized to service the product. If purchaser cannot deliver the product to such a dealer,written notice must be given to Mercury. We will then arrange for the inspection and any covered repair. Purchaser in that case shall pay for all related transportation charges and/or travel time. If the service provided is not covered by this warranty, purchaser shall pay for all related labor and material, and any other expenses associated with that service. Purchaser shall not, unless requested by Mercury, ship the product or parts of the product directly to Mercury. The warranty registration card is the only valid registration identification and must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

WHAT IS NOT COVERED

This limited warranty does not cover routine maintenance items, tune ups, adjustments, normal wear and tear, damage caused by abuse, abnormal use, use of a propeller or gear ratio that does not allow the engine to run in its recommended wide–open–throttle RPM range (see the Operation and Maintenance Manual), operation of the product in a manner in consistent with the recommended operation/duty cycle section of the Operation and Maintenance Manual, neglect, accident, submersion, improper installation (proper installation specifications and techniques are set forth in the installation instructions for the product), improper service, use of an accessory or part not manufactured or sold by us, jet pump impellers and liners, operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operation and Maintenance Manual), alteration or removal of parts, or water entering the engine through the fuel intake, air intake or exhaust system. Use of the product for racing or other competitive activity, or operating with a racing type lower unit, at any point, even by a prior owner of the product, voids the warranty.

Expenses related to haul–out, launch, towing, storage, telephone, rental, inconvenience, slip fees, insurance coverage, loan payments, loss of time, loss of income, or any other type of incidental or consequential damages are not covered by this warranty. Also, expenses associated with the removal and/or replacement of boat partitions or material caused by boat design for access to the product are not covered by this warranty.

No individual or entity, including Mercury Marine authorized dealers, has been given authority by Mercury Marine to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against Mercury Marine.

For additional information regarding events and circumstances covered by this warranty, and those that are not, see the Warranty Coverage section of the Operation and Maintenance Manual, incorporated by reference into this warranty.

DISCLAIMERS AND LIMITATIONS:
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EX–PRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIALDAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOTALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEYMAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVEOTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

3 YEAR LIMITED WARRANTY AGAINST CORROSION FAILURE

WHAT IS COVERED

Mercury Marine warrants each new Mercury outboard, Mariner outboard, Mercury Racing, Jet Products, Thruster Electric Motor, Mercury Racing, Tracker by Mercury Marine Outboard, Mercruiser Inboard or sterndrive engine (Product) rendered inoperative as a direct result of corrosion for the period of time described below.

DURATION OF COVERAGE

This limited corrosion warranty provides coverage for three (3) years from the date the product is first sold, or the date on which the product is first put into service, whichever occurs first. The repair or replacement of parts, or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred to subsequent (non-commercial use) purchaser upon proper re–registration of the product.

CONDITIONS THAT MUST BE MET IN ORDER TO OBTAIN WARRANTY COVERAGE

Warranty coverage is available only to retail customers that purchase from a Dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified pre–delivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Corrosion prevention devices specified in the Operation and Maintenance Manual must be in use on the boat, and routine maintenance outlined in the Operation and Maintenance Manual must be timely per–formed (including without limitation the replacement of sacrificial anodes, use of specified lubricants, and touch–up of nicks and scratches) in order to maintain warranty coverage. If this maintenance is performed by the retail customer Mercury Marine reserves the right to make future warranty coverage contingent on proof of proper maintenance.

WHAT MERCURY WILL DO

Mercury's sole and exclusive obligation under this warranty is limited to, at our option, repairing a corroded part, replacing such part or parts with new or Mercury Marine certified re–manufactured parts, or refunding the purchase price of the Mercury product. Mercury reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

HOW TO OBTAIN WARRANTY COVERAGE

The customer must provide Mercury with a reasonable opportunity to repair, and reasonable access to the product for warranty service. Warranty claims shall be made by delivering the product for inspection to a Mercury dealer authorized to service the product. If purchaser cannot deliver the product to such a dealer, written notice must be given to Mercury. We will then arrange for the inspection and any covered repair. Purchaser in that case shall pay for all related transportation charges and/or travel time. If the service provided is not covered by this warranty, purchaser shall pay for all related labor and material, and any other expenses associated with that service. Purchaser shall not, unless requested by Mercury, ship the product or parts of the product directly to Mercury. The warranty registration card is the only valid registration identification and must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

WHAT IS NOT COVERED

This limited warranty does not cover electrical system corrosion; corrosion resulting from damage, corrosion which causes purely cosmetic damage, abuse or improper service; corrosion to accessories, instruments, steering systems; corrosion to factory installed jet drive unit; damage due to marine growth; product sold with less than a one year limited Product warranty; replacement parts (parts purchased by customer); products used in a commercial application. Commercial use is defined as any work or employment related use of the product, or any use of the product, which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes. Corrosion damage caused by stray electrical currents (on–shore power connections, nearby boats, submerged metal) is not covered by this corrosion warranty and should be protected against by the use of a corrosion protection system, such as the Mercury Precision Parts or Quicksilver MerCathode system and/or Galvanic Isolator. Corrosion damage caused by improper application of copper base anti–fouling paints is also not covered by this limited warranty. If anti–fouling protection is required, Tri–Butyl–Tin–Adipate (TBTA) base anti–fouling paints are recommended on Outboard and MerCruiser boating applications. In areas where TBTA base paints are prohibited by law, copper base paints can be used on the hull and transom. Do not apply paint to the outboard or MerCruiser product. In addition, care must be taken to avoid an electrical interconnection between the warranted product and the paint. Refer to the Operation and Maintenance Manual for additional details.

For additional information regarding events and circumstances covered by this warranty, and those that are not, see the Warranty Coverage section of the Operation and Maintenance Manual, incorporated by reference into this warranty.

DISCLAIMERS AND LIMITATIONS:
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EX–PRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIALDAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOTALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEYMAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVEOTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

WARRANTY COVERAGE AND EXCLUSIONS

The purpose of this section is to help eliminate some of the more common misunderstandings regarding warranty coverage. The following information explains some of the types of services that are not covered by warranty. The provisions set forth following have been incorporated by reference into the Three-Year Limited Warranty Against Corrosion Failure, the International Limited Outboard Warranty, and the United States and Canada Limited Outboard Warranty. Keep in mind that warranty covers repairs that are needed within the warranty period because of defects in material and workmanship. Installation errors, accidents, normal wear, and a variety of other causes that affect the product are not covered.
Warranty is limited to defects in material or workmanship, but only when the consumer sale is made in the country to which distribution is authorized by us. Should you have any questions concerning warranty coverage, contact your authorized dealer. They will be pleased to answer any questions that you may have.

General exclusions from warranty:

1. Minor adjustments and tune-ups, including checking, cleaning or adjusting spark plugs, ignition components, carburetor settings, filters, belts, controls, and checking lubrication made in connection with normal services.
2. Factory Installed Jet Drive units - Specific parts excluded from the warranty are: The jet drive impeller and jet drive liner damaged by impact or wear, and water damaged drive shaft bearings as a result of improper maintenance.
3. Damage caused by neglect, lack of maintenance, accident, abnormal operation or improper installation or service.
4. Haul-out, launch, towing charges, removal and/or replacement of boat partitions or material because of boat design for necessary access to the product, all related transportation charges and/or travel time, etc. Reasonable access must be provided to the product for warranty service. Customer must deliver product to an authorized dealer.
5. Additional service work requested by customer other than that necessary to satisfy the warranty obligation.

6. Labor performed by other than an authorized dealer may be covered only under following circumstances: When performed on emergency basis (providing there are no authorized dealers in the area who can perform the work required or have no facilities to haul out, etc., and prior factory approval has been given to have the work performed at this facility).
7. All incidental and/or consequential damages (storage charges, telephone or rental charges of any type, inconvenience or loss of time or income) are the owner's responsibility.
8. Use of other than Mercury Precision or Quicksilver replacement parts when making warranty repairs.
9. Oils, lubricants or fluids changed as a matter of normal maintenance is customer's responsibility unless loss or contamination of same is caused by product failure that would be eligible for warranty consideration.
10. Participating in or preparing for racing or other competitive activity or operating with a racing type lower unit.
11. Engine noise does not necessarily indicate a serious engine problem. If diagnosis indicates a serious internal engine condition, which could result in a failure, condition responsible for noise should be corrected under the warranty.
12. Lower unit and/or propeller damage caused by striking a submerged object is considered a marine hazard.
13. Water entering engine through the fuel intake, air intake or exhaust system. Or submersion.
14. Failure of any parts caused by lack of cooling water, which results from starting motor out of water, foreign material blocking inlet holes, motor being mounted too high or trimmed too far out.
15. Use of fuels and lubricants which are not suitable for use with or on the product. Refer to the Maintenance Section.
16. Our limited warranty does not apply to any damage to our products caused by the installation or use of parts and accessories which are not manufactured or sold by us. Failures which are not related to the use of those parts or accessories are covered under warranty if they otherwise meet the terms of the limited warranty for that product.

GENERAL INFORMATION

BOATER'S RESPONSABILITIES

The operator (driver) is responsible for the correct and safe operation of the boat and safety of its occupants and general public. It is strongly recommended that each operator (driver) read and understand this entire manual before operating the outboard.
Be sure at least one additional person on board is instructed in the basics of starting and operating the outboard and boat handling in case the driver is unable to operate the boat.

BEFORE OPERATION YOUR OUTBOARD

Read this manual carefully. Learn how to operate your outboard properly. If you gave any questions, contact your dealer. Safety and operating information that is practiced along with using good common sense can help prevent personal injury and product damage.
This manual as well as safety labels posted on the outboard use the following safety alerts to draw your attention to special safety instructions that should be followed.

DANGER

DANGER: Immediate hazards which WILL result in severe personal injury or death

WARNING

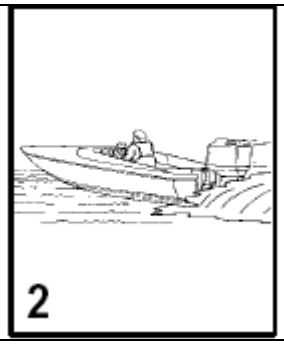
WARNING: Hazards or unsafe practices which COULD result in severe personal injury or death.

CAUTION

CAUTION: Hazards or unsafe practices, which could result in minor injury or product or property damage.

U.S. COAST GUARD CAPACITY

MAXIMUM HORSEPOWER	**XXX**
MAXIMUM PERSON CAPACITY (POUNDS)	**XXX**
MAXIMUM WEIGHT CAPACITY	**XXX**



BOAT HORSEPOWER CAPACITY

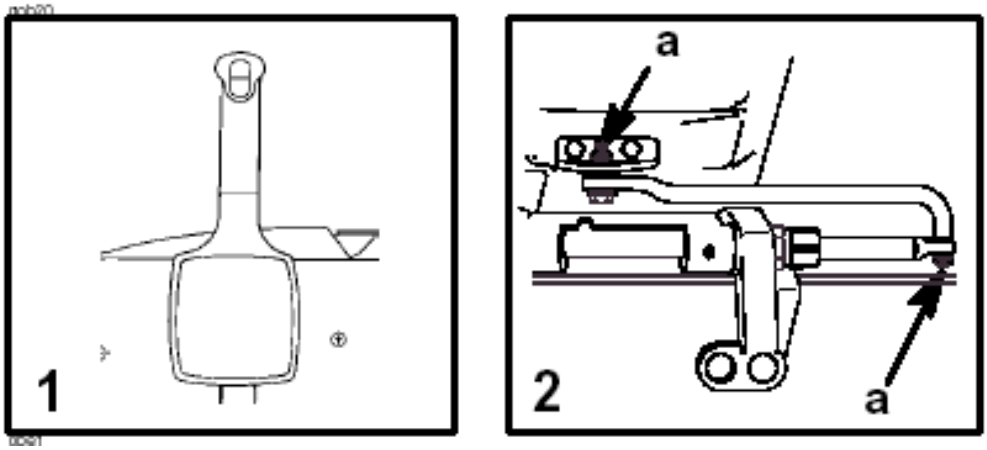
1. Do not overpower or overload your boat. Most boats will carry a required capacity plate indicating the maximum acceptable power and load as determined by the manufacturer following certain federal guidelines. If in doubt, contact your dealer or the boat manufacturer.

WARNING

Using an outboard that exceeds the maximum horsepower limit of a boat can: 1. cause loss of boat control 2. place too much weight at the transom altering the designed flotation characteristics of the boat or 3. cause the boat to break apart particularly around the transom area. Overpowering a boat can result in serious injury, death or boat damage.

HIGH-SPEED AND HIGH PERFORMANCE BOAT OPERATION

2. If your outboard is to be used on a high-speed or high-performance boat with which you are unfamiliar, we recommend that you never operate it at its high speed capability without first requesting an initial orientation and familiarization demonstration ride with your dealer or an operator experienced with boat / outboard combination. For additional information, obtain a copy of our “Hi-performance Boat Operation” booklet (Part Number 90-848481) from your dealer, distributor, or Mercury Marine.



OUTBOARD REMOTE CONTROL MODELS

1. The remote control connected to your outboard must be equipped with a “start-in-neutral” only protection device. This prevents the engine from starting when the shift is actuated in any position other than neutral.

WARNING

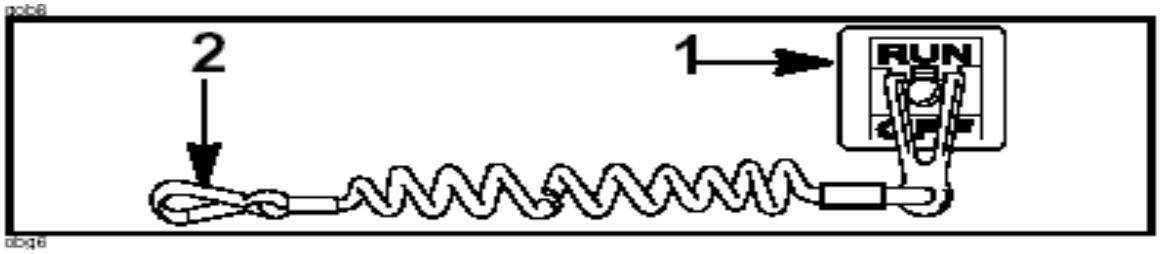
Avoid serious injury or death from a sudden unexpected acceleration when starting your engine. The design of this outboard requires that the remote control used with it must have a built in “start-in-neutral” only protection device.

REMOTE STEERING NOTICE

2. The steering link rod that connects the steering cable to the engine must be fastened utilizing self-locking nuts (a). These self-locking nuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off, freeing the link rod to disengage.

WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.



LANYARD STOP SWITCH

1. The purpose of a lanyard stop switch is to turn off the engine when the operator moves far enough away from the operator's position (as in accidental ejection from the operator's position) to activate the switch. Tiller handle outboards and some remote control units are equipped with a lanyard stop switch. A lanyard stop switch can be installed as an accessory – generally on the dashboard or side adjacent to the operator's position.

2. The lanyard is a cord usually between 4 and 5 feet (1220 and 1524 mm) in length when stretched out with an element on one end for attaching to the operator. The lanyard is coiled to make its at-rest condition as short as possible so as to minimize the likelihood of lanyard entanglement with nearby objects. It is made as long as it is in its stretched condition to minimize the likelihood of accidental activation should the operator choose to move around in an area close to the normal operator's position. If it is desired to have a shorter lanyard, wrap the lanyard around the operator's wrist or leg, or tie a knot in the lanyard.

Read the following Safety Information before proceeding.

Important Safety Information: The purpose of a lanyard stop switch is to stop the engine when the operator moves far enough away from the operator's position to activate the switch. This would occur if the operator accidentally falls overboard or moves within the boat a sufficient distance from the operator's position. Accidental ejections and falls overboard are more likely to occur in certain types of boats such as low sided inflatables or bass boats, high-performance boats and light, sensitive-handling fishing boats operated by hand-tiller. Accidental ejections and falls overboard are also likely to occur as a result of poor operating practices such as sitting on the back of the seat or gunwale at planing speeds, standing at planing speeds, sitting on elevated fishing boat decks, operating at planing speeds in shallow or obstacle-infested waters, releasing your grip on a steering wheel or tiller handle that is pulling in one direction, drinking alcohol or consuming drugs, or daring, high-speed boat manoeuvres.

While activation of the lanyard stop switch will stop the engine immediately, a boat will continue to coast for some distance depending upon the velocity and degree of any turn at shut-down. However, the boat will not complete a full circle. While the boat is coasting, it can cause injury to anyone in the boat's path as seriously as the boat would when under power.

We strongly recommend that other occupants be instructed on proper starting and operating procedures should they be required to operate the engine in an emergency (e.g. if the operator is accidentally ejected).

WARNING

Should the operator fall out of the boat, the possibility of serious injury or death from being run over by the boat can be greatly reduced by stopping the engine immediately. Always properly connect both ends of the stop switch lanyard – to the stop switch and the operator.

Accidental or unintended activation of the switch during normal operation is also a possibility. This could cause any, or all, of the following potentially hazardous situations:

1. Occupants could be thrown forward due to unexpected loss of forward motion
   - a particular concern for passengers in the front of the boat who could be ejected over the bow and possibly struck by the gear case or propeller.
2. Loss of power and directional control in heavy seas, strong current or high winds.
3. Loss of control when docking.

WARNING

Avoid serious injury or death from deceleration forces resulting from in accidental or unintended stop switch activation. The boat operator should never leave the operator's station without first disconnecting the stop switch lanyard from the operator.

PROTECTING PEOPLE IN THE WATER

While You are Cruising

It is very difficult for a person standing or floating in the water to take quick action to avoid a boat heading in his/her direction even at slow speed.

Always slow down and exercise extreme caution any time you are boating in an area where there might be people in the water.

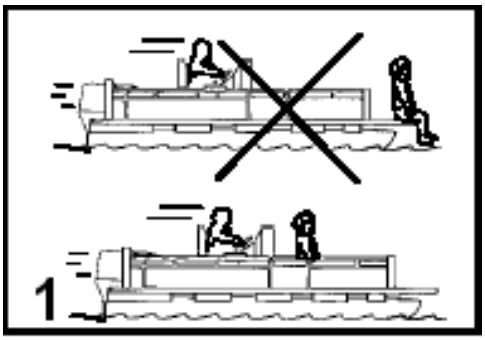
Whenever a boat is moving (coasting) and the outboard gear shift is in neutral position, there is sufficient force by the water on the propeller to cause the propeller to rotate. This neutral propeller rotation can cause serious injury.

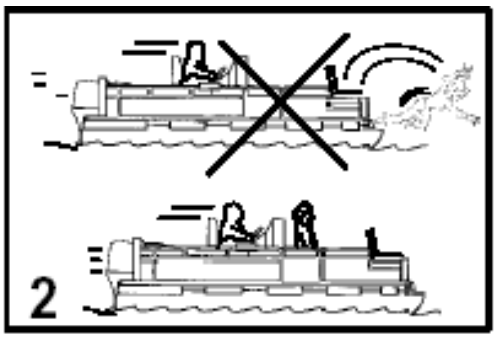
While Boat is Stationary

Shift outboard into neutral and shut off the engine before allowing people to swim or be in the water near your boat.

WARNING

Stop your engine immediately whenever anyone in the water is near your boat. Serious injury to the person in the water is likely if contacted by a rotating propeller, a moving boat, a moving gear case, or any solid device rigidly attached to a moving boat or gear case.





PASSENGER SAFETY MESSAGE – PONTOON BOATS AND DECK BOATS

Whenever the boat is in motion, observe the location of all the passengers.

Do not allow any passengers to stand or use seats other than those designated for traveling faster than idle speed, because a sudden reduction in boat speed, such as the result of plunging into a large wave or wake, a sudden throttle reduction, or a sharp change of boat direction, could throw them over the front of boat. Falling over the front of the boat between the two pontoons will position them to be run over by the outboard.

1 Boats having an open front deck:
No one should ever be on the deck in front of the fence while the boat is in motion.
Keep all passengers behind the front fence or enclosure.

Persons on the front deck could easily be thrown overboard or persons dangling their feet over the front edge could get their legs caught by a wave and pulled into the water.

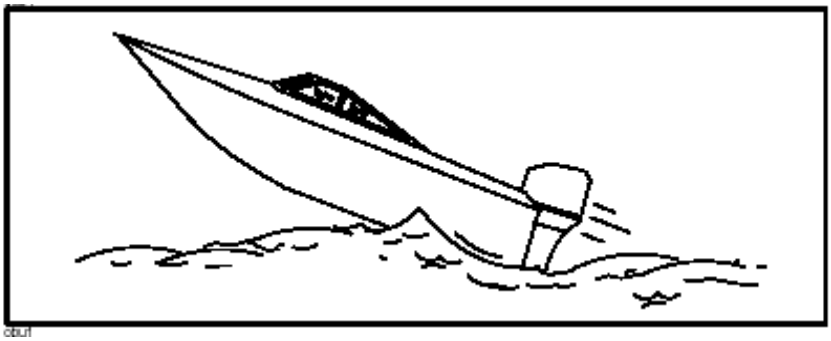
2 Boats with front-mounted, raised pedestal fishing seats:

These elevated fishing seats are not intended for use when the boat is travelling faster than idle or trolling speed. Sit only in seats designated for traveling at faster speeds.

Any unexpected sudden reduction in boat speed could result in the elevated passenger falling over the front of the boat.

WARNING

Avoid serious injury or death from falling over the front end of a pontoon or deck boat and being run over by the outboard. Stay back from the front end of the deck and remain seated while the boat is in motion.



WAVE AND WAKE JUMPING

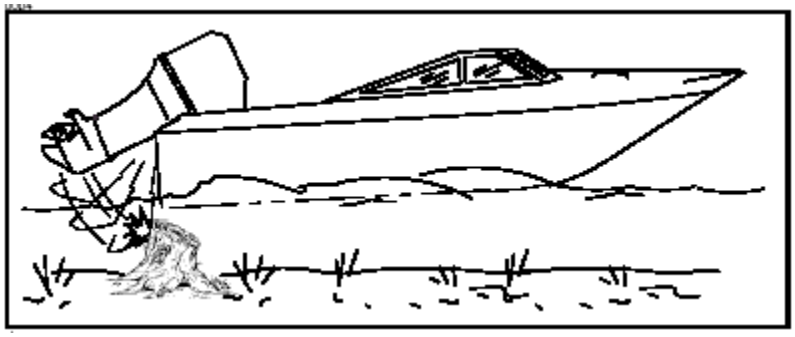
Operating recreational boats over waves and wakes is a natural part of boating. However, when this activity is done with sufficient speed to force the boat hull partially or completely out of the water, certain hazards arise, particularly when the boat re-enters the water.

The primary concern is the boat changing direction while in the midst of the jump. In such case the landing may cause the boat to veer violently in a new direction.Such a sharp change in direction can cause occupants to be thrown out of their seats, or out of the boat.

There is another less common hazardous result from allowing your boat to launch off a wave or wake. If the bow of your boat pitches down far enough while airborne, upon water contact it may penetrate under the water surface and “submarine” for an instant. This will bring the boat to a nearly instantaneous stop and can send the occupants flying forward. The boat may also steer sharply to one side.

WARNING

Avoid serious injury or death from being thrown within or out of a boat when it lands after jumping a wave or wake. Avoid wave or wake jumping whenever possible. Instruct all occupants that if a wake or wave jump occurs, get low and hang on to any boat hand hold.



IMPACT WITH UNDERWATER HAZARDS

Reduce speed and proceed with caution whenever you drive a boat in shallow water areas or in areas where you suspect of underwater obstacles may exist which could be struck by the outboard or the boat bottom. **The most important thing you can do to help reduce injury or impact damage from striking a floating or underwater object is to control the boat speed. Under these conditions, boat speed should be kept to a minimum planing speed (15 to 25 MPH).**

WARNING

To avoid serious injury or death from all or part of an outboard coming into the boat after striking a floating or underwater obstacle maintain a top speed no greater than minimum planing speed.

Striking a floating or underwater object could result in an infinite number of situations. Some of these situations could result in the following:

a) Part of the outboard or the entire outboard could break loose and fly into the boat.
b) The boat could move suddenly in a new direction. Such a sharp change in direction can cause occupants to be thrown out of their seats or out of the boat.
c) A rapid reduction in speed. This will cause occupants to be thrown forward, or even out of the boat.
d) Impact damage to the outboard and/or boat.

Keep in mind; the most important thing you can do to help reduce injury or impact damage in these situations is control the boat speed. Boat speed should be kept to a minimum planing speed when driving in waters known to have underwater obstacles.

After striking a submerged object, stop the engine as soon as possible and inspect the outboard for any broken or loose parts. If damage is present or suspected, the outboard should be taken to an authorized dealer for a thorough inspection and necessary repair.

The boat should also be checked for any hull fractures, transom fractures, or water leaks.

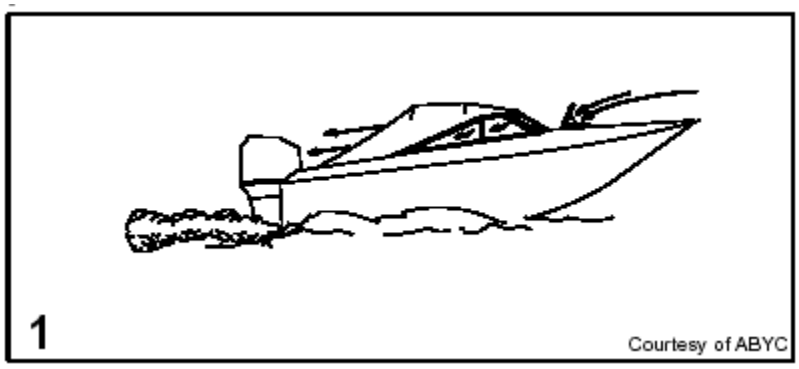
Operating a damaged outboard could cause additional damage to other parts of the outboard, or could affect control of the boat. If continued running is necessary, do so at greatly reduced speeds.

WARNING

Avoid serious injury or death from loss of boat control. Continued boating with major impact damage can result in sudden outboard component failure with or without subsequent impacts. Have the outboard thoroughly inspected and any necessary repairs made.

Additional safety instructions for Hand tilled outboards

When operating a hand tilled outboard, no operator, passenger, or cargo should occupy the space directly in front of the outboard. This space may be violently filled by the outboard if the outboard should kick up from striking an underwater obstacle.



EXHAUST EMISSIONS

Be Alert To Carbon Monoxide Poisoning

Carbon monoxide is present in the exhaust fumes of all internal combustion engines including the outboards, stern drives and inboard engines that propel boats, as well as the generators that power various boat accessories. Carbon monoxide is a deadly gas that is odorless, colorless and tasteless.

Early symptoms of carbon monoxide poisoning which should not be confused with seasickness or intoxication include headache, dizziness, drowsiness, and nausea.

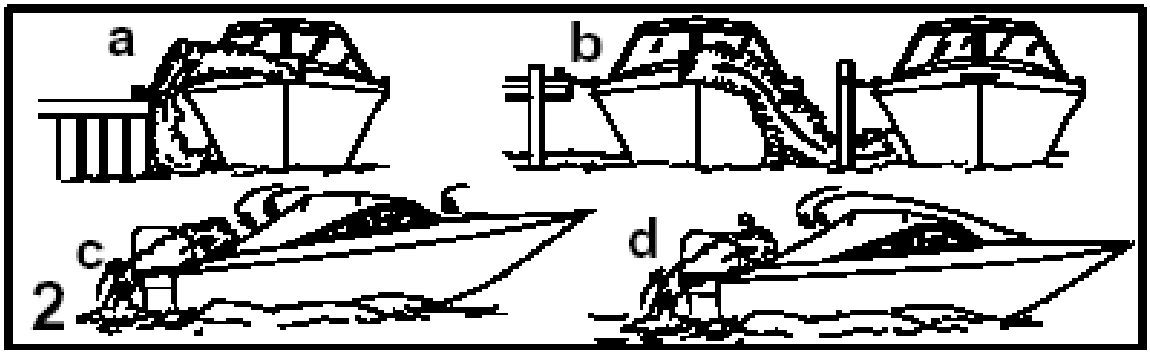
WARNING

Avoid the combination of a running engine and poor ventilation. Prolonged exposure to carbon monoxide in sufficient concentration can lead to unconsciousness, brain damage, or death.

Good Ventilation

Ventilate passenger area, open side curtains, or forward hatches to remove fumes.

1 Example of desired air flow through the boat.



Poor Ventilation

Under certain running and/or wind conditions, permanently enclosed or canvas enclosed cabins or cockpits with insufficient ventilation may draw in carbon monoxide. Install one or more carbon monoxide detectors in your boat.

Although the occurrence is rare, on a very calm day, swimmers and passengers in an unclosed area of a stationary boat that contains or is near a running engine may be exposed to a hazardous level of carbon monoxide.

2 Examples of Poor Ventilation:
While boat is stationary
a) Running the engine when the boat is moored in a confined space.
b) Mooring close to another boat that has its engine running.

While boat is moving
c) Running the boat with the trim angle of the bow too high.
d) Running the boat with no forward hatches open (station wagon effect).

SELECTING ACCESSORIES FOR YOUR OUTBOARD

Genuine Mercury Precision or Quicksilver Accessories have been specifically designed and tested for your outboard. These accessories are available from Mercury Marine dealers.

Some accessories not manufactured or sold by Mercury Marine are not designed to be safely used with your outboard or outboard operating system. Acquire and read the installation, operation, and maintenance manuals for all your selected accessories.

WARNING

Check with your dealer before installation of accessories. The misuse of acceptable accessories or the use of unacceptable accessories can result in serious injury, death, or product failure.

SAFE BOATING SUGGESTIONS

In order to safely enjoy the waterways, familiarize yourself with local and other governmental boating regulations and restrictions, and consider the following suggestions.

Use flotation devices. Have an approved personal flotation device of suitable size for each person aboard (it is the law) and have it readily accessible.

Do not overload your boat. Most boats are rated and certified for maximum load (weight) capacities (refer to your boat capacity plate). If in doubt, contact your dealer or the boats manufacturer.

Perform safety checks and required maintenance. Follow a regular schedule and ensure that all repairs are properly made.

Know and obey all nautical rules and laws of the waterways. Boat operators should complete a boating safety course. Courses are offered in the U.S.A. by (1) The U.S. Coast Guard Auxiliary, (2) The Power Squadron, (3) The Red Cross and (4) your state boating law enforcement agency. Inquiries may be made to the Boating Hot-line, 1-800-368-5647 or the Boat U.S. Foundation information number 1-800-336-BOAT.

Make sure everyone in the boat is properly seated. Don't allow anyone to sit or ride on any part of the boat that was not intended for such use. This includes backs of seats, gunwales, transom, bow, decks, raised fishing seats, any rotating fishing seat; anywhere that sudden unexpected acceleration, sudden stopping, unexpected loss of boat control or sudden boat movement could cause a person to be thrown overboard or into the boat.

Never be under the influence of alcohol or drugs while boating (it is the law). They impair your judgment and greatly reduce your ability to react quickly.

Prepare other boat operators. Instruct at least one person on board in the basics of starting and operating the outboard and boat handling in case the driver becomes disabled or falls overboard.

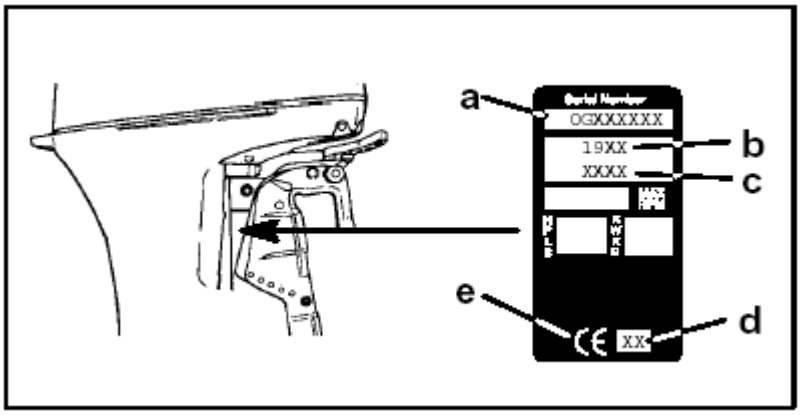
Passenger boarding. Stop the engine whenever passengers are boarding, unloading or are near the back (stern) of the boat. Just shifting the outboard into neutral is not sufficient.

Be alert. The operator of the boat is responsible by law to "maintain a proper lookout by sight (and hearing)." The operator must have an unobstructed view particularly to the front. No passengers, load, or fishing seats should block the operators view when operating the boat above idle speed.

Never drive your boat directly behind a water skier in case the skier falls. As an example, your boat traveling at 25 miles per hour (40 km/hr) in 5 seconds will overtake a fallen skier who was 200 feet (61m) in front of you.

Watch fallen skiers. When using your boat for water skiing or similar activities, always keep a fallen or down skier on the operator's side of the boat while returning to attend the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.

Report accidents. Boat operators are required by law to file a Boating Accident Report with their state boating law enforcement agency when their boat is involved in certain boating accidents. A boating accident must be reported if (1) there is loss of life or probable loss of life, (2) there is personal injury requiring medical treatment beyond first aid, (3) there is damage to boats or other property where the damage value exceeds $500.00 or (4) there is complete loss of the boat. Seek further assistance from local law enforcement.



RECORDING SERIAL NUMBER

It is important to record this number for future reference. The serial number is located on the outboard as shown.

a) Serial Number
b) Model Year
c) Model Designation
d) Year Manufactured
e) Certified Europe Insignia (as Applicable)

SPECIFICATIONS

MODELS	40	60
Horsepower	40	60
Kilowatts	29.8	44.7
Full Throttle RPM Range	5500-6000 RPM	
Idle Speed in Forward Gear	725 ± 25 RPM	
Number of Cylinders	4	
Piston Displacement	60.8 cu. in. (995cc)	
Cylinder Bore	2.559 in. (65mm)	
Stroke	2.953 in. (75mm)	
Valve Clearance (Cold) Intake Valve Exhaust Valve	 0.006-0.10 in. (0.15-0.25 mm) 0.010-0.014 in. (0.25-0.35 mm)	
Recommended Spark Plug	Champion RA8HC	
Spark Plug Gap	0.040 (1.0 mm)	
Gear Ratio 83mm Diameter Gear Case 108mm Diameter Gear Case	 1.83:1 2.31:1 or 2.33:1	
Recommended Gasoline	Refer to Fuel Section	
Recommended LPG	Refer to Fuel Section	
Recommended Oil	Refer to Fuel Section	
Gear Case Lubricant Capacity 83mm Diameter Gear Case 108mm Diameter Gear Case	 11.5 fl. Oz. (340 ml) 22.5 fl. Oz. (665 ml)	
Engine Oil Capacity	3 Quarts (3.0 Liter)	
Battery Rating Operation Above 32° F (0°C) Operation Above 32° F (0°C) Ampere Hours (Ah)	 465 Marine Cranking Amps (MCA) or 350 Cold Cranking Amps (CCA) 1000 Marine Cranking Amps (MCA) or 750 Cold Cranking AMPS (CCA) 70-100	

RECOMMENDATIONS FOR THE SAFE USE OF LPG AS A PROPULSION FUEL FOR BOATS, YACHTS AND OTHER CRAFT

The information is given in good faith and believe in its accuracy, but does not imply any acceptance of legal liability or responsibility by Mercury Marine.

TYPICAL PROPERTIES OF LPG

LPG is the commercial name for commercial propane and commercial butane. There are hydrocarbon products produced by the oil and gas industries.
The combustion of LPG produces carbon dioxide (CO2) and water vapour, but sufficient air must be available. Inadequate appliance fuelling and / or ventilation, or poor air gas mixing (for example due to lack of servicing) can result in the production of toxic carbon monoxide.
Everyone concerned with the storage and handling of LPG should be familiar with the following characteristics and potential hazards:

1. LPG is stored as a liquid under pressure. It is almost colourless and its weight is approximately half that of an equivalent volume of water.
2. LPG vapour is denser than air: butane is about twice as heavy as air and propane about one and a half times as heavy as air. Consequently, the vapour may flow along the ground and into drains, sinking to the lowest level of the surroundings and be ignited at a considerable distance from the source of leakage. In still air vapour will disperse slowly.
3. LPG can form a flammable mixture when mixed with air. The flammable range at ambient temperature and pressure extends between approximately 2 % of the vapour in air at its lower limit and approximately 10 % of the vapour in air at its upper limit. Within this range there is a risk of ignition. Outside this range any mixture is either too weak or too rich to propagate flame. However, over-rich mixtures can become hazardous when diluted with air and will also burn at the interface with air. At pressures greater than atmospheric, the upper limit of flammability is increased but this increase with pressure is not linear.
4. Escape of even small quantities of the liquefied gas can give rise to large volumes of vapour / air mixture and thus cause considerable hazard.

   A NAKED FLAME SHOULD NEVER BE USED TO SEARCH FOR A LEAK

5. At very high concentrations in air, LPG vapour is anaesthetic and subsequently an asphyxiant by diluting or decreasing the available oxygen.
6. Commercial LPG is normally odorised before distribution by the addition of an odorant, to enable detection by smell of the gas at concentrations down to one-fifth of the lower limit of flammability (i.e. approximately 0, 4 % of the gas in air).
7. Escape of LPG may be noticeable other than by smell. When the liquid evaporates, the cooling effect on the surrounding air causes condensation and even freezing of water vapour in the air. This effect may show itself as frost at the point of escape and thus make it easier to detect an escape of LPG. Because the refractive index of LPG differs from air, leaks can sometimes be seen as a 'shimmering'.
8. Owing to its rapid vaporisation and consequent lowering of temperature, LPG, particularly liquid, can cause severe frost burns if brought into contact with the skin. Personal protective equipment (e.g. hand and eye protection) should be worn if this hazard is likely to occur.
9. A container that held LPG and is 'empty' may still contain LPG in vapour form and is thus potentially dangerous. In this state the internal pressure is approximately atmospheric. If a valve is leaking or is left open, air can diffuse into the container forming a flammable mixture and creating a risk of explosion: alternatively, LPG can diffuse to the atmosphere.

***Note**: These properties are general characteristics of LPG, and items such as 8 should not occur in normal cylinder usage.*

DEFINITIONS

Competent person: A person with knowledge, training and ability to carry out their work safely and with the necessary proficiency to ensure the subsequent safe operation of the vessel.
Component: Any equipment thought which the LPG or other fuel flows and is added as part of the vessel conversion.
Cylinder: Any vessel or container of approved design containing LPG under pressure used to transport or store LPG.
Bi-Fuel : Where two alternative fuels are provided.
LPG locker or compartment: A purpose designed enclosure to hold only the LPG gas bottle (s) and the associated regulator(s) safety equipment and hose(s).

Stop fill valve: A double check level device, which prevents the over filling of a fuel container beyond a pre-determined liquid level (usually 80 %)
A lock-off valve: A term used to describe a shutt-off valve in the fuel feed line which will automatically shutt-off the fuel feed to the engine under specified conditions relating to vessel operation and safety.
Non Return Valve / Check valve: A device to permit flow in one direction and prevent the flow in opposite direction.

LPG CYLINDERS AND STORAGE

Liquefied Petroleum Gas (LPG) cylinders should be stowed on the open deck either completely in the open air or in a deck locker compartment that should be vented at low level and high level, so that any leakage of gas can disperse rapidly and be prevented from entering the hull interior.
Lockers or compartments should not be used for the storage of any equipment than LPG cylinders, and associated control equipment and kept clear of extraneous materials. Unconnected reserve or empty cylinders should be stowed similarly to those in service. Cylinder valves should be kept closed when the engine is not in use and when cylinders are regarded as empty.

IMPORTANT
1. Cylinders should never be stowed below the deepest loaded water line.
2. Cylinders should not be mounted outside the plan view of the hull

STOWAGE ON THE DECK

The sitting of the stowage area should be such that:
1. The possibility of cylinders sustaining mechanical damage is reduced to the minimum.
2. Neither the cylinders nor the compartment form an obstruction.
3. The area is at least 1 m away from hatches, other openings or possible sources of ignition.
4. The cylinders are secured in the correctly orientated position
5. The cylinders are easily accessible and readily removable in an emergency.

STOWAGE WITHIN A VESSEL

Stowage within a vessel means any location within the hull of the vessel including the cockpit of launches or recesses in decks as well as below decks or within the superstructure of large vessels.
In all cases LPG cylinders should be stowed in a separate locker or compartment.
LPG cylinders should not be stowed in accommodation spaces.

CONSTRUCTIONS OF CYLINDERS LOCKERS AND COMPARTMENTS

The construction and location of cylinder lockers or compartment should be such that there is an adequate separation of the cylinder compartment and /or the compartment sited in a low risk position in the boat, and the following conditions should be complied with:

1. Cylinders should be secured in the correctly orientated position.
2. A locker or compartment should be vapour-tight to the hull interior and openable only from the top except in the case of a deck locker which may be openable from the outside.
3. The material used in the construction of a locker or compartment should have a fire resistance of 30 min.
4. The locker or compartment should be ventilated at low and high level outside the hull or superstructure. The low level ventilation should be from the locker or compartment bottom above the deepest loaded waterline. Drainage / vent pipes should be of not less than 13 mm internal diameter for containers having a combined capacity of up to 15 kg but they should be enlarged pro rata where additional gas is carried. The opening should be remote from the engine exhaust system and at least 250 mm from it. The opening should, by position or other means, be protected from blockage, both from within and without.
5. For compartments situated wholly below deck but above the deepest loaded waterline, flame arresters should be fitted at the vent outlets unless the ventilation is to a safe area.
6. The locker or compartment should be designed to hold both the cylinders and the associated regulator equipment. The supply from the locker or compartment should be fixed by pipework from suitable bulkhead fitting.
7. The opening into a locker or compartment should allow for the operation of any valves, replacement of cylinders, and access to connections or regulating devices. The position of any main gas valve should be clearly indicated.
8. The readily ignitable material should not be placed in compartments used for housing the cylinder and the fittings immediately associated with it.

MAINTENANCE AND INSPECTION

Installation and commissioning of the fuel supply system should be carried out by competent persons adequately trained on LPG installation work on engines and in boats who are conversant with the properties of LPG.

STORAGE - REPAIR AND MAINTENANCE

Craft fuelled with LPG may be parked, service and repaired inside workshops provided that the following conditions are observed:

1. Only trained and competent personnel on the use of LPG as a fuel for boats should be allowed to work on the craft's engine or fuel system.
2. There shall be no leaks in the fuel system and the fuel containers shall not be filled beyond the 80 % maximum level.
3. Craft shall not be positioned within 3 m of sources of heat, open flames or other sources of ignition.
4. Unless the fuel is required for engine operation, LPG fuelled craft being repaired in workshops shall have the fuel container(s) shutt-off valve closed and the LPG fuel in the service line exhausted by running the engine or, if this is not possible, by disconnecting, in the open air, where the LPG cannot accumulate.
5. Craft undergoing repairs involving welding or the application heat, to any part within 1m of the fuel container, shall have the fuel lines emptied as (d) and the fuel container removed or shielded from the source of heat.
6. If the craft is to be repaired over an open pit, the pit shall be adequately ventilated. It is recommended that lighting needs to be safe to use in the area and that gas detectors are permanently fitted at the bottom pf the pit. These should be checked daily.

EMERGENCY PROCEDURES

The emergency action taken depends upon the situation is categorised as:

1. Leakage of LPG without fire.
2. Leakage of LPG which has ignited.
3. Fire external to containers or appliances.

Leakage of LPG Without fire

Because LPG is normally stenched, a leakage will normally be detected by smell but can be detected by an automatic gas detector, if fitted.

If leakage of LPG is suspected or detected, the following action should be taken immediately.

1. Shut down the engine.
2. Do not operate other electric switches.
3. Shut off the supply of gas by closing the main container valve(s).
4. Extinguishing all naked flames and other sources of ignition, e.g heaters, cookers, pilot lights, cigarettes, etc.
5. Ventilate by creating a through draught to disperse gas,
6. If possible, evacuate the area because leak with no fire may form an explosive mixture.
7. If leakage cannot be stopped remove containers from the vessel to a safe place, preferably in the open air. Place the container in a position on deck where the leaking gas will be blown away from other vessels in the vicinity. Extreme care should be taken to remove the container and/or the self-contained appliance in such a way as to prevent spillage of liquid.
8. Do not use the installation again until it has been checked and, if necessary, the fault rectified by a competent person.

Leakage Of LPG which Has Ignited

Action will depend upon whether the boat is **1** at a landing or **2** off-shore.

1 At a landing:

1. Raise the alarm and if practicable, call the fire brigade.
2. Alert everyone in the vicinity and, if possible, evacuate the area.
3. It is safe to do so, the flame should be extinguished by shutting off the supply gas, preferably by closing the container valve. No attempt should be made to extinguish the flame in any other way. After closing the container valve use extinguishers provided or water from over the side for free fires.
4. Inform the fire brigade on arrival of the location of the gas container.
5. Do not use the installation again until it has been checked and rectified by a competent person.

2 Off-Shore

1. Alert everyone on board.
2. Close the container valve(s), use extinguishers provided or water from over the side for free burning fires.
3. Do not use the installation again until it has been checked and rectified by a competent person.

Fire External to containers or Appliances

If there is a fire external to a LPG container or self-appliances, which has or could spread to the container, the following action should be taken.

1. Alert everyone on board. Anyone not fighting the fire should, if possible, leave the boat.
2. Close the container valves and, if safe and possible to do so, remove containers to a safe place in the open air.
3. If containers cannot be removed, it is essential that every effort is made to keep them cool by covering with wet blankets, etc. and spraying with water.

4. Do not use the installation again until it has been checked and rectified by a competent person.

SAFETY SIGNS AND LABELS

Each LPG system installed on a boat shall be provided with a plainly visible sign located in the vicinity of the cylinder. The sign shall contain at least the following informational elements:

1. The hazard intensity signal word
2. The nature of the hazard
3. Consequences that can result if the instructions to avoid the hazard are not followed and the instructions on how to avoid the hazard.
4. A sign containing a warning against connecting the LPG system to a Compressed Natural Gas (CNG) fuel supply.
5. On boats with gasoline engines, the sign required shall include an additional warning about hazards of gasoline vapors and open flame appliance.

WARNING

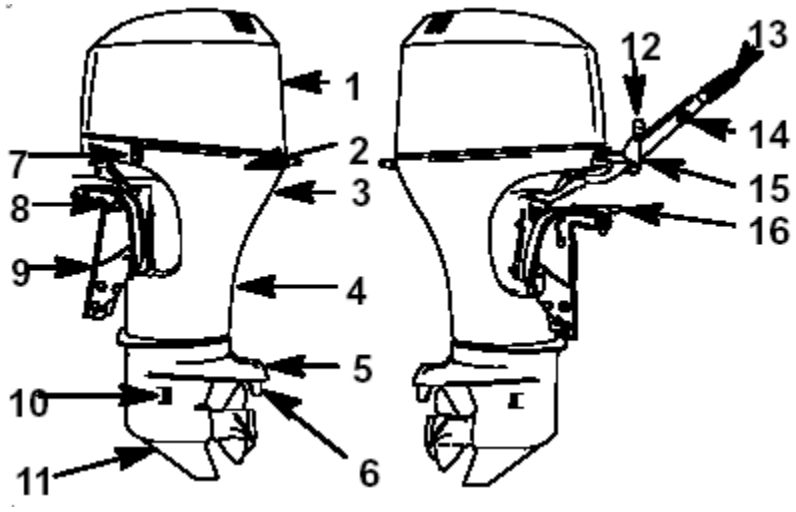
Liquefied propane gas (LPG) is flammable and explosive. Follow these instructions to avoid injury or death from fire or explosion.

1. **This system is designed for use with liquefied petroleum gas (LPG/Propane/butane) only.**
2. **Do not compress natural gas (CNG) to this system.**
3. **Keep LPG cylinder and /or solenoid valve(s) closed when the boat is unattended, and when appliances are not in use.**
4. **Close cylinder valves immediately in an emergency**

WARNING

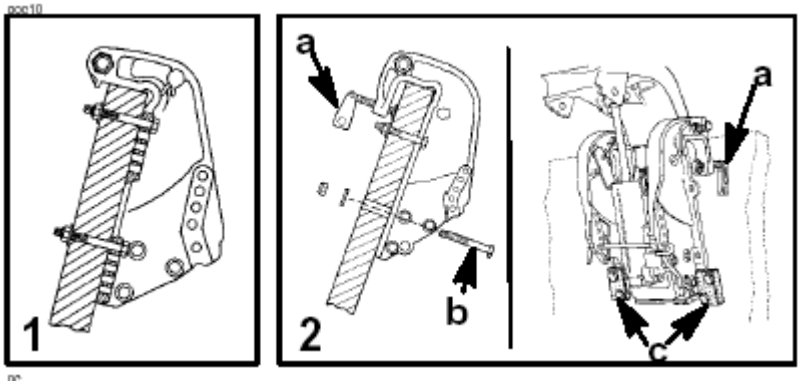
1. **Gasoline vapors are explosive.**
2. **Open flame appliances can ignite gasoline vapor causing death or injuries from the fire or explosion.**
3. **Turn off all open flame appliances when fuelling**

INSTALLATION



COMPONENT IDENTIFICATION

1. Top Cowl
2. Bottom Cowl
3. Water Pump Indicator Hole
4. Drive Shaft Housing
5. Anti-Ventilation Plate
6. Trim Tab
7. Auxiliary Tilt Switch
8. Tilt Support Pin
9. Transom Brackets
10. Primary Cooling Water Intake
11. Gear Case
12. Shift Handle
13. Engine Stop Switch
14. Throttle Friction Adjustment Knob
15. Lanyard Stop Switch
16. Steering Friction Adjustment Lever (Tiller Handle Models)



INSTALLING OUTBOARD

WARNING

Before operation, the outboard must be correctly installed with the required mounting hardware as shown. Failure to correctly fasten outboard could result in outboard ejecting off boat transom causing serious injury, death, or property damage.

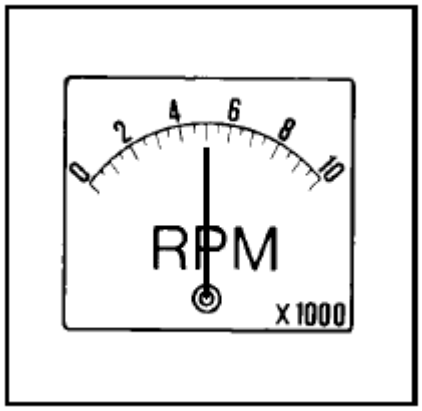
We strongly recommend that your dealer install your outboard and related accessories to ensure proper installation and good performance. If you install the outboard yourself, follow instructions in the outboard installation manual which is provided with the outboard.

Models Without Transom Bracket Clamp Screws

1. The outboard must be secured to the transom with the four 1/2 inch diameter mounting bolts and locknuts (provided). Install two bolts thru the upper set of holes and two bolts thru the lower set of holes.

Models With Transom Bracket Clamp Screws

2. The outboard must be secured to the transom one of two ways: EITHER with clamp screws (a) and two mounting bolts and locknuts (b) provided, OR with clamp screws (a) and optional Quicksilver or Mercury Precision Parts Outboard Mounting Kit No. 812432A4 (c).



PROPELLER SELECTION

For best all around performance from your outboard/boat combination, select a propeller that allows the engine to operate in the upper half of the recommended full throttle RPM range with the boat normally loaded (refer to Specifications). This RPM range allows for better acceleration while maintaining maximum boat speed.

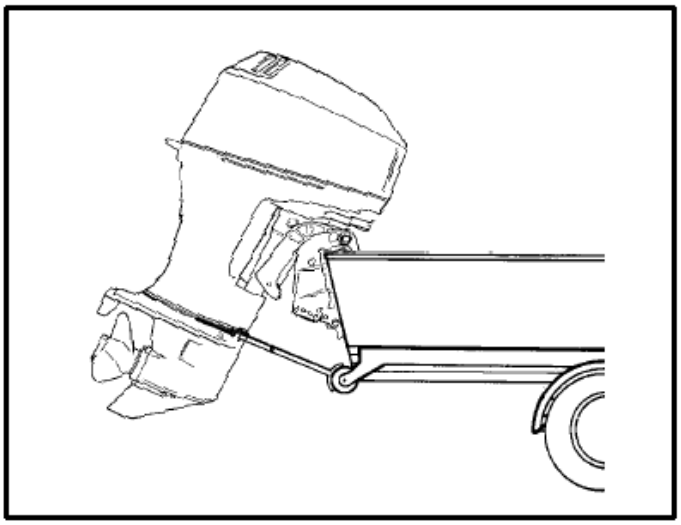
If changing conditions cause the RPM to drop below the recommended range (such as warmer, more humid weather, operation at higher elevations, increased boat load, or a dirty boat bottom/gear case), a propeller change or cleaning may be required to maintain performance and ensure the outboards durability.

Check full-throttle RPM, using an accurate tachometer, with the engine trimmed out to a balanced-steering condition (steering effort equal in both directions) without causing the propeller to “break loose.”

PROPELLER REQUIREMENTS – BIGFOOT MODELS

Bigfoot models require the use of specially designed rubber hub propellers to reduce both instances and severity of gear case clutch rattle. The use of the other propellers, although not detrimental to either performance of durability could result in clutch rattle.

TRANSPORTING



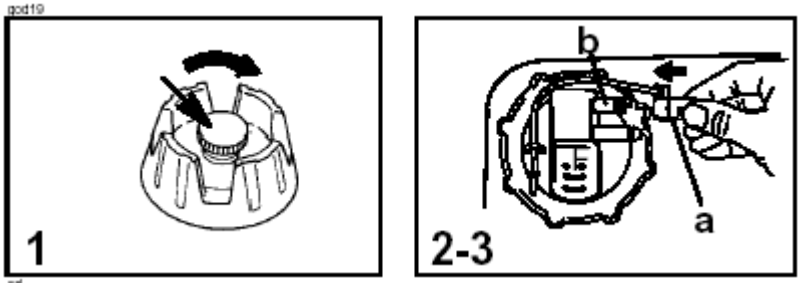
TRAILERING BOAT/OUTBOARD

Trailer your boat with the outboard tilted down (vertical operating position).

If additional ground clearance is required, the outboard should be tilted up using an accessory outboard support device. Refer to your local dealer for recommendations. Additional clearance may be required for railroad crossings, driveways and trailer bouncing.

IMPORTANT: Do not rely on the power trim/tilt system or tilt support lever to maintain proper ground clearance for trailering. The outboard tilt support lever is not intended to support the outboard for trailering.

Shift the outboard to forward gear. This prevents the propeller from spinning freely.



TRANSPORTING PORTABLE FUEL TANKS

Manual venting Type Fuel Tank
1. Close fuel tank air vent when transporting tank. This will prevent escape of fuel or vapors from tank.

Auto-venting Type Fuel Tank
2. Disconnect the remote fuel line from tank. This will close the air vent and prevent escape of fuel or vapors from tank.

3. Install tether cap (a) over the fuel line connector stem (b). This will protect the connector stem from being accidently pushed-in, thus, allowing fuel or vapor to escape.

WARNING

Avoid serious injury or death from a gasoline fire or explosion. Follow portable fuel tank transporting instructions. Transport the fuel tank in a well ventilated area away from open flame or sparks.

FUEL & OIL

GASOLINE RECOMMENDATIONS

United States and Canada

Use a major brand of automotive unleaded gasoline with a minimum posted octane rating of 87. Mid-grade automotive gasolines that contain fuel injector cleaner are preferred for added internal engine cleanliness. Leaded gasoline is not recommended.

International

Use a major brand of automotive unleaded gasoline with a minimum posted octane rating of 90RON. Automotive gasolines that contain fuel injector cleaner are preferred for added internal engine cleanliness. Leaded gasoline is acceptable in areas where unleaded gasoline is not available.

Alcohol in Gasoline

We do not recommend the use of gasoline which contains alcohol because of the possible adverse effect the alcohol may have on the fuel system. In general, if only gasoline containing alcohol is available, it must not contain more than 10% ethanol or 5% methanol, and the addition of a Water Separating Fuel Filter is recommended.

If gasoline containing alcohol is used or if you suspect the presence of alcohol in your gasoline, increase your inspection of the fuel system, visually checking for fuel leaks or abnormalities.

Gasoline containing alcohol may cause the following problems to your outboard and fuel system:

- Corrosion of metal parts.
- Deterioration of elastomers and plastic parts.
- Wear and damage of internal engine parts.
- Starting and operating difficulties.
- Vapor lock or fuel starvation.

Some of these adverse effects are due to the tendency of gasoline containing alcohol to absorb moisture from the air, resulting in a phase of water and alcohol which separates from the gasoline in the fuel tank.
The adverse effects of alcohol are more severe with methanol and are worse with increasing content of alcohol.

FILLING FUEL TANK

WARNING

Avoid serious injury or death from a gasoline fire or explosion. Always stop the engine and DO NOT smoke or allow open flames or sparks in the area while filling fuel tanks.

Fill fuel tanks outdoors away from heat, sparks, and open flames.

Remove portable fuel tanks from boat to refill them.

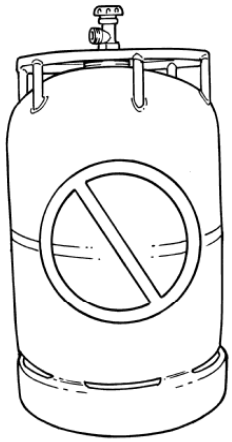
Always stop engine before refilling tanks.

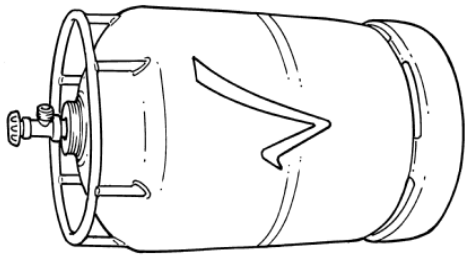
Do not completely fill the fuel tanks. Leave approximately 10% of the tank volume unfilled. Fuel will expand in volume as its temperature rises and can leak under pressure if the tank is completely filled.

Portable Fuel Tank Placement in the Boat

Place the fuel tank in the boat so that the tank vent will stay higher than the fuel level in the tank under normal boat operating conditions.

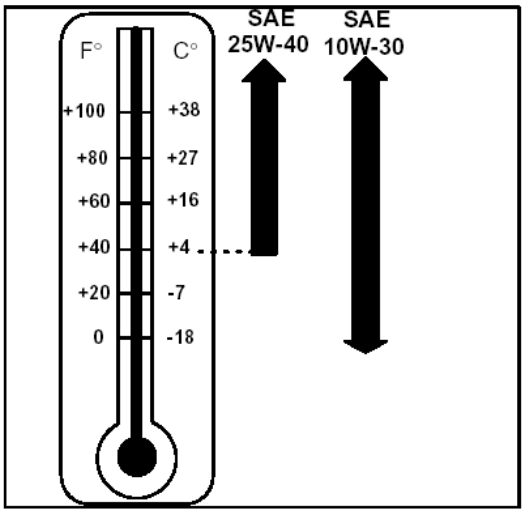
Portable LPG Cylinder Placement In the Boat
Place the portable LPG Cylinder in the boat so that the cylinder valve will stay higher than the LPG level in the tank under normal boat operating conditions.





LPG RECOMMENDATIONS

LPG usage as a fuel for engines is a mixture primarily made up of Butane and Propane in variable proportions. Those can vary according to the distributive firms and the seasons so as to allow a starting of the engine under the best conditions. In general the percentage of propane is highest in winter so as to facilitate cold start.

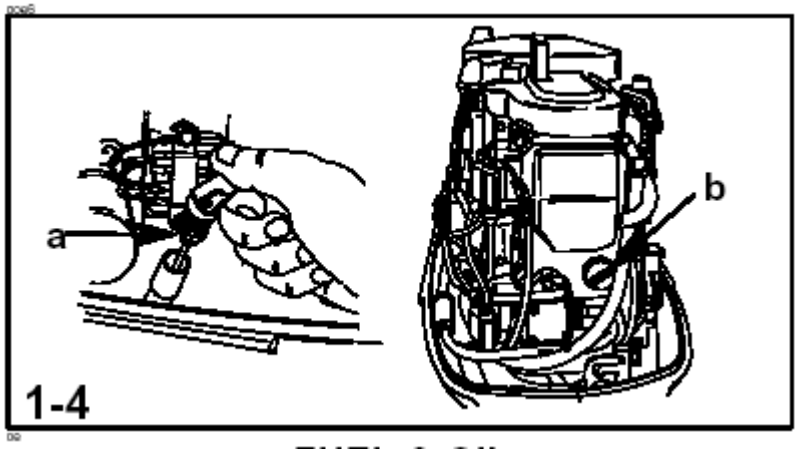


ENGINE OIL RECOMMENDATIONS

We recommend the use of Mercury or Quicksilver SAE 10W-30 multi-viscosity 4-stroke outboard oil for general, all-temperature use. If SAE 25W-40 multi-viscosity oil is preferred, (see chart above) use Mercury MerCruiser 4-cycle engine oil or Quicksilver sterndrive & inboard 4-cycle engine oil. Never use 4-cycle engine oil that is not certified to meet or exceed any one or combination of the following American Petroleum Institute (API) Service Classification SH, SG, SF, CF-4, CE, CD, CDII. Severe engine damage may result from use of an inferior oil.

Recommended SAE Viscosity for Engine Oil

- SAE 10W-30 viscosity oil is recommended for use in all temperatures.
- SAE 25W-40 viscosity oil may be used at temperatures above 40° F (4° C).



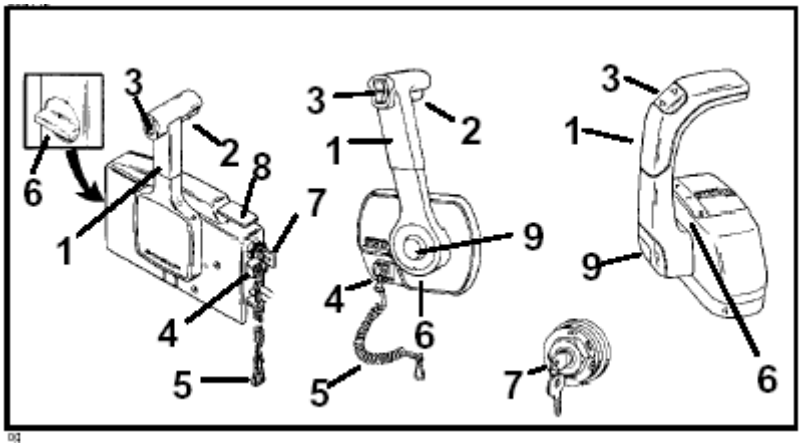
CHECKING AND ADDING ENGINE OIL

IMPORTANT: Do not overfill. Be sure that the outboard is upright (not tilted) when checking oil.

1. Turn the engine off. Have the outboard in a level operating position. Remove the top cowl.
2. Flip the handle up and pull out the dipstick (a). Wipe it with a clean rag or towel and push it back in all the-way.
3. Pull the dipstick back out again and observe the oil level. If the oil level is low, remove the oil filler cap (b) and fill to (but not over) the upper oil level with the recommended oil.

IMPORTANT: Inspect oil for signs of contamination. Oil contaminated with water will have a milky color to it; oil contaminated with fuel will smell strongly of fuel. If contaminated oil is noticed, have the engine checked by your dealer.

4. Push the dipstick back in all the way, then flip the handle down to lock the dipstick in place. Reinstall the oil filler cap and hand tighten securely.



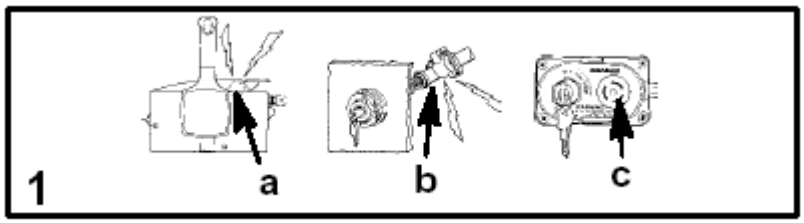
FEATURES & CONTROLS

REMOTE CONTROL FEATURES

Your boat may be equipped with one of the Mercury Precision or Quicksilver remote controls shown. If not, consult your dealer for a description of the functions and operations of the remote control.

1. Control Handle – Forward, Neutral, Reverse.
2. Neutral Release Lever
3. Trim/Tilt Switch (if Equipped) – Refer to Power Trim Operation.
4. Lanyard Stop Switch – Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.
5. Lanyard – Read the lanyard stop switch safety explanation and warning in the General Information Section.
6. Throttle Friction Adjustment – Console Controls require cover removal for adjustment.

7. Ignition Key Switch - Off, On, Start, Choke.
8. Fast Idle Lever – Raising lever will increase engine idle speed in neutral. Refer to Starting the Engine in the Operation Section.
9. Throttle Only Button – Pushing in the button will enable you to advance the control handle for increasing engine idle speed without shifting outboard into gear. Refer to Starting the Engine in the Operation Section.



WARNING SYSTEM

1. The outboard warning system incorporates a warning horn inside the boat. Remote control models will have the warning horn located inside the remote control (a) or connected to the ignition key switch (b). Tiller handle models will have the warning horn located in the ignition key panel (c).

Warning horn signals

When the key switch is turned to the ON position, the horn will turn on for a moment as a test to tell you the horn is working.

The warning horn will emit either a continuous beep or intermittent short beeps. This will alert the operator and help identify the following listed situations (see chart below). For visual display of the specific engine functions and for additional engine data, refer to SmartCraft Product information.

Warning Horn		
Function	**Sound**	**Description**
Start up	One Beep	Normal System Test
Engine Fault	Six Beeps at Start Up or While Driving	The horn sounds when there may be a problem with one of the engine functions. Have your dealer check the engine soon.
Engine Fault	Three Beeps ever 4 minutes	Engine problem has occurred. Engine will run rough and/or stall. Engine may not start. Advancing the remote control neutral fast idle feature or advancing the tiller handle throttle grip half way may assist starting. Have your dealer check the engine.
Start up	One Beep	Normal System Test
Engine Fault	Six Beeps at Start Up or While Driving	The horn sounds when there may be a problem with one of the engine functions. Have your dealer check the engine soon.
Engine Fault	Three Beeps ever 4 minutes	Engine problem has occurred. Engine will run rough and/or stall. Engine may not start. Advancing the remote control neutral fast idle feature or advancing the tiller handle throttle grip half way may assist starting. Have your dealer check the engine.
Engine Fault	Intermittent Beep	Engine problem has occurred. Engine will not run. Have your dealer check the engine.
Cooling System Problem	Continuous	Engine Guardian System is activated. Power limit will vary with level of overheat. Shift outboard into neutral and check for a steady stream of water coming out of the water pump indicator hole. If no water is coming out of the water pump indicator hole or flow is intermittent, stop engine and check water intake holes for obstruction.
Low Oil Pressure	Continuous	Engine Guardian System is activated. Power will be limited to 2000 RPM. First, stop the engine and check the oil level. Add oil if necessary
Engine Overspeed	Continuous	The warning horn is activated any time engine speed exceeds the maximum allowable RPM. The system will limit the engine speed to within the allowable range. Engine overspeed indicates a condition that should be corrected. Overspeed could be caused by incorrect propeller pitch, engine height, trim angle, etc.
Battery voltage too High or too Low	Continuous	Engine Guardian System is activated. Power limit will restrict engine speed to 75%.
Coolant Sensor Failure	Continuous	Engine Guardian System is activated. Power limit will restrict engine speed to 50%

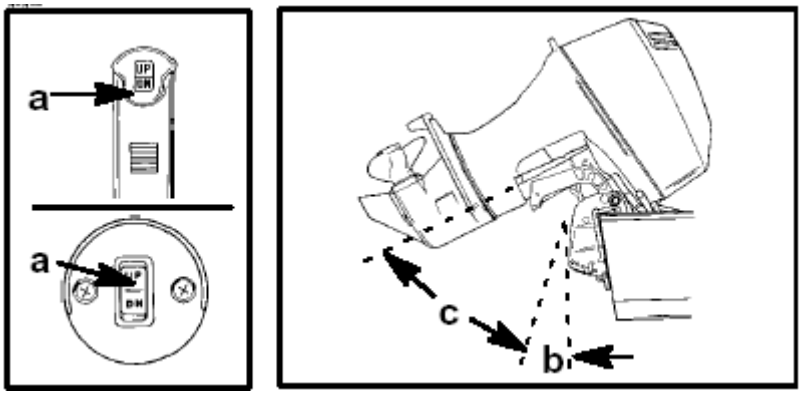
ENGINE GUARDIAN SYSTEM

The Engine Guardian System monitors the critical sensors on the engine for any early indications of problems. The system will respond to a problem by emitting a continuous beep and/or reducing engine power in order to provide engine protection.

If Guardian System has been activated, reduce throttle speed. The horn will turn off when throttle speed is within the allowable limit. Consult your dealer for assistance.

WARNING SYSTEM - SMARTCRAFT PRODUCT

A Mercury SmartCraft System instrument package can be purchased for this outboard. A few of the functions the instrument package will display are engine rpm, coolant temp, battery voltage, furel consumption and engine operating hours. The SmartCraft instrument package will also aid in Engine Guardian diagnostics. The SmartCraft instrument package will display critical engine alarm data and potential problems.



POWER TRIM AND TILT (IF EQUIPPED)

Your outboard has a trim/tilt control called “Power Trim.” This enables the operator to easily adjust the position of the outboard by pressing the trim switch (a). Moving the outboard in closer to the boat transom is called trimming “in” or “down.” Moving the outboard further away from the boat transom is called trimming “out” or “up.” The term “trim” generally refers to the adjustment of the outboard within the first205 range of travel (b). This is the range used while operating your boat on plane. The term “tilt” is generally used when referring to adjusting the outboard further up out of the water (c). With the engine turned off, the outboard can be tilted out of the water. At low idle speed, the outboard can also be tilted up past the trim range to permit, for example, shallow water operation.

Power Trim Operation

With most boats, operating around the middle of the “trim” range will give satisfactory results. However, to take full advantage of the trimming capability there may be times when you choose to trim your outboard all the way in or out. Along with an improvement in some performance aspects comes a greater
responsibility for the operator, and this is being aware of some potential control hazards.

The most significant control hazard is a pull or “torque” that can be felt on the steering wheel or tiller handle. This steering torque results from the outboard being trimmed so that the propeller shaft is not parallel to the water surface.

WARNING

Avoid possible serious injury or death. When the outboard is trimmed in or out beyond a neutral steering condition, a pull on the steering wheel or tiller handle in either direction may result. Failure to keep a continuous firm grip on the steering wheel or tiller handle when this condition exists can result in loss of boat control as the outboard can turn freely. The boat can now “spin out” or go into a very tight maximum turn which, if unexpected, can result in occupants being thrown within the boat or out of the boat.

Consider the following lists carefully.
Trimming In or Down Can:

1. Lower the bow.
2. Result in quicker planing off, especially with a heavy load or a stern heavy boat.
3. Generally improve the ride in choppy water.
4. Increase steering torque or pull to the right (with the normal right hand rotation propeller).

5. In excess, lower the bow of some boats to a point at which they begin to plow with their bow in the water while on plane. This can result in an unexpected turn in either direction (called “bow-steering” or “over-steering”) if any turn is attempted, or if a significant wave is encountered.

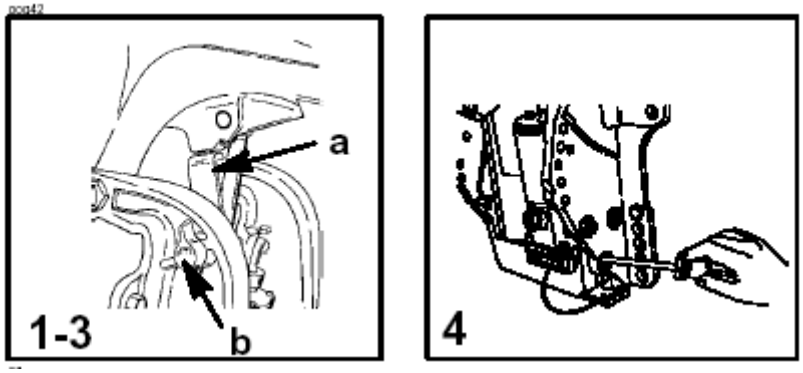
WARNING

Avoid possible serious injury or death. Adjust outboard to an intermediate trim position as soon as boat is on plane to avoid possible ejection due to boat spin-out. Do not attempt to turn boat when on plane if outboard is trimmed extremely in or down and there is a pull on the steering wheel or tiller handle.

6. In rare circumstances, the owner may decide to limit the trim in. This can be accomplished by repositioning the tilt stop pins into whatever adjustment holes in the transom brackets are desired.

Trimming Out or Up can:

1. Lift the bow higher out of the water.
2. Generally increase top speed.
3. Increase clearance over submerged objects or a shallow bottom.
4. Increase steering torque or pull to the left at a normal installation height (with the normal right hand rotation propeller).
5. In excess, cause boat “porpoising” (bouncing) or propeller ventilation.
6. Cause engine overheating if any cooling water intake holes are above the water line.



Tilting Operation

To tilt outboard, shut off the engine and press the trim/tilt switch or auxiliary tilt switch to the up position. The outboard will tilt up until the switch is released or it reaches its maximum tilt position.

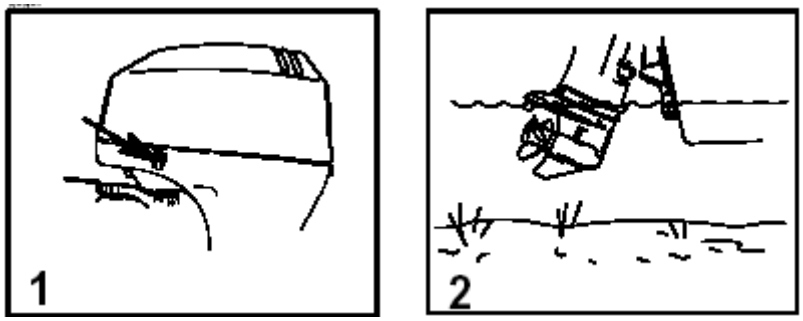
1. Engage the tilt support lever (a), by rotating knob (b) to bring the support lever upward.
2. Lower outboard to rest on the tilt support lever.
3. Disengage the tilt support lever, by raising the outboard off the support lever and rotating the lever down. Lower the outboard.

Manual Tilting

If the outboard cannot be tilted using the power trim/tilt switch, the outboard can be manually tilted.

4. Turn out the manual tilt release valve 3 turns (counterclockwise). This allows manual tilting of the outboard. Tilt the outboard to the desired position and tighten the manual tilt release valve.

Note: The manual tilt release valve must be tightened before operating the outboard to prevent the outboard from tilting up during reverse operation.



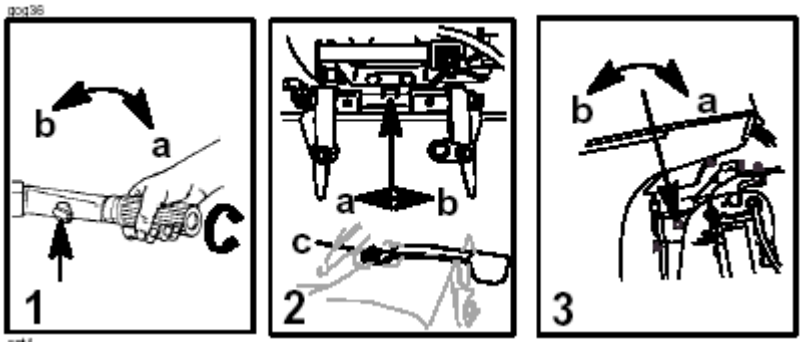
Auxiliary Tilt Switch

1. This switch can be used to tilt the outboard up or down using the power trim system.

Shallow Water Operation

2. When operating your boat in shallow water, you can tilt the outboard beyond the maximum trim range to prevent hitting bottom

   a. Reduce engine speed below 2000 RPM.
   b. Tilt outboard up. Make sure all the water intake holes stay submerged at all times.
   c. Operate the engine at slow speed only. If engine speed exceeds 2000 RPM, the outboard will automatically return down to the maximum trim range.



THROTTLE GRIP FRICTION ADJUSTMENT – TILLER HANDLE MODELS

1. Throttle Grip Friction Knob – Turn friction knob to set and maintain the throttle at desired speed. Turn knob towards (a) to tighten friction and move knob towards (b) to loosen friction.

STEERING FRICTION ADJUSTMENT

Tiller Handle Models

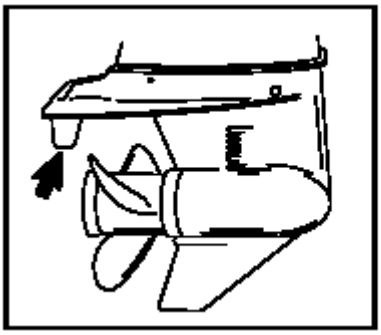
2. Steering Friction Adjustment – Adjust this lever to achieve the desired steering friction (drag) on the tiller handle. Move lever towards (a) to tighten friction or move towards (b) to loosen friction.

Note: To maintain proper adjustment, the locknut (c) located on top of the steering friction lever pivot shaft can be tightened.

Remote Steering Models

3. Steering Friction Adjustment – Adjust this screw to achieve the desired steering friction (drag) on the steering wheel. Turn screw towards (a) to tighten friction or turn towards (b) to loosen friction.

WARNING
Avoid possible serious injury or death from loss of boat control. Maintain sufficient steering friction to prevent the outboard from steering into a full turn if the tiller handle or steering wheel is released.



TRIM TAB ADJUSTMENT

Propeller steering torque may cause your boat to pull in one direction. This steering torque results from your outboard not being adjusted so the propeller shaft is parallel to the water surface. The trim tab can help compensate for this steering torque and can be adjusted within limits to reduce any unequal steering effort.

Note: Trim tab adjustment will have little effect reducing steering torque if the outboard is installed with the anti-ventilation plate approximately 2 inches (50mm) or more above the boat bottom.

Operate your boat at normal cruising speed, with the outboard set at the desired transom angle adjustment. Turn your boat left and right and note the direction the boat turns more easily.

If adjustment is necessary, loosen trim tab bolt and make small adjustments at a time. If the boat turns more easily to the left, move the trailing edge of trim tab to the left. If the boat turns more easily to the right move the trailing edge of trim tab to the right. Retighten bolt and retest.

OPERATION

PRE-STARTING CHECK LIST

- ❑ Operator knows safe navigation, boating, and operating procedures.
- ❑ An approved personal flotation device of suitable size for each person aboard and readily accessible (it is the law).
- ❑ A ring type life buoy or buoyant cushion designed to be thrown to a person in the water.
- ❑ Know your boats maximum load capacity. Look at the boat capacity plate.
- ❑ Fuel supply OK.
- ❑ Arrange passengers and load in the boat so the weight is distributed evenly and everyone is seated in a proper seat.
- ❑ Tell someone where you are going and when you expect to return.
- ❑ It is illegal to operate a boat while under the influence of alcohol or drugs.
- ❑ Know the waters and area you will be boating; tides, currents, sand bars, rocks, and other hazards.
- ❑ Make inspection checks listed in the Inspection and Maintenance Schedule.
  Refer to Maintenance Section.

OPERATING IN FREEZING TEMPERATURES

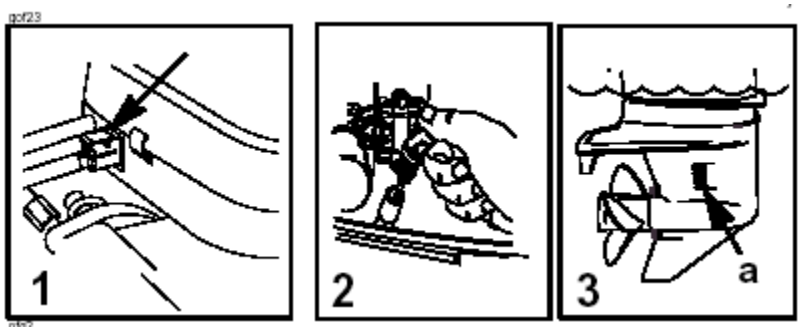
When using your outboard or having your outboard moored in freezing or near freezing temperature, keep the outboard tilted down at all times so the gear case is submerged. This prevents trapped water in gear case from freezing and causing possible damage to the water pump and other components.
If there is a chance of ice forming on the water, the outboard should be removed and drained completely of water. If ice should form at the water level inside the outboard drive shaft housing, it will block water flow to the engine causing possible damage.

OPERATING IN SALT WATER OR POLLUTED WATER

We recommend that you flush the internal water passages of your outboard with fresh water after each use in salt or polluted water. This will prevent a buildup of deposits from clogging the water passages. Refer to “Flushing The Cooling System” procedure in the Maintenance Section.

If you keep your boat moored in the water, always tilt the outboard so the gear case is completely out of water (except in freezing temperature) when not in use. Wash down the outboard exterior and flush out the exhaust outlet of the propeller and gear case with fresh water after each use. Each month, spray Mercury Precision or Quicksilver Corrosion Guard on external metal surfaces (do not spray on corrosion control anodes as this will reduce the effectiveness of the anodes).

PRE-STARTING INSTRUCTIONS



1. **Fuel** - Connect the remote fuel line to the outboard. Make sure connector is snapped into place.
1. **LPG** - Key on. Be sure LPG cylinder is open.
2. Check the engine oil level.
3. Make sure the cooling water intake (a) is submerged.

CAUTION

Never start or run your outboard (even momentarily) without water circulating through the cooling water intake in the gear case to prevent damage to the water pump (running dry) or overheating of the engine.

ENGINE BREAK-IN PROCEDURE

CAUTION

Severe damage to the engine can result by not complying with the following Engine Break-in Procedure.

1. For the first hour of operation, run the engine at varied throttle settings not exceeding 3500 RPM or at approximately half throttle.
2. For the second hour of operation, run the engine at varied throttle settings up to 4500 RPM or at three-quarter throttle, and during this period of time, run it at full throttle for approximately one minute every ten minutes.
3. For the next eight hours of operation, avoid continuous operation at full throttle for more than five minutes at a time.

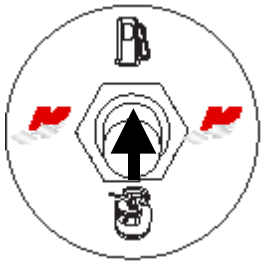
SWITCH FROM FUEL TO LPG

1. Start the engine with fuel (Refer to sections Starting the engine on fuel).

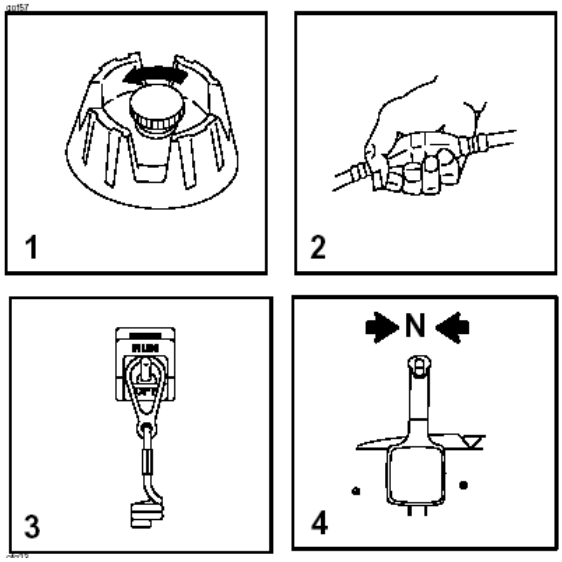
2. Push the switch to the lower position (it is recommended to proceed with this operation above 1500 RPM).
3. The engine is running on LPG.

SWITCH FROM LPG TO FUEL

1. Start the engine with LPG (refer to sections Starting the engine on LPG)



2. Push the switch to the higher position (it is recommended to proceed with this operation above 1500 RPM).
3. The engine is running on fuel.



STARTING THE ENGINE – REMOTE CONTROL MODELS

Before starting, read the Pre-Starting Check List, Special Operating Instructions, and Engine Break-in Procedure on the first three pages in the Operation Section.

CAUTION

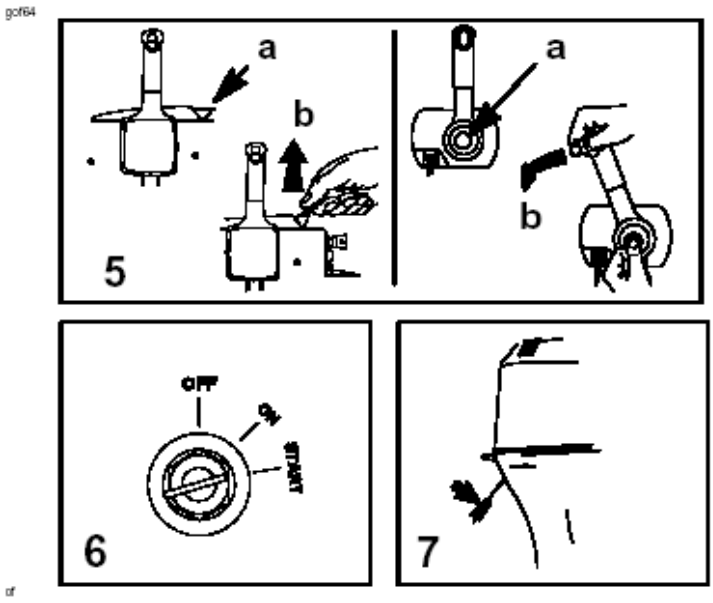
Never start or run your outboard (even momentarily) without water circulating through all the cooling water intake holes in the gear case to prevent damage to the water pump (running dry) or overheating of the engine.

1. **Fuel** - Open fuel tank vent screw (in filler cap) on manual venting type fuel tanks.
2. **Fuel** - Squeeze the fuel line primer bulb several times until it feels firm.

1. **LPG** - Open cylinder.
2. **LPG** - Be sure the switch is in the correct position

IMPORTANT: To prevent engine flooding, do not squeeze the primer bulb after engine has warmed up.

3. Set the lanyard stop switch to RUN position. Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.
4. Shift outboard to neutral (N) position.



5. Move the neutral fast idle speed feature to the fully closed position (a).

Starting Flooded Engine– Advance the neutral fast idle speed feature to the maximum fast idle speed position (b) and continue to crank the engine for starting. Immediately reduce engine speed after engine starts

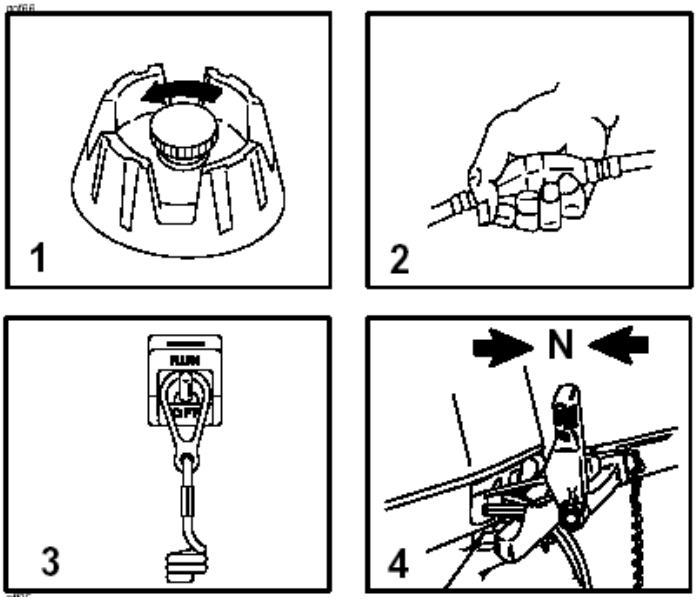
6. Turn ignition key to the START position. If engine fails to start in ten seconds, return key to ON position, wait 30 seconds and try again.
7. After engine starts, check for a steady stream of water flowing out of the water pump indicator hole.

IMPORTANT: If no water is coming out of the water pump indicator hole, stop engine and check cooling water intake for obstruction. No obstruction may indicate a water pump failure or blockage in the cooling system. These conditions will cause the engine to overheat. Have the outboard checked by your dealer. Operating the engine while overheated will cause engine damage.

CAUTION
Do not switch from fuel to LPG and from LPG to fuel a flooded engine

WARMING UP ENGINE

Before beginning operation, allow the engine to warm up at idling speed for 3 minutes.
LPG - Cold temperature (below 5°C) - It is better to start on fuel. If not possible, allow for 5 minutes warming up on LGP before operation.



STARTING THE ENGINE – TILLER HANDLE MODELS

Before starting, read the Pre-Starting Check List, Special Operating Instructions, and Engine Break-in Procedure on the first three pages in the Operation Section.

CAUTION

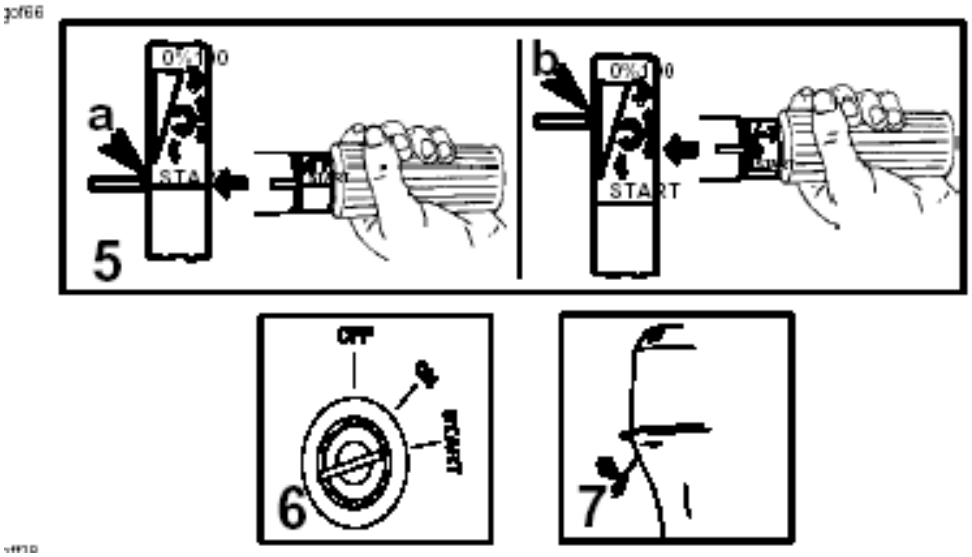
Never start or run your outboard (even momentarily) without water circulating through all the cooling water intake holes in the gear case to prevent damage to the water pump (running dry) or overheating of the engine.

1. **Fuel** - Open fuel tank vent screw (in filler cap) on manual venting type fuel tanks.
2. **Fuel** - Squeeze the fuel line primer bulb several times until it feels firm.

1. **LPG** - Open cylinder.
2. **LPG** - Be sure the switch is in the correct position

IMPORTANT: To prevent engine flooding, do not squeeze the primer bulb after engine has warmed up.

3. Set the lanyard stop switch to RUN position. Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.
4. Shift outboard to neutral (N) position.



5. Set the throttle grip to start position (a).

Starting Flooded Engine – Set the throttle grip to position (b).

6. Turn ingnition key to the START position. If engine fails to start in ten seconds, return key to ON position, wait 30 seconds and try again.

WARNING

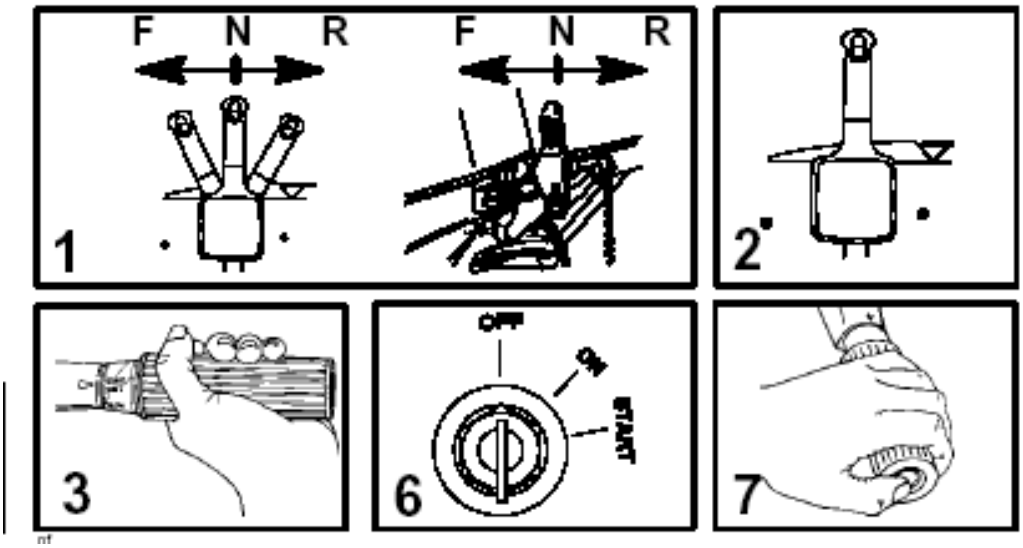
RAPID ACCELERATION HAZARD – Before shifting your outboard from neutral into gear, decrease engine speed to slow. This will prevent a rapid acceleration that can cause people in the boat to be thrown from their seats or out of the boat, causing injury or death.

7. Check for a steady stream of water flowing out of the water pump indicator hole.

IMPORTANT: If no water is coming out of the water pump indicator hole, stop engine and check cooling water intake for obstruction. No obstruction may indicate a water pump failure or blockage in the cooling system. These conditions will cause the engine to overheat. Have the outboard checked by your dealer. Operating the engine while overheated may cause serious engine damage.

WARMING UP ENGINE

Before beginning operation, allow the engine to warm up at idling speed for 3 minutes.
LPG - Cold temperature (below 5°C) - It is better to start on fuel. If not possible, allow for 5 minutes warming up on LGP before operation.



GEAR SHIFTING

IMPORTANT: Observe the following:

- **Never shift outboard into gear unless engine speed is at idle.**
- **Do not shift outboard into Reverse when the engine is not running.**

1. Your outboard has three gear shift positions to provide operation: Forward (F), Neutral (out of gear), and Reverse (R).
2. Remote Control Models – When shifting, always stop at neutral position and allow the engine speed to return to idle.
3. Tiller Handle Models – Reduce engine speed to idle before shifting.
4. Always shift outboard into gear with a quick motion.
5. After shifting outboard into gear, advance the remote control lever or rotate the throttle grip (tiller handle) to increase speed.

STOPPING THE ENGINE

Fuel

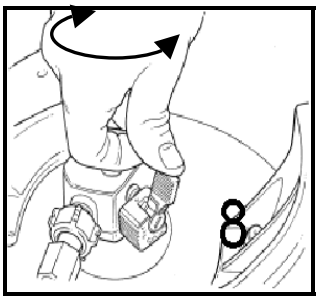
1. **Remote Control Models** – Reduce engine speed and shift outboard to neutral position. Turn ignition key to OFF position.
2. **Tiller Handle Models** – Reduce engine speed and shift outboard to neutral position. Push in the engine stop button or turn ignition key to OFF position.

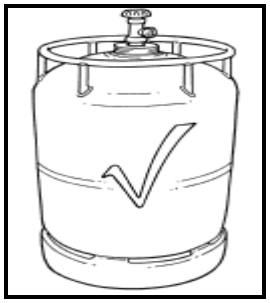
LPG

1. **Remote Control Models** - Reduce engine speed and shift outboard to neutral position. Turn ignition key to OFF position.
2. **Tiller Handle Models** - Reduce engine speed and shift outboard to neutral position. Push in the engine stop button or move the lanyard stop switch to the OFF position.

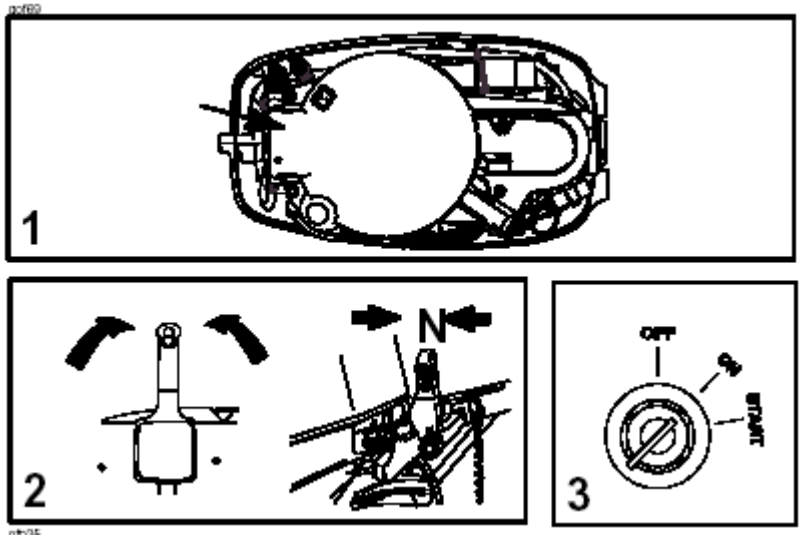
WARNING

Close the LPG cylinder Valve. LPG Cylinder valves should be kept closed when the engine is not in use and when cylinders are regarded as empty





3. **Close the LPG Cylinder Valve**. LPG cylinder valves should be kept closed when the engine in not in use and when cylinders are regarded as empty.



EMERGENCY STARTING

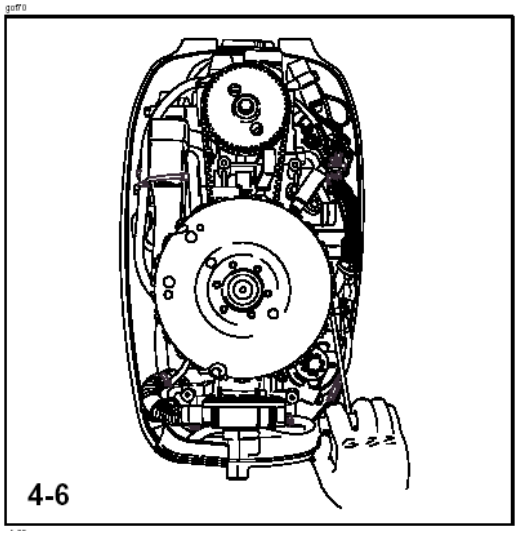
If the starter system fails, use the spare starter rope (provided) and follow procedure.

1. Remove flywheel cover or manual starter assembly.
2. Shift outboard to neutral (N) position.

WARNING

When using emergency starter rope to start engine, the start-in-gear protection device is inoperative. Make sure to set the outboard gear shift into neutral to prevent outboard from starting in gear. Sudden unexpected acceleration could result in serious injury or death.

3. Electric Start Models – Turn the ignition key to ON position.



WARNING

To prevent getting an electrical shock, DO NOT touch any ignition component, wiring, or spark plug wire when starting or running the engine.

WARNING

The exposed moving flywheel can cause serious injury. Keep your hands, hair, clothing, tools, and other objects away from engine when starting or running the engine. Do not attempt to reinstall the flywheel cover or top cowl when engine running.

4. Place the starter rope knot into the flywheel notch and wind the rope clockwise around the flywheel.
5. Refer to “Starting the Engine” procedure.
6. Pull the starter rope to start the engine.

MAINTENANCE

OUTBOARD CARE

To keep your outboard in the best operating condition, it is important that your outboard receive the periodic inspections and maintenance listed in the Inspection and Maintenance Schedule. We urge you to keep it maintained properly to ensure the safety of you and your passengers and retain its dependability.

WARNING

Neglected inspection and maintenance service of your outboard or attempting to perform maintenance or repair on your outboard if you are not familiar with the correct service and safety procedures could cause personal injury, death, or product failure.

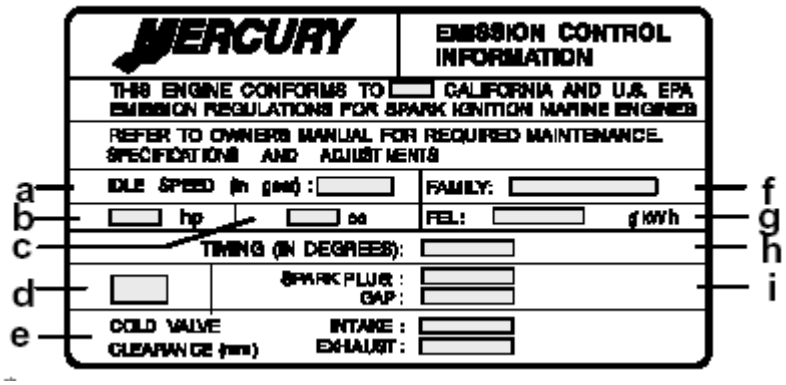
Record maintenance performed in Maintenance Log at the back of this book. Save all maintenance work orders and receipts.

SELECTING REPLACEMENT PARTS FOR YOUR OUTBOARD

We recommend using original Mercury Precision or Quicksilver replacement parts and Genuine Lubricants.

WARNING

Using a replacement part that is inferior to the original part could result in personal injury, death, or product failure.



EMISSION CERTIFICATION LABEL

An emission certification label, showing emission levels and engine specifications directly related to emissions, is placed on the engine at time of manufacture.

a. Idle Speed
b. Engine Horsepower
c. Timing Specification
d. Recommended Spark Plug & Gap
e. Valve Clearance (if Applicable)
f. Family Number
g. Maximum Emission Output for the Engine Family
h. Piston Displacement
i. Date of Manufacture

OWNER RESPONSIBILITY

The owner/operator is required to have engine maintenance performed to maintain emission levels within prescribed certification standards.

The owner/operator is not to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

INSPECTION AND MAINTENANCE SCHEDULE

Before Each Use

1. Check engine oil level.
2. Check that lanyard stop switch stops the engine.
3. Visually inspect the fuel system for deterioration or leaks.
4. Check outboard for tightness on transom.
5. Check steering system for binding or loose components.
6. Visually check steering link rod fasteners for proper tightness
7. Check propeller blades for damage.

After Each Use

1. Flush out the outboard cooling system if operating in salt or polluted water.
2. Wash off all salt deposits and flush out the exhaust outlet of the propeller and gear case with fresh water if operating in salt water.

Every 100 Hours of Use or Once yearly, Whichever occurs first

1. Lubricate all lubrication points. Lubricate more frequently when used in salt water.
2. Change engine oil and replace the oil filter. The oil should be changed more often when the engine is operated under adverse conditions such as extended trolling.
3. Replace spark plugs at first 100 hours or first year. After that, inspect spark plugs every 100 hours or once yearly. Replace spark plugs as needed.
4. Inspect thermostat visually for corrosion and broken spring. Make sure thermostat closes completely at room temperature.*
5. Check engine fuel filter for contaminants.
6. Check engine timing setup.*
7. Check corrosion control anodes. Check more frequently when used in salt water.
8. Drain and replace gear case lubricant.
9. Lubricate splines on the drive shaft.*
10. Check and adjust valve clearance, if necessary.*
11. Check power trim fluid.
12. Inspect battery.

13. Check control cable adjustments.*
14. Inspect timing belt.
15. Check tightness of bolts, nuts, and other fasteners.

LPG - Every 100 Hours Or Once Yearly, Whichever Occurs First

1. Periodical maintenance of the gas system includes the following operations:
   - Check the state of condition of the main tubing and associated components,
   - Check the pressure of the first and intermediate stages of the reducer,
   - Check the state of condition of the low pressure hose,
   - Check that there are no oily deposits inside the vaporizer,
   - Check water passages inside the vaporizer.

2. If any problems occur, carry out a complete systematic inspection of the engine to locate the fault. To obtain a clear picture of the faults, we recommend checking the following functions in order of precedence:
   - Battery (Electric start),
   - Starter-enrichener (Electric start),
   - Ignition,
   - Any abnormal air intake,
   - Engine conditions,
   - Fuel delivery,

Every 300 Hours of Use or Three Years

1. Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).*
2. Replace rubbers pipes and vaporizer.

Before Periods of Storage

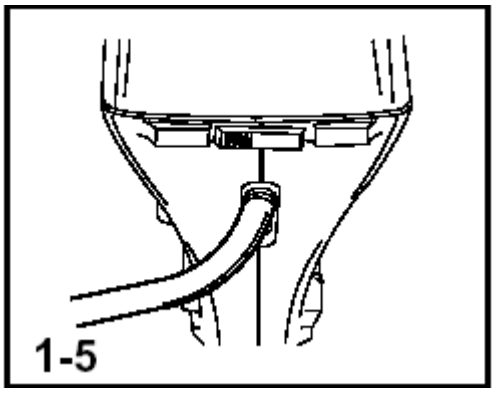
1. Refer to Storage procedure.

**** These items should be serviced by an authorized dealer.***

LPG CONTAINER INSPECTION

IMPORTANT: Refer to local regulations, which may vary from country to country.

1. A competent person must carry out examinations and tests.
2. Every year an external visual examination shall be made of the LPG container(s) and fittings, including the pressure relief valve, for signs of deterioration, corrosion, or leakage. This may require removal of the container where applicable.
3. Every 15 years the LPG container(s) shall be requalified and marked with the date and the testing authority symbol.
4. The accuracy of the 80% stop fill valve should be verified whenever the LPG container is emptied by using a re-fuelling meter.



FLUSHING THE COOLING SYSTEM

Flush the internal water passages of the outboard with fresh water after each use in salt, polluted or muddy water. This will help prevent a buildup of deposits from clogging the internal water passages.

IMPORTANT: The engine must be run during flushing in order to open the thermostat and circulate water through the water passages.

Note: You can have the outboard tilted or in the vertical operating position during flushing.

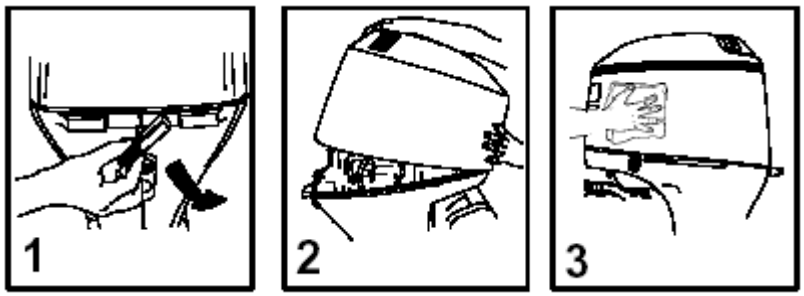
WARNING

To avoid possible injury when flushing, remove the propeller. Refer to Propeller Replacement.

1. Place the outboard in either the operating position (vertical) or in a tilted position.
2. Remove propeller (refer to Propeller Replacement).
3. Thread a water hose into the rear fitting. Partially open the water tap (1/2 maximum). Do not open the water tap all the way, as this allows a high pressure flow of water.

IMPORTANT: Do not run engine above idle when flushing.

4. Shift outboard into neutral. Start the engine and flush the cooling system for at least 5 minutes. Keep engine speed at idle.
5. Stop the engine. Turn off the water and remove hose. Reinstall the propeller.



TOP COWL REMOVAL AND INSTALLATION

Removal

1. Unlock the rear latch by pushing lever down.
2. Lift rear of cowl and disengage front hook.

Installation

Engage the front hook and push cowl back over the cowl seal.
Push cowl down and move the rear latch lever up to lock.

EXTERIOR CARE

Your outboard is protected with a durable baked enamel finish. Clean and wax often using marine cleaners and waxes.

BATTERY INSPECTION

The battery should be inspected at periodic intervals to ensure proper engine starting capability.

IMPORTANT: Read the safety and maintenance instructions which accompany your battery.

1. Turn off the engine before servicing the battery.
2. Add water as necessary to keep the battery full.
3. Make sure the battery is secure against movement.
4. Battery cable terminals should be clean, tight, and correctly installed. Positive to positive and negative to negative.
5. Make sure the battery is equipped with a nonconductive shield to prevent accidental shorting of battery terminals.

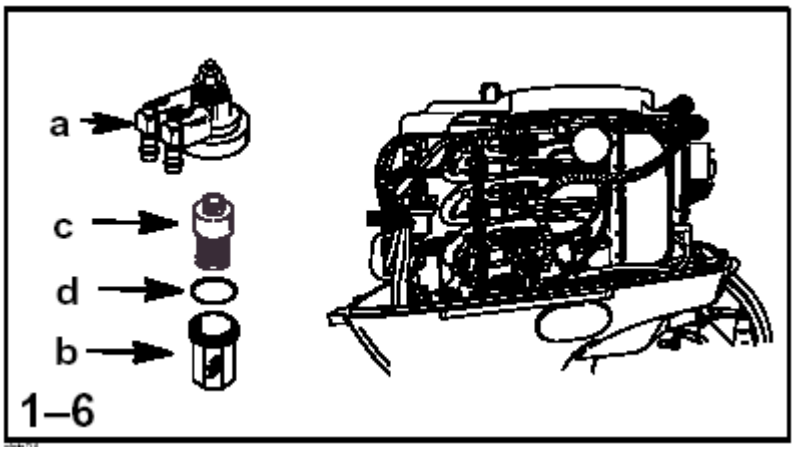
FUEL SYSTEM

WARNING

Avoid serious injury or death from gasoline fire or explosion. Carefully follow all fuel system service instructions. Always stop the engine and DO NOT smoke or allow open flames or sparks in the area while servicing any part of the fuel system.

Before servicing any part of the fuel system, stop engine and disconnect the battery. Drain the fuel system completely. Use an approved container to collect and store fuel. Wipe up any spillage immediately. Material used to contain spillage must be disposed of in an approved receptacle. Any fuel system service must be performed in a well ventilated area. Inspect any completed service work for signs of fuel leakage.

Fuel Line Inspection
Visually inspect the fuel line and primer bulb for cracks, swelling, leaks, hardness, or other signs of deterioration or damage. If any of these conditions are found, the fuel line or primer bulb must be replaced.



ENGINE FUEL FILTER

Check the fuel filter for water accumulation or sediment. If water is in the fuel, remove the sight bowl (b) and drain the water. If the filter appears to be contaminated, remove and replace.

REMOVAL

1. Read Fuel System servicing information and Warning on the previous page.
2. Pull out the filter assembly from mount. Hold onto the cover (a) to prevent it from turning and remove the the sight bowl (b). Empty contents into an approved container.
3. Pull out the filter element (c) and replace it if necessary.

INSTALLATION

4. Push the filter element into the cover.
5. Place the O-ring seal (d) into its proper position on the sight bowl and screw the sight bowl hand tight into the cover.
6. Push filter assembly back into mount.

IMPORTANT: Visually inspect for fuel leakage from the filter by squeezing the primer bulb until firm, forcing fuel into the filter.

LPG SYSTEM

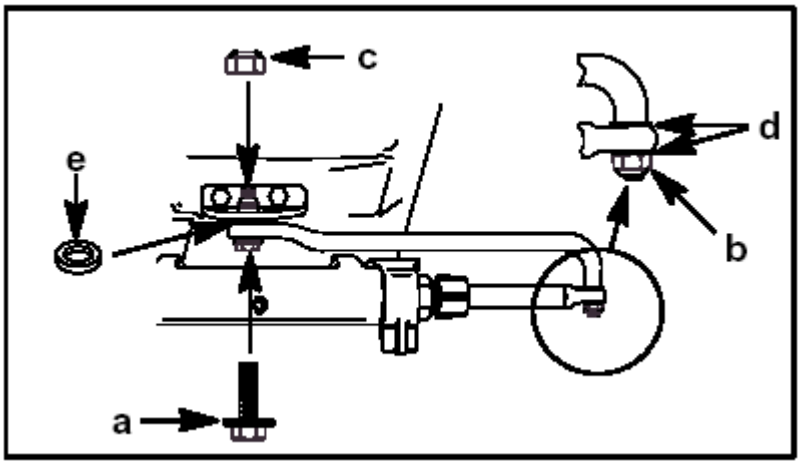
WARNING

Avoid serious injury or death from explosion. Carefully follow all LPG system service instructions. Always stop the engine. DO NOT smoke or allow open flame or sparks in the area while servicing any part of the LPG system

Before servicing any part of the LPG supply system, stop engine and disconnect the battery. Any LPG system service must be performed in a well-ventilated area. Inspect any complete service work for signs of leakage.

LPG Supply Line
Visually inspect line for cracks or other signs of deterioration.

IMPORTANT: Refer to the Maintenance Section if repair must be carried out on the LPG installation.



STEERING LINK ROD FASTENERS

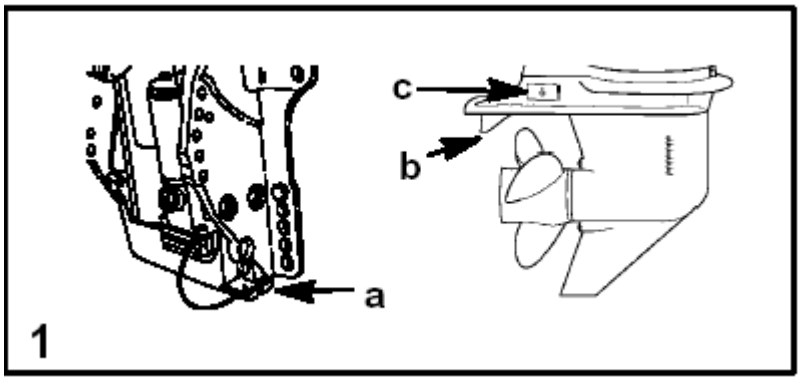
IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt ("a" – Part Number 10-90041) and self locking nylon insert locknuts ("b" & "c" – Part Number 11-34863). These locknuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off, freeing the link rod to disengage.

WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.

Assemble steering link rod to steering cable with two flat washers (d) and nylon insert locknut ("b" – Part Number 11-34863). Tighten locknut (b) until it seats, then back nut off 1/4 turn.

Assemble steering link rod to engine with special washer head bolt ("a" – Part Number 10-90041), locknut ("c" – Part Number 11-34863) and spacer ("e" – 12-71970). First torque bolt (a) to 20 lb. ft. (27 N·m), then torque locknut (c) to 20 lb. ft. (27 N·m).

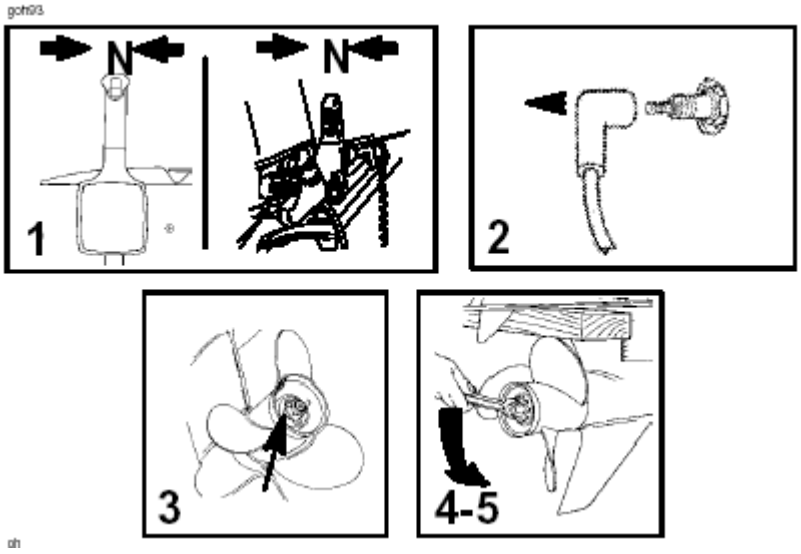


CORROSION CONTROL ANODE

Your outboard has control anodes at different locations. An anode helps protect the outboard against galvanic corrosion by sacrificing its metal to be slowly eroded instead of the outboard metals.

Each anode requires periodic inspection especially in salt water, which will accelerate the erosion. To maintain this corrosion protection, always replace the anode before it is completely eroded. Never paint or apply a protective coating on the anode as this will reduce effectiveness of the anode.

1. An anode (a) is installed on the bottom of the transom bracket assembly. Trim tab (b) is also an anode on the 3-1/4 in. (83mm) diameter gear case. The 4-1/4 in. (108mm) diameter gear case has three anodes. One of the anodes is the trim tab (b) and two anodes (c) are located on the side.

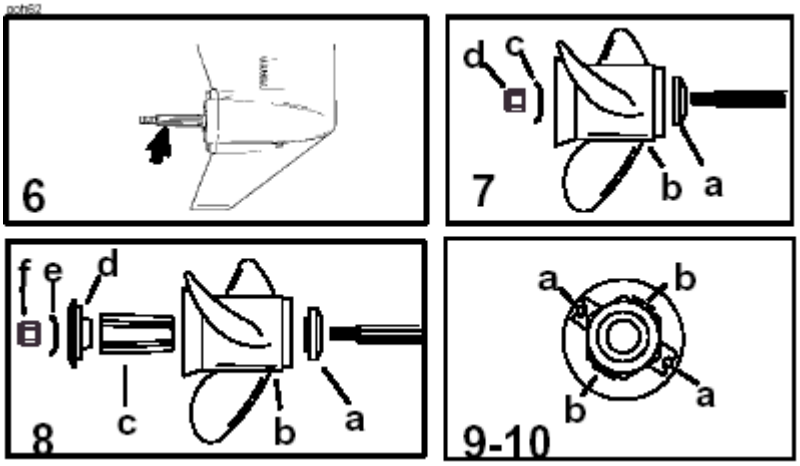


PROPELLER REPLACEMENT - 3-1/4 IN. (83MM) DIAMETER GEAR CASE

WARNING starting and possible serious injury caused from being struck by a rotating propeller, always shift outboard to neutral position and remove spark

If the propeller shaft is rotated while the engine is in gear, there is the possibility that the engine will crank over and start. To prevent this type of accidental engine plug leads when you are servicing the propeller.

1. Shift outboard to neutral (N) position.
2. Remove the spark plug leads to prevent engine from starting.
3. Straighten the bent tabs on the propeller nut retainer.
4. Place a block of wood between gear case and propeller to hold propeller and remove propeller nut.
5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.

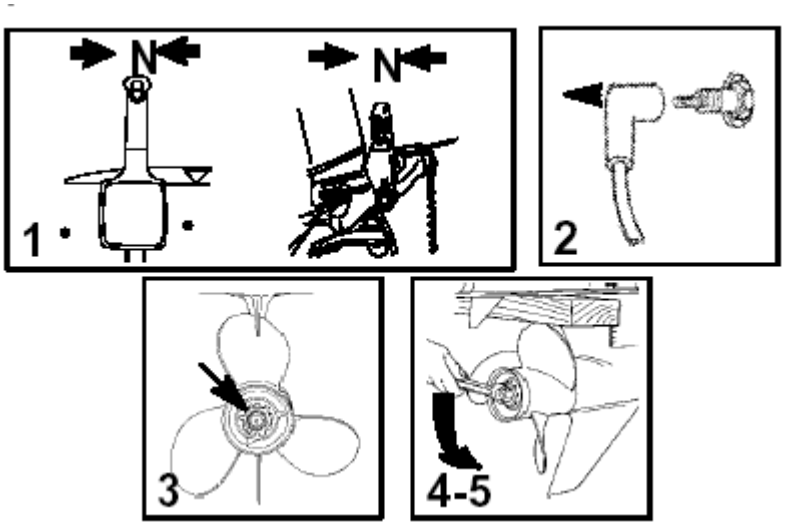


6. Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon.

IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft, especially in salt water, always apply a coat of the recommended lubricant to the entire propeller shaft at the recommended maintenance intervals and also each time the propeller is removed.

7. Flo-Torque I Drive Hub Propellers – Install forward thrust hub (a), propeller (b), propeller nut retainer (c) and propeller nut (d) onto the shaft.
8. Flo-Torque II Drive Hub Propellers – Install forward thrust hub (a), propeller (b), replaceable drive sleeve (c), rear thrust hub (d), propeller nut retainer (e) and propeller nut (f) onto the shaft.
9. Place propeller nut retainer over pins (a). Place a block of wood between gear case and propeller and tighten propeller nut to 55 lb. ft. (75 N·m), aligning flat sides of the propeller nut with tabs on the propeller nut retainer.

10. Secure propeller nut by bending tabs (b) up and against the flats on the propeller nut.
11. Reinstall spark plug leads.

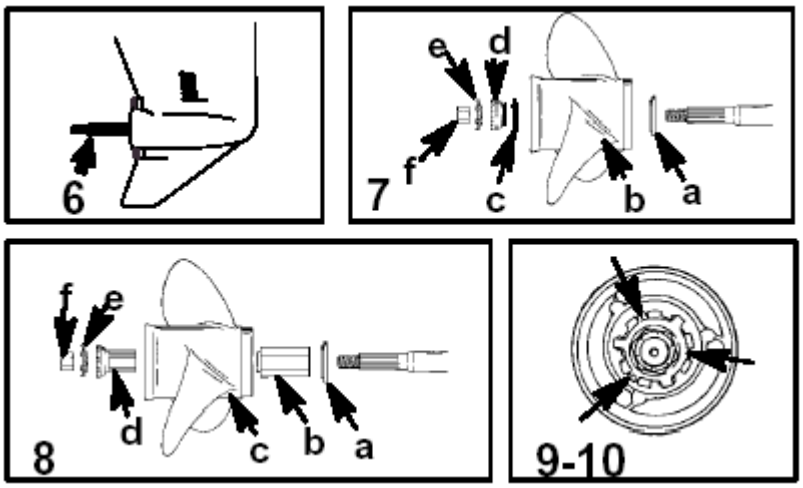


PROPELLER REPLACEMENT - 4-1/4 IN. (108MM) DIAMETER GEAR CASE

WARNING

If the propeller shaft is rotated while the engine is in gear, there is the possibility that the engine will crank over and start. To prevent this type of accidental engine starting and possible serious injury caused from being struck by a rotating propeller, always shift outboard to neutral position and remove spark plug leads when you are servicing the propeller.

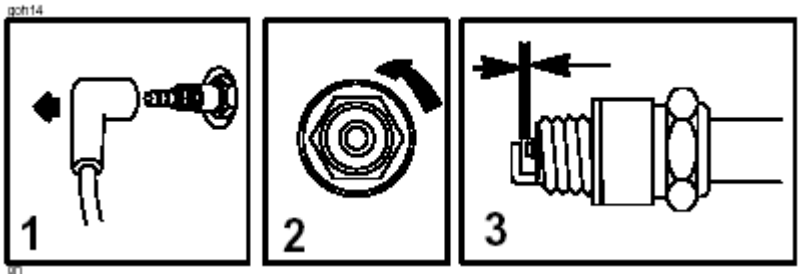
1. Shift outboard to neutral (N) position.
2. Remove the spark plug leads to prevent engine from starting.
3. Straighten the bent tabs on the propeller nut retainer.
4. Place a block of wood between gear case and propeller to hold propeller and remove propeller nut.
5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.



6. Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon.

IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft, especially in salt water, always apply a coat of the recommended lubricant to the entire propeller shaft at the recommended maintenance intervals and also each time the propeller is removed.

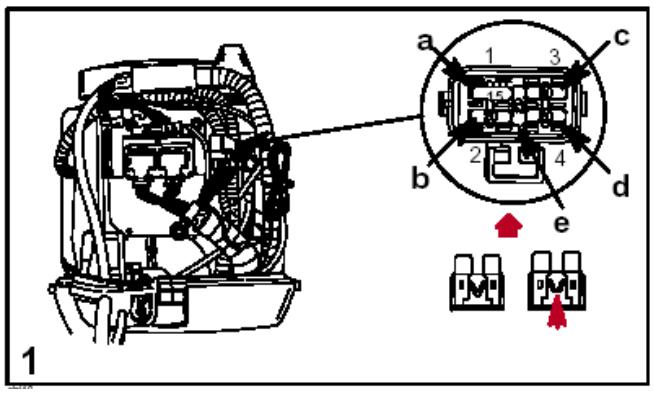
7. Flo-Torq I Drive Hub Propellers – Install thrust washer (a), propeller (b), continuity washer (c), thrust hub (d), propeller nut retainer (e), and propeller nut (f) onto the shaft.
8. Flo-Torq II Drive Hub Propellers – Install forward thrust hub (a), replaceable drive sleeve (b), propeller (c), thrust hub (d), propeller nut retainer (e) and propeller nut (f) onto the shaft.
9. Place a block of wood between gear case and propeller and torque propeller nut to 55 lb. ft. (75 N·m).
10. Secure propeller nut by bending three of the tabs into the thrust hub grooves.



SPARK PLUG INSPECTION AND REPLACEMENT

Inspect spark plugs at the recommended intervals

1. Remove the spark plug leads by twisting the rubber boots slightly and pull off.
2. Remove the spark plugs to inspect. Replace spark plug if electrode is worn or the insulator is rough, cracked, broken, blistered or fouled.
3. Set the spark plug gap. See Specification Chart in General Information Section.
4. Before reinstalling spark plugs, clean away dirt on the spark plug seats. Install plugs finger tight, and tighten 1/4 turn or torque to 20 lb. ft. (27 N·m).



FUSE REPLACEMENT

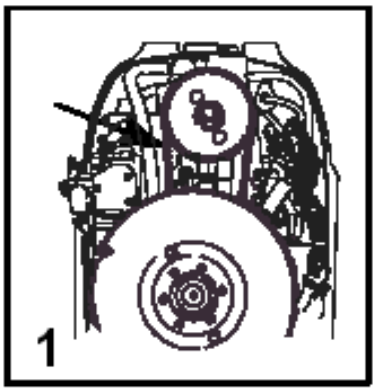
IMPORTANT: Always carry spare SFE 20 AMP fuses.

The electrical wiring circuits on the outboard are protected from overload by fuses in the wiring. If a fuse is blown, try to locate and correct the cause of the overload. If the cause is not found, the fuse may blow again.

1. Open the fuse holder and look at the silver colored band inside the fuse. If band is broken (a), replace the fuse. Replace fuse with a new fuse with the same rating.

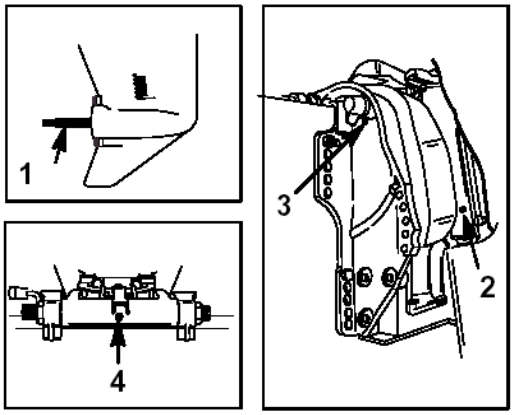
The fuses and circuits are identified as follows:

a. (1) SmartCraft Data Bus Circuit – 15 AMP Fuse.
b. (2) Fuel Pump/Idle Air Control/Fuel Injector Circuits – SFE 20 AMP Fuse.
c. (3) Main Relay/Accessories – 20 AMP Fuse.
d. (4) Ignition Coil Circuit – 20 AMP Fuse.
e. Spare 20 AMP Fuse



TIMING BELT INSPECTION

1. Inspect the timing belt and have it replaced by an authorized dealer if any of the following conditions are found.
   a. Cracks in the back of the belt or in the base of the belt teeth.
   b. Excessive wear at the roots of the cogs.
   c. Rubber portion swollen by oil.
   d. Belt surfaces roughened.
   e. Signs of wear on edges or outer surfaces of belt.



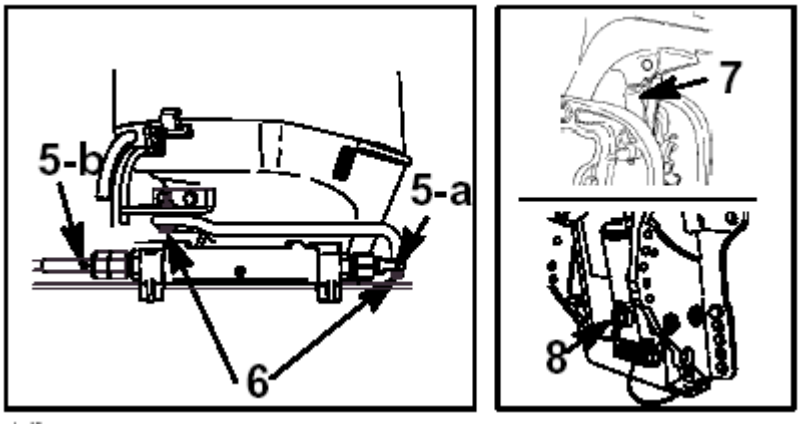
LUBRICATION POINTS

Lubricate Point 1 with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon.

1. Propeller Shaft – Refer to Propeller Replacement for removal and installation of the propeller. Coat the entire propeller shaft with lubricant to prevent the propeller hub from corroding and seizing to the shaft.

Lubricate Points 2 thru 5 with Quicksilver or Mercury Precision Lubricants 2-4-C Marine Lubricant with Teflon or Special Lubricant 101.

2. Swivel Bracket – Lubricate through fitting.
3. Tilt Support Lever – Lubricate through fitting.
4. Tilt Tube – Lubricate through fitting.



5. Steering Cable Grease Fitting (If equipped) – Rotate steering wheel to fully retract the steering cable end (a) into the outboard tilt tube. Lubricate through fitting (b).

WARNING

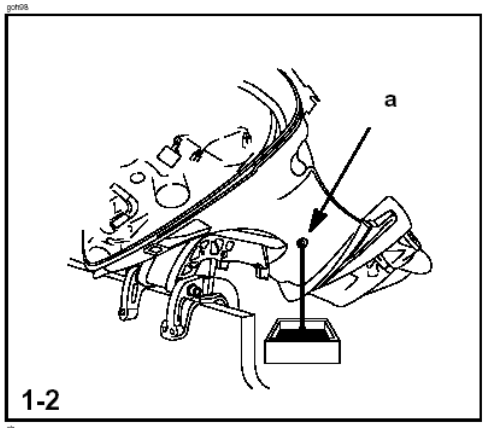
The end of the steering cable must be fully retracted into the outboard tilt tube before adding lubricant. Adding lubricant to steering cable when fully extended could cause steering cable to become hydraulically locked. An hydraulically locked steering cable will cause loss of steering control, possibly resulting in serious injury or death.

Lubricate Point 6 with light weight oil.

6. Steering Link Rod Pivot Points – Lubricate points.

CHECKING POWER TRIM FLUID

7. Tilt outboard to the full up position and engage the tilt support lock.
8. Remove fill cap and check fluid level. The fluid level should be even with the bottom of the fill hole. Add Quicksilver or Mercury Precision Lubricants Power Trim & Steering Fluid. If not available, use automotive (ATF) automatic transmission fluid.



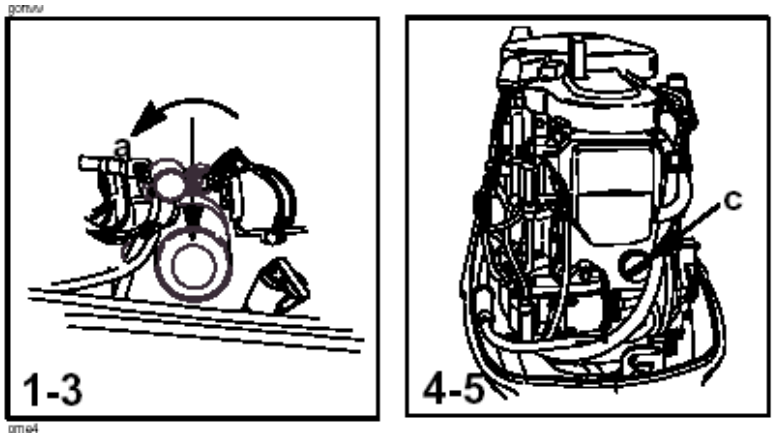
CHANGING ENGINE OIL

Engine Oil Capacity

3 U.S. Quarts (3.0 Liter).

Oil Changing Procedure

1. Tilt the outboard up to the trailer position.
2. Turn the steering on the outboard so that the drain hole (a) is facing downward. Remove drain plug and drain engine oil into an appropriate container. Lubricate the seal on the drain plug with oil and reinstall.

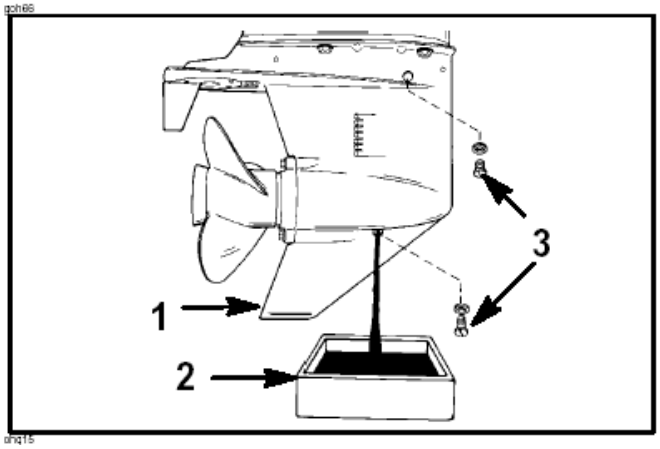


Changing Oil Filter

1. Place a rag or towel below the oil filter to absorb any spilled oil.
2. Unscrew old filter by turning the filter to the left (a).
3. Clean the mounting base. Apply film of clean oil to filter gasket. Do not use grease. Screw new filter on until gasket contacts base, then tighten 3/4 to 1 turn.

Oil Filling

4. Remove the oil fill cap (c) and add oil to proper operating level.
5. Idle engine for five minutes and check for leaks. Stop engine and check oil level on dipstick. Add oil if necessary.



GEAR CASE LUBRICATION – FOR 3-1/4 IN. (83MM) DIAMETER GEAR CASE

When adding or changing gear case lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have the gear case checked by your dealer. Water in the lubricant may result in premature bearing failure or, in freezing
temperatures, will turn to ice and damage the gear case.

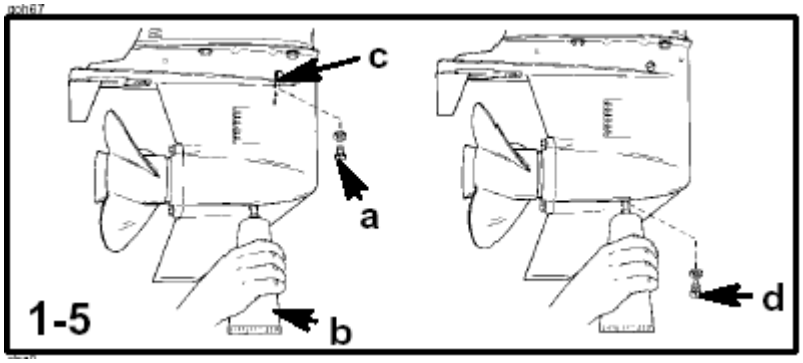
Examine the drained gear case lubricant for metal particles. A small amount of fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

Draining Gear Case

1. Place outboard in a vertical operating position.
2. Place a drain pan below outboard.
3. Remove vent plug and fill/drain plug and drain lubricant.

Gear Case Lubricant Capacity

Gear case lubricant capacity is approximately 11.5 fl. oz. (440 ml).

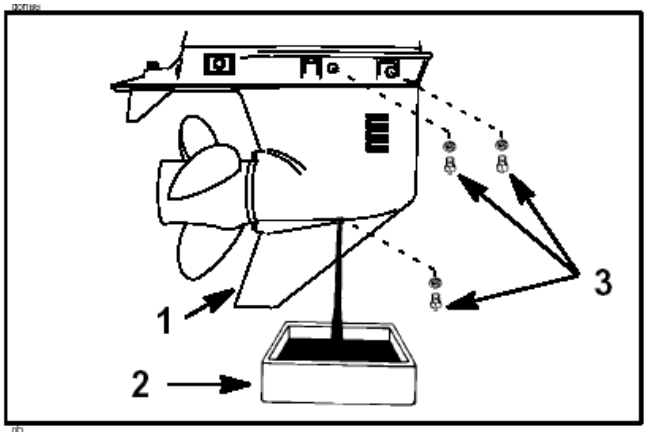


Checking Gear Case Lubricant Level and Refilling Gear Case

1. Place outboard in a vertical operating position.
2. Remove vent plug (a).
3. Place lubricant tube (b) into the fill hole and add lubricant until it appears at the vent hole (c).

IMPORTANT: Replace sealing washers if damaged.

4. Stop adding lubricant. Install the vent plug and sealing washer (a) before removing the lubricant tube.
5. Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer (d).



When adding or changing gear case lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have the gear case checked by your dealer. Water in the lubricant may result in premature bearing failure or, in freezing temperatures, will turn to ice and damage the gear case.

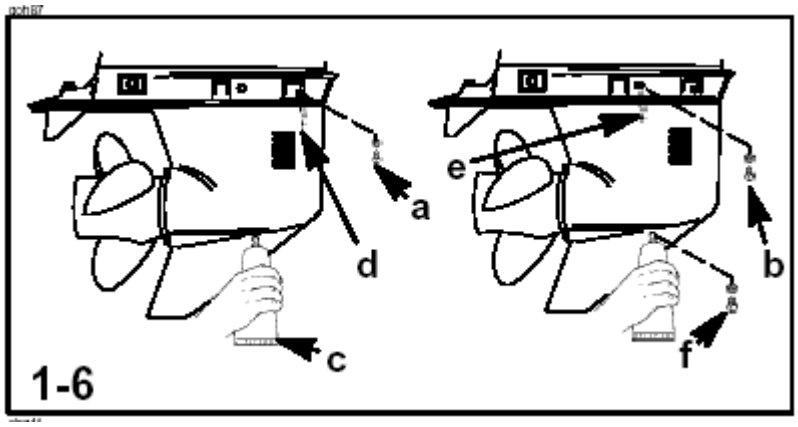
Examine the drained gear case lubricant for metal particles. A small amount of fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

Draining Gear Case

1. Place outboard in a vertical operating position.
2. Place a drain pan below outboard.
3. Remove vent plugs and fill/drain plug and drain lubricant.

Gear Case Lubricant Capacity

Gear case lubricant capacity is approximately 24 fl. oz. (710 ml).



GEAR CASE LUBRICATION – FOR 4-1/4 IN. (108MM) DIAMETER GEAR CASE

Checking Lubricant Level and Filling Gear Case

1. Place outboard in a vertical operating position.
2. Remove the front vent plug (a) and rear vent plug (b).
3. Place lubricant tube (c) into the fill hole and add lubricant until it appears at the front vent hole (d). At this time install the front vent plug and sealing washer (a).
4. Continue adding lubricant until it appears at the rear vent hole (e).
5. Stop adding lubricant. Install the rear vent plug and sealing washer (b) before removing lubricant tube.
6. Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer (f).

SUBMERGED OUTBOARD

A submerged outboard will require service within a few hours by an authorized dealer once the outboard is recovered from the water. This immediate attention by a servicing dealer is necessary once the engine is exposed to the atmosphere to minimize internal corrosion damage to the engine.

STORAGE

STORAGE PREPARATION

The major consideration in preparing your outboard for storage is to protect it from rust, corrosion, and damage caused by freezing of trapped water.

The following storage procedures should be followed to prepare your outboard for out-of-season storage or prolonged storage (two months or longer).

CAUTION
Never start or run your outboard (even momentarily) without water circulating through the cooling water intake in the gear case to prevent damage to the water pump (running dry) or overheating of the engine.

Fuel System

IMPORTANT: Gasoline containing alcohol (ethanol or methanol) can cause a formation of acid during storage and can damage the fuel system. If the gasoline being used contains alcohol, it is advisable to drain as much of the remaining gasoline as possible from the fuel tank, remote fuel line, and engine fuel system.

Fill the fuel tank and engine fuel system with treated (stabilized) fuel to help prevent formation of varnish and gum. Proceed with following instructions.

1. Portable Fuel Tank – Pour the required amount of Gasoline Stabilizer (follow instructions on container) into fuel tank. Tip fuel tank back and forth to mix stabilizer with the fuel.

2. Permanently Installed Fuel Tank – Pour the required amount of Gasoline Stabilizer (follow instructions on container) into a separate container and mix with approximately one quart (one liter) of gasoline. Pour this mixture into fuel tank.
3. Remove the fuel filter sight bowl and empty contents in a suitable container. Refer to Maintenance Section for removal and installation of filter. Add 3 cc (1/2 teaspoon) of gasoline stabilizer into the fuel filter sight bowl and reinstall.
4. Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for 15 minutes to allow treated fuel to fill the engine fuel system.

LPG System

1. Only trained and competent personnel on the use of LPG as a fuel for boats should be allowed to work on the craft's engine or fuel system.
2. There shall be no leaks in the fuel system and the fuel containers shall not be filled beyond the 80 % maximum level.
3. Craft shall not be positioned within 3 m of sources of heat, open flames or other sources of ignition.
4. Unless the fuel is required for engine operation, LPG fuelled craft being repaired in workshops shall have the fuel container(s) shut-off valve closed and the LPG fuel in the service line exhausted by running the engine or, if this is not possible, by disconnecting, in the open air, where the LPG cannot accumulate.
5. Craft undergoing repairs involving welding or the application heat, to any part within 1m of the fuel container, shall have the fuel lines emptied as (d) and the fuel container removed or shielded from the source of heat.
6. If the craft is to be repaired over an open pit, the pit shall be adequately ventilated. It is recommended that lighting needs to be safe to use in the area and that gas detectors are permanently fitted at the bottom of the pit. These should be checked daily.
7. Periodical maintenance of the gas system includes the following operations:
   - Check the state of condition of the main tubing and associated components,
   - Check the pressure of the first and intermediate stages of the reducer,
   - Check the state of condition of the low pressure hose,
   - Check that there are no oily deposits inside the mini-reducer (about every 100 hours) (see picture here above),
   - General overall of the mini-reducer using original spare parts (about every 1000 hours or 5 years).
8. If any problems occur, carry out a complete systematic inspection of the engine to locate the fault. To obtain a clear picture of the faults, we recommend checking the following functions in order of precedence:
   - Battery (Electric start),
   - Starter-enrichener (Electric start),
   - Ignition,
   - Any abnormal air intake,
   - Engine conditions,
   - Fuel delivery,

Protecting External Outboard Components

1. Lubricate all outboard components listed in the Inspection and Maintenance Schedule.
2. Touch up any paint nicks. See your dealer for touch-up paint.
3. Spray Quicksilver or Mercury Precision Lubricants Corrosion Guard on external metal surfaces (except corrosion control anodes).

Protecting Internal Engine Components

1. Remove the spark plugs and inject a small amount of engine oil inside of each cylinder.
2. Rotate the flywheel manually several times to distribute the oil in the cylinders. Reinstall spark plugs.
3. Change the engine oil.

Gear Case

1. Drain and refill the gear case lubricant (refer to maintenance procedure).

Positioning Outboard for Storage

Store outboard in an upright (vertical) position to allow water to drain out of outboard.

CAUTION

If outboard is stored tilted up in freezing temperature, trapped cooling water or rain water that may have entered the propeller exhaust outlet in the gear case could freeze and cause damage to the outboard.

Battery Storage

1. Follow the battery manufacturer's instructions for storage and recharging.
2. Remove the battery from the boat and check water level. Recharge if necessary.
3. Store the battery in a cool, dry place.
4. Periodically check the water level and recharge the battery during storage.

TROUBLESHOOTING

1. STARTER MOTOR WILL NOT CRANK THE ENGINE (ELECTRIC START MODELS)

Possible Causes

- Blown 20 Amp fuse in the starting circuit (carburettor Models) or main power relay/accessories circuit (EFI Models). Refer to Maintenance Section.
- Outboard is not shifted to neutral position.
- Weak battery or battery connections are loose or corroded.
- Ignition key switch failure.
- Wiring or electrical connection faulty.
- Starter motor or starter solenoid failure.

2. ENGINE WILL NOT START

Possible Causes

- Lanyard stop switch not in RUN position.
- Incorrect starting procedure. Refer to Operating Section.
- Old or contaminated gasoline.
- Engine flooded. Refer to Operating Section.
- Fuel is not reaching the engine.
    a. Fuel tank is empty.
    b. Fuel tank vent not open or restricted.
    c. Fuel line is disconnected or kinked.
    d. Primer bulb not squeezed.
    e. Primer bulb check valve is faulty.
    f. Fuel filter is obstructed. Refer to Maintenance Section.
    g. Fuel pump failure.
    h. Fuel tank filter obstructed.
- Blown 20 AMP fuse (EFI Models). Refer to Maintenance Section.
- Ignition system component failure
- Spark plugs fouled or defective. Refer to Maintenance Section.

3. ENGINE RUNS ERRATICALLY

Possible Causes

- Low oil pressure. Check oil level.
- Spark plugs fouled or defective. Refer to Maintenance Section.
- Incorrect setup and adjustments.
- Fuel is being restricted to the engine.
  a. Engine fuel filter is obstructed. Refer to Maintenance Section.
  b. Fuel tank filter obstructed.
  c. Stuck anti-siphon valve located on permanently built in type fuel tanks.
  d. Fuel line is kinked or pinched.
- Fuel pump failure.
- Ignition system component failure.
- Fuel injection component failure (EFI Models).

4. PERFORMANCE LOSS

Possible Causes

- Low oil pressure. Check oil level.
- Throttle not fully open.
- Damaged or improper size propeller.
- Incorrect engine timing, adjustments, or setup.
- Boat overloaded or load improperly distributed.
- Excessive water in bilge.
- Boat bottom is dirty or damaged.

5. BATTERY WILL NOT HOLD CHARGE

Possible Causes

- Battery connections are loose or corroded.

- Low electrolyte level in battery.
- Worn out or inefficient battery.
- Excessive use of electrical accessories.
- Defective rectifier, alternator, or voltage regulator.

6. ENGINE RUNS ON GAS BUT IDLE IS IRREGULAR

Possible Causes

- The engine runs on gas but idling is irregular.
- Adjust the carburetor throttle valve screw; at the same time make little adjustments to the reducer idling screw. The adjustment of the throttle valve must not substantially change normal operation of idling with fuel
- Carry out checks referred in next point.

7. ENGINE RUNS ON GAS BUT ACCELERATION IS NOT GOOD

Possible Causes

- Check that the LPG hose connecting the reducer to the mixer is not broken crushed or with sharp bends.
- Check that the mini-reducer peak screw is not closed.
- Check the tank pressure

8. ENGINE RUNS ON GAS BUT DOES NOT REACH FULL POWER.

Possible Causes

- Check as in point above
- If there is an injector pipe in the system, slightly adjust its orientation.

9. ENGINE RUNS ON GAS BUT WITH HIGH CONSUMPTION

Possible Causes

- Check carburetion both at idle and peak power.

10. THE MINI REDUCER FREEZES WHEN ENGINE IS RUNNING ON LPG

Possible Causes

- Check that gaseous rather than liquid LPG is being taken from the tank.

11. LPG CONTAINER FREEZES WHEN ENGINE IS RUNNING ON LPG

Possible Causes

- The gas has dropped below the reserve level. Fill the tank.
- idle speed of 800-900 RPM in forward gear

OWNER SERVICE ASSISTANCE

LOCAL REPAIR SERVICE

Always return your outboard to your local authorized dealer should the need for service arise. Only he has the certified mechanics, knowledge, special tools and equipment and the genuine parts and accessories to properly service your engine should the need occur. He knows your engine best.

SERVICE AWAY FROM HOME

If you are away from your local dealer and the need arises for service, contact the nearest authorized dealer. Refer to the Yellow Pages of the telephone directory. If, for any reason, you cannot obtain service, contact the nearest Mercury Marine (International) Marine Power Service Office

PARTS AND ACCESSORIES INQUIRES

All inquiries concerning genuine replacement parts and accessories should be directed to your local authorized dealer. The dealer has the necessary information to order parts and accessories for you. When inquiring on parts and accessories, the dealer requires the model and serial number to order the correct parts.

SERVICE ASSISTANCE

Your satisfaction with your outboard product is very important to your dealer and to us. If you ever have a problem, question or concern about your outboard product, contact your dealer or any Authorized Dealership. If additional assistance is required, take these steps.

1. *Talk with the dealership's sales manager or service manager. If this has already been done, then contact the owner of the dealership.*
2. *Should you have a question, concern or problem that cannot be resolved by your dealership, please contact Mercury Marine Service Office (International) Marine Power branch or distributor Service for assistance. They will work with your dealership to resolve all problems.*

The following information will be needed by the service office:

- Your name and address
- Daytime telephone number
- Model and serial number of your outboard
- The name and address of your dealership
- Nature of problem

Mercury Marine Service Offices are listed on the next page.

MERCURY MARINE SERVICE OFFICES

For assistance, call, fax, or write.
Please include your daytime telephone number with mail and fax correspondence.

		
United States		
(920) 929-5040	(920) 929-5893	Mercury Marine W6250 W.Pioneer Road, P.O. Box 1939 Fond du Lac, Wi 54936-1939, USA
Canada		
(905) 567-6372	(905) 567-8515	Mercury Marine Ltd. 2395 Meadowpine Blvd. Mississauga, Ontario Canada L5N 7W6
Australia, Pacific		
(61) (3) 9791-5822	(61) (3) 9793-5880	Mercury Marine Australia 132-140 Frankston Road Dandenong, Victoria 3164, Australia
Europe, Middle East, Africa		
(32) (87) 32 . 32 . 11	(32) (87) 31 . 19 . 65	Marine Power - Europe, Inc. Parc Industriel de Petit - Rechain B-4800 Verviers, Belgium
Mexico, Central America, South America, Caribbean		
(305) 385-9585	(305) 385-5507	Mercury Marine - Latin America & Caribbean 9010 S.W. 137th Ave., Suite 226 Miami, Fl 33186 U.S.A.
Japan		
81-53-423-2500	81-53-423-2510	Mercury Marine - Japan 283-1 Anshin-cho Hamamatsu, Shizuoka, 435-0005 Japan
Asia, Singapore		
5466160	5467789	Mercury Marine Singapore 72 Loyang Way Singapore 508762

MAINTENANCE LOG

Record here all maintenance performed on your outboard. Be sure to save all work orders and receipts.

Date	Maintenance Performed	Engine Hours