

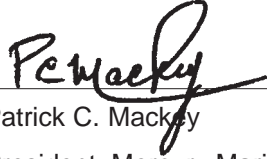
If the outboard motor's serial number plate contains the CE mark in the lower left-hand corner, the following statement applies:

This outboard motor manufactured by Mercury Marine, Fond du Lac, Wisconsin, USA or Marine Power Europe Inc. Park Industrial, de Petit-Rechain, Belgium complies with the requirements of the following directives and standards, as amended:

Recreational Craft Directive: 94/25/EC; std ISO 8665,
ISO 11547

Machinery Directive: 98/37/EC

EMC Directives: 89/336/EC; std. EN50081-1,
SAE J551 (CISPR Pub. 12).
EN 50082-1, IEC 61000 PT4-2,
IEC 61000 PT4-3,



Patrick C. Mackey

President, Mercury Marine, Fond du Lac, USA

European Regulations Contact:

Product Environmental Engineering Department, Mercury Marine,
Fond du Lac, WI USA



TABLE OF CONTENTS

Warranty Information	
Transfer Of Warranty	2
Warranty Registration	2
Mercury Marine Two Years Limited Warranty(Europe)	3
Mercury Marine ONE Year Limited Warranty(Confederation of Independent States, Middle- East, Africa)	4
3 Year Limited Warranty Against Corrosion	5
Warranty Coverage And Exclusions	6
General Information	
Boater's Responsibilities	7
Before Operating Your Outboard	7
Boat Horsepower Capacity	7
Lanyard Stop Switch	7
Protecting People In The Water	8
Exhaust Emissions	8
Selecting Accessories For Your Outboard	8
Safe Boating Suggestions	8
Recording Serial Number	9
Specifications	9
Recommendations for the Safe Use of LPG as a Propulsion Fuel for Boats, Yachts and Other Crafts	
Typical Properties of LPG	9
LPG Cylinder Storage	10
Stowage On The Deck	10
Stowage Within A Vessel	10
Constructions Of Cylinder Lockers And Compartments	10
Maintenance And Inspection	10
Storage – Repair And Maintenance	10
Emergency Procedures	10
Leakage Of LPG Without fire	10
Leakage Of LPG That Has Ignited	10
Fire External O Containers Or Appliances	10
Safety Signs And Labels	11
Installation	
Installing Outboard	11
Fastening Security Line	11
Transporting	
Carrying, Storing And Transporting Your Outboard When Removed From Boat	12
Trailing Your Boat	12
Fuel & Oil	
Gasoline Recommendations	12
Filling Fuel Tank	12
LPG Recommendations	12
Engine Oil Recommendations	13
Checking Engine Oil	13
Features & Controls	
Features & Controls	13
Tilting Outboard To Full Up Position	14
Lowering Outboard Down To Run Position	14
Shallow Water Operation	14
Setting The Operating Angle Of Your Outboard	14
Engine Over-speed Protection System	14

Operation	
Pre-Starting Check List	14
Operating In Freezing Temperatures	14
Operating In Salt Water Or Polluted Water	14
Engine Break-in Procedure	15
Starting The Engine	15
Switch from Fuel to LPG	16
Switch from LPG to Fuel	16
Gear Shifting	17
Stopping The Engine	17
Emergency Starting	17
Maintenance	
Outboard Care	18
Selecting Replacement Parts For Your Outboard	18
Inspection And Maintenance Schedule	19
LPG Container Inspection	19
Flushing The Cooling System	19
Top Cowl Removal And Installation	19
Corrosion Control Anode	20
Exterior Care	20
Fuel System	20
Propeller Replacement	20
Spark Plug Inspection And Replacement	21
Lubrication Points	21
Changing Engine Oil	21
Gear Case Lubrication	21
Submerged Outboard	22
Storage	
Storage Preparation	22
Troubleshooting	
Troubleshooting	23
LPG System Adjustment	
Idle Adjustment	24
Maximum Adjustment	24
Owner Service Assistance	
Local Repair Service	24
Service Away From Home	24
Parts And Accessories Inquires	24
Service Assistance	24
Mercury Marine Service Offices	25
Maintenance Log	
Maintenance Log	26

The description and specifications contained herein were in effect at the time this manual was approved for printing. Mercury Marine, whose policy is one of continued improvement, reserves the right to discontinue models at any time, to change specifications, designs, methods, or procedures without notice and without incurring obligation.

Mercury Marine, Fond du Lac, Wisconsin U.S.A.

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WARRANTY INFORMATION

092

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.

091

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.

092

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 dealer/distributor 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 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 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, 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 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 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 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 THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, 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 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 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 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 THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, 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.

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 (noncommercial 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 performed (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 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 THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, 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.

WARRANTY INFORMATION

op5

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.

WARRANTY COVERAGE

op6

WARRANTY COVERAGE AND EXCLUSIONS

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.

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GENERAL INFORMATION

oba1

BOATER'S RESPONSIBILITIES

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.

obb1

BEFORE OPERATING YOUR OUTBOARD

Read this manual carefully. Learn how to operate your outboard properly. If you have 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.

obc1

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U.S. COAST GUARD CAPACITY	
MAXIMUM HORSEPOWER	XXX
MAXIMUM PERSON CAPACITY (POUNDS)	XXX
MAXIMUM WEIGHT CAPACITY	XXX

obc1

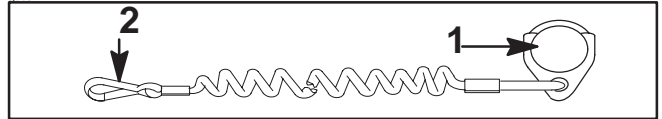
BOAT HORSEPOWER CAPACITY

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.

obd5



obd6

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 made to be inserted into the switch and a snap on the other 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 maneuvers.

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

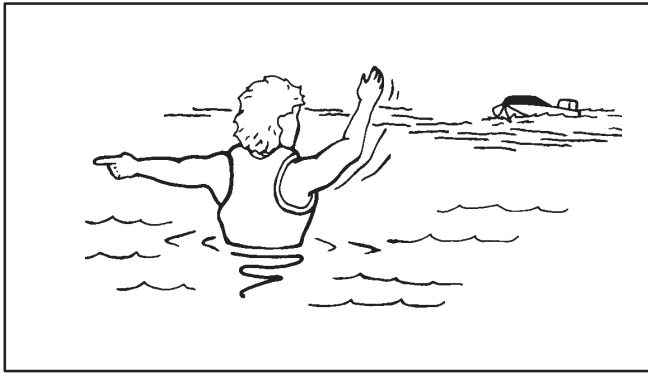
Should the operator fall out of the boat, the possibility of serious injury or death from being run over by the boat can be greatly reduced by stopping the engine immediately. Always properly connect both ends of the stop switch lanyard – to the stop switch and the operator.

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 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.



ob

GENERAL INFORMATION

obh2

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.

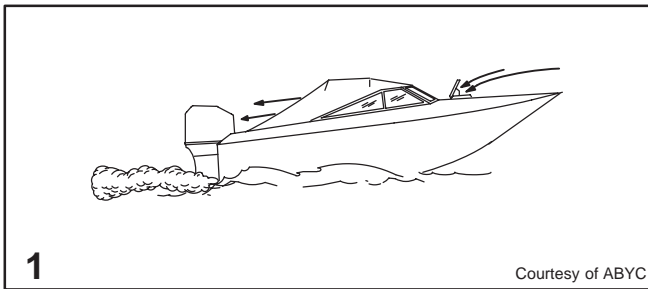
While Boat is Stationary

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.

gob4



Courtesy of ABYC

obh2

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.

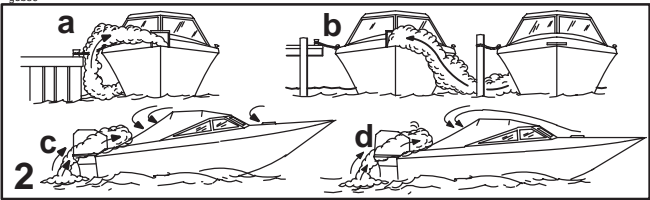
WARNING

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.



obh3

EXHAUST EMISSIONS (CONTINUED)

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

- Running the engine when the boat is moored in a confined space.
- Mooring close to another boat that has its engine running.

While boat is moving

- Running the boat with the trim angle of the bow too high.
- Running the boat with no forward hatches open (station wagon effect).

obh2

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.

obh1

SAFE BOATING SUGGESTIONS

In order to safely enjoy the waterways, familiarize yourself with local and other government 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.

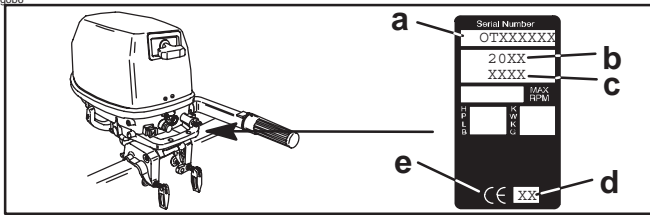
GENERAL INFORMATION

SAFE BOATING SUGGESTIONS (CONTINUED)

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.

ocb6



ob1

RECORDING SERIAL NUMBER

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

- Serial Number
- Model Year
- Model Designation
- Year Manufactured (Europe Only)
- Certified Europe Insignia (Europe Only)

obm46

SPECIFICATIONS

Models	6
Horsepower	6
Kilowatts	4.47
Full Throttle RPM Range	5000-6000
Idle Speed in Forward Gear	1100 RPM in Gear 1300 RPM in Neutral
Number of Cylinders	1
Piston Displacement	7.52. cu.in.123 cc
Cylinder Bore	2.32 in. (59 mm)
Piston Stroke	1.77 in. (45mm)
Engine Oil Capacity	15 fl. oz. (450 mL)
Recommended Spark Plug	NGK DCPR6E
Spark Plug Gap	.035 in. (.9 mm)
Gear Case Lubricant Capacity	6.6 fl. oz. (195 ml)
Gear ratio	2.15:1
Recommended Gasoline	Refer to Fuel/Oil Section
Recommended LPG	Refer to Fuel/Oil Section
Recommended Oil	Refer to Fuel/Oil Section

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:

- 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.
- 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.
- 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.
- 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.

- At very high concentrations in air, LPG vapour is anaesthetic and subsequently an asphyxiant by diluting or decreasing the available oxygen.
- Commercial LPG is normally odourised before distribution by the addition of an odourant, 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).
- 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'.
- 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.
- A container which has 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.

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

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 through 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 shut-off valve in the fuel feed line which will automatically shut-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 which 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 siting 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 CYLINDER 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) 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.

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.

EMERGENCY PROCEDURES

Leakage of LPG without Fire

Because LPG is normally stench, 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.

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

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.

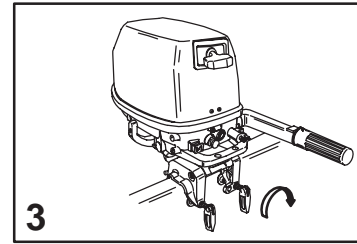
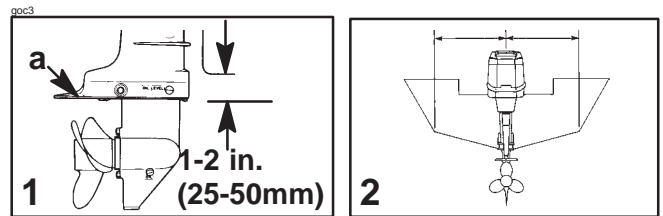
⚠ WARNING

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

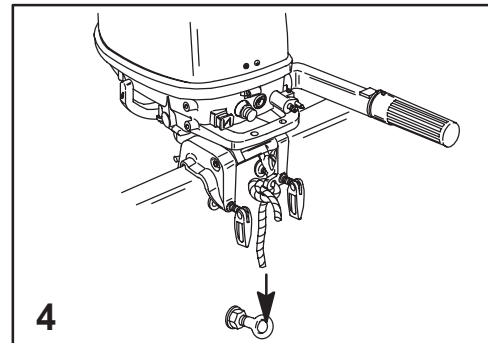
INSTALLING OUTBOARD

Boat Transom Height Requirement

- 1 Measure the transom height of your boat. The boat bottom should be aligned or be within 1 in. to 2 in. (25-50mm) above the anti-ventilation plate (a) of the outboard.

Installing Outboard on Transom

- 2 Place outboard on center line of transom.
- 3 Tighten transom clamp handles.



FASTENING SECURITY LINE

- 4 The primary purpose for installing a security line is to prevent loss of the outboard if the outboard becomes detached from the boat transom.

An effective security line should be of a working strength of at least five times the weight of the outboard.

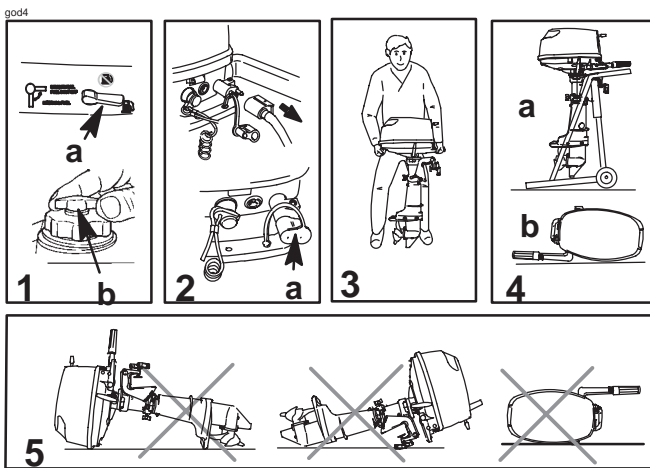
The security line should be attached between the boat and outboard following one of these steps.

Step 1. The length of the security line should be short enough and affixed in a manner to prevent the outboard from rising up and disengaging off the boat transom.

Step 2. The length of the security line should be long enough and affixed in a manner to permit a detached outboard to submerge completely behind the boat and stop running but not too short that could allow the outboard to continue running and propel itself back into the boat.

⚠ WARNING

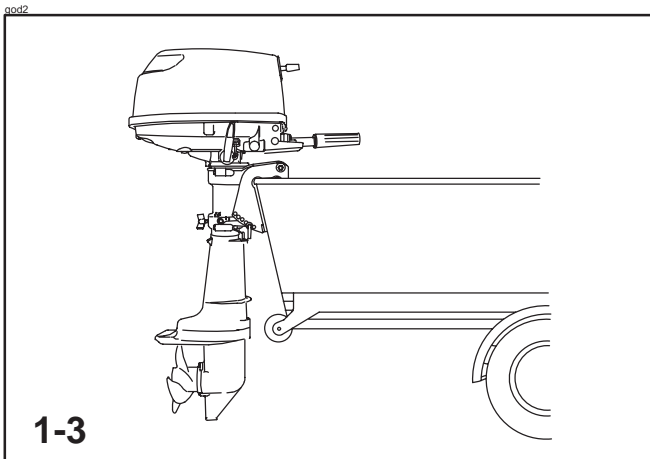
If the length of security line being used is long enough to allow the outboard to disengage off the boat transom but is too short to not allow the outboard to submerge behind the boat and stop running, the outboard could continue running and propel itself back into the boat with the propeller rotating under power. This exposes the occupants to serious injury or death.



TRANSPORTING

CARRYING, STORING AND TRANSPORTING YOUR OUTBOARD WHEN REMOVED FROM BOAT

- Internal fuel tank models – With the outboard still in the water, close the fuel valve (a) and run engine until it stops, draining carburetor. Close the fuel tank vent (b) after engine has stopped.
- Remote fuel tank models – With the outboard still in the water, disconnect the remote fuel line and run engine until it stops, draining carburetor. Install the protector cap (a) over the fuel connector.
- Remove outboard and hold upright until the water is drained out. Keep the outboard in a upright position when carrying.
- Carry, transport or store the outboard only in the upright position (a) or tiller handle down position (b). These positions will prevent oil from draining out of the crankcase.
- Never carry, store or transport the outboard in these positions. Engine damage could result from oil draining out of the crankcase.



TRAILERING YOUR BOAT

IMPORTANT: The tilt lock mechanism is not intended to support the outboard up in the tilted position when trailering your boat. Use of the tilt lock mechanism could allow the outboard to bounce and drop down causing damage to the outboard.

- Your boat should be trailered with the outboard tilted down (normal operating position).
- If additional ground clearance is required, remove the outboard from the boat and store securely. Additional clearance may be needed for railroad crossings, driveways, and trailer bouncing.
- Set the gear shift into forward gear. This prevents the propeller from spinning freely.

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.

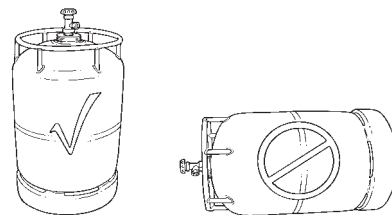
Do not completely fill the fuel tanks. Leave approximately 10% of the tank volume unfilled. Fuel will expand in volume as its temperature rises and can leak under pressure if the tank is completely filled.

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

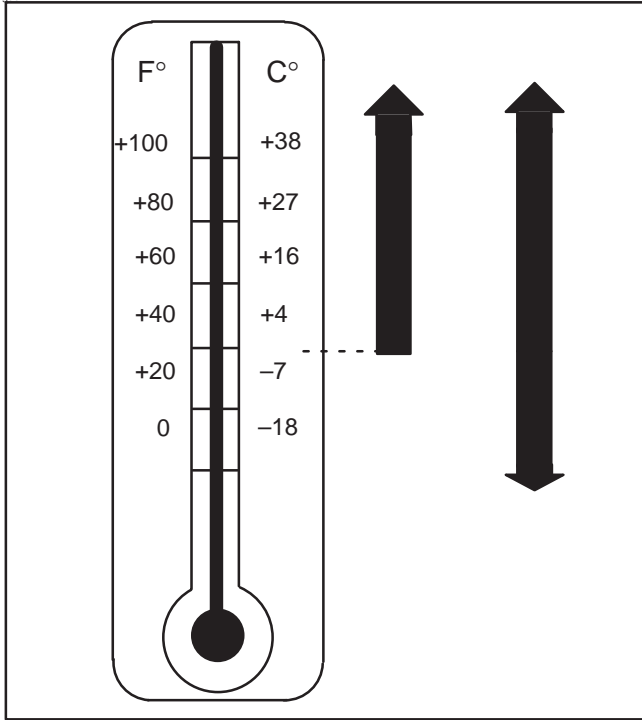
Place the portable LPG Cylinder in the boat so that the cylinder valve will stay higher than the LPG level in the tank under normal boat operating conditions.



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.

9981



FUEL & OIL

0913

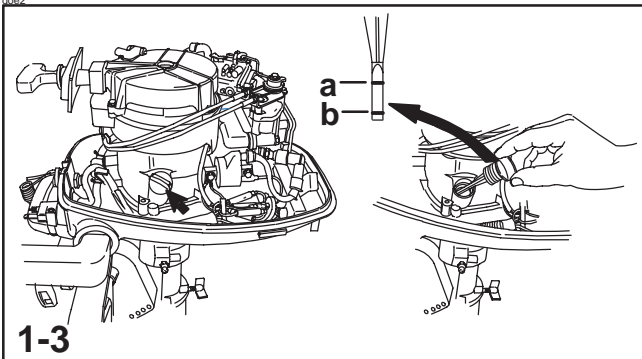
ENGINE OIL RECOMMENDATIONS

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 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).

9982



0915

CHECKING ENGINE OIL

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

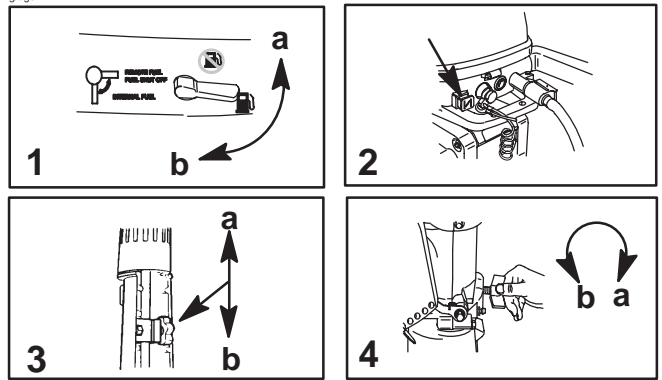
- 1 Position the outboard vertical and remove the top cowl.
- 2 Remove the oil filler cap. Wipe oil off the dip stick and screw the oil filler cap back into the oil fill hole completely. Remove the oil filler cap and check oil level on dipstick. Oil must be between full mark (a) and add mark (b). If oil level is low, add oil to bring oil level no higher than full mark (a).

Note: If oil level is at the add mark (b), add 3 oz. (100 mL) of 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.

- 3 Reinstall the oil filler cap and tighten securely.

9105



09

FEATURES & CONTROLS

0916

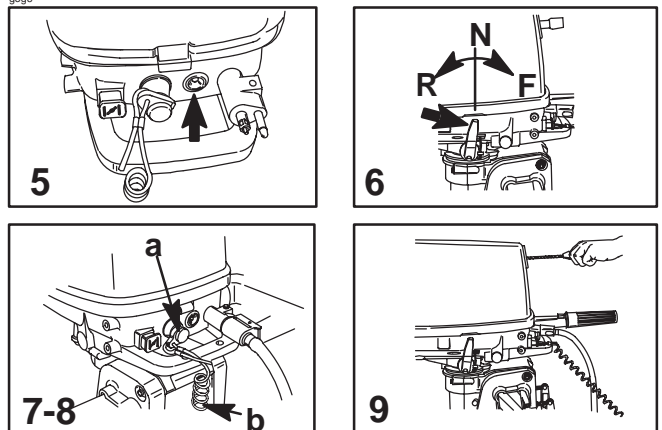
FEATURES & CONTROLS

- 1 Fuel Shut-off Valve (4 Hp Models) – Turn valve up (a) to close or down (b) to open. If an optional remote fuel tank is used, turn valve up (a) when using the remote fuel tank. Turn valve down (b) when using the internal fuel tank.
- 2 Choke Knob – Pull out for starting a cold engine. Push halfway in as engine is warming up. Push in completely after engine is warmed up.
- 3 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.
- 4 Steering Friction Adjustment – Adjust this knob to achieve the desired steering friction (drag) on the tiller handle. Move knob towards (a) to tighten friction and move knob 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 is released.

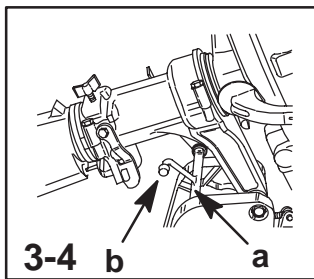
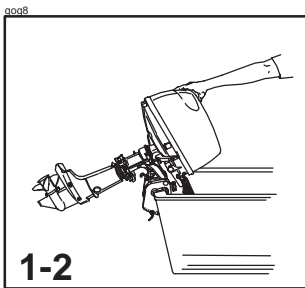
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FEATURES & CONTROLS

- 5 Oil Pressure Indicator – If oil pressure drops too low, the red light will turn on. If the oil pressure indicator light turns on when the engine is running, stop the engine as soon as it is safe to do so. Check oil level and add oil as needed. If the oil pressure indicator should stay on when the oil level is correct, consult your dealer.
- 6 Side Handle Gear Shift – Controls gear shift.
- 7 Engine Stop Switch/Lanyard Stop Switch (a) – Push in or pull lanyard to stop engine. The engine will not start unless the lanyard is engaged with the stop switch.
- 8 Lanyard (b) – Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.
- 9 Starter Rope – Pulling the starter rope cranks the engine over for starting. Adjustment – Adjust this lever to achieve the desired steering friction (drag) on the tiller handle. Move lever towards (a) to tighten friction and move lever towards (b) to loosen friction.



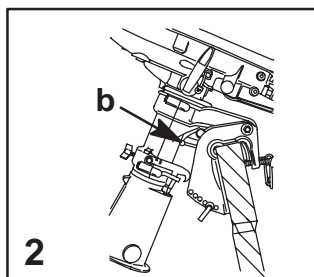
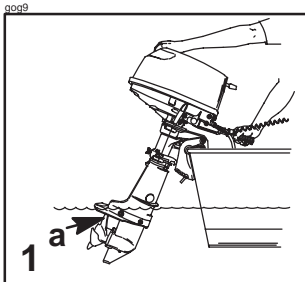
FEATURES & CONTROLS

TILTING OUTBOARD TO FULL UP POSITION

- 1 Stop the engine. Shift the outboard into forward gear.
- 2 Take hold of the top cowl grip and raise outboard to the full up position.
- 3 The spring loaded tilt lock lever (a) will engage automatically and lock the outboard in full up position.

LOWERING OUTBOARD DOWN TO RUN POSITION

- 4 Raise the outboard and pull up on the tilt release (b). Gently lower outboard down.



SHALLOW WATER OPERATION

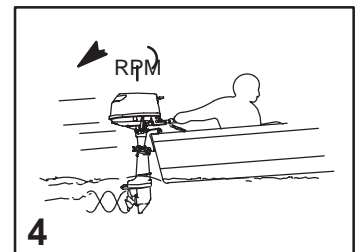
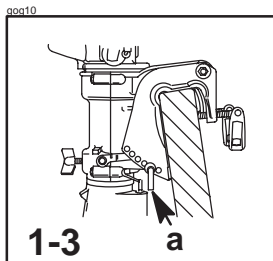
This outboard has a shallow water drive position to allow you to tilt the outboard to a higher tilt angle to prevent hitting bottom.

Engaging Shallow Water Drive

- 1 Reduce engine speed to idle in forward gear. Take hold of the top cowl grip and raise outboard to the higher tilt position. The spring loaded tilt lock lever will engage automatically and lock the outboard in the shallow water drive position. Be sure the cooling water intake is submerged.

IMPORTANT: Operate outboard at slow speed for shallow water operation and keep the cooling water intake (a) submerged.

- 2 To release outboard back down to run position, tilt outboard up slightly and pull up on the tilt release lever (b). Gently lower outboard down.



SETTING THE OPERATING ANGLE OF YOUR OUTBOARD

- 1 The vertical operating angle of your outboard is adjusted by changing the position of the tilt pin (a) in the adjustment holes provided. Proper adjustment allows the boat to run stable, achieve optimum performance, and minimize steering effort.
- 2 The tilt pin should be adjusted so the outboard is positioned to run perpendicular to the water when the boat is running at full speed. This allows the boat to be driven parallel to the water.
- 3 Arrange passengers and load in the boat so the weight is distributed evenly.

ENGINE OVER-SPEED PROTECTION SYSTEM

The system is activated if the engine speed should ever exceed the maximum allowable limit. This will protect the engine from mechanical damage.

- 4 Anytime the engine over-speed system is activated, the system will automatically reduce the engine speed to within the allowable limit. If engine over-speed continues, have the outboard checked by your dealer.

Note: Your engine speed should never reach the maximum limit to activate the system unless the propeller is ventilating, an incorrect propeller is being used, or the propeller is faulty.

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.
- LPG supply is available.
- 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 the 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).

OPERATION

ofd2

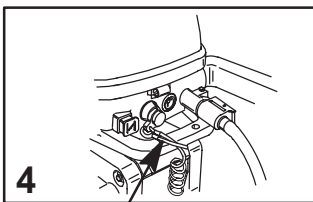
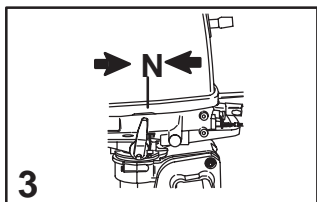
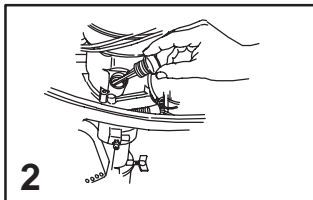
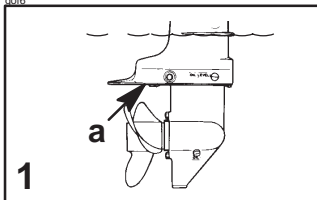
ENGINE BREAK-IN PROCEDURE

CAUTION

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

- For the first hour of operation, run the engine at varied throttle settings not exceeding 2000 RPM or at approximately half throttle.
- For the second hour of operation, run the engine at varied throttle settings up to 3000 RPM or at three-quarter throttle, and during this period of time run it at full throttle for approximately one minute every ten minutes.
- For the next eight hours of operation, avoid continuous operation at full throttle for more than five minutes at a time.

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STARTING THE ENGINE

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.

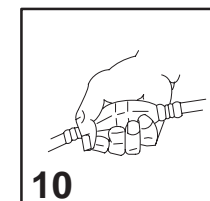
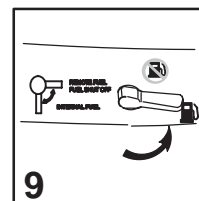
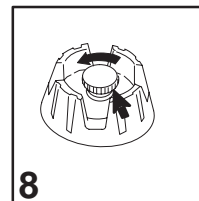
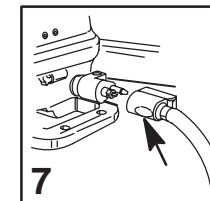
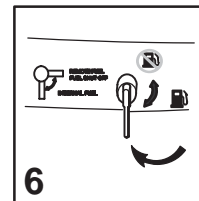
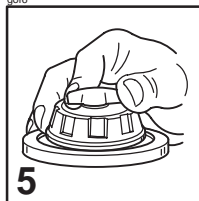
CAUTION

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

- Make sure the cooling water intake (a) is submerged.
- Check the engine oil level.
- Shift outboard to neutral (N) position.
- Attach the lanyard to the stop switch. Read the Lanyard Stop Switch safety explanation and Warning in the General Information Section.

Note: The engine will not start unless the lanyard is engaged with the stop switch.

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ofe57

STARTING THE ENGINE

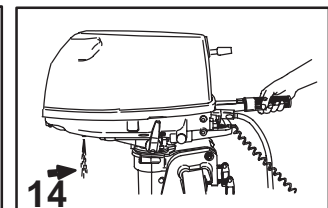
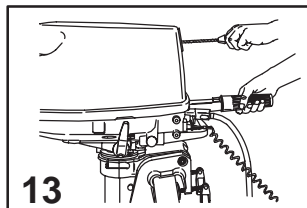
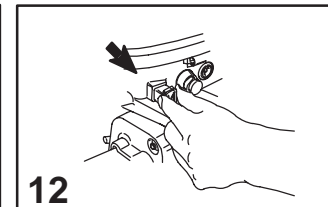
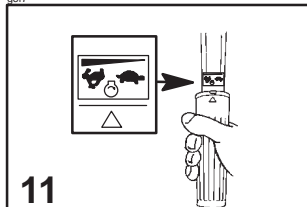
Models with internal fuel tank

- Open the vent on the internal fuel tank.
- Move the fuel shut-off valve to the lower position.

Models with remote fuel tank

- Connect the remote fuel line to the outboard. Make sure connector is snapped into place.
- Open fuel tank vent on manual venting type tanks.
- 4 Hp Models with optional remote fuel tank – Move the fuel valve to the up position.
- Squeeze the fuel line primer bulb several times until it feels firm.

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ofe59

STARTING THE ENGINE

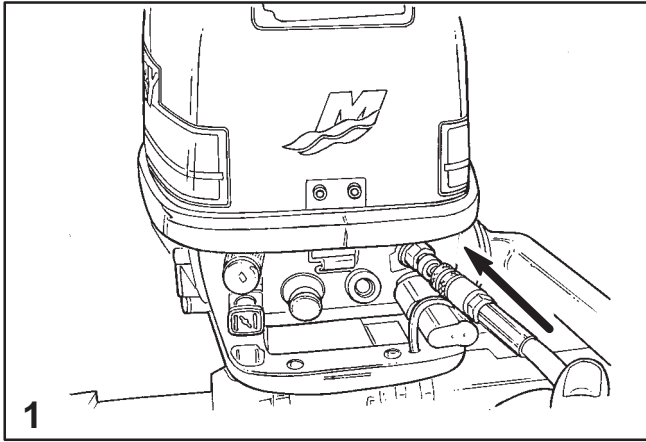
- Set the throttle grip to start position.
- If engine is cold, pull out the choke. Push in the choke halfway as the engine is warming up. Push in completely after engine is warmed up.
- Pull the starter rope slowly until you feel the starter engage, then pull rapidly to crank the engine. Allow rope to return slowly. Repeat until engine starts.
Note: Starting Flooded Engine – Push-in the choke knob. Wait 30 seconds, then continue to crank engine for starting.
- 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.

OPERATION

STARTING THE ENGINE

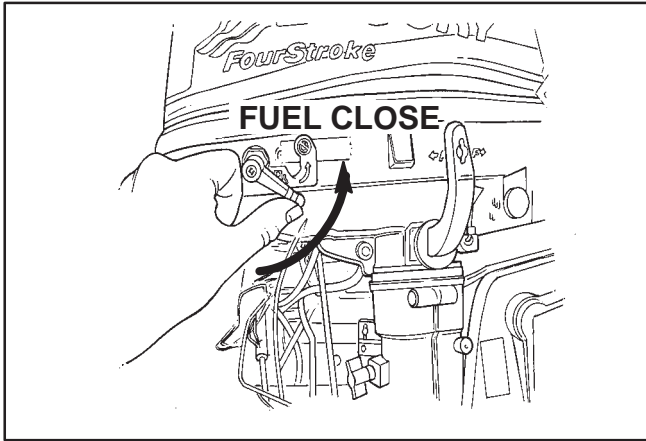
- Fuel** – Connect the remote fuel line to the outboard. Make sure connector is snapped into place.
or



- LPG** – Connect the remote LPG supply line to the outboard. Make sure connector is snapped in place.
- Check the engine oil level.
- Make sure the cooling water intake (a) is submerged.

SWITCH FROM FUEL TO LPG

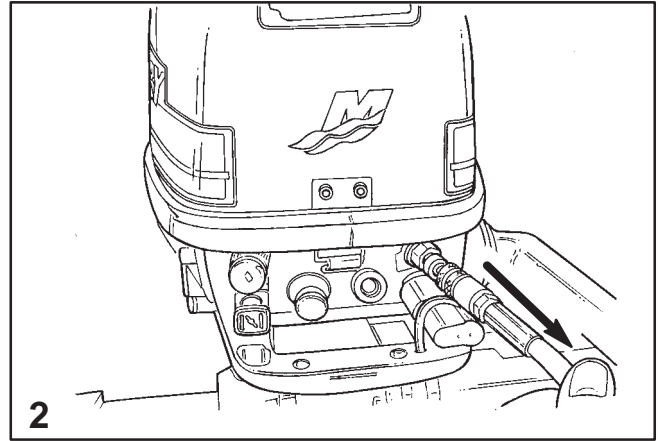
- Start the engine with fuel (Refer to sections Starting the engine on fuel).



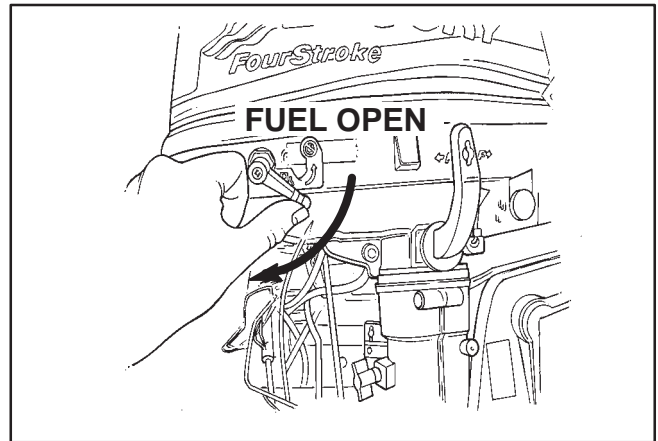
- Turn the fuel cock to a "close" position.
- Keep the engine running at idle until it stops (it may take a few minutes).
- Start the engine with LPG (refer to sections Starting the engine with LPG).

SWITCH FROM LPG TO FUEL

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



- Disconnect LPG line.
- Keep the engine running at idle until it stops.



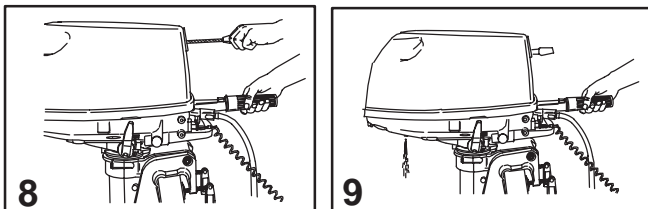
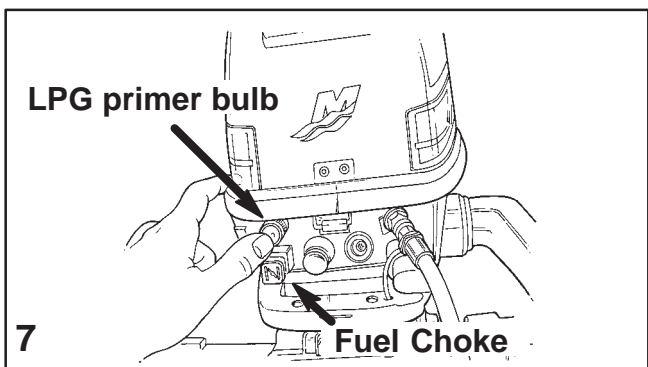
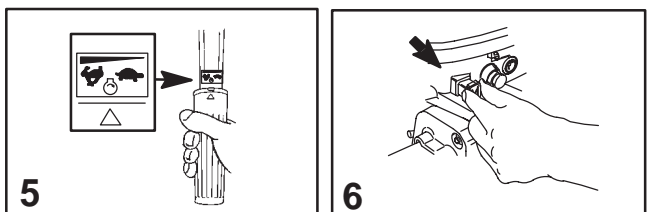
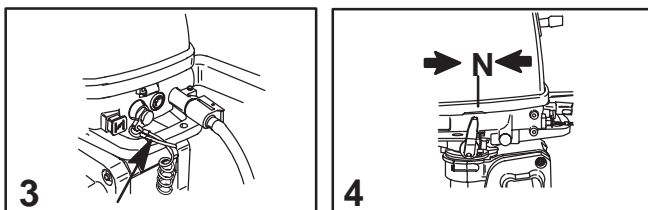
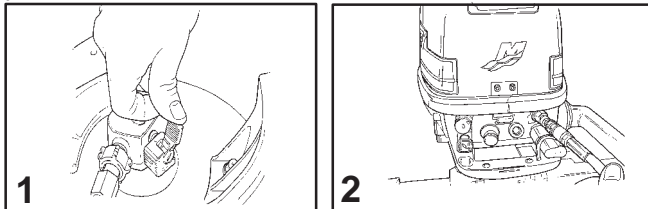
- Turn fuel cock to open position.
- Start the engine with fuel (refer to sections Starting the engine with fuel).

⚠ WARNING

To keep the fuel system and associated components (carburettor, fuel pump, etc.) in good condition, it is recommended to regularly operate the outboard on fuel.

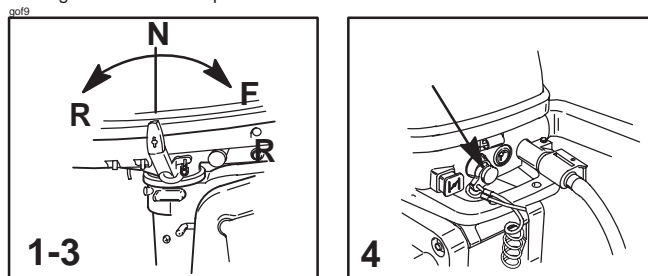
OPERATION

g07



LPG

- 1 Open the LPG Cylinder valve.
- 2 Connect LPG line.
- 3 Set the lanyard stop switch to RUN position.
- 4 Set the gear shift to NEUTRAL position.
- 5 Set the throttle grip to start position.
- 6 Cold Engine Start – Do not pull the Fuel choke knob for starting.
- 7 Prime several times on the specific LPG primer bulb located above the Fuel Choke on the bottom cowl. As an average, 5 primes will be necessary to start the engine when it is cold.
- 8 Pull the starter rope slowly.
- 9 Check for a steady stream of water flowing out of the water pump indicator hole.
- 10 If engine does not start, prime again while keeping the throttle grip on the "Start" position and proceed again from step 6 to 9. Do not open the throttle grip until engine starts. Do not pull Fuel choke.



GEAR SHIFTING

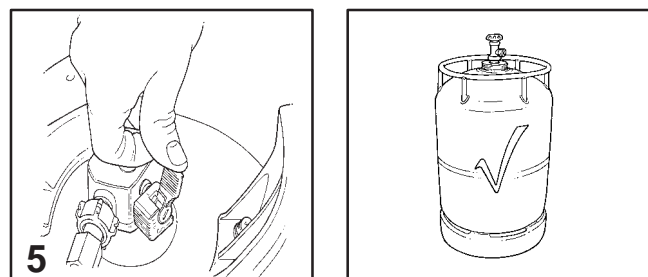
- 1 Your outboard has three gear shift positions to provide operation: Forward (F), Neutral (out of gear), and Reverse (R).
- 2 Reduce throttle speed to idle speed.
- 3 Always shift outboard into gear with a quick motion.

STOPPING THE ENGINE

- Fuel**
- 4 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.
- LPG**
- 4 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.

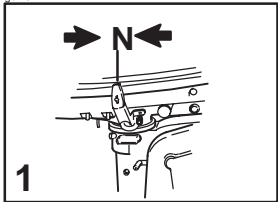
⚠ WARNING

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

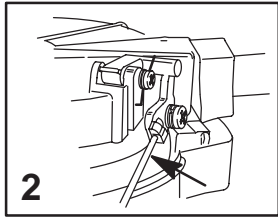


- 5 Close the LPG Cylinder Valve. LPG cylinder valves should be kept closed when the engine is not in use and when cylinders are regarded as empty.

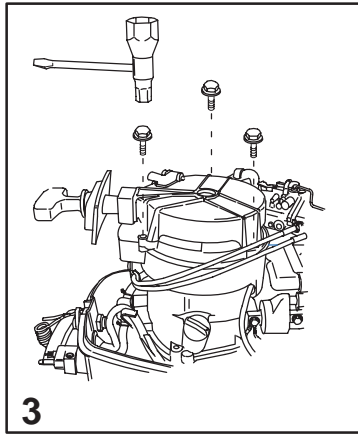
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EMERGENCY STARTING

If the starter rope should break or the rewind starter fails, use the spare starter rope (provided) and follow this procedure.

- 1 Shift outboard to neutral position.

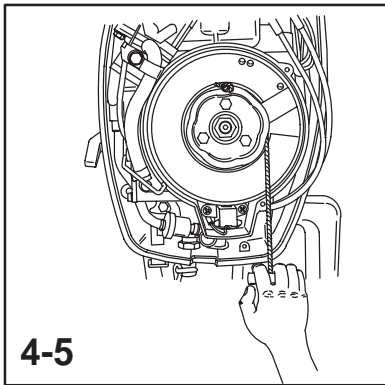
⚠ WARNING

When using emergency starter rope to start engine, the start at idle speed protection is inoperative. Make sure to have the engine speed set at slow and the outboard gear shift positioned in neutral to prevent outboard from starting in gear. Sudden unexpected acceleration could result in serious injury or death.

- 2 Disconnect linkage from rewind starter assembly.

- 3 Remove three bolts and rewind starter assembly.

go156



4-5

ofp3

EMERGENCY STARTING

⚠ 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 rewind starter assembly or top cowl when engine is running.

- 4 Place the starter rope knot into the starter cup notch and wind the rope clockwise around the cup.

- 5 Pull the starter rope to start the engine.

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MAINTENANCE

oha4

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.

o16

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.

MERCURY		EMISSION CONTROL INFORMATION	
THIS ENGINE CONFORMS TO <input type="checkbox"/> CALIFORNIA AND U.S. EPA EMISSION REGULATIONS FOR SPARK IGNITION MARINE ENGINES. REFER TO OWNERS MANUAL FOR REQUIRED MAINTENANCE, SPECIFICATIONS AND ADJUSTMENTS.			
a	IDLE SPEED (in gear) :	<input type="text"/>	FAMILY: <input type="text"/>
b	<input type="text"/> hp	<input type="text"/> cc	FEL: <input type="text"/> g/kWh
c	TIMING (IN DEGREES): <input type="text"/>		
d	<input type="text"/>	SPARK PLUG :	<input type="text"/>
e	COLD VALVE CLEARANCE (mm)	INTAKE :	<input type="text"/>
		EXHAUST :	<input type="text"/>
		GAP :	<input type="text"/>

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

o17

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

⚠ WARNING

Any repair carried out on the LPG installation must be carried out by competent persons adequately trained on LPG systems

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 building or loose components.
6. Remote Control Models – 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. Check for the condition of valves and connections for corrosion, damage or leakage. Correct or replace by a competent person as necessary.
2. Lubricate all lubrication points. Lubricate more frequently when used in salt water.
3. 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.
4. 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.
5. Inspect thermostat visually for corrosion and broken spring. Make sure thermostat closes completely at room temperature.*
6. Check fuel line filter for contaminants.
7. Check corrosion control anodes. Check more frequently when used in salt water.
8. Check and adjust valve clearance if necessary.*
9. Drain and replace gear case lubricant.
10. Lubricate splines on the drive shaft.*
11. Remote Control Models – Check control cable adjustments.*
12. Inspect timing belt.
13. 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 mini-reducer
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

Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).*

Every 5 Years

Flexible pipe work should be replaced unless proved suitable for further service by a competent person.*

LPG – Every 5 Years

General overall of the mini-reducer using original spare parts (about every 1000 hours or 5 years).

Before Periods Of Storage

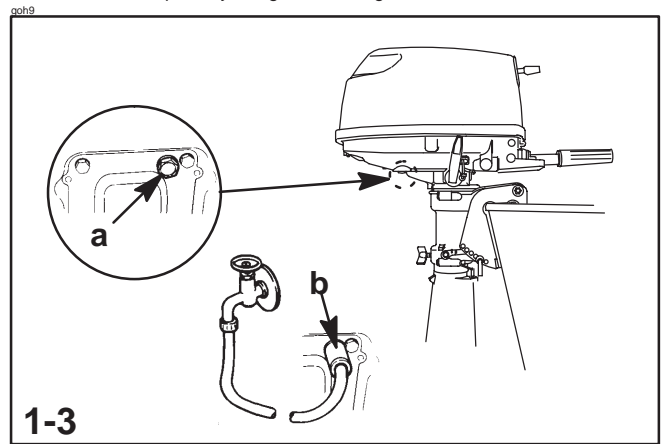
Refer to Storage Procedure

* 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.

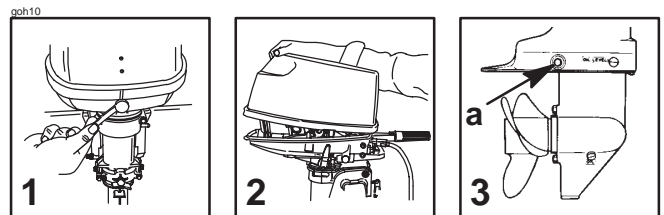


FLUSHING THE COOLING SYSTEM

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.

Note: Do not run the engine while flushing the cooling system.

- 1 Remove plug and gasket (a) and thread-in hose coupling (b).
- 2 Attach a water hose to the hose coupling. Turn on the water gently and flush the cooling system for 3 to 5 minutes.
- 3 Remove the thread-in hose coupling and reinstall plug and gasket.



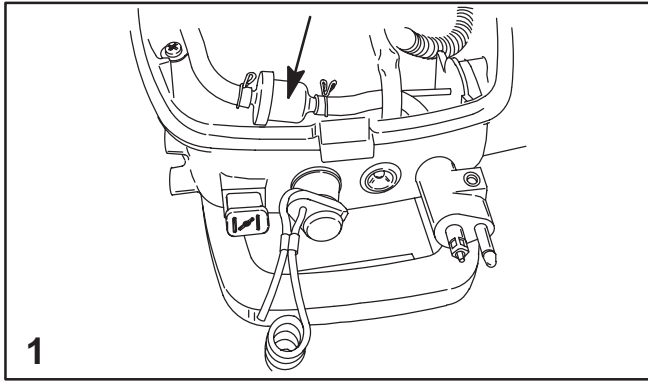
TOP COWL REMOVAL AND INSTALLATION

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.



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MAINTENANCE

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FUEL SYSTEM

⚠ WARNING

Avoid serious injury or death from gasoline fire or explosion. Carefully follow all fuel system service instructions. Always stop the engine. 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 Filter

- 1 Inspect the fuel line filter. If the filter appears to be contaminated, remove and replace.

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

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 is found, the fuel line or primer bulb must be replaced.

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

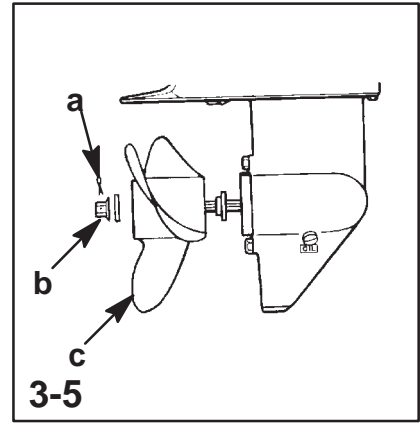
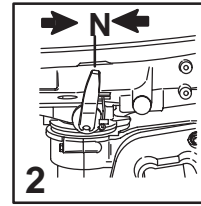
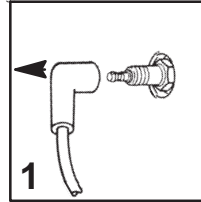
Before servicing any part of the LPG supply system, stop engine and disconnect the battery. Any LPG system service must be performed in a well-ventilated area. Inspect any complete service work for signs of leakage.

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.

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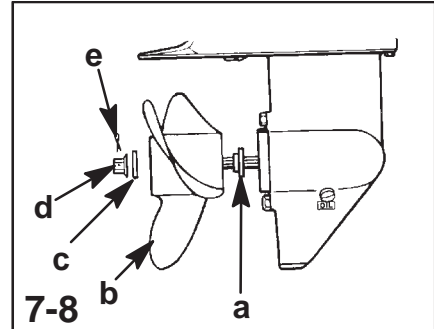
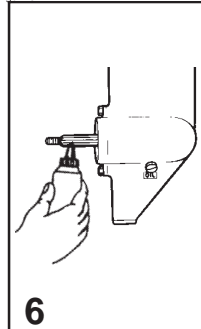
PROPELLER REPLACEMENT

⚠ 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 Remove the spark plug lead to prevent engine from starting.
- 2 Move gear shift lever into neutral.
- 3 Straighten and remove cotter pin (a).
- 4 Place a block of wood between gear case and propeller to hold propeller and remove propeller nut (b).
- 5 Pull propeller (c) straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.

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PROPELLER REPLACEMENT (CONTINUED)

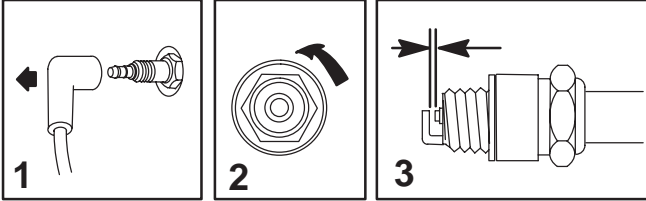
- 6 Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon.

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 Install front thrust washer (a), propeller (b), rear thrust hub (c) and propeller nut (d) onto the shaft.
- 8 Place a block of wood between gear case and propeller to prevent rotation and tighten propeller nut. Secure propeller nut to the shaft with cotter pin (e).

MAINTENANCE

goh14



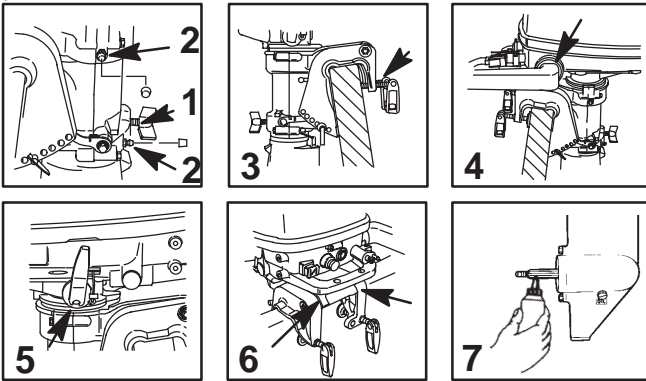
SPARK PLUG INSPECTION AND REPLACEMENT

⚠ WARNING

Avoid serious injury or death from fire or explosion caused by a damaged spark plug boot (a). A damaged spark plug boot can emit sparks. Sparks can ignite fuel vapors under the engine cowl. To avoid damaging the spark plug boot, do not use any sharp object or metal tool such as pliers, screwdriver, etc. to remove the spark plug boot.

- 1 Remove the spark plug boot (a) by twisting the rubber boot slightly and pull off.
- 2 Remove the spark plug to inspect and clean. 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 plug, clean away dirt on the spark plug seat. Install plug finger tight, and tighten 1/4 turn or torque to 20 lb. ft. (27 N·m).

goh17



LUBRICATION POINTS

Lubricate Points 1 thru 5 with Quicksilver or Mercury Precision Lubricantes 2-4-C Marine Lubricant with Teflon or Special Lubricant 101.

- 1 Co-Pilot - Lubricate threads.
- 2 Swivel Bracket - Lubricate fittings.
- 3 Transom Clamp Screws - Lubricate threads.

Note: Lubricating points 4 and 5 require disassembly of the product. These points should be lubricated at least once a year by an authorized dealer.

- 4 Tiller Handle Rubber Bushing – Lubricate internal diameter.
- 5 Shift Handle Detent - Lubricate detent.

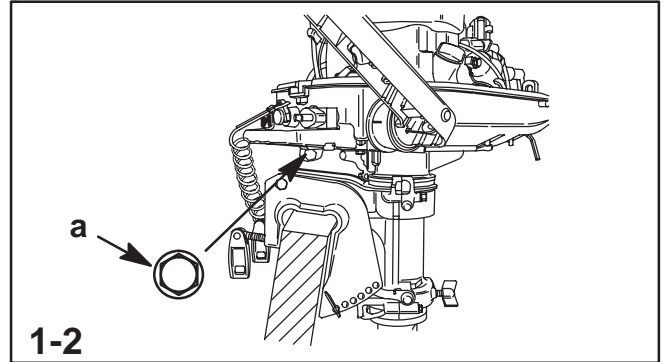
Lubricate Point 6 with Light Weight Oil

- 6 Tilt Pivot.

Lubricate Point 7 with Quicksilver or Mercury Precision Lubricantes Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon

- 7 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 to the shaft.

goh88



CHANGING ENGINE OIL

Engine Oil Capacity

15 fl. oz. (450 mL)

Oil Changing Procedure

- 1 Place outboard in an upright (not tilted) position.
- 2 Turn the steering on the outboard to gain access to the drain plug (a). Remove drain plug and drain engine oil into an appropriate container. Lubricate the seal on the drain plug with oil and reinstall.

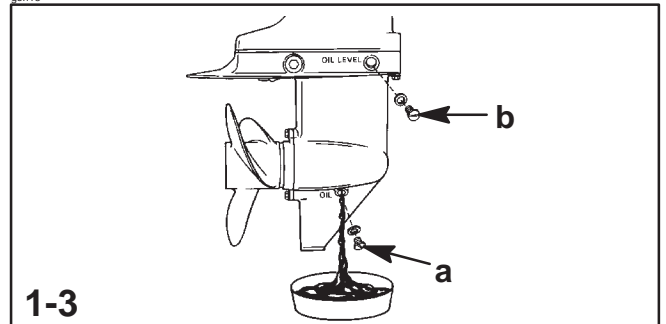
IMPORTANT: Inspect oil for signs of contamination. Oil contaminated with water will have a milky color to it; oil contaminated with fuel will smell strongly of fuel. If contaminated oil is noticed, have the engine checked by your dealer.

Oil Filling

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

Remove the oil fill cap and refill with 15 fl. oz. (450 mL) of oil. Reinstall the oil fill cap. Idle engine for five minutes and check for leaks. Stop engine and check oil level on dipstick. Add oil if necessary.

goh18



GEAR CASE LUBRICATION

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.

Also examine the gear case lubricant for metal particles. A small amount of metal filings or 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

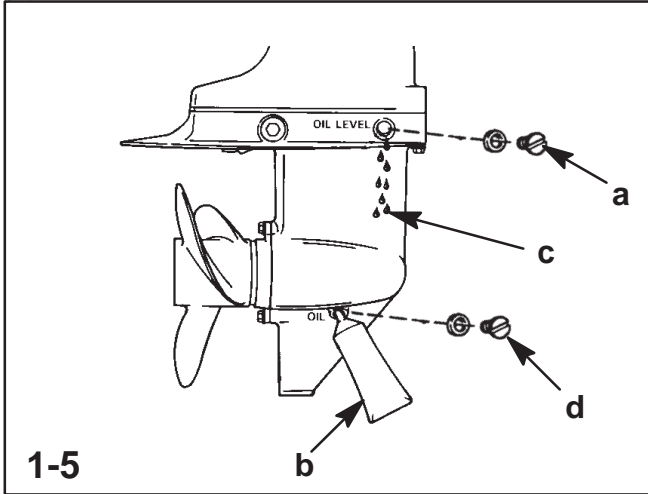
- 1 Place outboard in a vertical operating position.
- 2 Place drain pan below outboard.
- 3 Remove fill/drain plug (a) and vent plug (b) and drain lubricant.

Gear Case Lubricant Capacity

Gear case lubricant capacity is approximately 6.6 fl. oz. (195mL).

MAINTENANCE

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GEAR CASE LUBRICATION (CONTINUED)

Checking 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).
- 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).

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

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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.

oib11

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 system (tank, hoses, fuel pump, and carburetor) 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 Quicksilver 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. Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for ten minutes to allow treated fuel to reach the carburetor.

LPG system

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

3. 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.
4. There shall be no leaks in the fuel system and the fuel containers shall not be filled beyond the 80 % maximum level.
5. Craft shall not be positioned within 3 m of sources of heat, open flames or other sources of ignition.
6. 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.
7. 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.
8. 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.
9. 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).
10. 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-enricher (Electric start),
 - Ignition,
 - Any abnormal air intake,
 - Engine conditions,
 - Fuel delivery,

STORAGE

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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).

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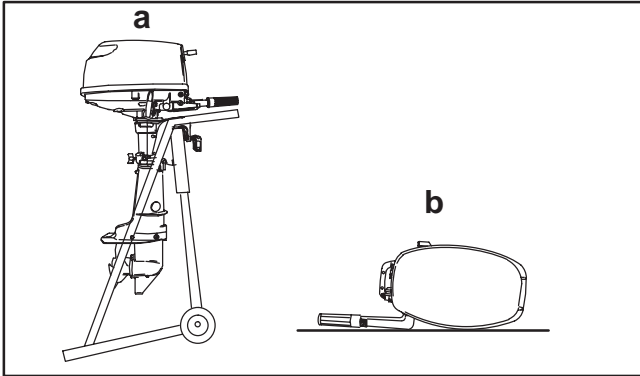
Protecting Internal Engine Components

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

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Gear Case

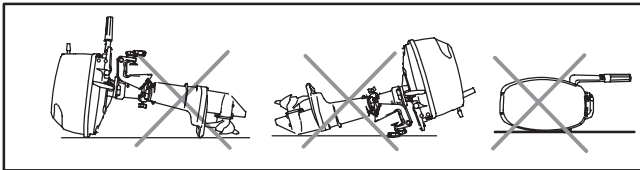
1. Drain and refill the gear case lubricant (refer to maintenance procedure).



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Positioning Outboard for Storage

- 1 Carry, transport or store the outboard only in these two positions. These positions will prevent oil from draining out of the crankcase.
 - a. Upright
 - b. Tiller Side Down



- 2 Never carry, store or transport the outboard in these positions. Engine damage could result from oil draining out of the crankcase.

CAUTION

If outboard is on a boat and 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.

TROUBLESHOOTING

1 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.

2 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.

3 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.

4 ENGINE RUNS ON GAS BUT WITH HIGH CONSUMPTION

Possible Causes

- Check carburetion both at idle and peak power.

5 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.

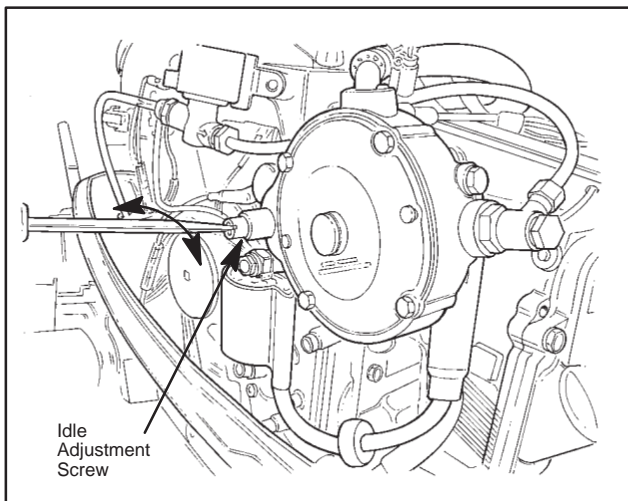
6 LPG CONTAINER FREEZES WHEN ENGINE IS RUNNING ON LPG

Possible Causes

- The gas has dropped below the reserve level. Fill the tank.

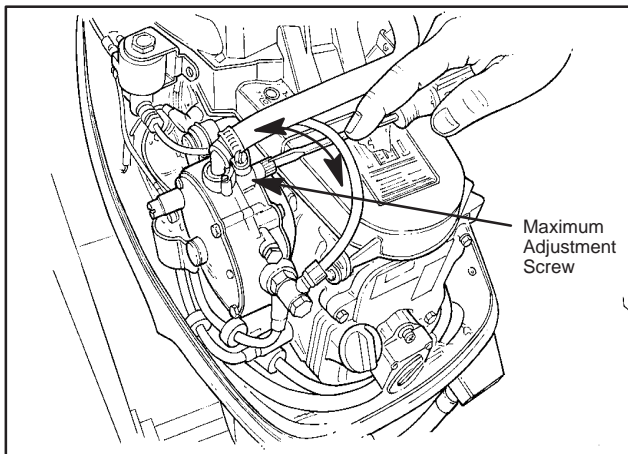
LPG SYSTEM ADJUSTMENT

1 IDLE ADJUSTMENT



- Set the Idle Adjustment Screw in the middle position.
- Start the engine and warm it up for a few minutes.
- Turn screw clockwise or anti-clockwise in order to reach and idle speed of 1.100 RPM in forward gear.

2 MAXIMUM ADJUSTMENT



- Start the engine.
- Turn the Maximum Adjustment Screw to allow the "MAXIMUM" LPG gas flow in order to reach full throttle RPM (5000–6000 RPM).
- Turning screw clockwise decrease gas flow.
- Turning screw counter-clockwise will increase gas flow.

⚠ WARNING

Any repair or adjustment carried out on the LPG installation must be carried out by competent persons adequately trained on LPG systems

OWNER SERVICE ASSISTANCE

or

^{eor6} 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.

^{eor2} 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

^{or7} PARTS AND ACCESSORIES INQUIRES

All inquiries concerning 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.

^{eor4} 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.




or

OWNER SERVICE ASSISTANCE

or

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 Ashin-cho Hamamatsu, Shizuoka, 435-0005 Japan
Asia, Singapore		
5466160	5467789	Mercury Marine Singapore 72 Loyang Way Singapore 508762

