

Thank You

for your purchase of one of the finest outboards available. You have made a sound investment in boating pleasure. Your outboard has been manufactured by Mercury Marine, a world leader in marine technology and outboard manufacturing since 1939. These years of experience have been committed to the goal of producing the finest quality products. This led to Mercury Marine's reputation for strict quality control, excellence, durability, lasting performance, and being the best at providing after the sale support.

Please read this manual carefully before operating your outboard. This manual has been prepared to assist you in the operation, safe use, and care of your outboard.

All of us at Mercury Marine took pride in building your outboard and wish you many years of happy and safe boating.

Again, thank you for your confidence in Mercury Marine.

EPA Emissions Regulations

Outboards sold by Mercury Marine in the United States are certified to the United States Environmental Protection Agency as conforming to the requirements of the regulations for the control of air pollution from new outboard motors. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, wherever practicable, returned to the original intent of the design. **Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine engine repair establishment or individual.**

Engines are labeled with an Emission Control Information decal as permanent evidence of EPA certification.

WARNING

The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Warranty Message

The product you have purchased comes with a **limited warranty** from Mercury Marine, the terms of the warranty are set forth in the **Warranty Information** section of this manual. The warranty statement contains a description of what is covered, what is not covered, the duration of coverage, how to best obtain warranty coverage, **important disclaimers and limitations of damages**, and other related information. Please review this important information.

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.

Litho in U.S.A.

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Mercury, Mercury Marine, MerCruiser, Mercury MerCruiser, Mercury Racing, Mercury Precision Parts, Mercury Propellers, Mariner, Quicksilver, #1 On The Water, Alpha, Bravo, Pro Max, OptiMax, Sport-Jet, K-Planes, MerCathode, RideGuide, SmartCraft, Zero Effort, M with Waves logo, Mercury with Waves logo, and SmartCraft logo are all registered trademarks of Brunswick Corporation. Mercury Product Protection logo is a registered service mark of Brunswick Corporation.

Mercury Premier Service

Mercury evaluates the service performance of its dealers and assigns its highest rating of "Mercury Premier" to those demonstrating an exceptional commitment to service.

Earning a Mercury Premier Service rating means a dealer:

- Achieves a high 12 month service CSI (Customer Satisfaction Index) score for warranty service.
- Possesses all necessary service tools, test equipment, manuals, and parts books.
- Employs at least one Certified or Master technician.

- Provides timely service for all Mercury Marine customers.
- Offers extended service hours and mobile service, when appropriate.
- Uses, displays, and stocks adequate inventory of genuine Mercury Precision Parts.
- Offers a clean, neat shop with well organized tools and service literature.

Declaration of Conformity OptiMax - For Recreational Craft Propulsion Engines with the Requirements of Directive 94/25/EC as amended by 2003/44/EC

Name of engine manufacturer: Mercury Marine

Address: W6250 Pioneer Road P.O. Box 1939

Town: Fond du Lac, WI

Post Code: 54936-1939

Country: USA

Name of Authorized Representative: Brunswick Marine in EMEA Inc.

Address: Parc Industriel de Petit-Rechain

Town: Verviers

Post Code: 4800

Country: Belgium

Name of Notified Body for exhaust emission assessment: Det Norske Veritas AS

Address: Veritasveien 1

Town: Hovik

Post Code:
1322

Country:
Norway

ID Number: 0575

Name of Notified Body for noise emission assessment: Det Norske Veritas AS

Address: Veritasveien 1

Town: Hovik

Post Code:
1322

Country:
Norway

ID Number: 0575

Conformity assessment module used for exhaust emissions:

☐ B+C ☐ B+D ☐ B+E ☐ B+F ☐ G ☒ H

Conformity assessment module used for noise emissions:

☐ A ☐ Aa ☐ G ☒ H

Other Community Directives applied: Safety of Machinery Directive 98/37/EC; Electromagnetic Compatibility Directive 2004/108/EC

Description of Engines and Essential Requirements

Engine Type	Fuel Type	Combustion Cycle
☒ Outboard engine	☒ Petrol	☒ 2 stroke

Identification of Engines Covered by This Declaration of Conformity

Name of engine family	Unique engine identification number: starting serial number	EC Module H certificate number
1.5L OptiMax 75, 80, 90, 115, 125 hp	1B227000	RCD-H-2
2.5L OptiMax 135, 150, 175 hp	1B227000	RCD-H-2
3.0L OptiMax 200, 225 hp	1B227000	RCD-H-2

Essential requirements	standards	other normative document/ method	technical file	Please specify in more detail (* = mandatory standard)
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Annex 1.B—Exhaust Emissions

B.1 engine identification	☐	☐	☒	
B.2 exhaust emission requirements	☒ *	☐	☐	* EN ISO 8178-1:1996
B.3 durability	☐	☐	☒	
B.4 owner's manual	☒	☐	☐	ISO 8665: 1995

Annex 1.C—Noise Emissions

C.1 Noise emission levels	☒ *	☐	☐	EN ISO 14509
C.2 Owner's manual	☐	☒	☐	Owner's manual

This declaration of conformity is issued under the sole responsibility of the manufacturer. I declare on behalf of the engine manufacturer that the engines mentioned preceding complies with all applicable essential requirements in the way specified.

Name / function:

Mark D. Schwabero, President, Mercury
Outboard

A handwritten signature in black ink, appearing to read "Mark D. Schwabero". The signature is fluid and cursive, with the first name "Mark" being more prominent and the last name "Schwabero" written in a continuous, flowing script.

Date and place of issue: July 24, 2008

Fond du Lac, Wisconsin, USA

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WARRANTY INFORMATION

Warranty Registration

UNITED STATES AND CANADA

To be eligible for warranty coverage, the product must be registered with Mercury Marine.

At the time of sale, the selling dealer should complete the warranty registration and immediately submit it to Mercury Marine via MercNET, e-mail, or mail. Upon receipt of this warranty registration, Mercury Marine will record the registration.

A copy of the warranty registration should be provided to you by your selling dealer.

NOTE: *Registration lists must be maintained by Mercury Marine and any dealer on marine products sold in the United States, should a safety recall notification under the Federal Safety Act be required.*

You may change your address at any time, including at time of warranty claim, by calling Mercury Marine or sending a letter or fax with your name, old address, new address, and engine serial number to Mercury Marine's warranty registration department. Your dealer can also process this change of information.

Mercury Marine

Attn: Warranty Registration Department

W6250 W. Pioneer Road

P.O. Box 1939

Fond du Lac, WI 54936-1939

920-929-5054

Fax +1 920 929 5893

OUTSIDE UNITED STATES AND CANADA

For products purchased outside the United States and Canada, contact the distributor in your country, or the Marine Power Service Center closest to you.

WARRANTY INFORMATION

Transfer of Warranty

UNITED STATES AND CANADA

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.

To transfer the warranty to the subsequent owner, send or fax a copy of the bill of sale or purchase agreement, new owner's name, address, and engine serial number to Mercury Marine's warranty registration department. In the United States and Canada, mail to:

Mercury Marine
Attn: Warranty Registration Department
W6250 W. Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939
920-929-5054
Fax +1 920 929 5893

Upon processing the transfer of warranty, Mercury Marine will record the new owner's information.

There is no charge for this service.

OUTSIDE THE UNITED STATES AND CANADA

For products purchased outside the United States and Canada, contact the distributor in your country, or the Marine Power Service Center closest to you.

Transfer of Mercury Product Protection (Extended Service Coverage) Plan United States and Canada

The remaining coverage period of the Product Protection Plan is transferable to the subsequent purchaser of the engine within thirty (30) days from the date of sale. Contracts not transferred within thirty (30) days of the subsequent purchase will no longer be valid and the product will no longer be eligible for coverage under the terms of the contract.

WARRANTY INFORMATION

To transfer the plan to the subsequent owner, contact Mercury Product Protection or an authorized dealer to receive a Request for Transfer form. Submit to Mercury Product Protection a receipt/bill of sale, a completed Request of Transfer form, and a check payable to Mercury Marine in the amount of \$50.00 (per engine) to cover the transfer fee.

Plan coverage is not transferable from one product to another product or for non-eligible applications.

The Certified Pre-Owned engine plans are not transferable.

For help or assistance, contact Mercury Product Protection Department at 1-888-427-5373 from 7:30 a.m. to 4:30 p.m. CST, Monday–Friday or email mpp_support@mercmarine.com.

Outboard Limited Warranty

UNITED STATES, CANADA, EUROPE, MIDDLE EAST, AFRICA, AND THE CONFEDERATION OF INDEPENDENT STATES

WHAT IS COVERED: Mercury Marine warrants its new products to be free of defects in material and workmanship during the period described below.

WARRANTY INFORMATION

DURATION OF COVERAGE: This Limited Warranty provides coverage for three (3) 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 one (1) year from the date of first retail sale, or one (1) year from the date on which the product was first put into service, 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 from one recreational use customer to a subsequent recreational use customer upon proper reregistration of the product. Unexpired warranty coverage cannot be transferred either to or from a commercial use customer.

Warranty coverage may be terminated for used repossessed product; or product purchased at auction, from a salvage yard, or from an insurance company.

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 predelivery 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 reregistered) 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. Mercury Marine reserves the right to make warranty coverage contingent upon proof of proper maintenance.

WARRANTY INFORMATION

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 remanufactured 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. Proof of registered ownership must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

WARRANTY INFORMATION

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, water entering the engine through the fuel intake, air intake or exhaust system, or damage to the product from insufficient cooling water caused by blockage of the cooling system by a foreign body, running the engine out of water, mounting the engine too high on the transom, or running the boat with the engine trimmed out too far. 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.

WARRANTY INFORMATION

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

WHAT IS COVERED: Mercury Marine warrants that each new Mercury, Mariner, Mercury Racing, Sport Jet, M² Jet Drive, Tracker by Mercury Marine Outboard, Mercury MerCruiser Inboard or Sterndrive Engine (Product) will not be 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 either 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 reregistration of the product.

WARRANTY INFORMATION

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 predelivery 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. Mercury Marine reserves the right to make warranty coverage contingent upon 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 remanufactured 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.

WARRANTY INFORMATION

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. Proof of registered ownership 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.

WARRANTY INFORMATION

Corrosion damage caused by stray electrical currents (onshore 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 antifouling paints is also not covered by this limited warranty. If antifouling protection is required, Tri-Butyl-Tin-Adipate (TBTA) base antifouling 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. For MerCruiser product, an unpainted gap of at least 38 mm (1.5 in.) should be left around the transom assembly. 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

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 driveshaft 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.

WARRANTY INFORMATION

5. Additional service work requested by customer other than that necessary to satisfy the warranty obligation.
6. Labor performed by other than an authorized dealer may be covered only under the 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 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.

WARRANTY INFORMATION

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.

U.S. EPA Emissions Limited Warranty

Consistent with the obligations created by 40 CFR Part 1045, Subpart B, Mercury Marine provides a five year or 175 hours of engine use, whichever occurs first, to the retail customer, that the engine is designed, built, and equipped so as to conform at the time of sale with applicable regulations under section 213 of the Clean Air Act, and that the engine is free from defects in materials and workmanship which cause the engine to fail to conform with applicable regulations. This emission-related warranty covers all the components listed in the **Emission Control System Components**.

Emission Control System Components

The EPA and California emission-related warranty covers all the following list of components:

COMPONENTS OF THE EMISSIONS CONTROL SYSTEM:

1. Fuel metering system
 - a. Carburetor and internal parts (and/or pressure regulator or fuel injection system)
 - b. Cold start enrichment system
 - c. Intake valves
2. Air induction system
 - a. Intake manifold
 - b. Turbocharger or supercharger systems (where applicable)
3. Ignition system
 - a. Spark plugs
 - b. Magneto or electronic ignition system
 - c. Spark advance/retard system

WARRANTY INFORMATION

- d. Ignition coil and/or control module
- e. Ignition wires
- 4. Lubrication system (4-Stroke engines excluded)
 - a. Oil pump and internal parts
 - b. Oil injectors
 - c. Oil meter
- 5. Exhaust system
 - a. Exhaust manifold
 - b. Exhaust valves
- 6. Miscellaneous items used in above systems
 - a. Hoses, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware
 - b. Pulleys, belts, and idlers
 - c. Vacuum, temperature, check and time sensitive valves and switches
 - d. Electronic controls

The emission-related warranty does not cover components whose failure would not increase an engine's emissions on any regulated pollutant.

California Emissions Limited Warranty

The California Air Resources Board has promulgated air emission regulations for outboard engines. The regulations apply to all outboard engines sold to retail consumers in California, and which were manufactured for the 2001 model year and later. Mercury Marine, in compliance with those regulations, provides this limited warranty for the emission control systems (see the components listed in the **Emission Control System Components**), and further warrants that the outboard engine was designed, built, and equipped to conform with all applicable regulations adopted by the California Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code. For information regarding the limited warranty for the nonemission-related components of the outboard, please see the limited warranty statement for your outboard.

WARRANTY INFORMATION

WHAT IS COVERED: Mercury Marine warrants the components of the emissions control systems (see the components listed in the **Emission Control System Components**) of its new, 2001 model year and later outboards, sold by a California dealer to retail customers residing in California, to be free from defects in material or workmanship, that cause the failure of a warranted part to be identical in all material respects to that part as described in the application of Mercury Marine for certification from the California Air Resources Board, for the period of time, and under the conditions, identified below. The cost to diagnose a warranty failure is covered under the warranty (if the warranty claim is approved). Damage to other engine components caused by the failure of a warranted part will also be repaired under warranty.

DURATION OF COVERAGE: This limited warranty provides coverage for the components of the emissions control systems of new, 2001 model year and later outboards, sold to retail customers in California for four (4) years from either the date the product is first sold, or first put into service, whichever occurs first, or the accumulation of 250 hours of engine operation (as determined by the engine's hour meter, if any). Emission-related normal maintenance items such as spark plugs and filters, that are on the warranted parts list, are warranted up to their first required replacement interval only. Refer to **Emission Control System Components and Maintenance Schedule**. 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. (See instructions on transfer of warranty.)

WARRANTY INFORMATION

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, please notify Mercury Marine and Mercury 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.

WHAT MERCURY WILL DO: Mercury Marine's sole and exclusive obligation under this warranty is limited to, at our expense and at our option, repairing or replacing defective parts with new or Mercury Marine certified remanufactured 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.

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 **General Information - Specifications**), operation of the product in a manner inconsistent with the recommended operation procedures, neglect, accident, submersion, improper installation (proper installation specifications and techniques are set forth in the installation instructions for the product), improper service, jet pump impellers and liners, operation with fuels, oils, or lubricants which are not suitable for use with the product (see **Fuel and Oil**), alteration or removal of parts.

WARRANTY INFORMATION

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.

Nonwarranty maintenance, replacement, or repair of emission control devices and systems may be performed by any marine engine repair establishment or individual. The use of non-Mercury parts for nonwarranty maintenance or repairs will not be grounds for disallowing other warranty work. The use of add-on (as defined at section 1900 (b)(1) and (b)(10) of Title 13 of the California Code of Regulations) or modified parts not exempted by the California Air Resources Board may be grounds for disallowing a warranty claim, at the discretion of Mercury Marine. Failures of warranted parts caused by the use of a nonexempted add-on or modified part will not be covered.

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.

If you have any questions regarding your warranty rights and responsibilities, you should contact Mercury Marine at 1-920-929-5040.

WARRANTY INFORMATION

California Air Resources Board Explanation of Your California Emission Control Warranty Statement

YOUR WARRANTY RIGHTS AND OBLIGATIONS: The California Air Resources Board is pleased to explain the emission control system warranty on your 2001 model year and later outboard engine. In California, new outboard engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Mercury Marine must warrant the emission control system on your outboard engine for the periods of time listed below, provided there has been no abuse, neglect, or improper maintenance of your outboard engine.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, Mercury Marine will repair your outboard engine at no cost to you, including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE: Select emission control parts from model year 2001 and later outboard engines are warranted for four (4) years, or for 250 hours of use, whichever occurs first. However, warranty coverage based on the hourly period is only permitted for outboard engines and personal watercraft equipped with appropriate hour meters or their equivalent. If any emission-related part on your engine is defective under warranty, the part will be repaired or replaced by Mercury Marine.

OWNER'S WARRANTY RESPONSIBILITIES: As the outboard engine owner, you are responsible for the performance of the required maintenance listed in the **Maintenance** section. Mercury Marine recommends that you retain all receipts covering maintenance on your outboard engine, but Mercury Marine cannot deny warranty solely for the lack of receipts or your failure to ensure the performance of all scheduled maintenance.

WARRANTY INFORMATION

As the outboard engine owner, you should, however, be aware that Mercury Marine may deny you warranty coverage if your outboard engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your outboard to a Mercury dealer authorized to service the product as soon as a problem exists. The warranty repairs will be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact Mercury Marine at 1-920-929-5040.

Emission Certification Star Label

Outboards are labeled on the cowl with one of the following star labels.

The symbol for a cleaner marine engine means:

Cleaner air and water - for a healthier lifestyle and environment.

Better fuel economy - burns up to 30–40 percent less gas and oil than conventional carbureted two-stroke engines, saving money and resources.

Longer emission warranty - protects consumer for worry-free operation.

 22531	One Star - Low Emission The One Star label identifies engines that meet the Air Resources Board's 2001 exhaust emissions standards. Engines meeting these standards have 75% lower emissions than conventional carbureted two-stroke engines. These engines are equivalent to the U.S. EPA's 2006 standards for marine engines.
 42537	Two Stars - Very Low Emission The Two Star label identifies engines that meet the Air Resources Board's Personal Watercraft and Outboard marine engine 2004 exhaust emissions standards. Engines meeting these standards have 20% lower emissions than One Star - Low Emission engines.

WARRANTY INFORMATION



Three Stars - Ultra Low Emission

The Three Star label identifies engines that meet the Air Resources Board's Personal Watercraft and Outboard marine engine 2008 exhaust emissions standards or the Sterndrive and Inboard marine engine 2003-2008 exhaust emission standards. Engines meeting these standards have 65% lower emissions than One Star - Low Emission engines.



Four Stars - Super Ultra Low Emission

The Four Star label identifies engines that meet the Air Resources Board's Sterndrive and Inboard marine engine 2009 exhaust emission standards. Personal Watercraft and Outboard marine engines may also comply with these standards. Engines meeting these standards have 90% lower emissions than One Star - Low Emission engines.

GENERAL INFORMATION

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 onboard is instructed in the basics of starting and operating the outboard and boat handling in case the driver is unable to operate the boat.

Before 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

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, could result in engine or major component failure.

GENERAL INFORMATION

Boat Horsepower Capacity

WARNING

Exceeding the boat's maximum horsepower rating can cause serious injury or death. Overpowering the boat can affect boat control and flotation characteristics or break the transom. Do not install an engine that exceeds the boat's maximum power rating.

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.

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

26777

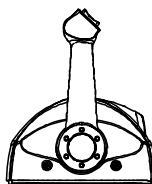
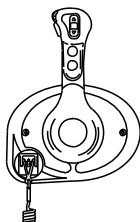
High-Speed and High-Performance Boat Operation

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

GENERAL INFORMATION

Outboard Remote Control Models

The outboard must be equipped with a Mercury remote control designed for digital throttle and shift. Start in gear protection is provided by the control system. This prevents the engine from starting when the shift is actuated in any position other than neutral.



29250

Propeller Selection

The propeller on your outboard is one of the most important components in the propulsion system. An improper propeller choice can significantly affect the performance of your boat and could result in damage to the outboard engine.

When choosing a propeller, a full selection of aluminum and stainless steel propellers specifically designed for your outboard are available through Mercury Marine. To view the entire product offering and find the correct propeller that is best suited for your application, visit www.mercmarinepropellers.com or see your local authorized Mercury dealer.

SELECTING THE CORRECT PROPELLER

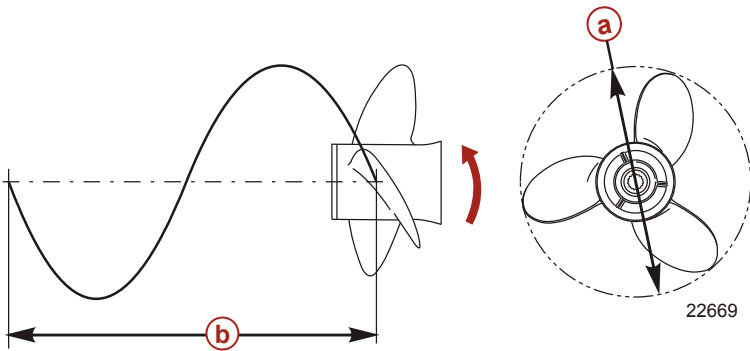
An accurate tachometer for measuring engine speed is important in choosing the correct propeller.

Choose a propeller for your boating application that will allow the engine to operate within the specified full throttle operating range. When operating the boat at full throttle under normal load conditions, the engine RPM should be in the upper half of the recommended full throttle RPM range. Refer to **Specifications**. If engine RPM is above that range, select a propeller of increased pitch in order to reduce engine RPM. If engine RPM is below the recommended range, select a propeller of reduced pitch to increase engine RPM.

GENERAL INFORMATION

IMPORTANT: To ensure proper fit, and performance, Mercury Marine recommends the use of Mercury or Quicksilver branded propellers and mounting hardware.

Propellers are designated by the diameter, pitch, number of blades, and material. The diameter and pitch are stamped (cast) into the side or the end of the propeller hub. The first number represents the diameter of the propeller and the second number represents the pitch. For example, 14x19 represents a propeller with a 14 inch diameter and 19 inches of pitch.



a - Diameter

b - Pitch - Travel during one revolution

The following are some propeller basics that will help you determine the correct propeller for your boating application.

Diameter - The diameter is the distance across the imaginary circle that is made when the propeller rotates. The correct diameter for each propeller has been predetermined for the design of your outboard. However, when more than one diameter is available for the same pitch, use a larger diameter for heavy boat applications and a smaller diameter for lighter applications.

GENERAL INFORMATION

Pitch - The pitch is the theoretical distance, in inches, that a propeller travels forward during one revolution. Pitch can be thought of similar to gears in a car. The lower the gear, the faster the car will accelerate, but with lower overall top speed. Likewise, a lower pitch propeller will accelerate quickly, but top-end speed will be reduced. The higher the propeller pitch the faster the boat will usually go; though typically slowing acceleration.

Determining the Correct Pitch size - First, check the full throttle RPM under normal load condition. If the full throttle RPM is within the recommended range, select a replacement or upgrade propeller with the same pitch as the current propeller.

- Adding 1 inch of pitch will reduce the full throttle RPM by 150 to 200
- Subtracting 1 inch of pitch will increase full throttle RPM by 150 to 200
- Upgrading from a 3-blade propeller to a 4-blade propeller will generally decrease full throttle RPM by 50 to 100

IMPORTANT: Avoid damage to the engine. Never use a propeller which allows the engine to exceed the recommended full throttle RPM range when under normal full throttle operation.

PROPELLER MATERIAL

Most propellers manufactured by Mercury Marine are made from either aluminum or stainless steel. Aluminum is suitable for general purpose use and is standard equipment on many new boats. Stainless steel is over five times more durable than aluminum and typically provides performance gains in acceleration and top end speed due to design efficiencies. Stainless steel propellers also come in a larger variety of sizes and styles that allow you to dial in the ultimate performance for your boat.

GENERAL INFORMATION

3 BLADE VS. 4 BLADE

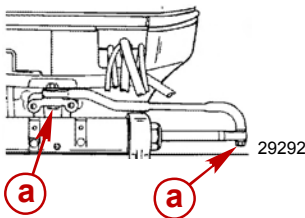
Available in many sizes of both aluminum and stainless, 3 and 4-blade propellers have unique performance characteristics. In general, 3-blade propellers offer good all around performance and higher top speed than 4-blade propellers. However, 4-blade propellers are usually faster to plane and more efficient at cruising speeds, but lack the top end speed of a 3-blade propeller.

Remote Steering Notice

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

WARNING

Improper fasteners or improper installation procedures can result in loosening or disengagement of the steering link rod. This can cause a sudden, unexpected loss of boat control, resulting in serious injury or death due to occupants being thrown within or out of the boat. Always use required components and follow instructions and torque procedures.



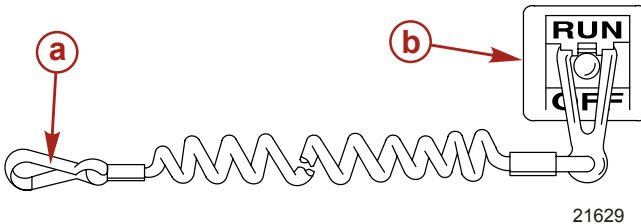
a - Self-locking nuts

GENERAL INFORMATION

Lanyard Stop Switch

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.

The lanyard is a cord usually 122–152 cm (4–5 feet) 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 to minimize the likelihood of lanyard entanglement with nearby objects. Its stretched-out length is made 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.



- a** - Lanyard cord
- b** - Lanyard stop switch

Read the following Safety Information before proceeding.

GENERAL INFORMATION

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. Falling overboard and accidental ejections are more likely to occur in certain types of boats such as low sided inflatables, bass boats, high performance boats, and light, sensitive handling fishing boats operated by a hand tiller. Falling overboard and accidental ejections 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

If the operator falls out of the boat, stop the engine immediately to reduce the possibility of serious injury or death from being struck by the boat. Always properly connect the operator to the stop switch using a lanyard.

GENERAL INFORMATION

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.

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:

- 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 gearcase or propeller.
- Loss of power and directional control in heavy seas, strong current, or high winds.
- Loss of control when docking.

KEEP THE LANYARD STOP SWITCH AND LANYARD CORD IN GOOD OPERATING CONDITION

Before each use, check to ensure the lanyard stop switch works properly. Start the engine and stop it by pulling the lanyard cord. If the engine does not stop, have the switch repaired before operating the boat.

Before each use, visually inspect the lanyard cord to ensure it is in good working condition and that there are no breaks, cuts, or wear to the cord. Check that the clips on the ends of the cord are in good condition. Replace any damaged or worn lanyard cords.

GENERAL INFORMATION

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

WARNING

A spinning propeller, a moving boat, or any solid device attached to the boat can cause serious injury or death to swimmers. Stop the engine immediately whenever anyone in the water is near your boat.

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

GENERAL INFORMATION

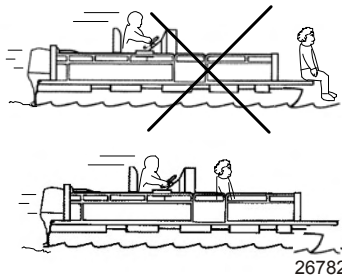
Passenger Safety Message - Pontoon Boats and Deck Boats

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

BOATS HAVING AN OPEN FRONT DECK

No one should ever be on the deck in front of the fence while the boat is in motion. Keep all passengers behind the front fence or enclosure.

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



WARNING

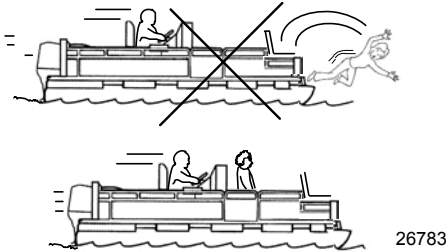
Sitting or standing in an area of the boat not designed for passengers at speeds above idle can cause serious injury or death. Stay back from the front end of deck boats or raised platforms and remain seated while the boat is in motion.

GENERAL INFORMATION

BOATS WITH FRONT MOUNTED, RAISED PEDESTAL FISHING SEATS

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

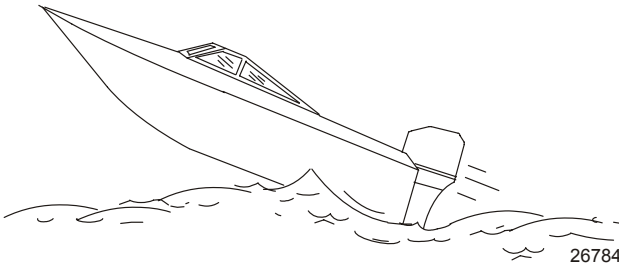
Any unexpected, sudden reduction in boat speed could result in the elevated passenger falling over the front of the boat.



26783

Wave and Wake Jumping

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



26784

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

GENERAL INFORMATION

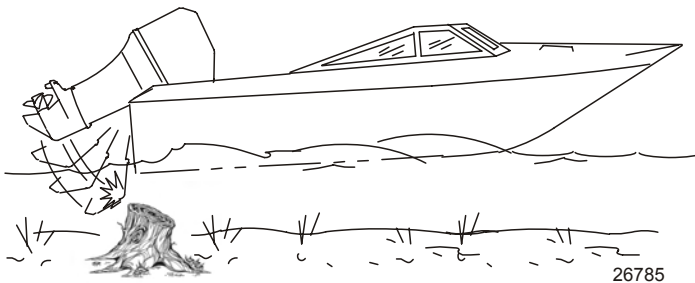
⚠ WARNING

Wave or wake jumping can cause serious injury or death from occupants being thrown within or out of the boat. Avoid wave or wake jumping whenever possible.

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

Impact with Underwater Hazards

Reduce speed and proceed with caution whenever you drive a boat in shallow water areas, or in areas where you suspect underwater obstacles may exist which could be struck by the outboard or the boat bottom. **The most important thing you can do to help reduce injury or impact damage from striking a floating or underwater object is to control the boat speed.** Under these conditions, boat speed should be kept to a minimum planing speed of 24 to 40 km/h (15 to 25 MPH).



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

- Part of the outboard or the entire outboard could break loose and fly into the boat.

GENERAL INFORMATION

- The boat could move suddenly in a new direction. Such a sharp change in direction can cause occupants to be thrown out of their seats or out of the boat.
- A rapid reduction in speed. This will cause occupants to be thrown forward, or even out of the boat.
- Impact damage to the outboard and/or boat.

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

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

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

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

WARNING

Operating a boat or engine with impact damage can result in product damage, serious injury, or death. If the vessel experiences any form of impact, have an authorized Mercury Marine dealer inspect and repair the vessel or power package.

GENERAL INFORMATION

Exhaust Emissions

BE ALERT TO CARBON MONOXIDE POISONING

Carbon monoxide (CO) is a deadly gas that is present in the exhaust fumes of all internal combustion engines, including the engines that propel boats, and the generators that power boat accessories. By itself, CO is odorless, colorless, and tasteless, but if you can smell or taste engine exhaust, you are inhaling CO.

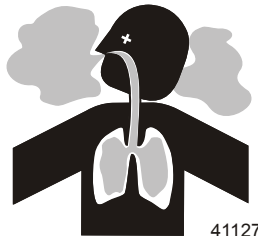
Early symptoms of carbon monoxide poisoning, which are similar to the symptoms of seasickness and intoxication, include headache, dizziness, drowsiness, and nausea.

WARNING

Inhaling engine exhaust gases can result in carbon monoxide poisoning, which can lead to unconsciousness, brain damage, or death. Avoid exposure to carbon monoxide.

Stay clear from exhaust areas when engine is running. Keep the boat well-ventilated while at rest or underway.

STAY CLEAR OF EXHAUST AREAS



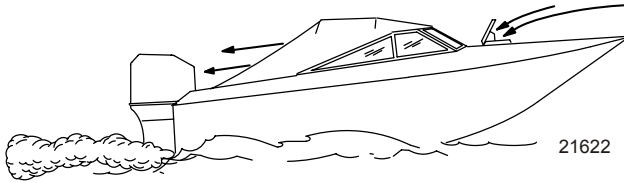
Engine exhaust gases contain harmful carbon monoxide. Avoid areas of concentrated engine exhaust gases. When engines are running, keep swimmers away from the boat, and do not sit, lie, or stand on swim platforms or boarding ladders. While underway, do not allow passengers to be positioned immediately behind the boat (platform dragging, teak/body surfing). This dangerous practice not only places a person in an area of high engine exhaust concentration, but also subjects them to the possibility of injury from the boat propeller.

GENERAL INFORMATION

GOOD VENTILATION

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

Example of desired air flow through the boat:

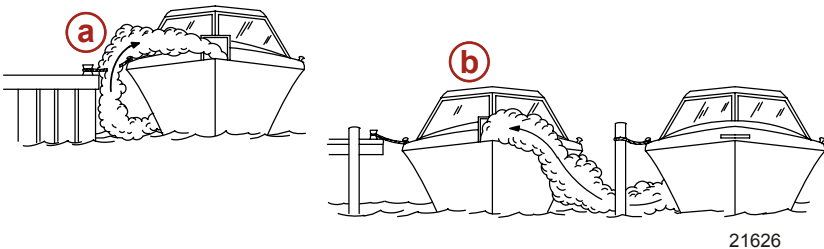


POOR VENTILATION

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

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

1. Examples of poor ventilation while the boat is stationary:



- a** - Operating the engine when the boat is moored in a confined space
- b** - Mooring close to another boat that has its engine operating

GENERAL INFORMATION

2. Examples of poor ventilation while the boat is moving:



- a** - Operating the boat with the trim angle of the bow too high
- b** - Operating the boat with no forward hatches open (station wagon effect)

Selecting Accessories for Your Outboard

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

IMPORTANT: Check with your dealer before installing accessories. The misuse of approved accessories or the use of nonapproved accessories can damage the product.

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.

Safe Boating Suggestions

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

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

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

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

GENERAL INFORMATION

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 Hotline, 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. Do not allow anyone to sit or ride on any part of the boat that was not intended for such use. This includes the back of seats, gunwales, transom, bow, decks, raised fishing seats, any rotating fishing seat; or anywhere that an 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). Alcohol or drug use impairs your judgment and greatly reduces your ability to react quickly.

Prepare other boat operators. Instruct at least one other person onboard 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 operator's 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 40 km/h (25 MPH) will overtake a fallen skier 61 m (200 ft) in front of you in 5 seconds.

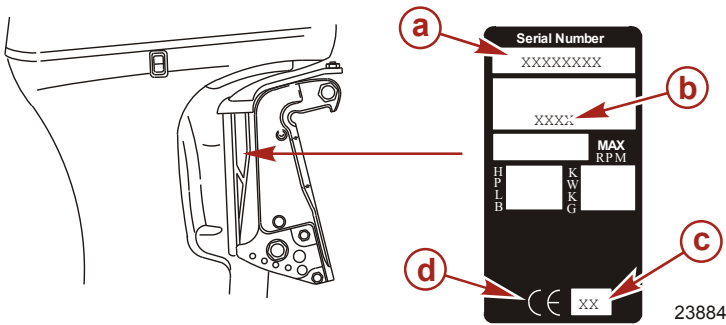
GENERAL INFORMATION

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

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

Recording Serial Number

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



- a** - Serial number
- b** - Model designation
- c** - Year manufactured
- d** - Certified Europe Insignia (as applicable)

200/225 OptiMax DTS Specifications

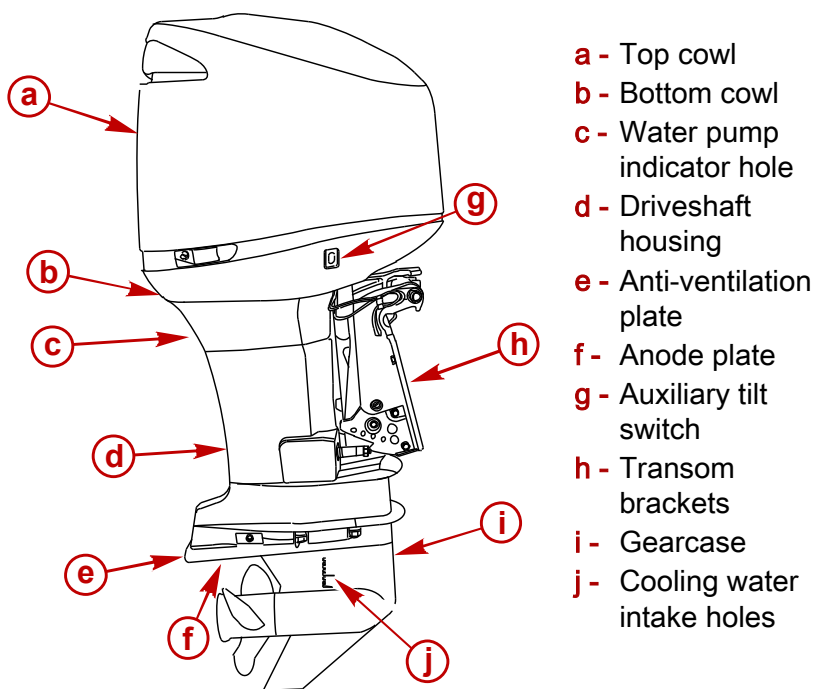
Models	200	225
Horsepower	200	225

GENERAL INFORMATION

Models	200	225
Kilowatts	147	165
Full throttle RPM range	5000–5750	
Idle speed in forward gear	575 ± 25 RPM	
Number of cylinders	6	
Piston displacement	3048 cc (186 in ³)	
Cylinder bore	92.1 mm (3.626 in.)	
Piston stroke	76.2 mm (3.000 in.)	
Recommended spark plug	NGK IZFR5G	
Spark plug gap	0.8 mm (0.031 in.)	
Standard gearcase ratio	1.75:1	
High altitude gearcase ratio	1.87:1	
Recommended gasoline	Refer to Fuel and Oil	
Recommended oil	Refer to Fuel and Oil	
Gearcase lubricant capacity	798 ml (27 fl oz)	
Battery rating	1000 marine cranking amps (MCA) or 800 cold cranking amps (CCA)	
Charging system output	60 A	
Emission control system	Electronic engine control (EC)	
Sound at drivers ear (ICOMIA 39-94) dBA	87.1	

GENERAL INFORMATION

Component Identification



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INSTALLATION

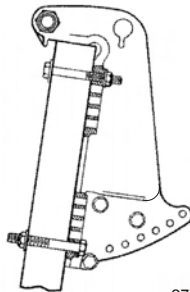
Installing Outboard

WARNING

Failure to correctly fasten the outboard could result in the outboard propelling off the boat transom resulting in property damage, serious injury, or death. Before operation, the outboard must be correctly installed with the required mounting hardware. Do not accelerate above idle speed in water that may contain underwater obstacles if the outboard is not attached to the transom correctly.

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

The outboard must be secured to the transom with the four 12.7 mm (1/2 in.) diameter mounting bolts and locknuts provided. Install two bolts through the upper set of holes and two bolts through the lower set of holes.

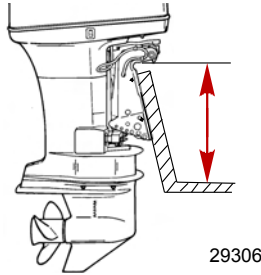


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INSTALLATION

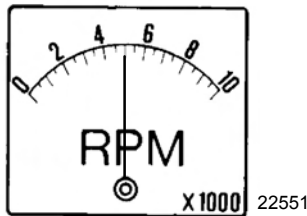
MAXIMUM OUTBOARD MOUNTING HEIGHT

The mounting height of the outboard must not exceed 635 mm (25 in.) for EL models, 762 mm (30 in.) for EXL models, and 889 mm (35 in.) for EXXL models. Mounting the outboard higher may cause damage to the gearcase components.



Propeller Selection

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



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

INSTALLATION

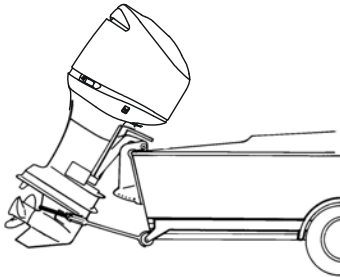
Check full-throttle RPM, using an accurate tachometer, with the engine trimmed out to a balanced-steering condition (steering effort equal in both directions) without causing the propeller to break loose.

TRANSPORTING

Trailer Boat/Outboard

Trailer your boat with the outboard tilted down in a vertical operating position.

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



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

FUEL AND OIL

Fuel Recommendations

IMPORTANT: Use of improper gasoline can damage your engine. Engine damage resulting from the use of improper gasoline is considered misuse of the engine, and damage caused thereby will not be covered under the limited warranty.

FUEL RATINGS

Mercury Marine engines will operate satisfactorily when using a major brand of unleaded gasoline meeting the following specifications:

USA and Canada - having a posted pump Octane Rating of 87 (R+M)/2 minimum. Premium gasoline (92 [R+M]/2 Octane) is also acceptable. Do not use leaded gasoline.

Outside USA and Canada - having a posted pump Octane Rating of 90 RON minimum. Premium gasoline (98 RON) is also acceptable. If unleaded gasoline is not available, use a major brand of leaded gasoline.

USING REFORMULATED (OXYGENATED) GASOLINES (USA ONLY)

This type of gasoline is required in certain areas of the USA. The 2 types of oxygenates used in these fuels are alcohol (ethanol) or ether (MTBE or ETBE). If ethanol is the oxygenate that is used in the gasoline in your area, refer to **Gasolines Containing Alcohol**.

These reformulated gasolines are acceptable for use in your Mercury Marine engine.

GASOLINES CONTAINING ALCOHOL

If the gasoline in your area contains either methanol (methyl alcohol) or ethanol (ethyl alcohol), you should be aware of certain adverse effects that can occur. These adverse effects are more severe with methanol. Increasing the percentage of alcohol in the fuel can also worsen these adverse effects.

Some of these adverse effects are caused because the alcohol in the gasoline can absorb moisture from the air, resulting in a separation of the water/alcohol from the gasoline in the fuel tank.

FUEL AND OIL

The fuel system components on your Mercury Marine engine will withstand up to 10% alcohol content in the gasoline. We do not know what percentage your boat's fuel system will withstand. Contact your boat manufacturer for specific recommendations on the boat's fuel system components (fuel tanks, fuel lines, and fittings). Be aware that gasolines containing alcohol may cause increased:

- Corrosion of metal parts
- Deterioration of rubber or plastic parts
- Fuel permeation through rubber fuel lines
- Starting and operating difficulties

WARNING

Fuel leakage is a fire or explosion hazard, which can cause serious injury or death. Periodically inspect all fuel system components for leaks, softening, hardening, swelling, or corrosion, particularly after storage. Any sign of leakage or deterioration requires replacement before further engine operation.

Because of possible adverse effects of alcohol in gasoline, it is recommended that only alcohol-free gasoline be used where possible. If only fuel containing alcohol is available, or if the presence of alcohol is unknown, increased inspection frequency for leaks and abnormalities is required.

IMPORTANT: When operating a Mercury Marine engine on gasoline containing alcohol, storage of gasoline in the fuel tank for long periods should be avoided. Long periods of storage, common to boats, create unique problems. In cars, alcohol-blend fuels normally are consumed before they can absorb enough moisture to cause trouble, but boats often sit idle long enough for phase separation to take place. In addition, internal corrosion may take place during storage if alcohol has washed protective oil films from internal components.

FUEL AND OIL

Fuel Additives

To minimize carbon deposit buildup in the engine, it is recommended to add Mercury or Quicksilver Quikleen Engine Treatment additive to the engine's fuel at each tank fill throughout the boating season. Use additive as directed on container.

Fuel Requirements

Do not use premixed gas and oil in this engine. The engine automatically receives extra oil during engine break-in. Use a fresh supply of the recommended gasoline during engine break-in and after engine break-in.

Avoiding Fuel Flow Restriction

IMPORTANT: Adding components to the fuel supply system (filters, valves, fittings, etc.) may restrict the fuel flow. This may cause engine stalling at low speed, and/or a lean fuel condition at high RPM that could cause engine damage.

Low Permeation Fuel Hose Requirement

Required for outboards manufactured for sale, sold, or offered for sale in the United States.

- The Environmental Protection Agency (EPA) requires that any outboard manufactured after January 1, 2009 must use low permeation fuel hose for the primary fuel hose connecting the fuel tank to the outboard.
- Low permeation hose is USCG Type B1-15 or Type A1-15, defined as not exceeding $15/\text{gm}^2/24 \text{ h}$ with CE 10 fuel at 23°C as specified in SAE J 1527 - marine fuel hose.

EPA Pressurized Portable Fuel Tank Requirements

The Environmental Protection Agency (EPA) will require portable fuel systems that are produced after January 1, 2011 for use with outboard engines to remain fully sealed (pressurized) up to 34.4 kPa (5.0 psi). These tanks may contain the following:

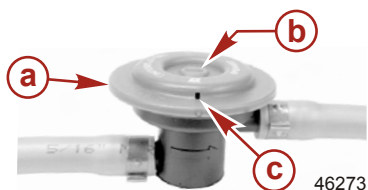
FUEL AND OIL

- An air inlet that opens to allow air to enter as the fuel is drawn out of the tank.
- An air outlet that opens (vents) to the atmosphere if pressure exceeds 34.4 kPa (5.0 psi).

Fuel Demand Valve (FDV) Requirement

Whenever a pressurized fuel tank is used, a fuel demand valve is required to be installed in the fuel hose between the fuel tank and primer bulb. The fuel demand valve prevents pressurized fuel from entering the engine and causing a fuel system overflow or possible fuel spillage.

The fuel demand valve has a manual release. The manual release can be used (pushed in) to open (bypass) the valve in case of a fuel blockage in the valve.



- a** - Fuel demand valve - installed in the fuel hose between the fuel tank and primer bulb
- b** - Manual release
- c** - Vent/water drain holes

Mercury Marine's Pressurized Portable Fuel Tank

Mercury Marine has created a new portable pressurized fuel tank that meets the preceding EPA requirements. These fuel tanks are available as an accessory or are provided with certain portable outboard models.

SPECIAL FEATURES OF THE PORTABLE FUEL TANK

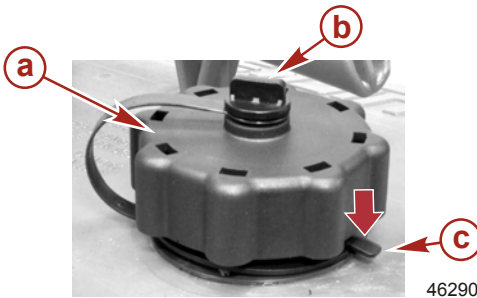
- The fuel tank has a two-way valve which allows air to enter the tank as the fuel is drawn to the engine, and also opens to vent to the atmosphere if internal pressure in the tank exceeds 34.4 kPa (5.0 psi). A hissing noise may be heard as the tank vents to the atmosphere. This is normal.
- The fuel tank includes a fuel demand valve that prevents pressurized fuel from entering the engine and causing a fuel system overflow or possible fuel spillage.

FUEL AND OIL

- When installing the fuel tank cap, turn the cap to the right until you hear a click. This signals that the fuel cap is fully seated. A built-in device prevents overtightening.
- The fuel tank has a manual vent screw which should be closed for transportation and open for operation and cap removal.

Since sealed fuel tanks are not openly vented, they will expand and contract as the fuel expands and contracts during heating and cooling cycles of the outside air. This is normal.

REMOVING THE FUEL CAP



- a** - Fuel cap
- b** - Manual vent screw
- c** - Tab lock

IMPORTANT: Contents may be under pressure. Rotate the fuel cap 1/4 turn to relieve pressure before opening.

1. Open the manual vent screw on top of the fuel cap.
2. Turn the fuel cap until it contacts the tab lock.
3. Press down on the tab lock. Rotate the fuel cap 1/4 turn to relieve the pressure.
4. Press down on the tab lock again and remove the cap.

DIRECTIONS FOR USING THE PRESSURIZED PORTABLE FUEL TANK

1. When installing the fuel tank cap, turn the cap to the right until you hear a click. This signals that the fuel cap is fully seated. A built-in device prevents overtightening.
2. Open the manual vent screw on top of the cap for operation and cap removal. Close the manual vent screw for transportation.
3. For fuel hoses that have quick disconnects, disconnect the fuel line from the engine or fuel tank when not in use.

FUEL AND OIL

4. Follow **Filling Fuel Tank** instructions for refueling.

Filling Fuel Tank

WARNING

Avoid serious injury or death from a gasoline fire or explosion. Use caution when filling fuel tanks. 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.

Oil Recommendation

Recommended Oil	Mercury OptiMax/DFI or Quicksilver DFI 2-Cycle Engine Oil
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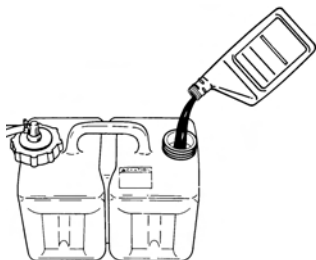
Mercury OptiMax/DFI or Quicksilver DFI 2-Cycle Engine Oil is recommended for your engine. If Mercury OptiMax/DFI or Quicksilver DFI 2-Cycle Engine Oil is not available, we recommend using Mercury or Quicksilver TC-W3 Premium Plus 2-Cycle Oil. Severe engine damage may result from use of an inferior oil.

Filling Remote Oil Tank

Remove filler cap and fill with the specified oil. Oil tank capacity is 11.5 liters (3 gallons). Replace filler cap and tighten securely.

FUEL AND OIL

IMPORTANT: Always make sure the oil tank caps are threaded on tight. An air leak will prevent oil flow to the engine.

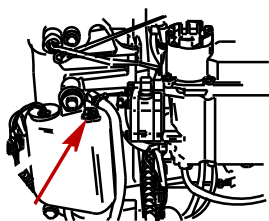


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Filling Engine Mounted Oil Reservoir Tank

NOTE: Filling this tank is only necessary if the oil level should ever drop and the low oil warning system is activated.

1. Remove the top cowl.
2. Loosen the fill cap on the engine oil reservoir tank. Run the engine until all the air has been vented out of the oil reservoir tank and tank is filled with oil to the point of overflow.
3. Retighten the fill cap. Stop the engine and replace the top cowl.

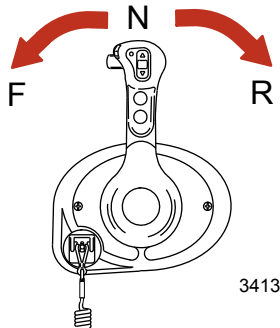


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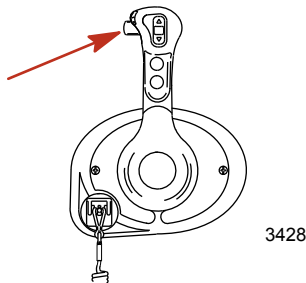
FEATURES AND CONTROLS

Panel Mount Control Features and Operation

1. Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling back to increase speed.

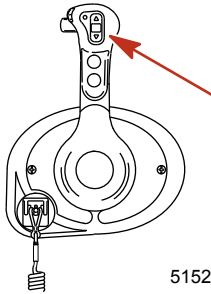


2. Shift lock - Pressing the shift lock allows the engine to shift. The shift lock must always be pressed when moving the control handle out of the neutral position.



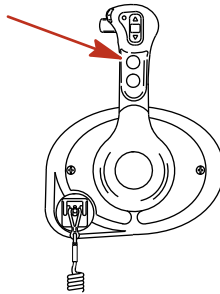
FEATURES AND CONTROLS

3. Trim switch (if equipped) - Pressing the trim switch allows the engine to trim up or down.



5152

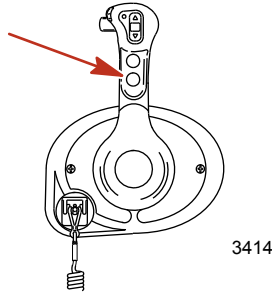
4. Throttle only button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn indicates throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position. Engine RPM is limited to prevent engine damage.



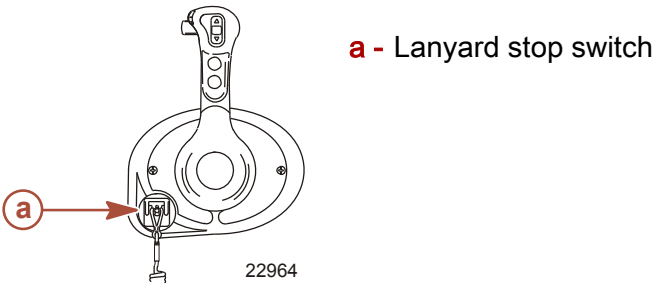
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FEATURES AND CONTROLS

5. Stop/start button - Allows the boat operator to start or stop the engine without using the ignition key. The ignition key must be in the "ON" position to start the engine.



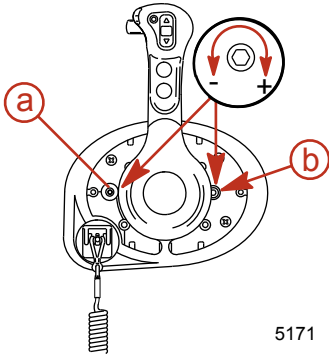
6. Lanyard stop switch - Turns the ignition off whenever the operator (when attached to the lanyard) moves far enough away from the operator's position to activate the switch.



7. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the handle in rough water. Turn screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to tension desired.

FEATURES AND CONTROLS

8. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning screw clockwise will increase tension. Adjust to tension desired.



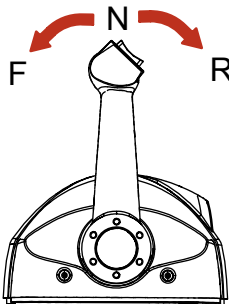
a - Detent tension adjustment screw

b - Control handle tension adjustment screw

5171

Single Handle Console Control Features and Operation

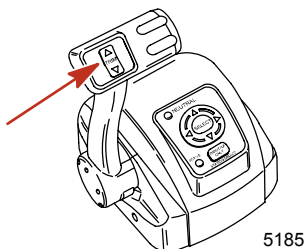
1. Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pushing back to increase speed.



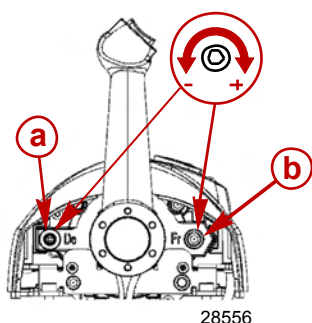
3417

FEATURES AND CONTROLS

2. Trim switch (if equipped) - Pressing the trim switch allows the engine to trim up or down.



3. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the remote control handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to the desired tension.
4. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning the screw clockwise will increase tension. Adjust to the desired tension.



- a** - Detent tension adjustment screw
- b** - Control handle tension adjustment screw

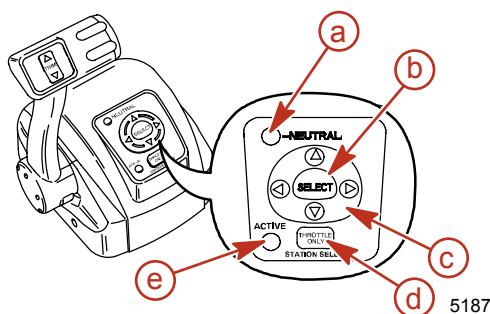
5. Arrow trackpad - Navigates through the System View on-screen function messages.

FEATURES AND CONTROLS

6. Select button - Selects the System View on-screen options and confirm data entries. Holding the select button for two seconds will pause the slide show if selected in Favorites. Holding the select button for three seconds will activate the reset data function (except when in the slide show function). Holding the select button for five seconds or more will bring up the Home page.
7. Neutral LED - The neutral LED illuminates when engine is in neutral gear position. It also flashes when throttle only is activated.

NOTE: Gear position is determined by sensing the position of the shift actuator on the engine, not the position of the control handle.

8. Active LED - The active LED illuminates to show the remote control is active and ready for use.
9. Throttle only/station select button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage. Pressing the station select button at an inactive helm initiates a helm transfer. Refer to **Helm Transfer**.



- a** - Neutral LED
- b** - Select button
- c** - Arrow trackpad
- d** - Throttle only/
station select
button
- e** - Active LED

FEATURES AND CONTROLS

HELM TRANSFER

WARNING

Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: *Idle position is preferred when doing a helm transfer. If conditions do not allow the remote control to be placed at idle position, a helm transfer can be done while in gear.*

NOTE: *The active light on the remote control will be illuminated at the helm that is in control of the engine.*

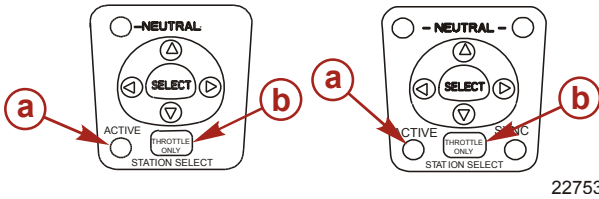
The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the throttle only/station select button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

NOTE: *There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the throttle only/station select button again will reinstate a helm transfer.*

1. Place active remote control lever to idle position.
2. Proceed to the inactive helm and position remote control lever to the idle position.

FEATURES AND CONTROLS

- Press throttle only/station select button two times. The "ACTIVE" light will illuminate to indicate the remote control is in control of the engine.



22753

- a** - Active light
- b** - Throttle only/station select button

- The "ACTIVE" light will switch off at the original helm.

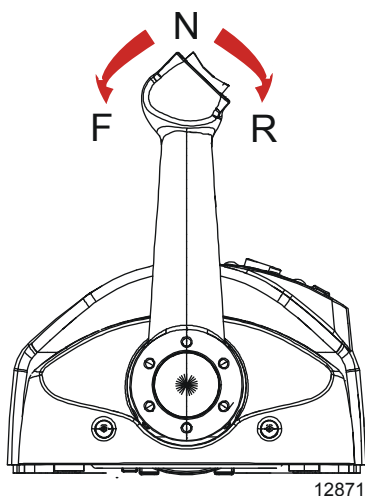
Synchronizing Helms Prior to Helm Transfer

Pressing the throttle only/station select button one time allows the boat operator 10 seconds to match up the control handle setting at the new station with the handle setting that is at the old (to be inactive) station. If the handle is not matched, the neutral light will flash. The light blinks faster as the handle is nearing match position. Once the light stays on continuously, the handle is matched and the throttle only/station select button can be pressed again to complete the transfer. This completes the transfer process, and give control to the new station. If the helm transfer is not completed within 10 seconds, the helm transfer is cancelled.

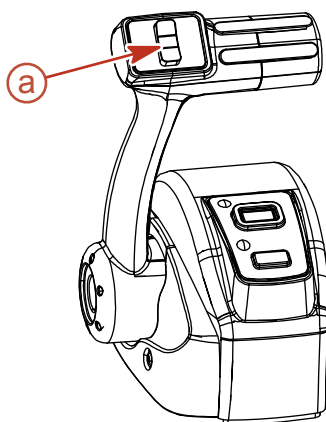
FEATURES AND CONTROLS

Slim Binnacle Control Features and Operation

1. Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pushing back to increase speed.



2. Trim switch (if equipped) - Pressing the trim switch allows the engine to trim up or down.

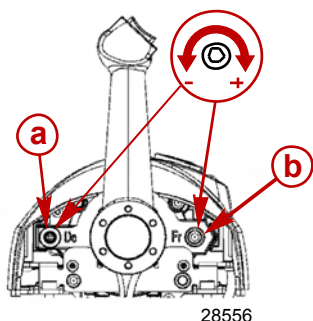


a - Trim switch

12874

FEATURES AND CONTROLS

3. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the remote control handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to the desired tension.
4. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning the screw clockwise will increase tension. Adjust to the desired tension.



- a** - Detent tension adjustment screw
- b** - Control handle tension adjustment screw

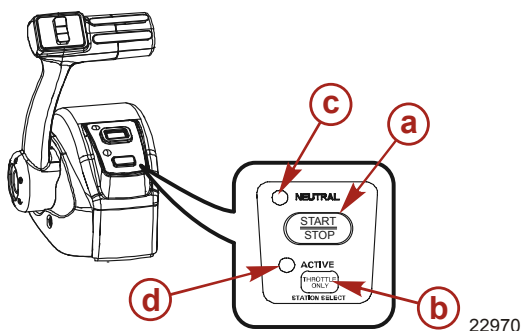
5. Start/stop button - Allows the boat operator to start or stop the engine without using the ignition key.
6. Neutral LED - The neutral LED illuminates when engine is in neutral gear position. It also flashes when throttle only is activated.

NOTE: Gear position is determined by sensing the position of the shift actuator on the engine, not the position of the control handle.

7. Active LED - The active LED illuminates to show the remote control is active and ready for use.

FEATURES AND CONTROLS

8. Throttle only/station select button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage. Pressing the station select button at an inactive helm initiates a helm transfer. Refer to **Helm Transfer**.



- a** - Start/stop button
- b** - Throttle only/
station select
button
- c** - Neutral LED
- d** - Active LED

HELM TRANSFER

WARNING

Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: Idle position is preferred when doing a helm transfer. If conditions do not allow the remote control to be placed at idle position, a helm transfer can be done while in gear.

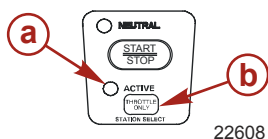
NOTE: The active light on the remote control will be illuminated at the helm that is in control of the engine.

FEATURES AND CONTROLS

The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the throttle only/station select button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

NOTE: *There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the throttle only/station select button again will reinitiate a helm transfer.*

1. Place the active remote control lever to idle position.
2. Proceed to the inactive helm and position remote control lever to the idle position.
3. Press throttle only/station select button two times. The "ACTIVE" light will illuminate to indicate the remote control is in control of the engine.



a - Active light

b - Throttle only/station select button

4. The "ACTIVE" light will switch off at the original helm.

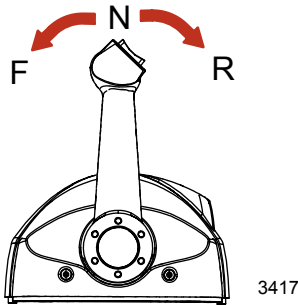
Synchronizing Helms Prior to Helm Transfer

Pressing the throttle only/station select button one time allows the boat operator 10 seconds to match up the control handle setting at the new station with the handle setting that is at the old (to be inactive) station. If the handle is not matched, the neutral light will flash. The light blinks faster as the handle is nearing match position. Once the light stays on continuously, the handle is matched and the throttle only/station select button can be pressed again to complete the transfer. This completes the transfer process, and gives control to the new station. If the helm transfer is not completed within 10 seconds, the helm transfer is cancelled.

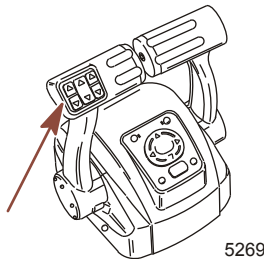
FEATURES AND CONTROLS

Dual Handle Console Control Features and Operation

1. Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling back to increase speed.



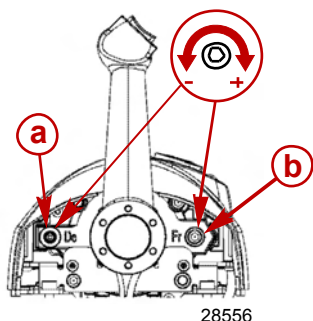
2. Trim switch (if equipped) - Pressing the trim switch allows the engine to trim up or down.



3. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to the desired tension.

FEATURES AND CONTROLS

4. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning screw clockwise will increase tension. Adjust to the desired tension.



a - Detent tension adjustment screw

b - Control handle friction adjustment screw

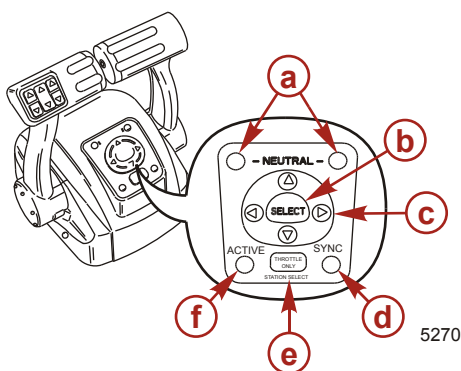
5. Throttle only/station select button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage. Pressing the station select button at an inactive helm initiates a helm transfer. Refer to **Helm Transfer**.
6. Arrow trackpad - Navigates through System View on-screen function messages.
7. Select button - Selects System View on-screen options and confirms data entries. Holding the select button for two seconds will pause the slide show if selected in Favorites. Holding the select button for three seconds will activate the reset data function (except when in the slide show function). Holding the select button for five seconds or more will bring up the Home page.

FEATURES AND CONTROLS

8. Neutral LEDs - The neutral LEDs illuminate when engines are in neutral gear position. The lights will flash when in throttle only mode.

NOTE: Gear position is determined by sensing the position of the shift actuator on the engine, not the position of the control handle.

9. Active LED - The active LED illuminates to show the remote control is active and ready for use.
10. Sync LED - The sync LED illuminates when the RPM of the two engines are being synchronized by the DTS system.



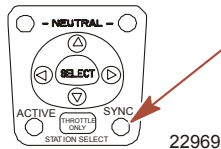
- a** - Neutral LEDs
- b** - Select button
- c** - Arrow trackpad
- d** - Sync LED
- e** - Throttle only/station select button
- f** - Active LED

SYNCHRONIZING ENGINES

The auto synchronizing feature, when engaged, will automatically adjust all engine speeds to match the speed of the starboard engine.

FEATURES AND CONTROLS

Engine auto synchronization will automatically engage when engine speed is over 900 RPM for two seconds and remote control handles are positioned within 10% of each other. The "SYNC" light will turn on when the engines are synchronized. Auto synchronization will stay engaged up to 95% throttle opening. To disengage, move one or both control handles until they are more than 10% apart, reduce engine speed below 900 RPM, or increase engine speed beyond 95%.



HELM TRANSFER

WARNING

Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: Idle position is preferred when doing a helm transfer. If conditions do not allow the remote control to be placed at idle position, a helm transfer can be done while in gear.

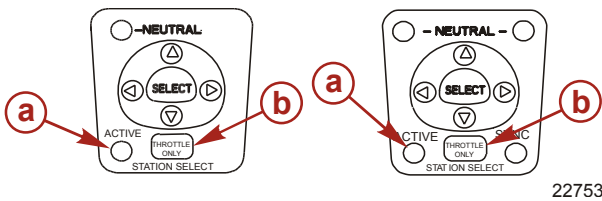
NOTE: The active light on the remote control will be illuminated at the helm that is in control of the engine.

The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the throttle only/station select button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

FEATURES AND CONTROLS

NOTE: There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the throttle only/station select button again will reinitiate a helm transfer.

1. Place active remote control lever to idle position.
2. Proceed to the inactive helm and position remote control lever to the idle position.
3. Press throttle only/station select button two times. The "ACTIVE" light will illuminate to indicate the remote control is in control of the engine.



a - Active light

b - Throttle only/station select button

4. The "ACTIVE" light will switch off at the original helm.

Synchronizing Helms Prior to Helm Transfer

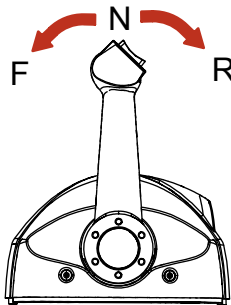
Pressing the throttle only/station select button one time allows the boat operator 10 seconds to match up the control handle setting at the new station with the handle setting that is at the old (to be inactive) station. If the handle is not matched, the neutral light will flash. The light blinks faster as the handle is nearing match position. Once the light stays on continuously, the handle is matched and the throttle only/station select button can be pressed again to complete the transfer. This completes the transfer process, and give control to the new station. If the helm transfer is not completed within 10 seconds, the helm transfer is cancelled.

FEATURES AND CONTROLS

Dual Handle Console Control with CAN Trackpad Features and Operation

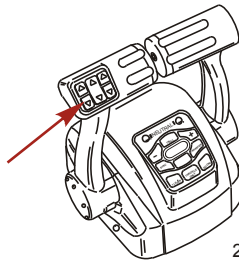
DUAL-HANDLE CONSOLE CONTROL WITH CAN TRACKPAD: FEATURES AND OPERATION

1. Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing the handle forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling the handle back to increase speed.



3417

2. Trim switch (if equipped) - Pressing the trim switch allows the engine to trim up and down.



22132

3. Neutral lights - The neutral lights illuminate when the engine is in neutral gear position. The lights will flash when the engine is in throttle only mode.

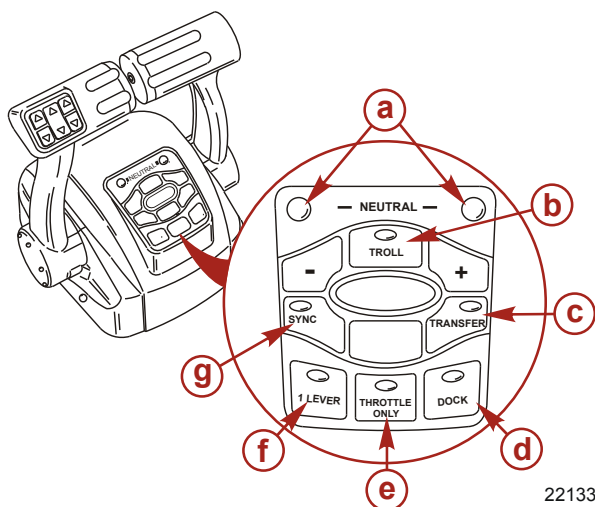
NOTE: Gear position is determined by the position of the shift actuator on the engine, not the position of the control handle.

FEATURES AND CONTROLS

4. TROLL button - Pressing the "TROLL" button activates troll control. The troll control feature allows the boat operator to set the engine speed for slow speed cruising or maneuvering. To activate, move the control handles into forward detent and press the button. Use the - or + buttons to decrease or increase speed, up to a maximum of 1000 RPM. If troll control is set at a desired speed and then shut off, the system remembers the set speed and will return to that speed when reengaged. To turn off the troll control press the "TROLL" button, move the throttle to a different speed, or shift the engine into neutral.
5. Transfer button - Pressing the "TRANSFER" button allows engine operation to be transferred from a different helm. Refer to **Helm Transfer**.
6. Dock button - Pressing the "DOCK" button initiates docking mode. Docking mode reduces throttle capacity to approximately 50% of normal throttle. To turn off docking mode, shift the engine into neutral and press the "DOCK" button.
7. Throttle only button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button and move the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage.
8. 1 lever button - Pressing the "1 LEVER" button initiates single lever mode. Single lever mode enables the throttle and shift functions of both engines to be controlled by the port control handle. To turn off single lever mode, shift the engine into neutral and press the "1 LEVER" button.

FEATURES AND CONTROLS

9. Sync button - Pressing the "SYNC" button turns off or on the auto synchronization feature. Refer to **Synchronizing Engines**.



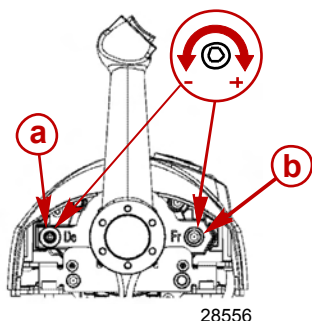
22133

- a** - Neutral LEDS
- b** - Troll button
- c** - Transfer button
- d** - Dock button
- e** - Throttle only
- f** - 1 lever button
- g** - Sync button

10. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to tension desired.

FEATURES AND CONTROLS

11. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning the screw clockwise will increase tension. Adjust to tension desired.



- a** - Detent tension adjustment screw
- b** - Control handle tension adjustment screw

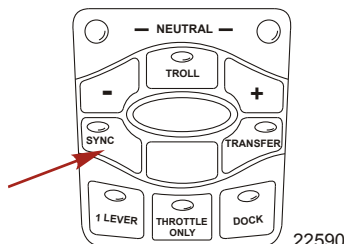
28556

SYNCHRONIZING ENGINES

The auto synchronizing feature, when engaged, will automatically adjust all engine speeds to match the speed of the starboard engine.

Press the "SYNC" button on the CAN trackpad to turn auto synchronization on or off. When the sync LED is yellow, the "SYNC" button has been pressed, but the conditions are not right for auto synchronization to engage. When the sync LED turns red, engine synchronization has been engaged. The engines will remain synchronized as long as engine speed is over 900 RPM for two seconds, remote control handles are positioned within 10% of each other, and the engines are below 95% throttle opening.

To disengage the auto synchronization feature, press the "SYNC" button.



22590

FEATURES AND CONTROLS

HELM TRANSFER

WARNING

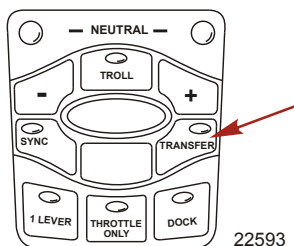
Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: *Neutral position is preferred when doing a station transfer. If conditions do not allow the remote control to be placed in the neutral position, a helm transfer can be done while in gear.*

The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the "TRANSFER" button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

Once the "TRANSFER" button is pressed, the transfer LED will light up and one beep will sound. Press the "TRANSFER" button again to complete the helm transformation. When helm transformation is complete, another beep will sound and the transfer LED will turn off.

NOTE: *There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the "TRANSFER" button again will reinitiate a helm transfer.*



22593

FEATURES AND CONTROLS

Synchronizing Helms Prior to Transfer

Pressing the "TRANSFER" button allows the boat operator 10 seconds to match up the control handle settings at the new helm with the handle settings that are at the old (to be inactive) helm. If the handles are not matched, the neutral lights will flash. The light blinks faster as the handles are nearing match position. Once the light stays on continuously, the handles are matched and the button can be pressed again to complete the transfer. This completes the transfer process, and gives control to the new station. If the helm transfer is not completed within 10 seconds, the action will be cancelled.

Shadow Mode Control Features and Operation

TRIPLE ENGINE THROTTLE AND SHIFT OPERATION

Movement of the handles on the remote control allows the boat operator to control the engine throttle speed and gear shift positions of all three engines.

The throttle and shift function is dependant on what engines are running. Refer to the following table.

Port Engine	Center Engine	Starboard Engine	Control Handle Function
Running	Running	Running	Port engine throttle and shift = controlled by port control handle
			Starboard engine throttle and shift = controlled by starboard control handle
			Center engine throttle = average of port and starboard engines
			Center engine shift = neutral unless both engines are in the same gear
Running	Running	Off	Port and center engine throttle and shift = controlled by port control handle
Off	Running	Running	Starboard and center engine throttle and shift = controlled by starboard control handle

FEATURES AND CONTROLS

Port Engine	Center Engine	Starboard Engine	Control Handle Function
Running	Off	Running	Port engine throttle and shift = controlled by port control handle
			Starboard engine throttle and shift = controlled by starboard control handle
Running	Off	Off	Port engine throttle and shift = controlled by port control handle
Off	Off	Running	Starboard engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Off (ignition key switch turned on)	Center engine throttle and shift = neutral/idle unless both control handles are in the same gear

Turning off one of the outer engines while underway will cause the center engine to go into forced neutral/idle. Operation to the center engine can be restored by moving the control handle of the functioning outer engine back into neutral position and then reengaging. The center engine speed and gear shift will then be controlled by the functioning outer engine.

Turning off the center engine while underway will have no effect on the operation of the outer engines.

If a failure should occur while underway which causes one of the outer engines into forced neutral/idle condition, the center engine will also be forced to neutral/idle. Operation to the center engine can be restored by moving the control handle of the functioning outer engine back into neutral and then reengaging.

QUAD ENGINE THROTTLE AND SHIFT OPERATION

Movement of the handles on the remote control allows the boat operator to control the engine throttle speed and gear shift positions of all four engines.

The throttle and shift function is dependent on what engines are running. Refer to the following table.

FEATURES AND CONTROLS

Port Outer Engine	Port Inner Engine	Starboard Inner Engine	Starboard Outer Engine	Control Handle Function
Running	Running	Running	Running	Port inner and outer engines throttle and shift = controlled by port control handle
				Starboard inner and outer engines throttle and shift = controlled by starboard control handle
Running	Running	Off	Off	Port inner and outer engine throttle and shift = controlled by port control handle
Off	Off	Running	Running	Starboard inner and outer engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Running	Running	Port inner engine throttle and shift = controlled by port control handle
Running	Running	Running	Off (ignition key switch turned on)	Starboard inner engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned off)	Running	Running	Running	Port inner engine throttle and shift = controlled by starboard control handle
Running	Running	Running	Off (ignition key switch turned off)	Starboard inner engine throttle and shift = controlled by port control handle

FEATURES AND CONTROLS

Port Outer Engine	Port Inner Engine	Starboard Inner Engine	Starboard Outer Engine	Control Handle Function
Running	Off	Off	Running	Port outer engine throttle and shift = controlled by port control handle
				Starboard outer engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Running	Off (ignition key switch turned on)	Port inner engine throttle and shift = controlled by port control handle
				Starboard inner engine throttle and shift = controlled by starboard control handle

Turning off the starboard outer engine while underway will cause the starboard inner engine to go into forced neutral/idle.

Operation to the inner engine can be restored by turning the starboard outer engine ignition key to the on position and moving the starboard control handle back into neutral position and then reengaging. The inner engine speed and gear shift will then be controlled by the starboard control handle.

Turning off the port outer engine while underway will cause the port inner engine to go into forced neutral/idle. Operation to the inner engine can be restored by turning the port outer engine ignition key to the on position and moving the port control handle back into neutral position and then reengaging. The inner engine speed and gear shift will then be controlled by the port control handle.

Turning off one of the inner engines while underway will have no effect on the operation of the outer engines.

FEATURES AND CONTROLS

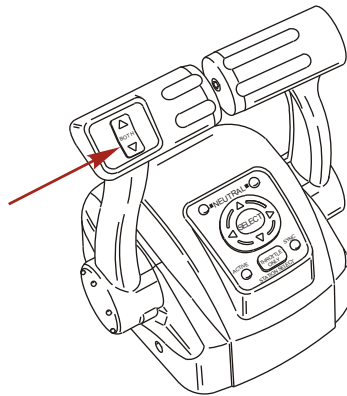
If a failure should occur while underway which causes the starboard outer engines into forced neutral/idle condition, the inner starboard engine will also be forced to neutral/idle.

Operation to the inner engine can be restored by moving the starboard control handle back into neutral and then reengaging.

If a failure should occur while underway which causes the port outer engines into forced neutral/idle condition, the inner port engine will also be forced to neutral/idle. Operation to the inner engine can be restored by moving the port control handle back into neutral and then reengaging.

TRIM SWITCH AND KEY PAD FEATURES

1. Trim switch (if equipped) - Operates the trim for all engines. An accessory trim switch panel is required for trimming engines individually.



13853

FEATURES AND CONTROLS

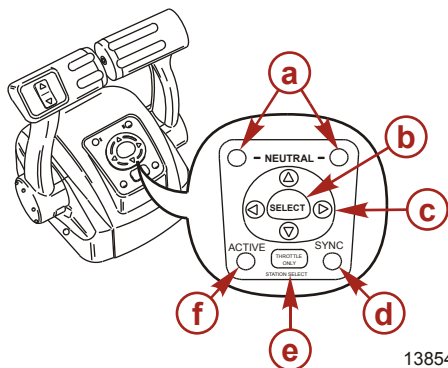
2. Throttle only/station select button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage. Pressing the station select button at an inactive helm initiates a helm transfer. Refer to **Helm Transfer**.
3. Arrow trackpad - Navigates through System View on-screen function messages.
4. Select button - Selects System View on-screen options and confirm data entries. Holding the select button for two seconds will pause the slide show if selected in Favorites. Holding the select button for three seconds will activate the reset data function (except when in the slide show function). Holding the select button for five seconds or more will bring up the Home page.
5. Neutral LEDs - The neutral LEDs illuminate when engines are in neutral gear position. The lights will flash when in throttle only mode.

NOTE: Gear position is determined by sensing the position of the shift actuator on the engine, not the position of the control handle.

6. Active LED - The active LED illuminates to show the remote control is active and ready for use.

FEATURES AND CONTROLS

7. Sync LED - The "SYNC" LED illuminates when the RPM of the engines are being synchronized by the DTS system.



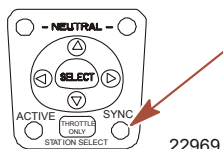
- a** - Neutral LEDS
- b** - Select button
- c** - Arrow trackpad
- d** - Sync LED
- e** - Throttle only/station select button
- f** - Active LED

13854

SYNCHRONIZING ENGINES

The auto synchronizing feature, when engaged, will automatically adjust all engine speeds to match the speed of the starboard engine.

Engine auto synchronization will automatically engage when engine speed is over 900 RPM for two seconds and remote control handles are positioned within 10% of each other. The "SYNC" light will turn on when the engines are synchronized. Auto synchronization will stay engaged up to 95% throttle opening. To disengage, move one or both control handles until they are more than 10% apart, reduce engine speed below 900 RPM, or increase engine speed beyond 95%.



22969

FEATURES AND CONTROLS

HELM TRANSFER

WARNING

Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: *Idle position is preferred when doing a helm transfer. If conditions do not allow the remote control to be placed at idle position, a helm transfer can be done while in gear.*

NOTE: *The active light on the remote control will be illuminated at the helm that is in control of the engine.*

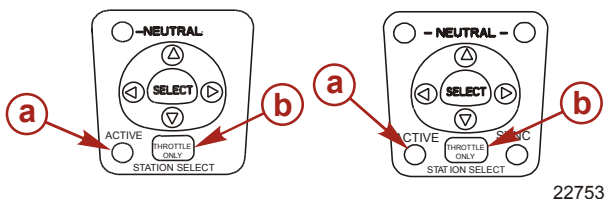
The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the throttle only/station select button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

NOTE: *There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the throttle only/station select button again will reinitiate a helm transfer.*

1. Place active remote control lever to idle position.
2. Proceed to the inactive helm and position remote control lever to the idle position.

FEATURES AND CONTROLS

3. Press throttle only/station select button two times. The "ACTIVE" light will illuminate to indicate the remote control is in control of the engine.



22753

a - Active light

b - Throttle only/station select button

4. The "ACTIVE" light will switch off at the original helm.

Synchronizing Helms Prior to Helm Transfer

Pressing the throttle only/station select button one time allows the boat operator 10 seconds to match up the control handle setting at the new station with the handle setting that is at the old (to be inactive) station. If the handle is not matched, the neutral light will flash. The light blinks faster as the handle is nearing match position. Once the light stays on continuously, the handle is matched and the throttle only/station select button can be pressed again to complete the transfer. This completes the transfer process, and give control to the new station. If the helm transfer is not completed within 10 seconds, the helm transfer is cancelled.

Shadow Mode Control with CAN Trackpad Features and Operation

TRIPLE ENGINE THROTTLE AND SHIFT OPERATION

Movement of the handles on the remote control allows the boat operator to control the engine throttle speed and gear shift positions of all three engines.

The throttle and shift function is dependant on what engines are running. Refer to the following table.

FEATURES AND CONTROLS

Port Engine	Center Engine	Starboard Engine	Control Handle Function
Running	Running	Running	Port engine throttle and shift = controlled by port control handle
			Starboard engine throttle and shift = controlled by starboard control handle
			Center engine throttle = average of port and starboard engines
			Center engine shift = neutral unless both engines are in the same gear
Running	Running	Off	Port and center engine throttle and shift = controlled by port control handle
Off	Running	Running	Starboard and center engine throttle and shift = controlled by starboard control handle
Running	Off	Running	Port engine throttle and shift = controlled by port control handle
			Starboard engine throttle and shift = controlled by starboard control handle
Running	Off	Off	Port engine throttle and shift = controlled by port control handle
Off	Off	Running	Starboard engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Off (ignition key switch turned on)	Center engine throttle and shift = neutral/idle unless both control handles are in the same gear

Turning off one of the outer engines while underway will cause the center engine to go into forced neutral/idle. Operation to the center engine can be restored by moving the control handle of the functioning outer engine back into neutral position and then reengaging. The center engine speed and gear shift will then be controlled by the functioning outer engine.

Turning off the center engine while underway will have no effect on the operation of the outer engines.

FEATURES AND CONTROLS

If a failure should occur while underway which causes one of the outer engines into forced neutral/idle condition, the center engine will also be forced to neutral/idle. Operation to the center engine can be restored by moving the control handle of the functioning outer engine back into neutral and then reengaging.

QUAD ENGINE THROTTLE AND SHIFT OPERATION

Movement of the handles on the remote control allows the boat operator to control the engine throttle speed and gear shift positions of all four engines.

The throttle and shift function is dependent on what engines are running. Refer to the following table.

Port Outer Engine	Port Inner Engine	Starboard Inner Engine	Starboard Outer Engine	Control Handle Function
Running	Running	Running	Running	Port inner and outer engines throttle and shift = controlled by port control handle
				Starboard inner and outer engines throttle and shift = controlled by starboard control handle
Running	Running	Off	Off	Port inner and outer engine throttle and shift = controlled by port control handle
Off	Off	Running	Running	Starboard inner and outer engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Running	Running	Port inner engine throttle and shift = controlled by port control handle
Running	Running	Running	Off (ignition key switch turned on)	Starboard inner engine throttle and shift = controlled by starboard control handle

FEATURES AND CONTROLS

Port Outer Engine	Port Inner Engine	Starboard Inner Engine	Starboard Outer Engine	Control Handle Function
Off (ignition key switch turned off)	Running	Running	Running	Port inner engine throttle and shift = controlled by starboard control handle
Running	Running	Running	Off (ignition key switch turned off)	Starboard inner engine throttle and shift = controlled by port control handle
Running	Off	Off	Running	Port outer engine throttle and shift = controlled by port control handle
				Starboard outer engine throttle and shift = controlled by starboard control handle
Off (ignition key switch turned on)	Running	Running	Off (ignition key switch turned on)	Port inner engine throttle and shift = controlled by port control handle
				Starboard inner engine throttle and shift = controlled by starboard control handle

Turning off the starboard outer engine while underway will cause the starboard inner engine to go into forced neutral/idle. Operation to the inner engine can be restored by turning the starboard outer engine ignition key to the on position and moving the starboard control handle back into neutral position and then reengaging. The inner engine speed and gear shift will then be controlled by the starboard control handle.

FEATURES AND CONTROLS

Turning off the port outer engine while underway will cause the port inner engine to go into forced neutral/idle. Operation to the inner engine can be restored by turning the port outer engine ignition key to the on position and moving the port control handle back into neutral position and then reengaging. The inner engine speed and gear shift will then be controlled by the port control handle.

Turning off one of the inner engines while underway will have no effect on the operation of the outer engines.

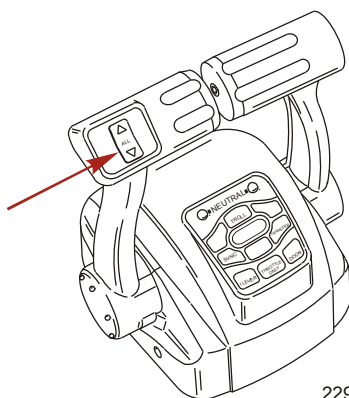
If a failure should occur while underway which causes the starboard outer engines into forced neutral/idle condition, the inner starboard engine will also be forced to neutral/idle.

Operation to the inner engine can be restored by moving the starboard control handle back into neutral and then reengaging.

If a failure should occur while underway which causes the port outer engines into forced neutral/idle condition, the inner port engine will also be forced to neutral/idle. Operation to the inner engine can be restored by moving the port control handle back into neutral and then reengaging.

TRIM SWITCH AND KEY PAD FEATURES

1. Trim switch (if equipped) - Operates the trim for all engines. An accessory trim switch panel is required for trimming engines individually.



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FEATURES AND CONTROLS

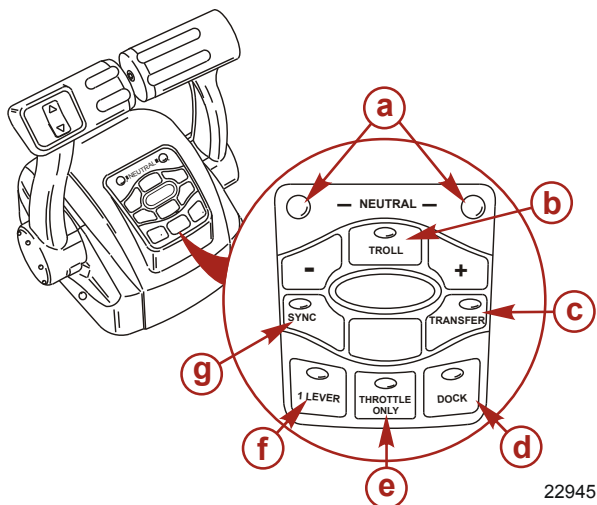
2. Neutral lights - The neutral lights illuminate when the engine is in neutral gear position. The lights will flash when the engine is in throttle only mode.

NOTE: *Gear position is determined by the position of the shift actuator on the engine, not the position of the control handle.*

3. Troll button - Pressing the "TROLL" button activates troll control. The troll control feature allows the boat operator to set the engine speed for slow speed cruising or maneuvering. To activate, move the control handles into forward detent and press the button. Use the - or + buttons to decrease or increase speed, up to the maximum calibrated set point. If troll control is set at a desired speed and then shut off, the system remembers the set speed and will return to that speed when reengaged. To turn off the troll control press the "TROLL" button, move the throttle to a different speed, or shift the engine into neutral.
4. Transfer button - Pressing the "TRANSFER" button allows engine operation to be transferred to a different helm. Refer to **Helm Transfer**.
5. Dock button - Pressing the "DOCK" button initiates docking mode. Docking mode reduces throttle capacity to approximately 50% of normal throttle. To turn off docking mode, shift the engine into neutral and press the "DOCK" button.
6. Throttle only button - Allows the boat operator to increase engine RPM for warm-up, without shifting the engine into gear. To engage throttle only, move the control handle into the neutral position. Press the throttle only button while moving the control handle ahead to the forward detent. The horn will sound once and the neutral light will start flashing. The horn will sound twice when throttle only is engaged. Advance throttle to increase engine RPM. To disengage, return control handle to neutral position and press the throttle only button. Engine RPM is limited to prevent engine damage.

FEATURES AND CONTROLS

7. 1 lever button - Pressing the "1 LEVER" button initiates single lever mode. Single lever mode enables the throttle and shift functions of both engines to be controlled by the port control handle. To turn off single lever mode, shift the engine into neutral and press the "1 LEVER" button.
8. Sync button - Pressing the "SYNC" button turns off or on the auto synchronization feature. Refer to **Synchronizing Engines**.



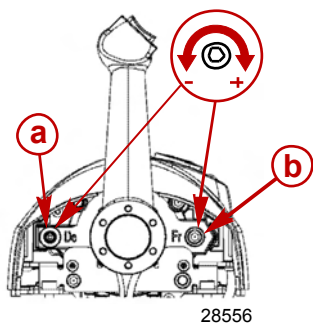
22945

- a** - Neutral LEDS
- b** - Troll button
- c** - Transfer button
- d** - Dock button
- e** - Throttle only
- f** - 1 lever button
- g** - Sync button

9. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to tension desired.

FEATURES AND CONTROLS

10. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning the screw clockwise will increase tension. Adjust to tension desired.



a - Detent tension adjustment screw

b - Control handle tension adjustment screw

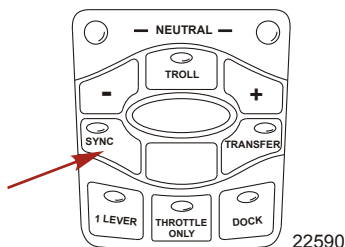
28556

SYNCHRONIZING ENGINES

The auto synchronizing feature, when engaged, will automatically adjust all engine speeds to match the speed of the starboard engine.

Press the "SYNC" button on the CAN trackpad to turn auto synchronization on or off. When the sync LED is yellow, the "SYNC" button has been pressed, but the conditions are not right for auto synchronization to engage. When the sync LED turns red, engine synchronization has been engaged. The engines will remain synchronized as long as engine speed is over 900 RPM for two seconds, remote control handles are positioned within 10% of each other, and the engines are below 95% throttle opening.

To disengage the auto synchronization feature, press the "SYNC" button.



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FEATURES AND CONTROLS

HELM TRANSFER

WARNING

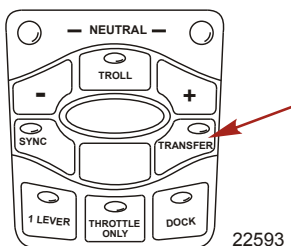
Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.

NOTE: *Neutral position is preferred when doing a station transfer. If conditions do not allow the remote control to be placed in the neutral position, a helm transfer can be done while in gear.*

The helm transfer function allows the boat operator to select which helm is in control of engine operation. Pressing the "TRANSFER" button two times allows engine control to be transferred to a new helm. When a helm transfer is initiated, the control will automatically start adjusting engine RPM and gear position to match the control handle setting at the new helm. Adjust the control handles to the desired throttle and gear position.

Once the "TRANSFER" button is pressed, the transfer LED will light up and one beep will sound. Press the "TRANSFER" button again to complete the helm transformation. When helm transformation is complete, another beep will sound and the transfer LED will turn off.

NOTE: *There is a 10 second time frame to complete a helm transfer. If the helm transfer is not completed, the action will be cancelled and a double beep will sound. Pressing the "TRANSFER" button again will reinitiate a helm transfer.*



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FEATURES AND CONTROLS

Synchronizing Helms Prior to Transfer

Pressing the "TRANSFER" button allows the boat operator 10 seconds to match up the control handle settings at the new helm with the handle settings that are at the old (to be inactive) helm. If the handles are not matched, the neutral lights will flash. The light blinks faster as the handles are nearing match position. Once the light stays on continuously, the handles are matched and the button can be pressed again to complete the transfer. This completes the transfer process, and gives control to the new station. If the helm transfer is not completed within 10 seconds, the action will be cancelled.

Warning System

The outboard warning system incorporates a warning horn inside the boat. The warning horn is located under the dash within the wiring harness.

WARNING HORN SIGNALS

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

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

Warning Horn		
Function	Sound	Description
Start up	One beep	Normal system test
Low oil reserve	Four beeps every 2 minutes	Oil level is low in the engine mounted oil reservoir. Refill the engine mounted oil reservoir along with the remote oil tank. Refer to Fuel & Oil .
Water in fuel	Four beeps every 2 minutes	Water in the fuel filter chamber reaches the full level. Water can be removed from the chamber. Refer to Maintenance - Fuel System for water removal.

FEATURES AND CONTROLS

Warning Horn		
Function	Sound	Description
Cooling system problem	Continuous	Engine Guardian System is activated. Power limit will vary with level of overheat. Shift outboard into neutral and check for a steady stream of water coming out of the water pump indicator hole. If no water is coming out of the water pump indicator hole or flow is intermittent, stop engine and check water intake holes for obstruction.
Oil level is critically low	Continuous	Engine Guardian System is activated. Power will be limited. The oil level is critically low in the engine mounted oil reservoir. Refill the engine mounted oil reservoir along with the remote oil tank. Refer to Fuel & Oil .
Oil pump failure	Continuous	Engine Guardian System is activated. Power limit will allow a fast idle. The warning horn is activated if the oil pump should ever stop functioning electrically. No lubricating oil is being supplied to the engine.
Engine overspeed	Continuous	The warning horn is activated any time engine speed exceeds the maximum allowable RPM. The system will limit the engine speed to within the allowable range. Engine overspeed indicates a condition that should be corrected. Overspeed could be caused by incorrect propeller pitch, engine height, trim angle, etc.
Remote control failure	Continuous	Engine Guardian System is activated. Wiring problem to the remote control or an internal control problem has occurred.
Sensor out of range	Continuous	Engine Guardian System is activated. Power limit may activate at full throttle speed.
	Intermittent beep	Engine Guardian System is activated. Power limit may restrict engine speed to idle.
Engine running cold at slow speed	One beep	Engine is not reaching correct temperature while operating below 1000 RPM.

FEATURES AND CONTROLS

ENGINE GUARDIAN SYSTEM

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

If Guardian System has been activated, reduce throttle speed. The problem will need to be identified and corrected, if possible. The system must be reset before the engine will operate at higher speeds. Moving the throttle lever back to the idle position will reset the system.

SMARTCRAFT PRODUCT

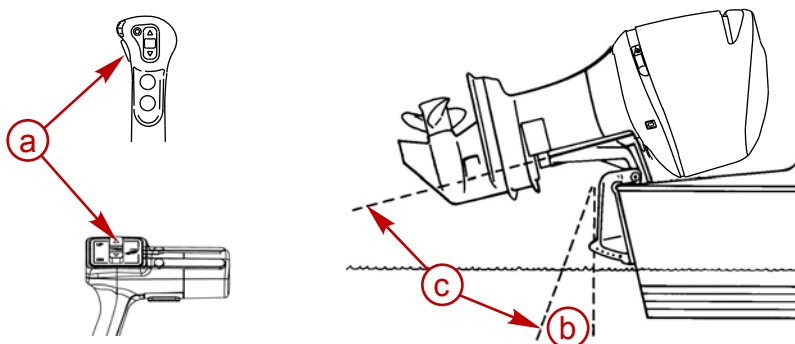
A Mercury SmartCraft System instrument package can be purchased for this outboard. A few of the functions the instrument package will display are engine RPM, coolant temperature, battery voltage, fuel consumption, and engine operating hours.

The SmartCraft instrument package will also aid in Engine Guardian diagnostics. The SmartCraft instrument package will display critical engine alarm data and potential problems.

FEATURES AND CONTROLS

Power Trim and Tilt

The outboard has a trim/tilt control called power trim. This enables the operator to easily adjust the position of the outboard by pressing the trim switch. Moving the outboard in closer to the boat transom is called trimming in or down. Moving the outboard further away from the boat transom is called trimming out or up. The term trim generally refers to the adjustment of the outboard within the first 20° range of travel. This is the range used while operating the boat on plane. The term tilt is generally used when referring to adjusting the outboard further up out of the water. With the engine turned off and ignition switch turned on, the outboard can be tilted out of the water. At low idle speed, the outboard can also be tilted up past the trim range to permit, for example, shallow water operation.



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- a** - Trim switch
- b** - Trim range of travel
- c** - Tilt range of travel

POWER TRIM OPERATION

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

FEATURES AND CONTROLS

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

WARNING

Trimming the outboard beyond a neutral steering condition may result in a pull on the steering wheel or tiller handle and loss of boat control. Maintain control of the boat if trimming beyond a neutral steering condition.

Consider the following lists carefully.

1. Trimming in or down can:

- Lower the bow
- Result in quicker planing off, especially with a heavy load or a stern heavy boat
- Generally improve the ride in choppy water
- Increase steering torque or pull to the right (with the normal right-hand rotation propeller)
- In excess, can lower the bow of some boats to a point where they begin to plow with their bow in the water while on plane. This can result in an unexpected turn in either direction (called bow steering or oversteering) if any turn is attempted, or if a significant wave is encountered.

WARNING

Operating the boat at high speeds with the outboard trimmed too far under can create excessive bow steer, resulting in the operator losing control of the boat. Install the trim limit pin in a position that prevents excessive trim under and operate the boat in a safe manner.

FEATURES AND CONTROLS

- In rare circumstances, the owner may decide to limit the trim in. This can be accomplished by purchasing a stainless steel tilt pin from your dealer and inserting it in whatever adjustment hole in the transom brackets is desired. The nonstainless steel shipping bolt should not be used in this application other than on a temporary basis.
2. Trimming out or up can:
- Lift the bow higher out of the water
 - Generally increase top speed
 - Increase clearance over submerged objects or a shallow bottom
 - Increase steering torque or pull to the left at a normal installation height (with the normal right-hand rotation propeller)
 - In excess, can cause boat porpoising (bouncing) or propeller ventilation
 - Cause engine overheating if any cooling water intake holes are above the waterline

TRIM WITHOUT KEY

Trim without key is a method of allowing trim operation after the ignition key switch is turned off. The command module and PCM remain powered and are able to process trim requests for up to 15 minutes after the key switch is turned off. The command module does not process any requests other than trim during this period. Once the 15 minute period expires, the command module sends a command through the CAN lines to shut down the PCM. On multi-engine applications, the timeout is managed separately for each engine.

The trim without key period may be ended at any time by moving the control handle to Wide-Open Throttle Reverse (WOTR) with the key off. To end the 15 minute period for the center engine in a shadow mode application, ensure all ignition key switches are in the "OFF" position and both remote control handles are in the Wide-Open Throttle Reverse (WOTR) position.

FEATURES AND CONTROLS

TILTING TO FULL UP POSITION

Tilt At Helm

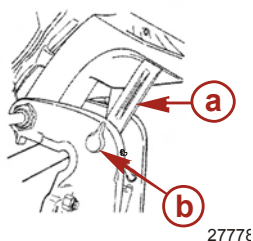
NOTE: The trim/tilt switch will remain active for 15 minutes after the ignition key switch has been turned off.

1. If the ignition key switch has been turned off for over 15 minutes, turn it to the "ON" position.
2. Press the trim/tilt switch to the up position. The outboard will tilt up until the switch is released or it reaches its maximum tilt position.

Tilt At Engine

The cowl mounted auxiliary tilt switch can be used to tilt the outboard with the key switch in the "OFF" position.

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



a - Tilt support lever
b - Knob

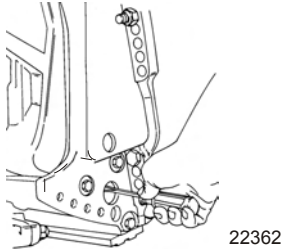
MANUAL TILTING

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

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

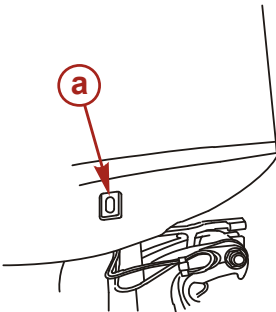
FEATURES AND CONTROLS

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



AUXILIARY TILT SWITCH

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



a - Auxiliary tilt switch

SHALLOW WATER OPERATION

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

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

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 the boat's maximum load capacity. Look at the boat capacity plate.
- Fuel supply OK.
- Oil supply (oil injection) 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 **Maintenance - Inspection and Maintenance Schedule**.

Operating in Freezing Temperatures

When using your outboard or having your outboard moored in freezing or near freezing temperatures, keep the outboard tilted down at all times so the gearcase is submerged. This prevents the trapped water in the gearcase 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 driveshaft housing, it will block water flow to the engine causing possible damage.

OPERATION

Operating in Saltwater 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 **Maintenance - Flushing the Cooling System**.

If you keep your boat moored in the water, always tilt the outboard so the gearcase is completely out of water (except in freezing temperatures) when not in use.

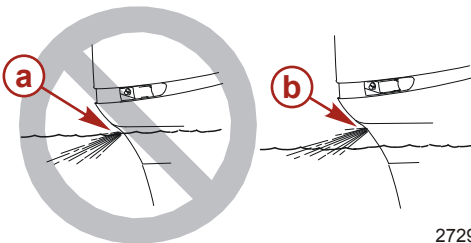
Wash the outboard exterior and flush out the exhaust outlet of the propeller and gearcase with fresh water after each use. Each month, spray Mercury Precision or Quicksilver Corrosion Guard on external metal surfaces. Do not spray on corrosion control anodes as this will reduce the effectiveness of the anodes.

Operating at High Elevations

Your engine automatically compensates for high elevation changes. A different pitch propeller may help reduce some normal performance loss resulting from reduced oxygen in the air. Consult your dealer.

Setting Trim Angle While Running Engine at Idle Speed

Submerging the exhaust relief hole on the outboard can happen on some boats if you trim full in while running at idle speed, resulting in, exhaust restriction, rough idle, excessive smoke, and fouled spark plugs. If this condition exists, trim outboard up until exhaust relief hole is out of the water.



- a** - Relief hole submerged (wrong)
- b** - Relief hole above waterline (correct)

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OPERATION

Engine Break-In Procedure

IMPORTANT: Failure to follow the engine break-in procedures can result in poor performance throughout the life of the engine and can cause engine damage. Always follow break-in procedures.

GASOLINE/OIL BREAK-IN MIXTURE

NOTE: Do not use premixed gas and oil during break-in. Use straight gasoline during engine break-in and after engine break-in.

The engine break-in procedure for an OptiMax outboard is important to ensure proper performance and maximum life from the engine. The following break-in procedure allows the internal engine parts to wear-in evenly. Incorrect engine break-in can shorten the engine life.

The engine automatically receives extra oil during the first hours of operation. For most boaters this extra oil mode will be complete in about ten hours.

BREAK-IN PROCEDURE

1. For the first hour of operation, allow the engine to warm up for 30–60 seconds.
 - a. Run the engine at varied throttle settings, the majority of the time between 3000 and 4500 RPM or three-quarter throttle.
 - b. Change engine speed approximately every two minutes, and avoid continuous operation at idle speed for more than ten minutes. Short bursts of full throttle for periods up to ten seconds are acceptable.
 - c. Avoid trimming the outboard out (up) beyond a vertical trim position during operation.

NOTE: It is the driver's responsibility to always drive in a safe manner. Improper trim angle of the outboard when driving at high speed can be difficult and dangerous. The purpose of specifying trim angle is to help guide the operator in determining how to put the proper load on the engine. They are intended to be guidelines and do not suggest or require unsafe boat operation.

OPERATION

2. For the next three hours of operation, change engine speed every ten minutes.

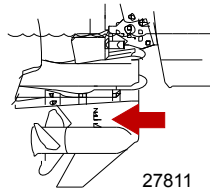
Starting the Engine

Before starting, read the pre-starting check list, special operating instructions, engine break-in procedure and **Gear Shifting** in the **Operation** section, and the remote control features and operation in the **Features and Controls** section.

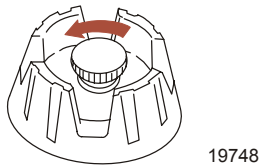
NOTICE

Without sufficient cooling water, the engine, the water pump, and other components will overheat and suffer damage. Provide a sufficient supply of water to the water inlets during operation.

1. Make sure the cooling water intake is submerged.

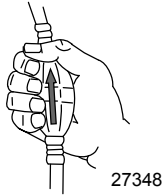


2. Open the fuel tank vent on manual venting type tanks.



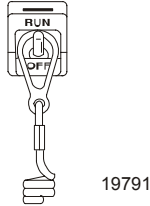
OPERATION

3. Position the fuel line primer bulb so the arrow on the side of the bulb is pointing up. Squeeze the fuel line primer bulb several times until it feels firm.

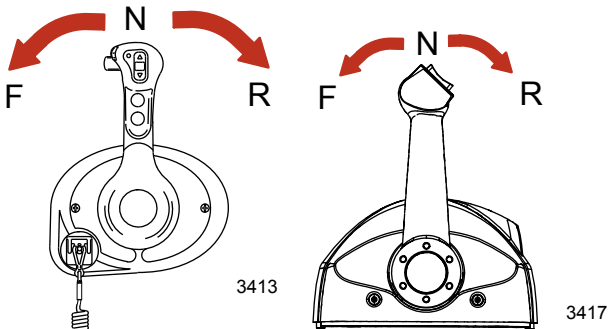


NOTE: The engine will not start unless the lanyard is set to the "RUN" position.

4. Set the lanyard stop switch to the "RUN" position. Refer to **General Information - Lanyard Stop Switch**.



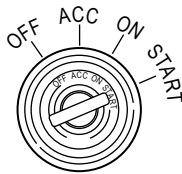
5. Shift the outboard to the neutral ("N") position.



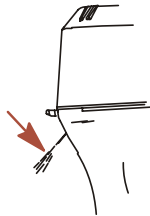
6. For the initial start of a new engine, or for an engine that ran out of fuel or was drained of fuel, the fuel system should be filled as follows:
 - a. Squeeze the fuel line primer bulb until it feels firm.

OPERATION

- b. Turn the ignition key switch to the "ON" position for three seconds. This operates the electric fuel pump.
 - c. Turn the ignition key switch back to the "OFF" position, and squeeze the primer bulb again until it feels firm. Turn the ignition key switch to the "ON" position again for three seconds. Continue this procedure until the fuel line primer bulb stays firm.
7. Ignition key starting - Turn the ignition key to "START" position and release the key. The electronic starting system will automatically crank the engine for starting. If the engine fails to start, the engine will stop cranking. Turn the key to "START" position again until engine starts.



8. After the engine starts, check for a steady stream of water flowing out of the water pump indicator hole.



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

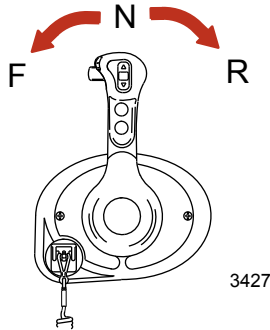
OPERATION

Gear Shifting

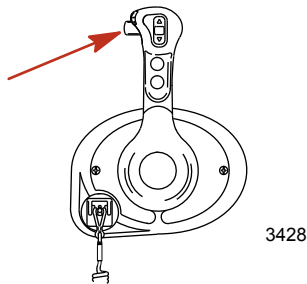
DTS PANEL MOUNT REMOTE CONTROL

IMPORTANT: Never shift outboard into gear unless engine speed is at idle. Do not shift outboard into forward or reverse when the engine is not running.

- The outboard has three gear shift positions to provide operation: Forward (F), Neutral (N), and Reverse (R).



- When shifting, always stop at neutral position and allow the engine speed to return to idle.
- Panel mount remote control requires the operator to always press shift lock while moving the control handle out of the neutral position.



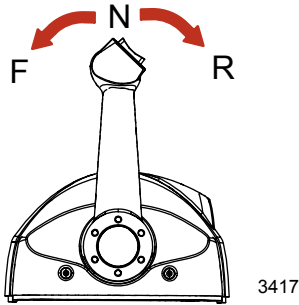
- Advance the control lever to further increase speed.

OPERATION

DTS CONSOLE MOUNT REMOTE CONTROL

IMPORTANT: Never shift outboard into gear unless engine speed is at idle. Do not shift outboard into forward or reverse when the engine is not running.

- The outboard has three gear shift positions to provide operation: Forward (F), Neutral (N), and Reverse (R).

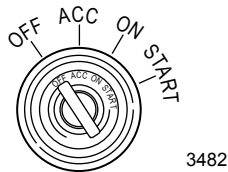


- When shifting, always stop at neutral position and allow the engine speed to return to idle.
- Advance the control lever to further increase speed.

Stopping the Engine

IMPORTANT: Turning key to the "START" position while the engine is running will result in engine shut down, while leaving the DTS system active. This will allow the use of the power trim/tilt from the remote control handle.

Reduce engine speed and shift outboard to neutral position. Turn ignition key to "OFF" position.



MAINTENANCE

Outboard Care

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

Record maintenance performed in the **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.

EPA Emissions Regulations

All new outboards manufactured by Mercury Marine are certified to the United States Environmental Protection Agency, as conforming to the requirements of the regulations for the control of air pollution from new outboard motors. This certification is contingent on certain adjustments set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, wherever practicable, returned to the original intent of the design. **Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine spark ignition (SI) engine repair establishment or individual.**

MAINTENANCE

EMISSION CERTIFICATION LABEL

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

The diagram shows a rectangular label with the Mercury logo at the top left. The label is divided into several sections. Callouts a-j point to the following fields:

MERCURY		EMISSION CONTROL INFORMATION	
THIS ENGINE CONFORMS TO ☐ CALIFORNIA AND U.S. EPA EMISSION REGULATIONS FOR SPARK IGNITION MARINE ENGINES			
REFER TO OWNERS MANUAL FOR REQUIRED MAINTENANCE, SPECIFICATIONS, AND ADJUSTMENTS			
IDLE SPEED (in gear):		FAMILY:	
hp	L	HC+NOx:FEL: g/kWh	
kw		CO FEL: g/kWh	
SPARK PLUG:		GAP:	
LOW PERM/HIGH PERM:			

43210

- a** - Idle speed
- b** - Engine horsepower
- c** - Piston displacement
- d** - Engine power - kilowatts
- e** - Date of manufacture
- f** - Family number
- g** - Regulated emission limit for the engine family
- h** - Regulated emission limit for the engine family
- i** - Recommended spark plug and gap
- j** - Percent of fuel line permeation

OWNER RESPONSIBILITY

The owner/operator is required to have routine 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 emission levels to exceed their predetermined factory specifications.

Inspection and Maintenance Schedule

BEFORE EACH USE

- Check that lanyard stop switch stops the engine.
- Visually inspect the fuel system for deterioration or leaks.

MAINTENANCE

- Inspect the outboard for tightness to the boat transom. If any looseness of the outboard or mounting fasteners exist, retorque the outboard mounting fasteners to 75 Nm (55 lb-ft).
- Check steering system for binding or loose components.
- Visually check steering link rod fasteners for proper tightness. See **Steering Link Rod Fasteners**.
- Check propeller blades for damage.

AFTER EACH USE

- Flush out the outboard cooling system if operating in salt or polluted water. See **Flushing the Cooling System**.
- Wash off all salt deposits and flush out the exhaust outlet of the propeller and gearcase with fresh water if operating in saltwater.

EVERY 100 HOURS OF USE OR ONCE YEARLY, WHICHEVER OCCURS FIRST

- Retorque the outboard mounting fasteners that fasten the outboard to the transom. Torque to 75 Nm (55 lb-ft).¹
- Lubricate all lubrication points. Lubricate more frequently when used in saltwater. See **Lubrication Points**.
- 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. See **Spark Plug Inspection and Replacement**.
- Replace fuel filter. See **Fuel System**.
- Replace compressor air intake filter. See **Compressor Air Intake Filter**.
- Inspect alternator belt. See **Alternator Belt Inspection**.
- Check corrosion control anodes. Check more frequently when used in saltwater. See **Corrosion Control Anode**.
- Drain and replace gearcase lubricant. See **Gearcase Lubrication**.
- Check power trim fluid. See **Checking Power Trim Fluid**.
- Inspect battery. See **Battery Inspection**.

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

MAINTENANCE

- Lubricate splines on the driveshaft and shift shaft.¹
- Check tightness of bolts, nuts, and other fasteners.
- Check cowl seals to make sure seals are intact and not damaged.
- Check internal cowl sound reduction foam (if equipped) to make sure foam is intact and not damaged.
- Check that the intake silencer (if equipped) is in place.
- Check that the idle relief muffler (if equipped) is in place.
- Check for loose hose clamps and rubber boots (if equipped) on the air intake assembly.

EVERY 300 HOURS OF USE OR THREE YEARS

- Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).¹
- Inspect the poppet valve assembly for deterioration of the rubber diaphragm. Replace the rubber diaphragm if necessary.¹
- Replace the two in-line oil filters located in the air compressor oil return lines. ¹

BEFORE PERIODS OF STORAGE

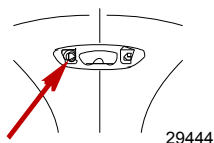
- Refer to storage procedure. See **Storage** section.

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.

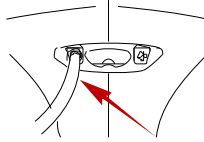
NOTE: *Engine can be stopped, or running at idle speed, when flushing the cooling system. Do not flush engine using a water system that exceeds 310.26 kPa (45 psi).*

1. Remove the plug from fitting in the bottom cowl.



MAINTENANCE

2. Attach a water hose to the fitting. Turn on the water and flush for 3 to 5 minutes.

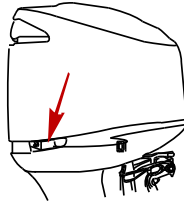
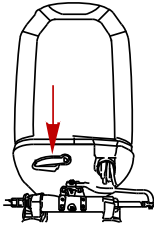


29445

Top Cowl Removal and Installation

REMOVAL

1. Release the front and side cowl latches.
2. Lift the top cowl from the outboard.



29447

INSTALLATION

1. Position the top cowl over the engine.
2. Ensure the bottom rubber seal fits properly and lock the front and side latches.

Cleaning Care for Top Cowl

IMPORTANT: Dry wiping (wiping the plastic surface when it is dry) will result in minor surface scratches. Always wet the surface before cleaning. Follow the cleaning and waxing procedure.

CLEANING AND WAXING PROCEDURE

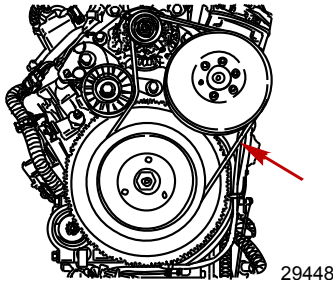
1. Before washing, rinse the top cowl with clean water to remove the dirt and dust that may scratch the surface.
2. Wash the top cowl with clean water and a mild non-abrasive soap. Use a soft clean cloth when washing.
3. Dry thoroughly with a soft clean cloth.

MAINTENANCE

4. Wax the surface using a non-abrasive automotive polish (polish designed for clear coat finishes). Remove the applied wax by hand using a clean soft cloth.

Alternator Belt Inspection

1. Inspect the alternator belt and have it replaced by an authorized dealer if any of the following conditions are found.
 - a. Cracks or deterioration in the rubber portion of the belt.
 - b. Belt surfaces rough or uneven.
 - c. Signs of wear on edges or outer surfaces of belt.



Fuel System

WARNING

Fuel is flammable and explosive. Ensure that the key switch is off and the lanyard is positioned so that the engine cannot start. Do not smoke or allow sources of spark or open flame in the area while servicing. Keep the work area well ventilated and avoid prolonged exposure to vapors. Always check for leaks before attempting to start the engine, and wipe up any spilled fuel immediately.

MAINTENANCE

Before servicing any part of the fuel system, stop the 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 sign of fuel leakage.

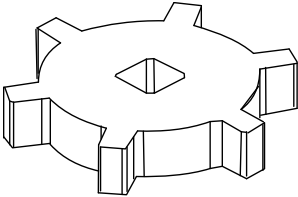
FUEL LINE INSPECTION

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

FUEL FILTER REPLACEMENT

Removal

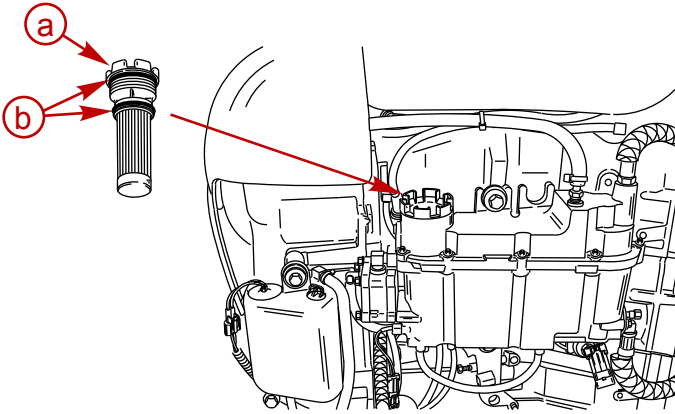
1. Use the fuel filter removal/installation tool or the shaft of a screwdriver between the lugs on the filter cap and unscrew the filter.

Fuel Filter Removal/Installation Tool	91-896661
 24896	Aids in the removal and installation of the fuel filter cap assembly.

MAINTENANCE

Installation

1. Lubricate the O-ring seals with oil.



3388

- a** - Filter
- b** - O-ring seals

2. Install the fuel filter and tighten securely.

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

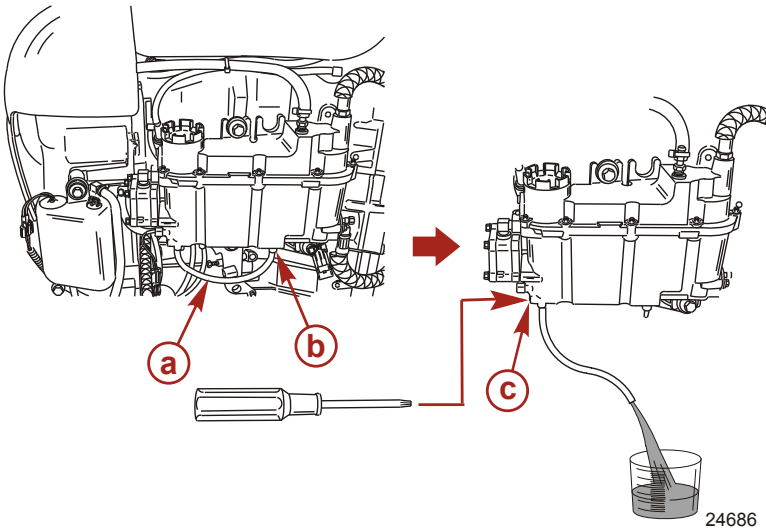
DRAINING WATER FROM THE FUEL FILTER CHAMBER

NOTE: If a sufficient amount of water has accumulated in the fuel filter chamber, the warning system will turn on. Draining the water from the fuel filter chamber is required.

1. Pull the drain hose off the right side fitting. Hold the open end of the hose over a container.
2. Use a 1/8 in. hex wrench and loosen the drain screw and drain the fuel filter chamber.

MAINTENANCE

3. Retighten the drain screw and reattach the hose.



- a** - Drain hose
- b** - Side fitting
- c** - Drain screw

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

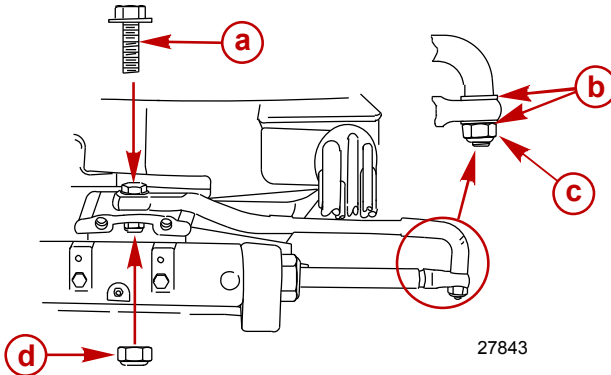
Steering Link Rod Fasteners

IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using a special washer head bolt ("a" - Part Number 10-849838) and self-locking nylon insert locknuts ("c" and "d" - Part Number 11-826709113). These locknuts must never be replaced with common nuts (nonlocking) as they will work loose and vibrate off, freeing the link rod to disengage.

MAINTENANCE

⚠ WARNING

Improper fasteners or improper installation procedures can result in loosening or disengagement of the steering link rod. This can cause a sudden, unexpected loss of boat control, resulting in serious injury or death due to occupants being thrown within or out of the boat. Always use required components and follow instructions and torque procedures.



- a** - Special washer head bolt (10-849838)
- b** - Flat washer (2)
- c** - Nylon insert locknut (11-826709113)
- d** - Nylon insert locknut (11-826709113)

Description	Nm	lb-in.	lb-ft
Special washer head bolt	27		20
Nylon insert locknut "d"	27		20
Nylon insert locknut "c"	Tighten until it seats, then back off 1/4 turn		

Assemble steering link rod to steering cable with two flat washers and self-locking nylon insert locknut. Tighten locknut until it seats, then back nut off 1/4 turn.

Assemble steering link rod to engine with special washer head bolt and self-locking nylon insert locknut. First torque bolt, then torque locknut to specifications.

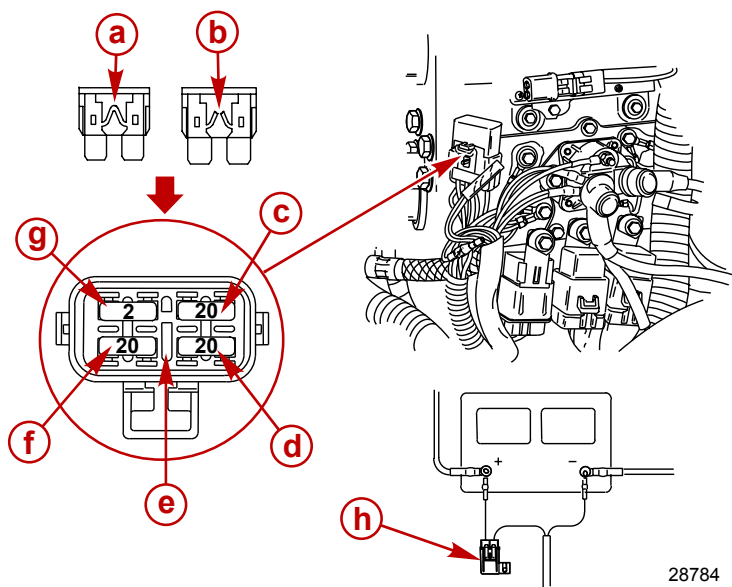
MAINTENANCE

Fuse Replacement

IMPORTANT: Always carry spare 2, 5 and 20 amp fuses.

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

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



- a** - Good fuse
- b** - Blown fuse
- c** - Power on circuit - 20 amp fuse
- d** - Ignition system circuit - 20 amp fuse
- e** - Spare fuse slot
- f** - Fuel injector/direct injector/starter slave solenoid/PCM and electric fuel pumps circuit - 20 amp fuse
- g** - Diagnostic circuit - 2 amp fuse
- h** - DTS power harness circuit (fuse holder located near starting battery) - 5 amp fuse

MAINTENANCE

DTS Wiring System

WARNING

Splicing or probing will damage the wire insulation allowing water to enter the wiring. Water intrusion may lead to wiring failure and loss of throttle and shift control. To avoid the possibility of serious injury or death from loss of boat control, do not splice or probe into any wire insulation of the DTS system.

- Verify the harnesses are not routed near sharp edges, hot surfaces, or moving parts.
- Verify all unused connectors and receptacles are covered with a weather cap.
- Verify the harnesses are fastened along the routing path.

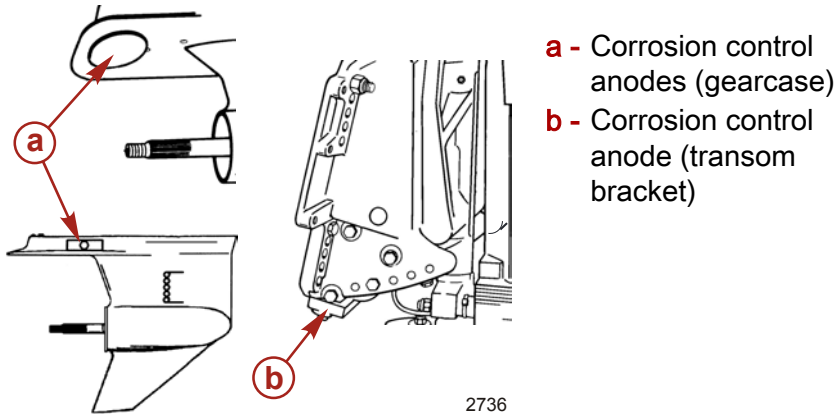
Corrosion Control Anode

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

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

MAINTENANCE

The gearcase has three anodes. Two anodes are located on each side of the gearcase, and a third is an anode plate installed underneath the anti-ventilation plate. If a trim tab should be installed, this anode plate will be removed. Another anode is installed on the bottom of the transom bracket assembly.



Battery Inspection

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

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

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

MAINTENANCE

Battery Information

WARNING

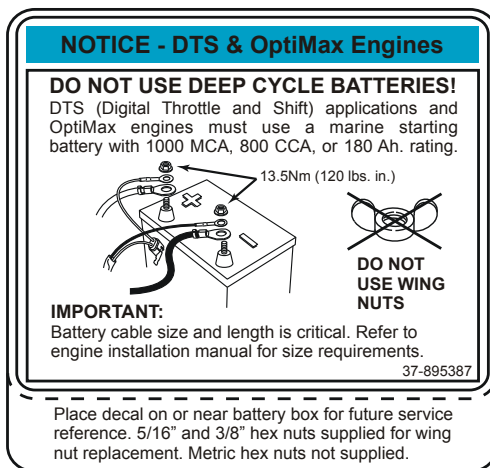
Failure to properly secure the battery leads can result in a loss of power to the Digital Throttle and Shift (DTS) system, leading to serious injury or death due to loss of boat control. Secure the battery leads to the battery posts with hex nuts to avoid loose connections.

- Do not use deep-cycle batteries. Engines must use a marine starting battery with 1000 MCA, 800 CCA, or 180 Ah.
- When connecting the engine battery, hex nuts must be used to secure battery leads to battery posts. Torque nuts to specification.

Description	Nm	lb-in.	lb-ft
Hex nuts	13.5	120	

IMPORTANT: Battery cable size and length is critical. Refer to engine installation manual for size requirements.

The decal needs to be placed on or near the battery box for future service reference. One 5/16 in. and one 3/8 in. hex nut is supplied per battery for wing nut replacement. Metric hex nuts are not supplied.



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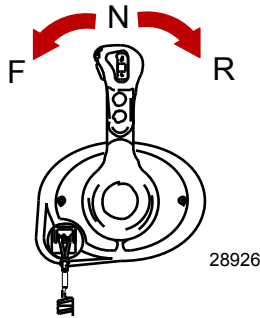
MAINTENANCE

Propeller Replacement

WARNING

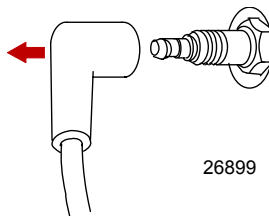
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the drive unit in neutral and engage the lanyard stop switch to prevent the engine from starting. Place a block of wood between the propeller blade and the anti-ventilation plate.

1. Shift outboard to neutral (N) position.



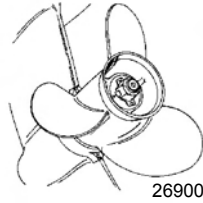
IMPORTANT: Refer to Spark Plug Inspection and Replacement for removing spark plug leads.

2. Remove spark plug leads to prevent engine from starting.

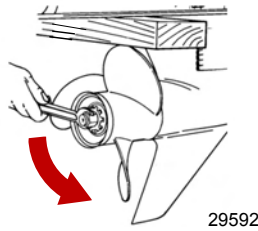


MAINTENANCE

3. Straighten the bent tabs on the propeller nut retainer.



4. Place a block of wood between gearcase and propeller to hold propeller and remove propeller nut.



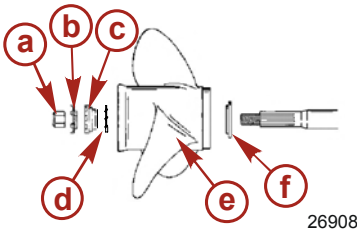
5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.
6. Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C with PTFE.

Tube Ref No.	Description	Where Used	Part No.
 94	Anti-Corrosion Grease	Propeller shaft	92-802867Q 1
 95	2-4-C with PTFE	Propeller shaft	92-802859A 1

IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft, especially in saltwater, 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.

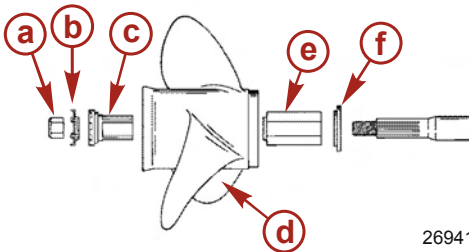
MAINTENANCE

7. Flo-Torq I drive hub propellers - Install forward thrust hub, propeller, continuity washer, rear thrust hub, propeller nut retainer, and propeller nut onto the shaft.



- a** - Propeller nut
- b** - Propeller nut retainer
- c** - Rear thrust hub
- d** - Continuity washer
- e** - Propeller
- f** - Forward thrust hub

8. Flo-Torq II drive hub propellers - Install forward thrust hub, replaceable drive sleeve, propeller, thrust hub, propeller nut retainer, and propeller nut onto the shaft.

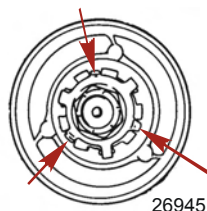


- a** - Propeller nut
- b** - Propeller nut retainer
- c** - Rear thrust hub
- d** - Propeller
- e** - Replaceable drive sleeve
- f** - Forward thrust hub

9. Place a block of wood between gearcase and propeller and torque to specifications.

Description	Nm	lb. in.	lb. ft.
Propeller nut	75		55

10. Secure propeller nut by bending three of the tabs into the thrust hub grooves.



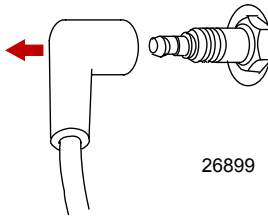
MAINTENANCE

Spark Plug Inspection and Replacement

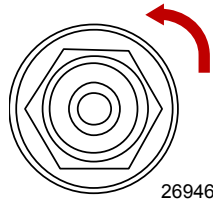
⚠ WARNING

Damaged spark plug boots may emit sparks which can ignite fuel vapors under the engine cowl, resulting in serious injury or death from a fire or explosion. To avoid damaging the spark plug boots, do not use any sharp object or metal tool to remove the spark plug boots.

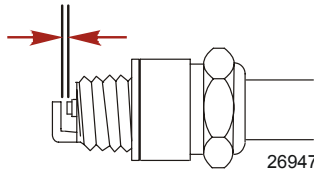
1. Remove the spark plug leads. Twist the rubber boots slightly and pull off.



2. Remove the spark plugs to inspect. Replace spark plug if electrode is worn or the insulator is rough, cracked, broken, blistered, or fouled.



3. Set the spark plug gap to specification.



Spark Plug	
Spark plug gap	0.80 mm (0.030 in.)

MAINTENANCE

4. Before installing spark plugs, clean off any dirt on the spark plug seats. Install plugs finger-tight, and then tighten 1/4 turn or torque to specifications.

Description	Nm	lb-in.	lb-ft
Spark plug	27		20

Compressor Air Intake Filter

The filter should be changed every 100 hours of operation, or once a season.

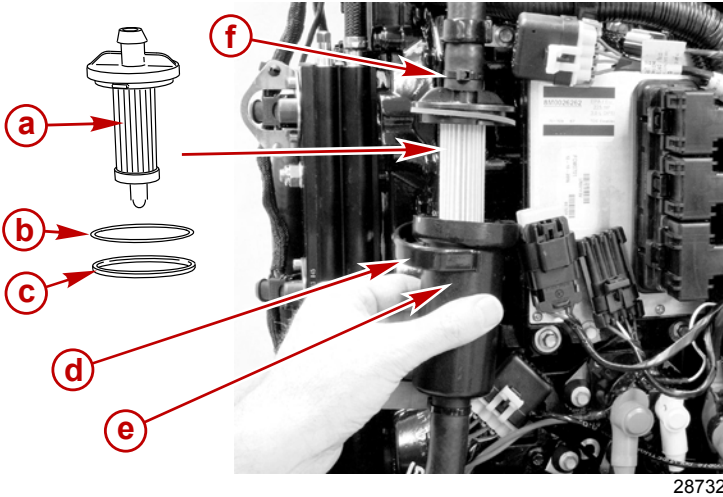
IMPORTANT: Never run the engine without the compressor air intake filter.

REMOVAL

1. Open the clamp and lift out the filter housing. Rotate the filter housing 1/4 turn clockwise to the unlock position and remove the air filter.

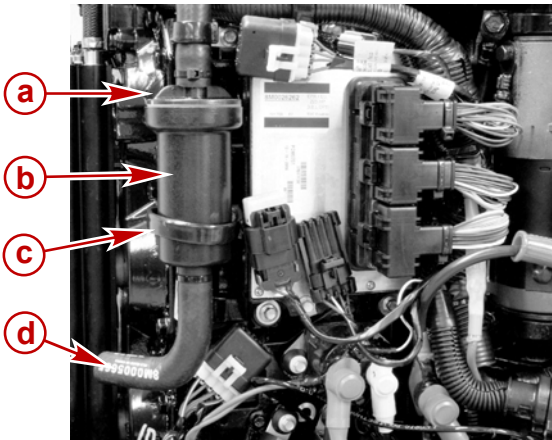
MAINTENANCE

2. Remove the hose cable tie and and pull the air filter off the hose.



- a** - Air filter
- b** - Nylon washer
- c** - Rubber washer
- d** - Clamp
- e** - Filter housing
- f** - Cable tie

MAINTENANCE



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- a** - Air filter
- b** - Filter housing
- c** - Clamp
- d** - Inlet hose

INSTALLATION

1. Place the nylon washer and rubber washer onto the air filter and insert the filter into the housing. Rotate the filter 1/4 turn to the lock position.
2. Position the filter housing so that the inlet hose is facing towards the back of the engine. Reinstall the hose and secure with a cable tie.
3. Secure the filter housing with the clamp.

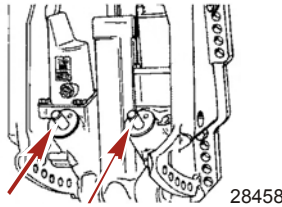
Lubrication Points

1. Lubricate the following with Quicksilver or Mercury Precision Special Lubricant 101.

Tube Ref No.	Description	Where Used	Part No.
 34	Special Lubricant 101	Trim rod ball ends	92-802865Q02

MAINTENANCE

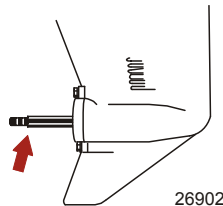
- Trim rod ball ends - Turn the ball ends to work the lubricant into the ball sockets.



- Lubricate the following with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C with PTFE.

Tube Ref No.	Description	Where Used	Part No.
 94	Anti-Corrosion Grease	Propeller shaft	92-802867Q 1
 95	2-4-C with PTFE	Propeller shaft	92-802859A 1

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



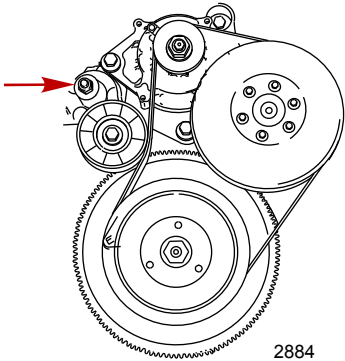
- Lubricate the following with Quicksilver or Mercury Precision Lubricants 2-4-C with PTFE or Special Lubricant 101.

Tube Ref No.	Description	Where Used	Part No.
 34	Special Lubricant 101	Alternator belt tensioner pivot shaft, swivel bracket, tilt support lever, tilt tube, steering cable	92-802865Q02

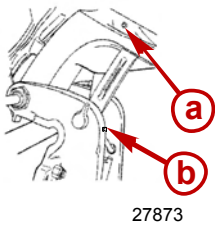
MAINTENANCE

Tube Ref No.	Description	Where Used	Part No.
	2-4-C with PTFE	Alternator belt tensioner pivot shaft, swivel bracket, tilt support lever, tilt tube, steering cable	92-802859A 1

- Alternator belt tensioner pivot shaft - Lubricate through fitting.

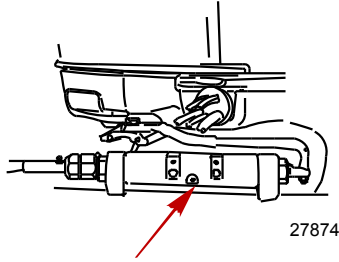


- Swivel bracket - Lubricate through fitting.
- Tilt support lever - Lubricate through fitting.



MAINTENANCE

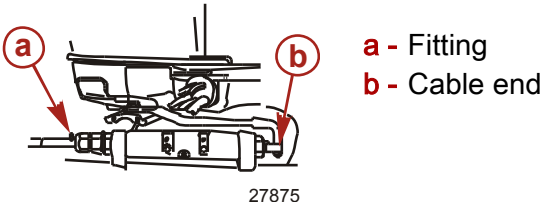
- Tilt tube - Lubricate through fitting.



⚠ WARNING

Incorrect cable lubrication can cause hydraulic lock, leading to serious injury or death from loss of boat control. Completely retract the end of the steering cable before applying lubricant.

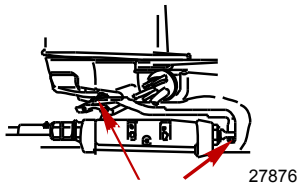
- Steering cable - Rotate steering wheel to fully retract the steering cable end into the outboard tilt tube. Lubricate through fitting.



a - Fitting
b - Cable end

4. Lubricate the following with lightweight oil.

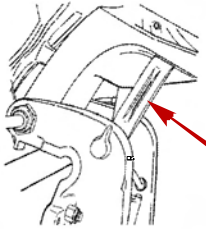
- Steering link rod pivot points - Lubricate pivot points.



MAINTENANCE

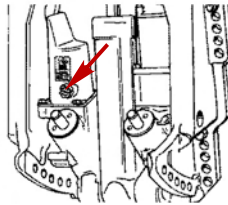
Checking Power Trim Fluid

1. Tilt outboard to the full up position and engage the tilt support lever.



27877

2. Remove fill cap and check fluid level. The fluid level should be even with the bottom of the fill hole. Add Quicksilver or Mercury Precision Lubricant Power Trim and Steering Fluid. If not available, use automotive automatic transmission fluid (ATF).



28460

Tube Ref No.	Description	Where Used	Part No.
 114	Power Trim and Steering Fluid	Power trim system	92-858074K01

MAINTENANCE

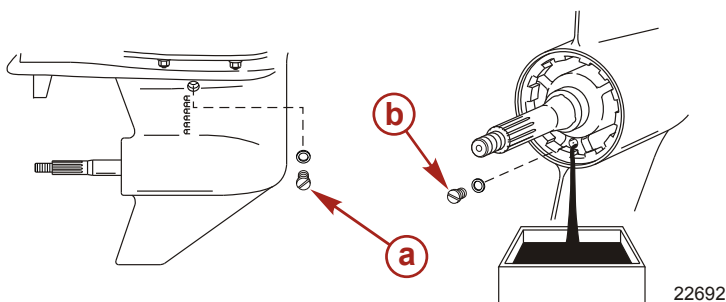
Gearcase Lubrication

When adding or changing gearcase 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 gearcase 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 gearcase.

Examine the drained gearcase lubricant for metal particles. A small amount of 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 GEARCASE

1. Place outboard in a vertical operating position.
2. Remove propeller. Refer to **Propeller Replacement**.
3. Place drain pan below outboard.
4. Remove vent plug and fill/drain plug and drain lubricant.



a - Vent plug

b - Fill/drain plug

GEARCASE LUBRICANT CAPACITY

Gearcase lubricant capacity is approximately 970 ml (32.8 fl oz).

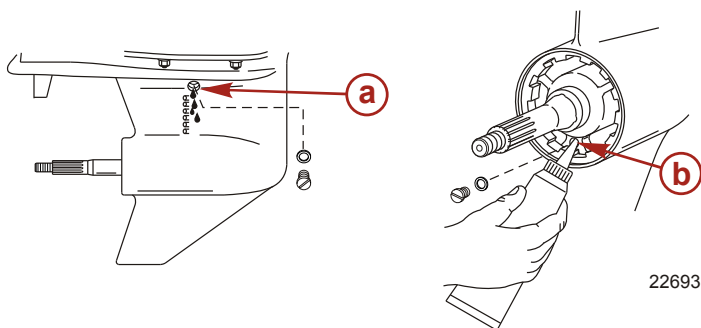
GEARCASE LUBRICANT RECOMMENDATION

Mercury or Quicksilver High Performance Gear Lubricant.

MAINTENANCE

CHECKING LUBRICANT LEVEL AND REFILLING GEARCASE

1. Place outboard in a vertical operating position.
2. Remove vent plug/sealing washer.
3. Remove fill/drain plug. Place lubricant tube into the fill hole and add lubricant until it appears at the vent hole.



a - Vent hole

b - Fill hole

IMPORTANT: Replace sealing washers if damaged.

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

Submerged Outboard

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

STORAGE

Storage Preparation

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

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

NOTICE

Without sufficient cooling water, the engine, the water pump, and other components will overheat and suffer damage. Provide a sufficient supply of water to the water inlets during operation.

Fuel System

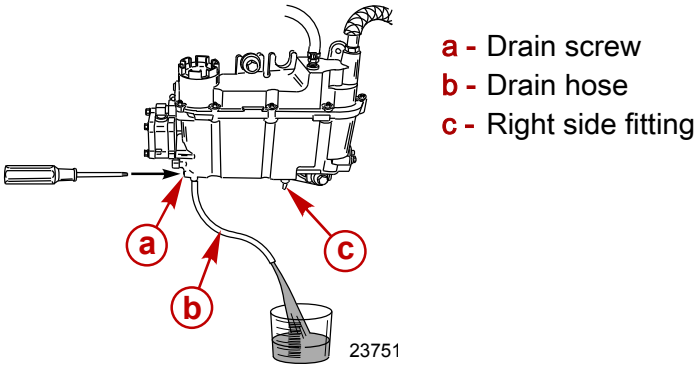
IMPORTANT: Gasoline containing alcohol (ethanol or methanol) can cause a formation of acid during storage and can damage the fuel system. If the gasoline being used contains alcohol, it is advisable to drain as much of the remaining gasoline as possible from the fuel tank, remote fuel line, and engine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

The most effective method of storage preparation is to add the recommended amount of Mercury Precision Fuel Stabilizer and Mercury Precision Quickleen products as described on the containers to the fuel tank before the last operation of the boat. Adding fuel stabilizer will help prevent the formation of varnish and gum in the gasoline. The Mercury Precision Quickleen product will help clean and lubricate the fuel injectors.

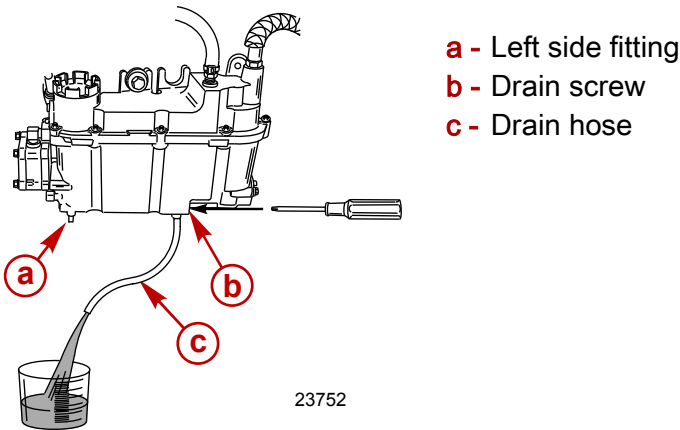
1. Portable Fuel Tank - Pour the required amount of gasoline stabilizer and Quickleen (follow instructions on containers) into fuel tank. Tip fuel tank back and forth to mix stabilizer and Quickleen with the fuel.
2. Permanently Installed Fuel Tank - Pour the required amount of gasoline stabilizer and Quickleen (follow instructions on containers) into a separate container and mix with approximately 1 liter (1 quart) of gasoline. Pour this mixture into fuel tank.

STORAGE

3. Pull the drain hose off the right side fitting. Hold the open end of the hose over a container.
4. Loosen drain screw and drain the fuel filter chamber.



5. Retighten the drain screw and reattach the hose.
6. Pull the drain hose off the left side fitting. Hold the open end of the hose over a container.
7. Loosen the drain screw and drain the float chamber.



8. Retighten the drain screw and reattach the hose.
9. Premix the following in a container:
 - a. 8 cc (0.27 oz.) or 2 teaspoons of Mercury Precision Quickleen lubricant.
 - b. 8 cc (0.27 oz.) or 2 teaspoons of Mercury Precision Fuel Stabilizer.

STORAGE

10. Remove the fuel filter. See **Maintenance - Fuel System** for procedure.
11. Pour this mixture into the fuel filter opening. Reinstall the fuel filter.
12. Prime the fuel system. See **Operation - Starting The Engine**.
13. Place the outboard in water or use the flush hose or flushing device or for circulating cooling water. Start the engine and run at idle speed for five minutes to allow the treated fuel to fill the fuel system.

Flushing Device	91-44357Q 2
 9192	Attaches to the water intakes; provides a fresh water connection when flushing the cooling system or operating the engine.

Protecting Internal Engine Components

NOTE: Make sure the fuel system has been prepared for storage. Refer to **Fuel System**, preceding.

IMPORTANT: Refer to **Spark Plug Inspection and Replacement** for correct procedure for removing spark plug leads.

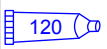
1. Remove the spark plugs. Add approximately 30 ml (1 oz) of engine oil or inject a five second spray of storage seal into each spark plug hole.
2. Rotate the flywheel manually several times to distribute the oil or storage seal in the cylinders.
3. Reinstall spark plugs.

Protecting External Outboard Components

- Lubricate all outboard components listed in **Maintenance - Inspection and Maintenance Schedule**.

STORAGE

- Touch up any paint nicks. See your dealer for touch-up paint.
- Spray Quicksilver or Mercury Precision Lubricants Corrosion Guard on external metal surfaces (except corrosion control anodes).

Tube Ref No.	Description	Where Used	Part No.
 120	Corrosion Guard	External metal surfaces	92-802878 55

Gearcase

- Drain and refill the gearcase lubricant (refer to **Gearcase Lubrication**).

Positioning Outboard for Storage

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

NOTICE

Storing the outboard in a tilted position can damage the outboard. Water trapped in the cooling passages or rain water collected in the propeller exhaust outlet in the gearcase can freeze. Store the outboard in the full down position.

Battery Storage

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

TROUBLESHOOTING

Starter Motor Will Not Crank the Engine

POSSIBLE CAUSES

- Lanyard stop switch not in "RUN" position.
- Blown 5 amp fuse. Check DTS power harness circuit fuse. Refer to **Maintenance** section.
- Outboard is not shifted to neutral position.
- Shift actuator failure. "Gear Shift Diff" error message shown on System View. Refer to **Maintenance** section.
- Weak battery or battery connections are loose or corroded.
- Ignition key switch failure.
- Wiring or electrical connection faulty.
- Starter motor solenoid or slave solenoid failure.

Engine Will Not Start

POSSIBLE CAUSES

- Lanyard stop switch not in "RUN" position.
- Battery not fully charged.
- Incorrect starting procedure. Refer to **Operation** section.
- Old or contaminated fuel.
- Fuel is not reaching the engine.
 - Fuel tank is empty.
 - Fuel tank vent not open or restricted.
 - Fuel line is disconnected or kinked.
 - Primer bulb not squeezed.
 - Primer bulb check valve is faulty.
 - Fuel filter is obstructed. Refer to **Maintenance** section.
 - Fuel pump failure.
 - Fuel tank filter obstructed.
- Open 20 amp fuse. Check fuses, refer to **Maintenance** section.
- Threaded connection of an air hose is loose.
- Ignition system component failure.

TROUBLESHOOTING

- Spark plugs fouled or defective. Refer to **Maintenance** section.

Engine Starts But Will Not Shift Into Gear

- Shift actuator failure. "Gear Shift Diff" error message shown on System View. Refer to **Maintenance** section.

Engine Runs Erratically

POSSIBLE CAUSES

- Spark plugs fouled or defective. Refer to **Maintenance** section.
- Incorrect setup and adjustments.
- Fuel is being restricted to the engine.
 - a. Engine fuel filter is obstructed. Refer to **Maintenance** section.
 - b. Fuel tank filter obstructed.
 - c. Stuck antisiphon valve on built-in fuel tank.
 - d. Fuel line is kinked or pinched.
 - e. Injector plugged.
- Threaded connection of an air hose is loose.
- Fuel pump failure.
- Ignition system component failure.

Performance Loss

POSSIBLE CAUSES

- Throttle not fully open.
- Damaged propeller or improper propeller size.
- Boat overloaded or load improperly distributed.
- Excessive water in bilge.
- Boat bottom is dirty or damaged.

Battery Will Not Hold Charge

POSSIBLE CAUSES

- Battery connections are loose or corroded.

TROUBLESHOOTING

- Low electrolyte level in battery.
- Worn out or inefficient battery.
- Excessive use of electrical accessories.
- Defective rectifier, alternator, or voltage regulator.
- Open circuit in the alternator output wire (fused link).

OWNER SERVICE ASSISTANCE

Local Repair Service

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

Service Away from Home

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

Parts and Accessories Inquiries

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

Service Assistance

Your satisfaction with your outboard product is very important to your dealer and to us. If you ever have a problem, question or concern about your outboard product, contact your dealer or any authorized Mercury Marine 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 for assistance. Mercury Marine will work with you and your dealership to resolve all problems.

The following information will be needed by the service office:

OWNER SERVICE ASSISTANCE

- 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

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

United States, Canada		
Telephone	English - (920) 929-5040 Français - (905) 636-4751	Mercury Marine W6250 W. Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939
Fax	English - (920) 929-5893 Français - (905) 636-1704	
Website	www.mercurymarine.com	

Australia, Pacific		
Telephone	(61) (3) 9791-5822	Brunswick Asia Pacific Group 41-71 Bessemer Drive Dandenong South, Victoria 3175 Australia
Fax	(61) (3) 9706-7228	

Europe, Middle East, Africa		
Telephone	(32) (87) 32 • 32 • 11	Brunswick Marine Europe Parc Industriel de Petit-Rechain B-4800 Verviers, Belgium
Fax	(32) (87) 31 • 19 • 65	

Mexico, Central America, South America, Caribbean		
Telephone	(954) 744-3500	Mercury Marine 11650 Interchange Circle North Miramar, FL 33025 U.S.A.
Fax	(954) 744-3535	

Japan		
Telephone	072-233-8888	Kisaka Co., Ltd. 4-130 Kannabecho Sakai-shi Sakai-ku 5900984 Osaka, Japan
Fax	072-233-8833	

OWNER SERVICE ASSISTANCE

Asia, Singapore		
Telephone	(65) 65466160	Brunswick Asia Pacific Group T/A Mercury Marine Singapore Pte Ltd 29 Loyang Drive Singapore, 508944
Fax	(65) 65467789	

MAINTENANCE LOG

Maintenance Log

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

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