

## 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.

© 2008, Mercury Marine

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.



# TABLE OF CONTENTS

---

## Warranty Information

---

Warranty Registration.....	1
Transfer of Warranty.....	1
Transfer of Mercury Product Protection (Extended Service Coverage) Plan United States and Canada.....	2
Outboard Limited Warranty.....	3
3 Year Limited Warranty Against Corrosion.....	6
Warranty Coverage and Exclusions.....	9

---

## GENERAL INFORMATION

---

Boater's Responsibilities.....	12
Before Operating Your Outboard.....	12
Boat Horsepower Capacity.....	13
High-Speed and High-Performance Boat Operation.....	13
Outboard Remote Control Models .....	13
Remote Steering Notice.....	14
Lanyard Stop Switch.....	15
Protecting People in the Water.....	17
Passenger Safety Message - Pontoon Boats and Deck Boats..	18
Wave and Wake Jumping.....	19
Impact with Underwater Hazards.....	20
Safety Instructions for Hand-Tilled Outboards.....	21
Exhaust Emissions.....	22
Selecting Accessories for Your Outboard.....	24
Safe Boating Suggestions.....	24
Recording Serial Number.....	26
40/50 Specifications.....	26
Component Identification.....	28

---

## INSTALLATION

---

Installing Outboard.....	29
Propeller Selection.....	31

# TABLE OF CONTENTS

---

## TRANSPORTING

---

Trailing Boat/Outboard .....	32
Transporting Portable Fuel Tanks.....	33

---

## FUEL & OIL

---

Fuel Recommendations.....	34
Low Permeation Fuel Hose Requirement .....	35
Oil Recommendation.....	36
Fuel and Oil Ratio.....	36
Mixing Fuel and Oil.....	37
Filling Oil Injection System.....	37
Filling Fuel Tank.....	38

---

## FEATURES & CONTROLS

---

Remote Control Features.....	39
Warning System - Electric Start Models.....	40
Warning Horn System - Manual Start Models.....	42
Engine Over-Speed Limiter.....	43
Manual Tilt System.....	43
Power Trim And Tilt (If Equipped).....	47
Throttle Grip Friction Adjustment - Tiller Handle Models.....	51
Steering Friction Adjustment.....	52
Trim Tab Adjustment.....	53

# TABLE OF CONTENTS

---

## OPERATION

---

Pre-Starting Check List.....	54
Operating in Freezing Temperatures.....	54
Operating in Saltwater or Polluted Water.....	55
Operating at High Elevations.....	55
Engine Break-in Procedure.....	55
Starting the Engine - Electric Start Remote Control Models.....	56
Starting the Engine - Tiller Handle Models.....	59
Gear Shifting.....	63
Stopping the Engine .....	64
Emergency Starting - Electric Start Models.....	64
Emergency Starting - Manual Start Models.....	67

---

## MAINTENANCE

---

Outboard Care.....	70
EPA Regulations.....	70
EPA Emissions.....	71
Inspection and Maintenance Schedule.....	71
Flushing the Cooling System.....	73
Exterior Care.....	74
Top Cowl Removal and Installation.....	74
Battery Inspection .....	75
Fuel System.....	75
Steering Link Rod Fasteners.....	76
Fuse Replacement - Electric Start Models.....	77
Corrosion Control Anode.....	78
Propeller Replacement.....	79
Spark Plug Inspection and Replacement.....	83
Lubrication Points.....	84
Checking Power Trim Fluid.....	87
Gearcase Lubrication.....	88
Submerged Outboard.....	89

# TABLE OF CONTENTS

---

## STORAGE

---

Storage Preparation.....	90
Protecting External Outboard Components.....	91
Protecting Internal Engine Components.....	91
Gearcase.....	92
Positioning Outboard for Storage.....	92
Battery Storage.....	92

---

## TROUBLESHOOTING

---

Starter Motor Will Not Crank The Engine (Electric Start Models) .....	93
Engine Will Not Start.....	93
Engine Runs Erratically.....	93
Performance Loss.....	94
Battery Will Not Hold Charge.....	94

---

## OWNER SERVICE ASSISTANCE

---

Local Repair Service.....	95
Service Away from Home.....	95
Parts and Accessories Inquiries.....	95
Service Assistance.....	95
Mercury Marine Service Offices.....	96

---

## MAINTENANCE LOG

---

Maintenance Log.....	98
----------------------	----



# 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.

## 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.

# WARRANTY INFORMATION

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 send registration verification to the new owner of the product by mail.

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.

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.

## WARRANTY INFORMATION

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@mercurymarine.com](mailto:mpp_support@mercurymarine.com).

### Outboard Limited Warranty

*Outside the United States and Canada - Check with your local distributor.*

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

**DURATION OF COVERAGE:** This limited warranty provided coverage for one (1) year 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 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. 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.

**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. 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 the limited warranty, and if made, shall not be enforceable against Mercury Marine.

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

# WARRANTY INFORMATION

## 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, M<sup>2</sup> 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.

**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 electrical system corrosion; corrosion resulting from damage, corrosion which causes purely cosmetic damage, abuse or improper service; corrosion to accessories, instruments, steering systems; corrosion to factory installed jet drive unit; damage due to marine growth; product sold with less than a one year limited Product warranty; replacement parts (parts purchased by customer); products used in a commercial application. Commercial use is defined as any work or employment related use of the product, or any use of the product which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes.

Corrosion damage caused by stray electrical currents (on-shore power connections, nearby boats, submerged metal) is not covered by this corrosion warranty and should be protected against by the use of a corrosion protection system, such as the Mercury Precision Parts or Quicksilver MerCathode system and/or Galvanic Isolator. Corrosion damage caused by improper application of copper base anti-fouling paints is also not covered by this limited warranty. If anti-fouling protection is required, Tri-Butyl-Tin-Adipate (TBTA) base anti-fouling paints are recommended on Outboard and MerCruiser boating applications. In areas where TBTA base paints are prohibited by law, copper base paints can be used on the hull and transom. Do not apply paint to the outboard or MerCruiser product. In addition, care must be taken to avoid an electrical interconnection between the warranted product and the paint. 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.



# WARRANTY INFORMATION

## 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 DISCLAIMED, 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 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.

## WARRANTY INFORMATION

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.
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.

## WARRANTY INFORMATION

12. Lower unit and/or propeller damage caused by striking a submerged object is considered a marine hazard.
13. Water entering engine through the fuel intake, air intake, or exhaust system or submersion.
14. Failure of any parts caused by lack of cooling water, which results from starting motor out of water, foreign material blocking inlet holes, motor being mounted too high, or trimmed too far out.
15. Use of fuels and lubricants which are not suitable for use with or on the product. Refer to the **Maintenance** section.
16. Our limited warranty does not apply to any damage to our products caused by the installation or use of parts and accessories which are not manufactured or sold by us. Failures which are not related to the use of those parts or accessories are covered under warranty if they otherwise meet the terms of the limited warranty for that product.

# GENERAL INFORMATION

## Boater's 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.

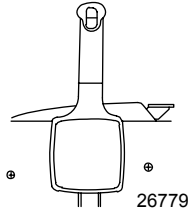
## Outboard Remote Control Models

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

## GENERAL INFORMATION

### **⚠ WARNING**

Starting the engine with the drive in gear can cause serious injury or death. Never operate a boat that does not have a neutral-safety-protection device.

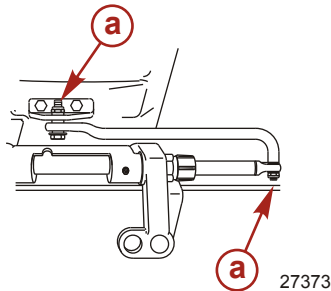


### Remote Steering Notice

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.



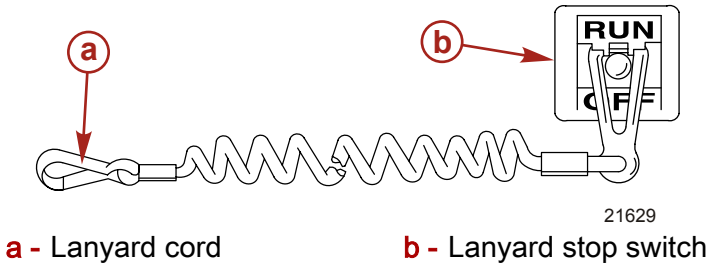
**a** - Self-locking nuts

# 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.



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.

### 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.



# GENERAL INFORMATION

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.

## 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.

# GENERAL INFORMATION

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

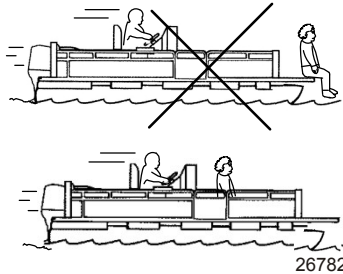
## Passenger Safety Message - Pontoon Boats and Deck Boats

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**

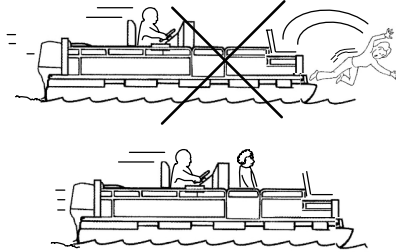
**Sitting or standing in an area of the boat not designed for passengers at speeds above idle can cause serious injury or death. Stay back from the front end of deck boats or raised platforms and remain seated while the boat is in motion.**

# GENERAL INFORMATION

## BOATS WITH FRONT MOUNTED, RAISED PEDESTAL FISHING SEATS

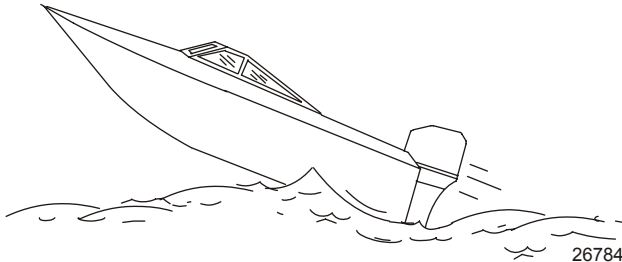
Elevated fishing seats are not intended for use when the boat is traveling faster than idle or trolling speed. Sit only in seats designated for traveling at faster speeds.

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



## 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.



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

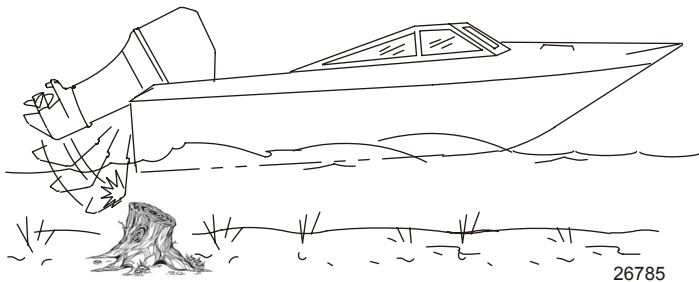
## **⚠ WARNING**

**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.**

## Safety Instructions for Hand-Tilled Outboards

No person or cargo should occupy the area directly in front of the outboard while the boat is in motion. If an underwater obstacle is struck, the outboard will tilt up and could seriously injure anyone occupying this area.

# GENERAL INFORMATION

## MODELS WITH CLAMP SCREWS:

Some outboards come with transom bracket clamp screws. The use of clamp bracket screws alone, is insufficient to properly and safely secure the outboard to the transom. Proper installation of the outboard includes bolting the engine to the boat through the transom. Refer to **Installation - Installing Outboard** for more complete installation information.

### 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.

If an obstacle is struck at planing speed and the outboard is not securely fastened to the transom, it is possible the outboard could lift off the transom and land in the boat.

## Exhaust Emissions

### BE ALERT TO CARBON MONOXIDE POISONING

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

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

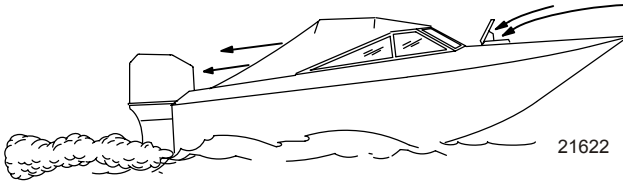
### WARNING

Carbon monoxide poisoning can lead to unconsciousness, brain damage, or death. Keep the boat well ventilated while at rest or underway and avoid prolonged exposure to carbon monoxide.

# GENERAL INFORMATION

## GOOD VENTILATION

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



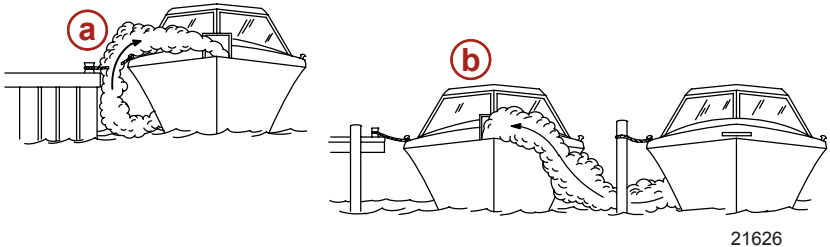
Example of desired air flow through the boat

## 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 enclosed area of a stationary boat that contains or is near a running engine may be exposed to a hazardous level of carbon monoxide.

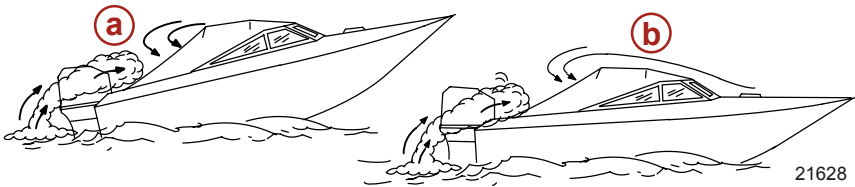
## WHILE BOAT IS STATIONARY



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

# GENERAL INFORMATION

## WHILE BOAT IS MOVING



- a** - Running the boat with the trim angle of the bow too high
- b** - Running the boat with no forward hatches open

## 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 on board in the basics of starting and operating the outboard, and boat handling, in case the driver becomes disabled or falls overboard.

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

**Be alert.** The operator of the boat is responsible by law to maintain a proper lookout by sight and hearing. The operator must have an unobstructed view particularly to the front. No passengers, load, or fishing seats should block the 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.

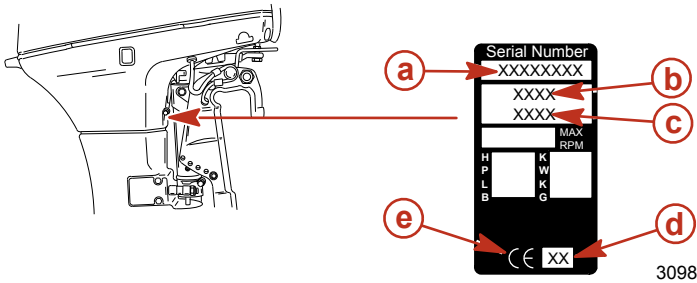
**Watch fallen skiers.** When using your boat for waterskiing or similar activities, always keep a fallen or down skier on the operator's side of the boat while returning to assist the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.

# GENERAL INFORMATION

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

## Recording Serial Number

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



- a** - Serial number
- b** - Model year
- c** - Model designation

- d** - Year manufactured
- e** - Certified Europe insignia (as applicable)

## 40/50 Specifications

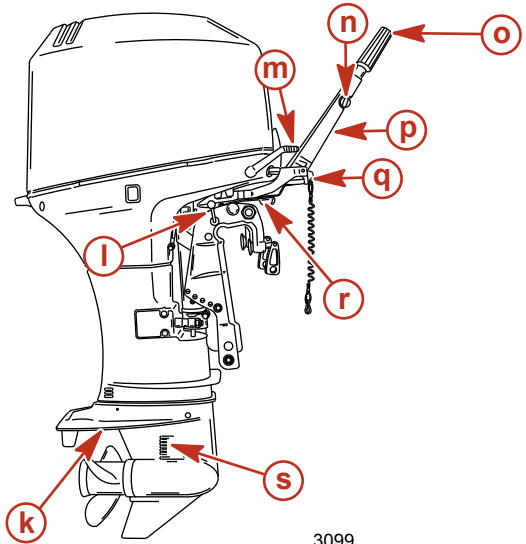
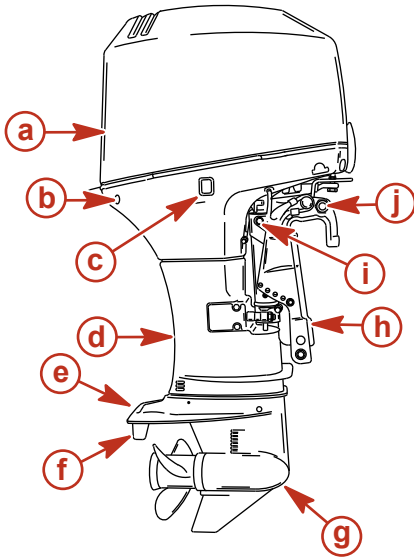
Models	40	50
Horsepower	40	50
Kilowatts	29.4	36.8
Full throttle RPM range	5000–5500 RPM	
Idle speed in forward gear	650–700 RPM	
Number of cylinders	3	
Piston displacement	965 cc (58.9 in <sup>3</sup> )	
Cylinder bore	76 mm (2.993 in.)	
Piston stroke	71 mm (2.796 in.)	

## GENERAL INFORMATION

Models	40	50
Recommended spark plug	NGK BPZ8H-N-10	
Spark plug gap	1.0 mm (0.040 in.)	
Gear ratio	1.83:1	
Recommended gasoline	Refer to <b>Fuel and Oil</b>	
Recommended oil	Refer to <b>Fuel and Oil</b>	
Gearcase lubricant capacity	440 ml (14.9 fl oz)	
Battery rating	465 marine cranking amps (MCA) or 350 cold cranking amps (CCA)	
Ampere hours (Ah)	70–100	

# GENERAL INFORMATION

## Component Identification



3099

- a** - Top cowl
- b** - Water pump indicator hole
- c** - Auxiliary tilt switch
- d** - Driveshaft housing
- e** - Anti-ventilation plate
- f** - Trim tab
- g** - Gearcase
- h** - Transom bracket
- i** - Steering friction adjustment (non tiller handle models)
- j** - Tilt lock pin

- k** - Secondary cooling water intake
- l** - Tilt lock lever (non power trim)
- m** - Shift handle
- n** - Throttle friction adjustment knob
- o** - Engine stop switch
- p** - Tiller handle
- q** - Lanyard stop switch
- r** - Steering friction adjustment lever
- s** - Primary cooling water intake

# INSTALLATION

## Installing Outboard

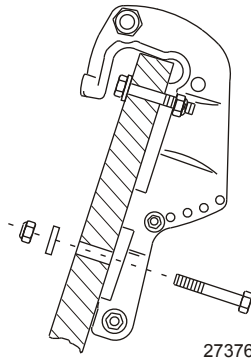
### WARNING

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.

### MODELS WITHOUT TRANSOM BRACKET CLAMP SCREWS

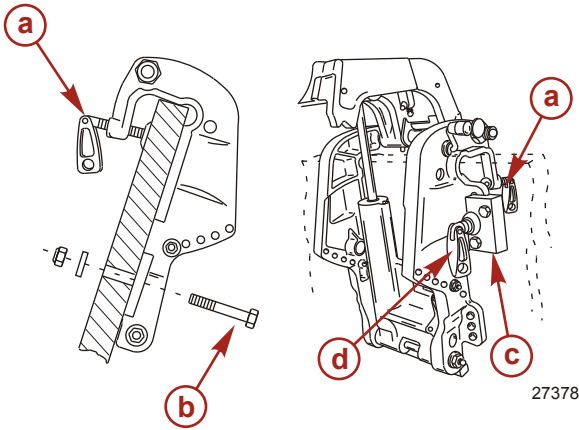
The outboard must be secured to the transom with the four 12.7 mm (1/2 in.) diameter mounting bolts and locknuts provided. Install two bolts through the upper set of holes and two bolts through the lower set of holes.



# INSTALLATION

## MODELS WITH TRANSOM BRACKET CLAMP SCREWS

The outboard must be secured to the transom one of two ways: EITHER with clamp screws and the two mounting bolts and locknuts provided, OR with clamp screws and optional Quicksilver or Mercury Precision Parts Outboard Mounting Kit. Tighten retainer screws into the lower mounting holes when using outboard mounting kit.



27378

**a** - Clamp screws

**b** - Mounting bolt and  
locknut (2)

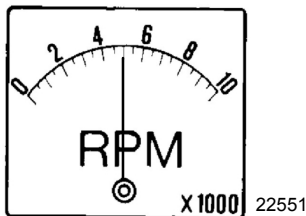
**c** - Outboard Mounting Kit  
(part number 812432A5)

**d** - Retainer screws

# INSTALLATION

## 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.

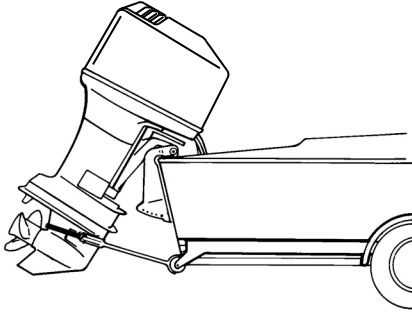
Check full-throttle RPM, using an accurate tachometer, with the engine trimmed out to a balanced-steering condition (steering effort equal in both directions) without causing the propeller to break loose.

# TRANSPORTING

## Trailing 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.



28419

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

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



# TRANSPORTING

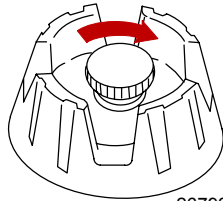
## Transporting Portable Fuel Tanks

### WARNING

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

### MANUAL VENTING TYPE FUEL TANK

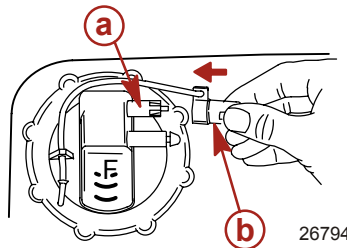
Close fuel tank air vent when transporting tank. This will prevent escape of fuel or vapors from tank.



26793

### AUTO-VENTING TYPE FUEL TANK

1. Disconnect the remote fuel line from tank. This will close the air vent and prevent escape of fuel or vapors from tank.
2. Install tether cap over the fuel line connector stem. This will protect the connector stem from being accidentally pushed-in, thus, allowing fuel or vapor to escape.



26794

**a** - Connector stem

**b** - Tether cap

# FUEL & 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 & 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.

### Low Permeation Fuel Hose Requirement

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

# FUEL & OIL

- 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/gm<sup>2</sup>/24 h with CE 10 fuel at 23 °C as specified in SAE J 1527 - marine fuel hose.

## Oil Recommendation

Recommended Oil	Mercury or Quicksilver Premium 2-Cycle TC-W3 Outboard Oil
-----------------	---

**IMPORTANT:** Oil must be NMMA certified TC-W3 2-Cycle oil.

Mercury or Quicksilver Premium TC-W3 2-Cycle oil is recommended for this engine. For added protection and lubrication, Mercury or Quicksilver Premium Plus TC-W3 2-Cycle oil is recommended. If Mercury or Quicksilver outboard oil is not available, substitute another brand of 2-cycle outboard oil that is NMMA Certified TC-W3. Severe engine damage may result from use of an inferior oil.

## Fuel and Oil Ratio

### MODELS WITH OIL INJECTION

Use a 50:1 (2%) gasoline/oil mixture in the first tank of fuel. Follow the table below for mixing ratios. Use of this fuel mixture combined with oil from the oil injection system will supply adequate lubrication during engine break-in.

After the break-in fuel mixture is used up, it is no longer necessary to add oil with the gasoline.

**NOTE:** *At the end of the break-in period, visually check to see if the oil level in the oil injection system has dropped. Oil usage indicates the oil injection system is functioning correctly.*

GASOLINE/OIL MIXING RATIO CHART			
Gas/Oil Ratio	3.8 liters (1 gal.) gas	11.5 liters (3 gal.) gas	23 liters (6 gal.) gas
50:1 (2%)	89 ml (3 fl. oz.) oil	237 ml (8 fl. oz.) oil	473 ml (16 fl. oz.) oil

# FUEL & OIL

## MODELS WITHOUT OIL INJECTION

Use a 25:1 (4%) gasoline/oil mixture in the first tank of fuel.

After the break-in fuel mixture is used up, use a 50:1 (2%) gasoline/oil mixture. Follow the table for mixing ratios.

GASOLINE/OIL MIXING RATIO CHART			
Gas/Oil Ratio	3.8 liters (1 gal.) gas	11.5 liters (3 gal.) gas	23 liters (6 gal.) gas
25:1 (4%)	148 ml (5 fl. oz.) oil	473 ml (16 fl. oz.) oil	946 ml (32 fl. oz.) oil
50:1 (2%)	89 ml (3 fl. oz.) oil	237 ml (8 fl. oz.) oil	473 ml (16 fl. oz.) oil

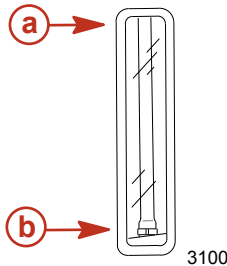
## Mixing Fuel and Oil

**Portable Tank** - Pour 4 liters (1 gallon) of gasoline into tank. Add the correct amount of oil and mix thoroughly. Add the remainder of gasoline.

**Built-in Tank** - Using a funnel, pour the correct amount of oil slowly with the gasoline as tank is filled.

## Filling Oil Injection System

1. Place outboard in a vertical operating position. Check oil level using the sight gauge in front of the outboard.

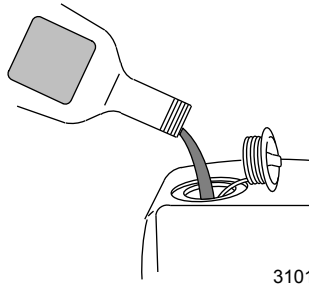


**a** - Full level

**b** - Add level

## FUEL & OIL

2. Remove the fill cap and fill tank with oil.



3101

	Capacity	Fluid Type
Oil tank	3 liters (3.17 qt.)	Mercury or Quicksilver Premium 2-Cycle TC-W3 Outboard Oil

### 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.

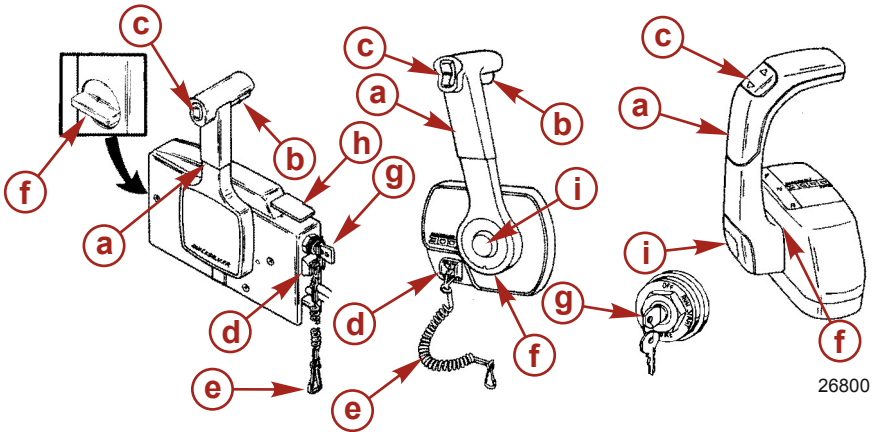
#### **PORTABLE FUEL TANK PLACEMENT IN THE BOAT**

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

# FEATURES & CONTROLS

## Remote Control Features

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



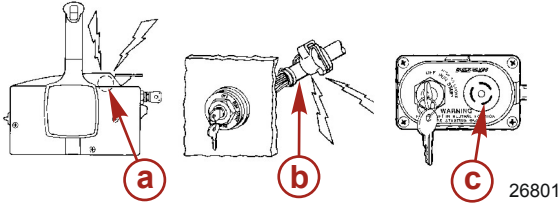
- a** - Control handle - forward, neutral, reverse
- b** - Neutral release lever
- c** - Trim/tilt switch (if equipped) - Refer to **Features and Controls - Power Trim and Tilt**
- d** - Lanyard stop switch - Refer to **General Information - Lanyard Stop Switch**
- e** - Lanyard - Refer to **General Information - Lanyard Stop Switch**
- f** - Throttle friction adjustment - Console controls require cover removal for adjustment
- g** - Ignition key switch - "OFF," "ON," "START"
- h** - Fast idle lever - Refer to **Operation - Starting the Engine**
- i** - Throttle only button - Refer to **Operation - Starting the Engine**

# FEATURES & CONTROLS

## Warning System - Electric Start Models

### WARNING SYSTEM

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



**a** - Horn inside remote control

**c** - Horn in ignition key panel

**b** - Horn connected to ignition key switch

### WARNING SYSTEM OPERATION

The warning horn will emit a continuous beep. This will alert the operator and help identify the following listed situations.

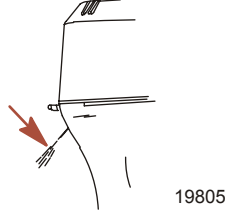
Warning System		
Function	Sound	Description
Engine Over Temperature	Continuous	Engine Overheat
Low Oil Level	Continuous	Low Oil Level



# FEATURES & CONTROLS

## ENGINE OVERHEAT

If the engine overheats, immediately reduce throttle speed to idle. Shift outboard into neutral and check for a steady stream of water coming out of the water pump indicator hole.



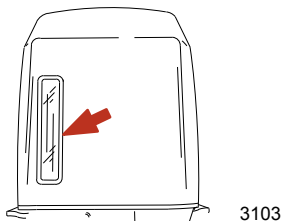
If no water is coming out of the water pump indicator hole or flow is intermittent, stop engine and check the cooling water intake holes for obstruction. If no obstruction is found, there may be a blockage in the cooling system or a water pump problem. Have the outboard checked by your dealer. Operating the engine while overheated will cause engine damage.

**NOTE:** *Should overheating occur and you are stranded, stop the engine and allow it to cool down. This will usually allow some additional low speed (idle) running time before the engine starts to overheat again. Operating an overheated engine will cause engine damage.*

If a steady flow of water is coming out of the water pump indicator hole and the engine continues to overheat, consult your dealer. Operating an overheated engine will cause engine damage.

## LOW OIL LEVEL

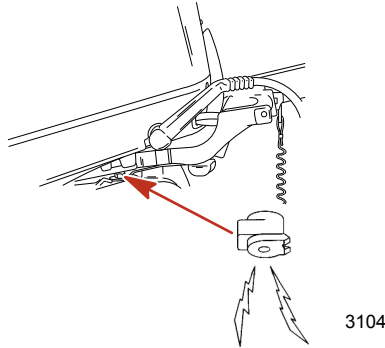
The warning system will be activated if the oil level drops below the sight gauge in the cowl when the outboard is in a vertical position. There is still oil reserve remaining for 30 minutes of full speed operation. Refer to **Fuel & Oil - Filling Oil Injection System**.



# FEATURES & CONTROLS

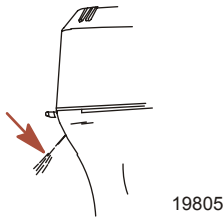
## Warning Horn System - Manual Start Models

The outboard warning system incorporates a warning horn beneath the bottom cowl. The warning horn will sound if the engine overheats.



## ENGINE OVERHEAT

If the engine overheats, the warning horn will sound. Immediately reduce throttle speed to idle. 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 the cooling water intake holes for obstruction. If no obstruction is found, there may be a blockage in the cooling system or a water pump problem. Have the outboard checked by your dealer. Operating the engine while overheated will cause engine damage.

**NOTE:** *Should overheating occur and you are stranded, stop the engine and allow it to cool down. This will usually allow some additional low speed (idle) running time before the engine starts to overheat again. Operating an overheated engine will cause engine damage.*

## FEATURES & CONTROLS

If a steady flow of water is coming out of the water pump indicator hole and the engine continues to overheat, consult your dealer. Operating an overheated engine will cause engine damage.

### Engine Over-Speed Limiter

The outboard is equipped with an engine over-speed limiter which limits the engine maximum RPM. This will protect the engine from mechanical damage.

Some causes of engine over-speed are as follows:

- Propeller ventilation.
- A propeller which has an incorrect pitch or diameter.
- Propeller hub slippage.
- Outboard mounted too high on the transom.
- Tilting the outboard out beyond a vertical position.
- Cavitation of the propeller due to rough water or obstruction in the boat hull.

When the engine over-speed limiter is activated, the engine timing will be momentarily retarded to decrease the engine speed. Excessive over-speed (above 5700 RPM) will result in cutout of the cylinders ignition to prevent operation above this limit.

### Manual Tilt System

Models without power trim are equipped with a tilt assist system that allows the operator to easily tilt and lock the outboard at any tilt position from full down to full up.

This tilt system is designed to be adjusted when the outboard is idling in neutral or with the engine turned off.

#### **WARNING**

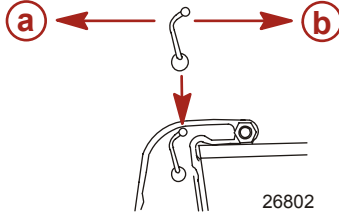
**Operating the engine without engaging the tilt lock lever can cause serious injury or death. The outboard can tilt upwards when decelerating or operating in reverse, causing loss of boat control. Always lock the outboard in its run position before operating.**

Before operating, the outboard must be locked in its tilt position by moving the tilt lock lever to the lock/run position.

# FEATURES & CONTROLS

## BASIC TILTING OPERATION

Move tilt lock lever to the tilt position. Tilt outboard to desired position and lock in place by moving the tilt lock lever back to the lock/run position.



**a** - Tilt position

**b** - Lock/run position

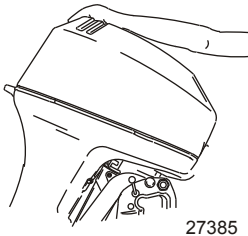
## SHALLOW WATER OPERATION

When operating the boat in shallow water, the outboard can be adjusted and locked at a higher tilt angle. Operate the outboard at slow speed while tilted up for shallow water operation. Keep the cooling water intake holes submerged in the water and continue to check for water discharge from the water pump indicator hole.

## TILTING OPERATION

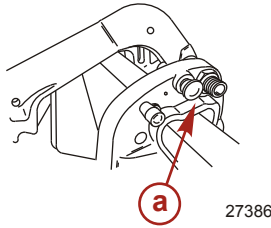
### Tilting To Full Up Position

1. Stop the engine. Move the tilt lock lever to the tilt position. Take hold of the top cowl grip and raise outboard to full tilt up position. Lock the outboard in place by moving the tilt lock lever to the lock/run position.



## FEATURES & CONTROLS

2. Push in the tilt support pin.



**a** - Tilt support pin

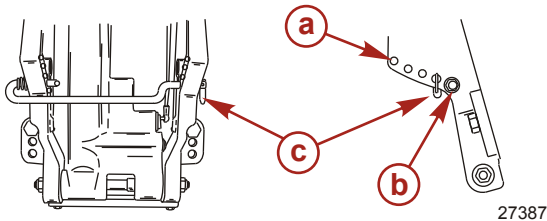
3. Lower outboard to rest on the tilt support pin.

### Lowering To Run Position

1. Raise the outboard off the support pin to disengage tilt support. Pulling out the support pin and lower the outboard.
2. Move tilt lock lever to lock/run position.

### SETTING THE OPERATING ANGLE OF THE OUTBOARD

The transom brackets have five holes for adjusting the operating angle (forward stop movement) of the outboard. Tilt stops are installed for adjustment in the first hole. Use tilt pin provided for adjustments in the remaining four holes. Remove tilt pin when using the tilt stops.

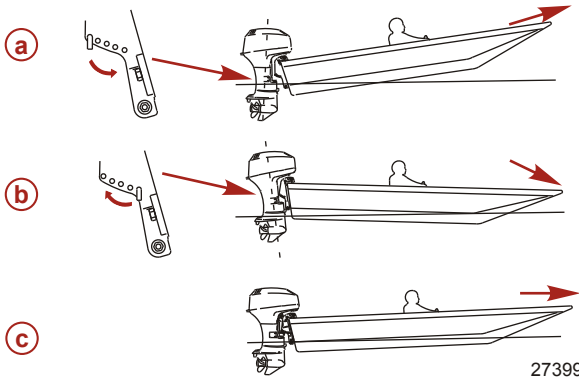


**a** - Transom bracket holes      **c** - Tilt pin  
**b** - Tilt stops

Adjust the operating angle of the outboard so that the outboard runs perpendicular to the water when the boat is at full speed.

# FEATURES & CONTROLS

Arrange passengers and load in the boat so the weight is distributed evenly.



- a** - Too much angle (bow up) - adjust in
- b** - Not enough angle (bow down) - adjust out
- c** - Angle adjusted properly (bow slightly up)

**NOTE:** *The outboard should be locked against the tilt stops or tilt pin during operation by setting the tilt lock lever to the lock/run position.*

Consider the following lists carefully when adjusting the operating angle of your outboard.

Adjusting the outboard close to the boat transom 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 over-steering) if any turn is attempted or if a significant wave is encountered.

Adjusting the outboard away from the boat transom can:

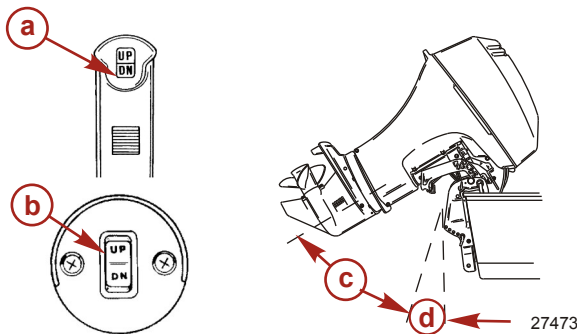
- Lift the bow out of the water.

# FEATURES & CONTROLS

- 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.

## Power Trim And Tilt (If Equipped)

Your outboard has a trim/tilt control called power trim. This enables the operator to easily adjust the position of the outboard by pressing the trim switch. 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 your boat on plane. The term tilt is generally used when referring to adjusting the outboard further up and out of the water. With the engine turned off, the outboard can be tilted out of the water. At low idle speed, the outboard can also be tilted up past the trim range to permit, for example, shallow water operation.



**a** - Remote control trim switch

**b** - Panel mount trim switch

**c** - Tilt range of travel

**d** - Trim range of travel

# FEATURES & CONTROLS

## POWER TRIM OPERATION

With most boats, operating around the middle of the trim range will give satisfactory results. However, to take full advantage of the trimming capability there may be times when you choose to trim your outboard all the way in or out. Along with an improvement in some performance aspects comes a greater responsibility for the operator, and this is being aware of some potential control hazards. The most significant control hazard is a pull or torque that can be felt on the steering wheel or tiller handle. This steering torque results from the outboard being trimmed so that the propeller shaft is not parallel to the water surface.

### **WARNING**

**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 over-steering) if any turn is attempted, or if a significant wave is encountered.



## FEATURES & CONTROLS

### 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.

- In rare circumstances, the owner may decide to limit the trim in. This can be accomplished by repositioning the tilt stop pin into whatever adjustment hole in the transom bracket is desired.
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.

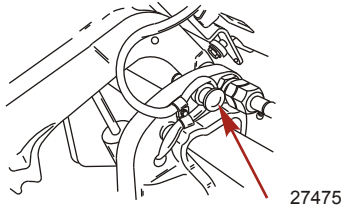
### TILTING OPERATION

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

1. Push in the tilt support pin.
2. Lower outboard to rest on the tilt support pin.

## FEATURES & CONTROLS

3. Disengage the tilt support pin, by raising the outboard off the support pin and pulling out the support pin. Lower the outboard.

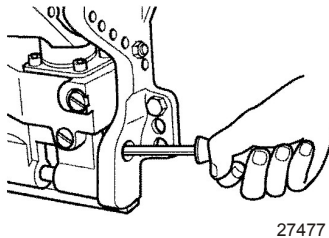


### MANUAL TILTING

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.*

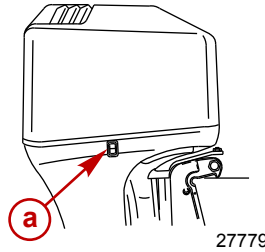
1. Turn out the manual tilt release valve 3 turns counterclockwise. This allows manual tilting of the outboard. Tilt the outboard to the desired position and tighten the manual tilt release valve.



# FEATURES & CONTROLS

## AUXILIARY TILT SWITCH

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



**a** - Auxiliary tilt switch

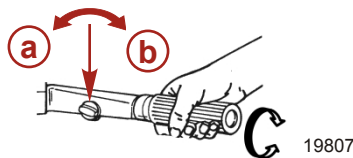
## SHALLOW WATER OPERATION

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.

## Throttle Grip Friction Adjustment - Tiller Handle Models

Throttle grip friction knob - Turn friction knob to set and maintain the throttle at desired speed. Turn knob clockwise to tighten friction and turn knob counterclockwise to loosen friction.



**a** - Loosen friction

**b** - Tighten friction

# FEATURES & CONTROLS

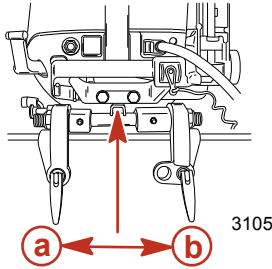
## Steering Friction Adjustment

### WARNING

Insufficient friction adjustment can cause serious injury or death due to loss of boat control. When setting the friction adjustment, maintain sufficient steering friction to prevent the outboard from steering into a full turn if the tiller handle or steering wheel is released.

### TILLER HANDLE MODELS

Steering Friction Adjustment - Adjust this lever to achieve the desired steering friction (drag) on the tiller handle. Move lever to the left to tighten friction or move to the right to loosen friction.

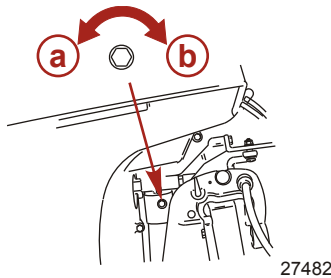


**a** - Tighten friction

**b** - Loosen friction

### REMOTE STEERING MODELS

Steering Friction Adjustment - Adjust this screw to achieve the desired steering friction (drag) on the steering wheel. Turn screw clockwise to tighten friction or turn counterclockwise to loosen friction.



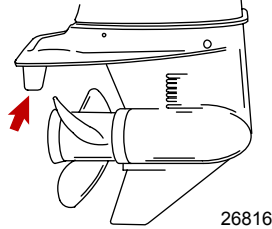
**a** - Loosen friction

**b** - Tighten friction

# FEATURES & CONTROLS

## Trim Tab Adjustment

Propeller steering torque will cause your boat to pull in one direction. This steering torque is a normal result from your outboard not trimmed with the propeller shaft parallel to the water surface. The trim tab can help to compensate for this steering torque in many cases and can be adjusted within limits to reduce any unequal steering effort.



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

## MODELS WITHOUT POWER TRIM

Operate your boat at normal cruising speed trimmed to desired position by installing the tilt pin in the desired tilt pin hole. Turn your boat left and right and note the direction the boat turns more easily. If adjustment is necessary, loosen trim tab bolt and make small adjustments at a time. If the boat turns more easily to the left, move the trailing edge of trim tab to the left. If the boat turns more easily to the right move the trailing edge of trim tab to the right. Retighten bolt and retest.

## MODELS WITH POWER TRIM

Operate your boat at normal cruising speed, trimmed to desired position. Turn your boat left and right and note the direction the boat turns more easily.

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

# OPERATION

## Pre-Starting Check List

- Operator knows safe navigation, boating, and operating procedures.
- An approved personal flotation device of suitable size for each person aboard and readily accessible (it is the law).
- A ring type life buoy or buoyant cushion designed to be thrown to a person in the water.
- Know 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 trapped water in 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

**IMPORTANT:** To prevent serious damage to the engine caused by a lean fuel mixture, do not operate your outboard (if the jets were changed for high elevation) at a lower elevation unless the jets are changed again to correspond to the new elevation.

Operating your outboard at an elevation higher than 750 m (2500 ft.) above sea level may require a carburetor jet change and/or different pitch propeller. Consult your dealer. This will reduce the normal performance loss experienced as a result of reduced oxygen in the air causing an overly rich fuel mixture.

## 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.

### MODELS WITH OIL INJECTION

**Engine Break-in Fuel Mixture** - Use a 50:1 (2%) gasoline/oil mixture in the first tank of fuel. Use of this fuel mixture combined with oil from the oil injection system will supply adequate lubrication during engine break-in.

# OPERATION

**Engine Break-in Procedure** - Vary the throttle setting during the first hour of operation. During the first hour of operation, avoid remaining at constant speed for more than two minutes and avoid sustained wide open throttle.

## MODELS WITHOUT OIL INJECTION

**Engine Break-in Fuel Mixture** - Use a 25:1 (4%) gasoline/oil mixture in the first tank of fuel. After the break-in fuel mixture is used up, use a 50:1 (2%) gasoline/oil mixture.

**Engine Break-in Procedure** - Vary the throttle setting during the first hour of operation. During the first hour of operation, avoid remaining at constant speed for more than two minutes and avoid sustained wide open throttle.

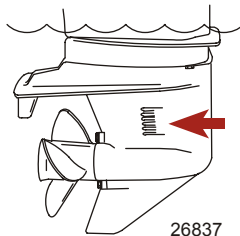
## Starting the Engine - Electric Start Remote Control Models

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

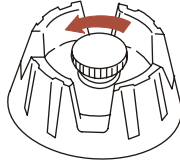


26837



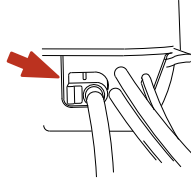
# OPERATION

2. Open fuel tank vent screw (in filler cap) on manual venting type fuel tanks.



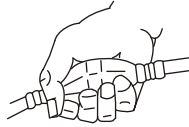
19748

3. Connect the fuel line to the outboard.



3106

4. Squeeze the fuel line primer bulb several times until it feels firm.



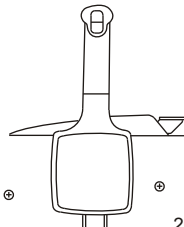
19779

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



19791

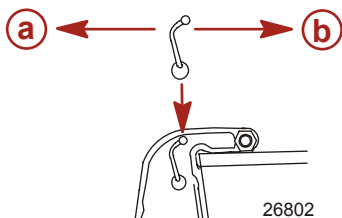
6. Shift outboard to neutral (N) position.



26838

# OPERATION

7. Models without power trim - Position the tilt lock lever down to the lock position.



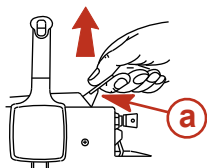
**a** - Tilt position

**b** - Lock/run position

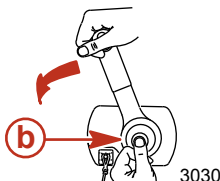
## ⚠ WARNING

Operating the engine without engaging the tilt lock lever can cause serious injury or death. The outboard can tilt upwards when decelerating or operating in reverse, causing loss of boat control. Always lock the outboard in its run position before operating.

8. Cold engine - Advance the fast idle lever or throttle only feature to an approximate halfway (1/2) setting. After engine start up, immediately adjust neutral fast idle setting so engine speed drops below 2000 RPM. Return back to normal idle speed after engine is warmed up.

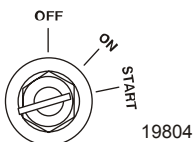


**a** - Fast idle speed lever



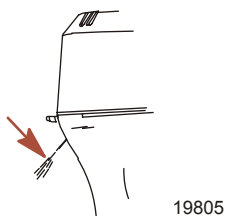
**b** - Throttle only feature

9. Turn ignition key to the "START" position and start the engine. If engine is cold, push in on key to choke engine. If engine fails to start in 10 seconds, wait 30 seconds and try again. If engine begins to stall, reprime (push key in) until engine is running.



## OPERATION

- Starting flooded engine - Advance the fast idle lever or throttle only feature to the maximum position. Without activating primer, crank engine for 10 seconds. Wait 30 seconds and repeat until engine starts. Immediately start to reduce engine speed after engine starts.
- After engine starts, check for a steady stream of water flowing out of the water pump indicator hole.



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

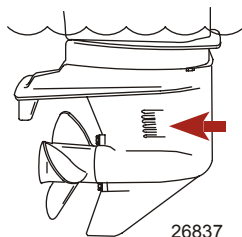
### Starting the Engine - Tiller Handle Models

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

#### **NOTICE**

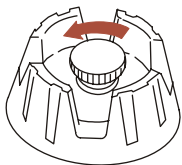
Without sufficient cooling water, the engine, the water pump, and other components will overheat and suffer damage. Provide a sufficient supply of water to the water inlets during operation.

- Make sure the cooling water intake is submerged.



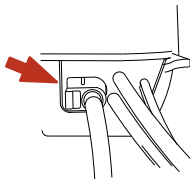
# OPERATION

2. Open fuel tank vent screw (in filler cap) on manual venting type fuel tanks.



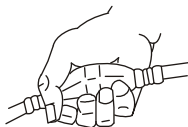
19748

3. Connect the fuel line to the outboard.



3106

4. Squeeze the fuel line primer bulb several times until it feels firm.



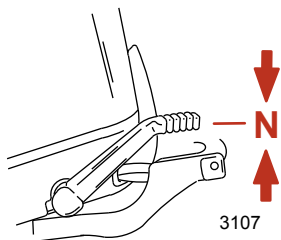
19779

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



19791

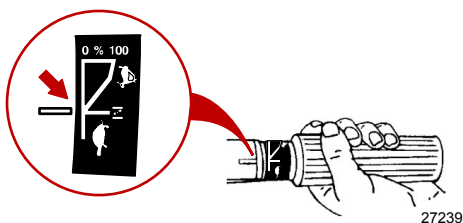
6. Shift outboard to neutral (N) position.



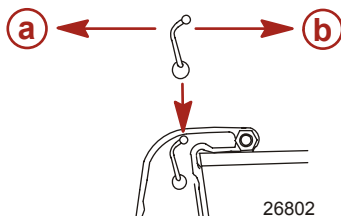
3107

# OPERATION

7. Move throttle grip to start position.



8. Models without power trim - Position the tilt lock lever to the lock/run position.



**a** - Tilt position

**b** - Lock/run position

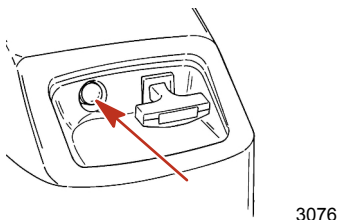
## ⚠ WARNING

Rapid acceleration can result in serious injury or death from being thrown within or out of the boat. Decrease engine speed before shifting into gear.

9. Manual starting models:

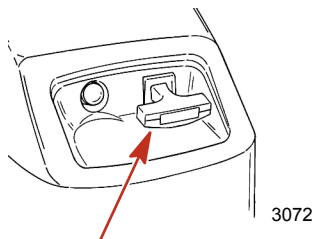
a. If engine is cold, push in the primer bulb rapidly 4 to 6 times.

**NOTE:** For initial start of a new engine or first start after a prolonged storage, primer lines may have air in them. In this case, push in the primer bulb several times until fluid can be felt and then the normal 4 to 6 times.

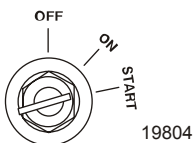


# OPERATION

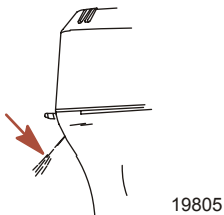
- b. Pull the starter rope slowly until starter engages, then pull rapidly to crank the engine. Allow rope to return slowly. Repeat until engine starts. If engine begins to stall, reprime until engine is running.



10. Electric starting models - Turn ignition key to the "START" position and start the engine. If engine is cold, push in on key to choke engine. If engine fails to start in 10 seconds, wait 30 seconds and try again. If engine begins to stall, reprime (push key in) until engine is running.



11. Starting flooded engine - Advance the throttle grip to the maximum position. Without activating primer, start engine following starting procedure. Immediately start to reduce engine speed after engine starts.
12. Check for a steady stream of water flowing out of the water pump indicator hole.



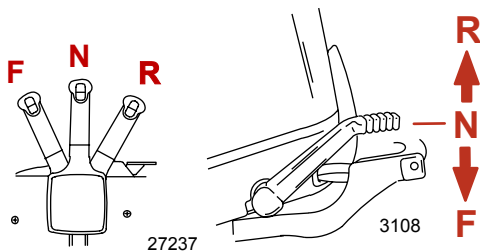
# OPERATION

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

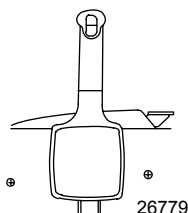
## Gear Shifting

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

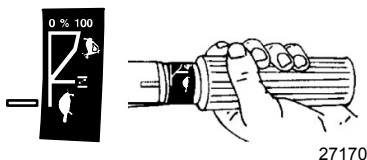
- The outboard has three gear shift positions to provide operation: Forward (F), Neutral (N), and Reverse (R).



- Remote control models - When shifting, always stop at neutral position and allow the engine speed to return to idle.



- Tiller handle models - Reduce engine speed to idle before shifting.



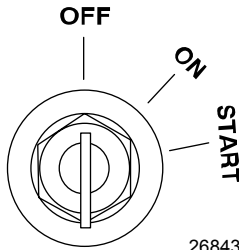
- Always shift outboard into gear with a quick motion.

# OPERATION

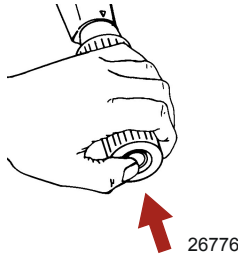
- After shifting outboard into gear, advance the remote control lever or rotate the throttle grip (tiller handle) to increase speed.

## Stopping the Engine

1. **Remote control models** - Reduce engine speed and shift outboard to neutral position. Turn ignition key to "OFF" position.



2. **Tiller handle models** - Reduce engine speed and shift outboard to neutral position. Push in the engine stop button or turn ignition key to "OFF" position.



## Emergency Starting - Electric Start Models

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

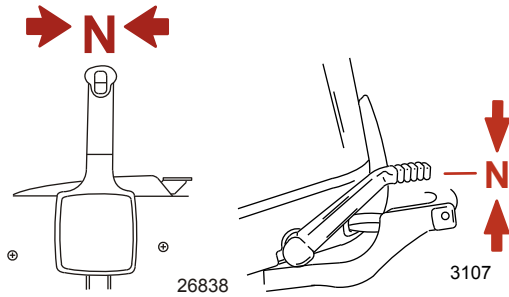
### WARNING

The neutral-speed-protection device is inoperative when starting the engine with the emergency starter rope. Set the engine speed at idle and the gear shift in neutral to prevent the outboard from starting in gear.

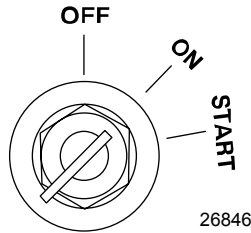


# OPERATION

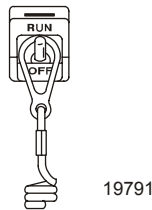
1. Shift outboard to neutral (N) position.



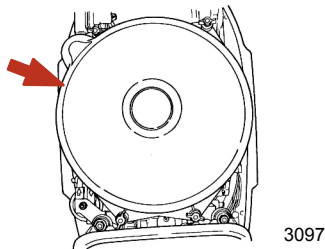
2. Turn ignition key to "ON" position.



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



4. Remove flywheel cover.



# OPERATION

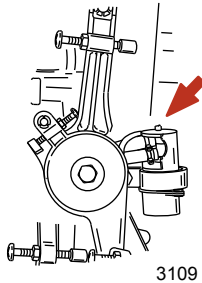
## ⚠ WARNING

High voltage is present any time the key is turned on, especially when starting or operating the engine. Do not touch ignition components or metal test probes and stay clear of spark plug leads when performing live tests.

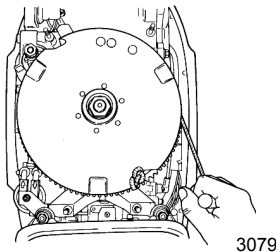
## ⚠ WARNING

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

5. If engine is cold, hold the fuel primer button in and pump up the fuel pressure with the fuel line primer bulb.



6. Place the starter rope knot into the flywheel notch and wind the rope clockwise around the flywheel.
7. Pull the starter rope to start the engine.



# OPERATION

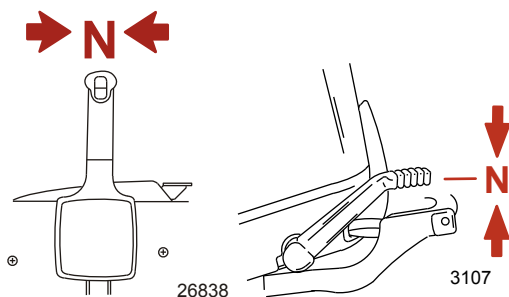
## Emergency Starting - Manual Start Models

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

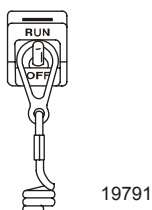
### ⚠ WARNING

The neutral-speed-protection device is inoperative when starting the engine with the emergency starter rope. Set the engine speed at idle and the gear shift in neutral to prevent the outboard from starting in gear.

1. Shift outboard to neutral (N) position.

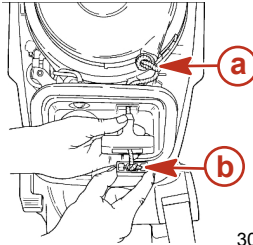


2. Set the lanyard stop switch to "RUN" position. Refer to **General Information - Lanyard Stop Switch**.

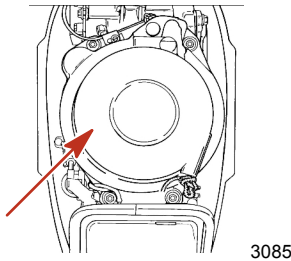


## OPERATION

3. If starter rope is intact, pull rope out of the rewind housing and tie a knot in the rope. Remove retainer from end of rope and untie the retainer knot.



4. Remove the rewind starter.



### **⚠ WARNING**

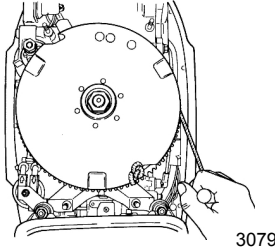
High voltage is present any time the key is turned on, especially when starting or operating the engine. Do not touch ignition components or metal test probes and stay clear of spark plug leads when performing live tests.

### **⚠ WARNING**

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

## OPERATION

5. Place the starter rope knot into the flywheel notch and wind the rope clockwise around the flywheel.



6. If engine is cold, push in the fuel primer button 4 to 6 times.
7. Pull the starter rope to start the engine.

# MAINTENANCE

## Outboard Care

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

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 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 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 spark ignition (SI) engine repair establishment or individual.**

# MAINTENANCE

## EPA Emissions

### EMISSION CERTIFICATION LABEL

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

The diagram shows a rectangular label with the Mercury logo on the left and the title "EMISSION CONTROL INFORMATION" on the right. The label contains several fields for engine specifications and emissions data. Red callouts labeled 'a' through 'i' point to specific fields: 'a' points to the idle speed field; 'b' points to the horsepower field; 'c' points to the timing field; 'd' points to the spark plug and gap fields; 'e' points to the valve clearance field; 'f' points to the family number field; 'g' points to the maximum emission output field; 'h' points to the piston placement field; and 'i' points to the date of manufacture field.

MERCURY		EMISSION CONTROL INFORMATION	
This engine conforms to <input type="checkbox"/> model year EPA regulations for Marine SI engines. Refer to Owner's Manual for required maintenance.			
IDLE SPEED: <input type="text"/>		FAMILY: <input type="text"/>	
<input type="text"/> hp	<input type="text"/> cc	FEL: <input type="text"/> g/kWh	
TIMING (IN DEGREES): <input type="text"/>			
Standard spark plug: <input type="text"/>		<input type="text"/>	
Suppressor spark plug: <input type="text"/>			
GAP: <input type="text"/>			
Valve Clearance (Cold) mm		Intake <input type="text"/>	Exhaust <input type="text"/>

28405

- a** - Idle speed
- b** - Engine horsepower
- c** - Timing specification
- d** - Recommended spark plug and gap
- e** - Valve clearance (if applicable)
- f** - Family number
- g** - Maximum emission output for the engine family
- h** - Piston placement
- i** - Date of manufacture

### 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.
- Check outboard for tightness on transom.
- Check steering system for binding or loose components.

## MAINTENANCE

- Remote control models - 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

- Lubricate all lubrication points. Lubricate more frequently when used in saltwater. See **Lubrication Points**.
- Inspect and clean spark plugs. See **Spark Plug Inspection and Replacement**.
- Check engine fuel filter for contaminants. See **Fuel System**.
- Adjust carburetors. (If required)<sup>1</sup>.
- Check engine timing setup.<sup>1</sup>
- Check corrosion control anodes. Check more frequently when used in saltwater. See **Corrosion Control Anodes**.
- Drain and replace gearcase lubricant. See **Gearcase Lubrication**.
- Lubricate splines on the driveshaft.<sup>1</sup>
- Check power trim fluid. See **Checking Power Trim Fluid**.
- Inspect battery. See **Battery Inspection**.
- Check control cable adjustments.<sup>1</sup>
- Remove engine deposits with Mercury Precision or Quicksilver Power Tune Engine Cleaner.
- Check tightness of bolts, nuts, and other fasteners.

### EVERY 300 HOURS OF USE OR THREE YEARS

- Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).<sup>1</sup>

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



# MAINTENANCE

## BEFORE PERIODS OF STORAGE

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

## Flushing the Cooling System

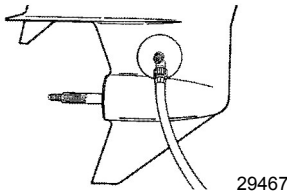
Flush the internal water passages of the outboard with fresh water after each use in salt, polluted, or muddy water. This will help prevent a buildup of deposits from clogging the internal water passages.

Use a Mercury Precision or Quicksilver accessory (or equivalent) flushing attachment.

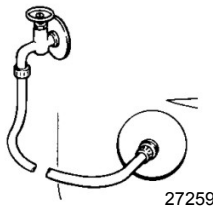
### WARNING

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. Remove propeller. Refer to **Propeller Replacement**. Install the flushing attachment so the rubber cups fit tightly over the cooling water intake.



2. Attach a water hose to the flushing attachment. Turn on the water and adjust the flow so water is leaking around the rubber cups to ensure the engine receives an adequate supply of cooling water.

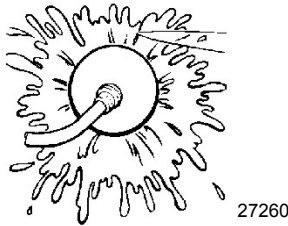


## MAINTENANCE

3. Start the engine and run it at idle speed in neutral shift position.

**IMPORTANT: Do not run engine above idle when flushing.**

4. Adjust water flow (if necessary) so excess water continues leaking out from around the rubber cups to ensure the engine is receiving an adequate supply of cooling water.



5. Check for a steady stream of water flowing out of the water pump indicator hole. Continue flushing the outboard for 3 to 5 minutes, carefully monitoring water supply at all times.

6. Stop the engine, turn off the water, and remove the flushing attachment. Reinstall the propeller.

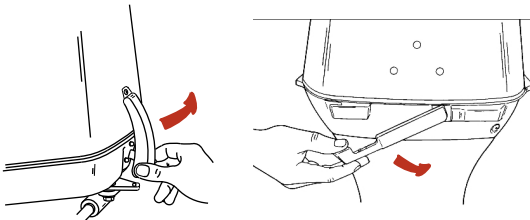
## Exterior Care

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

## Top Cowl Removal and Installation

### REMOVAL

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



3110

### INSTALLATION

1. Position the top cowl over the engine.

# MAINTENANCE

2. Make sure the bottom rubber seal fits properly and lock the front and rear latches.

## 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. Make sure 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. Make sure the battery is equipped with a nonconductive shield to prevent accidental shorting of battery terminals.

## Fuel System

### WARNING

**Fuel is flammable and explosive. Ensure 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.**

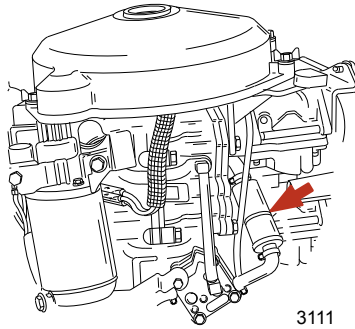
Before servicing any part of the fuel system, stop engine and disconnect the battery. Drain the fuel system completely. Use an approved container to collect and store fuel. Wipe up any spillage immediately. Material used to contain spillage must be disposed of in an approved receptacle. Any fuel system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

## FUEL LINE FILTER

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

# MAINTENANCE

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



## FUEL LINE INSPECTION

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

## Steering Link Rod Fasteners

**IMPORTANT:** The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt ("a" - Part Number 10-856680) and self-locking nylon insert locknuts ("b" & "e" - Part Number 11-826709113). These locknuts must never be replaced with common nuts (non-locking) as they will work loose and vibrate off, freeing the link rod to disengage.

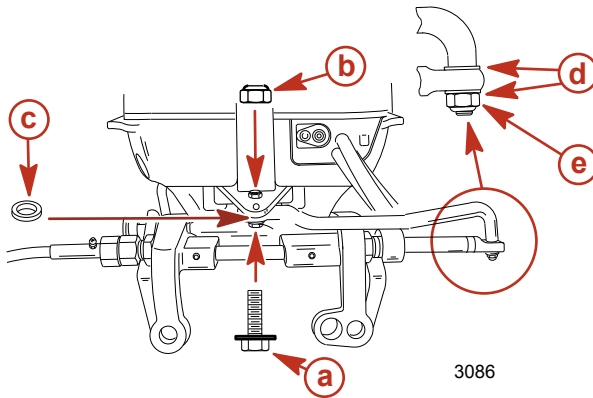
### WARNING

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.

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

# MAINTENANCE

Assemble steering link rod to engine with special washer head bolt, locknut and spacer. First torque bolt to specifications, then torque locknut to specifications.



- a** - Special washer head bolt (10-856680)
- b** - Nylon insert locknut (11-826709113)
- c** - Spacer
- d** - Flat washers
- e** - Nylon insert locknut (11-826709113)

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

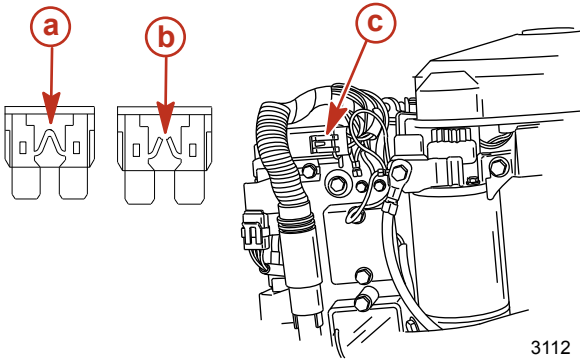
## Fuse Replacement - Electric Start Models

**IMPORTANT:** Always carry spare SFE 20 amp fuses.

The electric starting circuit is protected from overload by an SFE 20 amp fuse. If the fuse is blown, the electric starter motor will not operate. Try to locate and correct the cause of the overload. If the cause is not found, the fuse may blow again.

# MAINTENANCE

1. 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** - Fuse holder

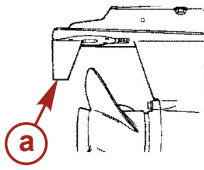
## Corrosion Control Anode

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

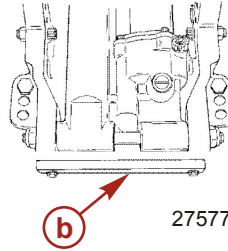
Each anode requires periodic inspection, especially in saltwater which will accelerate the erosion. To maintain this corrosion protection, always replace the anode before it is completely eroded. Never paint or apply a protective coating on the anode as this will reduce effectiveness of the anode.

# MAINTENANCE

One of the anodes is the trim tab installed on the gearcase. Another anode is installed on the bottom of the transom bracket assembly.



**a** - Trim tab



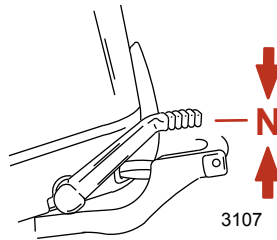
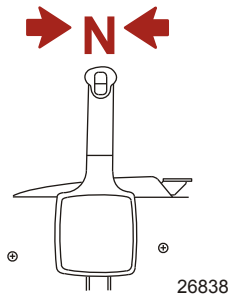
**b** - Transom bracket anode

## Propeller Replacement

### ⚠ WARNING

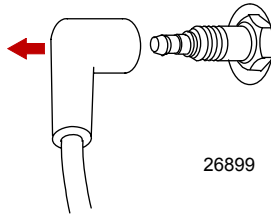
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the drive unit in neutral and engage the lanyard stop switch to prevent the engine from starting. Place a block of wood between the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

1. Shift outboard to neutral (N) position.

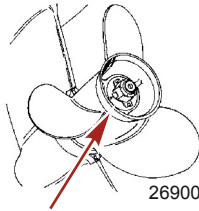


## MAINTENANCE

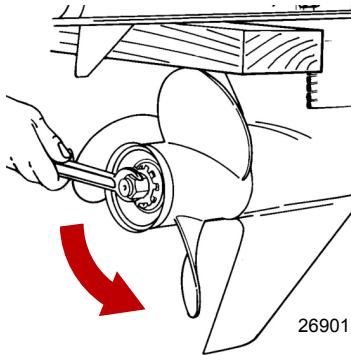
2. Remove the spark plug leads to prevent engine from starting.



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



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

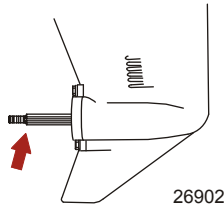




5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.



# MAINTENANCE

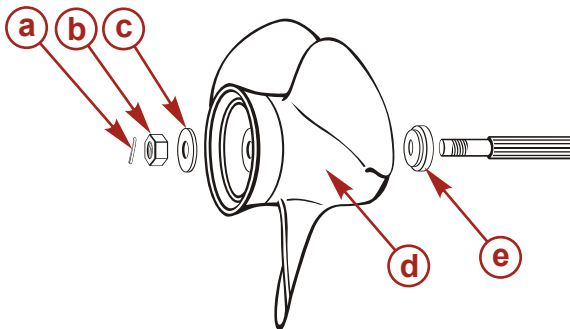
6. Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C with Teflon.



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

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

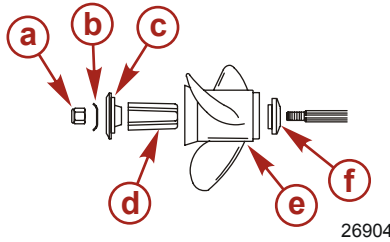


38055

- a** - Propeller nut
- b** - Propeller nut retainer
- c** - Propeller
- d** - Forward thrust hub

# MAINTENANCE

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

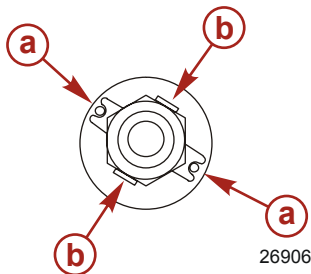


- a** - Propeller nut  
**b** - Propeller nut retainer  
**c** - Rear thrust hub  
**d** - Replaceable drive sleeve  
**e** - Propeller  
**f** - Forward thrust hub

9. Place propeller nut retainer over pins. Place a block of wood between gearcase and propeller and tighten propeller nut to specifications, aligning flat sides of the propeller nut with tabs on the propeller nut retainer.

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

10. Secure propeller nut by bending tabs up and against the flats on the propeller nut.



- a** - Pins  
**b** - Tabs

11. Reinstall spark plug leads.

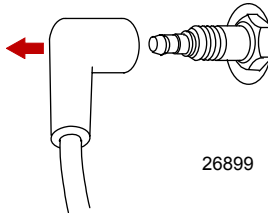
# MAINTENANCE

## Spark Plug Inspection and Replacement

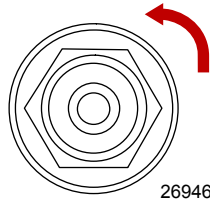
### WARNING

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.

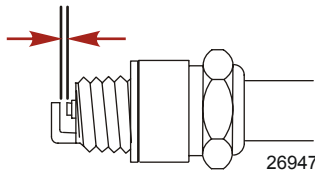
1. Remove the spark plug boots. Twist the rubber boots slightly and pull off.



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

1.0 mm (0.040 in.)



# MAINTENANCE

- 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.

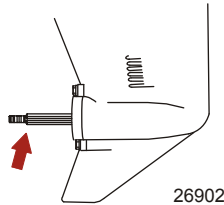
Description	Nm	lb. in.	lb. ft.
Spark plug	27		20

## Lubrication Points


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

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

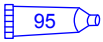
- Propeller Shaft - Refer to **Propeller Replacement** for removal and installation of the propeller. Coat the entire propeller shaft with lubricant to prevent the propeller hub from corroding and seizing to the shaft.



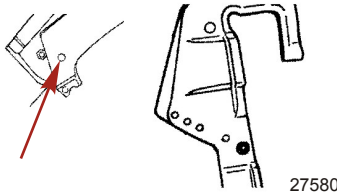
- Lubricate the following with Quicksilver or Mercury Precision Lubricants 2-4-C with Teflon or Special Lubricant 101.

Tube Ref No.	Description	Where Used	Part No.
 34	Special Lubricant 101	Swivel bracket, tilt tube, co-pilot shaft, transom clamp screws, shift handle, steering cable grease fitting	92-802865Q02

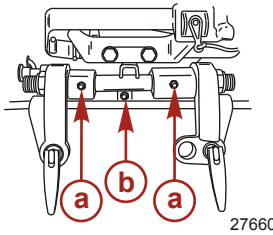
# MAINTENANCE

Tube Ref No.	Description	Where Used	Part No.
	2-4-C with Teflon	Swivel bracket, tilt tube, co-pilot shaft, transom clamp screws, shift handle, steering cable grease fitting	92-802859A 1

- Swivel Bracket - Lubricate through fitting.



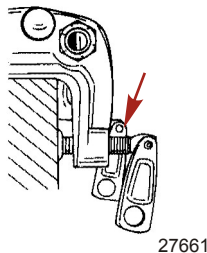
- Tilt Tube - Lubricate through fitting.
- Co-Pilot Shaft (Tiller Handle Models) - Lubricate through fitting. Move the steering friction lever back and forth while lubricating.



**a** - Tilt tube

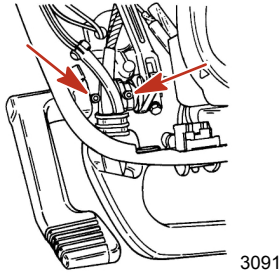
**b** - Co-Pilot shaft

- Lubricate threads of transom clamp screws (if equipped).



# MAINTENANCE

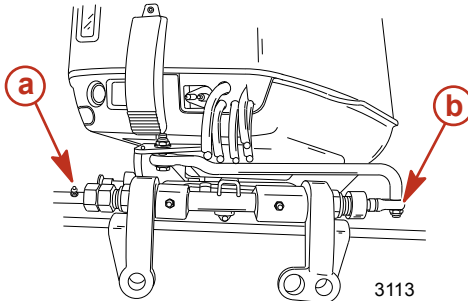
- Shift Handle (Tiller Handle Models) - Lubricate through fittings.



- Steering Cable Grease Fitting (If equipped) - Rotate steering wheel to fully retract the steering cable end into the outboard 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.



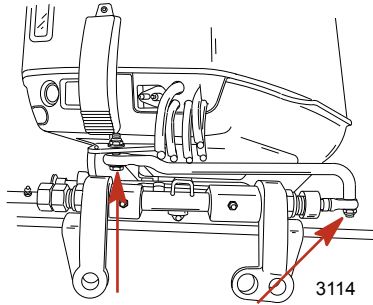
**a** - Fitting

**b** - Steering cable end

3. Lubricate the following with light weight oil.

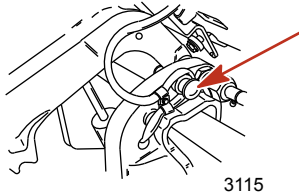
# MAINTENANCE

- Steering Link Rod Pivot Points - Lubricate points.

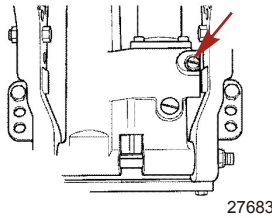


## Checking Power Trim Fluid

1. Tilt outboard to the full up position and engage the tilt lock pin.



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 Lubricants Power Trim & Steering Fluid. If not available, use automotive (ATF) automatic transmission fluid.



# MAINTENANCE

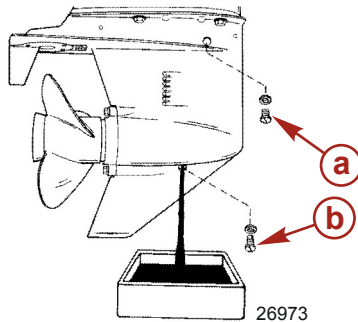
## Gearcase Lubrication

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. Place a drain pan below outboard.
3. 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 440 ml (14.9 fl. oz.).



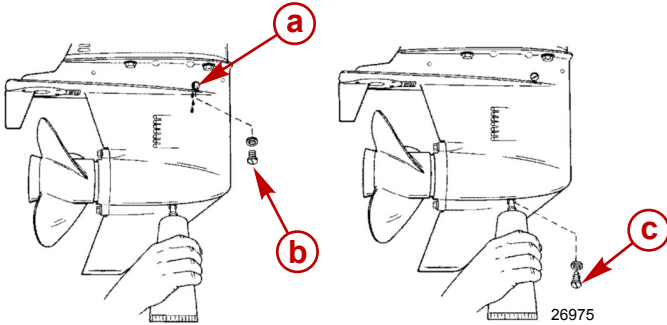
# MAINTENANCE

## GEARCASE LUBRICANT RECOMMENDATION

Mercury or Quicksilver Premium or High Performance Gear Lubricant.

## CHECKING LUBRICANT LEVEL AND REFILLING GEARCASE

1. Place outboard in a vertical operating position.
2. Remove vent plug.



**a** - Vent hole  
**b** - Vent plug

**c** - Fill/drain plug

3. Place lubricant tube into the fill hole and add lubricant until it appears at the vent 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.

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


- Portable fuel tank - Pour the required amount of gasoline stabilizer (follow instructions on container) into fuel tank. Tip fuel tank back and forth to mix stabilizer with the fuel.
- Permanently installed fuel tank - Pour the required amount of gasoline stabilizer (follow instructions on container) into a separate container and mix with approximately 1 liter (1 U.S. quart) of gasoline. Pour this mixture into fuel tank.
- Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for ten minutes to fill the engine fuel system.

# STORAGE

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

## Protecting External Outboard Components

- Lubricate all outboard components listed in **Maintenance - Inspection and Maintenance Schedule**.
- 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.
	Corrosion Guard	External metal surfaces	92-802878 55

## Protecting Internal Engine Components

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

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

- Place the outboard in water or connect flushing attachment for circulating cooling water. Start the engine and let it run in neutral to warm up.
- With engine running at fast idle, stop the fuel flow by disconnecting the remote fuel line. When engine begins to stall, quickly spray Quicksilver or Mercury Precision Lubricants Storage Seal into carburetor until engine stops from lack of fuel.
- Remove the spark plugs and inject a five second spray of storage seal around the inside of the cylinder.

# STORAGE

- Rotate the flywheel manually several times to distribute the storage seal in the cylinder. Reinstall spark plug.

## Gearcase

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

## Positioning Outboard for Storage

Store outboard in an upright (vertical) position to allow water to drain out of 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 (Electric Start Models)

### POSSIBLE CAUSES

- Blown fuse in the starting circuit. Refer to **Maintenance** section.
- Outboard is not shifted to neutral position.
- Weak battery or battery connections are loose or corroded.
- Ignition key switch failure.
- Wiring or electrical connection faulty.
- Starter motor or starter solenoid failure.

## Engine Will Not Start

### POSSIBLE CAUSES

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

## Engine Runs Erratically

### POSSIBLE CAUSES

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

# TROUBLESHOOTING

- Incorrect setup and adjustments.
- Fuel is being restricted to the engine.
  - Engine fuel filter is obstructed. Refer to **Maintenance** section.
  - Fuel tank filter obstructed.
  - Stuck anti-siphon valve on built in fuel tank.
  - Fuel line is kinked or pinched.
- Fuel pump failure.
- Ignition system component failure.

## Performance Loss

### POSSIBLE CAUSES

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

## Battery Will Not Hold Charge

### POSSIBLE CAUSES

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

# 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:

- Your name and address
- Daytime telephone number

## OWNER SERVICE ASSISTANCE

- 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.

<b>United States, Canada</b>		
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	

<b>Australia, Pacific</b>		
Telephone	(61) (3) 9791-5822	Mercury Marine Australia 132-140 Frankston Road Dandenong, Victoria 3164 Australia
Fax	(61) (3) 9793-5880	

<b>Europe, Middle East, Africa</b>		
Telephone	(32) (87) 32 • 32 • 11	Marine Power - Europe, Inc. Parc Industriel de Petit-Rechain B-4800 Verviers, Belgium
Fax	(32) (87) 31 • 19 • 65	

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

<b>Japan</b>		
Telephone	81-053-423-2500	Mercury Marine - Japan Anshin-cho 283-1 Hamamatsu Shizuoka-ken, Japan 435-0005 Japan
Fax	81-053-423-2510	



## OWNER SERVICE ASSISTANCE

Asia, Singapore		
Telephone	5466160	Mercury Marine Singapore 72 Loyang Way Singapore, 508762
Fax	5467789	

