



MERCURY[®]

8M0118484 416 eng



**Operation
Maintenance
and
Installation
Manual**

40/50 TwoStroke

© 2016 Mercury Marine

Welcome

You have selected one of the finest marine power packages available. It incorporates numerous design features to ensure operating ease and durability. With proper care and maintenance, you will enjoy using this product for many boating seasons. To ensure maximum performance and carefree use, we ask that you thoroughly read this manual.

The Operation and Maintenance Manual contains specific instructions for using and maintaining your product. We suggest that this manual remain with the product for ready reference whenever you are on the water.

Thank you for purchasing one of our products. We sincerely hope your boating will be pleasant!

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

Name / function:

John Pfeifer, President,
Mercury Marine




Read This Manual Thoroughly

IMPORTANT: If you do not understand any portion of this manual, contact your dealer. Your dealer can also provide a demonstration of actual starting and operating procedures.

Notice

Throughout this publication, and on your power package, warnings, cautions,

and notices, accompanied by the International Hazard Symbol , may be used to alert the installer and user to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully.

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance with these special instructions while performing the service, plus common sense operation, are major accident prevention measures.

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.

IMPORTANT: Identifies information essential to the successful completion of the task.

NOTE: Indicates information that helps in the understanding of a particular step or action.

IMPORTANT: The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard, and the safety of all occupants aboard. We strongly recommend that the operator read this Operation and Maintenance Manual and thoroughly understand the operational instructions for the power package and all related accessories before the boat is used.

⚠ WARNING

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

The serial numbers are the manufacturer's keys to numerous engineering details that apply to your Mercury Marine power package. When contacting Mercury Marine about service, **always specify model and serial numbers.**

Descriptions and specifications contained herein were in effect at the time this was approved for printing. Mercury Marine, whose policies are based on continuous improvement, reserves the right to discontinue models at any time or to change specifications or designs without notice and without incurring obligation.

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 Manual included with the product. The Warranty Manual 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.

Copyright and Trademark Information

© **MERCURY MARINE. All rights reserved. Reproduction in whole or in part without permission is prohibited.**

Alpha, Axius, Bravo One, Bravo Two, Bravo Three, Circle M with Waves Logo, K-planes, Mariner, MerCathode, MerCruiser, Mercury, Mercury with Waves Logo, Mercury Marine, Mercury Precision Parts, Mercury Propellers, Mercury Racing, MotorGuide, OptiMax, Quicksilver, SeaCore, Skyhook, SmartCraft, Sport-Jet, Verado, VesselView, Zero Effort, Zeus, #1 On the Water and We're Driven to Win are registered trademarks of Brunswick Corporation. Pro XS is a trademark of Brunswick Corporation. Mercury Product Protection is a registered service mark of Brunswick Corporation.

Identification Records

Please record the following applicable information:

Outboard		
Engine Model and Horsepower		
Engine Serial Number		
Gear Ratio		
Propeller Number	Pitch	Diameter
Hull Identification Number (HIN)		Purchase Date
Boat Manufacturer	Boat Model	Length
Exhaust Gas Emissions Certification Number (Europe Only)		

General Information

Boater's Responsibilities.....	1
Before Operating Your Outboard.....	1
Boat Horsepower Capacity.....	1
High-Speed and High-Performance Boat Operation.....	2
Outboard Remote Control Models.....	2
Remote Steering Notice.....	3
Lanyard Stop Switch.....	4
Protecting People in the Water.....	6
Passenger Safety Message - Pontoon Boats and Deck Boats.....	7
Wave and Wake Jumping.....	8
Impact with Underwater Hazards.....	9
Exhaust Emissions.....	10
Selecting Accessories for Your Outboard.....	12
Safe Boating Recommendations.....	12
Recording Serial Number.....	14
40/50 Specifications (Include English Units).....	15

Transporting

Removing the Motor.....	30
Carrying the Motor.....	30
Trailing Boat/Outboard.....	31
Mooring with the Engine Tilted Up.....	31
Storing the Motor.....	35
Transporting Portable Fuel Tanks.....	37

Fuel and Oil

Fuel Requirements.....	38
Oil Recommendation.....	39
Non-Oil Injected Models: MH, EH.....	39
Oil Injected Models: EHO, EHPTO, EO, EPTO.....	40

Features and Controls

Remote Control Features.....	42
Tilting Outboard.....	42
Shallow Water Operation.....	42
Trim Adjustment.....	44
Steering Friction Adjustment.....	47
Throttle Grip Turning Friction Adjustment.....	48
Trim Tab Adjustment.....	48

Operation

Prestarting Check List.....	51
Operating in Freezing Temperatures.....	51
Operating in Saltwater or Polluted Water.....	51
Operating at High Elevations.....	52
Engine Break-in Procedure.....	52
Starting the Engine.....	52
Gear Shifting.....	60
Emergency Starting.....	63
Stopping the Engine.....	67

Maintenance

Outboard Care.....	70
EPA Regulations.....	70
EPA Emissions.....	71
Inspection and Maintenance Schedule.....	71
Flushing the Cooling System.....	72
Top Cowl Removal and Installation.....	74
Battery Inspection	75
Fuel System.....	75
Fuse Replacement - Electric Start Remote Control Models.....	77
Corrosion Control Anode.....	78
Propeller Replacement.....	78
Spark Plug Inspection and Replacement.....	81
Lubrication Points.....	83
Gearcase Lubrication.....	83
Submerged Outboard.....	85

Storage

Storage Preparation.....	87
Protecting External Outboard Components.....	87
Protecting Internal Engine Components.....	88
Gearcase.....	88
Positioning Outboard for Storage.....	88
Battery Storage.....	88
Pre-Season Check.....	88

Troubleshooting

Starter Motor Will Not Crank the Engine (Electric Start Models).....	90
Engine Will Not Start.....	90
Engine Runs Erratically.....	90
Performance Loss.....	91
Battery Will Not Hold Charge.....	91

Installation

Mercury Marine Validated Engine Mounting Hardware.....	92
Accessories Mounted to the Transom Clamp Bracket.....	92
Boat Horsepower Capacity.....	96
Fastening the Outboard to the Transom.....	96
Installing Outboard.....	101
Installing the Remote Control Box.....	106
Installation of the Remote Control Cables (Box Side).....	106
Installation of the Remote Control Box on your Boat.....	106
Connecting the Remote Control Cable to the Engine.....	107
Connecting Electrical Harnesses.....	110
Attaching the Steering Link Rod.....	113
Battery Installation	114
Propeller Selection.....	115

Associated Parts

Associated Parts.....	117
Propeller Selection.....	117
NOTE:.....	118

Accessories

Optional Accessories.....	120
---------------------------	-----

Owner Service Assistance

Service Assistance.....	124
Ordering Literature.....	126

Maintenance Log

Maintenance Log.....	128
----------------------	-----

GENERAL INFORMATION

Boater's Responsibilities

The operator (driver) is responsible for the correct and safe operation of the boat and the safety of its occupants and general public. It is strongly recommended that each operator read and understand this entire manual before operating the outboard.

Be sure that 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.

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.

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.

GENERAL INFORMATION

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 do not 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.

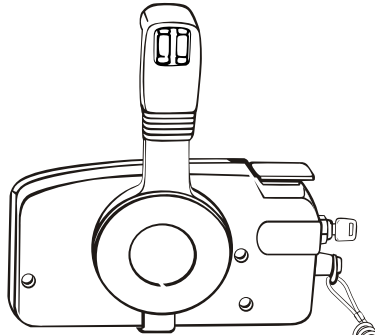
Outboard Remote Control Models

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.



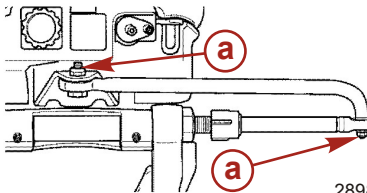
37882

Remote Steering Notice

⚠ 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.

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.



28984

a - Self-locking nuts

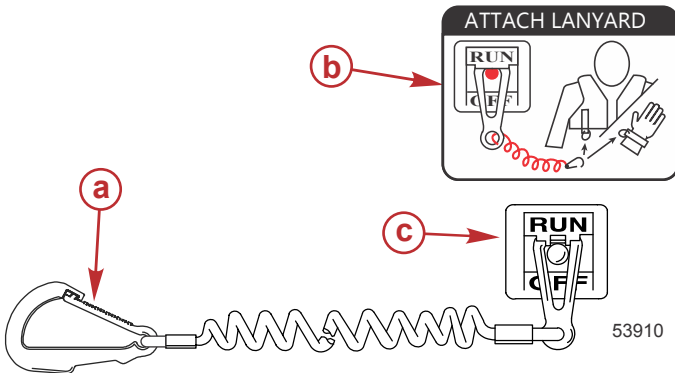
GENERAL INFORMATION

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.

A decal near the lanyard stop switch is a visual reminder for the operator to attach the lanyard to their personal flotation device (PFD) or wrist.

The lanyard cord is 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 clip on the other end for attaching to the operator's PFD or wrist. The lanyard is coiled to make its at-rest condition as short as possible to minimize the likelihood of lanyard entanglement with nearby objects. Its stretched-out length is made to minimize the likelihood of accidental activation should the operator choose to move around in an area close to the normal operator's position. If it is desired to have a shorter lanyard, wrap the lanyard around the operator's wrist or leg, or tie a knot in the lanyard.



- a** - Lanyard cord clip
- b** - Lanyard decal
- c** - Lanyard stop switch

Read the following Safety Information before proceeding.

GENERAL INFORMATION

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

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

We strongly recommend that other occupants be instructed on proper starting and operating procedures should they be required to operate the engine in an emergency (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.

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.

GENERAL INFORMATION

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

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

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

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 THE BOAT IS STATIONARY

▲ WARNING

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

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

GENERAL INFORMATION

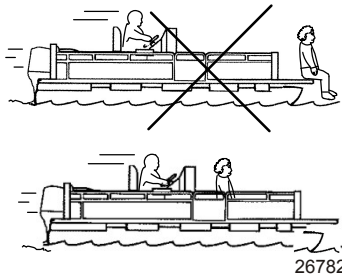
Passenger Safety Message - Pontoon Boats and Deck Boats

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

BOATS HAVING AN OPEN FRONT DECK

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

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



▲ WARNING

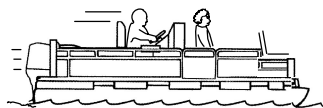
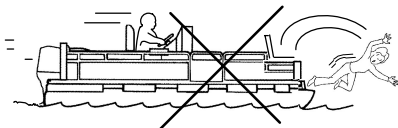
Sitting or standing in an area of the boat not designed for passengers at speeds above idle can cause serious injury or death. Stay back from the front end of deck boats or raised platforms and remain seated while the boat is in motion.

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.

GENERAL INFORMATION

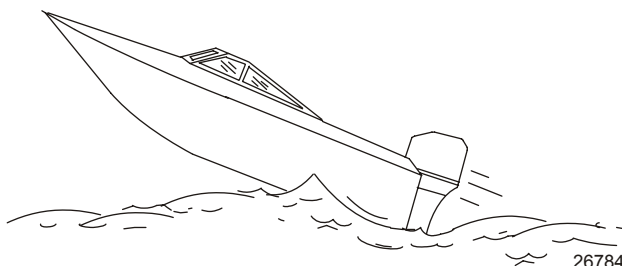
Any unexpected, sudden reduction in boat speed could result in the elevated passenger falling over the front of the boat.



26783

Wave and Wake Jumping

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



26784

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

▲ WARNING

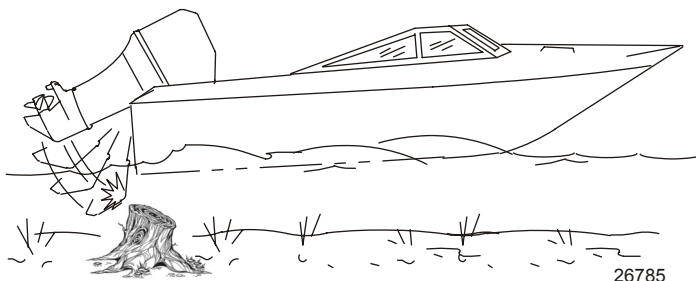
Wave or wake jumping can cause serious injury or death from occupants being thrown within or out of the boat. Avoid wave or wake jumping whenever possible.

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.

GENERAL INFORMATION

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.
- 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.

GENERAL INFORMATION

⚠ 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.

Exhaust Emissions

BE ALERT TO CARBON MONOXIDE POISONING

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

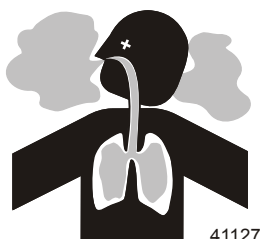
Early symptoms of carbon monoxide poisoning, which are similar to the symptoms of seasickness and intoxication, include headache, dizziness, drowsiness, and nausea.

⚠ WARNING

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

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

STAY CLEAR OF EXHAUST AREAS



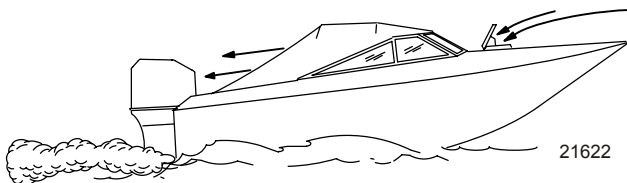
Engine exhaust gases contain harmful carbon monoxide. Avoid areas of concentrated engine exhaust gases. When engines are running, keep swimmers away from the boat, and do not sit, lie, or stand on swim platforms or boarding ladders. While underway, do not allow passengers to be positioned immediately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

GENERAL INFORMATION

GOOD VENTILATION

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

Example of desired air flow through the boat:

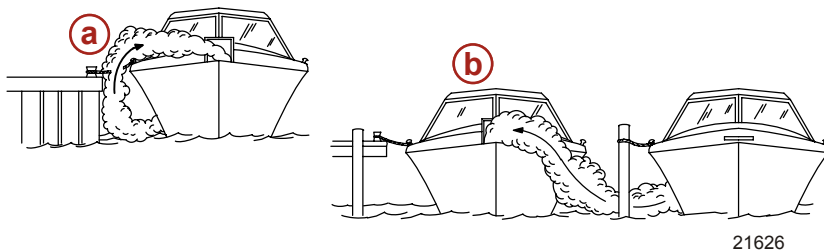


POOR VENTILATION

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

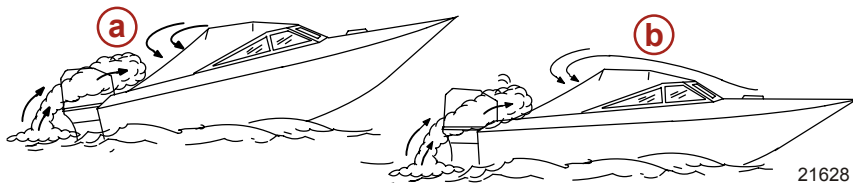
Although the occurrence is rare, on a very calm day, swimmers and passengers in an open area of a stationary boat that contains, or is near, a running engine may be exposed to a hazardous level of carbon monoxide.

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



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

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



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

GENERAL INFORMATION

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 Recommendations

To safely enjoy the waterways, familiarize yourself with local and all other governmental boating regulations and restrictions and consider the following suggestions.

Know and obey all nautical rules and laws of the waterways.

- We recommend that all powerboat operators complete a boating safety course. In the U.S., the U.S. Coast Guard Auxiliary, the Power Squadron, the Red Cross, and your state or provincial boating law enforcement agency provide courses. For more information in the U.S., call the Boat U.S. Foundation at 1-800-336-BOAT (2628).

Perform safety checks and required maintenance.

- Follow a regular schedule and ensure that all repairs are properly made.

Check safety equipment onboard.

- Here are some suggestions of the types of safety equipment to carry when boating:
 - Approved fire extinguishers
 - Signal devices: flashlight, rockets or flares, flag, and whistle or horn
 - Tools necessary for minor repairs
 - Anchor and extra anchor line
 - Manual bilge pump and extra drain plugs
 - Drinking water
 - Radio
 - Paddle or oar
 - Spare propeller, thrust hubs, and an appropriate wrench
 - First aid kit and instructions
 - Waterproof storage containers

GENERAL INFORMATION

- Spare operating equipment, batteries, bulbs, and fuses
- Compass and map or chart of the area
- Personal flotation device (one per person onboard)

Watch for signs of weather change and avoid foul weather and rough-sea boating.

Tell someone where you are going and when you expect to return.

Passenger boarding.

- Stop the engine whenever passengers are boarding, unloading, or are near the back (stern) of the boat. Shifting the drive unit into neutral is not sufficient.

Use personal flotation devices.

- Federal law requires that there be a U.S. Coast Guard-approved life jacket (personal flotation device), correctly sized and readily accessible for every person onboard, plus a throwable cushion or ring. We strongly advise that everyone wear a life jacket at all times while in the boat.

Prepare other boat operators.

- Instruct at least one person onboard in the basics of starting and operating the engine and boat handling in case the driver becomes disabled or falls overboard.

Do not overload your boat.

- Most boats are rated and certified for maximum load (weight) capacities (refer to your boat's capacity plate). Know your boat's operating and loading limitations. Know if your boat will float if it is full of water. When in doubt, contact your authorized Mercury Marine dealer or the boat manufacturer.

Ensure that 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 backs of seats, gunwales, transom, bow, decks, raised fishing seats, and any rotating fishing seat. Passengers should not sit or ride anywhere that sudden unexpected acceleration, sudden stopping, unexpected loss of boat control, or sudden boat movement could cause a person to be thrown overboard or into the boat. Ensure that all passengers have a proper seat and are in it before any boat movement.

Never operate a boat while under the influence of alcohol or drugs. It is the law.

- Alcohol or drugs can impair your judgment and greatly reduce your ability to react quickly.

Know your boating area and avoid hazardous locations.

Be alert.

GENERAL INFORMATION

- 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 the boat is above idle or planing transition speed. Watch out for others, the water, and your wake.

Never drive your boat directly behind a water skier.

- Your boat traveling at 40 km/h (25 mph) will overtake a fallen skier who is 61 m (200 ft) in front of you in five 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 attend to the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.

Report accidents.

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

Recording Serial Number

It is important to record the serial number and other important information for future reference.

Please record the serial number of the engine as indicated (on the lower engine cover and the cylinder block) in the space below. This number will come in handy in the event of theft and it can help you to quickly identify the product type.

Serial number:
Model year:
Model designation:
Year manufactured:
Certified Europe Insignia (as applicable):

GENERAL INFORMATION

40/50 Specifications (Include English Units)

Model	40/50MH	40/50EH	40/50EHO
Overall length	1,143 mm		
Overall width	384 mm		
Overall height	S = 1,225 mm, L = 1,352 mm, UL = 1,479 mm		
Transom height	S = 403 mm, L = 530 mm, UL = 657 mm		
Weight	S = 72.0, L = 73.5, UL = 75.0 kg	L = 78.5 kg	L = 80.0, UL = 81.5 kg
Maximum output	40 = 29.4 kW, 50 = 36.8 kW		
Full throttle RPM	40 = 5000–5700, 50 = 5150–5850		
Number of cylinders	3		
Displacement	697 mL		
Bore and stroke	68 x 64 mm		
Exhaust system	Through hub exhaust		
Lubrication	Premixed fuel		Oil injection
Fuel mixing ratio	50:1		120:1–50:1
Cooling system	Thermostat controlled		
Starting system	Manual	Electric (with manual backup)	
Ignition	CDI		
Spark plugs	40: NGK B7HS-10/BR7HS-10 or Champion L-82C/ RL-82C (1.0 mm gap), 50: NGK B8HS-10/BR8HS-10 or Champion L-78C/RL-78C (1.0 mm gap)		
Alternator	12 V, 130 W (12 V, 11 A)		
Trim system	Manual, 6 position		
Engine oil	Mercury or Quicksilver oil or recommended oil (TC-W3)		
Gear oil	Mercury or Quicksilver gear oil or API GL5, SAE #80 to #90, approximately 500 mL		
Fuel tank capacity	25 L (6.6 US gal)		
Engine oil capacity	–		Approximately 2.0 L (0.53 US gal)
Gear reduction ratio	13:24		
Fuel	Unleaded regular gasoline pump posted 87 octane (research octane rating of 91)		

GENERAL INFORMATION

Model	40/50EHPTO	40/50EO	40/50EPTO
Overall length	1,143 mm	630 mm	
Overall width	384 mm	340 mm	355 mm
Overall height	S = 1,225, L = 1,352, UL = 1,479 mm	S = 1,212, L = 1,339, UL = 1,466 mm	
Transom height	S = 403, L = 530, UL = 657		
Weight	S = 87.5, L = 89.0, UL = 90.5 kg	S = 74.5, L = 76.0 kg	S = 83.5, L = 85.0, UL = 86.5 kg
Maximum output	40 = 29.4 kW, 50 = 36.8 kW		
Full throttle RPM	40 = 5000–5700, 50 = 5150–5850		
Number of cylinders	3		
Displacement	697 mL		
Bore and stroke	68 x 64 mm		
Exhaust system	Through hub exhaust		
Lubrication	Oil injection		
Fuel mixing ratio	120:1–50:1		
Cooling system	Thermostat controlled		
Starting system	Electric (manual backup)	Electric	
Ignition	CDI		
Spark plugs	40: NGK B7HS-10/BR7HS-10 or Champion L-82C/ RL-82C (1.0 mm gap), 50: NGK B8HS-10/BR8HS-10 or Champion L-78C/RL-78C (1.0 mm gap)		
Alternator	12 V, 130 W (12 V, 11 A)		
Trim system	Power trim	Manual, 6 position	Power trim
Engine oil	Mercury or Quicksilver motor oil or recommended oil (TC-W3)		
Gear oil	Mercury or Quicksilver gear oil or API GL5, SAE #80 to #90, approximately 500 mL		
Fuel tank capacity	25 L (6.6 US gal)		
Engine oil capacity	Approximately 2.0 L (0.53 US gal)		
Gear reduction ratio	13:24		
Fuel	Unleaded regular gasoline pump posted 87 octane (research octane rating of 91)		

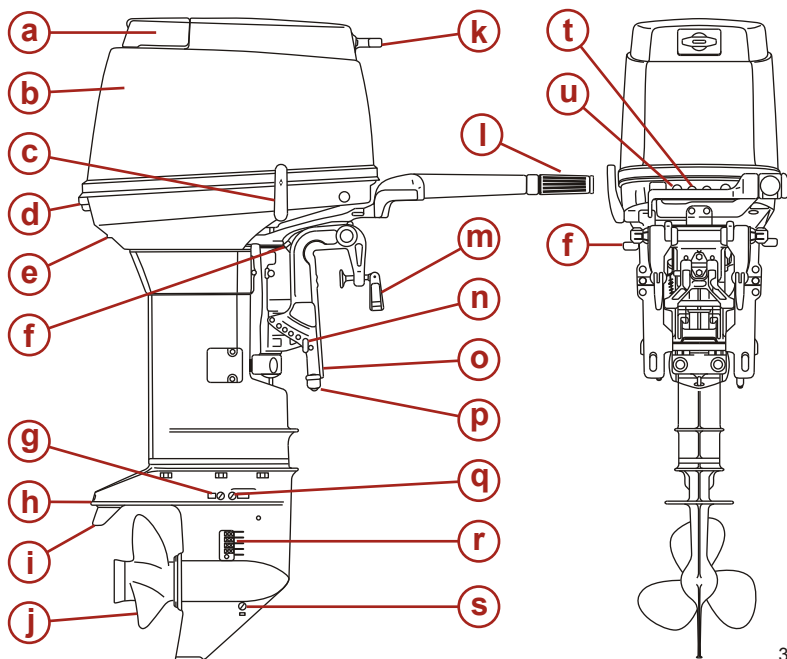
GENERAL INFORMATION

Model	W50MH	W50EHPT	W50EO
Overall length	1,145 mm	630 mm	
Overall width	384 mm	355 mm	340 mm
Overall height	L = 1,413 mm	L = 1,410 mm	
Transom height	550 mm		
Weight	L = 79.0 kg	L = 84.0 kg	L = 81.5 kg
Maximum output	36.8 kW		
Full throttle RPM	5150–5850		
Number of cylinders	3		
Displacement	697 mL		
Bore and stroke	68 x 64 mm		
Exhaust system	Through hub exhaust		
Lubrication	Premixed fuel		Oil injection
Fuel mixing ratio	50:1		120:1 - 50:1
Cooling system	Thermostat controlled		
Starting system	Manual	Electric (w/ manual backup)	Electric
Ignition	CDI		
Spark plugs	NGK B8HS-10/BR8HS-10 or Champion L-78C/RL-78C (1.0 mm gap)		
Alternator	12 V, 130 W (12 V, 11 A)		
Trim system	Manual, 6 position	Power trim	Manual, 6 position
Engine oil	Mercury or Quicksilver motor oil or recommended oil (TC-W3)		
Gear oil	Mercury or Quicksilver gear oil or API GL5, SAE #80 to #90, approximately 700 mL		
Fuel tank capacity	25 L (6.6 US gal)		
Engine oil capacity	–		Approximately 2.0 L (0.53 US gal)
Gear reduction ratio	12:23		
Fuel	Unleaded regular gasoline pump posted 87 octane (research octane rating of 91)		

GENERAL INFORMATION

COMPONENT IDENTIFICATION

40MH/W50MH



38270

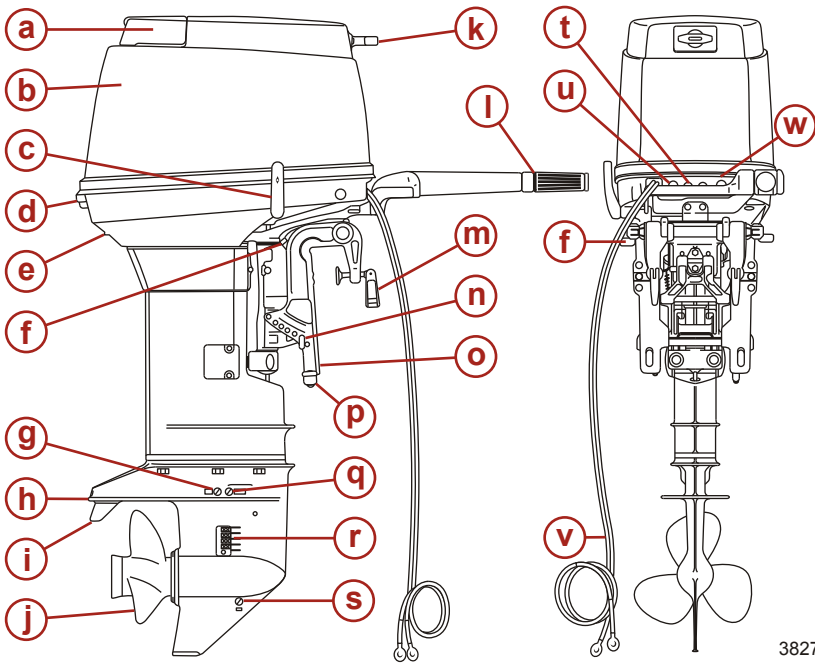
- a** - Tilt handle
- b** - Top cowl
- c** - Shift lever
- d** - Cowl latch
- e** - Water pump indicator hole
- f** - Reverse lock lever
- g** - Water plug
- h** - Anti-ventilation plate
- i** - Trim tab
- j** - Propeller
- k** - Manual start handle
- l** - Throttle grip
- m** - Clamp screw
- n** - Trim position pin
- o** - Transom bracket
- p** - Anode
- q** - Oil drain plug (upper)
- r** - Water intake

GENERAL INFORMATION

- s** - Oil drain plug (lower)
- t** - Stop switch
- u** - Choke knob

GENERAL INFORMATION

40EH/50EH



38271

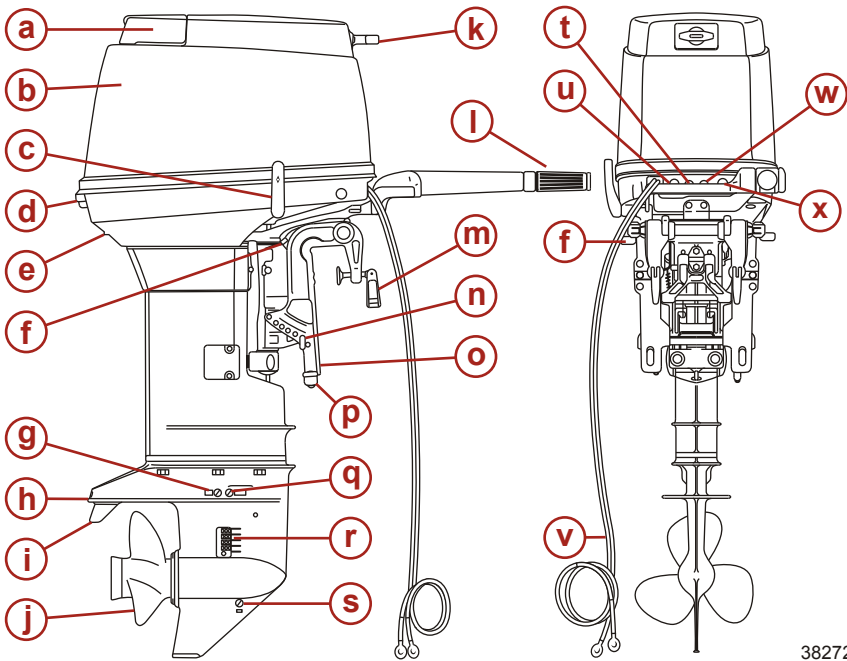
- a** - Tilt handle
- b** - Top cowl
- c** - Shift lever
- d** - Cowl latch
- e** - Water pump indicator hole
- f** - Reverse lock lever
- g** - Water plug
- h** - Anti-ventilation plate
- i** - Trim tab
- j** - Propeller
- k** - Manual start handle
- l** - Throttle grip
- m** - Clamp screw
- n** - Trim position pin
- o** - Transom bracket
- p** - Anode
- q** - Oil drain plug (upper)
- r** - Water intake
- s** - Oil drain plug (lower)

GENERAL INFORMATION

- t** - Stop switch
- u** - Choke knob
- v** - Battery cables
- w** - Start button

GENERAL INFORMATION

40EHO/50EHO



38272

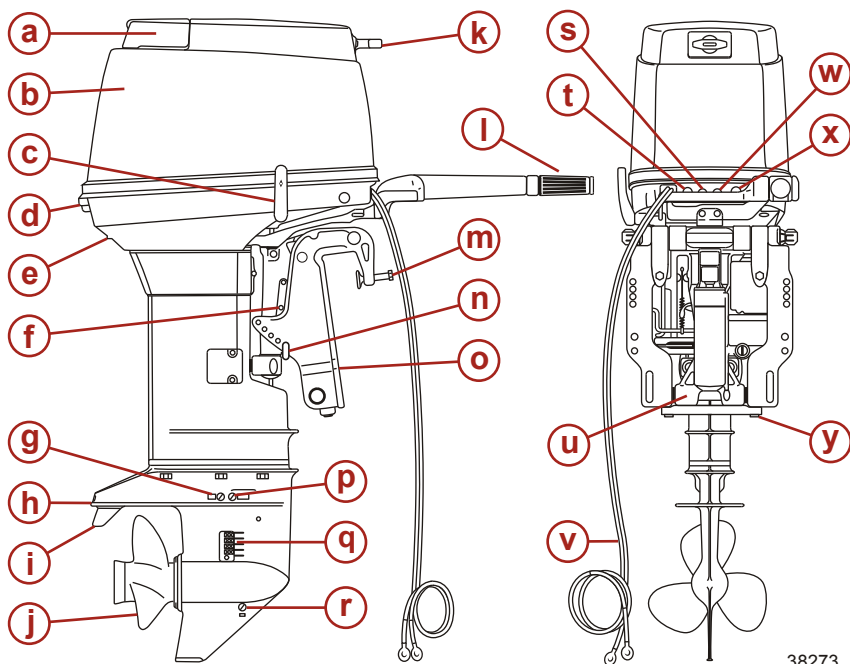
- a** - Tilt handle
- b** - Top cowl
- c** - Shift lever
- d** - Cowl latch
- e** - Water pump indicator hole
- f** - Reverse lock lever
- g** - Water plug
- h** - Anti-ventilation plate
- i** - Trim tab
- j** - Propeller
- k** - Manual start handle
- l** - Throttle grip
- m** - Clamp screw
- n** - Trim position pin
- o** - Transom bracket
- p** - Anode
- q** - Oil drain plug (upper)
- r** - Water intake
- s** - Oil drain plug (lower)

GENERAL INFORMATION

- t** - Stop switch
- u** - Choke knob
- v** - Battery cables
- w** - Low oil light
- x** - Start button

GENERAL INFORMATION

40EHPTO/50EHPTO



38273

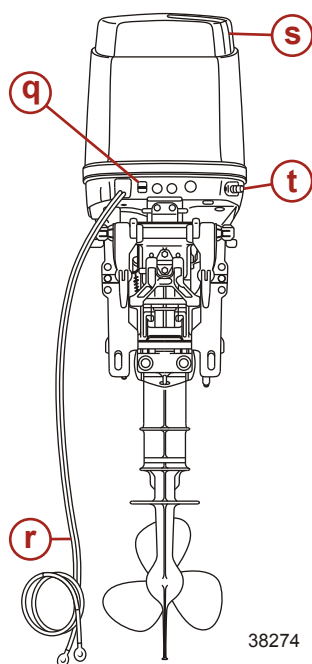
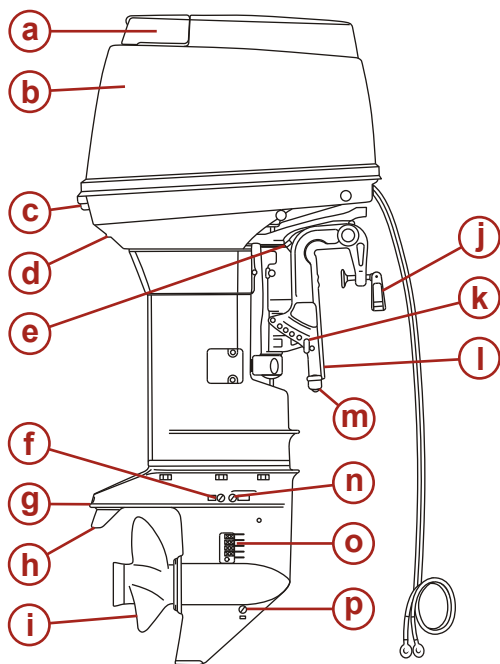
- a** - Tilt handle
- b** - Top cowl
- c** - Shift lever
- d** - Cowl latch
- e** - Water pump indicator hole
- f** - Tilt stopper
- g** - Water plug
- h** - Anti-ventilation plate
- i** - Trim tab
- j** - Propeller
- k** - Manual start handle
- l** - Throttle grip
- m** - Clamp screw
- n** - Trim position pin
- o** - Transom bracket
- p** - Oil drain plug (upper)
- q** - Water intake
- r** - Oil drain plug (lower)
- s** - Stop switch

GENERAL INFORMATION

- t** - Choke knob
- u** - Power trim and tilt
- v** - Battery cables
- w** - Low oil light
- x** - Start button
- y** - Anode

GENERAL INFORMATION

40EO/50EO



38274

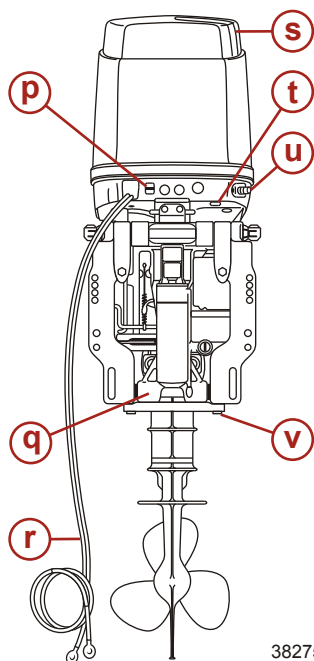
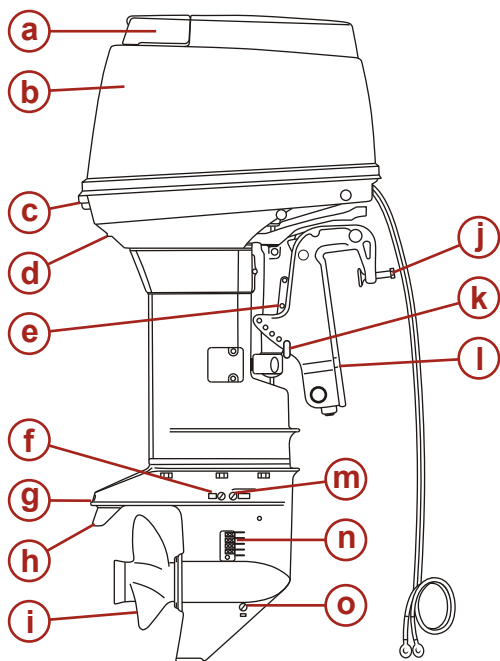
- a** - Tilt handle
- b** - Top cowl
- c** - Cowl latch
- d** - Water pump indicator hole
- e** - Reverse lock lever
- f** - Water plug
- g** - Anti-ventilation plate
- h** - Trim tab
- i** - Propeller
- j** - Clamp screw
- k** - Trim position pin
- l** - Transom bracket
- m** - Anode
- n** - Oil drain plug (upper)
- o** - Water intake
- p** - Oil drain plug (lower)
- q** - Choke knob
- r** - Battery cables
- s** - Oil fill door

GENERAL INFORMATION

t- Fuel connector

GENERAL INFORMATION

40EPTO/50EPTO



38275

- a** - Tilt handle
- b** - Top cowl
- c** - Cowl latch
- d** - Water pump indicator hole
- e** - Tilt stopper
- f** - Water plug
- g** - Anti-ventilation plate
- h** - Trim tab
- i** - Propeller
- j** - Clamp screw
- k** - Trim position pin
- l** - Transom bracket
- m** - Oil drain plug (upper)
- n** - Water intake
- o** - Oil drain plug (lower)
- p** - Choke knob
- q** - Power trim and tilt
- r** - Battery cables
- s** - Oil fill door

GENERAL INFORMATION

- t** - Power trim and tilt switch
- u** - Fuel connector
- v** - Anode

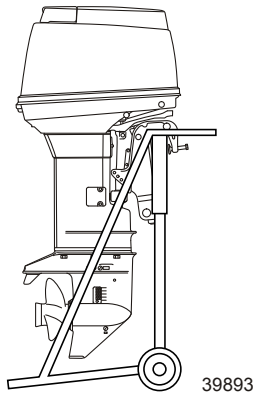
TRANSPORTING

Removing the Motor

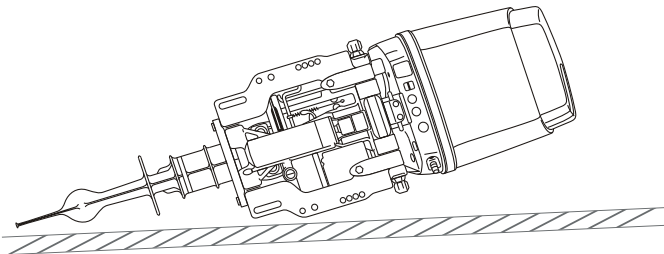
1. Verify the engine has cooling water supplied.
2. Disconnect the fuel connector and run the engine out of fuel. Pull the choke out when the engine begins to stall. This will help evacuate the remaining fuel out of the carburetors.
3. After the engine has stalled, the remote control cable, the battery cables, and the bracket fixing bolts and nuts from the motor.
4. Remove the motor from the hull and completely drain the water from the outboard. Be sure to keep the engine higher than the propeller whenever you carry the motor.

Carrying the Motor

Be sure to keep the engine vertical whenever you carry the motor.



When carrying or putting the engine up for storage, make sure the side with the electric pump or the power trim and tilt is down, otherwise air will enter the power trim and tilt pump system.



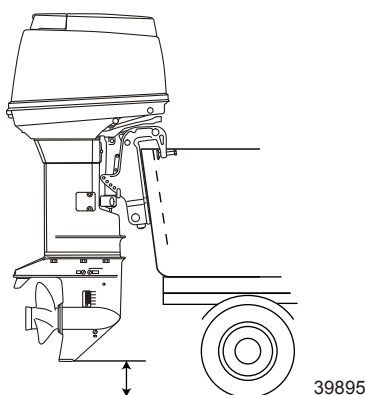
38384

TRANSPORTING

Trailing Boat/Outboard

The boat should be trailered with the outboard in the vertical (normal running), fully down position.

NOTE: *Trailing in the tilted position may cause damage to the motor, boat, etc. If trailing with the engine fully down is not acceptable (the gearcase skeg is too close to the road in a vertical position), fix the motor securely using a device (like a transom saver bar) in the tilted position.*



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

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

IMPORTANT: The tilt lock and shallow water drive feature (tiller handle models) on the outboard are not intended to support the outboard in the tilted position when trailering.

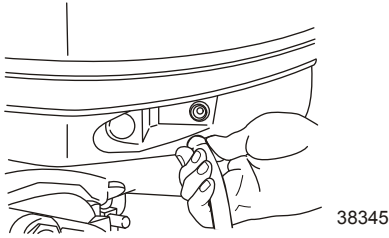
Mooring with the Engine Tilted Up

When the engine has been stopped and it will not be used for a long time, or when mooring in shallow water, tilt the engine up to prevent damage to the propeller and gearcase.

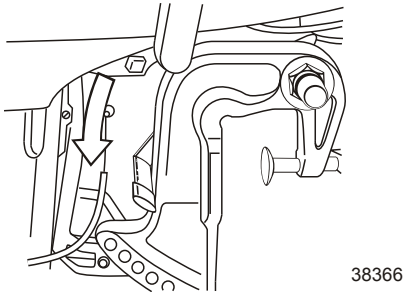
MH, EH, EHO, EO

TRANSPORTING

1. Disconnect the fuel connector from the engine.

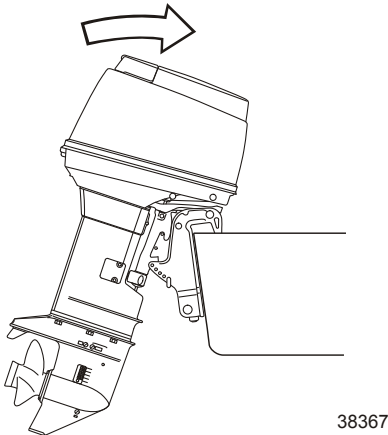


2. Set the reverse lock lever on the starboard side to release by turning it downward.



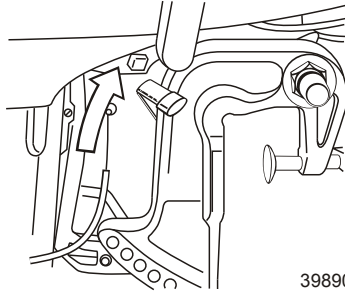
IMPORTANT: When tilting up or down, be sure your finger, or hand, is not placed in-between the swivel bracket and transom bracket. Be sure to tilt down the outboard slowly.

3. Tilt the engine up entirely. The outboard will lock in the raised position.



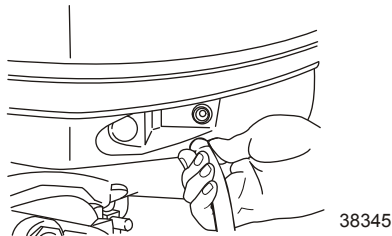
TRANSPORTING

4. To tilt the outboard down. Turn the reverse lock lever upward (toward release). Tilt the engine up slightly and then tilt the engine down. The reverse lock will release automatically.



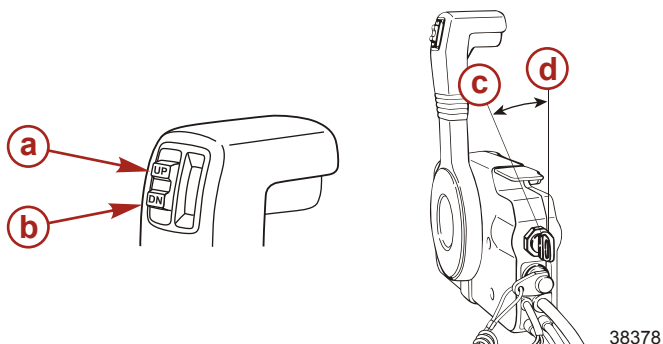
EHPTO, EPTO

1. Disconnect the fuel connector from the engine.



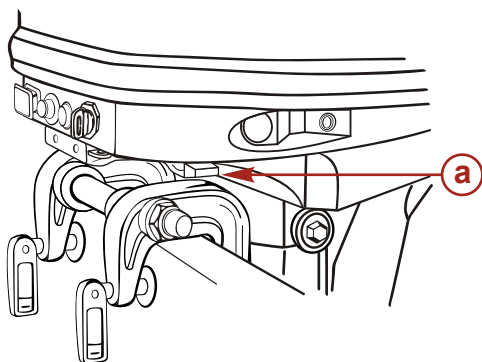
TRANSPORTING

2. Operate the power trim and tilt switch on the remote control lever and tilt the engine up.



- a** - UP
- b** - Down (DN)
- c** - Off
- d** - On

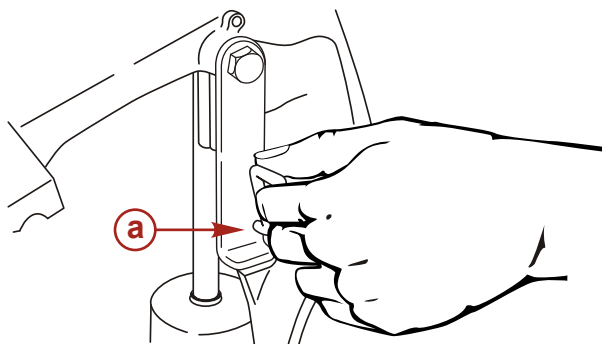
3. The engine can also be tilted up using the switch provided under the bottom cowl.



- a** - Power trim and tilt switch

TRANSPORTING

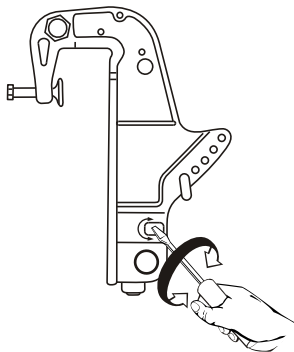
4. Lock the tilt with the tilt stopper after the engine has been tilted up.



38381

a - Tilt stopper

5. Manual tilting: If the engine cannot be trimmed up electrically, turn the manual valve a few turns counterclockwise. This will allow manual tilting of the engine.



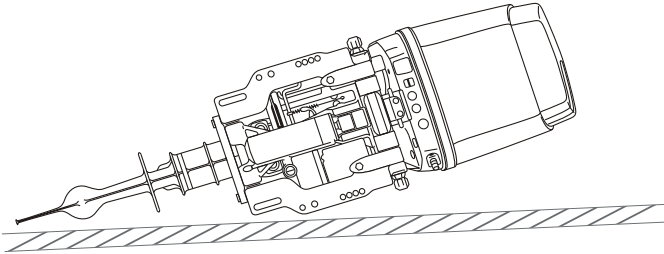
38382

Storing the Motor

Keep the motor in a vertical position when you store it.

TRANSPORTING

NOTE: If you store the motor in a horizontal position, lay the motor as shown in the figure.

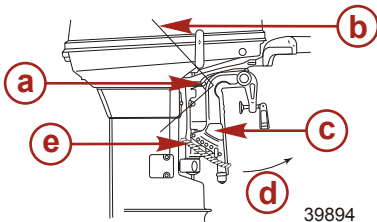


38384

EH, EHO, EO

IMPORTANT: When removing the motor from the package or removing the motor from the boat, never release the reverse lock lever. If the reverse lock lever is released, it will be very easy for the transom bracket to spring up to the tilting direction because it is not secured.

1. Secure the transom bracket to the outboard with a rope.
2. Pay attention to the tilting direction so as not to be injured by the transom bracket.



39894

- a** - Reverse lock lever
- b** - Lock
- c** - Transom bracket
- d** - Tilting direction
- e** - Rope

TRANSPORTING

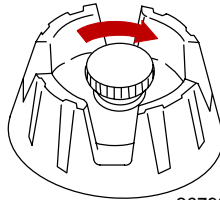
Transporting Portable Fuel Tanks

⚠ 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

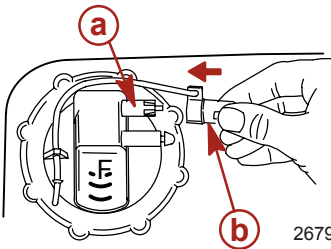
Close the fuel tank air vent when transporting tank. This will prevent escape of fuel or vapors from tank.



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, allowing fuel or vapor to escape.



a - Connector stem

b - Tether cap

26794

FUEL AND OIL

Fuel Requirements

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 will not be covered under the limited warranty.

FUEL RATINGS

Mercury outboard engines will operate satisfactorily with any major brand of unleaded gasoline that meets the following specifications:

USA and Canada - A posted pump octane rating of 87 (R+M)/2, minimum, for most models. Premium gasoline 91 (R+M)/2 octane is also acceptable for most models. **Do not** use leaded gasoline.

Outside USA and Canada - A posted pump octane rating of 91 RON, minimum, for most models. Premium gasoline (95 RON) is also acceptable for all models. **Do not** use leaded gasoline.

USING REFORMULATED (OXYGENATED) GASOLINE (USA ONLY)

Reformulated gasoline is required in certain areas of the USA and is acceptable for use in your Mercury Marine engine. The only oxygenate currently in use in the USA is alcohol (ethanol, methanol, or butanol).

GASOLINE CONTAINING ALCOHOL

Bu16 Butanol Fuel Blends

Fuel blends of up to 16.1% butanol (Bu16) that meet the published Mercury Marine fuel rating requirements are an acceptable substitute for unleaded gasoline. Contact your boat manufacturer for specific recommendations on your boat's fuel system components (fuel tanks, fuel lines, and fittings).

Methanol and Ethanol Fuel Blends

IMPORTANT: The fuel system components on your Mercury Marine engine will withstand up to 10% alcohol (methanol or ethanol) content in the gasoline. Your boat's fuel system may not be capable of withstanding the same percentage of alcohol. Contact your boat manufacturer for specific recommendations on your boat's fuel system components (fuel tanks, fuel lines, and fittings).

Be aware that gasoline containing methanol or ethanol may cause increased:

- Corrosion of metal parts
- Deterioration of rubber or plastic parts
- Fuel permeation through the rubber fuel lines
- Likelihood of phase separation (water and alcohol separating from the gasoline in the fuel tank)

FUEL AND OIL

⚠ 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.

IMPORTANT: If you use gasoline that contains or might contain methanol or ethanol, you must increase the frequency of inspection for leaks and abnormalities.

IMPORTANT: When operating a Mercury Marine engine on gasoline containing methanol or ethanol, do not store the gasoline in the fuel tank for long periods. Cars normally consume these blended fuels before they can absorb enough moisture to cause trouble; boats often sit idle long enough for phase separation to take place. Internal corrosion may occur during storage if alcohol has washed protective oil films from internal components.

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.

Non-Oil Injected Models: MH, EH

Add engine oil into the fuel tank. The mixing ratio with gasoline is 50:1 (50 parts gasoline and one part oil). Mix well by hand. The mixing ratio during break-in running is 25:1.

Mixing ratio

	Gasoline	Engine Oil
During break-in	25	1
After break-in	50	1

Pour oil into the fuel tank.

Pour gasoline into the fuel tank.

ENGINE BREAK-IN

Engine Break-in Fuel Mixture

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

FUEL AND OIL

Engine Break-in Procedure

Refer to **Operation - Engine Break-In Procedure** for correct break-in procedure.

Oil Injected Models: EHO, EHPTO, EO, EPTO

The required amount of engine oil is automatically supplied from the oil pump according to the engine running conditions.

IMPORTANT: During engine break-in, engine oil must be added to the gasoline in addition to the oil, which is automatically supplied from the oil tank.

Mixing ratio (during break-in on oil injected models)

	Gasoline	Engine Oil
During break-in	50	1
After break-in	Automatic: Fill up engine oil tank regularly	

Pour oil into the fuel tank.

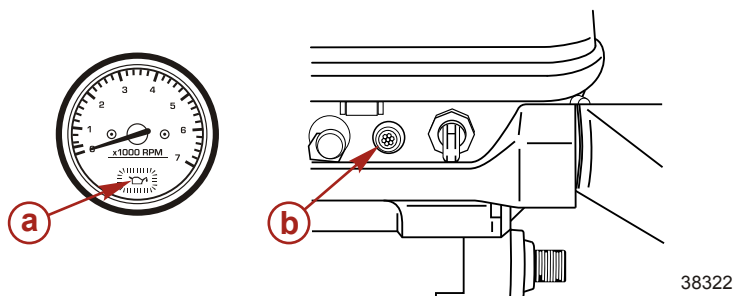
Pour gasoline into the fuel tank. Shake well to mix oil and fuel.

Alarm for low engine oil level

If the level in the oil tank falls below 0.4 L (0.105 US gal), the low engine oil alarm will be triggered. The engine oil tank capacity is 2 L (0.53 US gal).

EO, EPTO: The low oil light in the tachometer lights and the buzzer in the remote control box sounds if the engine oil level falls below 0.4 L (0.105 US gal).

EHO, EHPTO: The low oil light is on the front portion of the bottom cowl. The light will come on if the engine oil level falls below 0.4 L (0.105 US gal).



- a** - Low oil light in tachometer
- b** - Low oil light on lower engine cover

Resetting the low oil level alarm:

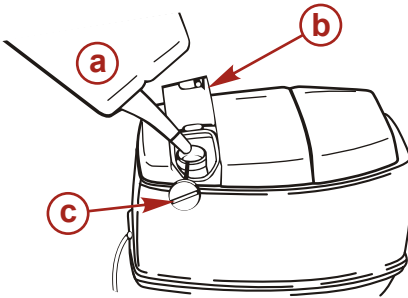
1. Reduce engine speed to trolling RPM and steer towards a safe area with calm water. Set the remote control lever to Neutral (buzzer will stop).

FUEL AND OIL

2. Turn off the ignition switch, and fill up the oil tank with recommended engine oil.
3. Start the engine, and shift into gear carefully.
4. Confirm that the indicator lamp goes out and the buzzer does not sound.

Replenishing the oil in the engine oil tank:

1. Open the oil fill door on the top cowl.
2. Remove the oil tank cap.
3. Fill up the tank with genuine engine oil or recommended oil.



- a - Recommended engine oil
- b - Oil fill door
- c - Oil tank cap

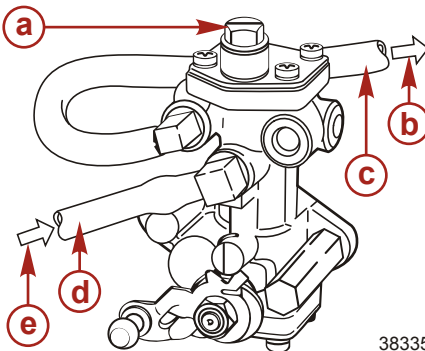
IMPORTANT: Please follow the instructions below.

1. In the unlikely event that gasoline is filled into the oil tank by mistake, drain the oil tank completely, and consult an authorized service shop for advice.
2. Check the amount of oil in the oil tank visually before starting the engine.

Oil pump air vent

Visually check whether there is air in the oil through the oil line connecting the oil tank with the oil pump. If present, purge the air as follows:

Loosen the air vent screw on the oil pump to purge the air, and tighten it when all air, as seen through the oil line to the oil pump has been purged.



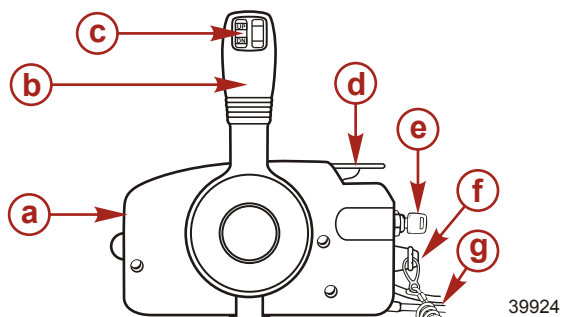
- a - Air vent screw
- b - To check valve
- c - Oil line
- d - Oil line
- e - From oil filter

NOTE: Wipe off any spilled oil with a rag, and dispose of it.

FEATURES AND CONTROLS

Remote Control Features

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



- a** - Remote control box
- b** - Remote control handle
- c** - Power trim and tilt switch
- d** - Neutral warm-up lever
- e** - Ignition key switch
- f** - Lanyard stop switch
- g** - Lanyard cord

Tilting Outboard

BASIC TILTING OPERATION

The tilt feature allows the operator to tilt the outboard to a higher tilt angle for operation in shallow water, or tilt the outboard to the full up position.

When running the outboard, keep the tilt lever in the release position. This allows the outboard to return to the running position if the outboard should hit an underwater obstacle and be lifted up.

Moving the tilt lever to the tilt position will allow the outboard to lock into the shallow water drive position or the full up position.

Shallow Water Operation

The outboard is equipped with a shallow water tilt feature that allows you to tilt the outboard to a higher tilt angle to prevent hitting bottom.

IMPORTANT: Before tilting the outboard into the shallow water drive position, reduce engine speed to idle and shift engine into neutral gear.

FEATURES AND CONTROLS

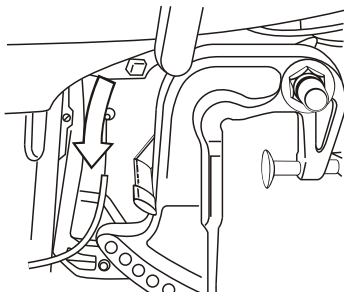
NOTE: Please follow the instructions below:

- When running in shallow water, take care the water in take is submerged at all times and that water is continuously running out of the water pump indicator hole.
- Be sure to run slowly when using the shallow water drive. Running at higher speeds will result in lack of control and may cause damage to the gearcase.
- Ensure that the motor does not strike the bottom, especially when running in Reverse (R). If the motor strikes the bottom while in reverse the impact is transmitted to the transom, risking damage to both the motor and the boat.

SHALLOW WATER RUNNING POSITION

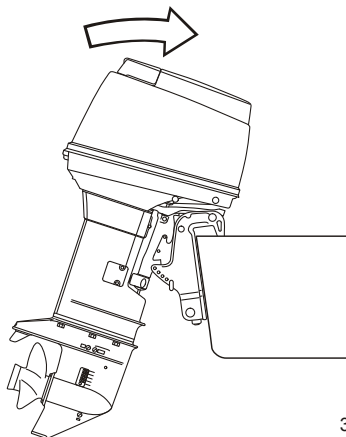
MH, EH, EHO, EO

1. Set the reverse lock lever provided on the starboard side to Release by turning it downward.



38366

2. Tilt the engine up approximately 45° and lower it. The engine will now be set to the shallow water setting.



38367

FEATURES AND CONTROLS

3. Releasing the shallow water setting:
 - a. Turn the reverse lock lever upward to set them in the lock position.
 - b. Tilt up the engine slightly and let it go down. The shallow water setting is released.
 - c. The engine is released from shallow water setting, and locked at normal running position.

EHPTO, EPTO

Tilt up the engine using the power trim and tilt system.

Trim Adjustment

Trim of the motor can be adjusted to suit the transom angle and loading conditions of your boat. Be sure to maintain the anti-ventilation plate parallel to the water level during cruising.

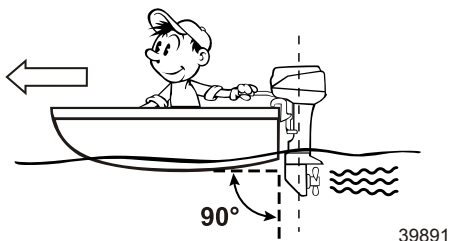
The following instructions explain how to set the best angle of the boat.

Proper adjustment allows the boat to run stable, achieve optimum performance, and minimize steering effort.

MH, EH, EHO, EO

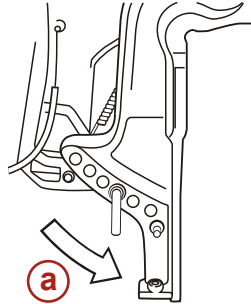
The trim angle is adjusted by setting the trim position pin in the correct trim position. Arrange passengers and load in the boat so the weight is distributed evenly.

- **Correct trim:** The trim angle is optimum when the boat is parallel to the water surface while running.



FEATURES AND CONTROLS

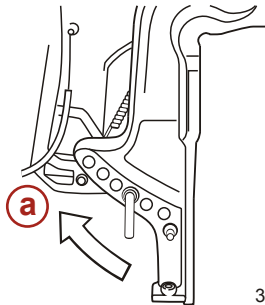
- **Trim down:** If the trim angle is excessive, the bow will rise out of the water and the speed will decrease.



38372

a - Select a lower hole

- **Trim up:** If the trim angle is low, the bow will dip into the water, the speed will decrease, and water may enter the boat. In this case, the trim angle should be increased by setting the trim position pin in a higher hole.



38374

a - Select a higher hole

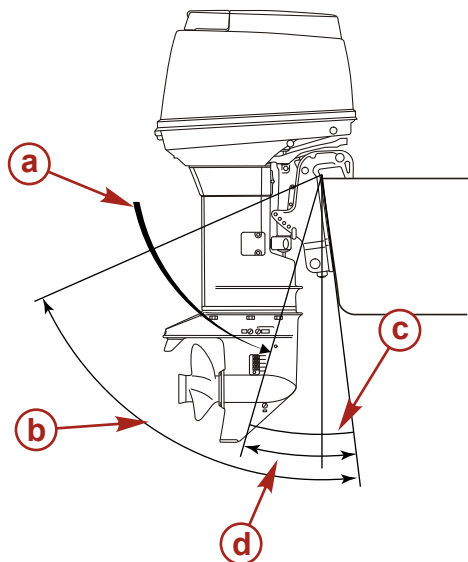
EHPTO, EPTO

The provided power trim and tilt can be adjusted to set the desired trim angle of the engine in relation to the transom shape, planing speeds, and load. It is imperative that the trim angle is adjusted correctly. Incorrect adjustment will cause the boat to sway, deteriorate engine performance, and may cause unsafe steering conditions.

IMPORTANT: The power trim and tilt can be set to trim angle, however, avoid cruising with the engine tilted in the tilt range. Operating the boat in this manner, the engine may suck air into the water cooling system resulting in engine overheating.

FEATURES AND CONTROLS

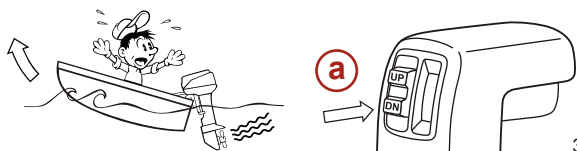
How to use the trim gauge: When the trim angle is set as desired, take a reading off the trim gauge, and record it for future reference.



- a** - Trim angle adjustable range
- b** - 74°
- c** - 8°
- d** - 28°

38375

- **Correct trim:** The trim angle is optimum when the boat is parallel to the water surface while running.
- **Trim down:** If the trim angle is excessive, the bow will rise out of the water and the speed will decrease. If this occurs, press the switch on the remote control level to down (DN).

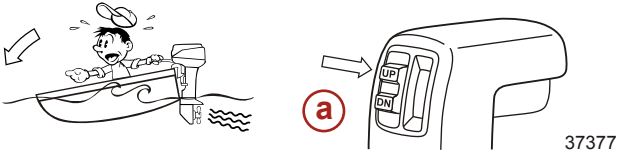


38376

- a** - Remote control lever: Down (DN)

FEATURES AND CONTROLS

- **Trim up:** If the trim angle is low, the bow will dip into the water and the speed will decrease. Water may also enter the boat. In this case, the trim angle should be increased by pressing the switch on the remote control lever to UP.



a - Remote control lever: UP

Steering Friction Adjustment

Steering friction can be adjusted according to your preference with the steering co-pilot.

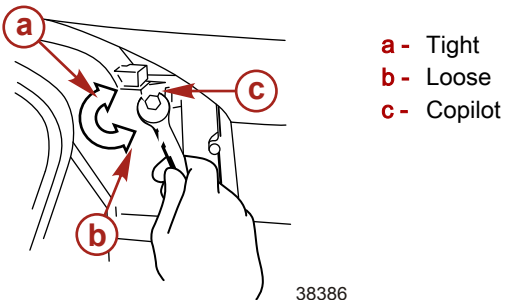
⚠ WARNING

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.

Adjust the steering co-pilot to achieve desired steering friction.

- Turn clockwise for more friction.
- Turn counterclockwise for less friction.

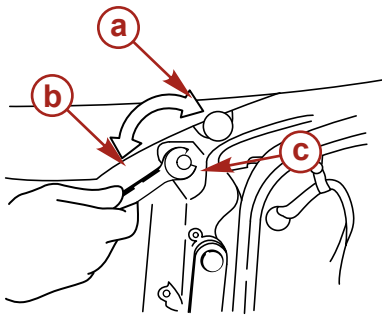
MH, EH, EHO, EO



- a** - Tight
- b** - Loose
- c** - Copilot

FEATURES AND CONTROLS

EHPTO, EPTO

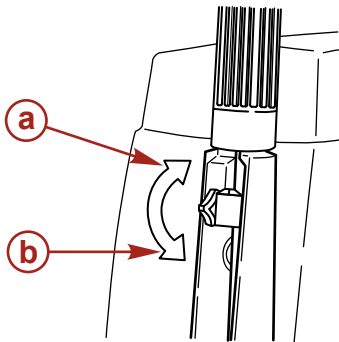


- a** - Tight
- b** - Loose
- c** - Copilot

38387

Throttle Grip Turning Friction Adjustment

Turn the screw clockwise to tighten friction and turn the screw counterclockwise to loosen friction.



- a** - Loosen friction
- b** - Tighten friction

38388

Trim Tab Adjustment

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

- Operate the boat at normal cruising speed with the outboard set at the desired operating angle position. Turn the boat left and right and note the direction the boat turns more easily.
- If an adjustment is necessary, loosen the trim tab bolt and make small adjustments at a time.
- After the adjustment, securely tighten the trim tab bolt.

NOTE: *Inspect the tightness of the bolt and the trim tab at regular intervals. Due to corrosion, the trim tab will wear down over time.*

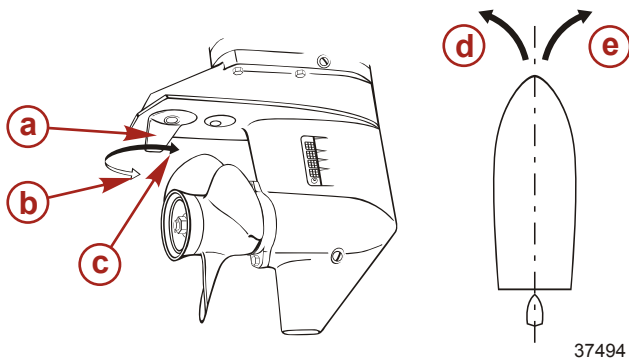
FEATURES AND CONTROLS

IMPORTANT: The trim tab also acts as an anode to prevent galvanic corrosion. Do not apply any paint, grease, or other material to the surface of the trim tab.

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.

The trim tab is located under the anti-ventilation plate.

- If the boat steers toward the left, set the trim tab in the direction of B.
- If the boat steers toward the right, set the trim tab in the direction of C.



- a** - Trim tab
- b** - Steers toward the left, set the trim tab in the direction of B
- c** - Steers toward the right, set the trim tab in the direction of C
- d** - Turning left
- e** - Turning right

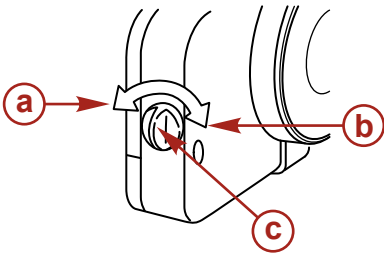
REMOTE CONTROL LEVER FRICTION

EO, EPTO

(Throttle friction adjustment screw)

FEATURES AND CONTROLS

To adjust the load of the remote control lever, turn the throttle friction adjustment screw on the front of the remote control box. Turn clockwise to increase the friction and counter-clockwise to decrease it.



38385

- a** - Turn counterclockwise to decrease the friction
- b** - Turn clockwise to increase the friction
- c** - Throttle friction adjustment screw

OPERATION

Prestarting Check List

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

Operating in Freezing Temperatures

When using your outboard or having your outboard moored in freezing or near freezing temperatures, keep the outboard tilted down at all times so the gearcase is submerged. This prevents the trapped water in the gearcase from freezing and causing possible damage to the water pump and other components.

If there is a chance of ice forming on the water, the outboard should be removed and drained completely of water. If ice should form at the water level inside the outboard driveshaft housing, it will block water flow to the engine causing possible damage.

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.

OPERATION

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.

Break-in running time: 10 hours

Time	0 min.~	10 min.~	1 hr.~	2 hrs.~	10 hrs.~
Method of break-in	Trolling or idling	Throttle opening <1/2 about 3,000 RPM	Throttle opening <3/4 about 4,000 RPM	Throttle opening 3/4 about 4,000 RPM	Normal running
Running conditions	Cruising at minimum speed	—	Full-throttle run is allowed for 1 min. in 10 min.	Full-throttle run is allowed for a short time.	—

ENGINE BREAK-IN FUEL MIXTURE

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

The use of poor quality fuel will shorten the life of a motor and cause trouble, including starting failure. It is recommended to use a high quality gasoline and genuine or recommended engine oil. (Refer to **Fuel and Oil** section.)

Starting the Engine

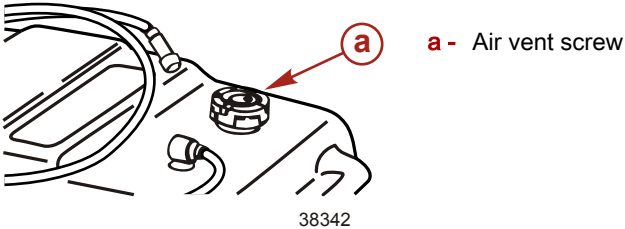
IMPORTANT: Never fill up portable fuel tanks on board to avoid fire or explosion resulting from spilled gasoline. If gasoline is ever spilled on board, wipe it off thoroughly. Fuel tanks must always be filled up on land.

IMPORTANT: Before starting, read the Pre-Starting Check List, special operating instructions, and Engine Break-in Procedure in the Operation section.

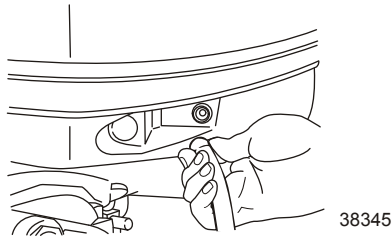
OPERATION

PREPARATIONS

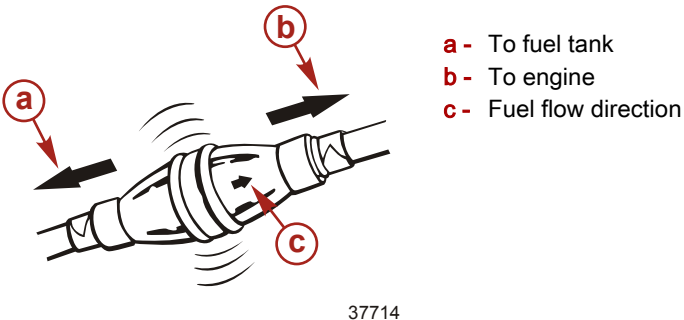
1. Loosen the air vent screw on the fuel tank cap. For tanks with a fuel tank auto air vent (optional): There is no need to loosen the air vent screw. An air vent opens automatically when the connector is attached to the tank.



2. Connect the fuel connector to the engine.



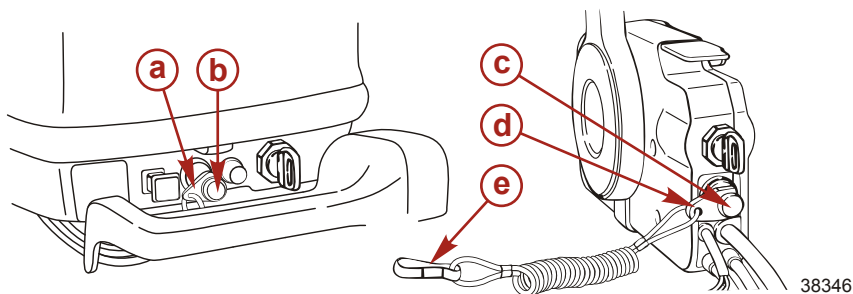
3. Squeeze the primer bulb until firm.



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

OPERATION

4. Install the lanyard cord.



- a - Lanyard cord
- b - Lanyard switch
- c - Lanyard switch
- d - Lanyard cord
- e - Hook

IMPORTANT: Be sure to connect the lanyard stop switch to your body. The engine is shut down if the stop switch is disconnected.

STARTING (MANUAL START)

IMPORTANT: Before starting, read the Pre-Starting Check List, special operating instructions, and Engine Break-in Procedure in the Operation section.

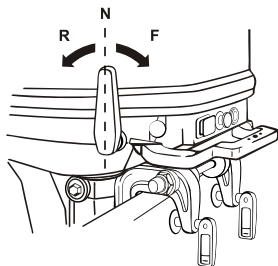
NOTE: Be sure the shift is at Neutral (N) when starting the engine. This model is provided with start in gear protection.

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.

MH: Tiller Handle Model

1. Set the shift lever to Neutral (N).

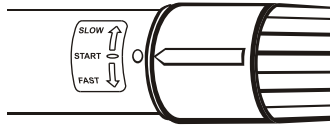


38347

OPERATION

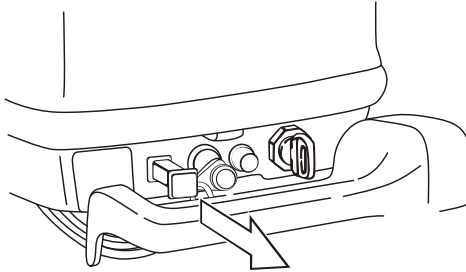
NOTE: If the engine starts in gear, do not use the engine. Contact your dealer.

2. Turn the throttle grip so the indicator line meets the "START" mark.



38348

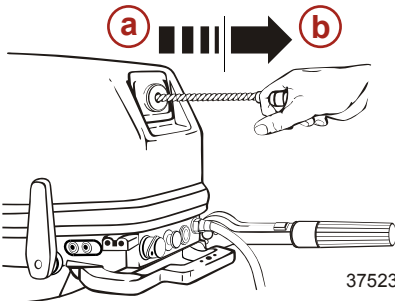
3. Pull the choke knob out.



38349

NOTE: Operation of the choke knob is not required if the engine is warm.

4. Pull the starter rope slowly until you feel the starter engage, then pull rapidly to crank the engine. Allow the rope to return slowly.



37523

a - Pull slowly

b - Pull rapidly

5. Carefully turn the throttle grip to "SLOW."

STARTING (ELECTRIC START)

NOTE: Be sure the shift is at Neutral (N) when starting the engine. This model is provided with start in gear protection.

IMPORTANT: Before starting, read the Pre-Starting Check List, special operating instructions, and Engine Break-in Procedure in the Operation section.

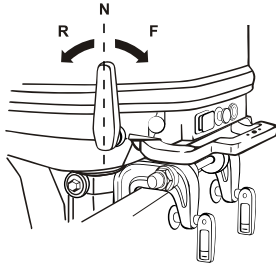
OPERATION

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.

EH, EHO, EHPTO: Tiller Handle Model

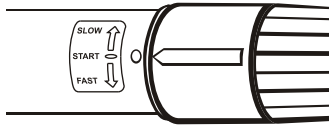
1. Set the shift lever to Neutral (N).



38347

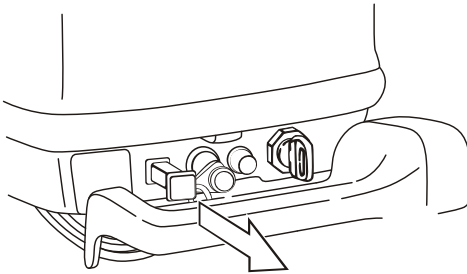
NOTE: If the engine starts in gear, do not use the engine. Contact your dealer.

2. Turn the throttle grip so the indicator line meet the "START" mark.



38348

3. Pull the choke knob out.

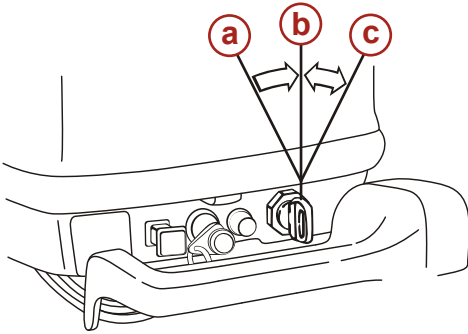


38349

NOTE: Operation of the choke knob is not required if the engine is warm.

OPERATION

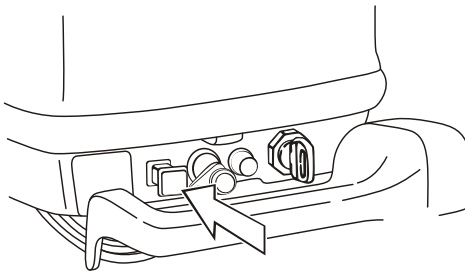
4. Turn the key switch to ON. Continue turning the key switch clockwise to start the motor.



- a - Off
- b - On
- c - Start

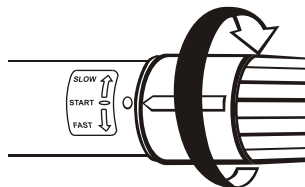
38350

5. Release the key switch as soon as the engine starts. The key will return to the ON position automatically.
6. Push back the choke knob slowly.



38351

7. Carefully turn the throttle grip to "SLOW."



38352

IMPORTANT: Please follow the instructions below:

- Extended operation of the starter motor will run the battery down. Operate the starter motor for a maximum of five seconds. If the engine does not start, wait for 10 seconds before operating the starter motor again.
- Never operate the starter motor once the engine has started.
- If the starter motor won't turn over, ensure that the battery terminal connections are tight and the battery is fully charged.

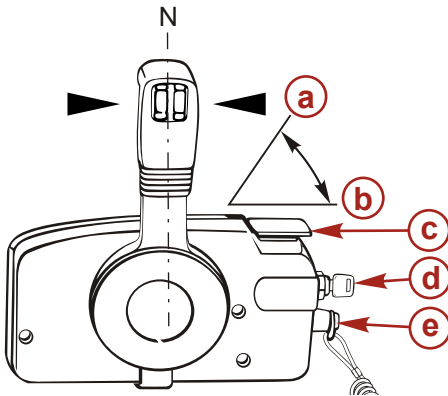
OPERATION

STARTING (REMOTE CONTROL MODEL)

IMPORTANT: Before starting, read the Pre-Starting Check List, special operating instructions, and Engine Break-in Procedure in the Operation section.

EO, EPTO

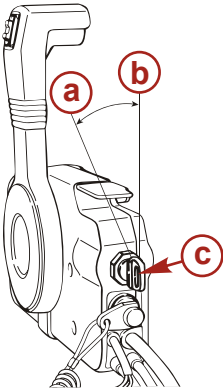
1. Insert the key into the ignition.
2. Set the remote control lever to Neutral (N), and move the neutral warm-up lever to OPEN.



37715

OPERATION

3. Turn the key switch to the ON position and push ON for choke operation. The key does not need to be pushed if the engine is warm.

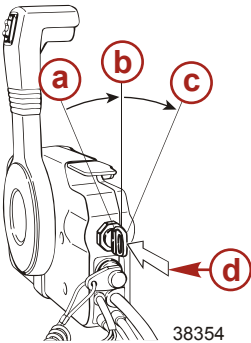


- a - Off
- b - On
- c - Push to choke

37466

NOTE: The neutral warm-up lever is inoperative unless the remote control lever is set to Neutral (N).

4. While keeping the key pressed in, turn it to START.



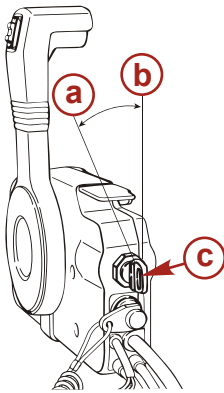
- a - Off
- b - On
- c - Start
- d - Push to choke

38354

NOTE: If the engine is warm, there is no need to press the key for choking when turning it to START.

OPERATION

5. When the engine starts, release the key and allow it to return to ON.



- a** - Off
- b** - On
- c** - Push to choke

37466

IMPORTANT: Please follow the instructions below:

- Extended operation of the starter motor will run the battery down. Operate the starter motor for a maximum of five seconds. If the engine does not start, wait for 10 seconds before operating the starter motor again or starter will be damaged.
- Never operate the starter motor once the engine has started.
- If the starter motor won't turn over, ensure the battery terminal connections are tight and the battery is fully charged.

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.

Gear Shifting

FORWARD/REVERSE RUNNING

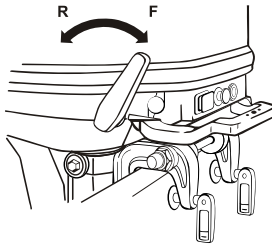
The outboard has three gear shift positions to provide operation: Forward (F), Reverse (R), and Neutral (N).

IMPORTANT: It may be dangerous to attempt shifting at high RPM. Be sure to slow engine RPM down to idle RPM before shifting.

MH, EH, EHO, EHPTO

OPERATION

Tiller handle models: Turn the throttle grip to the "SLOW" position and move the shift lever to Forward (F) or Reverse (R) position swiftly when the engine speed drops to its lowest level.

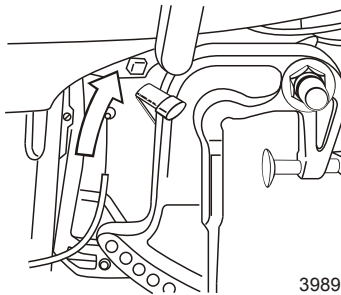


36363

IMPORTANT: It may be dangerous to attempt shifting at high RPM. Be sure to slow engine RPM down to idle RPM before shifting.

NOTE: Please follow the instructions below:

1. The engine must be at idling speed when the shift lever is moved from Forward (F) to Reverse (R).
2. Before moving the shift lever to Reverse (R), ensure the reverse lock is engaged in the "UP" position.



39890

MH, EH, EHO, EHPTO

3. The shift lever cannot be moved from Neutral (N) to Reverse (R) unless the throttle grip is placed in the "SLOW" position.

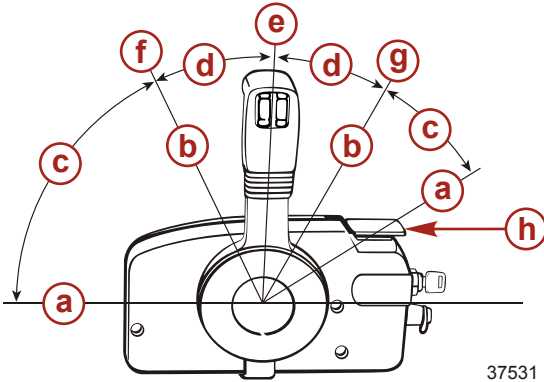
IMPORTANT: Never shift the outboard into gear unless the engine speed is at idle. Do not shift the outboard into reverse when the engine is not running. It may damage the shift linkage and possibly the gear mechanism.

EO, EPTO

1. Remote control models: While pressing the lock button on the remote control lever upward, swiftly move the lever to Forward (F) or Reverse (R) to the detent (approximately 32° forward or backward from Neutral).

OPERATION

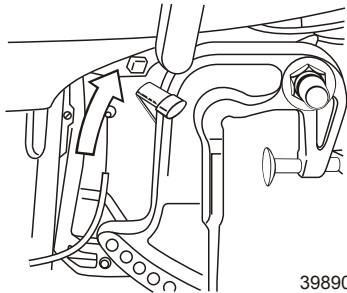
2. If the shift/throttle handle is moved pass the gear detent position, the throttle will begin to open.



- a** - Full throttle position
- b** - Idle position
- c** - Throttle range
- d** - Shift range (32°)
- e** - Neutral (N)
- f** - Forward (F)
- g** - Reverse (R)
- h** - Neutral warm-up lever

NOTE: Please follow the instructions below:

1. The engine must be at idle speed when the shift lever is moved from Forward (F) to Reverse (R).
2. Before moving the shift lever to Reverse (R), ensure the reverse lock is engaged in the "UP" position.



EO, EPTO

OPERATION

NOTE: The remote control lever becomes inoperative unless the neutral warm-up lever is in the fully closed position.

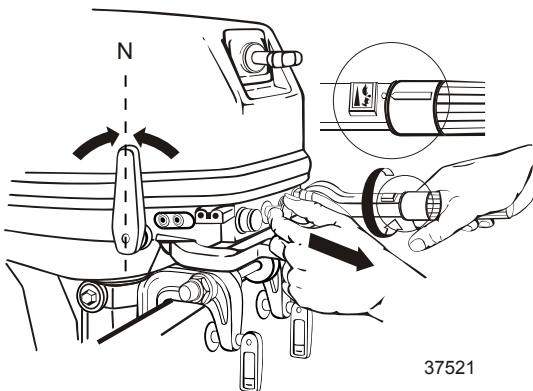
IMPORTANT: Never shift the outboard into gear unless the engine speed is at idle. Do not shift the outboard into reverse when the engine is not running.

Emergency Starting

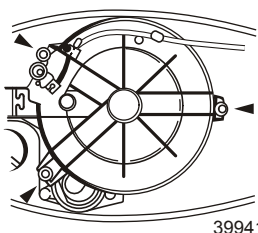
If the starter system fails, use the spare starter rope (provided) and follow the procedure.

IMPORTANT: To prevent getting an electrical shock, do not touch any ignition component, wiring, or spark plug wire when starting or running the engine.

1. Set the shift lever or the remote control lever to Neutral (N).

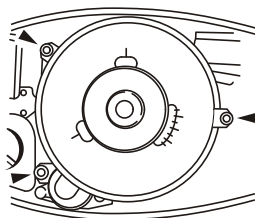


2. MH, EH, EHO, EHPTO: Remove the top cowl. Take off the starter assembly/flywheel cover.



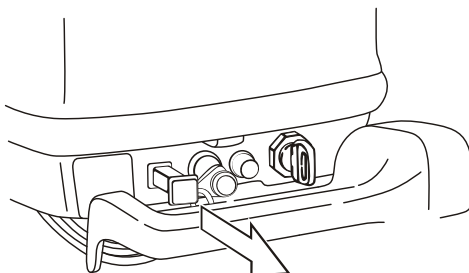
OPERATION

3. EO, EPTO: Remove the top cowl. Take off the flywheel cover.



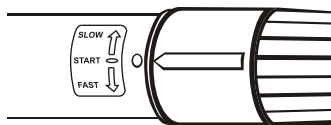
38355

4. Pull the choke knob.



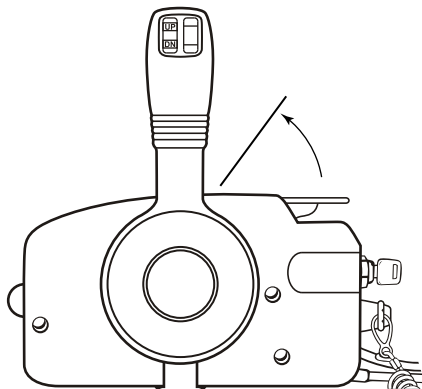
38349

5. MH, EH, EHO, EHPTO: Turn the throttle grip so the indicator line meets the "START" mark.



38348

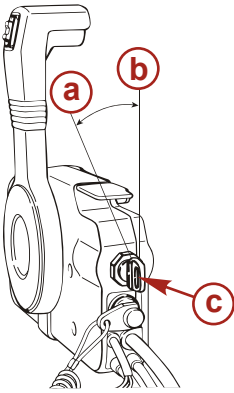
6. EO, EPTO: Lift up the newtral warm-up lever 1/3 to 1/2 of its stroke.



38356

OPERATION

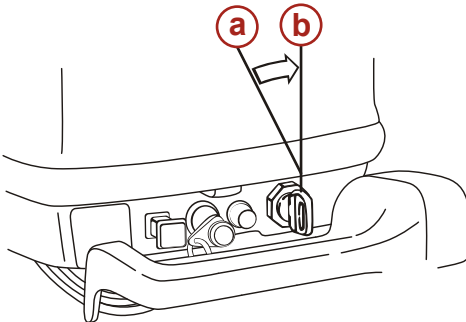
7. EO, EPTO: Turn the key switch to ON.



- a - Off
- b - On
- c - Key switch

37881

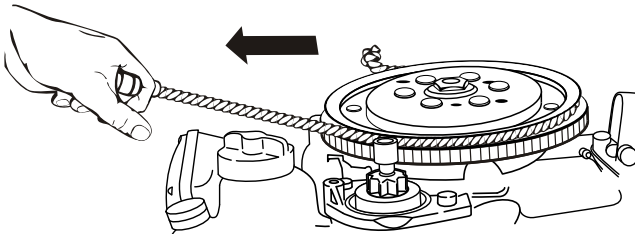
8. EH, EHO, EHPTO: Turn the key switch to ON.



- a - Off
- b - On

38359

9. Wind the starter rope around the flywheel a few turns clockwise. Give it a sharp tug to start the engine. Use a socket wrench to get a firm grip on the end of the rope.



38361

10. Remote control models: Ensure the key switch is in the "ON" position.

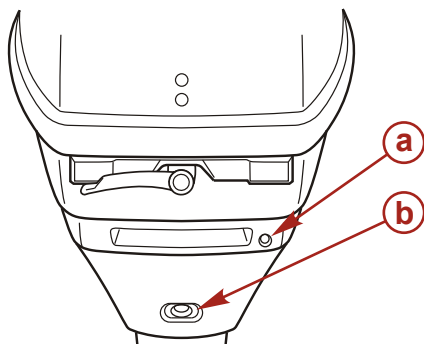
NOTE: Confirm that the shift lever is in the Neutral (N) position.

OPERATION

WARM-UP

Before driving the boat, let the engine run at low speed for approximately three minutes to let it warm-up. If the engine is not warmed up beforehand, the engine life will shorten greatly. During the warm-up operation, confirm that cooling water is discharged from the water pump indicator hole and idle port.

IMPORTANT: If cooling water is not discharged and engine operation is continued, the engine may overheat and damage may occur.



a - Cooling water discharge port

b - Idle port

38362

Engine speed:

Proper idle speed after warm-up operation

In-gear	Neutral
750 RPM	900 RPM

Do not exceed the full-throttle engine speed

Full throttle engine speed	
40	50
5000–5700 RPM	5150–5850 RPM

OVERHEAT ALARM AND SENSOR (OPTIONAL ON SOME MODELS)

EH, EHO, EHPTO, EO, EPTO

- The overheat alarm will sound if the engine temperature exceeds the preset level.
- If the alarm sounds indicating overheating, immediately move the remote control lever to Neutral (N). Confirm that cooling water is discharged from the water pump indicator hole, and then stop the engine. Turn the key switch to "OFF" position.
- Remove dirt or other foreign matter clogging the water inlets on the gearcase.

NOTE: If the alarm sounds frequently after restarting the engine, contact your service dealer.

OPERATION

NOTE: Check for a steady stream flowing out of the water pump indicator hole. If no water is coming out of the water pump indicator hole or flow is intermittent, stop the engine and check cooling water intake holes for obstruction. If no obstruction is found, this may indicate a blockage in the cooling system or a water pump problem. Have the outboard checked by your dealer. Operating the engine while overheated may 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 may cause engine damage.

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.

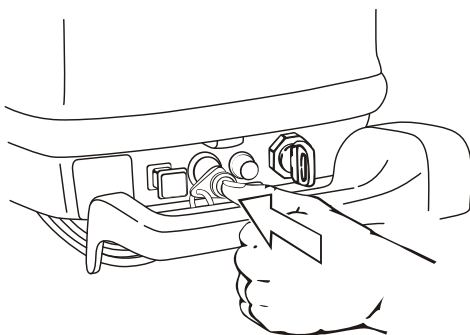
IMPORTANT: If a steady flow of water is coming out of the water pump indicator hole and the engine continues to overheat, consult your dealer.

Stopping the Engine

IMPORTANT: Never stop the engine immediately after a full throttle run. Keep it running for two or three minutes at idling speed (Neutral) to allow the engine to cool down.

MH

1. Reduce the engine speed to idle RPM.
2. Pressing on the stop switch or pull the lanyard. The engine will then stop.



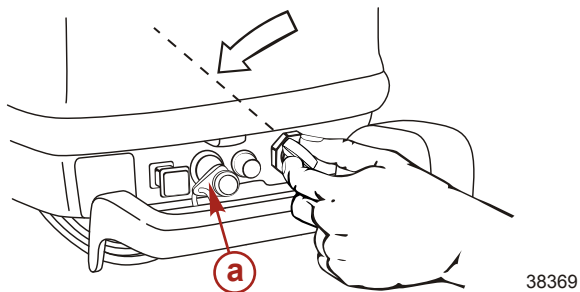
38368

EH, EHO, EHPTO

1. Reduce the engine speed to idle RPM.

OPERATION

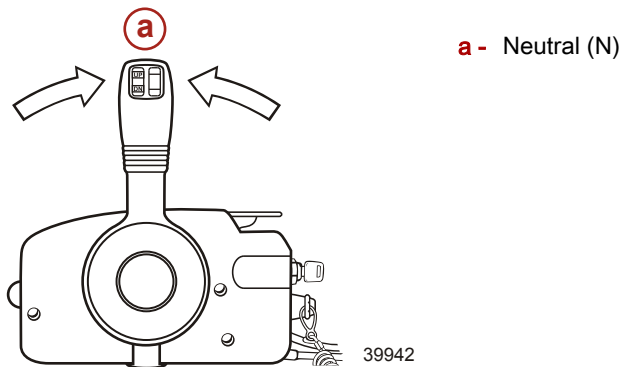
2. Turn the main switch to "OFF," press the stop switch or pull the lanyard.
The engine will then stop.



a - Lanyard /stop switch

EO, EPTO

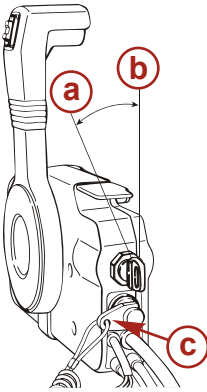
1. Move the remote control lever to Neutral (N) and let the engine idle for two or three minutes to allow it to cool down.



a - Neutral (N)

OPERATION

- Turn the key switch counterclockwise to the "OFF" position or pull the lanyard. The engine will then stop. The engine can also be stopped by pressing on the lanyard switch.

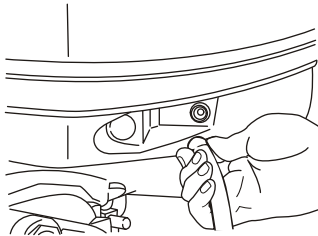


39943

- a - Off
- b - On
- c - Stop switch lock plate

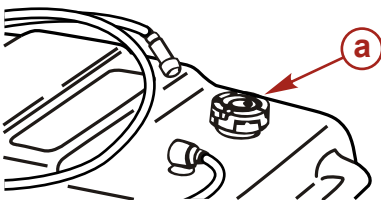
NOTE: Please follow the instructions below:

- Disconnect the fuel connector from the engine.
 - After the engine has stopped, close the air vent screw on the fuel tank cap.
 - Disconnect the battery cables from the battery if the engine will not be used for an extended period of time.
- Disconnect the fuel connector from the engine.



38345

- Close the air vent screw on the fuel tank cap.



38342

- a - Air vent screw

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 circles with letters a through i are placed around the label, with arrows pointing to specific fields: a points to the "IDLE SPEED" field; b points to the "hp" field; c points to the "TIMING (IN DEGREES)" field; d points to the "Standard spark plug" and "GAP" fields; e points to the "Valve Clearance (Cold) mm" field; f points to the "FAMILY" field; g points to the "FEL" field; h points to the "cc" field; and i points to a date field on the right side of the label. The label also includes a disclaimer: "This engine conforms to [] model year EPA regulations for Marine SI engines. Refer to Owner's Manual for required maintenance." and a date field "28405" at the bottom right.

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

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 displacement
- 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

DAILY CHECKS

- Check the engine oil level
- Check the lanyard stop switch
- Inspect the fuel system for leaks
- Inspect the engine tightness on the transom
- Check the steering system for binding
- Check the propeller for damage

MAINTENANCE

- Inspect the hydraulic steering fittings and hoses for leaks or signs of damage, if equipped
- Check the hydraulic steering fluid level, if equipped

AFTER EACH USE

- Wash the power package exterior with fresh water
- Flush the outboard cooling system, saltwater or brackish water only

ANNUALLY OR 100 HOURS

- Grease the engine, if applicable
- Change the engine oil and filter, if equipped
- Inspect the thermostat, saltwater or brackish water only
- Add Quickleen to the fuel tank, once per year, per engine
- Apply anti-seize to the spark plug threads
- Replace the gear lubricant
- Inspect the corrosion control anodes
- Replace all filters on the suction side of the fuel system—dealer item
- Lubricate the driveshaft splines—dealer item
- Lubricate the propeller shaft splines—dealer item
- Check the tightness on all the fasteners—dealer item
- Check the torque of the outboard mounting hardware—dealer item
- Check the battery condition and tightness of the battery cable connection—dealer item

THREE YEARS OR 300 HOURS

- Replace the spark plugs
- Replace the water pump impeller—dealer item
- Inspect the carbon fiber reeds—dealer item
- Inspect the wire harness connectors—dealer item
- Check the remote control cable adjustment, if applicable—dealer item
- Replace the high-pressure fuel filter—dealer item
- Replace the accessory drive belt—dealer item
- Check the power trim fluid level—dealer item
- Inspect the engine motor mounts—dealer item

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.

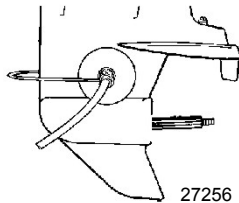
MAINTENANCE


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

⚠ WARNING

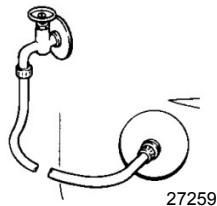
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the drive unit in neutral and engage the lanyard stop switch to prevent the engine from starting. Place a block of wood between the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

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



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

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.

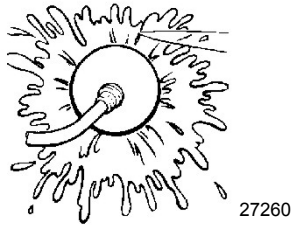


3. Start the engine and run it at idle speed in neutral shift position.

MAINTENANCE

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

4. Adjust the 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.

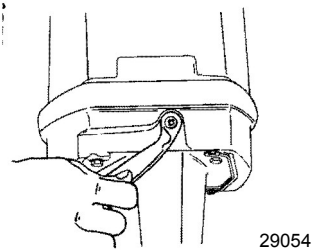


5. Check for a steady stream of water flowing out of the water pump indicator hole. Continue flushing the outboard for 3 to 5 minutes, carefully monitoring water supply at all times.
6. Stop the engine, turn off the water, and remove the flushing attachment. Install the propeller.

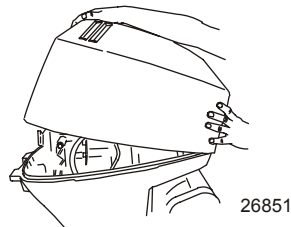
Top Cowl Removal and Installation

REMOVAL

1. Unlock the rear latch by pushing lever down.



2. Lift rear of cowl and disengage front hook.



INSTALLATION

1. Engage the front hook and push cowl back over the cowl seal.

MAINTENANCE

2. Push cowl down and move the rear latch lever up to lock.

Battery Inspection

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

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

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

Fuel System

WARNING

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

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

FUEL LINE INSPECTION

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

ENGINE FUEL FILTER

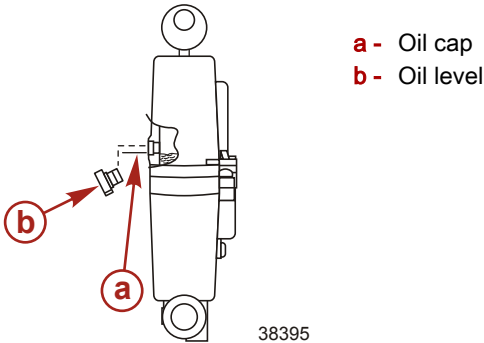
Inspect the sight bowl for water accumulation and inspect the filter element for sediment. Clean the tank and filters as follows.

CHECKING AND REFILLING OIL IN THE POWER TRIM AND TILT

1. Check the oil level of the reservoir tank, as shown, while the engine is kept in a vertical position.

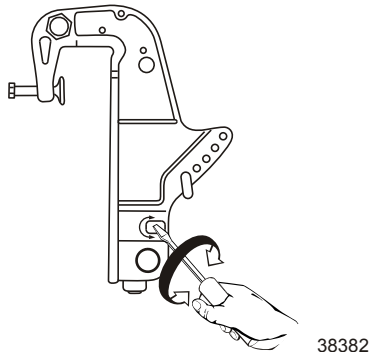
MAINTENANCE

2. Remove the oil plug by turning counterclockwise, then check if the oil level reaches the bottom line of the plug hole.



NOTE: Do not fully unscrew the oil plug with the engine tilted down. Pressurized oil in the oil tank may spurt out.

3. Recommended oil: Add Mercury or Quicksilver Power Trim and Steering Fluid. If not available, use automotive automatic transmission fluid (ATF).
4. Air purging from the power trim and tilt unit: Entrapped air in the power trim and tilt unit will cause poor tilting movement. With the engine mounted on the boat, set the manual release valve to the manual side, and tilt the engine manually up/down 5–6 times while checking the oil level. When done, close the valve by turning towards the power side.



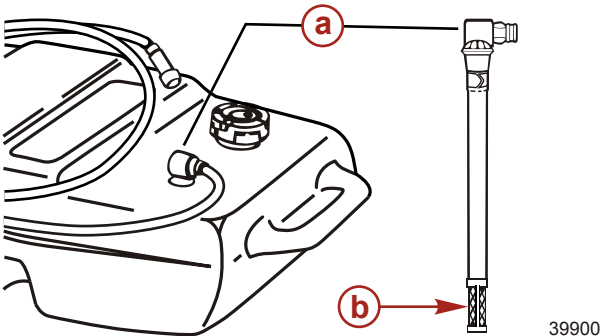
CLEANING FUEL TANKS AND FILTERS

1. Water or dirt in the fuel tank may cause engine trouble.
2. Clean the tank at specified times or after a long storage period (over three months).

Fuel filters are provided inside the fuel tank and at the engine.

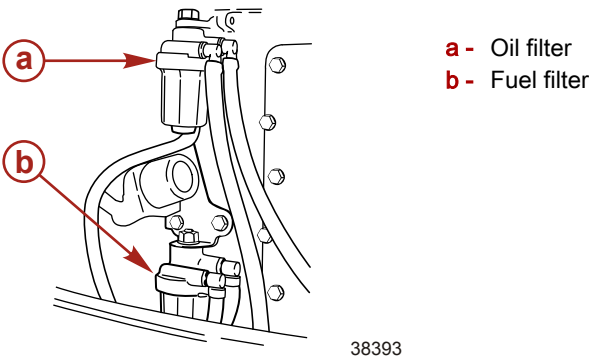
MAINTENANCE

1. Loosen a fuel pickup elbow and remove it. Then clean the fuel filter.



- a - Fuel pickup elbow
- b - Filter

2. Clean the fuel filter on the engine after removing the fuel filter cases.



- a - Oil filter
- b - Fuel filter

3. Oil filter and oil tank: Check the oil tank and/or filter for entrapped water and dust.
 - a. Disconnect all hoses between the oil tank and oil pump.
 - b. Clean out all the foreign debris.
 - c. Refit the hoses to the oil tank and pumps, and fill up with new engine oil.
 - d. For air purging, refer to **Fuel & Oil - Oil pump vent**.

Fuse Replacement - Electric Start Remote Control Models

IMPORTANT: Always carry spare SFE 20 amp fuses.

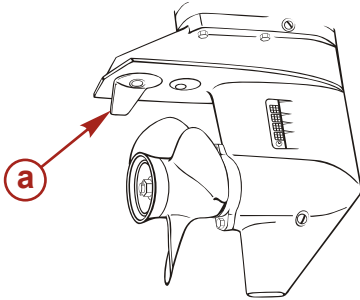
The electric starting circuit is protected from overload by an SFE 20 amp fuse. If the fuse is blown, the electric starter motor will not operate. Try to locate and correct the cause of the overload. If the cause is not found, the fuse may blow again. Replace fuse with a fuse of the same rating.

MAINTENANCE

Corrosion Control Anode

Your outboard has a corrosion control anode installed on the gearcase and in the cylinder. An anode helps protect the outboard against galvanic corrosion by sacrificing its metal to be slowly corroded instead of the outboard metals.

The 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.



a - Anode (trim tab)

37879

Important:

- Before replacing the anode, remove the spark plug cap to make sure the engine will not start, then check and replace the anode.
- If the anode is worn out or no anode is fitted on the outboard motor, aluminum parts will corrode more rapidly which can cause paint to peel off and damage the surface.

Propeller Replacement

⚠ WARNING

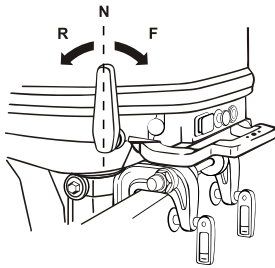
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the drive unit in neutral and engage the lanyard stop switch to prevent the engine from starting. Place a block of wood between the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

REMOVING PROPELLER

1. Remote control model: Shift outboard to Neutral (N) position.

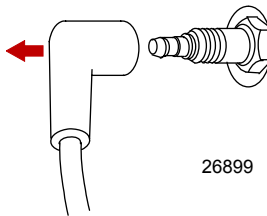
MAINTENANCE

2. Tiller handle model: Move shift lever to Neutral (N) position.



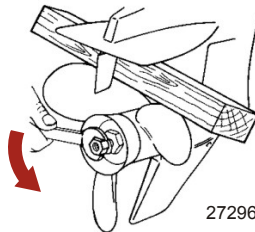
38347

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



26899

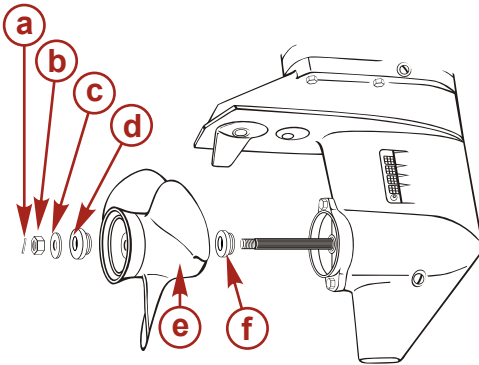
4. Place a block of wood between the gearcase and propeller to hold the propeller.



27296

MAINTENANCE



5. Remove the cotter pin, propeller nut, stopper, and washer.

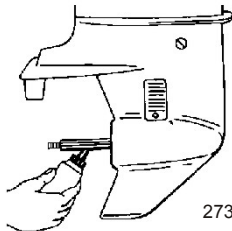


38390

- a** - Cotter pin
- b** - Nut
- c** - Washer
- d** - Stopper
- e** - Propeller
- f** - Propeller thrust holder

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

Tube Ref No.	Description	Where Used	Part No.
	Extreme Grease	Propeller shaft	8M0071842
	2-4-C with PTFE	Propeller shaft	92-802859A 1



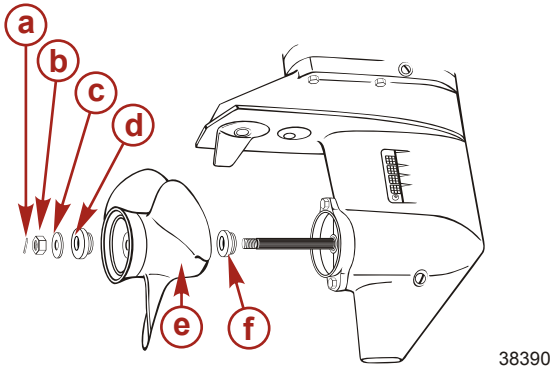
27344

MAINTENANCE

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.

INSTALLING PROPELLER

1. Install the propeller thrust holder, propeller, washer, nut, stopper, and cotter pin onto the propeller shaft.



- a** - Cotter pin
- b** - Nut
- c** - Washer
- d** - Stopper
- e** - Propeller
- f** - Propeller thrust holder

2. Place the propeller nut retainer over the pins. Place a block of wood between the gearcase and propeller. Tighten the propeller nut to the specified torque.

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

3. Install the spark plug leads.

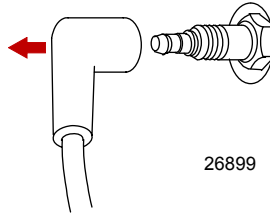
Spark Plug Inspection and Replacement

▲ WARNING

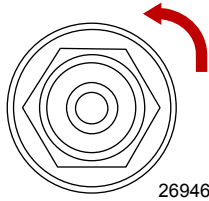
Damaged spark plug boots may emit sparks that can ignite fuel vapors under the engine cowl, resulting in serious injury or death from a fire or explosion. To avoid damaging the spark plug boots, do not use any sharp object or metal tool to remove the spark plug boots.

MAINTENANCE

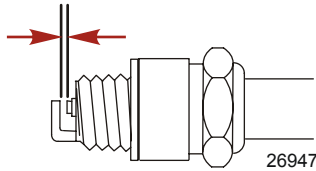
1. Remove the spark plug boots. Twist the rubber boots slightly and pull off.



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 (0.9–1.0 mm).



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

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

IMPORTANT: Please follow the instructions below:

- Do not touch the high tension cables running from the ignition coil to the spark plugs while the engine is running or it is turned by the electric starter motor, not even for testing the high tension cables or the spark plugs.
- The high tension cables and the spark plugs generate very high electric voltage, which can cause a serious electric shock if touched.

MAINTENANCE

Lubrication Points

It is important to inspect and maintain your outboard motor regularly. Maintenance intervals should be determined according to the number of hours or number of months, whichever comes first. For periodic servicing and maintenance guidelines, please contact your local Mercury dealer.

Item	Every 50 hours or 3 months	Every 100 hours or 6 months	Action
Sliding and rotating parts	Yes	Yes	Apply and pump in grease
Grease fittings	Yes	Yes	Apply and pump in grease

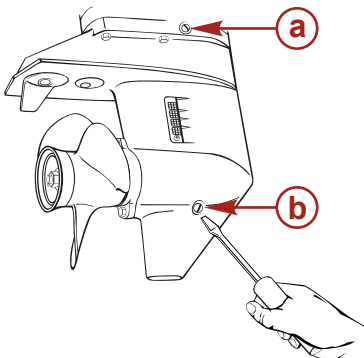
Gearcase Lubrication

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.

Remove the fill/drain plug and examine the magnetic end for metal particles. A small amount of metal filings or fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

CHANGING GEAR OIL

1. Place the outboard in a vertical operating position.
2. Place a drain pan below the outboard.
3. Remove the oil plugs (upper and lower) and drain the gear oil completely.

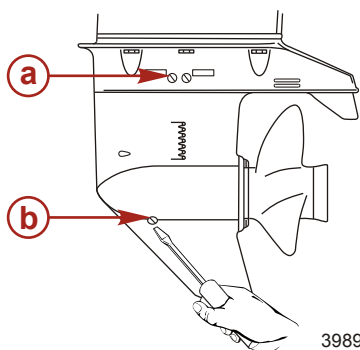


40/50

a - Vent plug

b - Fill plug

MAINTENANCE



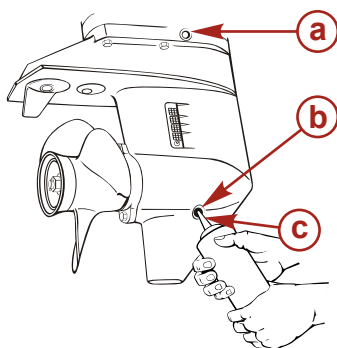
39897

W50

a - Vent plug

b - Fill plug

4. Place the lubricant tube nozzle into the fill/drain hole and add the lubricant until it appears at the upper oil plug hole.



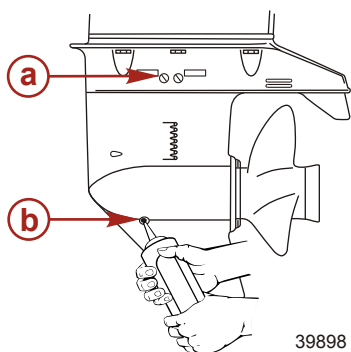
38392

40/50

a - Vent plug

b - Fill plug

c - Lubricant tube nozzle



39898

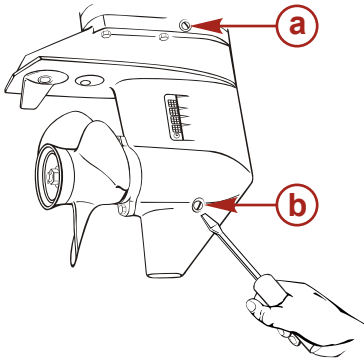
W50

a - Vent plug

b - Fill plug

MAINTENANCE

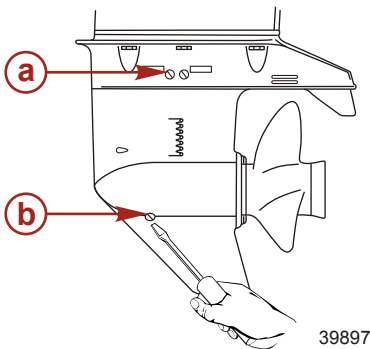
5. Install the vent plug. Then remove the lubricant tube nozzle and install the fill plug.



40/50

a - Vent plug

b - Fill plug



W50

a - Vent plug

b - Fill plug

NOTE: Use only genuine or recommended gear oil. If not available, use an API (American Petroleum Institute) oil grade of GL5 SAE #80–SAE #90.

Required volume		
40/50	Approximation 500 mL	17 fl oz
W50	Approximation 700 mL	24 fl oz

GEARCASE LUBRICANT RECOMMENDATION

Mercury or Quicksilver Premium or High Performance Gear Lubricant.

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.

Following are the emergency measures to be taken on the submerged outboard.

MAINTENANCE

1. Immediately take it out of the water and wash it with fresh water to remove salt or dirt.
2. Remove the spark plugs and completely drain the water from the engine by pulling the rewind starter several times.
3. Sufficiently inject genuine engine oil through the spark plug hole and into the crankcase from the carburetor side. Pull the rewind starter several times to circulate the oil throughout the motor.

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.

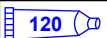
Fill the fuel tank and engine fuel system with treated (stabilized) fuel to help prevent formation of varnish and gum. Proceed with the following instructions.

- Portable fuel tank - Pour the required amount of gasoline stabilizer (follow instructions on container) into the 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 US qt) of gasoline. Pour this mixture into the fuel tank.
- Remove the fuel filter sight bowl and empty contents in a suitable container. Refer to **Maintenance - Fuel System** for removal and installation of filter. Add 3 cc (1/2 tsp) of gasoline stabilizer into the fuel filter sight bowl and install.
- Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for 15 minutes at idle RPM to fill the engine fuel system with stabilized fuel.

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).

STORAGE

Tube Ref No.	Description	Where Used	Part No.
 120	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.
- 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 **Gearcase Lubrication**).

Positioning Outboard for Storage

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

NOTICE

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

Battery Storage

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

Pre-Season Check

Have your dealer check the engine before the season starts, or if you prefer, be sure to check the following items yourself:

STORAGE

- Check the electrolyte level, and measure the voltage and specific gravity of the battery.

Specific Gravity at 20 °C	Terminal Voltage (V)	Charge Condition
1.120	10.5	Fully discharged
1.160	11.1	1/4 charged
1.210	11.7	1/2 charged
1.250	12.0	3/4 charged
1.280	13.2	Fully charged

- Check that the battery is secure and the battery cables are installed properly.
- Clean the engine oil filter.
- Purge air in the oil line connecting the oil tank to the oil pump.
- Check the shift and throttle function properly. Be sure to turn the propeller shaft when checking the shift function or else the shift linkage may be damaged.

TROUBLESHOOTING

Starter Motor Will Not Crank the Engine (Electric Start Models)

POSSIBLE CAUSES

- Remote control models - Blown 20 amp 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.
- 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.

TROUBLESHOOTING

- 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.

INSTALLATION

Mercury Marine Validated Engine Mounting Hardware

IMPORTANT: Mercury Marine provides validated fasteners and installation instructions, including torque specifications, with all of our outboards so they can be properly secured to boat transoms. Improper installation of the outboard can cause performance and reliability issues that can lead to safety concerns. Follow all of the instructions relating to the outboard installation. **DO NOT** mount any other accessory onto the boat with the fasteners provided with the outboard. For example, do not mount tow sport bars or boarding ladders onto the boat using the mounting hardware included with the outboard. Installing other products onto the boat that utilize the outboard mounting hardware will compromise the ability of that hardware to properly and safely secure the outboard to the transom.

Outboards that require validated mounting hardware will have the following decal on the transom clamp.



51965

Accessories Mounted to the Transom Clamp Bracket

Mercury Marine has been made aware that certain aftermarket marine accessories, such as emergency boarding ladders, shallow water anchors, transom wedge kits, and tow sport attaching devices, have been mounted to the boat by use of the same fasteners that secure the outboard to the transom or jack plate. Using the same fastener to secure both an accessory and the engine to the boat compromises the ability of the fasteners to maintain the proper clamp load. A boat with loose engine mounting fasteners creates the possibility of performance, durability, and safety issues.

INSTALLATION

⚠ WARNING

Avoid serious injury or death resulting from a loss of boat control. Loose engine fasteners could cause the transom bracket to fail, resulting in a loss of the driver's ability to control the boat. Always ensure that the engine fasteners are tightened to the specified torque.

ACCEPTABLE ACCESSORY MOUNTING TO THE TRANSOM CLAMP BRACKET

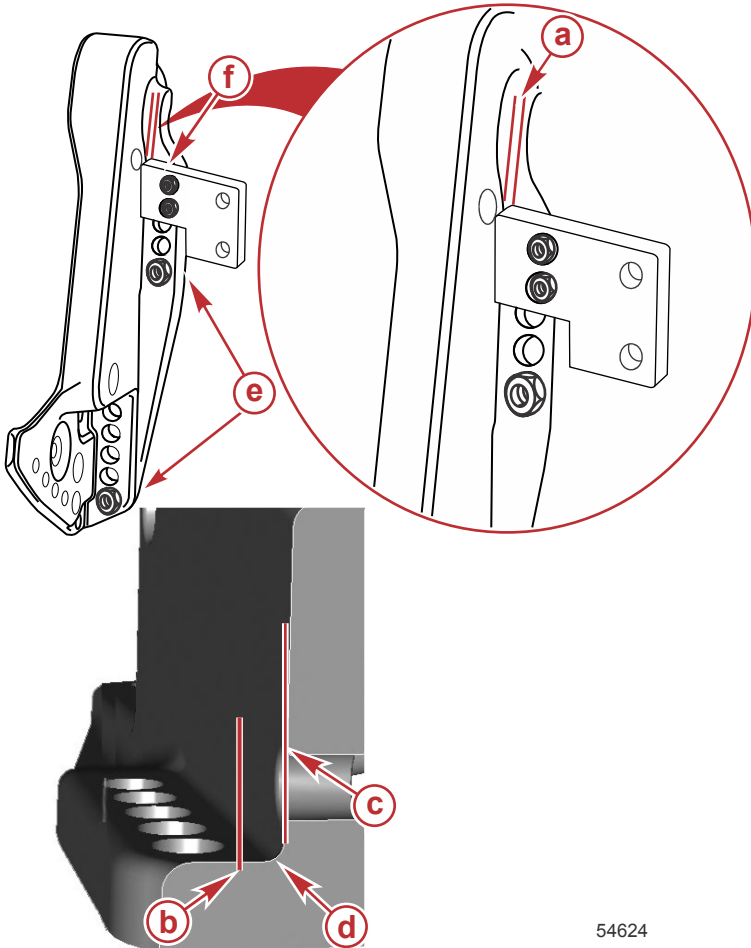
After the engine is mounted to the transom or jack plate in accordance with the engine installation instructions, it is acceptable to attach an accessory to the boat by use of the unused bolt holes in the transom clamp bracket as shown in Figure 1.

The following list provides additional guidelines for mounting accessories to the transom clamp bracket.

- The accessory fasteners must pass through the boat transom or jack plate.

INSTALLATION

- The installation must not create interference issues, as would an accessory mounting plate resting in the radius of the transom clamp bracket. Refer to Figure 1.



54624

Figure 1

- a** - Minimum clearance 3.175 mm (0.125 in.)
- b** - Edge of accessory bracket
- c** - Transom clamp bracket wall
- d** - Radius
- e** - Engine supplied mounting fasteners
- f** - Fasteners supplied by the accessory manufacturer installed through unused engine mounting bracket holes

INSTALLATION

UNACCEPTABLE ACCESSORY MOUNTING

IMPORTANT: Do not use the fasteners that secure the engine to the boat (either the transom or the jack plate) for any purpose other than securing the engine to the boat.

1. Do not mount an accessory to the transom clamp bracket in an unsupported condition. Refer to Figure 2.

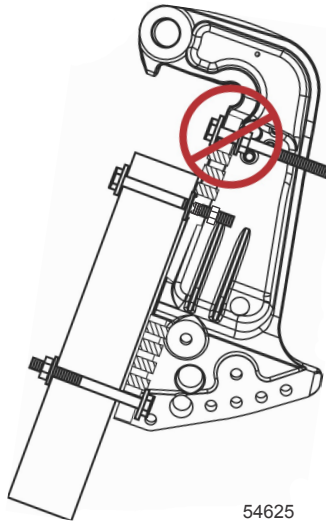


Figure 2

2. Do not attach an accessory to the boat by use of the engine mounting hardware. Refer to Figure 3.

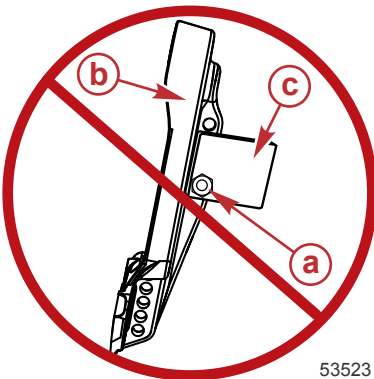


Figure 3

- a** - Engine supplied mounting fasteners
- b** - Transom clamp bracket
- c** - Accessory

INSTALLATION

- Do not install wedges or plates between the transom clamp brackets and the transom (or jack plate). Refer to Figure 4.

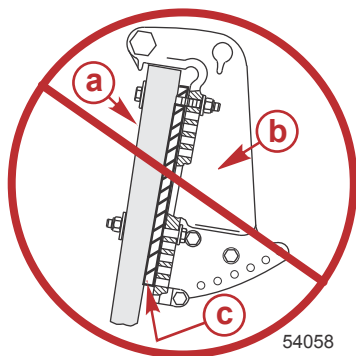


Figure 4

- a** - Boat transom or jack plate
- b** - Transom clamp bracket
- c** - Wedge/plate

54058

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

Fastening the Outboard to the Transom

MOUNTING BOLTS

Outboard Transom Mounting Hardware - Supplied with Outboard		
Part Number	Part Name	Description
8M0071543	Outboard mounting bolt	½-20 x 5.00 in. long (3.25 in. thread)

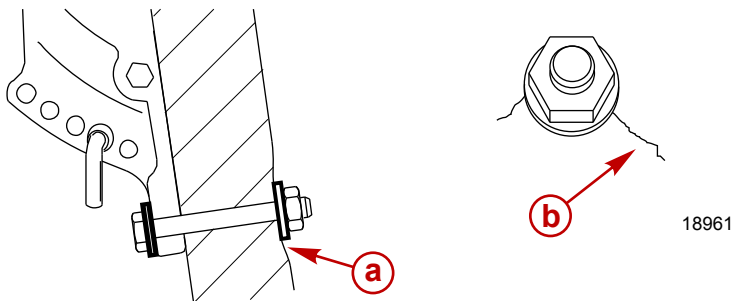
INSTALLATION

Outboard Transom Mounting Hardware - Supplied with Outboard		
Part Number	Part Name	Description
826711-17	Nylon insert locknut	½-20
28421	Flat washer	1.50 in. diameter
54012	Flat washer	0.875 in. diameter

Available Outboard Mounting Bolts	
Part Number	Description
67755005	½-20 x 2.50 in. long (1.25 in. thread)
67755006	½-20 x 3.50 in. long (1.25 in. thread)
814259	½-20 x 4.00 in. long (2.25 in. thread)
67755-1	½-20 x 4.50 in. long (2.25 in. thread)
8M0071543	½-20 x 5.00 in. long (3.25 in. thread)
8M0038370	½-20 x 5.50 in. long (3.25 in. thread)
67755-2	½-20 x 6.50 in. long (2.75 in. thread)
8M0028080	½-20 x 7.50 in. long (2.75 in. thread)
8M0032860	½-20 x 8.00 in. long (2.75 in. thread)

CHECKING BOAT TRANSOM CONSTRUCTION

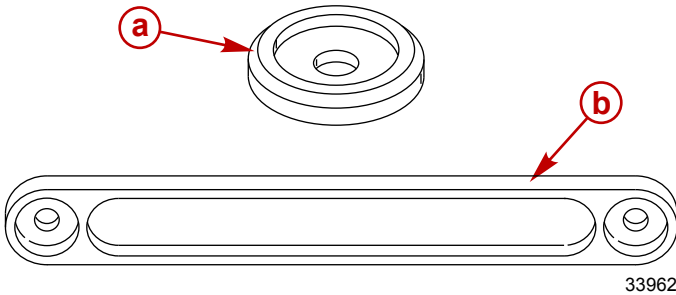
IMPORTANT: Determine the strength of the boat transom. The outboard mounting locknuts and bolts should be able to hold 75 Nm (55 lb-ft) of torque without the boat transom yielding or cracking. If the boat transom yields or cracks under this torque, the construction of the transom may not be adequate. The boat transom must be strengthened or the load carrying area increased.



- a** - Transom yielding under bolt torque
- b** - Transom cracking under bolt torque

INSTALLATION

Use a dial torque wrench to determine transom strength. If the bolt or nut continues to turn without the torque reading on the dial increasing, it is an indication that the transom is yielding. The load area can be increased by using a larger washer or a transom reinforcement plate.

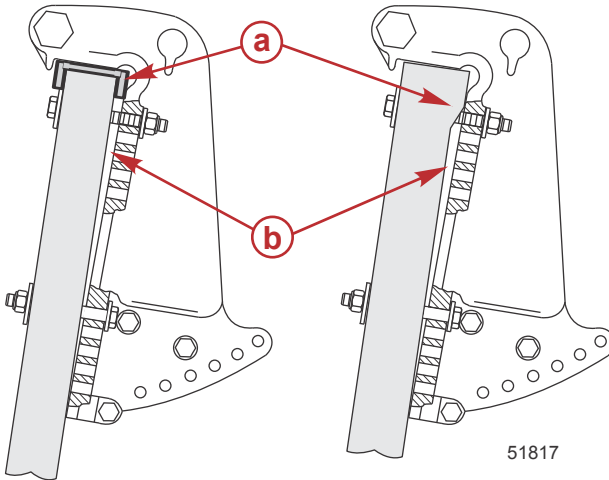


33962

- a** - Large transom washer
- b** - Transom reinforcement plate

FASTENING THE OUTBOARD TO THE TRANSOM

IMPORTANT: The transom mounting surface must be flat within 3.17 mm (0.125 in.). No step in the transom mounting surface is allowed. The inside transom mounting bolt washer surface must be flat within 3.17 mm (0.125 in.).

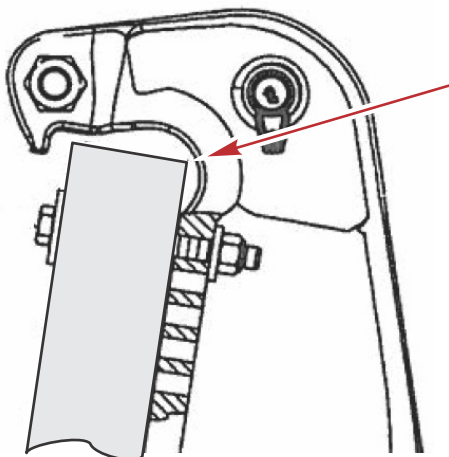


51817

- a** - Step (not allowed)
- b** - Gap between transom clamp and boat transom (not allowed)

INSTALLATION

IMPORTANT: Clearance must be maintained between the vessel transom and the outboard transom bracket relief radius area. Failure to maintain clearance may damage the transom bracket and cause the transom bracket to fail. Adjustments to the position of the Mercury Marine transom drilling fixture may be required to ensure proper clearance of the transom bracket relief radius area.



51867

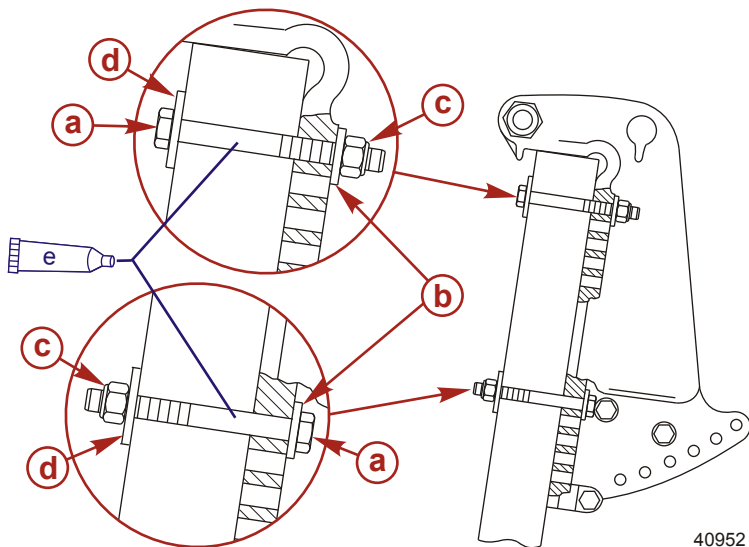
Installation

1. Apply marine sealer to the shanks of the bolts, not to the threads.
2. Fasten the outboard with the correct mounting hardware. Tighten the locknuts to the specified torque.

IMPORTANT: Ensure that a minimum of two full threads of the mounting bolts extend beyond the locknut after tightening. The locknut must be drawn tight while still engaging the bolt threads and not contacting the shank of the bolt.

INSTALLATION

NOTE: For a more accurate torque reading, tighten the mounting locknuts rather than the outboard mounting bolts.

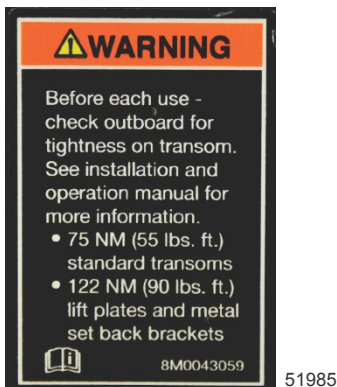


- a** - 0.500 in. diameter outboard mounting bolt (4)
- b** - 0.875 in. flat washer (4)
- c** - Nylon insert locknut (4)
- d** - 1.500 in. flat washer (4)
- e** - Marine sealer – apply to the shank of the bolts, not the threads

Description	Nm	lb-in.	lb-ft
Outboard mounting locknuts and bolts – standard boat transom	75	–	55
Outboard mounting locknuts and bolts – metal lift plates and setback brackets	122	–	90

INSTALLATION

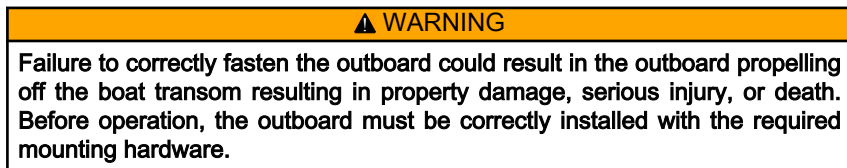
A decal on the transom bracket reminds the owner to check the fasteners securing the outboard to the transom before each use.



Decal on the transom bracket

Installing Outboard

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 the instructions in the manual.



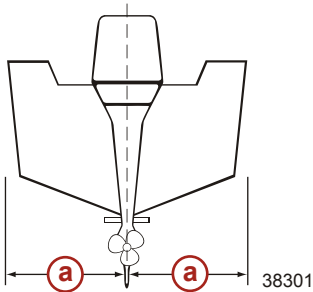
NOTE: Consult your authorized dealer to receive the proper instructions or ask your dealer to mount the motor as necessary.

IMPORTANT: Most boats are rated and certified in terms of their maximum horsepower limit, and this is shown on the boat's certification plate. Do not equip your boat with an outboard that exceeds this limit. If in doubt, contact your dealer. Do not operate the engine until it has been securely mounted on the boat in accordance with the instructions below.

INSTALLATION

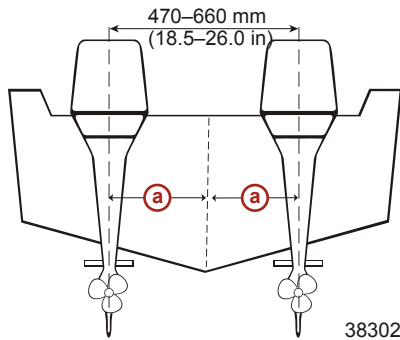
INSTALLATION

1. **Single engine installation:** Position the outboard motor at the center of the transom. Mount it using a cushioning pad or plate.



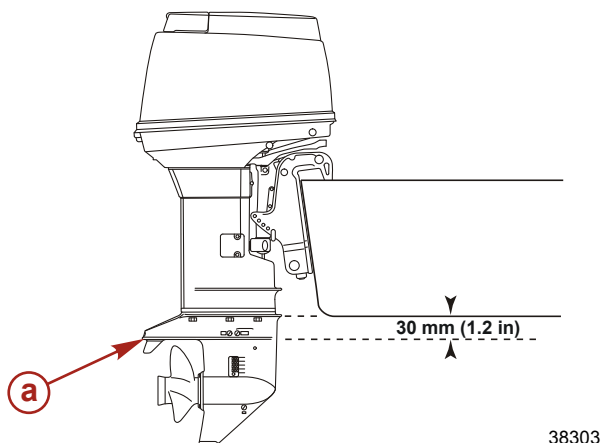
a - Outboard on the centerline of the transom

2. **Twin engine installation:** Position the outboard engines 470–660 mm (18.5–26.0 in.) apart, measured from the centerline of each engine, and equal distance (a) from the center of the transom.



INSTALLATION

3. **Transom height:** Clearance between the anti-ventilation plate of the motor and the bottom of the boat must be 10–30 mm (0.4–1.2 in.). If the height difference exceeds 30 mm (1.2 in.), engine power performance is likely to be reduced as a result of increased water resistance to the gearcase assembly.



38303

a - Anti-ventilation plate

4. After positioning the transom brackets, attach with clamp screws. Drill two holes in the boat transom, matching the holes in the transom bracket. Secure the engine with the supplied bolts, washers, and nuts.

TRANSOM MATCHING

Ensure the anti-ventilation plate of the outboard is below the water surface when running at wide-open throttle. In case the above condition cannot be met due to the bottom shape of your boat, please consult the dealer.

IMPORTANT: Overheating may occur if the anti-ventilation plate is at a level higher than the bottom of the boat, as a result of a lack of cooling water.

If the height difference exceeds 30 mm (1.2 in.), engine power performance is likely to be reduced as a result of increased water resistance to the gearcase assembly.

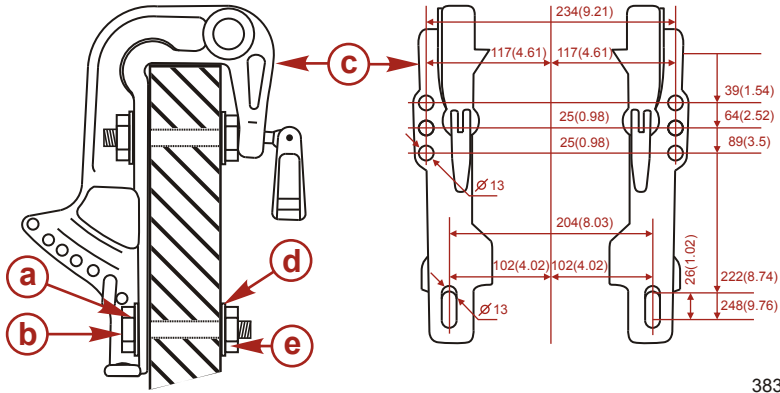
Attaching the transom bracket: After positioning the transom bracket, tighten the clamp screws. Drill four holes in the boat transom, matching the holes in the transom bracket. Secure the engine with the supplied bolts (M12 x 105 mm), washers, and nuts. Use the larger diameter washers inside of the transom board and the smaller diameter washers outside of the transom bracket.

The mounting holes may be drilled beforehand by referring to the dimensional drawing.

INSTALLATION

TRANSOM BRACKET DIMENSIONAL DRAWING

Manual tilting model: MH, EH, EHO, EO

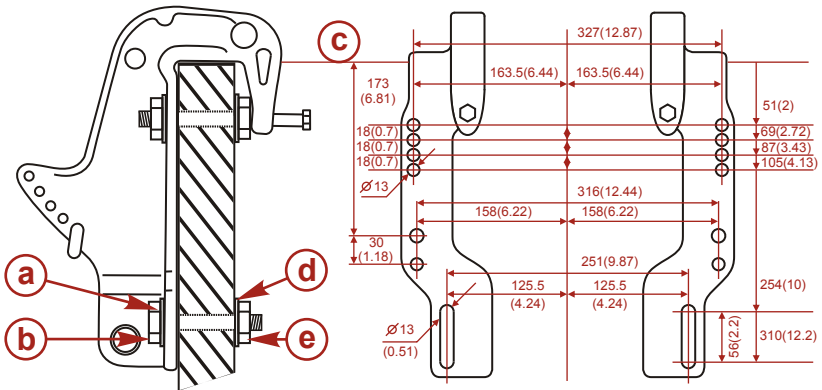


38305

- a** - Washer (smaller diameter)
- b** - Bolt (M12 x 105 mm)
- c** - Top of transom
- d** - Washer (larger diameter)
- e** - Nut

INSTALLATION

Power trim and tilt model: EHPTO, EPTO



38306

- a - Washer (smaller diameter)
- b - Bolt (M12 x 105 mm)
- c - Top of transom
- d - Washer (larger diameter)
- e - Nut

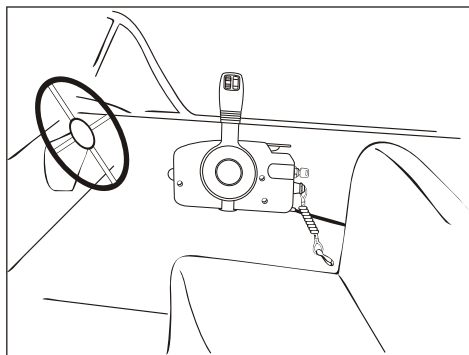
NOTE: We recommend the bolt head of the upper bolts face inward while the nuts are kept on the outside of the boat to prevent injury to the passengers.

1. Apply sealing agent, such as silicon sealer, between the bolts and the boat transom holes when tightening the bolt.
2. Secure the engine tightly with the bolts.

INSTALLATION

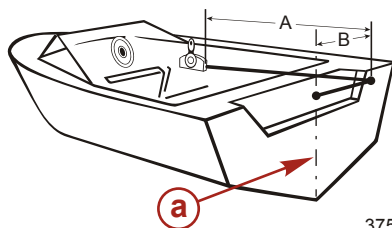
Installing the Remote Control Box

1. Position the remote control box in a place that will not interfere with the handling of the controls, levers, and switches. Confirm that there are no obstacles in the passage of the remote control cables.



41202

2. Determining remote control cable length: Use distances A and B as depicted in the illustrations. Determining the proper length for a remote control cable is dimensions A plus B plus 300 mm (12 in.).



a - Center of transom

37530

NOTE: The minimum bend radius for a remote control cable is typically 203 mm (8 in.). Avoid making sharp bends.

NOTE: To prevent accidental running of the engine, which could result in an injury, do not connect the battery until the installation of the remote control box and the engine is complete.

Installation of the Remote Control Cables (Box Side)

Follow the instruction manual provided with the remote control box.

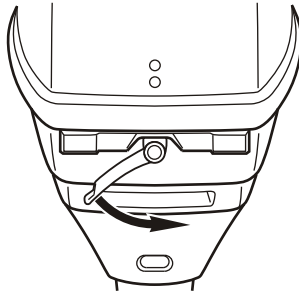
Installation of the Remote Control Box on your Boat

Follow the instruction manual provided with the remote control box.

INSTALLATION

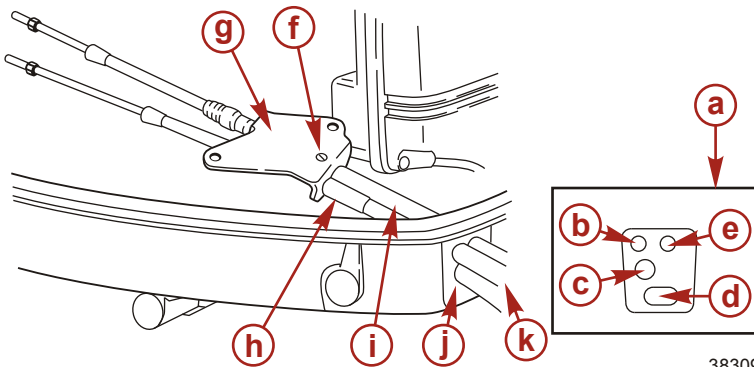
Connecting the Remote Control Cable to the Engine

1. Detach the top cowl by rotating the cowl latch.



38308

2. Detach the bracket and set cable harness B and remote control cables. Having secured the remote control cables to the bracket, attach them to the bottom cowl.

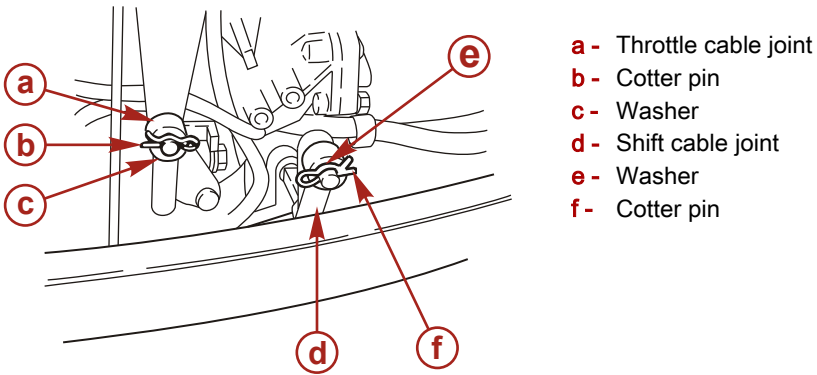


38309

- a** - Grommet
- b** - Shift cable
- c** - Key switch harness
- d** - Battery cables
- e** - Throttle cable
- f** - Screw
- g** - Bracket
- h** - Shift cable
- i** - Throttle cable
- j** - Grommet
- k** - Cable harness B

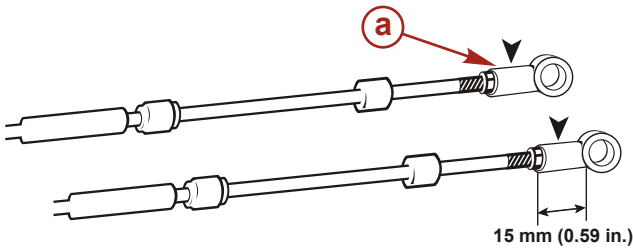
INSTALLATION

- Detach the throttle and shift cable joints by removing the cotter pins.



38310

- Thread at least 15 mm (0.59 in.) of the remote control cables through the terminal eyes. Securely lock the terminal eyes with the locknuts.



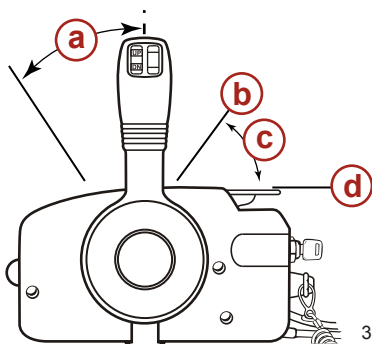
38311

a - Cable joint

- Move the remote control lever Forward (F), to Neutral (N), and to Reverse (R) to confirm the shift is working; then set the lever to Neutral (N).

INSTALLATION

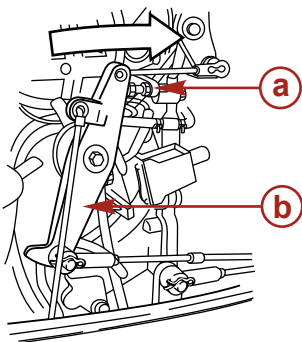
- Double-check that the remote control cables, the throttle cable, and the shift cable have been connected correctly. Move the remote control lever Forward (F) until the first engaging point (approximately 32°). The cable which is moved first when the lever is turned, is a shift cable. Check that the shift lever is in Neutral (N) and the neutral warm-up lever is fully closed when the remote control cables have been connected.



38312

- a** - Approximately 32°
- b** - Fully opened
- c** - Neutral warm-up lever
- d** - Fully closed

6. The advancer arm on the engine should have contact with the stopper of the carburetor throttle valve to enable it to be fully closed.

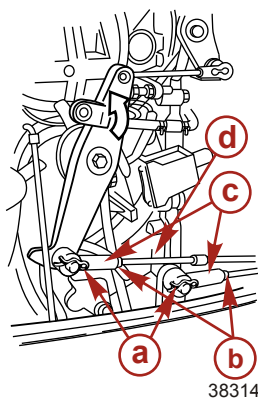


38313

- a** - Stopper (throttle fully closed side)
- b** - Advancer arm

INSTALLATION

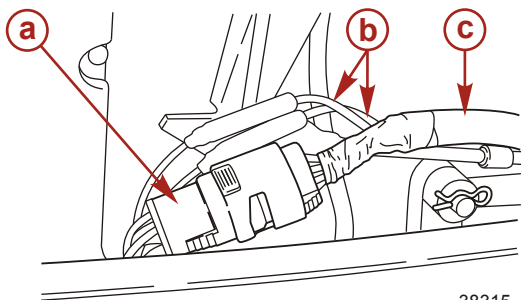
- Adjust the cable joint until the hole meets with the throttle arm pin. After adjustment, lock a cable joint with a nut and secure with a cotter pin.



- a - Cotter pin
- b - Nut
- c - Cable joint
- d - Throttle cable

Connecting Electrical Harnesses

- Connect key switch harness to the engine harness.
- Connect the pink and light blue leads from the key switch harness to the engine harness.



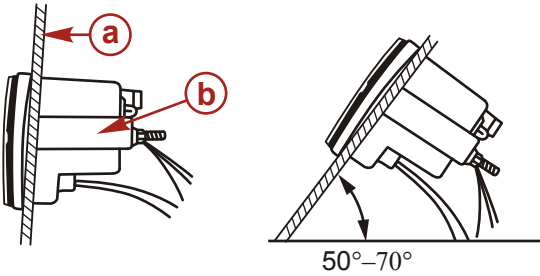
- a - Key switch harness
- b - Lead wires
- c - Engine harness

IMPORTANT: Do not disconnect the electric couplers while the engine is running, as this will damage the CD unit and could result in a serious electric shock.

INSTALLATION

INSTALLING THE METERS

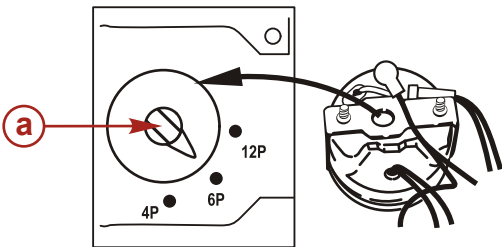
1. Install the meters securely in the dashboard where they can be easily read and are not exposed to water splashes. The recommended dashboard thickness is 2–11 mm (0.08–0.4 in.). For dashboards thicker than 11 mm (0.4 in.), the fitting plate should be cut accordingly. Be sure to tighten the nuts on the bracket evenly.



38316

- a** - Dashboard
- b** - Bracket

2. The dashboard inclination should be 50°–70°.
3. All models of the 40 and 50 series have six electric poles. Set the tachometer selector knob to "6P."

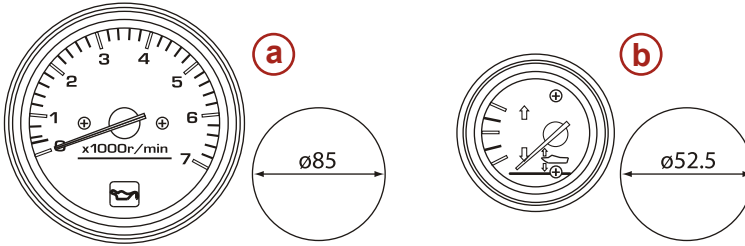


- a** - Selector

38317

INSTALLATION

4. Cut holes with 85 mm (3.346 in.) diameter for the tachometer and 52.5 mm (2.067 in.) for the trim gauge.

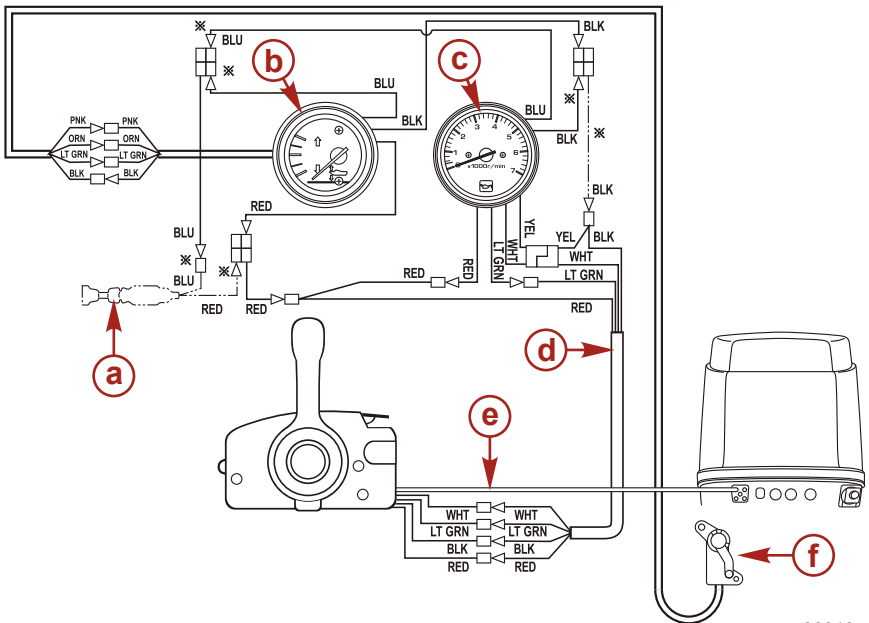


- a** - Tachometer
b - Trim gauge

5. Connection of leads:
- Tachometer: EO, EPTO
 - Trim gauge: EPTO
 - Trim sender: EPTO

INSTALLATION

Meter wiring diagram



38319

- a** - Meter lamp switch (optional)
- b** - Trim gauge
- c** - Tachometer
- d** - Analog gauge harness
- e** - Key switch harness
- f** - Trim sender

NOTE: The parts of * mark is to be wired when a meter lamp switch (optional) is connected.

Attaching the Steering Link Rod

⚠ WARNING

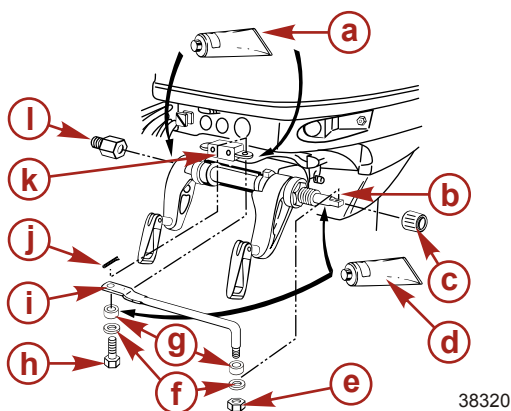
Improper fasteners or improper installation procedures can result in loosening or disengagement of the steering link rod. This can cause a sudden, unexpected loss of boat control, resulting in serious injury or death due to occupants being thrown within or out of the boat. Always use required components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

INSTALLATION

NOTE: The steering link rod parts are available and assembled as illustrated on the next page. Spacers may or may not be required, depending on cable brands.

1. Connect the steering link rod to the tip of the steering cable. Tighten the rod using a self-locking nut, making sure the rod can swing freely.
2. Connect the other tip of the rod to the steering bracket with a bolt, applying a collar and washer. The bolt head must face downward. Secure with a cotter pin to the bolt.

NOTE: Apply grease in the required places (refer to the illustration below). Apply grease inside the tilt tube.



38320

- a - Grease (apply grease inside the tilt tube)
- b - Apply grease on tip of steering cable
- c - Seal ring
- d - Grease
- e - Lock nut
- f - Washer
- g - Collar
- h - Bolt
- i - Steering link rod
- j - Cotter pin
- k - Steering bracket
- l - Spacer (optional)

Battery Installation

MOUNTING BATTERY

Follow the battery manufacturer's instructions carefully. Mount battery securely to the hull in a place free from splashing water.

NOTE: Electric starting outboards must have the battery cables connected to a battery whenever the engine is running, even if started manually, as damage to the charging system could result.

BATTERY CONNECTIONS

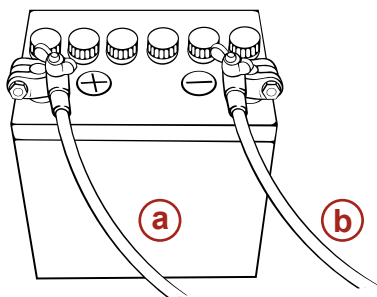
Connect a red cable to the positive (+) terminal first and a black cable to the negative (-) terminal of the battery. Put a red cap on the positive terminal. When disconnecting battery cables, be sure to disconnect the black cable first, and then the red cable.

Required battery rating: 12 V battery with a recommended capacity of 70 AH or over.

- Battery cables must be long enough to allow free steering.

INSTALLATION

- Battery cables must be arranged and protected from damage during steering.
- With poor cable connections, the starter will fail to start.
- Battery cable terminals should be clean, tight, and correctly installed. Positive to positive and negative to negative.
- Battery must be fully charged before running the motor.



- a** - Red cable
- b** - Black cable

37712

IMPORTANT: Please follow the instructions below:

- Hydrogen gas is generated when charging a battery. Keep the battery in a well-ventilated area during charging. Remove the battery from the boat; this will protect your hull and interior from damage. Electric sparks, cigarette smoking, and other sources of fire must be avoided in the charging area to prevent explosion of the battery.
- The battery fluid (electrolyte) contains sulfuric acid. If electrolyte is spilled on the skin or clothes, wash with plenty of water and consult a medical doctor. Always use safety glasses and rubber gloves when handling the battery.

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. This RPM range allows for better acceleration while maintaining maximum boat speed.

The propeller supplied with your outboard provides the best overall performance under average operating conditions.

Alternative propellers are available for specific boating requirements. See your outboard dealer.

AVAILABLE PROPELLERS

Refer to **Associated Parts - Propeller Selection** for the propeller selection.

Model	40	50
Maximum engine operating RPM range	5000–5700 RPM	5150–5850 RPM

INSTALLATION

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 outboard's 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.

ASSOCIATED PARTS

Associated Parts

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

	Name	Quantity	Dimensions
Service tools	Tool bag	1	
	Pliers	1	
	Socket wrench	1	10 x 13 mm
	Socket wrench	1	21 mm
	Socket wrench handle	1	
	Screwdriver (phillips and flat head)	1	
Spare parts	Starter rope	1	1600 mm
	Spark plug	2	40: NGK B7HS-10
		2	50: NGK B7HS-10
	Cotter pin	1	Diameter x length - 3 x 25 mm
Other*	Bracket fixing bolts	4	12 mm
	Bracket fixing nuts	4	12 mm
	Washers A, B	4 each	A = large, B = small
	Fuel tank (with primer bulb)	1	
	Remote control box	1	
	Steering link	1	
	Tachometer	1	
	Trim gauge	1	EPTO type only
Lead wire for gauge	1		
			For EO and EPTO type

NOTE: * Not included as standard accessories in some markets.

Propeller Selection

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.

A propeller must be selected so that the engine RPM measured at wide open throttle while cruising is within the recommended range.

ASSOCIATED PARTS

40	5000–5700 RPM
50	5150–5850 RPM

Lower numbers indicates heavier load and higher numbers indicates lighter load

Mark	40	50
*7		
8.5		
9		
10		
11		
12	XL transom	
C 12.5	SL transom	XL transom
13		
C 13.5		SL transom
14		
C 14.5		
C 16		

NOTE: * Shows propeller with four blades.

Mark	W50
9	
10	
11	
12	L transom
13	
14	
15	
16.5	
17.5	

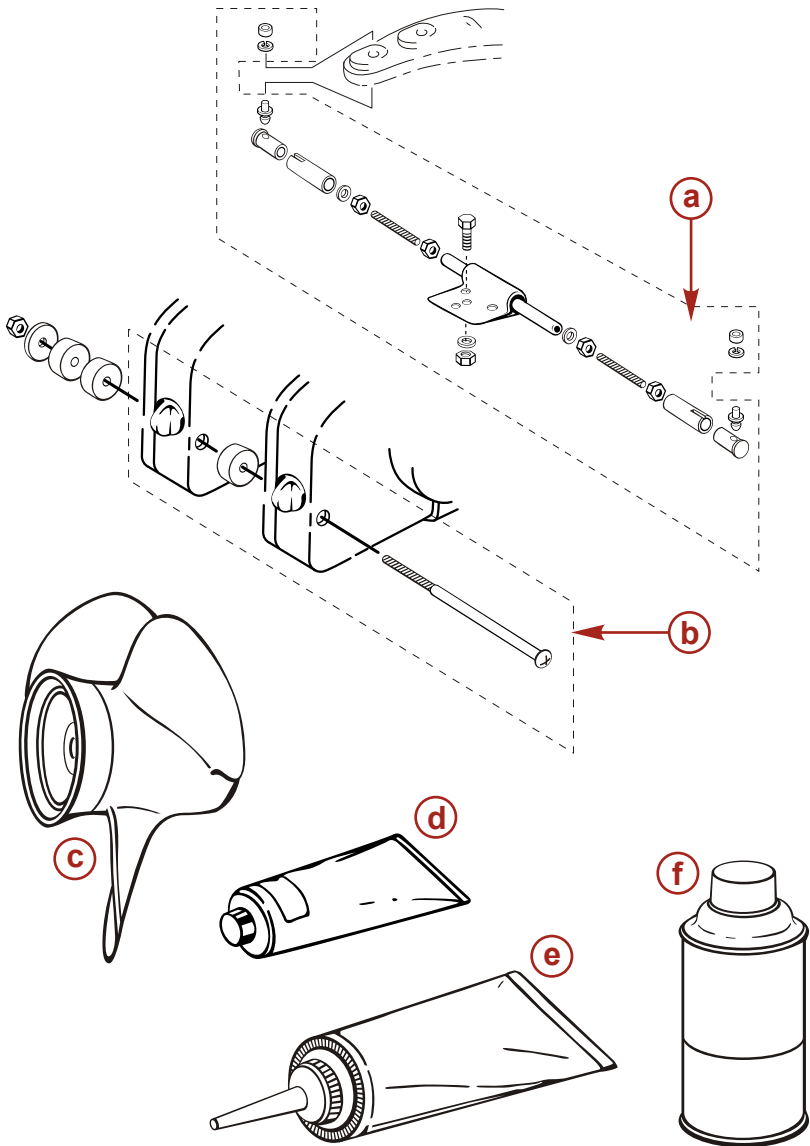
NOTE:

ASSOCIATED PARTS

Notes:

ACCESSORIES

Optional Accessories

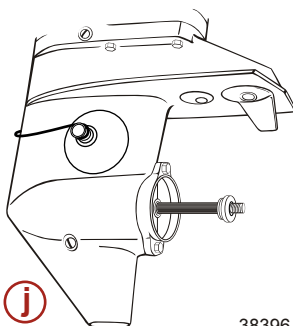
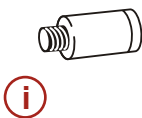
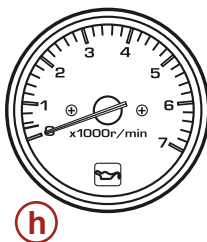
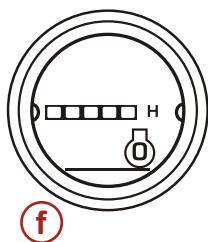
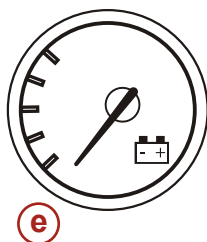
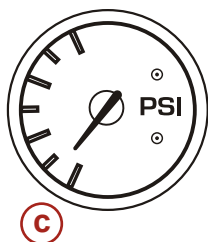
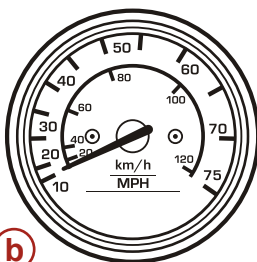
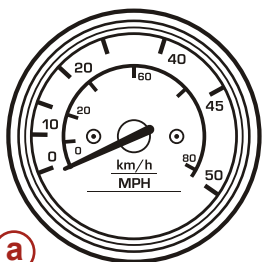


38397

ACCESSORIES

- a** - Tie bar kit B (for twin - engine operation)
- b** - Twin - control kit (for twin - engine operation)
- c** - Propeller
- d** - Grease
- e** - Gear oil (500 ml)
- f** - Touch-up spray

ACCESSORIES



- a** - Speedometer (50 mph)
- b** - Speedometer (75 mph)
- c** - Water pressure gauge
- d** - Water temperature gauge

ACCESSORIES

- e** - Voltmeter
- f** - Hour meter (engine operation hour counter)
- g** - Fuel gauge
- h** - Tachometer
- i** - Flushing attachment
- j** - Drive cleaner

OWNER SERVICE ASSISTANCE

Service Assistance

LOCAL REPAIR SERVICE

If you need service for your Mercury-outboard-powered boat, take it to your authorized dealer. Only authorized dealers specialize in Mercury products and have factory-trained mechanics, special tools and equipment, and genuine Quicksilver parts and accessories to properly service your engine.

NOTE: *Quicksilver parts and accessories are engineered and built by Mercury Marine specifically for your power package.*

SERVICE AWAY FROM HOME

If you are away from your local dealer and the need arises for service, contact the nearest authorized dealer. If, for any reason, you cannot obtain service, contact the nearest Regional Service Center. Outside the United States and Canada, contact the nearest Marine Power International Service Center.

STOLEN POWER PACKAGE

If your power package is stolen, immediately advise the local authorities and Mercury Marine of the model and serial numbers and to whom the recovery is to be reported. This information is maintained in a database at Mercury Marine to aid authorities and dealers in the recovery of stolen power packages.

ATTENTION REQUIRED AFTER SUBMERSION

1. Before recovery, contact an authorized Mercury dealer.
2. After recovery, immediate service by an authorized Mercury dealer is required to reduce the possibility of serious engine damage.

REPLACEMENT SERVICE PARTS

WARNING

Avoid fire or explosion hazard. Electrical, ignition, and fuel system components on Mercury Marine products comply with federal and international standards to minimize risk of fire or explosion. Do not use replacement electrical or fuel system components that do not comply with these standards. When servicing the electrical and fuel systems, properly install and tighten all components.

Marine engines are expected to operate at or near full throttle for most of their lives. They are also expected to operate in both fresh and saltwater environments. These conditions require numerous special parts.

PARTS AND ACCESSORIES INQUIRIES

Direct any inquiries concerning genuine Mercury Precision Parts® or Quicksilver Marine Parts and Accessories® to a local authorized dealer. Dealers have the proper systems to order parts and accessories, if they are not in stock. **Engine model** and **serial number** are required to order correct parts.

OWNER SERVICE ASSISTANCE

RESOLVING A PROBLEM

Satisfaction with your Mercury product is important to your dealer and to us. If you ever have a problem, question or concern about your power package, contact your dealer or any authorized Mercury dealership. If you need additional assistance:

1. Talk with the dealership's sales manager or service manager.
2. If your question, concern, or problem cannot be resolved by your dealership, please contact the 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 Customer Service:

- Your name and address
- Your daytime telephone number
- The model and serial numbers of your power package
- The name and address of your dealership
- The nature of the problem

CONTACT INFORMATION FOR MERCURY MARINE CUSTOMER SERVICE

For assistance, call, fax, or write to the geographic office in your area. Please include your daytime telephone number with mail and fax correspondence.

United States, Canada		
Telephone	English +1 920 929 5040 Français +1 905 636 4751	Mercury Marine W6250 Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939
Fax	English +1 920 929 5893 Français +1 905 636 1704	
Website	www.mercurymarine.com	

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

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

OWNER SERVICE ASSISTANCE

Mexico, Central America, South America, Caribbean		
Telephone	+1 954 744 3500	Mercury Marine 11650 Interchange Circle North Miramar, FL 33025 U.S.A.
Fax	+1 954 744 3535	

Japan		
Telephone	+072 233 8888	Kisaka Co., Ltd. 4-130 Kannabecho, Sakai-ku Sakai-shi, Osaka 590-0984, Japan
Fax	+072 233 8833	

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

Ordering Literature

Before ordering literature, have the following information about your power package available:

Model		Serial Number	
Horsepower		Year	

UNITED STATES AND CANADA

For additional literature for your Mercury Marine power package, contact your nearest Mercury Marine dealer or contact:

Mercury Marine		
Telephone	Fax	Mail
(920) 929-5110 (USA only)	(920) 929-4894 (USA only)	Mercury Marine Attn: Publications Department P.O. Box 1939 Fond du Lac, WI 54936-1939

OUTSIDE THE UNITED STATES AND CANADA

Contact your nearest Mercury Marine authorized service center to order additional literature that is available for your particular power package.

OWNER SERVICE ASSISTANCE

Submit the following order form with payment to:	Mercury Marine Attn: Publications Department W6250 Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939
--	--

Ship To: (Copy this form and print or type—This is your shipping label)	
Name	
Address	
City, State, Province	
ZIP or postal code	
Country	

Quantity	Item	Stock Number	Price	Total
			.	.
			.	.
			.	.
			.	.
			.	.
Total Due			.	.

MAINTENANCE LOG

Maintenance Log

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

Date	Maintenance Performed	Engine Hours