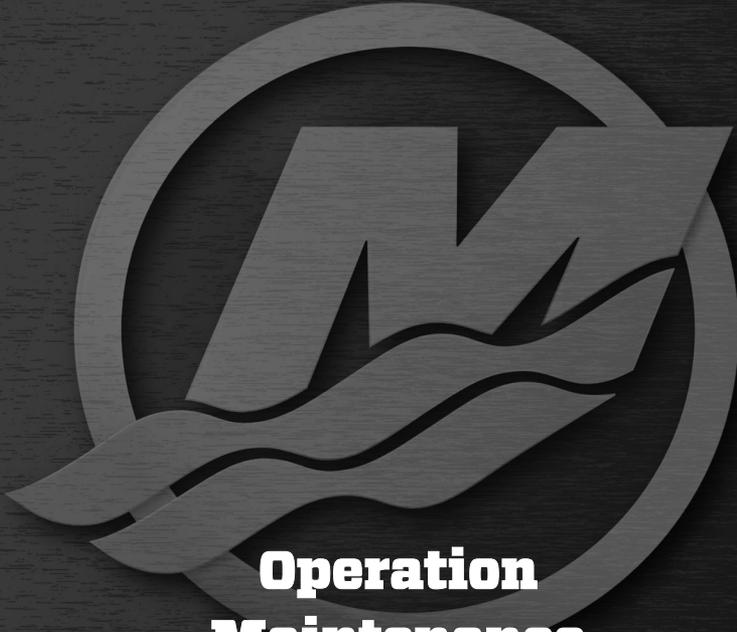




**MERCURY**<sup>®</sup>

8M0118480 416 eng



**Operation  
Maintenance  
and  
Installation  
Manual**

**4/4.9/5**

© 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.

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## 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)		



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# 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

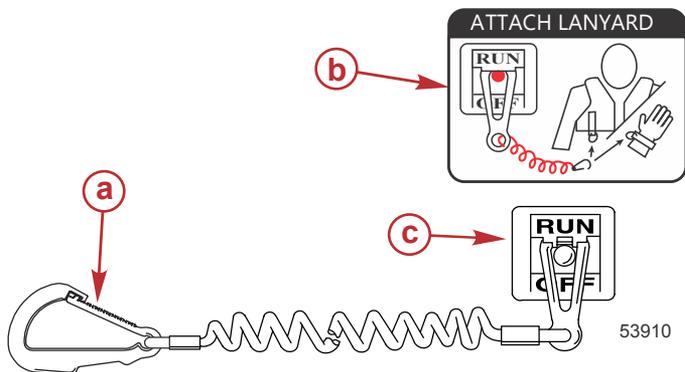
## Lanyard Stop Switch

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.

# GENERAL INFORMATION

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.

**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.

# GENERAL INFORMATION

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.

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

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

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

# GENERAL INFORMATION

## Protecting People in the Water

### WHILE YOU ARE CRUISING

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



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

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

### WHILE 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.

## 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.

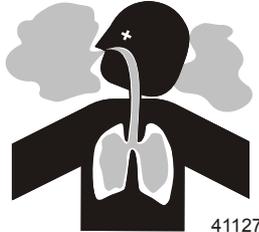
# GENERAL INFORMATION

## ⚠ 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

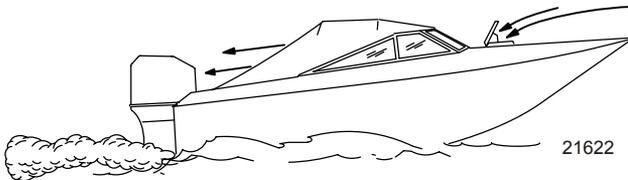


Engine exhaust gases contain harmful carbon monoxide. Avoid areas of concentrated engine exhaust gases. When engines are running, keep swimmers away from the boat, and do not sit, lie, or stand on swim platforms or boarding ladders. While underway, do not allow passengers to be positioned immediately 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.

## GOOD VENTILATION

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

Example of desired air flow through the boat:



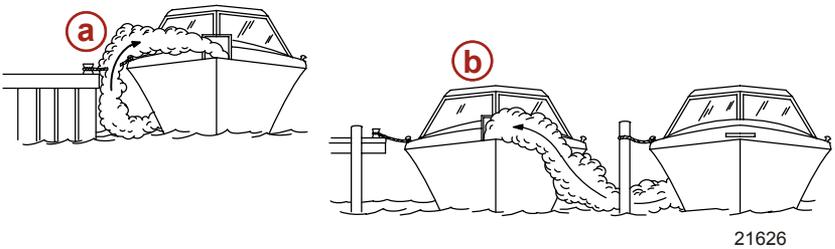
## POOR VENTILATION

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.

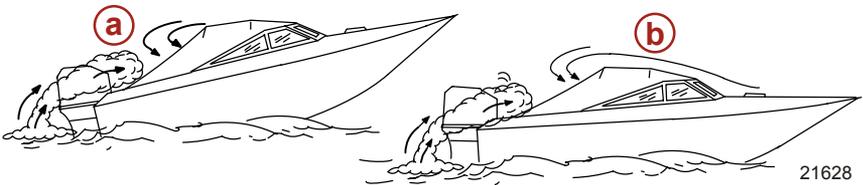
# GENERAL INFORMATION

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)

## 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.**

# GENERAL INFORMATION

- 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
  - 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.**

# GENERAL INFORMATION

- 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.**

- 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.**

# GENERAL INFORMATION

- 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

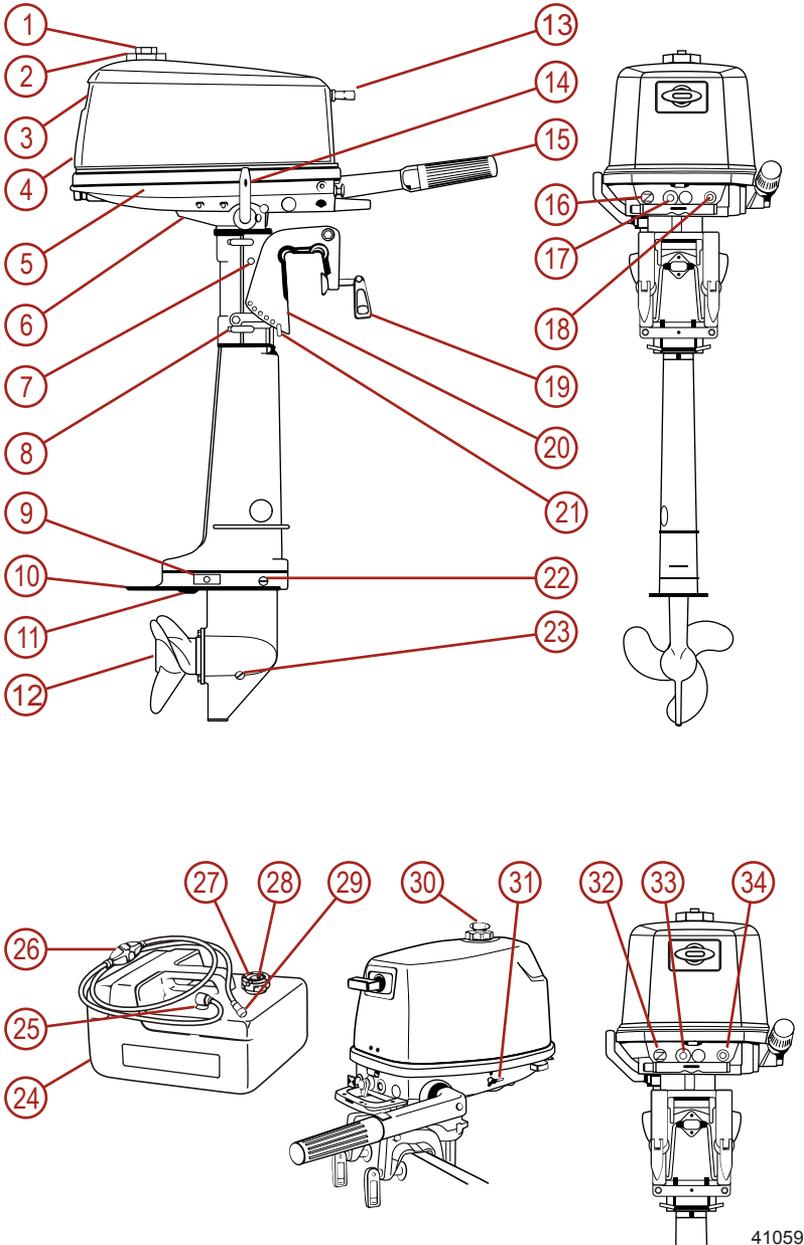
It is important to record the serial number and other important information for future reference.

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

## Component Identification—4C/4.9/5BD



41059

# GENERAL INFORMATION

- 1 - Air vent screw
- 2 - Fuel tank cap
- 3 - Tilt handle
- 4 - Upper motor cover
- 5 - Lower motor cover
- 6 - Water pump indicator port
- 7 - Tilt lever
- 8 - Steering friction adjustment screw
- 9 - Anode
- 10 - Anti-ventilation plate
- 11 - Water inlet
- 12 - Propeller
- 13 - Starter handle
- 14 - Shift lever
- 15 - Throttle grip
- 16 - Choke knob
- 17 - Stop switch
- 18 - Fuel connector
- 19 - Clamp screw
- 20 - Clamp bracket
- 21 - Trim position pin
- 22 - Oil plug (upper)
- 23 - Oil plug (lower)
- 24 - Fuel tank
- 25 - Fuel pickup elbow
- 26 - Primer bulb
- 27 - Fuel tank cap
- 28 - Air vent screw
- 29 - Fuel connector
- 30 - Air vent screw
- 31 - Fuel valve
- 32 - Choke knob
- 33 - Stop switch
- 34 - Fuel connector

## 4/4.9/5 Specifications

Models	4C	4.9	5B-D
Overall length	700 mm (27.6 in.)		
Overall width	310 mm (12.2 in.)		

# GENERAL INFORMATION

Models	4C	4.9	5B-D
Overall height	S=1007 mm (39.6 in.), L=1134 mm (44.6 in.)		
	–	–	UL=1261 mm (49.6 in.)
Transom height	S=435 mm (17.1 in.), L=562 mm (22.1 in.), UL=689 mm (27.1 in.)		
Weight	S=20.0 kg (44 lb), L=20.5 kg (45 lb)		
	–	–	UL=21.0 kg (46 lb)
Output	2.9 kW (4 HP)	3.6 kW (4.9 HP)	3.7 kW (5 HP)
Max operating range	4500–5500 RPM		
Idle speed in forward gear	850 RPM		
Idle speed in neutral gear	1000 RPM		
Engine type	Two-Stroke		
Number of cylinders	1		
Bore x stroke	55 x 43 mm (2.17 x 1.69 in.)		
Displacement	102 mL (6.22 in. <sup>3</sup> )		
Exhaust system	Through hub exhaust		
Cooling system	Thermostat controlled		
Lubrication system	Engine oil mixed gasoline		
Fuel	Unleaded regular gasoline pump posted 87 Octane (research octane rating of 92)		
Engine oil	Mercury/Quicksilver or recommended Two-Stroke engine oil		
Engine oil mixing ratio	1:50 (Engine oil: fuel)		
Starting system	Manual starter		
Ignition system	Flywheel magneto CDI		
Spark plug	NGK BPR7HS-10		
Trim position	6		
Gear oil	Mercury/Quicksilver gear oil or API GLS, SAE #80 to #90, approximately 195 mL (6.6 fl oz)		

## GENERAL INFORMATION

<b>Models</b>	<b>4C</b>	<b>4.9</b>	<b>5B-D</b>
Fuel tank capacity	2.5 L (0.66 US gal)	2.5 L (0.66 US gal)	2.5 L (0.66 US gal), 12 L (3.17 US gal)*
Gear reduction ratio	2.15 (13:28)		

\* In case of dual fuel tank system, use together with 12 L separate tank.

# 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

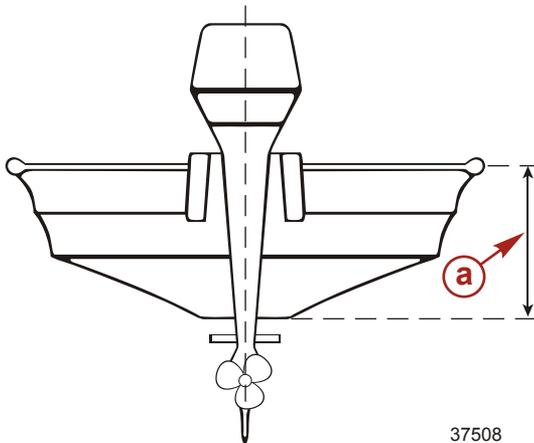
## Installing Outboard

### INSTALLING OUTBOARD ON TRANSOM

**IMPORTANT:** Most boats are rated and certified in terms of their maximum horsepower, 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 unit until it has been securely mounted on the boat in accordance with the instructions below.

# INSTALLATION

1. Position the outboard at the center of the transom. Mount it using a cushioning pad or plate.

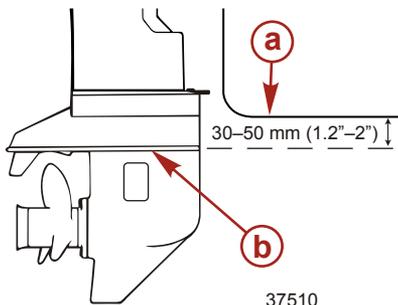


**a** - Boat transom

37508

## BOAT TRANSOM HEIGHT REQUIREMENT

1. Measure the transom height of your boat. The anti-ventilation plate should be 30 - 50 mm (1.2 - 2 in.) below the bottom of the boat.



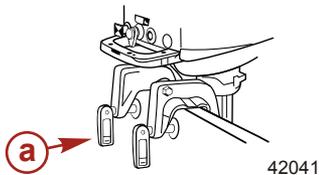
**a** - Bottom of hull

**b** - Anti-ventilation plate

37510

## ATTACH THE ENGINE TO THE BOAT

1. Tighten the clamp screws by turning their handles. Secure with a cable to prevent accidental loss overboard.



**a** - Clamp screw

42041

# TRANSPORTING

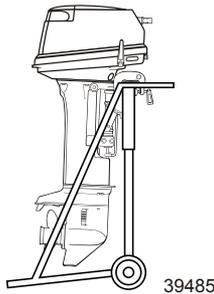
## Removing the Motor

**IMPORTANT:** Ensure the proper procedures are followed for transportation and storage of the outboard to avoid the possibility of oil leaks.

1. Stop the engine and close the air vent screw.
2. Close the fuel valve knob. Disconnect the fuel connector.
3. Remove the motor from the hull and completely drain the water from the gearcase.

## Carrying the Motor

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



**NOTE:** If you carry the motor horizontal posture, keep the power head higher than the propeller.

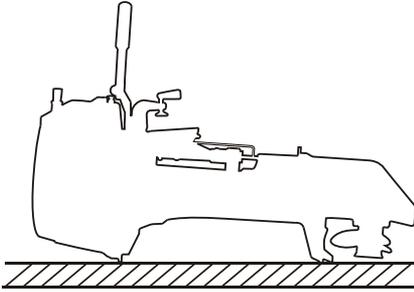
**IMPORTANT:** Beware of explosion danger. Spilled and vaped gasoline may easily catch fire and explode. Be sure to fully discharge gasoline from the carburetors when transporting the engine. Wipe off spilled gasoline with a rag.

## Storing the Motor

1. With the outboard still in the water, close the fuel shut-off valve or disconnect the remote fuel line (if equipped) and run engine until it stops. This will drain fuel from the carburetor. Remove outboard from the boat and hold upright until all cooling water is drained out.

# TRANSPORTING

2. Lay the outboard down on its back side so the tiller handle is facing up as shown. Place a protective pad under the outboard.



40803

3. Close the fuel tank vent.

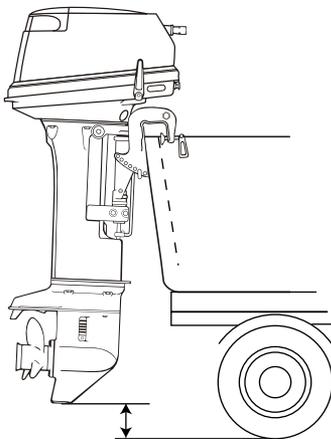
## Trailing the Boat

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

The boat should be trailered with the outboard tilted down (normal operating position). If trailering with the engine fully down is not possible (the gearcase skag is too close to the road in a vertical position), tilt the motor securely using a device (like a transom saver bar) in the tilted up position.

If additional ground clearance is required, remove the outboard from the boat and store securely. Additional clearance may be needed for railroad crossings, driveways, and trailer bouncing.

Set the gear shift into forward (F) gear. This prevents the propeller from spinning freely.



39486

# TRANSPORTING

**NOTE:** *The tilt support device supplied on your outboard is not intended for towing. It is intended to support the engine while the boat is docked, beached, etc.*

# 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
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**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.

## Mixing Fuel and Oil

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

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

## GASOLINE/OIL MIXING RATIO CHART

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

## MIXING PROCEDURE

Pour the full amount of oil along with approximately one gallon of gasoline into an approved container. Shake the two together until they are thoroughly mixed. Add the remainder of gasoline and shake container to ensure mixing.

# FUEL AND OIL

## Engine Break-In

### Engine Break-In Fuel Mixture

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

### Engine Break-In Procedure

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

## Filling Fuel Tank

### WARNING

**Avoid serious injury or death from a gasoline fire or explosion. Use caution when filling fuel tanks. Always stop the engine and do not smoke or allow open flames or sparks in the area while filling fuel tanks.**

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

Always stop engine before refilling tanks.

Do not overfill the fuel tank. Fuel will expand in volume as its temperature rises and can leak under pressure if the tank is completely filled.

The oil and fuel mixture should always be thoroughly mixed in an approved container before pouring into motor fuel tank. Do not pour separately into fuel tank.

Pour fuel into tank through a fine mesh strainer to remove dirt which may be present.

### PORTABLE FUEL TANK

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

Remove portable fuel tanks from boat to refill them.

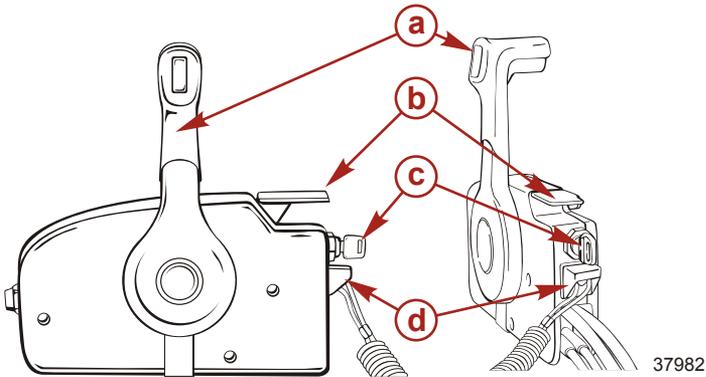
Always stop engine before refilling tanks.

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

# FEATURES AND CONTROLS

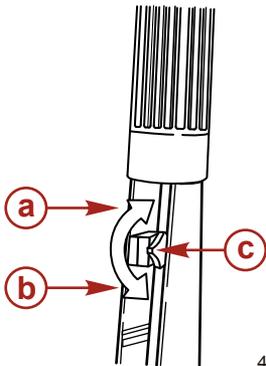
## Remote Control Features

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 handle
- b** - Throttle only lever
- c** - Ignition key switch
- d** - Lanyard stop switch

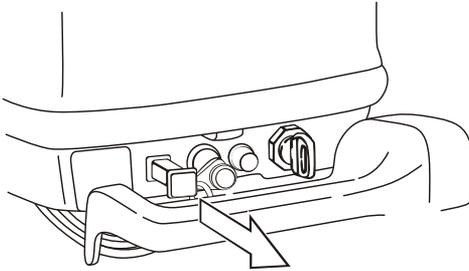
**Throttle grip friction knob:** The throttle friction can be adjusted in accordance with your preference by turning the adjustment screw.



- a** - Direction to heavier friction
- b** - Direction to lighter friction
- c** - Throttle adjustment screw

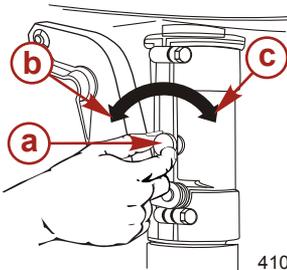
# FEATURES AND CONTROLS

**Choke knob:** Pull completely out when starting a cold engine. Push halfway in as engine is warming up. Push in completely after engine is warmed up.



38349

**Steering friction adjustment:** The steering friction can be adjusted in accordance with your preference by turning the adjustment screw.



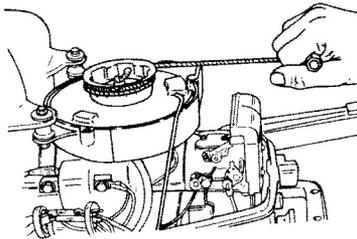
41067

- a** - Steering adjustment screw
- b** - Turn counterclockwise to lighter steering
- c** - Turn clockwise to heavier steering

## ⚠ 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.

**Starter rope:** Pull the starter handle slowly until you feel engagement. Then pull it quickly. Repeat if necessary until engine is started.



28851

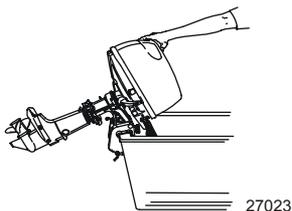
After the engine has started, push the choke knob back then return the grip to SLOW position and run the engine to warm up for several minutes.

# FEATURES AND CONTROLS

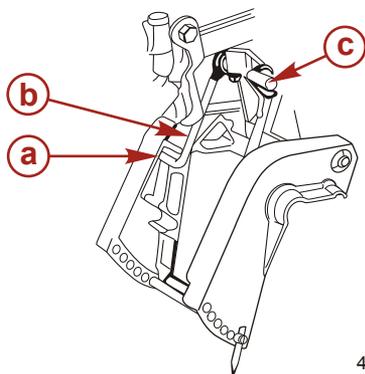
## Tilting Outboard

### TILTING TO FULL UP POSITION

1. Stop the engine. Shift the outboard into Forward (F) gear.
2. Take hold of the top cowl grip and raise outboard to the full up position.



3. Then slightly lower the motor for locking at tilt-up position.

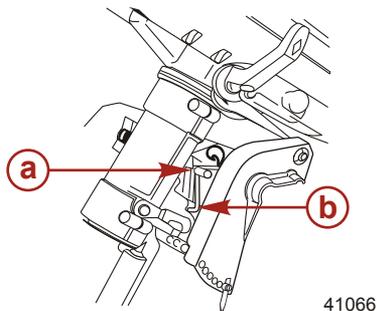


- a - Tilt up position
- b - Tilt stopper
- c - Tilt lever

4. The spring loaded tilt lock lever will engage automatically and lock the outboard in full up position.

### LOWERING TO RUN POSITION

1. Raise the outboard and pull up on the tilt release lever. Gently lower outboard down.



- a - Tilt lever
- b - Tilt stopper

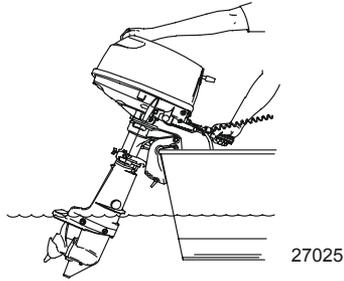
# FEATURES AND CONTROLS

## Shallow Water Operation

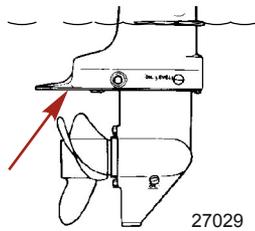
This outboard has a shallow water drive position. This will allow you to tilt the outboard to a higher position to prevent hitting bottom.

### ENGAGING SHALLOW WATER DRIVE

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



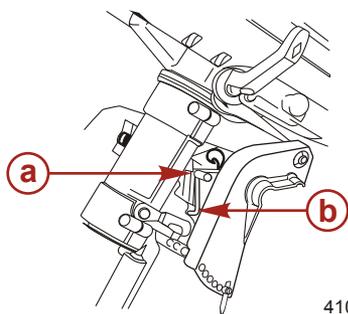
2. Ensure the cooling water intake is submerged.



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

# FEATURES AND CONTROLS

- To release outboard back down to run position, tilt outboard up slightly (approximately 15°), then pull up on the tilt release lever. Gently lower outboard down to the normal running position.



- a - Tilt lever
- b - Tilt stopper

41066

Please follow the instructions below.

- Be sure that the water intake is submerged at all times and that water is continuously flowing from the cooling water pump indicator hole.
- Be sure to run the engine slowly when using the shallow water drive. Running at higher speeds will result in lack of control and may damage the mounting bracket.
- Care must be taken while running in this tilt position not come in contact with the bottom, or submerged objects, especially in reverse. This may cause damage to the motor and/or boat.

## Trim Angle Adjustment

The vertical operating angle of your outboard is adjusted by changing the position of the tilt pin in the adjustment holes provided. Proper adjustment allows the boat to achieve optimum performance, stability, and minimize steering effort.

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

The tilt pin should be adjusted so the outboard is positioned to run perpendicular to the water when the boat is running at full speed. This allows the boat to be driven parallel to the water.

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

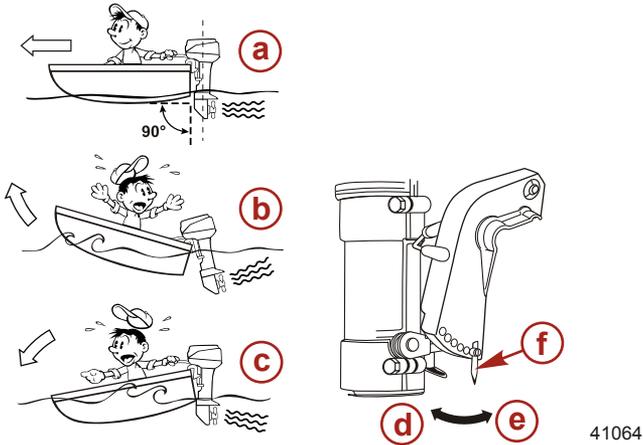
The trim angle is adjusted by setting the trim position pin in the correct trim position.

## TRIM POSITION ADJUSTMENTS

- 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. Furthermore, the bow may sway or the bottom may slam the water while cruising. In this case, decrease the trim angle by setting the trim position pin in a lower position.

# FEATURES AND CONTROLS

- **Trim up:** If the trim angle is too small, the bow will enter 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 position.



- a** - Correct trim
- b** - Trim down
- c** - Trim up
- d** - Move pin to raise bow up
- e** - Move pin to lower bow down
- f** - Trim position pin

# 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 at High Elevations

**IMPORTANT: To prevent serious damage to the engine caused by a lean fuel mixture, do not operate the 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 the outboard at an elevation higher than 762 m (2500 ft.) above sea level may require a carburetor jet change. 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.

## 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**.

# OPERATION

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.

## 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.

### ENGINE BREAK-IN FUEL MIXTURE

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

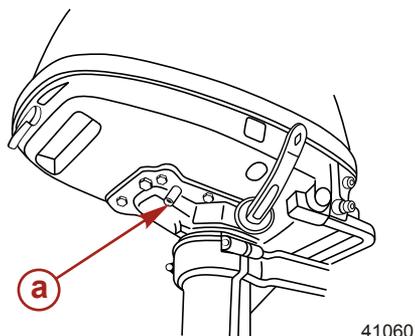
### BREAK-IN PROCEDURE

Vary the throttle setting during the first hour of operation. During the first hour of operation, avoid remaining at a constant speed for more than two minutes and avoid sustained wide open throttle.

## Warming Up the Engine

It's important to warm-up the engine for three minutes. This allows the lubrication system to circulate and deliver oil to all the moving parts of an engine.

Operating the engine without warm-up will reduce engine performance and shorten the life of the engine. Be sure to check that cooling water is coming out of the water pump indicator hole during warm-up.



**a** - Water pump indicator hole

41060

### 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.

# OPERATION

**Engine speed:** Idling speed after warming up.

In Gear	In Neutral
850 RPM	1000 RPM

## Starting the Engine

Before starting, read the **Prestarting Check List**, special operating instructions, and **Engine Break-In Procedure** in this section.

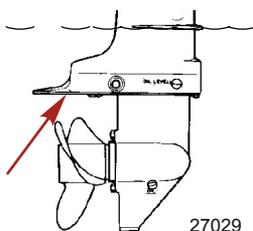
**IMPORTANT:** Be sure to connect the emergency lanyard to your waist or clothing. The engine will shut down if the lanyard becomes disconnected from the engine.

**NOTE:** The engine will not start unless the lanyard has been properly connected to the emergency stop switch.

1. Lower the outboard to the run position. Make sure the cooling water intake is submerged.

### 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.

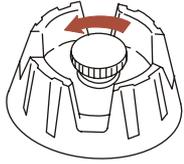


2. Loosen the air vent screw on the tank cap.



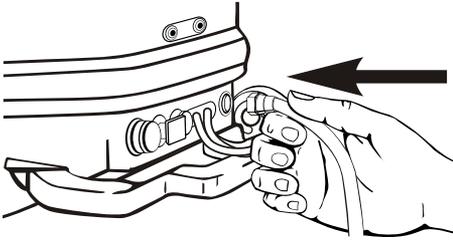
**a** - Air vent screw

# OPERATION



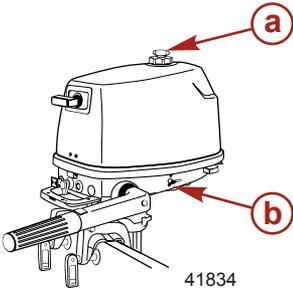
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3. Attach the fuel connector to the engine connector.



42043

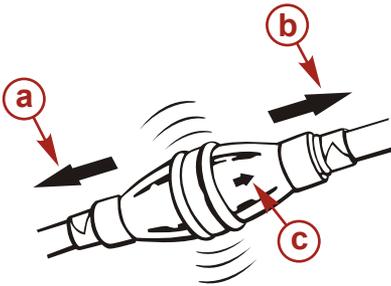
4. The arrow mark on the primer bulb should be facing the engine (separate fuel tank).
5. Open the fuel valve (internal fuel tank).



41834

- a** - Air vent screw
- b** - Fuel valve

6. Feed fuel to the carburetor by squeezing the primer bulb until it is firm (separate fuel tank).

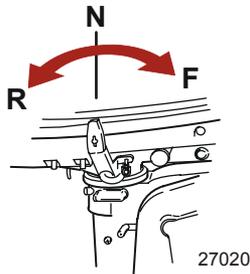


37714

- a** - To fuel tank
- b** - To engine
- c** - Fuel flow direction

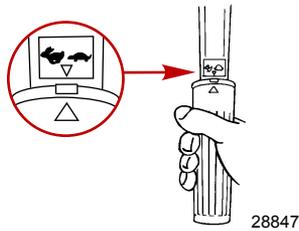
# OPERATION

7. Move gear shift lever to neutral (N) position. Be sure that the shift lever is in neutral (N) when starting the engine. This model is provided with a function that prevents starting in gear.

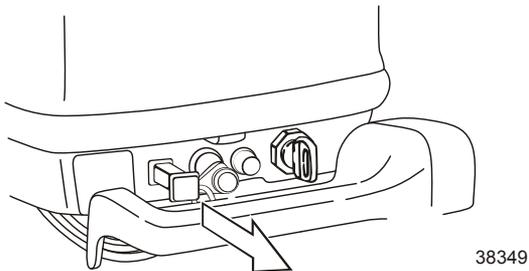


**NOTE:** If the motor somehow does start in gear, do not operate it. Contact your authorized dealer.

8. Move the throttle grip to the start position.

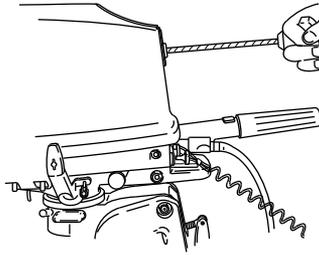


9. If the engine is cold, completely pull the choke knob out. Push in the choke halfway as the engine is warming up. Push in completely after engine is warmed up.



# OPERATION

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



28840

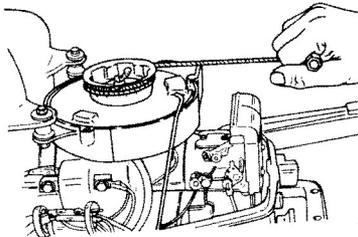
**NOTE:** Starting flooded engine - push in the choke knob. Wait 30 seconds, then continue to crank engine for starting.

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

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

## IF THE RECOIL STARTER FAILS TO OPERATE

- Remove the upper motor cover and the recoil starter. Wrap a rope around the starter pulley then pull quickly to start.
- Use a 10 mm socket wrench as a rope handle.



28851

### ▲ WARNING

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

# OPERATION

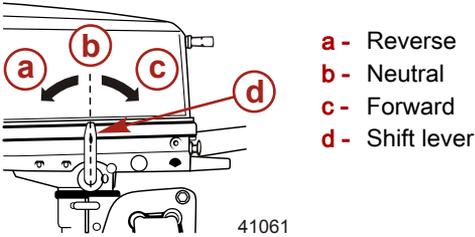
## Gear Shifting

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

Reduce throttle speed to idle speed.

**NOTE:** Personal injury and/or equipment damage may occur if shifting at high speed. Engine must be in the slow running position before shifting is attempted.

**NOTE:** Do not increase engine speed more than necessary in reverse.

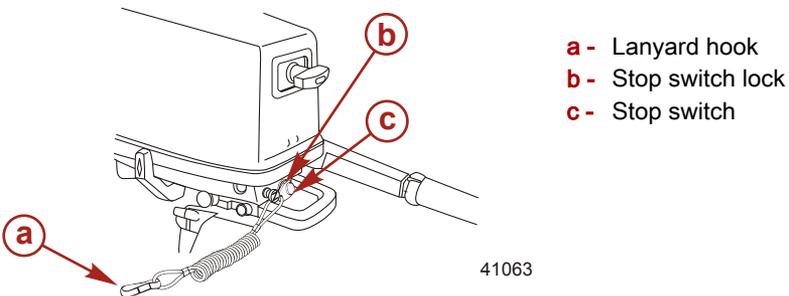


Always shift outboard into gear with a quick motion.

- **Forward:** Turn the throttle grip to reduce engine speed. When the engine reaches trolling (or idling) speed, quickly pull the shift lever to the Forward (F) position.
- **Reverse:** Reduce engine speed, when the engine reaches trolling (or idling) speed, quickly push the shift lever to the Reverse (R) position.

## Stopping the Engine

1. Turn the throttle grip to the slow position.
2. Put the shift lever in Neutral (N) position. Run the engine for 2–3 minutes at idling speed if it has been running at full speed.
3. Push the stop switch to stop the engine.



# MAINTENANCE

## Outboard Care

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

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

## SELECTING REPLACEMENT PARTS FOR YOUR OUTBOARD

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

## EPA Regulations

All new outboards manufactured by Mercury Marine are certified to the United States Environmental Protection Agency, as conforming to the requirements of the regulations for the control of air pollution from new outboard motors. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, wherever practicable, returned to the original intent of the design.

**Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine spark ignition (SI) engine repair establishment or individual.**

# MAINTENANCE

## EPA Emissions

### EMISSION CERTIFICATION LABEL

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

The diagram shows a rectangular label with the Mercury logo on the left and the title "EMISSION CONTROL INFORMATION" on the right. The label contains several fields for engine specifications and emissions data. Red 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."

<b>MERCURY</b>		<b>EMISSION CONTROL INFORMATION</b>	
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

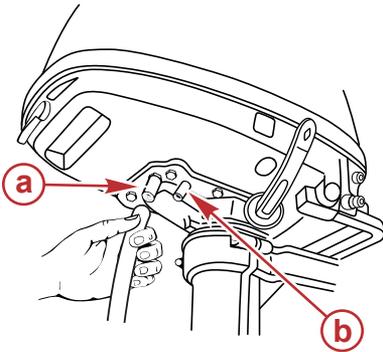
## Flushing the Cooling System

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

1. Remove the water plug from the motor, and install in the flushing attachment (hose adapter).
2. Attach a hose to the flushing attachment.
3. Turn on the water and adjust the flow so water is exiting the water pump indicator hose.



- a - Flushing attachment
- b - Water pump indicator hose

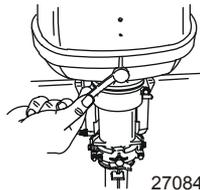
61081

4. Continue flushing the outboard for five minutes.
5. Turn off the water and remove the flushing attachment. Install the water plug.

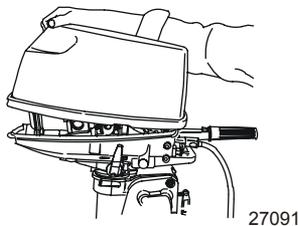
## Top Cowl Removal And Installation

### REMOVAL

1. Unlock the rear latch by pushing lever down.



2. Lift rear of cowl and disengage front hook.



# MAINTENANCE

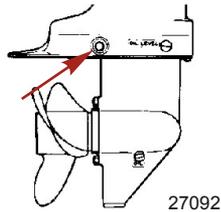
## INSTALLATION

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

## Corrosion Control Anode

Your outboard has a corrosion control anode installed on the gearcase. 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.



## Exterior Care

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

## 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.

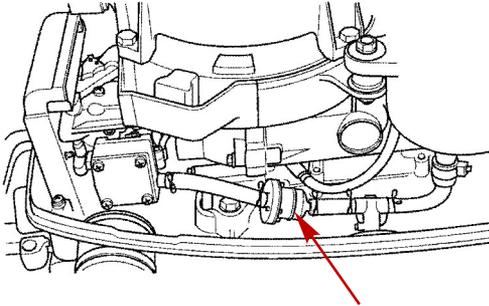
# MAINTENANCE

## 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.

## CLEANING THE FUEL FILTERS AND THE FUEL TANK

The fuel filter is located between the fuel valve and the fuel pump.



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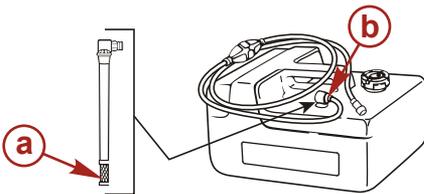
- Drain all fuel from the fuel tank. Remove the fuel lines from the fuel filter.
- Inspect the fuel filter.
- If there is water or dirt inside, replace the filter. Install the filter in the same orientation as it was removed.



41074

**a** - Fuel filter

- For external tanks, loosen the fuel pickup elbow, remove it and clean the fuel filter.



41045

**a** - Fuel tank filter  
**b** - Fuel pickup elbow

- **Fuel tank:** Water or dirt in the fuel tank will cause engine performance problems. Check and clean the tank at specified time or after the motor has been stored for a long period of time (over three months).

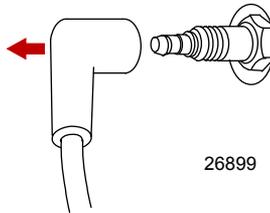
# MAINTENANCE

## Propeller Replacement

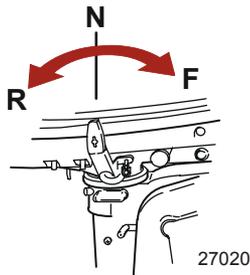
### ⚠ WARNING

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

1. Remove the spark plug lead to prevent the engine from starting.



2. Move the gear shift lever into neutral.

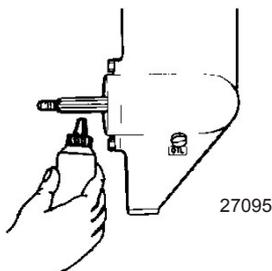


3. Straighten and remove the cotter pin.
4. Place a block of wood between the gearcase and the propeller to hold the propeller and remove the propeller nut.
5. Pull the propeller straight off the shaft. If the propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.

**IMPORTANT:** To prevent the propeller hub from corroding and seizing to the propeller shaft (especially in saltwater), always apply the recommended lubricant to the entire propeller shaft at the recommended maintenance intervals and also each time the propeller is removed.

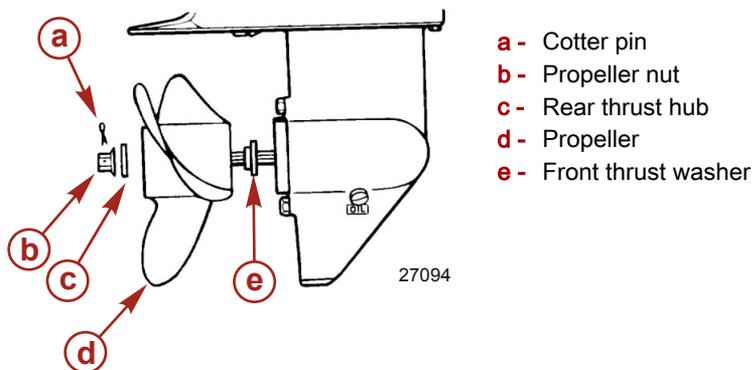
# MAINTENANCE

- Apply Quicksilver or Mercury Precision Lubricants Extreme Grease or 2-4-C with PTFE to the entire propeller shaft and splines.



Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Propeller shaft	92-802859A 1
	Extreme Grease	Propeller shaft	8M0071842

- Install the front thrust washer, propeller, rear thrust hub, and propeller nut onto the shaft.
- Place a block of wood between the gearcase and the propeller to prevent rotation and tighten the propeller nut. Secure the propeller nut to the shaft with a cotter pin.



## Propeller Selection

The propeller must be selected that will allow the engine to reach recommended RPM when cruising at wide-open throttle.

Wide-open throttle RPM range
4500–5500

# MAINTENANCE

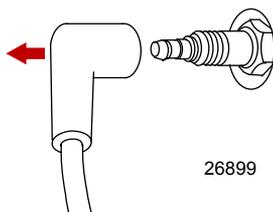
Recommended propellers are listed under **Propeller Recommendation** in the **Accessories** section of this manual.

## Spark Plug Inspection And Replacement

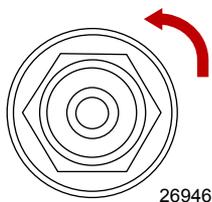
### ⚠ WARNING

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.

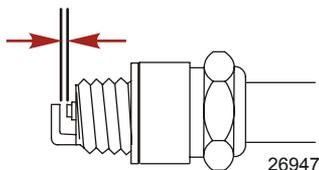
1. Remove the spark plug boot. Twist the rubber boot slightly and pull off.



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



3. Set the spark plug gap to specification.



### Spark Plug

Spark plug gap	1.0 mm (0.040 in.)
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4. Before installing spark plug, clean off any dirt on the spark plug seat. Install plug finger tight, and then tighten 1/4 turn or torque to specifications.

# MAINTENANCE

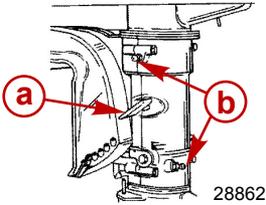
Description	Nm	lb. in.	lb. ft.
Spark plug	27		20

## Lubrication Points

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

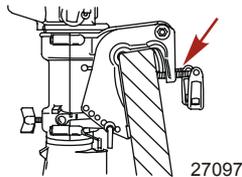
Tube Ref No.	Description	Where Used	Part No.
 95	2-4-C with PTFE	Co-pilot threads, swivel bracket, transom clamp screws, tiller handle bushing, shift handle detent	92-802859A 1

- Co-Pilot - Lubricate threads.
- Swivel Bracket - Lubricate through fittings.



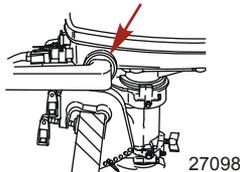
- a - Co-pilot
- b - Swivel bracket

- Transom Clamp Screws - Lubricate threads.



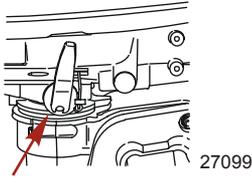
**NOTE:** Lubricating the tiller handle bushing and shift handle detent requires disassembly of the product. These points should be lubricated at least once a year by an authorized dealer.

- Tiller Handle Rubber Bushing - Lubricate internal diameter.



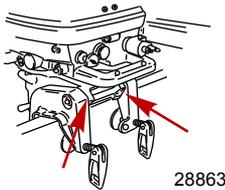
# MAINTENANCE

- Shift Handle Detent - Lubricate detent.



2. Lubricate the following with Light Weight Oil.

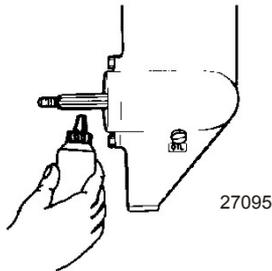
- Tilt Pivot.



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

Tube Ref No.	Description	Where Used	Part No.
 95	2-4-C with PTFE	Propeller shaft	92-802859A 1
	Extreme Grease	Propeller shaft	8M0071842

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



# MAINTENANCE

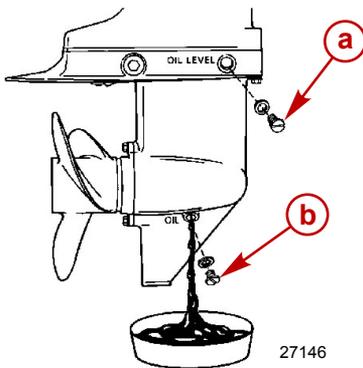
## Gearcase Lubrication

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

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

## DRAINING GEARCASE

1. Tilt the outboard so that the oil drain plug is at the lowest point.
2. Place the drain pan below the outboard.
3. Remove the vent plug and fill/drain plug and drain lubricant.



- a - Vent plug  
b - Fill/drain plug

## GEARCASE LUBRICANT CAPACITY

Gearcase lubricant capacity is approximately 195 cc (6.6 fl. oz.).

## GEARCASE LUBRICANT RECOMMENDATION

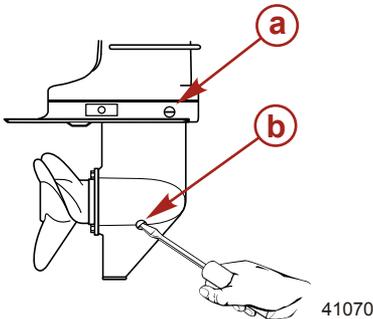
Mercury or Quicksilver Premium or High Performance Gear Lubricant.

## CHANGING GEAR OIL

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

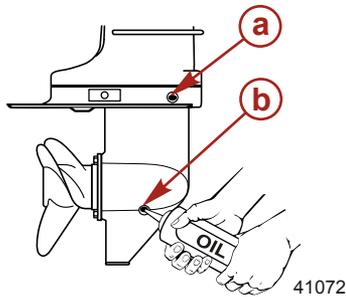
# MAINTENANCE

**NOTE:** If water in the oil, giving it a milky colored appearance, contact your dealer.



- a - Oil drain plug (upper)
- b - Oil drain plug (lower)

3. Insert the oil tube nozzle into the lower oil plug hole, and fill with gear oil by squeezing the oil tube until oil flows out of the upper plug hole.



4. Replace the oil plug gasket with a new one. Install the upper oil plug, and then remove oil tube nozzle and install the lower oil plug.

**NOTE:** Use Mercury or Quicksilver gear oil or the recommended gear oil (API GL-5:SAE #80 to #90). Required volume: approx. 195 mL

## Submerged Outboard

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

# STORAGE

## Storage Preparation

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

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

### NOTICE

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

## FUEL SYSTEM

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

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

- 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.
- Place the outboard in water or connect flushing attachment for circulating cooling water. Start the outboard and operate at idle RPM in neutral for five minutes to allow stabilized fuel to reach the carburetor.

## Protecting External Outboard Components

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

Tube Ref No.	Description	Where Used	Part No.
 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.

# STORAGE

- Place the outboard in water. Start the engine and let it run in neutral to warm up.
- With engine running at fast idle, stop the fuel flow by closing the fuel shut-off valve. 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 plug 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.**

# OWNER SERVICE ASSISTANCE

## Local Repair Service

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

## Service Away from Home

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

## Parts and Accessories Inquiries

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

## Service Assistance

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

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

The following information will be needed by the service office:

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

## Mercury Marine Service Offices

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

# OWNER SERVICE ASSISTANCE

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

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

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

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

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

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



# ACCESSORIES

## Propeller Recommendation

Use Mercury/Quicksilver propeller.

A propeller must be selected so that the engine RPM measured at wide-open throttle while cruising is within the recommended range: 4500–5500 RPM.

Light boats -----	----- Heavy boats		
Size as indicated on propeller	9	8	7
Propeller size (mm)	200 x 229	198 x 203	198 x 178
Diameter x pitch (in.)	7.9 x 9.0	7.8 x 8.0	7.8 x 7.0
Model	Optional	4.9/5B-D S, L, UL	4C S, L

Transom height: S (short), L (long), UL (extra long):

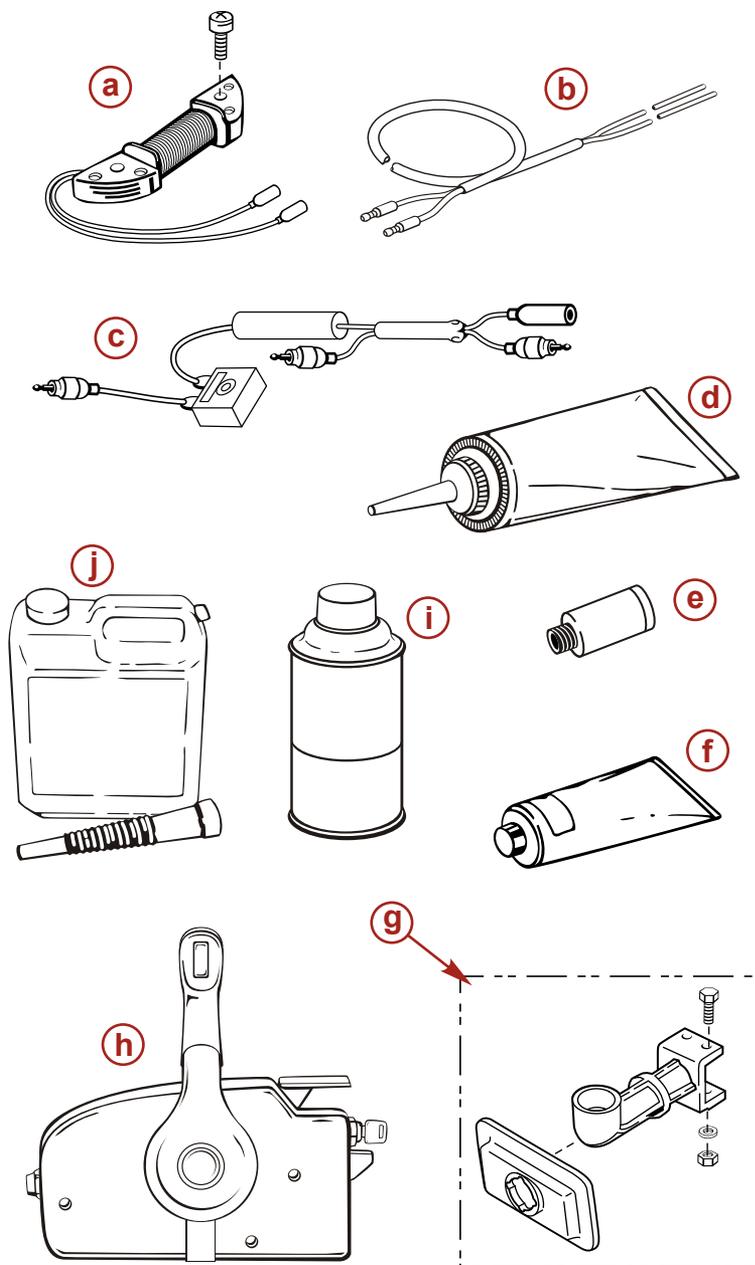
## Tool Kit and Spare Parts

A listed tools and spare parts below are provided with the motor.

Items		Quantity	Dimensions	Remark
Service tools	Tool bag	1		
	Pliers	1		
	Socket wrench	1	10 x 13 mm	
	Socket wrench	1	21 mm	
	Socket wrench handle	1		
	screwdrivers	1	Cross and straight point	
	Screwdriver handle	1		
Spare parts	Rope	1	1000 mm	
	Spark plug	1	NGK BPR 7HS10	
	Cotter pin	1		
Parts packaged with engine	Fuel tank 12 L	1		5B-D only
	Primer bulb	1set		5B-D only

# ACCESSORIES

## Optional Accessories



41075

# ACCESSORIES

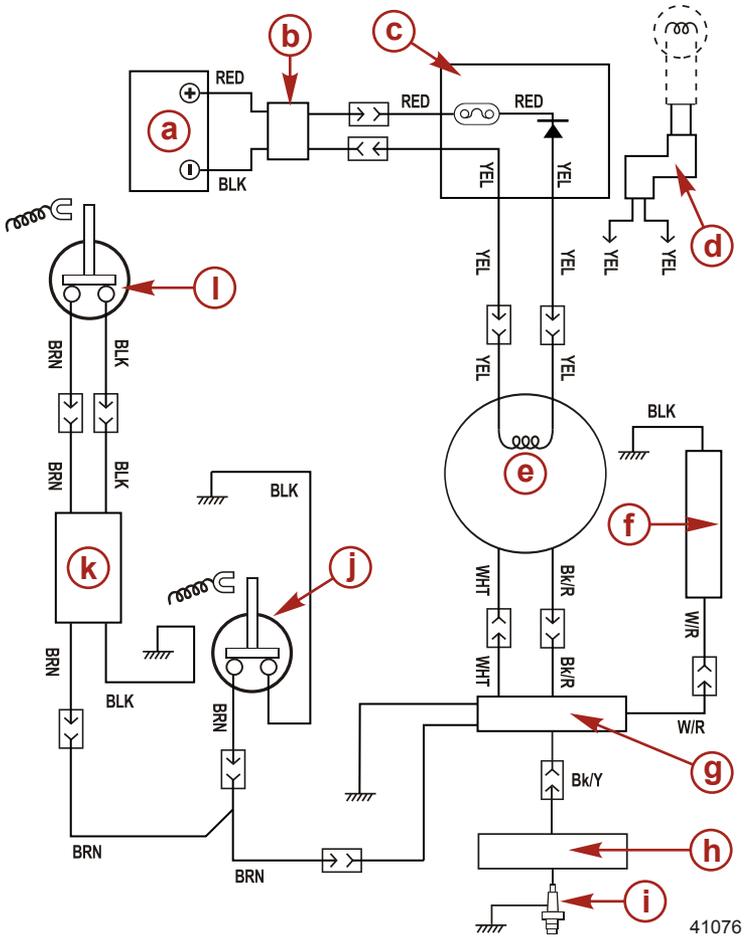
- a** - Alternator (12 V, 60 W)
- b** - Extension cord for light (Lights are available on the market.)
- c** - Rectifier
- d** - Gear oil (500 mL)
- e** - Flushing attachment
- f** - Grease (250 g)
- g** - Vertical starter
- h** - Remote control box
- i** - Touch up paint (300 mL)
- j** - Engine oil (0.4 L, 1 L, 4 L, 20 L)

# ACCESSORIES

Notes:

# ACCESSORIES

## Wiring Diagram



# ACCESSORIES

- a** - Battery
- b** - Extension cord (optional)
- c** - Rectifier (optional)
- d** - Light extension cord (optional)
- e** - Lighting unit (optional)
- f** - Pulsar coil
- g** - CD unit
- h** - Ignition coil
- i** - Spark plug
- j** - Stop switch (optional)

## Wire Color Code Abbreviations

Wire Color Abbreviations				
BLK	Black		BLU	Blue
BRN	Brown		GRY	Gray
GRN	Green		ORN or ORG	Orange
PNK	Pink		PPL or PUR	Purple
RED	Red		TAN	Tan
WHT	White		YEL	Yellow
LT or LIT	Light		DK or DRK	Dark