



40V
40Y
50H

OWNER'S MANUAL

63B-28199-79-E0

EMU25050

Read this owner's manual carefully before operating your outboard motor.

Important manual information

EMU25100

To the owner

Thank you for choosing a Yamaha outboard motor. This Owner's Manual contains information needed for proper operation, maintenance and care. A thorough understanding of these simple instructions will help you obtain maximum enjoyment from your new Yamaha. If you have any question about the operation or maintenance of your outboard motor, please consult a Yamaha dealer. In this Owner's Manual particularly important information is distinguished in the following ways.



The Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

EWMO0780



WARNING

Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the outboard motor.

ECMO0700

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the outboard motor.

NOTE:

A NOTE provides key information to make procedures easier or clearer.

Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your machine and this manual. If there is any question concerning this manu-

al, please consult your Yamaha dealer.

NOTE:

The 40VEO, 40VETO, 40VMHO, 40YETO, 40YMHO, 50HEDO, 50HETO, 50HMHO and the standard accessories are used as a base for the explanations and illustrations in this manual. Therefore some items may not apply to every model.

EMU25120

40V, 40Y, 50H

OWNER'S MANUAL

©2004 by Yamaha Motor Co., Ltd.

1st Edition, April 2004

All rights reserved.

Any reprinting or unauthorized use without the written permission of

Yamaha Motor Co., Ltd.

is expressly prohibited.

Printed in Japan

Table of contents

General information	1	Tilt support lever for power trim and tilt or hydro tilt model.....	16
Identification numbers record	1	Tilt support lever for manual tilt model	16
Outboard motor serial number	1	Top cowling lock lever(s) (turn type)	16
Key number.....	1	Warning indicator for three indicators.....	17
EC label.....	1	Warning indicator	17
Safety information	2	Tachometer	17
Important labels.....	3	Digital tachometer	17
Warning instructions	3	Oil level indicators (three indicators 2)	18
Fueling instructions	3	Oil level indicator (digital type)	18
Gasoline	4	Overheat warning indicator	18
Engine oil	4	Overheat warning indicator (digital type)	18
Battery requirement.....	4	Trim meter	19
Battery specifications	4	Trim meter (digital type)	19
Propeller selection.....	4	Hour meter (digital type).....	19
Start-in-gear protection	5	Warning system	20
Basic components	6	Overheat warning.....	20
Main components.....	6	Oil level warning and oil filter clogging warning	21
Fuel tank	8	Operation	23
Fuel joint	9	Installation.....	23
Fuel gauge	9	Mounting the outboard motor	23
Fuel tank cap	9	Clamping the outboard motor.....	24
Air vent screw	9	Breaking in engine	25
Remote control.....	9	Gasoline and engine oil mixing chart (50:1).....	25
Remote control lever.....	9	Procedure for oil injection models	25
Neutral interlock trigger.....	10	Preoperation checks	26
Neutral throttle lever.....	10	Fuel	26
Tiller handle	10	Oil.....	26
Gear shift lever.....	10	Controls.....	26
Throttle grip.....	11	Engine	26
Throttle indicator	11	Operation after long period of storage	26
Throttle friction adjuster.....	11	Filling fuel and engine oil	27
Engine stop lanyard switch	12	Filling fuel for portable tank	27
Engine stop button	12	Filling oil for manual starter model	27
Choke knob for pull type	13	Filling oil for electric start models	28
Manual starter handle	13	Oil level indicator operation	29
Main switch	13		
Steering friction adjuster	13		
Steering friction adjuster	14		
Power trim and tilt switch on remote control or tiller handle	14		
Power trim and tilt switch on bottom engine cowling.....	14		
Trim tab with anode	15		
Trim rod (tilt pin).....	15		
Tilt lock mechanism.....	15		

Table of contents

Operating engine.....	30	Battery care.....	52
Feeding fuel (portable tank)	30	Cleaning the outboard motor.....	53
Starting engine.....	31	Checking painted surface of	
Warming up engine	34	motor.....	53
Choke start models	34	Periodic maintenance	53
Electric start and prime start		Replacement parts	53
models	34	Maintenance chart.....	55
Shifting	35	Greasing.....	56
Forward (tiller handle and remote		Cleaning and adjusting spark	
control models)	35	plug	57
Reverse (automatic reverse lock		Checking fuel system	58
and power trim and tilt models).....	35	Inspecting fuel filter	59
Reverse (manual tilt and hydro tilt		Cleaning fuel filter	59
models)	36	Inspecting idling speed.....	60
Stopping engine	37	Checking water in engine oil tank ...	60
Procedure	37	Checking wiring and connectors	61
Trimming outboard motor.....	37	Exhaust leakage.....	61
Adjusting trim angle for manual tilt		Water leakage	61
models	38	Checking power trim and tilt	
Adjusting trim angle	39	system.....	61
Adjusting trim angle for hydro tilt		Checking propeller	62
models	39	Removing the propeller	63
Adjusting boat trim	40	Installing the propeller	63
Tilting up and down	41	Changing gear oil	64
Procedure for tilting up.....	41	Cleaning fuel tank	65
Procedure for tilting up (hydro tilt		Inspecting and replacing	
models)	42	anode(s).....	65
Procedure for tilting up	42	Checking battery (for electric start	
Procedure for tilting down	44	models)	66
Procedure for tilting down (manual		Connecting the battery	67
and hydro tilt models)	44	Disconnecting the battery.....	67
Procedure for tilting down	44	Checking top cowling	67
Cruising in shallow water	45	Coating the boat bottom.....	68
Hydro tilt models	45	Trouble Recovery.....	69
Power trim and tilt models / power		Troubleshooting	69
tilt models.....	46	Temporary action in emergency	72
Cruising in other conditions.....	47	Impact damage	72
Maintenance.....	48	Replacing fuse	72
Specifications	48	Power trim and tilt will not	
Transporting and storing outboard		operate	73
motor.....	50	Starter will not operate	73
Clamp screw mounting models	51	Emergency starting engine	74
Storing outboard motor	51	Emergency starting engine	75
Procedure	51	Engine fails to operate	76
Lubrication (oil injection models).....	52	Cold engine fails to start.....	76

Table of contents

Treatment of submerged motor..... 77
 Procedure 77

General information

EMU25170

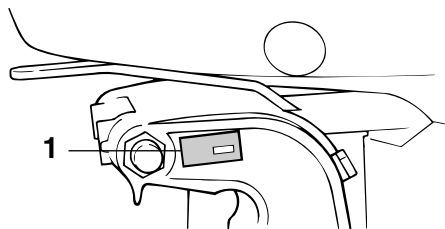
Identification numbers record

EMU25182

Outboard motor serial number

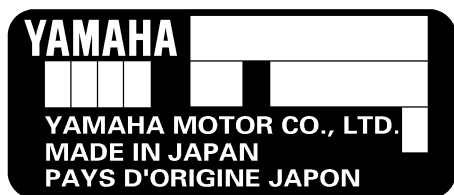
The outboard motor serial number is stamped on the label attached to the port side of the clamp bracket or the upper part of the swivel bracket.

Record your outboard motor serial number in the spaces provided to assist you in ordering spare parts from your Yamaha dealer or for reference in case your outboard motor is stolen.



ZMU02931

1. Outboard motor serial number location



ZMU01692

EMU25190

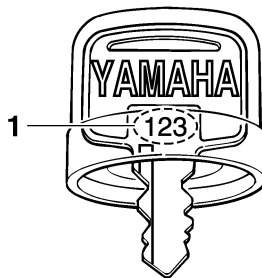
Key number

If a main key switch is equipped with the motor, the key identification number is stamped on your key as shown in the illustration. Record this number in the space provided for

reference in case you need a new key.

--	--	--

ZMU01693



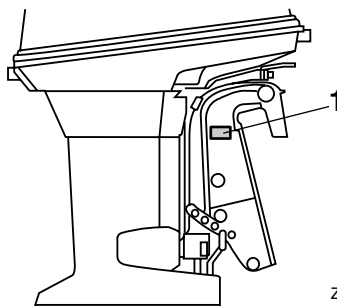
ZMU01694

1. Key number

EMU25202

EC label

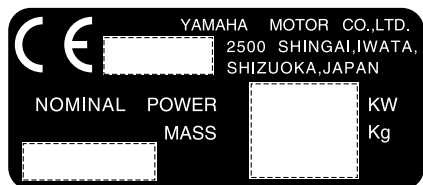
Engines affixed with this label conform to certain portions of the European Parliament directive relating to machinery. Refer to the label and the EC Declaration of Conformity for more details.



ZMU04889

1. EC label location

General information



ZMU01696

EMU25370

Safety information

- Before mounting or operating the outboard motor, read this entire manual. Reading it should give you an understanding of the motor and its operation.
- Before operating the boat, read any owner's or operator's manuals supplied with it and all labels. Be sure you understand each item before operating.
- Do not overpower the boat with this outboard motor. Overpowering the boat could result in loss of control. The rated power of the outboard should be equal to or less than the rated horsepower capacity of the boat. If the rated horsepower capacity of the boat is unknown, consult the dealer or boat manufacturer.
- Do not modify the outboard. Modifications could make the motor unfit or unsafe to use.
- Never operate after drinking alcohol or taking drugs. About 50% of all boating fatalities involve intoxication.
- Have an approved personal flotation device (PFD) on board for every occupant. It is a good idea to wear a PFD whenever boating. At a minimum, children and non-swimmers should always wear PFDs, and everyone should wear PFDs when there are potentially hazardous boating conditions.
- Gasoline is highly flammable, and its vapors are flammable and explosive. Handle and store gasoline carefully. Make sure there are no gas fumes or leaking fuel before starting the engine.
- This product emits exhaust gases which contain carbon monoxide, a colorless, odorless gas which may cause brain damage or death when inhaled. Symptoms include nausea, dizziness, and drowsiness. Keep cockpit and cabin areas well ventilated. Avoid blocking exhaust outlets.
- Check throttle, shift, and steering for proper operation before starting the engine.
- Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating. If you accidentally leave the helm, the lanyard will pull from the switch, stopping the engine.
- Know the marine laws and regulations where you will be boating - and obey them.
- Stay informed about the weather. Check weather forecasts before boating. Avoid boating in hazardous weather.
- Tell someone where you are going: leave a Float Plan with a responsible person. Be sure to cancel the Float Plan when you return.
- Use common sense and good judgment when boating. Know your abilities, and be sure you understand how your boat handles under the different boating conditions you may encounter. Operate within your limits, and the limits of your boat. Always operate at safe speeds, and keep a careful watch for obstacles and other traffic.
- Always watch carefully for swimmers during the engine operation.
- Stay away from swimming areas.

General information

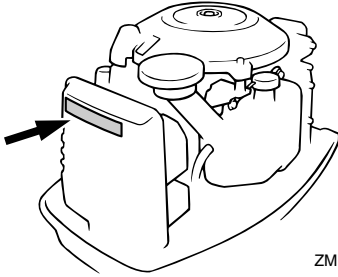
- When a swimmer is in the water near you shift into neutral and shut off the engine.

EMU25380

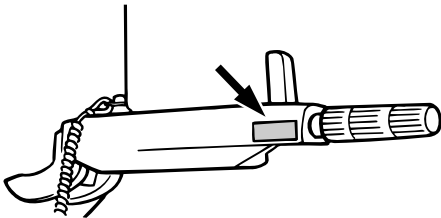
Important labels

EMU25395

Warning labels



ZMU03342



ZMU03340

EMU25401

Label

EWMO1260



WARNING

- Be sure shift control is in neutral before starting engine. (except 2HP)
- Do not touch or remove electrical parts when starting or during operation.
- Keep hands, hair, and clothes away from flywheel and other rotating parts while engine is running.

EMU25431

Label

EWMO1300



WARNING

- This engine is equipped with a neutral

starting device.

- The engine will not start unless the shift control is in neutral position.

EMU25540

Fueling instructions

EWMO0010



WARNING

GASOLINE AND ITS VAPORS ARE HIGHLY FLAMMABLE AND EXPLOSIVE!

- Do not smoke when refueling, and keep away from sparks, flames, or other sources of ignition.
- Stop engine before refueling.
- Refuel in a well-ventilated area. Refuel portable fuel tanks off the boat.
- Take care not to spill gasoline. If gasoline spills, wipe it up immediately with dry rags.
- Do not overfill the fuel tank.
- Tighten the filler cap securely after refueling.
- If you should swallow some gasoline, inhale a lot of gasoline vapor, or get gasoline in your eyes, get immediate medical attention.
- If any gasoline spills onto your skin, immediately wash with soap and water. Change clothing if gasoline spills on it.
- Touch the fuel nozzle to the filler opening or funnel to help prevent electrostatic sparks.

ECMO0010



CAUTION:

Use only new clean gasoline which has been stored in clean containers and is not contaminated with water or foreign matter.

General information

EMU25580

Gasoline

Recommended gasoline:

Regular unleaded gasoline with a minimum octane rating of 90 (Research Octane Number).

If knocking or pinging occurs, use a different brand of gasoline or premium unleaded fuel.

EMU25650

Engine oil

Recommended engine oil:

YAMALUBE 2-stroke outboard motor oil

If the recommended engine oil is not available, another 2-stroke engine oil with an NMMA-certified TC-W3 rating may be used.

EMU25690

Battery requirement

ECM01060

CAUTION:

Do not use a battery that does not meet the specified capacity. If a battery which does not meet specifications is used, the electric system could perform poorly or be overloaded, causing electric system damage.

For electric start models, choose a battery which meets the following specifications.

EMU25720

Battery specifications

Minimum cold cranking amps (CCA/EN):

40VEO 347.0 A
40VETO 347.0 A
40YETO 347.0 A
50HEDO 347.0 A
50HETO 347.0 A

Minimum rated capacity (20HR/IEC):

40VEO 40.0 Ah
40VETO 40.0 Ah
40YETO 40.0 Ah
50HEDO 40.0 Ah
50HETO 40.0 Ah

EMU25741

Propeller selection

The performance of your outboard motor will be critically affected by your choice of propeller, as an incorrect choice could adversely affect performance and could also seriously damage the motor. Engine speed depends on the propeller size and boat load. If engine speed is too high or too low for good engine performance, this will have an adverse effect on the engine.

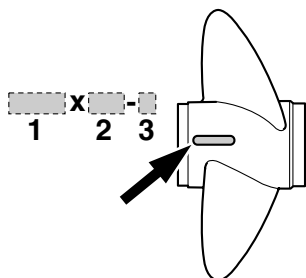
Yamaha outboard motors are fitted with propellers chosen to perform well over a range of applications, but there may be uses where a propeller with a different pitch would be more appropriate. For a greater operating load, a smaller-pitch propeller is more suitable as it enables the correct engine speed to be maintained. Conversely, a larger-pitch propeller is more suitable for a smaller operating load.

Yamaha dealers stock a range of propellers, and can advise you and install a propeller on your outboard that is best suited to your application.

EMU25760

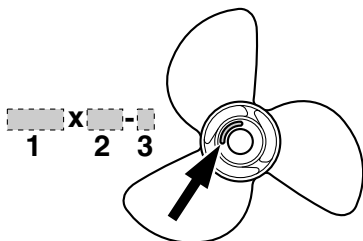
Start-in-gear protection

Yamaha outboard motors affixed with the pictured label or Yamaha-approved remote control units are equipped with start-in-gear protection device(s). This feature permits the engine to be started only when it is in neutral. Always select neutral before starting the engine.



ZMU04606

1. Propeller diameter in inches
2. Propeller pitch in inches
3. Type of propeller (propeller mark)



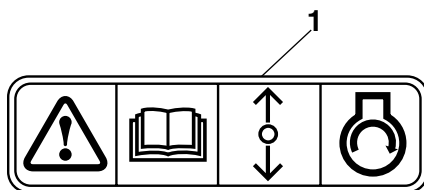
ZMU04607

1. Propeller diameter in inches
2. Propeller pitch in inches
3. Type of propeller (propeller mark)

NOTE:

Select a propeller which will allow the engine to reach the middle or upper half of the operating range at full throttle with the maximum boat load. If operating conditions such as light boat loads then allow the engine r/min to rise above the maximum recommended range, reduce the throttle setting to maintain the engine in the proper operating range.

For instructions on propeller removal and installation, see page 62.



ZMU01713

1. Start-in-gear protection label

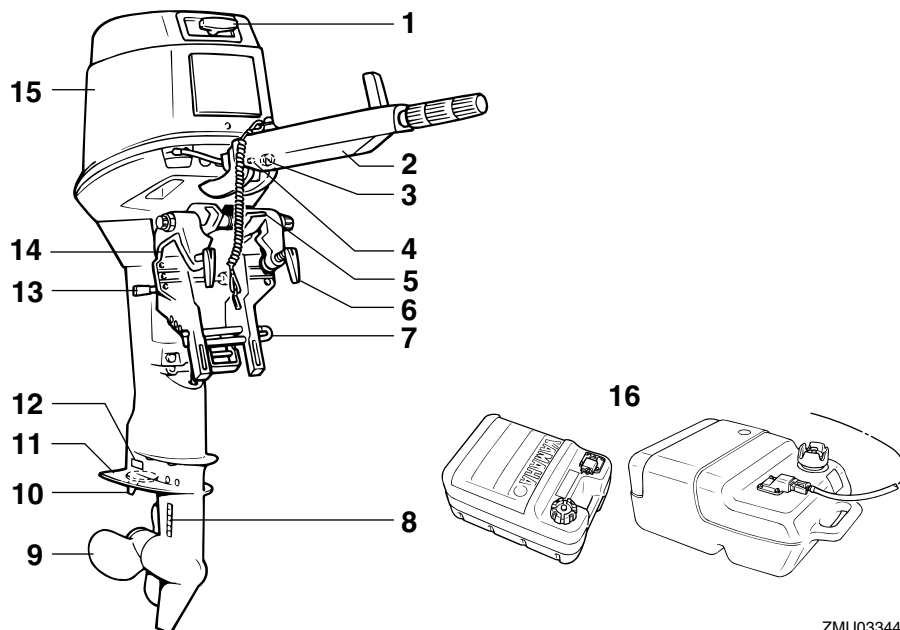
Basic components

EMU25795

Main components

NOTE: _____
* May not be exactly as shown; also may not be included as standard equipment on all models.

40VMHO, 40YMHO, 50HMHO

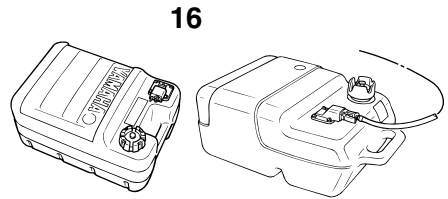
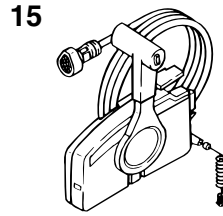
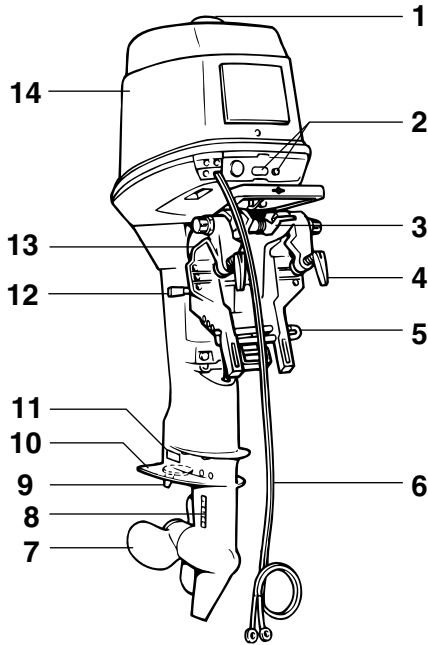


ZMU03344

1. Manual starter handle
2. Tiller handle
3. Choke knob
4. Warning indicator
5. Tilt lock lever
6. Clamp screw
7. Trim rod
8. Cooling water inlet
9. Propeller
10. Trim tab (anode)
11. Anti-cavitation plate
12. Anode
13. Tilt support lever
14. Clamp bracket

15. Top cowling
16. Fuel tank*

40VEO

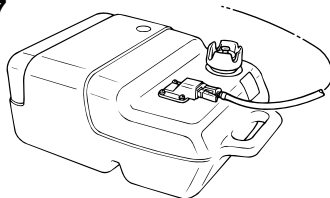
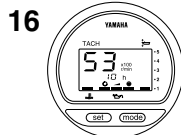
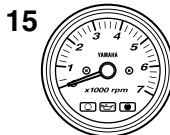
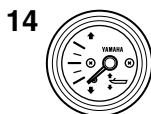
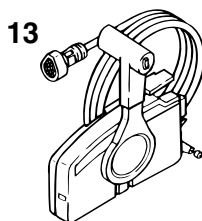
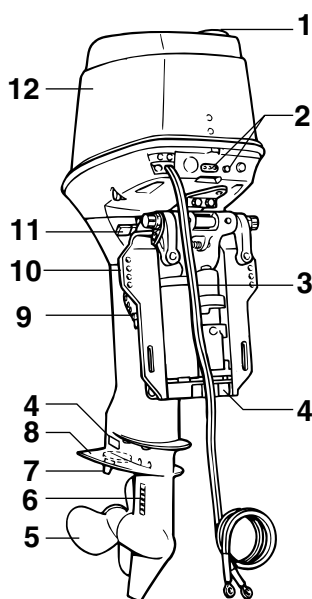


- 1. Oil tank filler cap
- 2. Warning indicator(s)
- 3. Tilt lock lever
- 4. Clamp screw
- 5. Trim rod
- 6. Battery cable
- 7. Propeller
- 8. Cooling water inlet
- 9. Trim tab (anode)
- 10. Anti-cavitation plate
- 11. Anode
- 12. Tilt support lever
- 13. Clamp bracket
- 14. Top cowling
- 15. Remote control box (side mount type)*
- 16. Fuel tank*

ZMU03346

Basic components

40VETO, 40YETO, 50HEDO, 50HETO



ZMU04548

1. Oil tank filler cap
2. Warning indicator(s)
3. Battery cable
4. Anode(s)
5. Propeller
6. Cooling water inlet
7. Trim tab (anode)
8. Anti-cavitation plate
9. Trim rod
10. Clamp bracket
11. Tilt support lever
12. Top cowling
13. Remote control box (side mount type)*
14. Trim meter*
15. Tachometer*
16. Digital tachometer*
17. Fuel tank*

fuel tank, its function is as follows.

EWMO0020



WARNING

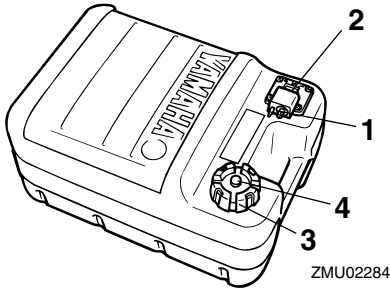
The fuel tank supplied with this engine is its dedicated fuel reservoir and must not be used as a fuel storage container. Commercial users should conform to relevant licensing or approval authority regulations.

EMU25802

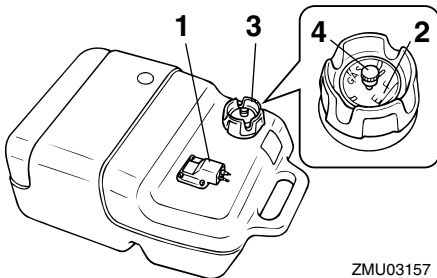
Fuel tank

If your model was equipped with a portable

Basic components



1. Fuel joint
2. Fuel gauge
3. Fuel tank cap
4. Air vent screw



1. Fuel joint
2. Fuel gauge
3. Fuel tank cap
4. Air vent screw

EMU25830

Fuel joint

This joint is used to connect the fuel line.

EMU25841

Fuel gauge

This gauge is located on either the fuel tank cap or on the fuel joint base. It shows the approximate amount of fuel remaining in the tank.

EMU25850

Fuel tank cap

This cap seals the fuel tank. When removed,

the tank can be filled with fuel. To remove the cap, turn it counterclockwise.

EMU25860

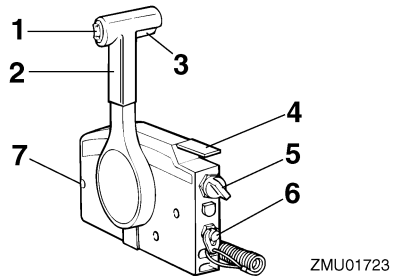
Air vent screw

This screw is on the fuel tank cap. To loosen the screw, turn it counterclockwise.

EMU26180

Remote control

The remote control lever actuates both the shifter and the throttle. The electrical switches are mounted on the remote control box.



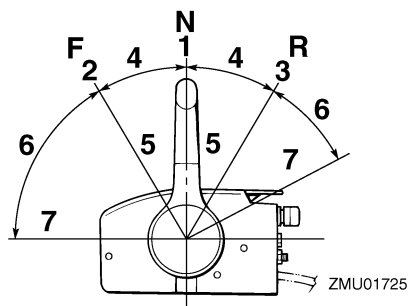
1. Power trim and tilt switch
2. Remote control lever
3. Neutral interlock trigger
4. Neutral throttle lever
5. Main switch / choke switch
6. Engine stop lanyard switch
7. Throttle friction adjuster

EMU26190

Remote control lever

Moving the lever forward from the neutral position engages forward gear. Pulling the lever back from neutral engages reverse. The engine will continue to run at idle until the lever is moved about 35° (a detent can be felt). Moving the lever farther opens the throttle, and the engine will begin to accelerate.

Basic components

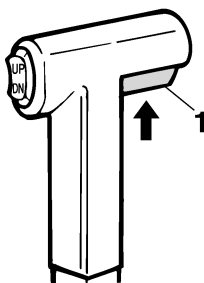


- 1. Neutral "N"
- 2. Forward "F"
- 3. Reverse "R"
- 4. Shift
- 5. Fully closed
- 6. Throttle
- 7. Fully open

EMU26201

Neutral interlock trigger

To shift out of neutral, first pull the neutral interlock trigger up.



- 1. Neutral interlock trigger

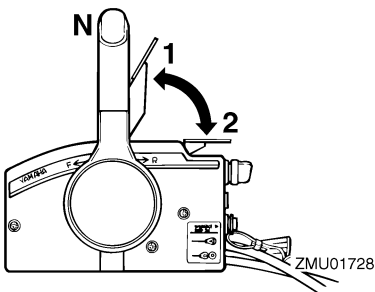
EMU26211

Neutral throttle lever

To open the throttle without shifting into either forward or reverse, put the remote control lever in the neutral position and lift the neutral throttle lever.

NOTE: _____
The neutral throttle lever will operate only

when the remote control lever is in neutral. The remote control lever will operate only when the neutral throttle lever is in the closed position.

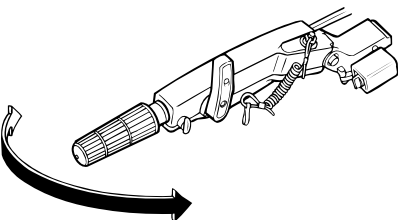


- 1. Fully open
- 2. Fully closed

EMU25911

Tiller handle

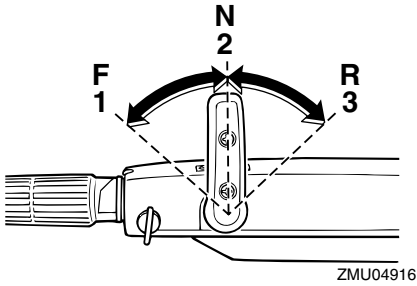
To change direction, move the tiller handle to the left or right as necessary.



EMU25922

Gear shift lever

Pulling the gear shift lever towards you puts the engine in forward gear so that the boat moves ahead. Pushing the lever away from you puts the engine in reverse gear so that the boat moves astern.

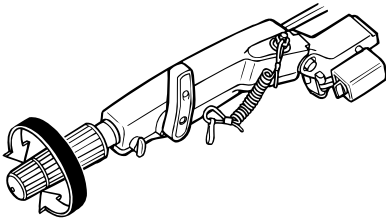


1. Forward "F"
2. Neutral "N"
3. Reverse "R"

EMU25941

Throttle grip

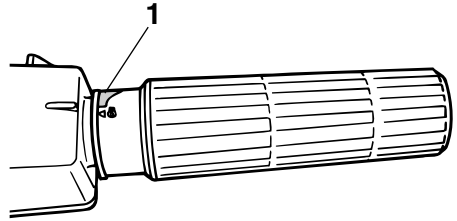
The throttle grip is on the tiller handle. Turn the grip counterclockwise to increase speed and clockwise to decrease speed.



EMU25961

Throttle indicator

The fuel consumption curve on the throttle indicator shows the relative amount of fuel consumed for each throttle position. Choose the setting that offers the best performance and fuel economy for the desired operation.



ZMU03351

1. Throttle indicator

EMU25970

Throttle friction adjuster

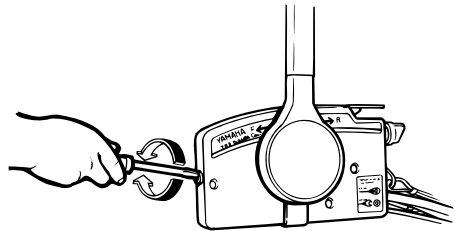
A friction device provides adjustable resistance to movement of the throttle grip or the remote control lever, and can be set according to operator preference.

To increase resistance, turn the adjuster clockwise. To decrease resistance, turn the adjuster counterclockwise.

EWWM00030

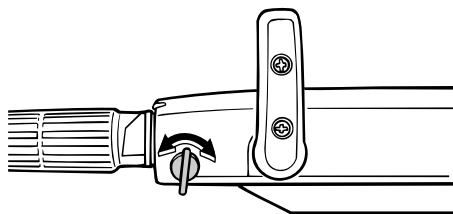


Do not overtighten the friction adjuster. If there is too much resistance, it could be difficult to move throttle lever or grip, which could result in an accident.



ZMU03095

Basic components



ZMU03352

When constant speed is desired, tighten the adjuster to maintain the desired throttle setting.

EMU25990

Engine stop lanyard switch

The lock plate must be attached to the engine stop switch for the engine to run. The lanyard should be attached to a secure place on the operator's clothing, or arm or leg. Should the operator fall overboard or leave the helm, the lanyard will pull out the lock plate, stopping ignition to the engine. This will prevent the boat from running away under power.

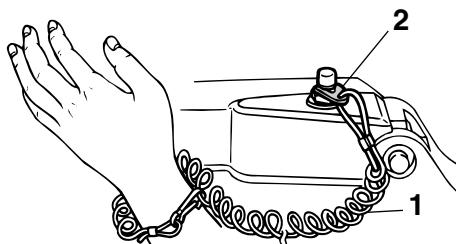
EWMO0120



- **Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.**
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.**

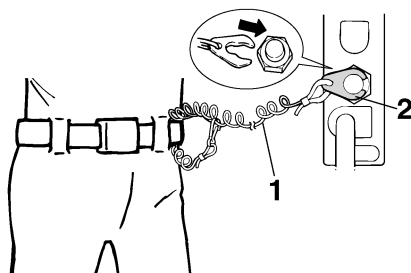
NOTE:

The engine cannot be started with the lock plate removed.



ZMU04712

1. Lanyard
2. Lock plate



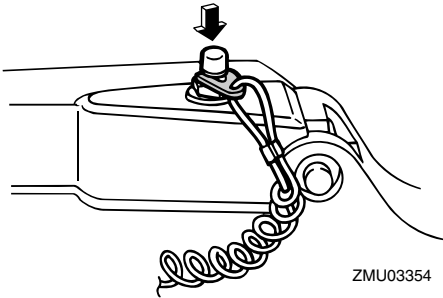
ZMU01716

1. Lanyard
2. Lock plate

EMU26001

Engine stop button

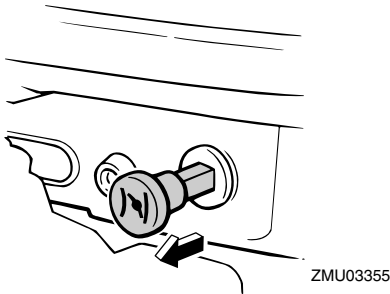
To open the ignition circuit and stop the engine, push this button.



EMU26011

Choke knob for pull type

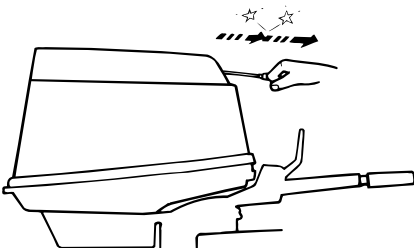
To supply the engine with the rich fuel mixture required to start, pull out this knob.



EMU26070

Manual starter handle

To start the engine, first gently pull the handle out until resistance is felt. From that position, then pull the handle straight out quickly to crank the engine.



EMU26090

Main switch

The main switch controls the ignition system; its operation is described below.

- **"OFF" (off)**

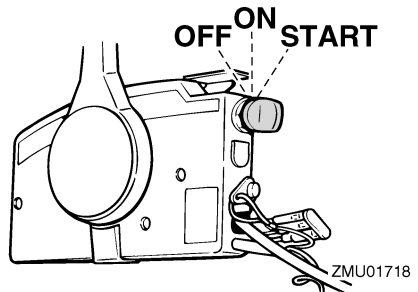
With the main switch in the **"OFF"** (off) position, the electrical circuits are off, and the key can be removed.

- **"ON" (on)**

With the main switch in the **"ON"** (on) position, the electrical circuits are on, and the key cannot be removed.

- **"START" (start)**

With the main switch in the **"START"** (start) position, the starter motor turns to start the engine. When the key is released, it returns automatically to the **"ON"** (on) position.



EMU26110

Steering friction adjuster

A friction device provides adjustable resistance to the steering mechanism, and can be set according to operator preference. An adjuster lever is located on the bottom of the tiller handle bracket.

To increase resistance, turn the lever to the left.

To decrease resistance, turn the lever to the right.

EWMM00040

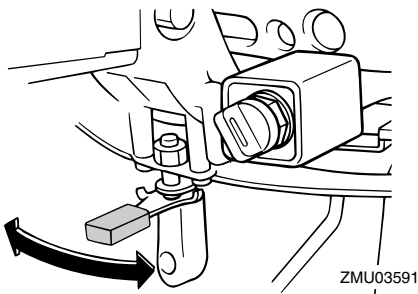


WARNING

Do not overtighten the friction adjuster. If there is too much resistance, it could be

Basic components

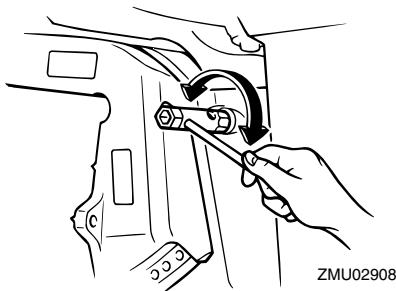
difficult to steer, which could result in an accident.



EMU26122

Steering friction adjuster

A friction device provides adjustable resistance to the steering mechanism, and can be set according to operator preference. An adjusting screw or bolt is located on the swivel bracket.



To increase resistance, turn the adjuster clockwise.

To decrease resistance, turn the adjuster counterclockwise.

EWMO0040

WARNING

Do not overtighten the friction adjuster. If there is too much resistance, it could be difficult to steer, which could result in an accident.

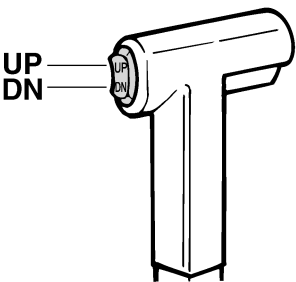
EMU26141

Power trim and tilt switch on remote control or tiller handle

The power trim and tilt system adjusts the outboard motor angle in relation to the transom. Pressing the switch “UP” (up) trims the outboard motor up, then tilts it up. Pressing the switch “DN” (down) tilts the outboard motor down and trims it down. When the switch is released, the outboard motor will stop in its current position.

NOTE:

For instructions on using the power trim and tilt switch, see pages 37 and 41.



EMU26151

Power trim and tilt switch on bottom engine cowling

The power trim and tilt switch is located on the side of the bottom engine cowling. Pressing the switch “UP” (up) trims the outboard motor up, then tilts it up. Pressing the switch “DN” (down) tilts the outboard motor down and trims it down. When the switch is released, the outboard motor will stop in its current position.

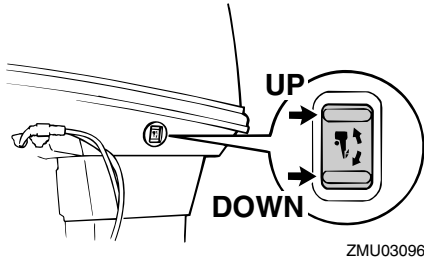
EWMO1030

WARNING

Use the power trim and tilt switch located on the bottom engine cowling only when the boat is at a complete stop with the engine off. Attempting to use this switch

Basic components

while the boat is moving could increase the risk of falling overboard and could distract the operator, increasing the risk of collision with another boat or an obstacle.



NOTE:

For instructions on using the power trim and tilt switch, see page 41.

EMU26240

Trim tab with anode

The trim tab should be adjusted so that the steering control can be turned to either the right or left by applying the same amount of force.

EWM00840

WARNING

An improperly adjusted trim tab could cause difficult steering. Always test run after the trim tab has been installed or replaced to be sure steering is correct. Be sure you have tightened the bolt after adjusting the trim tab.

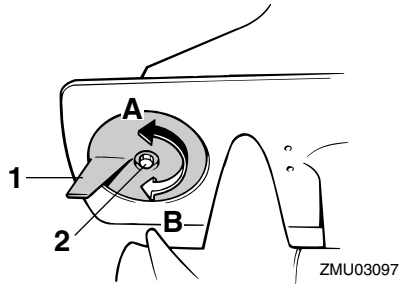
If the boat tends to veer the left (port side), turn the trim tab rear end to the port side "A" in the figure. If the boat tends to veer the right (starboard side), turn the trim tab end to the starboard side "B" in the figure.

ECM00840

CAUTION:

The trim tab also serves as an anode to

protect the engine from electrochemical corrosion. Never paint the trim tab as it will become ineffective as an anode.

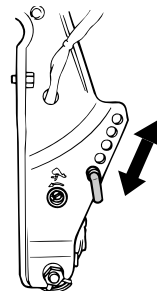


1. Trim tab
2. Bolt

EMU26261

Trim rod (tilt pin)

The position of the trim rod determines the minimum trim angle of the outboard motor in relation to the transom.

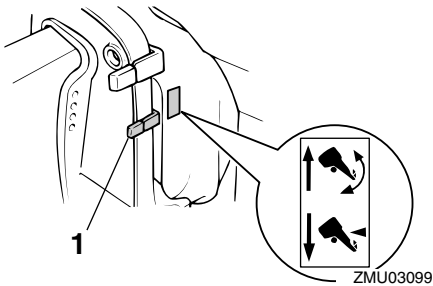


EMU26312

Tilt lock mechanism

The tilt lock mechanism is used to prevent the outboard motor from lifting out of the water when in reverse gear.

Basic components



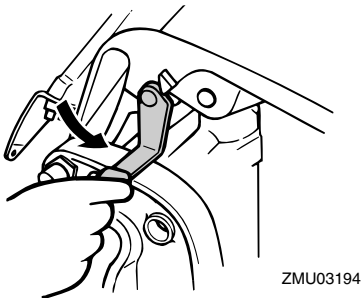
1. Tilt lock lever

To lock it, set the tilt lock lever in the “” (lock) position. To release, push the tilt lock lever in the “” (release) position.

EMU26340

Tilt support lever for power trim and tilt or hydro tilt model

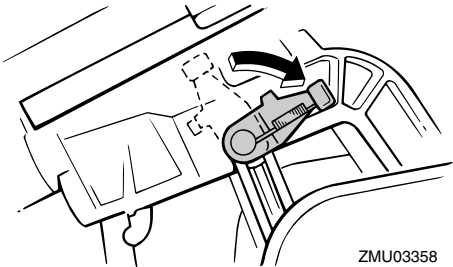
To keep the outboard motor in the tilted up position, lock the tilt support lever to the clamp bracket.



EMU30200

Tilt support lever for manual tilt model

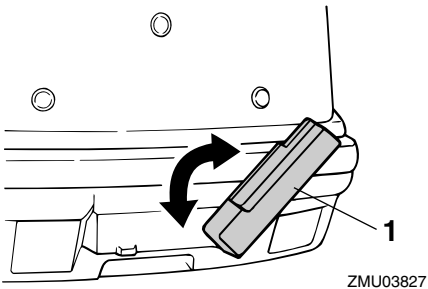
To keep the outboard motor in the tilted up position, lock the tilt support lever to the clamp bracket.



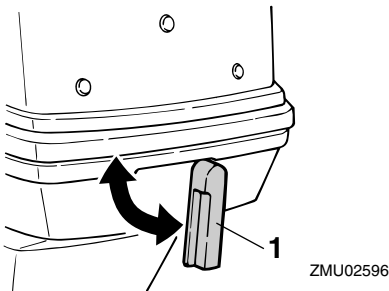
EMU26372

Top cowling lock lever(s) (turn type)

To remove the engine top cowling, turn the lock lever(s) and lift off the cowling. When installing the cowling, check to be sure it fits properly in the rubber seal. Then lock the cowling again by returning the lever(s) to the lock position.



1. Top cowling lock lever(s)



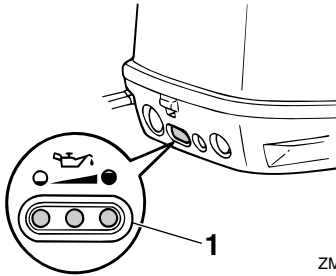
1. Top cowling lock lever(s)

Basic components

EMU26290

Warning indicator for three indicators

If the engine develops a condition which is cause for warning, the indicator on the front of the bottom cowling lights up. The three indicators mounted on the bottom cowling also indicate the engine oil level. For details on how to read the warning indicators, see page 20.



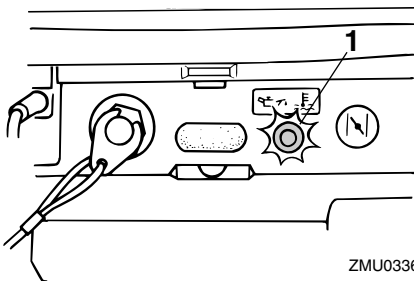
ZMU03360

1. Warning indicator(s)

EMU26300

Warning indicator

If the engine develops a condition which is cause for warning, the indicator lights up. For details on how to read the warning indicator, see page 20.



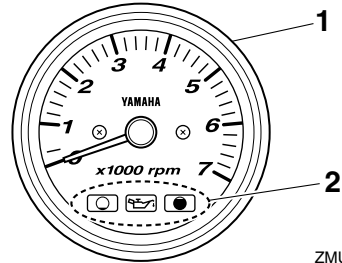
ZMU03361

1. Warning indicator

EMU26470

Tachometer

This gauge shows the engine speed and has the following functions.



ZMU04577

1. Tachometer
2. Oil level indicator

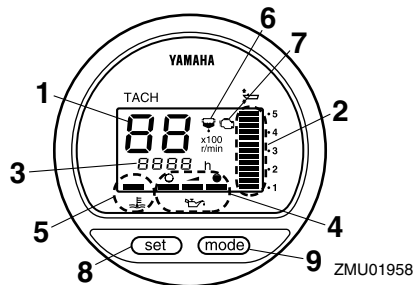
EMU26491

Digital tachometer

The tachometer shows the engine speed and has the following functions.

NOTE:

All segments of the display will light momentarily after the main switch is turned on and will return to normal thereafter.



ZMU01958

1. Tachometer
2. Trim meter
3. Hour meter
4. Oil level indicator
5. Overheat warning indicator
6. Water separator warning indicator

Basic components

- 7. Engine trouble warning indicator
- 8. Set button
- 9. Mode button

NOTE: _____

The water separator and engine trouble warning indicators only operate when the engine is equipped with the appropriate functions.

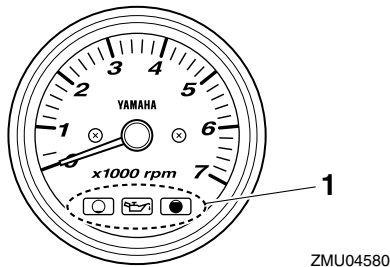
EMU26540

Oil level indicators (three indicators 2)

The indicators on the gauge show the status of the oil level. For details on how to read the indicators, see page 29.

ECM00030

CAUTION: _____
Do not operate the engine without oil. Serious engine damage will occur.



1. Oil level indicators

EMU26550

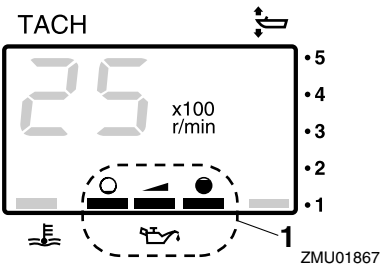
Oil level indicator (digital type)

This indicator shows the engine oil level. If the oil level falls below the lower limit, the warning indicator will start to blink. For further information, see page 21.

ECM00030

CAUTION: _____
Do not operate the engine without oil. Se-

rious engine damage will occur.



1. Oil level indicator

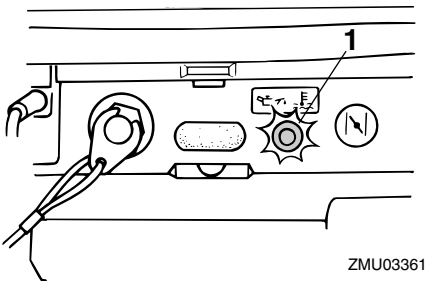
EMU26571

Overheat warning indicator

If the engine temperature rises too high, this indicator will flash. For further information on reading the indicator, see page 20.

ECM00050

CAUTION: _____
Do not continue to run the engine if the overheat warning indicator is on. Serious engine damage will occur.



1. Overheat warning indicator

EMU26581

Overheat warning indicator (digital type)

If the engine temperature rises too high, the warning indicator will start to blink. For fur-

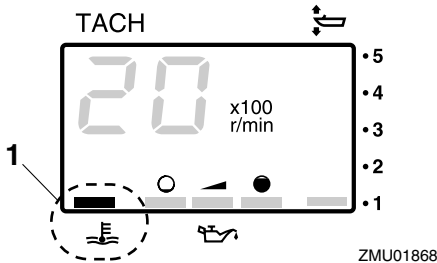
Basic components

ther information on reading the indicator, see page 20.

ECM00050

CAUTION:

Do not continue to run the engine if the overheat warning indicator is on. Serious engine damage will occur.



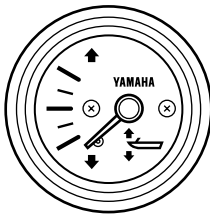
ZMU01868

1. Overheat warning indicator

EMU26610

Trim meter

This gauge shows the trim angle of your out-board motor.



ZMU04581

NOTE:

Memorize the trim angles that work best for your boat under different conditions. Adjust the trim angle to the desired setting with the power trim and tilt switch.

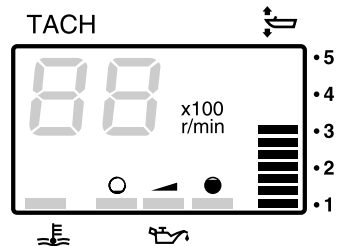
EMU26620

Trim meter (digital type)

This meter shows the trim angle of your out-board motor.

NOTE:

- Memorize the trim angles that work best for your boat under different conditions. Adjust the trim angle to the desired using the power trim and tilt switch.
- If the trim angle of your motor exceeds the trim operating range, the top segment on the trim meter display will blink.

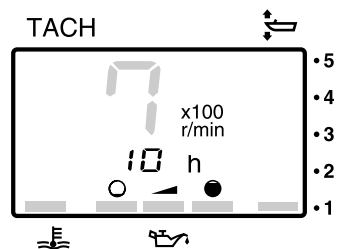


ZMU01869

EMU26650

Hour meter (digital type)

This meter shows the number of hours the engine has been run. It can be set to show the total number of hours or the number of hours for the current trip. The display can also be turned on and off.



ZMU01870

- Changing the display format

Basic components

- Pressing the “mode” (mode) button changes the display format in the following pattern:
- Total hours→Trip hours→Display off
- Resetting the trip hours
- Simultaneously pressing the “set” (set) and “mode” (mode) buttons for more than 1 second while the trip hours are displayed resets the trip counter to 0 (zero).

NOTE:

The total number of hours the engine has been run cannot be reset.

EMU26801

Warning system

ECM00090

CAUTION:

Do not continue to operate the engine if a warning device has activated. Consult your Yamaha dealer if the problem cannot be located and corrected.

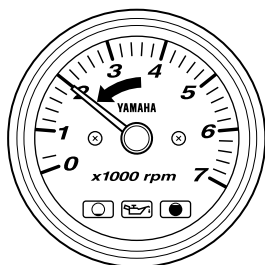
EMU26813

Overheat warning

This engine has an overheat warning device. If the engine temperature rises too high, the warning device will activate.

Activation of warning device

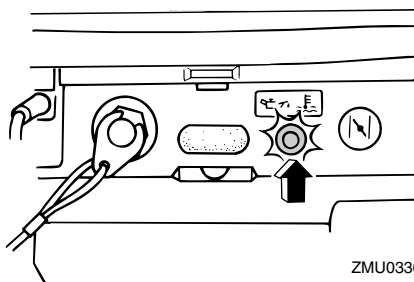
- The engine speed will automatically decrease to about 2000 r/min.



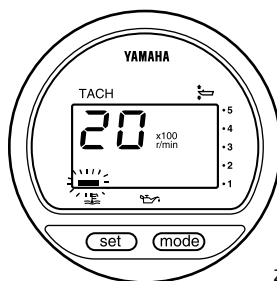
ZMU04766

- The overheat warning indicator will light (if equipped on the bottom cowling or the ta-

chometer).

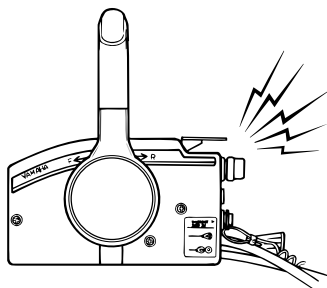


ZMU03364



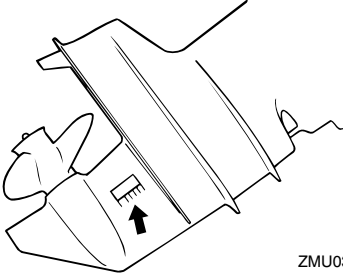
ZMU01757

- The buzzer will sound (if equipped on the tiller handle, remote control box, or main switch panel).



ZMU03025

If the warning system has activated, stop the engine and check the cooling water inlet for clogging.



ZMU03026

EMU26843

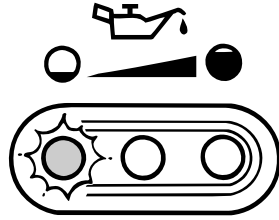
Oil level warning and oil filter clogging warning

Oil injection models

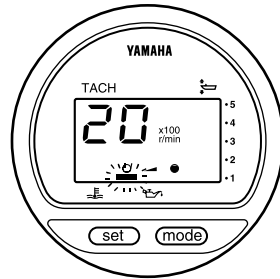
This engine has an oil level warning system. If the oil level falls below the lower limit, the warning system will activate.

Activation of warning device

- Engine speed will automatically decrease to about 2000 r/min.

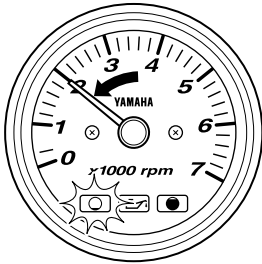


ZMU03363



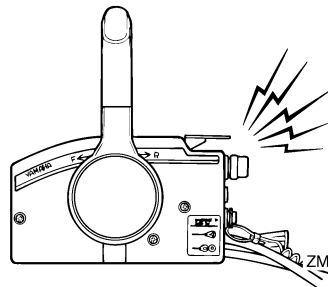
ZMU03942

- The buzzer will sound.



ZMU04586

- The oil level warning indicator will light.

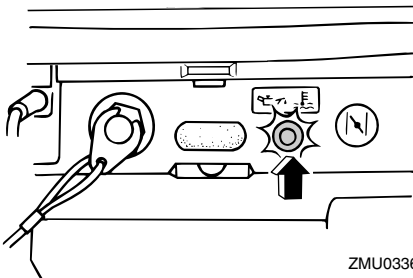


ZMU01758

If the warning system has been activated, stop the engine and check for the cause.

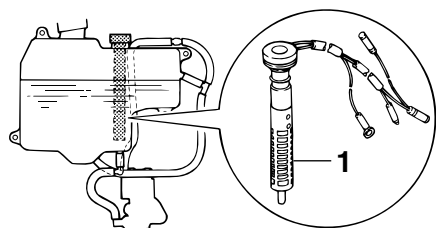
NOTE:

The warning for oil filter clogging is similar to the warnings for low oil level and overheating. To make troubleshooting easier, check for engine overheating first, then oil level, and finally oil filter clogging.



ZMU03364

Basic components



ZMU03366

1. Oil filter

EMU26901

Installation

ECM00110

CAUTION:

Incorrect engine height or obstructions to smooth water flow (such as the design or condition of the boat, or accessories such as transom ladders or depth finder transducers) can create airborne water spray while the boat is cruising. Severe engine damage may result if the motor is operated continuously in the presence of airborne water spray.

NOTE:

During water testing check the buoyancy of the boat, at rest, with its maximum load. Check that the static water level on the exhaust housing is low enough to prevent water entry into the powerhead, when water rises due to waves when the outboard is not running.

EMU26910

Mounting the outboard motor

EWM00820

WARNING

- Overpowering a boat could cause severe instability. Do not install an outboard motor with more horsepower than the maximum rating on the capacity plate of the boat. If the boat does not have a capacity plate, consult the boat manufacturer.
- The information presented in this section is intended as reference only. It is not possible to provide complete instructions for every possible boat and motor combination. Proper mounting depends in part on experience and the

specific boat and motor combination.

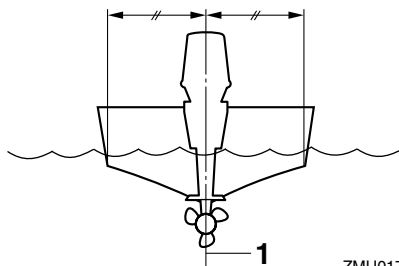
EWM00830

WARNING

Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control, or fire hazards. Observe the following:

- For permanently mounted models, your dealer or other person experienced in proper rigging should mount the motor. If you are mounting the motor yourself, you should be trained by an experienced person.
- For portable models, your dealer or other person experienced in proper outboard motor mounting should show you how to mount your motor.

Mount the outboard motor on the center line (keel line) of the boat, and ensure that the boat itself is well balanced. Otherwise the boat will be hard to steer. For boats without a keel or which are asymmetrical, consult your dealer.



ZMU01760

1. Center line (keel line)

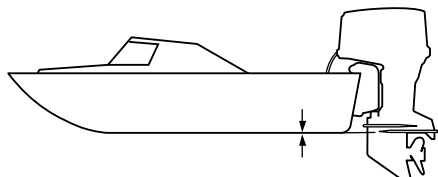
EMU26930

Mounting height (boat bottom)

To run your boat at optimum efficiency, the water resistance (drag) of the boat and outboard motor must be made as little as possible. The mounting height of the outboard

Operation

motor greatly affects the water resistance. If the mounting height is too high, cavitation tends to occur, thus reducing the propulsion; and if the propeller tips cut the air, the engine speed will rise abnormally and cause the engine to overheat. If the mounting height is too low, the water resistance will increase and thereby reduce engine efficiency. Mount the outboard motor so that the anti-cavitation plate is in alignment with the bottom of the boat.



ZMU01762

NOTE:

- The optimum mounting height of the outboard motor is affected by the boat/motor combination and the desired use. Test runs at different heights can help determine the optimum mounting height. Consult your Yamaha dealer or boat manufacturer for further information on determining the proper mounting height.
- For instructions on setting the trim angle of the outboard motor, see page 37.

EMU26970

Clamping the outboard motor

1. Place the outboard motor on the transom so that it is positioned as close to the center as possible. Tighten the transom clamp screws evenly and securely. Occasionally check the clamp screws for tightness during operation of the outboard motor because they could be-

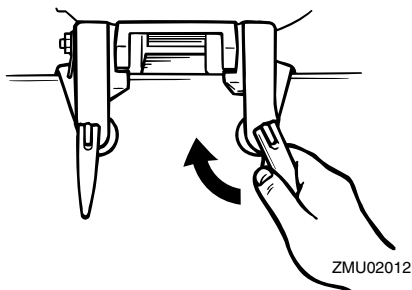
come loose due to engine vibration.

EWMM00640



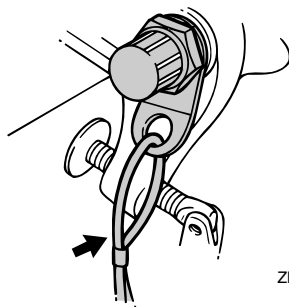
WARNING

Loose clamp screws could allow the outboard motor to fall off or move on the transom. This could cause loss of control and serious injury. Make sure the transom screws are tightened securely. Occasionally check the screws for tightness during operation.



ZMU02012

2. If the engine restraint cable attachment is equipped on your engine, an engine restraint cable or chain should be used. Attach one end to the engine restraint cable attachment and the other to a secure mounting point on the boat. Otherwise the engine could be completely lost if it accidentally falls off the transom.



ZMU02013

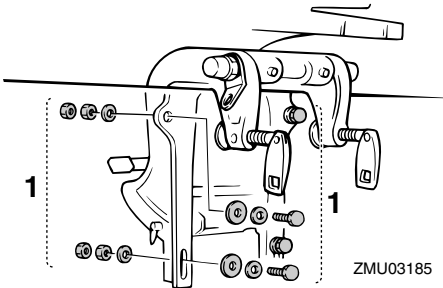
3. Secure the clamp bracket to the transom using the bolts provided with the out-

board (if packed). For details, consult your Yamaha dealer.

EWMO0650

WARNING

Avoid using bolts, nuts or washers other than those contained in the engine packaging. If used, they must be of at least the same quality of material and strength and must be tightened securely. After tightening, test run the engine and check their tightness.



1. Bolts

EMU27020

Breaking in engine

Your new engine requires a period of break-in to allow mating surfaces of moving parts to wear in evenly. Correct break-in will help ensure proper performance and longer engine life.

ECMO0140

CAUTION:

- **Failure to follow the break-in procedure could result in reduced engine life or even severe engine damage.**
- **Premix fuel must be used during break-in in addition to oil in the oil injection system.**

EMU27060

Gasoline and engine oil mixing chart (50:1)

50:1				
	1 L (0.26 US gal, 0.22 Imp gal)	12 L (3.2 US gal, 2.6 Imp gal)	14 L (3.7 US gal, 3.1 Imp gal)	24 L (6.3 US gal, 5.3 Imp gal)
	0.02L (0.02 US qt, 0.02 Imp qt)	0.24 L (0.25 US qt, 0.21 Imp qt)	0.28 L (0.3US qt, 0.25 Imp qt)	0.48 L (0.51 US qt, 0.42Imp qt)

ZMU02442

1. : Gasoline
2. : Engine oil

ECMO0150

CAUTION:

Be sure to mix gasoline and oil completely, otherwise the engine may be damaged.

EMU30310

Procedure for oil injection models

Run the engine under load (in gear with a propeller installed) as follows.

1. **First 10 minutes:**
Run the engine at the lowest possible speed. A fast idle in neutral is best.
2. **Next 50 minutes:**
Do not exceed half throttle (approximately 3000 r/min). Vary engine speed occasionally. If you have an easy-planing boat, accelerate at full throttle onto plane, then immediately reduce the throttle to 3000 r/min or less.
3. **Second hour:**
Accelerate at full throttle onto plane, then reduce engine speed to three-quarter throttle (approximately 4000 r/min). Vary engine speed occasionally. Run at full throttle for one minute, then allow about 10 minutes of operation at three-quarter throttle or less to let the engine

Operation

cool.

4. Third through tenth hours:

Avoid operating at full throttle for more than 5 minutes at a time. Let the engine cool between full-throttle runs. Vary engine speed occasionally.

5. After the first 10 hours:

Operate the engine normally. Use only straight gasoline in the fuel tank. The Yamaha oil injection system provides proper lubrication for normal operation.

EMU27101

Preoperation checks

EWMO0080



WARNING

If any item in the preoperation check is not working properly, have it inspected and repaired before operating the outboard motor. Otherwise an accident could occur.

ECMO0120

CAUTION:

Do not start the engine out of water. Overheating and serious engine damage can occur.

EMU27110

Fuel

- Check to be sure you have plenty of fuel for your trip.
- Make sure there are no fuel leaks or gasoline fumes.
- Check fuel line connections to be sure they are tight (if equipped Yamaha fuel tank or boat tank).
- Be sure the fuel tank is positioned on a secure, flat surface, and that the fuel line is not twisted or flattened, or likely to contact sharp objects (if equipped Yamaha fuel tank or boat tank).

EMU27120

Oil

- Check to be sure you have plenty of oil for your trip.

EMU27130

Controls

- Check throttle, shift, and steering for proper operation before starting the engine.
- The controls should work smoothly, without binding or unusual free play.
- Look for loose or damaged connections.
- Check operation of the starter and stop switches when the outboard motor is in the water.

EMU27140

Engine

- Check the engine and engine mounting.
- Look for loose or damaged fasteners.
- Check the propeller for damage.

EMU27180

Operation after long period of storage

Oil injection models

When operating the engine after a long period (12 months) of storage, proceed as follows:

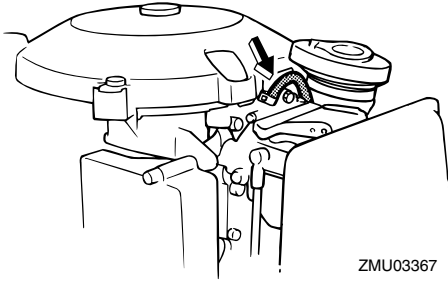
1. Use a 50:1 gasoline to oil mixture to start the engine.
2. Start the engine. Leave it idling.

EWMO1330



WARNING

- **Do not touch or remove electrical parts when starting or during operation.**
 - **Keep hands, hair, and clothes away from the flywheel and other rotating parts while the engine is running.**
3. Watch for oil flowing through the oil feed pipes. After any air in the oil lines has been expelled, the oil injection system should supply oil normally. If no oil is flowing after 10 minutes of idling, consult your Yamaha dealer.



ZMU03367

ECM01260

CAUTION:

Be sure to take the above steps when operating the engine after a long period of storage. Otherwise engine seizure could occur.

EMU27233

Filling fuel and engine oil

EMU27242

Filling fuel for portable tank

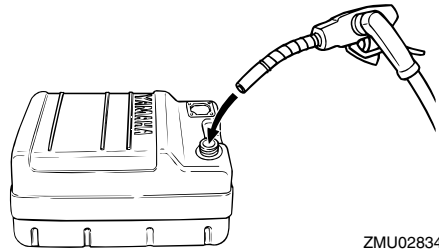
EWM00060

WARNING

Gasoline and its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames, or other sources of ignition.

1. Remove the fuel tank cap.
2. Fill the fuel tank carefully.
3. Close the cap securely after refueling. Wipe up any spilled fuel.

Fuel tank capacity (if equipped with a Yamaha fuel tank):
24L, 25L



ZMU02834

EMU27300

Filling oil for manual starter model

EWM00530

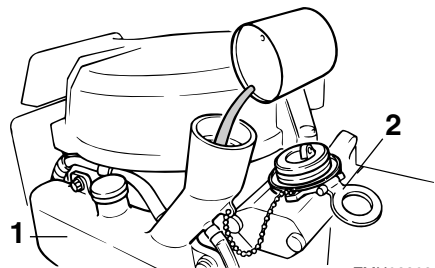
WARNING

Do not add gasoline into the oil tank. Fire or explosion could result.

This engine uses the Yamaha oil injection system, which provides superior lubrication by ensuring the proper oil ratio for all operating conditions. No fuel premixing is needed. Simply pour gasoline into the fuel tank and oil into the oil tank. Convenient indicator segments indicate the status of the oil supply. For details on reading the indicator segments, see page 29.

To fill the engine oil tank, proceed as follows:

Engine oil tank capacity:
1.5 L (1.59 US qt) (1.32 Imp.qt)



ZMU03368

1. Engine oil tank

Operation

2. Oil tank filler cap

1. Remove the top cowling.
2. Open the oil tank filler cap by pulling the tab.
3. Slowly fill the engine oil into the engine oil tank.
4. After filling, replace the cap securely.

EMU27311

Filling oil for electric start models

EWM00530



WARNING

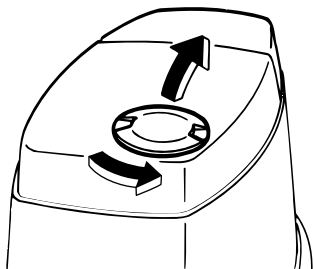
Do not add gasoline into the oil tank. Fire or explosion could result.

This engine uses the Yamaha oil injection system, which provides superior lubrication by ensuring the proper oil ratio for all operating conditions. No fuel premixing is needed. Simply pour gasoline into the fuel tank and oil into the oil tank. Convenient indicator segments indicate the status of the oil supply. For details on reading the indicator segments, see page 29.

To fill the engine oil tank, proceed as follows:

Engine oil tank capacity:
1.5 L (1.59 US qt) (1.32 Imp.qt)

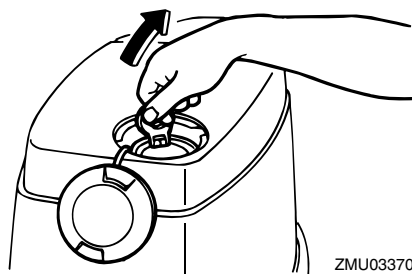
1. Turn the oil filler access cap on the top cowling counterclockwise and open it.



ZMU03369

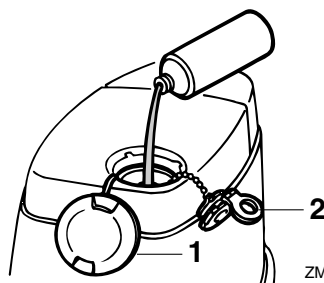
2. Open the oil tank filler cap by pulling the

tab on the cap.



ZMU03370

3. Slowly pour the engine oil into the engine oil tank.



ZMU03371

1. Oil filler access cap
2. Oil tank filler cap

4. After filling, replace the all caps securely.

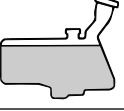
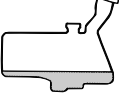
EMU27321

Oil level indicator operation

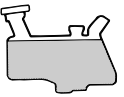
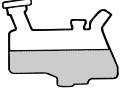
The various functions of the oil level system are as follows:

EMU27340

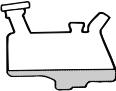
Manual start models

Oil level warning indicator			Engine oil tank	Remarks
OFF	 		 more than 200 cm ³ (0.21 US qt, 0.181 Imp qt)	No refilling necessary.
ON	Red  		 200 cm ³ or less (0.21 US qt, 0.181 Imp qt)	● Buzzer sounds in remote control box and engine speed is limited to about 2000 r/min to help conserve oil. ● Check oil filter for clogging. ● Add oil; see page 27.

Electric start models

Oil level warning indicator (digital tachometer)	Oil level warning indicator (analog tachometer/ bottom cowling)	Engine oil tank	Remarks
	Green   	 more than 450 cm ³ (0.48 US qt, 0.40 Imp qt)	No refilling necessary.
	Yellow   	 from 450 cm ³ (0.48 US qt, 0.40 Imp qt) down to 200 cm ³ (0.21 US qt, 0.18 Imp qt)	Add oil; see page 28.

Operation

Oil level warning indicator (digital tachometer)	Oil level warning indicator (analog tachometer/ bottom cowling)	Engine oil tank	Remarks
	Red 	 200 cm ³ (0.21 US qt, 0.18 Imp qt) or less	● Buzzer sounds in remote control box and engine speed is limited to about 2000 r/min to help conserve oil. ● Check oil filter for clogging.

EMU27450

Operating engine

EMU27461

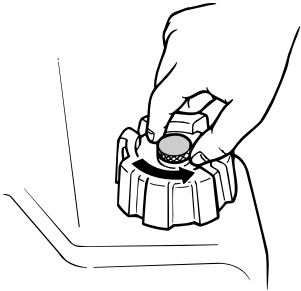
Feeding fuel (portable tank)

EWM00420



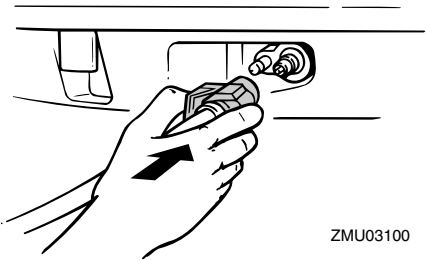
- Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.
- When the air vent screw is loosened, gasoline vapor will be released. Gasoline is highly flammable, and its vapors are flammable and explosive. Refrain from smoking, and keep away from open flames and sparks while loosening the air vent screw.
- This product emits exhaust gases which contain carbon monoxide, a colorless, odorless gas which could cause brain damage or death when inhaled. Symptoms include nausea, dizziness, and drowsiness. Keep cockpit and cabin areas well ventilated. Avoid blocking exhaust outlets.

1. If there is an air vent screw on the fuel tank cap, loosen it 2 or 3 turns.

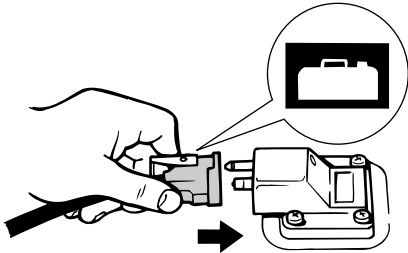


ZMU02295

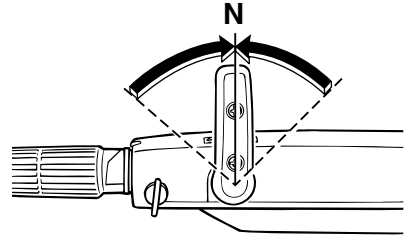
2. If there is a fuel joint on the motor, firmly connect the fuel line to the joint. Then firmly connect the other end of the fuel line to the joint on the fuel tank.



ZMU03100



ZMU02024



ZMU03386

3. If a steering friction adjuster is provided on your outboard motor, securely attach the fuel line to the fuel line clamp.

NOTE:

During engine operation place the tank horizontally, otherwise fuel cannot be drawn from the fuel tank.

4. Squeeze the primer pump with the outlet end up until you feel it become firm.



ZMU02025

EMU27490

Starting engine

EMU27505

Manual start models (tiller control)

1. Place the gear shift lever in neutral.

NOTE:

The start-in-gear protection device prevents the engine from starting except when in neutral.

2. Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg. Then install the lock plate on the other end of the lanyard into the engine stop switch.

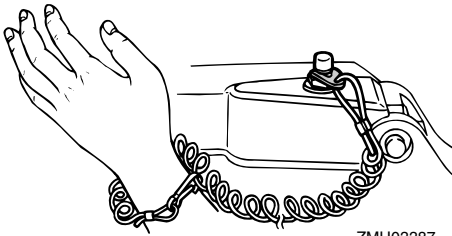
EWMM00120



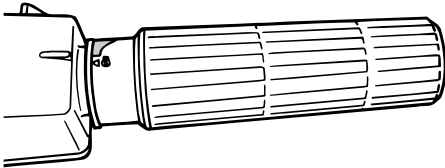
WARNING

- Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.
- Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.
- Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.

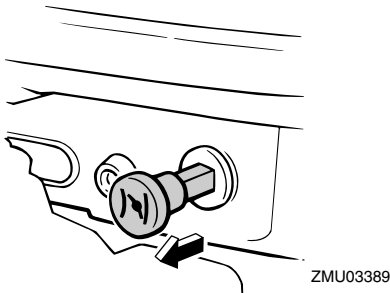
Operation



3. Place the throttle grip in the “START” (start) position.



4. Pull out / turn the choke knob fully. After the engine starts, replace / return the knob to the home position.

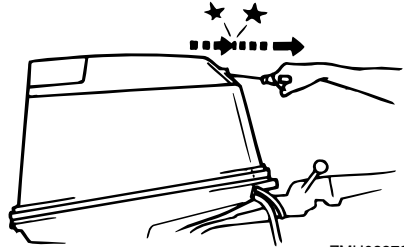


NOTE:

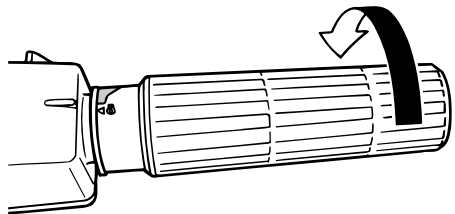
- It is not necessary to use the choke when starting a warm engine.
- If the choke knob is left in the “START” (start) position while the engine is running,

the engine will run poorly or stall.

5. Pull the manual starter handle slowly until you feel resistance. Then give a strong pull straight out to crank and start the engine. Repeat if necessary.



6. After the engine starts, slowly return the manual starter handle to its original position before releasing it.
7. Slowly return the throttle grip to the fully closed position.



NOTE:

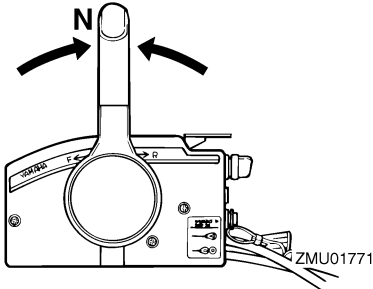
- When the engine is cold, it needs to be warmed up. For further information, see page 34.
- If the engine does not start on the first try, repeat the procedure. If the engine fails to start after 4 or 5 tries, open the throttle a small amount (between 1/8 and 1/4) and try again. Also if the engine is warm and fails to start, open the throttle a same

amount and try to start the engine again. If the engine still fails to start, see page 69.

EMU27662

Electric start and remote control models

1. Place the remote control lever in neutral.



NOTE:

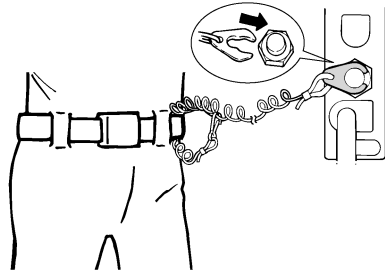
The start-in-gear protection device prevents the engine from starting except when in neutral.

2. Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg. Then install the lock plate on the other end of the lanyard into the engine stop switch.

ECM00120

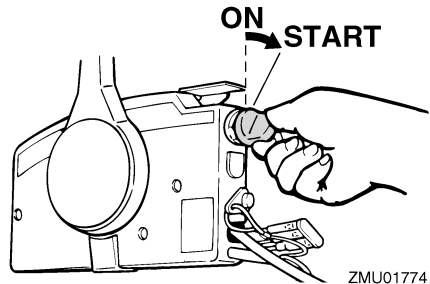
WARNING

- Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.
- Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.
- Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.



ZMU01772

3. Turn the main switch to "ON" (on).
4. Turn the main switch to "START" (start), and hold it for a maximum of 5 seconds.



ZMU01774

5. Immediately after the engine starts, release the main switch and allow it to return to "ON" (on).

ECM00191

CAUTION:

- Never turn the main switch to "START" (start) while the engine is running.
- Do not keep the starter motor turning for more than 5 seconds. If the starter motor is turned continuously for more than 5 seconds, the battery will be quickly discharged, thus making it impossible to start the engine. The starter can also be damaged. If the engine will not start after 5 seconds of cranking, return the main switch to "ON" (on), wait 10 seconds, then crank the engine

Operation

again.

NOTE:

- When the engine is cold, it needs to be warmed up. For further information, see page 34.
- If the engine is warm and fails to start, open the throttle slightly and try to start the engine again. If the engine still fails to start, see page 69.

EMU27670

Warming up engine

EMU27681

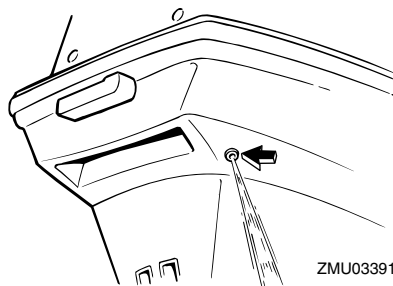
Choke start models

1. After starting the engine, allow it to idle for 3 minutes to warm up. Failure to do so will shorten engine life. Gradually return the choke knob to its home position as the engine warms up.
2. Check for a steady flow of water from the cooling water pilot hole.

ECM00511

CAUTION:

A continuous flow of water from the cooling water pilot hole shows that the water pump is pumping water through the cooling passages. If water is not flowing out of the hole at all times while the engine is running, overheating and serious damage could occur. Stop the engine and check whether the cooling water inlet on the lower case or the cooling water pilot hole is blocked. Consult your Yamaha dealer if the problem cannot be located and corrected.



EMU27702

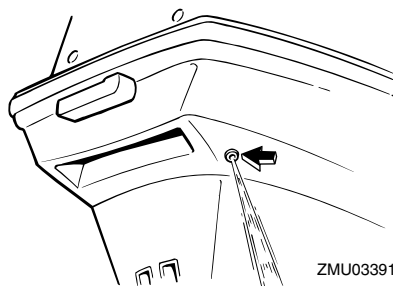
Electric start and prime start models

1. After starting the engine, allow it to idle for 3 minutes to warm up. Failure to do so will shorten engine life.
2. Check for a steady flow of water from the cooling water pilot hole.

ECM00511

CAUTION:

A continuous flow of water from the cooling water pilot hole shows that the water pump is pumping water through the cooling passages. If water is not flowing out of the hole at all times while the engine is running, overheating and serious damage could occur. Stop the engine and check whether the cooling water inlet on the lower case or the cooling water pilot hole is blocked. Consult your Yamaha dealer if the problem cannot be located and corrected.



EMU27740

Shifting

EWM00180

WARNING

Before shifting, make sure there are no swimmers or obstacles in the water near you.

ECM00220

CAUTION:

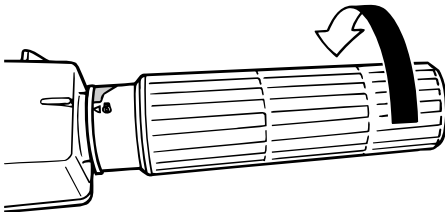
To change the boat direction or shifting position from forward to reverse or vice-versa, first close the throttle so that the engine idles (or runs at low speeds).

EMU27763

Forward (tiller handle and remote control models)

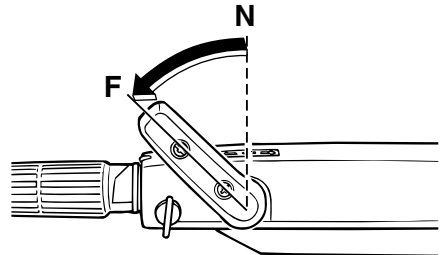
Tiller control models

1. Place the throttle grip in the fully closed position.



ZMU03393

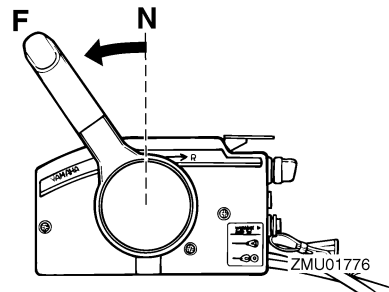
2. Move the gear shift lever quickly and firmly from neutral to forward.



ZMU03392

Remote control models

1. Pull up the neutral interlock trigger (if equipped) and move the remote control lever quickly and firmly from neutral to forward.



ZMU01776

EMU27784

Reverse (automatic reverse lock and power trim and tilt models)

EWM00190

WARNING

When operating in reverse, go slowly. Do not open the throttle more than half. Otherwise the boat could become unstable, which could result in loss of control and an accident.

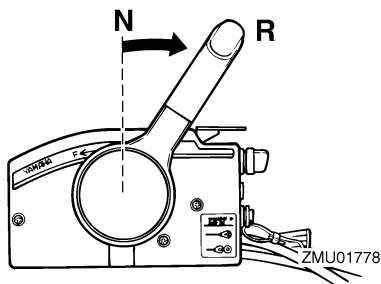
Tiller control models

1. Place the throttle grip in the fully closed position.
2. Move the gear shift lever quickly and firmly from neutral to reverse.

Remote control models

Operation

1. Pull up the neutral interlock trigger (if equipped) and move the remote control lever quickly and firmly from neutral to reverse.



EMU27795

Reverse (manual tilt and hydro tilt models)

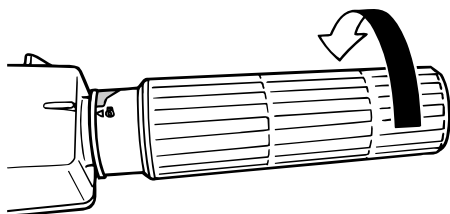
EWM00190



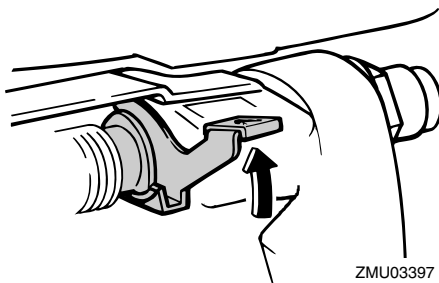
When operating in reverse, go slowly. Do not open the throttle more than half. Otherwise the boat could become unstable, which could result in loss of control and an accident.

Tiller control models

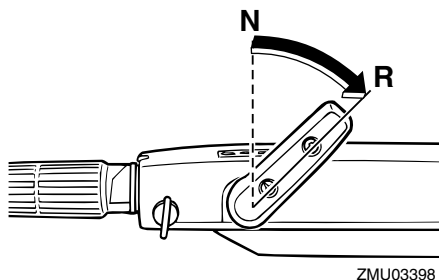
1. Place the throttle grip in the fully closed position.



2. On models equipped with a tilt lock lever, check that it is in the lock/down position.

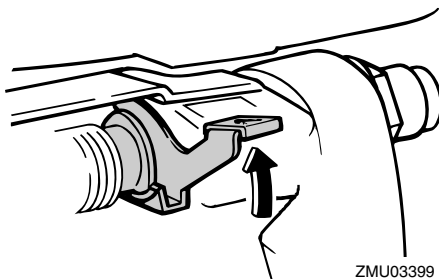


3. Move the gear shift lever quickly and firmly from neutral to reverse.

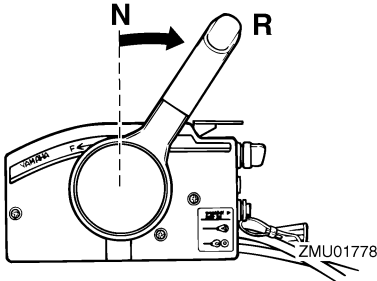


Remote control models

1. Check that the tilt lock lever is in the lock position.



2. Pull up the neutral interlock trigger (if equipped) and move the remote control lever quickly and firmly from neutral to reverse.



EMU27820

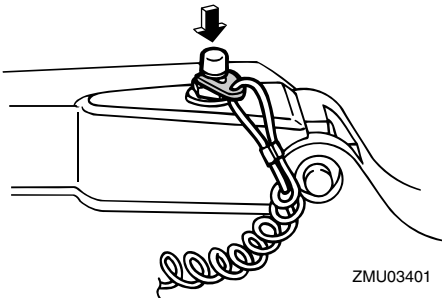
Stopping engine

Before stopping the engine, first let it cool off for a few minutes at idle or low speed. Stopping the engine immediately after operating at high speed is not recommended.

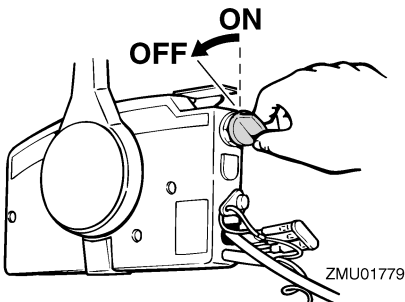
EMU27844

Procedure

1. Push and hold the engine stop button or turn the main switch to "OFF" (off).



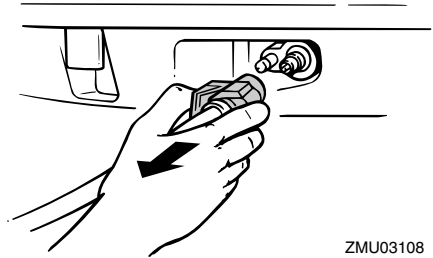
ZMU03401



ZMU01779

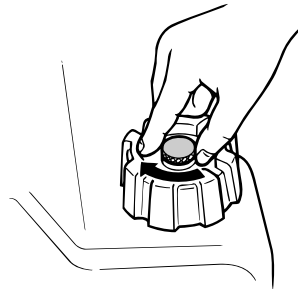
2. After stopping the engine, disconnect

the fuel line if there is a fuel joint on the outboard motor.



ZMU03108

3. Tighten the air vent screw on the fuel tank cap (if equipped).



ZMU02301

4. Remove the key if the boat will be left unattended.

NOTE:

The engine can also be stopped by pulling the lanyard and removing the lock plate from the engine stop switch, then turning the main switch to "OFF" (off).

EMU27861

Trimming outboard motor

The trim angle of the outboard motor helps determine the position of the bow of the boat in the water. Correct trim angle will help improve performance and fuel economy while reducing strain on the engine. Correct trim angle depends upon the combination of boat, engine, and propeller. Correct trim is

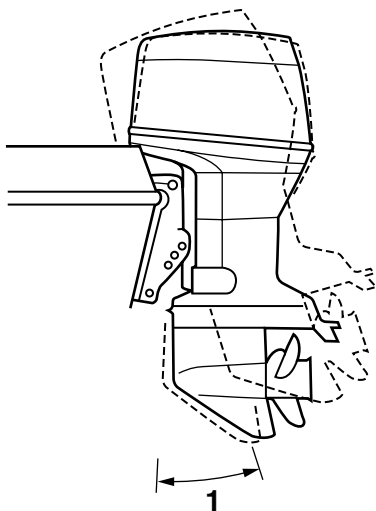
Operation

also affected by variables such as the load in the boat, sea conditions, and running speed.

EWM00740

WARNING

Excessive trim for the operating conditions (either trim up or trim down) can cause boat instability and can make steering the boat more difficult. This increases the possibility of an accident. If the boat begins to feel unstable or is hard to steer, slow down and/or readjust the trim angle.



ZMU03109

1. Trim operating angle

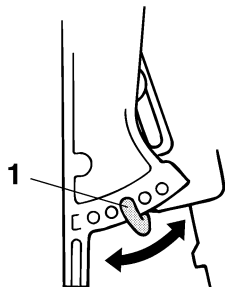
EMU27871

Adjusting trim angle for manual tilt models

There are 4 or 5 holes provided in the clamp bracket to adjust the outboard motor trim angle.

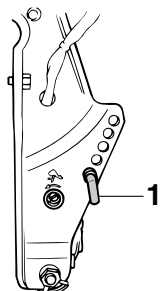
1. Stop the engine.

2. Remove the trim rod from the clamp bracket while slightly tilting the outboard motor up.



ZMU02408

1. Trim rod



ZMU03402

1. Trim rod

3. Reposition the rod in the desired hole. To raise the bow ("trim-out"), move the rod away from the transom.

To lower the bow ("trim-in"), move the rod toward the transom.

Make test runs with the trim set to different angles to find the position that works best for your boat and operating conditions.

EWM00400

WARNING

- Stop the engine before adjusting the trim angle.
- Use care to avoid being pinched when

removing or installing the rod.

- Use caution when trying a trim position for the first time. Increase speed gradually and watch for any signs of instability or control problems. Improper trim angle can cause loss of control.

NOTE:

The outboard motor trim angle can be changed approximately 4 degrees by shifting the trim rod one hole.

EMU27881

Adjusting trim angle

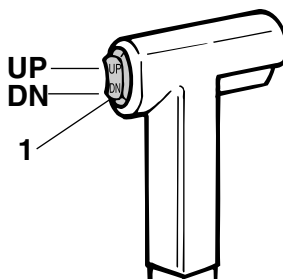
Power trim and tilt models

EWMO0750

WARNING

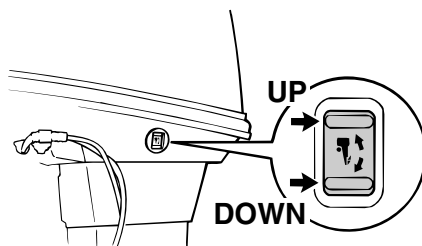
- Be sure all people are clear of the outboard motor when adjusting the tilt angle, also be careful not to pinch any body parts between the drive unit and clamp bracket.
- Use caution when trying a trim position for the first time. Increase speed gradually and watch for any signs of instability or control problems. Improper trim angle can cause loss of control.
- Use the power tilt switch located on the bottom engine cowling (if equipped) only when the boat is at a complete stop with the engine off.

Adjust the outboard motor trim angle using the power trim and tilt switch.



ZMU03110

1. Power trim and tilt switch



ZMU03096

To raise the bow (trim-out), press the switch "UP" (up).

To lower the bow (trim-in), press the switch "DN" (down).

Make test runs with the trim set to different angles to find the position that works best for your boat and operating conditions.

NOTE:

To adjust the trim angle while the boat is moving, use the power trim and tilt switch located on the remote control device or tiller handle, if equipped.

EMU27891

Adjusting trim angle for hydro tilt models

EWMO0490

WARNING

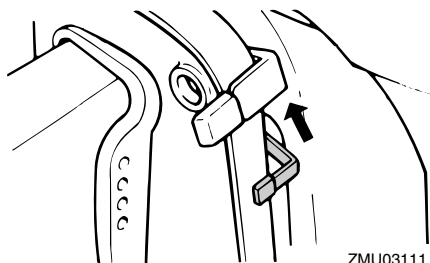
- Stop the engine before adjusting the

Operation

trim angle.

- Be sure all people are clear of the outboard motor when adjusting the tilt angle, also be careful not to pinch any body parts between the drive unit and clamp bracket.
- Use caution when trying a trim position for the first time. Increase speed gradually and watch for any signs of instability or control problems. Improper trim angle can cause loss of control.

1. Stop the engine.
2. Place the tilt lock lever in the release position.



3. Hold the rear of the top cowling with one hand and tilt the engine to the desired angle.
4. Place the tilt lock lever back into the lock position to support the engine.

To raise the bow ("trim-out"), tilt the engine up.

To lower the bow ("trim-in"), tilt the engine down.

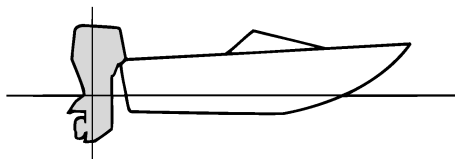
Make test runs with the trim set to different angles to find the position that works best for your boat and operating conditions.

EMU27911

Adjusting boat trim

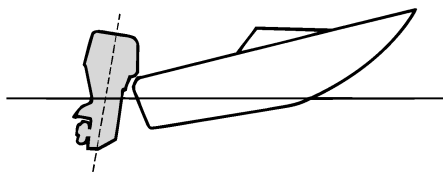
When the boat is on plane, a bow-up attitude results in less drag, greater stability and efficiency. This is generally when the keel line of

the boat is up about 3 to 5 degrees. With the bow up, the boat may have a greater tendency to steer to one side or the other. Compensate for this as you steer. The trim tab can also be adjusted to help offset this effect. When the bow of the boat is down, it is easier to accelerate from a standing start onto plane.



Bow Up

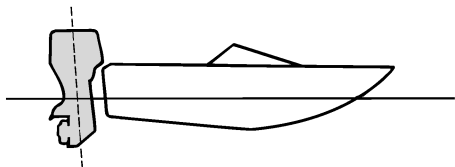
Too much trim-out puts the bow of the boat too high in the water. Performance and economy are decreased because the hull of the boat is pushing the water and there is more air drag. Excessive trim-out can also cause the propeller to ventilate, which reduces performance further, and the boat may "porpoise" (hop in the water), which could throw the operator and passengers overboard.



Bow Down

Too much trim-in causes the boat to "plow" through the water, decreasing fuel economy

and making it hard to increase speed. Operating with excessive trim-in at higher speeds also makes the boat unstable. Resistance at the bow is greatly increased, heightening the danger of “bow steering” and making operation difficult and dangerous.



ZMU01786

NOTE:

Depending on the type of boat, the outboard motor trim angle may have little effect on the trim of the boat when operating.

EMU27933

Tilting up and down

If the engine will be stopped for some time or if the boat is moored in shallows, the outboard motor should be tilted up to protect the propeller and casing from damage by collision with obstructions, and also to reduce salt corrosion.

EWM00220



WARNING

Be sure all people are clear of the outboard motor when tilting up and down, also be careful not to pinch any body parts between the drive unit and engine bracket.

EWM00250



WARNING

Leaking fuel is a fire hazard. If there is a fuel joint on the outboard motor, disconnect the fuel line or close the fuel cock if

the engine will be tilted for more than a few minutes. Otherwise fuel may leak.

ECM00241

CAUTION:

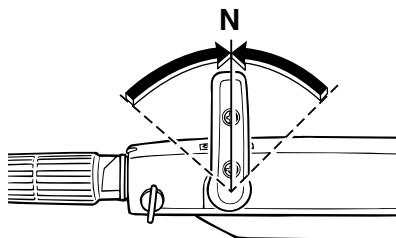
- Before tilting the outboard motor, stop the engine by following the procedure on page 37. Never tilt the outboard motor while the engine is running. Severe damage from overheating can result.
- Do not tilt up the engine by pushing the tiller handle (if equipped) because this could break the handle.

EMU27952

Procedure for tilting up

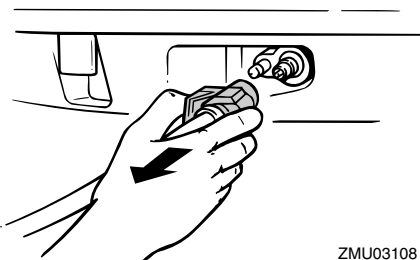
Manual tilt models

1. Place the gear shift lever in neutral.



ZMU03404

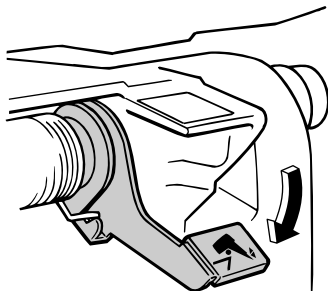
2. Disconnect the fuel line if a fuel joint is provided on the outboard motor.



ZMU03108

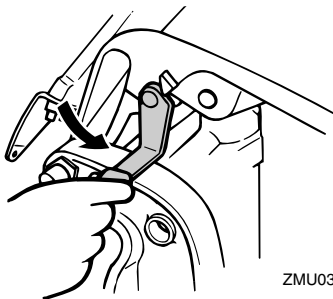
3. Place the tilt lock lever in the release position.

Operation



ZMU03405

4. Hold the rear of the top cowling with one hand, tilt the engine up, and turn the tilt support lever to the lock position and support the engine.

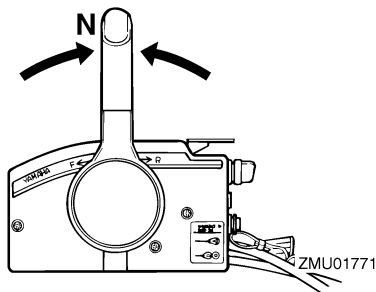


ZMU03114

EMU27995

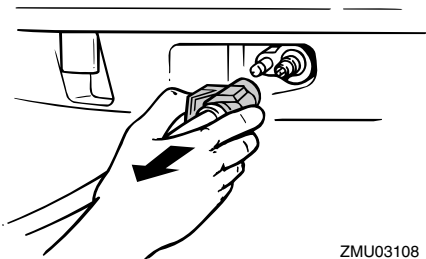
Procedure for tilting up (hydro tilt models)

1. Place the remote control lever / gear shift lever in neutral.



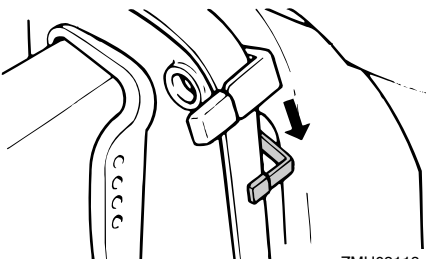
ZMU01771

2. Disconnect the fuel line from the outboard motor.



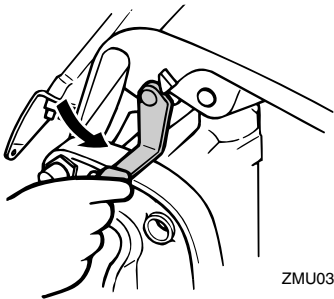
ZMU03108

3. Place the tilt lock lever in the release position.



ZMU03118

4. Hold the rear of the top cowling with one hand, tilt the engine up, and turn the tilt support lever toward you or tilt support knob into the clamp bracket, and then place the tilt lock lever back into the lock position to support the outboard motor.



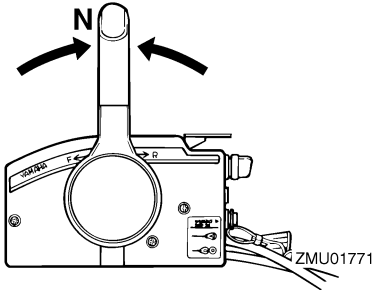
ZMU03114

EMU28005

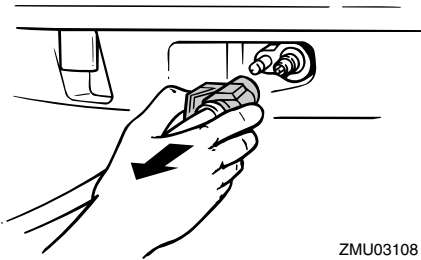
Procedure for tilting up

Power trim and tilt models / power tilt models

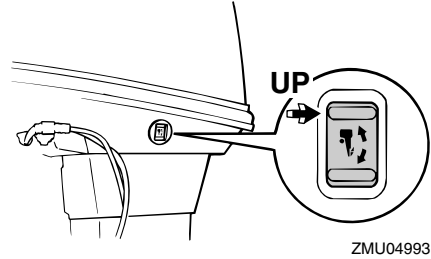
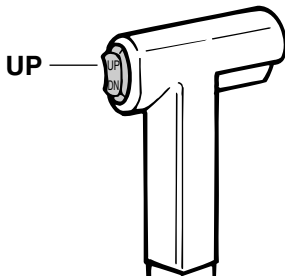
1. Place the remote control lever / the gear shift lever in neutral.



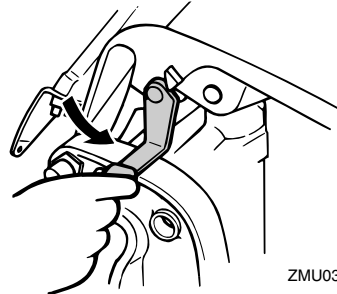
2. Disconnect the fuel line from the outboard motor or close the fuel cock.



3. Press the power trim and tilt switch / power tilt switch "UP" (up) until the outboard motor has tilted up completely.



4. Push the tilt support knob into the clamp bracket or pull the tilt support lever toward you to support the engine.



EWMO0260

WARNING

After tilting the outboard motor, be sure to support it with the tilt support knob or tilt support lever. Otherwise the outboard motor could fall back down suddenly if oil in the power trim and tilt unit loses pressure.

5. Models equipped with trim rods: Once the outboard motor is supported with the tilt support lever, press the power trim and tilt switch "DN" (down) to retract the trim rods.

ECM00250

CAUTION:

Be sure to retract the trim rods completely during mooring. This protects the rods

Operation

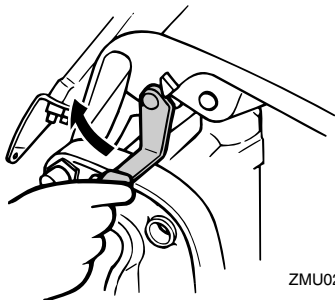
from marine growth and corrosion which could damage the power trim and tilt mechanism.

EMU30410

Procedure for tilting down

Manual tilt models

1. Slightly tilt the engine up.
2. On models equipped with a tilt support lever, return it to the release position.



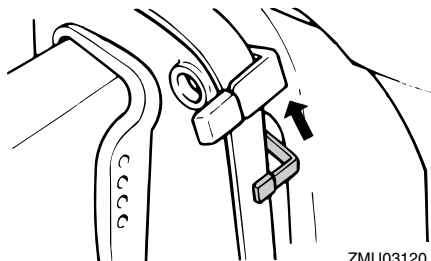
ZMU02569

3. Slowly tilt the engine down.

EMU28041

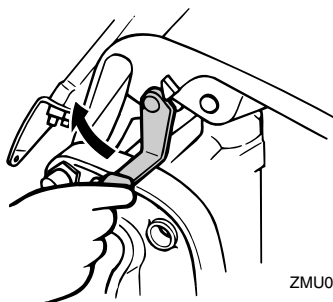
Procedure for tilting down (manual and hydro tilt models)

1. Release the tilt lock lever.



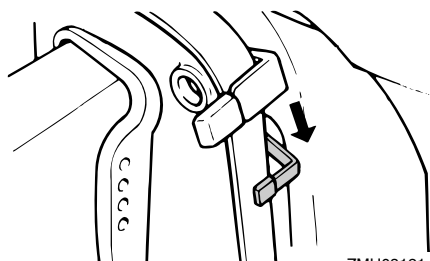
ZMU03120

2. Hold the rear of the top cowling with one hand, tilt the outboard motor up slightly and pull out the tilt support knob or return the tilt support lever.



ZMU02569

3. Slowly tilt the outboard motor down.
4. Place the tilt lock lever in the lock position.



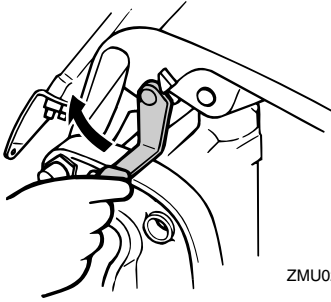
ZMU03121

EMU28052

Procedure for tilting down

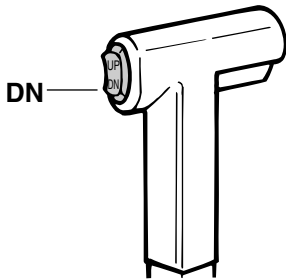
Power trim and tilt models / power tilt models

1. Push the power tilt / power trim and tilt switch "UP" (up) until the outboard motor is supported by the tilt rod and the tilt support lever / tilt support knob becomes free.
2. Release the tilt support lever or pull out the tilt support knob.

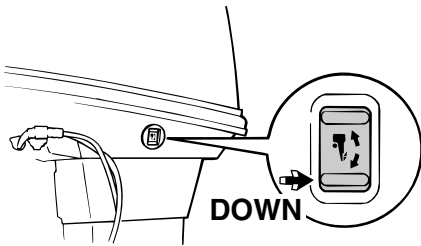


ZMU02569

3. Push the power tilt / power trim and tilt switch "DN" (down) to lower the outboard motor to the desired position.



ZMU01936



ZMU03410

EMU28060

Cruising in shallow water

The outboard motor can be tilted up partially to allow operation in shallow water.

EMU28080

Hydro tilt models

The outboard motor can be tilted up partially

to allow operation in shallow water.

EW000270

WARNING

- Place the gear shift in neutral before using the shallow water cruising system.
- Run the boat at the lowest possible speed when using the shallow water cruising system.
- Use extra care when operating in reverse. Too much reverse thrust can cause the outboard motor to lift out of the water, increasing the chance of accident and personal injury.
- Return the outboard motor to its normal position as soon as the boat is back in deeper water.

ECM00260

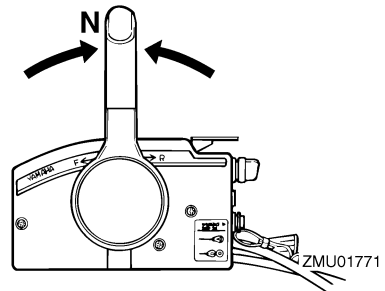
CAUTION:

Do not tilt the outboard motor up so that the cooling water inlet on the lower unit is above the surface of the water when setting up for and cruising in shallow water. Otherwise severe damage from overheating can result.

EMU28174

Procedure for hydro tilt models

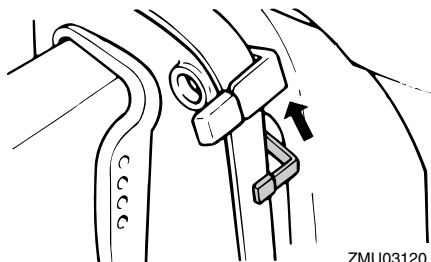
1. Place the gear shift lever in neutral.



ZMU01771

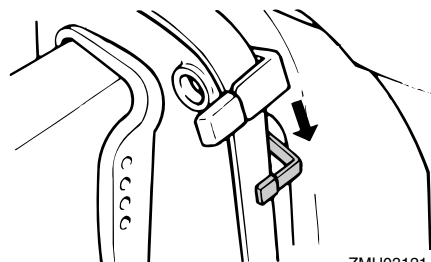
2. Pull the tilt lock lever up to the release position.

Operation



ZMU03120

3. Slightly tilt the outboard motor up to the desired position and push the tilt lock lever down to the lock position.
4. To return the outboard motor to the normal running position, pull the tilt lock lever up to the release position and slowly tilt the outboard motor down.
5. Push the tilt lock lever down to the lock position.



ZMU03121

EMU28090

Power trim and tilt models / power tilt models

The outboard motor can be tilted up partially to allow operation in shallow water.

EWM00660



WARNING

- Place the gear shift in neutral before setting up for shallow water cruising.
- Return the outboard motor to its normal position as soon as the boat is back in

deeper water.

ECM00260

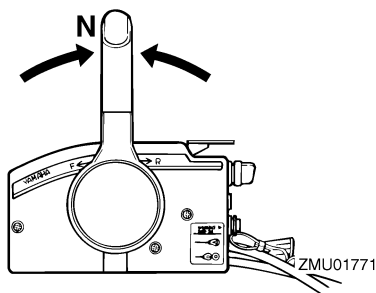
CAUTION:

Do not tilt the outboard motor up so that the cooling water inlet on the lower unit is above the surface of the water when setting up for and cruising in shallow water. Otherwise severe damage from overheating can result.

EMU28184

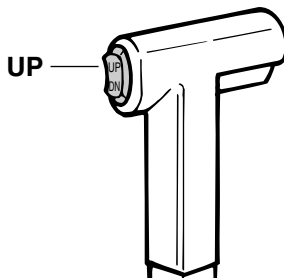
Procedure for power trim and tilt / power tilt models

1. Place the gear shift lever in neutral.

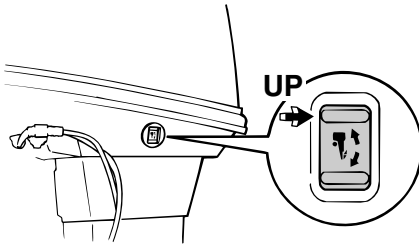


ZMU01771

2. Slightly tilt the outboard motor up to the desired position using the power trim / tilt switch.



ZMU01935



ZMU03412

3. To return the outboard motor to the normal running position, press the power trim / tilt switch and slowly tilt the outboard motor down.

EMU28190

Cruising in other conditions

Cruising in salt water

After operating in salt water, wash out the cooling water passages with fresh water to prevent them from becoming clogged with salt deposits.

NOTE:

For cooling system flushing instructions, see page 50.

Cruising in turbid water

Yamaha strongly recommends that you use the optional chromium-plated water pump kit if you use the outboard motor in turbid (muddy) water conditions.

Maintenance

EMU28216

Specifications

Dimension:

Overall length:

40VEO 670 mm (26.4 in)
40VETO 646 mm (25.4 in)
40VMHO 1281 mm (50.4 in)
40YETO 646 mm (25.4 in)
40YMHO 1281 mm (50.4 in)
50HEDO 670 mm (26.4 in)
50HETO 670 mm (26.4 in)
50HMHO 1281 mm (50.4 in)

Overall width:

40VEO 349 mm (13.7 in)
40VETO 350 mm (13.8 in)
40VMHO 349 mm (13.7 in)
40YETO 350 mm (13.8 in)
40YMHO 349 mm (13.7 in)
50HEDO 360 mm (14.2 in)
50HETO 360 mm (14.2 in)
50HMHO 349 mm (13.7 in)

Overall height S:

40VEO 1192 mm (46.9 in)
40VMHO 1223 mm (48.1 in)
40YMHO 1223 mm (48.1 in)
50HMHO 1223 mm (48.1 in)

Overall height L:

40VEO 1319 mm (51.9 in)
40VETO 1319 mm (51.9 in)
40VMHO 1350 mm (53.1 in)
40YETO 1319 mm (51.9 in)
50HEDO 1319 mm (51.9 in)
50HETO 1319 mm (51.9 in)

Transom height S:

40VEO 406 mm (16.0 in)
40VMHO 406 mm (16.0 in)
40YMHO 406 mm (16.0 in)
50HMHO 406 mm (16.0 in)

Transom height L:

40VEO 533 mm (21.0 in)
40VETO 533 mm (21.0 in)

40VMHO 533 mm (21.0 in)
40YETO 533 mm (21.0 in)
50HEDO 533 mm (21.0 in)
50HETO 533 mm (21.0 in)

Weight (AL) S:

40VEO 74.5 kg (164 lb)
40VMHO 75.8 kg (167 lb)
40YMHO 75.8 kg (167 lb)
50HMHO 75.0 kg (165 lb)

Weight (AL) L:

40VEO 77.3 kg (170 lb)
40VETO 88.0 kg (194 lb)
40VMHO 77.5 kg (171 lb)
40YETO 88.0 kg (194 lb)
50HEDO 84.5 kg (186 lb)
50HETO 88.0 kg (194 lb)

Performance:

Full throttle operating range:

4500–5500 r/min

Maximum output:

40VEO 29.4 kW@5000 r/min
(40 HP@5000 r/min)
40VETO 29.4 kW@5000 r/min
(40 HP@5000 r/min)
40VMHO 29.4 kW@5000 r/min
(40 HP@5000 r/min)
40YETO 29.4 kW@5000 r/min
(40 HP@5000 r/min)
40YMHO 29.4 kW@5000 r/min
(40 HP@5000 r/min)
50HEDO 36.8 kW@5000 r/min
(50 HP@5000 r/min)
50HETO 36.8 kW@5000 r/min
(50 HP@5000 r/min)
50HMHO 36.8 kW@5000 r/min
(50 HP@5000 r/min)

Idling speed (in neutral):

800 ±50 r/min

Engine:

Type:

2-stroke L

Displacement:

698.0 cm³ (42.59 cu.in)

Bore × stroke:

67.0 × 66.0 mm (2.64 × 2.60 in)

Ignition system:

CDI

Spark plug (NGK):

40VEO B7HS-10
40VETO B7HS-10
40VMHO B7HS-10
40YETO BR8HS-10
40YMHO BR8HS-10
50HEDO B8HS-10
50HETO B8HS-10
50HMHO B8HS-10

Spark plug with resistor (NGK):

40VEO BR7HS-10
40VETO BR7HS-10
40VMHO BR7HS-10
40YETO BR8HS-10
40YMHO BR8HS-10
50HEDO BR8HS-10
50HETO BR8HS-10
50HMHO BR8HS-10

Spark plug gap:

0.9–1.0 mm (0.035–0.039 in)

Control system:

40VEO Remote control
40VETO Remote control
40VMHO Tiller
40YETO Remote control
40YMHO Tiller
50HEDO Remote control
50HETO Remote control
50HMHO Tiller

Starting system:

40VEO Electric
40VETO Electric
40VMHO Manual
40YETO Electric
40YMHO Manual

50HEDO Electric

50HETO Electric

50HMHO Manual

Starting carburetion system:

40VEO Prime start
40VETO Prime start
40VMHO Choke valve
40YETO Prime start
40YMHO Choke valve
50HEDO Prime start
50HETO Prime start
50HMHO Choke valve

Min. cold cranking amps (CCA/EN):

40VEO 347.0 A
40VETO 347.0 A
40YETO 347.0 A
50HEDO 347.0 A
50HETO 347.0 A

Min. rated capacity (20HR/IEC):

40VEO 40.0 Ah
40VETO 40.0 Ah
40YETO 40.0 Ah
50HEDO 40.0 Ah
50HETO 40.0 Ah

Alternator output:

40VMHO 80 W
40YMHO 80 W
50HMHO 80 W

Alternator output for battery DC:

40VEO 6.0 A
40VETO 6.0 A
40YETO 6.0 A
50HEDO 6.0 A
50HETO 6.0 A

Drive unit:**Gear positions:**

Forward-neutral-reverse

Gear ratio:

1.85 (24/13)

Trim and tilt system:

40VEO Manual tilt

Maintenance

40VETO Power trim and tilt
40VMHO Manual tilt
40YETO Power trim and tilt
40YMHO Manual tilt
50HEDO Hydro tilt
50HETO Power trim and tilt
50HMHO Manual tilt

Propeller mark:

G

Fuel and oil:

Recommended fuel:

Regular unleaded gasoline

Min. research octane:

90

Recommended engine oil:

YAMALUBE 2-stroke outboard motor
oil

Lubrication:

Oil injection

Engine oil tank capacity:

1.5 L (1.59 US qt) (1.32 Imp.qt)

Recommended gear oil:

Hypoid gear oil SAE#90

Gear oil quantity:

430.0 cm³ (14.54 US oz)
(15.17 Imp.oz)

Tightening torque for engine:

Spark plug:

25.0 Nm (18.4 ft-lb) (2.55 kgf-m)

Propeller nut:

35.0 Nm (25.8 ft-lb) (3.57 kgf-m)

EMU28222

Transporting and storing outboard motor

EWMO0690

WARNING

- Leaking fuel is a fire hazard. When transporting and storing the outboard motor, close the air vent screw and fuel cock to prevent fuel from leaking.
- USE CARE when transporting fuel tank,

whether in a boat or car.

- DO NOT fill fuel container to maximum capacity. Gasoline will expand considerably as it warms up and can build up pressure in the fuel container. This can cause fuel leakage and a potential fire hazard.

EWMO0700

WARNING

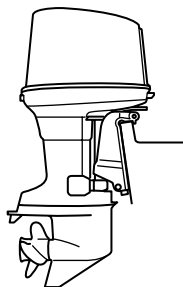
Never get under the lower unit while it is tilted, even if a motor support bar is used. Severe injury could occur if the outboard motor accidentally falls.

ECMO0660

CAUTION:

Do not use the tilt support lever or knob when trailering the boat. The outboard motor could shake loose from the tilt support and fall. If the motor cannot be trailered in the normal running position, use an additional support device to secure it in the tilt position.

The outboard motor should be trailered and stored in the normal running position. If there is insufficient road clearance in this position, then trailer the outboard motor in the tilt position using a motor support device such as a transom saver bar. Consult your Yamaha dealer for further details.

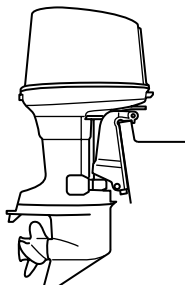


ZMU03122

EMU28235

Clamp screw mounting models

When transporting or storing the outboard motor while removed from a boat, keep the outboard motor in the attitude shown.



ZMU03122

NOTE:

Place a towel or something similar under the outboard motor to protect it from damage.

EMU30272

Storing outboard motor

When storing your Yamaha outboard motor for prolonged periods of time (2 months or longer), several important procedures must be performed to prevent excessive damage. It is advisable to have your outboard motor serviced by an authorized Yamaha dealer prior to storage. However, you, the owner, with a minimum of tools, can perform the following procedures.

ECM01411

CAUTION:

- Do not place the outboard motor on its side before the cooling water has drained from it completely, otherwise water may enter the cylinder through the exhaust port and cause engine trouble.
- Store the outboard motor in a dry, well-ventilated place, not in direct sunlight.

EMU28301

Procedure

EMU28332

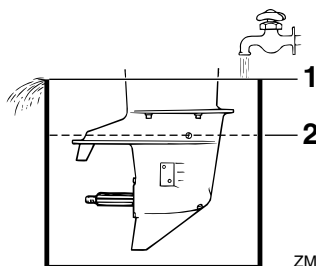
Flushing in a test tank

ECM00300

CAUTION:

Do not run the engine without supplying it with cooling water. Either the engine water pump will be damaged or the engine will be damaged from overheating. Before starting the engine, be sure to supply water to the cooling water passages.

1. Wash the outboard motor body using fresh water. For further information, see page 53.
2. Disconnect the fuel line from the motor or shut off the fuel cock, if equipped.
3. Remove the engine top cowl and silencer cover. Remove the propeller.
4. Install the outboard motor on the test tank. Fill the tank with fresh water to above the level of the anti-cavitation plate.



ZMU02051

1. Water surface
2. Lowest water level

ECM00290

CAUTION:

If the fresh water level is below the level of the anti-cavitation plate, or if the water

Maintenance

supply is insufficient, engine seizure may occur.

5. Cooling system flushing is essential to prevent the cooling system from clogging up with salt, sand, or dirt. In addition, fogging/lubricating of the engine is mandatory to prevent excessive engine damage due to rust. Perform the flushing and fogging at the same time.

EWMM00090



- **Do not touch or remove electrical parts when starting or during operation.**
- **Keep hands, hair, and clothes away from the flywheel and other rotating parts while the engine is running.**

6. Run the engine at a fast idle for a few minutes in neutral position.
7. Just prior to turning off the engine, quickly spray "Fogging Oil" alternately into each carburetor or the fogging hole of the silencer cover, if equipped. When properly done, the engine will smoke excessively and almost stall.
8. Remove the outboard motor from the test tank.
9. Install the silencer cover/cap of fogging hole and top cowling.
10. If the "Fogging Oil" is not available, run the engine at a fast idle until the fuel system becomes empty and the engine stops.
11. Drain the cooling water completely out of the motor. Clean the body thoroughly.
12. If the "Fogging Oil" is not available, remove the spark plug(s). Pour a teaspoonful of clean engine oil into each cylinder. Crank several times manually. Replace the spark plug(s).
13. Drain the fuel from the fuel tank.

NOTE: _____

Store the fuel tank in a dry, well-ventilated place, not in direct sunlight.

EMU28410

Lubrication (oil injection models)

1. Grease the spark plug threads and install the spark plug(s) and torque to proper specification. For information on spark plug installation, see page 57.
2. Fill the oil tanks. This prevents the formation of condensation. For models with a remote oil tank, it may be necessary to manually override the control unit to completely fill the engine oil tank.
3. Change the gear oil. For instructions, see page 64. Inspect the oil for the presence of water which indicates a leaky seal. Seal replacement should be performed by an authorized Yamaha dealer prior to use.
4. Grease all grease fittings. For further details, see page 56.

EMU28430

Battery care

EWMM00330



Battery electrolytic fluid is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- **Avoid bodily contact with electrolytic fluid as it can cause severe burns or permanent eye injury.**
- **Wear protective eye gear when handling or working near batteries.**

Antidote (EXTERNAL):

- **SKIN - Flush with water.**
- **EYES - Flush with water for 15 minutes**

and get immediate medical attention.

Antidote (INTERNAL):

- Drink large quantities of water or milk followed by milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Batteries also generate explosive hydrogen gas; therefore, you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks, or open flames (for example: welding equipment, lighted cigarettes, and so on.)
- DO NOT SMOKE when charging or handling batteries.

KEEP BATTERIES AND ELECTROLYTIC FLUID OUT OF REACH OF CHILDREN.

Batteries vary among manufacturers. Therefore the following procedures may not always apply. Consult your battery manufacturer's instructions.

Procedure

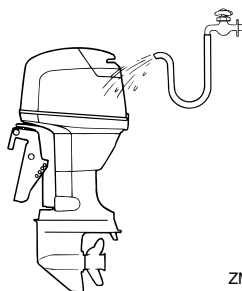
1. Disconnect and remove the battery from the boat. Always disconnect the black negative cable first to prevent the risk of shorting.
2. Clean the battery casing and terminals. Fill each cell to the upper level with distilled water.
3. Store the battery on a level surface in a cool, dry, well-ventilated place out of direct sunlight.
4. Once a month, check the specific gravity of the electrolyte and recharge as required to prolong battery life.

EMU28450

Cleaning the outboard motor

After use, wash the exterior of the outboard motor with fresh water. Flush the cooling

system with fresh water.



ZMU03223

NOTE:

For cooling system flushing instructions, see page 50.

EMU28460

Checking painted surface of motor

Check the motor for scratches, nicks, or flaking paint. Areas with damaged paint are more likely to corrode. If necessary, clean and paint the areas. A touch-up paint is available from your Yamaha dealer.

EMU28474

Periodic maintenance

EWMO1070



Be sure to turn off the engine when you perform maintenance unless otherwise specified. If you or the owner is not familiar with machine servicing, this work should be done by your Yamaha dealer or other qualified mechanic.

EMU28510

Replacement parts

If replacement parts are necessary, use only genuine Yamaha parts or parts of the same type and of equivalent strength and materials. Any part of inferior quality may malfunction, and the resulting loss of control could endanger the operator and passengers. Yamaha genuine parts and accessories are

Maintenance

available from your Yamaha dealer.

EMU28521

Maintenance chart

Frequency of maintenance operations may be adjusted according to the operating conditions, but the following table gives general guidelines. Refer to the sections in this chapter for explanations of each owner-specific action.

The “●” symbol indicates the check-ups which you may carry out yourself.

The “○” symbol indicates work to be carried out by your Yamaha dealer.

Item	Actions	Initial		Every	
		10 hours (1 month)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)
Anode(s) (external)	Inspection / replacement		●/○	●/○	
Anode(s) (internal)	Inspection / replacement				○
Battery	Inspection / charging	●/○			
Cooling water passages	Cleaning		●	●	
Cowling clamp	Inspection				●
Fuel filter (can be disassembled)	Inspection / cleaning	●	●	●	
Fuel system	Inspection	●	●	●	
Fuel tank (Yamaha portable tank)	Inspection / cleaning				●
Gear oil	Change	●		●	
Greasing points	Greasing			●	
Idling speed (carburetor models)	Inspection / adjustment	●/○		●/○	
Power trim and tilt unit	Inspection				○
Propeller and cotter pin	Inspection / replacement		●	●	
Shift link / shift cable	Inspection / adjustment				○
Thermostat	Inspection				○
Throttle link / throttle cable / throttle pick-up timing	Inspection / adjustment				○
Water pump	Inspection				○
Oil pump	Inspection / adjustment	○			
Oil tank water drain	Inspection / cleaning	●/○	●/○	●/○	

Maintenance

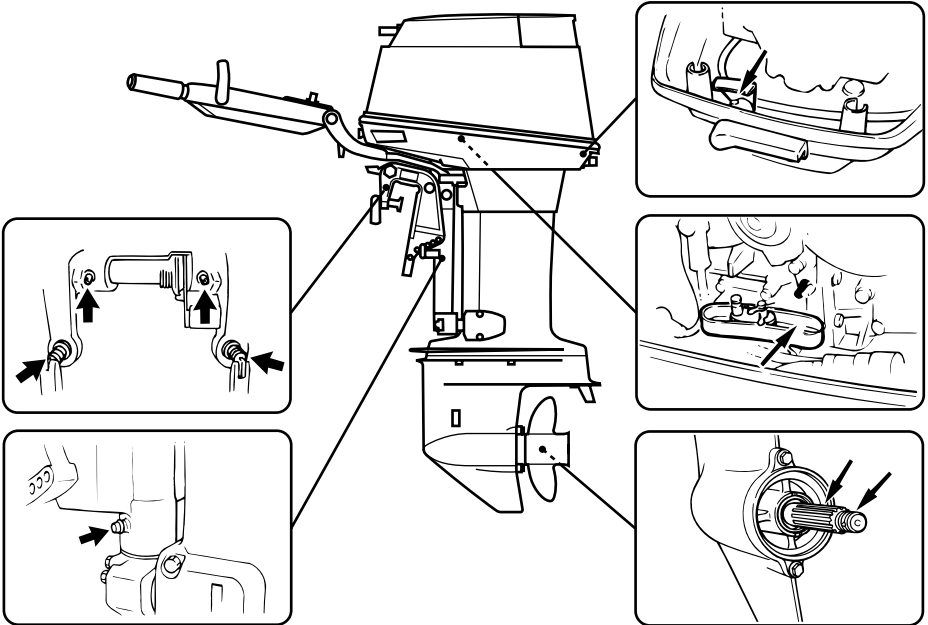
Item	Actions	Initial		Every	
		10 hours (1 month)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)
Spark plug(s)	Cleaning / adjustment / replacement	●	●	●	

NOTE: _____
When operating in salt water, turbid or muddy water, the engine should be flushed with clean water after each use.

EMU28940

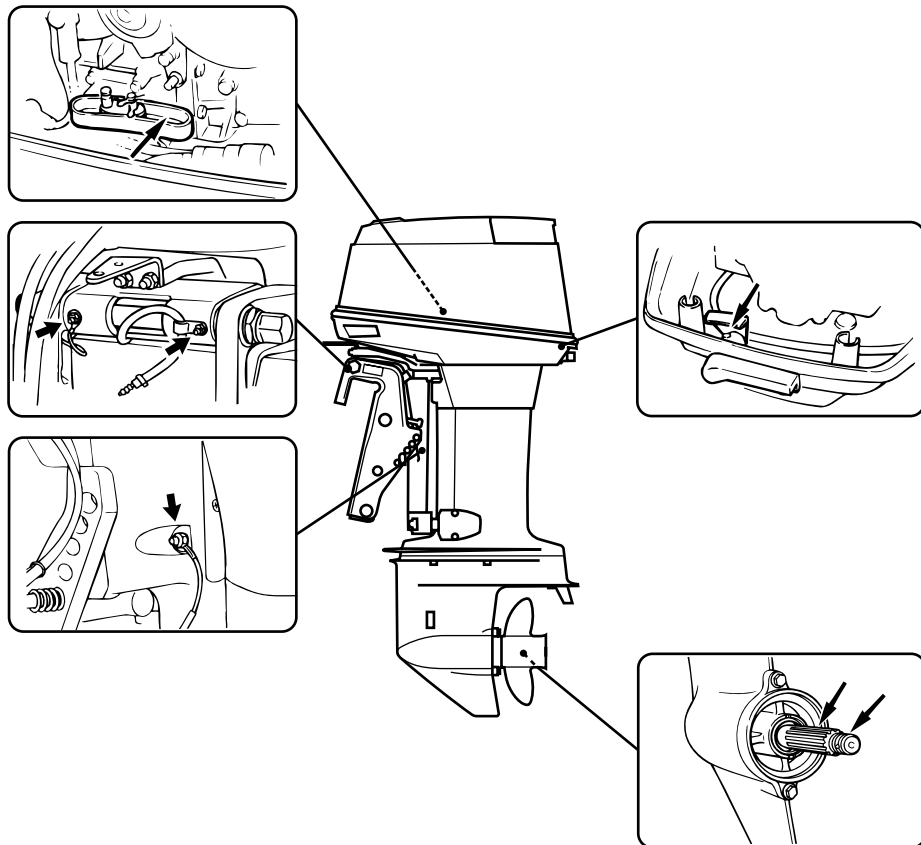
Greasing

Yamaha grease A (water resistant grease)
Yamaha grease D (corrosion resistant grease; for propeller shaft)
40VMHO, 40YMHO, 50HMHO



ZMU03415

40VEO, 40VETO, 40YETO, 50HEDO, 50HETO



ZMU03414

EMU28951

Cleaning and adjusting spark plug

EWMO0560

WARNING

When removing or installing a spark plug, be careful not to damage the insulator. A damaged insulator could allow external sparks, which could lead to explosion or fire.

The spark plug is an important engine component and is easy to inspect. The condition of the spark plug can indicate something

about the condition of the engine. For example, if the center electrode porcelain is very white, this could indicate an intake air leak or carburetion problem in that cylinder. Do not attempt to diagnose any problems yourself. Instead, take the outboard motor to a Yamaha dealer. You should periodically remove and inspect the spark plug because heat and deposits will cause the spark plug to slowly break down and erode. If electrode erosion becomes excessive, or if carbon and other deposits are excessive, you should re-

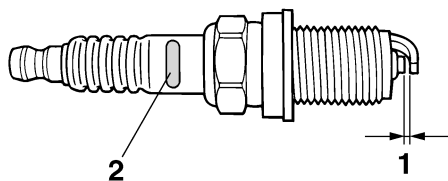
Maintenance

place the spark plug with another of the correct type.

Standard spark plug:

40VEO B7HS-10
40VETO B7HS-10
40VMHO B7HS-10
40YETO BR8HS-10
40YMHO BR8HS-10
50HEDO B8HS-10
50HETO B8HS-10
50HMHO B8HS-10
40VEO BR7HS-10
40VETO BR7HS-10
40VMHO BR7HS-10
40YETO BR8HS-10
40YMHO BR8HS-10
50HEDO BR8HS-10
50HETO BR8HS-10
50HMHO BR8HS-10

Before fitting the spark plug, measure the electrode gap with a wire thickness gauge; adjust the gap to specification if necessary.



ZMU01797

1. Spark plug gap
2. Spark plug I.D. mark (NGK)

Spark plug gap:

0.9–1.0 mm (0.035–0.039 in)

When fitting the plug, always clean the gasket surface and use a new gasket. Wipe off

any dirt from the threads and screw in the spark plug to the correct torque.

Spark plug torque:

25.0 Nm (18.4 ft-lb) (2.55 kgf-m)

NOTE:

If a torque-wrench is not available when you are fitting a spark plug, a good estimate of the correct torque is 1/4 to 1/2 a turn past finger-tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque-wrench.

EMU28962

Checking fuel system

EWM00060



Gasoline and its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames, or other sources of ignition.

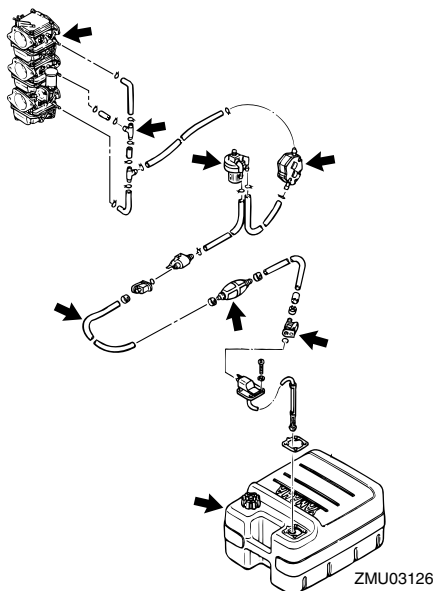
EWM00910



Leaking fuel can result in fire or explosion.

- Check for fuel leakage regularly.
- If any fuel leakage is found, the fuel system must be repaired by a qualified mechanic. Improper repairs can make the outboard unsafe to operate.

Check the fuel lines for leaks, crack, or malfunction. If a problem is found, your Yamaha dealer or other qualified mechanic should repair it immediately.



Checkpoints

- Fuel system parts leakage
- Fuel line joint leakage
- Fuel line cracks or other damage
- Fuel connector leakage

EMU28980

Inspecting fuel filter

EWM00310



WARNING

Gasoline is highly flammable, and its vapors are flammable and explosive.

- If you have any question about properly doing this procedure, consult your Yamaha dealer.
- Do not perform this procedure on a hot or running engine. Allow the engine to cool.
- There will be fuel in the fuel filter. Keep away from sparks, cigarettes, flames or other sources of ignition.
- This procedure will allow some fuel to spill. Catch fuel in a rag. Wipe up any

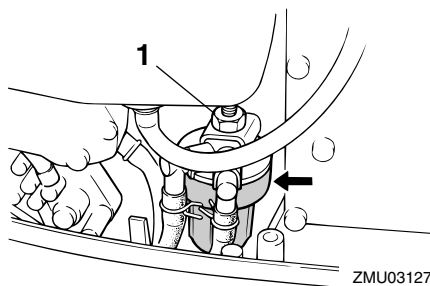
spilled fuel immediately.

- The fuel filter must be reassembled carefully with the O-ring, filter cup, and hoses in place. Improper assembly or replacement could result in a fuel leak, which could result in a fire or explosion hazard.

EMU29001

Cleaning fuel filter

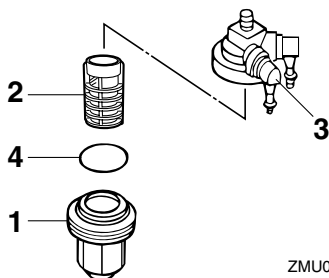
1. Remove the nut holding the fuel filter assembly if equipped.



1. Nut

2. Unscrew the filter cup, catching any spilled fuel in a rag.
3. Remove the filter element, and wash it in solvent. Allow it to dry. Inspect the filter element and O-ring to make sure they are in good condition. Replace them if necessary. If any water is found in the fuel, the Yamaha portable fuel tank or other fuel tanks should be checked and cleaned.

Maintenance



ZMU02079

1. Filter cup
 2. Filter element
 3. Filter housing
 4. O-ring
4. Reinstall the filter element in the cup. Make sure the O-ring is in position in the cup. Firmly screw the cup onto the filter housing.
 5. Attach the filter assembly to the bracket so that the fuel hoses are attached to the filter assembly.
 6. Run the engine and check the filter and lines for leaks.

EMU29040

Inspecting idling speed

EWMO0450

WARNING

- Do not touch or remove electrical parts when starting or during operation.
- Keep hands, hair, and clothes away from the flywheel and other rotating parts while the engine is running.
- **2-hp models:** The propeller rotates whenever the engine is running. Do not move the throttle control lever from the start position during warm-up. The boat could unexpectedly start to move,

which could result in an accident.

ECM00490

CAUTION:

This procedure must be performed while the outboard motor is in the water. A flushing attachment or test tank can be used.

A diagnostic tachometer should be used for this procedure. Results may vary depending on whether testing is conducted with the flushing attachment, in a test tank, or with the outboard motor in the water.

1. Start the engine and allow it to warm up fully in neutral until it is running smoothly.
2-hp model: Warm the engine with the throttle in the start position or less. If the outboard is mounted on a boat, be sure the boat is tightly moored.

NOTE:

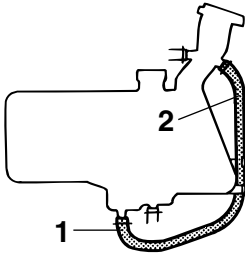
Correct idling speed inspection is only possible if the engine is fully warmed up. If not warmed up fully, the idle speed will measure higher than normal. If you have difficulty verifying the idle speed, or the idle speed requires adjustment, consult a Yamaha dealer or other qualified mechanic.

2. Verify whether the idle speed is set to specification. For idle speed specifications, see page 48.

EMU29061

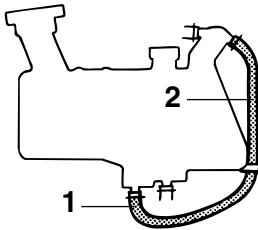
Checking water in engine oil tank

A translucent water drain hose is connected from the bottom of the oil tank to the filler neck. If water or foreign matter collects in this hose, consult a Yamaha dealer.



ZMU03416

1. Drain hose
2. Filler neck side



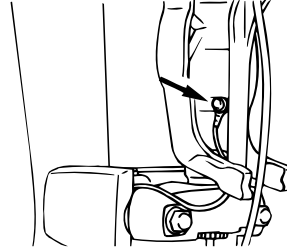
ZMU04989

1. Drain hose
2. Filler neck side

EMU29111

Checking wiring and connectors

- Check that each grounding wire is properly secured.
- Check that each connector is engaged securely.



ZMU03240

EMU29120

Exhaust leakage

Start the engine and check that no exhaust leaks from the joints between the exhaust cover, cylinder head, and body cylinder.

EMU29130

Water leakage

Start the engine and check that no water leaks from the joints between the exhaust cover, cylinder head, and body cylinder.

EMU29161

Checking power trim and tilt system

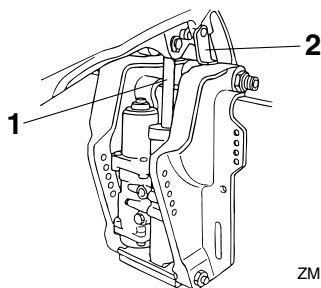
EW000430

WARNING

- **Never get under the lower unit while it is tilted, even when the tilt support lever is locked. Severe injury could occur if the outboard motor accidentally falls.**
- **Make sure no one is under the outboard motor before performing this test.**

1. Check the power trim and tilt unit for any sign of oil leaks.

Maintenance



ZMU03417

1. Trim and tilt rod
2. Tilt support lever

2. Operate each of the power trim and tilt switches / the power tilt switches on the remote control and engine bottom cowl (if equipped) to check that all switches work.
3. Tilt the outboard motor up and check that the trim and tilt rod is pushed out completely.
4. Check that the trim and tilt rod is free of corrosion or other flaws.
5. Tilt the outboard motor down. Check that the trim and tilt rod operates smoothly.

NOTE:

Consult your Yamaha dealer if any operation is abnormal.

EMU29171

Checking propeller

EWMO0321

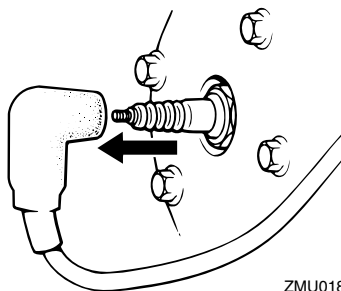


You could be seriously injured if the engine accidentally starts when you are near the propeller.

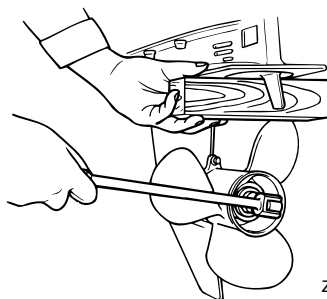
- Before inspecting, removing, or installing the propeller, remove the spark plug caps from the spark plugs. Also, place the shift control in neutral, turn the main switch to “OFF” (off) and re-

move the key, and remove the lanyard from the engine stop switch. Turn off the battery cut-off switch if your boat has one.

- Do not use your hand to hold the propeller when loosening or tightening the propeller nut. Put a wood block between the anti-cavitation plate and the propeller to prevent the propeller from turning.



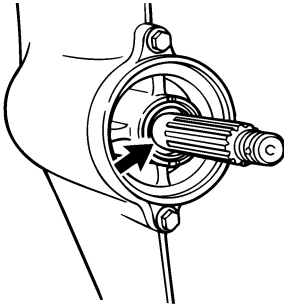
ZMU01896



ZMU01897

Checkpoints

- Check each of the propeller blades for wear, erosion from cavitation or ventilation, or other damage.
- Check the propeller shaft for damage.
- Check the splines / shear pin for wear or damage.
- Check for fish line tangled around the propeller shaft.



ZMU02274

- Check the propeller shaft oil seal for damage.

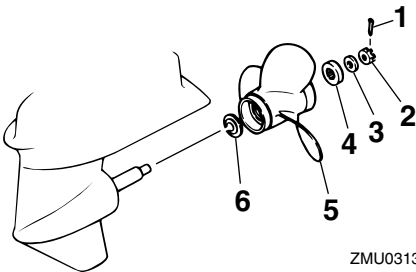
NOTE:

If the shear pin equipped: it is designed to break if the propeller hits a hard underwater obstacle to help protect the propeller and drive mechanism. The propeller will then spin freely on the shaft. If this happens, the shear pin must be replaced.

EMU29193

Removing the propeller

1. Straighten the cotter pin and pull it out using a pair of pliers.
2. Remove the propeller nut, washer, and spacer (if equipped).



ZMU03131

1. Cotter pin
2. Propeller nut
3. Washer
4. Spacer
5. Propeller
6. Thrust washer

3. Remove the propeller and thrust washer.

EMU29230

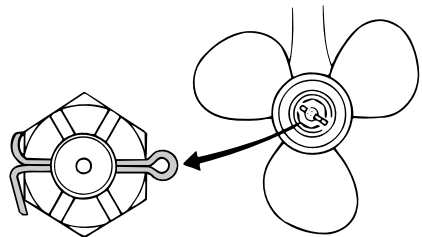
Installing the propeller

ECM00340

CAUTION:

- Be sure to install the thrust washer before installing the propeller, otherwise the lower case and propeller boss could be damaged.
- Be sure to use a new cotter pin and bend the ends over securely. Otherwise the propeller could come off during operation and be lost.

1. Apply Yamaha marine grease or a corrosion resistant grease to the propeller shaft.
2. Install the spacer(if equipped), thrust washer, and propeller on the propeller shaft.
3. Install the spacer (if equipped) and the washer. Tighten the propeller nut to the specified torque.
4. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends.



ZMU02063

NOTE:

If the propeller nut does not align with the propeller shaft hole after tightening to the specified torque, tighten the nut further to

Maintenance

align it with the hole.

EMU29280

Changing gear oil

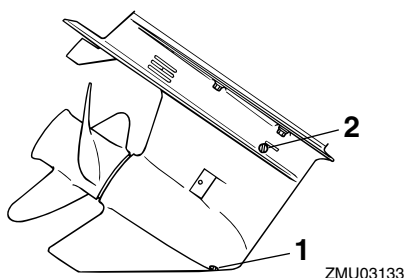
EWM00800



WARNING

- Be sure the outboard motor is securely fastened to the transom or a stable stand. You could be severely injured if the outboard motor falls on you.
- Never get under the lower unit while it is tilted, even when the tilt support lever or knob is locked. Severe injury could occur if the outboard motor accidentally falls.

1. Tilt the outboard motor so that the gear oil drain screw is at the lowest point possible.
2. Place a suitable container under the gear case.
3. Remove the gear oil drain screw.



1. Gear oil drain screw
2. Oil level plug

NOTE:

If the magnetic gear oil drain screw equipped: remove all metal particles from the screw before installing it.

4. Remove the oil level plug to allow the oil

to drain completely.

ECM00710

CAUTION:

Inspect the used oil after it has been drained. If the oil is milky, water is getting into the gear case which can cause gear damage. Consult a Yamaha dealer for repair of the lower unit seals.

NOTE:

For disposal of used oil consult your Yamaha dealer.

5. With the outboard motor in a vertical position, and using a flexible or pressurized filling device, inject the gear oil into the gear oil drain screw hole.

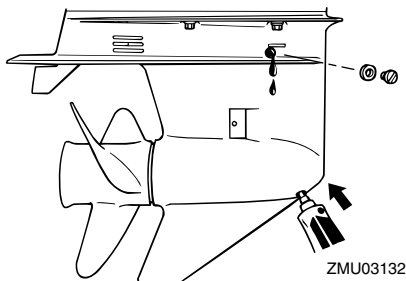
Recommended gear oil:

Hypoid gear oil SAE#90

Gear oil quantity:

430.0 cm³ (14.54 US oz)

(15.17 Imp.oz)



6. When the oil begins to flow out of the oil level plug hole, insert and tighten the oil level plug.
7. Insert and tighten the gear oil drain screw.

EMU29302

Cleaning fuel tank

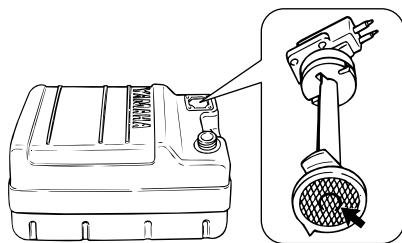
EWM00920

WARNING

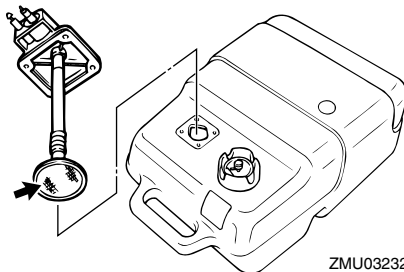
Gasoline is highly flammable, and its vapors are flammable and explosive.

- If you have any question about properly doing this procedure, consult your Yamaha dealer.
- Keep away from sparks, cigarettes, flames, or other sources of ignition when cleaning the fuel tank.
- Remove the fuel tank from the boat before cleaning it. Work only outdoors in an area with good ventilation.
- Wipe up any spilled fuel immediately.
- Reassemble the fuel tank carefully. Improper assembly can result in a fuel leak, which could result in a fire or explosion hazard.
- Dispose of old gasoline according to local regulations.

1. Empty the fuel tank into an approved container.
2. Pour a small amount of suitable solvent into the tank. Install the cap and shake the tank. Drain the solvent completely.
3. Remove the screws holding the fuel joint assembly. Pull the assembly out of the tank.



ZMU02324



ZMU03232

4. Clean the filter (located on the end of the suction pipe) in a suitable cleaning solvent. Allow the filter to dry.
5. Replace the gasket with a new one. Reinstall the fuel joint assembly and tighten the screws firmly.

EMU29312

Inspecting and replacing anode(s)

Yamaha outboard motors are protected from corrosion by sacrificial anodes. Inspect the external anodes periodically. Remove scales from the surfaces of the anodes. Consult a Yamaha dealer for replacement of external anodes.

ECM00720

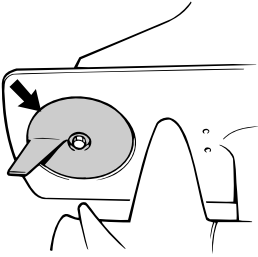
CAUTION:

Do not paint anodes, as this would render them ineffective.

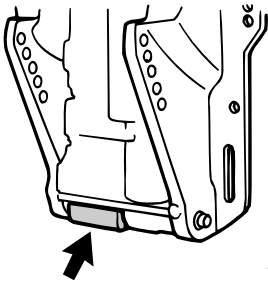
NOTE:

Inspect ground leads attached to external anodes on equipped models. Consult a Yamaha dealer for inspection and replacement of internal anodes attached to the power unit.

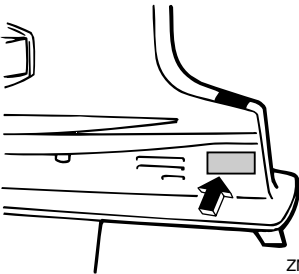
Maintenance



ZMU03134



ZMU03135



ZMU03418

EMU29320

Checking battery (for electric start models)

EWMO0330



WARNING

Battery electrolytic fluid is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid bodily contact with electrolytic

fluid as it can cause severe burns or permanent eye injury.

- Wear protective eye gear when handling or working near batteries.

Antidote (EXTERNAL):

- SKIN - Flush with water.
- EYES - Flush with water for 15 minutes and get immediate medical attention.

Antidote (INTERNAL):

- Drink large quantities of water or milk followed by milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Batteries also generate explosive hydrogen gas; therefore, you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks, or open flames (for example: welding equipment, lighted cigarettes, and so on.)
- DO NOT SMOKE when charging or handling batteries.

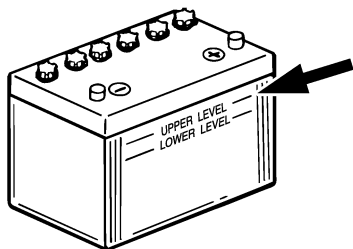
KEEP BATTERIES AND ELECTROLYTIC FLUID OUT OF REACH OF CHILDREN.

ECMO0360

CAUTION:

- A poorly maintained battery will quickly deteriorate.
- Ordinary tap water contains minerals harmful to a battery, and should not be used for topping up.

1. Check the electrolyte level at least once a month. Fill to the manufacturer's recommended level when necessary. Top up only with distilled water (or pure de-ionized water suitable to use in batteries).



ZMU01810

2. Always keep the battery in a good state of charge. Installing a voltmeter will help you monitor your battery. If you will not use the boat for a month or more, remove the battery from the boat and store it in a cool, dark place. Completely re-charge the battery before using it.
3. If the battery will be stored for longer than a month, check the specific gravity of the fluid at least once a month and re-charge the battery when it is low.

NOTE:

Consult a Yamaha dealer when charging or re-charging batteries.

EMU29331

Connecting the battery

EWM00570



WARNING

Mount the battery holder securely in a dry, well-ventilated, vibration-free location in the boat. Install a fully charged battery in the holder.

ECM01121

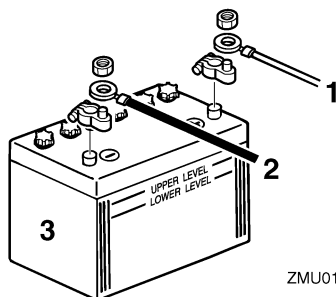
CAUTION:

- Make sure the main switch (on applicable models) is "OFF" (off) before working on the battery.
- Reversal of the battery cables will damage the electrical parts.
- Connect the red battery cable first

when installing the battery and disconnect the black battery cable first when removing it. Otherwise, the electrical parts can be damaged.

- The electrical contacts of the battery and cables must be clean and properly connected, or the battery will not start the engine.

Connect the red battery cable to the POSITIVE (+) terminal first. Then connect the black battery cable to the NEGATIVE (-) terminal.



ZMU01811

1. Red cable
2. Black cable
3. Battery

EMU29370

Disconnecting the battery

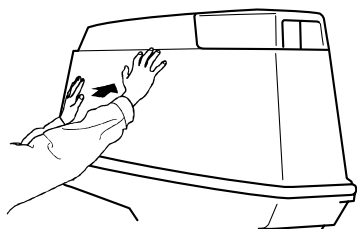
Disconnect the BLACK cable from the NEGATIVE (-) terminal first. Then disconnect the RED cable from the POSITIVE (+) terminal.

EMU29390

Checking top cowling

Check the fitting of the top cowling by pushing it with both hands. If it is loose have it repaired by your Yamaha dealer.

Maintenance



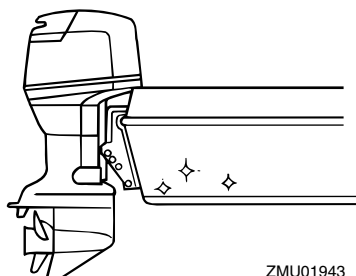
ZMU04678

EMU29400

Coating the boat bottom

A clean hull improves boat performance. The boat bottom should be kept as clean of marine growth as possible. If necessary, the boat bottom can be coated with an anti-fouling paint approved for your area to inhibit marine growth.

Do not use anti-fouling paint which includes copper or graphite. These paints can cause more rapid engine corrosion.



ZMU01943

Troubleshooting

A problem in the fuel, compression, or ignition systems can cause poor starting, loss of power, or other problems. This section describes basic checks and possible remedies, and covers all Yamaha outboard motors. Therefore some items may not apply to your model.

If your outboard motor requires repair, bring it to your Yamaha dealer.

If the engine trouble warning indicator is flashing, consult your Yamaha dealer.

Starter will not operate.

Q. Is battery capacity weak or low?

A. Check battery condition. Use battery of recommended capacity.

Q. Are battery connections loose or corroded?

A. Tighten battery cables and clean battery terminals.

Q. Is fuse for electric start relay or electric circuit blown?

A. Check for cause of electric overload and repair. Replace fuse with one of correct amperage.

Q. Are starter components faulty?

A. Have serviced by a Yamaha dealer.

Q. Is shift lever in gear?

A. Shift to neutral.

Engine will not start (starter operates).

Q. Is fuel tank empty?

A. Fill tank with clean, fresh fuel.

Q. Is fuel contaminated or stale?

A. Fill tank with clean, fresh fuel.

Q. Is fuel filter clogged?

A. Clean or replace filter.

Q. Is starting procedure incorrect?

A. See page 31.

Q. Has fuel pump malfunctioned?

A. Have serviced by a Yamaha dealer.

Q. Are spark plug(s) fouled or of incorrect type?

A. Inspect spark plug(s). Clean or replace with recommended type.

Q. Are spark plug cap(s) fitted incorrectly?

A. Check and re-fit cap(s).

Q. Is ignition wiring damaged or poorly connected?

A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Are ignition parts faulty?

A. Have serviced by a Yamaha dealer.

Q. Is engine stop switch lanyard not attached?

A. Attach lanyard.

Q. Are engine inner parts damaged?

A. Have serviced by a Yamaha dealer.

Engine idles irregularly or stalls.

Q. Are spark plug(s) fouled or of incorrect type?

A. Inspect spark plug(s). Clean or replace with recommended type.

Trouble Recovery

Q. Is fuel system obstructed?

A. Check for pinched or kinked fuel line or other obstructions in fuel system.

Q. Is fuel contaminated or stale?

A. Fill tank with clean, fresh fuel.

Q. Is fuel filter clogged?

A. Clean or replace filter.

Q. Have ignition parts failed?

A. Have serviced by a Yamaha dealer.

Q. Has warning system activated?

A. Find and correct cause of warning.

Q. Is spark plug gap incorrect?

A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?

A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Is specified engine oil not being used?

A. Check and replace oil as specified.

Q. Is thermostat faulty or clogged?

A. Have serviced by a Yamaha dealer.

Q. Are carburetor adjustments incorrect?

A. Have serviced by a Yamaha dealer.

Q. Is fuel pump damaged?

A. Have serviced by a Yamaha dealer.

Q. Is air vent screw on fuel tank closed?

A. Open air vent screw.

Q. Is choke knob pulled out?

A. Return to home position.

Q. Is motor angle too high?

A. Return to normal operating position.

Q. Is carburetor clogged?

A. Have serviced by a Yamaha dealer.

Q. Is fuel joint connection incorrect?

A. Connect correctly.

Q. Is throttle valve adjustment incorrect?

A. Have serviced by a Yamaha dealer.

Q. Is battery cable disconnected?

A. Connect securely.

Warning buzzer sounds or indicator lights.

Q. Is cooling system clogged?

A. Check water intake for restriction.

Q. Is engine oil level low?

A. Fill oil tank with specified engine oil.

Q. Is heat range of spark plug incorrect?

A. Inspect spark plug and replace it with recommended type.

Q. Is specified engine oil not being used?

A. Check and replace oil with specified type.

Q. Is engine oil contaminated or deteriorated?

A. Replace oil with fresh, specified type.

Q. Is oil filter clogged?

A. Have serviced by a Yamaha dealer.

Q. Has oil feed/injection pump malfunctioned?

A. Have serviced by a Yamaha dealer.

Q. Is load on boat improperly distributed?

A. Distribute load to place boat on an even plane.

Q. Is water pump or thermostat faulty?

A. Have serviced by a Yamaha dealer.

Q. Is there excess water in fuel filter cup?

A. Drain filter cup.

Engine power loss.

Q. Is propeller damaged?

A. Have propeller repaired or replaced.

Q. Is propeller pitch or diameter incorrect?

A. Install correct propeller to operate out-board at its recommended speed (r/min) range.

Q. Is trim angle incorrect?

A. Adjust trim angle to achieve most efficient operation.

Q. Is motor mounted at incorrect height on transom?

A. Have motor adjusted to proper transom height.

Q. Has warning system activated?

A. Find and correct cause of warning.

Q. Is boat bottom fouled with marine growth?

A. Clean boat bottom.

Q. Are spark plug(s) fouled or of incorrect type?

A. Inspect spark plug(s). Clean or replace with recommended type.

Q. Are weeds or other foreign matter tangled on gear housing?

A. Remove foreign matter and clean lower unit.

Q. Is fuel system obstructed?

A. Check for pinched or kinked fuel line or other obstructions in fuel system.

Q. Is fuel filter clogged?

A. Clean or replace filter.

Q. Is fuel contaminated or stale?

A. Fill tank with clean, fresh fuel.

Q. Is spark plug gap incorrect?

A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?

A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Have ignition parts failed?

A. Have serviced by a Yamaha dealer.

Q. Is specified engine oil not being used?

A. Check and replace oil with specified type.

Q. Is thermostat faulty or clogged?

A. Have serviced by a Yamaha dealer.

Q. Is air vent screw closed?

A. Open the air vent screw.

Q. Is fuel pump damaged?

A. Have serviced by a Yamaha dealer.

Q. Is fuel joint connection incorrect?

A. Connect correctly.

Trouble Recovery

Q. Is heat range of spark plug incorrect?

A. Inspect spark plug and replace it with recommended type.

Q. Is high pressure fuel pump drive belt broken?

A. Have serviced by a Yamaha dealer.

Q. Is engine not responding properly to shift lever position?

A. Have serviced by a Yamaha dealer.

Engine vibrates excessively.

Q. Is propeller damaged?

A. Have propeller repaired or replaced.

Q. Is propeller shaft damaged?

A. Have serviced by a Yamaha dealer.

Q. Are weeds or other foreign matter tangled on propeller?

A. Remove and clean propeller.

Q. Is motor mounting bolt loose?

A. Tighten bolt.

Q. Is steering pivot loose or damaged?

A. Tighten or have serviced by a Yamaha dealer.

EMU29432

Temporary action in emergency

EMU29440

Impact damage

EWM00870



WARNING

The outboard motor can be seriously damaged by a collision while operating or trailering. Damage could make the out-

board motor unsafe to operate.

If the outboard motor hits an object in the water, follow the procedure below.



1. Stop the engine immediately.
2. Inspect the control system and all components for damage. Also inspect the boat for damage.
3. Whether damage is found or not, return to the nearest harbor slowly and carefully.
4. Have a Yamaha dealer inspect the outboard motor before operating it again.

EMU29462

Replacing fuse

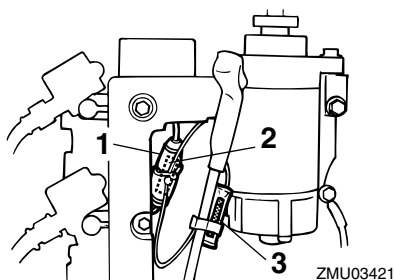
If the fuse has blown on an electric start model, open the fuse holder and replace the fuse with a new one of the proper amperage.

EWM00630



WARNING

Be sure to use the specified fuse. An incorrect fuse or a piece of wire could allow excessive current flow. This could cause electric system damage and a fire hazard.



1. Fuse holder
2. Fuse (20 A)
3. Spare fuse (20 A)

NOTE:

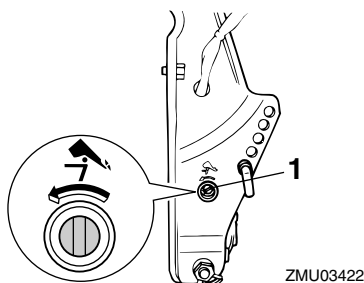
Consult your Yamaha dealer if the new fuse immediately blows again.

EMU29520

Power trim and tilt will not operate

If the engine cannot be tilted up or down with the power trim and tilt/ the power tilt because of a discharged battery or a failure with the power trim and tilt unit/the power tilt, the engine can be tilted manually.

1. Loosen the manual valve screw by turning it counterclockwise until it stops.



1. Manual valve screw
2. Put the engine in the desired position, then tighten the manual valve screw by turning it clockwise.

EMU29531

Starter will not operate

If the starter mechanism does not operate (the engine cannot be cranked with the starter), the engine can be started with an emergency starter rope.

EWMO1020

WARNING

- Use this procedure only in an emergency and only to return to port for repairs.
- When the emergency starter rope is used to start the engine, the start-in-gear protection device does not operate. Make sure the remote control lever is in neutral. Otherwise the boat could unexpectedly start to move, which could result in an accident.
- Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.
- Do not attach the lanyard to clothing that could tear loose. Do not route the cord where it could become entangled, preventing it from functioning.
- Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.
- Be sure no one is standing behind you when pulling the starter rope. It could whip behind you and injure someone.
- An unguarded, rotating flywheel is very dangerous. Keep loose clothing and other objects away when starting the engine. Use the emergency starter rope only as instructed. Do not touch the flywheel or other moving parts when the engine is running. Do not install the

Trouble Recovery

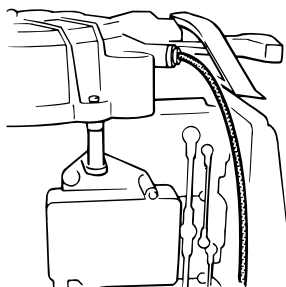
starter mechanism or top cowling after the engine is running.

- Do not touch the ignition coil, spark plug wire, spark plug cap, or other electrical components when starting or operating the motor. You could get an electrical shock.

EMU29573

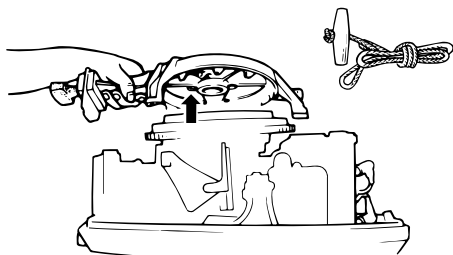
Emergency starting engine

1. Remove the top cowling.
2. Disconnect the start-in-gear protection cable from the starter, if equipped.



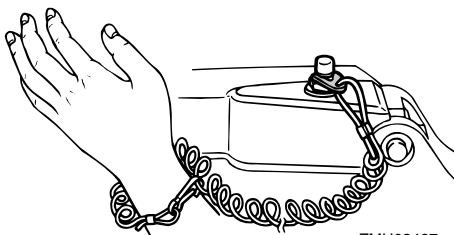
ZMU03425

3. Remove the starter/flywheel cover after removing the bolt(s).

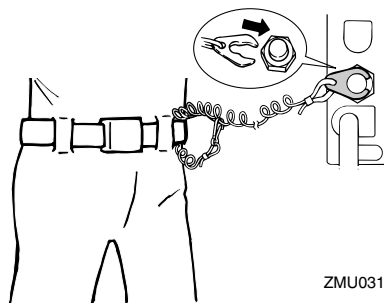


ZMU03139

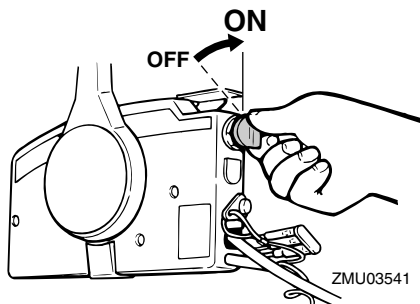
4. Prepare the engine for starting. For further information, see page 31. Be sure the engine is in neutral and that the engine stop switch lanyard lock plate is attached to the engine stop switch. The main switch must be "ON" (on), if equipped.



ZMU03427

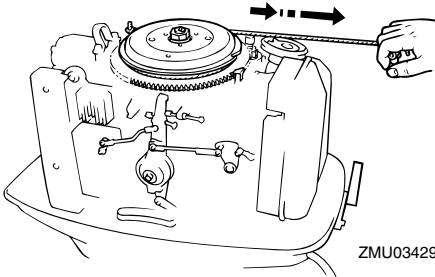


ZMU03140



ZMU03541

5. Insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and wind the rope several turns around the flywheel clockwise.
6. Pull the rope slowly until resistance is felt.
7. Give a strong pull straight out to crank and start the engine. Repeat if necessary.



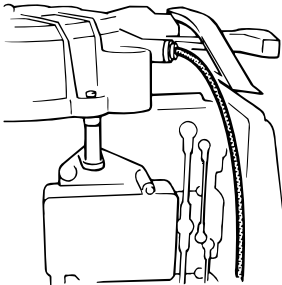
NOTE:

When the engine does not start with this procedure, see page 76.

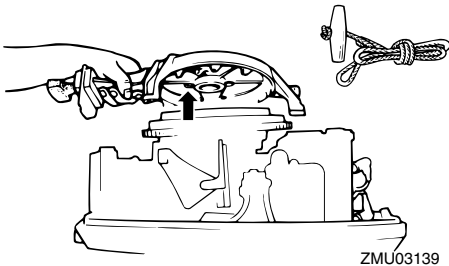
EMU29561

Emergency starting engine

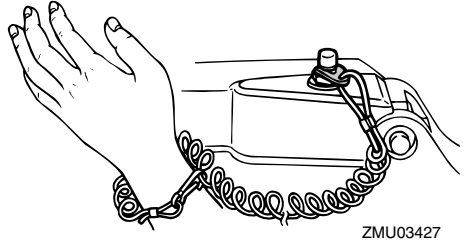
1. Remove the top cowl.
2. Remove the start-in-gear protection cable from the starter, if equipped.



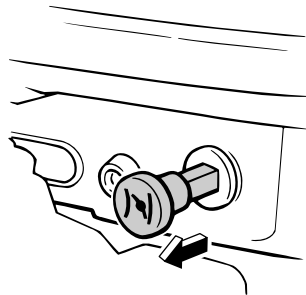
3. Remove the starter/flywheel cover after removing the bolt(s).



4. Prepare the engine for starting. For further information, see page 31. Be sure the engine is in neutral and that the engine stop switch lanyard lock plate is attached to the engine stop switch. The main switch must be "ON" (on), if equipped.

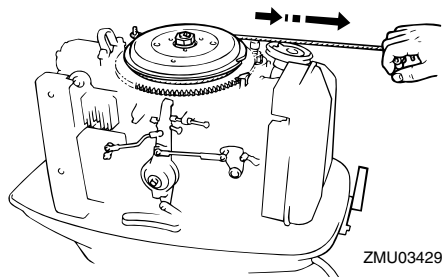


5. If equipped the choke knob, pull out it when the engine is cold. After the engine starts, gradually return the choke knob to its home position as the engine warms up.



6. Insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and wind the rope several turns around the flywheel clockwise.
7. Give a strong pull straight out to crank and start the engine. Repeat if necessary.

Trouble Recovery



EMU29670

Engine fails to operate

EMU29704

Cold engine fails to start

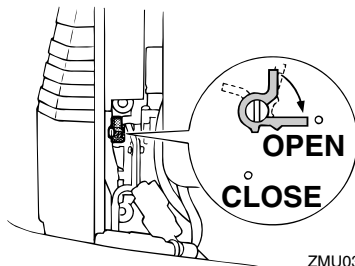
If the engine fails to start when it is cold, use the following procedure.

EWM00410

WARNING

When starting or operating the engine, do not touch the ignition coil, spark plug wire, spark plug cap, or other electrical parts carrying high voltage. Keep loose clothing and other objects away from the engine when starting it. Do not touch the flywheel or other moving parts when the engine is running.

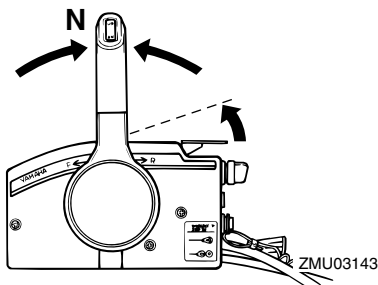
1. Adjust the trim angle so that the drive shaft is at right angles to the water surface or is trimmed in.
2. On models equipped with an emergency starter valve, open it. The valve is located behind the silencer cover on the front of the engine.



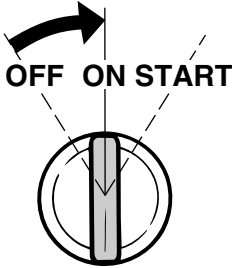
3. Squeeze the primer pump two or three times to feed fuel.



4. Open the throttle slightly without shifting using the throttle grip, neutral throttle lever or free accelerator. It is necessary to change the throttle opening slightly depending on the engine temperature. After the engine starts, return the throttle to its original position.



5. Turn the main switch to "ON" (on).



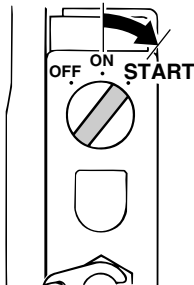
ZMU03144

6. Turn the main switch to “START” (start).

ECM00191

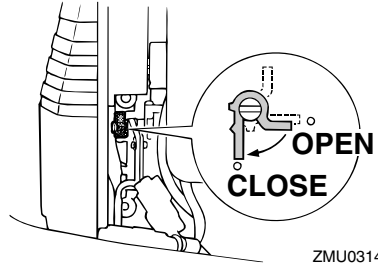
CAUTION:

- Never turn the main switch to “START” (start) while the engine is running.
- Do not keep the starter motor turning for more than 5 seconds. If the starter motor is turned continuously for more than 5 seconds, the battery will be quickly discharged, thus making it impossible to start the engine. The starter can also be damaged. If the engine will not start after 5 seconds of cranking, return the main switch to “ON” (on), wait 10 seconds, then crank the engine again.



ZMU03335

7. After the engine starts, close the emergency starter valve (if used), then return the throttle to its original position.



ZMU03145

NOTE:

When the starter mechanism malfunctions, see page 73.

EMU29760

Treatment of submerged motor

If the outboard motor is submerged, immediately take it to a Yamaha dealer. Otherwise some corrosion may begin almost immediately.

If you cannot immediately take the outboard motor to a Yamaha dealer, follow the procedure below in order to minimize engine damage.

EMU29771

Procedure

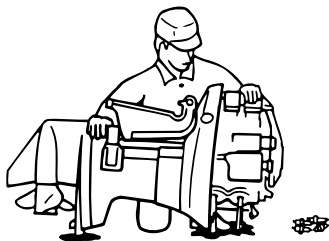
1. Thoroughly wash away mud, salt, seaweed, and so on, with fresh water.



ZMU01909

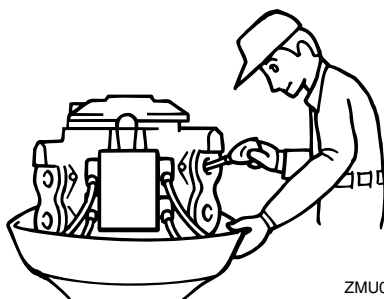
2. Remove the spark plugs and face the spark plug holes downward to allow any water, mud, or contaminants to drain.

Trouble Recovery



ZMU01910

3. Drain the fuel from the carburetor, fuel filter, and fuel line.
4. Feed fogging oil or engine oil through the carburetor(s) and spark plug holes while cranking with the manual starter or emergency starter rope.



ZMU01911

5. Take the outboard motor to a Yamaha dealer as soon as possible.

ECM00400

CAUTION:

Do not attempt to run the outboard motor until it has been completely inspected.



Printed in Japan
April 2004 -0.2 × 1 

Printed on recycled paper