YAMAHA

E115A
115B
140B
150A
L150A
175A
200A
L200A

OWNER'S MANUAL

60H-28199-E1

EMU01449

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!

⚠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.

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 manual, please consult your Yamaha dealer.

NOTE:

The E115AE, E115AMH, E115AWH, 200AET, L200AET, and their standard accessories are used as a base for the explanations and illustrations in this manual. Therefore, some items may not apply to every model.

EMU01447

**E115A, 115B, 140B, 150A, L150A,
175A, 200A, L200A
OWNER'S MANUAL**

**1st Edition, March 2002
Printed in Japan**

EMU00003

E

CONTENTS

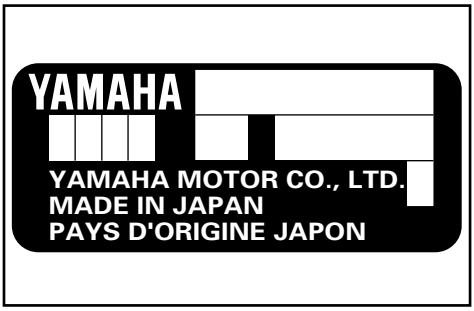
READ THIS OWNER'S MANUAL CAREFULLY BEFORE OPERATING YOUR OUTBOARD MOTOR.

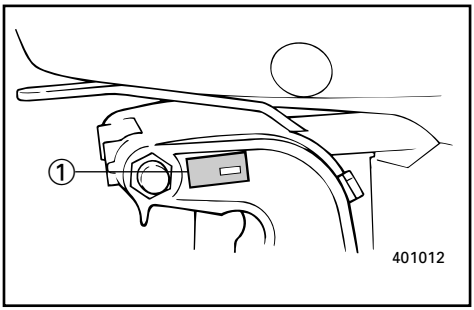
E

EMU00004

1

Chapter 1
GENERAL INFORMATION





EMU00005

IDENTIFICATION NUMBERS RECORD

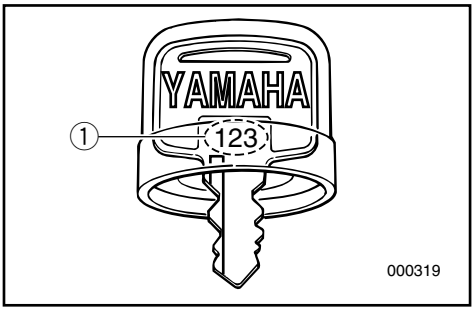
EMU00007

OUTBOARD MOTOR SERIAL NUMBER

The outboard motor serial number is stamped on the label attached to the port side of the clamp-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.

① Outboard motor serial number

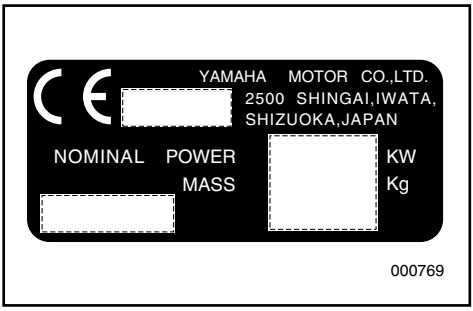


EMU00008

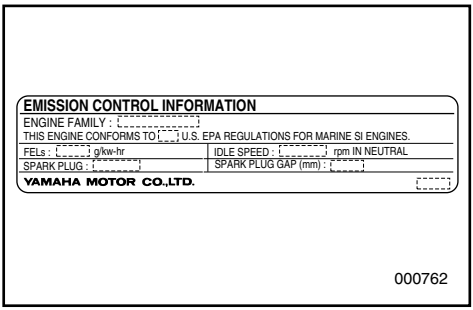
KEY NUMBER

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.

① Key number



000769



000762

EMU01532

LABELS

EMU01526

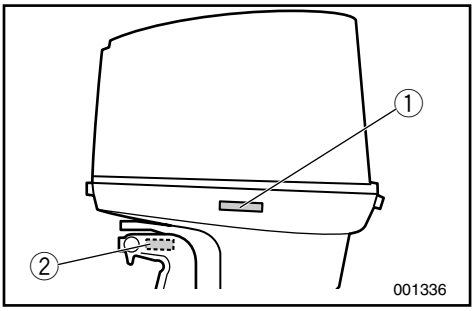
EC LABEL

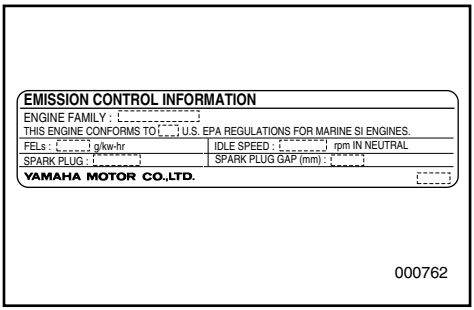
Engines affixed with this label conform to certain portions of the European Parliament directive relating to machinery. Refer to the label and the EC Declaration of Conformity for more details.

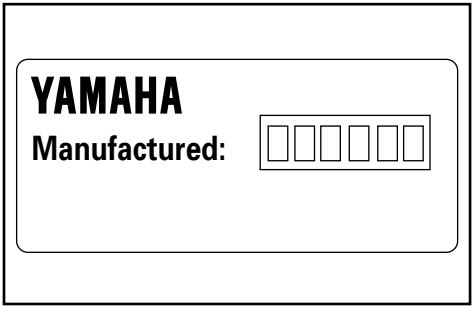
EMU01527

EPA LABEL

Engines affixed with this label conform to U.S. Environmental Protection Agency (EPA) regulations for marine SI engines. Refer to the label for more details.







EMU01385

EMISSION CONTROL INFORMATION

EMU01390

U.S. INSULAR AREAS

Engines affixed with the label pictured below conform to U.S. Environmental Protection Agency (EPA) regulations for marine SI engines. See the label affixed to your engine for details.

① Emission control information label

Approval label of Emission control certificate

This label is attached to the bottom cowling.

Existing Technology ; N/A

② Manufactured date label

Manufactured date label

This label is attached to the clamp bracket or the swivel bracket.

EMU00918

⚠ 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 (Petrol) is highly flammable, and its vapors are flammable and explosive. Handle and store gasoline (Petrol) 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.
- When a swimmer is in the water near you shift into neutral and shut off the engine.

EMU00016

FUELING INSTRUCTIONS

⚠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.**

CAUTION:

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

EMU01799

GASOLINE

Recommended gasoline:
Regular unleaded gasoline

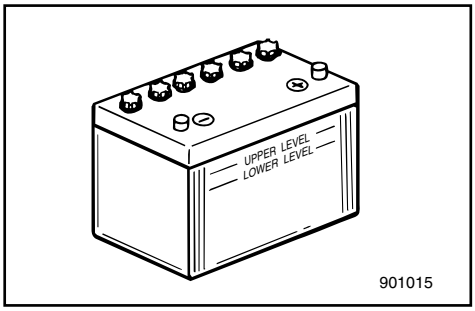
If knocking or pinging occurs, use a different brand of gasoline or premium unleaded fuel. If unleaded gasoline is not available, then premium gasoline can be used.

EMU01356

ENGINE OIL

Recommended engine oil:
YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE

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



EMU01775

BATTERY REQUIREMENT

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.

EMU01857

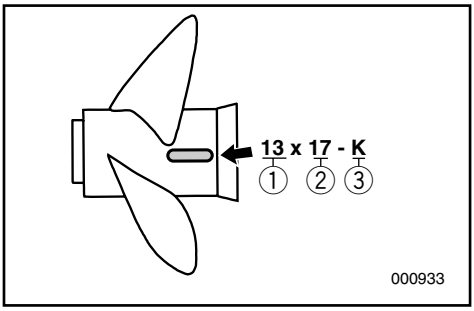
Minimum cold cranking amps (CCA/EN):
430 amps at -18°C (-0.4°F)
Minimum rated capacity (20HR/IEC):
70 A·h

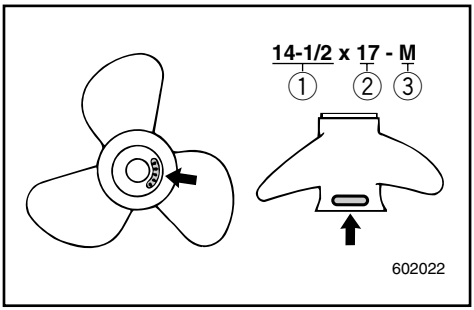
EMU01395

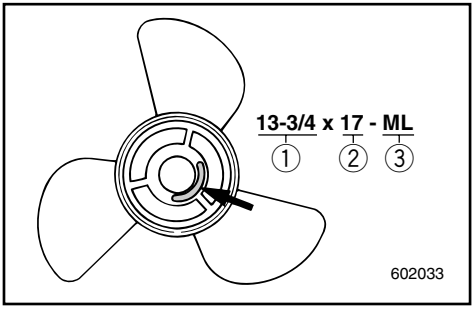
PROPELLER SELECTION

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.

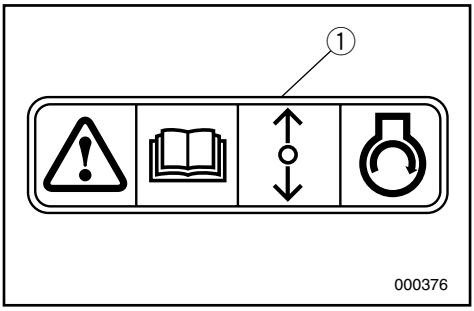
NOTE:

At full throttle and under a maximum boat load, the engine's rpm should be within the upper half of the full throttle operating range, as listed in "SPECIFICATIONS" on page 4-1. Select a propeller which fulfills this requirement.

If operating under conditions which allow the engine's rpm to rise above the maximum recommended range (such as light boat loads), reduce the throttle setting to maintain the rpm in the proper operating range.

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

Refer to the section "CHECKING PROPELLER" for instructions on propeller removal and installation.



EMU01208

START-IN-GEAR PROTECTION

Yamaha outboard motors which have the pictured label ① affixed to them 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 Neutral. Always select Neutral before starting the engine.

E

EMU00037

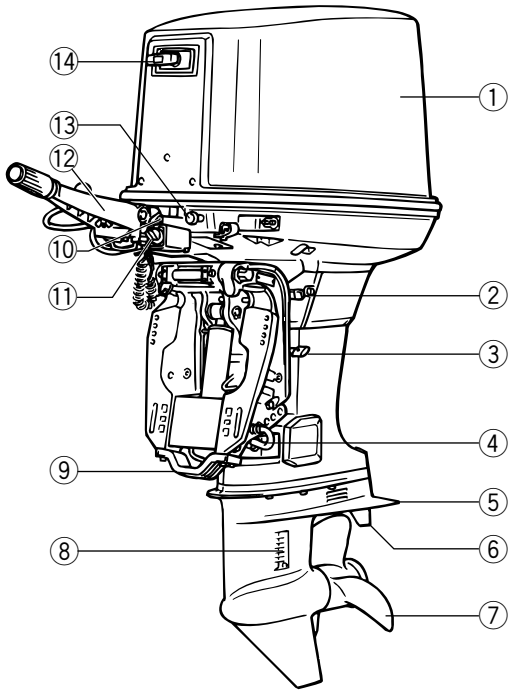
Chapter 2
BASIC COMPONENTS

2

EMU01206

MAIN COMPONENTS

E115AMH, E115AWH



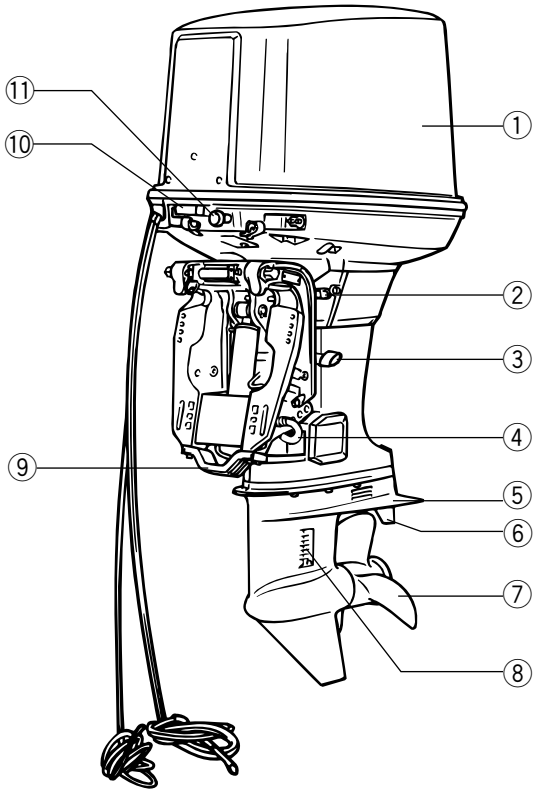
① Top cowling
② Tilt support lever
③ Tilt lock lever
④ Trim angle adjusting rod
⑤ Anti-cavitation plate
⑥ Trim tab (Anode)
⑦ Propeller
⑧ Cooling water inlet
⑨ Anode
⑩ Engine stop switch
*⑪ Main switch
⑫ Tiller handle
⑬ Manual injection knob
⑭ Recoil starter handle

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

EMU01206

MAIN COMPONENTS

E115AE, 115BE



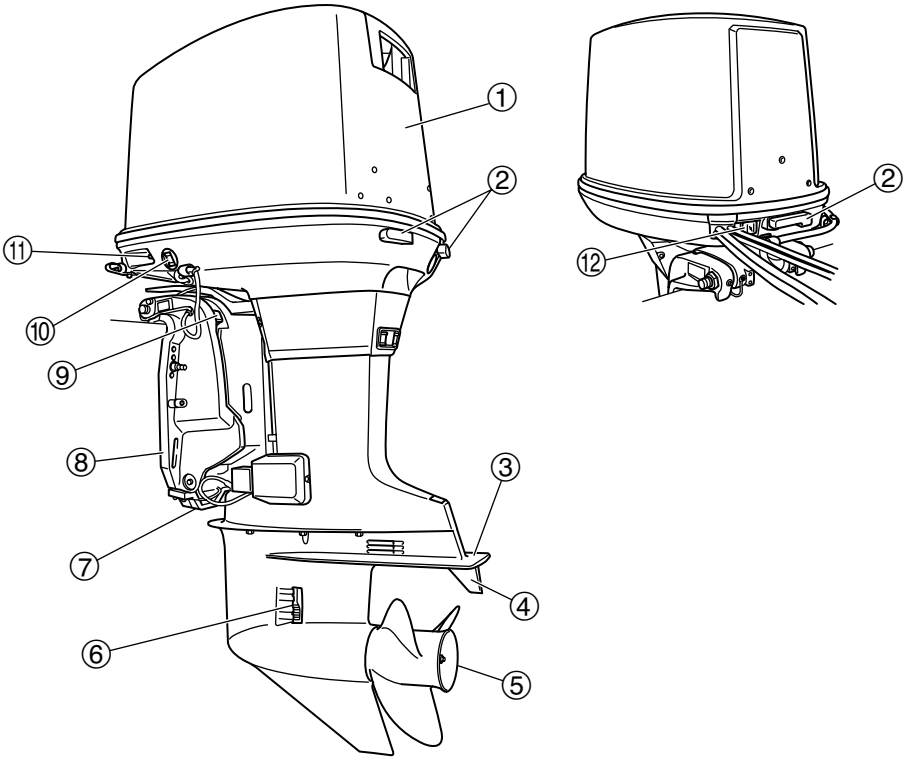
① Top cowling
② Tilt support lever
③ Tilt lock lever
④ Trim angle adjusting rod
⑤ Anti-cavitation plate
⑥ Trim tab (Anode)
⑦ Propeller
⑧ Cooling water inlet
⑨ Anode
⑩ Cowling lock lever
⑪ Choke knob

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

EMU01206

MAIN COMPONENTS

E115AET, 115BET, 140BET, 150AET, L150AET, 175AET, 200AET, L200AET

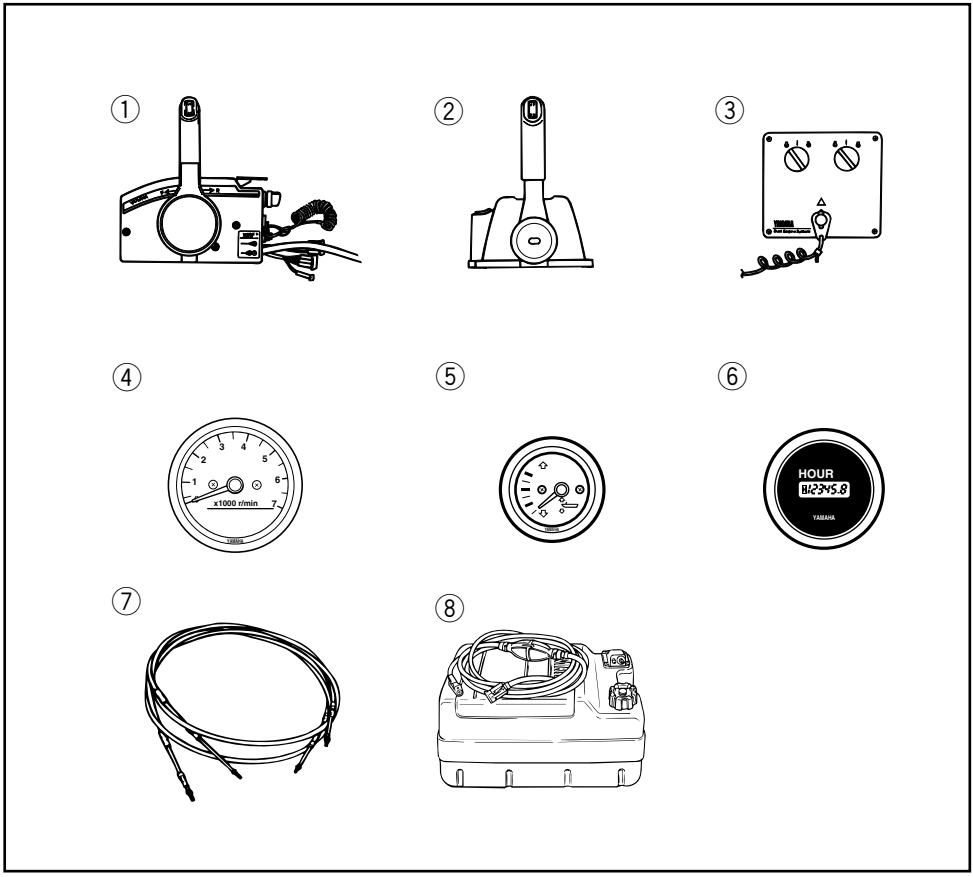


① Top cowling
② Cowling lock levers
③ Anti-cavitation plate
④ Trim tab(Anode)
⑤ Propeller
⑥ Cooling water inlet
⑦ Anode
⑧ Clamp bracket
⑨ Tilt support lever
⑩ Power trim/tilt switch
⑪ Fuel joint
⑫ Choke knob

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

EMU01206

MAIN COMPONENTS



* ① Remote control box (side mount type)
* ② Remote control box (binnacle mount type)
* ③ Switch panel (for use with ②)
* ④ Tachometer
* ⑤ Trim meter
* ⑥ Digital hour meter
* ⑦ Remote control cable
* ⑧ Fuel tank

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

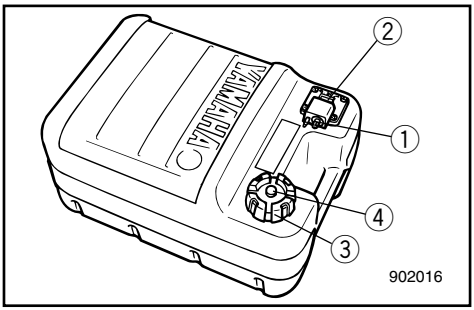
EMU00039

OPERATIONS OF CONTROLS AND OTHER FUNCTIONS

EMU01465

FUEL TANK

If your model included a portable fuel tank, its parts and functions are as follows.



① Fuel hose joint
② Fuel meter (if equipped)
③ Fuel tank cap
④ Air vent screw (if equipped)

EMU00042

Fuel Hose Joint

This connector is provided for connecting or disconnecting fuel hose.

EMU00045

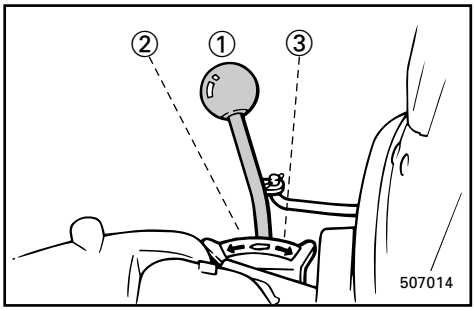
Fuel Tank Cap

This cap is for filling fuel. To remove it, turn it counterclockwise.

EMU00046

Air Vent Screw

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



EMU00051

GEAR SHIFT LEVER (for Tiller control model)

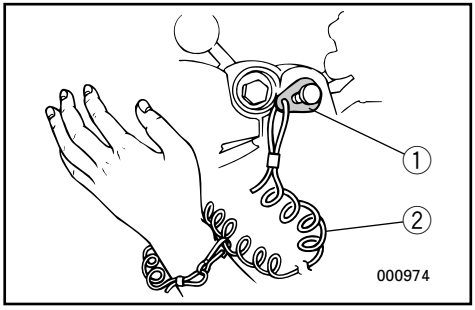
Turning the gear-shift lever towards you engages the clutch with the forward gear so that the boat moves ahead. Turning the lever away from you engages the reverse gear so that the boat moves astern.

① Neutral
② Forward
③ Reverse

EMU00931

ENGINE STOP LANYARD SWITCH (for Tiller control model)

The lock-plate ① must be attached to the engine stop lanyard switch for the engine to run. The lanyard ② 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.

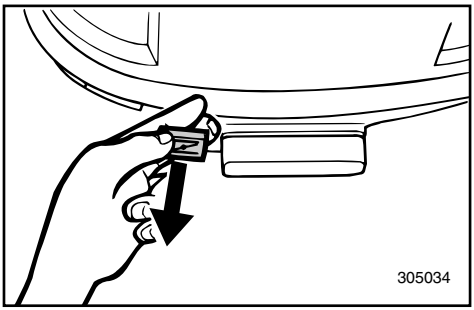


⚠WARNING

- **Attach the lanyard to a secure place on your clothing, your arm or leg while operating.**
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard in such a way that 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 lockplate removed.



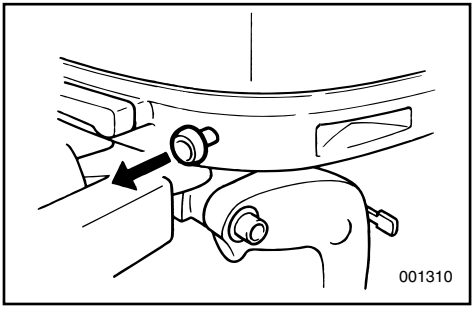
EMU00055

CHOKE KNOB

Pulling out this knob (setting it to ON) supplies a rich mixture required to start the engine.

NOTE:

The choke knob for Remote control model has the same function as the choke switch on the remote control box.

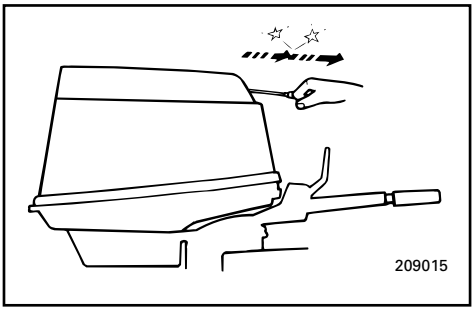


EMU01703

MANUAL INJECTION KNOB

E115AMH, E115AWH

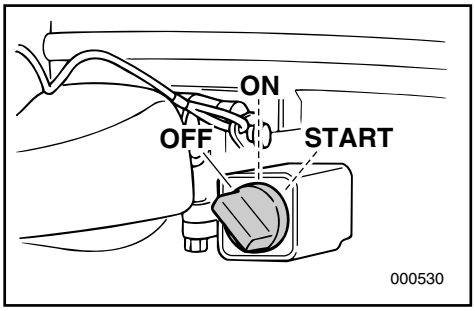
The manual injection knob is used to supply a rich fuel mixture to the carburetor when starting the engine. To use the manual injection knob, fully pull out the knob firmly. Release the knob to allow it to automatically return to its home position. For further information, see Chapter 3, “Starting engine.”



EMU00059

RECOIL STARTER HANDLE (If equipped)

Pull the handle gently until resistance is felt. Then vigorously pull the handle straight out to crank the engine to start it.



EMU01292

MAIN SWITCH

E115AWH

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

- **OFF**

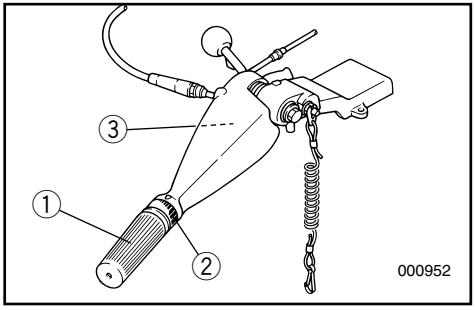
Electrical circuits switched off.
(The key can be removed.)

- **ON**

Electrical circuits switched on.
(The key cannot be removed.)

- **START**

Starter-motor will turn and start engine.
(When the key is released, it returns automatically to "ON".)

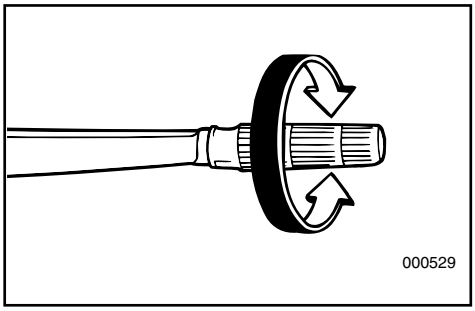


EMU00062

TILLER HANDLE (for Tiller control model)

Moving the tiller handle sideways to adjust the steering direction. In addition, this handle contains the functions as follows.

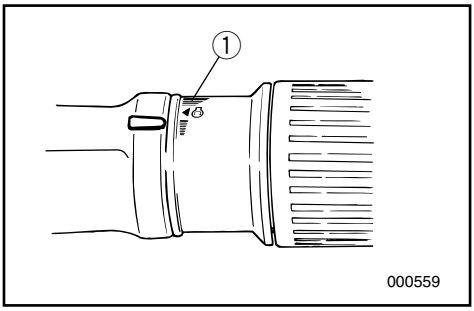
① Throttle control grip
② Throttle indicator
③ Throttle friction adjusting knob/screw



EMU00065

Throttle Control Grip

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

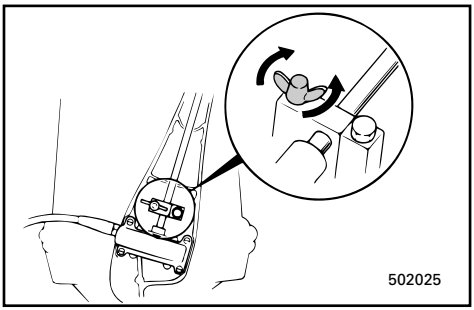


EMU00067

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.

① Throttle indicator



EMU01293

Throttle friction adjusting screw/ knob

A friction device in the tiller handle provide resistance to movement of the throttle grip. This is adjustable for operator preference. An adjusting screw/knob is located within the tiller handle.

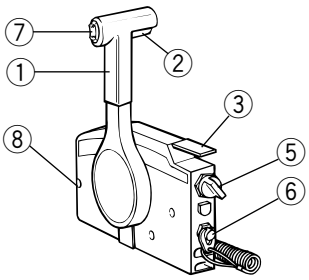
Resistance	Knob/Screw
Increase	Turn clockwise
Decrease	Turn counterclockwise

When constant speed is desired, tighten the adjusting screw/bolt to maintain the desired throttle setting.

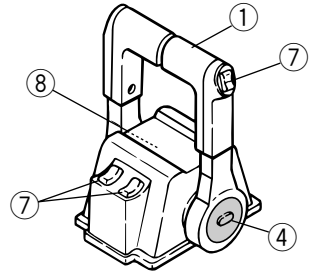
⚠WARNING

Do not over tighten the friction adjusting screw/ knob.
If there is too much resistance, it may be difficult to move the throttle grip, which could result in an accident.

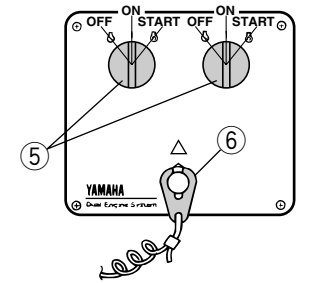
A



B



C



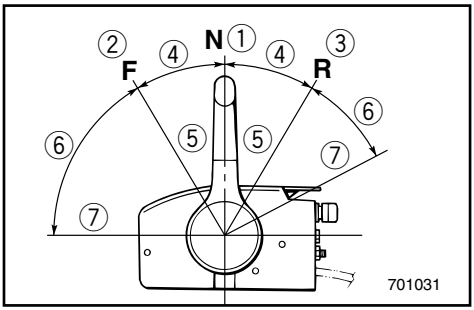
EMU01691

REMOTE CONTROL

Both the shifter and the throttle are actuated by the remote control lever. Additionally, the remote control also has the electrical switches.

A Side mount remote control box
B Binnacle mount remote control box
C Switch panel (for use with B)

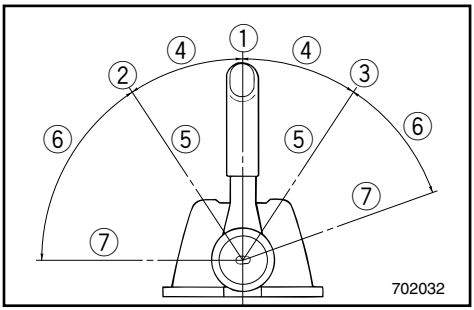
① Remote control lever
② Neutral interlock trigger
③ Neutral throttle lever
④ Free accelerator
⑤ Main switch / choke switch
⑥ Engine stop lanyard switch
⑦ Power trim and tilt switch
⑧ Throttle friction adjusting screw



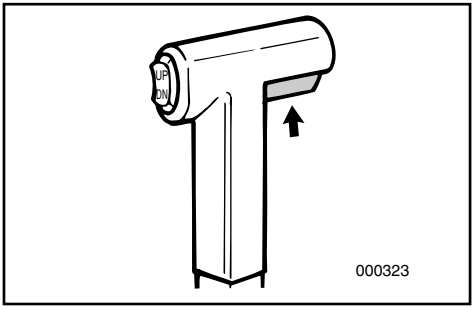
EMU00098

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.



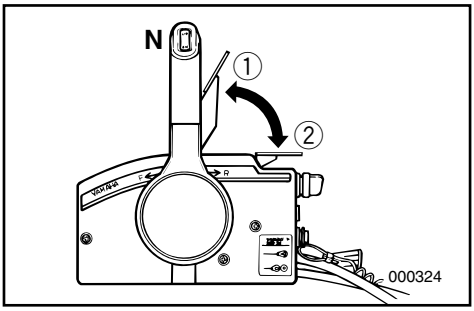
① Neutral
② Forward
③ Reverse
④ Shift
⑤ Fully closed
⑥ Throttle
⑦ Fully open



EMU00099

Neutral Interlock Trigger

To shift out of Neutral, the neutral interlock trigger of the remote control lever must first be pulled up.



EMU00100

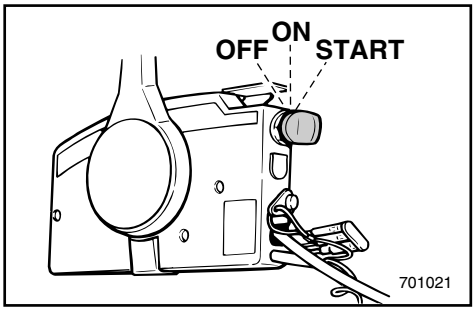
Neutral Throttle Lever

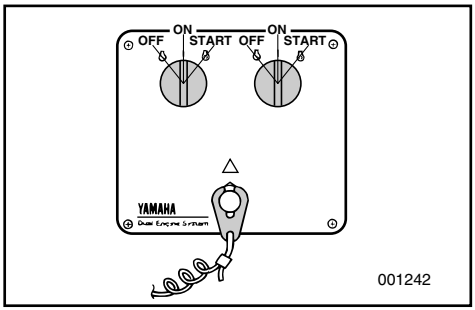
To open the throttle without shifting into either Forward or Reverse, place the remote control lever in the Neutral position and lift the neutral throttle lever.

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





EMU00101

Main switch

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

- **OFF**

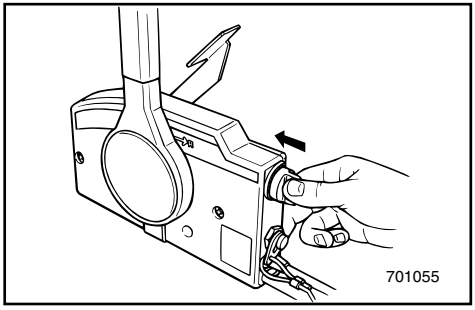
Electrical circuits switched off.
(The key can be removed.)

- **ON**

Electrical circuits switched on.
(The key cannot be removed.)

- **START**

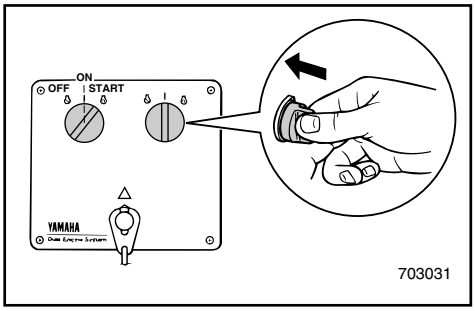
Starter-motor will turn and start engine.
(When the key is released, it returns automatically to “ON”.)

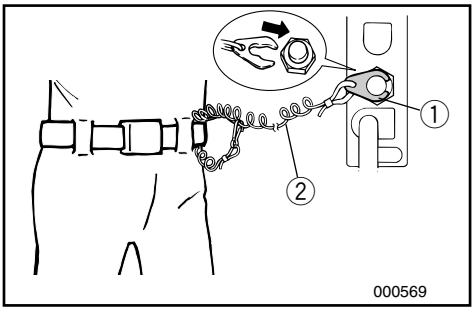


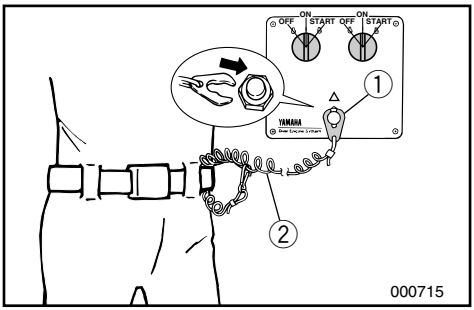
EMU00102

Choke Switch

While the main switch is being pressed in at “ON” or “START”, the choke system will switch on, to supply a rich mixture required to start the engine. (When the key is released, it will switch off automatically.)







EMU00934

Engine Stop Lanyard Switch

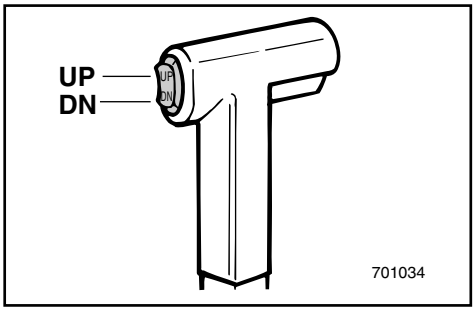
The lock-plate ① must be attached to the engine stop lanyard switch for the engine to run. The lanyard ② should be attached to a secure place on the operator's clothing, or arm or leg. Should the operator fall overboard or leave the helm, the lanyard will pull out the lock plate, stopping ignition to the engine. This will prevent the boat from running away under power.

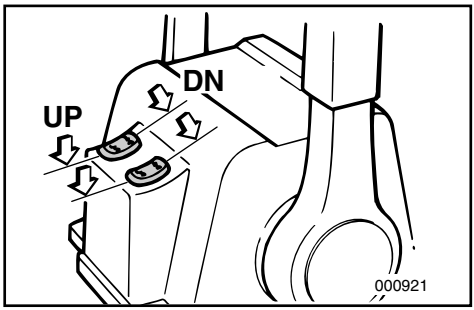
⚠WARNING

- **Attach the lanyard to a secure place on your clothing, your arm or leg while operating.**
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard in such a way that 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.





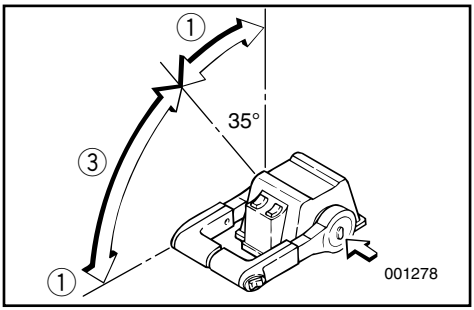
EMU01112

Power Trim/Tilt Switches

The power trim/tilt adjusts the motor angle in relation to the transom. The power trim/tilt switch is located on the remote control lever grip. Individual-engine switches are also on the control cover. Pushing the switch “UP” trims the motor up, then tilts the motor up. Pressing the switch “DN” tilts the motor down and trims the motor down. When the switch button is released, the motor will stop in its current position.

NOTE:

- On the dual engine control, the switch on the remote control grip controls both engines at the same time.
- Refer to the sections “Adjusting Trim Angle” and “Tilting Up/Down” in Chapter 3 for instructions on usage.



EMU00106

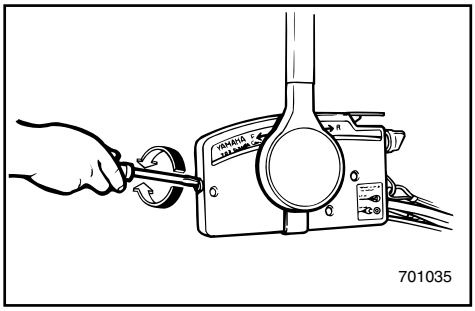
Free Accelerator

To open the throttle without shifting into either Forward or Reverse, push the free accelerator button and turn the remote control lever.

NOTE:

- The free accelerator button can be operated only when the remote control lever is in the Neutral position.
- After the button is pushed, the remote control lever must be moved at least 35° to begin opening the throttle.
- After operating the free accelerator, return the remote control lever to the Neutral position. The free accelerator button will return automatically to its set position. The remote control will then engage Forward and Reverse normally.

① Fully-open
② Fully-closed
③ Free accelerator

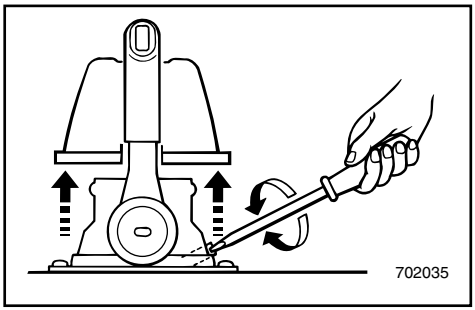


EMU01155

Throttle Friction Adjusting Screw

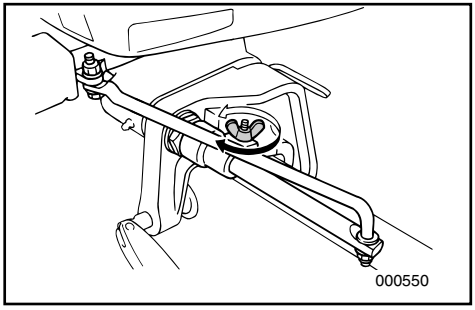
A friction device in the remote control box provides adjustable resistance to movement of the remote control lever, and can be set according to operator preference. An adjusting screw is located on the front of the remote control box.

Resistance	Screw
Increase	Turn clockwise
Decrease	Turn counterclockwise



⚠WARNING

Do not overtighten the friction adjusting screw. If there is too much resistance, it may be difficult to move the lever, which could result in an accident.



EMU00109

STEERING FRICTION ADJUSTING SCREW (for Tiller control model)

A friction device provides resistance to steering movement. This is adjustable for operator preference. An adjusting screw/bolt is located at right(starboard) side of the through tube end on the clamp bracket.

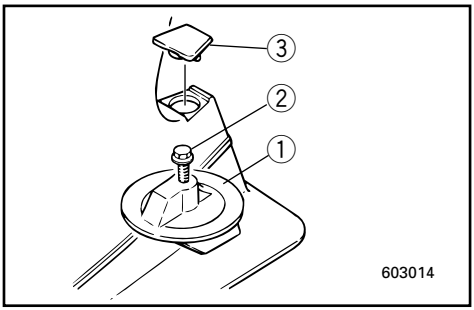
EMU01552

TRIM TAB

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.

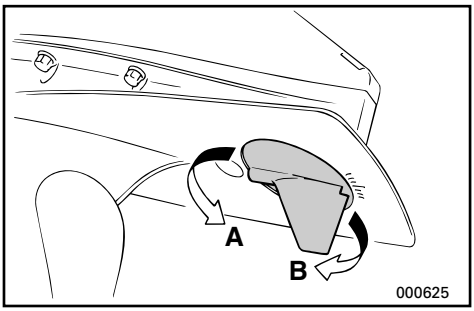
⚠WARNING

An improperly adjusted trim tab may 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.



① Trim tab
② Bolt
③ Cap (if equipped)

Boat tends to veer	The fin of trim tab
To the left (port side)	Turn to the left (A in the figure)
To the right (starboard side)	Turn to the right (B in the figure)



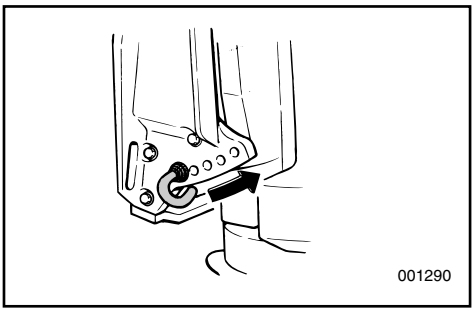
CAUTION:

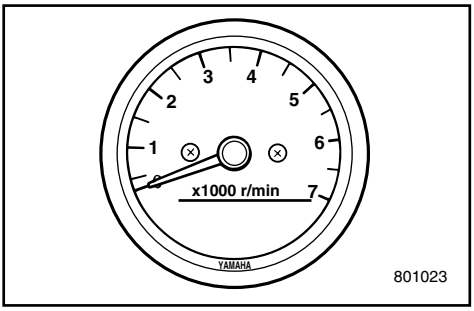
The trim tab also serves as an anode to protect the engine from electrochemical corrosion. Never paint the trim tab as it will become ineffective as an anode.

EMU01297

TRIM ANGLE ADJUSTING ROD

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

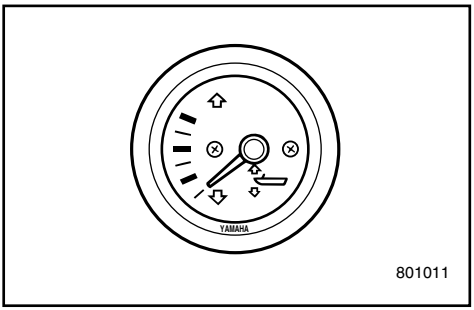




EMU00124

TACHOMETER

This meter shows the engine speed.



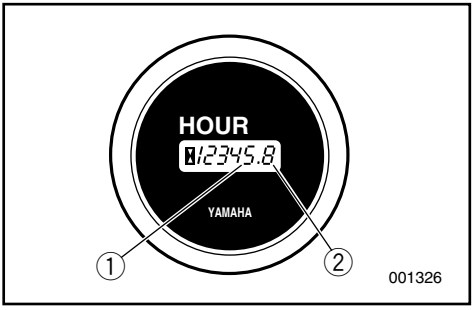
EMU00132

TRIM METER (for Power trim/tilt model)

This meter shows the trim angle of your outboard.

NOTE:

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



EMU00133

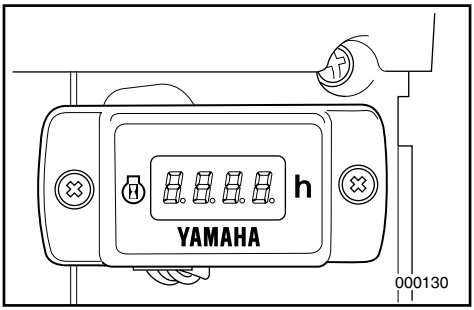
DIGITAL HOUR METER

This meter indicates the time elapsed time by counting the time of engine use.

① Hours
② Minutes(×6)

NOTE:

The time counting method can be selected that it counts while the main switch is “ON” or the engine is running by operator’s preference. Consult your Yamaha dealer for selecting the time counting method.



EMU01610

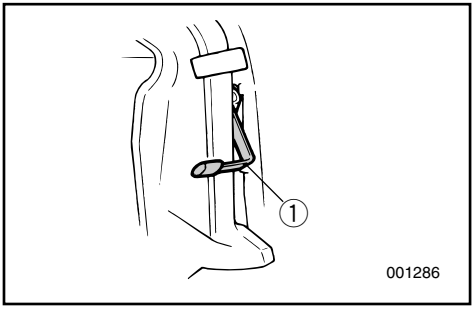
DIGITAL HOUR METER

200A, L200A

Located on the engine inside the top cowling, this device measures the total number of hours the engine has been run since manufacture. When the main switch is turned on, initially all segments of the display will light. The indicator will then display the number of hours normally.

NOTE:

The number of hours is only measured when the engine is running. When the main switch is turned on but the engine is not running, the digital hour meter will display the hours run but will not add any further time to the total.



EMU00153

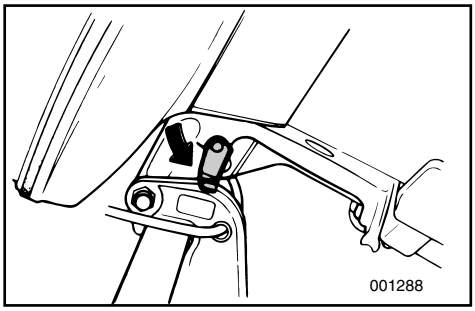
TILT LOCK MECHANISM (for Manual tilt model)

The tilt-lock mechanism is used to prevent reverse thrust from the propeller lifting the outboard motor when reversing.

To lock it, set the tilt-lock lever in the Lock position.

To release it, place the tilt-lock lever in the Tilt position.

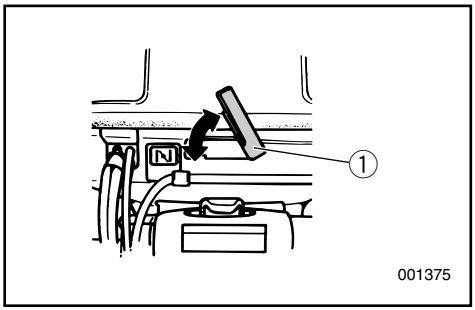
① Tilt-lock lever



EMU00157

TILT SUPPORT LEVER

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

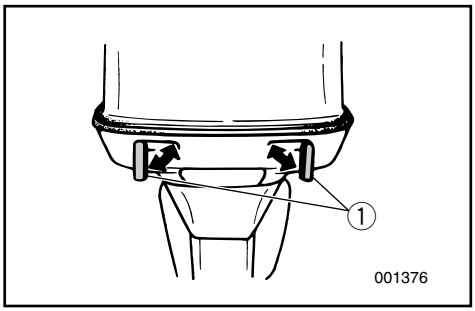


EMU00160

TOP COWLING LOCK LEVERS

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

① Top cowling lock lever

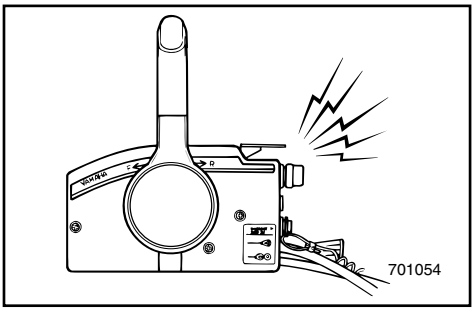


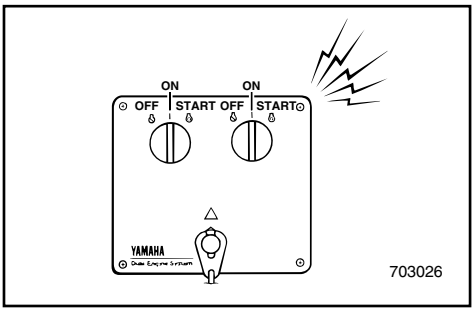
EMU00169

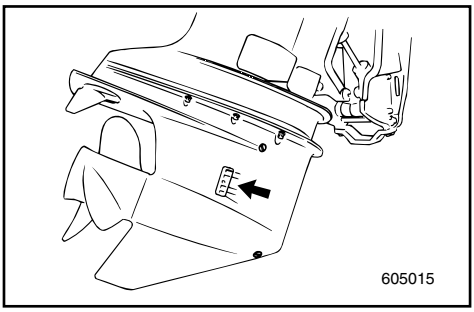
WARNING SYSTEM

CAUTION:

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







EMU00171

OVERHEAT WARNING

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

(○); Included (—); N/A

Warning device activation	Tiller control model	Remote control model
The engine speed will automatically decrease to about 2,000 r/min.	○	○
The overheat warning indicator will come on.	—	—
The buzzer will sound.	—	○

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

NOTE:

In case of dual engine drive:
Should the overheat warning system of one engine operate, it slows down and the buzzer sounds. This will cause the other engine to slow down and the buzzer to sound. For the other engine, the warning system can be released by shifting the remote control lever into the neutral.

E

EMU00174

Chapter 3
OPERATION

3

EMU00175

INSTALLATION

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/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.

EMU01478

MOUNTING THE OUTBOARD MOTOR

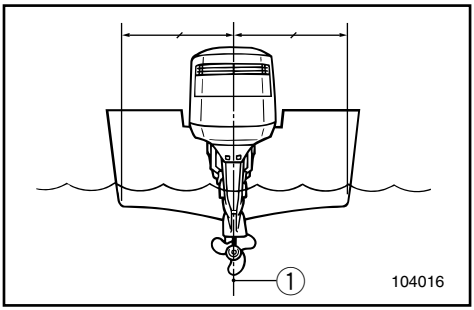
⚠WARNING

- **Overpowering a boat may 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/motor combination. Proper mounting depends in part on experience and the specific boat/motor combination.**

⚠WARNING

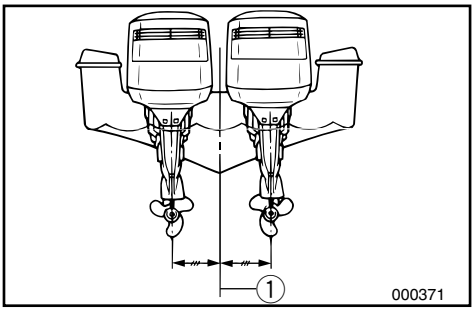
Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control, or fire hazards. Observe the following:

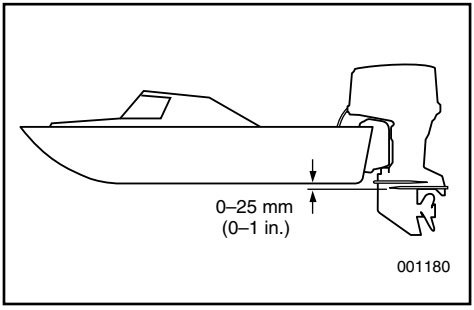
- **For permanently mounted models, your dealer or other person experienced in proper rigging should mount the motor. If you are mounting the motor yourself, you should be trained by an experienced person.**
- **For portable models, your dealer or other person experienced in proper outboard motor mounting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

① Center line (keel line)





EMU01298

Mounting Height

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 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 engine so that the anti-cavitation plate is between the bottom of the boat and a level 25 mm (1 in.) below it.

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.
- Refer to the section “TRIMMING OUTBOARD MOTOR” for instructions on setting the trim angle of the outboard.

EMU01534

BREAKING IN (RUNNING IN) ENGINE

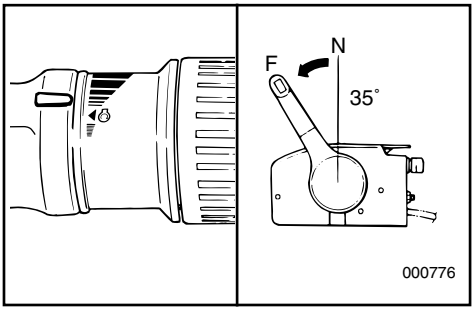
Your new engine requires a period of break-in (running-in) to allow mating surfaces of moving parts to wear-in evenly. Correct break-in (running-in) will help ensure proper performance and longer engine life.

CAUTION:

Failure to follow the break-in (running-in) procedure may result in reduced engine life or even severe engine damage.

Break-in (running-in) time:10 hours

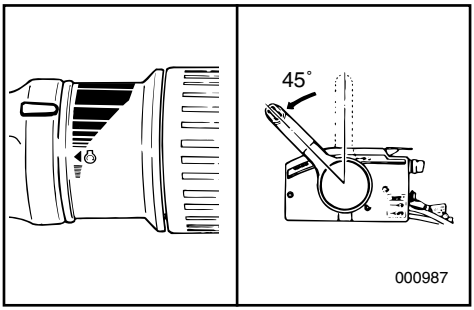
Break-in (running-in) premix ratio:
Refer to “GASOLINE/PETROL AND OIL MIXING”.



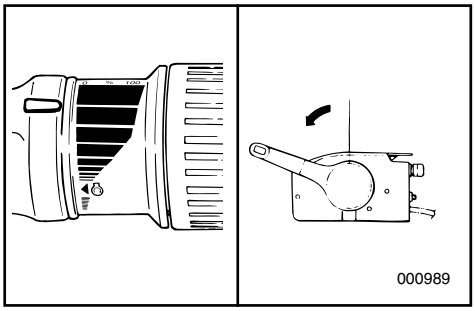
EMU01538

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

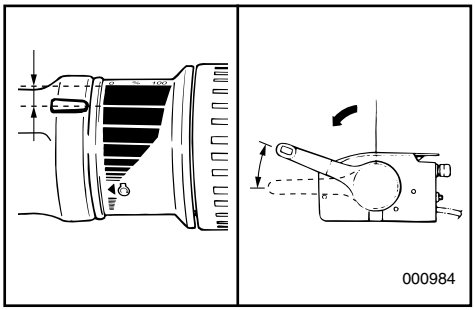
1) First 10 minutes:
Run the engine at the lowest possible speed. A fast idle in neutral is best.



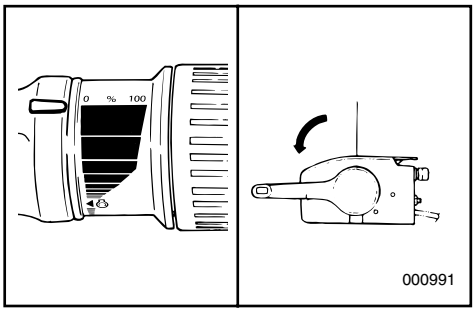
2) Next 50 minutes:
Do not exceed half throttle (approximately 3,000 r/min). Vary engine speed occasionally. If you have an easy-planing boat, accelerate at full throttle onto plane, then immediately reduce the throttle to 3,000 r/min or less.



3) Second hour:
Accelerate at full throttle onto plane, then reduce engine speed to three-quarter throttle (approximately 4,000 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 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 the standard premix ratio of gasoline:oil. Refer to “GASOLINE/PETROL AND OIL MIXING” for details.

EMU00204

PRE-OPERATION CHECKS

⚠WARNING

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

CAUTION:

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

EMU00206

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.
- Be sure the fuel tank is positioned on a secure, flat surface, and that the fuel hose is not twisted or flattened, or likely to contact sharp objects.

EMU00207

Oil

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

EMU00209

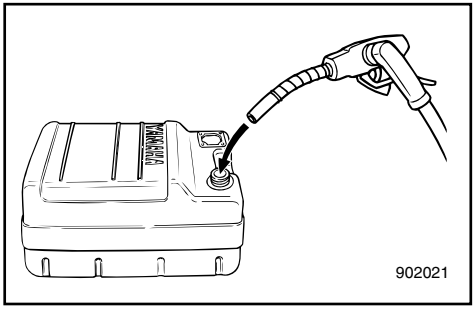
Controls

- 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.

EMU00210

Engine

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



EMU00186

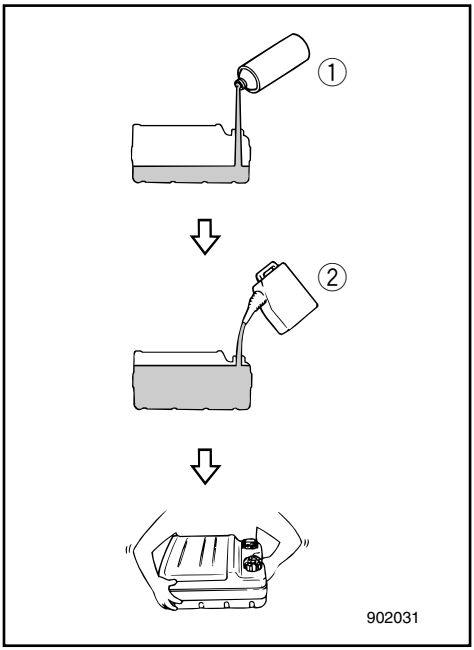
FILLING FUEL AND ENGINE OIL

EMU01537

FILLING FUEL

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:
Refer to “SPECIFICATIONS,” page 4-1.



EMU01481

GASOLINE (PETROL) AND OIL MIXING

Pre-mix models

	Gasoline (Petrol) : Engine oil
Break-in period	25 : 1
After break-in	50 : 1

1) Pour oil and gasoline into the fuel tank, in that order.

① Engine oil
② Gasoline (Petrol)

2) Mix the fuel thoroughly by shaking.
3) Make sure the oil is mixed with the gasoline.

CAUTION:

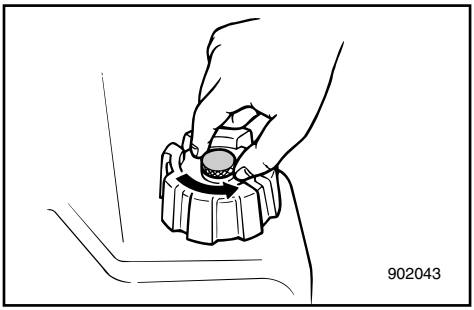
- **Avoid using any oil other than the designated type.**
- **Use a thoroughly blended fuel-oil mixture.**
- **If the mixture is not thoroughly blended, or if the mixing ratio is incorrect, the following problems could occur:**
  - **Low oil ratio: Lack of oil could cause major engine trouble, such as piston seizure.**
  - **High oil ratio: Too much oil could cause fouled spark plugs, smoky exhaust, and heavy carbon deposits.**

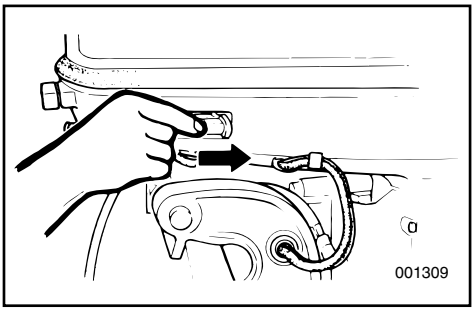
Mixing ratio	25 : 1			
Gasoline (Petrol)	1 L (0.26 US gal, 0.22 Imp gal)	12 L (3.2 US gal, 2.6 Imp gal)	14 L (3.7 US gal, 3.1 Imp gal)	24 L (6.3 US gal, 5.3 Imp gal)
Engine oil	0.04 L (0.04 US qt, 0.04 Imp qt)	0.48 L (0.51 US qt, 0.42 Imp qt)	0.56 L (0.59 US qt, 0.49 Imp qt)	0.96 L (1.01 US qt, 0.84 Imp qt)

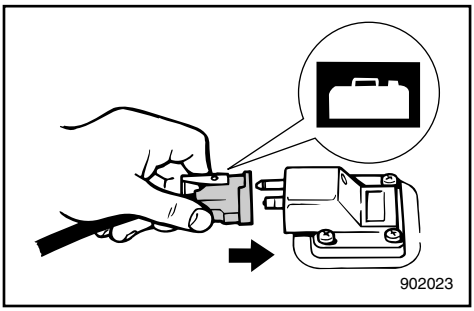
Mixing ratio	50 : 1			
Gasoline (Petrol)	1 L (0.26 US gal, 0.22 Imp gal)	12 L (3.2 US gal, 2.6 Imp gal)	14 L (3.7 US gal, 3.1 Imp gal)	24 L (6.3 US gal, 5.3 Imp gal)
Engine oil	0.02 L (0.02 US qt, 0.02 Imp qt)	0.24 L (0.26 US qt, 0.21 Imp qt)	0.28 L (0.30 US qt, 0.24 Imp qt)	0.48 L (0.51 US qt, 0.42 Imp qt)

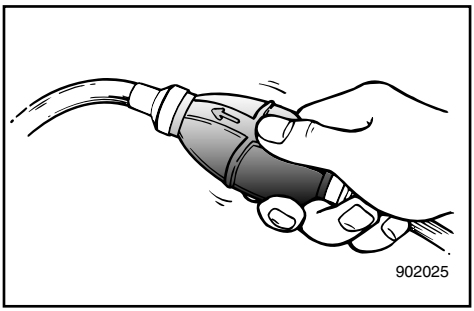
NOTE:

If using a permanently installed tank, pour the oil gradually as the fuel is being added to the tank.









EMU01461

STARTING ENGINE

⚠WARNING

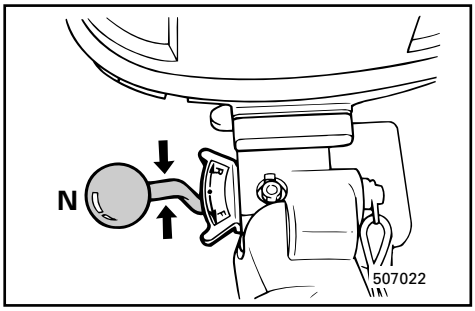
- **Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.**
- **When the air vent screw is loosened, gasoline (petrol) vapor will be released. Gasoline (petrol) is highly flammable, 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 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.**

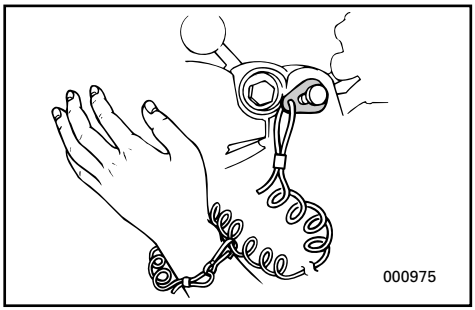
1) If there is an air vent screw on the fuel tank cap, loosen it 2 or 3 turns.
2) If there is a fuel joint on the motor, firmly connect the fuel line to the joint. Then firmly connect the other end of the fuel line to the joint on the fuel tank.

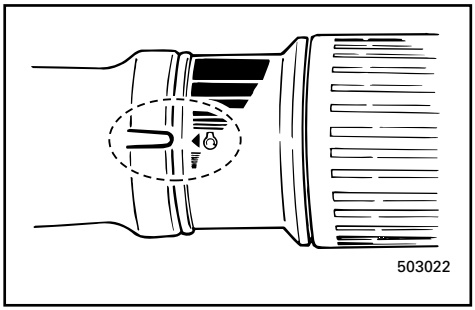
NOTE:

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

3) Squeeze the primer bulb with the outlet end up until you feel it become firm.







EMU01497

PROCEDURE FOR TILLER CONTROL MODEL

4) Place the gear-shift lever in the neutral position.

NOTE:

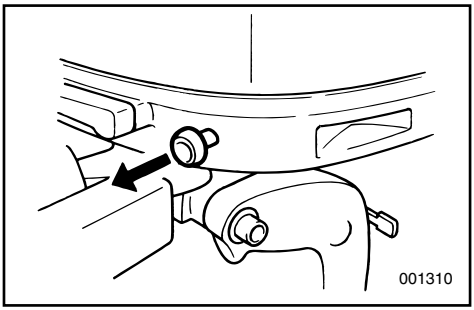
The start-in-gear protection device prevents the engine from starting except when in Neutral.

5) 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 in the engine stop switch.

⚠WARNING

- **Attach the engine stop switch lanyard to a secure place on your clothing, 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.**

6) Place the throttle control grip in the “START” position.



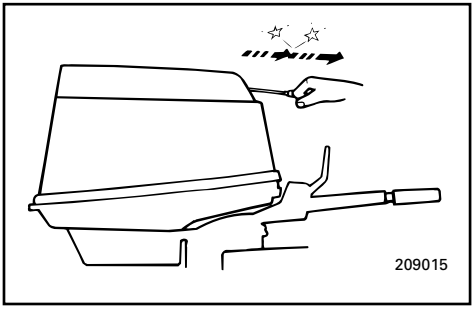
EMU01707

Manual start models

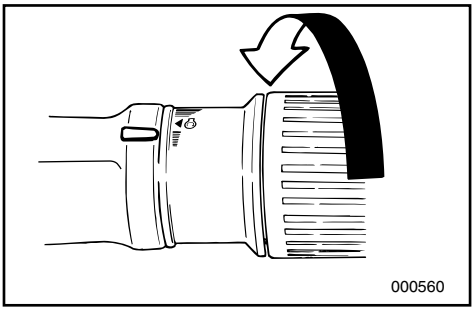
7) Fully pull out the manual injection knob firmly once. Release the knob to allow it to automatically return to its home position.

NOTE:

- It is not necessary to use the manual injection knob when restarting a warm engine.
- Pull out the manual injection knob twice when the engine is brand new, after it has been disassembled and reassembled for inspection or repairs, and when starting after a long period of storage.



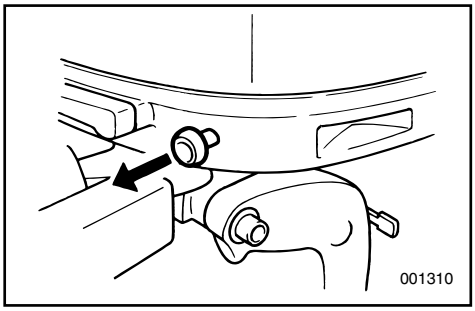
8) Pull the starter handle slowly until you feel resistance. Then give a strong pull straight out to crank and start the engine. Repeat if necessary.



9) After the engine starts, return the starter handle slowly to its original position before releasing it.

NOTE:

- When starting a cold engine, the engine needs to be warmed up. For further information, see “Warming up engine” in this chapter.
- If the engine doesn’t start after pulling the starter handle 3 or more times, repeat the procedure from step 7. If the engine still fails to start, see Chapter 5, “Troubleshooting.”



EMU01706

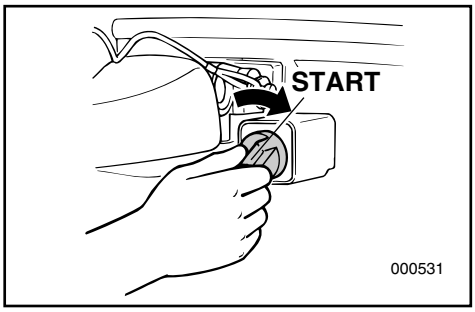
Electric start models

E115AWH

7) Fully pull out the manual injection knob firmly once. Release the knob to allow it to automatically return to its home position.

NOTE:

- It is not necessary to use the manual injection knob when restarting a warm engine.
- Pull out the manual injection knob twice when the engine is brand new, after it has been disassembled and reassembled for inspection or repairs, and when starting after a long period of storage.

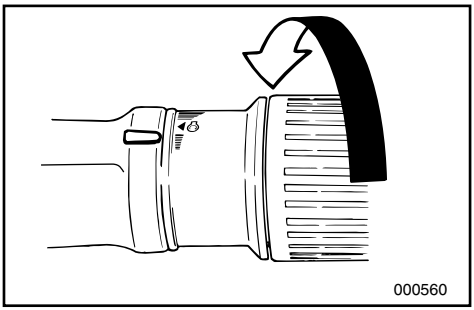


8) Turn the main switch to START, and hold it for a maximum of 5 seconds.

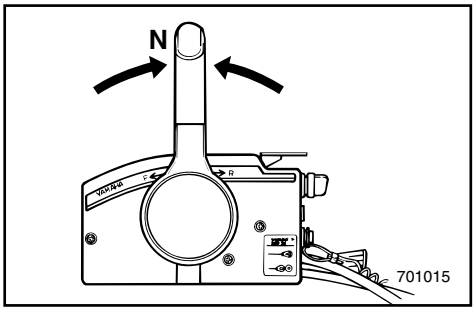
9) Immediately after the engine starts, release the main switch to return it to ON.

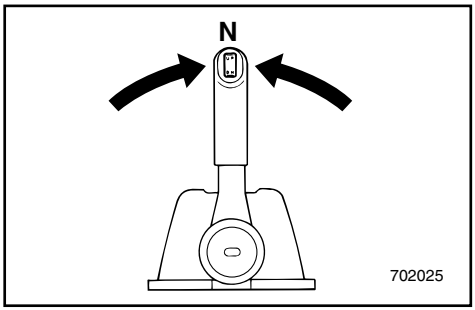
CAUTION:

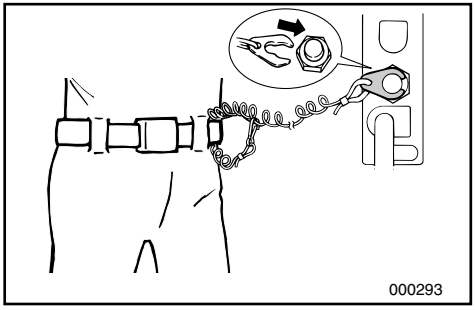
- **Do not turn the main switch to START when the engine is running.**
- **Do not keep the starter motor turning for more than 5 seconds. The battery will rapidly become exhausted and it will be impossible for it to start the engine. If the engine does not start within 5 seconds, return the main switch to ON, wait 10 seconds, then crank the engine again.**

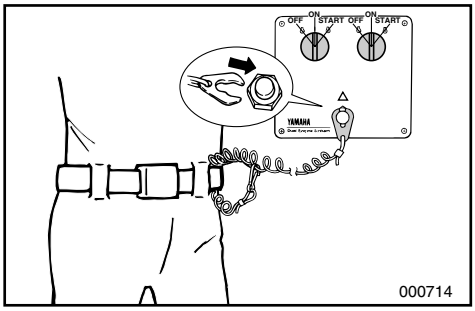


10) Return the throttle control grip slowly to the fully closed position.









EMU00248

PROCEDURE FOR REMOTE CONTROL MODELS

4) Place the remote control lever in the Neutral position.

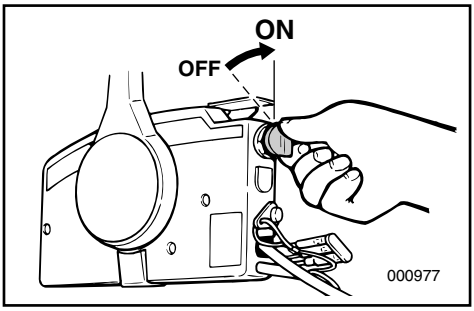
NOTE:

The start-in-gear protection device permits the engine to be started only when it is in Neutral.

5) 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 in the engine stop switch.

⚠WARNING

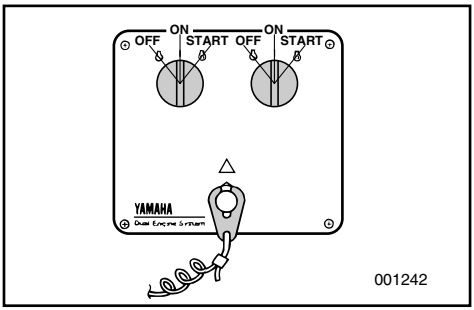
- **Attach the engine stop switch lanyard to a secure place on your clothing, your arm or leg while operating.**
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling 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.**

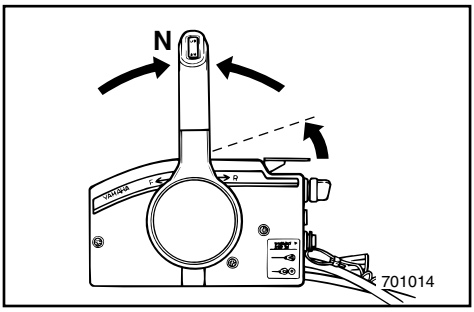


6) Turn the main switch to “ON”.

NOTE:

In case of dual-engine operation, when the main switch is turned on, the buzzer operates for a few seconds and stops automatically. Should either of the dual engines stall, the buzzer operates.





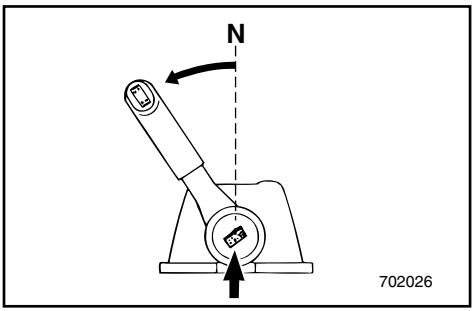
EMU00948

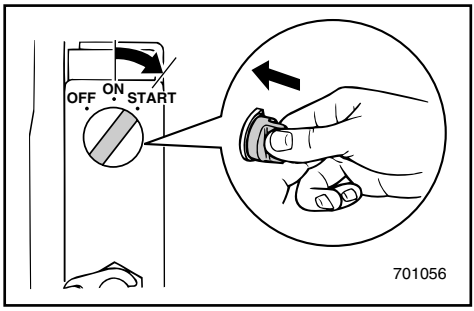
Electric start models

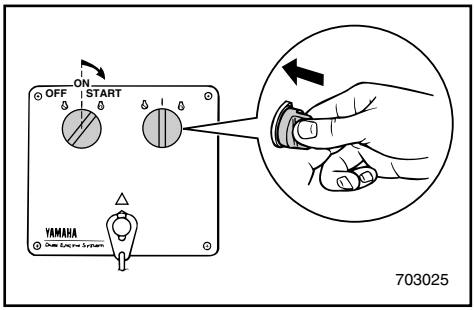
7) Open the throttle slightly without shifting using the neutral throttle lever or the free accelerator.
   After the engine starts, return the throttle to the original position.

NOTE:

The rotation angle of the neutral throttle lever or the free accelerator should be determined upon the engine temperature. When the engine is cold, it is necessary to rotate the lever a little farther.







8) Press in and hold the main switch to operate the remote choke system.(The remote choke switch returns to its home position when you release your hand. Therefore, keep the switch pressed in.)

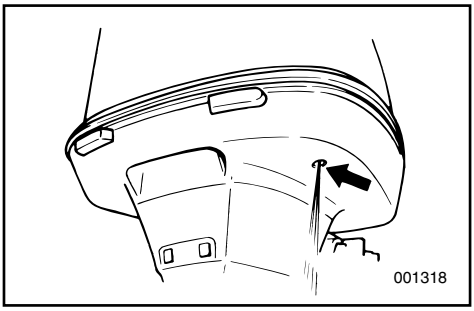
NOTE:

- It is not necessary to use the choke when the engine is warm.
- Set the choke knob to the home position, or the remote choke system will not operate.

9) Turn the main switch to “START”, and hold it for a maximum of 5 seconds.
10) Immediately after the engine starts, release the main switch to return it to “ON”.

CAUTION:

- **Do not turn the main switch to “START” when the engine is running.**
- **Do not keep the starter motor turning for more than 5 seconds. The starter can be damaged. The battery will also run down quickly, making it harder to start the engine. If the engine does not start within 5 seconds, return the main switch to “ON,” wait 10 seconds, and then crank the engine again.**



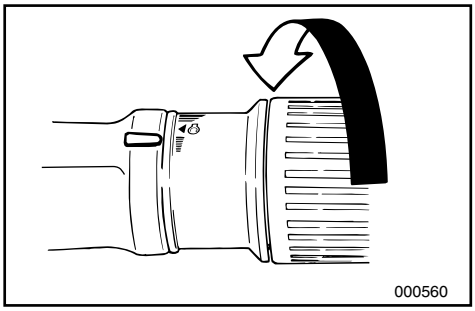
EMU01507

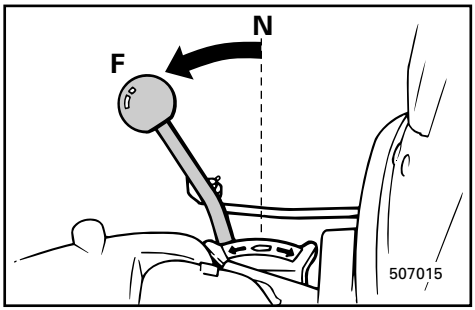
WARMING UP ENGINE

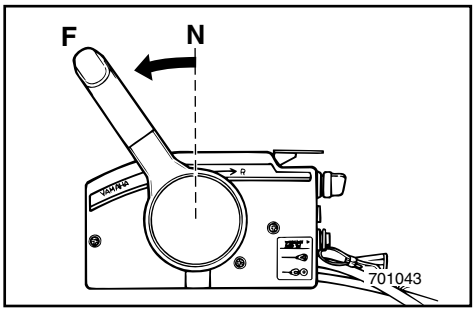
1) Before beginning operation, allow the engine to warm up at idling speed for 3 minutes. (Failure to do this will shorten engine life.) Gradually return the choke knob to the home position as the engine warms up.
2) Check for a steady flow of water from the cooling-water pilot hole.

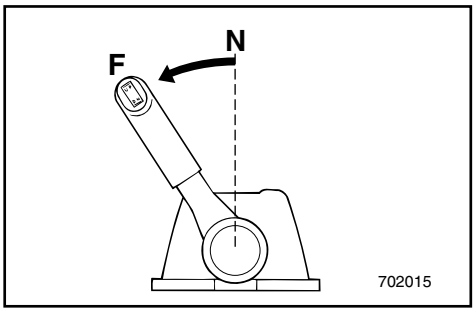
CAUTION:

A continuous flow of water from the pilot hole shows that the water pump is pumping water through the cooling passages. If water is not flowing out of the pilot hole at all times while the engine is running, do not continue to run the engine. Overheating and serious damage could occur. Stop the engine and check to see if the water inlet on the lower casing is blocked. If the problem cannot be found and corrected, consult your Yamaha dealer.









EMU00261

SHIFTING

⚠WARNING

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

CAUTION:

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

EMU00265

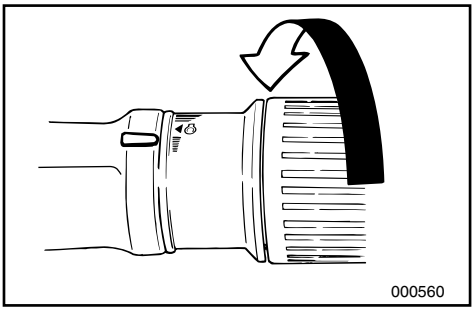
FORWARD

Tiller control model

1) Place the throttle control grip in the fully closed position.
2) Turn the gear-shift lever quickly and firmly from Neutral to Forward.

Remote control model

Pull up the neutral interlock trigger if equipped and move the remote control lever quickly and firmly from Neutral to Forward.



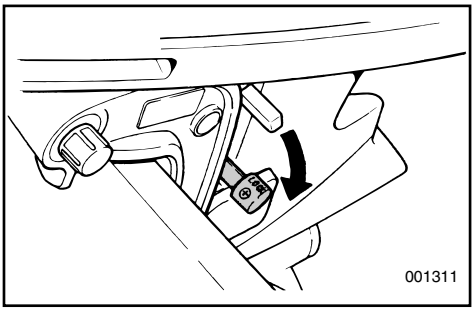
EMU01326

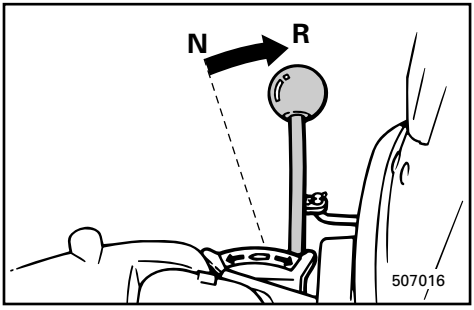
REVERSE

⚠WARNING

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

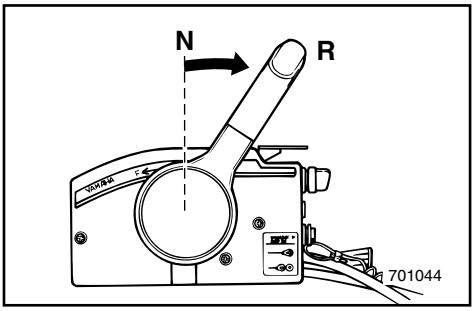
1) Place the throttle control grip in the fully closed position (for Tiller control model).
2) Check that the tilt-lock lever (for Manual tilt/Hydro-tilt model) is in the locked position.





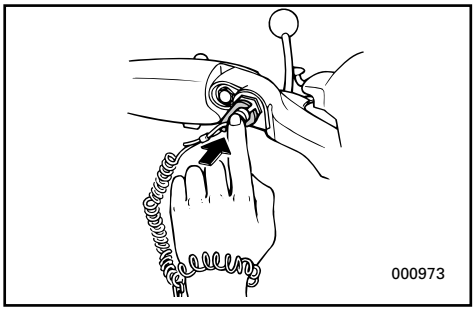
Tiller control model

3) Turn the gear-shift lever quickly and firmly from Neutral to Reverse.



Remote control model

3) Pull up the neutral interlock trigger if equipped and move the remote control lever quickly and firmly from Neutral to Reverse.



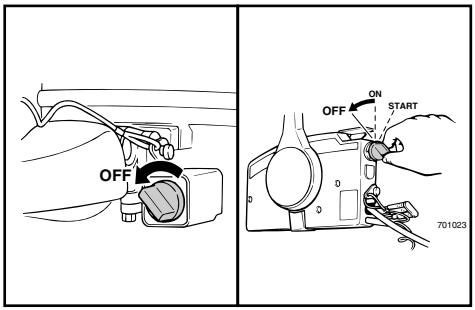
EMU00273

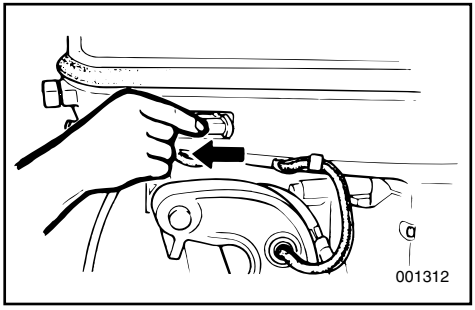
STOPPING ENGINE

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

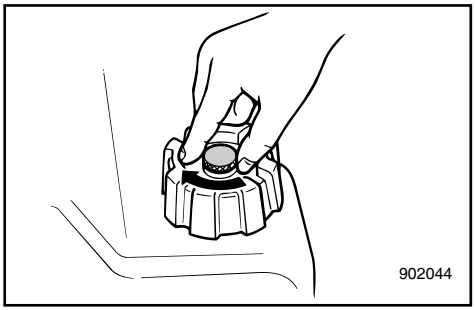
EMU00277

1) Push and hold the engine stop button or turn the main switch to “OFF”.





2) If the fuel joints are provided, disconnect the fuel line from the motor after stopping the engine.



3) Tighten the air vent screw on the fuel tank cap after stopping the engine, if it is equipped.
4) Remove the key if the boat will be left unattended.

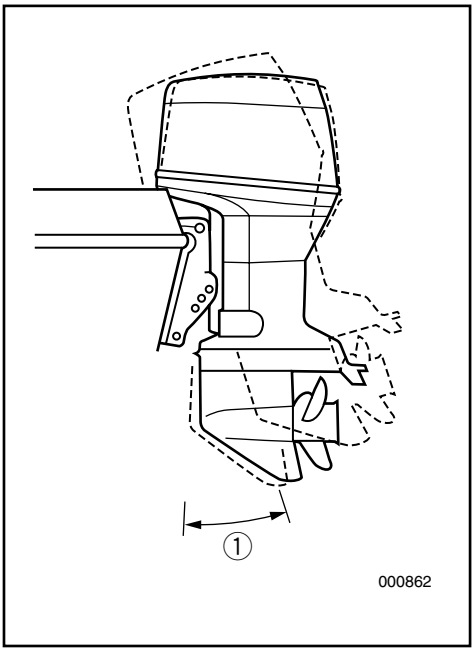
NOTE:

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

EMU01412

TRIMMING OUTBOARD MOTOR

The trim angle of the outboard motor helps determine the position of the bow of the boat in the water. The correct trim angle will help improve performance and fuel economy while reducing strain on the engine. The correct trim angle depends upon the combination of boat, engine, and propeller. Correct trim is also affected by variables such as the load in the boat, sea conditions, and running speed.



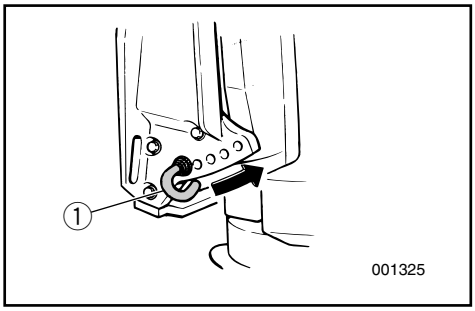
⚠WARNING

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.

NOTE:

Refer to the section “ADJUSTING TRIM ANGLE” for instructions on usage.

① Trim operating angle



ADJUSTING TRIM ANGLE

EMU00951

Manual tilt model

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 angle adjusting rod ① from the clamp bracket while tilting the motor up slightly.
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.

⚠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:

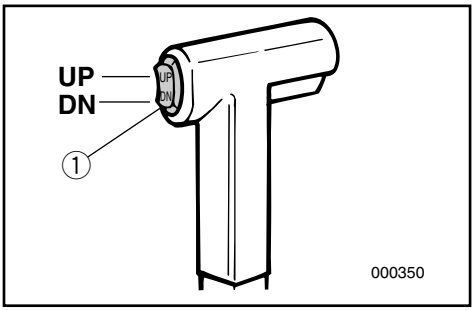
The outboard motor trim angle can be changed approximately 4 degrees by shifting the trim adjusting-rod one hole.

EMU01401

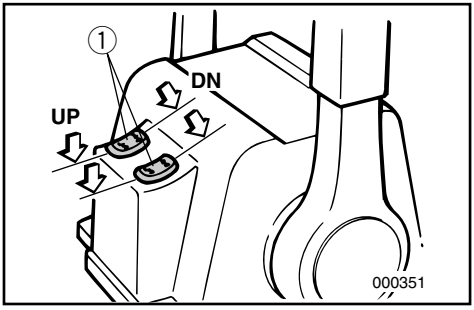
Power Trim/Tilt Model

⚠WARNING

- **Be sure all people are clear of the outboard motor when adjusting the trim/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.**
- **Use the power trim/tilt switch located on the bottom engine cowling (if equipped) only when the boat is at a complete stop with the engine off.**



The outboard motor trim angle can be adjusted operating the power trim/tilt switch ①.



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

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

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

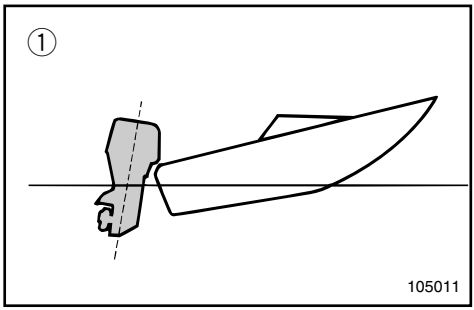
NOTE:

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 so equipped.

EMU01558

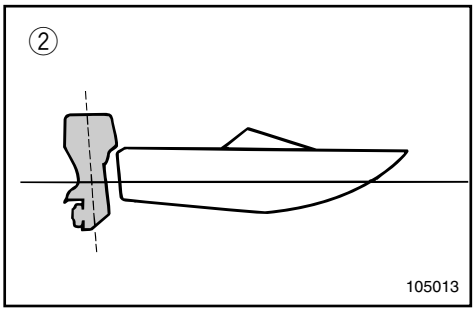
Bow Up

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. When trimmed out, the boat may have more 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.



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.

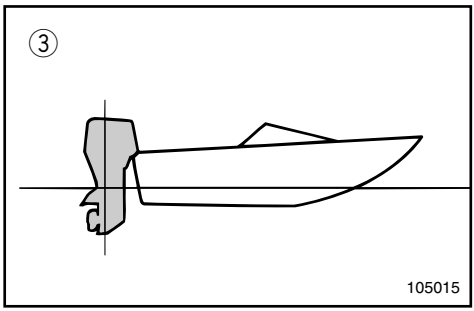
Excessive trim-up can cause the propeller to ventilate, which reduces performance further. When trimmed-out too much, a boat may “porpoise” (hop in the water), which could throw the operator and passengers overboard.



EMU01559

Bow Down

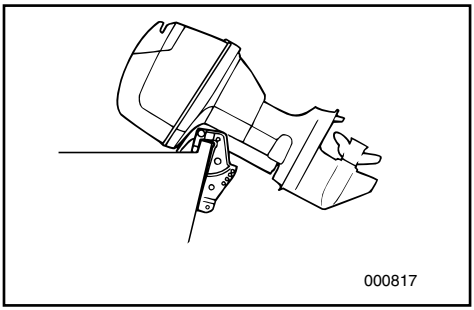
When the bow of the boat is down, it is easier to accelerate from a standing start onto plane.



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.

① Bow up
② Bow down
③ Optimum angle



EMU00285

TILTING UP/DOWN

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

CAUTION:

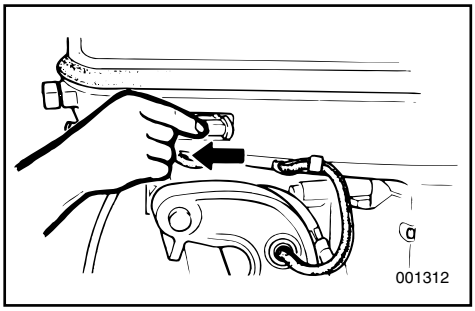
- **Before tilting the motor, follow the procedures under "STOPPING ENGINE". Never tilt the motor while the engine is running. Severe damage from overheating can result.**
- **Do not tilt up the engine by pushing the steering handle as this could break the handle.**

⚠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 engine bracket.

⚠WARNING

Leaking fuel is a fire hazard. Disconnect the fuel line if the engine will be tilted for more than a few minutes. Otherwise, fuel may leak. (If the fuel connector is provided on the motor.)

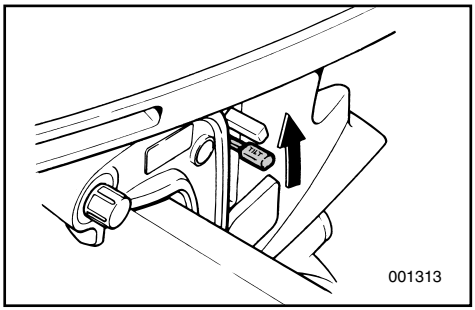


EMU00286

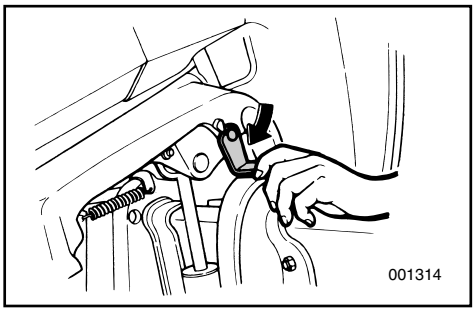
PROCEDURE FOR TILTING UP

Manual tilt model

1) Remove the fuel-line connection from the motor. (If the fuel connector is provided on the motor.)



2) Place the tilt-lock lever in Release.



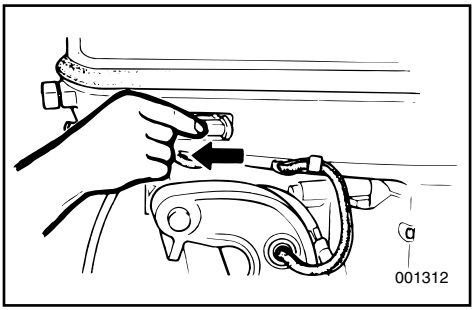
3) Hold the rear of the top cowling with one hand, tilt the engine up, and turn the tilt-support lever to the locked position and support the engine.

EMU00297

PROCEDURE FOR TILTING DOWN

Manual tilt models

1) Return the tilt support lever tilting up the engine slightly.
2) Tilt down the engine.

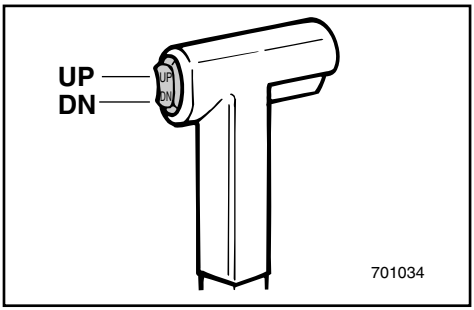


EMU01575

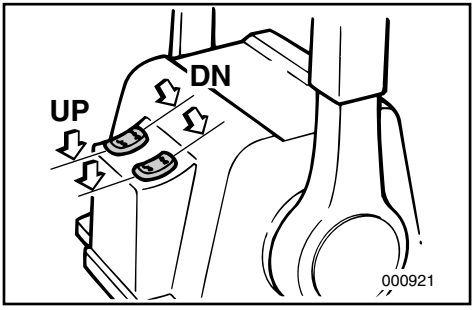
PROCEDURE FOR TILTING UP

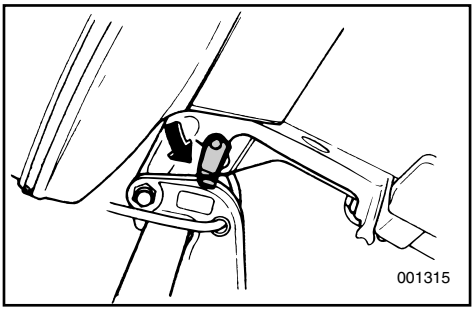
Power trim and tilt models

1) Disconnect the fuel line or close the fuel cock.



2) Push the power trim and tilt switch “UP” until the outboard has tilted up completely.

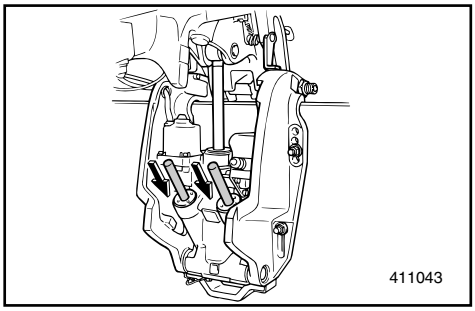




3) Turn the tilt support lever toward you to support the engine.

⚠WARNING

- **After tilting the engine, be sure to support it with the tilt support lever. Otherwise, the engine could fall back down suddenly if oil in the power trim and tilt unit should lose pressure.**
- **Never operate the engine while it is supported by the tilt support lever.**

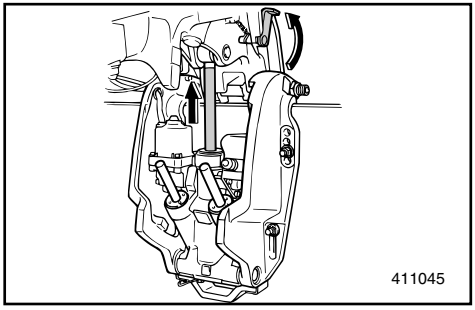

411043

EMU01576

4) Once the engine is supported with the tilt support lever, push the power trim and tilt switch “DN” (down) to retract the trim rods.

CAUTION:

Be sure to retract the trim rods completely during mooring. This protects the rods from marine growths and corrosion which could damage the power trim and tilt mechanism.


411045

EMU00303

PROCEDURE FOR TILTING DOWN

Power trim/tilt model

1) Push the power trim/tilt switch “UP” until the engine is supported by the tilt rod.
2) Release the tilt-support lever.
3) Push the power trim/tilt switch “DN” (Down) to lower the engine to the desired position.

EMU00316

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-up with salt deposits.

NOTE:

Refer to cooling system flushing instructions in “TRANSPORTING AND STORING OUTBOARD MOTOR”.

CRUISING IN TURBID WATER

It is strongly recommended that the optional chromium-plated water-pump kit be installed if the outboard is to be used in turbid (muddy) water conditions.

E

EMU00317

Chapter 4
MAINTENANCE

4

EMU01695*

SPECIFICATIONS

Item \ Model		Unit	E115AMH
DIMENSIONS			
Overall length		mm (in.)	1,458 (57.4)
Overall width		mm (in.)	600 (23.6)
Overall height	L/Y/X	mm (in.)	1,558 (61.3) / 1,611 (63.4) / 1,684 (66.3)
Transom height	L/Y/X	mm (in.)	516 (20.3) / 569 (22.4) / 642 (25.3)
Weight	L/Y/X	kg (lb.)	153 (337) / 155 (342) / 157 (346)
PERFORMANCE			
Full throttle operating range		r/min	4,500–5,500
Maximum output		kW (HP) @ r/min	84.6 (115) @ 5,000
Idling speed (in neutral)		r/min	700–800
ENGINE			
Type			2-stroke, V4
Displacement		cm^3 (cu.in.)	1,730 (105.6)
Bore × stroke		mm (in.)	90 × 68 (3.54 × 2.68)
Ignition system			CDI system
Spark plug		NGK	B8HS-10
Spark plug gap		mm (in.)	0.9–1.0 (0.035–0.039)
Control system			Tiller control
Starting system			Manual start
Battery			
Min. cold cranking amps (CCA/EN)		amps at -18°C (-0.4°F)	—
Min. rated capacity (20HR/IEC)		A·h	—
Alternator output		V-A (W)	12-10
Starting carburetion system			Manual injection
DRIVE UNIT			
Gear positions			Forward-Neutral-Reverse
Gear ratio			2.00 (26/13)
Trim and tilt system			Manual tilt
Propeller mark			K
FUEL AND OIL			
Recommended fuel			Regular unleaded gasoline
Fuel tank capacity		l (US gal, Imp gal)	24 (6.34, 5.28)
Recommended engine oil			YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil
Lubrication			Premix
Fuel:oil ratio		Fuel:Oil	50:1
Recommended gear oil			Hypoid gear oil (SAE90)
Gear oil capacity		cm^3 (US oz, Imp oz)	760 (25.7, 26.8)
TIGHTENING TORQUE			
Spark plug		N·m (kgf·m, lb·ft)	25 (2.5, 18)
Propeller nut		N·m (kgf·m, lb·ft)	55 (5.6, 40)

E115AWH	E115AE	E115AET
1,458 (57.4) 600 (23.6) 1,558 (61.3) / 1,611 (63.4) / 1,684 (66.3) 516 (20.3) / 569 (22.4) / 642 (25.3) 156 (344) / 158 (348) / 160 (353)	828 (32.6) 600 (23.6) 1,435 (56.5) / — / 1,561 (61.5) 516 (20.3) / — / 642 (25.3) 149 (328) / — / 153 (337)	828 (32.6) 600 (23.6) 1,435 (56.5) / — / 1,561 (61.5) 516 (20.3) / — / 642 (25.3) 156 (344) / — / 160 (353)
4,500–5,500 84.6 (115) @ 5,000 700–800	4,500–5,500 84.6 (115) @ 5,000 700–800	4,500–5,500 84.6 (115) @ 5,000 700–800
2-stroke, V4 1,730 (105.6) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Tiller control Manual and electric start 430 70 12-10 Manual injection	2-stroke, V4 1,730 (105.6) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-10 Choke start	2-stroke, V4 1,730 (105.6) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 (EPA models: BR8HS-10) 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-10 Choke start
Forward-Neutral-Reverse 2.00 (26/13) Manual tilt K	Forward-Neutral-Reverse 2.00 (26/13) Manual tilt K	Forward-Neutral-Reverse 2.00 (26/13) Power trim and tilt K
Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 760 (25.7, 26.8)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 760 (25.7, 26.8)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 760 (25.7, 26.8)
25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)

EMU01695*

SPECIFICATIONS

Item \ Model		Unit	115BE
DIMENSIONS			
Overall length		mm (in.)	828 (32.6)
Overall width		mm (in.)	600 (23.6)
Overall height	L/Y/X	mm (in.)	1,435 (56.5) / — / —
Transom height	L/Y/X	mm (in.)	516 (20.3) / — / —
Weight	L/Y/X	kg (lb.)	148 (326) / — / —
PERFORMANCE			
Full throttle operating range		r/min	4,500–5,500
Maximum output		kW (HP) @ r/min	84.6 (115) @ 5,000
Idling speed (in neutral)		r/min	700–800
ENGINE			
Type			2-stroke, V4
Displacement		cm^3 (cu.in.)	1,730 (105.6)
Bore × stroke		mm (in.)	90 × 68 (3.54 × 2.68)
Ignition system			CDI system
Spark plug		NGK	B8HS-10
Spark plug gap		mm (in.)	0.9–1.0 (0.035–0.039)
Control system			Remote control
Starting system			Electric start
Battery			
Min. cold cranking amps (CCA/EN)		amps at -18°C (-0.4°F)	430
Min. rated capacity (20HR/IEC)		A·h	70
Alternator output		V-A (W)	12-10
Starting carburetion system			Choke start
DRIVE UNIT			
Gear positions			Forward-Neutral-Reverse
Gear ratio			2.00 (26/13)
Trim and tilt system			Manual tilt
Propeller mark			K
FUEL AND OIL			
Recommended fuel			Regular unleaded gasoline
Fuel tank capacity		l (US gal, Imp gal)	24 (6.34, 5.28)
Recommended engine oil			YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil
Lubrication			Premix
Fuel:oil ratio		Fuel:Oil	50:1
Recommended gear oil			Hypoid gear oil (SAE90)
Gear oil capacity		cm^3 (US oz, Imp oz)	760 (25.7, 26.8)
TIGHTENING TORQUE			
Spark plug		N·m (kgf·m, lb·ft)	25 (2.5, 18)
Propeller nut		N·m (kgf·m, lb·ft)	55 (5.6, 40)

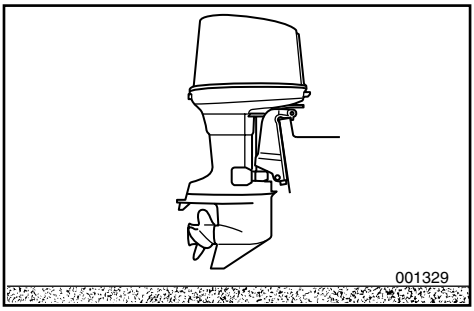
115BET	140BET	150AET
828 (32.6) 600 (23.6) — / — / 1,561 (61.5) — / — / 642 (25.3) — / — / 160 (353)	828 (32.6) 600 (23.6) 1,435 (56.5) / — / 1,561 (61.5) 516 (20.3) / — / 642 (25.3) 156 (344) / — / 160 (353)	828 (32.6) 600 (23.6) 1,577 (62.1) / — / 1,703 (67.0) 516 (20.3) / — / 642 (25.3) 180 (397) / — / 184 (406)
4,500–5,500 84.6 (115) @ 5,000 700–800	4,500–5,500 103 (140) @ 5,000 700–800	4,500–5,500 110.3 (150) @ 5,000 675–725
2-stroke, V4 1,730 (105.6) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-10 Choke start	2-stroke, V4 1,730 (105.6) 90 × 68 (3.54 × 2.68) CDI system B9HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-10 Choke start	2-stroke, V6 2,596 (158.4) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 (EPA models: BR8HS-10) 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-14 Choke start
Forward-Neutral-Reverse 2.00 (26/13) Power trim and tilt K	Forward-Neutral-Reverse 2.00 (26/13) Power trim and tilt K	Forward-Neutral-Reverse 1.86 (26/14) Power trim and tilt M
Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 760 (25.7, 26.8)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 760 (25.7, 26.8)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 980 (33.1, 34.5)
25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)

EMU01695*

SPECIFICATIONS

Item \ Model		Unit	L150AET
DIMENSIONS			
Overall length		mm (in.)	828 (32.6)
Overall width		mm (in.)	600 (23.6)
Overall height	L/Y/X	mm (in.)	— / — / 1,703 (67.0)
Transom height	L/Y/X	mm (in.)	— / — / 642 (25.3)
Weight	L/Y/X	kg (lb.)	— / — / 186 (410)
PERFORMANCE			
Full throttle operating range		r/min	4,500–5,500
Maximum output		kW (HP) @ r/min	110.3 (150) @ 5,000
Idling speed (in neutral)		r/min	675–725
ENGINE			
Type			2-stroke, V6
Displacement		cm^3 (cu.in.)	2,596 (158.4)
Bore × stroke		mm (in.)	90 × 68 (3.54 × 2.68)
Ignition system			CDI system
Spark plug		NGK	B8HS-10 (EPA models: BR8HS-10)
Spark plug gap		mm (in.)	0.9–1.0 (0.035–0.039)
Control system			Remote control
Starting system			Electric start
Battery			
Min. cold cranking amps (CCA/EN)		amps at -18°C (-0.4°F)	430
Min. rated capacity (20HR/IEC)		A·h	70
Alternator output		V-A (W)	12-14
Starting carburetion system			Choke start
DRIVE UNIT			
Gear positions			Forward-Neutral-Reverse
Gear ratio			1.86 (26/14)
Trim and tilt system			Power trim and tilt
Propeller mark			ML
FUEL AND OIL			
Recommended fuel			Regular unleaded gasoline
Fuel tank capacity		l (US gal, Imp gal)	24 (6.34, 5.28)
Recommended engine oil			YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil
Lubrication			Premix
Fuel:oil ratio		Fuel:Oil	50:1
Recommended gear oil			Hypoid gear oil (SAE90)
Gear oil capacity		cm^3 (US oz, Imp oz)	870 (29.4, 30.6)
TIGHTENING TORQUE			
Spark plug		N·m (kgf·m, lb·ft)	25 (2.5, 18)
Propeller nut		N·m (kgf·m, lb·ft)	55 (5.6, 40)

175AET	200AET	L200AET
828 (32.6) 600 (23.6) 1,577 (62.1) / — / 1,703 (67.0) 516 (20.3) / — / 642 (25.3) 180 (397) / — / 184 (406)	828 (32.6) 600 (23.6) 1,577 (62.1) / — / 1,703 (67.0) 516 (20.3) / — / 642 (25.3) 180 (397) / — / 184 (406)	828 (32.6) 600 (23.6) — / — / 1,703 (67.0) — / — / 642 (25.3) — / — / 186 (410)
4,500–5,500 128.7 (175) @ 5,000 675–725	4,500–5,500 147.1 (200) @ 5,000 675–725	4,500–5,500 147.1 (200) @ 5,000 675–725
2-stroke, V6 2,596 (158.4) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-14 Choke start	2-stroke, V6 2,596 (158.4) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-14 Choke start	2-stroke, V6 2,596 (158.4) 90 × 68 (3.54 × 2.68) CDI system B8HS-10 0.9–1.0 (0.035–0.039) Remote control Electric start 430 70 12-14 Choke start
Forward-Neutral-Reverse 1.86 (26/14) Power trim and tilt M	Forward-Neutral-Reverse 1.86 (26/14) Power trim and tilt M	Forward-Neutral-Reverse 1.86 (26/14) Power trim and tilt ML
Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 980 (33.1, 34.5)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 980 (33.1, 34.5)	Regular unleaded gasoline 24 (6.34, 5.28) YAMALUBE 2 STROKE OUTBOARD OIL or an equivalent TCW3 certified outboard oil Premix 50:1 Hypoid gear oil (SAE90) 870 (29.4, 30.6)
25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)	25 (2.5, 18) 55 (5.6, 40)



EMU01369

TRANSPORTING AND STORING OUTBOARD MOTOR

⚠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.

EMU00326

TRAILERING OUTBOARD MOTOR

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

For further details, consult your Yamaha dealer.

⚠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 accidentally falls.**
- **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.**

CAUTION:

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

EMU00329

STORING OUTBOARD MOTOR

When storing your outboard motor for prolonged periods of time (2 months or longer), several important procedures must be performed to prevent expensive damage.

It is advisable to have your outboard serviced by an authorized Yamaha dealer prior to storage. However, the following procedures can be performed by the owner with a minimum of tools.

CAUTION:

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

EMU01508

1) Wash the motor body using fresh water. (Refer to “MOTOR EXTERIOR” for details.)
2) Remove the fuel-line connection(s) from the motor or shut off the fuel valve, if equipped.
3) Run the engine at idling speed while supplying fresh water to flush the cooling-water passages. Continue until the fuel system becomes empty and the engine stops. (Refer to “FLUSHING COOLING SYSTEM” for details.)
4) For electric start models, remove the battery. (Refer to “DISCONNECTING THE BATTERY” for details.)
5) Drain the cooling water completely out of the motor.
   Clean the body thoroughly.
6) Remove the spark plug(s).

7) Pour a teaspoonful of clean engine oil into the cylinder(s).
8) Crank several times manually.
9) Replace the spark plug(s).

EMU00336

Fuel Tank

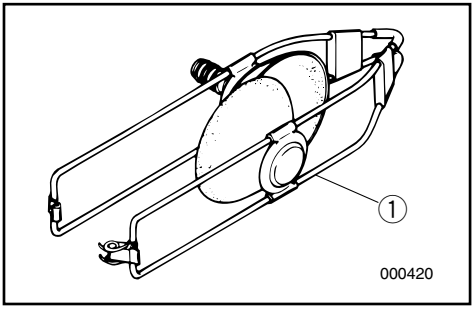
1) Drain the fuel from the tank for a long period of storage.
2) Store the fuel tank in a dry, well-ventilated place, not in direct sunlight.

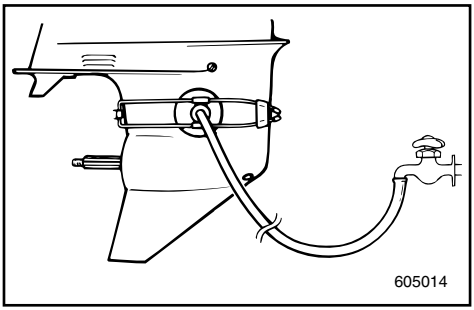
EMU00345

Flushing Cooling System

CAUTION:

Do not run the engine without supplying the engine cooling water. Either the engine water pump will be damaged or the engine will overheat and be damaged. Before starting the engine, supply water to the cooling water passage.





EMU00348

- **Flushing with the Flushing Attachment**

⚠WARNING

Before using the flushing attachment, remove the propeller. Keep yourself and others away from the propeller shaft.

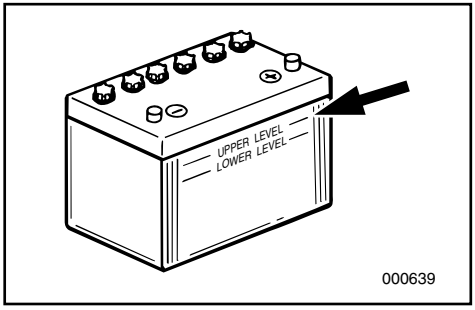
1) Fit the flushing attachment ① (option) in position on the lower casing, with rubber cups covering the cooling water inlet.
2) Connect a garden hose between the flushing attachment and the water tap.
3) Shift into “NEUTRAL”, and start the engine while supplying water.
4) Run the engine at low speed for a few minutes.

EMU01545

Battery Care

⚠WARNING

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes, or clothing.
Antidote:
EXTERNAL: Flush with water.
INTERNAL: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.
EYES: Flush with water for 15 minutes and get prompt medical attention.
Batteries produce explosive gases: Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in a closed space. Always wear eye protection when working near batteries.
KEEP OUT OF REACH OF CHILDREN.



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

1) Disconnect and remove the battery from the boat. Always disconnect the black negative lead 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.

EMU00355

PERIODIC MAINTENANCE

⚠WARNING

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

EMU00356

REPLACEMENT PARTS

If replacement parts are necessary, use only genuine Yamaha parts or equivalents 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 available from a Yamaha dealer.

EMU01708

MAINTENANCE CHART

Frequency of maintenance operations may be adjusted according to the operating conditions, but the following table gives general guidelines.
The mark (●) indicates the check-ups which you may carry out yourself.
The mark (○) indicates work to be carried out by your Yamaha dealer.

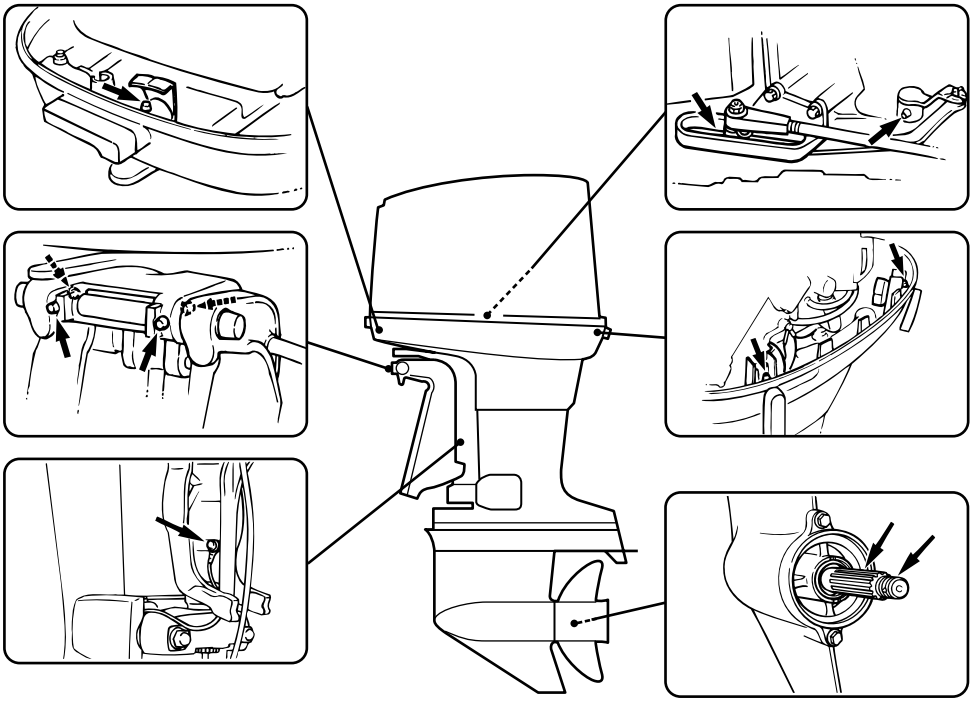
Item \ Interval		Initial		Every		Refer page
		10 hours	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
Carburetor	Cleaning	○	○	○		—
Fuel tank	Cleaning				●	4-26
Fuel filter	Cleaning	●	●	●		4-17
Fuel system	Inspection	●		●	○	4-16
Cooling water passages *1	Cleaning		●	●		4-9
Idling speed	Inspection/adjustment	●		●		4-20
Spark plug	Cleaning/adjustment/ replacement	●	●	●		4-14
Power trim and tilt system	Inspection	●	●	●		4-22
Wiring and connectors	Inspection/reconnection	●	●	●		4-21
Exhaust leakage	Inspection	●	●	●		4-21
Water leakage	Inspection	●	●	●		4-21
Grease points	Greasing			●		4-13
Gear oil	Change	●		●		4-25
Bolts and nuts	Retightening	●	●	●		4-31
Cowling clamps	Inspection				●	—
Anode	Inspection		●	●		4-27
Propeller	Inspection	●	●	●		4-23
Motor exterior	Inspection	●	●	●		4-31
Battery *2	Inspection	● (every month)				4-28
Carburetor setting	Inspection/adjustment	○		○		—
Ignition timing	Inspection/adjustment	○		○		—

*1. When operating in salt water, turbid or muddy water, the engine should be flushed with clean water after each use.
*2. For electric start models.

EMU00909

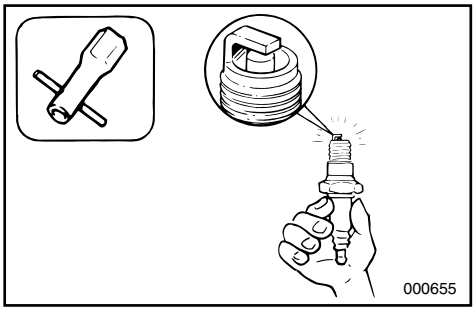
GREASING

Yamaha grease A (Water resistant grease)
Yamaha grease D (Corrosion resistant grease) *1



103072

*1. For propeller shaft



EMU01202

CLEANING AND ADJUSTING SPARK PLUG

⚠WARNING

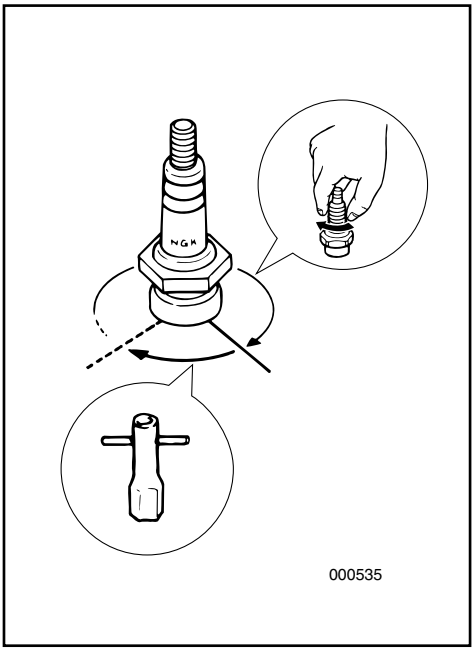
When removing or installing a spark plug, be careful not to damage the insulator. A damaged insulator could allow external sparks, which could lead to explosion or fire.

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 replace the spark plug with another of the correct type.

Standard spark plug:
Refer to “SPECIFICATIONS”, page 4-1.

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

Spark plug gap:
Refer to “SPECIFICATIONS”, page 4-1.



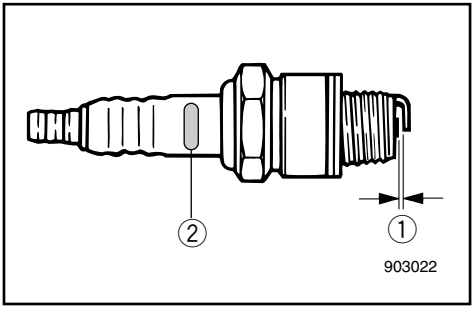
When fitting the plug, always clean the gasket surface and use a new gasket. Wipe off any dirt from the threads and screw in the spark plug to the correct torque.

Spark plug torque:
Refer to “SPECIFICATIONS”, page 4-1.

NOTE:

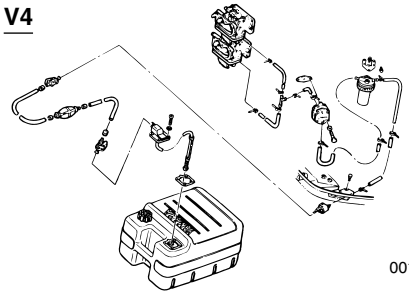
If a torque-wrench is not available when you are fitting a spark plug, a good estimate of the correct torque is 1/4 to 1/2 a turn past finger-tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque-wrench.

Initial of spark plug I.D. mark	Plug wrench size
B	21 mm (13/16 in.)
C/BK	16 mm (5/8 in.)
D	18.3 mm (23/32 in.)



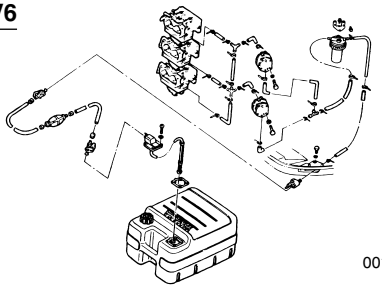
① Spark plug gap
② Spark plug I.D. mark (NGK)

V4



001319

V6



001320

EMU01509

CHECKING FUEL SYSTEM

⚠WARNING

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

Check the fuel line for leaks, cracks, or malfunctions. If any problem is found, it should be repaired immediately by Yamaha dealer or other qualified mechanic.

Checkpoints

- Fuel system parts leakage.
- Fuel hose joint leakage.
- Fuel hose cracks or other damage.
- Fuel connector leakage.

⚠WARNING

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.**

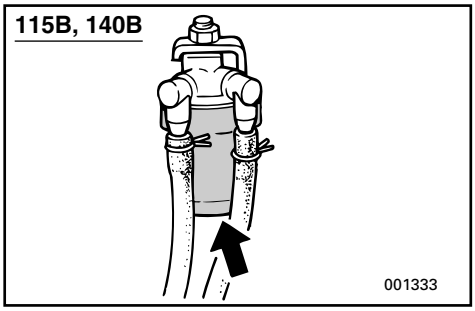
EMU00370

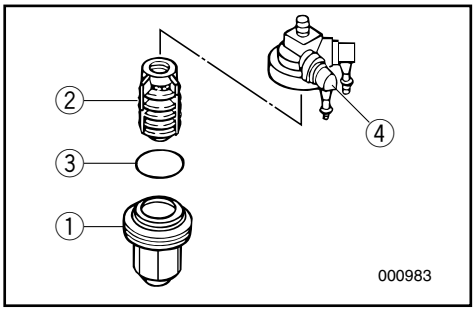
INSPECTING FUEL FILTER

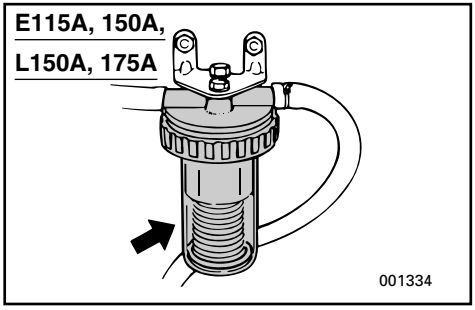
⚠WARNING

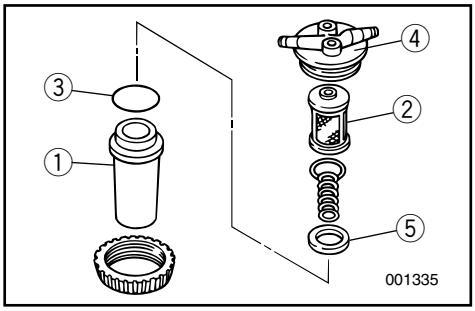
Gasoline (petrol) is highly flammable, and its vapors are flammable and explosive.

- **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 O-ring, filter cup, and hoses in place. Improper assembly or replacement can result in a fuel leak, which could result in a fire or explosion hazard.**









EMU00978

115B, 140B

1) Remove the nut holding the fuel filter assembly if equipped.
2) Unscrew the filter cup ①, catching any spilled fuel in a rag.
3) Remove the filter element ②, and wash it in solvent.
   Allow it to dry. Inspect the filter element and O-ring ③ to make sure they are in good condition. Replace them if necessary.
4) Reinstall the filter element in the cup. Make sure the O-ring in position in the cup. Firmly screw the cup onto the filter housing ④.
5) Attach the filter assembly to the bracket with that the fuel hoses are attached to the filter assembly.
6) Run the engine and check the filter and lines for leaks.

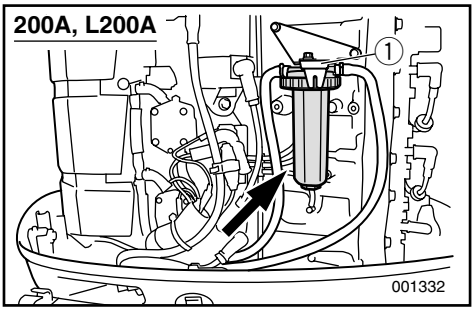
EMU01307

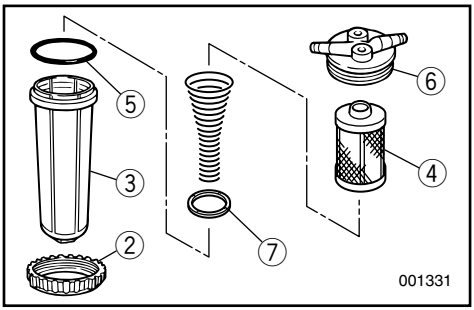
E115A, 150A, L150A, 175A

NOTE:

If any water is in the fuel, the red float in the fuel filter unit will rise. If so, remove the cup and drain the water.

1) Remove the filter cup ①, catching any spilled fuel in a container.
2) Remove the filter element ②, wash it in solvent, and allow it to dry. Inspect the filter element, O-ring ③, and float ⑤ to make sure they are in good condition, and replace if necessary.
3) Re-install the filter element in the filter housing ④ and properly re-insert the float into the filter cup.
4) Re-insert the O-ring in its proper position and re-install the filter cup onto the filter housing firmly.
5) Run the engine and check the filter and lines for leaks.





EMU01308

200A, L200A

NOTE:

If any water is in the fuel, the float ⑦ will rise. If so, remove the cup and drain the water.

1) Loosen and remove the locking tab bolt and tab ①. Slightly loosen the filter cup ring nut ②.
2) Remove the filter cup ③, catching any spilled fuel in a rag.
3) Remove the filter element ④, and wash it in solvent.
   Allow it to dry. Inspect the filter element and O-ring ⑤ to make sure they are in good condition. Replace them if necessary.
4) Reinstall the filter element. Make sure the O-ring is in position in the cup. Insert the cup and O-ring into the filter housing ⑥. Screw the ring nut onto the filter housing until the ring is lightly seated.
5) Tighten the ring nut approximately an additional 1/4 turn until ring nut is tight. Align one of the four larger ring nut tabs into the slot of the locking tab. Install the locking tab bolt and tighten.
6) Run the engine and check the filter and lines for leaks.

EMU00991

ADJUSTING IDLING SPEED

⚠WARNING

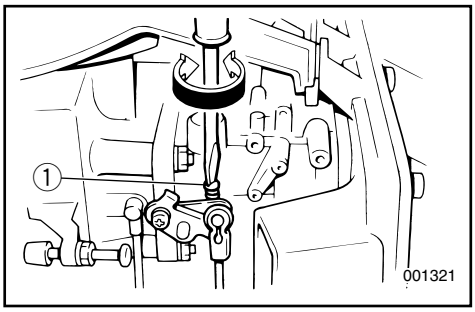
- **Do not touch or remove electrical parts when starting or during operation.**
- **Keep hands, hair and clothes away from flywheel and other rotating parts while engine is running.**

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.

1) Start the engine and allow it to warm up fully in Neutral until it is running smoothly. If the outboard is mounted on a boat, be sure the boat is tightly moored.
2) Adjust the throttle stop-screw ① to set the idling speed to specification (see "SPECIFICATIONS" on page 4-1) by turning the stop-screw clockwise to increase the idling speed, and turning it counterclockwise to decrease the idling speed.



NOTE:

Correct idling-speed adjustment is only possible if the engine is fully warmed-up. If not warmed up fully, the speed setting will tend to be too high. If you have difficulty obtaining the specified idle, consult a Yamaha dealer or other qualified mechanic.

EMU01329

REPLACING FUSE

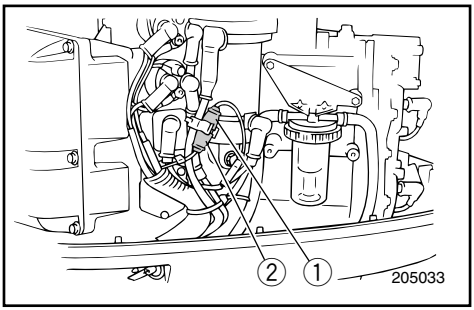
If the fuse has blown on an Electric start model, open the fuse holder and replace the fuse with a new one of proper amperage.

⚠WARNING

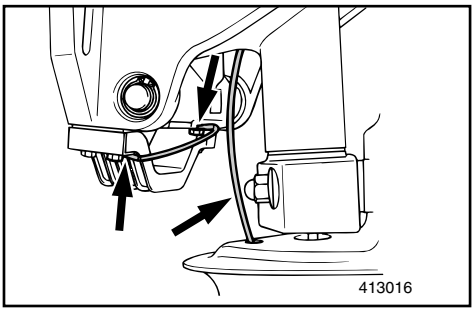
Be sure to use the specified fuse. An incorrect fuse or a piece of wire may allow excessive current flow. This could cause electrical system damage and a fire hazard.

NOTE:

If the new fuse blows again immediately, consult a Yamaha dealer.



① Fuse holder
② Fuse (20A)



EMU00383

CHECKING WIRING AND CONNECTORS

1) Check that each grounding wire is properly secured.
2) Check that each connector is engaged securely.

EMU00384

EXHAUST LEAKAGE

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

EMU00385

WATER LEAKAGE

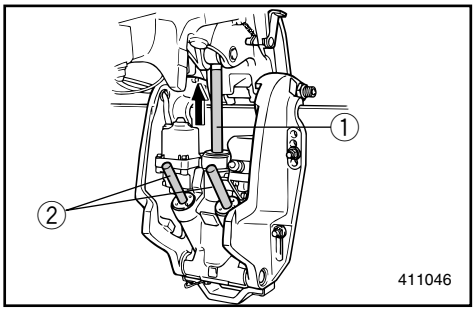
Start the engine and check that no water leaks from the joints between the exhaust cover, cylinder head and crank case.

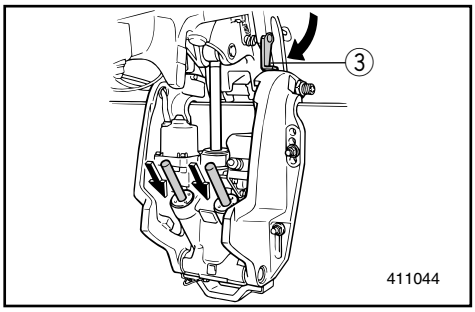
EMU01690

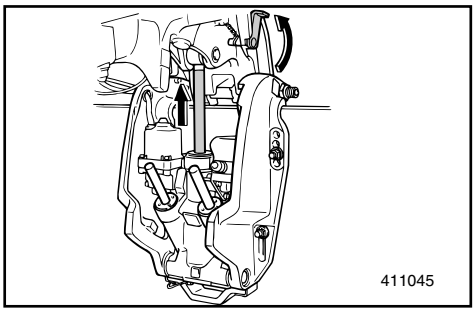
CHECKING POWER TRIM AND TILT SYSTEM

⚠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 accidentally falls.**
- **Make sure no one is under the outboard before performing this test.**





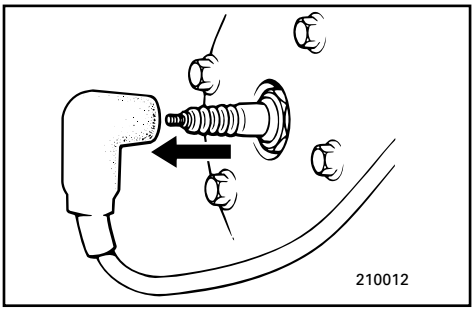


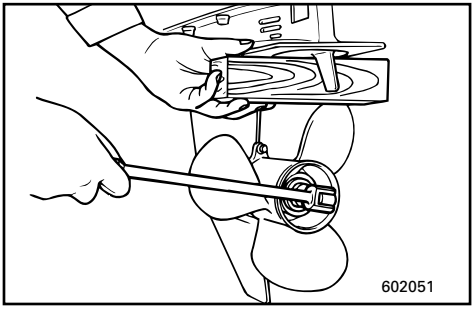
1) Check the power trim and tilt unit for any sign of oil leaks.
2) Operate each of the power trim and tilt switches on remote control and engine bottom cowling (if equipped) to check that all switches work.
3) Tilt up the motor and check that the tilt rod ① and trim rods ② are pushed out completely.
4) Use the tilt support lever ③ to lock the motor in the UP position. Operate the tilt down switch briefly so the motor is supported the tilt support lever.
5) Check that the tilt rod and trim rods are free of corrosion or other flaws.
6) Activate the tilt-down switch until the trim rods have gone completely into the cylinders.
7) Activate the trim-up switch until the tilt rod is fully extended. Unlock the tilt support lever.
8) Operate the motor to tilt down. Check that the tilt rod and trim rods operate smoothly.

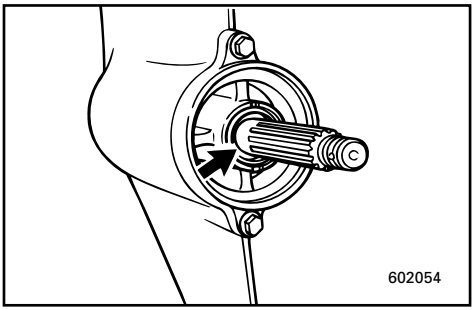
NOTE:

If any operation is abnormal, consult a Yamaha dealer.

Recommended fluid:
Yamaha power trim & tilt fluid or ATF (DEXRON-Ⅱ).







EMU00388

CHECKING PROPELLER

⚠WARNING

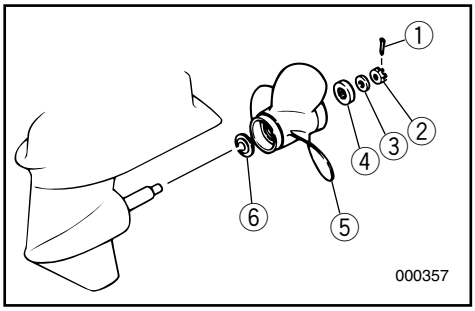
You could be seriously injured if the engine accidentally starts while you are near the propeller.

- **Before inspecting, removing or installing the propeller, remove the spark plug caps from the spark plugs. Also, put the shift control in Neutral, put the main switch in the "OFF" position and remove 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 cavitation plate and the propeller to prevent the propeller from turning.**

EMU00390

Propeller Checking Point

- Check each of the propeller blades for wear, erosion from cavitation or ventilation, or other damage.
- Check the splines for wear and damage.
- Check for fish line winding around the propeller shaft.
- Check the propeller shaft oil seal for damage.



EMU00976

Removing the Propeller

1) Straighten the cotter-pin ① and pull it out using a pair of pliers.
2) Remove the propeller nut ②, washer ③ and spacer ④.
3) Remove the propeller ⑤ and thrust washer ⑥.

EMU01560

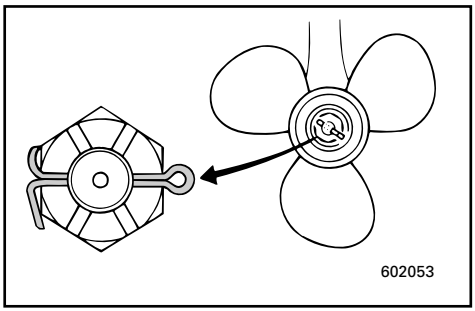
Installing the Propeller

CAUTION:

- **Be sure to install the thrust washer before installing propeller, otherwise the lower case and propeller boss may 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 Corrosion resistant grease to the propeller shaft.
2) Install the thrust washer and propeller on the propeller shaft.
3) Install the spacer and washer. Tighten the propeller nut to the specified torque.

Tightening torque:
Refer to “SPECIFICATIONS” page 4-1.



4) Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends.

NOTE:

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

EMU01460

CHANGING GEAR OIL

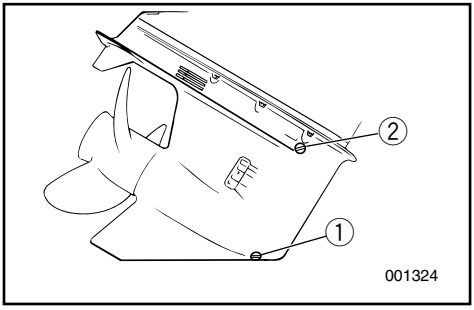
⚠WARNING

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

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

NOTE:

The oil drain plug is magnetic. Remove all metal particles from the plug before reinstalling it.



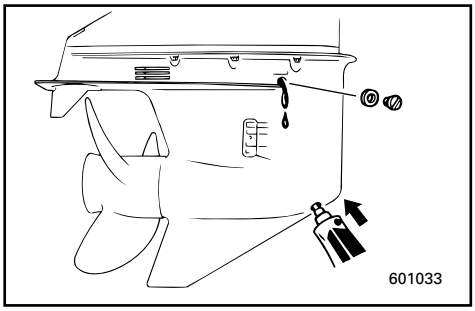
4) Remove the oil level plug ② to allow the oil to drain completely.

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 oil drain plug hole.

Gear oil grade/capacity:
Refer to “SPECIFICATIONS,” page 4-1.

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 oil drain plug.

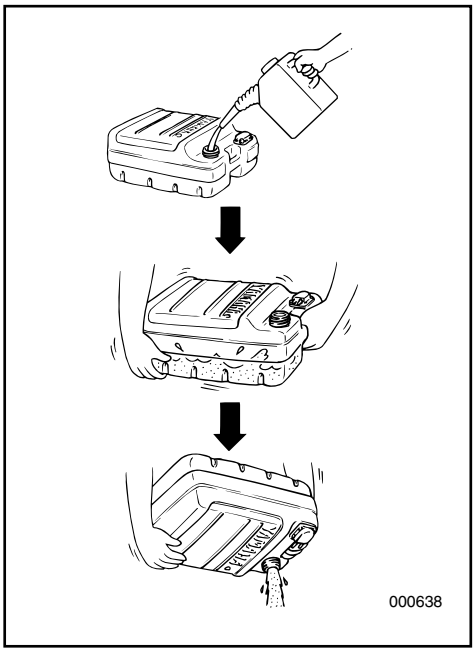
EMU01510

CLEANING FUEL TANK

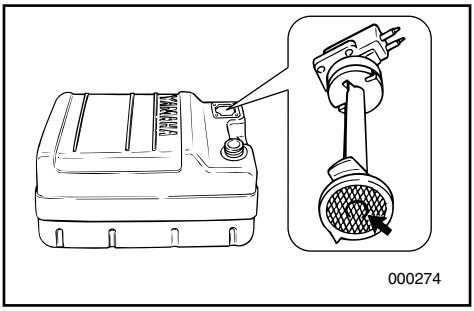
⚠WARNING

Gasoline (petrol) 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 (petrol) according to local regulations.**



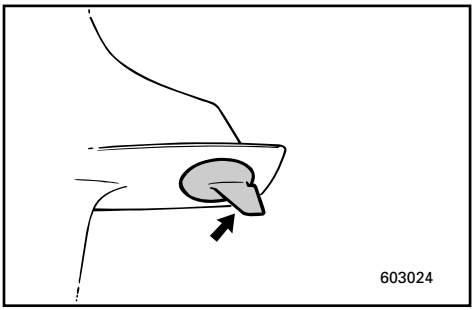
1) Empty the fuel tank into an approved container.
2) Pour a small amount of suitable solvent in the tank. Reinstall the cap and shake the tank. Drain the solvent completely.



EMU00402

Cleaning the Fuel Filter

1) Remove the screws holding the fuel hose joint assembly. Pull the assembly out of the tank.
2) Clean the filter (located on the end of the suction pipe) in a suitable cleaning solvent. Allow the filter to dry.
3) Replace the gasket with a new one. Reinstall the fuel hose joint assembly and tighten the screws firmly.



EMU01462

INSPECTING AND REPLACING ANODE(S)

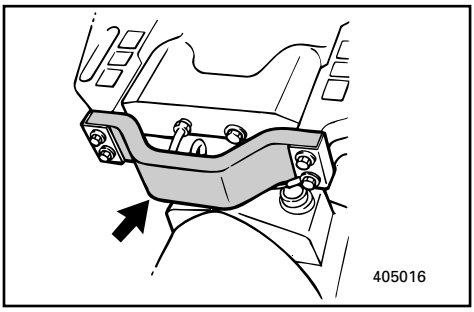
Yamaha outboard motors are protected from corrosion by sacrificial anodes.

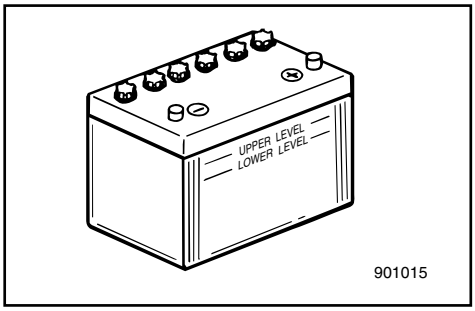
Check the anodes periodically. Remove scales from the surfaces of the anodes.

For inspection and replacement of anodes, consult a Yamaha dealer.

CAUTION:

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





EMU00404

CHECKING BATTERY (for Electric start models)

⚠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):

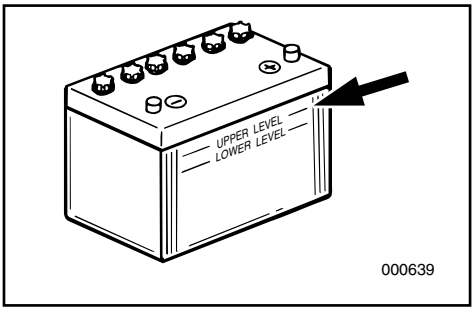
- **SKIN - Flush with water.**
- **EYES - Flush with water for 15 minutes and get immediate medical attention.**

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 (e.g., welding equipment, lighted cigarettes, etc.).**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTIC FLUID OUT OF REACH OF CHILDREN.**



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 deionized water suitable to use in batteries).
2) Keep the battery always 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 recharge 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 recharge the battery when it is low.

EMU01279

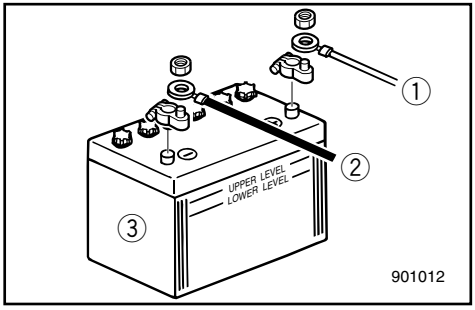
Connecting the Battery
Electric start models

⚠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.

CAUTION:

- **Make sure the main switch (on applicable models) is "OFF" before working on the battery.**
- **Reversal of the battery leads will damage the rectifier.**
- **Connect the RED lead first when installing the battery and disconnect the RED lead last when removing it. Otherwise, the electrical system 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 lead to the POSITIVE (+) terminal first.
Then connect the BLACK lead to the NEGATIVE (-) terminal.

① Red lead
② Black lead
③ Battery

EMU01280

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

EMU00408

CHECKING BOLTS AND NUTS

1) Check that bolts securing the cylinder head and engine and the nut securing the flywheel are tightened with their specified tightening torque.
2) Check the tightening torque of other bolts and nuts.

EMU01635

CHECKING TOP COWLING

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

EMU00409

MOTOR EXTERIOR

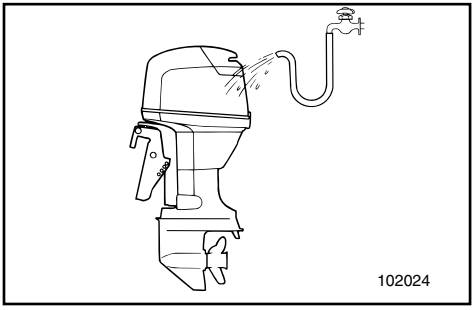
EMU00410

Cleaning the Outboard Motor

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

NOTE:

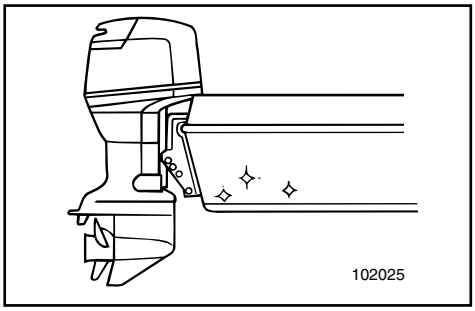
Refer to Flushing Cooling System instructions in “TRANSPORTING AND STORING OUTBOARD MOTOR”.



EMU00412

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 a Yamaha dealer.



EMU00413

COATING THE BOAT BOTTOM

A clean hull improves boat performance. The boat bottom should be kept as clean of marine growths 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.

-MEMO-

E

EMU00414

Chapter 5
TROUBLE RECOVERY

5

EMU01663

TROUBLESHOOTING

A problem in the fuel, compression, or ignition systems can cause poor starting, loss of power, or other problems. The troubleshooting chart describes basic checks and possible remedies. (This chart covers all Yamaha outboard motors. Therefore, some items may not apply to your model.)
If your outboard motor requires repair, bring it to a Yamaha dealer.
If the engine warning indicator is flashing, consult your Yamaha dealer.

Trouble	Possible Cause	Remedy
A. Starter will not operate.	1. Battery capacity weak or low.	1. Check battery condition. Use battery of recommended capacity.
	2. Battery connections loose or corroded.	2. Tighten battery cables and clean battery terminals.
	3. Fuse for electric start circuit blown.	3. Check for cause of electric overload and repair. Replace fuse with one of correct amperage.
	4. Starter components faulty.	4. Have serviced by a Yamaha dealer.
	5. Shift lever in gear.	5. Shift to neutral.
B. Engine will not start (Starter operates).	1. Fuel tank empty.	1. Fill tank with clean, fresh fuel.
	2. Fuel contaminated or stale.	2. Fill tank with clean, fresh fuel.
	3. Fuel filter clogged.	3. Clean or replace filter.
	4. Starting procedure incorrect.	4. Read “STARTING ENGINE” section.
	5. Fuel pump malfunctions.	5. Have serviced by a Yamaha dealer.
	6. Spark plug(s) fouled or incorrect type.	6. Inspect spark plug(s). Clean or replace with recommended type.
	7. Spark plug cap(s) fitted incorrectly.	7. Check and re-fit cap(s).
	8. Poor connections or damaged ignition wiring.	8. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.
	9. Ignition parts faulty.	9. Have serviced by a Yamaha dealer.
	10. Engine stop switch lanyard not attached.	10. Attach lanyard.
	11. Engine inner parts damaged.	11. Have serviced by a Yamaha dealer.
C. Engine idles irregularly or stalls.	1. Spark plug(s) fouled or incorrect type.	1. Inspect spark plug(s). Clean or replace with recommended type.
	2. Fuel system obstructed.	2. Check for pinched or kinked fuel line or other obstructions in fuel system.
	3. Fuel contaminated or stale.	3. Fill tank with clean, fresh fuel.
	4. Fuel filter clogged.	4. Clean or replace filter.
	5. Failed ignition parts.	5. Have serviced by a Yamaha dealer.
	6. Warning system activated.	6. Find and correct cause of warning.
	7. Spark plug gap incorrect.	7. Inspect and adjust as specified.

Trouble	Possible Cause	Remedy
C. Engine idles irregularly or stalls.	8. Poor connections or damaged ignition wiring. 9. Specified engine oil not used. 10. Thermostat faulty or clogged. 11. Carburetor adjustments incorrect. 12. Fuel pump damaged. 13. Air vent screw on the fuel tank closed. 14. Choke knob pulled out. 15. Motor angle too high. 16. Carburetor clogged. 17. Fuel joint connection incorrect. 18. Throttle valve adjustment incorrect. 19. Battery lead disconnected.	8. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires. 9. Check and replace oil as specified. 10. Have serviced by a Yamaha dealer. 11. Have serviced by a Yamaha dealer. 12. Have serviced by a Yamaha dealer. 13. Open the air vent screw. 14. Return to home position. 15. Return to normal operating position. 16. Have serviced by a Yamaha dealer. 17. Connect correctly. 18. Have serviced by a Yamaha dealer. 19. Connect securely.
D. Warning buzzer sounds or indicator lamp lights.	1. Cooling system clogged. 2. Heat range of spark plug incorrect. 3. Specified engine oil not used. 4. Engine oil contaminated or deteriorated. 5. Load on boat improperly distributed. 6. Water pump/thermostat faulty.	1. Check water intake for restriction. 2. Inspect spark plug and replace it with recommended type. 3. Check and replace oil with specified type. 4. Replace oil with fresh, specified type. 5. Distribute load to place boat on an even plane. 6. Have serviced by a Yamaha dealer.
E. Engine power loss.	1. Propeller damaged. 2. Propeller pitch or diameter incorrect. 3. Trim angle incorrect. 4. Motor mounted at incorrect height on transom. 5. Warning system activated. 6. Boat bottom fouled with marine growth. 7. Spark plug(s) fouled or incorrect type. 8. Weeds or other foreign matter tangled on gear housing. 9. Fuel system obstructed. 10. Fuel filter clogged. 11. Fuel contaminated or stale. 12. Spark plug gap incorrect. 13. Poor connections or damaged ignition wiring.	1. Have propeller repaired or replaced. 2. Install correct propeller to operate outboard at its recommended speed (r/min) range. 3. Adjust trim angle to achieve most efficient operation. 4. Have motor adjusted to proper transom height. 5. Find and correct cause of warning. 6. Clean boat bottom. 7. Inspect spark plug(s). Clean or replace with recommended type. 8. Remove foreign matter and clean lower unit. 9. Check for pinched or kinked fuel line or other obstructions in fuel system. 10. Clean or replace filter. 11. Fill tank with clean, fresh fuel. 12. Inspect and adjust as specified. 13. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Trouble	Possible Cause	Remedy
E. Engine power loss.	14. Failed ignition parts. 15. Specified engine oil not used. 16. Thermostat faulty or clogged. 17. Air vent screw closed. 18. Fuel pump damaged. 19. Fuel joint connection incorrect. 20. Heat range of spark plug incorrect.	14. Have serviced by a Yamaha dealer. 15. Check and replace oil with specified type. 16. Have serviced by a Yamaha dealer. 17. Open the air vent screw. 18. Have serviced by a Yamaha dealer. 19. Connect correctly. 20. Inspect spark plug and replace it with recommended type.
F. Engine vibrates excessively.	1. Propeller damaged. 2. Propeller shaft damaged. 3. Weeds or other foreign matter tangled on propeller. 4. Motor mounting bolt loose. 5. Steering pivot loose or damaged.	1. Have propeller repaired or replaced. 2. Have serviced by a Yamaha dealer. 3. Remove and clean propeller. 4. Tighten bolt. 5. Tighten or have serviced by a Yamaha dealer.

-MEMO-

EMU00416

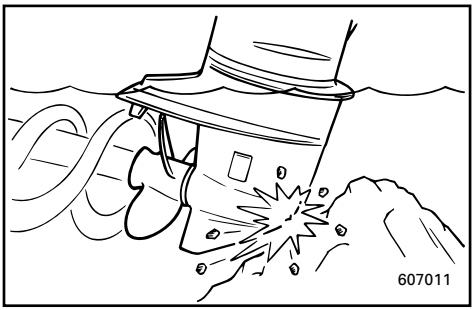
TEMPORARY ACTION IN EMERGENCY

EMU01492

IMPACT DAMAGE

⚠WARNING

The outboard motor can be seriously damaged by a collision while operating or trailering. Damage could make the outboard motor unsafe to operate.



If the outboard motor hits any 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.

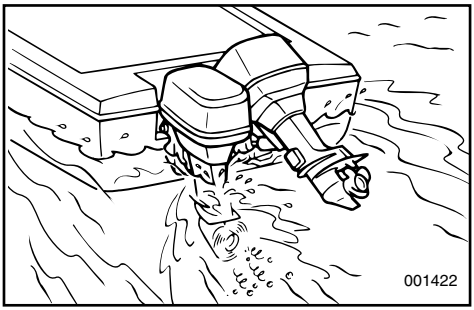
EMU00418

RUNNING SINGLE ENGINE

Using only one of the engines in case of an emergency, be sure to keep the unused one tilted up and operate the other engine at low speed.

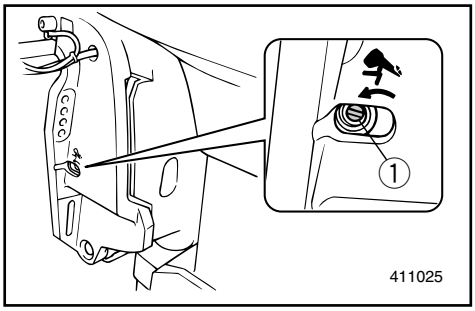
CAUTION:

If the boat is operated with one engine in the water but not running, water may run into the exhaust pipe due to wave action, causing engine trouble.



NOTE:

When you are maneuvering at low speed, such as near a dock, it is recommended that both engines be running with one in neutral gear if possible.



EMU00419

POWER TRIM/TILT WILL NOT OPERATE

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

① Manual valve screw

EMU00421

1) Loosen the manual valve screw counterclockwise until it stops.
2) Put the engine in the desired position, then tighten the manual valve screw clockwise.

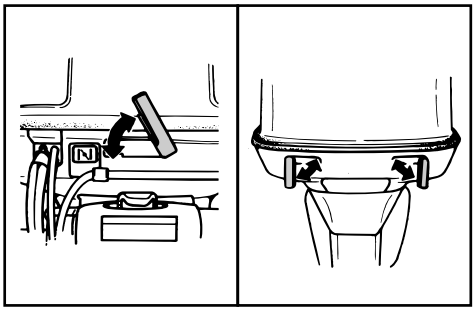
EMU00423

STARTER WILL NOT OPERATE

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

⚠WARNING

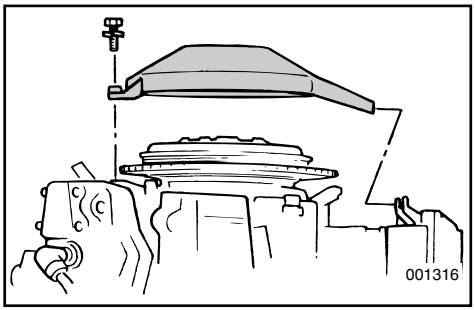
- **Use this procedure only in an emergency and only to return to port for repairs.**
- **When the emergency starter rope is used to start the engine, the start-in-gear protection device does not operate. Make sure the gear shift lever/ remote control lever is in neutral. Otherwise, the boat could unexpectedly start to move, which could result in an accident.**
- **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 starter mechanism or top cowling after the engine is running.**
- **Do not touch the ignition coil, high voltage wire, spark plug cap or other electrical components when starting of operating the motor. You could be shocked.**

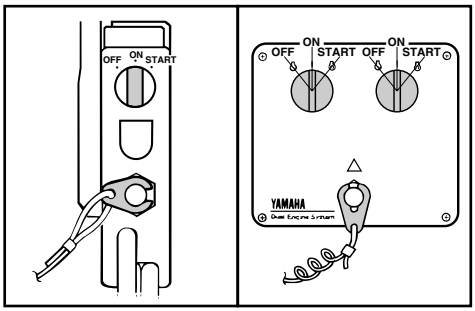


EMU01513

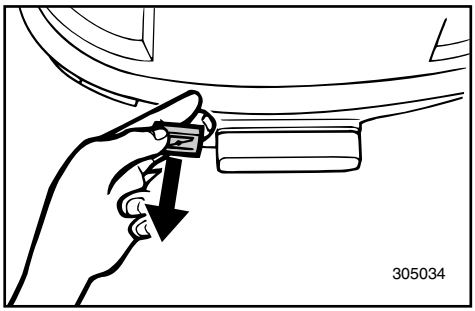
Emergency Starting Engine

1) Remove the top cowling.
2) Remove the start-in-gear protection cable from the starter if equipped.
3) Remove the starter/flywheel cover after removing the bolt(s).

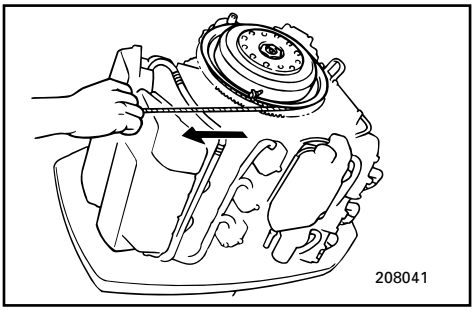




4) Prepare the engine for starting. Refer to "STARTING ENGINE" for details. Be sure the engine is in Neutral and that the lock plate is attached to the engine stop lanyard switch. The main switch must be "ON" if equipped.



5) Pull out the choke knob when starting a cold engine. After the engine starts, gradually return the choke knob to the home position as the engine warms up.



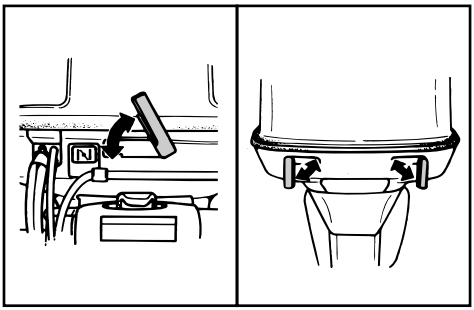
6) Insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and wind the rope 1 or 2 turns clockwise.
7) Give a strong pull straight out to crank and start the engine. Repeat if necessary.

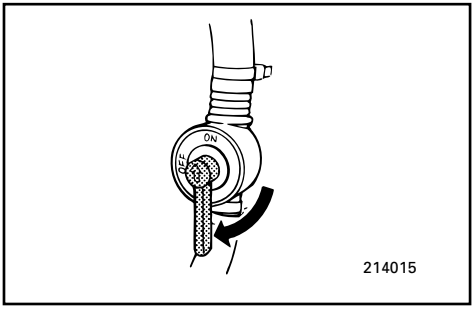
EMU01705*

Starting engine after manual injection failure

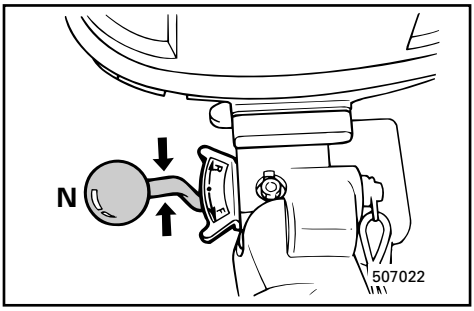
E115AMH, E115AWH

1) Remove the top cowling.

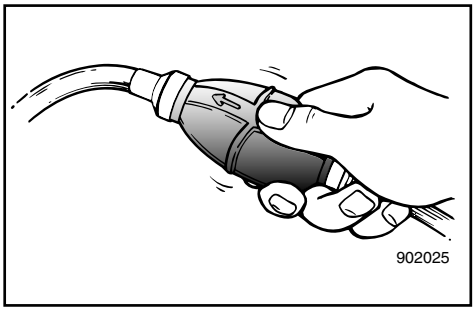




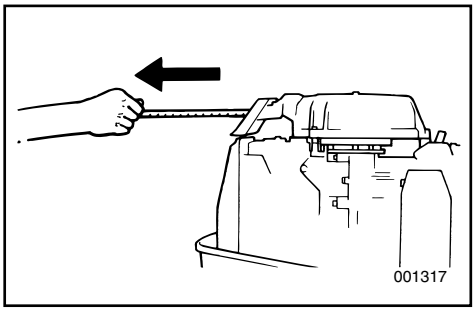
2) Turn the emergency valve to ON.



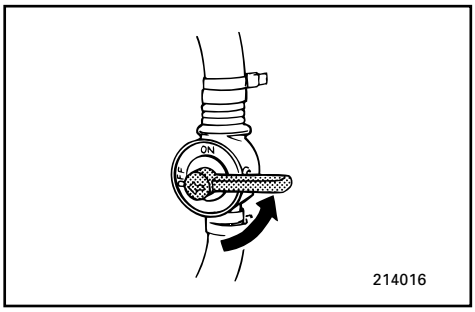
3) Prepare the engine for starting. For instructions, see Chapter 3, “Starting Engine.” Be sure the engine is in neutral.



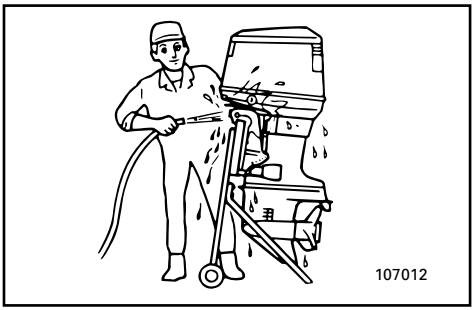
4) Squeeze the primer pump once to feed fuel to the engine.

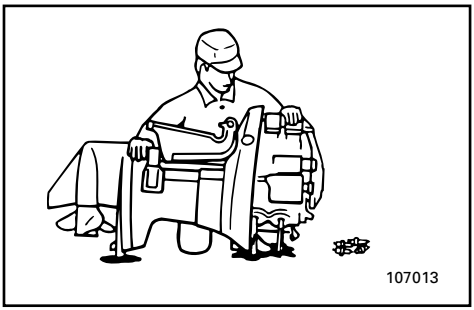


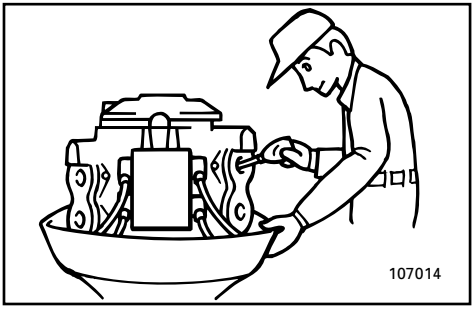
5) Pull the starter handle slowly until you feel resistance. Then give a strong pull straight out to crank and start the engine. Repeat if necessary.



6) Return the emergency valve to OFF after the engine has started, then securely reinstall the top cowling.


107012


107013


107014

EMU01511

TREATMENT OF SUBMERGED MOTOR

If the outboard motor is submerged, immediately take it 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.

EMU00447

1) Thoroughly wash away mud, salt, seaweed, etc. with fresh water.
2) Remove the spark plugs and face the spark plug holes downward to allow any water, mud or contaminants to drain.
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 hole(s) while cranking with the manual starter or emergency starter rope.
5) Take the outboard motor to a Yamaha dealer as soon as possible.

CAUTION:

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

E

EMU00450

Chapter 6
INDEX

6

EMU00451

INDEX

YAMAHA MOTOR CO., LTD.
Printed in Japan
March 2002-0.1 × 1
60H-28199-E1
(E115AMH, E115AWH, E115AE, E115AET, 115BE, 115BET, 140BET, 150AET, L150AET, 175AET, 200AET, L200AET)
(E)