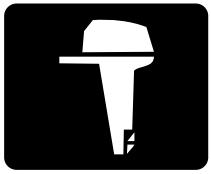
YAMAHA



60F
75A
85A
115B

OWNER'S MANUAL

688-28199-S9

EMU01419*

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 60FET, 75AED, 115BET 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.

EMU00002*

60F/75A/85A/115B
OWNER'S MANUAL

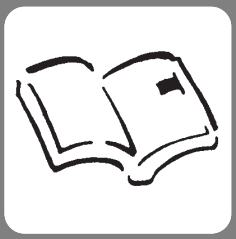
1st Edition, April 2000

Printed in Japan

CONTENTS

E

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



EMB00010

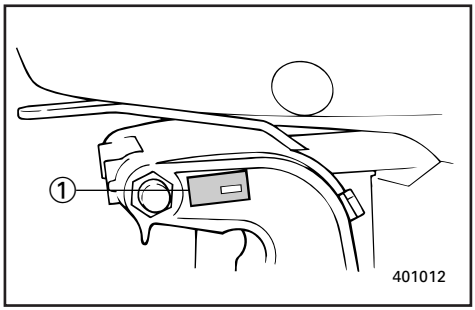
Chapter 1
GENERAL INFORMATION

EMU00005

IDENTIFICATION NUMBERS RECORD

EMU00007

OUTBOARD MOTOR SERIAL NUMBER



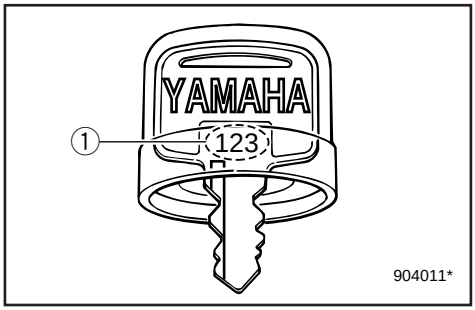
The outboard motor serial number is stamped on the label attached to the port side of the clamp-bracket.
Record your outboard motor serial number in the spaces provided to assist you in ordering spare parts from your Yamaha dealer or for reference in case your outboard motor is stolen.

① Outboard motor serial number

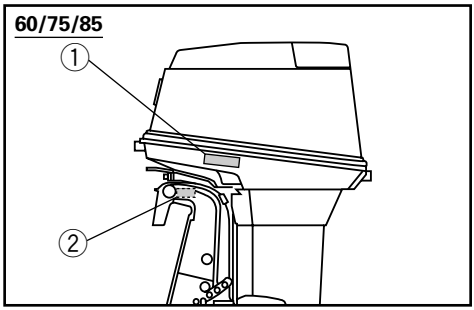
EMU00008

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



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

EMISSION CONTROL INFORMATION	
ENGINE FAMILY : [ ]	
THIS ENGINE CONFORMS TO [ ] U.S. EPA REGULATIONS FOR MARINE SI ENGINES.	
FELs : [ ] g/kw-hr	IDLE SPEED : [ ] rpm IN NEUTRAL
SPARK PLUG : [ ]	SPARK PLUG GAP (mm) : [ ]
YAMAHA MOTOR CO.,LTD.	[ ]

Approval label of Emission control certificate

This label is attached to the bottom cowling.

Existing Technology ; N/A

② Manufactured date label

YAMAHA
Manufactured: □□□□□□

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.

EMU00024

GASOLINE (PETROL)

Recommended gasoline (petrol):
Regular grade gasoline (petrol)

If knocking or pinging occurs, use a different brand of gasoline (petrol) or premium grade fuel.

EEMU01356

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.

EMU00032

BATTERY REQUIREMENT

CAUTION:

Do not use the battery that does not meet the specified capacity. If different battery from the specification is used, the electric system may perform poorly or be overloaded, causing electrical system damage.

Choose battery which meets the following specifications for Electric start model.

Battery capacity : 12V, 70~100Ah (252~360kc)

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.

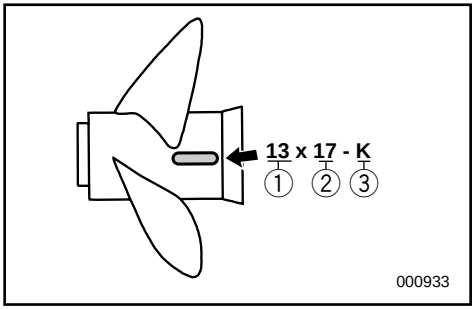
Yamaha outboard motors are fitted with propellers chosen to perform well over a range of applications, but there may be uses where a propeller with a different pitch would be more appropriate. For a greater operating load, a smaller-pitch propeller is more suitable as it enables the correct engine speed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

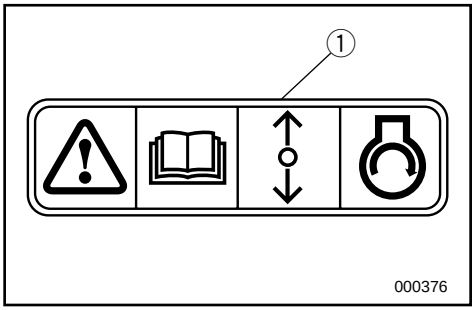


① Propeller diameter (in inches)
② Propeller pitch (in inches)
③ Type of propeller (propeller mark)

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

EMU01208

START-IN-GEAR PROTECTION

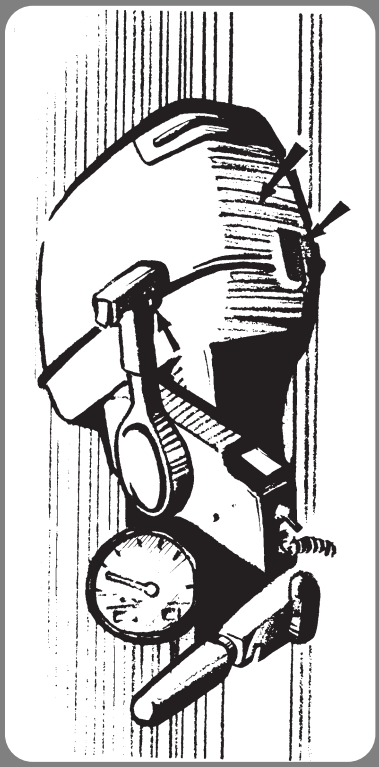


Yamaha outboard motors which have the pictured label ① affixed to them or Yamaha approved remote control units are equipped with start-in-gear protection device(s). This feature permits the engine to be started only when it is Neutral. Always select Neutral before starting the engine.

-MEMO-

EMC00010

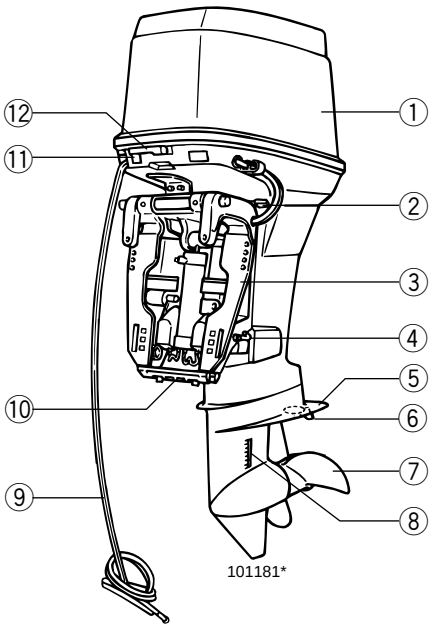
Chapter 2
BASIC COMPONENTS



EMU01206

MAIN COMPONENTS

60/75/85



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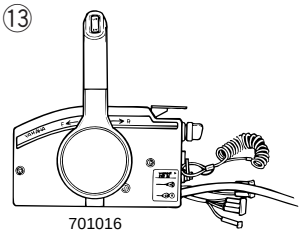

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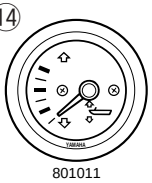

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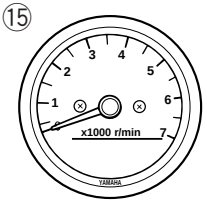

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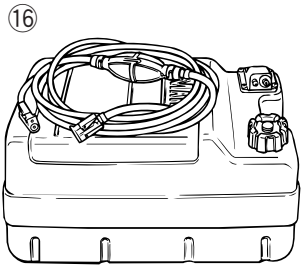


902016

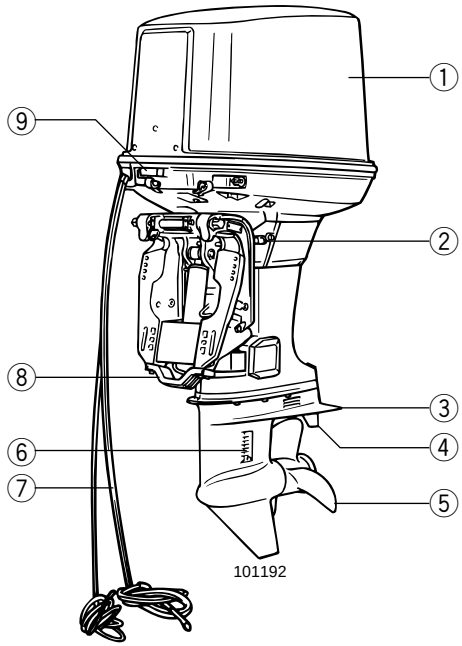
① Top cowling
② Tilt support lever
③ Clamp bracket
④ Trim angle adjusting rod
⑤ Anti-cavitation plate
⑥ Trim tab (Anode)
⑦ Propeller
⑧ Cooling water inlet
⑨ Battery lead
⑩ Anode
⑪ Choke knob
⑫ Cowling lock lever
⑬ Remote control box
* ⑭ Trim meter
* ⑮ Tachometer
⑯ Fuel tank

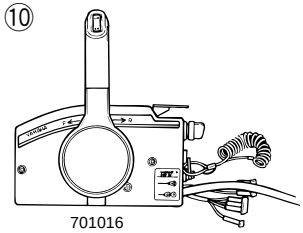
* May not be exactly as shown; also may not be included as standard equipment on all models.

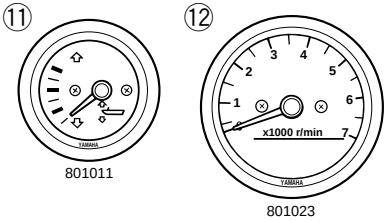
EMU01206

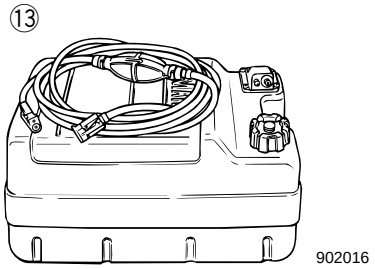
MAIN COMPONENTS

115









① Top cowling
② Tilt support lever
③ Anti-cavitation plate
④ Trim tab (Anode)
⑤ Propeller
⑥ Cooling water inlet
⑦ Battery lead
⑧ Anode
⑨ Cowling lock lever
⑩ Remote control box
⑪ Trim meter
⑫ Tachometer
⑬ Fuel tank

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

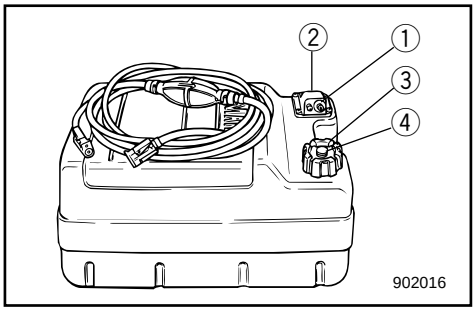
EMC20010

OPERATIONS OF CONTROLS AND OTHER FUNCTIONS

EMC21012

FUEL TANK

If your model was equipped with a portable fuel tank, its function is as follows.



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

Fuel hose joint

This connector is provided for connecting or disconnecting fuel hose.

Fuel meter (If equipped)

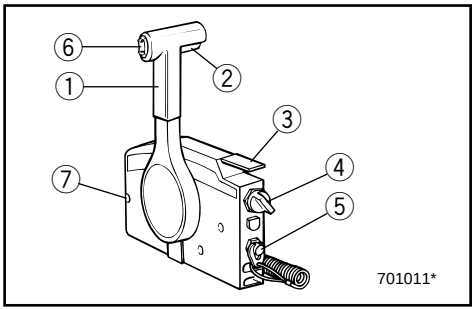
This meter is on the fuel hose connector. It shows current fuel quantity in the fuel tank approximately.

Fuel tank cap

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

Air Vent screw (If equipped)

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



EMC81210

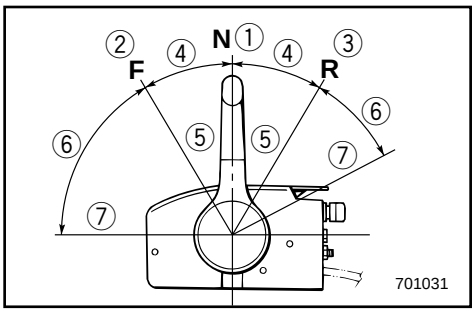
REMOTE CONTROL

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

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

Remote control lever

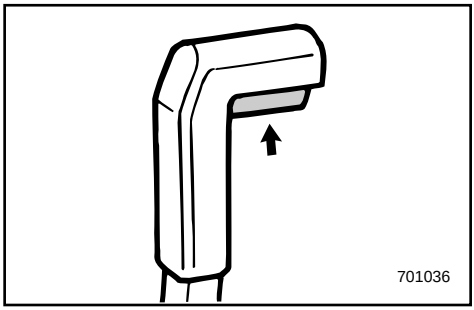
Moving the lever forward from the Neutral position engages Forward gear. Pulling the lever back from Neutral engages Reverse. The engine will continue to run at idle until the lever is moved about 35° (a detent can be felt). Moving the lever farther opens the throttle, and the engine will begin to accelerate.

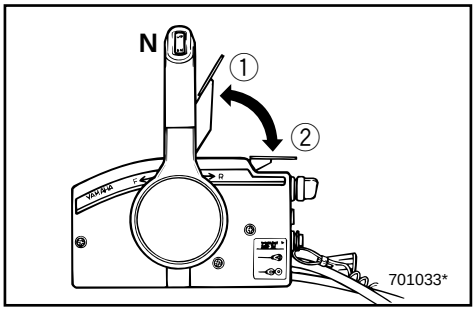


① Neutral
② Forward
③ Reverse
④ Shift
⑤ Fully closed
⑥ Throttle
⑦ Fully open

Neutral interlock trigger

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





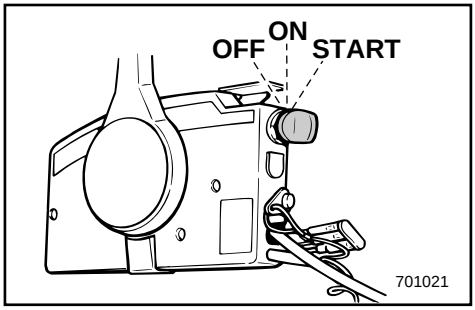
Neutral throttle lever

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



EMC48110

Main switch

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

- **OFF**

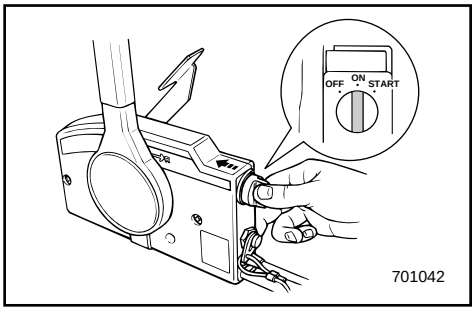
Electrical circuits switched off.
(The key can be removed.)

- **ON**

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

- **START**

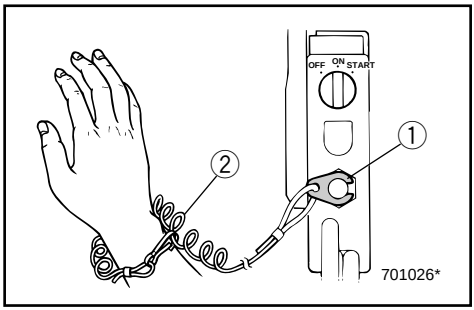
Starter-motor will turn and start engine.
(When the key is released, it returns automatically to "ON".)



EMC50310

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

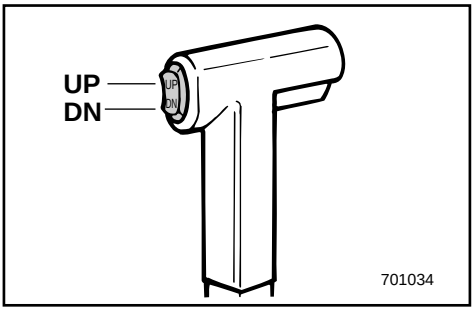
The lock-plate ① must be attached to the engine stop lanyard switch for the engine to run. The lanyard ② should be attached to a secure place on the operator's clothing, or arm or leg. Should the operator fall overboard or leave the helm, the lanyard will pull out the lock plate, stopping ignition to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



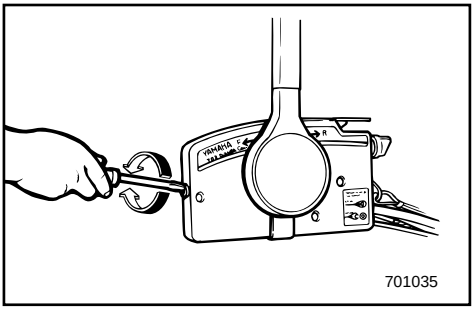
EMU01331

Power Trim/Tilt Switch

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. 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:

Refer to the sections "ADJUSTING TRIM ANGLE" and "TILTING UP/DOWN" in Chapter 3 for instructions on usage.



EMU00107

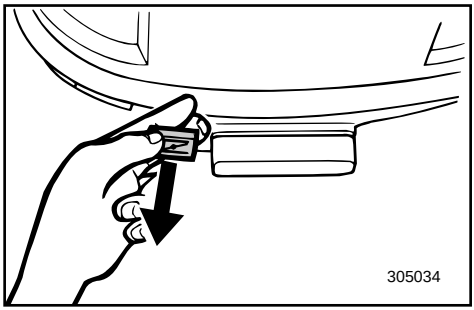
Throttle Friction Adjusting Screw

A friction device in the remote control box provides resistance to movement of the remote control lever. This is adjustable for operator preference. An adjusting screw is located at 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.



EMC42010

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.

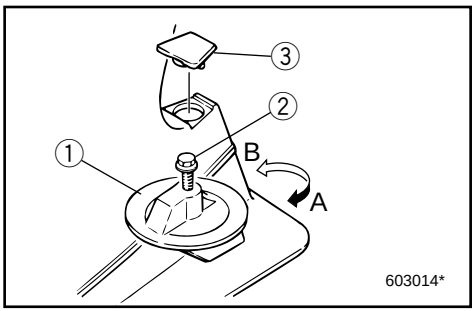
EMD04011

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 be installed or replaced to be sure steering is correct. Be sure you have tightened the bolt after adjusting the trim tab.

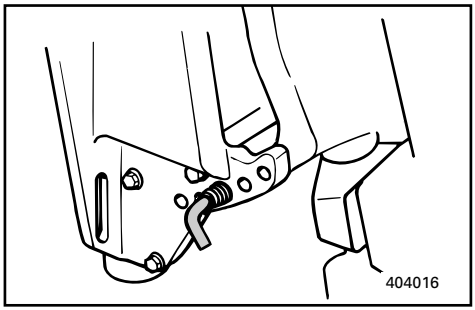


① Trim tab
② Bolt
③ Cap

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

CAUTION:

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



EMD06011

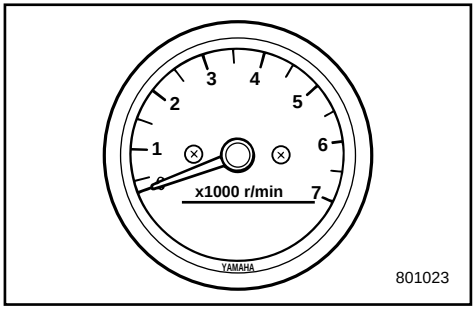
TRIM ANGLE ADJUSTING ROD
60/75/85

The outboard motor fully trim-in angle setting in relation to the transam can be adjusted by changing the position of the trim angle adjusting-rod.

EMD24110

TACHOMETER

This meter shows the engine speed.



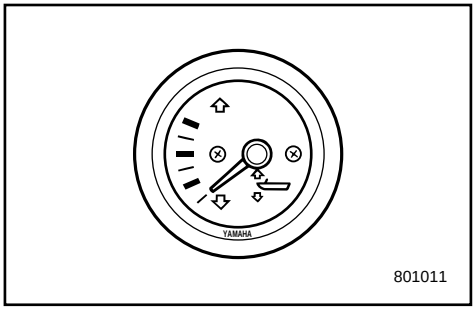
EMD26010

TRIM METER (for Power trim and tilt model)

This meter shows the trim angle of your outboard.

NOTE:

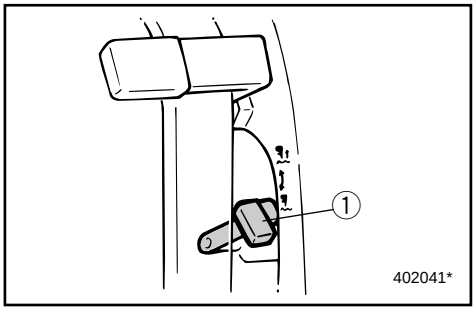
Memorize the trim angles that work best for your boat under different conditions. Adjust the trim angle to the desired setting by operating the power trim and tilt switch.



EMU00154

TILT LOCK MECHANISM (for Hydro-tilt model)

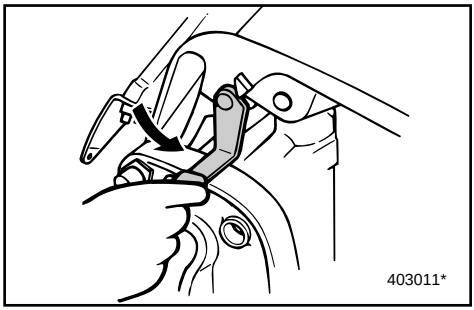
Tilt-lock mechanism is used to prevent reverse thrust from the propeller lifting the outboard motor when reversing. To lock it, set the tilt-lock lever in the Lock position. To release it, place the tilt-lock lever in the Tilt position.



① Tilt-lock lever

NOTE:

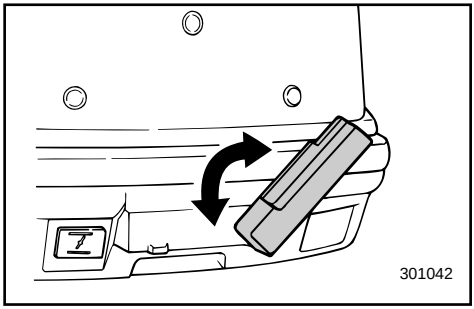
The tilt-lock mechanism on the hydro-tilt model can be used to keep the outboard motor at a slightly tilted angle for shallow water cruising. Refer to CRUISING IN SHALLOW WATER for the correct operation.



EMD60010

TILT SUPPORT LEVER

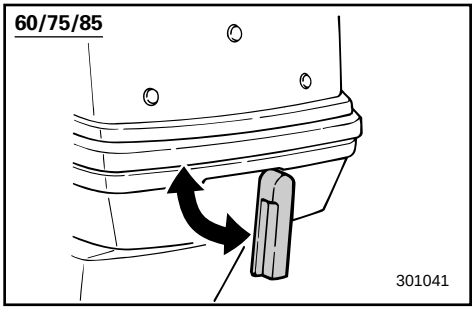
To keep the outboard motor in the tilted-up position, lock the tilt support lever to the clamp bracket.

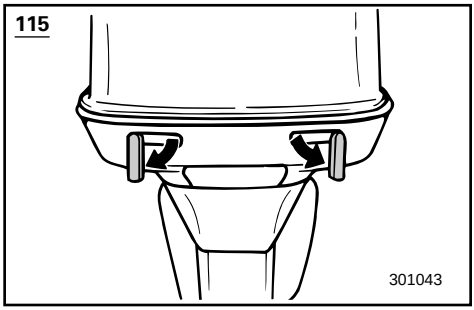


EMD63110

TOP COWLING LOCK LEVERS

To remove the engine top cowling, pull up the front lock lever and push the rear lock lever(s) down. 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.



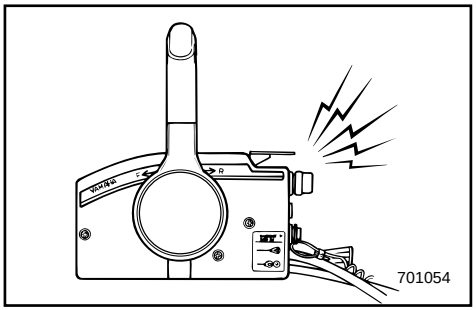


EMD80010

WARNING SYSTEM

CAUTION:

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

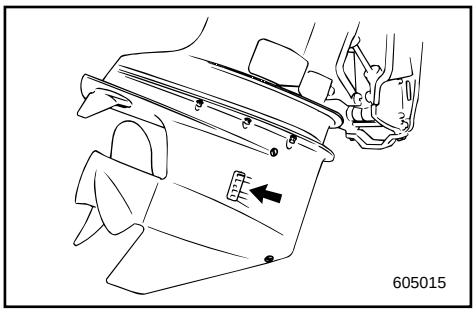


EMD82211

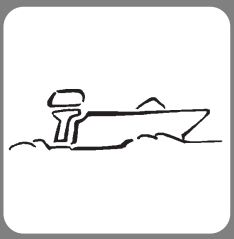
OVERHEAT WARNING

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

- Engine speed will be limited to about 2,000 r/min to help protect the engine.
- The buzzer in the remote control box/switch panel will sound.



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



EMF00010

Chapter 3
OPERATION

EMF10010

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.

EMF12011

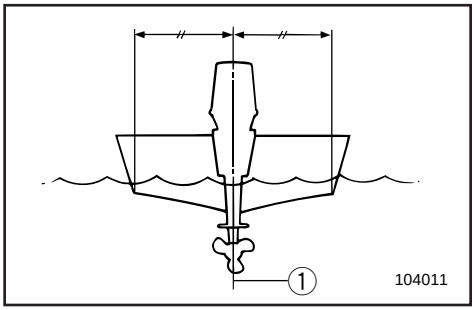
MOUNTING THE OUTBOARD MOTOR

⚠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:

- **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.**
- **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. [permanent mounted type]**
- **Your dealer or other person experienced in proper outboard motor mounting should show you how to mount your motor. [portable type]**

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)

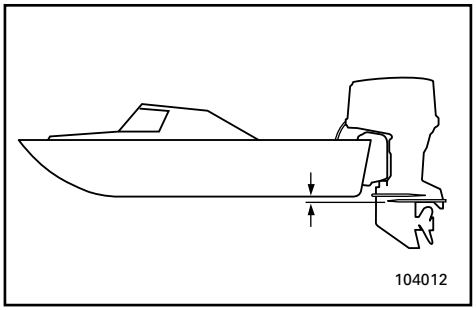
⚠WARNING

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.

EMU01299

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 in alignment with the bottom of the boat .



NOTE:

- The optimum mounting height of the outboard motor is affected by the boat/motor combination. 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.

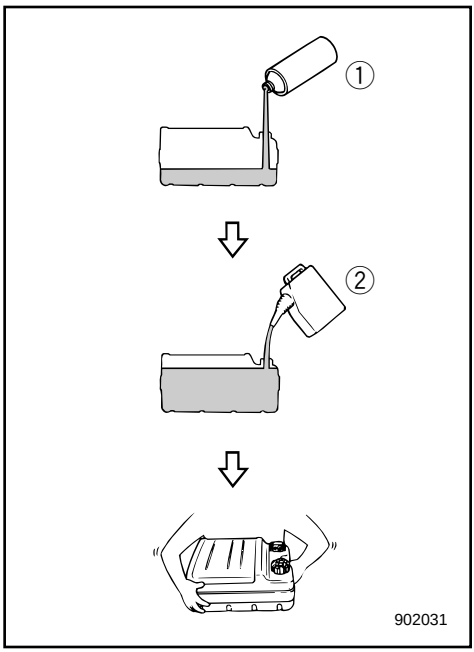
EMF31010

FILLING FUEL AND ENGINE OIL

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.



EMU00201

GASOLINE (PETROL) AND OIL MIXING

Pre-mix model

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

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

① Engine oil
② Gasoline (Petrol)

2) Then mix the fuel thoroughly by shaking.
3) Make sure the oil is mixed with 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.

EMF40110

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.

Fuel

Check to be sure you have plenty of fuel for your trip. Make sure there are no fuel leaks or gasoline fumes.

Be sure the fuel hose is not being flattened or kinked by objects in the boat, and that there are no sharp objects near it.

Oil

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

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 moter is in the water.

Engine

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

CAUTION:

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

EMF50011

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".

EMU00226

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

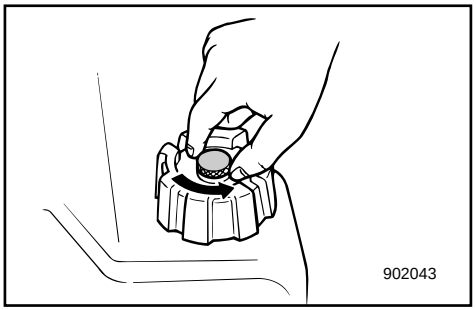
1) First 10 minutes:
   Run the engine at the lowest possible-speed. A fast idle in neutral is best.
2) Next 50 minutes:
   Do not exceed half throttle (approximately 3,000 r/min). Vary engine speed occasionally. If you have an easy-planing boat, accelerate at full throttle onto plane, then immediately 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”.)

EMU01147

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.**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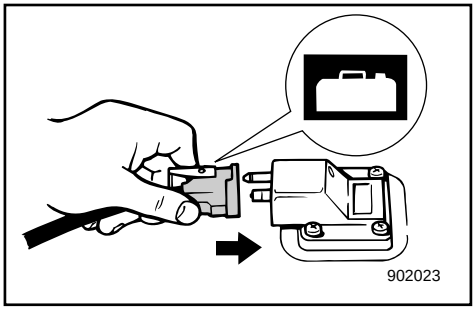
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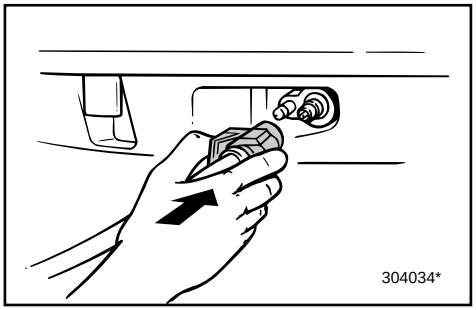
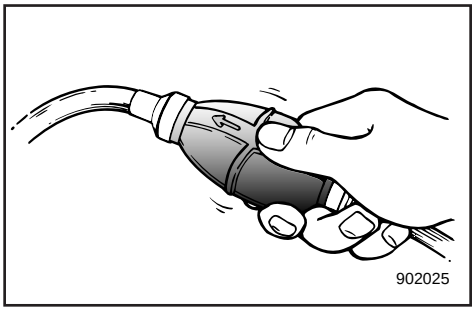

304034*

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 into the engine.



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

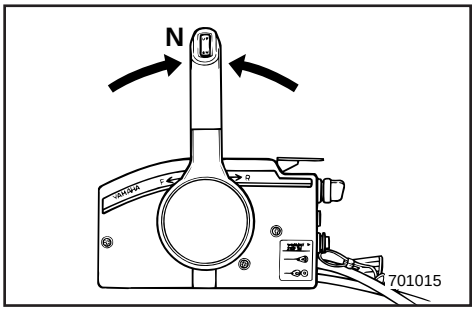
EMU00247

PROCEDURE FOR REMOTE CONTROL MODEL

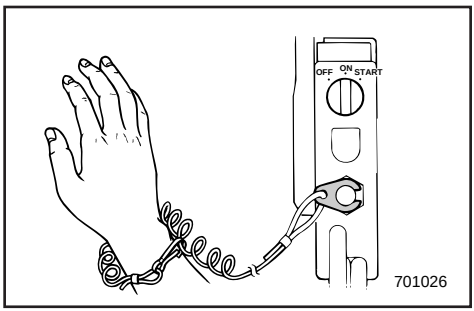
4) Place the remote control lever in the Neutral position.

NOTE:

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



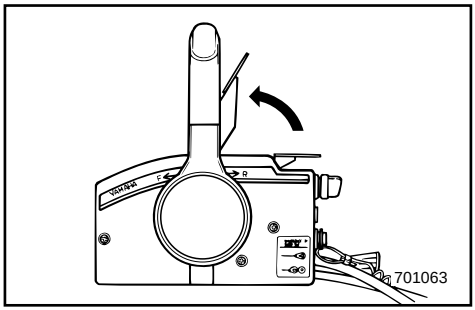
5) Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg. Then, install the lock plate on the other end of the lanyard in the engine stop switch.



⚠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 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".



EMU00945*

Electric Start Model

7) Open the throttle slightly lifting the neutral throttle lever upwards partially. You may need to change the throttle opening slightly depending on engine temperature.
   After the engine starts, return the throttle to the original position.

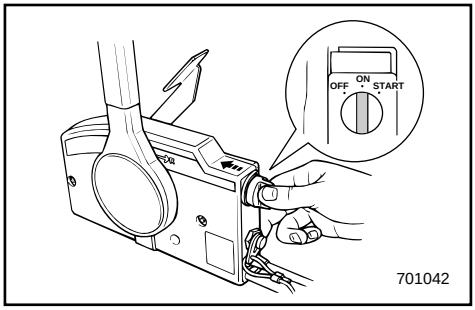
NOTE:

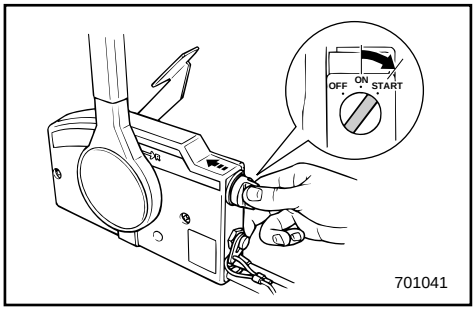
- As a starting point, lift the lever just until you feel resistance, then lift slightly more.
- The operation of the neutral throttle lever is possible only when the remote control lever is in "N".

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.

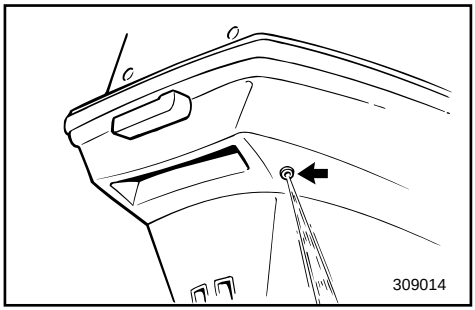




9) Turn the main switch to "START", and hold it for a maximum of 5 seconds.
10) Immediately after the engine starts, release the main switch to return it to "ON".

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 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, and then crank the engine again.**



EMG00010

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.)
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.

EMG20310

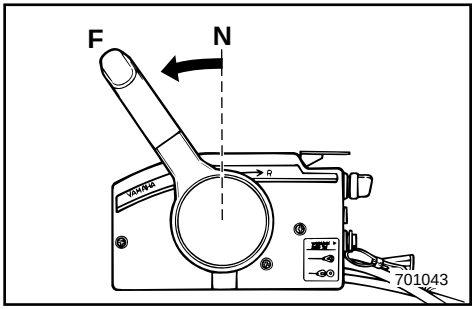
SHIFTING

⚠WARNING

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

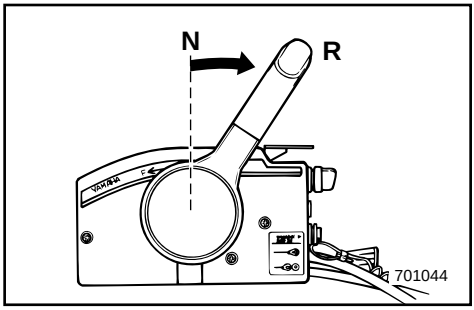
CAUTION:

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).



FORWARD

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



REVERSE

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

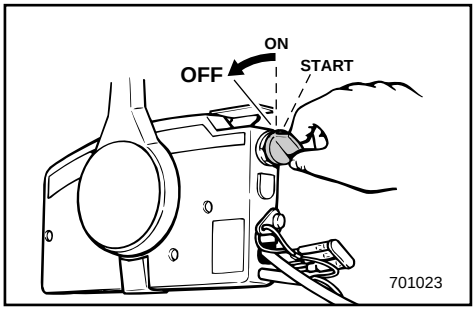
⚠WARNING

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.

EMG38010

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.



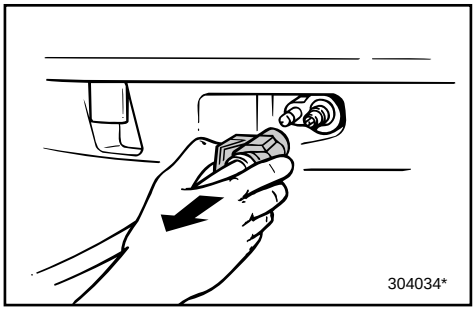
EMG41211

PROCEDURE

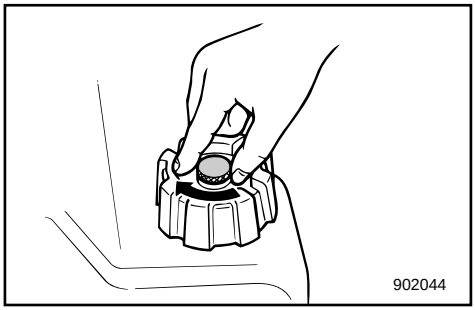
1) Turn the main switch to "OFF".

NOTE:

The engine can also be stopped by pulling the lanyard from the engine stop switch (then turning the main switch to "OFF").



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

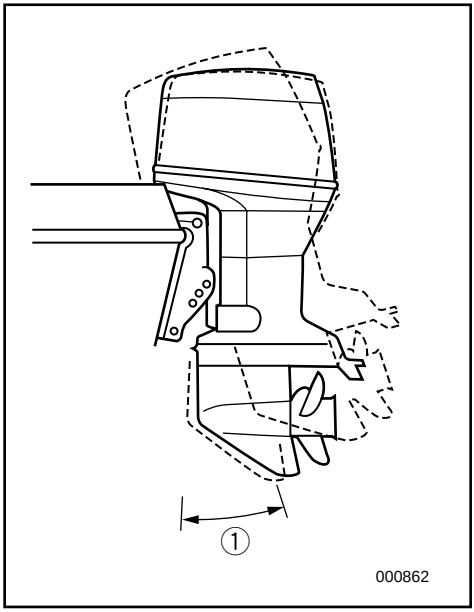


3) Tighten the air vent screw on the fuel tank cap after stopping the engine, if it is equipped.
4) Remove the key if the boat will be left unattended.

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

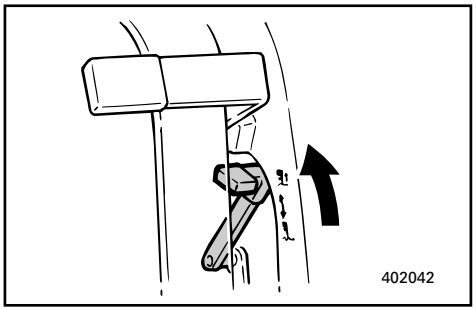
ADJUSTING TRIM ANGLE

EMU01145

Hydro-tilt Model

⚠WARNING

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



1) Stop the engine.
2) Place the tilt-lock lever in the release position.
3) Hold the rear of the top cowling with one hand and tilt the engine to the desired angle.
4) Place the tilt-lock lever back into the lock position to support the engine.

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

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

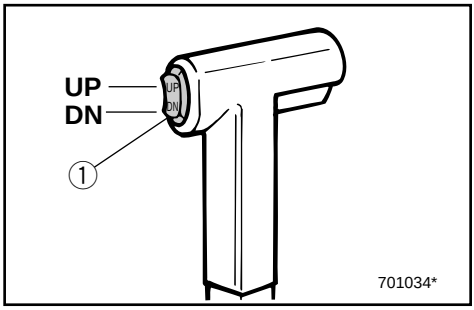
Make test runs with the trim set to different angles to find the position that works best for your boat and operating conditions.

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.

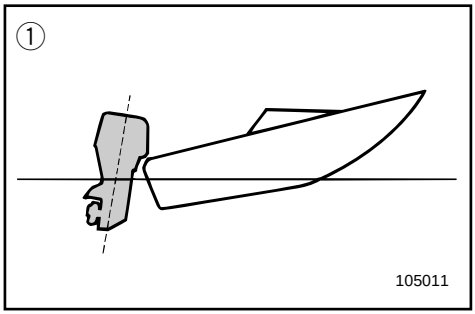
NOTE:

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.

EMU00282

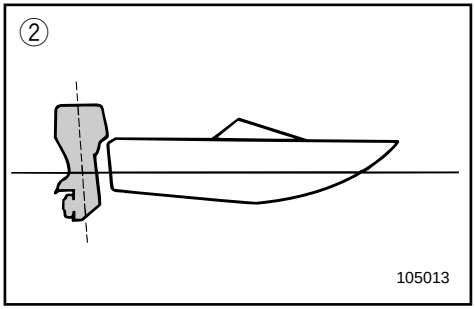
Bow Up

When the boat is on plane, a bow-up attitude result 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.



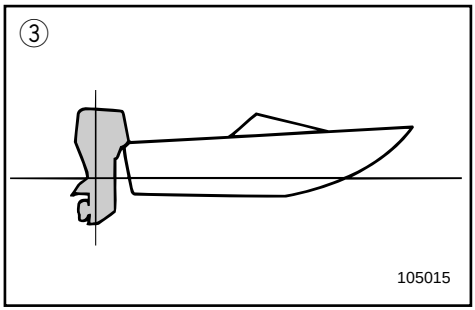
EMU00283

Bow Down

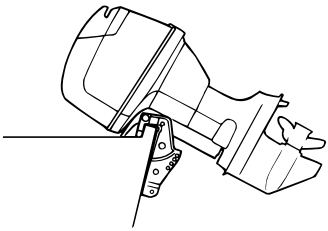
When the bow of the boat is down, it is easier to accelerate from a standing start onto plane.

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



000817

EMH10110

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:

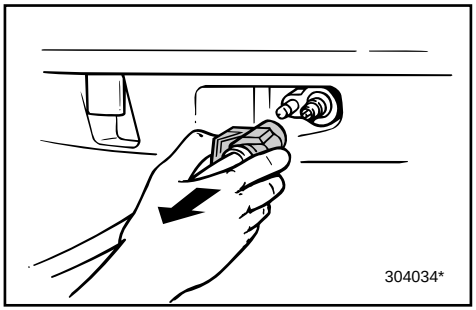
- **Before tilting the motor, follow the procedures under "STOPPING ENGINE". Never tilt the motor while the engine is running. Severe damage from overheating can result.**
- **Do not tilt up the engine by pushing the steering handle as this could break the handle.**
- **Keep the power unit higher than the propeller at all times. Otherwise, water can run into the cylinder, causing damage.**

⚠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.)

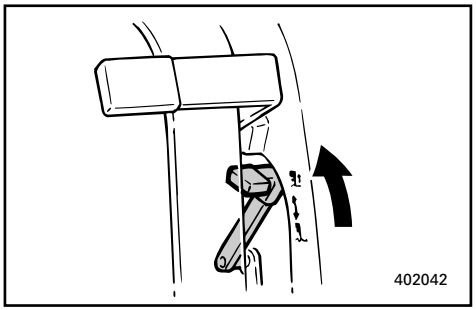


EMU00292

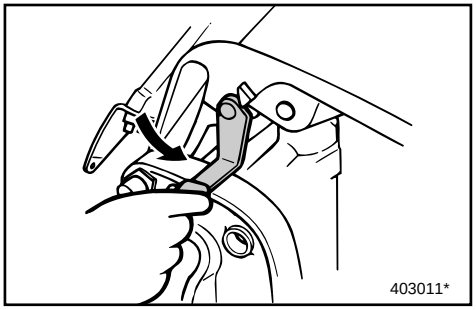
PROCEDURE FOR TILTING UP

Hydro-tilt model

1) Remove the fuel-line connection from the motor.



2) Place the tilt-lock lever in the release position.



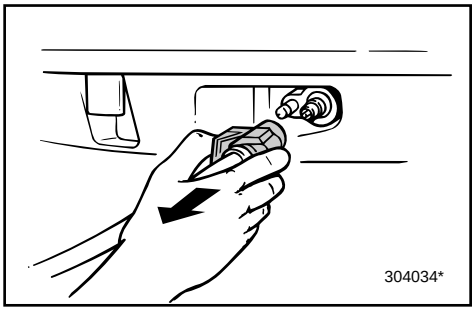
3) Hold the rear of the top cowling with one hand, tilt the engine up, and turn the tilt-support lever toward you and support the engine.

EMU00302

PROCEDURE FOR TILTING DOWN

Hydro-tilt model

1) Release the tilt support lever holding the rear of the top cowling with one hand.
2) Tilt the engine down.

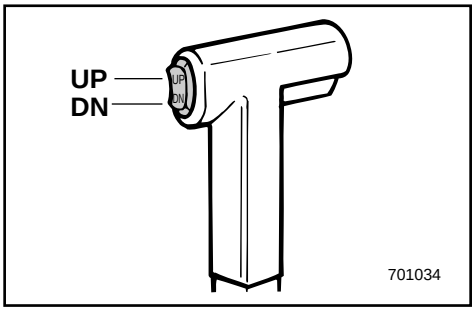


EMU00294

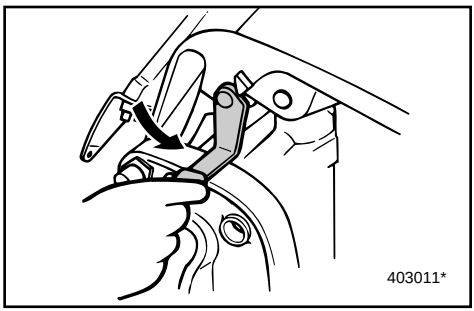
PROCEDURE FOR TILTING UP

Power trim/tilt model

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



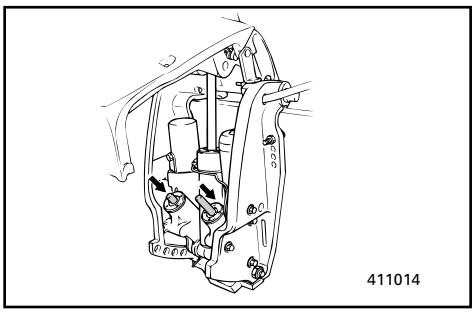
2) Push the power trim/tilt switch "UP" until the outboard has tilted up completely.



3) Turn the tilt-support lever toward you and support the engine.

⚠WARNING

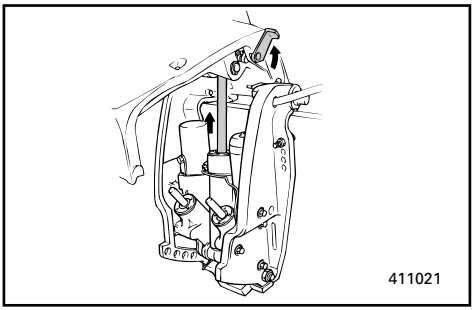
After tilting the engine, be sure to support it with the tilt-support lever. Otherwise, the engine could fall back down suddenly if oil in the power trim/tilt unit should lose pressure.



4) Once the engine is supported with the tilt-support lever, push the power trim/tilt switch 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/tilt mechanism.



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.

EMH60010

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:

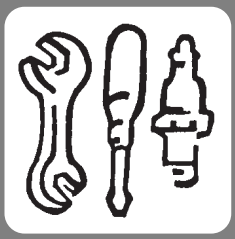
Refer to cooling system flushing instructions in "TRANSPORTING AND STORING OUTBOARD MOTOR".

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.

-MEMO-

E



EMK00010

Chapter 4
MAINTENANCE

4

EMK13010*

SPECIFICATION DATA

Item \ Model	Unit	60FET
DIMENSIONS		
●Overall Length	mm (in.)	713 (28.1)
●Overall Width	mm (in.)	364 (14.3)
●Overall Height L/X	mm (in.)	1,374 (54.1) / 1,501 (59.1)
●Tramson Height L/X	mm (in.)	521 (20.5) / 648 (25.5)
●Weight L/X	kg (lb.)	106 (234) / 109 (240)
PERFORMANCE		
●Full throttle operating range	r/min	4,500 ~ 5,500
●Maximum output	kW (HP)	44.1 (60.0) at 5,000 r/min
●Idling speed	r/min	750 ~ 850
ENGINE		
●Type		2-stroke, L
Number of cylinder		3
Displacement	cm^3 (cu.in.)	849 (51.81)
Bore × stroke	mm (in.)	72.0 × 72.0 (2.83 × 2.83)
●Ignition system		C.D.I system
●Spark plug	NGK	BR8HS-10
Spark plug gap	mm (in.)	0.9 ~ 1.0 (0.035 ~ 0.039)
●Control system		Remote control
●Starting system		Electric start
●Battery capacity	V-AH (kc)	12 - 70 (252) ~ 100 (360)
●Alternator output	V-Amp (W)	12 - 6
●Starting carburetion system		Choke valve start system
DRIVE UNIT		
●Gear positions		Forward-Neutral-Reverse
Gear ratio		2.33 (12 : 28)
●Trim/tilt system		Power trim / tilt
●Propeller mark		K
FUEL AND OIL		
●Fuel		Regular grade gasoline (petrol)
Fuel tank capacity		24 (6.3, 5.3)
●Recommended engine oil	L (US gal, Imp gal)	YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil
Oil tank capacity	L (US qt, Imp qt)	Remote : — Engine : —
●Fuel/oil ratio		1 : 50
●Recommended gearcase oil		Hypoid gear oil (SAE 90)
Gear oil capacity	cm^3 (US oz, Imp oz)	610 (20.6, 21.5)
TIGHTENING TORQUE		
●Spark plug	N•m (kgf•m, lb•ft)	25 (2.5, 18)
●Propeller nut	N•m (kgf•m, lb•ft)	35 (3.5, 25)

75AED	75AET	85AED
726 (28.6) 374 (14.7) 1,422 (56.0) / 1,548 (60.9) 521 (20.5) / 647 (25.5) 113 (249) / 116 (256)	726 (28.6) 374 (14.7) 1,422 (56.0) / 1,548 (60.9) 521 (26.5) / 647 (25.5) 121 (267) / 124 (273)	726 (28.6) 374 (14.7) 1,422 (56.0) / 1,548 (60.9) 521 (20.5) / 647 (25.5) 113 (249) / 116 (256)
4,500 ~ 5,500 55.2 at 5,000 r/min 750 ~ 850	4,500 ~ 5,500 55.2 (75.0) at 5,000 r/min 750 ~ 850	4,500 ~ 5,500 62.5 at 5,000 r/min 750 ~ 850
2-stroke, L 3 1,140 (69.57) 82.0 × 72.0 (3.23 × 2.83) C.D.I system BR8HS-10 0.9 ~ 1.0 (0.035 ~ 0.039) Remote control Electric start 12 - 70 ~ 100 (252 ~ 360) 12 - 10 Choke valve start system	2-stroke, L 3 1,140 (69.57) 82.0 × 72.0 (3.23 × 2.83) C.D.I system BR8HS-10 0.9 ~ 1.0 (0.035 ~ 0.039) Remote control Electric start 12 - 70 (252) ~ 100 (360) 12 - 10 Choke valve start system	2-stroke, L 3 1,140 (69.57) 82.0 × 72.0 (3.23 × 2.83) C.D.I system BR8HS-10 0.9 ~ 1.0 (0.035 ~ 0.039) Remote control Electric start 12 - 70 ~ 100 (252 ~ 360) 12 - 10 Choke valve start system
Forward-Neutral-Reverse 2.0 (13 : 26) Hydro K	Forward-Neutral-Reverse 2.0 (13 : 26) Power trim / tilt K	Forward-Neutral-Reverse 2.0 (13 : 26) Hydro K
Regular grade gasoline (petrol) 25 (6.60, 5.50) YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil Remote : — Engine : — 1 : 50 Hypoid gear oil (SAE 90) 610 (20.6, 21.5)	Regular grade gasoline (petrol) 24 (6.3, 5.3) YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil Remote : — Engine : — 1 : 50 Hypoid gear oil (SAE 90) 610 (20.6, 21.5)	Regular grade gasoline (petrol) 25 (6.60, 5.50) YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil Remote : — Engine : — 1 : 50 Hypoid gear oil (SAE 90) 610 (20.6, 21.5)
25 (2.5, 18) 35 (3.5, 25)	25 (2.5, 18) 35 (3.5, 25)	25 (2.5, 18) 35 (3.5, 25)

EMK13010*

SPECIFICATION DATA

Item \ Model	Unit	85AET
DIMENSIONS		
●Overall Length	mm (in.)	726 (28.6)
●Overall Width	mm (in.)	374 (14.7)
●Overall Height L/X	mm (in.)	1,422 (56.0) / 1,548 (60.9)
●Tramson Height L/X	mm (in.)	521 (20.5) / 647 (255)
●Weight L/X	kg (lb.)	121 (267) / 124 (273)
PERFORMANCE		
●Full throttle operating range	r/min	4,500 ~ 5,500
●Maximum outputt	kW (HP)	62.5 (85.0) at 5,000 r/min
●Idling speed	r/min	750 ~ 850
ENGINE		
●Type		2-stroke, L
Number of cylinder		3
Displacement	cm^3 (cu.in.)	1,140 (69.57)
Bore × stroke	mm (in.)	82.0 × 72.0 (3.23 × 2.83)
●Ignition system		C.D.I system
●Spark plug	NGK	BR8HS-10
Spark plug gap	mm (in.)	0.9 ~ 1.0 (0.035 ~ 0.039)
●Control system		Remote control
●Starting system		Electric start
●Battery capacity	V-AH (kc)	12 - 70 (252) ~ 100 (360)
●Alternator output	V-Amp (W)	12 - 10
●Starting carburetion system		Choke valve start system
DRIVE UNIT		
●Gear positions		Forward-Neutral-Reverse
Gear ratio		2.0 (13 : 26)
●Trim/tilt system		Power trim / tilt
●Propeller mark		K
FUEL AND OIL		
●Fuel		Regular grade gasoline (petrol)
Fuel tank capacity		24 (6.3, 5.3)
●Recommended engine oil	L (US gal, Imp gal)	YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil
Oil tank capacity	L (US qt, Imp qt)	Remote : — Engine : —
●Fuel/oil ratio		1 : 50
●Recommended gearcase oil		Hypoid gear oil (SAE 90)
Gear oil capacity	cm^3 (US oz, Imp oz)	610 (20.6, 21.5)
TIGHTENING TORQUE		
●Spark plug	N•m (kgf•m, lb•ft)	25 (2.5, 18)
●Propeller nut	N•m (kgf•m, lb•ft)	35 (3.5, 25)

115BET	—	—
828 (32.6) 600 (23.6) 1,435 (56.5) / — 516 (20.3) / — 156 (344) / —		
4,500 ~ 5,500 84.6 (115.0) at 5,000 r/min 700 ~ 800		
2-stroke, V 4 1,730 (105.57) 90.0 × 68.0 (3.54 × 2.68) C.D.I system BR8HS-10 0.9 ~ 1.0 (0.035 ~ 0.039) Remote control Electric start 12 - 70 (252) ~ 100 (360) 12 - 10 Choke valve start system		
Forward-Neutral-Reverse 2.0 (13 : 26) Power trim / tilt K		
Regular grade gasoline (petrol) 24 (6.3, 5.3) YAMALUBE, TWO STROKE MOTOR OIL FOR MARINE or an equivalent TC-W3 certified outboard oil Remote : — Engine : — 1 : 50 Hypoid gear oil (SAE 90) 760 (25.7, 26.8)		
25 (2.5, 18) 55 (5.5, 40)		

EMU01369

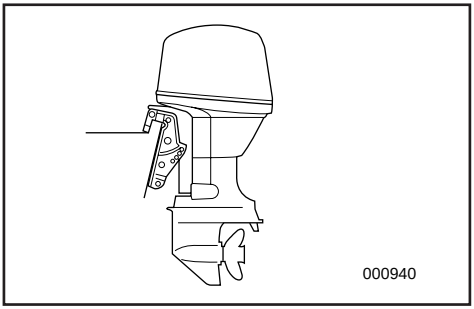
TRANSPORTING AND STORING OUTBOARD MOTOR

⚠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.

EMK17010

STORING OUTBOARD MOTOR

Procedure

1) Using fresh water, flush the cooling-water passages (Refer to "Flushing cooling system") and wash the motor body. (Refer to "MOTOR EXTERIOR").
2) Remove the fuel-line connections from the motor.
3) Run the engine at idling speed until the carburetor is empty.
4) Completely drain the water out of the outboard motor, and thoroughly clean the body.
5) Remove the spark-plug, pour a teaspoonful of clean engine oil into the cylinder, and replace the spark-plug.

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.**

EMK24110

Fuel Tank

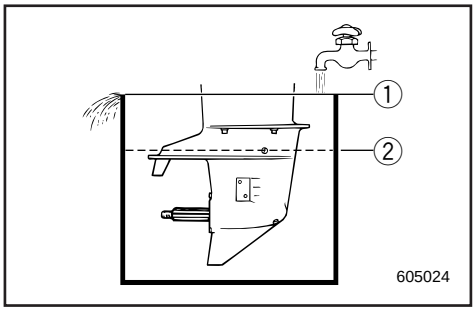
1) Drain the fuel from the tank for a long period of storage.
2) Store the fuel tank in a dry, well-ventilated place, not in direct sunlight.

EMK23511

Flushing cooling system

- **Flushing in a water tank**

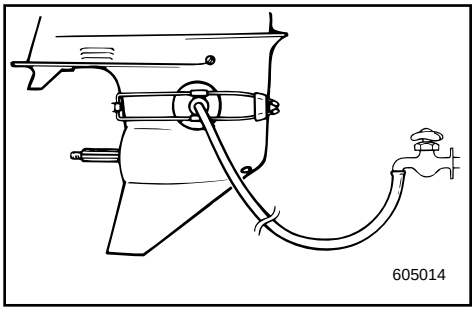
1) Fit the outboard motor on the water tank, and fill the tank with fresh water to above the level of the anti-cavitation plate.
2) Shift into Neutral, start the engine, and run at low speed for a few minutes.



CAUTION:

If the fresh water level is below the level of the anticavitation plate, or if the water supply is insufficient, engine seizure may occur.

① Water surface
② Lowest water level

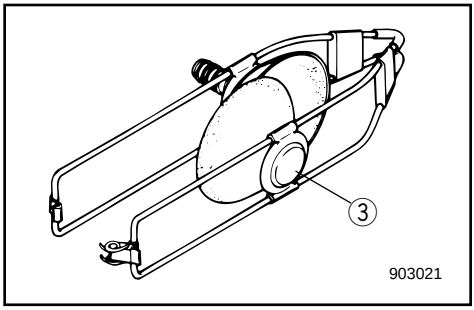


- **Flushing with the flushing attachment**

1) Fit the flushing attachment (option) in position on the lower casing, with rubber cups covering the water intake opening. The attachment must be installed from the front of the lower casing.
2) Connect a garden hose between the flushing attachment and the water tap.
3) Shift into "NEUTRAL", and start the engine while supplying water, then keep it running at low speed for a few minutes.

CAUTION:

Never operate the engine even momentarily without running cooling-water. Either the water pump will get damaged or the engine will overheat. Before starting the engine, be sure to install the flushing attachment and feed water.



⚠WARNING

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

③ Flushing attachment

EMK29010

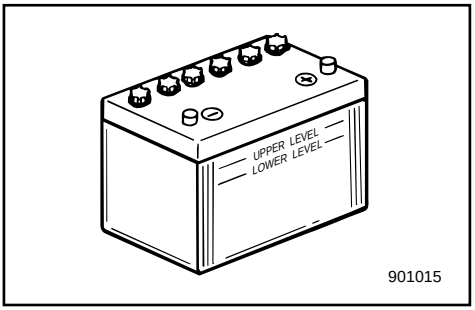
Battery Care

⚠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.

NOTE:

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.

EMK30110*

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.

EMK33011

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.

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		Refe page
		10 hours	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
Carburetor	Inspection/Adjustment	○		○		—
Fuel filter	Cleaning	●	●	●		4-15
Fuel system	Inspection	●		●		4-14
Fuel tank	Cleaning				●	4-28
Idling speed	Inspection/Adjustment	●		●		4-17
Coling water passages	Cleaning		●	●		4-9
Spark plug	Cleaning/Adjustment/Replacement	●	●	●		4-12
Power trim and tilt system*1	Inspection	●	●	●		4-21
Wiring & Connectors	Inspection/Reconnect	●	●	●		4-19
Exhaust leakage	Inspection	●	●	●		4-19
Water leakage	Inspection	●	●	●		4-19
Grease points	Greasing			●		4-20
Gear oil	Change	●		●		4-25
Bolts & Nuts	Retightening	○		○		4-32
Cowling clamp	Inspection				●	—
Anode	Inspection	●	○	○		4-28
Propeller	Inspection		●	●		4-23
Motor exterior	Inspection		●	●		4-32
Battery	Inspection	● (every month)				4-29

*1.....for Power trim and tilt/Power tilt model

NOTE:

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

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.

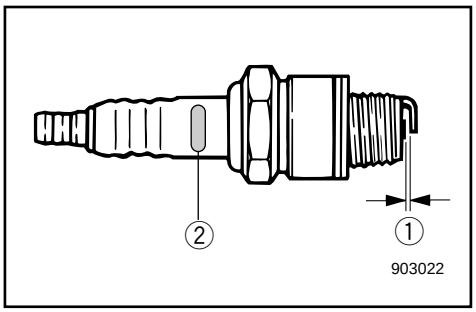
When fitting the plug, always clean the gasket surface and use a new gasket. Wipe off any dirt from the threads and screw in the spark plug to the correct torque.

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

NOTE:

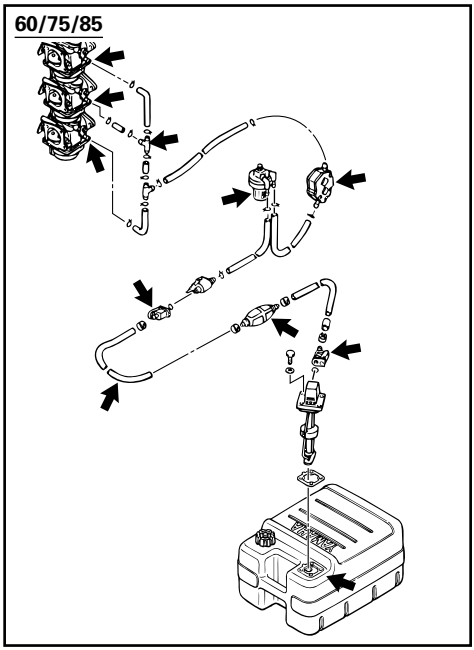
If a torque-wrench is not available when you are fitting a spark plug, a good estimate of the correct torque is 1/4 to 1/2 a turn past finger-tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque-wrench.

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)

60/75/85



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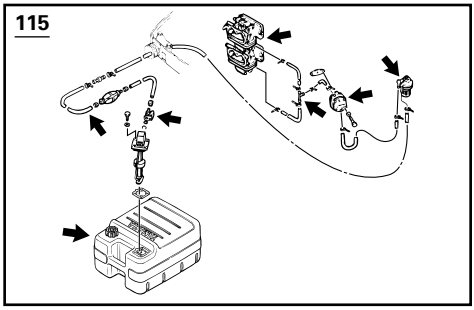


EMK38010

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.

Checking points

- 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.**

EMK50000

CLEANING FUEL FILTER

⚠WARNING

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

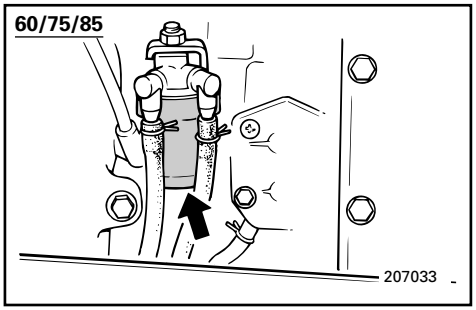
- **If you have any question about properly doing this procedure, consult your Yamaha dealer.**
- **Do not perform this procedure on a hot or running engine. Allow the engine to cool.**
- **There will be fuel in the fuel filter. Keep away from sparks, cigarettes, flames or other sources of ignition.**
- **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 can result in a fuel leak, which could result in a fire or explosion hazard.**

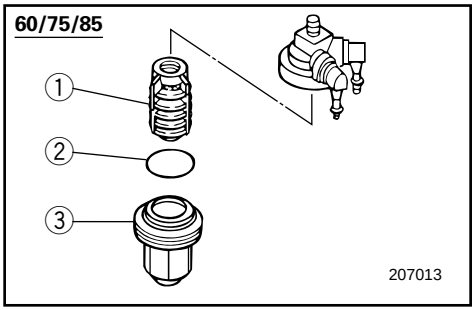
EMK50012

Cleaning the fuel filter

60/75/85

1) Remove the nut holding the fuel filter assembly if equipped.
2) Unscrew the filter cup, catching any spilled fuel in a rag.
3) Remove the filter element, and wash it in solvent.
   Allow it to dry. Inspect the filter element and O-ring to make sure they are in good condition. Replace them if necessary.
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.





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.

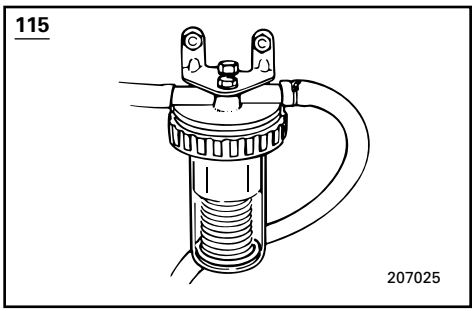
① Filter element
② O-ring
③ Filter cap
④ Filter housing

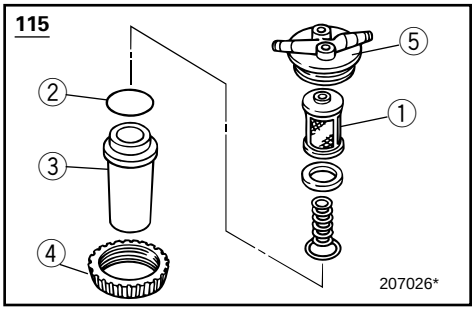
EMK50210*

Cleaning the fuel filter

115

1) Slightly loosen the filter cup ring nut.
2) Remove the filter cup, catching any spilled fuel in a rag.
3) Remove the filter element, and wash it in solvent.
   Allow it to dry. Inspect the filter element and O-ring to make sure they are in good condition. Replace them if necessary.
4) Reinstall the filter element in the cup. Make sure the O-ring in position in the cup. Insert the cup and O-ring into the filter housing. Firmly screw the ring nut onto the filter housing.
5) Run the engine and check the filter and lines for leaks.





① Filter element
② O-ring
③ Filter cap
④ Ring nut
⑤ Filter housing

NOTE:

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

EMK54110

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.**

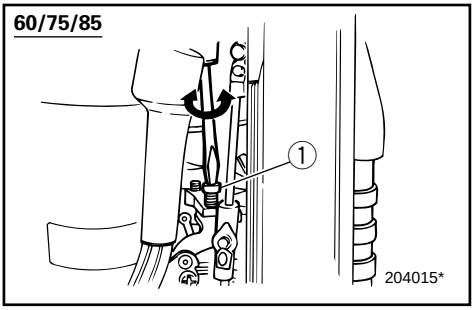
CAUTION:

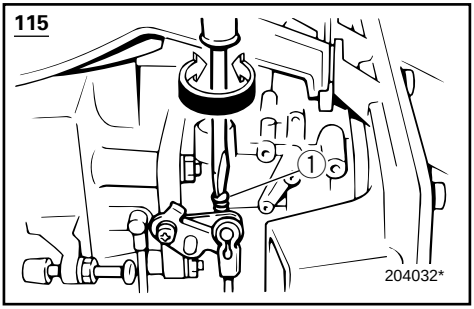
This procedure must be performed while the outboard motor is in the water. A flushing attachment or test tank can be used.

Procedure

NOTE:

A diagnostic tachometer should be used for this procedure.



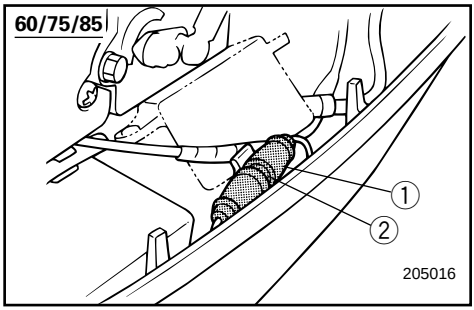


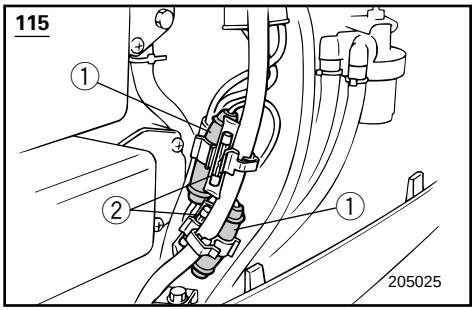
1) Start the engine and allow it to warm up fully in Neutral until it is running smoothly. If the outboard is mounted on a boat, be sure the boat is tightly moored.
2) Adjust the throttle stop-screw to set the idling speed to specification (see "SPECIFICATIONS") by turning the stop-screw clockwise to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

① Throttle stop-screw





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.

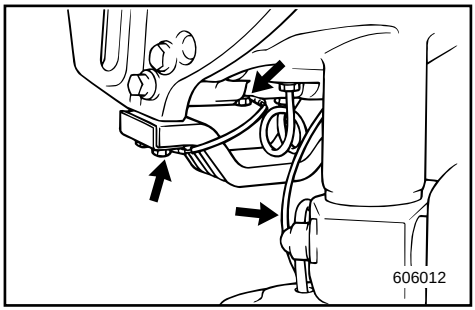
⚠WARNING

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)



EMK78010

CHECKING WIRING AND CONNECTORS

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

EXHAUST LEAKAGE

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

WATER LEAKAGE

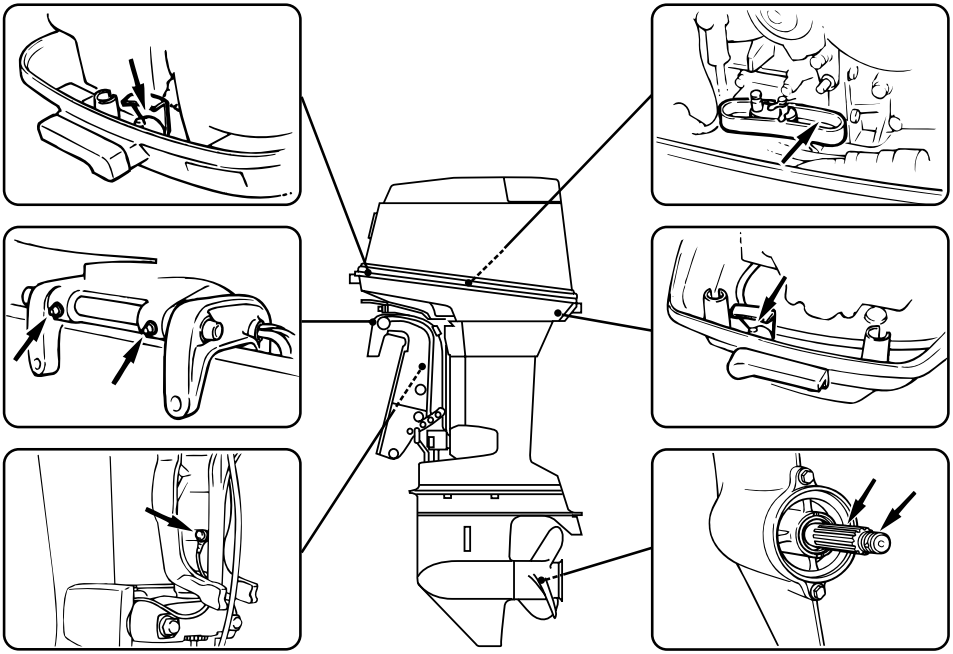
Start the engine and check that no water leaks from the joints between the exhaust cover, cylinder head and crank case.

EMU00909

GREASING E

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

60/75/85



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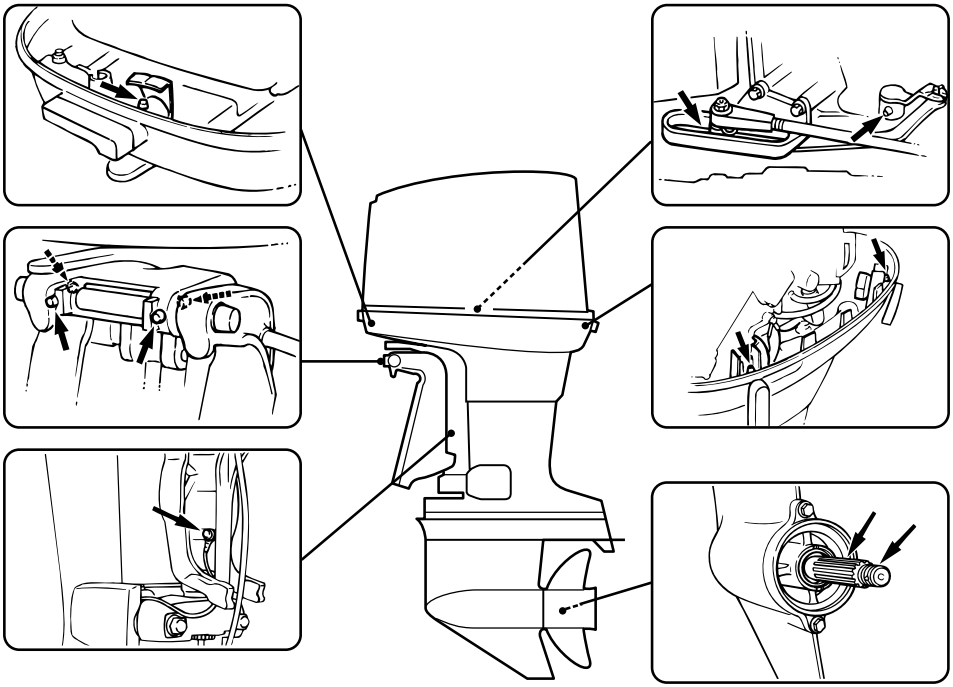
*1. For propeller shaft

EMU00909

GREASING E

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

115



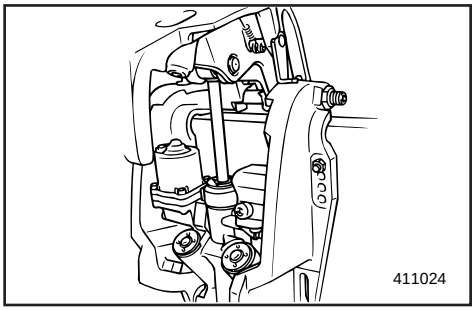
*1. For propeller shaft

EML02011

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.**

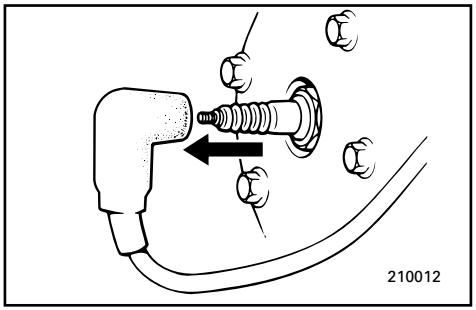


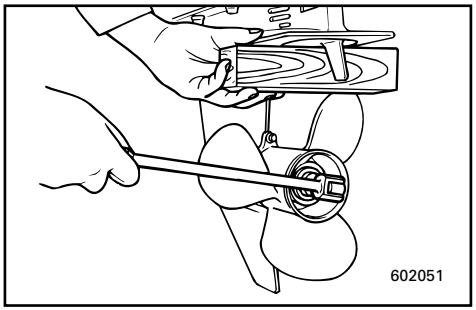
1) Check the power trim and tilt unit for any sign of oil leaks.
2) Operate each of the power trim and tilt switches on remote control and engine bottom cowling (If equipped) to check that all switches work.
3) Tilt up the motor and check that the tilt rod and trim rods are pushed out completely.
4) Use the tilt-support lever 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.

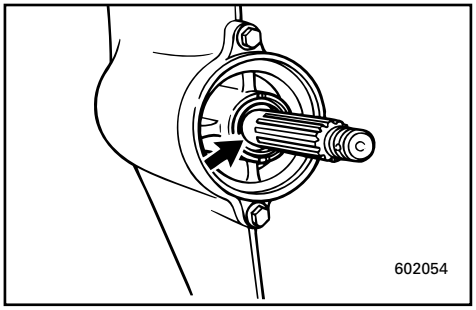
NOTE:

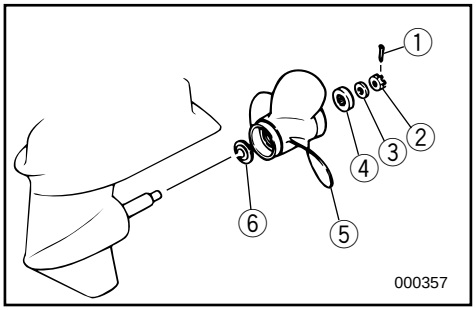
If any operation is abnormal, consult a Yamaha dealer.

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









EML08011*

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.**

1) Check each of the propeller blades for wear, erosion from cavitation or ventilation, or other damage.
2) Check the splines for wear and damage.
3) 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 ⑤and thrust washer ⑥.

EMU00397

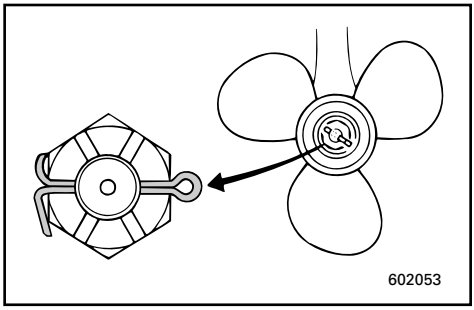
Installing the Propeller

CAUTION:

- **Be sure to install the thrust washer before installing propeller, otherwise, 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.


602053

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.

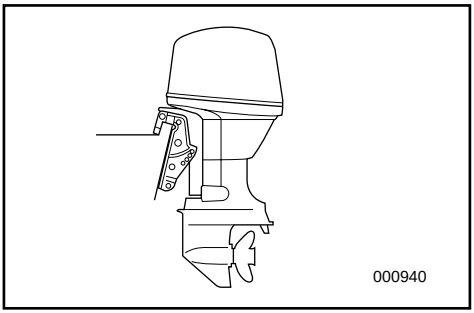
EML20010

CHANGING GEAR OIL

⚠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.

1) Put the outboard in a vertical position (not tilted).



⚠WARNING

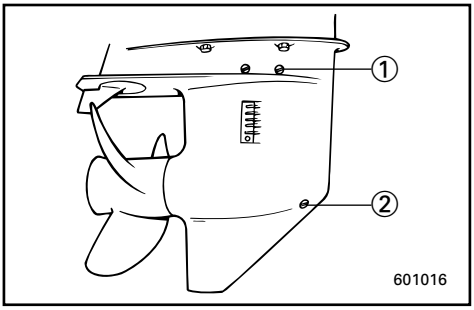
Be sure the outboard is securely fastened to the transom or a stable stand. You could be severely injured if the outboard falls on you.

2) Place a suitable container under the gearcase.
3) Remove the oil drain plug.

NOTE:

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

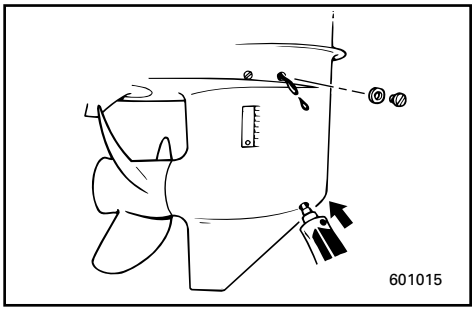
4) Remove the oil level plug to allow the oil to drain completely.



① Oil-level plug
② Oil drain-plug

CAUTION:

Inspect the used oil after it has been drained. If the oil is milky, water is getting into the gearcase 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 an vertical position, using a flexible or pressurized filling device, inject outboard motor hypoid gear oil (SAE 90) into the oil drain plug hole.

Gear oil capacity:
Refer to "SPECIFICATIONS", page 4-1.

6) When 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.

EML22010

CLEANING FUEL TANK

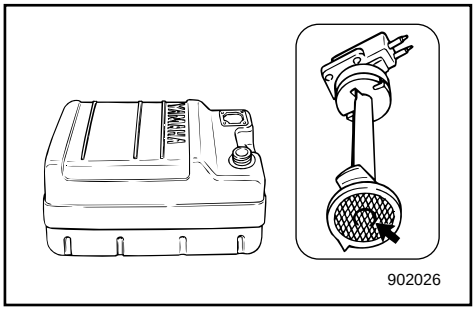
⚠WARNING

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.**

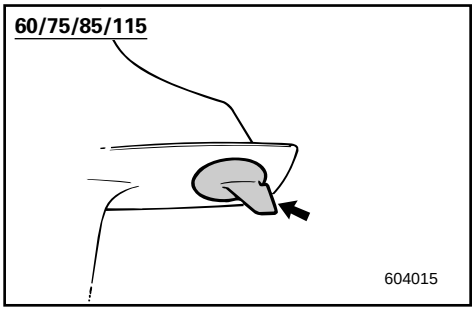
To clean the fuel tank:

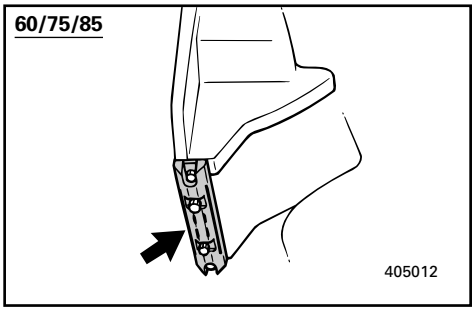
1) Empty the fuel tank into an approved gasoline (petrol) container.
2) Pour a small amount of suitable solvent in the tank. Reinstall the cap and shake the tank. Drain the solvent completely.

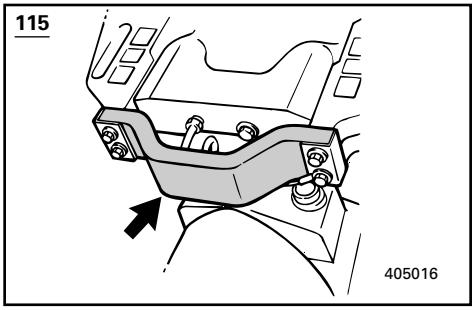


To clean the fuel filter:

1) Remove the screws holding the fuel meter 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 meter assembly and tighten the screws firmly.







EML24010

INSPECTING AND REPLACING ANODE

Yamaha outboard motor is protected from corrosion by a sacrificial anode(s).

Check the anode periodically. Remove the scales from surfaces of the anode.
For the replacement of the anode, consult a Yamaha dealer.

CAUTION:

Do not paint the anode, for this would render it ineffective.

EML26010

CHECKING BATTERY (for Electric start model)

⚠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[C4]Flush with water.**
- **EYES[C4]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.

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

CAUTION:

Ordinary tap-water contains minerals harmhul to a battery, and should not be used for topping-up.

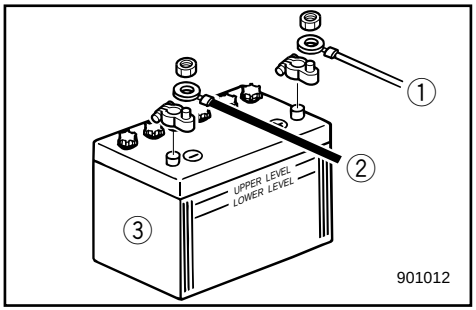
2) Keep the battery always in a good state of charge. Installing a voltmeter will help you monitor your battery. If you will not use the boat for a month or more, remove the battery from the boat and store it in a cool, dark place. Completely recharge the battery before using it.
3) If the battery will 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

⚠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

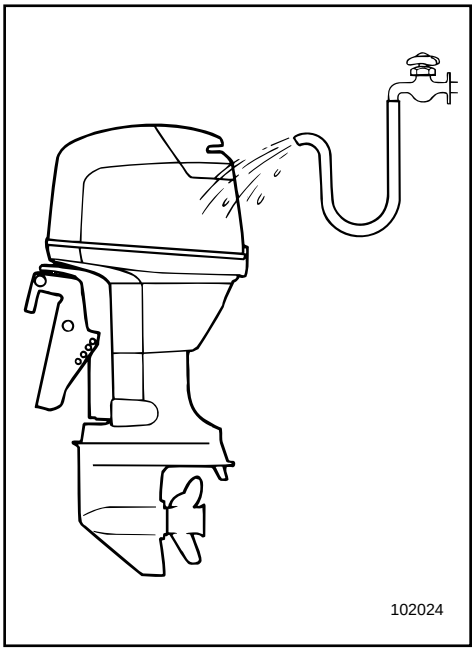
Disconnecting the Battery

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

EML40010

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 torques.
2) Check the tightening torques of other bolts and nuts.



EML42011

MOTOR EXTERIOR

Cleaning the Outboard Motor

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

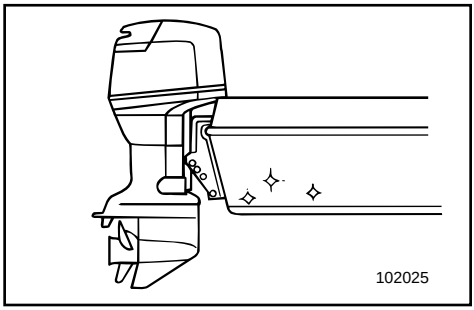
Cleaning cooling-water passages

NOTE:

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

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. Consult a Yamaha dealer for touch-up paint.



EML44010

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-

EMN00010

Chapter 5
TROUBLE RECOVERY

EMU01204

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.

Trouble	Possible Cause	Remedy
A. Starter will not operate.	1. Battery capacity weak or low. 2. Battery connections loose or corroded. 3. Fuse for electric start circuit blown. 4. Starter components faulty. 5. Engine stop switch lanyard not attached. 6. Shift lever in gear.	1. Check battery condition. Use battery of recommended capacity. 2. Tighten battery cables and clean battery terminals. 3. Check for cause of electric overload and repair. Replace fuse with one of correct amperage. 4. Have serviced by a Yamaha dealer. 5. Attach lanyard. 6. Shift to neutral.
B. Engine will not start (Starter operates).	1. Fuel tank empty. 2. Fuel contaminated or stale. 3. Fuel filter clogged. 4. Starting procedure incorrect. 5. Fuel pump malfunctions. 6. Spark plug(s) fouled or incorrect type. 7. Spark plug cap(s) fitted incorrectly. 8. Poor connections or damaged ignition wiring. 9. Ignition parts faulty. 10. Engine stop switch lanyard not attached. 11. Shift lever in gear. 12. Engine inner parts damaged.	1. Fill tank with clean, fresh fuel. 2. Fill tank with clean, fresh fuel. 3. Clean or replace filter. 4. Read "STARTING ENGINE" section. 5. Have serviced by a Yamaha dealer. 6. Inspect spark plug(s). Clean or replace with recommended type. 7. Check and re-fit cap(s). 8. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires. 9. Have serviced by a Yamaha dealer. 10. Attach lanyard. 11. Shift to neutral. 12. Have serviced by a Yamaha dealer.

Trouble	Possible Cause	Remedy
C. Engine idles irregularly or stalls.	1. Spark plug(s) fouled or incorrect type. 2. Fuel system obstructed. 3. Fuel contaminated or stale. 4. Fuel filter clogged. 5. Failed ignition parts. 6. Warning system activated. 7. Spark plug gap incorrect. 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.	1. Inspect spark plug(s). Clean or replace with recommended type. 2. Check for pinched or kinked fuel line or other obstructions in fuel system. 3. Fill tank with clean, fresh fuel. 4. Clean or replace filter. 5. Have serviced by a Yamaha dealer. 6. Find and correct cause of warning. 7. Inspect and adjust as specified. 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.

Trouble	Possible Cause	Remedy
D. Warning buzzer sounds or indicator lamp lights.	1. Cooling system clogged. 2. Engine oil level low. 3. Heat range of spark plug incorrect. 4. Specified engine oil not used. 5. Engine oil contaminated or deteriorated. 6. Oil filter clogged. 7. Oil feed/injection pump malfunctions. 8. Load on boat improperly distributed. 9. Water pump/thermostat faulty. 10. Excess water in fuel filter cup.	1. Check water intake for restriction. 2. Fill oil tank with specified engine oil. 3. Inspect spark plug and replace it with recommended type. 4. Check and replace oil with specified type. 5. Replace oil with fresh, specified type. 6. Have serviced by a Yamaha dealer. 7. Have serviced by a Yamaha dealer. 8. Distribute load to place boat on an even plane. 9. Have serviced by a Yamaha dealer. 10. Drain filter cup.
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.	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.

Trouble	Possible Cause	Remedy
E. Engine power loss.	13. Poor connections or damaged ignition wiring. 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. 21. Engine not responding properly to shift lever position.	13. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires. 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. 21. Have serviced by a Yamaha dealer.
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.

EMN20010

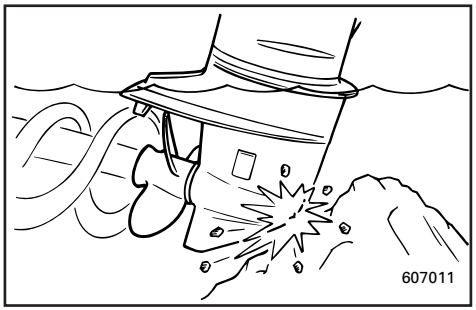
TEMPORARY ACTION IN EMERGENCY

EMH80010

IMPACT DAMAGE

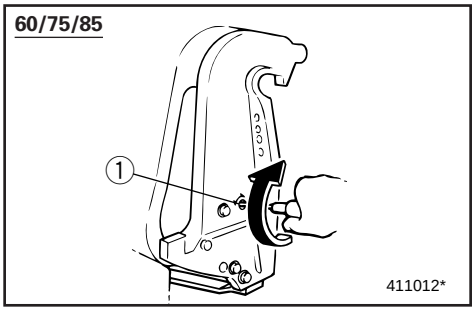
⚠WARNING

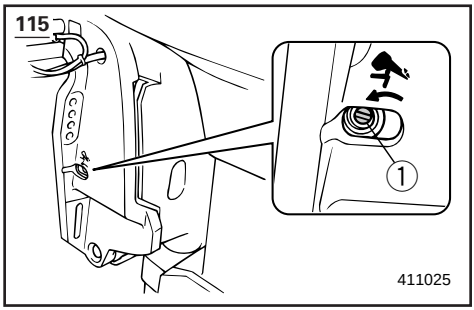
The outboard motor can be seriously damaged by a collision while operating or trailering. Damage could make the outboard motor unsafe to operate.



If the outboard motor hits any object in the water, follow the procedure below;

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





POWER TRIM/TILT WILL NOT OPERATE

60/75/85

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

115

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

① Manual valve screw

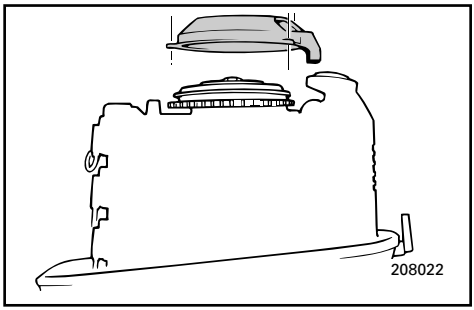
EMN30210

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.

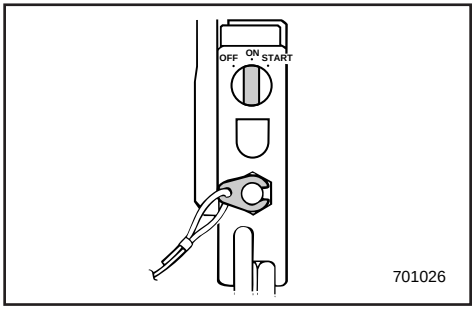
⚠WARNING

- **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 transmission 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.**



Procedure

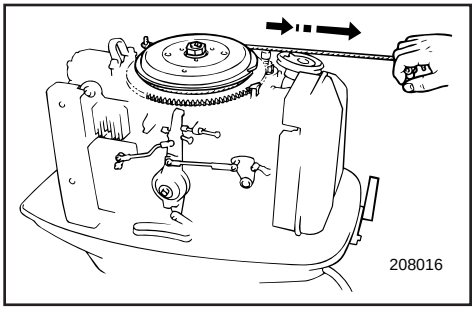
1) Remove the top cowling.
2) Remove the flywheel cover by removing the bolts.



3) Prepare the engine for starting. See "STARTING ENGINE" for procedures. Be sure the engine is in Neutral and that the lanyard is attached to the engine stop switch. The main switch must be on.

NOTE:

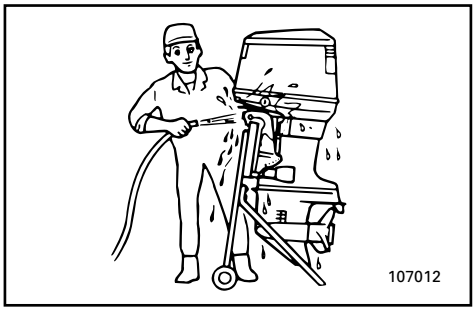
- In this case, choke switch will not operate. Pull out the choke knob when engine is cold.
- Without setting the main switch to "ON", it is impossible to start the engine.

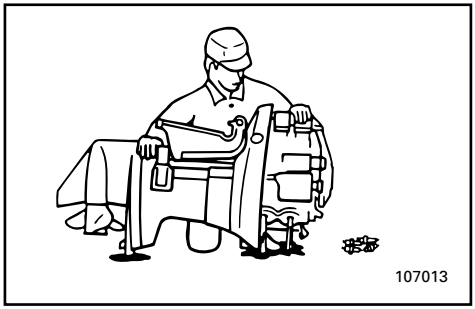


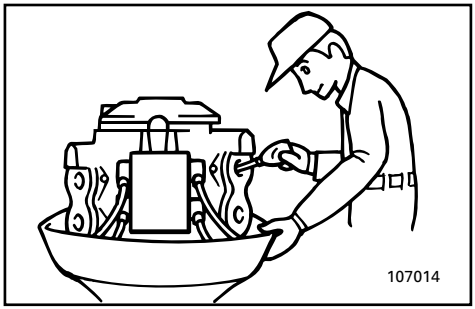
4) To start the engine with the emergency starter rope, insert the knotted end of the rope into the notch in the flywheel rotor and wind the rope several turns clockwise. Then, give a strong pull straight out to crank the engine. Repeat if necessary.

⚠WARNING

Do not install the top cowling when engine is running.







EMN50011

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 bellow for taking care to minimize engine damage.

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.
4) Feed fogging oil or engine oil through the carburetors and spark plug holes 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.

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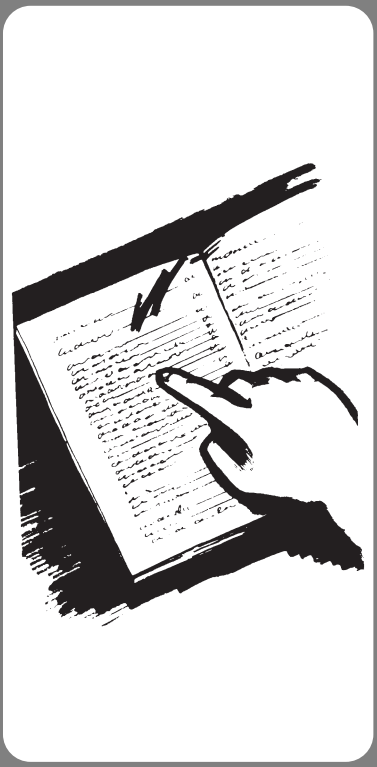
AtoZ



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Chapter 6
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