Watson Outboard Handbook

Thank you for purchasing your Watson outboard. We are sure you will be very happy with your purchase.
You must register your engine to obtain your warranty.

Watson outboard 2.5hp Quick start manual

What's in the box?

1x Watson Outboard
1x bottle SAE 10w-30 Oil
1x Tool Kit

Your Watson outboard has been shipped to you in the laying down position, this is because currently your engine has no fluids inside. The first thing you need to do is take note of the sticker on the outboard telling you which side to lay your engine down when it has been filled with fluids.
When transporting you engine in the laying down position please ensure it's either on its front with the propeller upwards, or laying on the tiller arm side.
Failure to do this can cause fuel to leak into the cylinder and oil to leak out of the engine.

Make sure you add the oil to the engine before you run it as this could cause unnecessary damage to the outboard.

Your new engine requires a period of 10 hours break in to allow mating services of moving parts to wear in evenly and protect the longevity of your engine.

Run the engine in water, underload in gear as follows. For breaking in the engine avoid extended idling, rough water and crowded areas.

1. For the first hour of operation run the engine at varying speeds up to 2000 rpm or approximately half throttle.
2. For the second hour of operation run the engine at 3000 rpm or approximately three quarter throttle.
3. Remaining eight hours run the engine at any speed. However avoid operating at full throttle for more than five minutes at a time.
4. After the first 10 hours you can operate the engine however you see fit.

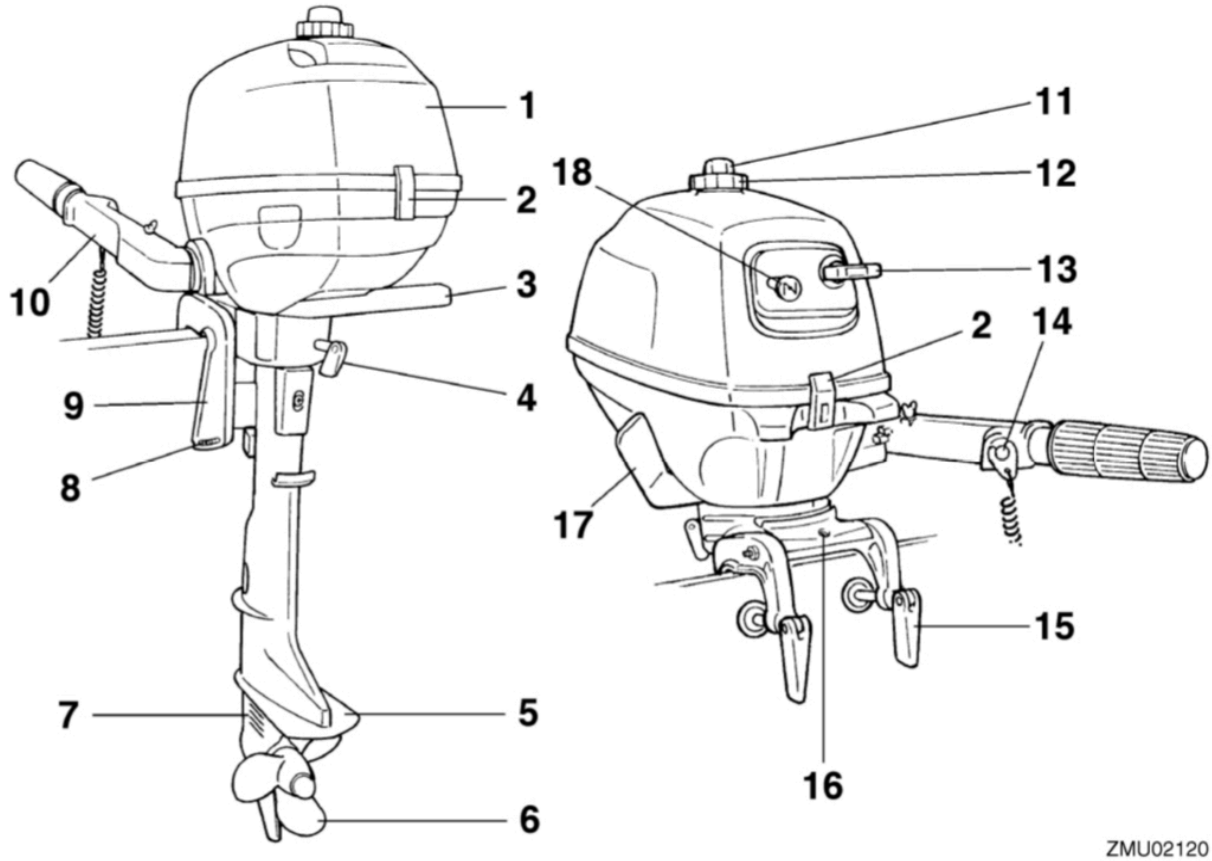
Basic components

EMU25797

Main components

NOTE:

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

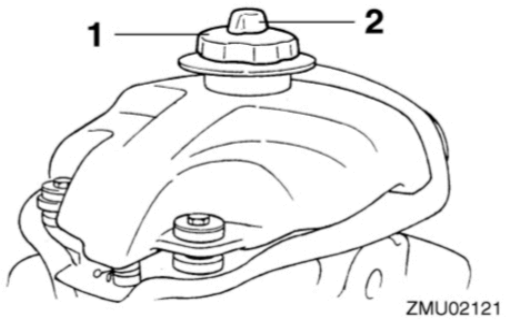


1. Top cowling
2. Top cowling lock lever
3. Carrying handle
4. Steering friction screw
5. Anti-cavitation plate
6. Propeller
7. Cooling water inlet
8. Trim rod
9. Clamp bracket
10. Tiller handle
11. Air vent screw
12. Fuel tank cap
13. Manual starter handle
14. Engine stop button/Engine stop lanyard switch
15. Clamp screw
16. Rope attachment
17. Gear shift lever
18. Choke knob

EMU25821

Fuel tank

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

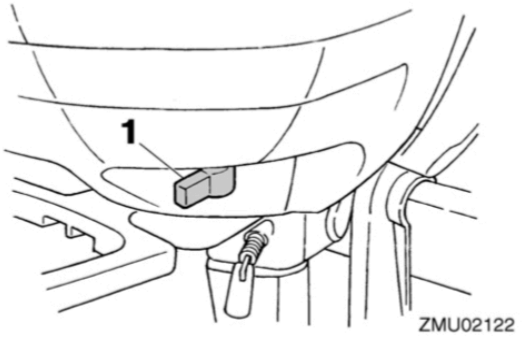


1. Fuel tank cap
2. Air vent screw

EMU25850
Fuel tank cap
This cap seals the fuel tank. When removed, the tank can be filled with fuel. To remove the cap, turn it counterclockwise.

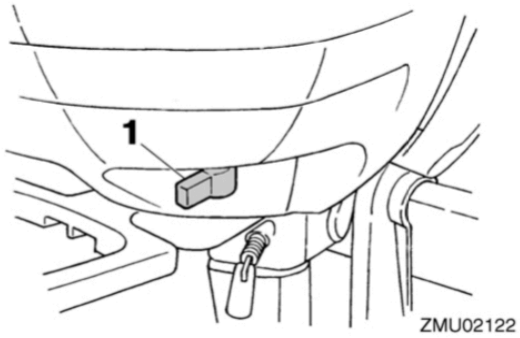
EMU25860
Air vent screw
This screw is on the fuel tank cap. To loosen the screw, turn it counterclockwise.

EMU25872
Fuel cock
The fuel cock turns on and off the supply of fuel from the fuel tank to the engine.



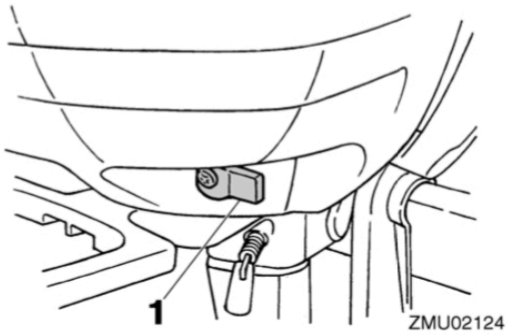
1. Fuel cock

EMU25881
Close
To stop fuel flow to the engine, turn the lever or knob to close position.
Always turn the lever or knob to close position when the engine is not running.



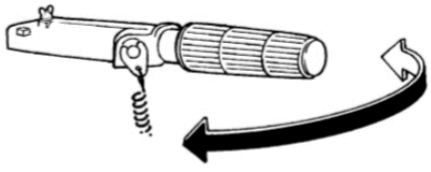
1. Close position

EMU25891
Open
With the lever/knob in this position, fuel flows to the carburetor.
Normal running is done with the lever/knob in this position.



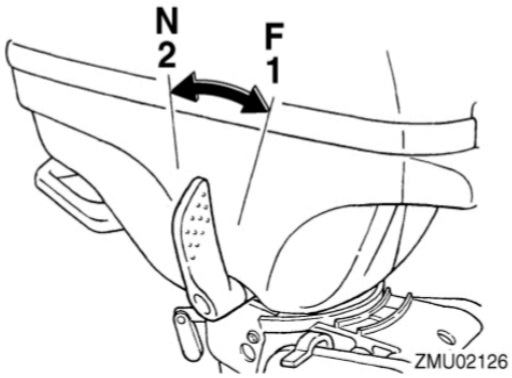
1. Open position

EMU25911
Tiller handle
To change direction, move the tiller handle to the left or right as necessary.



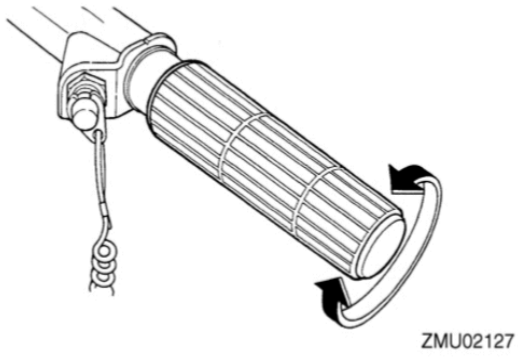
Basic components

EMU25930
Gear shift lever
Pulling the gear shift lever towards you puts the engine in forward gear so that the boat moves ahead.

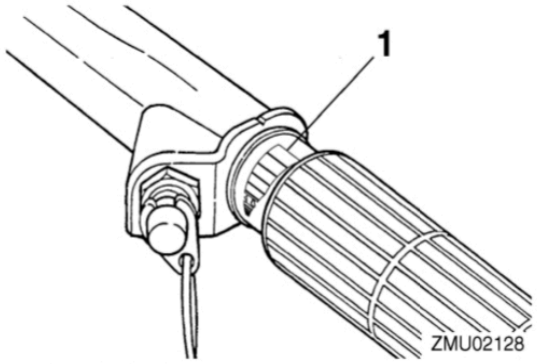


1. Forward "**F**"
2. Neutral "**N**"

EMU25941
Throttle grip
The throttle grip is on the tiller handle. Turn the grip counterclockwise to increase speed and clockwise to decrease speed.



EMU25961
Throttle indicator
The fuel consumption curve on the throttle indicator shows the relative amount of fuel consumed for each throttle position. Choose the setting that offers the best performance and fuel economy for the desired operation.

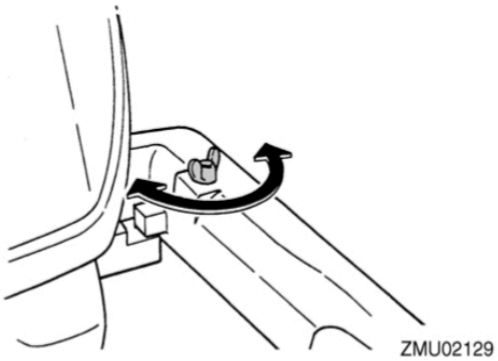


1. Throttle indicator

EMU25971
Throttle friction adjuster
A friction device provides adjustable resistance to movement of the throttle grip or the remote control lever, and can be set according to operator preference.
To increase resistance, turn the adjuster clockwise. To decrease resistance, turn the adjuster counterclockwise.

EWM00031
⚠ WARNING

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



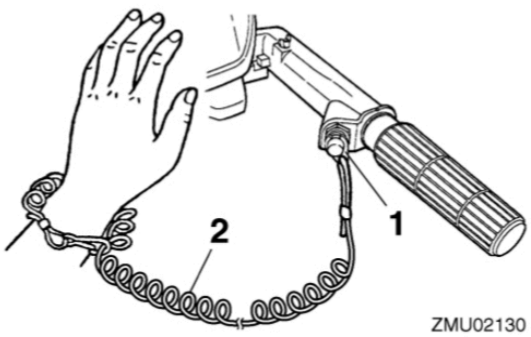
When constant speed is desired, tighten the adjuster to maintain the desired throttle setting.

EMU25990
Engine stop lanyard switch
The lock plate must be attached to the engine stop switch for the engine to run. The lanyard should be attached to a secure place on the operator's clothing, or arm or leg. Should the operator fall overboard or leave the helm, the lanyard will pull out the lock plate, stopping ignition to the engine. This will prevent the boat from running away under power.

EWM00120
⚠ WARNING

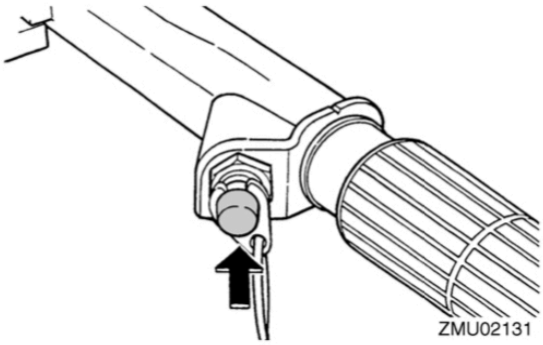
- **Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.**
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling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

NOTE:
The engine cannot be started with the lock plate removed.

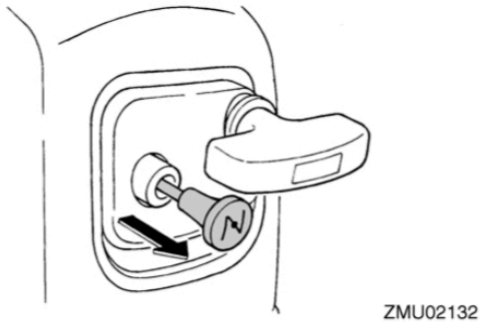


1. Lock plate
2. Lanyard

EMU26001
Engine stop button
To open the ignition circuit and stop the engine, push this button.

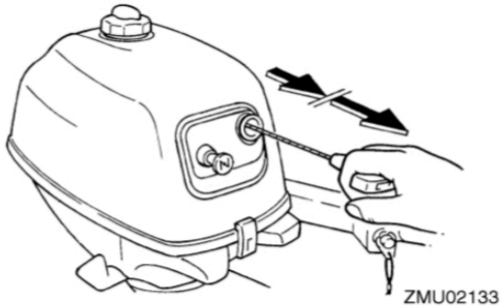


EMU26011
Choke knob for pull type
To supply the engine with the rich fuel mixture required to start, pull out this knob.

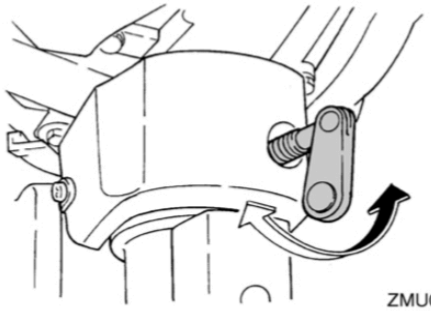


EMU26070
Manual starter handle
To start the engine, first gently pull the handle out until resistance is felt. From that position, then pull the handle straight out quickly to crank the engine.

Basic components


ZMU02133

EMU26122
Steering friction adjuster
A friction device provides adjustable resistance to the steering mechanism, and can be set according to operator preference. An adjusting screw or bolt is located on the swivel bracket.

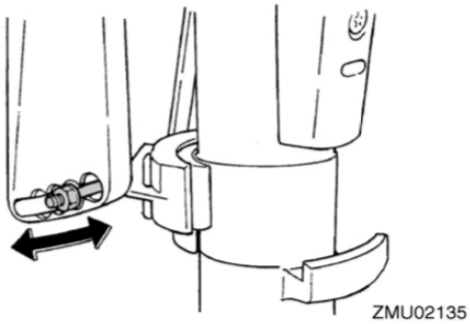

ZMU02134

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

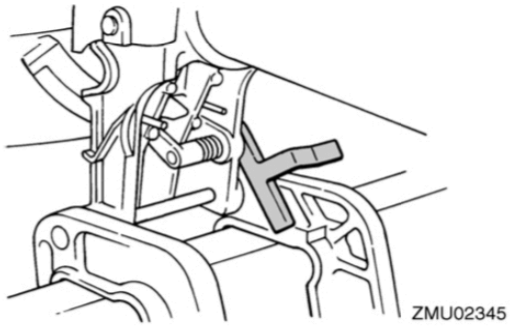
EWM00040
⚠ WARNING

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

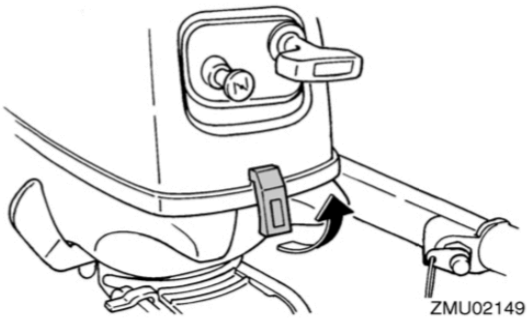
EMU26261
Trim rod (tilt pin)
The position of the trim rod determines the minimum trim angle of the outboard motor in relation to the transom.

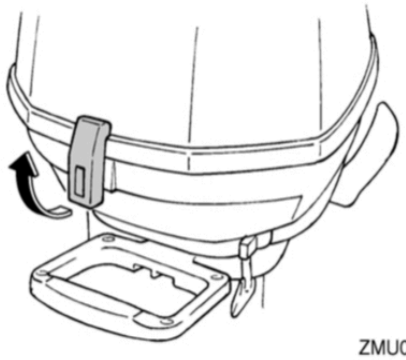

ZMU02135

EMU30200
Tilt support lever for manual tilt model
To keep the outboard motor in the tilted up position, lock the tilt support lever to the clamp bracket.


ZMU02345

EMU26382
Top cowling lock lever (pull up type)
To remove the engine top cowling, pull up the lock lever(s) and lift off the cowling. When installing the cowling, check to be sure it fits properly in the rubber seal. Then lock the cowling by moving the lever(s) downward.


ZMU02149

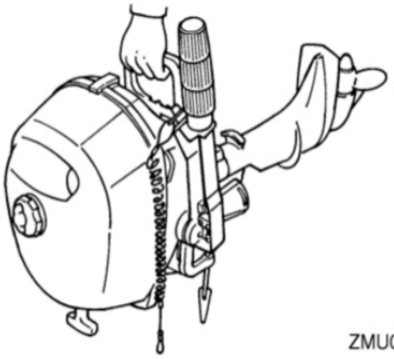


ZMU02150

EMU26450

Carrying handle

A carrying handle is provided on the rear of the outboard motor. It enables you to carry the outboard motor easily with one hand.



ZMU02152

EMU26901

Installation

ECM00110

CAUTION:

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

NOTE:

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

EMU26910

Mounting the outboard motor

EWM00820

WARNING

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

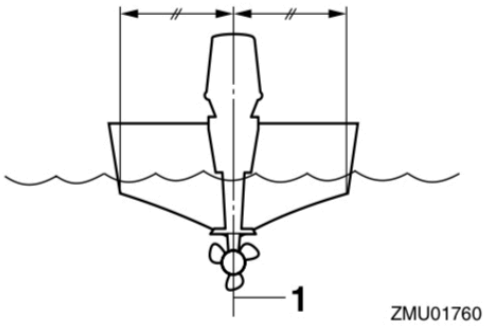
EWM00830

WARNING

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

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

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



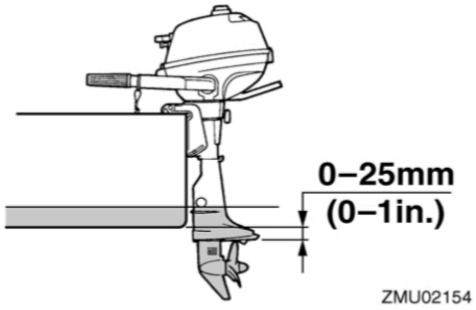
1. Center line (keel line)

EMU26920

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



NOTE:

- The optimum mounting height of the outboard motor is affected by the boat and motor combination and the desired use. Test runs at different heights can help determine the optimum mounting height. Consult your Yamaha dealer or boat manufacturer for further information on determining the proper mounting height.
- For instructions on setting the trim angle of the outboard motor, see page 25.

EMU26970

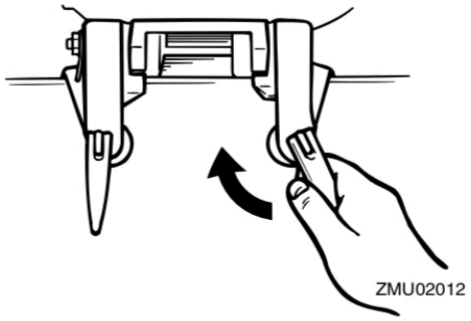
Clamping the outboard motor

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

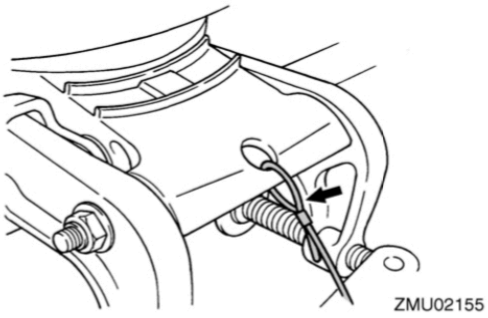
EWM00640

⚠ WARNING

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



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



3. Secure the clamp bracket to the transom using the bolts provided with the outboard (if packed). For details, consult your Yamaha dealer.

EWM00650

⚠ WARNING

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

EMU30173

Breaking in engine

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

ECM00800

CAUTION:

Failure to follow the break-in procedure could result in reduced engine life or even severe engine damage.

EMU27081

Procedure for 4-stroke models

Run the engine under load (in gear with a propeller installed) for 10 hours as follows.

1. First hour:
   Run the engine at 2000 r/min or at approximately half throttle.
2. Second hour:
   Run the engine at 3000 r/min or at approximately three-quarter throttle.
3. Remaining eight hours:
   Run the engine at any speed. However, avoid operating at full throttle for more than 5 minutes at a time.
4. After the first 10 hours:
   Operate the engine normally.

EMU27102

Preoperation checks

EWM00080

⚠ WARNING

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

ECM00120

CAUTION:

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

EMU31500

Fuel

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

EMU27130

Controls

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

EMU27140

Engine

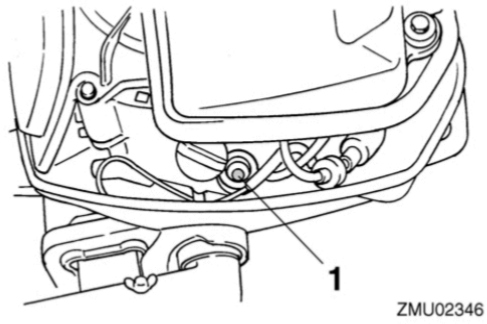
- Check the engine and engine mounting.
- Look for loose or damaged fasteners.
- Check the propeller for damage.

EMU30212

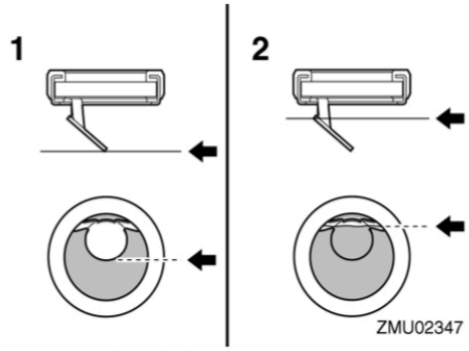
Checking the engine oil level

1. Put the outboard motor in an upright position (not tilted).
2. Check the oil level using the oil level check window to be sure the level falls between the upper and lower marks. Fill

with oil if it is below the lower mark, or drain to the specified level if it is above the upper mark.



1. Oil level check window



1. Lower level mark
2. Upper level mark

EMU30850

Filling fuel for built-in tank

EWM00060

⚠ WARNING

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

1. With the outboard motor tilted down (in the vertical running position), remove the fuel tank cap.
2. Use a funnel if the nozzle on the fuel can or pump is not small enough or long enough to fit into the mouth of the fuel tank.
3. Fill the fuel tank carefully.
4. Securely close the cap after refueling. Wipe up any spilled fuel.

Fuel tank capacity:
0.9 L (0.24 US gal) (0.20 Imp.gal)

EMU27270

Ring Free Fuel Additive

Gasoline is a precise blend of many different substances, each chosen to give certain characteristics. Gasoline blends have been changing in recent years in response to concerns about pollution and resulting emissions regulations. One of the most obvious changes has been the elimination of lead from most fuels.

As gasoline has changed, the amount of additives such as aromatics and oxygenates has increased. These additives are important for the engines in passenger cars, but they can have detrimental effects in marine engines, because of increased deposits in the combustion chamber. When enough deposits collect, piston rings begin sticking. Performance drops and engine wear increases dramatically.

While many additives available may reduce deposits, Yamaha recommends the use of **Ring Free Fuel Additive**, available from your Yamaha dealer. **Ring Free Fuel Additive** has repeatedly proven its ability to clean combustion deposits from inside the engine, notably the critical piston-ring-land area, and fuel system components. Follow product labeling for use instructions.

EMU27450

Operating engine

EMU31510

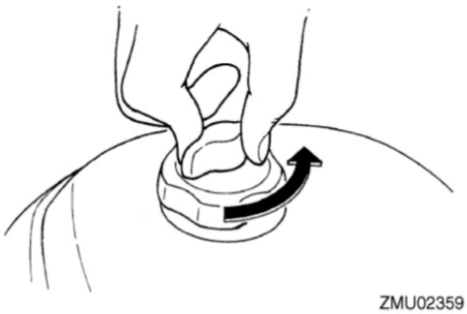
Feeding fuel

EWM00420

⚠ WARNING

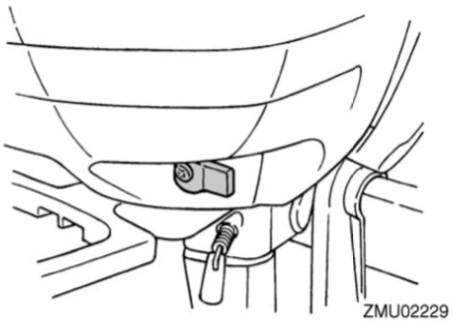
- **Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.**
- **When the air vent screw is loosened, gasoline vapor will be released. Gasoline is highly flammable, and its vapors are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

1. Loosen the air vent screw on the fuel tank cap by one turn.



ZMU02359

2. Open the fuel cock.



ZMU02229

EMU27490

Starting engine

EMU27522

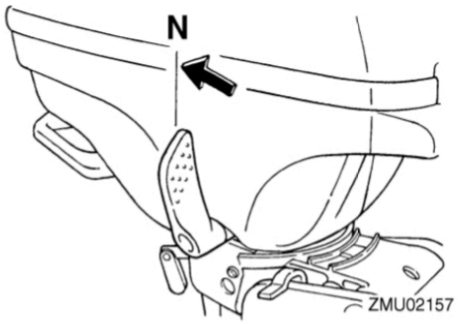
Manual start models

1. Place the gear shift lever in neutral.

EWM00110

⚠ WARNING

Always start the engine in neutral to avoid accidentally moving the boat.



ZMU02157

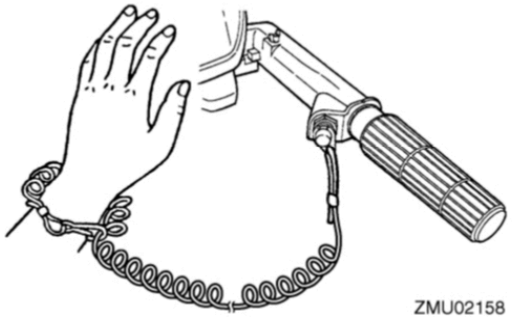
2. If the engine stop switch lanyard is equipped, attach it to a secure place on your clothing, or your arm or leg. Then install the lock plate on the other end of the lanyard into the engine stop switch.

EWM00120

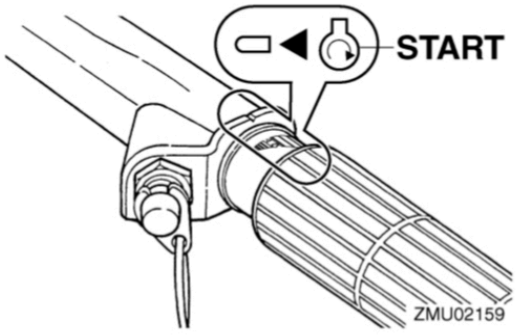
⚠ WARNING

- **Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating.**

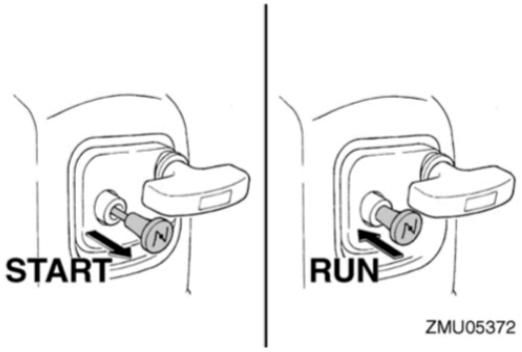
- **Do not attach the lanyard to clothing that could tear loose. Do not route the lanyard where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without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



3. Place the throttle grip in the "**START**" (start) position.



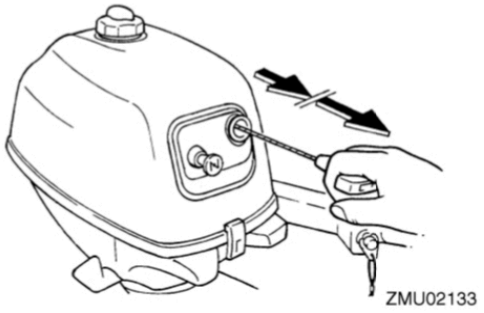
4. Place the choke knob in the "**START**" (start) position. After the engine starts, return the knob to the "**RUN**" (run) position.



NOTE:

- When restarting a warm engine, place the choke knob in the "**RUN**" (run) position.
- If the choke knob is left in the "**START**" (start) position while the engine is running, the engine will run poorly or stall.

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



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

NOTE:

- When the engine is cold, it needs to be warmed up. For further information, see page 23.

- If the engine does not start on the first try, repeat the procedure. If the engine fails to start after 4 or 5 tries, open the throttle a small amount (between 1/8 and 1/4) and try again. Also if the engine is warm and fails to start, open the throttle a same amount and try to start the engine again. If the engine still fails to start, see page 45.

EMU27670

Warming up engine

EMU27732

Manual start models

1. After starting the engine, return the choke knob to the halfway position. For approximately the first 5 minutes after starting, warm up the engine by operating at one fifth throttle or less. After the engine has warmed up, push the choke knob in fully. Failure to do so will shorten engine life.

NOTE:

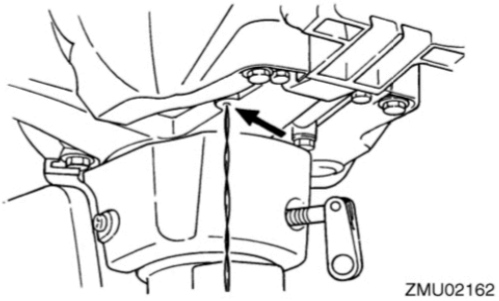
- If the choke knob is left pulled out after the engine starts, the engine will stall.
- In temperatures of -5°C or less, leave the choke knob pulled out fully for approximately 30 seconds after starting.

2. Check for a steady flow of water from the cooling water pilot hole.

ECM00511

CAUTION:

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



ZMU02162

EMU27740

Shifting

EWM00180

⚠ WARNING

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

ECM00220

CAUTION:

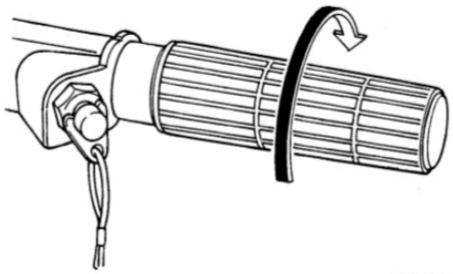
To change the boat direction or shifting position from forward to reverse or vice-versa, first close the throttle so that the engine idles (or runs at low speeds).

EMU27764

Forward (tiller handle and remote control models)

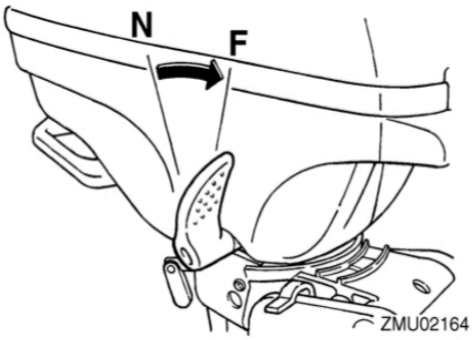
Tiller handle models

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



ZMU02163

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



ZMU02164

Remote control models

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

EMU27811

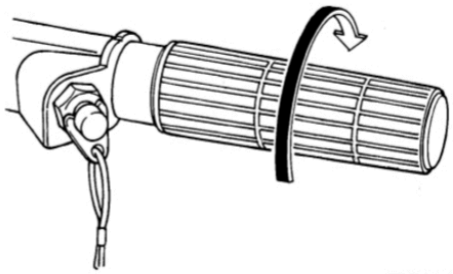
Reverse

EWM00190

⚠ WARNING

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

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

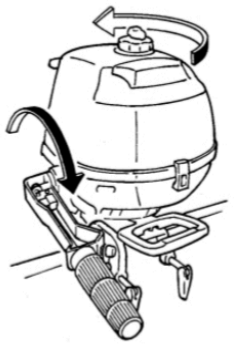


ZMU02163

2. Turn the outboard motor around 180°, and then move the tiller handle so that it is facing toward the bow.

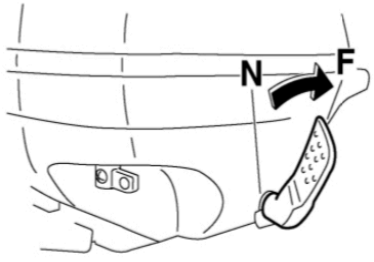
NOTE:

The outboard motor can be turned a full 360° in its bracket (full-pivot system).



ZMU02166

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



ZMU05373

Operation

EMU27820

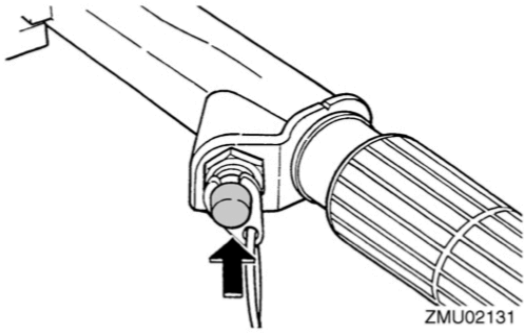
Stopping engine

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

EMU31520

Procedure

1. Push and hold the engine stop button until the engine comes to a complete stop.



2. After stopping the engine, tighten the air vent screw on the fuel tank cap and set the fuel cock to the closed position.

NOTE:

The engine can also be stopped by pulling the lanyard and removing the lock plate from the engine stop switch.

EMU27861

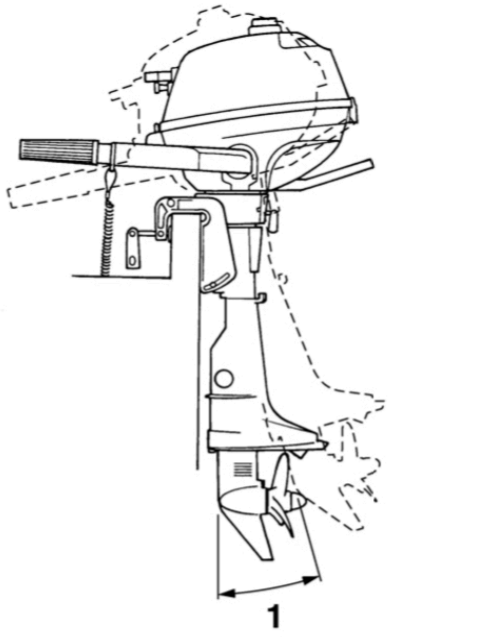
Trimming outboard motor

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

EWM00740

⚠ WARNING

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

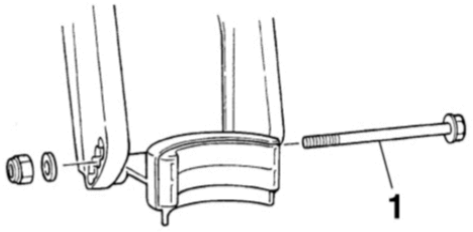


1. Trim operating angle

EMU27872
Adjusting trim angle for manual tilt models

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

1. Stop the engine.
2. Tilt the outboard motor up, and then remove the trim rod from the clamp bracket.



ZMU02169

1. Trim rod

3. Reposition the rod in the desired hole.

To raise the bow ("trim-out"), move the rod away from the transom.

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

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

EWM00400

⚠ WARNING

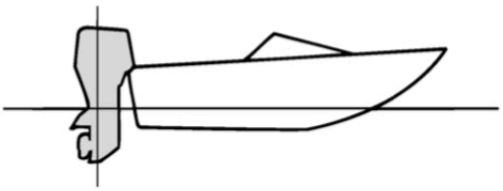
- **Stop the engine before adjusting the trim angle.**
- **Use care to avoid being pinched when removing or installing the rod.**
- **Use caution when trying a trim position for the first time. Increase speed gradually and watch for any signs of instability or control problems. Improper trim angle can cause loss of control.**

NOTE:

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

EMU27911
Adjusting boat trim

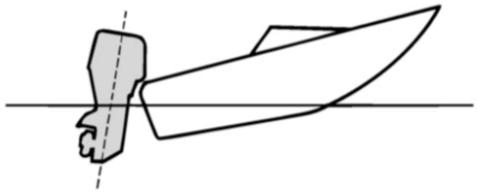
When the boat is on plane, a bow-up attitude results in less drag, greater stability and efficiency. This is generally when the keel line of the boat is up about 3 to 5 degrees. With the bow up, the boat may have a greater tendency to steer to one side or the other. Compensate for this as you steer. The trim tab can also be adjusted to help offset this effect. When the bow of the boat is down, it is easier to accelerate from a standing start onto plane.



ZMU01784

Bow Up

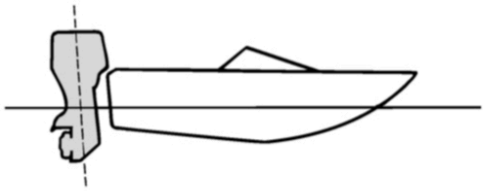
Too much trim-out puts the bow of the boat too high in the water. Performance and economy are decreased because the hull of the boat is pushing the water and there is more air drag. Excessive trim-out can also cause the propeller to ventilate, which reduces performance further, and the boat may "porpoise"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



ZMU01785

Bow Down

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



ZMU01786

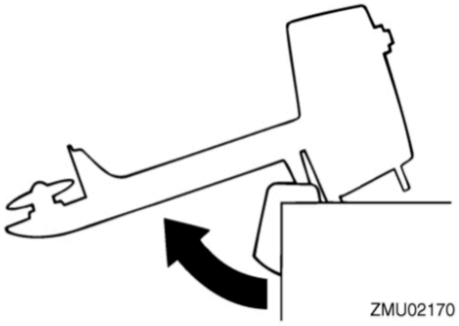
NOTE:

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

EMU27921

Tilting up and down

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



ZMU02170

EWM00220

⚠ WARNING

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

EWM00230

⚠ WARNING

Leaking fuel is a fire hazard. Tighten the air vent screw and place the fuel cock in the closed position if the outboard motor will be tilted for more than a few minutes. Otherwise fuel may leak.

ECM00231

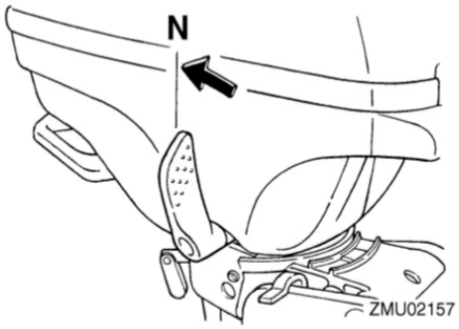
CAUTION:

- **Before tilting the outboard motor, follow the procedure under “Stopping engine” in this chapter. Never tilt the outboard motor while the engine is running. Severe damage from overheating can result.**
- **Do not tilt up the engine by pushing the tiller handle because this could break the handle.**
- **Keep the power unit higher than the propeller at all times. Otherwise water could run into the cylinder and cause damage.**
- **The outboard motor cannot be tilted when in reverse or when the outboard motor is turned 180° (facing the rear).**

EMU27964

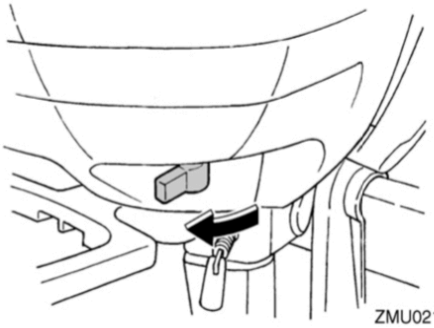
Procedure for tilting up (manual tilt models)

1. Place the gear shift lever in neutral (if equipped) and face the outboard motor forward.

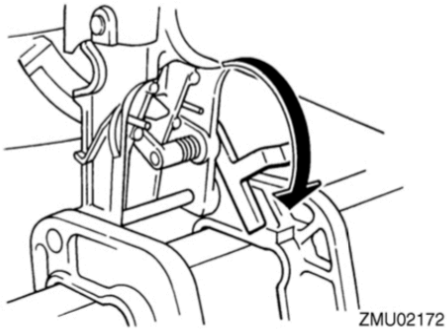


2. On full-pivot system models, tighten the steering friction adjuster by turning it clockwise to prevent the motor from turning freely.
3. Tighten the air vent screw. On models equipped with a fuel joint, disconnect the fuel line from the outboard motor.

4. Close the fuel cock.



5. Tilt support bar equipped models: Hold the rear of the top cowling or the rear handle (if equipped) with one hand and tilt the outboard motor up fully until the tilt support bar automatically locks.
6. Tilt support knob equipped models: Hold the rear of the top cowling with one hand, fully tilt the outboard motor up, and push the tilt support knob into the clamp bracket.
7. Tilt support lever equipped models: Hold the rear handle and tilt the engine up fully until the tilt support lever automatically locks.



NOTE:

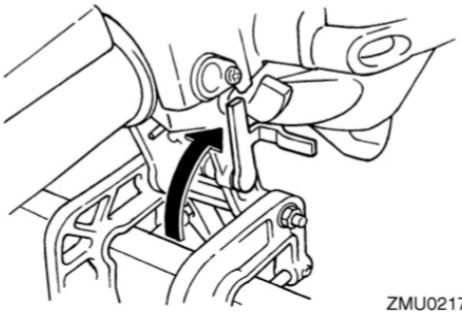
Tilt support lever/bar equipped models: If the motor is not facing forward, the tilt support lever/bar cannot automatically turn to the

locked position. If the tilt support lever/bar does not automatically lock, swing the motor a little to the left and right.

EMU28032

Procedure for tilting down (manual tilt models)

1. Slightly tilt the outboard motor up.
2. If equipped with the tilt support bar: Slowly tilt the outboard motor down while pulling the tilt support bar lever up.
3. If equipped with the tilt support knob: Pull the knob out, and then slowly tilt the outboard motor down.
4. If equipped with the tilt support lever: Slowly tilt the outboard motor down while pulling the tilt support lever up.



ZMU02173

5. Loosen the steering friction adjuster by turning it counterclockwise, and adjust the steering friction according to operator preference.

EWM00720

⚠ WARNING

If there is too much resistance it could be difficult to steer, which could result in an accident.

EMU31480

Specifications

NOTE:

"(AL)" stated in the specification data below represents the numerical value for the aluminum propeller installed.

Likewise, "(SUS)" represents the value for stainless steel propeller installed and "(PL)" for plastic propeller installed.

EMU28218

Dimension:

Overall length:
623 mm (24.5 in)
Overall width:
345 mm (13.6 in)
Overall height S:
1021 mm (40.2 in)
Transom height S:
432 mm (17.0 in)
Weight (AL) S:
17.0 kg (37 lb)

Performance:

Full throttle operating range:
5250–5750 r/min
Maximum output:
1.8 kW@5500 r/min (2.5 HP@5500 r/min)
Idling speed (in neutral):
1900 ±100 r/min

Engine:

Type:
4-stroke S
Displacement:
72.0 cm^3 (4.39 cu.in)
Bore × stroke:
54.0 × 31.5 mm (2.13 × 1.24 in)
Ignition system:
TCI
Spark plug (NGK):
BR6HS
Spark plug gap:
0.6–0.7 mm (0.024–0.028 in)
Control system:
Tiller
Starting system:
Manual
Starting carburetion system:
Choke valve
Valve clearance (cold engine) IN:
0.08–0.12 mm (0.0032–0.0047 in)
Valve clearance (cold engine) EX:
0.08–0.12 mm (0.0032–0.0047 in)

Drive unit:

Gear positions:
Forward-neutral
Gear ratio:
2.08 (27/13)
Trim and tilt system:
Manual tilt
Propeller mark:
BS

Fuel and oil:

Recommended fuel:
Regular unleaded gasoline
Min. pump octane:
86
Fuel tank capacity (built in type):
0.9 L (0.24 US gal) (0.20 Imp.gal)
Recommended engine oil:
4-stroke outboard motor oil
Engine oil grade API:
API SE, SF, SG, SH, SJ, SL
Engine oil type SAE:
SAE10W30 or SAE10W40
Lubrication:
Wet sump
Engine oil quantity (excluding oil filter):
0.35 L (0.37 US qt) (0.31 Imp.qt)
Recommended gear oil:
Hypoid gear oil SAE#90
Gear oil quantity:
75.0 cm^3 (2.54 US oz) (2.65 Imp.oz)

Tightening torque for engine:

Spark plug:
25.0 Nm (18.4 ft-lb) (2.55 kgf-m)
Engine oil drain bolt:
18.0 Nm (13.3 ft-lb) (1.84 kgf-m)

EMU28222

Transporting and storing outboard motor

EWM00690

⚠ WARNING

- **Leaking fuel is a fire hazard. When transporting and storing the outboard motor, close the air vent screw and fuel cock to prevent fuel from leaking.**
- **USE CARE when transporting fuel tank, whether in a boat or car.**
- **DO NOT fill fuel container to maximum capacity. Gasoline will expand considerably as it warms up and can build up pressure in the fuel container. This can cause fuel leakage and a potential fire hazard.**

EWM00700

⚠ WARNING

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

ECM00660

CAUTION:

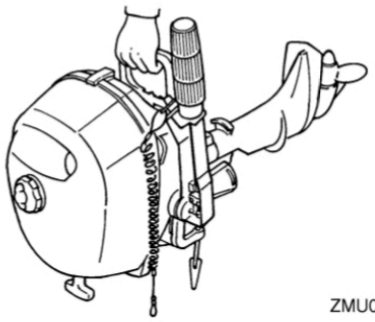
Do not use the tilt support lever or knob when trailering the boat. The outboard motor could shake loose from the tilt support and fall. If the motor cannot be trailered in the normal running position, use an additional support device to secure it in the tilt position.

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

EMU28235

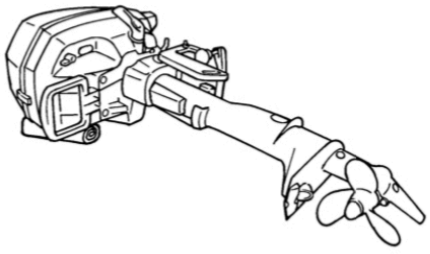
Clamp screw mounting models

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

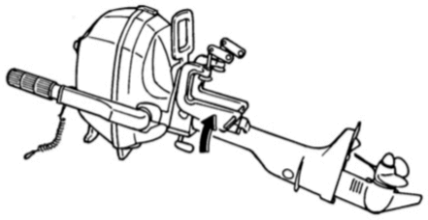


ZMU02348

ZMU02349



ZMU02350



ZMU02351

NOTE:

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

EMU28241

Storing outboard motor

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

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

ECM01080

CAUTION:

- **To prevent problems which can be caused by oil entering the cylinder from the sump, keep the outboard motor in the attitude shown when transporting and storing it. If storing or transporting the outboard motor on its side (not upright), put it on a cushion after draining the engine oil.**
- **Do not place the outboard motor on its side before the cooling water has drained from it completely, otherwise water may enter the cylinder through the exhaust port and cause engine trouble.**
- **Store the outboard motor in a dry, well-ventilated place, not in direct sunlight.**

EMU28302

Procedure

EMU28372

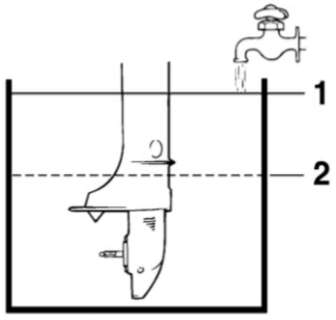
Flushing in a test tank

1. Wash the outboard motor body using fresh water. For further information, see page 33.
2. Fill the fuel tank with fresh fuel and add one ounce of “Yamaha Fuel Conditioner and Stabilizer” (Part No. LUB-FUELC-12-00) to each gallon of fuel.

NOTE:

The use of “Yamaha Fuel Conditioner and Stabilizer” eliminates the need to drain the fuel system. Consult your Yamaha dealer or other qualified mechanic if the fuel system is to be drained instead.

3. Remove the engine top cowling and silencer cover.
4. Install the outboard motor on the test tank.



ZMU02176

1. Water surface
2. Lowest water level

5. Fill the tank with fresh water to above the level of the anti-cavitation plate.

ECM00300

CAUTION:

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

ECM00290

CAUTION:

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

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

EWM00090

⚠ WARNING

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

7. Run the engine at a fast idle for 10–15 minutes in neutral position.
8. Just prior to turning off the engine, quickly spray “Yamaha Stor-Rite Engine Fogging Oil” (Part No. LUB-STRRT-12-00) alternately into each carburetor or the fogging hole of the silencer cover, if equipped. When properly done, the engine will smoke excessively and almost stall.
9. Remove the outboard motor from the test tank.
10. Drain the cooling water completely out of the motor. Clean the body thoroughly.
11. Install the silencer cover/cap and top cowling.

EMU28400

Lubrication (except oil injection models)

1. Grease the spark plug threads and install the spark plug(s) and torque to proper specification. For information on spark plug installation, see page 36.
2. Change the gear oil. For instructions, see page 42. Inspect the oil for the presence of water that indicates a leaky seal. Seal replacement should be performed by an authorized Yamaha dealer prior to use.
3. Grease all grease fittings. For further details, see page 36.

EMU28421

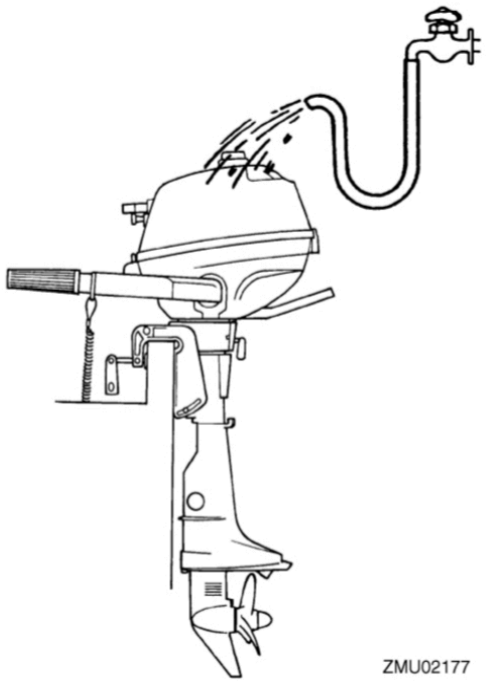
Cleaning and anticorrosion measures

1. Wash down the exterior of the outboard motor with fresh water and dry off completely.
2. Spray the outboard motor exterior with “Yamaha Silicone Protectant” (Part No. LUB-SILCNE-13-00).
3. Wax the cowling with a non-abrasive wax such as “Yamaha Silicone Wax” (Part No. ACC-11000-15-02).

EMU28450

Cleaning the outboard motor

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


ZMU02177

NOTE:
For cooling system flushing instructions, see page 31.

EMU28460
Checking painted surface of motor
Check the motor for scratches, nicks, or flaking paint. Areas with damaged paint are more likely to corrode. If necessary, clean and paint the areas. A touch-up paint is available from your Yamaha dealer.

EMU28486
Periodic maintenance

EWM01070
⚠ WARNING

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

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine engine repair establishment or individual. All warranty repairs, however, including those to the emission control system, must be performed by an authorized Yamaha marine dealership.

A service manual is available for purchase through your Yamaha dealer for owners who have the mechanical skills, tools, and other equipment necessary to perform maintenance not covered by this owner's manual.

EMU28510
Replacement parts
If replacement parts are necessary, use only genuine Yamaha parts or parts of the same type and of equivalent strength and materials. Any part of inferior quality may malfunction, and the resulting loss of control could endanger the operator and passengers. Yamaha genuine parts and accessories are available from your Yamaha dealer.

Maintenance

EMU28522
Maintenance chart
Frequency of maintenance operations may be adjusted according to the operating conditions, but the following table gives general guidelines. Refer to the sections in this chapter for explanations of each owner-specific action.

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

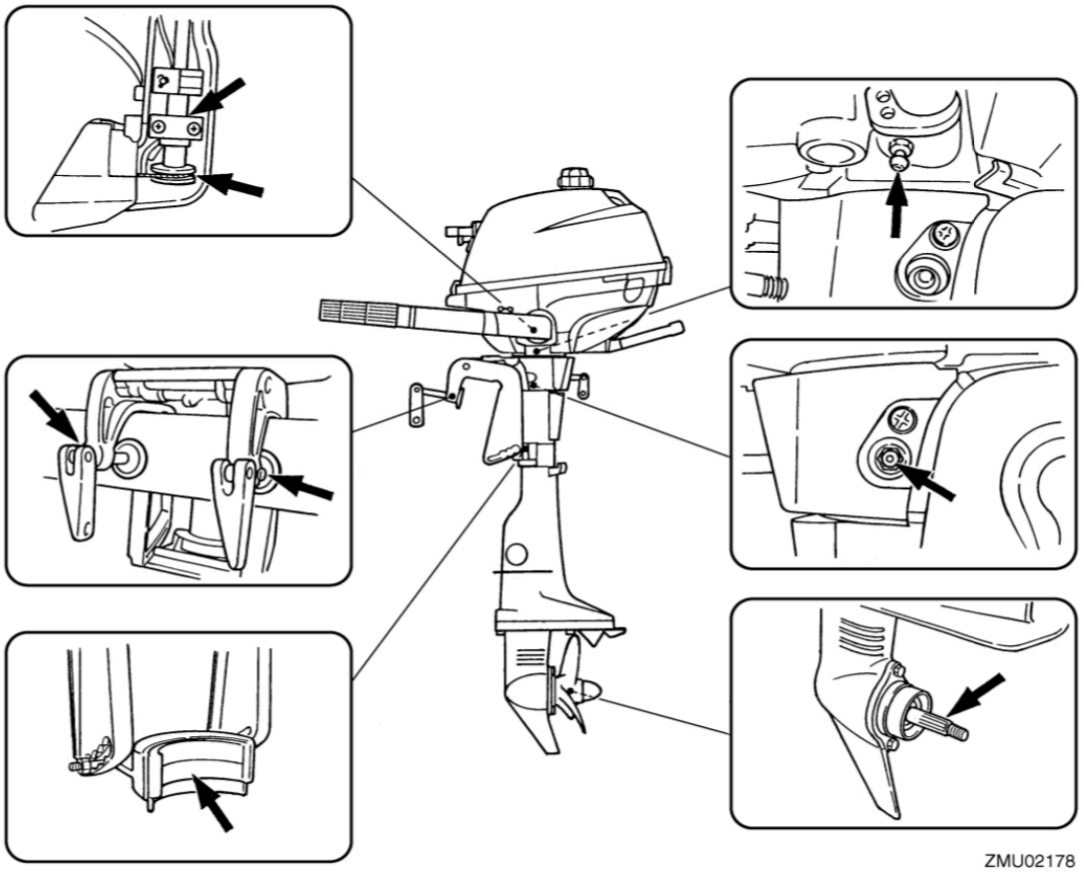
The "●" symbol indicates the check-ups which you may carry out yourself.
The "○" symbol indicates work to be carried out by your Yamaha dealer.

Item	Actions	Initial		Every	
		10 hours (1 month)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)
Anode(s) (external)	Inspection / replacement		●/○	●/○	
Anode(s) (internal)	Inspection / replacement				○
Cooling water passages	Cleaning		●	●	
Cowling clamp	Inspection				●
Fuel filter (inside built-in fuel tank)	Inspection / cleaning				○
Fuel system	Inspection	●	●	●	
Fuel tank (built-in tank)	Inspection / cleaning				○
Gear oil	Change	●		●	
Greasing points	Greasing			●	
Idling speed (carburetor models)	Inspection	●/○		●/○	
Propeller and cotter pin	Inspection / replacement		●	●	
Shift link / shift cable	Inspection / adjustment				○
Thermostat	Inspection / replacement				○
Throttle link / throttle cable / throttle pick-up timing	Inspection / adjustment				○
Water pump	Inspection / replacement				○
Engine oil	Inspection / change	●		●	
Spark plug(s)	Cleaning / adjustment / replacement	●			●
Valve clearance (OHC, OHV)	Inspection / adjustment	○		○	

EMU28874
Maintenance chart (additional)

Item	Actions	Every	
		500 hours (2.5 years)	1000 hours (5 years)
Exhaust guide, exhaust manifold	Inspection / replacement		○

EMU28931
Greasing
Yamaha marine grease (Water resistant grease)



ZMU02178

EMU28952
Cleaning and adjusting spark plug
EWM00560

⚠ WARNING

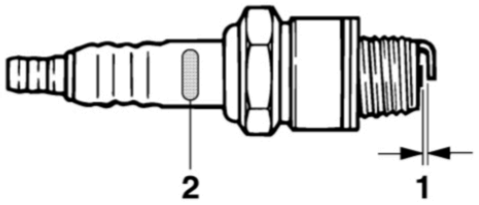
When removing or installing a spark plug, be careful not to damage the insulator. A damaged insulator could allow external sparks, which could lead to explosion or fire.

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:
BR6HS

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



ZMU02179

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

Spark plug gap:
0.6–0.7 mm (0.024–0.028 in)

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

Spark plug torque:
25.0 Nm (18.4 ft-lb) (2.55 kgf-m)

NOTE:

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

EMU28962

Checking fuel system

EWM00060

⚠ WARNING

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

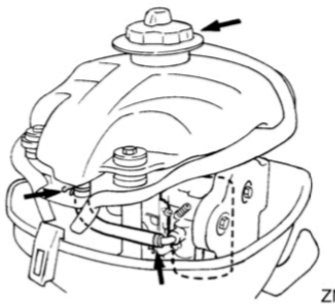
EWM00910

⚠ 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.**

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



ZMU02180

Checkpoints

- Fuel system parts leakage
- Fuel line joint leakage

- Fuel line cracks or other damage
- Fuel connector leakage

EMU29041
Inspecting idling speed

EWM00451
⚠ WARNING

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

ECM00490
CAUTION:

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

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

1. Start the engine and allow it to warm up fully in neutral until it is running smoothly.

NOTE:

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

2. Verify whether the idle speed is set to specification. For idle speed specifications, see page 30.

EMU30222
Changing engine oil

EWM00760
⚠ WARNING

- **Avoid draining the engine oil immediately after stopping the engine. The oil is hot and should be handled with care to avoid burns.**
- **Be sure the outboard motor is securely fastened to the transom or a stable stand.**

ECM00970
CAUTION:

- **Do not overfill the oil, and be sure the outboard motor is upright (not tilted) when checking and changing the engine oil.**
- **If the oil level is above the upper level mark, drain until the level meets the specified capacity. Overfilling the oil could cause leakage or damage.**

ECM01240
CAUTION:

Change the engine oil after the first 10 hours of operation, and every 100 hours or at 6-month intervals thereafter. Otherwise the engine will wear quickly.

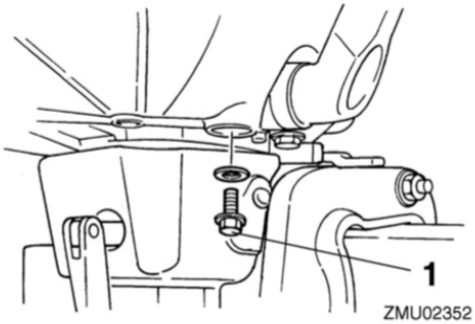
NOTE:

Change the engine oil when the oil is still warm.

1. Put the outboard motor in an upright position (not tilted).


ZMU02349

2. Prepare a suitable container that holds a larger amount than the engine oil capacity. Loosen and remove the drain screw while holding the container under the drain hole. Then remove the oil filler cap. Let the oil drain completely. Wipe up any spilled oil immediately.



ZMU02352

1. Drain screw

3. Put a new gasket on the oil drain screw. Apply a light coat of oil to the gasket and install the drain screw.

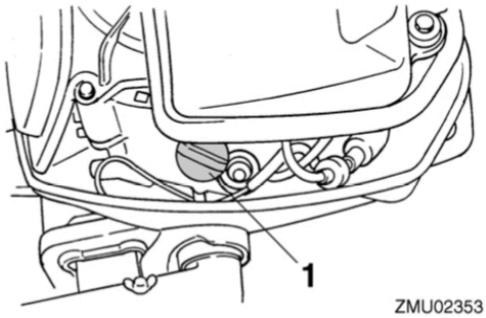
Drain screw tightening torque:
18.0 Nm (13.3 ft-lb) (1.84 kgf-m)

NOTE:

If a torque wrench is not available when you are installing the drain screw, finger tighten the screw just until the gasket comes into contact with the surface of the drain hole. Then tighten 1/4 to 1/2 turn more. Tighten the drain screw to the correct torque with a torque wrench as soon as possible.

4. Add the correct amount of oil through the filler hole. Install the filler cap.

Recommended engine oil:
4-stroke outboard motor oil
Engine oil quantity (excluding oil filter):
0.35 L (0.37 US qt) (0.31 Imp.qt)



ZMU02353

1. Oil filler cap

5. Start the engine and watch to make sure the low oil pressure warning indicator (if equipped) turns off. Make sure that there are no oil leaks.

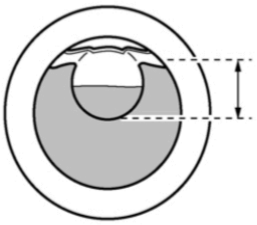
ECM00680

CAUTION:

If the low oil pressure warning indicator does not turn off or if there are oil leaks, stop the engine and find the cause. Continued operation with a problem could cause severe engine damage. Consult your Yamaha dealer if the problem cannot be located and corrected.

6. Turn off the engine and wait 3 minutes. Recheck the oil level using the oil level check window to be sure the level falls between the upper and lower marks. Fill

with oil if it is below the lower mark, or drain to the specified level if it is above the upper mark.



ZMU02354

7. Dispose of used oil according to local regulations.

NOTE:

- For more information on the disposal of used oil, consult your Yamaha dealer.
- Change the oil more often when operating the engine under adverse conditions such as extended trolling.

EMU29112

Checking wiring and connectors

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

EMU29120

Exhaust leakage

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

EMU29130

Water leakage

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

EMU29140

Engine oil leakage

Check for oil leaks on the around the engine.

NOTE:

If any leaks are found, consult your Yamaha dealer.

EMU29171

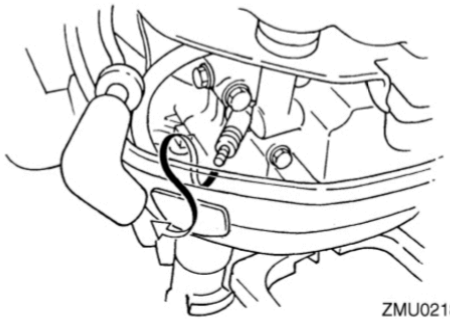
Checking propeller

EWM00321

⚠ WARNING

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

- **Before inspecting, removing, or installing the propeller, remove the spark plug caps from the spark plugs. Also, place the shift control in neutral, turn the main switch to "OFF" (off) and 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 anti-cavitation plate and the propeller to prevent the propeller from turning.**



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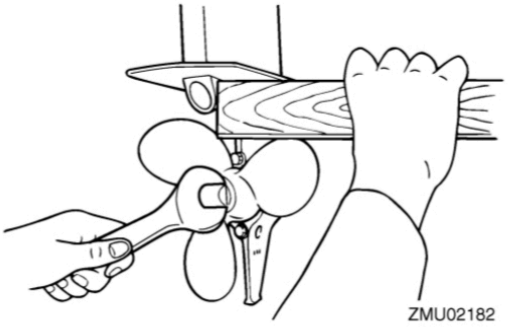
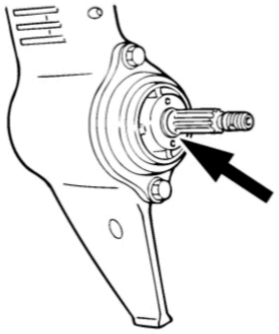

ZMU02182

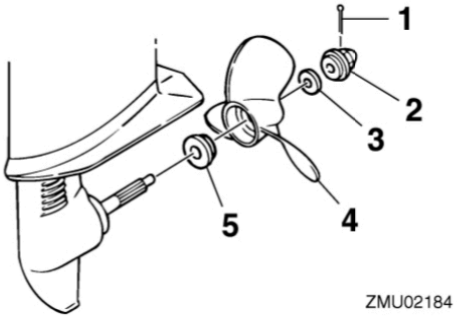
Checkpoints
- Check each of the propeller blades for wear, erosion from cavitation or ventilation, or other damage.
- Check the propeller shaft for damage.
- Check the splines / shear pin for wear or damage.
- Check for fish line tangled around the propeller shaft.


ZMU02183

- Check the propeller shaft oil seal for damage.

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

EMU30660
Removing the propeller
EMU29194
Spline models
1. Straighten the cotter pin and pull it out using a pair of pliers.
2. Remove the propeller nut, washer, and spacer (if equipped).



ZMU02184

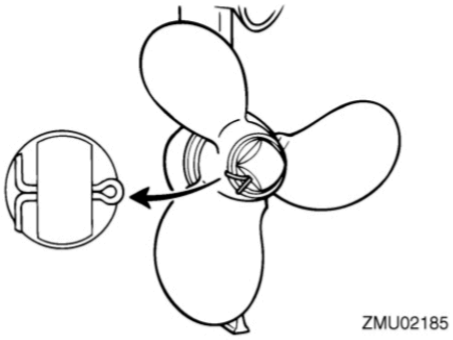
1. Cotter pin
2. Propeller nut
3. Washer
4. Propeller
5. Thrust washer

3. Remove the propeller and thrust washer.

EMU30670
Installing the Propeller
EMU30371
Spline models
ECM00340
CAUTION:
- **Be sure to install the thrust washer before installing the propeller, otherwise the lower case and propeller boss could be damaged.**
- **Be sure to use a new cotter pin and bend the ends over securely. Otherwise the propeller could come off during operation and be lost.**

1. Apply Yamaha marine grease or a corrosion resistant grease to the propeller shaft.

2. Install the spacer (if equipped), thrust washer, and propeller on the propeller shaft.
3. Install the spacer (if equipped) and the washer. Tighten the propeller nut until there is no forward-and-backward movement.
4. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends.


ZMU02185

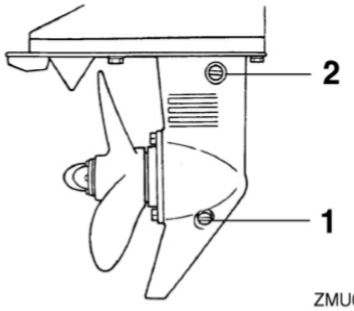
NOTE:
If the propeller nut does not align with the propeller shaft hole after tightening it, loosen the nut until it aligns with the hole.

EMU29282
Changing gear oil

EWM00800
⚠ WARNING

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

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



ZMU02186

1. Gear oil drain screw
2. Oil level plug

NOTE:
- If a magnetic gear oil drain screw is equipped, remove all metal particles from the screw before installing it.
- Always use new gaskets. Do not reuse the removed gaskets.

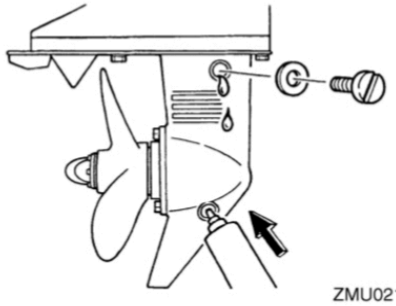
4. Remove the oil level plug and gasket to allow the oil to drain completely.

ECM00710
CAUTION:
Inspect the used oil after it has been drained. If the oil is milky, water is getting into the gear case which can cause gear damage. Consult a Yamaha dealer for repair of the lower unit seals.

NOTE:
For disposal of used oil, consult your Yamaha dealer.

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

Recommended gear oil:
Hypoid gear oil SAE#90
Gear oil quantity:
75.0 cm³ (2.54 US oz) (2.65 Imp.oz)

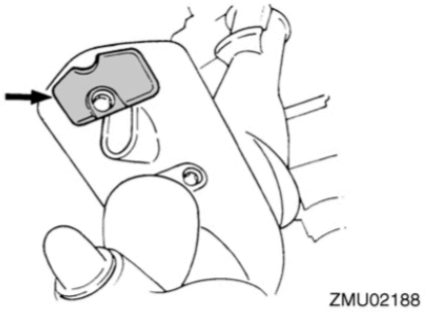

ZMU02187

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

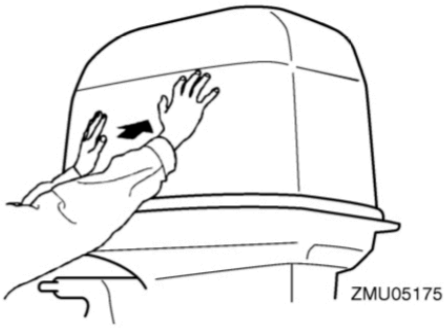
EMU29312
Inspecting and replacing anode(s)
Yamaha outboard motors are protected from corrosion by sacrificial anodes. Inspect the external anodes periodically. Remove scales from the surfaces of the anodes. Consult a Yamaha dealer for replacement of external anodes.

ECM00720
CAUTION:
Do not paint anodes, as this would render them ineffective.

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


ZMU02188

EMU29390
Checking top cowling
Check the fitting of the top cowling by pushing it with both hands. If it is loose have it repaired by your Yamaha dealer.


ZMU05175

EMU29400
Coating the boat bottom
A clean hull improves boat performance. The boat bottom should be kept as clean of marine growth as possible. If necessary, the boat bottom can be coated with an anti-fouling paint approved for your area to inhibit marine growth.
Do not use anti-fouling paint which includes copper or graphite. These paints can cause more rapid engine corrosion.

ZMU02189

Trouble Recovery

EMU29424

Troubleshooting

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

Starter will not operate.
Q. Is battery capacity weak or low?
A. Check battery condition. Use battery of recommended capacity.

Q. Are battery connections loose or corroded?
A. Tighten battery cables and clean battery terminals.

Q. Is fuse for electric start relay or electric circuit blown?
A. Check for cause of electric overload and repair. Replace fuse with one of correct amperage.

Q. Are starter components faulty?
A. Have serviced by a Yamaha dealer.

Q. Is shift lever in gear?
A. Shift to neutral.

Engine will not start (starter operates).
Q. Is fuel tank empty?
A. Fill tank with clean, fresh fuel.

Q. Is fuel contaminated or stale?
A. Fill tank with clean, fresh fuel.

Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Is starting procedure incorrect?
A. See page 21.

Q. Has fuel pump malfunctioned?
A. Have serviced by a Yamaha dealer.

Q. Are spark plug(s) fouled or of incorrect type?
A. Inspect spark plug(s). Clean or replace with recommended type.

Q. Are spark plug cap(s) fitted incorrectly?
A. Check and re-fit cap(s).

Q. Is ignition wiring damaged or poorly connected?
A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Are ignition parts faulty?
A. Have serviced by a Yamaha dealer.

Q. Is engine stop switch lanyard not attached?
A. Attach lanyard.

Q. Are engine inner parts damaged?
A. Have serviced by a Yamaha dealer.

Engine idles irregularly or stalls.
Q. Are spark plug(s) fouled or of incorrect type?
A. Inspect spark plug(s). Clean or replace with recommended type.

Q. Is fuel system obstructed?

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

Q. Is fuel contaminated or stale?
A. Fill tank with clean, fresh fuel.

Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Have ignition parts failed?
A. Have serviced by a Yamaha dealer.

Q. Has warning system activated?
A. Find and correct cause of warning.

Q. Is spark plug gap incorrect?
A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?
A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Is specified engine oil not being used?
A. Check and replace oil as specified.

Q. Is thermostat faulty or clogged?
A. Have serviced by a Yamaha dealer.

Q. Are carburetor adjustments incorrect?
A. Have serviced by a Yamaha dealer.

Q. Is fuel pump damaged?
A. Have serviced by a Yamaha dealer.

Q. Is air vent screw on fuel tank closed?
A. Open air vent screw.

Q. Is choke knob pulled out?
A. Return to home position.

Q. Is motor angle too high?
A. Return to normal operating position.

Q. Is carburetor clogged?
A. Have serviced by a Yamaha dealer.

Q. Is fuel joint connection incorrect?
A. Connect correctly.

Q. Is throttle valve adjustment incorrect?
A. Have serviced by a Yamaha dealer.

Q. Is battery cable disconnected?
A. Connect securely.

Warning buzzer sounds or indicator lights.
Q. Is cooling system clogged?
A. Check water intake for restriction.

Q. Is engine oil level low?
A. Fill oil tank with specified engine oil.

Q. Is heat range of spark plug incorrect?
A. Inspect spark plug and replace it with recommended type.

Q. Is specified engine oil not being used?
A. Check and replace oil with specified type.

Q. Is engine oil contaminated or deteriorated?
A. Replace oil with fresh, specified type.

Q. Is oil filter clogged?
A. Have serviced by a Yamaha dealer.

Q. Has oil feed/injection pump malfunctioned?
A. Have serviced by a Yamaha dealer.

Trouble Recovery

Q. Is load on boat improperly distributed?
A. Distribute load to place boat on an even plane.

Q. Is water pump or thermostat faulty?
A. Have serviced by a Yamaha dealer.

Q. Is there excess water in fuel filter cup?
A. Drain filter cup.

Engine power loss.
Q. Is propeller damaged?
A. Have propeller repaired or replaced.

Q. Is propeller pitch or diameter incorrect?
A. Install correct propeller to operate outboard at its recommended speed (r/min) range.

Q. Is trim angle incorrect?
A. Adjust trim angle to achieve most efficient operation.

Q. Is motor mounted at incorrect height on transom?
A. Have motor adjusted to proper transom height.

Q. Has warning system activated?
A. Find and correct cause of warning.

Q. Is boat bottom fouled with marine growth?
A. Clean boat bottom.

Q. Are spark plug(s) fouled or of incorrect type?
A. Inspect spark plug(s). Clean or replace with recommended type.

Q. Are weeds or other foreign matter tangled on gear housing?
A. Remove foreign matter and clean lower unit.

Q. Is fuel system obstructed?
A. Check for pinched or kinked fuel line or other obstructions in fuel system.

Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Is fuel contaminated or stale?
A. Fill tank with clean, fresh fuel.

Q. Is spark plug gap incorrect?
A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?
A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Have electrical parts failed?
A. Have serviced by a Yamaha dealer.

Q. Is specified fuel not being used?
A. Replace fuel with specified type.

Q. Is specified engine oil not being used?
A. Check and replace oil with specified type.

Q. Is thermostat faulty or clogged?
A. Have serviced by a Yamaha dealer.

Q. Is air vent screw closed?
A. Open the air vent screw.

Q. Is fuel pump damaged?
A. Have serviced by a Yamaha dealer.

Q. Is fuel joint connection incorrect?

A. Connect correctly.

Q. Is heat range of spark plug incorrect?
A. Inspect spark plug and replace it with recommended type.

Q. Is high pressure fuel pump drive belt broken?
A. Have serviced by a Yamaha dealer.

Q. Is engine not responding properly to shift lever position?
A. Have serviced by a Yamaha dealer.

Engine vibrates excessively.
Q. Is propeller damaged?
A. Have propeller repaired or replaced.

Q. Is propeller shaft damaged?
A. Have serviced by a Yamaha dealer.

Q. Are weeds or other foreign matter tangled on propeller?
A. Remove and clean propeller.

Q. Is motor mounting bolt loose?
A. Tighten bolt.

Q. Is steering pivot loose or damaged?
A. Tighten or have serviced by a Yamaha dealer.

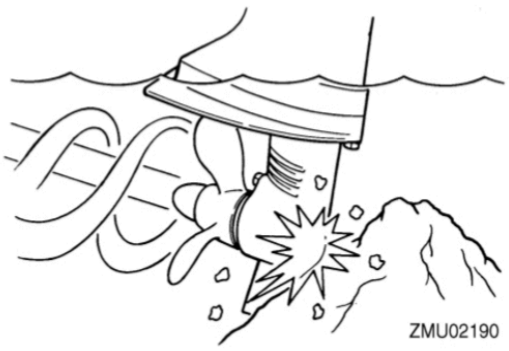
EMU29432
Temporary action in emergency

EMU29440
Impact damage

EWM00870
⚠ WARNING

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

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


ZMU02190

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

EMU31300
Starter will not operate

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

EWM01450
⚠ WARNING

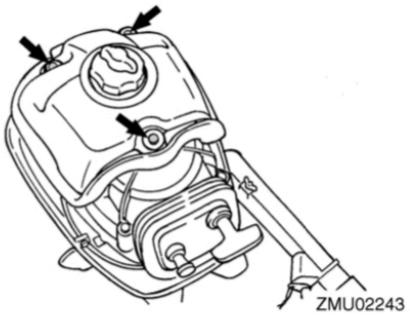
- **Use this procedure only in an emergency to return to the nearest port for repairs.**
- **Make sure the remote control lever is in neutral. Otherwise the boat could unexpectedly start to move, which could result in an accident.**
- **Attach the engine stop switch lanyard to a secure place on your clothing, or your arm or leg while operating the boat.**

- **Do not attach the lanyard to clothing that could tear loose. Do not route the cord where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling the lanyard during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.**
- **Make 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, spark plug wire, spark plug cap, or other electrical components when starting or operating the motor. You could get an electrical shock.**

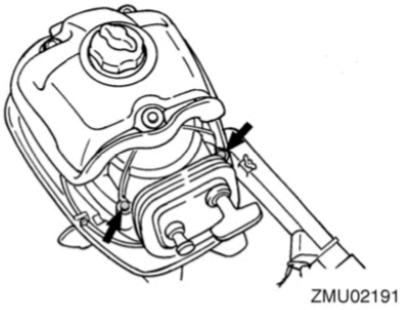
EMU29631

Emergency Starting Engine

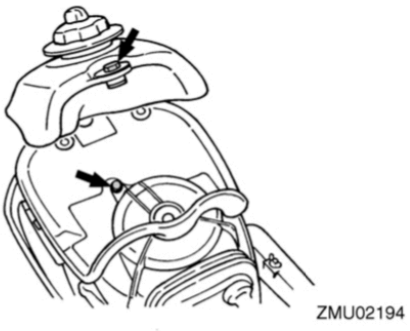
1. Remove the top cowling.
2. Remove the bolts from the fuel tank.



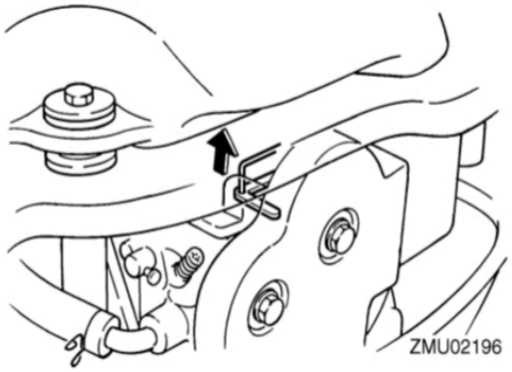
3. Remove the bolts from the starter case.



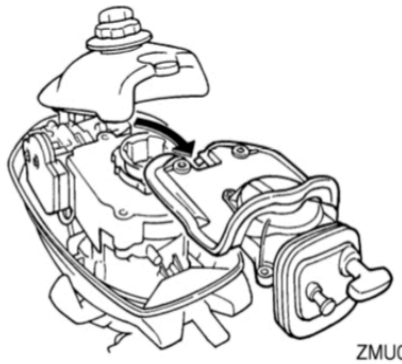
4. While lifting the fuel tank up, remove the bolt from the starter case.
5. Remove the collar.



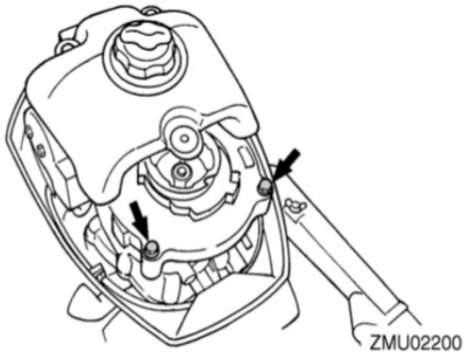
6. While lifting the starter case up, disconnect the choke wire from the carburetor.


ZMU02196

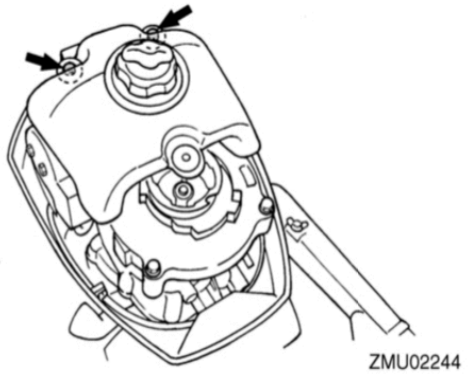
7. Remove the starter case by pulling it towards you.


ZMU02198

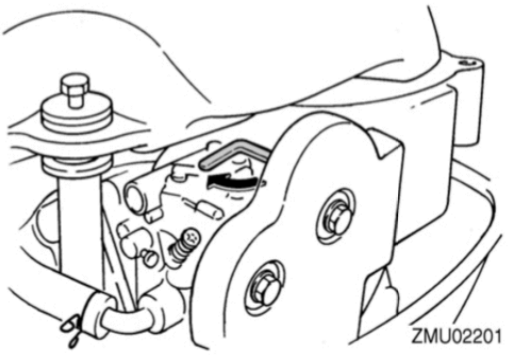
8. Install the fuel tank bracket by installing the bolts.


ZMU02200

9. Install 2 bolts into the rear section of the fuel tank.


ZMU02244

10. Prepare the engine for starting; see page 21. Be sure the engine is in neutral and that the engine stop switch lanyard lock plate is attached to the engine stop switch.
11. Turn the lever on the carburetor to operate the choke system when the engine is cold. After the engine starts, return the lever to the original position.

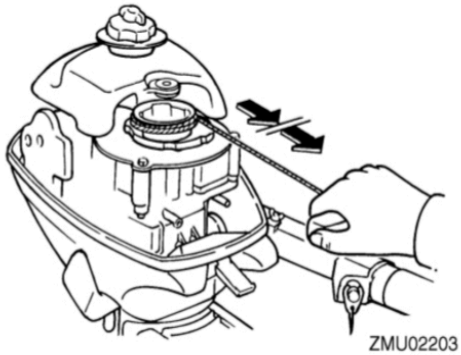

ZMU02201

12. While lifting the fuel tank, insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and wind the rope several turns clockwise.

NOTE:

If the rope is too long after winding it around the flywheel, shorten its length at the handle.

13. Pull the rope slowly until resistance is felt.
14. Give a strong pull straight out to crank and start the engine. Repeat if necessary.


ZMU02203

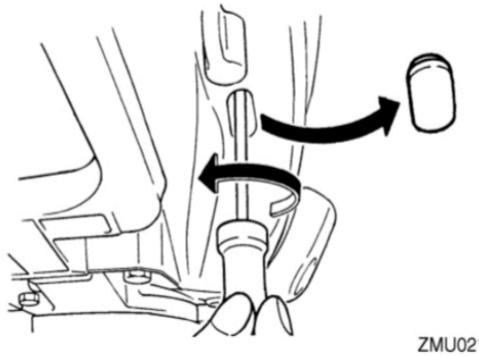
EMU29760
Treatment of submerged motor

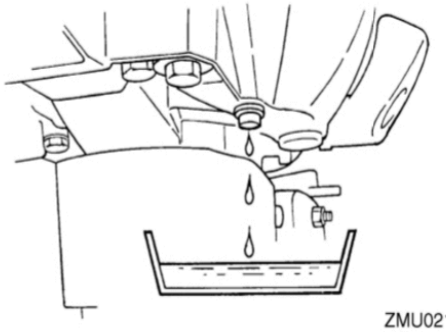
If the outboard motor is submerged, immediately take it to a Yamaha dealer. Otherwise some corrosion may begin almost immediately.

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

EMU29783
Procedure

1. Thoroughly wash away mud, salt, seaweed, and so on, with fresh water.
2. Remove the spark plug(s), then face the spark plug holes downward to allow any water, mud, or contaminants to drain.
3. Drain the fuel from the carburetor, fuel filter, and fuel line. Drain the engine oil completely.

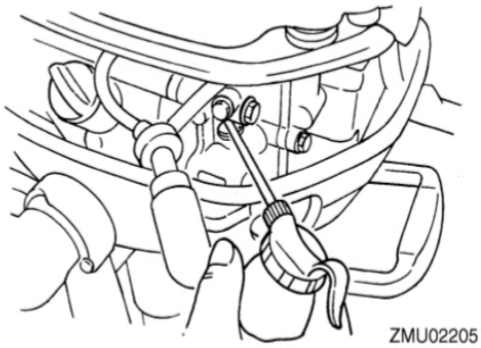

ZMU02174


ZMU02175

4. Fill the sump with the fresh engine oil.

Engine oil capacity:
0.35 L (0.37 US qt) (0.31 Imp.qt)

5. Feed engine fogging oil or engine oil through the carburetor(s) and spark plug holes while cranking the engine with the manual starter or emergency starter rope.


ZMU02205

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

ECM00400

CAUTION:

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