YAMAHA

F4

OWNER'S MANUAL

U.S.A.Edition
LIT-18626-07-59
68D-F8199-19

EMU25061

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

YAMAHA LIT-CALIF-65-01

ZMU01690

⚠ **Read this owner's manual carefully before operating or working on your outboard motor. Keep this manual onboard in a waterproof bag when boating. This manual should stay with the outboard motor if it is sold.**

EMU31281

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!

EWM00780

⚠ 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.

ECM00700

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 F4MH and the standard accessories are used as a base for the explanations and illustrations in this manual. Therefore some items may not apply to every model.

EMU25131

F4
OWNER'S MANUAL

1st Edition, June 2007

Printed in France
P/N LIT-18626-07-59

Table of contents

Table of contents

EMU25171

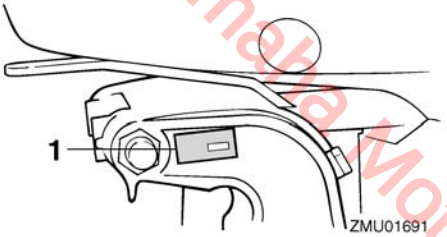
Identification numbers record

EMU25183

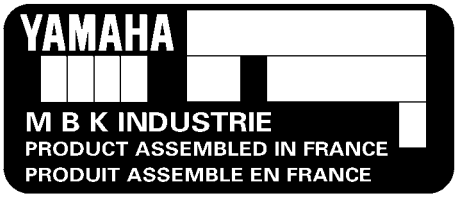
Outboard motor serial number

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 location



ZMU02115

EMU25221

Emission control information

EMU25230

North American models

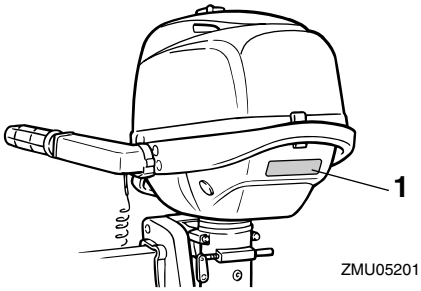
This engine conforms to U.S. Environmental Protection Agency (EPA) regulations for marine SI engines. See the label affixed to your engine for details.

EMU25242

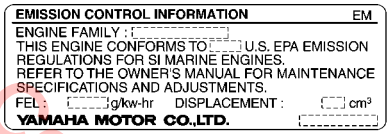
Approval label of emission control certificate

This label is attached to the bottom cowling.

New Technology; (4-stroke/HPDI) EM



1. Approval label location

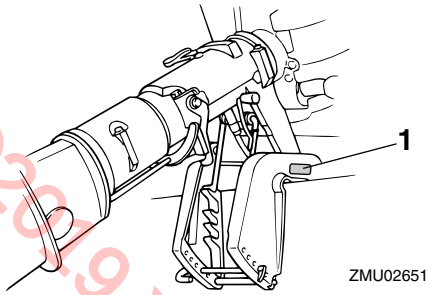


ZMU05845

EMU25262

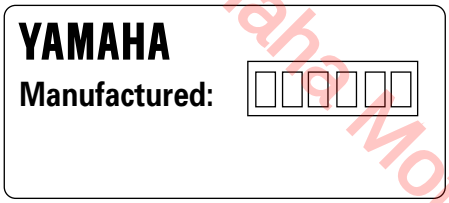
Manufactured date label

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



ZMU02651

1. Manufactured date label location

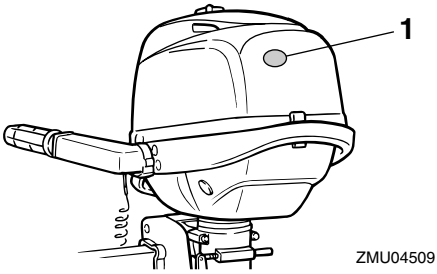


ZMU04346

EMU25273

Star labels

Your outboard motor is labeled with a California Air Resources Board (CARB) star label. See below for a description of your particular label.



ZMU04509

1. Star labels location

EMU25280

One Star—Low Emission

The one-star label identifies engines that meet the Air Resources Board's 2001 exhaust emission standards. Engines meeting these standards have 75% lower emissions than conventional carbureted two-stroke engines. These engines are equivalent to the U.S. EPA's 2006 standards for marine engines.

ZMU01702

EMU25290

Two Stars—Very Low Emission

The two-star label identifies engines that meet the Air Resources Board's 2004 exhaust emission standards. Engines meeting these standards have 20% lower emissions than One Star-Low-Emission engines.

ZMU01703

EMU25300

Three Stars—Ultra Low Emission

The three-star label identifies engines that meet the Air Resources Board's 2008 exhaust emission standards. Engines meeting

these standards have 65% lower emissions than One Star-Low-Emission engines.

ZMU01704

EMU33861

Four Stars—Super Ultra Low Emission

The four-star label identifies engines that meet the Air Resources Board's Sterndrive and Inboard marine engine 2009 exhaust emission standards. Personal Watercraft and Outboard marine engines may also comply with these standards. Engines meeting these standards have 90% lower emissions than One Star-Low-Emission engines.

ZMU05663

EMU33520

Read manuals and labels

Before operating or working on this motor:

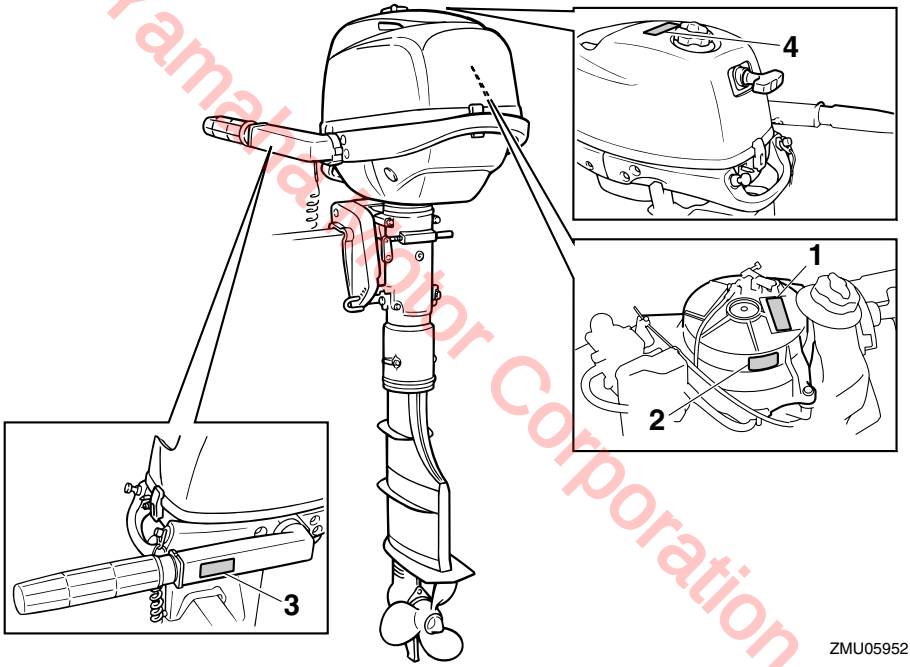
- Read this manual.
- Read any manuals supplied with the boat.
- Read all labels on the outboard motor and the boat.

If you need any additional information, contact your Yamaha dealer.

EMU33831

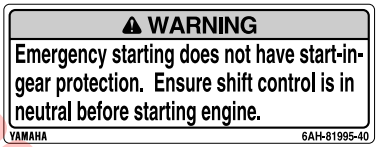
Warning labels

If these labels are damaged or missing, contact your Yamaha dealer for replacements.



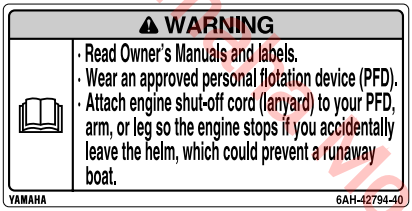
ZMU05952

1

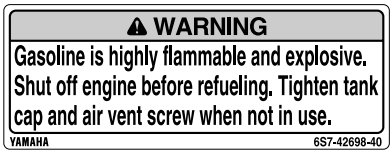


2

3



4



ZMU05924

EMU33841

Symbols

The following symbols mean as follows.

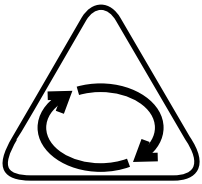
Caution/Warning

ZMU05696

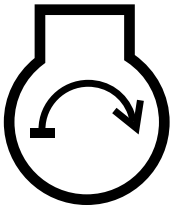
Read Operator's Manual

ZMU05664

Hazard caused by continuous rotation

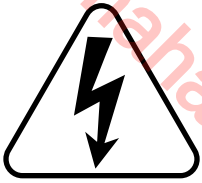


ZMU05665



ZMU05668

Electrical hazard



ZMU05666

Remote control lever/gear shift lever operating direction, dual direction

ZMU05667

Engine start/ Engine cranking

EMU33621

Safety information

Observe these precautions at all times.

EMU33630

Rotating parts

Hands, feet, hair, jewelry, clothing, PFD straps, etc. can become entangled with internal rotating parts of the engine, resulting in serious injury or death.

Keep the top cowling in place whenever possible. Do not remove or replace the cowling with the engine running.

Only operate the engine with the cowling removed according to the specific instructions in the manual. Keep hands, feet, hair, jewelry, clothing, PFD straps, etc. away from any exposed moving parts.

EMU33640

Hot parts

During and after operation, engine parts are hot enough to cause burns. Avoid touching any parts under the top cowling until the engine has cooled.

EMU33650

Electric shock

Do not touch any electrical parts while starting or operating the engine. They can cause shock or electrocution.

EMU33670

Engine shut-off cord

Attach the engine shut-off cord so that the engine stops if the operator falls overboard or leaves the helm. This prevents the boat from running away under power and leaving people stranded, or running over people or objects.

Always attach the engine shut-off cord to a secure place on your clothing or your arm or leg while operating. Do not remove it to leave the helm while the boat is moving. Do not attach the cord to clothing that could tear loose, or route the cord where it could become entangled, preventing it from functioning.

Do not route the cord where it is likely to be accidentally pulled out. If the cord is pulled during operation, the engine will shut off and you will lose most steering control. The boat could slow rapidly, throwing people and objects forward.

EMU33810

Gasoline

Gasoline and its vapors are highly flammable and explosive. Always, refuel according to the procedure on page 28 to reduce the risk of fire and explosion.

EMU33820

Gasoline exposure and spills

Take care not to spill gasoline. If gasoline spills, wipe it up immediately with dry rags. Dispose of rags properly.

If any gasoline spills onto your skin, immediately wash with soap and water. Change clothing if gasoline spills on it.

If you swallow gasoline, inhale a lot of gasoline vapor, or get gasoline in your eyes, get immediate medical attention. Never siphon fuel by mouth.

EMU33900

Carbon monoxide

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.

EMU33780

Modifications

Do not attempt to modify this outboard motor. Modifications to your outboard motor may reduce safety and reliability, and render the outboard unsafe or illegal to use.

EMU33740

Boating safety

This section includes a few of the many important safety precautions that you should follow when boating.

EMU33710

Alcohol and drugs

Never operate after drinking alcohol or taking drugs. Intoxication is one of the most common factors contributing to boating fatalities.

EMU33720

Personal flotation devices

Have an approved personal flotation device (PFD) on board for every occupant. Yamaha recommends that you must 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.

EMU33730

People in the water

Always watch carefully for people in the water, such as swimmers, skiers, or divers, whenever the engine is running. When someone is in the water near the boat, shift into neutral and shut off the motor.

Stay away from swimming areas. Swimmers can be hard to see.

The propeller can keep moving even when the motor is in neutral. Shut off the engine when a person is in the water near you.

EMU33750

Passengers

Consult your boat manufacturer's instructions for details about appropriate passenger locations in your boat and be sure all passengers are positioned properly before accelerating and when operating above an idle speed. Standing or sitting in non-designated locations may result in being thrown either overboard or within the boat due to waves, wakes, or sudden changes in speed or direction. Even when people are positioned properly, alert your passengers if you must make any unusual maneuver. Always avoid jumping waves or wakes.

EMU33760

Overloading

Do not overload the boat. Consult the boat capacity plate or boat manufacturer for maximum weight and number of passengers. Be sure that weight is properly distributed according to the boat manufacturers instructions. Overloading or incorrect weight distribution can compromise the boats handling and lead to an accident, capsizing or swamping.

EMU33770

Avoid collisions

Scan constantly for people, objects, and other boats. Be alert for conditions that limit your visibility or block your vision of others.

Operate defensively at safe speeds and keep a safe distance away from people, objects, and other boats.

- Do not follow directly behind other boats or waterskiers.
- Avoid sharp turns or other maneuvers that make it hard for others to avoid you or understand where you are going.
- Avoid areas with submerged objects or shallow water.
- Ride within your limits and avoid aggressive maneuvers to reduce the risk of loss of control, ejection, and collision.
- **Take early action** to avoid collisions. Remember, **boats do not have brakes**, and stopping the engine or reducing throttle can reduce the ability to steer. If you are not sure that you can stop in time before hitting an obstacle, apply throttle and turn in another direction.

EMU33790

Weather

Stay informed about the weather. Check weather forecasts before boating. Avoid boating in hazardous weather.

EMU33800

Accident reporting

Boat operators are required by law to file a Boating Accident Report with their state boating law enforcement agency if their boat is involved in any of the following accidents:

1. There is loss of life or probable loss of life.
2. There is personal injury that requires medical attention beyond first aid.
3. There is property damage to boats or other property over a certain amount.
4. There is complete loss of a boat.

Contact local law enforcement personnel if a report is necessary.

EMU33870

Boat education and training

Operators should take a boating safety course. This may be required in your state. Many of the organizations listed in the next section can provide information about courses in your area.

You may also want to consider an Internet-based program for basic boater education. The Online Boating Safety Course provided by the BoatU.S. Foundation, is approved by the National Association of State Boating Law Administrators (NASBLA) and recognized by the United States Coast Guard. Most, but not all, states accept this course to meet their minimum requirements. While it cannot replace an in-depth course such as one offered by the U.S. Coast Guard, U.S. Power Squadron, or other organization, this online course does provide a general overview of the basics in boating safety, requirements, navigation, and operation. Upon successful completion of the course, the user can download a certificate of completion immediately or, for a small charge, request one by mail. To take this free course, go to boatus.org.

EMU33880

Passenger training

Make sure at least one other passenger is trained to operate the boat in the event of an emergency.

EMU33890

Boating safety publications

Be informed about boating safety. Additional publications and information can be obtained from many boating organizations.

EMU33590

Laws and regulations

Know the marine laws and regulations where you will be boating- and obey them. Several sets of rules prevail according to geographic location, but all are basically the same as the International Rules of the Road. The rules presented in the following section are condensed- and have been provided for your convenience only.

Contact the U.S. Coast Guard, the National Association of State Boating Law Administrators, or your local Power Squadron for a complete set of rules governing the waters in which you will be using your boat.

EMU33680

Boating organizations

The following organizations provide boating safety training and information about boating safety and laws.

United States Coast Guard
Consumer Affairs Staff (G-BC)
Office of Boating, Public, and Consumer Affairs
U.S. Coast Guard Headquarters
Washington, D.C. 20593-0001

Boating Safety Hotline: 1-800-368-5647
www.uscgboating.org

United States Power Squadrons
1-888-FOR-USPS (1-888-367-8777)
www.usps.org

Boat Owners Association of The United States
1-800-336-BOAT (1-800-336-2628)
www.boatus.com

National Association of State Boating Law Administrators (NASBLA)
1500 Leestown Road, Suite 330
Lexington, KY 4051 859-225-9497
859-225-9497
www.nasbla.org

National Marine Manufacturers Association (NMMA)
200 East Randolph Drive
Suite 5100
Chicago, IL 606001
www.nmma.org

Marine Retailers Association of America
155 N. Michigan Ave. Chicago,
IL 60601
www.mraa.com

EMU33690

Basic boating rules (Rules of the road)

Just as there are rules that apply when you are driving on streets and highways, there are waterway rules that apply when you are driving your boat. These rules are used internationally. (For USA: and are also enforced by the United States Coast Guard and local agencies.) You should be aware of these rules, and follow them whenever you encounter another vessel on the water.

EMU33700

Steering and sailing rules and sound signals

Whenever two vessels on the water meet one another, one vessel has the right-of-way; it is called the “stand-on” vessel. The vessel that does not have the right-of-way is called the “give-way” or “burdened”vessel. These rules determine which vessel has the right-of-way, and what each vessel should do.

Stand-on vessel
The vessel with the right-of-way has the duty to continue its course and speed, except to avoid an immediate collision. When you maintain your direction and speed, the other vessel will be able to determine how best to avoid you.

Give-way vessel
The vessel that does not have the right-of-way has the duty to take positive and timely action to stay out of the way of the Stand-On vessel. Normally, you should not cross in front of the vessel with the right-of-way. You should slow down or change directions briefly and pass behind the other vessel. You should always move in such a way that the operator of the other vessel can see what you are doing.

“ The general prudential rule ”
This rule is called Rule 2 in the International Rules and says,
“ In obeying and construing these rules due regard shall be had to all dangers of navigation and collision, and to any special circumstances, which may render a departure from the above rules necessary in order to avoid immediate danger.”

In other words, follow the standard rules except when a collision will occur unless both vessels try to avoid each other. If that is the case, both vessels become " Give-Way " vessels.

EMU25521

Rules when encountering vessels

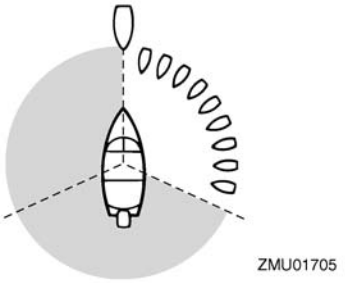
There are three main situations that you may encounter with other vessels which could lead to a collision unless the Steering Rules are followed:

Meeting: (you are approaching another vessel head-on)

Crossing: (you are traveling across the other vessel's path)

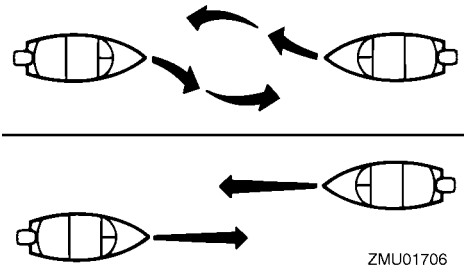
Overtaking: (you are passing or being passed by another vessel)

In the following illustration, your boat is in the center. You should give the right-of-way to any vessels shown in white area (you are the Give-Way vessel). Any vessels in the shaded area must yield to you (they are the Give-Way vessels). Both you and the meeting vessel must alter course to avoid each other.



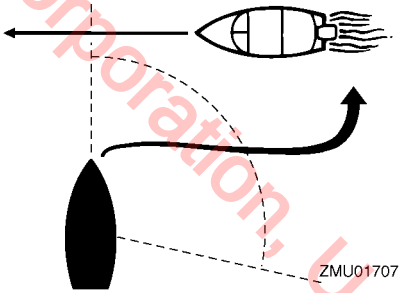
Meeting

If you are meeting another power vessel head on, and are close enough to run the risk of collision, neither of you has the right-of-way Both of you should alter course to avoid an accident. You should keep the other vessel on your port (left) side. This rule doesn't apply if both of you will clear one another if you continue on your set course and speed.



Crossing

When two power driven vessels are crossing each other's path close enough to run the risk of collision, the vessel which has the other on the starboard (right) side must keep out of the way of the other. If the other vessel is on your right, you must keep out of its way; you are the Give-Way vessel. If the other vessel is on your port (left) side, remember that you should maintain course and direction, provided the other vessel gives you the right-of-way as it should.



Overtaking

If you are passing another vessel, you are the "Give-Way" vessel. This means that the other vessel is expected to maintain its course and speed. You must stay out of its way until you are clear of it. Likewise, if another vessel is passing you, you should

maintain your speed and direction so that the other vessel can steer itself around you.

EMU25531

Other special situations

There are three other rules you should be aware of when driving your boat around other vessels.

Narrow channels and bends

When navigating in narrow channels, you should keep to the right when it is safe and practical to do so. If the operator of a power-driven vessel is preparing to go around a bend that may obstruct the view of other water vessels, the operator should sound a prolonged blast on the whistle (4 to 6 seconds). If another vessel is around the bend, it too should sound the whistle. Even if no reply is heard, however, the vessel should still proceed around the bend with caution. If you navigate such waters with your boat, you will need to carry a portable air horn, available from local marine supply stores.

Fishing vessel right-of-way

All vessels that are fishing with nets, lines or trawls are considered to be “fishing vessels” under the International Rules. Vessels with trolling lines are not considered fishing vessels. Fishing vessels have the right-of-way regardless of position. Fishing vessels cannot, however, impede the passage of other vessels in narrow channels.

Sailing vessel right-of-way

Sailing vessels should normally be given the right-of-way. The exceptions to this are:

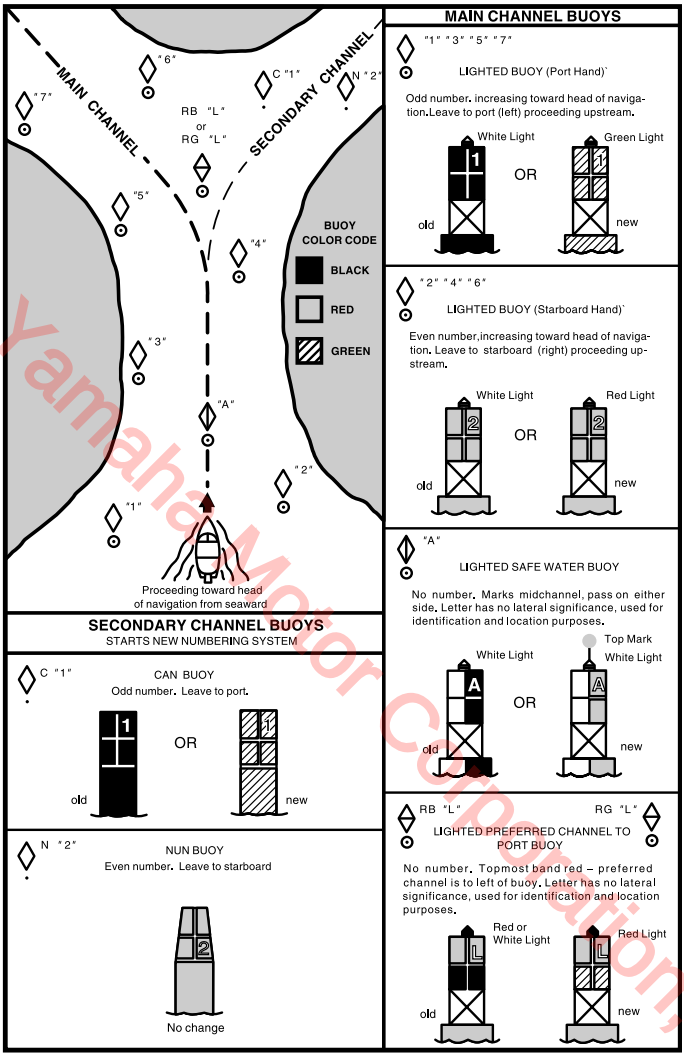
1. When the sailing vessel is overtaking the power-driven vessel, the power-driven vessel has the right-of-way.
2. Sailing vessels should keep clear of any fishing vessel.
3. In a narrow channel, a sailing vessel should not hamper the safe passage of a power-driven vessel that can navigate only in such a channel.

Reading buoys and other markers

The waters of the United States are marked for safe navigation by the lateral system of buoyage. Simply put, buoys and markers have an arrangement of shapes, colors, numbers and lights to show which side of the buoy a boater should pass on when navigating in a particular direction. The markings on these buoys are oriented from the perspective of being entered from seaward (the boater is going towards the port). This means that red buoys are passed on the starboard (right) side when proceeding from open water into port, and black buoys are to port (left) side. When navigating out of port, your position with respect to the buoys should be reversed; red buoys should be to port and black buoys to starboard.

Many bodies of water used by boaters are entirely within the boundaries of a particular state. The Uniform State Waterway Marking System has been devised for these waters. This system uses buoys and signs with distinctive shapes and colors to show regulatory or advisory information. These markers are white with black letters and orange boarders. They signify speed zones, restricted areas, danger areas, and general information.

Remember, markings may vary by geographic location. Always consult local boating authorities before driving your boat in unfamiliar waters.



ZMU01708

EMU25540

Fueling instructions

EWM00010

⚠ 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.**

ECM00010

CAUTION:

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

EMU33960

Gasoline

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

Recommended gasoline:
Regular unleaded gasoline with a minimum octane rating of 86 (Pump Octane Number) = (R+M)/2

Gasohol

There are two types of gasohol: gasohol containing ethanol and that containing methanol. Gasohol containing ethanol can be used if ethanol content does not exceed 10% and the fuel meets minimum octane ratings. E-85 is a fuel blend containing 85% ethanol and therefore must not be used in your outboard motor. All ethanol blends containing more than 10% ethanol can cause fuel system damage or engine performance problems. Yamaha does not recommend gasohol-containing methanol because it can cause fuel system damage or engine performance problems.

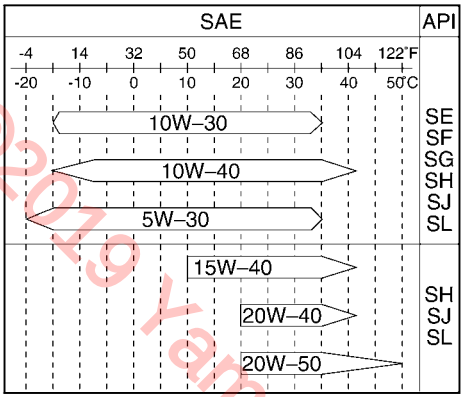
EMU31440

Engine oil

Recommended engine oil:
YAMALUBE 4-M FC-W oil or 4-stroke motor oil with a combination of the following SAE and API oil classifications
Engine oil type SAE:
10W-30 or 10W-40
Engine oil grade API:
SE, SF, SG, SH, SJ, SL
Engine oil quantity (excluding oil filter):
0.5 L (0.53 US qt) (0.44 Imp.qt)

NOTE:

If the recommended engine oil grades are not available, select an alternative from the following chart according to the average temperatures in your area.



ZMU05190

ECM01050

CAUTION:

All 4-stroke engines are shipped from the factory without engine oil.

ZMU01710

EMU33552

Installation requirements

EMU33560

Boat horsepower rating

Before installing the outboard motor(s), confirm that the total horsepower of your motor(s) does not exceed the boats maximum horsepower rating. See the boats capacity plate or contact the manufacturer.

EWM01560

WARNING

Overpowering a boat can cause severe instability.

EMU33570

Mounting motor

Your dealer or other person experienced in proper rigging should mount the motor using correct equipment and complete rigging instructions. For further information, see page 24.

EWM01570

WARNING

- **Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control, or fire hazards.**
- **Because the motor is very heavy, special equipment and training is required to mount it safely.**

EMU34190

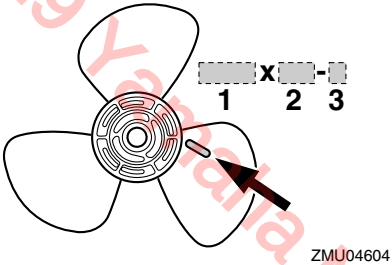
Propeller selection

Next to selecting an outboard, choosing the right propeller is one of the most important purchasing decisions a boater can make. The type, size, and design of your propeller have a direct impact on acceleration, top speed, fuel economy, and even engine life. Yamaha designs and manufactures propellers for every Yamaha outboard motor and every application.

Your outboard motor came with a Yamaha propeller chosen to perform well over a range of applications, but there may be uses where a different propeller would be more appropriate.

Your Yamaha dealer can help you select the right propeller for your boating needs. Select a propeller that will allow the engine to reach the middle or upper half of the operating range at full throttle with the maximum boat-load. Generally, chose a larger pitch propeller for a smaller operating load and a smaller pitch propeller for a heavier load. If you carry

loads that vary widely, chose the propeller that lets the engine run in the proper range for your maximum load but remember that you may need to reduce your throttle setting to stay within the recommended engine speed range when carrying lighter loads.
For instructions on propeller removal and installation, see page 54.



ZMU04604

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

EMU25770

Start-in-gear protection

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

Basic components

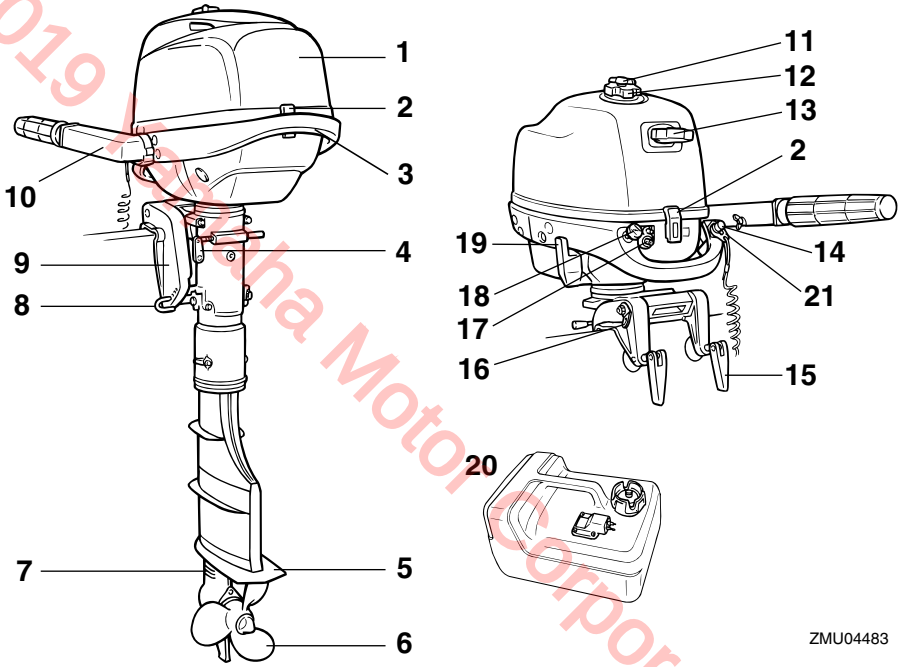
EMU2579D

Main components

NOTE:

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

F4



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 shut-off switch
15. Clamp screw
16. Rope attachment
17. Fuel joint
18. Choke knob
19. Gear shift lever
20. Fuel tank*
21. Clip

EMU25802

Fuel tank

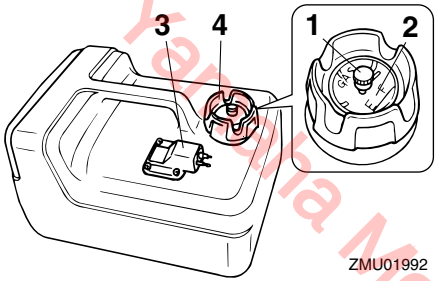
If your model was equipped with a portable

fuel tank, its function is as follows.

EWM00020

⚠ WARNING

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

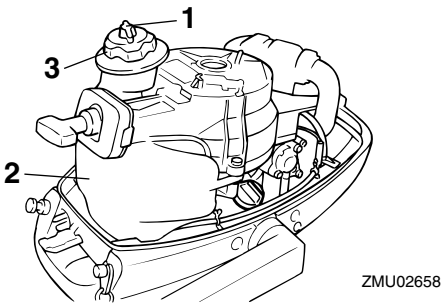


1. Air vent screw
2. Fuel gauge
3. Fuel joint
4. Fuel tank cap

EMU25821

Fuel tank

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



1. Air vent screw
2. Built-in fuel tank
3. Fuel tank cap

EMU25830

Fuel joint

This joint is used to connect the fuel line.

EMU25841

Fuel gauge

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

EMU25850

Fuel tank cap

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

EMU25860

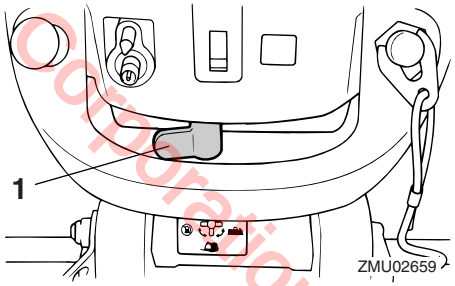
Air vent screw

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

EMU25872

Fuel cock

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



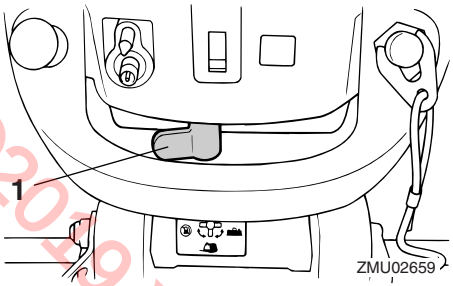
1. Fuel cock

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.

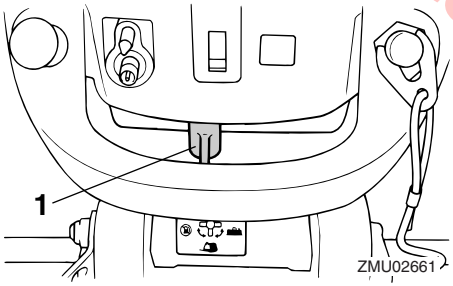


1. Close position

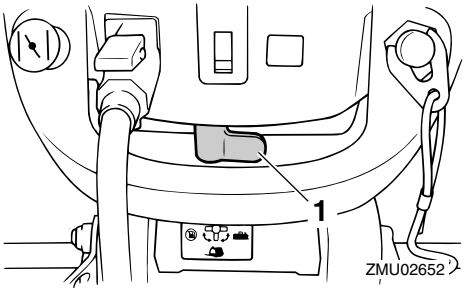
EMU25901

Open

The fuel cock has two open positions, one for selecting fuel flow from the built-in fuel tank, and one for an external tank.
Fuel flows to the carburetor with the lever or knob in either open position. These are the normal running positions.



1. “OPEN” position for the built-in tank

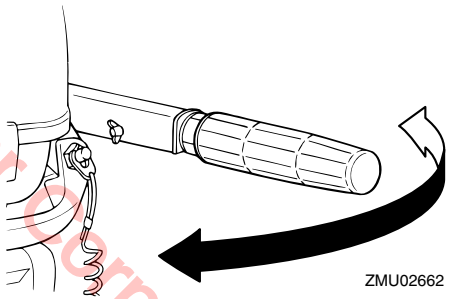


1. “OPEN” position for the portable tank

EMU25911

Tiller handle

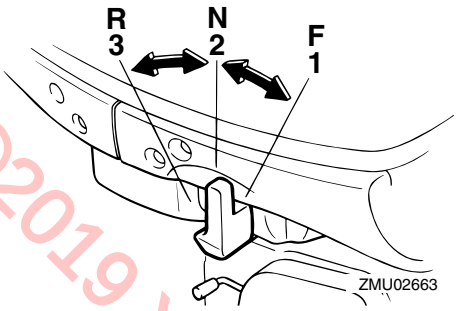
To change direction, move the tiller handle to the left or right as necessary.



EMU25922

Gear shift lever

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

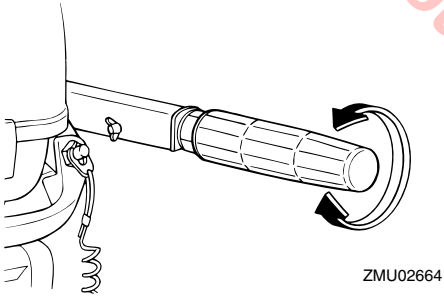


1. Forward “**F**”
2. Neutral “**N**”
3. Reverse “**R**”

EMU25941

Throttle grip

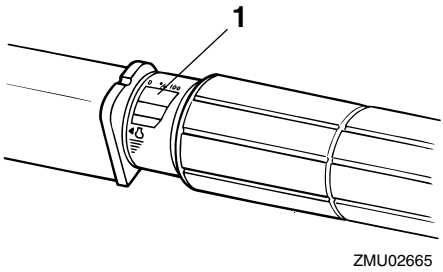
The throttle grip is on the tiller handle. Turn the grip counterclockwise to increase speed and clockwise to decrease speed.



EMU25961

Throttle indicator

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



1. Throttle indicator

EMU25971

Throttle friction adjuster

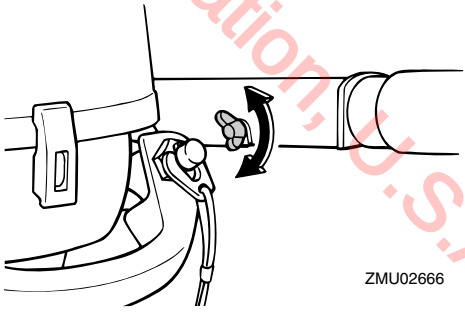
A friction device provides adjustable resistance to movement of the throttle grip or the remote control lever, and can be set according to operator preference.

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.

EMU25991

Engine shut-off switch

The clip must be attached to the engine shut-off switch for the engine to run. The cord 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 cord will pull out the clip, stopping ignition to the engine. This will prevent the boat from running away under power.

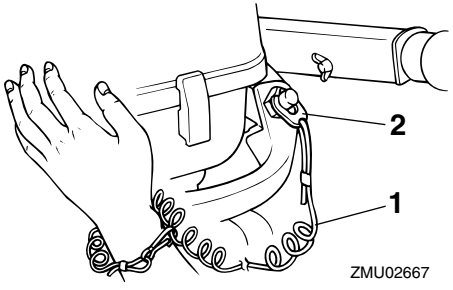
EWM00121

⚠ WARNING

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



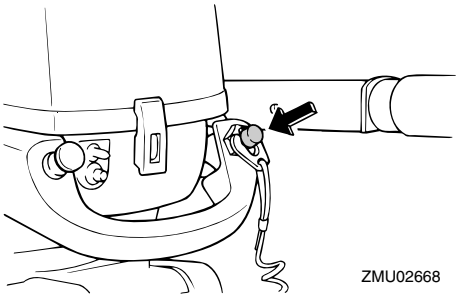
ZMU02667

1. Cord
2. Clip

EMU26001

Engine stop button

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

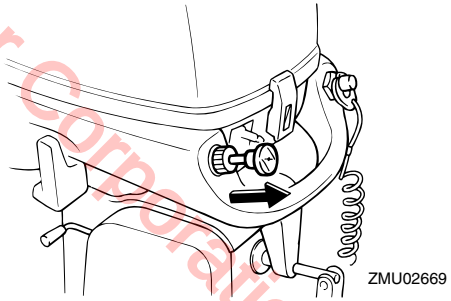


ZMU02668

EMU26011

Choke knob for pull type

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

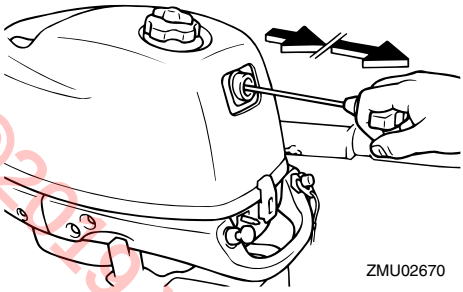


ZMU02669

EMU26070

Manual starter handle

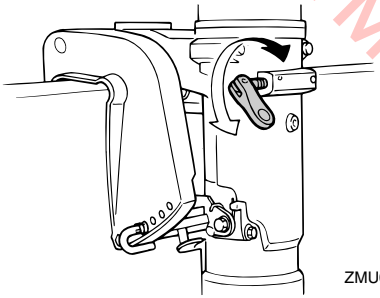
To start the engine, first gently pull the handle out until resistance is felt. From that position, then pull the handle straight out quickly to crank the engine.


ZMU02670

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.


ZMU02671

To increase resistance, turn the adjuster clockwise.

To decrease resistance, turn the adjuster counterclockwise.

EWM00040

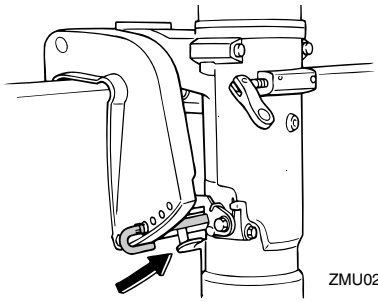
⚠ WARNING

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)

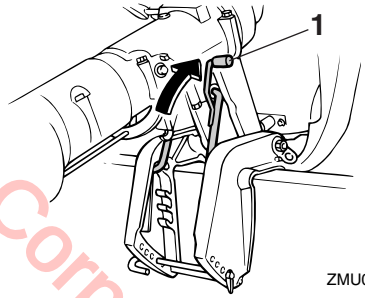
The position of the trim rod determines the minimum trim angle of the outboard motor in relation to the transom.


ZMU02672

EMU30530

Tilt lock mechanism

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



ZMU04497

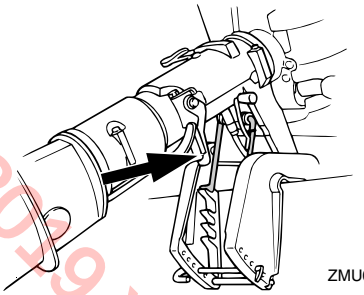
1. Tilt lock lever

To lock it, set the tilt lock lever in the lock position. To release, push the tilt lock lever in the release position.

EMU26332

Tilt support bar

The tilt support bar keeps the outboard motor in the tilted up position.


ZMU02674

ECM01660

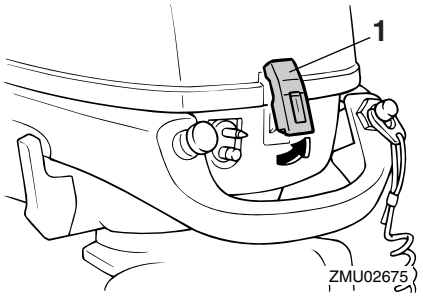
CAUTION:

Do not use the tilt support bar 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.

EMU26382

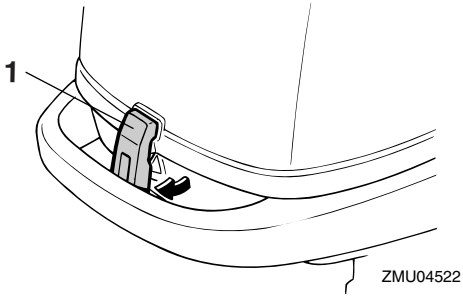
Top cowling lock lever (pull up type)

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.



ZMU02675

1. Top cowling lock lever(s)



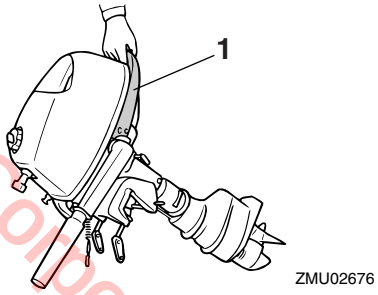
ZMU04522

1. Top cowling lock lever(s)

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.



ZMU02676

1. Carrying handle

EMU26902

Installation

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.

EWM01590

⚠ 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.**
- **Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control, or fire hazards. For permanently mounted models, your dealer or other person experienced in proper rigging should mount the motor.**

EMU26911

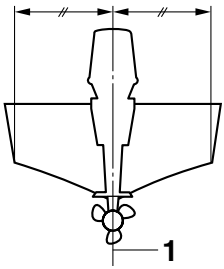
Mounting the outboard motor

EWM01720

⚠ WARNING

Your dealer or other person experienced in proper outboard motor mounting should show you how to mount your outboard motor.

The outboard motor should be mounted so that the boat is well balanced. Otherwise, the boat could be hard to steer. For single-engine boats, mount the outboard motor on the centerline (keel line) of the boat.



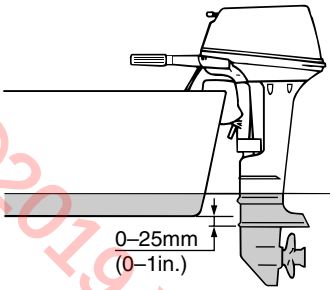
ZMU01760

1. Center line (keel line)

EMU26921

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.



ZMU02011

ECM01630

CAUTION:

- **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 power head when water rises due to waves when the outboard is not running.**
- **Incorrect engine height or obstructions to the smooth flow of water (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. If the motor is operated continuously in the presence of airborne water spray, enough water could enter the engine through the intake opening on the cowling to cause severe engine damage. Eliminate the cause of the airborne water spray.**

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 34.

EMU26970

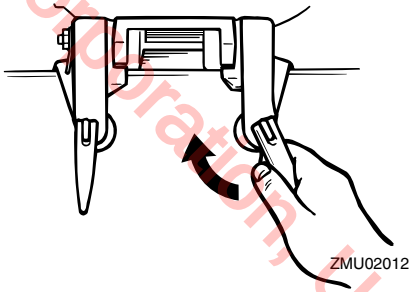
Clamping the outboard motor

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

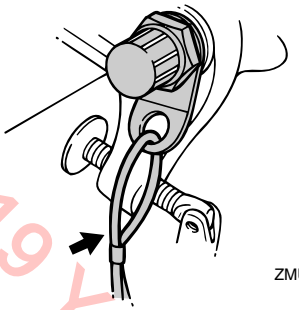
Loose clamp screws could allow the outboard motor to fall off or move on the transom. This could cause loss of control and serious injury. Make sure the transom screws are tightened securely. Occasionally check the screws for tightness during operation.



ZMU02012

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

if it accidentally falls off the transom.



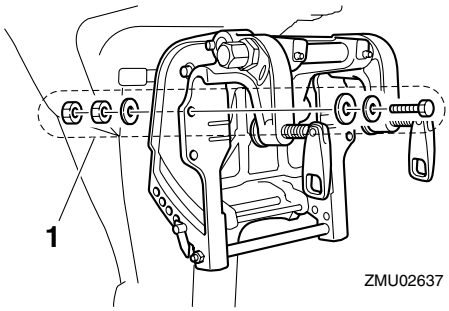
ZMU02013

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



ZMU02637

1. Bolts

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.

EMU27083

Procedure for 4-stroke models

Your new engine requires a period of ten-hours 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.

NOTE:

Failure to follow the break-in procedure could result in reduced engine life or even severe engine damage. Run the engine in the water, under load (in gear with a propeller installed) as follows. For ten hours for breaking in 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 r/min or approximately half throttle.
2. For the second hour of operation:
   Increase engine speed as much as necessary to put the boat on plane (but avoid full-throttle operation), then back off on the throttle while keeping the boat at a planing speed.
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.

EMU27104

Pre-operation checks

EWM00081

⚠ 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.

ECM00120

CAUTION:

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

EMU27111

Fuel

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

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

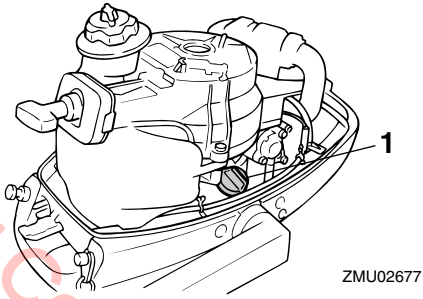
Engine

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

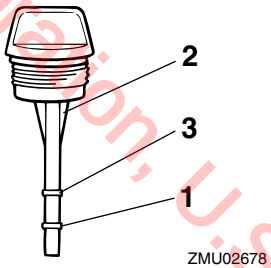
EMU27163

Checking the engine oil level

1. Put the outboard motor in an upright position (not tilted).
2. Remove oil dipstick and wipe it clean.
3. Completely insert the dipstick and remove it again.
4. Check the oil level using the dipstick 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 dipstick



1. Lower level mark
2. Oil dipstick
3. Upper level mark

NOTE:

Be sure to completely insert the dipstick into the dipstick guide.

EMU30541

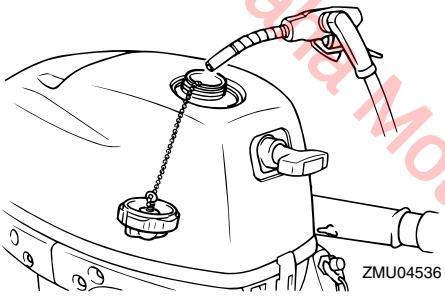
Filling fuel

EWM00060

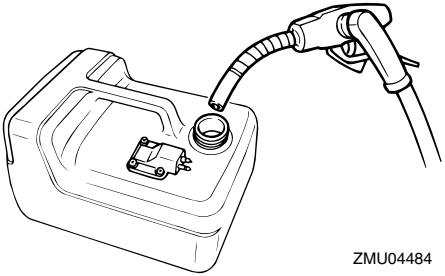
⚠ WARNING

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

1. Remove the fuel tank cap.
2. Carefully fill the fuel tank.



ZMU04536



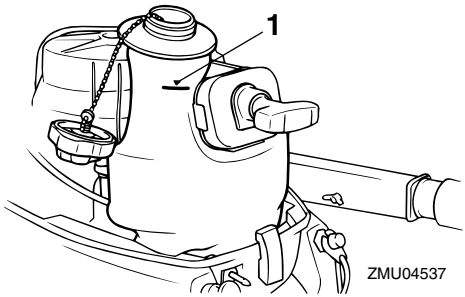
ZMU04484

3. Securely close the cap after filling the tank. Wipe up any spilled fuel.

Fuel tank capacity:
1.1 L (0.29 US gal) (0.24 Imp.gal)

NOTE:

The upper fuel level mark is indicated on the built-in fuel tank.



ZMU04537

1. Upper level mark

EMU27450

Operating engine

EMU27473

Feeding fuel

EWM00420

⚠ WARNING

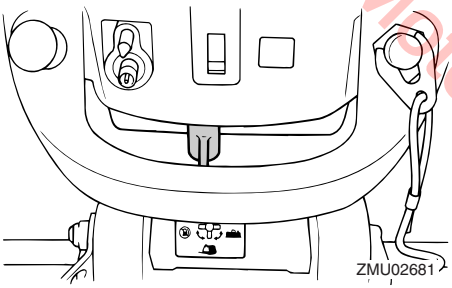
- **Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.**
- **When the air vent screw is loosened, gasoline vapor will be released. Gasoline is highly flammable, and its vapors are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

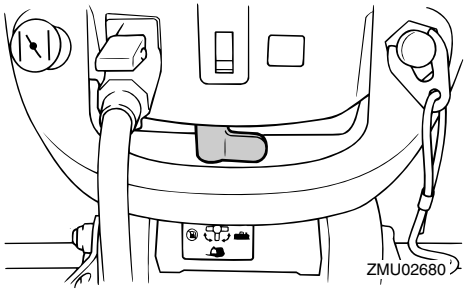
exhaust outlets.

1. For the built in tank, loosen the air vent screw on the fuel tank cap by one turn. For the external fuel tank, loosen it on the fuel tank cap by 2 or 3 turns.

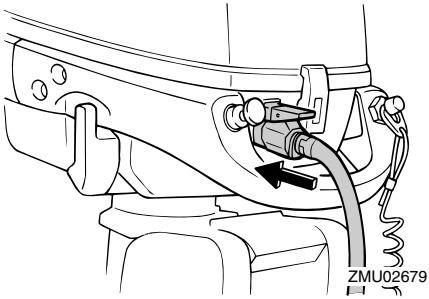

ZMU02443

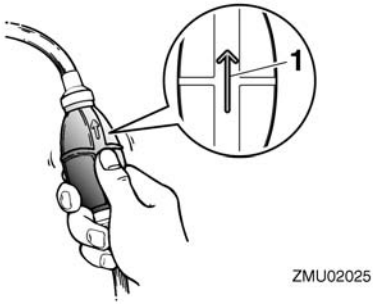
2. Select the fuel tank using the fuel cock or open the fuel cock.


ZMU02681


ZMU02680

3. If you are using an external fuel tank, connect the fuel joints securely and squeeze the primer pump, with the arrow pointing up, until you feel it become firm (if equipped the fuel joint).


ZMU02679



ZMU02025

1. Arrow

EMU27491

Starting engine

EWM01600

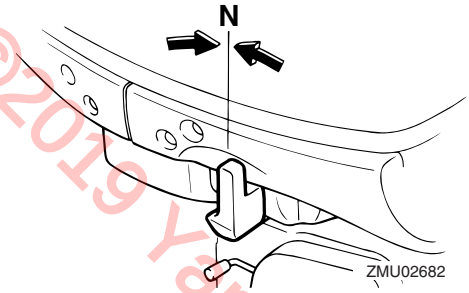
⚠ WARNING

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.

EMU30861

Manual start models (tiller control)

1. Place the gear shift lever in neutral.



ZMU02682

NOTE:

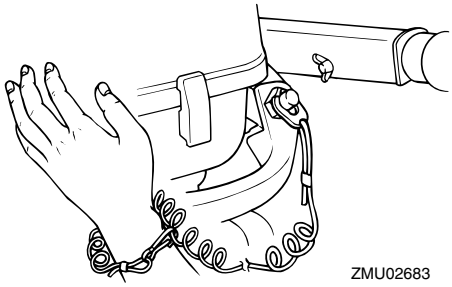
The start-in-gear protection device prevents the engine from starting except when in neutral.

2. Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg. Then install the clip on the other end of the cord into the engine shut-off switch.

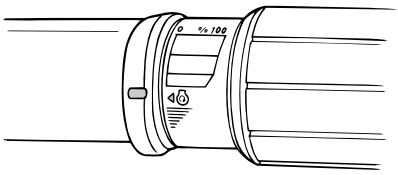
EWM00121

⚠ WARNING

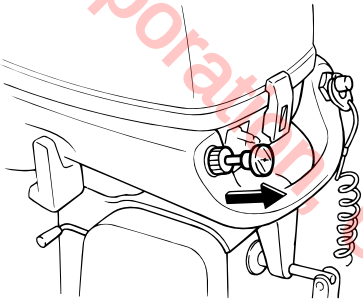
- **Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg while operating.**
- **Do not attach the cord to clothing that could tear loose. Do not route the cord where it could become entangled, preventing it from functioning.**
- **Avoid accidentally pulling the cord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


ZMU02683

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


ZMU02684

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

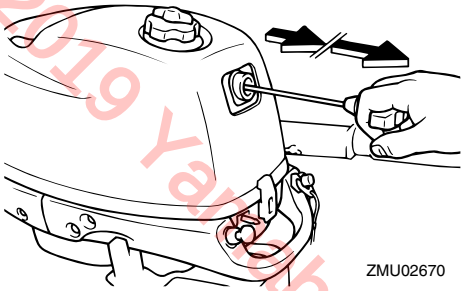

ZMU02669

NOTE:

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

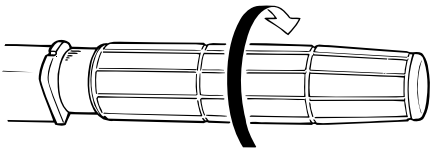
the engine will run poorly or stall.

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



ZMU02670

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



ZMU02685

NOTE:

- When the engine is cold, it needs to be warmed up. For further information, see page 31.
- If the engine does not start on the first try, repeat the procedure. If the engine fails to start after 4 or 5 tries, see page 59. Also, if the engine is warm and fails to start, open the throttle halfway and try to start the engine again.

EMU27670

Warming up engine

EMU27733

Warming up (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:

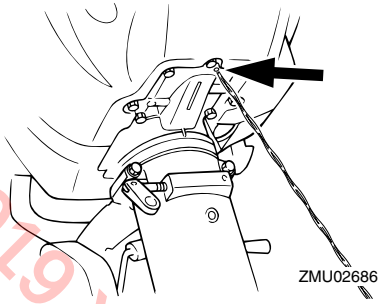
- If the choke knob is left pulled out after the engine starts, the engine will stall.
- In temperatures of -5°C or less, leave the choke knob pulled out fully for approximately 30 seconds after starting.

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.


ZMU02686

EMU34610

Shifting

EWM00180

⚠ WARNING

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

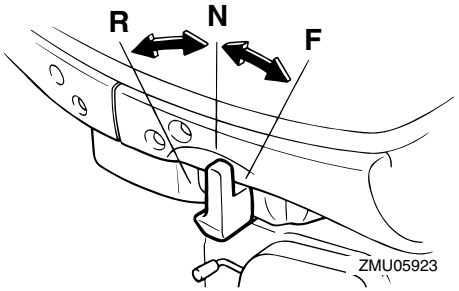
ECM01610

CAUTION:

Warm up the engine before shifting into gear. Until the engine is warm, the idle speed may be higher than normal. High idle speed can prevent you from shifting back to neutral. If this occurs, stop the engine, shift to neutral, then restart the engine and allow it to warm up.

To shift out of neutral

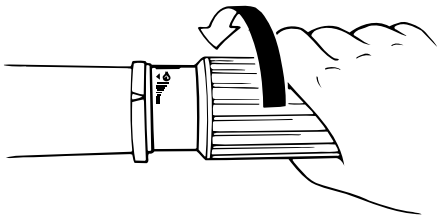
1. Move the gear shift lever firmly and crisply forward (for forward gear) or backward (for reverse gear).



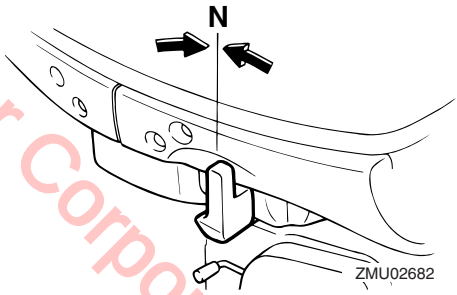
ZMU05923

To shift from in gear (forward/reverse) to neutral

1. Close the throttle so that the engine slows to idle speed.


ZMU02030

2. After the engine is at idle speed in gear move the gear shift lever firmly and crisply into the neutral position.



ZMU02682

NOTE:

The outboard motor can turn 360° in its bracket (full-pivot system). The boat can also be backed up by simply turning the outboard motor around 180° with the steering handle facing toward you.

EMU31742

Stopping boat

EWM01510

WARNING

- **Do not use the reverse function to slow down or stop the boat as it could cause you to lose control, be ejected, or impact the steering wheel or other parts of the boat. This could increase the risk of serious injury. It could also damage the shift mechanism.**
- **Do not shift into reverse while traveling at planing speeds. Loss of control, boat swamping, or damage to the boat could occur.**

The boat is not equipped with a separate braking system. Water resistance stops it after the throttle lever is moved back to idle. The stopping distance varies depending on gross weight, water surface conditions, and wind direction.

EMU27820

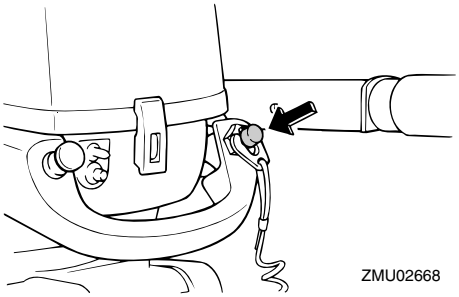
Stopping engine

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.

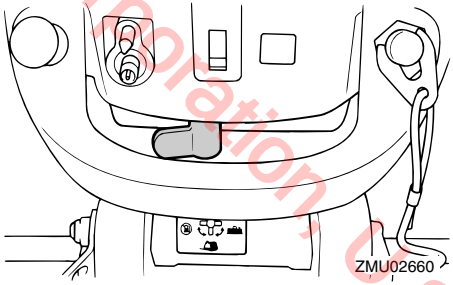
EMU27833

Procedure

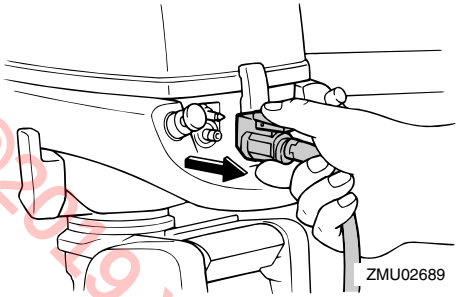
1. Push and hold the engine stop button until the engine comes to a complete stop.



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



3. Disconnect the fuel line if you are using an external fuel tank.


ZMU02689

NOTE:

If the outboard motor is equipped with an engine shut-off cord, the engine can also be stopped by pulling the cord and removing the clip from the engine shut-off switch.

EMU27861

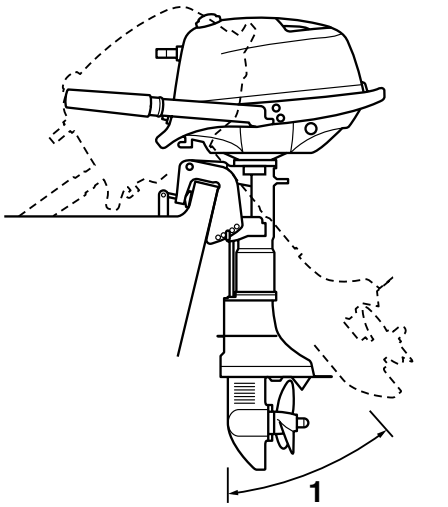
Trimming outboard motor

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.



ZMU02690

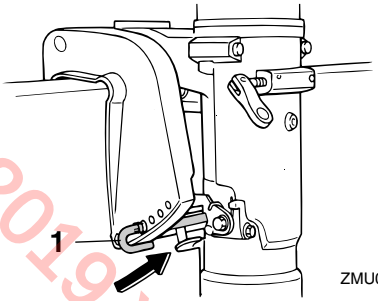
1. Trim operating angle

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.



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.**

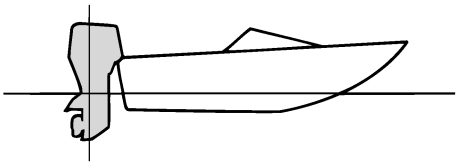
NOTE:

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

EMU27911

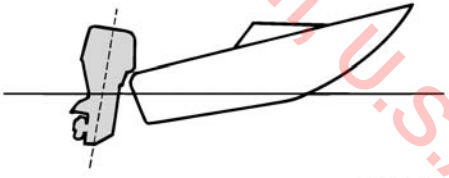
Adjusting boat trim

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.



Bow Up

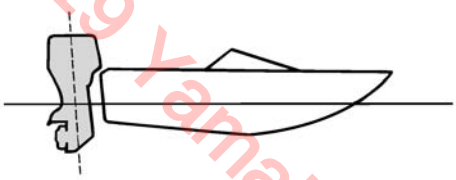
Too much trim-out puts the bow of the boat too high in the water. Performance and economy are decreased because the hull of the boat is pushing the water and there is more air drag. Excessive trim-out can also cause the propeller to ventilate, which reduces performance further, and the boat may “porpoise”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



Bow Down

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

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



ZMU01786

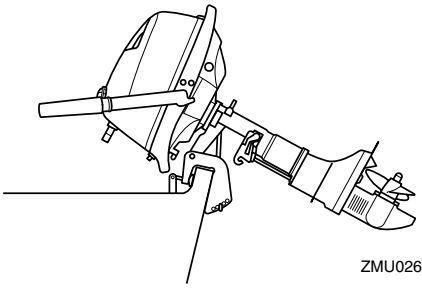
NOTE:

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

EMU27922

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 lower casing from damage by collision with obstructions, and also to reduce salt corrosion.



ZMU02692

EWM00221

WARNING

Be sure all people are clear of the outboard motor when tilting up and down, Body parts can be crushed between the motor and the clamp bracket when the motor is trimmed or tilted.

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:

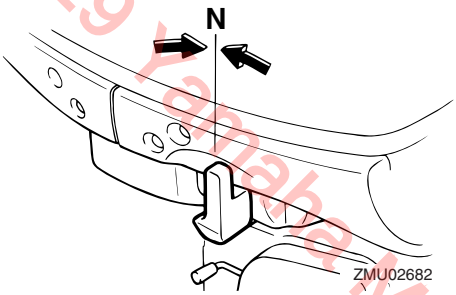
- **Before tilting the outboard motor, follow the procedure under "Stopping engine" in this chapter. Never tilt the outboard motor while the engine is running. Severe damage from overheating can result.**
- **Do not tilt up the engine by pushing the tiller handle because this could break the handle.**
- **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).

EMU27965

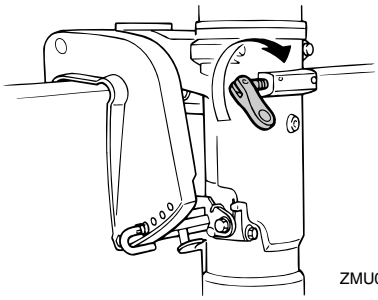
Procedure for tilting up (manual tilt models)

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



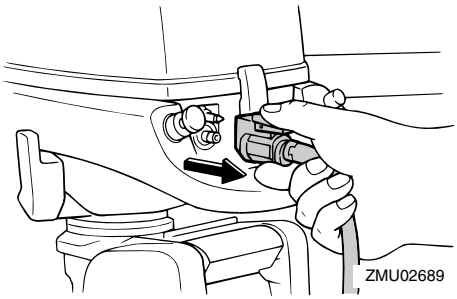
ZMU02682

2. Tighten the steering friction adjuster by turning it clockwise to prevent the motor from turning freely.

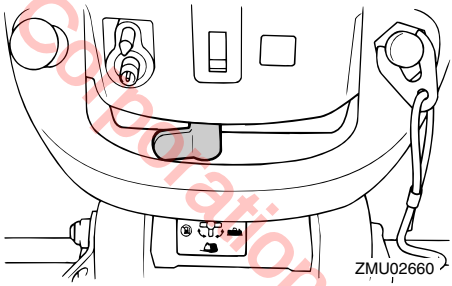

ZMU02696

3. Tighten the air vent screw.

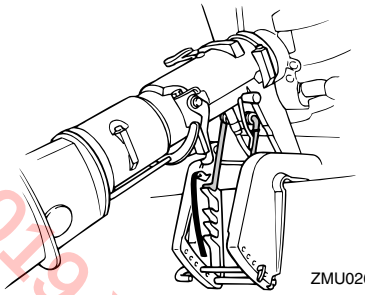

ZMU02450


ZMU02689

4. Close the fuel cock.


ZMU02660

5. Tilt support bar equipped models: Hold the rear of the top cowling or the carrying handle (if equipped) with one hand and tilt the outboard motor up fully until the tilt support bar automatically locks.


ZMU02694

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 carrying handle and tilt the engine up fully until the tilt support lever automatically locks.

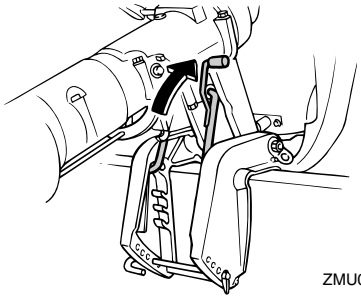
NOTE:

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.

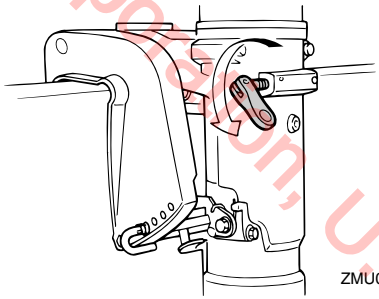

ZMU02673

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.
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.


ZMU02695

EMU28060

Cruising in shallow water

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

EMU28071

Cruising in shallow water (manual tilt models)

EWM00710

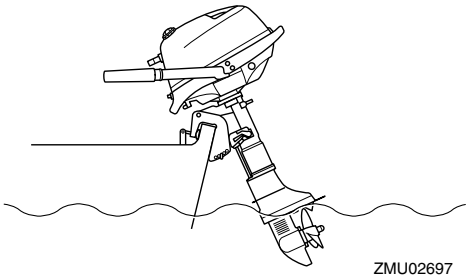
⚠ WARNING

- **Place the gear shift in neutral before using the shallow water cruising system.**
- **Run the boat at the lowest possible speed when using the shallow water cruising system. The tilt lock mechanism does not work while the shallow water cruising system is being used. Hitting an underwater obstacle could cause the outboard motor to lift out of the water, resulting in loss of control.**
- **Do not rotate the outboard motor 180° and operate the boat in reverse. Place the gear shift in reverse to operate the boat in reverse.**
- **Use extra care when operating in reverse. Too much reverse thrust can cause the outboard motor to lift out of the water, increasing the chance of accident and personal injury.**
- **Return the outboard motor to its normal position as soon as the boat is back in deeper water.**

ECM00260

CAUTION:

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

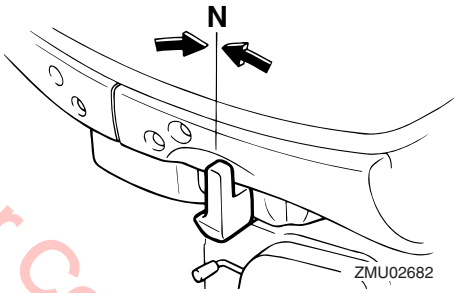


ZMU02697

EMU28101

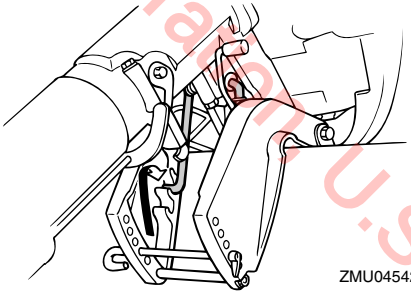
Procedure

1. Place the gear shift lever in neutral and face the outboard motor forward.



ZMU02682

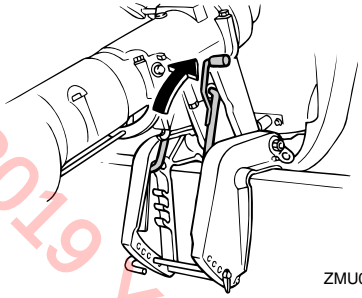
2. Slightly tilt the outboard motor up until the tilt support bar automatically turns to the lock position to support the engine.



ZMU04542

3. To lower the outboard motor to the normal running position, first slightly tilt the outboard motor up. Then pull up the tilt support bar lever and slowly tilt the en-

gine down.



ZMU02673

NOTE:

The outboard motor is equipped with 2 or 3 positions for shallow water cruising.

EMU28193

Cruising in other conditions

Cruising in salt water

After operating in salt water, flush the cooling water passages with fresh water to prevent them from becoming clogged. Also rinse the outside of the outboard motor with fresh water and, if possible, rinse the power head under the cowling.

Cruising in muddy or turbid water

Yamaha strongly recommends that you use the optional chromium-plated water pump kit (available for V4 and large engines) if you use the outboard motor in water with a lot of sediment in it, such as muddy or other turbid (cloudy) water.

Cruising in acidic water

Water in some areas can be acidic. After operating in such water, flush the cooling passages with fresh water to prevent corrosion. Also rinse the outside of the outboard motor with fresh water.

EMU34520

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.

NOTE:

"*" means, select the engine oil referring to the chart of engine oil paragraph. For further information, see page 14.

EMU28219

Dimension:
- Overall length:
  - 717 mm (28.2 in)
- Overall width:
  - 361 mm (14.2 in)
- Overall height S:
  - 1029 mm (40.5 in)
- Overall height L:
  - 1156 mm (45.5 in)
- Transom height S:
  - 435 mm (17.1 in)
- Transom height L:
  - 562 mm (22.1 in)
- Weight (AL) S:
  - 22.0 kg (49 lb)
- Weight (AL) L:
  - 23.0 kg (51 lb)

Performance:
- Full throttle operating range:
  - 4000–5000 r/min
- Maximum output:
  - 2.9 kW@4500 r/min (4 HP@4500 r/min)
- Idling speed (in neutral):
  - 1500 ±50 r/min

Engine:
- Type:
  - 4-stroke S
- Displacement:
  - 112.0 cm^3
- Bore × stroke:
  - 59.0 × 41.0 mm (2.32 × 1.61 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-reverse
- Gear ratio:
  - 2.08 (27/13)
- Trim and tilt system:
  - Manual tilt
- Propeller mark:
  - BA

Fuel and oil:
- Recommended fuel:
  - Regular unleaded gasoline
- Min. pump octane:
  - 86
- Fuel tank capacity (built in type):
  - 1.1 L (0.29 US gal) (0.24 Imp.gal)
- Recommended engine oil:
  - 4-stroke outboard motor oil

Recommended engine oil group 1*:
SAE 10W-30/10W-40/5W-30
API SE/SF/SG/SH/SJ/SL
Recommended engine oil group 2*:
SAE 15W-40/20W-40/20W-50
API SH/SJ/SL
Lubrication:
Wet sump
Engine oil quantity (excluding oil filter):
0.5 L (0.53 US qt) (0.44 Imp.qt)
Recommended gear oil:
Hypoid gear oil SAE#90
Gear oil quantity:
100.0 cm^3 (3.38 US oz) (3.53 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)

EMU28223

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

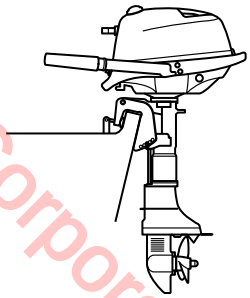
Never get under the lower unit while it is tilted, even if a motor support bar is used. Severe injury could occur if the outboard motor accidentally falls.

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.

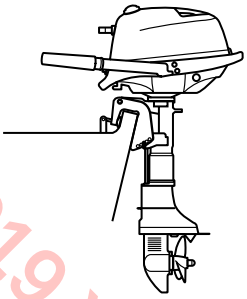


ZMU02699

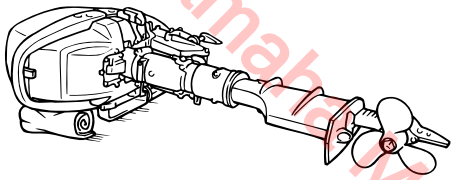
EMU28235

Clamp screw mounting models

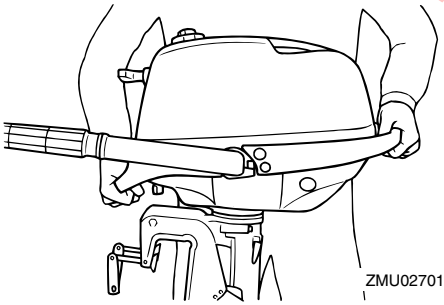
When transporting or storing the outboard motor while removed from a boat, keep the outboard motor in the attitude shown.



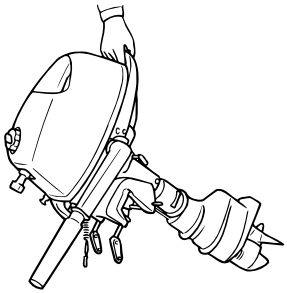
ZMU02699



ZMU02700



ZMU02701



ZMU04507

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.**

EMU28303

Procedure

EMU28373

Flushing in a test tank

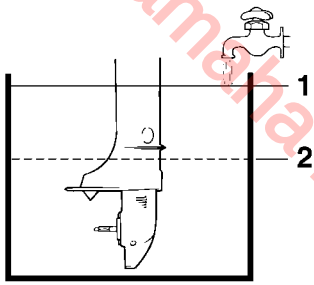
1. Wash the outboard motor body using fresh water. For further information, see page 45.
2. Fill the fuel tank with fresh fuel and add one ounce of “Yamaha Fuel Conditioner

and Stabilizer" 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.



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" 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.

EMU28402

Lubrication

1. Install the spark plug(s) and torque to proper specification. For information on spark plug installation, see page 50.
2. Change the gear oil. For instructions, see page 56. 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 50.

NOTE:

For long-term storage, fogging the engine with oil is recommended. Contact your Yamaha dealer for information about fogging oil and procedures for your engine.

EMU28422

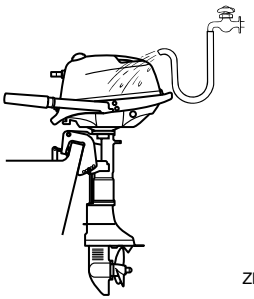
Cleaning and anticorrosion measures

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”.
3. Wax the cowling with a non-abrasive wax such as “Yamaha Silicone Wax”.

EMU28450

Cleaning the outboard motor

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



ZMU02703

NOTE:

For cooling system flushing instructions, see page 42.

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.

EMU28488

Periodic maintenance

EWM01071

WARNING

Be sure to turn off the engine when you perform maintenance unless otherwise specified. If you are 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.

EMU28511

Replacement parts

If replacement parts are necessary, use only genuine Yamaha parts or parts of equivalent design and quality. 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.

EMU35520

Maintenance interval guidelines

The service intervals provided in the Maintenance Chart were developed based upon “typical” use that includes operating at varied speeds, with sufficient time for engine warm

up and cool-down, a medium to light load, and an average cruising speed near the 3000 to 4000 rpm range. As with any engine, however, if your normal operating conditions are different, you should consider service more often than shown, especially how often you change your engine and gear oil. Examples might include extended wide-open-throttle use or long periods of trolling or idling, carrying heavy loads, or frequent starting and stopping or shifting. More frequent maintenance will often pay off many times over in increased engine life and greater owner satisfaction. Consult your Yamaha dealer for additional maintenance recommendations.

EMU34443

Maintenance chart 1

NOTE:

- Refer to the sections in this chapter for explanations of each owner-specific action.
- The maintenance cycle on these charts assume usage of 100 hours per year and regular flushing of the cooling water passages. Maintenance frequency should be adjusted when operating the engine under adverse conditions such as extended trolling.
- Disassembly or repairs may be necessary depending on the outcome of maintenance checks.
- Expendable or consumable parts and lubricants will lose their effectiveness over time and through normal usage regardless of the warranty period.
- When operating in salt water, muddy, other turbid (cloudy), acidic 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		
		20 hours (3 months)	100 hours (1 year)	300 hours (3 years)	500 hours (5 years)
Anode(s) (external)	Inspection or replacement as necessary		●/○		
Anode(s) (thermostat cover)	Inspection or replacement as necessary		○		
Cooling water leakage	Inspection or replacement as necessary	○	○		
Cowling clamp	Inspection		●/○		
Engine starting condition/Noise	Inspection	●/○	●/○		
Engine idling speed/ Noise	Inspection	●/○	●/○		
Engine oil	Replacement	●/○	●/○		
Fuel filter (inside built-in fuel tank)	Inspection and cleaning as necessary		○		
Fuel filter (disposal type)	Replacement		●/○		
Fuel pump	Inspection or replacement as necessary			○	
Fuel/oil leakage	Inspection	○	○		
Fuel pipe	Inspection or replacement as necessary	○	○		
Fuel pipe	Replacement			○	

Item	Actions	Initial	Every		
		20 hours (3 months)	100 hours (1 year)	300 hours (3 years)	500 hours (5 years)
Gear oil	Replacement	●/○	●/○		
Greasing points	Greasing	●/○	●/○		
Impeller/water pump housing	Inspection or replacement as necessary		○		
Impeller/water pump housing	Replacement			○	
Propeller/Propeller nut/Cotter pin	Inspection or replacement as necessary	●/○	●/○		
Shift link/shift cable	Inspection, adjustment or replacement as necessary	○	○		
Spark plug(s)	Inspection, adjustment or replacement as necessary		●/○		
Spark plug caps/high tention cordes	Inspection or replacement as necessary	○	○		
Pilot water	Inspection	●/○	●/○		
Throttle link/Throttle cable/Throttle pick-up timing	Inspection, adjustment or replacement as necessary	○	○		
Thermostat	Inspection or replacement as necessary		○		
Timing belt	Inspection or replacement as necessary		○		
Valve clearance	Inspection and adjustment				○
Water inlet	Inspection	●/○	●/○		
Main switch/stop switch/choke switch	Inspection or replacement as necessary	○	○		
Wire harness connections/Wire coupler connections	Inspection or replacement as necessary	○	○		
(Yamaha) Fuel tank	Inspection and cleaning as necessary		○		
Fuel tank (built-in tank)	Inspection and cleaning as necessary		○		

EMU34450

Maintenance chart 2

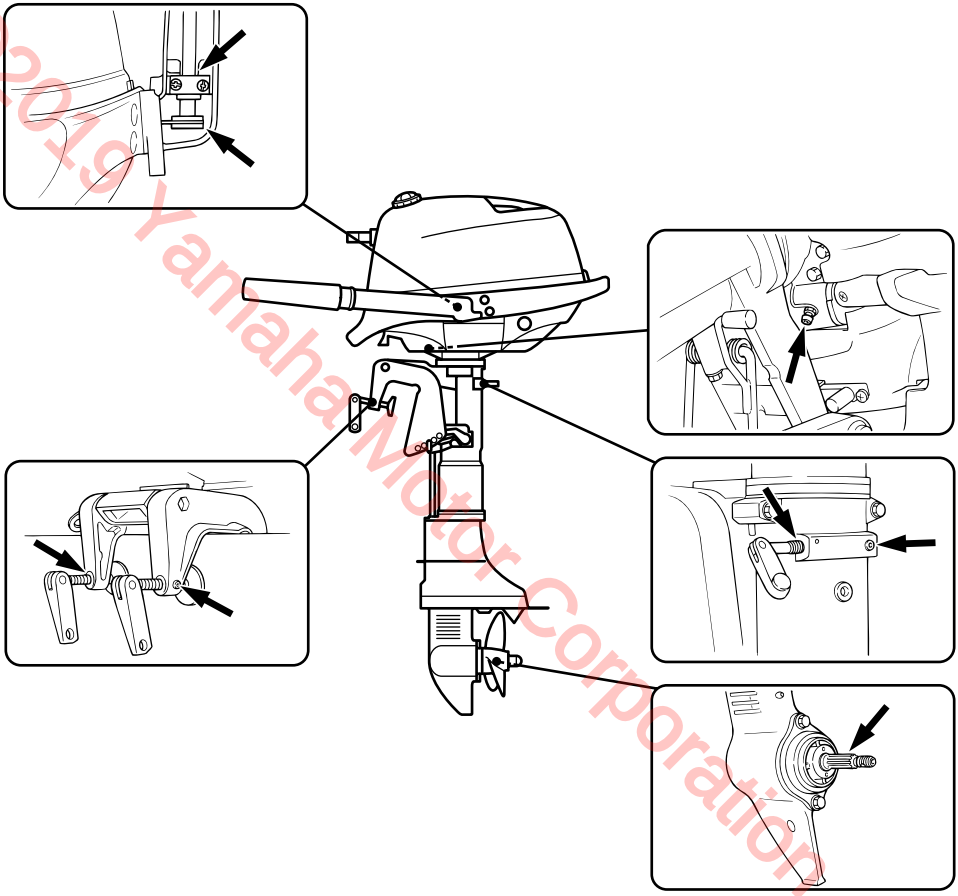
Item	Actions	Every
		1000 hours
Guide exhaust/exhaust manifold	Inspection or replacement as necessary	○
Timing belt	Replacement	○

EMU28932

Greasing

Yamaha marine grease (Water resistant grease)

F4



ZMU02706

EMU28953

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.

EWM01550

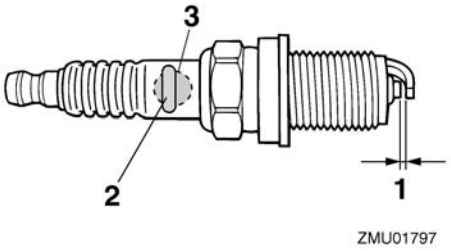
⚠ WARNING

The engine will still be very hot when it has just been turned off. Take extremely care so that neither you nor anyone else gets burnt. To avoid burns, work on the engine when it has cooled down.

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.



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

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.

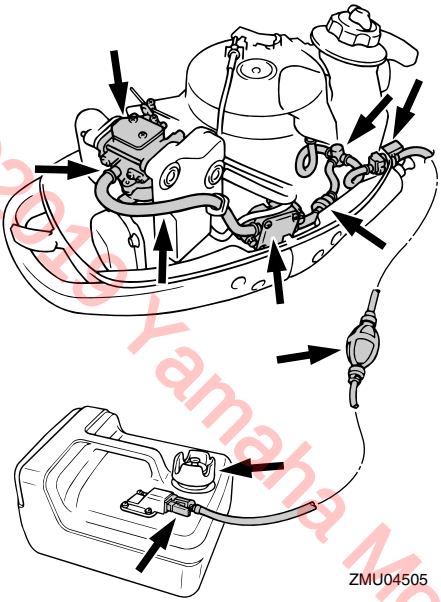
EWM00910

⚠ WARNING

Leaking fuel can result in fire or explosion.

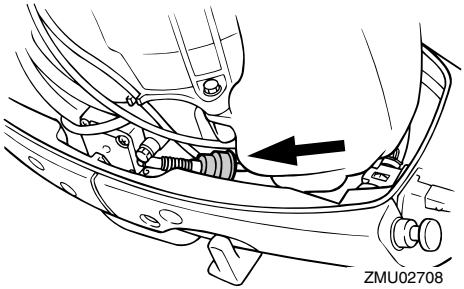
- **Check for fuel leakage regularly.**
- **If any fuel leakage is found, the fuel system must be repaired by a qualified mechanic. Improper repairs can make the outboard unsafe to operate.**

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.


ZMU04505

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

EMU28990
Checking fuel filter
Check the fuel filter periodically. The fuel filter is a one piece, disposable type. If foreign matter is found in the filter, replace it. For replacement of the fuel filter, consult your Yamaha dealer.


ZMU02708

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 41.

EMU29104
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.**

ECM01710

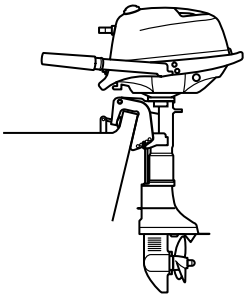
CAUTION:

Change the engine oil after the first 20 hours of operation or 3 months, and every 100 hours or at 1-year intervals thereafter. Otherwise the engine will wear quickly.

NOTE:

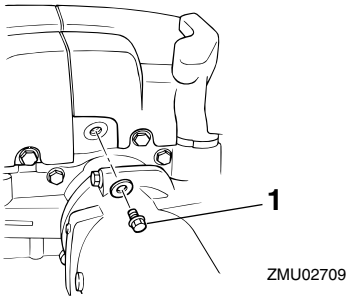
Change the engine oil when the oil is still warm.

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



ZMU02699

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.



ZMU02709

1. Drain screw

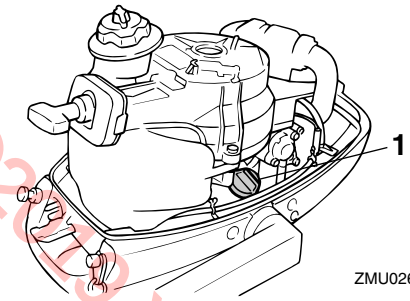
3. Put a new gasket on the oil drain screw. Apply a light coat of oil to the gasket and install the drain screw.

Tightening torque:
See page 41

NOTE:

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

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



ZMU02677

1. Oil filler cap

Engine oil grade/capacity:
See page 41

5. Start the engine and make sure that there are no oil leaks.
6. Turn off the engine and wait 3 minutes. Recheck the oil level using the dipstick 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.

NOTE:

- For disposal of used oil consult your Yamaha dealer.
- The oil should be changed more often when the engine is operated 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.

EMU32110

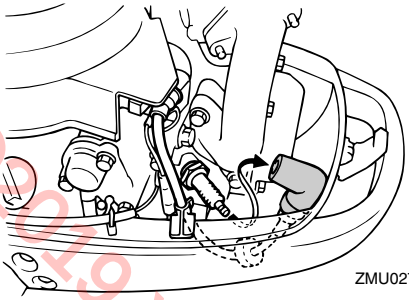
Checking propeller

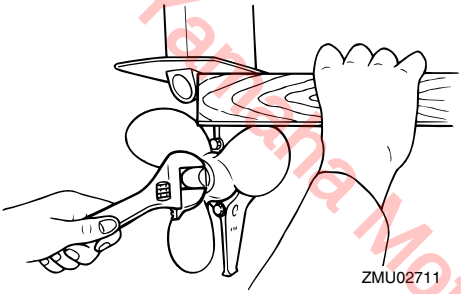
EWM01610

⚠ WARNING

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

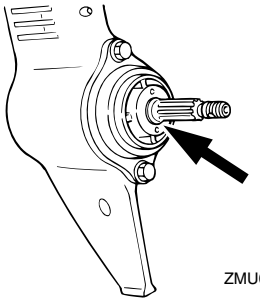
- **Before inspecting, removing, or installing the propeller, remove the spark plug caps from the spark plugs. Also, place the shift control in neutral, turn the main switch to "OFF" (off) and remove the key, and remove the cord from the engine shut-off switch. Turn off the battery cut-off switch if 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.**


ZMU02710


ZMU02711

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 for wear or damage.
- Check for fish line tangled around the propeller shaft.


ZMU02712

- Check the propeller shaft oil seal for damage.

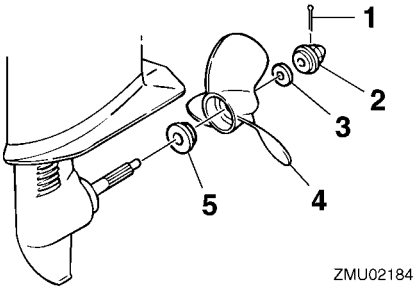
EMU30661

Removing propeller

EMU29196

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, washer (if equipped), and thrust washer.

EMU30671

Installing propeller

EMU30371

Spline models

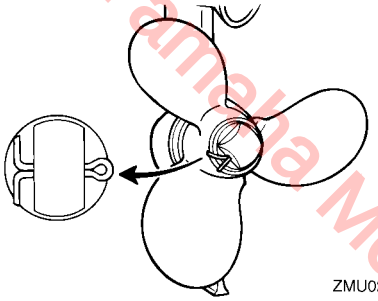
ECM00340

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

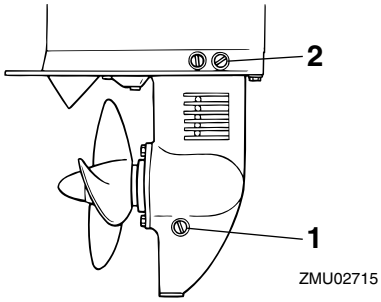
shaft.
2. Install the spacer (if equipped), thrust washer, and propeller on the propeller shaft.
3. Install the spacer (if equipped) and the washer. Tighten the propeller nut until there is no forward-and-backward movement.
4. Align the propeller nut with the propeller shaft hole. Insert a new cotter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



ZMU02715

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.

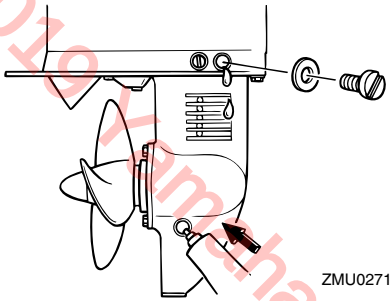
ECM00710
CAUTION:
Inspect the used oil after it has been drained. If the oil is milky, water is getting into the gear case which can cause gear damage. Consult a Yamaha dealer for repair of the lower unit seals.

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:
100.0 cm^3 (3.38 US oz) (3.53 Imp.oz)


ZMU02716

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.

EMU29302

Cleaning fuel tank

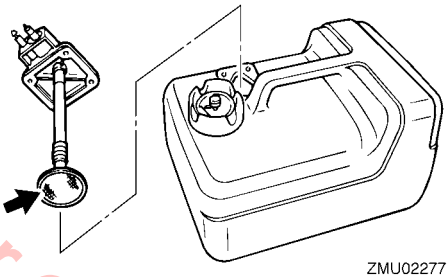
EWM00920

WARNING

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

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

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


ZMU02277

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

EMU29312

Inspecting and replacing anode(s)

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

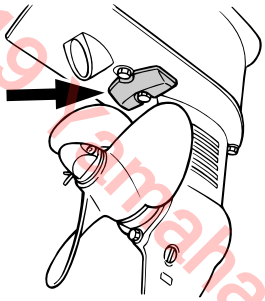
ECM00720

CAUTION:

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

NOTE:

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



ZMU02717

EMU29391

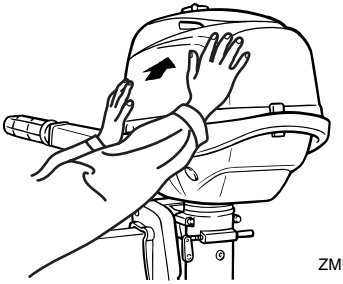
Checking top cowling

ECM01650

CAUTION:

Be sure the cowling is closed securely and that there are no gaps. A loose or improperly fitting cover could allow water into the engine.

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



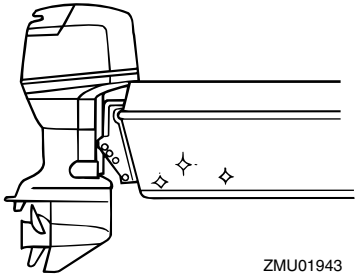
ZMU04477

EMU29400

Coating the boat bottom

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

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



ZMU01943

EMU29425

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 29.

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 shut-off cord not attached?
A. Attach cord.

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.

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.

EMU29433

Temporary action in emergency

EMU29440

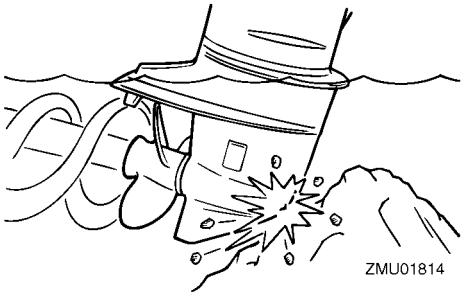
Impact damage

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.



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.

EMU29533

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.

EWM01022

WARNING

- **Use this procedure only in an emergency to return to the nearest port for repairs.**
- **When the emergency starter rope is used to start the engine, the start-in-gear protection device does not operate. Make sure the remote control lever is in neutral. Otherwise the boat could unexpectedly start to move, which**

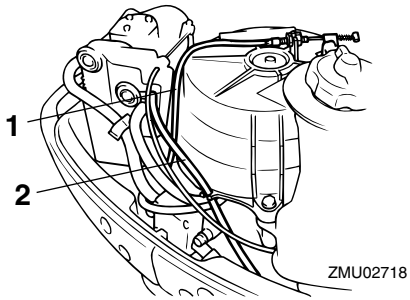
could result in an accident.

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

EMU29622

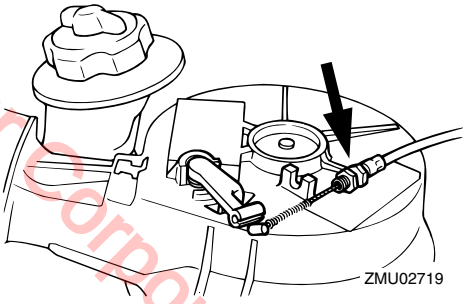
Emergency starting engine

1. Remove the top cowling.
2. Remove the start-in-gear protection cable and the choke cable from the holder on the starter. After removing the choke cable, confirm that the cable end is contacted with the silencer by pushing it inside.

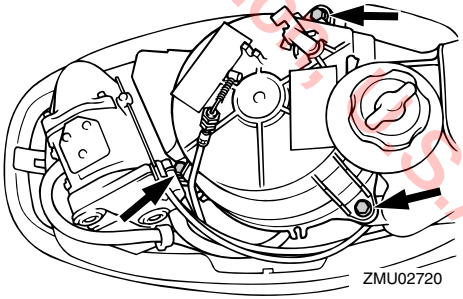


1. Start-in-gear protection cable
2. Choke cable

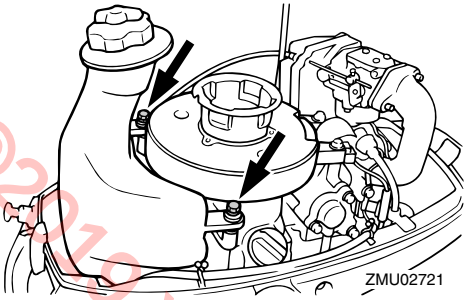
3. Remove the start-in-gear protection cable end by pulling it out from the lever of the starter after loosening the nut.



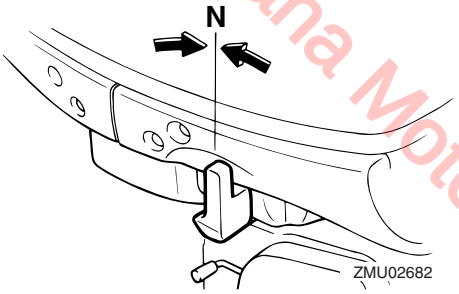
4. Remove the starter after removing the three bolts.



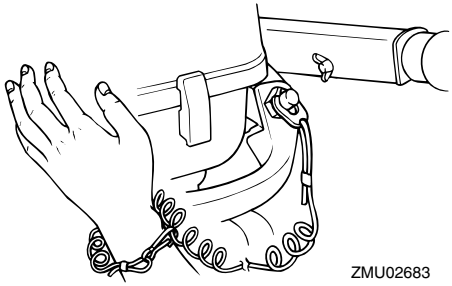
5. Reinstall two bolts to secure the fuel tank.


ZMU02721

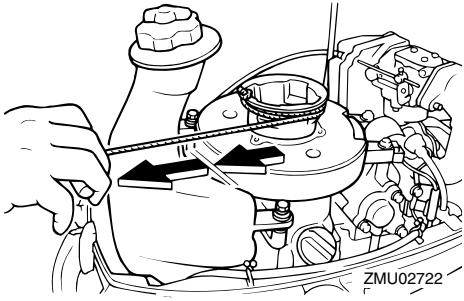
6. Prepare the engine for starting. For further information, see page 29. Be sure the engine is in neutral and that the clip is attached to the engine shut-off switch.



ZMU02682


ZMU02683

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


ZMU02722

EMU29760

Treatment of submerged motor

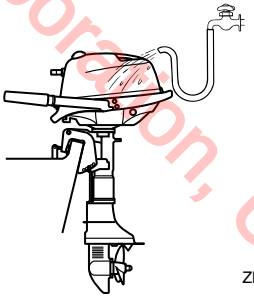
If the outboard motor is submerged, immediately take it to a Yamaha dealer. Otherwise some corrosion may begin almost immediately.

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

EMU29783

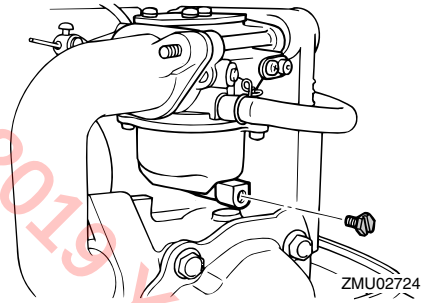
Procedure

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


ZMU02703

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

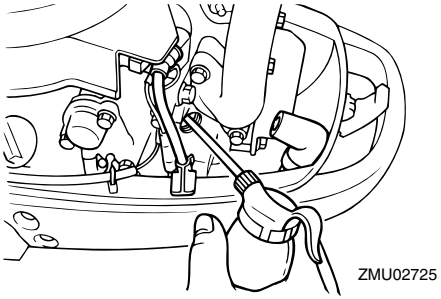
completely.



4. Fill the sump with the fresh engine oil.

Engine oil capacity:
0.5 L (0.53 US qt) (0.44 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.



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.

EMU29811

Important warranty information for U.S.A. and Canada

Welcome to the Yamaha Family!

Congratulations on the purchase of your new Yamaha marine power. Yamaha is committed to exceptional customer satisfaction, and we want your ownership experience to be a satisfying one. Please read the following warranty information to help ensure satisfaction with your Yamaha.

Yamaha is ready to stand behind your purchase with strong warranty coverage. To be sure you receive all the benefits of warranty, please take the following steps:

1. Be sure your new Yamaha is registered for warranty. Your boat dealer should do this at the time of sale. Make sure your dealer gives you a copy of the completed Yamaha registration card for your records. If you are unsure whether or not your Yamaha is registered, complete the Warranty Registration card found inside the cover of the Owner's Manual. Mail it to the distributor for the country in which you live (see step 6 for the correct address). If your Yamaha is not properly registered, a warranty repair could be unnecessarily delayed while registration records are checked.

2. Read the Limited Warranty statement which follows these instructions. This warranty applies to Yamaha outboard motors sold in the United States, whether purchased separately or when supplied as original equipment by a boat builder. The terms also apply to original equipment packages sold in Canada, with coverage provided by Yamaha Motor Canada (see "Warranty Guide" for Canadian models). This warranty explains the conditions of the warranty, including the obligations that your dealer and you as the owner have under the warranty. For example, your Yamaha outboard must receive a proper pre-delivery inspection (PDI) by the selling dealer. Failure to take this important step could jeopardize warranty coverage!

3. If you need warranty repairs, you must take your Yamaha outboard to an authorized Yamaha outboard dealer. Be aware that not all selling boat dealers are authorized Yamaha dealers. Only authorized dealers have the factory training, special tools, and Yamaha support needed to perform warranty repairs.

4. If you are away from home, or your selling dealer is not an authorized Yamaha dealer, use the following toll free number or website to find the nearest Yamaha dealer.

United States Dealer Locations: 1-800-889-2624
Canada Dealer Locations: www.yamaha-motor.ca

ZMU01682

5. Your warranty applies specifically to repairs made in the country of purchase. If your U.S.-purchased Yamaha needs warranty service while in Canada, or your Canadian purchased Yamaha needs service while in the United States, Yamaha will assist the local dealer whenever possible. However, some products available in one country may not be sold or serviced in the other.

6. If you need any additional information about your Yamaha or warranty coverage which your dealer cannot provide, please contact us directly.

Yamaha Motor Corporation, U.S.A.
1270 Chastain Road
Kennesaw, GA 30144
Attention: Customer Relations Department

Telephone No. (866) 894-1626

Yamaha Motor Canada Ltd.
480 Gordon Baker Road
Toronto, Ontario
M2H 3B4
Attention: Customer Relations Department

Telephone No. (416) 498-1911
Fax No. (416) 495-2091

ZMU01683

EMU29830

YAMAHA MOTOR CORPORATION, U.S.A.
FOUR-STROKE OUTBOARD MOTOR
THREE-YEAR LIMITED WARRANTY

Yamaha Motor Corporation, U.S.A. hereby warrants that new Yamaha 1999-or-later model four-stroke outboard motors originally distributed by Yamaha Motor Corporation, U.S.A. will be free from defects in material and workmanship for the period of time stated herein, subject to certain stated limitations. Warranty coverage for outboards distributed by non-US Yamaha affiliated companies may be different.

PERIOD OF WARRANTY. Any new Yamaha 1999-or-later model four-stroke outboard motor purchased and registered with Yamaha Motor Corporation, U.S.A. for pleasure use in the United States, will be warranted against defects in material or workmanship for a period of three (3) years from the date of purchase, subject to exclusions noted herein. Any Yamaha outboard motor purchased and utilized for commercial applications will be warranted for a period of one (1) year from the date of purchase, subject to exclusions noted herein. Yamaha peripheral equipment included with the motor, such as gauges, fuel tanks, and hoses, remote control boxes, and wiring external from the motor unit, will be warranted for one (1) year from the date of purchase of either pleasure or commercial use. Replacement parts used in warranty repairs will be warranted for the balance of the applicable warranty period.

The second and third year of warranty (if applicable) shall be limited to covering the cost of parts and labor for major components only. The major components covered are:

Power Unit Section
- Power Head
- Intake Manifold
- Carburetor Assembly and its Related Components
- Fuel Injection System and its Related Components
- Fuel and Oil Pump Assemblies
- Ignition System (Standard and Microcomputer)

Lower Unit Section
- Exhaust System
- Upper Casing
- Lower Unit Assembly

Bracket Section
- Bracket System
- Power Trim and Tilt Assembly

WARRANTY REGISTRATION. To be eligible for warranty coverage, the outboard motor must be registered with Yamaha Motor Corporation, U.S.A. Warranty registration can be accomplished by any authorized Yamaha Outboard Motor Dealer. Upon receipt of the registration, an Owner's Warranty Card will be sent by Yamaha to the registered purchaser.

OBTAINING REPAIRS UNDER WARRANTY. To receive repairs under this warranty, a valid Owner's Warranty Card must be presented to an authorized Yamaha Outboard Motor Dealer.

During the period of warranty, any authorized Yamaha outboard dealer will, free of charge, repair or replace, at Yamaha's option, any parts adjudged defective by Yamaha due to faulty workmanship or material from the factory. All replaced parts will become the property of Yamaha Motor Corporation, U.S.A.

CUSTOMER'S RESPONSIBILITY. Under the terms of this warranty, the customer will be responsible for ensuring that the outboard motor is properly operated, maintained, and stored as specified in the applicable Owner's Manual.

The owner of the outboard motor shall give notice to an authorized Yamaha Outboard Motor Dealer of any and all apparent defects within ten (10) days of discovery and make the motor available at that time for inspection and repairs at the dealer's place of business.

GENERAL EXCLUSIONS FROM WARRANTY. This warranty will not cover the repair of damage if the damage is a result of abuse or neglect of the product. Examples of abuse and neglect include, but are not limited to:

1. Racing or competition use, modification of original parts, abnormal strain.
2. Lack of proper maintenance and off season storage as described in the Owner's Manual, installation of parts or accessories that are not equivalent in design and quality genuine Yamaha parts.
3. Operation of the motor at an rpm other than specified, use of lubricants or oils that are not suitable for outboard motor use.
4. Damage as a result of accidents, collisions, contact with foreign materials, or submersion.
5. Growth of marine organism on motor surfaces.
6. Normal deterioration.

ZMU01687

Consumer information

SPECIFIC PARTS EXCLUDED FROM WARRANTY. Parts replaced due to normal wear or routine maintenance such as oil, spark plugs, shear pins, propellers, hubs, fuel and oil filters, brushes for the starter motor and power tilt motor, water pump impellers, and anodes, are not covered by warranty.

Charges for removal of the motor from a boat and transporting the motor to and from an authorized Yamaha Outboard Motor Dealer are excluded from warranty coverage.
Specific parts excluded from the second and third year of warranty (if applicable) are:

- Top and Bottom Cowling
- Electric Components (other than ignition system)
- Rubber Components (such as hoses, tubes, rubber seals, fittings, and clamps)

TRANSFER OF WARRANTY. Transfer of the warranty from the original purchaser to any subsequent purchaser is possible by having the motor inspected by an authorized Yamaha Outboard Motor Dealer and requesting the dealer to submit a change of registration to Yamaha Motor Corporation, U.S.A. within ten (10) days of the transfer.

YAMAHA MOTOR CORPORATION, U.S.A. MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY YAMAHA MOTOR CORPORATION, U.S.A. AND EXCLUDED FROM THIS WARRANTY.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. ALSO EXCLUDED FROM THIS WARRANTY ARE ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LOSS OF USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

YAMAHA MOTOR CORPORATION, USA.
1270 Chastain Road
Kennesaw, GA 30144

ZMU01688

EMU29841

IMPORTANT WARRANTY INFORMATION IF YOU USE YOUR YAMAHA OUTSIDE THE USA OR CANADA

Welcome to the Yamaha Family!

Congratulations on the purchase of your new Yamaha Products. Yamaha is committed to exceptional customer satisfaction, and we want your ownership experience to be a satisfying one. Please read the following warranty information to help ensure satisfaction with your Yamaha.

This model was manufactured as a USA specification model, and the warranty statement shown in this manual is for the United States market.
Please note the following information:

1. As explained in the Limited Warranty Statement, the Yamaha warranty covers your Yamaha when it is registered and used in the United States or Canada.

2. If you need repairs while temporarily using your Yamaha in another country, contact the local authorized Yamaha distributor for that country. Yamaha will work with that distributor to make the needed repairs as quickly as possible. If you have to pay for a repair that you believe your warranty would have covered at home, present all repair orders, receipts, or other related documents to your local dealer when you return home. He will be able to contact Yamaha on your behalf to see if any refund can be provided.

NOTE:
Your Yamaha model may not be sold in some countries. Therefore, a Yamaha dealer outside the United States or Canada may not have all of the replacement parts or technical information available to provide proper service. This may unavoidably delay repairs. Thank you for your understanding should this happen.

3. If your Yamaha is registered or used primarily outside the United States or Canada, the warranty printed in this manual does not apply to you. Contact the dealer who sold the Yamaha marine power unit to you for customer support information.

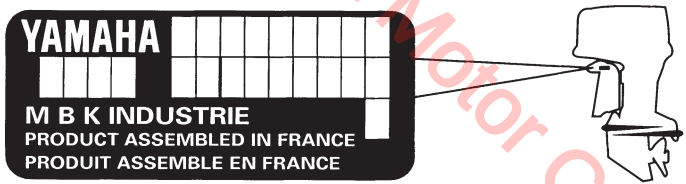
ZMU05199

YAMAHA MOTOR CORPORATION, USA
Printed in France
June 2007–0.1 × 1

YAMAHA OUTBOARD MOTOR WARRANTY REGISTRATION
ENREGISTREMENT DE LA GARANTIE DU MOTEUR HORS-BORD

Please complete and mail this card. This information is necessary to accurately register your unit for warranty.
Veuillez signer ci-dessous pour attester que le montage et l'inspection ont été faits dans le respect des directives d'inspection et que la marche à suivre pour la garantie et l'entretien a été expliquée à l'acheteur au détail.

OUTBOARD MOTOR MODEL AND SERIAL NUMBER (From I.D. label on clamp bracket)
MODÈLE ET NO. DE SÉRIE DU MOTEUR HORS-BORD (sur l'étiquette d'identification de la presse de fixation)



(For Dealer Use Only)
(A l'usage du concessionnaire)
YAMAHA DEALER NUMBER
NO. DU CONCESSIONNAIRE YAMAHA

DEALER NAME
NOM DU CONCESSIONNAIRE

DATE SOLD
DATE DE LIVRAISON
MONTH / MOIS — DAY / JOUR — YEAR / ANNÉE

USAGE (Check One) / UTILISATION (En cocher un.)
☐ PLEASURE / LOISIR
☐ COMMERCIAL / COMMERCIAL

OWNER'S NAME
NOM DU PROPRIÉTAIRE
FIRST / PRÉNOM — LAST / NOM DE FAMILLE

ADDRESS
ADRESSE
STREET / RUE

CITY / VILLE — STATE/PROVINCE / PROVINCE — ZIP / CODE POSTAL

PHONE NUMBER ( )
NUMÉRO DE TÉLÉPHONE

PLACE
POSTAGE
HERE

ATTN: WARRANTY DEPARTMENT